# Appendix 1: PIAAC Main Study Item Pool Characteristics: Literacy, Numeracy and PSTRE 

| Item Difficulty (RP67) | Unit ID and Name | Proficiency Level (RP67) | Other ID | Slope | Difficulty | t1 | t2 | t3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 374 | U04A - Class Attendance | 3 | U04A000P | 0.426 | 1.666 | -6.277 | 3.573 | 2.704 |
| 355 | U11B - Locate Email - File 3 emails | 3 | U11B000P | 0.471 | 0.774 | -5.357 | 4.062 | 1.295 |
| 346 | U02-Meeting Rooms | 3 | U02X000P | 1.184 | 0.784 | -0.271 | 0.500 | -0.229 |
| 342 | U06A - Sprained Ankle - Site Evaluation Table | 3 | U06A000S | 1.132 | 1.000 |  |  |  |
| 325 | U06B - Sprained Ankle Reliable/Trustworthy Site | 2 | U06B000S | 0.534 | -0.244 |  |  |  |
| 321 | U23-Lamp Return | 2 | U23X000P | 0.533 | -0.052 | -5.338 | 3.885 | 1.452 |
| 320 | U21-Tickets | 2 | U21X000S | 1.191 | 0.310 |  |  |  |
| 316 | U03A - CD Tally | 2 | U03A000S | 1.274 | 0.223 |  |  |  |
| 305 | U07- Digital Photography Book Purchase | 2 | U07X000S | 1.104 | -0.237 |  |  |  |
| 299 | U01B - Party Invitations Accommodations | 2 | U01B000S | 1.531 | -0.286 |  |  |  |
| 296 | U19B - Club Membership - Eligibility for Club President | 2 | U19B000P | 1.072 | -0.677 | -0.387 | 0.387 |  |
| 286 | U16-Reply All | 1 | U16X000S | 1.377 | -0.773 |  |  |  |
| 286 | U01A - Party Invitations Can/Cannot Come | 1 | U01A000P | 0.755 | -1.047 | -1.933 | 0.987 | 0.945 |
| 268 | U19A - Club Membership - Member ID | 1 | U19A000S | 1.414 | -1.367 |  |  |  |

PIAAC Numeracy Items

|  | Unit ID and Name | Proficiency |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Trend Status | PIAAC Item ID | Level (RP67) | Other ID | Slope | Difficulty |
| 375 | 612 - Dioxin (MOD) | New | C612A518 | 4 | C612518 | 0.981 | 1.930 |
| 354 | 632 - EducationalLevel | New | C632P001 | 4 | E632001 | 0.632 | 1.313 |
| 348 | 610 - Compoundlnterest | Trend | P610A515 | 4 | M610515 | 1.698 | 1.619 |
| 341 | 623 - Wine | Trend | P623A618 | 4 | M623618 | 1.414 | 1.452 |
| 332 | 660 - Weighthistory | New | C660P004 | 4 | E660004 | 0.805 | 1.059 |
| 326 | 665 - Coopertest | New | C665P002 | 4 | E665002 | 1.255 | 1.129 |
| 324 | 641 - Amoeba | New | C641P001 | 3 | E641001 | 1.167 | 1.081 |
| 320 | 624 - BMI | Trend | C624A620 | 3 | C624620 | 1.398 | 1.057 |
| 318 | 634 - Peanuts | New | C634P002 | 3 | E634002 | 1.639 | 1.064 |
| 317 | 644 - NZExports | New | C644P002 | 3 | E644002 | 1.650 | 1.051 |
| 315 | 661 - Studyfees | New | C661P002 | 3 | E661002 | 1.155 | 0.916 |
| 315 | 657 - Package | New | C657P001 | 3 | E657001 | 0.642 | 0.626 |
| 314 | 651 - Fertilizer | New | C651P002 | 3 | E651002 | 1.509 | 0.973 |
| 308 | 661 - Studyfees | New | C661P001 | 3 | E661001 | 1.392 | 0.847 |
| 308 | 620 - Inflation | Trend | C620A612 | 3 | C620612 | 0.878 | 0.660 |
| 307 | 664 - Orchestra Tickets | New | C664P001 | 3 | E664001 | 1.333 | 0.819 |
| 305 | 634 - Peanuts | New | C634P001 | 3 | E634001 | 1.150 | 0.719 |
| 303 | 617 - Map | Trend | C617A605 | 3 | C617605 | 1.067 | 0.653 |
| 301 | 622 - Classified | Trend | C622A615 | 3 | C622615 | 0.851 | 0.533 |
| 297 | 618 - SixPack1 | Trend | C618A608 | 3 | C618608 | 1.024 | 0.543 |
| 296 | 611 - TempScale | Trend | C611A517 | 3 | C611517 | 0.847 | 0.439 |
| 294 | 636 - LabReport | New | C636P001 | 3 | E636001 | 0.870 | 0.405 |
| 287 | 617 - Map | Trend | C617A606 | 3 | C617606 | 0.794 | 0.233 |
| 282 | 619 - Tiles | Trend | C619A609 | 3 | C619609 | 1.087 | 0.279 |
| 276 | 623 - Wine | Trend | C623A617 | 3 | C623617 | 1.327 | 0.238 |
| 276 | 660 - Weighthistory | New | C660P003 | 3 | E660003 | 0.936 | 0.105 |
| 273 | 606 - Solution | Trend | C606A509 | 2 | C606509 | 1.051 | 0.107 |
| 267 | 620 - Inflation | Trend | C620A610 | 2 | C620610 | 1.365 | 0.097 |
| 266 | 632 - EducationalLevel | New | C632P002 | 2 | E632002 | 0.938 | -0.071 |
| 261 | 611 - TempScale | Trend | C611A516 | 2 | C611516 | 0.904 | -0.170 |
| 260 | 650 - UrbanPopulation | New | C650P001 | 2 | E650001 | 0.828 | -0.234 |
| 260 | 608 - Tree | Trend | C608A513 | 2 | C608513 | 0.563 | -0.471 |
| 259 | 605 - Photo | Trend | C605A506 | 2 | C605506 | 0.891 | -0.214 |
| 259 | 602 - PriceTag | Trend | C602A503 | 2 | C602503 | 1.134 | -0.122 |
| 258 | 623 - Wine | Trend | C623A616 | 2 | C623616 | 1.018 | -0.171 |
| 256 | 646 - RugProduction | New | C646P002 | 2 | E646002 | 1.042 | -0.207 |
| 250 | 613 - Logbook | Trend | C613A520 | 2 | C613520 | 1.082 | -0.301 |
| 249 | 655 - Path | New | C655P001 | 2 | E655001 | 1.181 | -0.294 |
| 242 | 605 - Photo | Trend | C605A507 | 2 | C605507 | 1.079 | -0.447 |
| 240 | 666 - Rope | New | P666P001 | 2 | P666001 | 0.576 | -0.817 |
| 239 | 607 - TV | Trend | C607A510 |  | C607510 | 1.051 | -0.513 |
| 238 | 602 - PriceTag | Trend | C602A502 | 2 | C602502 | 0.648 | -0.784 |
| 234 | 665 - Coopertest | New | C665P001 | 2 | E665001 | 0.932 | -0.647 |
| 231 | 615 - Candles | Trend | C615A603 | 2 | C615603 | 0.929 | -0.700 |
| 231 | 645 - AirportTimetable | New | C645P001 | 2 | E645001 | 0.669 | -0.889 |
| 228 | 604 - GasGauge | Trend | C604A505 | 2 | C604505 | 0.918 | -0.771 |
| 227 | 605 - Photo | Trend | C605A508 | 2 | C605508 | 1.018 | -0.739 |
| 221 | 624 - BMI | Trend | C624A619 | 1 | C624619 | 0.766 | -0.987 |


| Item <br> Difficulty <br> (RP67) | Unit ID and Name | Trend |  |  |  |  |  |
| :---: | :--- | :--- | :--- | :---: | :--- | :--- | :--- | :--- |
| Status | PIAAC Item ID | Proficiency <br> Level <br> (RP67) | Other ID | Slope | Difficulty |  |  |
| 221 | 615 - Candles | Trend | C615A602 | 1 | C615602 | 0.760 | -0.995 |
| 217 | $618-$ SixPack1 | Trend | C618A607 | 1 | C618607 | 0.690 | -1.115 |
| 195 | $640-$ Odometer | New | P640P001 | 1 | P640001 | 0.909 | -1.373 |
| 185 | $614-$ Watch | Trend | C614A601 | 1 | C614601 | 0.808 | -1.608 |
| 179 | $635-$ ParkingMap | New | C635P001 | 1 | E635001 | 1.021 | -1.615 |
| 168 | $602-$ PriceTag | Trend | C602A501 | Below 1 | C602501 | 0.678 | -2.015 |
| 155 | $600-$ Electionresults | Trend | C600AC04 | Below 1 | C600C04 | 0.799 | -2.160 |
| 129 | $601-$ Bottles | Trend | C601AC06 | Below 1 | C601C06 | 0.583 | -2.827 |

PIAAC Literacy Items

| Item Difficulty (RP67) | Unit ID and Name | Trend Status | PIAAC Item ID | $\begin{aligned} & \hline \text { Proficiency } \\ & \text { Level } \\ & \text { (RP67) } \end{aligned}$ | Other ID | Slope | Difficulty |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 376 | 323 - Library Search | New | C323P005 | 5 | E323005 | 0.967 | 1.968 |
| 374 | 329 - Work-related Stress | New | C329P003 | 4 | E329003 | 1.412 | 2.079 |
| 372 | 306 - CANCO | Trend | C306B111 | 4 | D306111 | 0.851 | 1.838 |
| 371 | 308 - Baltic Stock Market | Trend | C308A116 | 4 | C308116 | 0.735 | 1.743 |
| 359 | 317 - Apples | New | P317P001 | 4 | P317001 | 0.782 | 1.000 |
| 350 | 327 - Summer Streets | New | C327P004 | 4 | E327004 | 1.132 | 1.552 |
| 349 | 329 - Work-related Stress | New | C329P002 | 4 | E329002 | 0.812 | 1.392 |
| 348 | 323 - Library Search | New | C323P002 | 4 | E323002 | 1.319 | 1.568 |
| 347 | 324 - Milk Label | New | P324P002 | 4 | P324002 | 1.027 | 1.465 |
| 337 | 308 - Baltic Stock Market | Trend | C308A118 | 4 | C308118 | 1.009 | 1.260 |
| 329 | 309 - Generic Medicines | Trend | C309A322 | 4 | C309322 | 0.776 | 0.994 |
| 329 | 323 - Library Search | New | C323P004 | 4 | E323004 | 1.462 | 1.236 |
| 324 | 313 - International Calls | Trend | C313A410 | 3 | C313410 | 1.280 | 1.112 |
| 320 | 327 - Summer Streets | New | C327P003 | 3 | E327003 | 0.972 | 0.937 |
| 318 | 315 - Distances-Mexican Cities | Trend | C315B512 | 3 | D315512 | 0.758 | 0.766 |
| 316 | 318-Civil Engineering | New | C318P003 | 3 | E318003 | 1.250 | 0.957 |
| 315 | 313 - International Calls | Trend | C313A411 | 3 | C313411 | 1.516 | 0.984 |
| 312 | 310 - Memory Training | Trend | C310A407 | 3 | C310407 | 1.246 | 0.881 |
| 312 | 324 - Milk Label | New | P324P003 | 3 | P324003 | 0.892 | 0.740 |
| 309 | 305 - TMN AntiTheft | Trend | C305A218 | 3 | C305218 | 1.077 | 0.764 |
| 306 | 327 - Summer Streets | New | C327P002 | 3 | E327002 | 0.897 | 0.632 |
| 304 | 304 - Contact Employer | Trend | C304B711 | 3 | D304711 | 0.964 | 0.892 |
| 303 | 318 - Civil Engineering | New | C318P001 | 3 | E318001 | 1.246 | 0.703 |
| 298 | 327 - Summer Streets | New | C327P001 | 3 | E327001 | 0.919 | 0.492 |
| 297 | 308 - Baltic Stock Market | Trend | C308A119 | 3 | C308119 | 1.285 | 0.614 |
| 294 | 322 - Lakeside Fun Run | New | C322P003 | 3 | E322003 | 1.069 | 0.478 |
| 293 | 322 - Lakeside Fun Run | New | C322P004 | 3 | E322004 | 1.442 | 0.575 |
| 289 | 323 - Library Search | New | C323P003 | 3 | E323003 | 1.338 | 0.466 |
| 288 | 307 - MEDCO Aspirin | Trend | C307B402 | 3 | D307402 | 1.074 | 0.367 |
| 286 | 320 - Discussion forum | New | C320P003 | 3 | E320003 | 1.446 | 0.437 |
| 286 | 313 - International Calls | Trend | C313A413 | 3 | C313413 | 1.126 | 0.355 |
| 286 | 304 - Contact Employer | Trend | C304B710 | 3 | D304710 | 1.722 | 0.476 |
| 285 | 320 - Discussion forum | New | C320P004 | 3 | E320004 | 1.338 | 0.399 |
| 283 | 322 - Lakeside Fun Run | New | C322P001 | 3 | E322001 | 0.935 | 0.231 |
| 281 | 320 - Discussion forum | New | C320P001 | 3 | E320001 | 1.746 | 0.393 |
| 279 | 308 - Baltic Stock Market | Trend | C308A121 | 3 | C308121 | 1.296 | 0.266 |
| 272 | 310 - Memory Training | Trend | C310A406 | 2 | C310406 | 1.539 | 0.200 |
| 272 | 309 - Generic Medicines | Trend | C309A319 | 2 | C309319 | 1.168 | 0.114 |
| 272 | 313 - International Calls | Trend | C313A414 | 2 | C313414 | 1.115 | 0.096 |

PIAAC Literacy Items

| Item Difficulty (RP67) | Unit ID and Name | Trend <br> Status | PIAAC Item ID | Proficiency Level (RP67) | Other ID | Slope | Difficulty |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 265 | 317 - Apples | New | P317P003 | 2 | P317003 | 0.935 | -0.121 |
| 262 | 317 - Apples | New | P317P002 | 2 | P317002 | 1.017 | -0.132 |
| 260 | 305 - TMN AntiTheft | Trend | C305A215 | 2 | C305215 | 1.116 | -0.139 |
| 257 | 313 - International Calls | Trend | C313A412 | 2 | C313412 | 0.926 | -0.270 |
| 254 | 308 - Baltic Stock Market | Trend | C308A120 | 2 | C308120 | 1.270 | -0.202 |
| 251 | 321 - Internet Poll | New | C321P001 | 2 | E321001 | 1.041 | -0.329 |
| 244 | 306 - CANCO | Trend | C306B110 | 2 | D306110 | 1.241 | -0.395 |
| 244 | 322 - Lakeside Fun Run | New | C322P005 | 2 | E322005 | 1.040 | -0.465 |
| 240 | 322 - Lakeside Fun Run | New | C322P002 | 2 | E322002 | 0.858 | -0.616 |
| 239 | 308 - Baltic Stock Market | Trend | C308A117 | 2 | C308117 | 1.088 | -0.534 |
| 239 | 309 - Generic Medicines | Trend | C309A320 | 2 | C309320 | 1.075 | -0.549 |
| 238 | 321 - Internet Poll | New | C321P002 | 2 | E321002 | 0.519 | -0.968 |
| 219 | 309 - Generic Medicines | Trend | C309A321 | 1 | C309321 | 0.984 | -0.955 |
| 207 | 330 - Guadeloupe | New | P330P001 | 1 | P330001 | 0.779 | -1.294 |
| 201 | 311 - Dutch Women | Trend | C311B701 | 1 | D311701 | 0.718 | -1.436 |
| 169 | 307 - MEDCO Aspirin | Trend | C30B7401 | Below 1 | D307401 | 0.996 | -1.883 |
| 162 | 302 - Election Results | Trend | C302BC02 | Below 1 | D302C02 | 0.514 | -2.411 |
| 136 | 300 - Employment Ad | Trend | C300AC02 | Below 1 | C300C02 | 0.785 | -2.614 |
| 75 | 301 - SGIH | Trend | C301AC05 | Below 1 | C301C05 | 0.502 | -4.051 |

## Appendix 2: Contrast Coding Used in Conditioning

PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| A_D01a1 | 14 | General - Interview month (Derived by CAPI) | -1 | Missing | 0000000000001 |
| A_D01a1 |  |  | 1 | January | 0000000000000 |
| A_D01a1 |  |  | 2 | February | 1000000000000 |
| A_D01a1 |  |  | 3 | March | 0100000000000 |
| A_D01a1 |  |  | 4 | April | 0010000000000 |
| A_D01a1 |  |  | 5 | May | 0001000000000 |
| A_D01a1 |  |  | 6 | June | 0000100000000 |
| A_D01a1 |  |  | 7 | July | 0000010000000 |
| A_D01a1 |  |  | 8 | August | 0000001000000 |
| A_D01a1 |  |  | 9 | September | 0000000100000 |
| A_D01a1 |  |  | 10 | October | 0000000010000 |
| A_D01a1 |  |  | 11 | November | 0000000001000 |
| A_D01a1 |  |  | 12 | Dember | 0000000000100 |
| A_D01a1 |  |  | 96 | Valid skip | 0000000000010 |
| B_D12h | 7 | Activities - Last year - Number of learning activi | -1 | Missing | 000001 |
| B_D12h |  |  | 1 | Respondent reported | 000000 |
| B_D12h |  |  | 2 | Respondent reported | 100000 |
| B_D12h |  |  | 3 | Respondent reported | 010000 |
| B_D12h |  |  | 4 | Respondent reported | 001000 |
| B_D12h |  |  | 5 | Information on learn | 000100 |
| B_D12h |  |  | 6 | Valid skip | 000010 |
| B_Q01a | 18 | Education - Highest qualification - Level | -1 | Missing | 00000000000000001 |
| B_Q01a |  |  | 1 | No formal qualificat | 00000000000000000 |
| B_Q01a |  |  | 2 | ISCED 1 | 10000000000000000 |
| B_Q01a |  |  | 3 | ISCED 2 | 01000000000000000 |
| B_Q01a |  |  | 4 | ISCED 3C shorter tha | 00100000000000000 |
| B_Q01a |  |  | 5 | ISCED 3C 2 years or | 00010000000000000 |
| B_Q01a |  |  | 6 | ISCED 3A-B | 00001000000000000 |
| B_Q01a |  |  | 7 | ISCED 3 (without dis | 00000100000000000 |
| B_Q01a |  |  | 8 | ISCED 4C | 00000010000000000 |
| B_Q01a |  |  | 9 | ISCED 4A-B | 00000001000000000 |
| B_Q01a |  |  | 10 | ISCED 4 (without dis | 00000000100000000 |
| B_Q01a |  |  | 11 | ISCED 5B | 00000000010000000 |
| B_Q01a |  |  | 12 | ISCED 5A, bachelor d | 00000000001000000 |
| B_Q01a |  |  | 13 | ISCED 5A, master deg | 00000000000100000 |
| B_Q01a |  |  | 14 | ISCED 6 | 00000000000010000 |
| B_Q01a |  |  | 15 | Foreign qualificatio | 00000000000001000 |
| B_Q01a |  |  | 16 | ISCED 5A bachelor de | 00000000000000100 |
| B_Q01a |  |  | 96 | Valid skip | 00000000000000010 |
| B_Q01a3 | 17 | Education - Highest qualification - Level of forei | -1 | Missing | 000000000000001 |
| B_Q01a3 |  |  | 1 | No formal qualificat | 0000000000000000 |
| B_Q01a3 |  |  | 2 | ISCED 1 | 100000000000000 |

PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01a3 | 11 | Education - Highest qualification - Area of study | 3 | ISCED 2 | 0100000000000000 |
| B_Q01a3 |  |  | 4 | ISCED 3C shorter tha | 001000000000000 |
| B_Q01a3 |  |  | 5 | ISCED 3C 2 years or | 0001000000000000 |
| B_Q01a3 |  |  | 6 | ISCED 3A-B | 0000100000000000 |
| B_Q01a3 |  |  | 7 | ISCED 3 (without dis | 0000010000000000 |
| B_Q01a3 |  |  | 8 | ISCED 4C | 0000001000000000 |
| B_Q01a3 |  |  | 9 | ISCED 4A-B | 0000000100000000 |
| B_Q01a3 |  |  | 10 | ISCED 4 (without dis | 0000000010000000 |
| B_Q01a3 |  |  | 11 | ISCED 5B | 0000000001000000 |
| B_Q01a3 |  |  | 12 | ISCED 5A, bachelor d | 0000000000100000 |
| B_Q01a3 |  |  | 13 | ISCED 5A, master deg | 0000000000010000 |
| B_Q01a3 |  |  | 14 | ISCED 6 | 0000000000001000 |
| B_Q01a3 |  |  | 15 | ISCED 5A bachelor de | 0000000000000100 |
| B_Q01a3 |  |  | 96 | Valid skip | 0000000000000010 |
| B_Q01b |  |  | -1 | Missing | 0000000001 |
| B_Q01b |  |  | 1 | General programmes | 0000000000 |
| B_Q01b |  |  | 2 | Teacher training and | 1000000000 |
| B_Q01b |  |  | 3 | Humanities, language | 0100000000 |
| B_Q01b |  |  | 4 | Social sciences, bus | 0010000000 |
| B_Q01b |  |  | 5 | Science, mathematics | 0001000000 |
| B_Q01b |  |  | 6 | Engineering, manufac | 0000100000 |
| B_Q01b |  |  | 7 | Agriculture and vete | 0000010000 |
| B_Q01b |  |  | 8 | Health and welfare | 0000001000 |
| B_Q01b |  |  | 9 | Services | 0000000100 |
| B_Q01b |  |  | 96 | Valid skip | 0000000010 |
| B_Q01d | 14 | Education - Highest qualification - Month of finis | -1 | Missing | 0000000000001 |
| B_Q01d |  |  | 1 | January | 0000000000000 |
| B_Q01d |  |  | 2 | February | 1000000000000 |
| B_Q01d |  |  | 3 | March | 0100000000000 |
| B_Q01d |  |  | 4 | April | 0010000000000 |
| B_Q01d |  |  | 5 | May | 0001000000000 |
| B_Q01d |  |  | 6 | June | 0000100000000 |
| B_Q01d |  |  | 7 | July | 0000010000000 |
| B_Q01d |  |  | 8 | August | 0000001000000 |
| B_Q01d |  |  | 9 | September | 0000000100000 |
| B_Q01d |  |  | 10 | October | 0000000010000 |
| B_Q01d |  |  | 11 | November | 0000000001000 |
| B_Q01d |  |  | 12 | Dember | 0000000000100 |
| B_Q01d |  |  | 96 | Valid skip | 0000000000010 |
| B_Q02a | 4 | Education - Current qualification | -1 | Missing | 001 |
| B_Q02a |  |  | 1 | Yes | 000 |
| B_Q02a |  |  | 2 | No | 100 |

PIAAC Contrast Coding used for Conditioning - International Variables


PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q03b | 14 | Education - Uncompleted qualification - Month of d | 10 | ISCED 5B | 000000001000000 |
| B_Q03b |  |  | 11 | ISCED 5A, bachelor d | 000000000100000 |
| B_Q03b |  |  | 12 | ISCED 5A, master deg | 000000000010000 |
| B_Q03b |  |  | 13 | ISCED 6 | 000000000001000 |
| B_Q03b |  |  | 14 | ISCED 5A bachelor de | 000000000000100 |
| B_Q03b |  |  | 96 | Valid skip | 000000000000010 |
| B_Q03d |  |  | -1 | Missing | 0000000000001 |
| B_Q03d |  |  | 1 | January | 0000000000000 |
| B_Q03d |  |  | 2 | February | 1000000000000 |
| B_Q03d |  |  | 3 | March | 0100000000000 |
| B_Q03d |  |  | 4 | April | 0010000000000 |
| B_Q03d |  |  | 5 | May | 0001000000000 |
| B_Q03d |  |  | 6 | June | 0000100000000 |
| B_Q03d |  |  | 7 | July | 0000010000000 |
| B_Q03d |  |  | 8 | August | 0000001000000 |
| B_Q03d |  |  | 9 | September | 0000000100000 |
| B_Q03d |  |  | 10 | October | 0000000010000 |
| B_Q03d |  |  | 11 | November | 0000000001000 |
| B_Q03d |  |  | 12 | Dember | 0000000000100 |
| B_Q03d |  |  | 96 | Valid skip | 0000000000010 |
| B_Q04a | 4 | Education - Formal qualification | -1 | Missing | 001 |
| B_Q04a |  |  | 1 | Yes | 000 |
| B_Q04a |  |  | 2 | No | 100 |
| B_Q04a |  |  | 6 | Valid skip | 010 |
| B_Q04b | 11 | Education - Formal qualification - How many qualif | -1 | Missing | 0000000001 |
| B_Q04b |  |  | 1 | 1 qualification | 0000000000 |
| B_Q04b |  |  | 2 | 2 qualifications | 1000000000 |
| B_Q04b |  |  | 3 | 3 qualifications | 0100000000 |
| B_Q04b |  |  | 4 | 4 qualifications | 0010000000 |
| B_Q04b |  |  | 5 | 5 qualifications | 0001000000 |
| B_Q04b |  |  | 6 | 6 qualifications | 0000100000 |
| B_Q04b |  |  | 7 | 7 qualifications | 0000010000 |
| B_Q04b |  |  | 8 | 8 qualifications | 0000001000 |
| B_Q04b |  |  | 9 | 9 qualifications | 0000000100 |
| B_Q04b |  |  | 96 | Valid skip | 0000000010 |
| B_Q05a | 16 | Education - Formal qualification - Level | -1 | Missing | 000000000000001 |
| B_Q05a |  |  | 1 | ISCED 1 | 000000000000000 |
| B_Q05a |  |  | 2 | ISCED 2 | 100000000000000 |
| B_Q05a |  |  | 3 | ISCED 3C shorter tha | 010000000000000 |
| B_Q05a |  |  | 4 | ISCED 3C 2 years or | 001000000000000 |
| B_Q05a |  |  | 5 | ISCED 3A-B | 000100000000000 |
| B_Q05a |  |  | 6 | ISCED 3 (without dis | 000010000000000 |

PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q05a | 11 | Education - Formal qualification - Area of study | 7 | ISCED 4C | 000001000000000 |
| B_Q05a |  |  | 8 | ISCED 4A-B | 000000100000000 |
| B_Q05a |  |  | 9 | ISCED 4 (without dis | 000000010000000 |
| B_Q05a |  |  | 10 | ISCED 5B | 000000001000000 |
| B_Q05a |  |  | 11 | ISCED 5A, bachelor d | 000000000100000 |
| B_Q05a |  |  | 12 | ISCED 5A, master deg | 000000000010000 |
| B_Q05a |  |  | 13 | ISCED 6 | 000000000001000 |
| B_Q05a |  |  | 14 | ISCED 5A bachelor de | 000000000000100 |
| B_Q05a |  |  | 96 | Valid skip | 000000000000010 |
| B_Q05b |  |  | -1 | Missing | 0000000001 |
| B_Q05b |  |  | 1 | General programmes | 0000000000 |
| B_Q05b |  |  | 2 | Teacher training and | 1000000000 |
| B_Q05b |  |  | 3 | Humanities, language | 0100000000 |
| B_Q05b |  |  | 4 | Social sciences, bus | 0010000000 |
| B_Q05b |  |  | 5 | Science, mathematics | 0001000000 |
| B_Q05b |  |  | 6 | Engineering, manufac | 0000100000 |
| B_Q05b |  |  | 7 | Agriculture and vete | 0000010000 |
| B_Q05b |  |  | 8 | Health and welfare | 0000001000 |
| B_Q05b |  |  | 9 | Services | 0000000100 |
| B_Q05b |  |  | 96 | Valid skip | 0000000010 |
| B_Q05c | 4 | Education - Formal qualification - Reason job rela | -1 | Missing | 001 |
| B_Q05c |  |  | 1 | Yes | 000 |
| B_Q05c |  |  | 2 | No | 100 |
| B_Q05c |  |  | 6 | Valid skip | 010 |
| B_Q10a | 4 | Education - Formal qualification - Employed | -1 | Missing | 001 |
| B_Q10a |  |  | 1 | Yes | 000 |
| B_Q10a |  |  | 2 | No | 100 |
| B_Q10a |  |  | 6 | Valid skip | 010 |
| B_Q10b | 6 | Education - Formal qualification - Employed - Work | -1 | Missing | 00001 |
| B_Q10b |  |  | 1 | Only during working | 00000 |
| B_Q10b |  |  | 2 | Mostly during workin | 10000 |
| B_Q10b |  |  | 3 | Mostly outside worki | 01000 |
| B_Q10b |  |  | 4 | Only outside working | 00100 |
| B_Q10b |  |  | 6 | Valid skip | 00010 |
| B_Q10c | 6 | Education - Formal qualification - Employed - Usef | -1 | Missing | 00001 |
| B_Q10c |  |  | 1 | Not useful at all | 00000 |
| B_Q10c |  |  | 2 | Somewhat useful | 10000 |
| B_Q10c |  |  | 3 | Moderately useful | 01000 |
| B_Q10c |  |  | 4 | Very useful | 00100 |
| B_Q10c |  |  | 6 | Valid skip | 00010 |
| B_Q11 | 7 | Education - Formal qualification - Grant from empl | -1 | Missing | 000001 |
| B_Q11 |  |  | 1 | Yes, totally | 000000 |

## PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q11 | 4 Activities - Last year - Open or distance edu |  | 2 | Yes, partly | 100000 |
| B_Q11 |  |  | 3 | No, not at all | 010000 |
| B_Q11 |  |  | 4 | There were no such c | 001000 |
| B_Q11 |  |  | 5 | No employer or prosp | 000100 |
| B_Q11 |  |  | 6 | Valid skip | 000010 |
| B_Q12a |  |  | -1 | Missing | 001 |
| B_Q12a |  |  | 1 | Yes | 000 |
| B_Q12a |  |  | 2 | No | 100 |
| B_Q12a |  |  | 6 | Valid skip | 010 |
| B_Q12c | 4 | Activities - Last year - On the job training | -1 | Missing | 001 |
| B_Q12c |  |  | 1 | Yes | 000 |
| B_Q12c |  |  | 2 | No | 100 |
| B_Q12c |  |  | 6 | Valid skip | 010 |
| B_Q12e | 4 | Activities - Last year - Seminars or workshops | -1 | Missing | 001 |
| B_Q12e |  |  | 1 | Yes | 000 |
| B_Q12e |  |  | 2 | No | 100 |
| B_Q12e |  |  | 6 | Valid skip | 010 |
| B_Q12g | 4 | Activities - Last year - Private lessons | -1 | Missing | 001 |
| B_Q12g |  |  | 1 | Yes | 000 |
| B_Q12g |  |  | 2 | No | 100 |
| B_Q12g |  |  | 6 | Valid skip | 010 |
| B_Q13 | 6 | Activities - Last year - Activity specified | -1 | Missing | 00001 |
| B_Q13 |  |  | 1 | A course conducted t | 00000 |
| B_Q13 |  |  | 2 | An organised session | 10000 |
| B_Q13 |  |  | 3 | A seminar or worksho | 01000 |
| B_Q13 |  |  | 4 | Other kind of course | 00100 |
| B_Q13 |  |  | 6 | Valid skip | 00010 |
| B_Q14a | 4 | Activities - Last year - Job related | -1 | Missing | 001 |
| B_Q14a |  |  | 1 | Yes | 000 |
| B_Q14a |  |  | 2 | No | 100 |
| B_Q14a |  |  | 6 | Valid skip | 010 |
| B_Q14b | 10 | Activities - Last year - Reason for participating | -1 | Missing | 000000001 |
| B_Q14b |  |  | 1 | To do my job better | 000000000 |
| B_Q14b |  |  | 2 | To be less likely to | 100000000 |
| B_Q14b |  |  | 3 | To increase my possi | 010000000 |
| B_Q14b |  |  | 4 | To start my own busi | 001000000 |
| B_Q14b |  |  | 5 | I was obliged to par | 000100000 |
| B_Q14b |  |  | 6 | To increase my knowl | 000010000 |
| B_Q14b |  |  | 7 | To obtain a certific | 000001000 |
| B_Q14b |  |  | 8 | Other | 000000100 |
| B_Q14b |  |  | 96 | Valid skip | 000000010 |
| B_Q15a | 4 | Activities - Last year - Employed | -1 | Missing | 001 |

## PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q15a | 6 Activities - Last year - During working hours |  | 1 | Yes | 000 |
| B_Q15a |  |  | 2 | No | 100 |
| B_Q15a |  |  | 6 | Valid skip | 010 |
| B_Q15b |  |  | -1 | Missing | 00001 |
| B_Q15b |  |  | 1 | Only during working | 00000 |
| B_Q15b |  |  | 2 | Mostly during workin | 10000 |
| B_Q15b |  |  | 3 | Mostly outside worki | 01000 |
| B_Q15b |  |  | 4 | Only outside working | 00100 |
| B_Q15b |  |  | 6 | Valid skip | 00010 |
| B_Q15c | 6 | Activities - Last year - Useful for job | -1 | Missing | 00001 |
| B_Q15c |  |  | 1 | Not useful at all | 00000 |
| B_Q15c |  |  | 2 | Somewhat useful | 10000 |
| B_Q15c |  |  | 3 | Moderately useful | 01000 |
| B_Q15c |  |  | 4 | Very useful | 00100 |
| B_Q15c |  |  | 6 | Valid skip | 00010 |
| B_Q16 | 7 | Activities - Last year - Grant from employer | -1 | Missing | 000001 |
| B_Q16 |  |  | 1 | Yes, totally | 000000 |
| B_Q16 |  |  | 2 | Yes, partly | 100000 |
| B_Q16 |  |  | 3 | No, not at all | 010000 |
| B_Q16 |  |  | 4 | There were no such c | 001000 |
| B_Q16 |  |  | 5 | No employer or prosp | 000100 |
| B_Q16 |  |  | 6 | Valid skip | 000010 |
| B_Q17 | 5 | Activities - Last year - Time spend - Unit | -1 | Missing | 0001 |
| B_Q17 |  |  | 1 | Weeks | 0000 |
| B_Q17 |  |  | 2 | Days | 1000 |
| B_Q17 |  |  | 3 | Hours | 0100 |
| B_Q17 |  |  | 6 | Valid skip | 0010 |
| B_Q20b | 7 | Activities - Last year - Time spend for activities | -1 | Missing | 000001 |
| B_Q20b |  |  | 1 | None of the time | 000000 |
| B_Q20b |  |  | 2 | Up to a quarter of t | 100000 |
| B_Q20b |  |  | 3 | Up to half of the ti | 010000 |
| B_Q20b |  |  | 4 | More than half of th | 001000 |
| B_Q20b |  |  | 5 | All of the time | 000100 |
| B_Q20b |  |  | 6 | Valid skip | 000010 |
| B_Q26a | 4 | Activities - Last year - Wanted but didn't start | -1 | Missing | 001 |
| B_Q26a |  |  | 1 | Yes | 000 |
| B_Q26a |  |  | 2 | No | 100 |
| B_Q26a |  |  | 6 | Valid skip | 010 |
| B_Q26b | 10 | Activities - Last year - Wanted but didn't start - | -1 | Missing | 000000001 |
| B_Q26b |  |  | 1 | I did not have the p | 000000000 |
| B_Q26b |  |  | 2 | Education or trainin | 100000000 |
| B_Q26b |  |  | 3 | Education or trais s | 010000000 |



## PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| C_Q01b | 4 | Current status/work history - Last week - Unpaid w | 6 | Valid skip | 010 |
| C_Q01c |  |  | -1 | Missing | 001 |
| C_Q01c |  |  | 1 | Yes | 000 |
| C_Q01c |  |  | 2 | No | 100 |
| C_Q01c |  |  | 6 | Valid skip | 010 |
| C_Q02a | 4 | Current status/work history - Last month - Looking | -1 | Missing | 001 |
| C_Q02a |  |  | 1 | Yes | 000 |
| C_Q02a |  |  | 2 | No | 100 |
| C_Q02a |  |  | 6 | Valid skip | 010 |
| C_Q02b | 4 | Current status/work history - Last month - Waiting | -1 | Missing | 001 |
| C_Q02b |  |  | 1 | Yes | 000 |
| C_Q02b |  |  | 2 | No | 100 |
| C_Q02b |  |  | 6 | Valid skip | 010 |
| C_Q02c | 4 | Current status/work history - Last month - Waiting | -1 | Missing | 001 |
| C_Q02c |  |  | 1 | Within three months | 000 |
| C_Q02c |  |  | 2 | In more than three m | 100 |
| C_Q02c |  |  | 6 | Valid skip | 010 |
| C_Q03_01 | 4 | Current status/work history - Last month - Reason | -1 | Missing | 001 |
| C_Q03_01 |  |  | 1 | Marked | 000 |
| C_Q03_01 |  |  | 2 | Not marked | 100 |
| C_Q03_01 |  |  | 6 | Valid skip | 010 |
| C_Q03_02 | 4 | Current status/work history - Last month - Reason | -1 | Missing | 001 |
| C_Q03_02 |  |  | 1 | Marked | 000 |
| C_Q03_02 |  |  | 2 | Not marked | 100 |
| C_Q03_02 |  |  | 6 | Valid skip | 010 |
| C_Q03_03 | 4 | Current status/work history - Last month - Reason | -1 | Missing | 001 |
| C_Q03_03 |  |  | 1 | Marked | 000 |
| C_Q03_03 |  |  | 2 | Not marked | 100 |
| C_Q03_03 |  |  | 6 | Valid skip | 010 |
| C_Q03_04 | 4 | Current status/work history - Last month - Reason | -1 | Missing | 001 |
| C_Q03_04 |  |  | 1 | Marked | 000 |
| C_Q03_04 |  |  | 2 | Not marked | 100 |
| C_Q03_04 |  |  | 6 | Valid skip | 010 |
| C_Q03_05 | 4 | Current status/work history - Last month - Reason | -1 | Missing | 001 |
| C_Q03_05 |  |  | 1 | Marked | 000 |
| C_Q03_05 |  |  | 2 | Not marked | 100 |
| C_Q03_05 |  |  | 6 | Valid skip | 010 |
| C_Q03_06 | 4 | Current status/work history - Last month - Reason | -1 | Missing | 001 |
| C_Q03_06 |  |  | 1 | Marked | 000 |
| C_Q03_06 |  |  | 2 | Not marked | 100 |
| C_Q03_06 |  |  | 6 | Valid skip | 010 |
| C_Q03_07 | 4 | Current status/work history - Last month - Reason | -1 | Missing | 001 |

## PIAAC Contrast Coding used for Conditioning - International Variables



| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| C_Q04g | 4 | Current status/work history - Last month - Ways of | 6 | Valid skip | 010 |
| C_Q04h |  |  | -1 | Missing | 001 |
| C_Q04h |  |  | 1 | Yes | 000 |
| C_Q04h |  |  | 2 | No | 100 |
| C_Q04h |  |  | 6 | Valid skip | 010 |
| C_Q04i | 4 | Current status/work history - Last month - Ways of | -1 | Missing | 001 |
| C_Q04i |  |  | 1 | Yes | 000 |
| C_Q04i |  |  | 2 | No | 100 |
| C_Q04i |  |  | 6 | Valid skip | 010 |
| C_Q04j | 4 | Current status/work history - Last month - Ways of | -1 | Missing | 001 |
| C_Q04j |  |  | 1 | Yes | 000 |
| C_Q04j |  |  | 2 | No | 100 |
| C_Q04j |  |  | 6 | Valid skip | 010 |
| C_Q05 | 4 | Current status/work history - Ability to start job | -1 | Missing | 001 |
| C_Q05 |  |  | 1 | Yes | 000 |
| C_Q05 |  |  | 2 | No | 100 |
| C_Q05 |  |  | 6 | Valid skip | 010 |
| C_Q06 | 4 | Current status/work history - Last week - Number o | -1 | Missing | 001 |
| C_Q06 |  |  | 1 | One job or business | 000 |
| C_Q06 |  |  | 2 | More than one job or | 100 |
| C_Q06 |  |  | 6 | Valid skip | 010 |
| C_Q07 | 12 | Current status/work history - Subjective status | -1 | Missing | 00000000001 |
| C_Q07 |  |  | 1 | Full-time employed ( | 00000000000 |
| C_Q07 |  |  | 2 | Part-time employed ( | 10000000000 |
| C_Q07 |  |  | 3 | Unemployed | 01000000000 |
| C_Q07 |  |  | 4 | Pupil, student | 00100000000 |
| C_Q07 |  |  | 5 | Apprentice, internsh | 00010000000 |
| C_Q07 |  |  | 6 | In retirement or ear | 00001000000 |
| C_Q07 |  |  | 7 | Permanently disabled | 00000100000 |
| C_Q07 |  |  | 8 | In compulsory milita | 00000010000 |
| C_Q07 |  |  | 9 | Fulfilling domestic | 00000001000 |
| C_Q07 |  |  | 10 | Other | 00000000100 |
| C_Q07 |  |  | 96 | Valid skip | 00000000010 |
| C_Q08a | 4 | Current status/work history - Ever paid work | -1 | Missing | 001 |
| C_Q08a |  |  | 1 | Yes | 000 |
| C_Q08a |  |  | 2 | No | 100 |
| C_Q08a |  |  | 6 | Valid skip | 010 |
| C_Q08b | 4 | Current status/work history - Last year - Paid wor | -1 | Missing | 001 |
| C_Q08b |  |  | 1 | Yes | 000 |
| C_Q08b |  |  | 2 | No | 100 |
| C_Q08b |  |  | 6 | Valid skip | 010 |
| CBA_START | 3 | Computer-based exercise agreement | -1 | Missing | 01 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| CBA_START | 4 | CBA MODULE1 BRANCH |  | Continue to computer | 00 |
| CBA_START |  |  | 2 | Continue to paper ba | 10 |
| CBAMOD1 |  |  | -1 | Missing | 001 |
| CBAMOD1 |  |  | 1 | LIT | 000 |
| CBAMOD1 |  |  | 2 | NUM | 100 |
| CBAMOD1 |  |  | 3 | PS1 | 010 |
| CBAMOD1STG1 | 4 | CBA MODULE1 STAGE1 BRANCH | -1 | Missing | 001 |
| CBAMOD1STG1 |  |  | 1 | EASY | 000 |
| CBAMOD1STG1 |  |  | 2 | MEDIUM | 100 |
| CBAMOD1STG1 |  |  | 3 | HARD | 010 |
| CBAMOD1STG2 | 5 | CBA MODULE1 STAGE2 BRANCH | -1 | Missing | 0001 |
| CBAMOD1STG2 |  |  | 1 | EASY | 0000 |
| CBAMOD1STG2 |  |  | 2 | MED1 | 1000 |
| CBAMOD1STG2 |  |  | 3 | MED2 | 0100 |
| CBAMOD1STG2 |  |  | 4 | HARD | 0010 |
| CBAMOD2 | 4 | CBA MODULE2 BRANCH | -1 | Missing | 001 |
| CBAMOD2 |  |  | 1 | LIT | 000 |
| CBAMOD2 |  |  | 2 | NUM | 100 |
| CBAMOD2 |  |  | 3 | PS2 | 010 |
| CBAMOD2ALT | 8 | CBA MODULE1\&2 BRANCH | -1 | Missing | 0000001 |
| CBAMOD2ALT |  |  | 12 | LIT-NUM | 0000000 |
| CBAMOD2ALT |  |  | 13 | LIT-PS2 | 1000000 |
| CBAMOD2ALT |  |  | 21 | NUM-LIT | 0100000 |
| CBAMOD2ALT |  |  | 23 | NUM-PS2 | 0010000 |
| CBAMOD2ALT |  |  | 31 | PS1-LIT | 0001000 |
| CBAMOD2ALT |  |  | 32 | PS1-NUM | 0000100 |
| CBAMOD2ALT |  |  | 33 | PS1-PS2 | 0000010 |
| CBAMOD2STG1 | 4 | CBA MODULE2 STAGE1 BRANCH | -1 | Missing | 001 |
| CBAMOD2STG1 | 5 |  | 1 | EASY | 000 |
| CBAMOD2STG1 |  |  | 2 | MEDIUM | 100 |
| CBAMOD2STG1 |  |  | 3 | HARD | 010 |
| CBAMOD2STG2 |  | CBA MODULE2 STAGE2 BRANCH | -1 | Missing | 0001 |
| CBAMOD2STG2 | 3 |  | 1 | EASY | 0000 |
| CBAMOD2STG2 |  |  | 2 | MED1 | 1000 |
| CBAMOD2STG2 |  |  | 3 | MED2 | 0100 |
| CBAMOD2STG2 |  |  | 4 | HARD | 0010 |
| E |  | Respondent experience with computer (DERIVED BY CA | -1 | Missing | 01 |
| E | 3 |  | 1 | Experienced | 00 |
| E |  |  | 2 | Not experienced | 10 |
| CORESTAGE1_PASS |  | Core Stage 1 status | -1 | Missing | 01 |
| CORESTAGE1_PASS |  |  | 1 | Passed | 00 |
| CORESTAGE1_PASS |  |  | 29 | Not passed | 10 |

PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| CORESTAGE2_PASS | 3 | Final indication of pass/not pass of Core Stage 2 | -1 | Missing | 01 |
| CORESTAGE2_PASS |  |  | 1 | Passed | 00 |
| CORESTAGE2_PASS |  |  | 29 | Not passed | 10 |
| D_Q03 | 5 | Current work - Economic sector | -1 | Missing | 0001 |
| D_Q03 |  |  | 1 | The private sector ( | 0000 |
| D_Q03 |  |  | 2 | The public sector (f | 1000 |
| D_Q03 |  |  | 3 | A non-profit organis | 0100 |
| D_Q03 |  |  | 6 | Valid skip | 0010 |
| D_Q04 | 4 | Current work - Employee or self-employed | -1 | Missing | 001 |
| D_Q04 |  |  | 1 | Employee | 000 |
| D_Q04 |  |  | 2 | Self-employed | 100 |
| D_Q04 |  |  | 6 | Valid skip | 010 |
| D_Q05a3 | 14 | Current work - Start of work for employer - Month | -1 | Missing | 0000000000001 |
| D_Q05a3 |  |  | 1 | January | 0000000000000 |
| D_Q05a3 |  |  | 2 | February | 1000000000000 |
| D_Q05a3 |  |  | 3 | March | 0100000000000 |
| D_Q05a3 |  |  | 4 | April | 0010000000000 |
| D_Q05a3 |  |  | 5 | May | 0001000000000 |
| D_Q05a3 |  |  | 6 | June | 0000100000000 |
| D_Q05a3 |  |  | 7 | July | 0000010000000 |
| D_Q05a3 |  |  | 8 | August | 0000001000000 |
| D_Q05a3 |  |  | 9 | September | 0000000100000 |
| D_Q05a3 |  |  | 10 | October | 0000000010000 |
| D_Q05a3 |  |  | 11 | November | 0000000001000 |
| D_Q05a3 |  |  | 12 | Dember | 0000000000100 |
| D_Q05a3 |  |  | 96 | Valid skip | 0000000000010 |
| D_Q05b3 | 14 | Current work - Start of work for business - Month | -1 | Missing | 0000000000001 |
| D_Q05b3 |  |  | 1 | January | 0000000000000 |
| D_Q05b3 |  |  | 2 | February | 1000000000000 |
| D_Q05b3 |  |  | 3 | March | 0100000000000 |
| D_Q05b3 |  |  | 4 | April | 0010000000000 |
| D_Q05b3 |  |  | 5 | May | 0001000000000 |
| D_Q05b3 |  |  | 6 | June | 0000100000000 |
| D_Q05b3 |  |  | 7 | July | 0000010000000 |
| D_Q05b3 |  |  | 8 | August | 0000001000000 |
| D_Q05b3 |  |  | 9 | September | 0000000100000 |
| D_Q05b3 |  |  | 10 | October | 0000000010000 |
| D_Q05b3 |  |  | 11 | November | 0000000001000 |
| D_Q05b3 | 7 | Current work - Amount of people working for employ | 12 | Dember | 0000000000100 |
| D_Q05b3 |  |  | 96 | Valid skip | 0000000000010 |
| D_Q06a |  |  | -1 | Missing | 000001 |
| D_Q06a |  |  | 1 | 1 to 10 people | 000000 |

PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| D_Q06a | 5 Current work - Amount of people working for employ |  | 2 | 11 to 50 people | 100000 |
| D_Q06a |  |  | 3 | 51 to 250 people | 010000 |
| D_Q06a |  |  | 4 | 251 to 1000 people | 001000 |
| D_Q06a |  |  | 5 | More than 1000 peopl | 000100 |
| D_Q06a |  |  | 6 | Valid skip | 000010 |
| D_Q06b |  |  | -1 | Missing | 0001 |
| D_Q06b |  |  | 1 | Increased | 0000 |
| D_Q06b |  |  | 2 | Decreased | 1000 |
| D_Q06b |  |  | 3 | Stayed more or less | 0100 |
| D_Q06b |  |  | 6 | Valid skip | 0010 |
| D_Q06c | 4 | Current work - Part of a larger organization | -1 | Missing | 001 |
| D_Q06c |  |  | 1 | Yes | 000 |
| D_Q06c |  |  | 2 | No | 100 |
| D_Q06c |  |  | 6 | Valid skip | 010 |
| D_Q07a | 4 | Current work - Employees working for you | -1 | Missing | 001 |
| D_Q07a |  |  | 1 | Yes | 000 |
| D_Q07a |  |  | 2 | No | 100 |
| D_Q07a |  |  | 6 | Valid skip | 010 |
| D_Q07b | 7 | Current work - Employees working for you - Amount | -1 | Missing | 000001 |
| D_Q07b |  |  | 1 | 1 to 10 people | 000000 |
| D_Q07b |  |  | 2 | 11 to 50 people | 100000 |
| D_Q07b |  |  | 3 | 51 to 250 people | 010000 |
| D_Q07b |  |  | 4 | 251 to 1000 people | 001000 |
| D_Q07b |  |  | 5 | More than 1000 peopl | 000100 |
| D_Q07b |  |  | 6 | Valid skip | 000010 |
| D_Q08a | 4 | Current work - Managing other employees | -1 | Missing | 001 |
| D_Q08a |  |  | 1 | Yes | 000 |
| D_Q08a |  |  | 2 | No | 100 |
| D_Q08a |  |  | 6 | Valid skip | 010 |
| D_Q08b | 7 | Current work - Managing other employees - Amount | -1 | Missing | 000001 |
| D_Q08b |  |  | 1 | 1 to 5 people | 000000 |
| D_Q08b |  |  | 2 | 6 to 10 people | 100000 |
| D_Q08b |  |  | 3 | 11 to 24 people | 010000 |
| D_Q08b |  |  | 4 | 25 to 99 people | 001000 |
| D_Q08b |  |  | 5 | 100 or more people | 000100 |
| D_Q08b |  |  | 6 | Valid skip | 000010 |
| D_Q09 | 8 | Current work - Type of contract | -1 | Missing | 0000001 |
| D_Q09 |  |  | 1 | An indefinite contra | 0000000 |
| D_Q09 |  |  | 2 | A fixed term contrac | 1000000 |
| D_Q09 |  |  | 3 | A temporary employme | 0100000 |
| D_Q09 |  |  | 4 | An apprenticeship or | 0010000 |
| D_Q09 |  |  | 5 | No contract | 0001000 |

## PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| D_Q09 | 7 | Current work - Work flexibility - Sequence of task | 6 | Other | 0000100 |
| D_Q09 |  |  | 96 | Valid skip | 0000010 |
| D_Q11a |  |  | -1 | Missing | 000001 |
| D_Q11a |  |  | 1 | Not at all | 000000 |
| D_Q11a |  |  | 2 | Very little | 100000 |
| D_Q11a |  |  | 3 | To some extent | 010000 |
| D_Q11a |  |  | 4 | To a high extent | 001000 |
| D_Q11a |  |  | 5 | To a very high exten | 000100 |
| D_Q11a |  |  | 6 | Valid skip | 000010 |
| D_Q11b | 7 | Current work - Work flexibility - How to do the wo | -1 | Missing | 000001 |
| D_Q11b |  |  | 1 | Not at all | 000000 |
| D_Q11b |  |  | 2 | Very little | 100000 |
| D_Q11b |  |  | 3 | To some extent | 010000 |
| D_Q11b |  |  | 4 | To a high extent | 001000 |
| D_Q11b |  |  | 5 | To a very high exten | 000100 |
| D_Q11b |  |  | 6 | Valid skip | 000010 |
| D_Q11c | 7 | Current work - Work flexibility - Speed of work | -1 | Missing | 000001 |
| D_Q11c |  |  | 1 | Not at all | 000000 |
| D_Q11c |  |  | 2 | Very little | 100000 |
| D_Q11c |  |  | 3 | To some extent | 010000 |
| D_Q11c |  |  | 4 | To a high extent | 001000 |
| D_Q11c |  |  | 5 | To a very high exten | 000100 |
| D_Q11c |  |  | 6 | Valid skip | 000010 |
| D_Q11d | 7 | Current work - Work flexibility - Working hours | -1 | Missing | 000001 |
| D_Q11d |  |  | 1 | Not at all | 000000 |
| D_Q11d |  |  | 2 | Very little | 100000 |
| D_Q11d |  |  | 3 | To some extent | 010000 |
| D_Q11d |  |  | 4 | To a high extent | 001000 |
| D_Q11d |  |  | 5 | To a very high exten | 000100 |
| D_Q11d |  |  | 6 | Valid skip | 000010 |
| D_Q12a | 17 | Current work - Requirements - Education level | -1 | Missing | 0000000000000001 |
| D_Q12a |  |  | 1 | No formal qualificat | 0000000000000000 |
| D_Q12a |  |  | 2 | ISCED 1 | 1000000000000000 |
| D_Q12a |  |  | 3 | ISCED 2 | 0100000000000000 |
| D_Q12a |  |  | 4 | ISCED 3C shorter tha | 0010000000000000 |
| D_Q12a |  |  | 5 | ISCED 3C 2 years or | 0001000000000000 |
| D_Q12a |  |  | 6 | ISCED 3A-B | 0000100000000000 |
| D_Q12a |  |  | 7 | ISCED 3 (without dis | 0000010000000000 |
| D_Q12a |  |  | 8 | ISCED 4C | 0000001000000000 |
| D_Q12a |  |  | 9 | ISCED 4A-B | 0000000100000000 |
| D_Q12a |  |  | 10 | ISCED 4 (without dis | 0000000010000000 |
| D_Q12a |  |  | 11 | ISCED 5B | 0000000001000000 |

PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| D_Q12a | 5 Current work - Requirements - To do the job satisf |  | 12 | ISCED 5A, bachelor d | 0000000000100000 |
| D_Q12a |  |  | 13 | ISCED 5A, master deg | 0000000000010000 |
| D_Q12a |  |  | 14 | ISCED 6 | 0000000000001000 |
| D_Q12a |  |  | 15 | ISCED 5A bachelor de | 0000000000000100 |
| D_Q12a |  |  | 96 | Valid skip | 0000000000000010 |
| D_Q12b |  |  | -1 | Missing | 0001 |
| D_Q12b |  |  | 1 | This level is necess | 0000 |
| D_Q12b |  |  | 2 | A lower level would | 1000 |
| D_Q12b |  |  | 3 | A higher level would | 0100 |
| D_Q12b |  |  | 6 | Valid skip | 0010 |
| D_Q12c | 8 | Current work - Requirements - Related work experie | -1 | Missing | 0000001 |
| D_Q12c |  |  | 1 | None | 0000000 |
| D_Q12c |  |  | 2 | Less than 1 month | 1000000 |
| D_Q12c |  |  | 3 | 1 to 6 months | 0100000 |
| D_Q12c |  |  | 4 | 7 to 11 months | 0010000 |
| D_Q12c |  |  | 5 | 1 or 2 years | 0001000 |
| D_Q12c |  |  | 6 | 3 years or more | 0000100 |
| D_Q12c |  |  | 96 | Valid skip | 0000010 |
| D_Q13a | 7 | Current work - Learning - Learning from co-workers | -1 | Missing | 000001 |
| D_Q13a |  |  | 1 | Never | 000000 |
| D_Q13a |  |  | 2 | Less than once a mon | 100000 |
| D_Q13a |  |  | 3 | Less than once a wee | 010000 |
| D_Q13a |  |  | 4 | At least once a week | 001000 |
| D_Q13a |  |  | 5 | Every day | 000100 |
| D_Q13a |  |  | 6 | Valid skip | 000010 |
| D_Q13b | 7 | Current work - Learning - Learning-by-doing | -1 | Missing | 000001 |
| D_Q13b |  |  | 1 | Never | 000000 |
| D_Q13b |  |  | 2 | Less than once a mon | 100000 |
| D_Q13b |  |  | 3 | Less than once a wee | 010000 |
| D_Q13b |  |  | 4 | At least once a week | 001000 |
| D_Q13b |  |  | 5 | Every day | 000100 |
| D_Q13b |  |  | 6 | Valid skip | 000010 |
| D_Q13c | 7 | Current work - Learning - Keeping up to date | -1 | Missing | 000001 |
| D_Q13c |  |  | 1 | Never | 000000 |
| D_Q13c |  |  | 2 | Less than once a mon | 100000 |
| D_Q13c |  |  | 3 | Less than once a wee | 010000 |
| D_Q13c |  |  | 4 | At least once a week | 001000 |
| D_Q13c |  |  | 5 | Every day | 000100 |
| D_Q13c |  |  | 6 | Valid skip | 000010 |
| D_Q14 | 7 | Current work - Job satisfaction | -1 | Missing | 000001 |
| D_Q14 |  |  | 1 | Extremely satisfied | 000000 |
| D_Q14 |  |  | 2 | Satisfied | 100000 |

PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| D_Q14 | 10 | Current work - Earnings - Salary interval | 3 | Neither satisfied no | 010000 |
| D_Q14 |  |  | 4 | Dissatisfied | 001000 |
| D_Q14 |  |  | 5 | Extremely dissatisfi | 000100 |
| D_Q14 |  |  | 6 | Valid skip | 000010 |
| D_Q16a |  |  | -1 | Missing | 000000001 |
| D_Q16a |  |  | 1 | Per hour | 000000000 |
| D_Q16a |  |  | 2 | Per day | 100000000 |
| D_Q16a |  |  | 3 | Per week | 010000000 |
| D_Q16a |  |  | 4 | Per two weeks | 001000000 |
| D_Q16a |  |  | 5 | Per month | 000100000 |
| D_Q16a |  |  | 6 | Per year | 000010000 |
| D_Q16a |  |  | 7 | Piece rate | 000001000 |
| D_Q16a |  |  | 8 | I get no salary or w | 000000100 |
| D_Q16a |  |  | 96 | Valid skip | 000000010 |
| D_Q16c | 4 | Current work - Earnings - Gross pay in broad categ | -1 | Missing | 001 |
| D_Q16c |  |  | 1 | Yes | 000 |
| D_Q16c |  |  | 2 | No | 100 |
| D_Q16c | 8 |  | 6 | Valid skip | 010 |
| D_Q16d1 |  | Current work - Earnings - Broad categories - Gross | -1 | Missing | 0000001 |
| D_Q16d1 |  |  | 1 | Less than 10\% | 0000000 |
| D_Q16d1 |  |  | 2 | $10 \%$ to less than 2 | 1000000 |
| D_Q16d1 |  |  | 3 | 25\% to less than 5 | 0100000 |
| D_Q16d1 |  |  | 4 | $50 \%$ to less than 7 | 0010000 |
| D_Q16d1 |  |  | 5 | $75 \%$ to less than 9 | 0001000 |
| D_Q16d1 |  |  | 6 | 90\% or more | 0000100 |
| D_Q16d1 |  |  | 96 | Valid skip | 0000010 |
| D_Q16d2 | 8 | Current work - Earnings - Broad categories - Gross | -1 | Missing | 0000001 |
| D_Q16d2 |  |  | 1 | Less than 10\% | 0000000 |
| D_Q16d2 |  |  | 2 | 10\% to less than 2 | 1000000 |
| D_Q16d2 |  |  | 3 | 25\% to less than 5 | 0100000 |
| D_Q16d2 |  |  | 4 | 50\% to less than 7 | 0010000 |
| D_Q16d2 |  |  | 5 | $75 \%$ to less than 9 | 0001000 |
| D_Q16d2 |  |  | 6 | 90\% or more | 0000100 |
| D_Q16d2 |  |  | 96 | Valid skip | 0000010 |
| D_Q16d3 | 8 | Current work - Earnings - Broad categories - Gross | -1 | Missing | 0000001 |
| D_Q16d3 |  |  | 1 | Less than 10\% | 0000000 |
| D_Q16d3 |  |  | 2 | $10 \%$ to less than 2 | 1000000 |
| D_Q16d3 |  |  | 3 | 25\% to less than 5 | 0100000 |
| D_Q16d3 |  |  | 4 | 50\% to less than 7 | 0010000 |
| D_Q16d3 |  |  | 5 | 75\% to less than 9 | 0001000 |
| D_Q16d3 |  |  | 6 | 90\% or more | 0000100 |
| D_Q16d3 |  |  | 96 | Valid skip | 0000010 |

PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| D_Q16d4 | 8 | Current work - Earnings - Broad categories - Gross | -1 | Missing | 0000001 |
| D_Q16d4 |  |  | 1 | Less than 10\% | 0000000 |
| D_Q16d4 |  |  | 2 | 10\% to less than 2 | 1000000 |
| D_Q16d4 |  |  | 3 | 25\% to less than 5 | 0100000 |
| D_Q16d4 |  |  | 4 | $50 \%$ to less than 7 | 0010000 |
| D_Q16d4 |  |  | 5 | 75\% to less than 9 | 0001000 |
| D_Q16d4 |  |  | 6 | 90\% or more | 0000100 |
| D_Q16d4 |  |  | 96 | Valid skip | 0000010 |
| D_Q16d5 | 8 | Current work - Earnings - Broad categories - Gross | -1 | Missing | 0000001 |
| D_Q16d5 |  |  | 1 | Less than 10\% | 0000000 |
| D_Q16d5 |  |  | 2 | $10 \%$ to less than 2 | 1000000 |
| D_Q16d5 |  |  | 3 | 25\% to less than 5 | 0100000 |
| D_Q16d5 |  |  | 4 | $50 \%$ to less than 7 | 0010000 |
| D_Q16d5 |  |  | 5 | 75\% to less than 9 | 0001000 |
| D_Q16d5 |  |  | 6 | 90\% or more | 0000100 |
| D_Q16d5 |  |  | 96 | Valid skip | 0000010 |
| D_Q16d6 | 8 | Current work - Earnings - Broad categories - Gross | -1 | Missing | 0000001 |
| D_Q16d6 |  |  | 1 | Less than 10\% | 0000000 |
| D_Q16d6 |  |  | 2 | $10 \%$ to less than 2 | 1000000 |
| D_Q16d6 |  |  | 3 | 25\% to less than 5 | 0100000 |
| D_Q16d6 |  |  | 4 | 50\% to less than 7 | 0010000 |
| D_Q16d6 |  |  | 5 | $75 \%$ to less than 9 | 0001000 |
| D_Q16d6 |  |  | 6 | 90\% or more | 0000100 |
| D_Q16d6 |  |  | 96 | Valid skip | 0000010 |
| D_Q17a | 4 | Current work - Earnings - Additional payments | -1 | Missing | 001 |
| D_Q17a |  |  | 1 | Yes | 000 |
| D_Q17a |  |  | 2 | No | 100 |
| D_Q17a |  |  | 6 | Valid skip | 010 |
| D_Q17c | 4 | Current work - Earnings - Additional payments in b | -1 | Missing | 001 |
| D_Q17c |  |  | 1 | Yes | 000 |
| D_Q17c |  |  | 2 | No | 100 |
| D_Q17c |  |  | 6 | Valid skip | 010 |
| D_Q17d | 5 | Current work - Earnings - Additional payments - Br | -1 | Missing | 0001 |
| D_Q17d |  |  | 1 | Less than 5\% | 0000 |
| D_Q17d |  |  | 2 | $5 \%$ to less than 10 | 1000 |
| D_Q17d |  |  | 3 | 10\% or more | 0100 |
| D_Q17d |  |  | 6 | Valid skip | 0010 |
| D_Q18b | 4 | Current work - Earnings - Total earnings broad cat | -1 | Missing | 001 |
| D_Q18b |  |  | 1 | Yes | 000 |
| D_Q18b |  |  | 2 | No | 100 |
| D_Q18b |  |  | 6 | Valid skip | 010 |
| D_Q18c1 | 8 | Current work - Earnings - Broad categories - Total | -1 | Missing | 0000001 |

PIAAC Contrast Coding used for Conditioning - International Variables


\begin{tabular}{|c|c|c|c|c|c|}
\hline ITEM_ID \& N Contrast \& LABEL \& VALUE \& Category Label \& CONTRAST <br>
\hline E_Q08 \& \multirow[t]{20}{*}{8

12} \& \multirow[t]{8}{*}{Last job - Type of contract} \& -1 \& Missing \& 0000001 <br>
\hline E_Q08 \& \& \& 1 \& An indefinite contra \& 0000000 <br>
\hline E_Q08 \& \& \& 2 \& A fixed term contrac \& 1000000 <br>
\hline E_Q08 \& \& \& 3 \& A temporary employme \& 0100000 <br>
\hline E_Q08 \& \& \& 4 \& An apprenticeship or \& 0010000 <br>
\hline E_Q08 \& \& \& 5 \& No contract \& 0001000 <br>
\hline E_Q08 \& \& \& 6 \& Other \& 0000100 <br>
\hline E_Q08 \& \& \& 96 \& Valid skip \& 0000010 <br>
\hline E_Q10 \& \& Last job-Reason for end of job \& -1 \& Missing \& 00000000001 <br>
\hline E_Q10 \& \& \& 1 \& I was dismissed \& 00000000000 <br>
\hline E_Q10 \& \& \& 2 \& I was made redundant \& 10000000000 <br>
\hline E_Q10 \& \& \& 3 \& It was a temporary j \& 01000000000 <br>
\hline E_Q10 \& \& \& 4 \& I resigned \& 00100000000 <br>
\hline E_Q10 \& \& \& 5 \& I gave up work for h \& 00010000000 <br>
\hline E_Q10 \& \& \& 6 \& I took early retirem \& 00001000000 <br>
\hline E_Q10 \& \& \& 7 \& I retired (at or aft \& 00000100000 <br>
\hline E_Q10 \& \& \& 8 \& I gave up work becau \& 00000010000 <br>
\hline E_Q10 \& \& \& 9 \& I gave up work in or \& 00000001000 <br>
\hline E_Q10 \& \& \& 10 \& I left for some othe \& 00000000100 <br>
\hline E_Q10 \& \& \multirow{5}{*}{Educational level of the respondent (DERIVED BY CA} \& 96 \& Valid skip \& 00000000010 <br>
\hline EDLEVEL3 \& \multirow[t]{4}{*}{4} \& \& -1 \& Missing \& 001 <br>
\hline EDLEVEL3 \& \& \& 1 \& Low \& 000 <br>
\hline EDLEVEL3 \& \& \& 2 \& Medium \& 100 <br>
\hline EDLEVEL3 \& \& \& 3 \& High \& 010 <br>
\hline ETSAGEG5 \& \multirow[t]{13}{*}{13} \& \multirow[t]{13}{*}{Age groups in equal 5-year intervals from 16-65} \& -1 \& Missing \& 000000000001 <br>
\hline ETSAGEG5 \& \& \& 1 \& Age 16-20 \& 000000000000 <br>
\hline ETSAGEG5 \& \& \& 2 \& Age 21-25 \& 100000000000 <br>
\hline ETSAGEG5 \& \& \& 3 \& Age 26-30 \& 010000000000 <br>
\hline ETSAGEG5 \& \& \& 4 \& Age 31-35 \& 001000000000 <br>
\hline ETSAGEG5 \& \& \& 5 \& Age 36-40 \& 000100000000 <br>
\hline ETSAGEG5 \& \& \& 6 \& Age 41-45 \& 000010000000 <br>
\hline ETSAGEG5 \& \& \& 7 \& Age 46-50 \& 000001000000 <br>
\hline ETSAGEG5 \& \& \& 8 \& Age 51-55 \& 000000100000 <br>
\hline ETSAGEG5 \& \& \& 9 \& Age 56-60 \& 000000010000 <br>
\hline ETSAGEG5 \& \& \& 10 \& Age 61-65 \& 000000001000 <br>
\hline ETSAGEG5 \& \& \& 94 \& Age <16 \& 000000000100 <br>
\hline ETSAGEG5 \& \& \& 95 \& Age > 65 \& 000000000010 <br>
\hline F_Q01b \& \multirow[t]{5}{*}{7} \& \multirow[t]{5}{*}{Skill use work - Time cooperating with co-workers} \& -1 \& Missing \& 000001 <br>
\hline F_Q01b \& \& \& 1 \& None of the time \& 000000 <br>
\hline F_Q01b \& \& \& 2 \& Up to a quarter of t \& 100000 <br>
\hline F_Q01b \& \& \& 3 \& Up to half of the ti \& 010000 <br>
\hline F_Q01b \& \& \& 4 \& More than half of th \& 001000 <br>
\hline
\end{tabular}

PIAAC Contrast Coding used for Conditioning - International Variables


PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| F_Q03a | 7 | Skill use work - How often - Planning others activ | 5 | Every day | 000100 |
| F_Q03a |  |  | 6 | Valid skip | 000010 |
| F_Q03b |  |  | -1 | Missing | 000001 |
| F_Q03b |  |  | 1 | Never | 000000 |
| F_Q03b |  |  | 2 | Less than once a mon | 100000 |
| F_Q03b |  |  | 3 | Less than once a wee | 010000 |
| F_Q03b |  |  | 4 | At least once a week | 001000 |
| F_Q03b |  |  | 5 | Every day | 000100 |
| F_Q03b |  |  | 6 | Valid skip | 000010 |
| F_Q03c | 7 | Skill use work - How often - Organising own time | -1 | Missing | 000001 |
| F_Q03c |  |  | 1 | Never | 000000 |
| F_Q03c |  |  | 2 | Less than once a mon | 100000 |
| F_Q03c |  |  | 3 | Less than once a wee | 010000 |
| F_Q03c |  |  | 4 | At least once a week | 001000 |
| F_Q03c |  |  | 5 | Every day | 000100 |
| F_Q03c |  |  | 6 | Valid skip | 000010 |
| F_Q04a | 7 | Skill use work - How often - Influencing people | -1 | Missing | 000001 |
| F_Q04a |  |  | 1 | Never | 000000 |
| F_Q04a |  |  | 2 | Less than once a mon | 100000 |
| F_Q04a |  |  | 3 | Less than once a wee | 010000 |
| F_Q04a |  |  | 4 | At least once a week | 001000 |
| F_Q04a |  |  | 5 | Every day | 000100 |
| F_Q04a |  |  | 6 | Valid skip | 000010 |
| F_Q04b | 7 | Skill use work - How often - Negotiating with peop | -1 | Missing | 000001 |
| F_Q04b |  |  | 1 | Never | 000000 |
| F_Q04b |  |  | 2 | Less than once a mon | 100000 |
| F_Q04b |  |  | 3 | Less than once a wee | 010000 |
| F_Q04b |  |  | 4 | At least once a week | 001000 |
| F_Q04b |  |  | 5 | Every day | 000100 |
| F_Q04b |  |  | 6 | Valid skip | 000010 |
| F_Q05a | 7 | Skill use work - Problem solving - Simple problems | -1 | Missing | 000001 |
| F_Q05a |  |  | 1 | Never | 000000 |
| F_Q05a |  |  | 2 | Less than once a mon | 100000 |
| F_Q05a |  |  | 3 | Less than once a wee | 010000 |
| F_Q05a |  |  | 4 | At least once a week | 001000 |
| F_Q05a |  |  | 5 | Every day | 000100 |
| F_Q05a |  |  | 6 | Valid skip | 000010 |
| F_Q05b | 7 | Skill use work - Problem solving - Complex problem | -1 | Missing | 000001 |
| F_Q05b |  |  | 1 | Never | 000000 |
| F_Q05b |  |  | 2 | Less than once a mon | 100000 |
| F_Q05b |  |  | 3 | Less than once a wee | 010000 |
| F_Q05b |  |  | 4 | At least once a week | 001000 |

PIAAC Contrast Coding used for Conditioning - International Variables


PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| G_Q01c | 7 Skill use work - Literacy - Read professional jour |  | 4 | At least once a week | 001000 |
| G_Q01c |  |  | 5 | Every day | 000100 |
| G_Q01c |  |  | 6 | Valid skip | 000010 |
| G_Q01d |  |  | -1 | Missing | 000001 |
| G_Q01d |  |  | 1 | Never | 000000 |
| G_Q01d |  |  | 2 | Less than once a mon | 100000 |
| G_Q01d |  |  | 3 | Less than once a wee | 010000 |
| G_Q01d |  |  | 4 | At least once a week | 001000 |
| G_Q01d |  |  | 5 | Every day | 000100 |
| G_Q01d |  |  | 6 | Valid skip | 000010 |
| G_Q01e | 7 | Skill use work - Literacy - Read books | -1 | Missing | 000001 |
| G_Q01e |  |  | 1 | Never | 000000 |
| G_Q01e |  |  | 2 | Less than once a mon | 100000 |
| G_Q01e |  |  | 3 | Less than once a wee | 010000 |
| G_Q01e |  |  | 4 | At least once a week | 001000 |
| G_Q01e |  |  | 5 | Every day | 000100 |
| G_Q01e |  |  | 6 | Valid skip | 000010 |
| G_Q01f | 7 | Skill use work - Literacy - Read manuals or refere | -1 | Missing | 000001 |
| G_Q01f |  |  | 1 | Never | 000000 |
| G_Q01f |  |  | 2 | Less than once a mon | 100000 |
| G_Q01f |  |  | 3 | Less than once a wee | 010000 |
| G_Q01f |  |  | 4 | At least once a week | 001000 |
| G_Q01f |  |  | 5 | Every day | 000100 |
| G_Q01f |  |  | 6 | Valid skip | 000010 |
| G_Q01g | 7 | Skill use work - Literacy - Read financial stateme | -1 | Missing | 000001 |
| G_Q01g |  |  | 1 | Never | 000000 |
| G_Q01g |  |  | 2 | Less than once a mon | 100000 |
| G_Q01g |  |  | 3 | Less than once a wee | 010000 |
| G_Q01g |  |  | 4 | At least once a week | 001000 |
| G_Q01g |  |  | 5 | Every day | 000100 |
| G_Q01g |  |  | 6 | Valid skip | 000010 |
| G_Q01h | 7 | Skill use work - Literacy - Read diagrams maps or | -1 | Missing | 000001 |
| G_Q01h |  |  | 1 | Never | 000000 |
| G_Q01h |  |  | 2 | Less than once a mon | 100000 |
| G_Q01h |  |  | 3 | Less than once a wee | 010000 |
| G_Q01h |  |  | 4 | At least once a week | 001000 |
| G_Q01h |  |  | 5 | Every day | 000100 |
| G_Q01h |  |  | 6 | Valid skip | 000010 |
| G_Q02a | 7 | Skill use work - Literacy - Write letters memos or | -1 | Missing | 000001 |
| G_Q02a |  |  | 1 | Never | 000000 |
| G_Q02a |  |  | 2 | Less than once a mon | 100000 |
| G_Q02a |  |  | 3 | Less than once a wee | 010000 |

PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| G_Q02a | 7 | Skill use work - Literacy - Write articles | 4 | At least once a week | 001000 |
| G_Q02a |  |  | 5 | Every day | 000100 |
| G_Q02a |  |  | 6 | Valid skip | 000010 |
| G_Q02b |  |  | -1 | Missing | 000001 |
| G_Q02b |  |  | 1 | Never | 000000 |
| G_Q02b |  |  | 2 | Less than once a mon | 100000 |
| G_Q02b |  |  | 3 | Less than once a wee | 010000 |
| G_Q02b |  |  | 4 | At least once a week | 001000 |
| G_Q02b |  |  | 5 | Every day | 000100 |
| G_Q02b |  |  | 6 | Valid skip | 000010 |
| G_Q02c | 7 | Skill use work - Literacy - Write reports | -1 | Missing | 000001 |
| G_Q02c |  |  | 1 | Never | 000000 |
| G_Q02c |  |  | 2 | Less than once a mon | 100000 |
| G_Q02c |  |  | 3 | Less than once a wee | 010000 |
| G_Q02c |  |  | 4 | At least once a week | 001000 |
| G_Q02c |  |  | 5 | Every day | 000100 |
| G_Q02c |  |  | 6 | Valid skip | 000010 |
| G_Q02d | 7 | Skill use work - Literacy - Fill in forms | -1 | Missing | 000001 |
| G_Q02d |  |  | 1 | Never | 000000 |
| G_Q02d |  |  | 2 | Less than once a mon | 100000 |
| G_Q02d |  |  | 3 | Less than once a wee | 010000 |
| G_Q02d |  |  | 4 | At least once a week | 001000 |
| G_Q02d |  |  | 5 | Every day | 000100 |
| G_Q02d |  |  | 6 | Valid skip | 000010 |
| G_Q03b | 7 | Skill use work - Numeracy - How often - Calculatin | -1 | Missing | 000001 |
| G_Q03b |  |  | 1 | Never | 000000 |
| G_Q03b |  |  | 2 | Less than once a mon | 100000 |
| G_Q03b |  |  | 3 | Less than once a wee | 010000 |
| G_Q03b |  |  | 4 | At least once a week | 001000 |
| G_Q03b |  |  | 5 | Every day | 000100 |
| G_Q03b |  |  | 6 | Valid skip | 000010 |
| G_Q03c | 7 | Skill use work - Numeracy - How often - Use or cal | -1 | Missing | 000001 |
| G_Q03c |  |  | 1 | Never | 000000 |
| G_Q03c |  |  | 2 | Less than once a mon | 100000 |
| G_Q03c |  |  | 3 | Less than once a wee | 010000 |
| G_Q03c |  |  | 4 | At least once a week | 001000 |
| G_Q03c |  |  | 5 | Every day | 000100 |
| G_Q03c |  |  | 6 | Valid skip | 000010 |
| G_Q03d | 7 | Skill use work - Numeracy - How often - Use a calc | -1 | Missing | 000001 |
| G_Q03d |  |  | 1 | Never | 000000 |
| G_Q03d |  |  | 2 | Less than once a mon | 100000 |
| G_Q03d |  |  | 3 | Less than once a wee | 010000 |

PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| G_Q03d | 7 Skill use work - Numeracy - How often - Prepare ch |  | 4 | At least once a week | 001000 |
| G_Q03d |  |  | 5 | Every day | 000100 |
| G_Q03d |  |  | 6 | Valid skip | 000010 |
| G_Q03f |  |  | -1 | Missing | 000001 |
| G_Q03f |  |  | 1 | Never | 000000 |
| G_Q03f |  |  | 2 | Less than once a mon | 100000 |
| G_Q03f |  |  | 3 | Less than once a wee | 010000 |
| G_Q03f |  |  | 4 | At least once a week | 001000 |
| G_Q03f |  |  | 5 | Every day | 000100 |
| G_Q03f |  |  | 6 | Valid skip | 000010 |
| G_Q03g | 7 | Skill use work - Numeracy - How often - Use simple | -1 | Missing | 000001 |
| G_Q03g |  |  | 1 | Never | 000000 |
| G_Q03g |  |  | 2 | Less than once a mon | 100000 |
| G_Q03g |  |  | 3 | Less than once a wee | 010000 |
| G_Q03g |  |  | 4 | At least once a week | 001000 |
| G_Q03g |  |  | 5 | Every day | 000100 |
| G_Q03g |  |  | 6 | Valid skip | 000010 |
| G_Q03h | 7 | Skill use work - Numeracy - How often - Use advanc | -1 | Missing | 000001 |
| G_Q03h |  |  | 1 | Never | 000000 |
| G_Q03h |  |  | 2 | Less than once a mon | 100000 |
| G_Q03h |  |  | 3 | Less than once a wee | 010000 |
| G_Q03h |  |  | 4 | At least once a week | 001000 |
| G_Q03h |  |  | 5 | Every day | 000100 |
| G_Q03h |  |  | 6 | Valid skip | 000010 |
| G_Q04 | 4 | Skill use work - ICT - Experience with computer in | -1 | Missing | 001 |
| G_Q04 |  |  | 1 | Yes | 000 |
| G_Q04 |  |  | 2 | No | 100 |
| G_Q04 |  |  | 6 | Valid skip | 010 |
| G_Q05a | 7 | Skill use work - ICT - Internet - How often - For | -1 | Missing | 000001 |
| G_Q05a |  |  | 1 | Never | 000000 |
| G_Q05a |  |  | 2 | Less than once a mon | 100000 |
| G_Q05a |  |  | 3 | Less than once a wee | 010000 |
| G_Q05a |  |  | 4 | At least once a week | 001000 |
| G_Q05a |  |  | 5 | Every day | 000100 |
| G_Q05a |  |  | 6 | Valid skip | 000010 |
| G_Q05c | 7 | Skill use work - ICT - Internet - How often - Work | -1 | Missing | 000001 |
| G_Q05c |  |  | 1 | Never | 000000 |
| G_Q05c |  |  | 2 | Less than once a mon | 100000 |
| G_Q05c |  |  | 3 | Less than once a wee | 010000 |
| G_Q05c |  |  | 4 | At least once a week | 001000 |
| G_Q05c |  |  | 5 | Every day | 000100 |
| G_Q05c |  |  | 6 | Valid skip | 000010 |

PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| G_Q05d | 7 | Skill use work - ICT - Internet - How often - CondSkill use work - ICT - Computer - How often - Spre | -1 | Missing | 000001 |
| G_Q05d |  |  | 1 | Never | 000000 |
| G_Q05d |  |  | 2 | Less than once a mon | 100000 |
| G_Q05d |  |  | 3 | Less than once a wee | 010000 |
| G_Q05d |  |  | 4 | At least once a week | 001000 |
| G_Q05d |  |  | 5 | Every day | 000100 |
| G_Q05d |  |  | 6 | Valid skip | 000010 |
| G_Q05e |  |  | -1 | Missing | 000001 |
| G_Q05e |  |  | 1 | Never | 000000 |
| G_Q05e |  |  | 2 | Less than once a mon | 100000 |
| G_Q05e |  |  | 3 | Less than once a wee | 010000 |
| G_Q05e |  |  | 4 | At least once a week | 001000 |
| G_Q05e |  |  | 5 | Every day | 000100 |
| G_Q05e |  |  | 6 | Valid skip | 000010 |
| G_Q05f | 7 | Skill use work - ICT - Computer - How often - Word | -1 | Missing | 000001 |
| G_Q05f |  |  | 1 | Never | 000000 |
| G_Q05f |  |  | 2 | Less than once a mon | 100000 |
| G_Q05f |  |  | 3 | Less than once a wee | 010000 |
| G_Q05f |  |  | 4 | At least once a week | 001000 |
| G_Q05f |  |  | 5 | Every day | 000100 |
| G_Q05f |  |  | 6 | Valid skip | 000010 |
| G_Q05g | 7 | Skill use work - ICT - Computer - How often - Prog | -1 | Missing | 000001 |
| G_Q05g |  |  | 1 | Never | 000000 |
| G_Q05g |  |  | 2 | Less than once a mon | 100000 |
| G_Q05g |  |  | 3 | Less than once a wee | 010000 |
| G_Q05g |  |  | 4 | At least once a week | 001000 |
| G_Q05g |  |  | 5 | Every day | 000100 |
| G_Q05g |  |  | 6 | Valid skip | 000010 |
| G_Q05h | 7 | Skill use work - ICT - Computer - How often - Real | -1 | Missing | 000001 |
| G_Q05h |  |  | 1 | Never | 000000 |
| G_Q05h |  |  | 2 | Less than once a mon | 100000 |
| G_Q05h |  |  | 3 | Less than once a wee | 010000 |
| G_Q05h |  |  | 4 | At least once a week | 001000 |
| G_Q05h |  |  | 5 | Every day | 000100 |
| G_Q05h |  |  | 6 | Valid skip | 000010 |
| G_Q06 | 5 | Skill use work - ICT - Computer - Level of compute | -1 | Missing | 0001 |
| G_Q06 |  |  | 1 | Straightforward | 0000 |
| G_Q06 |  |  | 2 | Moderate | 1000 |
| G_Q06 |  |  | 3 | Complex | 0100 |
| G_Q06 |  |  | 6 | Valid skip | 0010 |
| G_Q07 | 4 | Skill use work - ICT - Computer - Got the skills n | -1 | Missing | 001 |
| G_Q07 |  |  | 1 | Yes | 000 |



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| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| H_Q03g | 7 Skill use everyday life - Numeracy - How often - U |  | 2 | Less than once a mon | 100000 |
| H_Q03g |  |  | 3 | Less than once a wee | 010000 |
| H_Q03g |  |  | 4 | At least once a week | 001000 |
| H_Q03g |  |  | 5 | Every day | 000100 |
| H_Q03g |  |  | 6 | Valid skip | 000010 |
| H_Q03h |  |  | -1 | Missing | 000001 |
| H_Q03h |  |  | 1 | Never | 000000 |
| H_Q03h |  |  | 2 | Less than once a mon | 100000 |
| H_Q03h |  |  | 3 | Less than once a wee | 010000 |
| H_Q03h |  |  | 4 | At least once a week | 001000 |
| H_Q03h |  |  | 5 | Every day | 000100 |
| H_Q03h |  |  | 6 | Valid skip | 000010 |
| H_Q04a | 4 | Skill use everyday life - ICT - Ever used computer | -1 | Missing | 001 |
| H_Q04a |  |  | 1 | Yes | 000 |
| H_Q04a |  |  | 2 | No | 100 |
| H_Q04a |  |  | 6 | Valid skip | 010 |
| H_Q04b | 4 | Skill use everyday life - ICT - Experience with co | -1 | Missing | 001 |
| H_Q04b |  |  | 1 | Yes | 000 |
| H_Q04b |  |  | 2 | No | 100 |
| H_Q04b |  |  | 6 | Valid skip | 010 |
| H_Q05a | 7 | Skill use everyday life - ICT - Internet - How oft | -1 | Missing | 000001 |
| H_Q05a |  |  | 1 | Never | 000000 |
| H_Q05a |  |  | 2 | Less than once a mon | 100000 |
| H_Q05a |  |  | 3 | Less than once a wee | 010000 |
| H_Q05a |  |  | 4 | At least once a week | 001000 |
| H_Q05a |  |  | 5 | Every day | 000100 |
| H_Q05a |  |  | 6 | Valid skip | 000010 |
| H_Q05c | 7 | Skill use everyday life - ICT - Internet - How oft | -1 | Missing | 000001 |
| H_Q05c |  |  | 1 | Never | 000000 |
| H_Q05c |  |  | 2 | Less than once a mon | 100000 |
| H_Q05c |  |  | 3 | Less than once a wee | 010000 |
| H_Q05c |  |  | 4 | At least once a week | 001000 |
| H_Q05c |  |  | 5 | Every day | 000100 |
| H_Q05c |  |  | 6 | Valid skip | 000010 |
| H_Q05d | 7 | Skill use everyday life - ICT - Internet - How oft | -1 | Missing | 000001 |
| H_Q05d |  |  | 1 | Never | 000000 |
| H_Q05d |  |  | 2 | Less than once a mon | 100000 |
| H_Q05d |  |  | 3 | Less than once a wee | 010000 |
| H_Q05d |  |  | 4 | At least once a week | 001000 |
| H_Q05d |  |  | 5 | Every day | 000100 |
| H_Q05d |  |  | 6 | Valid skip | 000010 |
| H_Q05e | 7 | Skill use everyday life - ICT - Computer - How oft | -1 | Missing | 000001 |

PIAAC Contrast Coding used for Conditioning - International Variables


PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| I_Q04d | 7 | About yourself - Learning strategies - Attribute s | 5 | To a very high exten | 000100 |
| I_Q04d |  |  | 6 | Valid skip | 000010 |
| I_Q04h |  |  | -1 | Missing | 000001 |
| I_Q04h |  |  | 1 | Not at all | 000000 |
| I_Q04h |  |  | 2 | Very little | 100000 |
| I_Q04h |  |  | 3 | To some extent | 010000 |
| I_Q04h |  |  | 4 | To a high extent | 001000 |
| I_Q04h |  |  | 5 | To a very high exten | 000100 |
| I_Q04h |  |  | 6 | Valid skip | 000010 |
| I_Q04j | 7 | About yourself - Learning strategies - Get to the | -1 | Missing | 000001 |
| I_Q04j |  |  | 1 | Not at all | 000000 |
| I_Q04j |  |  | 2 | Very little | 100000 |
| I_Q04j |  |  | 3 | To some extent | 010000 |
| I_Q04j |  |  | 4 | To a high extent | 001000 |
| I_Q04j |  |  | 5 | To a very high exten | 000100 |
| I_Q04j |  |  | 6 | Valid skip | 000010 |
| I_Q04I | 7 | About yourself - Learning strategies - Figure out | -1 | Missing | 000001 |
| I_Q041 |  |  | 1 | Not at all | 000000 |
| I_Q041 |  |  | 2 | Very little | 100000 |
| I_Q041 |  |  | 3 | To some extent | 010000 |
| I_Q041 |  |  | 4 | To a high extent | 001000 |
| I_Q04I |  |  | 5 | To a very high exten | 000100 |
| I_Q04\| |  |  | 6 | Valid skip | 000010 |
| I_Q04m | 7 | About yourself - Learning strategies - Looking for | -1 | Missing | 000001 |
| I_Q04m |  |  | 1 | Not at all | 000000 |
| I_Q04m |  |  | 2 | Very little | 100000 |
| I_Q04m |  |  | 3 | To some extent | 010000 |
| I_Q04m |  |  | 4 | To a high extent | 001000 |
| I_Q04m |  |  | 5 | To a very high exten | 000100 |
| I_Q04m |  |  | 6 | Valid skip | 000010 |
| I_Q05f | 7 | About yourself - Cultural engagement - Voluntary w | -1 | Missing | 000001 |
| I_Q05f |  |  | 1 | Never | 000000 |
| I_Q05f |  |  | 2 | Less than once a mon | 100000 |
| I_Q05f |  |  | 3 | Less than once a wee | 010000 |
| I_Q05f |  |  | 4 | At least once a week | 001000 |
| I_Q05f |  |  | 5 | Every day | 000100 |
| I_Q05f |  |  | 6 | Valid skip | 000010 |
| I_Q06a | 7 | About yourself - Political efficacy - No influence | -1 | Missing | 000001 |
| I_Q06a |  |  | 1 | Strongly agree | 000000 |
| I_Q06a |  |  | 2 | Agree | 100000 |
| I_Q06a |  |  | 3 | Neither agree nor di | 010000 |
| I_Q06a |  |  | 4 | Disagree | 001000 |



PIAAC Contrast Coding used for Conditioning - International Variables




## PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| ZZ1b_01 | 4 Observation module: Assistance in skills assessmen |  | 1 | Yes | 000 |
| ZZ1b_01 |  |  | 2 | No | 100 |
| ZZ1b_01 |  |  | 6 | Valid skip | 010 |
| ZZ1b_02 |  |  | -1 | Missing | 001 |
| ZZ1b_02 |  |  | 1 | Yes | 000 |
| ZZ1b_02 |  |  | 2 | No | 100 |
| ZZ1b_02 |  |  | 6 | Valid skip | 010 |
| ZZ2 |  |  | -1 | Missing | 00001 |
| ZZ2 | 6 |  | 1 | Never | 00000 |
| ZZ2 |  |  | 2 | Almost never | 10000 |
| ZZ2 |  |  | 3 | Now and then | 01000 |
| ZZ2 |  |  | 4 | Often | 00100 |
| ZZ2 |  |  | 5 | Very Often | 00010 |
| ZZ3 | 4 | Observation module: Clarification necessary | -1 | Missing | 001 |
| ZZ3 |  |  | 1 | Yes | 000 |
| ZZ3 |  |  | 2 | No | 100 |
| ZZ3 |  |  | 6 | Valid skip | 010 |
| ZZ4_01 | 4 | Observation module: Respondent held a conversation | -1 | Missing | 001 |
| ZZ4_01 |  |  | 1 | Yes | 000 |
| ZZ4_01 |  |  | 2 | No | 100 |
| ZZ4_01 |  |  | 6 | Valid skip | 010 |
| ZZ4_02 | 4 | Observation module: Respondent answered a phone ca | -1 | Missing | 001 |
| ZZ4_02 |  |  | 1 | Yes | 000 |
| ZZ4_02 |  |  | 2 | No | 100 |
| ZZ4_02 |  |  | 6 | Valid skip | 010 |
| ZZ4_03 | 4 | Observation module: Respondent was looking after c | -1 | Missing | 001 |
| ZZ4_03 |  |  | 1 | Yes | 000 |
| ZZ4_03 |  |  | 2 | No | 100 |
| ZZ4_03 |  |  | 6 | Valid skip | 010 |
| ZZ4_04 | 4 | Observation module: Respondent was undertaking dom | -1 | Missing | 001 |
| ZZ4_04 |  |  | 1 | Yes | 000 |
| ZZ4_04 |  |  | 2 | No | 100 |
| ZZ4_04 |  |  | 6 | Valid skip | 010 |
| ZZ4_05 | 4 | Observation module: Television, radio, game consol | -1 | Missing | 001 |
| ZZ4_05 |  |  | 1 | Yes | 000 |
| ZZ4_05 | 4 |  | 2 | No | 100 |
| ZZ4_05 |  |  | 6 | Valid skip | 010 |
| ZZ4_06 |  | Observation module: Respondent was interrupted by | -1 | Missing | 001 |
| ZZ4_06 |  |  | 1 | Yes | 000 |
| ZZ4_06 |  |  | 2 | No | 100 |
| ZZ4_06 |  |  | 6 | Valid skip | 010 |
| ZZ5 | 4 | Observation module: Assessment taking too long | -1 | Missing | 001 |

PIAAC Contrast Coding used for Conditioning - International Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| ZZ5 | 9 | Observation module: Room of assessment | 1 | Yes | 000 |
| ZZ5 |  |  | 2 | No | 100 |
| ZZ5 |  |  | 6 | Valid skip | 010 |
| ZZ6 |  |  | -1 | Missing | 00000001 |
| ZZ6 |  |  | 1 | Living/dining room | 00000000 |
| ZZ6 |  |  | 2 | Kitchen | 10000000 |
| ZZ6 |  |  | 3 | Bedroom | 01000000 |
| ZZ6 |  |  | 4 | Entrance | 00100000 |
| ZZ6 |  |  | 5 | Hallway or corridor | 00010000 |
| ZZ6 |  |  | 6 | Office | 00001000 |
| ZZ6 |  |  | 7 | Other space in the h | 00000100 |
| ZZ6 |  |  | 8 | Other space outside | 00000010 |

PIAAC Contrast Coding used for Conditioning - National Variables


## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| A_Q03a2ca | 15 | Language - Language spoken at home | 7 | Polish | 00000100000000 |
| A_Q03a2ca |  |  | 8 | Ukrainian | 00000010000000 |
| A_Q03a2ca |  |  | 9 | Spanish | 00000001000000 |
| A_Q03a2ca |  |  | 10 | Dutch | 00000000100000 |
| A_Q03a2ca |  |  | 11 | Punjabi | 00000000010000 |
| A_Q03a2ca |  |  | 12 | Greek | 00000000001000 |
| A_Q03a2ca |  |  | 13 | Other - specify | 00000000000100 |
| A_Q03a2ca |  |  | 96 | Valid skip | 00000000000010 |
| A_Q04bca |  |  | -1 | Missing | 00000000000001 |
| A_Q04bca |  |  | 1 | English | 0000000000000 |
| A_Q04bca |  |  | 2 | French | 1000000000000 |
| A_Q04bca |  |  | 3 | Italian | 0100000000000 |
| A_Q04bca |  |  | 4 | Chinese | 00100000000000 |
| A_Q04bca |  |  | 5 | German | 00010000000000 |
| A_Q04bca |  |  | 6 | Portuguese | 00001000000000 |
| A_Q04bca |  |  | 7 | Polish | 00000100000000 |
| A_Q04bca |  |  | 8 | Ukrainian | 00000010000000 |
| A_Q04bca |  |  | 9 | Spanish | 00000001000000 |
| A_Q04bca |  |  | 10 | Dutch | 00000000100000 |
| A_Q04bca |  |  | 11 | Punjabi | 00000000010000 |
| A_Q04bca |  |  | 12 | Greek | 00000000001000 |
| A_Q04bca |  |  | 13 | Other - specify | 00000000000100 |
| A_Q04bca |  |  | 96 | Valid skip | 00000000000010 |
| A_Q04cca | 4 | Language - Other language spoken at home - Yes/No | -1 | Missing | 001 |
| A_Q04cca |  |  | 1 | Yes | 000 |
| A_Q04cca |  |  | 2 | No | 100 |
| A_Q04cca |  |  | 6 | Valid skip | 010 |
| A_Q04cca1_01 | 4 | Language - Other language spoken at home - English | -1 | Missing | 001 |
| A_Q04cca1_01 |  |  | 1 | Marked | 000 |
| A_Q04cca1_01 |  |  | 2 | Not marked | 100 |
| A_Q04cca1_01 |  |  | 6 | Valid skip | 010 |
| A_Q04cca1_02 | 4 | Language - Other language spoken at home - French | -1 | Missing | 001 |
| A_Q04cca1_02 |  |  | 1 | Marked | 000 |
| A_Q04cca1_02 |  |  | 2 | Not marked | 100 |
| A_Q04cca1_02 |  |  | 6 | Valid skip | 010 |
| A_Q04cca1_03 | 4 | Language - Other language spoken at home - Italian | -1 | Missing | 001 |
| A_Q04cca1_03 |  |  | 1 | Marked | 000 |
| A_Q04cca1_03 |  |  | 2 | Not marked | 100 |
| A_Q04cca1_03 |  |  | 6 | Valid skip | 010 |
| A_Q04cca1_04 | 4 | Language - Other language spoken at home - Chinese | -1 | Missing | 001 |
| A_Q04cca1_04 |  |  | 1 | Marked | 000 |
| A_Q04cca1_04 |  |  | 2 | Not marked | 100 |
| A_Q04cca1_04 |  |  | 6 | Valid skip | 010 |
| A_Q04cca1_05 | 4 | Language - Other language spoken at home - German | -1 | Missing | 001 |
| A_Q04cca1_05 |  |  | 1 | Marked | 000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| A_Q04cca1_05 | 4 | Language - Other language spoken at home - Portugu | 2 | Not marked | 100 |
| A_Q04cca1_05 |  |  | 6 | Valid skip | 010 |
| A_Q04cca1_06 |  |  | -1 | Missing | 001 |
| A_Q04cca1_06 |  |  | 1 | Marked | 000 |
| A_Q04cca1_06 |  |  | 2 | Not marked | 100 |
| A_Q04cca1_06 |  |  | 6 | Valid skip | 010 |
| A_Q04cca1_07 | 4 | Language - Other language spoken at home - Polish | -1 | Missing | 001 |
| A_Q04cca1_07 |  |  | 1 | Marked | 000 |
| A_Q04cca1_07 |  |  | 2 | Not marked | 100 |
| A_Q04cca1_07 |  |  | 6 | Valid skip | 010 |
| A_Q04cca1_08 | 4 | Language - Other language spoken at home - Ukraini | -1 | Missing | 001 |
| A_Q04cca1_08 |  |  | 1 | Marked | 000 |
| A_Q04cca1_08 |  |  | 2 | Not marked | 100 |
| A_Q04cca1_08 | 4 |  | 6 | Valid skip | 010 |
| A_Q04cca1_09 |  | Language - Other language spoken at home - Spanish | -1 | Missing | 001 |
| A_Q04cca1_09 |  |  | 1 | Marked | 000 |
| A_Q04cca1_09 |  |  | 2 | Not marked | 100 |
| A_Q04cca1_09 | 4 |  | 6 | Valid skip | 010 |
| A_Q04cca1_10 |  | Language - Other language spoken at home - Dutch | -1 | Missing | 001 |
| A_Q04cca1_10 |  |  | 1 | Marked | 000 |
| A_Q04cca1_10 |  |  | 2 | Not marked | 100 |
| A_Q04cca1_10 |  |  | 6 | Valid skip | 010 |
| A_Q04cca1_11 | 4 | Language - Other language spoken at home - Punjabi | -1 | Missing | 001 |
| A_Q04cca1_11 |  |  | 1 | Marked | 000 |
| A_Q04cca1_11 |  |  | 2 | Not marked | 100 |
| A_Q04cca1_11 |  |  | 6 | Valid skip | 010 |
| A_Q04cca1_12 | 4 | Language - Other language spoken at home - Greek | -1 | Missing | 001 |
| A_Q04cca1_12 |  |  | 1 | Marked | 000 |
| A_Q04cca1_12 |  |  | 2 | Not marked | 100 |
| A_Q04cca1_12 |  |  | 6 | Valid skip | 010 |
| A_Q04cca1_13 | 4 | Language - Other language spoken at home - Other- | -1 | Missing | 001 |
| A_Q04cca1_13 |  |  | 1 | Marked | 000 |
| A_Q04cca1_13 |  |  | 2 | Not marked | 100 |
| A_Q04cca1_13 |  |  | 6 | Valid skip | 010 |
| A_Q04fca | 7 | Language - Current reading skills in English/Frenc | -1 | Missing | 000001 |
| A_Q04fca |  |  | 1 | Cannot read this lan | 000000 |
| A_Q04fca |  |  | 2 | Poor | 100000 |
| A_Q04fca |  |  | 3 | Fair | 010000 |
| A_Q04fca |  |  | 4 | Good | 001000 |
| A_Q04fca |  |  | 5 | Very good | 000100 |
| A_Q04fca |  |  | 6 | Valid skip | 000010 |
| A_Q04gca | 7 | Language - Current writing skills in English/Frenc | -1 | Missing | 000001 |
| A_Q04gca |  |  | 1 | Cannot write in this | 000000 |
| A_Q04gca |  |  | 2 | Poor | 100000 |
| A_Q04gca |  |  | 3 | Fair | 010000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| A_Q04gca | 7 Language - Current reading skills in English/Frenc |  | 4 | Good | 001000 |
| A_Q04gca |  |  | 5 | Very good | 000100 |
| A_Q04gca |  |  | 6 | Valid skip | 000010 |
| A_Q04ica |  |  | -1 | Missing | 000001 |
| A_Q04ica |  |  | 1 | Cannot read this lan | 000000 |
| A_Q04ica |  |  | 2 | Poor | 100000 |
| A_Q04ica |  |  | 3 | Fair | 010000 |
| A_Q04ica |  |  | 4 | Good | 001000 |
| A_Q04ica |  |  | 5 | Very good | 000100 |
| A_Q04ica |  |  | 6 | Valid skip | 000010 |
| A_Q04jca | 7 | Language - Current writing skills in English/Frenc | -1 | Missing | 000001 |
| A_Q04jca |  |  | 1 | Cannot write in this | 000000 |
| A_Q04jca |  |  | 2 | Poor | 100000 |
| A_Q04jca |  |  | 3 | Fair | 010000 |
| A_Q04jca |  |  | 4 | Good | 001000 |
| A_Q04jca |  |  | 5 | Very good | 000100 |
| A_Q04jca |  |  | 6 | Valid skip | 000010 |
| A_Q04lca1 | 7 | Language - Current ability to speak English/French | -1 | Missing | 000001 |
| A_Q04lca1 |  |  | 1 | Cannot speak in this | 000000 |
| A_Q04lca1 |  |  | 2 | Poor | 100000 |
| A_Q04lca1 |  |  | 3 | Fair | 010000 |
| A_Q04lca1 |  |  | 4 | Good | 001000 |
| A_Q04lca1 |  |  | 5 | Very good | 000100 |
| A_Q04lca1 |  |  | 6 | Valid skip | 000010 |
| A_Q04lca2 | 7 | Language - Current ability to speak English/French | -1 | Missing | 000001 |
| A_Q04lca2 |  |  | 1 | Cannot speak in this | 000000 |
| A_Q04lca2 |  |  | 2 | Poor | 100000 |
| A_Q04lca2 |  |  | 3 | Fair | 010000 |
| A_Q04lca2 |  |  | 4 | Good | 001000 |
| A_Q04lca2 |  |  | 5 | Very good | 000100 |
| A_Q04lca2 |  |  | 6 | Valid skip | 000010 |
| AA2 | 5 | Respondent Language of Preference - From CMS | -1 | Missing | 0001 |
| AA2 |  |  | 1 | English | 0000 |
| AA2 |  |  | 2 | French | 1000 |
| AA2 |  |  | 3 | Other - specify | 0100 |
| AA2 |  |  | 6 | Valid skip | 0010 |
| B_D01a3DE1 | 13 | Education National - Highest Level of Education - | -1 | Missing | 000000000001 |
| B_D01a3DE1 |  |  | 1 | No formal qualificat | 000000000000 |
| B_D01a3DE1 |  |  | 2 | Left school in Germa | 100000000000 |
| B_D01a3DE1 |  |  | 3 | German General educa | 010000000000 |
| B_D01a3DE1 |  |  | 4 | German Evening schoo | 001000000000 |
| B_D01a3DE1 |  |  | 5 | German vocational ed | 000100000000 |
| B_D01a3DE1 |  |  | 6 | German university ed | 000010000000 |
| B_D01a3DE1 |  |  | 7 | German other degree | 000001000000 |
| B_D01a3DE1 |  |  | 8 | Left school in other | 000000100000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

\begin{tabular}{|c|c|c|c|c|c|}
\hline ITEM_ID \& N Contrast \& LABEL \& VALUE \& Category Label \& CONTRAST <br>
\hline B_D01a3DE1 \& \multirow{18}{*}{7

7} \& \multirow{10}{*}{Education National - Current Level of Education -} \& 9 \& Foreign general educ \& 000000010000 <br>
\hline B_D01a3DE1 \& \& \& 10 \& Foreign vocational e \& 000000001000 <br>
\hline B_D01a3DE1 \& \& \& 11 \& Foreign university \& 000000000100 <br>
\hline B_D01a3DE1 \& \& \& 96 \& Valid skip \& 000000000010 <br>
\hline B_D02b3DE1 \& \& \& -1 \& Missing \& 000001 <br>
\hline B_D02b3DE1 \& \& \& 1 \& General education \& 000000 <br>
\hline B_D02b3DE1 \& \& \& 2 \& Evening school \& 100000 <br>
\hline B_D02b3DE1 \& \& \& 3 \& Vocational education \& 010000 <br>
\hline B_D02b3DE1 \& \& \& 4 \& University education \& 001000 <br>
\hline B_D02b3DE1 \& \& \& 5 \& German other degree \& 000100 <br>
\hline B_D02b3DE1 \& \& \multirow{8}{*}{Education National - Uncompleted Education - Deriv} \& 6 \& Valid skip \& 000010 <br>
\hline B_D03b3DE1 \& \& \& -1 \& Missing \& 000001 <br>
\hline B_D03b3DE1 \& \& \& 1 \& General education \& 000000 <br>
\hline B_D03b3DE1 \& \& \& 2 \& Evening school \& 100000 <br>
\hline B_D03b3DE1 \& \& \& 3 \& Vocational education \& 010000 <br>
\hline B_D03b3DE1 \& \& \& 4 \& University education \& 001000 <br>
\hline B_D03b3DE1 \& \& \& 5 \& German other degree \& 000100 <br>
\hline B_D03b3DE1 \& \& \& 6 \& Valid skip \& 000010 <br>
\hline B_D05a3DE1 \& \multirow[t]{7}{*}{7} \& \multirow[t]{7}{*}{Education National - Formal Level of Education - D} \& -1 \& Missing \& 000001 <br>
\hline B_D05a3DE1 \& \& \& 1 \& General education \& 000000 <br>
\hline B_D05a3DE1 \& \& \& 2 \& Evening school \& 100000 <br>
\hline B_D05a3DE1 \& \& \& 3 \& Vocational education \& 010000 <br>
\hline B_D05a3DE1 \& \& \& 4 \& University education \& 001000 <br>
\hline B_D05a3DE1 \& \& \& 5 \& German other degree \& 000100 <br>
\hline B_D05a3DE1 \& \& \& 6 \& Valid skip \& 000010 <br>
\hline B_Q00CZ01 \& \multirow[t]{4}{*}{4} \& \multirow[t]{4}{*}{Education - Level 01} \& -1 \& Missing \& 001 <br>
\hline B_Q00CZ01 \& \& \& 1 \& Yes \& 000 <br>
\hline B_Q00CZ01 \& \& \& 2 \& No \& 100 <br>
\hline B_Q00CZ01 \& \& \& 6 \& Valid skip \& 010 <br>
\hline B_Q00CZ02 \& \multirow[t]{4}{*}{4} \& \multirow[t]{4}{*}{Education - Level 02} \& -1 \& Missing \& 001 <br>
\hline B_Q00CZ02 \& \& \& 1 \& Yes \& 000 <br>
\hline B_Q00CZ02 \& \& \& 2 \& No \& 100 <br>
\hline B_Q00CZ02 \& \& \& 6 \& Valid skip \& 010 <br>
\hline B_Q00CZ03 \& \multirow[t]{4}{*}{4} \& \multirow[t]{4}{*}{Education - Level 03} \& -1 \& Missing \& 001 <br>
\hline B_Q00CZ03 \& \& \& 1 \& Yes \& 000 <br>
\hline B_Q00CZ03 \& \& \& 2 \& No \& 100 <br>
\hline B_Q00CZ03 \& \& \& 6 \& Valid skip \& 010 <br>
\hline B_Q00CZ04 \& \multirow[t]{4}{*}{4} \& \multirow[t]{4}{*}{Education - Level 04} \& -1 \& Missing \& 001 <br>
\hline B_Q00CZ04 \& \& \& 1 \& Yes \& 000 <br>
\hline B_Q00CZ04 \& \& \& 2 \& No \& 100 <br>
\hline B_Q00CZ04 \& \& \& 6 \& Valid skip \& 010 <br>
\hline B_Q00CZ05 \& \multirow[t]{4}{*}{4} \& \multirow[t]{4}{*}{Education - Level 05} \& -1 \& Missing \& 001 <br>
\hline B_Q00CZ05 \& \& \& 1 \& Yes \& 000 <br>
\hline B_Q00CZ05 \& \& \& 2 \& No \& 100 <br>
\hline B_Q00CZ05 \& \& \& 6 \& Valid skip \& 010 <br>
\hline
\end{tabular}

PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q00CZ06 | 4 | Education - Level 06 | -1 | Missing | 001 |
| B_Q00CZ06 |  |  | 1 | Yes | 000 |
| B_Q00CZ06 |  |  | 2 | No | 100 |
| B_Q00CZ06 |  |  | 6 | Valid skip | 010 |
| B_Q00CZ07 | 4 | Education - Level 07 | -1 | Missing | 001 |
| B_Q00CZ07 |  |  | 1 | Yes | 000 |
| B_Q00CZ07 |  |  | 2 | No | 100 |
| B_Q00CZ07 |  |  | 6 | Valid skip | 010 |
| B_Q00CZ08 | 4 | Education - Level 08 | -1 | Missing | 001 |
| B_Q00CZ08 |  |  | 1 | Yes | 000 |
| B_Q00CZ08 |  |  | 2 | No | 100 |
| B_Q00CZ08 |  |  | 6 | Valid skip | 010 |
| B_Q00CZ09 | 4 | Education - Level 09 | -1 | Missing | 001 |
| B_Q00CZ09 |  |  | 1 | Yes | 000 |
| B_Q00CZ09 |  |  | 2 | No | 100 |
| B_Q00CZ09 |  |  | 6 | Valid skip | 010 |
| B_Q00CZ10 | 4 | Education - Level 10 | -1 | Missing | 001 |
| B_Q00CZ10 |  |  | 1 | Yes | 000 |
| B_Q00CZ10 |  |  | 2 | No | 100 |
| B_Q00CZ10 |  |  | 6 | Valid skip | 010 |
| B_Q00CZ11 | 4 | Education - Level 11 | -1 | Missing | 001 |
| B_Q00CZ11 |  |  | 1 | Yes | 000 |
| B_Q00CZ11 |  |  | 2 | No | 100 |
| B_Q00CZ11 |  |  | 6 | Valid skip | 010 |
| B_Q00CZ12 | 4 | Education - Level 12 | -1 | Missing | 001 |
| B_Q00CZ12 |  |  | 1 | Yes | 000 |
| B_Q00CZ12 |  |  | 2 | No | 100 |
| B_Q00CZ12 |  |  | 6 | Valid skip | 010 |
| B_Q00CZ13 | 4 | Education - Level 13 | -1 | Missing | 001 |
| B_Q00CZ13 |  |  | 1 | Yes | 000 |
| B_Q00CZ13 |  |  | 2 | No | 100 |
| B_Q00CZ13 |  |  | 6 | Valid skip | 010 |
| B_Q00CZ14 | 4 | Education - Level 14 | -1 | Missing | 001 |
| B_Q00CZ14 |  |  | 1 | Yes | 000 |
| B_Q00CZ14 |  |  | 2 | No | 100 |
| B_Q00CZ14 |  |  | 6 | Valid skip | 010 |
| B_Q00SEX | 4 | Verification education | -1 | Missing | 001 |
| B_Q00SEX |  |  | 1 | Yes | 000 |
| B_Q00SEX |  |  | 2 | No | 100 |
| B_Q00SEX |  |  | 6 | Valid skip | 010 |
| B_Q00UKX_01 | 4 | Education - All qualifications - Degree level | -1 | Missing | 001 |
| B_Q00UKX_01 |  |  | 1 | Marked | 000 |
| B_Q00UKX_01 |  |  | 2 | Not marked | 100 |
| B_Q00UKX_01 |  |  | 6 | Valid skip | 010 |
| B_Q00UKX_02 | 4 | Education - All qualifications - Diploma in HE | -1 | Missing | 001 |

## PIAAC Contrast Coding used for Conditioning - National Variables



## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q00UKX_13 | 4 | Education - All qualifications - AS Level/Vocation | 2 | Not marked | 100 |
| B_Q00UKX_13 |  |  | 6 | Valid skip | 010 |
| B_Q00UKX_14 |  |  | -1 | Missing | 001 |
| B_Q00UKX_14 |  |  | 1 | Marked | 000 |
| B_Q00UKX_14 |  |  | 2 | Not marked | 100 |
| B_Q00UKX_14 | 4 |  | 6 | Valid skip | 010 |
| B_Q00UKX_15 |  | Education - All qualifications - Advanced Highers/ | -1 | Missing | 001 |
| B_Q00UKX_15 |  |  | 1 | Marked | 000 |
| B_Q00UKX_15 |  |  | 2 | Not marked | 100 |
| B_Q00UKX_15 |  |  | 6 | Valid skip | 010 |
| B_Q00UKX_16 | 4 | Education - All qualifications - Access to HE | -1 | Missing | 001 |
| B_Q00UKX_16 |  |  | 1 | Marked | 000 |
| B_Q00UKX_16 |  |  | 2 | Not marked | 100 |
| B_Q00UKX_16 |  |  | 6 | Valid skip | 010 |
| B_Q00UKX_17 | 4 | Education - All qualifications - O Level/GCSE/Voca | -1 | Missing | 001 |
| B_Q00UKX_17 |  |  | 1 | Marked | 000 |
| B_Q00UKX_17 |  |  | 2 | Not marked | 100 |
| B_Q00UKX_17 |  |  | 6 | Valid skip | 010 |
| B_Q00UKX_18 | 4 | Education - All qualifications - Intermediate 1 or | -1 | Missing | 001 |
| B_Q00UKX_18 |  |  | 1 | Marked | 000 |
| B_Q00UKX_18 |  |  | 2 | Not marked | 100 |
| B_Q00UKX_18 |  |  | 6 | Valid skip | 010 |
| B_Q00UKX_19 | 4 | Education - All qualifications - Standard Grade or | -1 | Missing | 001 |
| B_Q00UKX_19 |  |  | 1 | Marked | 000 |
| B_Q00UKX_19 |  |  | 2 | Not marked | 100 |
| B_Q00UKX_19 |  |  | 6 | Valid skip | 010 |
| B_Q00UKX_20 | 4 | Education - All qualifications - National Qualific | -1 | Missing | 001 |
| B_Q00UKX_20 |  |  | 1 | Marked | 000 |
| B_Q00UKX_20 |  |  | 2 | Not marked | 100 |
| B_Q00UKX_20 | 4 |  | 6 | Valid skip | 010 |
| B_Q00UKX_21 |  | Education - All qualifications - RSA/OCR | -1 | Missing | 001 |
| B_Q00UKX_21 |  |  | 1 | Marked | 000 |
| B_Q00UKX_21 |  |  | 2 | Not marked | 100 |
| B_Q00UKX_21 |  |  | 6 | Valid skip | 010 |
| B_Q00UKX_22 | 4 | Education - All qualifications - City and Guilds | -1 | Missing | 001 |
| B_Q00UKX_22 |  |  | 1 | Marked | 000 |
| B_Q00UKX_22 |  |  | 2 | Not marked | 100 |
| B_Q00UKX_22 |  |  | 6 | Valid skip | 010 |
| B_Q00UKX_23 | 4 | Education - All qualifications - YT Certificate/YT | -1 | Missing | 001 |
| B_Q00UKX_23 |  |  | 1 | Marked | 000 |
| B_Q00UKX_23 |  |  | 2 | Not marked | 100 |
| B_Q00UKX_23 |  |  | 6 | Valid skip | 010 |
| B_Q00UKX_24 | 4 | Education - All qualifications - Key Skills/Basic | -1 | Missing | 001 |
| B_Q00UKX_24 |  |  | 1 | Marked | 000 |
| B_Q00UKX_24 |  |  | 2 | Not marked | 100 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q00UKX_24 | 4 |  | 6 | Valid skip | 010 |
| B_Q00UKX_25 |  | Education - All qualifications - Entry Level quali | -1 | Missing | 001 |
| B_Q00UKX_25 |  |  | 1 | Marked | 000 |
| B_Q00UKX_25 |  |  | 2 | Not marked | 100 |
| B_Q00UKX_25 | 4 | Education - All qualifications - Foreign Qualifica | 6 | Valid skip | 010 |
| B_Q00UKX_26 |  |  | -1 | Missing | 001 |
| B_Q00UKX_26 |  |  | 1 | Marked | 000 |
| B_Q00UKX_26 |  |  | 2 | Not marked | 100 |
| B_Q00UKX_26 |  | Education - All qualifications - Any other profess | 6 | Valid skip | 010 |
| B_Q00UKX_27 | 4 |  | -1 | Missing | 001 |
| B_Q00UKX_27 |  |  | 1 | Marked | 000 |
| B_Q00UKX_27 |  |  | 2 | Not marked | 100 |
| B_Q00UKX_27 |  |  | 6 | Valid skip | 010 |
| B_Q00UKX_28 | 4 | Education - All qualifications - No formal qualifi | -1 | Missing | 001 |
| B_Q00UKX_28 |  |  | 1 | Marked | 000 |
| B_Q00UKX_28 |  |  | 2 | Not marked | 100 |
| B_Q00UKX_28 |  |  | 6 | Valid skip | 010 |
| B_Q01a1AU | 13 | Education - Highest primary/secondary school - Cou | -1 | Missing | 000000000001 |
| B_Q01a1AU |  |  | 1 | Australia | 000000000000 |
| B_Q01a1AU |  |  | 2 | England | 100000000000 |
| B_Q01a1AU |  |  | 3 | New Zealand | 010000000000 |
| B_Q01a1AU |  |  | 4 | Italy | 001000000000 |
| B_Q01a1AU |  |  | 5 | Viet Nam | 000100000000 |
| B_Q01a1AU |  |  | 6 | Scotland | 000010000000 |
| B_Q01a1AU |  |  | 7 | Greece | 000001000000 |
| B_Q01a1AU |  |  | 8 | Germany | 000000100000 |
| B_Q01a1AU |  |  | 9 | Philippines | 000000010000 |
| B_Q01a1AU |  |  | 10 | India | 000000001000 |
| B_Q01a1AU |  |  | 11 | Other - please speci | 000000000100 |
| B_Q01a1AU |  |  | 96 | Valid skip | 000000000010 |
| B_Q01a1AU12 | 14 | Education - Highest primary/secondary - Month stop | -1 | Missing | 0000000000001 |
| B_Q01a1AU12 |  |  | 1 | January | 0000000000000 |
| B_Q01a1AU12 |  |  | 2 | February | 1000000000000 |
| B_Q01a1AU12 |  |  | 3 | March | 0100000000000 |
| B_Q01a1AU12 |  |  | 4 | April | 0010000000000 |
| B_Q01a1AU12 |  |  | 5 | May | 0001000000000 |
| B_Q01a1AU12 |  |  | 6 | June | 0000100000000 |
| B_Q01a1AU12 |  |  | 7 | July | 0000010000000 |
| B_Q01a1AU12 |  |  | 8 | August | 0000001000000 |
| B_Q01a1AU12 |  |  | 9 | September | 0000000100000 |
| B_Q01a1AU12 |  |  | 10 | October | 0000000010000 |
| B_Q01a1AU12 |  |  | 11 | November | 0000000001000 |
| B_Q01a1AU12 |  |  | 12 | December | 0000000000100 |
| B_Q01a1AU12 |  |  | 96 | Valid skip | 0000000000010 |
| B_Q01a1AU7 | 4 | Education - Ever started but did not complete a le | -1 | Missing | 001 |

## PIAAC Contrast Coding used for Conditioning - National Variables



| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01a2CY |  <br>  <br>  <br>  <br> 9 | Education - Highest qualification - Country of for | 2 | Greece | 10000000 |
| B_Q01a2CY |  |  | 3 | United Kingdom | 01000000 |
| B_Q01a2CY |  |  | 4 | USA | 00100000 |
| B_Q01a2CY |  |  | 5 | Russian Federation | 00010000 |
| B_Q01a2CY |  |  | 6 | France | 00001000 |
| B_Q01a2CY |  |  | 7 | Other Country | 00000100 |
| B_Q01a2CY |  |  | 96 | Valid skip | 00000010 |
| B_Q01a2CZ |  |  | -1 | Missing | 00000001 |
| B_Q01a2CZ |  |  | 1 | Country 1 | 00000000 |
| B_Q01a2CZ |  |  | 2 | Country 2 | 10000000 |
| B_Q01a2CZ |  |  | 3 | Country 3 | 01000000 |
| B_Q01a2CZ |  |  | 4 | Country 4 | 00100000 |
| B_Q01a2CZ |  |  | 5 | Country 5 | 00010000 |
| B_Q01a2CZ |  |  | 6 | Country 6 | 00001000 |
| B_Q01a2CZ |  |  | 7 | Other country | 00000100 |
| B_Q01a2CZ |  |  | 96 | Valid skip | 00000010 |
| B_Q01a2DE2 | 13 | Education National - Highest qualification - Count | -1 | Missing | 000000000001 |
| B_Q01a2DE2 |  |  | 1 | Turkey | 000000000000 |
| B_Q01a2DE2 |  |  | 2 | Italy | 100000000000 |
| B_Q01a2DE2 |  |  | 3 | Poland | 010000000000 |
| B_Q01a2DE2 |  |  | 4 | Greece | 001000000000 |
| B_Q01a2DE2 |  |  | 5 | Serbia | 000100000000 |
| B_Q01a2DE2 |  |  | 6 | Croatia | 000010000000 |
| B_Q01a2DE2 |  |  | 7 | Russian Federation | 000001000000 |
| B_Q01a2DE2 |  |  | 8 | Bosnia and Herzegovi | 000000100000 |
| B_Q01a2DE2 |  |  | 9 | United Kingdom | 000000010000 |
| B_Q01a2DE2 |  |  | 10 | United States | 000000001000 |
| B_Q01a2DE2 |  |  | 11 | Another country | 000000000100 |
| B_Q01a2DE2 |  |  | 96 | Valid skip | 000000000010 |
| B_Q01a2DK | 9 | In which country did you gain this qualification? | -1 | Missing | 00000001 |
| B_Q01a2DK |  |  | 1 | Turkey | 00000000 |
| B_Q01a2DK |  |  | 2 | Germany | 10000000 |
| B_Q01a2DK |  |  | 3 | Poland | 01000000 |
| B_Q01a2DK |  |  | 4 | Iraq | 00100000 |
| B_Q01a2DK |  |  | 5 | Bosnia-Herzegovinia | 00010000 |
| B_Q01a2DK |  |  | 6 | Norway | 00001000 |
| B_Q01a2DK |  |  | 7 | Other country | 00000100 |
| B_Q01a2DK |  |  | 96 | Valid skip | 00000010 |
| B_Q01a2EE | 9 | Education - Highest qualification - Country of for | -1 | Missing | 00000001 |
| B_Q01a2EE |  |  | 1 | Russia | 00000000 |
| B_Q01a2EE |  |  | 2 | USA | 10000000 |
| B_Q01a2EE |  |  | 3 | Germany | 01000000 |
| B_Q01a2EE |  |  | 4 | UK | 00100000 |
| B_Q01a2EE |  |  | 5 | Finland | 00010000 |
| B_Q01a2EE |  |  | 6 | Sweden | 00001000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01a2EE | 13 | Education - Highest qualification - Country of for | 7 | Other country | 00000100 |
| B_Q01a2EE |  |  | 96 | Valid skip | 00000010 |
| B_Q01a2ES |  |  | -1 | Missing | 000000000001 |
| B_Q01a2ES |  |  | 1 | Argentina | 000000000000 |
| B_Q01a2ES |  |  | 2 | Colombia | 100000000000 |
| B_Q01a2ES |  |  | 3 | Ecuador | 010000000000 |
| B_Q01a2ES |  |  | 4 | Marruecos | 001000000000 |
| B_Q01a2ES |  |  | 5 | Marruecos | 000100000000 |
| B_Q01a2ES |  |  | 6 | Marrblica Dominicana | 000010000000 |
| B_Q01a2ES |  |  | 7 | Marrbla | 000001000000 |
| B_Q01a2ES |  |  | 8 | Venezuela | 000000100000 |
| B_Q01a2ES |  |  | 9 | Reino Unido | 000000010000 |
| B_Q01a2ES |  |  | 10 | Alemania | 000000001000 |
| B_Q01a2ES |  |  | 11 | Alemanias | 000000000100 |
| B_Q01a2ES |  |  | 96 | Valid skip | 000000000010 |
| B_Q01a2FI | 7 | Education - Highest qualification - Country of for | -1 | Missing | 000001 |
| B_Q01a2FI |  |  | 1 | Sweden | 000000 |
| B_Q01a2FI |  |  | 2 | Russia | 100000 |
| B_Q01a2FI |  |  | 3 | Former Soviet Union | 010000 |
| B_Q01a2FI |  |  | 4 | Estonia | 001000 |
| B_Q01a2FI |  |  | 5 | Other country | 000100 |
| B_Q01a2FI |  |  | 96 | Valid skip | 000010 |
| B_Q01a2FR | 12 | Education - Highest qualification - Country of for | -1 | Missing | 00000000001 |
| B_Q01a2FR |  |  | 1 | Algeria | 00000000000 |
| B_Q01a2FR |  |  | 2 | Germany | 10000000000 |
| B_Q01a2FR |  |  | 3 | Spain | 01000000000 |
| B_Q01a2FR |  |  | 4 | Italy | 00100000000 |
| B_Q01a2FR |  |  | 5 | Morocco | 00010000000 |
| B_Q01a2FR |  |  | 6 | Portugal | 00001000000 |
| B_Q01a2FR |  |  | 7 | United Kingdom | 00000100000 |
| B_Q01a2FR |  |  | 8 | Tunisia | 00000010000 |
| B_Q01a2FR |  |  | 9 | Turkey | 00000001000 |
| B_Q01a2FR |  |  | 10 | Other countries | 00000000100 |
| B_Q01a2FR |  |  | 96 | Valid skip | 00000000010 |
| B_Q01a2IE | 10 | Education - Highest qualification - Country of for | -1 | Missing | 000000001 |
| B_Q01a2IE |  |  | 1 | Poland | 000000000 |
| B_Q01a2IE |  |  | 2 | United Kingdom | 100000000 |
| B_Q01a2IE |  |  | 3 | Lithuania | 010000000 |
| B_Q01a2IE |  |  | 4 | Latvia | 001000000 |
| B_Q01a2IE |  |  | 5 | Germany | 000100000 |
| B_Q01a2IE |  |  | 6 | Romania | 000010000 |
| B_Q01a2IE |  |  | 7 | Northern Ireland | 000001000 |
| B_Q01a2IE |  |  | 8 | Other country | 000000100 |
| B_Q01a2IE |  |  | 96 | Valid skip | 000000010 |
| B_Q01a2IT | 18 | Education - Highest qualification - Country of for | -1 | Missing | 00000000000000001 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01a2IT | 12 Education - Highest qualification - Country of for |  | 1 | Albania | 00000000000000000 |
| B_Q01a2IT |  |  | 2 | China | 10000000000000000 |
| B_Q01a2IT |  |  | 3 | Ecuador | 01000000000000000 |
| B_Q01a2IT |  |  | 4 | Philippines | 00100000000000000 |
| B_Q01a2IT |  |  | 5 | France | 00010000000000000 |
| B_Q01a2IT |  |  | 6 | Germany | 00001000000000000 |
| B_Q01a2IT |  |  | 7 | Morocco | 00000100000000000 |
| B_Q01a2IT |  |  | 8 | Peru | 00000010000000000 |
| B_Q01a2IT |  |  | 9 | Poland | 00000001000000000 |
| B_Q01a2IT |  |  | 10 | United Kingdom | 00000000100000000 |
| B_Q01a2IT |  |  | 11 | Romania | 00000000010000000 |
| B_Q01a2IT |  |  | 12 | Spain | 00000000001000000 |
| B_Q01a2IT |  |  | 13 | United States of Ame | 00000000000100000 |
| B_Q01a2IT |  |  | 14 | Tunisia | 00000000000010000 |
| B_Q01a2IT |  |  | 15 | Ukraina | 00000000000001000 |
| B_Q01a2IT |  |  | 16 | Other | 00000000000000100 |
| B_Q01a2IT |  |  | 96 | Valid skip | 00000000000000010 |
| B_Q01a2JP |  |  | -1 | Missing | 00000000001 |
| B_Q01a2JP |  |  | 1 | USA | 00000000000 |
| B_Q01a2JP |  |  | 2 | Canada | 10000000000 |
| B_Q01a2JP |  |  | 3 | UK | 01000000000 |
| B_Q01a2JP |  |  | 4 | Australia | 00100000000 |
| B_Q01a2JP |  |  | 5 | New Zealand | 00010000000 |
| B_Q01a2JP |  |  | 6 | Republic of Korea | 00001000000 |
| B_Q01a2JP |  |  | 7 | China | 00000100000 |
| B_Q01a2JP |  |  | 8 | Germany | 00000010000 |
| B_Q01a2JP |  |  | 9 | France | 00000001000 |
| B_Q01a2JP |  |  | 10 | Other country | 00000000100 |
| B_Q01a2JP |  |  | 96 | Valid skip | 00000000010 |
| B_Q01a2KO | 9 | KO_Education - earned country | -1 | Missing | 00000001 |
| B_Q01a2KO |  |  | 1 | China | 00000000 |
| B_Q01a2KO |  |  | 2 | United States | 10000000 |
| B_Q01a2KO |  |  | 3 | Vietnam | 01000000 |
| B_Q01a2KO |  |  | 4 | Philippines | 00100000 |
| B_Q01a2KO |  |  | 5 | Thailand | 00010000 |
| B_Q01a2KO |  |  | 6 | Japan | 00001000 |
| B_Q01a2KO |  |  | 7 | Other country | 00000100 |
| B_Q01a2KO |  |  | 96 | Valid skip | 00000010 |
| B_Q01a2NL | 9 | Education - Highest qualification - Country of for | -1 | Missing | 00000001 |
| B_Q01a2NL |  |  | 1 | Marocco | 00000000 |
| B_Q01a2NL |  |  | 2 | Turkey | 10000000 |
| B_Q01a2NL |  |  | 3 | Germany | 01000000 |
| B_Q01a2NL |  |  | 4 | Belgium | 00100000 |
| B_Q01a2NL |  |  | 5 | France | 00010000 |
| B_Q01a2NL |  |  | 6 | United Kingdom | 00001000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01a2NL | 9 | Education - Highest qualification - Country of for | 7 | Other country | 00000100 |
| B_Q01a2NL |  |  | 96 | Valid skip | 00000010 |
| B_Q01a2NO |  |  | -1 | Missing | 00000001 |
| B_Q01a2NO |  |  | 1 | Australia | 00000000 |
| B_Q01a2NO |  |  | 2 | Denmark | 10000000 |
| B_Q01a2NO |  |  | 3 | Pakistan | 01000000 |
| B_Q01a2NO |  |  | 4 | UK | 00100000 |
| B_Q01a2NO |  |  | 5 | Sweden | 00010000 |
| B_Q01a2NO |  |  | 6 | USA | 00001000 |
| B_Q01a2NO |  |  | 7 | Other country | 00000100 |
| B_Q01a2NO |  |  | 96 | Valid skip | 00000010 |
| B_Q01a2PL | 15 | Education - Highest qualification - Country of for | -1 | Missing | 00000000000001 |
| B_Q01a2PL |  |  | 1 | Belarus | 00000000000000 |
| B_Q01a2PL |  |  | 2 | Czech Republic | 10000000000000 |
| B_Q01a2PL |  |  | 3 | England | 01000000000000 |
| B_Q01a2PL |  |  | 4 | France | 00100000000000 |
| B_Q01a2PL |  |  | 5 | Germany | 00010000000000 |
| B_Q01a2PL |  |  | 6 | Lithuania | 00001000000000 |
| B_Q01a2PL |  |  | 7 | Netherlands | 00000100000000 |
| B_Q01a2PL |  |  | 8 | Poland | 00000010000000 |
| B_Q01a2PL |  |  | 9 | Russia | 00000001000000 |
| B_Q01a2PL |  |  | 10 | Slovakia | 00000000100000 |
| B_Q01a2PL |  |  | 11 | Ukraine | 00000000010000 |
| B_Q01a2PL |  |  | 12 | United States of Ame | 00000000001000 |
| B_Q01a2PL |  |  | 13 | Other country | 00000000000100 |
| B_Q01a2PL |  |  | 96 | Valid skip | 00000000000010 |
| B_Q01a2RU | 9 | Education - Highest qualification - Country of for | -1 | Missing | 00000001 |
| B_Q01a2RU |  |  | 1 | Country 1 | 00000000 |
| B_Q01a2RU |  |  | 2 | Country 2 | 10000000 |
| B_Q01a2RU |  |  | 3 | Country 3 | 01000000 |
| B_Q01a2RU |  |  | 4 | Country 4 | 00100000 |
| B_Q01a2RU |  |  | 5 | Country 5 | 00010000 |
| B_Q01a2RU |  |  | 6 | Country 6 | 00001000 |
| B_Q01a2RU |  |  | 7 | Other country | 00000100 |
| B_Q01a2RU |  |  | 96 | Valid skip | 00000010 |
| B_Q01a2SE | 15 | Education - Highest qualification - Country of for | -1 | Missing | 00000000000001 |
| B_Q01a2SE |  |  | 1 | Finland | 00000000000000 |
| B_Q01a2SE |  |  | 2 | Irak | 10000000000000 |
| B_Q01a2SE |  |  | 3 | Serbien | 01000000000000 |
| B_Q01a2SE |  |  | 4 | Iran | 00100000000000 |
| B_Q01a2SE |  |  | 5 | Polen | 00010000000000 |
| B_Q01a2SE |  |  | 6 | Bosnien-Hercegovina | 00001000000000 |
| B_Q01a2SE |  |  | 7 | Turkiet | 00000100000000 |
| B_Q01a2SE |  |  | 8 | Danmark | 00000010000000 |
| B_Q01a2SE |  |  | 9 | Norge | 00000001000000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01a2SE | 9 | Education - Highest qualification - Country of for | 10 | Chile | 00000000100000 |
| B_Q01a2SE |  |  | 11 | Tyskland | 00000000010000 |
| B_Q01a2SE |  |  | 12 | Kroatien | 00000000001000 |
| B_Q01a2SE |  |  | 13 | Annat land var god a | 00000000000100 |
| B_Q01a2SE |  |  | 96 | Valid skip | 00000000000010 |
| B_Q01a2SK |  |  | -1 | Missing | 00000001 |
| B_Q01a2SK |  |  | 1 | Czech republic | 00000000 |
| B_Q01a2SK |  |  | 2 | Hungary | 10000000 |
| B_Q01a2SK |  |  | 3 | Austria | 01000000 |
| B_Q01a2SK |  |  | 4 | Poland | 00100000 |
| B_Q01a2SK |  |  | 5 | Russia | 00010000 |
| B_Q01a2SK |  |  | 6 | Great Britain | 00001000 |
| B_Q01a2SK |  |  | 7 | other country | 00000100 |
| B_Q01a2SK |  | Education - Highest qualification - Country of for | 96 | Valid skip | 00000010 |
| B_Q01a2UK | 15 |  | -1 | Missing | 00000000000001 |
| B_Q01a2UK |  |  | 1 | India | 00000000000000 |
| B_Q01a2UK |  |  | 2 | Poland | 10000000000000 |
| B_Q01a2UK |  |  | 3 | Pakistan | 0100000000000 |
| B_Q01a2UK |  |  | 4 | Germany | 0010000000000 |
| B_Q01a2UK |  |  | 5 | South Africa | 00010000000000 |
| B_Q01a2UK |  |  | 6 | Bangladesh | 00001000000000 |
| B_Q01a2UK |  |  | 7 | Nigeria | 00000100000000 |
| B_Q01a2UK |  |  | 8 | Kenya | 00000010000000 |
| B_Q01a2UK |  |  | 9 | United States | 00000001000000 |
| B_Q01a2UK |  |  | 10 | Phillippines | 00000000100000 |
| B_Q01a2UK |  |  | 11 | France | 00000000010000 |
| B_Q01a2UK |  |  | 12 | Australia | 00000000001000 |
| B_Q01a2UK |  |  | 13 | Other Country | 00000000000100 |
| B_Q01a2UK |  |  | 96 | Valid skip | 00000000000010 |
| B_Q01a2US | 9 | Education - Highest qualification - Country of for | -1 | Missing | 00000001 |
| B_Q01a2US |  |  | 1 | Mexico | 00000000 |
| B_Q01a2US |  |  | 2 | China | 10000000 |
| B_Q01a2US |  |  | 3 | Phillipines | 01000000 |
| B_Q01a2US |  |  | 4 | India | 00100000 |
| B_Q01a2US |  |  | 5 | Russia | 00010000 |
| B_Q01a2US |  |  | 6 | Colombia | 00001000 |
| B_Q01a2US |  |  | 7 | Other country | 00000100 |
| B_Q01a2US |  |  | 96 | Valid skip | 00000010 |
| B_Q01a3AT | 18 | Education - Highest qualification - Level of forei | -1 | Missing | 00000000000000001 |
| B_Q01a3AT |  |  | 1 | No compulsory school | 00000000000000000 |
| B_Q01a3AT |  |  | 2 | Compulsory school | 10000000000000000 |
| B_Q01a3AT |  |  | 3 | Apprenticeship | 01000000000000000 |
| B_Q01a3AT |  |  | 4 | Vocational School (< | 00100000000000000 |
| B_Q01a3AT |  |  | 5 | Vocational School (2 | 00010000000000000 |
| B_Q01a3AT |  |  | 6 | Nursing | 00001000000000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01a3AT | 12 | Education - Highest qualification - Level of quali | 7 | Master craftsman's c | 00000100000000000 |
| B_Q01a3AT |  |  | 8 | Academic Secondary S | 00000010000000000 |
| B_Q01a3AT |  |  | 9 | Vocational college | 00000001000000000 |
| B_Q01a3AT |  |  | 10 | Post-secondary cours | 00000000100000000 |
| B_Q01a3AT |  |  | 11 | Post-secondary colle | 00000000010000000 |
| B_Q01a3AT |  |  | 12 | University courses | 00000000001000000 |
| B_Q01a3AT |  |  | 13 | University-Bachelor | 00000000000100000 |
| B_Q01a3AT |  |  | 14 | University-Master | 00000000000010000 |
| B_Q01a3AT |  |  | 15 | Post-graduate course | 00000000000001000 |
| B_Q01a3AT |  |  | 16 | Doctoral Programme | 00000000000000100 |
| B_Q01a3AT |  |  | 96 | Valid skip | 00000000000000010 |
| B_Q01a3AU |  |  | -1 | Missing | 00000000001 |
| B_Q01a3AU |  |  | 1 | Certificate I | 00000000000 |
| B_Q01a3AU |  |  | 2 | Certificate II | 10000000000 |
| B_Q01a3AU |  |  | 3 | Certificate III | 01000000000 |
| B_Q01a3AU |  |  | 4 | Certificate IV | 00100000000 |
| B_Q01a3AU |  |  | 5 | Diploma | 00010000000 |
| B_Q01a3AU |  |  | 6 | Advanced Diploma and | 00001000000 |
| B_Q01a3AU |  |  | 7 | Bachelor degree (inc | 00000100000 |
| B_Q01a3AU |  |  | 8 | Graduate Diploma or | 00000010000 |
| B_Q01a3AU |  |  | 9 | Masters | 00000001000 |
| B_Q01a3AU |  |  | 10 | Doctorate | 00000000100 |
| B_Q01a3AU |  |  | 96 | Valid skip | 00000000010 |
| B_Q01a3BE | 13 | Education - Highest qualification - Level of forei | -1 | Missing | 00000000001 |
| B_Q01a3BE |  |  | 1 | No formal qualificat | 000000000000 |
| B_Q01a3BE |  |  | 2 | ISCED 1 | 10000000000 |
| B_Q01a3BE |  |  | 3 | ISCED 2 | 010000000000 |
| B_Q01a3BE |  |  | 4 | ISCED 3C 2 years or | 001000000000 |
| B_Q01a3BE |  |  | 5 | ISCED 3A-B | 000100000000 |
| B_Q01a3BE |  |  | 6 | ISCED 3 (without dis | 000010000000 |
| B_Q01a3BE |  |  | 7 | ISCED 4A-B | 000001000000 |
| B_Q01a3BE |  |  | 8 | ISCED 5B | 000000100000 |
| B_Q01a3BE |  |  | 9 | ISCED 5A, bachelor d | 000000010000 |
| B_Q01a3BE |  |  | 10 | ISCED 5A, master deg | 000000001000 |
| B_Q01a3BE |  |  | 11 | ISCED 6 | 000000000100 |
| B_Q01a3BE |  |  | 96 | Valid skip | 000000000010 |
| B_Q01a3CY | 10 | Education - Highest qualification - Level of forei | -1 | Missing | 000000001 |
| B_Q01a3CY |  |  | 1 | I never went to scho | 000000000 |
| B_Q01a3CY |  |  | 2 | Primary school | 100000000 |
| B_Q01a3CY |  |  | 3 | Public/Private Secon | 010000000 |
| B_Q01a3CY |  |  | 4 | High School/Vocation | 001000000 |
| B_Q01a3CY |  |  | 5 | Non-Univ. Degree/Dip | 000100000 |
| B_Q01a3CY |  |  | 6 | Undergraduate degree | 000010000 |
| B_Q01a3CY |  |  | 7 | Postgraduate degree, | 000001000 |
| B_Q01a3CY |  |  | 8 | Doctorate | 000000100 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01a3CY | 15 | Education - Highest qualification - Level of forei | 96 | Valid skip | 000000010 |
| B_Q01a3CZ |  |  | -1 | Missing | 00000000000001 |
| B_Q01a3CZ |  |  | 1 | No formal education | 00000000000000 |
| B_Q01a3CZ |  |  | 2 | First level of basic | 10000000000000 |
| B_Q01a3CZ |  |  | 3 | basic ISCED 2 | 01000000000000 |
| B_Q01a3CZ |  |  | 4 | vocational without m | 00100000000000 |
| B_Q01a3CZ |  |  | 5 | vocational without m | 00010000000000 |
| B_Q01a3CZ |  |  | 6 | ISCED 3A vocational | 00001000000000 |
| B_Q01a3CZ |  |  | 7 | ISCED 3A technical w | 00000100000000 |
| B_Q01a3CZ |  |  | 8 | ISCED 3A general wit | 00000010000000 |
| B_Q01a3CZ |  |  | 9 | ISCED 4 follow-up co | 00000001000000 |
| B_Q01a3CZ |  |  | 10 | ISCED 5B higher prof | 00000000100000 |
| B_Q01a3CZ |  |  | 11 | ISCED 5A, bachelor | 00000000010000 |
| B_Q01a3CZ |  |  | 12 | ISCED 5A, master | 00000000001000 |
| B_Q01a3CZ |  |  | 13 | ISCED 6, post gradua | 00000000000100 |
| B_Q01a3CZ |  |  | 96 | Valid skip | 00000000000010 |
| B_Q01a3DE2a | 8 | Education National - Highest school qualification | -1 | Missing | 0000001 |
| B_Q01a3DE2a |  |  | 1 | Left school without | 0000000 |
| B_Q01a3DE2a |  |  | 2 | Hauptschulabschluss | 1000000 |
| B_Q01a3DE2a |  |  | 3 | Realschulabschluss ( | 0100000 |
| B_Q01a3DE2a |  |  | 4 | Fachhochschulreife, | 0010000 |
| B_Q01a3DE2a |  |  | 5 | Abitur/EOS (General | 0001000 |
| B_Q01a3DE2a |  |  | 6 | Did not attend schoo | 0000100 |
| B_Q01a3DE2a |  |  | 96 | Valid skip | 0000010 |
| B_Q01a3DE2b | 11 | Education National - Highest professional qualific | -1 | Missing | 0000000001 |
| B_Q01a3DE2b |  |  | 1 | Apprenticeship (Lehr | 0000000000 |
| B_Q01a3DE2b |  |  | 2 | Basic vocational tra | 1000000000 |
| B_Q01a3DE2b |  |  | 3 | Training at Fachschu | 0100000000 |
| B_Q01a3DE2b |  |  | 4 | Berufsakademie, Fach | 0010000000 |
| B_Q01a3DE2b |  |  | 5 | Bachelor at Fachhoch | 0001000000 |
| B_Q01a3DE2b |  |  | 6 | Master/Diplom at Fac | 0000100000 |
| B_Q01a3DE2b |  |  | 7 | Bachelor at universi | 0000010000 |
| B_Q01a3DE2b |  |  | 8 | Master/Diplom at uni | 0000001000 |
| B_Q01a3DE2b |  |  | 9 | Doctorate | 0000000100 |
| B_Q01a3DE2b |  |  | 96 | Valid skip | 0000000010 |
| B_Q01a3DK | 16 | Can you indicate which level in our national educa | -1 | Missing | 000000000000001 |
| B_Q01a3DK |  |  | 1 | No formal education | 000000000000000 |
| B_Q01a3DK |  |  | 2 | Primary school, grad | 100000000000000 |
| B_Q01a3DK |  |  | 3 | Lower secondary, gra | 010000000000000 |
| B_Q01a3DK |  |  | 4 | Upper secondary voca | 001000000000000 |
| B_Q01a3DK |  |  | 5 | Upper secondary voca | 000100000000000 |
| B_Q01a3DK |  |  | 6 | Upper secondary gene | 000010000000000 |
| B_Q01a3DK |  |  | 7 | Upper secondary unde | 000001000000000 |
| B_Q01a3DK |  |  | 8 | Post secondary short | 000000100000000 |
| B_Q01a3DK |  |  | 9 | Post secondary entra | 000000010000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables



## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01a3FR | 15 | Education - Highest qualification - Level of forei | 6 | ISCED 3A-B | 000010000000000 |
| B_Q01a3FR |  |  | 7 | ISCED 3 (without dis | 000001000000000 |
| B_Q01a3FR |  |  | 8 | ISCED 4C | 000000100000000 |
| B_Q01a3FR |  |  | 9 | ISCED 4A-B | 000000010000000 |
| B_Q01a3FR |  |  | 10 | ISCED 4 (without dis | 000000001000000 |
| B_Q01a3FR |  |  | 11 | ISCED 5B | 000000000100000 |
| B_Q01a3FR |  |  | 12 | ISCED 5A, bachelor d | 000000000010000 |
| B_Q01a3FR |  |  | 13 | ISCED 5A, master deg | 000000000001000 |
| B_Q01a3FR |  |  | 14 | ISCED 6 | 000000000000100 |
| B_Q01a3FR |  |  | 96 | Valid skip | 000000000000010 |
| B_Q01a3IE |  |  | -1 | Missing | 00000000000001 |
| B_Q01a3IE |  |  | 1 | No formal education | 00000000000000 |
| B_Q01a3IE |  |  | 2 | Primary education (0 | 10000000000000 |
| B_Q01a3IE |  |  | 3 | Secondary 1 (Junior/ | 01000000000000 |
| B_Q01a3IE |  |  | 4 | Transition year prog | 00100000000000 |
| B_Q01a3IE |  |  | 5 | Secondary 2 (Leaving | 00010000000000 |
| B_Q01a3IE |  |  | 6 | Technical or Vocatio | 00001000000000 |
| B_Q01a3IE |  |  | 7 | Advanced Certificate | 00000100000000 |
| B_Q01a3IE |  |  | 8 | Higher Certificate ( | 00000010000000 |
| B_Q01a3IE |  |  | 9 | Diploma (e.g. Nation | 00000001000000 |
| B_Q01a3IE |  |  | 10 | Honours Bachelor Deg | 00000000100000 |
| B_Q01a3IE |  |  | 11 | Professional (Honour | 00000000010000 |
| B_Q01a3IE |  |  | 12 | Post-Graduate (e.g. | 00000000001000 |
| B_Q01a3IE |  |  | 13 | Doctorate or higher | 00000000000100 |
| B_Q01a3IE |  |  | 96 | Valid skip | 00000000000010 |
| B_Q01a3IT | 13 | Education - Highest qualification - Level of forei | -1 | Missing | 000000000001 |
| B_Q01a3IT |  |  | 1 | No formal qualificat | 000000000000 |
| B_Q01a3IT |  |  | 2 | Primary education or | 100000000000 |
| B_Q01a3IT |  |  | 3 | Lower secondary or s | 010000000000 |
| B_Q01a3IT |  |  | 4 | Regional Vocational | 001000000000 |
| B_Q01a3IT |  |  | 5 | Educational and voca | 000100000000 |
| B_Q01a3IT |  |  | 6 | Upper secondary educ | 000010000000 |
| B_Q01a3IT |  |  | 7 | Post-second. non ter | 000001000000 |
| B_Q01a3IT |  |  | 8 | Music Conservatory D | 000000100000 |
| B_Q01a3IT |  |  | 9 | First stage of terti | 000000010000 |
| B_Q01a3IT |  |  | 10 | First or second leve | 000000001000 |
| B_Q01a3IT |  |  | 11 | Research Doctoral de | 000000000100 |
| B_Q01a3IT |  |  | 96 | Valid skip | 000000000010 |
| B_Q01a3JP | 16 | Education - Highest qualification - Level of forei | -1 | Missing | 000000000000001 |
| B_Q01a3JP |  |  | 1 | No formal school edu | 000000000000000 |
| B_Q01a3JP |  |  | 2 | Elementary school | 100000000000000 |
| B_Q01a3JP |  |  | 3 | Lower secondary scho | 010000000000000 |
| B_Q01a3JP |  |  | 4 | Short-term course of | 001000000000000 |
| B_Q01a3JP |  |  | 5 | Specialized course o | 000100000000000 |
| B_Q01a3JP |  |  | 6 | General/integrated c | 000010000000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables



## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01a3NO | 12 | Education - Highest qualification - Level of forei | 5 | ISCED 3C 2 years or | 0001000000000 |
| B_Q01a3NO |  |  | 6 | ISCED 3A-B | 0000100000000 |
| B_Q01a3NO |  |  | 7 | ISCED 4C | 0000010000000 |
| B_Q01a3NO |  |  | 8 | ISCED 4A-B | 0000001000000 |
| B_Q01a3NO |  |  | 9 | ISCED 5B | 0000000100000 |
| B_Q01a3NO |  |  | 10 | ISCED 5A, bachelor d | 0000000010000 |
| B_Q01a3NO |  |  | 11 | ISCED 5A, Master deg | 0000000001000 |
| B_Q01a3NO |  |  | 12 | ISCED 6 | 0000000000100 |
| B_Q01a3NO |  |  | 96 | Valid skip | 0000000000010 |
| B_Q01a3PL |  |  | -1 | Missing | 00000000001 |
| B_Q01a3PL |  |  | 1 | No formal qualificat | 00000000000 |
| B_Q01a3PL |  |  | 2 | ISCED 1 | 10000000000 |
| B_Q01a3PL |  |  | 3 | ISCED 2 | 01000000000 |
| B_Q01a3PL |  |  | 4 | ISCED 3C | 00100000000 |
| B_Q01a3PL |  |  | 5 | ISCED 3B | 00010000000 |
| B_Q01a3PL |  |  | 6 | ISCED 3A | 00001000000 |
| B_Q01a3PL |  |  | 7 | ISCED 4 | 00000100000 |
| B_Q01a3PL |  |  | 8 | BA, ISCED 5A (I degr | 00000010000 |
| B_Q01a3PL |  |  | 9 | MA, ISCED 5A (II deg | 00000001000 |
| B_Q01a3PL |  |  | 10 | ISCED 6 | 00000000100 |
| B_Q01a3PL |  |  | 96 | Valid skip | 00000000010 |
| B_Q01a3RU | 11 | Education - Highest qualification - Level of forei | -1 | Missing | 0000000001 |
| B_Q01a3RU |  |  | 1 | No formal qualificat | 0000000000 |
| B_Q01a3RU |  |  | 2 | ISCED 1 | 1000000000 |
| B_Q01a3RU |  |  | 3 | ISCED 2 | 0100000000 |
| B_Q01a3RU |  |  | 4 | ISCED 3 (without dis | 0010000000 |
| B_Q01a3RU |  |  | 5 | ISCED 4 (without dis | 0001000000 |
| B_Q01a3RU |  |  | 6 | ISCED 5B | 0000100000 |
| B_Q01a3RU |  |  | 7 | ISCED 5A, bachelor d | 0000010000 |
| B_Q01a3RU |  |  | 8 | ISCED 5A, master deg | 0000001000 |
| B_Q01a3RU |  |  | 9 | ISCED 6 | 0000000100 |
| B_Q01a3RU |  |  | 96 | Valid skip | 0000000010 |
| B_Q01a3SE1 | 18 | Education correspondance | -1 | Missing | 00000000000000001 |
| B_Q01a3SE1 |  |  | 1 | Not stated or inferr | 00000000000000000 |
| B_Q01a3SE1 |  |  | 2 | Not stated or inr | 10000000000000000 |
| B_Q01a3SE1 |  |  | 3 | Grundskola, enhetssk | 01000000000000000 |
| B_Q01a3SE1 |  |  | 4 | Yrkesutbildning | 00100000000000000 |
| B_Q01a3SE1 |  |  | 5 | Grundskolekompetens | 00010000000000000 |
| B_Q01a3SE1 |  |  | 6 | Flickskola | 00001000000000000 |
| B_Q01a3SE1 |  |  | 7 | Gymnasie fackskola y | 00000100000000000 |
| B_Q01a3SE1 |  |  | 8 | Gymnasie fackskola y | 00000010000000000 |
| B_Q01a3SE1 |  |  | 9 | Gymnasie fackskola y | 00000001000000000 |
| B_Q01a3SE1 |  |  | 10 | Vuxenutbildning mots | 00000000100000000 |
| B_Q01a3SE1 |  |  | 11 | Vuxenutbildning mots | 00000000010000000 |
| B_Q01a3SE1 |  |  | 12 | Eftergymnasial utbil | 00000000001000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables



## PIAAC Contrast Coding used for Conditioning - National Variables



| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01aAU3 | 14 | Education - Highest qualification - Month of finis | -1 | Missing | 0000000000001 |
| B_Q01aAU3 |  |  | 1 | January | 0000000000000 |
| B_Q01aAU3 |  |  | 2 | February | 1000000000000 |
| B_Q01aAU3 |  |  | 3 | March | 0100000000000 |
| B_Q01aAU3 |  |  | 4 | April | 0010000000000 |
| B_Q01aAU3 |  |  | 5 | May | 0001000000000 |
| B_Q01aAU3 |  |  | 6 | June | 0000100000000 |
| B_Q01aAU3 |  |  | 7 | July | 0000010000000 |
| B_Q01aAU3 |  |  | 8 | August | 0000001000000 |
| B_Q01aAU3 |  |  | 9 | September | 0000000100000 |
| B_Q01aAU3 |  |  | 10 | October | 0000000010000 |
| B_Q01aAU3 |  |  | 11 | November | 0000000001000 |
| B_Q01aAU3 |  |  | 12 | December | 0000000000100 |
| B_Q01aAU3 |  |  | 96 | Valid skip | 0000000000010 |
| B_Q01aAU4 | 4 | Education - Did you complete primary school | -1 | Missing | 001 |
| B_Q01aAU4 |  |  | 1 | Yes | 000 |
| B_Q01aAU4 |  |  | 2 | No | 100 |
| B_Q01aAU4 |  |  | 6 | Valid skip | 010 |
| B_Q01aAU5 | 6 | Education - Highest primary/secondary school - Cur | -1 | Missing | 00001 |
| B_Q01aAU5 |  |  | 1 | Year 12 or equivalen | 00000 |
| B_Q01aAU5 |  |  | 2 | Year 11 or equivalen | 10000 |
| B_Q01aAU5 |  |  | 3 | Year 10 or equivalen | 01000 |
| B_Q01aAU5 |  |  | 4 | Year 9 or below | 00100 |
| B_Q01aAU5 |  |  | 6 | Valid skip | 00010 |
| B_Q01aAU6 | 4 | Education - Undertaking VET subjects/courses as pa | -1 | Missing | 001 |
| B_Q01aAU6 |  |  | 1 | Yes | 000 |
| B_Q01aAU6 |  |  | 2 | No | 100 |
| B_Q01aAU6 |  |  | 6 | Valid skip | 010 |
| B_Q01aAU9 | 4 | Education - Completed trade certificate, diploma, | -1 | Missing | 001 |
| B_Q01aAU9 |  |  | 1 | Yes | 000 |
| B_Q01aAU9 |  |  | 2 | No | 100 |
| B_Q01aAU9 |  |  | 6 | Valid skip | 010 |
| B_Q01aBE | 14 | Education - Highest qualification - Level | -1 | Missing | 0000000000001 |
| B_Q01aBE |  |  | 1 | No formal qualificat | 0000000000000 |
| B_Q01aBE |  |  | 2 | ISCED 1 | 1000000000000 |
| B_Q01aBE |  |  | 3 | ISCED 2 | 0100000000000 |
| B_Q01aBE |  |  | 4 | ISCED 3C 2 years or | 0010000000000 |
| B_Q01aBE |  |  | 5 | ISCED 3A-B | 0001000000000 |
| B_Q01aBE |  |  | 6 | ISCED 3 (without dis | 0000100000000 |
| B_Q01aBE |  |  | 7 | ISCED 4A-B | 0000010000000 |
| B_Q01aBE |  |  | 8 | ISCED 5B | 0000001000000 |
| B_Q01aBE |  |  | 9 | ISCED 5A, bachelor d | 0000000100000 |
| B_Q01aBE |  |  | 10 | ISCED 5A, master deg | 0000000010000 |
| B_Q01aBE |  |  | 11 | ISCED 6 | 0000000001000 |
| B_Q01aBE |  |  | 12 | Foreign qualificatio | 0000000000100 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01aBE | 4 | Education - Overall education - Graduated from hig | 96 | Valid skip | 0000000000010 |
| B_Q01aca1 |  |  | -1 | Missing | 001 |
| B_Q01aca1 |  |  | 1 | Yes | 000 |
| B_Q01aca1 |  |  | 2 | No | 100 |
| B_Q01aca1 |  |  | 6 | Valid skip | 010 |
| B_Q01aca10 | 12 | Education - Overall education - Country attained I | -1 | Missing | 00000000001 |
| B_Q01aca10 |  |  | 1 | China (People's Repu | 00000000000 |
| B_Q01aca10 |  |  | 2 | Germany | 10000000000 |
| B_Q01aca10 |  |  | 3 | Hong Kong | 01000000000 |
| B_Q01aca10 |  |  | 4 | India | 00100000000 |
| B_Q01aca10 |  |  | 5 | Italy | 00010000000 |
| B_Q01aca10 |  |  | 6 | Jamaica | 00001000000 |
| B_Q01aca10 |  |  | 7 | Philippines | 00000100000 |
| B_Q01aca10 |  |  | 8 | United Kingdom (e.g. | 00000010000 |
| B_Q01aca10 |  |  | 9 | United States | 00000001000 |
| B_Q01aca10 |  |  | 10 | Other - specify | 00000000100 |
| B_Q01aca10 |  |  | 96 | Valid skip | 00000000010 |
| B_Q01aca2 | 7 | Education - Overall education - Highest grade of e | -1 | Missing | 000001 |
| B_Q01aca2 |  |  | 1 | Less than Grade 6 | 000000 |
| B_Q01aca2 |  |  | 2 | Grade 6 | 100000 |
| B_Q01aca2 |  |  | 3 | Grade 7-8 (Secondary | 010000 |
| B_Q01aca2 |  |  | 4 | Grade 9 (Secondary 3 | 001000 |
| B_Q01aca2 |  |  | 5 | Grade 10-13 (Secon | 000100 |
| B_Q01aca2 |  |  | 6 | Valid skip | 000010 |
| B_Q01aca3 | 17 | Education - Overall education - Province/territory | -1 | Missing | 0000000000000001 |
| B_Q01aca3 |  |  | 10 | Newfoundland | 0000000000000000 |
| B_Q01aca3 |  |  | 11 | Prince Edward Island | 1000000000000000 |
| B_Q01aca3 |  |  | 12 | Nova Scotia | 0100000000000000 |
| B_Q01aca3 |  |  | 13 | New Brunswick | 0010000000000000 |
| B_Q01aca3 |  |  | 24 | Quebec | 0001000000000000 |
| B_Q01aca3 |  |  | 35 | Ontario | 0000100000000000 |
| B_Q01aca3 |  |  | 46 | Manitoba | 0000010000000000 |
| B_Q01aca3 |  |  | 47 | Saskatchewan | 0000001000000000 |
| B_Q01aca3 |  |  | 48 | Alberta | 0000000100000000 |
| B_Q01aca3 |  |  | 59 | British Columbia | 0000000010000000 |
| B_Q01aca3 |  |  | 60 | Yukon | 0000000001000000 |
| B_Q01aca3 |  |  | 61 | Northwest Territorie | 0000000000100000 |
| B_Q01aca3 |  |  | 62 | Nunavut | 0000000000010000 |
| B_Q01aca3 |  |  | 76 | U.S.A. | 0000000000001000 |
| B_Q01aca3 |  |  | 77 | Outside Canada/U.S.A | 0000000000000100 |
| B_Q01aca3 |  |  | 96 | Valid skip | 0000000000000010 |
| B_Q01aca5 | 4 | Education - Overall education - High/secondary sch | -1 | Missing | 001 |
| B_Q01aca5 |  |  | 1 | Yes | 000 |
| B_Q01aca5 |  |  | 2 | No | 100 |
| B_Q01aca5 |  |  | 6 | Valid skip | 010 |

PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01aca6 | 17 | Education - Overall education - Highest level of s | -1 | Missing | 0000000000000001 |
| B_Q01aca6 |  |  | 1 | No formal education | 000000000000000 |
| B_Q01aca6 |  |  | 2 | Less than high schoo | 100000000000000 |
| B_Q01aca6 |  |  | 3 | High school diploma | 010000000000000 |
| B_Q01aca6 |  |  | 4 | Trade/vocational cer | 0010000000000000 |
| B_Q01aca6 |  |  | 5 | Apprenticeship certi | 0001000000000000 |
| B_Q01aca6 |  |  | 6 | CEGEP diploma or cer | 000010000000000 |
| B_Q01aca6 |  |  | 7 | Non-university certi | 0000010000000000 |
| B_Q01aca6 |  |  | 8 | University transfer | 0000001000000000 |
| B_Q01aca6 |  |  | 9 | University certifica | 0000000100000000 |
| B_Q01aca6 |  |  | 10 | Bachelor's degree | 0000000010000000 |
| B_Q01aca6 |  |  | 11 | University certifica | 0000000001000000 |
| B_Q01aca6 |  |  | 12 | First professional d | 0000000000100000 |
| B_Q01aca6 |  |  | 13 | Master's | 0000000000010000 |
| B_Q01aca6 |  |  | 14 | Ph.D. | 0000000000001000 |
| B_Q01aca6 |  |  | 15 | Education not defina | 0000000000000100 |
| B_Q01aca6 |  |  | 96 | Valid skip | 0000000000000010 |
| B_Q01aca7 | 4 | Education - Overall education - CEGEP diploma/cert | -1 | Missing | 001 |
| B_Q01aca7 |  |  | 1 | Yes | 000 |
| B_Q01aca7 |  |  | 2 | No | 100 |
| B_Q01aca7 |  |  | 6 | Valid skip | 010 |
| B_Q01aca8 | 9 | Education - Overall education - Length - Complete | -1 | Missing | 00000001 |
| B_Q01aca8 |  |  | 1 | Less than 3 months | 00000000 |
| B_Q01aca8 |  |  | 2 | 3 months to less tha | 10000000 |
| B_Q01aca8 |  |  | 3 | One year | 01000000 |
| B_Q01aca8 |  |  | 4 | Greater than one yea | 00100000 |
| B_Q01aca8 |  |  | 5 | Two years | 00010000 |
| B_Q01aca8 |  |  | 6 | Greater than two yea | 00001000 |
| B_Q01aca8 |  |  | 7 | Three years or more | 00000100 |
| B_Q01aca8 |  |  | 96 | Valid skip | 00000010 |
| B_Q01aca9 | 4 | Education - Overall education - Obtained trade/voc | -1 | Missing | 001 |
| B_Q01aca9 |  |  | 1 | Yes | 000 |
| B_Q01aca9 |  |  | 2 | No | 100 |
| B_Q01aca9 |  |  | 6 | Valid skip | 010 |
| B_Q01aCY | 11 | Education - Highest qualification - Level | -1 | Missing | 0000000001 |
| B_Q01aCY |  |  | 1 | I never went to scho | 0000000000 |
| B_Q01aCY |  |  | 2 | Primary school | 1000000000 |
| B_Q01aCY |  |  | 3 | Public/Private Secon | 0100000000 |
| B_Q01aCY |  |  | 4 | High School/Vocation | 0010000000 |
| B_Q01aCY |  |  | 5 | Non-Univ. Degree/Dip | 0001000000 |
| B_Q01aCY |  |  | 6 | Undergraduate degree | 0000100000 |
| B_Q01aCY |  |  | 7 | Postgraduate degree, | 0000010000 |
| B_Q01aCY |  |  | 8 | Doctorate | 0000001000 |
| B_Q01aCY |  |  | 9 | Foreign qualificatio | 0000000100 |
| B_Q01aCY |  |  | 96 | Valid skip | 0000000010 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01aCZ | 16 |  | -1 | Missing | 000000000000001 |
| B_Q01aCZ |  |  | 1 | No formal education | 000000000000000 |
| B_Q01aCZ |  |  | 2 | First level of basic | 100000000000000 |
| B_Q01aCZ |  |  | 3 | basic ISCED 2 | 010000000000000 |
| B_Q01aCZ |  |  | 4 | vocational without m | 001000000000000 |
| B_Q01aCZ |  |  | 5 | vocational without m | 000100000000000 |
| B_Q01aCZ |  |  | 6 | ISCED 3A vocational | 000010000000000 |
| B_Q01aCZ |  |  | 7 | ISCED 3A technical w | 000001000000000 |
| B_Q01aCZ |  |  | 8 | ISCED 3A general wit | 000000100000000 |
| B_Q01aCZ |  |  | 9 | ISCED 4 follow-up co | 000000010000000 |
| B_Q01aCZ |  |  | 10 | ISCED 5B higher prof | 000000001000000 |
| B_Q01aCZ |  |  | 11 | ISCED 5A, bachelor | 000000000100000 |
| B_Q01aCZ |  |  | 12 | ISCED 5A, master | 000000000010000 |
| B_Q01aCZ |  |  | 13 | ISCED 6, post gradua | 000000000001000 |
| B_Q01aCZ |  |  | 14 | Foreign qualificatio | 000000000000100 |
| B_Q01aCZ |  |  | 96 | Valid skip | 000000000000010 |
| B_Q01aDE1 |  |  | -1 | Missing | 0000000000001 |
| B_Q01aDE1 |  |  | 1 | No formal education | 0000000000000 |
| B_Q01aDE1 |  |  | 2 | No Hauptschulabschlu | 1000000000000 |
| B_Q01aDE1 |  |  | 3 | Hauptschulabschluss | 0100000000000 |
| B_Q01aDE1 |  |  | 4 | Realschulabschluss ( | 0010000000000 |
| B_Q01aDE1 |  |  | 5 | Polytechnische Obers | 0001000000000 |
| B_Q01aDE1 |  |  | 6 | Polytechnische Obers | 0000100000000 |
| B_Q01aDE1 |  |  | 7 | Fachhochschulreife, | 0000010000000 |
| B_Q01aDE1 |  |  | 8 | Abitur/EOS (General | 0000001000000 |
| B_Q01aDE1 |  |  | 9 | Abitur (General high | 0000000100000 |
| B_Q01aDE1 |  |  | 10 | Foreign school leavi | 0000000010000 |
| B_Q01aDE1 |  |  | 11 | Another school leavi | 0000000001000 |
| B_Q01aDE1 |  |  | 12 | No school qualificat | 0000000000100 |
| B_Q01aDE1 |  |  | 96 | Valid skip | 0000000000010 |
| B_Q01aDE1_REC | 14 | Education National - Highest school qualification | -1 | Missing | 0000000000001 |
| B_Q01aDE1_REC |  |  | 1 | No formal education | 0000000000000 |
| B_Q01aDE1_REC |  |  | 2 | No Hauptschulabschlu | 1000000000000 |
| B_Q01aDE1_REC |  |  | 3 | Hauptschulabschluss | 0100000000000 |
| B_Q01aDE1_REC |  |  | 4 | Realschulabschluss ( | 0010000000000 |
| B_Q01aDE1_REC |  |  | 5 | Polytechnische Obers | 0001000000000 |
| B_Q01aDE1_REC |  |  | 6 | Polytechnische Obers | 0000100000000 |
| B_Q01aDE1_REC |  |  | 7 | Fachhochschulreife, | 0000010000000 |
| B_Q01aDE1_REC |  |  | 8 | Abitur/EOS (General | 0000001000000 |
| B_Q01aDE1_REC |  |  | 9 | Abitur (General high | 0000000100000 |
| B_Q01aDE1_REC |  |  | 10 | Foreign school leavi | 0000000010000 |
| B_Q01aDE1_REC |  |  | 11 | Another school leavi | 0000000001000 |
| B_Q01aDE1_REC |  |  | 12 | No school qualificat | 0000000000100 |
| B_Q01aDE1_REC |  |  | 96 | Valid skip | 0000000000010 |
| B_Q01aDE2 | 14 | Education National - Highest professional qualific | -1 | Missing | 0000000000001 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01aDE2 | 14 | Education National - Highest professional qualific | 1 | No professional qual | 0000000000000 |
| B_Q01aDE2 |  |  | 2 | Apprenticeship (Lehr | 1000000000000 |
| B_Q01aDE2 |  |  | 3 | Basic vocational tra | 0100000000000 |
| B_Q01aDE2 |  |  | 4 | Training at Fachschu | 0010000000000 |
| B_Q01aDE2 |  |  | 5 | Berufsakademie, Fach | 0001000000000 |
| B_Q01aDE2 |  |  | 6 | Bachelor at Fachhoch | 0000100000000 |
| B_Q01aDE2 |  |  | 7 | Master/Diplom at Fac | 0000010000000 |
| B_Q01aDE2 |  |  | 8 | Bachelor at universi | 0000001000000 |
| B_Q01aDE2 |  |  | 9 | Master/Diplom at uni | 0000000100000 |
| B_Q01aDE2 |  |  | 10 | Doctorate | 0000000010000 |
| B_Q01aDE2 |  |  | 11 | Foreign professional | 0000000001000 |
| B_Q01aDE2 |  |  | 12 | Another professional | 0000000000100 |
| B_Q01aDE2 |  |  | 96 | Valid skip | 0000000000010 |
| B_Q01aDE2_REC |  |  | -1 | Missing | 0000000000001 |
| B_Q01aDE2_REC |  |  | 1 | No professional qual | 0000000000000 |
| B_Q01aDE2_REC |  |  | 2 | Apprenticeship (Lehr | 1000000000000 |
| B_Q01aDE2_REC |  |  | 3 | Basic vocational tra | 0100000000000 |
| B_Q01aDE2_REC |  |  | 4 | Training at Fachschu | 0010000000000 |
| B_Q01aDE2_REC |  |  | 5 | Berufsakademie, Fach | 0001000000000 |
| B_Q01aDE2_REC |  |  | 6 | Bachelor at Fachhoch | 0000100000000 |
| B_Q01aDE2_REC |  |  | 7 | Master/Diplom at Fac | 0000010000000 |
| B_Q01aDE2_REC |  |  | 8 | Bachelor at universi | 0000001000000 |
| B_Q01aDE2_REC |  |  | 9 | Master/Diplom at uni | 0000000100000 |
| B_Q01aDE2_REC |  |  | 10 | Doctorate | 0000000010000 |
| B_Q01aDE2_REC |  |  | 11 | Foreign professional | 0000000001000 |
| B_Q01aDE2_REC |  |  | 12 | Another professional | 0000000000100 |
| B_Q01aDE2_REC |  |  | 96 | Valid skip | 0000000000010 |
| B_Q01aDK | 17 | Education - Highest qualification - Level | -1 | Missing | 0000000000000001 |
| B_Q01aDK |  |  | 1 | No formal education | 0000000000000000 |
| B_Q01aDK |  |  | 2 | Primary school, grad | 1000000000000000 |
| B_Q01aDK |  |  | 3 | Lower secondary, gra | 0100000000000000 |
| B_Q01aDK |  |  | 4 | Upper secondary voca | 0010000000000000 |
| B_Q01aDK |  |  | 5 | Upper secondary voca | 0001000000000000 |
| B_Q01aDK |  |  | 6 | Upper secondary gene | 0000100000000000 |
| B_Q01aDK |  |  | 7 | Upper secondary unde | 0000010000000000 |
| B_Q01aDK |  |  | 8 | Post secondary short | 0000001000000000 |
| B_Q01aDK |  |  | 9 | Post secondary entra | 0000000100000000 |
| B_Q01aDK |  |  | 10 | Post secondary non t | 0000000010000000 |
| B_Q01aDK |  |  | 11 | Tertiary not researc | 0000000001000000 |
| B_Q01aDK |  |  | 12 | Bachelor degree | 0000000000100000 |
| B_Q01aDK |  |  | 13 | Master degree | 0000000000010000 |
| B_Q01aDK |  |  | 14 | Ph.d or otther resea | 0000000000001000 |
| B_Q01aDK |  |  | 15 | Foreign qualificatio | 0000000000000100 |
| B_Q01aDK |  |  | 96 | Valid skip | 0000000000000010 |
| B_Q01aEE | 21 | Education - Highest qualification - Level | -1 | Missing | 00000000000000000001 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01aEE | 14 Education - Highest qualification - Level |  | 1 | Without primary educ | 00000000000000000000 |
| B_Q01aEE |  |  | 2 | Primary education | 1000000000000000000 |
| B_Q01aEE |  |  | 3 | Basic education | 0100000000000000000 |
| B_Q01aEE |  |  | 4 | General secondary ed | 00100000000000000000 |
| B_Q01aEE |  |  | 5 | Vocational education | 00010000000000000000 |
| B_Q01aEE |  |  | 6 | Vocational education | 00001000000000000000 |
| B_Q01aEE |  |  | 7 | Vocational education | 00000100000000000000 |
| B_Q01aEE |  |  | 8 | Vocational secondary | 00000010000000000000 |
| B_Q01aEE |  |  | 9 | Secondary specialise | 00000001000000000000 |
| B_Q01aEE |  |  | 10 | Vocational secondary | 00000000100000000000 |
| B_Q01aEE |  |  | 11 | Secondary specialise | 00000000010000000000 |
| B_Q01aEE |  |  | 12 | Applied higher educa | 00000000001000000000 |
| B_Q01aEE |  |  | 13 | Bachelor's degree (3 | 00000000000100000000 |
| B_Q01aEE |  |  | 14 | Bachelor's degree (4 | 00000000000010000000 |
| B_Q01aEE |  |  | 15 | Higher education (st | 00000000000001000000 |
| B_Q01aEE |  |  | 16 | Master's degree (3+2 | 00000000000000100000 |
| B_Q01aEE |  |  | 17 | Master's degree (4+2 | 00000000000000010000 |
| B_Q01aEE |  |  | 18 | Doctoral degree (inc | 00000000000000001000 |
| B_Q01aEE |  |  | 19 | Foreign qualificatio | 00000000000000000100 |
| B_Q01aEE |  |  | 96 | Valid skip | 00000000000000000010 |
| B_Q01aES |  |  | -1 | Missing | 0000000000001 |
| B_Q01aES |  |  | 1 | Not stated | 0000000000000 |
| B_Q01aES |  |  | 2 | Not stated | 1000000000000 |
| B_Q01aES |  |  | 3 | Not stated | 0100000000000 |
| B_Q01aES |  |  | 4 | Not stated | 0010000000000 |
| B_Q01aES |  |  | 5 | Not stated | 0001000000000 |
| B_Q01aES |  |  | 6 | Bachillerato, antigu | 0000100000000 |
| B_Q01aES |  |  | 7 | Pruebas de acceso a | 0000010000000 |
| B_Q01aES |  |  | 8 | Pruebas de acceso a | 0000001000000 |
| B_Q01aES |  |  | 9 | Pruebas de acceso a | 0000000100000 |
| B_Q01aES |  |  | 10 | Pruebas de aster y e | 0000000010000 |
| B_Q01aES |  |  | 11 | Programas de doctora | 0000000001000 |
| B_Q01aES |  |  | 12 | ProgramasN EXTRANJER | 0000000000100 |
| B_Q01aES |  |  | 96 | Valid skip | 0000000000010 |
| B_Q01aFI | 14 | Education - Highest qualification - Level | -1 | Missing | 0000000000001 |
| B_Q01aFI |  |  | 1 | No formal qualificat | 0000000000000 |
| B_Q01aFI |  |  | 2 | ISCED 1 | 1000000000000 |
| B_Q01aFI |  |  | 3 | ISCED 2 | 0100000000000 |
| B_Q01aFI |  |  | 4 | Upper secondary voca | 0010000000000 |
| B_Q01aFI |  |  | 5 | General upper second | 0001000000000 |
| B_Q01aFI |  |  | 6 | Specialist vocationa | 0000100000000 |
| B_Q01aFI |  |  | 7 | Vocational post-seco | 0000010000000 |
| B_Q01aFI |  |  | 8 | Polytechnic degree ( | 0000001000000 |
| B_Q01aFI |  |  | 9 | Bachelor's degree (I | 0000000100000 |
| B_Q01aFI |  |  | 10 | Master's degree (ISC | 0000000010000 |



## PIAAC Contrast Coding used for Conditioning - National Variables



## PIAAC Contrast Coding used for Conditioning - National Variables



| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01aNL | 15 | Education - Highest qualification - Level | 14 | tertiary education, | 000000000000100000 |
| B_Q01aNL |  |  | 15 | tertiary education, | 000000000000010000 |
| B_Q01aNL |  |  | 16 | tertiary education, | 000000000000001000 |
| B_Q01aNL |  |  | 17 | foreign qualificatio | 000000000000000100 |
| B_Q01aNL |  |  | 96 | Valid skip | 000000000000000010 |
| B_Q01aNO |  |  | -1 | Missing | 00000000000001 |
| B_Q01aNO |  |  | 1 | No formal qualificat | 00000000000000 |
| B_Q01aNO |  |  | 2 | ISCED 1 | 10000000000000 |
| B_Q01aNO |  |  | 3 | ISCED 2 | 01000000000000 |
| B_Q01aNO |  |  | 4 | ISCED 3C shorter tha | 00100000000000 |
| B_Q01aNO |  |  | 5 | ISCED 3C 2 years or | 00010000000000 |
| B_Q01aNO |  |  | 6 | ISCED 3A-B | 00001000000000 |
| B_Q01aNO |  |  | 7 | ISCED 4C | 00000100000000 |
| B_Q01aNO |  |  | 8 | ISCED 4A-B | 00000010000000 |
| B_Q01aNO |  |  | 9 | ISCED 5B | 00000001000000 |
| B_Q01aNO |  |  | 10 | ISCED 5A, bachelor d | 00000000100000 |
| B_Q01aNO |  |  | 11 | ISCED 5A, Master deg | 00000000010000 |
| B_Q01aNO |  |  | 12 | ISCED 6 | 00000000001000 |
| B_Q01aNO |  |  | 13 | Foreign qualificatio | 00000000000100 |
| B_Q01aNO |  |  | 96 | Valid skip | 00000000000010 |
| B_Q01aPL | 13 | Education - Highest qualification - Level | -1 | Missing | 000000000001 |
| B_Q01aPL |  |  | 1 | No formal qualificat | 000000000000 |
| B_Q01aPL |  |  | 2 | ISCED 1 | 100000000000 |
| B_Q01aPL |  |  | 3 | ISCED 2 | 010000000000 |
| B_Q01aPL |  |  | 4 | ISCED 3C | 001000000000 |
| B_Q01aPL |  |  | 5 | ISCED 3B | 000100000000 |
| B_Q01aPL |  |  | 6 | ISCED 3A | 000010000000 |
| B_Q01aPL |  |  | 7 | ISCED 4 | 000001000000 |
| B_Q01aPL |  |  | 8 | BA, ISCED 5A (I degr | 000000100000 |
| B_Q01aPL |  |  | 9 | MA, ISCED 5A (II deg | 000000010000 |
| B_Q01aPL |  |  | 10 | ISCED 6 | 000000001000 |
| B_Q01aPL |  |  | 11 | Foreign qualificatio | 000000000100 |
| B_Q01aPL |  |  | 96 | Valid skip | 000000000010 |
| B_Q01aRU | 12 | Education - Highest qualification - Level | -1 | Missing | 00000000001 |
| B_Q01aRU |  |  | 1 | No formal qualificat | 00000000000 |
| B_Q01aRU |  |  | 2 | ISCED 1 | 10000000000 |
| B_Q01aRU |  |  | 3 | ISCED 2 | 01000000000 |
| B_Q01aRU |  |  | 4 | ISCED 3 (without dis | 00100000000 |
| B_Q01aRU |  |  | 5 | ISCED 4 (without dis | 00010000000 |
| B_Q01aRU |  |  | 6 | ISCED 5B | 00001000000 |
| B_Q01aRU |  |  | 7 | ISCED 5A, bachelor d | 00000100000 |
| B_Q01aRU |  |  | 8 | ISCED 5A, master deg | 00000010000 |
| B_Q01aRU |  |  | 9 | ISCED 6 | 00000001000 |
| B_Q01aRU |  |  | 10 | Foreign qualificatio | 00000000100 |
| B_Q01aRU |  |  | 96 | Valid skip | 00000000010 |

PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01aSE1 | 19 | Education - Highest qualification - Level | -1 | Missing | 000000000000000001 |
| B_Q01aSE1 |  |  | 1 | Not stated or inferr | 000000000000000000 |
| B_Q01aSE1 |  |  | 2 | Not stated or inr | 10000000000000000 |
| B_Q01aSE1 |  |  | 3 | Grundskola, enhetssk | 01000000000000000 |
| B_Q01aSE1 |  |  | 4 | Yrkesutbildning | 001000000000000000 |
| B_Q01aSE1 |  |  | 5 | Grundskolekompetens | 000100000000000000 |
| B_Q01aSE1 |  |  | 6 | Flickskola | 000010000000000000 |
| B_Q01aSE1 |  |  | 7 | Gymnasie fackskola y | 000001000000000000 |
| B_Q01aSE1 |  |  | 8 | Gymnasie fackskola y | 000000100000000000 |
| B_Q01aSE1 |  |  | 9 | Gymnasie fackskola y | 000000010000000000 |
| B_Q01aSE1 |  |  | 10 | Vuxenutbildning mots | 000000001000000000 |
| B_Q01aSE1 |  |  | 11 | Vuxenutbildning mots | 000000000100000000 |
| B_Q01aSE1 |  |  | 12 | Eftergymnasial utbil | 000000000010000000 |
| B_Q01aSE1 |  |  | 13 | Eftergymnasial utbil | 000000000001000000 |
| B_Q01aSE1 |  |  | 14 | Eftergymnasial utbil | 000000000000100000 |
| B_Q01aSE1 |  |  | 15 | Eftergymnasial utbil | 000000000000010000 |
| B_Q01aSE1 |  |  | 16 | Forskarutbildning | 000000000000001000 |
| B_Q01aSE1 |  |  | 17 | Forsndsk utbildning | 000000000000000100 |
| B_Q01aSE1 |  |  | 96 | Valid skip | 000000000000000010 |
| B_Q01aSE2 | 4 | Degree | -1 | Missing | 001 |
| B_Q01aSE2 |  |  | 1 | Yes | 000 |
| B_Q01aSE2 |  |  | 2 | No | 100 |
| B_Q01aSE2 |  |  | 6 | Valid skip | 010 |
| B_Q01aSE3 | 6 | Type of degree | -1 | Missing | 00001 |
| B_Q01aSE3 |  |  | 1 | Fil Kand | 00000 |
| B_Q01aSE3 |  |  | 2 | Fil Mag | 10000 |
| B_Q01aSE3 |  |  | 3 | Master | 01000 |
| B_Q01aSE3 |  |  | 4 | Annan typ av examen | 00100 |
| B_Q01aSE3 |  |  | 6 | Valid skip | 00010 |
| B_Q01aSK | 14 | Education - Highest qualification - Level | -1 | Missing | 0000000000001 |
| B_Q01aSK |  |  | 1 | Pre school education | 0000000000000 |
| B_Q01aSK |  |  | 2 | Primary school 1-4. | 1000000000000 |
| B_Q01aSK |  |  | 3 | Primary school 5.-9. | 0100000000000 |
| B_Q01aSK |  |  | 4 | Secondary technical | 0010000000000 |
| B_Q01aSK |  |  | 5 | Secondary technical | 0001000000000 |
| B_Q01aSK |  |  | 6 | Secondary schools wi | 0000100000000 |
| B_Q01aSK |  |  | 7 | Upper secondary scho | 0000010000000 |
| B_Q01aSK |  |  | 8 | Pre-tertiary school, | 0000001000000 |
| B_Q01aSK |  |  | 9 | Bachelor degree, Gra | 0000000100000 |
| B_Q01aSK |  |  | 10 | Master degree | 0000000010000 |
| B_Q01aSK |  |  | 11 | PhD studies, Second | 0000000001000 |
| B_Q01aSK |  |  | 12 | Foreign qualificatio | 0000000000100 |
| B_Q01aSK |  |  | 96 | Valid skip | 0000000000010 |
| B_Q01aUK1 | 30 | Education - Highest qualification - Level | -1 | Missing | 00000000000000000000000000001 |
| B_Q01aUK1 |  |  | 1 | Degree level qualifi | 00000000000000000000000000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables



## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01aUK12 | 5 Education - Highest City \& Guilds qualification |  | 3 | a diploma | 01000 |
| B_Q01aUK12 |  |  | 4 | or some other RSA (i | 00100 |
| B_Q01aUK12 |  |  | 6 | Valid skip | 00010 |
| B_Q01aUK13 |  |  | -1 | Missing | 0001 |
| B_Q01aUK13 |  |  | 1 | Advanced craft/part | 0000 |
| B_Q01aUK13 |  |  | 2 | craft/part 2 | 1000 |
| B_Q01aUK13 |  |  | 3 | foundation/part 1 | 0100 |
| B_Q01aUK13 |  |  | 6 | Valid skip | 0010 |
| B_Q01aUK2 | 7 | Education - Highest full NVQ/SVQ - Level | -1 | Missing | 000001 |
| B_Q01aUK2 |  |  | 1 | Level 1 | 000000 |
| B_Q01aUK2 |  |  | 2 | Level 2 | 100000 |
| B_Q01aUK2 |  |  | 3 | Level 3 | 010000 |
| B_Q01aUK2 |  |  | 4 | Level 4 | 001000 |
| B_Q01aUK2 |  |  | 5 | Level 5 | 000100 |
| B_Q01aUK2 |  |  | 6 | Valid skip | 000010 |
| B_Q01aUK3 | 4 | Education - Number of A Levels | -1 | Missing | 001 |
| B_Q01aUK3 |  |  | 1 | one A level (or equi | 000 |
| B_Q01aUK3 |  |  | 2 | more than one | 100 |
| B_Q01aUK3 |  |  | 6 | Valid skip | 010 |
| B_Q01aUK4 | 4 | Education - Number of SCE Highers | -1 | Missing | 001 |
| B_Q01aUK4 |  |  | 1 | 3 or more Highers | 000 |
| B_Q01aUK4 |  |  | 2 | Fewer than 3 Highers | 100 |
| B_Q01aUK4 |  |  | 6 | Valid skip | 010 |
| B_Q01aUK5 | 5 | Education - Number of AS Levels | -1 | Missing | 0001 |
| B_Q01aUK5 |  |  | 1 | 1 AS level | 0000 |
| B_Q01aUK5 |  |  | 2 | 2 or 3 AS levels | 1000 |
| B_Q01aUK5 |  |  | 3 | 4 or more AS levels | 0100 |
| B_Q01aUK5 |  |  | 6 | Valid skip | 0010 |
| B_Q01aUK6_01 | 4 | Education - O levels/GCSE levels- GCSE Grade C or | -1 | Missing | 001 |
| B_Q01aUK6_01 |  |  | 1 | Marked | 000 |
| B_Q01aUK6_01 |  |  | 2 | Not marked | 100 |
| B_Q01aUK6_01 |  |  | 6 | Valid skip | 010 |
| B_Q01aUK6_02 | 4 | Education - O levels/GCSE levels- O level grade c | -1 | Missing | 001 |
| B_Q01aUK6_02 |  |  | 1 | Marked | 000 |
| B_Q01aUK6_02 |  |  | 2 | Not marked | 100 |
| B_Q01aUK6_02 |  |  | 6 | Valid skip | 010 |
| B_Q01aUK6_03 | 4 | Education - O levels/GCSE levels- CSEs Grade 1 | -1 | Missing | 001 |
| B_Q01aUK6_03 |  |  | 1 | Marked | 000 |
| B_Q01aUK6_03 |  |  | 2 | Not marked | 100 |
| B_Q01aUK6_03 |  |  | 6 | Valid skip | 010 |
| B_Q01aUK6_04 | 4 | Education - O levels/GCSE levels- Standards Grade | -1 | Missing | 001 |
| B_Q01aUK6_04 |  |  | 1 | Marked | 000 |
| B_Q01aUK6_04 |  |  | 2 | Not marked | 100 |
| B_Q01aUK6_04 |  |  | 6 | Valid skip | 010 |
| B_Q01aUK6_05 | 4 | Education- O levels/GCSE levels- intermediate 1 g | -1 | Missing | 001 |

## PIAAC Contrast Coding used for Conditioning - National Variables



## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01bca1 | 13 | Education - Highest qualification - Area of study | 4 | Social sciences, bus | 0010000000 |
| B_Q01bca1 |  |  | 5 | Science, mathematics | 0001000000 |
| B_Q01bca1 |  |  | 6 | Engineering, manufac | 0000100000 |
| B_Q01bca1 |  |  | 7 | Agriculture and vete | 0000010000 |
| B_Q01bca1 |  |  | 8 | Health and welfare | 0000001000 |
| B_Q01bca1 |  |  | 9 | Services | 0000000100 |
| B_Q01bca1 |  |  | 96 | Valid skip | 0000000010 |
| B_Q01bCZ |  |  | -1 | Missing | 000000000001 |
| B_Q01bCZ |  |  | 1 | General programmes | 000000000000 |
| B_Q01bCZ |  |  | 2 | Teacher training and | 100000000000 |
| B_Q01bCZ |  |  | 3 | Humanities, language | 01000000000 |
| B_Q01bCZ |  |  | 4 | Social sciences | 00100000000 |
| B_Q01bCZ |  |  | 5 | Business and law | 000100000000 |
| B_Q01bCZ |  |  | 6 | Science, mathematics | 000010000000 |
| B_Q01bCZ |  |  | 7 | Engineering, manufac | 000001000000 |
| B_Q01bCZ |  |  | 8 | Agriculture and vete | 000000100000 |
| B_Q01bCZ |  |  | 9 | Health | 000000010000 |
| B_Q01bCZ |  |  | 10 | Welfare | 000000001000 |
| B_Q01bCZ |  |  | 11 | Services | 000000000100 |
| B_Q01bCZ |  |  | 96 | Valid skip | 000000000010 |
| B_Q01bKO | 12 | KO_Education - major | -1 | Missing | 00000000001 |
| B_Q01bKO |  |  | 1 | General programmes | 00000000000 |
| B_Q01bKO |  |  | 2 | Teacher training and | 10000000000 |
| B_Q01bKO |  |  | 3 | Humanities, language | 01000000000 |
| B_Q01bKO |  |  | 4 | Social sciences, bus | 00100000000 |
| B_Q01bKO |  |  | 5 | Science, mathematics | 00010000000 |
| B_Q01bKO |  |  | 6 | Engineering, manufac | 00001000000 |
| B_Q01bKO |  |  | 7 | Agriculture and vete | 00000100000 |
| B_Q01bKO |  |  | 8 | Dental and medicine | 00000010000 |
| B_Q01bKO |  |  | 9 | Health and wellfare | 00000001000 |
| B_Q01bKO |  |  | 10 | Services | 00000000100 |
| B_Q01bKO |  |  | 96 | Valid skip | 00000000010 |
| B_Q01bNL | 13 | Education - Highest qualification - Area of study | -1 | Missing | 000000000001 |
| B_Q01bNL |  |  | 1 | general programmes | 000000000000 |
| B_Q01bNL |  |  | 2 | teacher training, ed | 10000000000 |
| B_Q01bNL |  |  | 3 | humanities, language | 010000000000 |
| B_Q01bNL |  |  | 4 | social sciences, com | 001000000000 |
| B_Q01bNL |  |  | 5 | economy, business, m | 000100000000 |
| B_Q01bNL |  |  | 6 | law, civil service, | 000010000000 |
| B_Q01bNL |  |  | 7 | mathematics, natural | 000001000000 |
| B_Q01bNL |  |  | 8 | technics | 000000100000 |
| B_Q01bNL |  |  | 9 | agriculture, veterin | 000000010000 |
| B_Q01bNL |  |  | 10 | health, welfare, per | 000000001000 |
| B_Q01bNL |  |  | 11 | tourism, horeca, tra | 000000000100 |
| B_Q01bNL |  |  | 96 | Valid skip | 000000000010 |



## PIAAC Contrast Coding used for Conditioning - National Variables



## PIAAC Contrast Coding used for Conditioning - National Variables



| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q02bBE | 16 | Education - Current study - Level of education | 96 | Valid skip | 000000000010 |
| B_Q02bca1 |  |  | -1 | Missing | 000000000000001 |
| B_Q02bca1 |  |  | 1 | Grade 6 | 000000000000000 |
| B_Q02bca1 |  |  | 2 | Less than high schoo | 100000000000000 |
| B_Q02bca1 |  |  | 3 | High school diploma | 010000000000000 |
| B_Q02bca1 |  |  | 4 | Trade/vocational cer | 001000000000000 |
| B_Q02bca1 |  |  | 5 | Apprenticeship certi | 000100000000000 |
| B_Q02bca1 |  |  | 6 | CEGEP diploma or cer | 000010000000000 |
| B_Q02bca1 |  |  | 7 | Non-university certi | 000001000000000 |
| B_Q02bca1 |  |  | 8 | University transfer | 000000100000000 |
| B_Q02bca1 |  |  | 9 | University certifica | 000000010000000 |
| B_Q02bca1 |  |  | 10 | Bachelor's degree | 000000001000000 |
| B_Q02bca1 |  |  | 11 | University certifica | 000000000100000 |
| B_Q02bca1 |  |  | 12 | First professional d | 000000000010000 |
| B_Q02bca1 |  |  | 13 | Master's | 000000000001000 |
| B_Q02bca1 |  |  | 14 | Ph.D. | 000000000000100 |
| B_Q02bca1 |  |  | 96 | Valid skip | 000000000000010 |
| B_Q02bca2 | 4 | Education - Current study - CEGEP diploma/certific | -1 | Missing | 001 |
| B_Q02bca2 |  |  | 1 | Yes | 000 |
| B_Q02bca2 |  |  | 2 | No | 100 |
| B_Q02bca2 |  |  | 6 | Valid skip | 010 |
| B_Q02bca3 | 9 | Education - Current study - Length - Complete trad | -1 | Missing | 00000001 |
| B_Q02bca3 |  |  | 1 | Less than 3 months | 00000000 |
| B_Q02bca3 |  |  | 2 | 3 months to less tha | 10000000 |
| B_Q02bca3 |  |  | 3 | One year | 01000000 |
| B_Q02bca3 |  |  | 4 | Greater than one yea | 00100000 |
| B_Q02bca3 |  |  | 5 | Two years | 00010000 |
| B_Q02bca3 |  |  | 6 | Greater than two yea | 00001000 |
| B_Q02bca3 |  |  | 7 | Three years or more | 00000100 |
| B_Q02bca3 |  |  | 96 | Valid skip | 00000010 |
| B_Q02bCY | 9 | Education - Current qualification - Level | -1 | Missing | 00000001 |
| B_Q02bCY |  |  | 1 | Primary school | 00000000 |
| B_Q02bCY |  |  | 2 | Public/Private Secon | 10000000 |
| B_Q02bCY |  |  | 3 | High School/Vocation | 01000000 |
| B_Q02bCY |  |  | 4 | Non-Univ. Degree/Dip | 00100000 |
| B_Q02bCY |  |  | 5 | Undergraduate degree | 00010000 |
| B_Q02bCY |  |  | 6 | Postgraduate degree, | 00001000 |
| B_Q02bCY |  |  | 7 | Doctorate | 00000100 |
| B_Q02bCY |  |  | 96 | Valid skip | 00000010 |
| B_Q02bCZ | 14 | Education - Current qualification - Level | -1 | Missing | 0000000000001 |
| B_Q02bCZ |  |  | 1 | First level of basic | 0000000000000 |
| B_Q02bCZ |  |  | 2 | basic ISCED 2 | 1000000000000 |
| B_Q02bCZ |  |  | 3 | vocational without m | 0100000000000 |
| B_Q02bCZ |  |  | 4 | vocational without m | 0010000000000 |
| B_Q02bCZ |  |  | 5 | ISCED 3A vocational | 0001000000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q02bCZ | 888 | Education National - Current school qualification | 6 | ISCED 3A technical w | 0000100000000 |
| B_Q02bCZ |  |  | 7 | ISCED 3A general wit | 0000010000000 |
| B_Q02bCZ |  |  | 8 | ISCED 4 follow-up co | 0000001000000 |
| B_Q02bCZ |  |  | 9 | ISCED 5B higher prof | 0000000100000 |
| B_Q02bCZ |  |  | 10 | ISCED 5A, bachelor | 0000000010000 |
| B_Q02bCZ |  |  | 11 | ISCED 5A, master | 0000000001000 |
| B_Q02bCZ |  |  | 12 | ISCED 6, post gradua | 0000000000100 |
| B_Q02bCZ |  |  | 96 | Valid skip | 0000000000010 |
| B_Q02bDE1 |  |  | -1 | Missing | 0000001 |
| B_Q02bDE1 |  |  | 1 | Hauptschulabschluss | 0000000 |
| B_Q02bDE1 |  |  | 2 | Realschulabschluss ( | 1000000 |
| B_Q02bDE1 |  |  | 3 | Fachhochschulreife, | 0100000 |
| B_Q02bDE1 |  |  | 4 | Abitur/EOS (General | 0010000 |
| B_Q02bDE1 |  |  | 5 | Abitur (General high | 0001000 |
| B_Q02bDE1 |  |  | 6 | Another school leavi | 0000100 |
| B_Q02bDE1 |  |  | 96 | Valid skip | 0000010 |
| B_Q02bDE1_REC |  | Education National - Current school qualification | -1 | Missing | 0000001 |
| B_Q02bDE1_REC |  |  | 1 | Hauptschulabschluss | 0000000 |
| B_Q02bDE1_REC |  |  | 2 | Realschulabschluss ( | 1000000 |
| B_Q02bDE1_REC |  |  | 3 | Fachhochschulreife, | 0100000 |
| B_Q02bDE1_REC |  |  | 4 | Abitur/EOS (General | 0010000 |
| B_Q02bDE1_REC |  |  | 5 | Abitur (General high | 0001000 |
| B_Q02bDE1_REC |  |  | 6 | Another school leavi | 0000100 |
| B_Q02bDE1_REC |  |  | 96 | Valid skip | 0000010 |
| B_Q02bDE2 | 12 | Education National - Current professional qualific | -1 | Missing | 00000000001 |
| B_Q02bDE2 |  |  | 1 | Completed Apprentice | 00000000000 |
| B_Q02bDE2 |  |  | 2 | Basic vocational tra | 10000000000 |
| B_Q02bDE2 |  |  | 3 | Training at Fachschu | 01000000000 |
| B_Q02bDE2 |  |  | 4 | Berufsakademie, Fach | 00100000000 |
| B_Q02bDE2 |  |  | 5 | Bachelor at Fachhoch | 00010000000 |
| B_Q02bDE2 |  |  | 6 | Master/Diplom at Fac | 00001000000 |
| B_Q02bDE2 |  |  | 7 | Bachelor at universi | 00000100000 |
| B_Q02bDE2 |  |  | 8 | Master/Diplom at uni | 00000010000 |
| B_Q02bDE2 |  |  | 9 | Doctorate | 00000001000 |
| B_Q02bDE2 |  |  | 10 | Another professional | 00000000100 |
| B_Q02bDE2 |  |  | 96 | Valid skip | 00000000010 |
| B_Q02bDE2_REC | 12 | Education National - Current professional qualific | -1 | Missing | 00000000001 |
| B_Q02bDE2_REC |  |  | 1 | Completed Apprentice | 00000000000 |
| B_Q02bDE2_REC |  |  | 2 | Basic vocational tra | 10000000000 |
| B_Q02bDE2_REC |  |  | 3 | Training at Fachschu | 01000000000 |
| B_Q02bDE2_REC |  |  | 4 | Berufsakademie, Fach | 00100000000 |
| B_Q02bDE2_REC |  |  | 5 | Bachelor at Fachhoch | 00010000000 |
| B_Q02bDE2_REC |  |  | 6 | Master/Diplom at Fac | 00001000000 |
| B_Q02bDE2_REC |  |  | 7 | Bachelor at universi | 00000100000 |
| B_Q02bDE2_REC |  |  | 8 | Master/Diplom at uni | 00000010000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q02bDE2_REC | 15 | What is the level of the qualification you are cur | 9 | Doctorate | 00000001000 |
| B_Q02bDE2_REC |  |  | 10 | Another professional | 00000000100 |
| B_Q02bDE2_REC |  |  | 96 | Valid skip | 00000000010 |
| B_Q02bDK |  |  | -1 | Missing | 00000000000001 |
| B_Q02bDK |  |  | 1 | Primary school, grad | 00000000000000 |
| B_Q02bDK |  |  | 2 | Lower secondary, gra | 1000000000000 |
| B_Q02bDK |  |  | 3 | Upper secondary voca | 0100000000000 |
| B_Q02bDK |  |  | 4 | Upper secondary voca | 0010000000000 |
| B_Q02bDK |  |  | 5 | Upper secondary gene | 00010000000000 |
| B_Q02bDK |  |  | 6 | Upper secondary unde | 00001000000000 |
| B_Q02bDK |  |  | 7 | Post secondary short | 00000100000000 |
| B_Q02bDK |  |  | 8 | Post secondary entra | 00000010000000 |
| B_Q02bDK |  |  | 9 | Post secondary non t | 00000001000000 |
| B_Q02bDK |  |  | 10 | Tertiary not researc | 00000000100000 |
| B_Q02bDK |  |  | 11 | Bachelor degree | 00000000010000 |
| B_Q02bDK |  |  | 12 | Master degree | 00000000001000 |
| B_Q02bDK |  |  | 13 | Ph.d or otther resea | 00000000000100 |
| B_Q02bDK |  |  | 96 | Valid skip | 00000000000010 |
| B_Q02bEE | 14 | Education - Current qualification - Level | -1 | Missing | 0000000000001 |
| B_Q02bEE |  |  | 1 | Primary education (1 | 0000000000000 |
| B_Q02bEE |  |  | 2 | Basic education (7-9 | 1000000000000 |
| B_Q02bEE |  |  | 3 | General secondary ed | 0100000000000 |
| B_Q02bEE |  |  | 4 | Vocational education | 0010000000000 |
| B_Q02bEE |  |  | 5 | Vocational education | 0001000000000 |
| B_Q02bEE |  |  | 6 | Voc ed on the basis | 0000100000000 |
| B_Q02bEE |  |  | 7 | Vocational secondary | 0000010000000 |
| B_Q02bEE |  |  | 8 | Vocational secondary | 0000001000000 |
| B_Q02bEE |  |  | 9 | Applied higher educa | 0000000100000 |
| B_Q02bEE |  |  | 10 | Bachelor's degree (3 | 0000000010000 |
| B_Q02bEE |  |  | 11 | Master's degree (3+2 | 0000000001000 |
| B_Q02bEE |  |  | 12 | Doctoral degree | 0000000000100 |
| B_Q02bEE |  |  | 96 | Valid skip | 0000000000010 |
| B_Q02bES | 12 | Education - Current qualification - Level | -1 | Missing | 00000000001 |
| B_Q02bES |  |  | 1 | Not stated or inferr | 00000000000 |
| B_Q02bES |  |  | 2 | Not stated or inferr | 10000000000 |
| B_Q02bES |  |  | 3 | Not stated or inferr | 01000000000 |
| B_Q02bES |  |  | 4 | Not stated or inferr | 00100000000 |
| B_Q02bES |  |  | 5 | Bachillerato,. Y sim | 00010000000 |
| B_Q02bES |  |  | 6 | Pruebas de acceso a | 00001000000 |
| B_Q02bES |  |  | 7 | Pruebas de acceso a | 00000100000 |
| B_Q02bES |  |  | 8 | Pruebas de acceso a | 00000010000 |
| B_Q02bES |  |  | 9 | Pruebas de aster y e | 00000001000 |
| B_Q02bES |  |  | 10 | Programas de doctora | 00000000100 |
| B_Q02bES |  |  | 96 | Valid skip | 00000000010 |
| B_Q02bFI | 12 | Education - Current qualification - Level | -1 | Missing | 00000000001 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q02bFI | 16 | Education - Current qualification - Level | 1 | ISCED 1 | 00000000000 |
| B_Q02bFI |  |  | 2 | ISCED 2 | 10000000000 |
| B_Q02bFI |  |  | 3 | Upper secondary voca | 01000000000 |
| B_Q02bFI |  |  | 4 | General upper second | 00100000000 |
| B_Q02bFI |  |  | 5 | Specialist vocationa | 00010000000 |
| B_Q02bFI |  |  | 6 | Vocational post-seco | 00001000000 |
| B_Q02bFI |  |  | 7 | Polytechnic degree ( | 00000100000 |
| B_Q02bFI |  |  | 8 | Bachelor's degree (I | 00000010000 |
| B_Q02bFI |  |  | 9 | Master's degree (ISC | 00000001000 |
| B_Q02bFI |  |  | 10 | Licentiate's and doc | 00000000100 |
| B_Q02bFI |  |  | 96 | Valid skip | 00000000010 |
| B_Q02bFR1 |  |  | -1 | Missing | 000000000000001 |
| B_Q02bFR1 |  |  | 1 | ISCED 1 | 000000000000000 |
| B_Q02bFR1 |  |  | 2 | ISCED 2 | 100000000000000 |
| B_Q02bFR1 |  |  | 3 | ISCED 3C shorter tha | 010000000000000 |
| B_Q02bFR1 |  |  | 4 | ISCED 3C 2 years or | 001000000000000 |
| B_Q02bFR1 |  |  | 5 | ISCED 3A-B | 000100000000000 |
| B_Q02bFR1 |  |  | 6 | ISCED 3 (without dis | 000010000000000 |
| B_Q02bFR1 |  |  | 7 | ISCED 4C | 000001000000000 |
| B_Q02bFR1 |  |  | 8 | ISCED 4A-B | 000000100000000 |
| B_Q02bFR1 |  |  | 9 | ISCED 4 (without dis | 000000010000000 |
| B_Q02bFR1 |  |  | 10 | ISCED 5B | 000000001000000 |
| B_Q02bFR1 |  |  | 11 | ISCED 5A, bachelor d | 000000000100000 |
| B_Q02bFR1 |  |  | 12 | ISCED 5A, master deg | 000000000010000 |
| B_Q02bFR1 |  |  | 13 | ISCED 6 | 000000000001000 |
| B_Q02bFR1 |  |  | 14 | Foreign qualificatio | 000000000000100 |
| B_Q02bFR1 |  |  | 96 | Valid skip | 000000000000010 |
| B_Q02bIE | 15 | Education - Current qualification - Level | -1 | Missing | 00000000000001 |
| B_Q02bIE |  |  | 1 | No formal education | 00000000000000 |
| B_Q02bIE |  |  | 2 | Primary education (0 | 10000000000000 |
| B_Q02bIE |  |  | 3 | Secondary 1 (Junior/ | 01000000000000 |
| B_Q02bIE |  |  | 4 | Transition year prog | 00100000000000 |
| B_Q02bIE |  |  | 5 | Secondary 2 (Leaving | 00010000000000 |
| B_Q02bIE |  |  | 6 | Technical or Vocatio | 00001000000000 |
| B_Q02bIE |  |  | 7 | Advanced Certificate | 00000100000000 |
| B_Q02bIE |  |  | 8 | Higher Certificate ( | 00000010000000 |
| B_Q02bIE |  |  | 9 | Diploma (e.g. Nation | 00000001000000 |
| B_Q02bIE |  |  | 10 | Honours Bachelor Deg | 00000000100000 |
| B_Q02bIE |  |  | 11 | Professional (Honour | 00000000010000 |
| B_Q02bIE |  |  | 12 | Post-Graduate (e.g. | 00000000001000 |
| B_Q02bIE |  |  | 13 | Doctorate or higher | 00000000000100 |
| B_Q02bIE |  |  | 96 | Valid skip | 00000000000010 |
| B_Q02bIT | 12 | Education - Current qualification - Level | -1 | Missing | 00000000001 |
| B_Q02bIT |  |  | 1 | Primary education or | 00000000000 |
| B_Q02bIT |  |  | 2 | Lower secondary or s | 10000000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q02bIT | 14 | Education - Current qualification - Level | 3 | Regional Vocational | 01000000000 |
| B_Q02bIT |  |  | 4 | Educational and voca | 00100000000 |
| B_Q02bIT |  |  | 5 | Upper secondary educ | 00010000000 |
| B_Q02bIT |  |  | 6 | Post-second. non ter | 00001000000 |
| B_Q02bIT |  |  | 7 | Music Conservatory D | 00000100000 |
| B_Q02bIT |  |  | 8 | First stage of terti | 00000010000 |
| B_Q02bIT |  |  | 9 | First or second leve | 00000001000 |
| B_Q02bIT |  |  | 10 | Research Doctoral de | 00000000100 |
| B_Q02bIT |  |  | 96 | Valid skip | 00000000010 |
| B_Q02bJP |  |  | -1 | Missing | 0000000000001 |
| B_Q02bJP |  |  | 1 | Elementary school | 0000000000000 |
| B_Q02bJP |  |  | 2 | Lower secondary scho | 1000000000000 |
| B_Q02bJP |  |  | 3 | Short-term course of | 0100000000000 |
| B_Q02bJP |  |  | 4 | Specialized course o | 0010000000000 |
| B_Q02bJP |  |  | 5 | General/integrated c | 0001000000000 |
| B_Q02bJP |  |  | 6 | Passed upper seconda | 0000100000000 |
| B_Q02bJP |  |  | 7 | Advanced course of $u$ | 0000010000000 |
| B_Q02bJP |  |  | 8 | Regular/advanced cou | 0000001000000 |
| B_Q02bJP |  |  | 9 | Undergraduate progra | 0000000100000 |
| B_Q02bJP |  |  | 10 | Master's program/Doc | 0000000010000 |
| B_Q02bJP |  |  | 11 | Doctoral programs of | 0000000001000 |
| B_Q02bJP |  |  | 12 | Specialized training | 0000000000100 |
| B_Q02bJP |  |  | 96 | Valid skip | 0000000000010 |
| B_Q02bKO | 12 | KO_Education - Current education | -1 | Missing | 00000000001 |
| B_Q02bKO |  |  | 1 | Elementary school | 00000000000 |
| B_Q02bKO |  |  | 2 | Middle school | 10000000000 |
| B_Q02bKO |  |  | 3 | High school(college | 01000000000 |
| B_Q02bKO |  |  | 4 | High school(vocation | 00100000000 |
| B_Q02bKO |  |  | 5 | 2-3 year college | 00010000000 |
| B_Q02bKO |  |  | 6 | 4 year college(speci | 00001000000 |
| B_Q02bKO |  |  | 7 | 4 year college(gener | 00000100000 |
| B_Q02bKO |  |  | 8 | Master's degree(spec | 00000010000 |
| B_Q02bKO |  |  | 9 | Master's degree(gene | 00000001000 |
| B_Q02bKO |  |  | 10 | Doctoral degree | 00000000100 |
| B_Q02bKO |  |  | 96 | Valid skip | 00000000010 |
| B_Q02bNL | 17 | Education - Current qualification - Level | -1 | Missing | 0000000000000001 |
| B_Q02bNL |  |  | 1 | primary education (i | 0000000000000000 |
| B_Q02bNL |  |  | 2 | sec education,first | 100000000000000 |
| B_Q02bNL |  |  | 3 | sec education, first | 010000000000000 |
| B_Q02bNL |  |  | 4 | secondary education, | 0010000000000000 |
| B_Q02bNL |  |  | 5 | secondary education, | 0001000000000000 |
| B_Q02bNL |  |  | 6 | secondary education, | 0000100000000000 |
| B_Q02bNL |  |  | 7 | secondary education, | 0000010000000000 |
| B_Q02bNL |  |  | 8 | secondary education, | 0000001000000000 |
| B_Q02bNL |  |  | 9 | sec education, secon | 0000000100000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q02bNL | 13 | Education - Current qualification - Level | 10 | secondary education, | 0000000010000000 |
| B_Q02bNL |  |  | 11 | tertiary education, | 0000000001000000 |
| B_Q02bNL |  |  | 12 | tertiary education, | 0000000000100000 |
| B_Q02bNL |  |  | 13 | tertiary education, | 0000000000010000 |
| B_Q02bNL |  |  | 14 | tertiary education, | 0000000000001000 |
| B_Q02bNL |  |  | 15 | tertiary education, | 0000000000000100 |
| B_Q02bNL |  |  | 96 | Valid skip | 0000000000000010 |
| B_Q02bNO |  |  | -1 | Missing | 000000000001 |
| B_Q02bNO |  |  | 1 | ISCED 1 | 000000000000 |
| B_Q02bNO |  |  | 2 | ISCED 2 | 100000000000 |
| B_Q02bNO |  |  | 3 | ISCED 3C shorter tha | 010000000000 |
| B_Q02bNO |  |  | 4 | ISCED 3C 2 years or | 001000000000 |
| B_Q02bNO |  |  | 5 | ISCED 3A-B | 000100000000 |
| B_Q02bNO |  |  | 6 | ISCED 4C | 000010000000 |
| B_Q02bNO |  |  | 7 | ISCED 4A-B | 000001000000 |
| B_Q02bNO |  |  | 8 | ISCED 5B | 000000100000 |
| B_Q02bNO |  |  | 9 | ISCED 5A, bachelor d | 000000010000 |
| B_Q02bNO |  |  | 10 | ISCED 5A, Master deg | 000000001000 |
| B_Q02bNO |  |  | 11 | ISCED 6 | 000000000100 |
| B_Q02bNO |  |  | 96 | Valid skip | 000000000010 |
| B_Q02bPL | 11 | Education - Current qualification - Level | -1 | Missing | 0000000001 |
| B_Q02bPL |  |  | 1 | ISCED 1 | 0000000000 |
| B_Q02bPL |  |  | 2 | ISCED 2 | 1000000000 |
| B_Q02bPL |  |  | 3 | ISCED 3C | 0100000000 |
| B_Q02bPL |  |  | 4 | ISCED 3B | 0010000000 |
| B_Q02bPL |  |  | 5 | ISCED 3A | 0001000000 |
| B_Q02bPL |  |  | 6 | ISCED 4 | 0000100000 |
| B_Q02bPL |  |  | 7 | BA, ISCED 5A (I degr | 0000010000 |
| B_Q02bPL |  |  | 8 | MA, ISCED 5A (II deg | 0000001000 |
| B_Q02bPL |  |  | 9 | ISCED 6 | 0000000100 |
| B_Q02bPL |  |  | 96 | Valid skip | 0000000010 |
| B_Q02bRU | 10 | Education - Current qualification - Level | -1 | Missing | 000000001 |
| B_Q02bRU |  |  | 1 | ISCED 1 | 000000000 |
| B_Q02bRU |  |  | 2 | ISCED 2 | 100000000 |
| B_Q02bRU |  |  | 3 | ISCED 3 (without dis | 010000000 |
| B_Q02bRU |  |  | 4 | ISCED 4 (without dis | 001000000 |
| B_Q02bRU |  |  | 5 | ISCED 5B | 000100000 |
| B_Q02bRU |  |  | 6 | ISCED 5A, bachelor d | 000010000 |
| B_Q02bRU |  |  | 7 | ISCED 5A, master deg | 000001000 |
| B_Q02bRU |  |  | 8 | ISCED 6 | 000000100 |
| B_Q02bRU |  |  | 96 | Valid skip | 000000010 |
| B_Q02bSE | 15 | Level of education | -1 | Missing | 00000000000001 |
| B_Q02bSE |  |  | 1 | Not stated ok 1-6 | 00000000000000 |
| B_Q02bSE |  |  | 2 | Not stated ok 7-9 | 10000000000000 |
| B_Q02bSE |  |  | 3 | Grundskolekompetens | 01000000000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q02bSE | 12 | Education - Current qualification - Level | 4 | Gymnasie fackskola y | 00100000000000 |
| B_Q02bSE |  |  | 5 | Gymnasie fackskola y | 00010000000000 |
| B_Q02bSE |  |  | 6 | Gymnasie fackskola y | 00001000000000 |
| B_Q02bSE |  |  | 7 | Vuxenutbildning mots | 00000100000000 |
| B_Q02bSE |  |  | 8 | Vuxenutbildning mots | 00000010000000 |
| B_Q02bSE |  |  | 9 | Eftergymnasial utbil | 00000001000000 |
| B_Q02bSE |  |  | 10 | Eftergymnasial utbil | 00000000100000 |
| B_Q02bSE |  |  | 11 | Eftergymnasial utbil | 00000000010000 |
| B_Q02bSE |  |  | 12 | Eftergymnasial utbil | 00000000001000 |
| B_Q02bSE |  |  | 13 | Forskarutbildning | 00000000000100 |
| B_Q02bSE |  |  | 96 | Valid skip | 00000000000010 |
| B_Q02bSK |  |  | -1 | Missing | 00000000001 |
| B_Q02bSK |  |  | 1 | Primary school 1-4. | 00000000000 |
| B_Q02bSK |  |  | 2 | Primary school 5.-9. | 10000000000 |
| B_Q02bSK |  |  | 3 | Secondary technical | 01000000000 |
| B_Q02bSK |  |  | 4 | Secondary technical | 00100000000 |
| B_Q02bSK |  |  | 5 | Secondary schools wi | 00010000000 |
| B_Q02bSK |  |  | 6 | Upper secondary scho | 00001000000 |
| B_Q02bSK |  |  | 7 | Pre-tertiary school, | 00000100000 |
| B_Q02bSK |  |  | 8 | Bachelor degree, Gra | 00000010000 |
| B_Q02bSK |  |  | 9 | Master degree | 00000001000 |
| B_Q02bSK |  |  | 10 | PhD studies, Second | 00000000100 |
| B_Q02bSK |  |  | 96 | Valid skip | 00000000010 |
| B_Q02bUK1_01 | 4 | Education - Current qualification - Level - Degree | -1 | Missing | 001 |
| B_Q02bUK1_01 |  |  | 1 | Marked | 000 |
| B_Q02bUK1_01 |  |  | 2 | Not marked | 100 |
| B_Q02bUK1_01 |  |  | 6 | Valid skip | 010 |
| B_Q02bUK1_02 | 4 | Education - Current qualification - Level - Diplom | -1 | Missing | 001 |
| B_Q02bUK1_02 |  |  | 1 | Marked | 000 |
| B_Q02bUK1_02 |  |  | 2 | Not marked | 100 |
| B_Q02bUK1_02 | 4 |  | 6 | Valid skip | 010 |
| B_Q02bUK1_03 |  | Education - Current qualification - Level - HNC/HN | -1 | Missing | 001 |
| B_Q02bUK1_03 |  |  | 1 | Marked | 000 |
| B_Q02bUK1_03 |  |  | 2 | Not marked | 100 |
| B_Q02bUK1_03 | 4 |  | 6 | Valid skip | 010 |
| B_Q02bUK1_04 |  | Education - Current qualification - Level - ONC/ON | -1 | Missing | 001 |
| B_Q02bUK1_04 |  |  | 1 | Marked | 000 |
| B_Q02bUK1_04 |  |  | 2 | Not marked | 100 |
| B_Q02bUK1_04 | 4 |  | 6 | Valid skip | 010 |
| B_Q02bUK1_05 |  | Education - Current qualification - Level - BTEC/E | -1 | Missing | 001 |
| B_Q02bUK1_05 |  |  | 1 | Marked | 000 |
| B_Q02bUK1_05 |  |  | 2 | Not marked | 100 |
| B_Q02bUK1_05 | 4 |  | 6 | Valid skip | 010 |
| B_Q02bUK1_06 |  | Education - Current qualification - Level - SCOTVE | -1 | Missing | 001 |
| B_Q02bUK1_06 |  |  | 1 | Marked | 000 |

## PIAAC Contrast Coding used for Conditioning - National Variables



## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q02bUK1_17 |  |  | 6 | Valid skip | 010 |
| B_Q02bUK1_18 | 4 | Education - Current qualification - Level - Access | -1 | Missing | 001 |
| B_Q02bUK1_18 |  |  | 1 | Marked | 000 |
| B_Q02bUK1_18 |  |  | 2 | Not marked | 100 |
| B_Q02bUK1_18 |  |  | 6 | Valid skip | 010 |
| B_Q02bUK1_19 | 4 | Education - Current qualification - Level - Nation | -1 | Missing | 001 |
| B_Q02bUK1_19 |  |  | 1 | Marked | 000 |
| B_Q02bUK1_19 |  |  | 2 | Not marked | 100 |
| B_Q02bUK1_19 |  |  | 6 | Valid skip | 010 |
| B_Q02bUK1_20 | 4 | Education - Current qualification-Level - GCSE/V | -1 | Missing | 001 |
| B_Q02bUK1_20 |  |  | 1 | Marked | 000 |
| B_Q02bUK1_20 |  |  | 2 | Not marked | 100 |
| B_Q02bUK1_20 |  |  | 6 | Valid skip | 010 |
| B_Q02bUK1_21 | 4 | Education - Current qualification-Level - RSA/OC | -1 | Missing | 001 |
| B_Q02bUK1_21 |  |  | 1 | Marked | 000 |
| B_Q02bUK1_21 |  |  | 2 | Not marked | 100 |
| B_Q02bUK1_21 |  |  | 6 | Valid skip | 010 |
| B_Q02bUK1_22 | 4 | Education - Current qualification-Level - City a | -1 | Missing | 001 |
| B_Q02bUK1_22 |  |  | 1 | Marked | 000 |
| B_Q02bUK1_22 |  |  | 2 | Not marked | 100 |
| B_Q02bUK1_22 |  |  | 6 | Valid skip | 010 |
| B_Q02bUK1_23 | 4 | Education - Current qualification - Level - key Sk | -1 | Missing | 001 |
| B_Q02bUK1_23 |  |  | 1 | Marked | 000 |
| B_Q02bUK1_23 |  |  | 2 | Not marked | 100 |
| B_Q02bUK1_23 |  |  | 6 | Valid skip | 010 |
| B_Q02bUK1_24 | 4 | Education - Current qualification - Level - Entry | -1 | Missing | 001 |
| B_Q02bUK1_24 |  |  | 1 | Marked | 000 |
| B_Q02bUK1_24 |  |  | 2 | Not marked | 100 |
| B_Q02bUK1_24 |  |  | 6 | Valid skip | 010 |
| B_Q02bUK1_25 | 4 | Education - Current qualification - Level - Any ot | -1 | Missing | 001 |
| B_Q02bUK1_25 |  |  | 1 | Marked | 000 |
| B_Q02bUK1_25 |  |  | 2 | Not marked | 100 |
| B_Q02bUK1_25 |  |  | 6 | Valid skip | 010 |
| B_Q02bUK2 | 7 | Education - Current qualification - NVQ/SVQ Level | -1 | Missing | 000001 |
| B_Q02bUK2 |  |  | 1 | Level 1 | 000000 |
| B_Q02bUK2 |  |  | 2 | Level 2 | 100000 |
| B_Q02bUK2 |  |  | 3 | Level 3 | 010000 |
| B_Q02bUK2 |  |  | 4 | Level 4 | 001000 |
| B_Q02bUK2 |  |  | 5 | Level 5 | 000100 |
| B_Q02bUK2 |  |  | 6 | Valid skip | 000010 |
| B_Q02bUK3 | 6 | Education - Current qualification-BTEC/EdExcel/L | -1 | Missing | 00001 |
| B_Q02bUK3 |  |  | 1 | A higher Level (leve | 00000 |
| B_Q02bUK3 |  |  | 2 | National Certificate | 10000 |
| B_Q02bUK3 |  |  | 3 | First Diploma or gen | 01000 |
| B_Q02bUK3 |  |  | 4 | First certificate or | 00100 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q02bUK3 | 7 | Education - Current qualification - SCOTVEC Level | 6 | Valid skip | 00010 |
| B_Q02bUK4 |  |  | -1 | Missing | 000001 |
| B_Q02bUK4 |  |  | 1 | A higher Level (leve | 000000 |
| B_Q02bUK4 |  |  | 2 | Full national certif | 100000 |
| B_Q02bUK4 |  |  | 3 | A first diploma or $g$ | 010000 |
| B_Q02bUK4 |  |  | 4 | A first certificate | 001000 |
| B_Q02bUK4 |  |  | 5 | Modules towards a Na | 000100 |
| B_Q02bUK4 |  |  | 6 | Valid skip | 000010 |
| B_Q02bUK5 | 7 | Education - Current qualification - National Quali | -1 | Missing | 000001 |
| B_Q02bUK5 |  |  | 1 | Access Level | 000000 |
| B_Q02bUK5 |  |  | 2 | Intermediate 1 | 100000 |
| B_Q02bUK5 |  |  | 3 | Intermediate 2 | 010000 |
| B_Q02bUK5 |  |  | 4 | Higher | 001000 |
| B_Q02bUK5 |  |  | 5 | Advanced Higher | 000100 |
| B_Q02bUK5 |  |  | 6 | Valid skip | 000010 |
| B_Q02bUK6 | 6 | Education - Current qualification - RSA Level | -1 | Missing | 00001 |
| B_Q02bUK6 |  |  | 1 | a higher diploma | 00000 |
| B_Q02bUK6 |  |  | 2 | an advanced diploma | 10000 |
| B_Q02bUK6 |  |  | 3 | a diploma | 01000 |
| B_Q02bUK6 |  |  | 4 | or some other RSA (i | 00100 |
| B_Q02bUK6 |  |  | 6 | Valid skip | 00010 |
| B_Q02bUK7 | 5 | Education - Current qualification - City \& Guilds | -1 | Missing | 0001 |
| B_Q02bUK7 |  |  | 1 | Advanced craft/part | 0000 |
| B_Q02bUK7 |  |  | 2 | craft/part 2 | 1000 |
| B_Q02bUK7 |  |  | 3 | foundation/part 1 | 0100 |
| B_Q02bUK7 |  |  | 6 | Valid skip | 0010 |
| B_Q02bUK8 | 4 | Education - Current qualification - Doing an appre | -1 | Missing | 001 |
| B_Q02bUK8 |  |  | 1 | Yes | 000 |
| B_Q02bUK8 |  |  | 2 | No | 100 |
| B_Q02bUK8 |  |  | 6 | Valid skip | 010 |
| B_Q02bUS | 12 | Education - Current qualification - Level | -1 | Missing | 00000000001 |
| B_Q02bUS |  |  | 1 | Grades 1-6 | 00000000000 |
| B_Q02bUS |  |  | 2 | Grades 7-9 | 10000000000 |
| B_Q02bUS |  |  | 3 | High school diploma | 01000000000 |
| B_Q02bUS |  |  | 4 | Pre-associate educat | 00100000000 |
| B_Q02bUS |  |  | 6 | A certificate from a | 00010000000 |
| B_Q02bUS |  |  | 7 | Associate degree | 00001000000 |
| B_Q02bUS |  |  | 8 | Bachelor's degree (e | 00000100000 |
| B_Q02bUS |  |  | 9 | Master's degree (e.g | 00000010000 |
| B_Q02bUS |  |  | 10 | Professional degree | 00000001000 |
| B_Q02bUS |  |  | 11 | Doctorate degree (e. | 00000000100 |
| B_Q02bUS |  |  | 96 | Valid skip | 00000000010 |
| B_Q02cCZ | 13 | Education - Current qualification - Area of study | -1 | Missing | 000000000001 |
| B_Q02cCZ |  |  | 1 | General programmes | 000000000000 |
| B_Q02cCZ |  |  | 2 | Teacher training and | 100000000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q02cCZ | 12 | KO_Education - Current qualification - Area of stu | 3 | Humanities, language | 010000000000 |
| B_Q02cCZ |  |  | 4 | Social sciences | 001000000000 |
| B_Q02cCZ |  |  | 5 | Business and law | 000100000000 |
| B_Q02cCZ |  |  | 6 | Science, mathematics | 000010000000 |
| B_Q02cCZ |  |  | 7 | Engineering, manufac | 000001000000 |
| B_Q02cCZ |  |  | 8 | Agriculture and vete | 000000100000 |
| B_Q02cCZ |  |  | 9 | Health | 000000010000 |
| B_Q02cCZ |  |  | 10 | Welfare | 000000001000 |
| B_Q02cCZ |  |  | 11 | Services | 000000000100 |
| B_Q02cCZ |  |  | 96 | Valid skip | 000000000010 |
| B_Q02cKO |  |  | -1 | Missing | 00000000001 |
| B_Q02cKO |  |  | 1 | General programmes | 00000000000 |
| B_Q02cKO |  |  | 2 | Teacher training and | 10000000000 |
| B_Q02cKO |  |  | 3 | Humanities, language | 01000000000 |
| B_Q02cKO |  |  | 4 | Social sciences, bus | 00100000000 |
| B_Q02cKO |  |  | 5 | Science, mathematics | 00010000000 |
| B_Q02cKO |  |  | 6 | Engineering, manufac | 00001000000 |
| B_Q02cKO |  |  | 7 | Agriculture and vete | 00000100000 |
| B_Q02cKO |  |  | 8 | Dental and medicine | 00000010000 |
| B_Q02cKO |  |  | 9 | Health and wellfare | 00000001000 |
| B_Q02cKO |  |  | 10 | Services | 00000000100 |
| B_Q02cKO |  |  | 96 | Valid skip | 00000000010 |
| B_Q02cNL | 13 | Education - Current qualification - Area of study | -1 | Missing | 000000000001 |
| B_Q02cNL |  |  | 1 | general programmes | 000000000000 |
| B_Q02cNL |  |  | 2 | teacher training, ed | 100000000000 |
| B_Q02cNL |  |  | 3 | humanities, language | 010000000000 |
| B_Q02cNL |  |  | 4 | social sciences, com | 001000000000 |
| B_Q02cNL |  |  | 5 | economy, business, m | 000100000000 |
| B_Q02cNL |  |  | 6 | law, civil service, | 000010000000 |
| B_Q02cNL |  |  | 7 | mathematics, natural | 000001000000 |
| B_Q02cNL |  |  | 8 | technics | 000000100000 |
| B_Q02cNL |  |  | 9 | agriculture, veterin | 000000010000 |
| B_Q02cNL |  |  | 10 | health, welfare, per | 000000001000 |
| B_Q02cNL |  |  | 11 | tourism, horeca, tra | 000000000100 |
| B_Q02cNL |  |  | 96 | Valid skip | 000000000010 |
| B_Q02cUK | 21 | Education - Current qualification - Area of study | -1 | Missing | 00000000000000000001 |
| B_Q02cUK |  |  | 1 | General programmes | 00000000000000000000 |
| B_Q02cUK |  |  | 2 | Medicine | 10000000000000000000 |
| B_Q02cUK |  |  | 3 | Medical related subj | 0100000000000000000 |
| B_Q02cUK |  |  | 4 | Biological Sciences | 00100000000000000000 |
| B_Q02cUK |  |  | 5 | Agricultural science | 00010000000000000000 |
| B_Q02cUK |  |  | 6 | Physical/Environment | 00001000000000000000 |
| B_Q02cUK |  |  | 7 | Mathematical Science | 00000100000000000000 |
| B_Q02cUK |  |  | 8 | Engineering | 00000010000000000000 |
| B_Q02cUK |  |  | 9 | Technology | 00000001000000000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q02cUK | 46 | Education - Uncompleted qualification | 10 | Architecture and rel | 00000000100000000000 |
| B_Q02cUK |  |  | 11 | Social Sciences (inc | 00000000010000000000 |
| B_Q02cUK |  |  | 12 | Business and Financi | 00000000001000000000 |
| B_Q02cUK |  |  | 13 | Librarianship and In | 00000000000100000000 |
| B_Q02cUK |  |  | 14 | Linguistics, English | 00000000000010000000 |
| B_Q02cUK |  |  | 15 | European Languages | 00000000000001000000 |
| B_Q02cUK |  |  | 16 | Other languages | 00000000000000100000 |
| B_Q02cUK |  |  | 17 | Humanities | 00000000000000010000 |
| B_Q02cUK |  |  | 18 | Arts | 00000000000000001000 |
| B_Q02cUK |  |  | 19 | Education | 00000000000000000100 |
| B_Q02cUK |  |  | 96 | Valid skip | 00000000000000000010 |
| B_Q03aAU |  |  | -1 | Missing | 001 |
| B_Q03aAU |  |  | 1 | Yes | 000 |
| B_Q03aAU |  |  | 2 | No | 100 |
| B_Q03aAU |  |  | 6 | Valid skip | 010 |
| B_Q03aDE |  | Education National - Uncompleted qualification | -1 | Missing | 00001 |
| B_Q03aDE |  |  | 1 | Yes, school providin | 00000 |
| B_Q03aDE |  |  | 2 | Yes, professional tr | 10000 |
| B_Q03aDE |  |  | 3 | Yes, both of the abo | 01000 |
| B_Q03aDE |  |  | 4 | No | 00100 |
| B_Q03aDE |  |  | 6 | Valid skip | 00010 |
| B_Q03b3FR | 15 | Education - Uncompleted qualification - Level of $f$ | -1 | Missing | 00000000000001 |
| B_Q03b3FR |  |  | 1 | ISCED 1 | 00000000000000 |
| B_Q03b3FR |  |  | 2 | ISCED 2 | 1000000000000 |
| B_Q03b3FR |  |  | 3 | ISCED 3C shorter tha | 0100000000000 |
| B_Q03b3FR |  |  | 4 | ISCED 3C 2 years or | 0010000000000 |
| B_Q03b3FR |  |  | 5 | ISCED 3A-B | 00010000000000 |
| B_Q03b3FR |  |  | 6 | ISCED 3 (without dis | 00001000000000 |
| B_Q03b3FR |  |  | 7 | ISCED 4C | 00000100000000 |
| B_Q03b3FR |  |  | 8 | ISCED 4A-B | 00000010000000 |
| B_Q03b3FR |  |  | 9 | ISCED 4 (without dis | 00000001000000 |
| B_Q03b3FR |  |  | 10 | ISCED 5B | 00000000100000 |
| B_Q03b3FR |  |  | 11 | ISCED 5A, bachelor d | 00000000010000 |
| B_Q03b3FR |  |  | 12 | ISCED 5A, master deg | 00000000001000 |
| B_Q03b3FR |  |  | 13 | ISCED 6 | 00000000000100 |
| B_Q03b3FR |  |  | 96 | Valid skip | 00000000000010 |
| B_Q03bAT | 18 | Education - Uncompleted qualification - Level - NA | -1 | Missing | 00000000000000001 |
| B_Q03bAT |  |  | 1 | Compulsory school | 00000000000000000 |
| B_Q03bAT |  |  | 2 | Apprenticeship | 10000000000000000 |
| B_Q03bAT |  |  | 3 | Vocational School (< | 01000000000000000 |
| B_Q03bAT |  |  | 4 | Vocational School (2 | 00100000000000000 |
| B_Q03bAT |  |  | 5 | Nursing | 00010000000000000 |
| B_Q03bAT |  |  | 6 | Master craftsman's c | 00001000000000000 |
| B_Q03bAT |  |  | 7 | Academic Secondary S | 00000100000000000 |
| B_Q03bAT |  |  | 8 | Vocational college | 00000010000000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

\begin{tabular}{|c|c|c|c|c|c|}
\hline ITEM_ID \& N Contrast \& LABEL \& VALUE \& Category Label \& CONTRAST <br>
\hline B_Q03bAT \& \multirow{27}{*}{5

13} \& \multirow{13}{*}{Education - Uncompleted qualification - Level not} \& 9 \& Post-secondary cours \& 00000001000000000 <br>
\hline B_Q03bAT \& \& \& 10 \& Post-secondary colle \& 00000000100000000 <br>
\hline B_Q03bAT \& \& \& 11 \& University courses \& 00000000010000000 <br>
\hline B_Q03bAT \& \& \& 12 \& University-Bachelor \& 00000000001000000 <br>
\hline B_Q03bAT \& \& \& 13 \& University-Master \& 00000000000100000 <br>
\hline B_Q03bAT \& \& \& 14 \& Post-graduate course \& 00000000000010000 <br>
\hline B_Q03bAT \& \& \& 15 \& Doctoral Programme \& 00000000000001000 <br>
\hline B_Q03bAT \& \& \& 16 \& Foreign Qualificatio \& 00000000000000100 <br>
\hline B_Q03bAT \& \& \& 96 \& Valid skip \& 00000000000000010 <br>
\hline B_Q03bAU \& \& \& -1 \& Missing \& 0001 <br>
\hline B_Q03bAU \& \& \& 1 \& Level \& 0000 <br>
\hline B_Q03bAU \& \& \& 2 \& Year 12 or equivalen \& 1000 <br>
\hline B_Q03bAU \& \& \& 3 \& Statement of attainm \& 0100 <br>
\hline B_Q03bAU \& \& \multirow{14}{*}{Education - Uncompleted qualification - Level} \& 6 \& Valid skip \& 0010 <br>
\hline B_Q03bBE \& \& \& -1 \& Missing \& 000000000001 <br>
\hline B_Q03bBE \& \& \& 1 \& ISCED 1 \& 000000000000 <br>
\hline B_Q03bBE \& \& \& 2 \& ISCED 2 \& 100000000000 <br>
\hline B_Q03bBE \& \& \& 3 \& ISCED 3C 2 years or \& 01000000000 <br>
\hline B_Q03bBE \& \& \& 4 \& ISCED 3A-B \& 00100000000 <br>
\hline B_Q03bBE \& \& \& 5 \& ISCED 3 (without dis \& 000100000000 <br>
\hline B_Q03bBE \& \& \& 6 \& ISCED 4A-B \& 000010000000 <br>
\hline B_Q03bBE \& \& \& 7 \& ISCED 5B \& 000001000000 <br>
\hline B_Q03bBE \& \& \& 8 \& ISCED 5A, bachelor d \& 000000100000 <br>
\hline B_Q03bBE \& \& \& 9 \& ISCED 5A, master deg \& 000000010000 <br>
\hline B_Q03bBE \& \& \& 10 \& ISCED 6 \& 000000001000 <br>
\hline B_Q03bBE \& \& \& 11 \& Foreign qualificatio \& 000000000100 <br>
\hline B_Q03bBE \& \& \& 96 \& Valid skip \& 000000000010 <br>
\hline B_Q03bca1 \& \multirow[t]{16}{*}{16} \& \multirow[t]{16}{*}{Education - Uncompleted program of study - Level} \& -1 \& Missing \& 000000000000001 <br>
\hline B_Q03bca1 \& \& \& 1 \& Grade 6 \& 000000000000000 <br>
\hline B_Q03bca1 \& \& \& 2 \& Less than high schoo \& 100000000000000 <br>
\hline B_Q03bca1 \& \& \& 3 \& High school diploma \& 010000000000000 <br>
\hline B_Q03bca1 \& \& \& 4 \& Trade/vocational cer \& 001000000000000 <br>
\hline B_Q03bca1 \& \& \& 5 \& Apprenticeship certi \& 000100000000000 <br>
\hline B_Q03bca1 \& \& \& 6 \& CEGEP diploma or cer \& 000010000000000 <br>
\hline B_Q03bca1 \& \& \& 7 \& Non-university certi \& 000001000000000 <br>
\hline B_Q03bca1 \& \& \& 8 \& University transfer \& 000000100000000 <br>
\hline B_Q03bca1 \& \& \& 9 \& University certifica \& 000000010000000 <br>
\hline B_Q03bca1 \& \& \& 10 \& Bachelor's degree \& 000000001000000 <br>
\hline B_Q03bca1 \& \& \& 11 \& University certifica \& 000000000100000 <br>
\hline B_Q03bca1 \& \& \& 12 \& First professional d \& 000000000010000 <br>
\hline B_Q03bca1 \& \& \& 13 \& Master's \& 000000000001000 <br>
\hline B_Q03bca1 \& \& \& 14 \& Ph.D. \& 000000000000100 <br>
\hline B_Q03bca1 \& \& \& 96 \& Valid skip \& 000000000000010 <br>
\hline B_Q03bca2 \& \multirow[t]{2}{*}{4} \& \multirow[t]{2}{*}{Education - Uncompleted program of study - CEGEP d} \& -1 \& Missing \& 001 <br>
\hline B_Q03bca2 \& \& \& 1 \& Yes \& 000 <br>
\hline
\end{tabular}

\begin{tabular}{|c|c|c|c|c|c|}
\hline ITEM_ID \& N Contrast \& LABEL \& VALUE \& Category Label \& CONTRAST <br>
\hline B_Q03bca2 \& \multirow{20}{*}{9

9} \& \multirow{11}{*}{Education - Uncompleted program of study - Length} \& 2 \& No \& 100 <br>
\hline B_Q03bca2 \& \& \& 6 \& Valid skip \& 010 <br>
\hline B_Q03bca3 \& \& \& -1 \& Missing \& 00000001 <br>
\hline B_Q03bca3 \& \& \& 1 \& Less than 3 months \& 00000000 <br>
\hline B_Q03bca3 \& \& \& 2 \& 3 months to less tha \& 10000000 <br>
\hline B_Q03bca3 \& \& \& 3 \& One year \& 01000000 <br>
\hline B_Q03bca3 \& \& \& 4 \& Greater than one yea \& 00100000 <br>
\hline B_Q03bca3 \& \& \& 5 \& Two years \& 00010000 <br>
\hline B_Q03bca3 \& \& \& 6 \& Greater than two yea \& 00001000 <br>
\hline B_Q03bca3 \& \& \& 7 \& Three years or more \& 00000100 <br>
\hline B_Q03bca3 \& \& \& 96 \& Valid skip \& 00000010 <br>
\hline B_Q03bCY \& \& \multirow[t]{9}{*}{Education - Uncompleted qualification - Level} \& -1 \& Missing \& 00000001 <br>
\hline B_Q03bCY \& \& \& 1 \& Primary school \& 00000000 <br>
\hline B_Q03bCY \& \& \& 2 \& Public/Private Secon \& 10000000 <br>
\hline B_Q03bCY \& \& \& 3 \& High School/Vocation \& 01000000 <br>
\hline B_Q03bCY \& \& \& 4 \& Non-Univ. Degree/Dip \& 00100000 <br>
\hline B_Q03bCY \& \& \& 5 \& Undergraduate degree \& 00010000 <br>
\hline B_Q03bCY \& \& \& 6 \& Postgraduate degree, \& 00001000 <br>
\hline B_Q03bCY \& \& \& 7 \& Doctorate \& 00000100 <br>
\hline B_Q03bCY \& \& \& 96 \& Valid skip \& 00000010 <br>
\hline B_Q03bCZ \& \multirow[t]{14}{*}{14} \& \multirow[t]{14}{*}{Education - Uncompleted qualification - Level} \& -1 \& Missing \& 0000000000001 <br>
\hline B_Q03bCZ \& \& \& 1 \& First level of basic \& 0000000000000 <br>
\hline B_Q03bCZ \& \& \& 2 \& basic ISCED 2 \& 1000000000000 <br>
\hline B_Q03bCZ \& \& \& 3 \& vocational without m \& 0100000000000 <br>
\hline B_Q03bCZ \& \& \& 4 \& vocational without m \& 0010000000000 <br>
\hline B_Q03bCZ \& \& \& 5 \& ISCED 3A vocational \& 0001000000000 <br>
\hline B_Q03bCZ \& \& \& 6 \& ISCED 3A technical w \& 0000100000000 <br>
\hline B_Q03bCZ \& \& \& 7 \& ISCED 3A general wit \& 0000010000000 <br>
\hline B_Q03bCZ \& \& \& 8 \& ISCED 4 follow-up co \& 0000001000000 <br>
\hline B_Q03bCZ \& \& \& 9 \& ISCED 5B higher prof \& 0000000100000 <br>
\hline B_Q03bCZ \& \& \& 10 \& ISCED 5A, bachelor \& 0000000010000 <br>
\hline B_Q03bCZ \& \& \& 11 \& ISCED 5A, master \& 0000000001000 <br>
\hline B_Q03bCZ \& \& \& 12 \& ISCED 6, post gradua \& 0000000000100 <br>
\hline B_Q03bCZ \& \& \& 96 \& Valid skip \& 0000000000010 <br>
\hline B_Q03bDE1 \& \multirow[t]{10}{*}{10} \& \multirow[t]{10}{*}{Education National - Uncompleted school qualificat} \& -1 \& Missing \& 000000001 <br>
\hline B_Q03bDE1 \& \& \& 1 \& Hauptschulabschluss \& 000000000 <br>
\hline B_Q03bDE1 \& \& \& 2 \& Realschulabschluss ( \& 100000000 <br>
\hline B_Q03bDE1 \& \& \& 3 \& Polytechnische Obers \& 010000000 <br>
\hline B_Q03bDE1 \& \& \& 4 \& Polytechnische Obers \& 001000000 <br>
\hline B_Q03bDE1 \& \& \& 5 \& Fachhochschulereife, \& 000100000 <br>
\hline B_Q03bDE1 \& \& \& 6 \& Abitur/EOS (General \& 000010000 <br>
\hline B_Q03bDE1 \& \& \& 7 \& Abitur (General high \& 000001000 <br>
\hline B_Q03bDE1 \& \& \& 8 \& Another school leavi \& 000000100 <br>
\hline B_Q03bDE1 \& \& \& 96 \& Valid skip \& 000000010 <br>
\hline B_Q03bDE2 \& 12 \& Education National - Uncompleted professional qual \& -1 \& Missing \& 00000000001 <br>
\hline
\end{tabular}

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q03bDE2 | 15 | Education - Uncompleted qualification - Level | 1 | Completed Apprentice | 00000000000 |
| B_Q03bDE2 |  |  | 2 | Basic vocational tra | 10000000000 |
| B_Q03bDE2 |  |  | 3 | Training at Fachschu | 01000000000 |
| B_Q03bDE2 |  |  | 4 | Berufsakademie, Fach | 00100000000 |
| B_Q03bDE2 |  |  | 5 | Bachelor at Fachhoch | 00010000000 |
| B_Q03bDE2 |  |  | 6 | Master/Diplom at Fac | 00001000000 |
| B_Q03bDE2 |  |  | 7 | Bachelor at universi | 00000100000 |
| B_Q03bDE2 |  |  | 8 | Master/Diplom at uni | 00000010000 |
| B_Q03bDE2 |  |  | 9 | Doctorate | 00000001000 |
| B_Q03bDE2 |  |  | 10 | Another professional | 00000000100 |
| B_Q03bDE2 |  |  | 96 | Valid skip | 00000000010 |
| B_Q03bDK |  |  | -1 | Missing | 00000000000001 |
| B_Q03bDK |  |  | 1 | Primary school, grad | 00000000000000 |
| B_Q03bDK |  |  | 2 | Lower secondary, gra | 10000000000000 |
| B_Q03bDK |  |  | 3 | Upper secondary voca | 01000000000000 |
| B_Q03bDK |  |  | 4 | Upper secondary voca | 00100000000000 |
| B_Q03bDK |  |  | 5 | Upper secondary gene | 00010000000000 |
| B_Q03bDK |  |  | 6 | Upper secondary unde | 00001000000000 |
| B_Q03bDK |  |  | 7 | Post secondary short | 00000100000000 |
| B_Q03bDK |  |  | 8 | Post secondary entra | 00000010000000 |
| B_Q03bDK |  |  | 9 | Post secondary non t | 00000001000000 |
| B_Q03bDK |  |  | 10 | Tertiary not researc | 00000000100000 |
| B_Q03bDK |  |  | 11 | Bachelor degree | 00000000010000 |
| B_Q03bDK |  |  | 12 | Master degree | 00000000001000 |
| B_Q03bDK |  |  | 13 | Ph.d or otther resea | 00000000000100 |
| B_Q03bDK |  |  | 96 | Valid skip | 00000000000010 |
| B_Q03bEE | 19 | Education - Uncompleted qualification - Level | -1 | Missing | 000000000000000001 |
| B_Q03bEE |  |  | 1 | Primary education | 000000000000000000 |
| B_Q03bEE |  |  | 2 | Basic education | 100000000000000000 |
| B_Q03bEE |  |  | 3 | General secondary ed | 010000000000000000 |
| B_Q03bEE |  |  | 4 | Vocational education | 001000000000000000 |
| B_Q03bEE |  |  | 5 | Vocational education | 000100000000000000 |
| B_Q03bEE |  |  | 6 | Vocational education | 000010000000000000 |
| B_Q03bEE |  |  | 7 | Vocational secondary | 000001000000000000 |
| B_Q03bEE |  |  | 8 | Secondary specialise | 000000100000000000 |
| B_Q03bEE |  |  | 9 | Vocational secondary | 000000010000000000 |
| B_Q03bEE |  |  | 10 | Secondary specialise | 000000001000000000 |
| B_Q03bEE |  |  | 11 | Applied higher educa | 000000000100000000 |
| B_Q03bEE |  |  | 12 | Bachelor's degree (3 | 000000000010000000 |
| B_Q03bEE |  |  | 13 | Bachelor's degree (4 | 000000000001000000 |
| B_Q03bEE |  |  | 14 | Higher education (st | 000000000000100000 |
| B_Q03bEE |  |  | 15 | Master's degree (3+2 | 000000000000010000 |
| B_Q03bEE |  |  | 16 | Master's degree (4+2 | 000000000000001000 |
| B_Q03bEE |  |  | 17 | Doctoral degree (inc | 000000000000000100 |
| B_Q03bEE |  |  | 96 | Valid skip | 000000000000000010 |

PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q03bES | 12 | Education - Uncompleted qualification - Level | -1 | Missing | 00000000001 |
| B_Q03bES |  |  | 1 | Not stated or inferr | 00000000000 |
| B_Q03bES |  |  | 2 | Not stated or inferr | 10000000000 |
| B_Q03bES |  |  | 3 | Not stated or inferr | 01000000000 |
| B_Q03bES |  |  | 4 | Not stated or inferr | 00100000000 |
| B_Q03bES |  |  | 5 | Bachillerato,. Y sim | 00010000000 |
| B_Q03bES |  |  | 6 | Pruebas de acceso a | 00001000000 |
| B_Q03bES |  |  | 7 | Pruebas de acceso a | 00000100000 |
| B_Q03bES |  |  | 8 | Pruebas de acceso a | 00000010000 |
| B_Q03bES |  |  | 9 | Pruebas de aster y e | 00000001000 |
| B_Q03bES |  |  | 10 | Programas de doctora | 00000000100 |
| B_Q03bES |  |  | 96 | Valid skip | 00000000010 |
| B_Q03bFI |  |  | -1 | Missing | 00000000001 |
| B_Q03bFI |  |  | 1 | ISCED 1 | 00000000000 |
| B_Q03bFI |  |  | 2 | ISCED 2 | 10000000000 |
| B_Q03bFI |  |  | 3 | Upper secondary voca | 01000000000 |
| B_Q03bFI |  |  | 4 | General upper second | 00100000000 |
| B_Q03bFI |  |  | 5 | Specialist vocationa | 00010000000 |
| B_Q03bFI |  |  | 6 | Vocational post-seco | 00001000000 |
| B_Q03bFI |  |  | 7 | Polytechnic degree ( | 00000100000 |
| B_Q03bFI |  |  | 8 | Bachelor's degree (I | 00000010000 |
| B_Q03bFI |  |  | 9 | Master's degree (ISC | 00000001000 |
| B_Q03bFI |  |  | 10 | Licentiate's and doc | 00000000100 |
| B_Q03bFI |  |  | 96 | Valid skip | 00000000010 |
| B_Q03bFR1 | 16 | Education - Uncompleted qualification - Level | -1 | Missing | 000000000000001 |
| B_Q03bFR1 |  |  | 1 | ISCED 1 | 000000000000000 |
| B_Q03bFR1 |  |  | 2 | ISCED 2 | 100000000000000 |
| B_Q03bFR1 |  |  | 3 | ISCED 3C shorter tha | 010000000000000 |
| B_Q03bFR1 |  |  | 4 | ISCED 3C 2 years or | 001000000000000 |
| B_Q03bFR1 |  |  | 5 | ISCED 3A-B | 000100000000000 |
| B_Q03bFR1 |  |  | 6 | ISCED 3 (without dis | 000010000000000 |
| B_Q03bFR1 |  |  | 7 | ISCED 4C | 000001000000000 |
| B_Q03bFR1 |  |  | 8 | ISCED 4A-B | 000000100000000 |
| B_Q03bFR1 |  |  | 9 | ISCED 4 (without dis | 000000010000000 |
| B_Q03bFR1 |  |  | 10 | ISCED 5B | 000000001000000 |
| B_Q03bFR1 |  |  | 11 | ISCED 5A, bachelor d | 000000000100000 |
| B_Q03bFR1 |  |  | 12 | ISCED 5A, master deg | 000000000010000 |
| B_Q03bFR1 |  |  | 13 | ISCED 6 | 000000000001000 |
| B_Q03bFR1 |  |  | 14 | Foreign qualificatio | 000000000000100 |
| B_Q03bFR1 |  |  | 96 | Valid skip | 000000000000010 |
| B_Q03bIE | 15 | Education - Uncompleted qualification - Level | -1 | Missing | 00000000000001 |
| B_Q03bIE |  |  | 1 | No formal education | 00000000000000 |
| B_Q03bIE |  |  | 2 | Primary education (0 | 10000000000000 |
| B_Q03bIE |  |  | 3 | Secondary 1 (Junior/ | 01000000000000 |
| B_Q03bIE |  |  | 4 | Transition year prog | 00100000000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q03bIE | 12 | Education - Uncompleted qualification - Level | 5 | Secondary 2 (Leaving | 00010000000000 |
| B_Q03bIE |  |  | 6 | Technical or Vocatio | 00001000000000 |
| B_Q03bIE |  |  | 7 | Advanced Certificate | 00000100000000 |
| B_Q03bIE |  |  | 8 | Higher Certificate ( | 00000010000000 |
| B_Q03bIE |  |  | 9 | Diploma (e.g. Nation | 00000001000000 |
| B_Q03bIE |  |  | 10 | Honours Bachelor Deg | 00000000100000 |
| B_Q03bIE |  |  | 11 | Professional (Honour | 00000000010000 |
| B_Q03bIE |  |  | 12 | Post-Graduate (e.g. | 00000000001000 |
| B_Q03bIE |  |  | 13 | Doctorate or higher | 00000000000100 |
| B_Q03bIE |  |  | 96 | Valid skip | 00000000000010 |
| B_Q03bIT |  |  | -1 | Missing | 00000000001 |
| B_Q03bIT |  |  | 1 | Primary education or | 00000000000 |
| B_Q03bIT |  |  | 2 | Lower secondary or s | 10000000000 |
| B_Q03bIT |  |  | 3 | Regional Vocational | 01000000000 |
| B_Q03bIT |  |  | 4 | Educational and voca | 00100000000 |
| B_Q03bIT |  |  | 5 | Upper secondary educ | 00010000000 |
| B_Q03bIT |  |  | 6 | Post-second. non ter | 00001000000 |
| B_Q03bIT |  |  | 7 | Music Conservatory D | 00000100000 |
| B_Q03bIT |  |  | 8 | First stage of terti | 00000010000 |
| B_Q03bIT |  |  | 9 | First or second leve | 00000001000 |
| B_Q03bIT |  |  | 10 | Research Doctoral de | 00000000100 |
| B_Q03bIT |  |  | 96 | Valid skip | 00000000010 |
| B_Q03bJP | 14 | Education - Uncompleted qualification - Level | -1 | Missing | 0000000000001 |
| B_Q03bJP |  |  | 1 | Elementary school | 0000000000000 |
| B_Q03bJP |  |  | 2 | Lower secondary scho | 1000000000000 |
| B_Q03bJP |  |  | 3 | Short-term course of | 0100000000000 |
| B_Q03bJP |  |  | 4 | Specialized course o | 0010000000000 |
| B_Q03bJP |  |  | 5 | General/integrated c | 0001000000000 |
| B_Q03bJP |  |  | 6 | Passed upper seconda | 0000100000000 |
| B_Q03bJP |  |  | 7 | Advanced course of u | 0000010000000 |
| B_Q03bJP |  |  | 8 | Regular/advanced cou | 0000001000000 |
| B_Q03bJP |  |  | 9 | Undergraduate progra | 0000000100000 |
| B_Q03bJP |  |  | 10 | Master's program/Doc | 0000000010000 |
| B_Q03bJP |  |  | 11 | Doctoral programs of | 0000000001000 |
| B_Q03bJP |  |  | 12 | Specialized training | 0000000000100 |
| B_Q03bJP |  |  | 96 | Valid skip | 0000000000010 |
| B_Q03bKO | 12 | KO_Education - Uncompleted qualification - Level | -1 | Missing | 00000000001 |
| B_Q03bKO |  |  | 1 | Elementary school | 00000000000 |
| B_Q03bKO |  |  | 2 | Middle school | 10000000000 |
| B_Q03bKO |  |  | 3 | High school(college | 01000000000 |
| B_Q03bKO |  |  | 4 | High school(vocation | 00100000000 |
| B_Q03bKO |  |  | 5 | 2-3 year college | 00010000000 |
| B_Q03bKO |  |  | 6 | 4 year college(speci | 00001000000 |
| B_Q03bKO |  |  | 7 | 4 year college(gener | 00000100000 |
| B_Q03bKO |  |  | 8 | Master's degree(spec | 00000010000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q03bKO | 17 | Education - Uncompleted qualification - Level | 9 | Master's degree(gene | 00000001000 |
| B_Q03bKO |  |  | 10 | Doctoral degree | 00000000100 |
| B_Q03bKO |  |  | 96 | Valid skip | 00000000010 |
| B_Q03bNL |  |  | -1 | Missing | 000000000000001 |
| B_Q03bNL |  |  | 1 | primary education (i | 0000000000000000 |
| B_Q03bNL |  |  | 2 | sec education, first | 100000000000000 |
| B_Q03bNL |  |  | 3 | sec education, first | 010000000000000 |
| B_Q03bNL |  |  | 4 | secondary education, | 001000000000000 |
| B_Q03bNL |  |  | 5 | secondary education, | 0001000000000000 |
| B_Q03bNL |  |  | 6 | secondary education, | 0000100000000000 |
| B_Q03bNL |  |  | 7 | secondary education, | 0000010000000000 |
| B_Q03bNL |  |  | 8 | secondary education, | 0000001000000000 |
| B_Q03bNL |  |  | 9 | sec education, secon | 0000000100000000 |
| B_Q03bNL |  |  | 10 | secondary education, | 0000000010000000 |
| B_Q03bNL |  |  | 11 | tertiary education, | 0000000001000000 |
| B_Q03bNL |  |  | 12 | tertiary education, | 0000000000100000 |
| B_Q03bNL |  |  | 13 | tertiary education, | 0000000000010000 |
| B_Q03bNL |  |  | 14 | tertiary education, | 0000000000001000 |
| B_Q03bNL |  |  | 15 | tertiary education, | 0000000000000100 |
| B_Q03bNL |  |  | 96 | Valid skip | 000000000000010 |
| B_Q03bNO | 13 | Education - Uncompleted qualification - Level | -1 | Missing | 000000000001 |
| B_Q03bNO |  |  | 1 | ISCED 1 | 000000000000 |
| B_Q03bNO |  |  | 2 | ISCED 2 | 100000000000 |
| B_Q03bNO |  |  | 3 | ISCED 3C shorter tha | 01000000000 |
| B_Q03bNO |  |  | 4 | ISCED 3C 2 years or | 001000000000 |
| B_Q03bNO |  |  | 5 | ISCED 3A-B | 000100000000 |
| B_Q03bNO |  |  | 6 | ISCED 4C | 000010000000 |
| B_Q03bNO |  |  | 7 | ISCED 4A-B | 000001000000 |
| B_Q03bNO |  |  | 8 | ISCED 5B | 000000100000 |
| B_Q03bNO |  |  | 9 | ISCED 5A, bachelor d | 000000010000 |
| B_Q03bNO |  |  | 10 | ISCED 5A, Master deg | 000000001000 |
| B_Q03bNO |  |  | 11 | ISCED 6 | 000000000100 |
| B_Q03bNO |  |  | 96 | Valid skip | 000000000010 |
| B_Q03bPL | 11 | Education - Uncompleted qualification - Level | -1 | Missing | 0000000001 |
| B_Q03bPL |  |  | 1 | ISCED 1 | 0000000000 |
| B_Q03bPL |  |  | 2 | ISCED 2 | 1000000000 |
| B_Q03bPL |  |  | 3 | ISCED 3C | 0100000000 |
| B_Q03bPL |  |  | 4 | ISCED 3B | 0010000000 |
| B_Q03bPL |  |  | 5 | ISCED 3A | 0001000000 |
| B_Q03bPL |  |  | 6 | ISCED 4 | 0000100000 |
| B_Q03bPL |  |  | 7 | BA, ISCED 5A (I degr | 0000010000 |
| B_Q03bPL |  |  | 8 | MA, ISCED 5A (II deg | 0000001000 |
| B_Q03bPL |  |  | 9 | ISCED 6 | 0000000100 |
| B_Q03bPL |  |  | 96 | Valid skip | 0000000010 |
| B_Q03bRU | 10 | Education - Uncompleted qualification - Level | -1 | Missing | 000000001 |

## PIAAC Contrast Coding used for Conditioning - National Variables



## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q03bUK1 | 7 Education - Uncompleted qualification - NVQ/SVQ Le |  | 6 | SCOTVEC, SCOTEC, SCO | 000010000000000000000000000 |
| B_Q03bUK1 |  |  | 7 | Teaching qualificati | 000001000000000000000000000 |
| B_Q03bUK1 |  |  | 8 | Nursing or other med | 000000100000000000000000000 |
| B_Q03bUK1 |  |  | 9 | other Higher Educati | 000000010000000000000000000 |
| B_Q03bUK1 |  |  | 10 | A Level/Vocational A | 000000001000000000000000000 |
| B_Q03bUK1 |  |  | 11 | Highers (Scotland) | 000000000100000000000000000 |
| B_Q03bUK1 |  |  | 12 | NVQ/SVQ | 000000000010000000000000000 |
| B_Q03bUK1 |  |  | 13 | GNVQ/GSVQ | 000000000001000000000000000 |
| B_Q03bUK1 |  |  | 14 | AS Level/Vocational | 000000000000100000000000000 |
| B_Q03bUK1 |  |  | 15 | Advanced highers or | 000000000000010000000000000 |
| B_Q03bUK1 |  |  | 16 | Access to HE | 000000000000001000000000000 |
| B_Q03bUK1 |  |  | 17 | O Level/GCSE/Vocatio | 00000000000000100000000000 |
| B_Q03bUK1 |  |  | 18 | Intermediate 1 or 2 | 000000000000000010000000000 |
| B_Q03bUK1 |  |  | 19 | Standard Grade or O | 000000000000000001000000000 |
| B_Q03bUK1 |  |  | 20 | National Qualificati | 000000000000000000100000000 |
| B_Q03bUK1 |  |  | 21 | RSA/OCR | 000000000000000000010000000 |
| B_Q03bUK1 |  |  | 22 | City and Guilds | 000000000000000000001000000 |
| B_Q03bUK1 |  |  | 23 | YT Certificate/YTP | 000000000000000000000100000 |
| B_Q03bUK1 |  |  | 24 | Key skills/Basic ski | 000000000000000000000010000 |
| B_Q03bUK1 |  |  | 25 | Entry level qualific | 000000000000000000000001000 |
| B_Q03bUK1 |  |  | 26 | Any other profession | 000000000000000000000000100 |
| B_Q03bUK1 |  |  | 96 | Valid skip | 00000000000000000000000010 |
| B_Q03bUK2 |  |  | -1 | Missing | 000001 |
| B_Q03bUK2 |  |  | 1 | Level 1 | 000000 |
| B_Q03bUK2 |  |  | 2 | Level 2 | 100000 |
| B_Q03bUK2 |  |  | 3 | Level 3 | 010000 |
| B_Q03bUK2 |  |  | 4 | Level 4 | 001000 |
| B_Q03bUK2 |  |  | 5 | Level 5 | 000100 |
| B_Q03bUK2 |  |  | 6 | Valid skip | 000010 |
| B_Q03bUK3 | 6 | Education - Uncompleted qualification - BTEC/BEC/T | -1 | Missing | 00001 |
| B_Q03bUK3 |  |  | 1 | A higher Level (leve | 00000 |
| B_Q03bUK3 |  |  | 2 | National Certificate | 10000 |
| B_Q03bUK3 |  |  | 3 | First Diploma or gen | 01000 |
| B_Q03bUK3 |  |  | 4 | First certificate or | 00100 |
| B_Q03bUK3 |  |  | 6 | Valid skip | 00010 |
| B_Q03bUK4 | 7 | Education - Uncompleted qualification - SCOTVEC/SC | -1 | Missing | 000001 |
| B_Q03bUK4 |  |  | 1 | A higher Level (leve | 000000 |
| B_Q03bUK4 |  |  | 2 | Full national certif | 100000 |
| B_Q03bUK4 |  |  | 3 | A first diploma or g | 010000 |
| B_Q03bUK4 |  |  | 4 | A first certificate | 001000 |
| B_Q03bUK4 |  |  | 5 | Modules towards a Na | 000100 |
| B_Q03bUK4 |  |  | 6 | Valid skip | 000010 |
| B_Q03bUK5 | 7 | Education - Uncompleted qualification- National Q | -1 | Missing | 000001 |
| B_Q03bUK5 |  |  | 1 | Access Level | 000000 |
| B_Q03bUK5 |  |  | 2 | Intermediate 1 | 100000 |



## PIAAC Contrast Coding used for Conditioning - National Variables



| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q05aBE | 16 | Education - Formal education - Level | 96 | Valid skip | 000000000010 |
| B_Q05aca1 |  |  | -1 | Missing | 000000000000001 |
| B_Q05aca1 |  |  | 1 | Grade 6 | 000000000000000 |
| B_Q05aca1 |  |  | 2 | Less than high schoo | 100000000000000 |
| B_Q05aca1 |  |  | 3 | High school diploma | 010000000000000 |
| B_Q05aca1 |  |  | 4 | Trade/vocational cer | 001000000000000 |
| B_Q05aca1 |  |  | 5 | Apprenticeship certi | 000100000000000 |
| B_Q05aca1 |  |  | 6 | CEGEP diploma or cer | 000010000000000 |
| B_Q05aca1 |  |  | 7 | Non-university certi | 000001000000000 |
| B_Q05aca1 |  |  | 8 | University transfer | 000000100000000 |
| B_Q05aca1 |  |  | 9 | University certifica | 000000010000000 |
| B_Q05aca1 |  |  | 10 | Bachelor's degree | 000000001000000 |
| B_Q05aca1 |  |  | 11 | University certifica | 000000000100000 |
| B_Q05aca1 |  |  | 12 | First professional d | 000000000010000 |
| B_Q05aca1 |  |  | 13 | Master's | 000000000001000 |
| B_Q05aca1 |  |  | 14 | Ph.D. | 000000000000100 |
| B_Q05aca1 |  |  | 96 | Valid skip | 000000000000010 |
| B_Q05aca2 | 4 | Education - Formal education - CEGEP diploma/certi | -1 | Missing | 001 |
| B_Q05aca2 |  |  | 1 | Yes | 000 |
| B_Q05aca2 |  |  | 2 | No | 100 |
| B_Q05aca2 |  |  | 6 | Valid skip | 010 |
| B_Q05aca3 | 9 | Education - Formal education - Length - Complete t | -1 | Missing | 00000001 |
| B_Q05aca3 |  |  | 1 | Less than 3 months | 00000000 |
| B_Q05aca3 |  |  | 2 | 3 months to less tha | 10000000 |
| B_Q05aca3 |  |  | 3 | One year | 01000000 |
| B_Q05aca3 |  |  | 4 | Greater than one yea | 00100000 |
| B_Q05aca3 |  |  | 5 | Two years | 00010000 |
| B_Q05aca3 |  |  | 6 | Greater than two yea | 00001000 |
| B_Q05aca3 |  |  | 7 | Three years or more | 00000100 |
| B_Q05aca3 |  |  | 96 | Valid skip | 00000010 |
| B_Q05aCY | 9 | Education - Formal qualification - Level | -1 | Missing | 00000001 |
| B_Q05aCY |  |  | 1 | Primary school | 00000000 |
| B_Q05aCY |  |  | 2 | Public/Private Secon | 10000000 |
| B_Q05aCY |  |  | 3 | High School/Vocation | 01000000 |
| B_Q05aCY |  |  | 4 | Non-Univ. Degree/Dip | 00100000 |
| B_Q05aCY |  |  | 5 | Undergraduate degree | 00010000 |
| B_Q05aCY |  |  | 6 | Postgraduate degree, | 00001000 |
| B_Q05aCY |  |  | 7 | Doctorate | 00000100 |
| B_Q05aCY |  |  | 96 | Valid skip | 00000010 |
| B_Q05aCZ | 14 | Education - Formal qualification - Level | -1 | Missing | 0000000000001 |
| B_Q05aCZ |  |  | 1 | First level of basic | 0000000000000 |
| B_Q05aCZ |  |  | 2 | basic ISCED 2 | 1000000000000 |
| B_Q05aCZ |  |  | 3 | vocational without m | 0100000000000 |
| B_Q05aCZ |  |  | 4 | vocational without m | 0010000000000 |
| B_Q05aCZ |  |  | 5 | ISCED 3A vocational | 0001000000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q05aCZ | 8 | Education National - Formal school qualification - | 6 | ISCED 3A technical w | 0000100000000 |
| B_Q05aCZ |  |  | 7 | ISCED 3A general wit | 0000010000000 |
| B_Q05aCZ |  |  | 8 | ISCED 4 follow-up co | 0000001000000 |
| B_Q05aCZ |  |  | 9 | ISCED 5B higher prof | 0000000100000 |
| B_Q05aCZ |  |  | 10 | ISCED 5A, bachelor | 0000000010000 |
| B_Q05aCZ |  |  | 11 | ISCED 5A, master | 0000000001000 |
| B_Q05aCZ |  |  | 12 | ISCED 6, post gradua | 0000000000100 |
| B_Q05aCZ |  |  | 96 | Valid skip | 0000000000010 |
| B_Q05aDE1 |  |  | -1 | Missing | 0000001 |
| B_Q05aDE1 |  |  | 1 | Hauptschulabschluss | 0000000 |
| B_Q05aDE1 |  |  | 2 | Realschulabschluss ( | 1000000 |
| B_Q05aDE1 |  |  | 3 | Fachhochschulreife, | 0100000 |
| B_Q05aDE1 |  |  | 4 | Abitur/EOS (General | 0010000 |
| B_Q05aDE1 |  |  | 5 | Abitur (General high | 0001000 |
| B_Q05aDE1 |  |  | 6 | Another school leavi | 0000100 |
| B_Q05aDE1 |  |  | 96 | Valid skip | 0000010 |
| B_Q05aDE2 | 12 | Education National - Formal professional qualifica | -1 | Missing | 00000000001 |
| B_Q05aDE2 |  |  | 1 | Completed Apprentice | 00000000000 |
| B_Q05aDE2 |  |  | 2 | Basic vocational tra | 10000000000 |
| B_Q05aDE2 |  |  | 3 | Training at Fachschu | 01000000000 |
| B_Q05aDE2 |  |  | 4 | Berufsakademie, Fach | 00100000000 |
| B_Q05aDE2 |  |  | 5 | Bachelor at Fachhoch | 00010000000 |
| B_Q05aDE2 |  |  | 6 | Master/Diplom at Fac | 00001000000 |
| B_Q05aDE2 |  |  | 7 | Bachelor at universi | 00000100000 |
| B_Q05aDE2 |  |  | 8 | Master/Diplom at uni | 00000010000 |
| B_Q05aDE2 |  |  | 9 | Doctorate | 00000001000 |
| B_Q05aDE2 |  |  | 10 | Another professional | 00000000100 |
| B_Q05aDE2 |  |  | 96 | Valid skip | 00000000010 |
| B_Q05aDK | 15 | What was the level of this qualification? | -1 | Missing | 00000000000001 |
| B_Q05aDK |  |  | 1 | Primary school, grad | 00000000000000 |
| B_Q05aDK |  |  | 2 | Lower secondary, gra | 10000000000000 |
| B_Q05aDK |  |  | 3 | Upper secondary voca | 01000000000000 |
| B_Q05aDK |  |  | 4 | Upper secondary voca | 00100000000000 |
| B_Q05aDK |  |  | 5 | Upper secondary gene | 00010000000000 |
| B_Q05aDK |  |  | 6 | Upper secondary unde | 00001000000000 |
| B_Q05aDK |  |  | 7 | Post secondary short | 00000100000000 |
| B_Q05aDK |  |  | 8 | Post secondary entra | 00000010000000 |
| B_Q05aDK |  |  | 9 | Post secondary non t | 00000001000000 |
| B_Q05aDK |  |  | 10 | Tertiary not researc | 00000000100000 |
| B_Q05aDK |  |  | 11 | Bachelor degree | 00000000010000 |
| B_Q05aDK |  |  | 12 | Master degree | 00000000001000 |
| B_Q05aDK |  |  | 13 | Ph.d or otther resea | 00000000000100 |
| B_Q05aDK |  |  | 96 | Valid skip | 00000000000010 |
| B_Q05aEE | 14 | Education - Formal qualification - Level | -1 | Missing | 0000000000001 |
| B_Q05aEE |  |  | 1 | Primary education (1 | 0000000000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q05aEE | 12 | Education - Formal qualification - Level | 2 | Basic education (7-9 | 1000000000000 |
| B_Q05aEE |  |  | 3 | General secondary ed | 0100000000000 |
| B_Q05aEE |  |  | 4 | Vocational education | 0010000000000 |
| B_Q05aEE |  |  | 5 | Vocational education | 0001000000000 |
| B_Q05aEE |  |  | 6 | Voc ed on the basis | 0000100000000 |
| B_Q05aEE |  |  | 7 | Vocational secondary | 0000010000000 |
| B_Q05aEE |  |  | 8 | Vocational secondary | 0000001000000 |
| B_Q05aEE |  |  | 9 | Applied higher educa | 0000000100000 |
| B_Q05aEE |  |  | 10 | Bachelor's degree (3 | 0000000010000 |
| B_Q05aEE |  |  | 11 | Master's degree (3+2 | 0000000001000 |
| B_Q05aEE |  |  | 12 | Doctoral degree | 0000000000100 |
| B_Q05aEE |  |  | 96 | Valid skip | 0000000000010 |
| B_Q05aES |  |  | -1 | Missing | 00000000001 |
| B_Q05aES |  |  | 1 | Not stated or inferr | 00000000000 |
| B_Q05aES |  |  | 2 | Not stated or inferr | 10000000000 |
| B_Q05aES |  |  | 3 | Not stated or inferr | 01000000000 |
| B_Q05aES |  |  | 4 | Not stated or inferr | 00100000000 |
| B_Q05aES |  |  | 5 | Bachillerato,. Y sim | 00010000000 |
| B_Q05aES |  |  | 6 | Pruebas de acceso a | 00001000000 |
| B_Q05aES |  |  | 7 | Pruebas de acceso a | 00000100000 |
| B_Q05aES |  |  | 8 | Pruebas de acceso a | 00000010000 |
| B_Q05aES |  |  | 9 | Pruebas de aster y e | 00000001000 |
| B_Q05aES |  |  | 10 | Programas de doctora | 00000000100 |
| B_Q05aES |  |  | 96 | Valid skip | 00000000010 |
| B_Q05aFI | 12 | Education - Formal qualification - Level | -1 | Missing | 00000000001 |
| B_Q05aFI |  |  | 1 | ISCED 1 | 00000000000 |
| B_Q05aFI |  |  | 2 | ISCED 2 | 10000000000 |
| B_Q05aFI |  |  | 3 | Upper secondary voca | 01000000000 |
| B_Q05aFI |  |  | 4 | General upper second | 00100000000 |
| B_Q05aFI |  |  | 5 | Specialist vocationa | 00010000000 |
| B_Q05aFl |  |  | 6 | Vocational post-seco | 00001000000 |
| B_Q05aFI |  |  | 7 | Polytechnic degree ( | 00000100000 |
| B_Q05aFI |  |  | 8 | Bachelor's degree (I | 00000010000 |
| B_Q05aFl |  |  | 9 | Master's degree (ISC | 00000001000 |
| B_Q05aFI |  |  | 10 | Licentiate's and doc | 00000000100 |
| B_Q05aFl |  |  | 96 | Valid skip | 00000000010 |
| B_Q05aFR1 | 16 | Education - Formal qualification - Level | -1 | Missing | 000000000000001 |
| B_Q05aFR1 |  |  | 1 | ISCED 1 | 000000000000000 |
| B_Q05aFR1 |  |  | 2 | ISCED 2 | 100000000000000 |
| B_Q05aFR1 |  |  | 3 | ISCED 3C shorter tha | 010000000000000 |
| B_Q05aFR1 |  |  | 4 | ISCED 3C 2 years or | 001000000000000 |
| B_Q05aFR1 |  |  | 5 | ISCED 3A-B | 000100000000000 |
| B_Q05aFR1 |  |  | 6 | ISCED 3 (without dis | 000010000000000 |
| B_Q05aFR1 |  |  | 7 | ISCED 4C | 000001000000000 |
| B_Q05aFR1 |  |  | 8 | ISCED 4A-B | 000000100000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q05aFR1 | 15 | Education - Formal qualification - Level | 9 | ISCED 4 (without dis | 000000010000000 |
| B_Q05aFR1 |  |  | 10 | ISCED 5B | 000000001000000 |
| B_Q05aFR1 |  |  | 11 | ISCED 5A, bachelor d | 000000000100000 |
| B_Q05aFR1 |  |  | 12 | ISCED 5A, master deg | 000000000010000 |
| B_Q05aFR1 |  |  | 13 | ISCED 6 | 000000000001000 |
| B_Q05aFR1 |  |  | 14 | Foreign qualificatio | 000000000000100 |
| B_Q05aFR1 |  |  | 96 | Valid skip | 000000000000010 |
| B_Q05alE |  |  | -1 | Missing | 00000000000001 |
| B_Q05alE |  |  | 1 | No formal education | 00000000000000 |
| B_Q05alE |  |  | 2 | Primary education (0 | 1000000000000 |
| B_Q05alE |  |  | 3 | Secondary 1 (Junior/ | 0100000000000 |
| B_Q05alE |  |  | 4 | Transition year prog | 0010000000000 |
| B_Q05alE |  |  | 5 | Secondary 2 (Leaving | 00010000000000 |
| B_Q05alE |  |  | 6 | Technical or Vocatio | 00001000000000 |
| B_Q05alE |  |  | 7 | Advanced Certificate | 00000100000000 |
| B_Q05alE |  |  | 8 | Higher Certificate ( | 00000010000000 |
| B_Q05alE |  |  | 9 | Diploma (e.g. Nation | 00000001000000 |
| B_Q05alE |  |  | 10 | Honours Bachelor Deg | 00000000100000 |
| B_Q05alE |  |  | 11 | Professional (Honour | 00000000010000 |
| B_Q05alE |  |  | 12 | Post-Graduate (e.g. | 00000000001000 |
| B_Q05alE |  |  | 13 | Doctorate or higher | 00000000000100 |
| B_Q05alE |  |  | 96 | Valid skip | 00000000000010 |
| B_Q05alT | 12 | Education - Formal qualification - Level | -1 | Missing | 00000000001 |
| B_Q05alT |  |  | 1 | Primary education or | 00000000000 |
| B_Q05alT |  |  | 2 | Lower secondary or s | 10000000000 |
| B_Q05alT |  |  | 3 | Regional Vocational | 01000000000 |
| B_Q05alT |  |  | 4 | Educational and voca | 00100000000 |
| B_Q05alT |  |  | 5 | Upper secondary educ | 00010000000 |
| B_Q05alT |  |  | 6 | Post-second. non ter | 00001000000 |
| B_Q05alT |  |  | 7 | Music Conservatory D | 00000100000 |
| B_Q05alT |  |  | 8 | First stage of terti | 00000010000 |
| B_Q05alT |  |  | 9 | First or second leve | 00000001000 |
| B_Q05alT |  |  | 10 | Research Doctoral de | 00000000100 |
| B_Q05alT |  |  | 96 | Valid skip | 00000000010 |
| B_Q05aJP | 14 | Education - Formal qualification - Level | -1 | Missing | 0000000000001 |
| B_Q05aJP |  |  | 1 | Elementary school | 0000000000000 |
| B_Q05aJP |  |  | 2 | Lower secondary scho | 1000000000000 |
| B_Q05aJP |  |  | 3 | Short-term course of | 0100000000000 |
| B_Q05aJP |  |  | 4 | Specialized course o | 0010000000000 |
| B_Q05aJP |  |  | 5 | General/integrated c | 0001000000000 |
| B_Q05aJP |  |  | 6 | Passed upper seconda | 0000100000000 |
| B_Q05aJP |  |  | 7 | Advanced course of $u$ | 0000010000000 |
| B_Q05aJP |  |  | 8 | Regular/advanced cou | 0000001000000 |
| B_Q05aJP |  |  | 9 | Undergraduate progra | 0000000100000 |
| B_Q05aJP |  |  | 10 | Master's program/Doc | 0000000010000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q05aJP | 12 |  | 11 | Doctoral programs of | 0000000001000 |
| B_Q05aJP |  |  | 12 | Specialized training | 0000000000100 |
| B_Q05aJP |  |  | 96 | Valid skip | 0000000000010 |
| B_Q05aKO |  | KO_Education - Formal qualification - Level | -1 | Missing | 00000000001 |
| B_Q05aKO |  |  | 1 | Elementary school | 00000000000 |
| B_Q05aKO |  |  | 2 | Middle school | 10000000000 |
| B_Q05aKO |  |  | 3 | High school(college | 01000000000 |
| B_Q05aKO |  |  | 4 | High school(vocation | 00100000000 |
| B_Q05aKO |  |  | 5 | 2-3 year college | 00010000000 |
| B_Q05aKO |  |  | 6 | 4 year college(speci | 00001000000 |
| B_Q05aKO |  |  | 7 | 4 year college(gener | 00000100000 |
| B_Q05aKO |  |  | 8 | Master's degree(spec | 00000010000 |
| B_Q05aKO |  |  | 9 | Master's degree(gene | 00000001000 |
| B_Q05aKO |  |  | 10 | Doctoral degree | 00000000100 |
| B_Q05aKO |  |  | 96 | Valid skip | 00000000010 |
| B_Q05aNL | 17 | Education - Formal qualification - Level | -1 | Missing | 0000000000000001 |
| B_Q05aNL |  |  | 1 | primary education (i | 0000000000000000 |
| B_Q05aNL |  |  | 2 | sec education,first | 1000000000000000 |
| B_Q05aNL |  |  | 3 | sec education, first | 0100000000000000 |
| B_Q05aNL |  |  | 4 | secondary education, | 0010000000000000 |
| B_Q05aNL |  |  | 5 | secondary education, | 0001000000000000 |
| B_Q05aNL |  |  | 6 | secondary education, | 0000100000000000 |
| B_Q05aNL |  |  | 7 | secondary education, | 0000010000000000 |
| B_Q05aNL |  |  | 8 | secondary education, | 0000001000000000 |
| B_Q05aNL |  |  | 9 | sec education, secon | 0000000100000000 |
| B_Q05aNL |  |  | 10 | secondary education, | 0000000010000000 |
| B_Q05aNL |  |  | 11 | tertiary education, | 0000000001000000 |
| B_Q05aNL |  |  | 12 | tertiary education, | 0000000000100000 |
| B_Q05aNL |  |  | 13 | tertiary education, | 0000000000010000 |
| B_Q05aNL |  |  | 14 | tertiary education, | 0000000000001000 |
| B_Q05aNL |  |  | 15 | tertiary education, | 0000000000000100 |
| B_Q05aNL |  |  | 96 | Valid skip | 0000000000000010 |
| B_Q05aNO | 13 | Education - Formal qualification - Level | -1 | Missing | 000000000001 |
| B_Q05aNO |  |  | 1 | ISCED 1 | 000000000000 |
| B_Q05aNO |  |  | 2 | ISCED 2 | 100000000000 |
| B_Q05aNO |  |  | 3 | ISCED 3C shorter tha | 010000000000 |
| B_Q05aNO |  |  | 4 | ISCED 3C 2 years or | 001000000000 |
| B_Q05aNO |  |  | 5 | ISCED 3A-B | 000100000000 |
| B_Q05aNO |  |  | 6 | ISCED 4C | 000010000000 |
| B_Q05aNO |  |  | 7 | ISCED 4A-B | 000001000000 |
| B_Q05aNO |  |  | 8 | ISCED 5B | 000000100000 |
| B_Q05aNO |  |  | 9 | ISCED 5A, bachelor d | 000000010000 |
| B_Q05aNO |  |  | 10 | ISCED 5A, Master deg | 000000001000 |
| B_Q05aNO |  |  | 11 | ISCED 6 | 000000000100 |
| B_Q05aNO |  |  | 96 | Valid skip | 000000000010 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q05aPL | 11 | Education - Formal qualification - LevelEducation - Formal qualification - Level | -1 | Missing | 0000000001 |
| B_Q05aPL |  |  | 1 | ISCED 1 | 0000000000 |
| B_Q05aPL |  |  | 2 | ISCED 2 | 1000000000 |
| B_Q05aPL |  |  | 3 | ISCED 3C | 0100000000 |
| B_Q05aPL |  |  | 4 | ISCED 3B | 0010000000 |
| B_Q05aPL |  |  | 5 | ISCED 3A | 0001000000 |
| B_Q05aPL |  |  | 6 | ISCED 4 | 0000100000 |
| B_Q05aPL |  |  | 7 | BA, ISCED 5A (I degr | 0000010000 |
| B_Q05aPL |  |  | 8 | MA, ISCED 5A (II deg | 0000001000 |
| B_Q05aPL |  |  | 9 | ISCED 6 | 0000000100 |
| B_Q05aPL |  |  | 96 | Valid skip | 0000000010 |
| B_Q05aRU |  |  | -1 | Missing | 000000001 |
| B_Q05aRU |  |  | 1 | ISCED 1 | 000000000 |
| B_Q05aRU |  |  | 2 | ISCED 2 | 100000000 |
| B_Q05aRU |  |  | 3 | ISCED 3 (without dis | 010000000 |
| B_Q05aRU |  |  | 4 | ISCED 4 (without dis | 001000000 |
| B_Q05aRU |  |  | 5 | ISCED 5B | 000100000 |
| B_Q05aRU |  |  | 6 | ISCED 5A, bachelor d | 000010000 |
| B_Q05aRU |  |  | 7 | ISCED 5A, master deg | 000001000 |
| B_Q05aRU |  |  | 8 | ISCED 6 | 000000100 |
| B_Q05aRU |  |  | 96 | Valid skip | 000000010 |
| B_Q05aSE | 15 | Education - Formal qualification - Level | -1 | Missing | 00000000000001 |
| B_Q05aSE |  |  | 1 | Not stated ok 1-6 | 00000000000000 |
| B_Q05aSE |  |  | 2 | Not stated ok 7-9 | 10000000000000 |
| B_Q05aSE |  |  | 3 | Grundskolekompetens | 01000000000000 |
| B_Q05aSE |  |  | 4 | Gymnasie fackskola y | 00100000000000 |
| B_Q05aSE |  |  | 5 | Gymnasie fackskola y | 00010000000000 |
| B_Q05aSE |  |  | 6 | Gymnasie fackskola y | 00001000000000 |
| B_Q05aSE |  |  | 7 | Vuxenutbildning mots | 00000100000000 |
| B_Q05aSE |  |  | 8 | Vuxenutbildning mots | 00000010000000 |
| B_Q05aSE |  |  | 9 | Eftergymnasial utbil | 00000001000000 |
| B_Q05aSE |  |  | 10 | Eftergymnasial utbil | 00000000100000 |
| B_Q05aSE |  |  | 11 | Eftergymnasial utbil | 00000000010000 |
| B_Q05aSE |  |  | 12 | Eftergymnasial utbil | 00000000001000 |
| B_Q05aSE |  |  | 13 | Forskarutbildning | 00000000000100 |
| B_Q05aSE |  |  | 96 | Valid skip | 00000000000010 |
| B_Q05aSK | 12 | Education - Formal qualification - Level | -1 | Missing | 00000000001 |
| B_Q05aSK |  |  | 1 | Primary school 1-4. | 00000000000 |
| B_Q05aSK |  |  | 2 | Primary school 5.-9. | 10000000000 |
| B_Q05aSK |  |  | 3 | Secondary technical | 01000000000 |
| B_Q05aSK |  |  | 4 | Secondary technical | 00100000000 |
| B_Q05aSK |  |  | 5 | Secondary schools wi | 00010000000 |
| B_Q05aSK |  |  | 6 | Upper secondary scho | 00001000000 |
| B_Q05aSK |  |  | 7 | Pre-tertiary school, | 00000100000 |
| B_Q05aSK |  |  | 8 | Bachelor degree, Gra | 00000010000 |




## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q05bCZ | 12 | KO_Education - Formal qualification - Area of stud | 6 | Science, mathematics | 000010000000 |
| B_Q05bCZ |  |  | 7 | Engineering, manufac | 000001000000 |
| B_Q05bCZ |  |  | 8 | Agriculture and vete | 000000100000 |
| B_Q05bCZ |  |  | 9 | Health | 000000010000 |
| B_Q05bCZ |  |  | 10 | Welfare | 000000001000 |
| B_Q05bCZ |  |  | 11 | Services | 000000000100 |
| B_Q05bCZ |  |  | 96 | Valid skip | 000000000010 |
| B_Q05bKO |  |  | -1 | Missing | 00000000001 |
| B_Q05bKO |  |  | 1 | General programmes | 00000000000 |
| B_Q05bKO |  |  | 2 | Teacher training and | 10000000000 |
| B_Q05bKO |  |  | 3 | Humanities, language | 01000000000 |
| B_Q05bKO |  |  | 4 | Social sciences, bus | 00100000000 |
| B_Q05bKO |  |  | 5 | Science, mathematics | 00010000000 |
| B_Q05bKO |  |  | 6 | Engineering, manufac | 00001000000 |
| B_Q05bKO |  |  | 7 | Agriculture and vete | 00000100000 |
| B_Q05bKO |  |  | 8 | Dental and medicine | 00000010000 |
| B_Q05bKO |  |  | 9 | Health and wellfare | 00000001000 |
| B_Q05bKO |  |  | 10 | Services | 00000000100 |
| B_Q05bKO |  |  | 96 | Valid skip | 00000000010 |
| B_Q05bNL | 13 | Education - Formal qualification - Area of study | -1 | Missing | 00000000001 |
| B_Q05bNL |  |  | 1 | general programmes | 000000000000 |
| B_Q05bNL |  |  | 2 | teacher training, ed | 10000000000 |
| B_Q05bNL |  |  | 3 | humanities, language | 010000000000 |
| B_Q05bNL |  |  | 4 | social sciences, com | 001000000000 |
| B_Q05bNL |  |  | 5 | economy, business, m | 000100000000 |
| B_Q05bNL |  |  | 6 | law, civil service, | 000010000000 |
| B_Q05bNL |  |  | 7 | mathematics, natural | 000001000000 |
| B_Q05bNL |  |  | 8 | technics | 000000100000 |
| B_Q05bNL |  |  | 9 | agriculture, veterin | 000000010000 |
| B_Q05bNL |  |  | 10 | health, welfare, per | 000000001000 |
| B_Q05bNL |  |  | 11 | tourism, horeca, tra | 000000000100 |
| B_Q05bNL |  |  | 96 | Valid skip | 000000000010 |
| B_Q05bUK | 21 | Education - Formal qualification - Area of study | -1 | Missing | 00000000000000000001 |
| B_Q05bUK |  |  | 1 | General programmes | 00000000000000000000 |
| B_Q05bUK |  |  | 2 | Medicine | 10000000000000000000 |
| B_Q05bUK |  |  | 3 | Medical related subj | 01000000000000000000 |
| B_Q05bUK |  |  | 4 | Biological Sciences | 00100000000000000000 |
| B_Q05bUK |  |  | 5 | Agricultural science | 00010000000000000000 |
| B_Q05bUK |  |  | 6 | Physical/Environment | 00001000000000000000 |
| B_Q05bUK |  |  | 7 | Mathematical Science | 00000100000000000000 |
| B_Q05bUK |  |  | 8 | Engineering | 00000010000000000000 |
| B_Q05bUK |  |  | 9 | Technology | 00000001000000000000 |
| B_Q05bUK |  |  | 10 | Architecture and rel | 00000000100000000000 |
| B_Q05bUK |  |  | 11 | Social Sciences (inc | 00000000010000000000 |
| B_Q05bUK |  |  | 12 | Business and Financi | 00000000001000000000 |



## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q11JPX2 | 11 | Education - Formal qualification financial burden | -1 | Missing | 0000000001 |
| B_Q11JPX2 |  |  | 1 | Less than 50,000 yen | 0000000000 |
| B_Q11JPX2 |  |  | 2 | 50,000 to 99,999 yen | 1000000000 |
| B_Q11JPX2 |  |  | 3 | 100,000 to 199,999 y | 0100000000 |
| B_Q11JPX2 |  |  | 4 | 200,000 to 299,999 y | 0010000000 |
| B_Q11JPX2 |  |  | 5 | 300,000 to 499,999 y | 0001000000 |
| B_Q11JPX2 |  |  | 6 | 500,000 to 999,999 y | 0000100000 |
| B_Q11JPX2 |  |  | 7 | 1,000,000 to 1,499,9 | 0000010000 |
| B_Q11JPX2 |  |  | 8 | 1,500,000 to 1,999,9 | 0000001000 |
| B_Q11JPX2 |  |  | 9 | 2,000,000 yen or mor | 0000000100 |
| B_Q11JPX2 |  |  | 96 | Valid skip | 0000000010 |
| B_Q11NLX | 5 | Education - Formal qualification - Initiative part | -1 | Missing | 0001 |
| B_Q11NLX |  |  | 1 | respondent | 0000 |
| B_Q11NLX |  |  | 2 | employer | 1000 |
| B_Q11NLX |  |  | 3 | other | 0100 |
| B_Q11NLX |  |  | 6 | Valid skip | 0010 |
| B_Q13AU | 6 | Activities - Last year - Activity specified (AUS) | -1 | Missing | 00001 |
| B_Q13AU |  |  | 1 | A correspondence or | 00000 |
| B_Q13AU |  |  | 2 | An organised session | 10000 |
| B_Q13AU |  |  | 3 | A seminar or worksho | 01000 |
| B_Q13AU |  |  | 4 | Other kind of course | 00100 |
| B_Q13AU |  |  | 6 | Valid skip | 00010 |
| B_Q14bUSX1 | 5 | Activities - Last year - Activity Participation fo | -1 | Missing | 0001 |
| B_Q14bUSX1 |  |  | 1 | Yes, I participated | 0000 |
| B_Q14bUSX1 |  |  | 2 | Yes, but personal in | 1000 |
| B_Q14bUSX1 |  |  | 3 | No | 0100 |
| B_Q14bUSX1 |  |  | 6 | Valid skip | 0010 |
| B_Q14bUSX2 | 4 | Activities - Last year - Activity Participation ma | -1 | Missing | 001 |
| B_Q14bUSX2 |  |  | 1 | Personal interest | 000 |
| B_Q14bUSX2 |  |  | 2 | Personal interest an | 100 |
| B_Q14bUSX2 |  |  | 6 | Valid skip | 010 |
| B_Q16NLX | 5 | Activities - Last year - Initiative participation | -1 | Missing | 0001 |
| B_Q16NLX |  |  | 1 | respondent | 0000 |
| B_Q16NLX |  |  | 2 | employer | 1000 |
| B_Q16NLX |  |  | 3 | other | 0100 |
| B_Q16NLX |  |  | 6 | Valid skip | 0010 |
| B_Q26aAU | 4 | Activities - Last year - Wanted but didn't start ( | -1 | Missing | 001 |
| B_Q26aAU |  |  | 1 | Yes | 000 |
| B_Q26aAU |  |  | 2 | No | 100 |
| B_Q26aAU |  |  | 6 | Valid skip | 010 |
| B_Q26bJPX | 4 | Activities - ICT skills | -1 | Missing | 001 |
| B_Q26bJPX |  |  | 1 | Yes (Please specify. | 000 |
| B_Q26bJPX |  |  | 2 | No | 100 |
| B_Q26bJPX |  |  | 6 | Valid skip | 010 |
| B_Q26NLX1 | 4 | Activities - Last year - Participation APL | -1 | Missing | 001 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q26NLX1 | 4 | Activites - Class - Class/tutor basic skills | 1 | Yes | 000 |
| B_Q26NLX1 |  |  | 2 | No | 100 |
| B_Q26NLX1 |  |  | 6 | Valid skip | 010 |
| B_Q27aUSX |  |  | -1 | Missing | 001 |
| B_Q27aUSX |  |  | 1 | Yes | 000 |
| B_Q27aUSX |  |  | 2 | No | 100 |
| B_Q27aUSX | 4 | Activites - Class - Class/tutor GED | 6 | Valid skip | 010 |
| B_Q27bUSX |  |  | -1 | Missing | 001 |
| B_Q27bUSX |  |  | 1 | Yes | 000 |
| B_Q27bUSX |  |  | 2 | No | 100 |
| B_Q27bUSX |  |  | 6 | Valid skip | 010 |
| B_Q27cUSX | 4 | Activites - Class - Class/tutor other equivalency | -1 | Missing | 001 |
| B_Q27cUSX |  |  | 1 | Yes | 000 |
| B_Q27cUSX |  |  | 2 | No | 100 |
| B_Q27cUSX |  |  | 6 | Valid skip | 010 |
| B_Q27dUSX | 5 | Activites - Class - Class/tutor main reason | -1 | Missing | 0001 |
| B_Q27dUSX |  |  | 1 | WORK-RELATED | 0000 |
| B_Q27dUSX |  |  | 2 | PERSONAL INTEREST | 1000 |
| B_Q27dUSX |  |  | 3 | BOTH EQUALLY | 0100 |
| B_Q27dUSX |  |  | 6 | Valid skip | 0010 |
| B_Q27eUSXb | 8 | Activites - Class - Class attendence, unit | -1 | Missing | 0000001 |
| B_Q27eUSXb |  |  | 1 | Day | 0000000 |
| B_Q27eUSXb |  |  | 2 | Week | 1000000 |
| B_Q27eUSXb |  |  | 3 | Month | 0100000 |
| B_Q27eUSXb |  |  | 4 | Semester | 0010000 |
| B_Q27eUSXb |  |  | 5 | Quarter | 0001000 |
| B_Q27eUSXb |  |  | 6 | Other specify | 0000100 |
| B_Q27eUSXb |  |  | 96 | Valid skip | 0000010 |
| B_Q29aUSX | 4 | Activites - Apprentice - Was apprentice | -1 | Missing | 001 |
| B_Q29aUSX |  |  | 1 | Yes | 000 |
| B_Q29aUSX |  |  | 2 | No | 100 |
| B_Q29aUSX |  |  | 6 | Valid skip | 010 |
| B_S26bEEX | 7 | Activities - Last year - Wanted but didn't start - | -1 | Missing | 000001 |
| B_S26bEEX |  |  | 1 | I did not have infor | 000000 |
| B_S26bEEX |  |  | 2 | Temporary or chronic | 100000 |
| B_S26bEEX |  |  | 3 | The course was full | 010000 |
| B_S26bEEX |  |  | 4 | The expected benefit | 001000 |
| B_S26bEEX |  |  | 5 | Other | 000100 |
| B_S26bEEX |  |  | 96 | Valid skip | 000010 |
| B_S26bSEX | 4 | Activities - Last year - Wanted but didn't start - | -1 | Missing | 001 |
| B_S26bSEX |  |  | 1 | Not stated or inferr | 000 |
| B_S26bSEX |  |  | 2 | Jag hade inte tid pg | 100 |
| B_S26bSEX |  |  | 6 | Valid skip | 010 |
| C_Q02aAU | 5 | Current status/work history - Last month - Looking | -1 | Missing | 0001 |
| C_Q02aAU |  |  | 1 | Yes, full time work | 0000 |

## PIAAC Contrast Coding used for Conditioning - National Variables



## PIAAC Contrast Coding used for Conditioning - National Variables



## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| C_Q04aUK3 | 4 | Current status/work history - Last month - Ways of | 2 | No | 100 |
| C_Q04aUK3 |  |  | 6 | Valid skip | 010 |
| C_Q04bAU |  |  | -1 | Missing | 001 |
| C_Q04bAU |  |  | 1 | Yes | 000 |
| C_Q04bAU |  |  | 2 | No | 100 |
| C_Q04bAU |  |  | 6 | Valid skip | 010 |
| C_Q04cAU | 4 | Current status/work history - Last month - Ways of | -1 | Missing | 001 |
| C_Q04cAU |  |  | 1 | Yes | 000 |
| C_Q04cAU |  |  | 2 | No | 100 |
| C_Q04cAU |  |  | 6 | Valid skip | 010 |
| C_Q04dSE1 | 4 | Current status/work history - Last month - Ways of | -1 | Missing | 001 |
| C_Q04dSE1 |  |  | 1 | Yes | 000 |
| C_Q04dSE1 |  |  | 2 | No | 100 |
| C_Q04dSE1 |  |  | 6 | Valid skip | 010 |
| C_Q04dSE2 | 4 | Current status/work history - Last month - Ways of | -1 | Missing | 001 |
| C_Q04dSE2 |  |  | 1 | Yes | 000 |
| C_Q04dSE2 |  |  | 2 | No | 100 |
| C_Q04dSE2 |  |  | 6 | Valid skip | 010 |
| C_Q04eAU | 4 | Current status/work history - Last month - Ways of | -1 | Missing | 001 |
| C_Q04eAU |  |  | 1 | Yes | 000 |
| C_Q04eAU |  |  | 2 | No | 100 |
| C_Q04eAU |  |  | 6 | Valid skip | 010 |
| C_Q04eUK2 | 4 | Current status/work history - Last month - Ways of | -1 | Missing | 001 |
| C_Q04eUK2 |  |  | 1 | Yes | 000 |
| C_Q04eUK2 |  |  | 2 | No | 100 |
| C_Q04eUK2 |  |  | 6 | Valid skip | 010 |
| C_Q04fAU | 4 | Current status/work history - Last month - Ways of | -1 | Missing | 001 |
| C_Q04fAU |  |  | 1 | Yes | 000 |
| C_Q04fAU |  |  | 2 | No | 100 |
| C_Q04fAU |  |  | 6 | Valid skip | 010 |
| C_Q04gAU | 7 | Current status/work history - Last month - Ways of | -1 | Missing | 000001 |
| C_Q04gAU |  |  | 1 | Advertised or tender | 000000 |
| C_Q04gAU |  |  | 2 | Contacted friends/re | 100000 |
| C_Q04gAU |  |  | 3 | Other | 010000 |
| C_Q04gAU |  |  | 4 | Only looked in newsp | 001000 |
| C_Q04gAU |  |  | 5 | None of these | 000100 |
| C_Q04gAU |  |  | 6 | Valid skip | 000010 |
| C_Q04gIT1 | 4 | Current status/work history - Last month - Ways of | -1 | Missing | 001 |
| C_Q04gIT1 |  |  | 1 | Yes | 000 |
| C_Q04gIT1 |  |  | 2 | No | 100 |
| C_Q04gIT1 |  |  | 6 | Valid skip | 010 |
| C_Q04gIT2 | 4 | Current status/work history - Last month - Ways of | -1 | Missing | 001 |
| C_Q04gIT2 |  |  | 1 | Yes | 000 |
| C_Q04gIT2 |  |  | 2 | No | 100 |
| C_Q04gIT2 |  |  | 6 | Valid skip | 010 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| C_Q04iBEX1 | 4444 | Current status/work history - Last month - Ways ofCurrent status/work history - Last month - Ways of | -1 | Missing | 001 |
| C_Q04iBEX1 |  |  | 1 | Yes | 000 |
| C_Q04iBEX1 |  |  | 2 | No | 100 |
| C_Q04iBEX1 |  |  | 6 | Valid skip | 010 |
| C_Q04iBEX2 |  |  | -1 | Missing | 001 |
| C_Q04iBEX2 |  |  | 1 | Yes | 000 |
| C_Q04iBEX2 |  |  | 2 | No | 100 |
| C_Q04iBEX2 |  |  | 6 | Valid skip | 010 |
| C_Q04iEE |  | Current status/work history - Last month - Ways of | -1 | Missing | 001 |
| C_Q04iEE | 4 |  | 1 | Yes | 000 |
| C_Q04iEE |  |  | 2 | No | 100 |
| C_Q04iEE |  |  | 6 | Valid skip | 010 |
| C_Q04iJPX | 4 | Current status/work history - Last month - Ways of | -1 | Missing | 001 |
| C_Q04iJPX |  |  | 1 | Yes | 000 |
| C_Q04iJPX |  |  | 2 | No | 100 |
| C_Q04iJPX |  |  | 6 | Valid skip | 010 |
| C_Q04iSEX | 4 | Current status/work history - Last month - Ways of | -1 | Missing | 001 |
| C_Q04iSEX |  |  | 1 | Yes | 000 |
| C_Q04iSEX |  |  | 2 | No | 100 |
| C_Q04iSEX |  |  | 6 | Valid skip | 010 |
| C_Q05AU1X | 5 | Current status/work history - Not looking for work | -1 | Missing | 0001 |
| C_Q05AU1X |  |  | 1 | Yes | 0000 |
| C_Q05AU1X |  |  | 2 | Maybe/It depends | 1000 |
| C_Q05AU1X |  |  | 3 | No | 0100 |
| C_Q05AU1X |  |  | 6 | Valid skip | 0010 |
| C_Q05AU3X | 5 | Current status/work history - If suitable childcar | -1 | Missing | 0001 |
| C_Q05AU3X |  |  | 1 | Yes | 0000 |
| C_Q05AU3X |  |  | 2 | Maybe/It depends | 1000 |
| C_Q05AU3X |  |  | 3 | No | 0100 |
| C_Q05AU3X |  |  | 6 | Valid skip | 0010 |
| C_Q05AU4X | 4 | Current status/work history - Childcare available, | -1 | Missing | 001 |
| C_Q05AU4X |  |  | 1 | Yes | 000 |
| C_Q05AU4X |  |  | 2 | No | 100 |
| C_Q05AU4X |  |  | 6 | Valid skip | 010 |
| C_Q05AUX | 4 | Current status/work history - Ability to start job | -1 | Missing | 001 |
| C_Q05AUX |  |  | 1 | Yes | 000 |
| C_Q05AUX |  |  | 2 | No | 100 |
| C_Q05AUX |  |  | 6 | Valid skip | 010 |
| C_Q07CZ | 11 | Current status/work history - Subjective status | -1 | Missing | 0000000001 |
| C_Q07CZ |  |  | 1 | Full-time employed ( | 0000000000 |
| C_Q07CZ |  |  | 2 | Part-time employed ( | 1000000000 |
| C_Q07CZ |  |  | 3 | Unemployed | 0100000000 |
| C_Q07CZ |  |  | 4 | Pupil, student | 0010000000 |
| C_Q07CZ |  |  | 5 | Apprentice, internsh | 0001000000 |
| C_Q07CZ |  |  | 6 | In retirement or ear | 0000100000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| C_Q07CZ | 11 | Current status/work history - Subjective status | 7 | Permanently disabled | 0000010000 |
| C_Q07CZ |  |  | 8 | Fulfilling domestic | 0000001000 |
| C_Q07CZ |  |  | 9 | Other | 0000000100 |
| C_Q07CZ |  |  | 96 | Valid skip | 0000000010 |
| C_Q07IE |  |  | -1 | Missing | 0000000001 |
| C_Q07IE |  |  | 1 | Full-time employed ( | 0000000000 |
| C_Q07IE |  |  | 2 | Part-time employed ( | 1000000000 |
| C_Q07IE |  |  | 3 | Unemployed | 0100000000 |
| C_Q07IE |  |  | 4 | Pupil, student | 0010000000 |
| C_Q07IE |  |  | 5 | Apprentice, internsh | 0001000000 |
| C_Q07IE |  |  | 6 | In retirement or ear | 0000100000 |
| C_Q07IE |  |  | 7 | Permanently disabled | 0000010000 |
| C_Q07IE |  |  | 8 | Fulfilling domestic | 0000001000 |
| C_Q07IE |  |  | 9 | Other | 0000000100 |
| C_Q07IE |  |  | 96 | Valid skip | 0000000010 |
| C_Q07JP | 11 | Current status/work history - Subjective status | -1 | Missing | 0000000001 |
| C_Q07JP |  |  | 1 | Full-time employed ( | 0000000000 |
| C_Q07JP |  |  | 2 | Part-time employed ( | 1000000000 |
| C_Q07JP |  |  | 3 | Unemployed | 0100000000 |
| C_Q07JP |  |  | 4 | Pupil, student | 0010000000 |
| C_Q07JP |  |  | 5 | Apprentice, internsh | 0001000000 |
| C_Q07JP |  |  | 6 | In retirement or ear | 0000100000 |
| C_Q07JP |  |  | 7 | Permanently disabled | 0000010000 |
| C_Q07JP |  |  | 8 | Fulfilling domestic | 0000001000 |
| C_Q07JP |  |  | 9 | Other | 0000000100 |
| C_Q07JP |  |  | 96 | Valid skip | 0000000010 |
| C_Q07NL | 11 | Current status/work history - Subjective status | -1 | Missing | 0000000001 |
| C_Q07NL |  |  | 1 | Full-time employed ( | 0000000000 |
| C_Q07NL |  |  | 2 | Part-time employed ( | 1000000000 |
| C_Q07NL |  |  | 3 | Unemployed | 0100000000 |
| C_Q07NL |  |  | 4 | Pupil, student | 0010000000 |
| C_Q07NL |  |  | 5 | Apprentice, internsh | 0001000000 |
| C_Q07NL |  |  | 6 | In retirement or ear | 0000100000 |
| C_Q07NL |  |  | 7 | Permanently disabled | 0000010000 |
| C_Q07NL |  |  | 8 | Fulfilling domestic | 0000001000 |
| C_Q07NL |  |  | 9 | Other | 0000000100 |
| C_Q07NL |  |  | 96 | Valid skip | 0000000010 |
| C_Q07NLX | 4 | Current status/work history - Combination working | -1 | Missing | 001 |
| C_Q07NLX |  |  | 1 | Yes | 000 |
| C_Q07NLX |  |  | 2 | No | 100 |
| C_Q07NLX |  |  | 6 | Valid skip | 010 |
| C_Q08bca2 | 4 | Current status/work history - Ever worked at a job | -1 | Missing | 001 |
| C_Q08bca2 |  |  | 1 | Yes | 000 |
| C_Q08bca2 |  |  | 2 | No | 100 |
| C_Q08bca2 |  |  | 6 | Valid skip | 010 |

PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| C_Q10aAU | 9 | Current status/work history - Last 5 years - How m | -1 | Missing | 00000001 |
| C_Q10aAU |  |  | 1 | 1 | 00000000 |
| C_Q10aAU |  |  | 2 | 2 | 10000000 |
| C_Q10aAU |  |  | 3 | 3 | 01000000 |
| C_Q10aAU |  |  | 4 | 4 | 00100000 |
| C_Q10aAU |  |  | 5 | 5 | 00010000 |
| C_Q10aAU |  |  | 6 | 6 | 00001000 |
| C_Q10aAU |  |  | 7 | 7 or more | 00000100 |
| C_Q10aAU |  |  | 96 | Valid skip | 00000010 |
| C_Q10bCZ | 4 | Unemployment > 3 months | -1 | Missing | 001 |
| C_Q10bCZ |  |  | 1 | Yes | 000 |
| C_Q10bCZ |  |  | 2 | No | 100 |
| C_Q10bCZ |  |  | 6 | Valid skip | 010 |
| C_Q11dkx1 | 5 | new tasks in a job? | -1 | Missing | 0001 |
| C_Q11dkx1 |  |  | 1 | Yes | 0000 |
| C_Q11dkx1 |  |  | 2 | No | 1000 |
| C_Q11dkx1 |  |  | 3 | Never participated i | 0100 |
| C_Q11dkx1 |  |  | 96 | Valid skip | 0010 |
| C_Q11dkx2 | 4 | more responsibility in a job? | -1 | Missing | 001 |
| C_Q11dkx2 |  |  | 1 | Yes | 000 |
| C_Q11dkx2 |  |  | 2 | No | 100 |
| C_Q11dkx2 |  |  | 96 | Valid skip | 010 |
| C_Q11dkx3 | 4 | higher income? | -1 | Missing | 001 |
| C_Q11dkx3 |  |  | 1 | Yes | 000 |
| C_Q11dkx3 |  |  | 2 | No | 100 |
| C_Q11dkx3 |  |  | 96 | Valid skip | 010 |
| C_Q11dkx4 | 4 | better chances to stay in a job? | -1 | Missing | 001 |
| C_Q11dkx4 |  |  | 1 | Yes | 000 |
| C_Q11dkx4 |  |  | 2 | No | 100 |
| C_Q11dkx4 |  |  | 96 | Valid skip | 010 |
| C_Q11dkx5 | 4 | better chances to get a new job? | -1 | Missing | 001 |
| C_Q11dkx5 |  |  | 1 | Yes | 000 |
| C_Q11dkx5 |  |  | 2 | No | 100 |
| C_Q11dkx5 |  |  | 96 | Valid skip | 010 |
| C_S07DEX | 5 | Participation in part time retirement scheme | -1 | Missing | 0001 |
| C_S07DEX |  |  | 1 | Yes, still actively | 0000 |
| C_S07DEX |  |  | 2 | Yes, not actively wo | 1000 |
| C_S07DEX |  |  | 3 | No | 0100 |
| C_S07DEX |  |  | 6 | Valid skip | 0010 |
| Childunder13AU | 5 | Number of children under 13 | -1 | Missing | 0001 |
| Childunder13AU |  |  | 1 | One child under 13 | 0000 |
| Childunder13AU |  |  | 2 | Two or more children | 1000 |
| Childunder13AU |  |  | 3 | No children under 13 | 0100 |
| Childunder13AU |  |  | 6 | Valid skip | 0010 |
| CNT_BRTH_DEX | 14 | Country of birth - Respondent | -1 | Missing | 0000000000001 |

## PIAAC Contrast Coding used for Conditioning - National Variables




## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| D_Q01aNOX | 4 | Current work - Job title - Register verification | 6 | Valid skip | 010 |
| D_Q01aSEX |  |  | -1 | Missing | 001 |
| D_Q01aSEX |  |  | 1 | Yes | 000 |
| D_Q01aSEX |  |  | 2 | No | 100 |
| D_Q01aSEX |  |  | 6 | Valid skip | 010 |
| D_Q02aNOX | 4 | Current work - Kind of business, industry or servi | -1 | Missing | 001 |
| D_Q02aNOX |  |  | 1 | Yes | 000 |
| D_Q02aNOX |  |  | 2 | No | 100 |
| D_Q02aNOX |  |  | 6 | Valid skip | 010 |
| D_Q02aSEX1 | 4 | Current work - Verification | -1 | Missing | 001 |
| D_Q02aSEX1 |  |  | 1 | Yes | 000 |
| D_Q02aSEX1 |  |  | 2 | No | 100 |
| D_Q02aSEX1 |  |  | 6 | Valid skip | 010 |
| D_Q03US | 5 | Current work - Economic sector | -1 | Missing | 0001 |
| D_Q03US |  |  | 1 | The private sector ( | 0000 |
| D_Q03US |  |  | 2 | The public sector (f | 1000 |
| D_Q03US |  |  | 3 | A non-profit organis | 0100 |
| D_Q03US |  |  | 6 | Valid skip | 0010 |
| D_Q04AT1 | 8 | Current work - Occupational status - NATIONAL | -1 | Missing | 0000001 |
| D_Q04AT1 |  |  | 1 | white-collar worker | 0000000 |
| D_Q04AT1 |  |  | 2 | blue-collar worker | 1000000 |
| D_Q04AT1 |  |  | 3 | magistrate | 0100000 |
| D_Q04AT1 |  |  | 4 | Contract agent | 0010000 |
| D_Q04AT1 |  |  | 5 | Freelancer | 0001000 |
| D_Q04AT1 |  |  | 6 | self-employed | 0000100 |
| D_Q04AT1 |  |  | 96 | Valid skip | 0000010 |
| D_Q04AT2 | 6 | Current work - Degree of difficulty of the job-N | -1 | Missing | 00001 |
| D_Q04AT2 |  |  | 1 | easy tasks | 00000 |
| D_Q04AT2 |  |  | 2 | average tasks | 10000 |
| D_Q04AT2 |  |  | 3 | higher tasks | 01000 |
| D_Q04AT2 |  |  | 4 | highly skilled tasks | 00100 |
| D_Q04AT2 |  |  | 6 | Valid skip | 00010 |
| D_Q04AU | 5 | Current work - Work for Employer or in own busines | -1 | Missing | 0001 |
| D_Q04AU |  |  | 1 | Employer | 0000 |
| D_Q04AU |  |  | 2 | Own business | 1000 |
| D_Q04AU |  |  | 3 | Other/Uncertain | 0100 |
| D_Q04AU |  |  | 6 | Valid skip | 0010 |
| D_Q04AU1 | 4 | Current work - Form of payment - Wage or Salary | -1 | Missing | 001 |
| D_Q04AU1 |  |  | 1 | Wage/Salary | 000 |
| D_Q04AU1 |  |  | 2 | Other/Uncertain | 100 |
| D_Q04AU1 |  |  | 6 | Valid skip | 010 |
| D_Q04AU2 | 11 | Current work - Payment or working arrangements | -1 | Missing | 0000000001 |
| D_Q04AU2 |  |  | 1 | Contractor/Subcontra | 0000000000 |
| D_Q04AU2 |  |  | 2 | Own business/Partner | 1000000000 |
| D_Q04AU2 |  |  | 3 | Commission only | 0100000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables




| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| D_Q09FR | 9 | Current work - Type of contract | 7 | Other. Specify. | 00000100 |
| D_Q09FR |  |  | 96 | Valid skip | 00000010 |
| D_Q091T |  |  | -1 | Missing | 00000001 |
| D_Q091T |  |  | 1 | An indefinite contra | 00000000 |
| D_Q091T |  |  | 2 | A fixed term contrac | 10000000 |
| D_Q091T |  |  | 3 | A temporary employme | 01000000 |
| D_Q091T |  |  | 4 | An apprenticeship or | 00100000 |
| D_Q091T |  |  | 5 | Project-based contra | 00010000 |
| D_Q091T |  |  | 6 | No contract | 00001000 |
| D_Q091T |  |  | 7 | Other | 00000100 |
| D_Q091T |  |  | 96 | Valid skip | 00000010 |
| D_Q09JP | 12 | Current work - Type of contract | -1 | Missing | 00000000001 |
| D_Q09JP |  |  | 1 | Regular staff(indefi | 00000000000 |
| D_Q09JP |  |  | 2 | Regular staff(fixted | 10000000000 |
| D_Q09JP |  |  | 3 | A contract employee | 01000000000 |
| D_Q09JP |  |  | 4 | A part-time worker(i | 00100000000 |
| D_Q09JP |  |  | 5 | A part-time worker(f | 00010000000 |
| D_Q09JP |  |  | 6 | A temporary employme | 00001000000 |
| D_Q09JP |  |  | 7 | An entrusted employe | 00000100000 |
| D_Q09JP |  |  | 8 | An apprenticeship | 00000010000 |
| D_Q09JP |  |  | 9 | No contract | 00000001000 |
| D_Q09JP |  |  | 10 | Other | 00000000100 |
| D_Q09JP |  |  | 96 | Valid skip | 00000000010 |
| D_Q09KOX1 | 5 | KO_Current work - Type of contract | -1 | Missing | 0001 |
| D_Q09KOX1 |  |  | 1 | A permanent worker | 0000 |
| D_Q09KOX1 |  |  | 2 | A temporary worker | 1000 |
| D_Q09KOX1 |  |  | 3 | A daily worker | 0100 |
| D_Q09KOX1 |  |  | 96 | Valid skip | 0010 |
| D_Q09KOX2 | 4 | KO_Current work - regular_irregural | -1 | Missing | 001 |
| D_Q09KOX2 |  |  | 1 | regular | 000 |
| D_Q09KOX2 |  |  | 2 | irregular | 100 |
| D_Q09KOX2 |  |  | 96 | Valid skip | 010 |
| D_Q09RU | 7 | Current work - Type of contract | -1 | Missing | 000001 |
| D_Q09RU |  |  | 1 | An indefinite contra | 000000 |
| D_Q09RU |  |  | 2 | A fixed term contrac | 100000 |
| D_Q09RU |  |  | 3 | An apprenticeship or | 010000 |
| D_Q09RU |  |  | 4 | No contract | 001000 |
| D_Q09RU |  |  | 5 | Other | 000100 |
| D_Q09RU |  |  | 96 | Valid skip | 000010 |
| D_Q09SE | 10 | Current work - Type of contract | -1 | Missing | 000000001 |
| D_Q09SE |  |  | 1 | Fast/tillsvidare | 000000000 |
| D_Q09SE |  |  | 2 | Fast/tillsvidare II | 100000000 |
| D_Q09SE |  |  | 3 | Fast/tillsvidare II | 010000000 |
| D_Q09SE |  |  | 4 | Fast/tillsvidare II | 001000000 |
| D_Q09SE |  |  | 5 | Kallas vid behov | 000100000 |

PIAAC Contrast Coding used for Conditioning - National Variables


PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| D_Q12aBE | 13 | Current work - Requirements - Education level | -1 | Missing | 000000000001 |
| D_Q12aBE |  |  | 1 | No formal qualificat | 000000000000 |
| D_Q12aBE |  |  | 2 | ISCED 1 | 100000000000 |
| D_Q12aBE |  |  | 3 | ISCED 2 | 010000000000 |
| D_Q12aBE |  |  | 4 | ISCED 3C 2 years or | 001000000000 |
| D_Q12aBE |  |  | 5 | ISCED 3A-B | 000100000000 |
| D_Q12aBE |  |  | 6 | ISCED 3 (without dis | 000010000000 |
| D_Q12aBE |  |  | 7 | ISCED 4A-B | 000001000000 |
| D_Q12aBE |  |  | 8 | ISCED 5B | 000000100000 |
| D_Q12aBE |  |  | 9 | ISCED 5A, bachelor d | 000000010000 |
| D_Q12aBE |  |  | 10 | ISCED 5A, master deg | 000000001000 |
| D_Q12aBE |  |  | 11 | ISCED 6 | 000000000100 |
| D_Q12aBE |  |  | 96 | Valid skip | 000000000010 |
| D_Q12aca |  |  | -1 | Missing | 00000000000001 |
| D_Q12aca |  |  | 1 | No formal education | 00000000000000 |
| D_Q12aca |  |  | 2 | Grade 6 | 10000000000000 |
| D_Q12aca |  |  | 3 | Less than high schoo | 01000000000000 |
| D_Q12aca |  |  | 4 | High school diploma | 00100000000000 |
| D_Q12aca |  |  | 5 | Trade/vocational cer | 00010000000000 |
| D_Q12aca |  |  | 6 | Apprenticeship certi | 00001000000000 |
| D_Q12aca |  |  | 7 | Non-university certi | 00000100000000 |
| D_Q12aca |  |  | 8 | University certifica | 00000010000000 |
| D_Q12aca |  |  | 9 | Bachelor's degree | 00000001000000 |
| D_Q12aca |  |  | 10 | University certifica | 00000000100000 |
| D_Q12aca |  |  | 11 | First professional d | 00000000010000 |
| D_Q12aca |  |  | 12 | Master's | 00000000001000 |
| D_Q12aca |  |  | 13 | Ph.D. | 00000000000100 |
| D_Q12aca |  |  | 96 | Valid skip | 00000000000010 |
| D_Q12aCY | 10 | Current work - Requirements - Education level | -1 | Missing | 000000001 |
| D_Q12aCY |  |  | 1 | I never went to scho | 000000000 |
| D_Q12aCY |  |  | 2 | Primary school | 100000000 |
| D_Q12aCY |  |  | 3 | Public/Private Secon | 010000000 |
| D_Q12aCY |  |  | 4 | High School/Vocation | 001000000 |
| D_Q12aCY |  |  | 5 | Non-Univ. Degree/Dip | 000100000 |
| D_Q12aCY |  |  | 6 | Undergraduate degree | 000010000 |
| D_Q12aCY |  |  | 7 | Postgraduate degree, | 000001000 |
| D_Q12aCY |  |  | 8 | Doctorate | 000000100 |
| D_Q12aCY |  |  | 96 | Valid skip | 000000010 |
| D_Q12aCZ | 15 | Current work - Requirements - Education level | -1 | Missing | 00000000000001 |
| D_Q12aCZ |  |  | 1 | No formal education | 00000000000000 |
| D_Q12aCZ |  |  | 2 | First level of basic | 10000000000000 |
| D_Q12aCZ |  |  | 3 | basic ISCED 2 | 01000000000000 |
| D_Q12aCZ |  |  | 4 | vocational without m | 00100000000000 |
| D_Q12aCZ |  |  | 5 | vocational without m | 00010000000000 |
| D_Q12aCZ |  |  | 6 | ISCED 3A vocational | 00001000000000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| D_Q12aCZ | 13 | Current work - Requirements - Professional qualifi | 7 | ISCED 3A technical w | 00000100000000 |
| D_Q12aCZ |  |  | 8 | ISCED 3A general wit | 00000010000000 |
| D_Q12aCZ |  |  | 9 | ISCED 4 follow-up co | 00000001000000 |
| D_Q12aCZ |  |  | 10 | ISCED 5B higher prof | 00000000100000 |
| D_Q12aCZ |  |  | 11 | ISCED 5A, bachelor | 00000000010000 |
| D_Q12aCZ |  |  | 12 | ISCED 5A, master | 00000000001000 |
| D_Q12aCZ |  |  | 13 | ISCED 6, post gradua | 00000000000100 |
| D_Q12aCZ |  |  | 96 | Valid skip | 00000000000010 |
| D_Q12aDE1 |  |  | -1 | Missing | 000000000001 |
| D_Q12aDE1 |  |  | 1 | No professional qual | 000000000000 |
| D_Q12aDE1 |  |  | 2 | Apprenticeship (Lehr | 100000000000 |
| D_Q12aDE1 |  |  | 3 | Basic vocational tra | 010000000000 |
| D_Q12aDE1 |  |  | 4 | Training at Fachschu | 001000000000 |
| D_Q12aDE1 |  |  | 5 | Berufsakademie, Fach | 000100000000 |
| D_Q12aDE1 |  |  | 6 | Bachelor at Fachhoch | 000010000000 |
| D_Q12aDE1 |  |  | 7 | Master/Diplom at Fac | 000001000000 |
| D_Q12aDE1 |  |  | 8 | Bachelor at universi | 000000100000 |
| D_Q12aDE1 |  |  | 9 | Master/Diplom at uni | 000000010000 |
| D_Q12aDE1 |  |  | 10 | Doctorate | 000000001000 |
| D_Q12aDE1 |  |  | 11 | Another professional | 000000000100 |
| D_Q12aDE1 |  |  | 96 | Valid skip | 000000000010 |
| D_Q12aDE2 | 7 | Current work - Requirements - School qualification | -1 | Missing | 000001 |
| D_Q12aDE2 |  |  | 1 | Hauptschulabschluss | 000000 |
| D_Q12aDE2 |  |  | 2 | Realschulabschluss ( | 100000 |
| D_Q12aDE2 |  |  | 3 | Fachhochschulreife, | 010000 |
| D_Q12aDE2 |  |  | 4 | Abitur/EOS (General | 001000 |
| D_Q12aDE2 |  |  | 5 | Another school leavi | 000100 |
| D_Q12aDE2 |  |  | 6 | Valid skip | 000010 |
| D_Q12aDK | 16 | Current work - Requirements - Education level | -1 | Missing | 000000000000001 |
| D_Q12aDK |  |  | 1 | No formal education | 000000000000000 |
| D_Q12aDK |  |  | 2 | Primary school, grad | 100000000000000 |
| D_Q12aDK |  |  | 3 | Lower secondary, gra | 010000000000000 |
| D_Q12aDK |  |  | 4 | Upper secondary voca | 001000000000000 |
| D_Q12aDK |  |  | 5 | Upper secondary voca | 000100000000000 |
| D_Q12aDK |  |  | 6 | Upper secondary gene | 000010000000000 |
| D_Q12aDK |  |  | 7 | Upper secondary unde | 000001000000000 |
| D_Q12aDK |  |  | 8 | Post secondary short | 000000100000000 |
| D_Q12aDK |  |  | 9 | Post secondary entra | 000000010000000 |
| D_Q12aDK |  |  | 10 | Post secondary non t | 000000001000000 |
| D_Q12aDK |  |  | 11 | Tertiary not researc | 000000000100000 |
| D_Q12aDK |  |  | 12 | Bachelor degree | 000000000010000 |
| D_Q12aDK |  |  | 13 | Master degree | 000000000001000 |
| D_Q12aDK |  |  | 14 | Ph.d or otther resea | 000000000000100 |
| D_Q12aDK |  |  | 96 | Valid skip | 000000000000010 |
| D_Q12aEE | 20 | Current work - Requirements - Education level | -1 | Missing | 0000000000000000001 |

## PIAAC Contrast Coding used for Conditioning - National Variables



PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| D_Q12aFR | 16 | Current work - Requirements - Education level | -1 | Missing | 000000000000001 |
| D_Q12aFR |  |  | 1 | No formal qualificat | 000000000000000 |
| D_Q12aFR |  |  | 2 | ISCED 1 | 100000000000000 |
| D_Q12aFR |  |  | 3 | ISCED 2 | 010000000000000 |
| D_Q12aFR |  |  | 4 | ISCED 3C shorter tha | 001000000000000 |
| D_Q12aFR |  |  | 5 | ISCED 3C 2 years or | 000100000000000 |
| D_Q12aFR |  |  | 6 | ISCED 3A-B | 000010000000000 |
| D_Q12aFR |  |  | 7 | ISCED 3 (without dis | 000001000000000 |
| D_Q12aFR |  |  | 8 | ISCED 4C | 000000100000000 |
| D_Q12aFR |  |  | 9 | ISCED 4A-B | 000000010000000 |
| D_Q12aFR |  |  | 10 | ISCED 4 (without dis | 000000001000000 |
| D_Q12aFR |  |  | 11 | ISCED 5B | 000000000100000 |
| D_Q12aFR |  |  | 12 | ISCED 5A, bachelor d | 000000000010000 |
| D_Q12aFR |  |  | 13 | ISCED 5A, master deg | 000000000001000 |
| D_Q12aFR |  |  | 14 | ISCED 6 | 000000000000100 |
| D_Q12aFR |  |  | 96 | Valid skip | 000000000000010 |
| D_Q12alE |  |  | -1 | Missing | 00000000000001 |
| D_Q12aIE |  |  | 1 | No formal education | 00000000000000 |
| D_Q12aIE |  |  | 2 | Primary education (0 | 10000000000000 |
| D_Q12alE |  |  | 3 | Secondary 1 (Junior/ | 01000000000000 |
| D_Q12alE |  |  | 4 | Transition year prog | 00100000000000 |
| D_Q12alE |  |  | 5 | Secondary 2 (Leaving | 00010000000000 |
| D_Q12alE |  |  | 6 | Technical or Vocatio | 00001000000000 |
| D_Q12alE |  |  | 7 | Advanced Certificate | 00000100000000 |
| D_Q12alE |  |  | 8 | Higher Certificate ( | 00000010000000 |
| D_Q12alE |  |  | 9 | Diploma (e.g. Nation | 00000001000000 |
| D_Q12alE |  |  | 10 | Honours Bachelor Deg | 00000000100000 |
| D_Q12alE |  |  | 11 | Professional (Honour | 00000000010000 |
| D_Q12alE |  |  | 12 | Post-Graduate (e.g. | 00000000001000 |
| D_Q12alE |  |  | 13 | Doctorate or higher | 00000000000100 |
| D_Q12aIE |  |  | 96 | Valid skip | 00000000000010 |
| D_Q12alT | 13 | Current work - Requirements - Education level | -1 | Missing | 000000000001 |
| D_Q12aIT |  |  | 1 | Non formal education | 000000000000 |
| D_Q12aIT |  |  | 2 | Primary education or | 100000000000 |
| D_Q12aIT |  |  | 3 | Lower secondary or s | 010000000000 |
| D_Q12alT |  |  | 4 | Professional qualifi | 001000000000 |
| D_Q12alT |  |  | 5 | Upper secondary educ | 000100000000 |
| D_Q12alT |  |  | 6 | Post-secondary non t | 000010000000 |
| D_Q12alT |  |  | 7 | Music Conservatory D | 000001000000 |
| D_Q12alT |  |  | 8 | First stage of terti | 000000100000 |
| D_Q12aIT |  |  | 9 | First or second leve | 000000010000 |
| D_Q12alT |  |  | 10 | Specialisation degre | 000000001000 |
| D_Q12alT |  |  | 11 | Research Doctoral de | 000000000100 |
| D_Q12alT |  |  | 96 | Valid skip | 000000000010 |
| D_Q12aJP | 16 | Current work - Requirements - Education level | -1 | Missing | 000000000000001 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| D_Q12aJP | 13 | KO_Current work - Requirements - Education level | 1 | No formal school edu | 000000000000000 |
| D_Q12aJP |  |  | 2 | Elementary school | 100000000000000 |
| D_Q12aJP |  |  | 3 | Lower secondary scho | 010000000000000 |
| D_Q12aJP |  |  | 4 | Short-term course of | 001000000000000 |
| D_Q12aJP |  |  | 5 | Specialized course o | 000100000000000 |
| D_Q12aJP |  |  | 6 | General/integrated c | 000010000000000 |
| D_Q12aJP |  |  | 7 | Passed upper seconda | 000001000000000 |
| D_Q12aJP |  |  | 8 | Advanced course of u | 000000100000000 |
| D_Q12aJP |  |  | 9 | Regular/advanced cou | 000000010000000 |
| D_Q12aJP |  |  | 10 | Undergraducate progr | 000000001000000 |
| D_Q12aJP |  |  | 11 | Master's programs/Do | 000000000100000 |
| D_Q12aJP |  |  | 12 | Completed all work o | 000000000010000 |
| D_Q12aJP |  |  | 13 | Doctoral programs of | 000000000001000 |
| D_Q12aJP |  |  | 14 | Specialized training | 000000000000100 |
| D_Q12aJP |  |  | 96 | Valid skip | 000000000000010 |
| D_Q12aKO |  |  | -1 | Missing | 000000000001 |
| D_Q12aKO |  |  | 1 | no formal education | 000000000000 |
| D_Q12aKO |  |  | 2 | Elementary school | 100000000000 |
| D_Q12aKO |  |  | 3 | Middle school | 010000000000 |
| D_Q12aKO |  |  | 4 | High school(college | 001000000000 |
| D_Q12aKO |  |  | 5 | High school(vocation | 000100000000 |
| D_Q12aKO |  |  | 6 | 2-3 year college | 000010000000 |
| D_Q12aKO |  |  | 7 | 4 year college(speci | 000001000000 |
| D_Q12aKO |  |  | 8 | 4 year college(gener | 000000100000 |
| D_Q12aKO |  |  | 9 | Master's degree(spec | 000000010000 |
| D_Q12aKO |  |  | 10 | Master's degree(gene | 000000001000 |
| D_Q12aKO |  |  | 11 | Doctoral degree | 000000000100 |
| D_Q12aKO |  |  | 96 | Valid skip | 000000000010 |
| D_Q12aNL | 18 | Current work - Requirements - Education level | -1 | Missing | 00000000000000001 |
| D_Q12aNL |  |  | 1 | no formal qualificat | 00000000000000000 |
| D_Q12aNL |  |  | 2 | primary education (i | 10000000000000000 |
| D_Q12aNL |  |  | 3 | sec education, first | 01000000000000000 |
| D_Q12aNL |  |  | 4 | sec education, first | 00100000000000000 |
| D_Q12aNL |  |  | 5 | secondary education, | 00010000000000000 |
| D_Q12aNL |  |  | 6 | secondary education, | 00001000000000000 |
| D_Q12aNL |  |  | 7 | secondary education, | 00000100000000000 |
| D_Q12aNL |  |  | 8 | secondary education, | 00000010000000000 |
| D_Q12aNL |  |  | 9 | secondary education, | 00000001000000000 |
| D_Q12aNL |  |  | 10 | secondary education, | 00000000100000000 |
| D_Q12aNL |  |  | 11 | secondary education, | 00000000010000000 |
| D_Q12aNL |  |  | 12 | tertiary education, | 00000000001000000 |
| D_Q12aNL |  |  | 13 | tertiary education, | 00000000000100000 |
| D_Q12aNL |  |  | 14 | tertiary education, | 00000000000010000 |
| D_Q12aNL |  |  | 15 | tertiary education, | 00000000000001000 |
| D_Q12aNL |  |  | 16 | tertiary education, | 00000000000000100 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| D_Q12aNL | 13 | Current work - Requirements - Education level | 96 | Valid skip | 00000000000000010 |
| D_Q12aNO |  |  | -1 | Missing | 000000000001 |
| D_Q12aNO |  |  | 1 | No formal qualificat | 000000000000 |
| D_Q12aNO |  |  | 2 | ISCED 1 | 100000000000 |
| D_Q12aNO |  |  | 3 | ISCED 2 | 010000000000 |
| D_Q12aNO |  |  | 4 | ISCED 3C shorter tha | 001000000000 |
| D_Q12aNO |  |  | 5 | ISCED 3C 2 years or | 000100000000 |
| D_Q12aNO |  |  | 6 | ISCED 3A-B | 000010000000 |
| D_Q12aNO |  |  | 7 | ISCED 4C | 000001000000 |
| D_Q12aNO |  |  | 8 | ISCED 4A-B | 000000100000 |
| D_Q12aNO |  |  | 9 | ISCED 5B | 000000010000 |
| D_Q12aNO |  |  | 10 | ISCED 5A, bachelor d | 000000001000 |
| D_Q12aNO |  |  | 11 | ISCED 5A, Master deg | 000000000100 |
| D_Q12aNO |  |  | 12 | ISCED 6 | 000000000010 |
| D_Q12aPL | 12 | Current work - Requirements - Education level | -1 | Missing | 00000000001 |
| D_Q12aPL |  |  | 1 | No formal qualificat | 00000000000 |
| D_Q12aPL |  |  | 2 | ISCED 1 | 10000000000 |
| D_Q12aPL |  |  | 3 | ISCED 2 | 01000000000 |
| D_Q12aPL |  |  | 4 | ISCED 3C | 00100000000 |
| D_Q12aPL |  |  | 5 | ISCED 3B | 00010000000 |
| D_Q12aPL |  |  | 6 | ISCED 3A | 00001000000 |
| D_Q12aPL |  |  | 7 | ISCED 4 | 00000100000 |
| D_Q12aPL |  |  | 8 | BA, ISCED 5A (I degr | 00000010000 |
| D_Q12aPL |  |  | 9 | MA, ISCED 5A (II deg | 00000001000 |
| D_Q12aPL |  |  | 10 | ISCED 6 | 00000000100 |
| D_Q12aPL |  |  | 96 | Valid skip | 00000000010 |
| D_Q12aRU | 11 | Current work - Requirements - Education level | -1 | Missing | 0000000001 |
| D_Q12aRU |  |  | 1 | No formal qualificat | 0000000000 |
| D_Q12aRU |  |  | 2 | ISCED 1 | 1000000000 |
| D_Q12aRU |  |  | 3 | ISCED 2 | 0100000000 |
| D_Q12aRU |  |  | 4 | ISCED 3 (without dis | 0010000000 |
| D_Q12aRU |  |  | 5 | ISCED 4 (without dis | 0001000000 |
| D_Q12aRU |  |  | 6 | ISCED 5B | 0000100000 |
| D_Q12aRU |  |  | 7 | ISCED 5A, bachelor d | 0000010000 |
| D_Q12aRU |  |  | 8 | ISCED 5A, master deg | 0000001000 |
| D_Q12aRU |  |  | 9 | ISCED 6 | 0000000100 |
| D_Q12aRU |  |  | 96 | Valid skip | 0000000010 |
| D_Q12aSE | 14 | Current work - Requirements - Education level | -1 | Missing | 0000000000001 |
| D_Q12aSE |  |  | 1 | Not stated or inferr | 0000000000000 |
| D_Q12aSE |  |  | 2 | Not stated or inr | 1000000000000 |
| D_Q12aSE |  |  | 3 | Not stated or inrr | 0100000000000 |
| D_Q12aSE |  |  | 4 | Gymnasie eller yrkes | 0010000000000 |
| D_Q12aSE |  |  | 5 | Gymnasie eller yrkes | 0001000000000 |
| D_Q12aSE |  |  | 6 | Gymnasie eller yrkes | 0000100000000 |
| D_Q12aSE |  |  | 7 | Gymnasie eller yrkes | 0000010000000 |



## PIAAC Contrast Coding used for Conditioning - National Variables

\begin{tabular}{|c|c|c|c|c|c|}
\hline ITEM_ID \& N Contrast \& LABEL \& VALUE \& Category Label \& CONTRAST <br>
\hline D_Q12aUK1 \& \multirow{17}{*}{7

6} \& \multirow{10}{*}{Current work - Requirements - Level of NVQ/SVQ} \& 25 \& Entry level qualific \& 0000000000000000000000010000 <br>
\hline D_Q12aUK1 \& \& \& 26 \& Any other profession \& 0000000000000000000000001000 <br>
\hline D_Q12aUK1 \& \& \& 27 \& No qualifications re \& 000000000000000000000000100 <br>
\hline D_Q12aUK1 \& \& \& 96 \& Valid skip \& 0000000000000000000000000010 <br>
\hline D_Q12aUK2 \& \& \& -1 \& Missing \& 000001 <br>
\hline D_Q12aUK2 \& \& \& 1 \& Level 1 \& 000000 <br>
\hline D_Q12aUK2 \& \& \& 2 \& Level 2 \& 100000 <br>
\hline D_Q12aUK2 \& \& \& 3 \& Level 3 \& 010000 <br>
\hline D_Q12aUK2 \& \& \& 4 \& Level 4 \& 001000 <br>
\hline D_Q12aUK2 \& \& \& 5 \& Level 5 \& 000100 <br>
\hline D_Q12aUK2 \& \& \multirow{7}{*}{Current work - Requirements - Level of BTEC/BEC/TE} \& 6 \& Valid skip \& 000010 <br>
\hline D_Q12aUK3 \& \& \& -1 \& Missing \& 00001 <br>
\hline D_Q12aUK3 \& \& \& 1 \& A higher Level (leve \& 00000 <br>
\hline D_Q12aUK3 \& \& \& 2 \& National Certificate \& 10000 <br>
\hline D_Q12aUK3 \& \& \& 3 \& First Diploma or gen \& 01000 <br>
\hline D_Q12aUK3 \& \& \& 4 \& First certificate or \& 00100 <br>
\hline D_Q12aUK3 \& \& \& 6 \& Valid skip \& 00010 <br>
\hline D_Q12aUK4 \& \multirow[t]{7}{*}{7} \& \multirow[t]{7}{*}{Current work - Requirements - Level of SCOTVEC/SCO} \& -1 \& Missing \& 000001 <br>
\hline D_Q12aUK4 \& \& \& 1 \& A higher Level (leve \& 000000 <br>
\hline D_Q12aUK4 \& \& \& 2 \& Full national certif \& 100000 <br>
\hline D_Q12aUK4 \& \& \& 3 \& A first diploma or g \& 010000 <br>
\hline D_Q12aUK4 \& \& \& 4 \& A first certificate \& 001000 <br>
\hline D_Q12aUK4 \& \& \& 5 \& Modules towards a Na \& 000100 <br>
\hline D_Q12aUK4 \& \& \& 6 \& Valid skip \& 000010 <br>
\hline D_Q12aUK5 \& \multirow[t]{7}{*}{7} \& \multirow[t]{7}{*}{Current work - Requirements - Level of GNVQ/GSVQ} \& -1 \& Missing \& 000001 <br>
\hline D_Q12aUK5 \& \& \& 1 \& Advanced level \& 000000 <br>
\hline D_Q12aUK5 \& \& \& 2 \& Full intermediate le \& 100000 <br>
\hline D_Q12aUK5 \& \& \& 3 \& Part 1 intermediate \& 010000 <br>
\hline D_Q12aUK5 \& \& \& 4 \& Full foundation leve \& 001000 <br>
\hline D_Q12aUK5 \& \& \& 5 \& Part 1 foundation le \& 000100 <br>
\hline D_Q12aUK5 \& \& \& 6 \& Valid skip \& 000010 <br>
\hline D_Q12aUK6 \& \multirow[t]{7}{*}{7} \& \multirow[t]{7}{*}{Current work - Requirements - Level of National Qu} \& -1 \& Missing \& 000001 <br>
\hline D_Q12aUK6 \& \& \& 1 \& Access Level \& 000000 <br>
\hline D_Q12aUK6 \& \& \& 2 \& Intermediate 1 \& 100000 <br>
\hline D_Q12aUK6 \& \& \& 3 \& Intermediate 2 \& 010000 <br>
\hline D_Q12aUK6 \& \& \& 4 \& Higher \& 001000 <br>
\hline D_Q12aUK6 \& \& \& 5 \& Advanced Higher \& 000100 <br>
\hline D_Q12aUK6 \& \& \& 6 \& Valid skip \& 000010 <br>
\hline D_Q12aUK7 \& \multirow[t]{6}{*}{6} \& \multirow[t]{6}{*}{Current work - Requirements - Level of RSA/OCR} \& -1 \& Missing \& 00001 <br>
\hline D_Q12aUK7 \& \& \& 1 \& a higher diploma \& 00000 <br>
\hline D_Q12aUK7 \& \& \& 2 \& an advanced diploma \& 10000 <br>
\hline D_Q12aUK7 \& \& \& 3 \& a diploma \& 01000 <br>
\hline D_Q12aUK7 \& \& \& 4 \& or some other RSA (i \& 00100 <br>
\hline D_Q12aUK7 \& \& \& 6 \& Valid skip \& 00010 <br>
\hline D_Q12aUK8 \& 5 \& Current work - Requirements - Level of City \& Guil \& -1 \& Missing \& 0001 <br>
\hline
\end{tabular}

## PIAAC Contrast Coding used for Conditioning - National Variables



PIAAC Contrast Coding used for Conditioning - National Variables



\begin{tabular}{|c|c|c|c|c|c|}
\hline ITEM_ID \& N Contrast \& LABEL \& VALUE \& Category Label \& CONTRAST <br>
\hline D_Q16d3EE2 \& \multirow[t]{16}{*}{8

8} \& \multirow[t]{16}{*}{Current work - Earnings - Gross pay per week
Current work - Earnings - Net pay per 2 weeks} \& -1 \& Missing \& 0000001 <br>
\hline D_Q16d3EE2 \& \& \& 1 \& up to 70 euro \& 0000000 <br>
\hline D_Q16d3EE2 \& \& \& 2 \& 70-100 euro \& 1000000 <br>
\hline D_Q16d3EE2 \& \& \& 3 \& 101-150 euro \& 0100000 <br>
\hline D_Q16d3EE2 \& \& \& 4 \& 151-220 euro \& 0010000 <br>
\hline D_Q16d3EE2 \& \& \& 5 \& 221-330 euro \& 0001000 <br>
\hline D_Q16d3EE2 \& \& \& 6 \& above 330 euro \& 0000100 <br>
\hline D_Q16d3EE2 \& \& \& 96 \& Valid skip \& 0000010 <br>
\hline D_Q16d4EE1 \& \& \& -1 \& Missing \& 0000001 <br>
\hline D_Q16d4EE1 \& \& \& 1 \& up to 130 euro \& 0000000 <br>
\hline D_Q16d4EE1 \& \& \& 2 \& 130-180 euro \& 1000000 <br>
\hline D_Q16d4EE1 \& \& \& 3 \& 181-260 euro \& 0100000 <br>
\hline D_Q16d4EE1 \& \& \& 4 \& 261-370 euro \& 0010000 <br>
\hline D_Q16d4EE1 \& \& \& 5 \& 371-540 euro \& 0001000 <br>
\hline D_Q16d4EE1 \& \& \& 6 \& above 540 euro \& 0000100 <br>
\hline D_Q16d4EE1 \& \& \& 96 \& Valid skip \& 0000010 <br>
\hline D_Q16d4EE2 \& \multirow[t]{8}{*}{8} \& \multirow[t]{8}{*}{Current work - Earnings - Gross pay per 2 weeks} \& -1 \& Missing \& 0000001 <br>
\hline D_Q16d4EE2 \& \& \& 1 \& up to 140 euro \& 0000000 <br>
\hline D_Q16d4EE2 \& \& \& 2 \& 140-200 euro \& 1000000 <br>
\hline D_Q16d4EE2 \& \& \& 3 \& 201-300 euro \& 0100000 <br>
\hline D_Q16d4EE2 \& \& \& 4 \& 301-450 euro \& 0010000 <br>
\hline D_Q16d4EE2 \& \& \& 5 \& 451-650 euro \& 0001000 <br>
\hline D_Q16d4EE2 \& \& \& 6 \& above 650 euro \& 0000100 <br>
\hline D_Q16d4EE2 \& \& \& 96 \& Valid skip \& 0000010 <br>
\hline D_Q16d5EE1 \& \multirow[t]{8}{*}{8} \& \multirow[t]{8}{*}{Current work - Earnings - Net pay per month} \& -1 \& Missing \& 0000001 <br>
\hline D_Q16d5EE1 \& \& \& 1 \& up to 270 euro \& 0000000 <br>
\hline D_Q16d5EE1 \& \& \& 2 \& 270-400 euro \& 1000000 <br>
\hline D_Q16d5EE1 \& \& \& 3 \& 401-550 euro \& 0100000 <br>
\hline D_Q16d5EE1 \& \& \& 4 \& 551-800 euro \& 0010000 <br>
\hline D_Q16d5EE1 \& \& \& 5 \& 801-1200 euro \& 0001000 <br>
\hline D_Q16d5EE1 \& \& \& 6 \& above 1200 euro \& 0000100 <br>
\hline D_Q16d5EE1 \& \& \& 96 \& Valid skip \& 0000010 <br>
\hline D_Q16d5EE2 \& \multirow[t]{8}{*}{8} \& \multirow[t]{8}{*}{Current work - Earnings - Gross pay per month} \& -1 \& Missing \& 0000001 <br>
\hline D_Q16d5EE2 \& \& \& 1 \& up to 300 euro \& 0000000 <br>
\hline D_Q16d5EE2 \& \& \& 2 \& 300-450 euro \& 1000000 <br>
\hline D_Q16d5EE2 \& \& \& 3 \& 451-670 euro \& 0100000 <br>
\hline D_Q16d5EE2 \& \& \& 4 \& 671-1000 euro \& 0010000 <br>
\hline D_Q16d5EE2 \& \& \& 5 \& 1001-1450 euro \& 0001000 <br>
\hline D_Q16d5EE2 \& \& \& 6 \& above 1450 euro \& 0000100 <br>
\hline D_Q16d5EE2 \& \& \& 96 \& Valid skip \& 0000010 <br>
\hline D_Q16d6EE1 \& \multirow[t]{5}{*}{8} \& \multirow[t]{5}{*}{Current work - Earnings - Net pay per year} \& -1 \& Missing \& 0000001 <br>
\hline D_Q16d6EE1 \& \& \& 1 \& up to 3300 euro \& 0000000 <br>
\hline D_Q16d6EE1 \& \& \& 2 \& 3300-4600 euro \& 1000000 <br>
\hline D_Q16d6EE1 \& \& \& 3 \& 4601-6600 euro \& 0100000 <br>
\hline D_Q16d6EE1 \& \& \& 4 \& 6601-9600 euro \& 0010000 <br>
\hline
\end{tabular}

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| D_Q16d6EE1 | 8 |  | 5 | 9601-14000 euro | 0001000 |
| D_Q16d6EE1 |  |  | 6 | above 14000 euro | 0000100 |
| D_Q16d6EE1 |  |  | 96 | Valid skip | 0000010 |
| D_Q16d6EE2 |  | Current work - Earnings - Gross pay per year | -1 | Missing | 0000001 |
| D_Q16d6EE2 |  |  | 1 | up to 3700 euro | 0000000 |
| D_Q16d6EE2 |  |  | 2 | 3700-5400 euro | 1000000 |
| D_Q16d6EE2 |  |  | 3 | 5401-8000 euro | 0100000 |
| D_Q16d6EE2 |  |  | 4 | 8001-12000 euro | 0010000 |
| D_Q16d6EE2 |  |  | 5 | 12001-17300 euro | 0001000 |
| D_Q16d6EE2 |  |  | 6 | above 17300 euro | 0000100 |
| D_Q16d6EE2 |  |  | 96 | Valid skip | 0000010 |
| D_Q16dFRX | 4 | Current work - Earnings - Broad categories - Gross | -1 | Missing | 001 |
| D_Q16dFRX |  |  | 1 | Yes | 000 |
| D_Q16dFRX |  |  | 2 | No | 100 |
| D_Q16dFRX | 4 |  | 6 | Valid skip | 010 |
| D_Q16eATX |  | Current work - Earnings - Additional payments 13th | -1 | Missing | 001 |
| D_Q16eATX |  |  | 1 | Yes | 000 |
| D_Q16eATX |  |  | 2 | No | 100 |
| D_Q16eATX |  |  | 6 | Valid skip | 010 |
| D_Q17aAT | 4 | Current work - Earnings - Additional payments - NA | -1 | Missing | 001 |
| D_Q17aAT |  |  | 1 | Yes | 000 |
| D_Q17aAT |  |  | 2 | No | 100 |
| D_Q17aAT |  |  | 6 | Valid skip | 010 |
| D_Q17dEE1 | 5 | Current work - Earnings - Additional payments - Br | -1 | Missing | 0001 |
| D_Q17dEE1 |  |  | 1 | less than 330 euro | 0000 |
| D_Q17dEE1 |  |  | 2 | 330-660 euro | 1000 |
| D_Q17dEE1 |  |  | 3 | over 660 euro | 0100 |
| D_Q17dEE1 |  |  | 6 | Valid skip | 0010 |
| D_Q17dEE2 | 5 | Current work - Earnings - Additional payments - Br | -1 | Missing | 0001 |
| D_Q17dEE2 |  |  | 1 | less than 400 euro | 0000 |
| D_Q17dEE2 |  |  | 2 | 400-800 euro | 1000 |
| D_Q17dEE2 |  |  | 3 | over 800 euro | 0100 |
| D_Q17dEE2 |  |  | 6 | Valid skip | 0010 |
| D_Q18aAU1X | 5 | Current work - Earnings - Total business profit/lo | -1 | Missing | 0001 |
| D_Q18aAU1X |  |  | 1 | Profit | 0000 |
| D_Q18aAU1X |  |  | 2 | Loss | 1000 |
| D_Q18aAU1X |  |  | 3 | Neither (nil income) | 0100 |
| D_Q18aAU1X |  |  | 6 | Valid skip | 0010 |
| D_Q18c1EE | 8 | Current work - Earnings - Broad categories - Total | -1 | Missing | 0000001 |
| D_Q18c1EE |  |  | 1 | up to 300 euro | 0000000 |
| D_Q18c1EE |  |  | 2 | 300-450 euro | 1000000 |
| D_Q18c1EE |  |  | 3 | 451-670 euro | 0100000 |
| D_Q18c1EE |  |  | 4 | 671-1000 euro | 0010000 |
| D_Q18c1EE |  |  | 5 | 1001-1450 euro | 0001000 |
| D_Q18c1EE |  |  | 6 | above 1450 euro | 0000100 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| D_Q18c1EE | 8 | Current work - Earnings - Broad categories - Total | 96 | Valid skip | 0000010 |
| D_Q18c2EE |  |  | -1 | Missing | 0000001 |
| D_Q18c2EE |  |  | 1 | up to 3700 euro | 0000000 |
| D_Q18c2EE |  |  | 2 | 3700-5400 euro | 1000000 |
| D_Q18c2EE |  |  | 3 | 5401-8000 euro | 0100000 |
| D_Q18c2EE |  |  | 4 | 8001-12000 euro | 0010000 |
| D_Q18c2EE |  |  | 5 | 12001-17300 euro | 0001000 |
| D_Q18c2EE |  |  | 6 | above 17300 euro | 0000100 |
| D_Q18c2EE |  |  | 96 | Valid skip | 0000010 |
| D_S16bAU | 8 | Current work - Earnings - Salary period | -1 | Missing | 0000001 |
| D_S16bAU |  |  | 1 | Week | 0000000 |
| D_S16bAU |  |  | 2 | Fortnight | 1000000 |
| D_S16bAU |  |  | 3 | Four weeks | 0100000 |
| D_S16bAU |  |  | 4 | Calendar month | 0010000 |
| D_S16bAU |  |  | 5 | Year | 0001000 |
| D_S16bAU |  |  | 6 | Other (please specif | 0000100 |
| D_S16bAU |  |  | 96 | Valid skip | 0000010 |
| E_D04 | 4 | Current work - Employee or self-employed | -1 | Missing | 001 |
| E_D04 |  |  | 1 | Employee | 000 |
| E_D04 |  |  | 2 | Self-employed | 100 |
| E_D04 |  |  | 6 | Valid skip | 010 |
| E_D04AT | 4 | Last job- Employee or self-employed - NATIONAL | -1 | Missing | 001 |
| E_D04AT |  |  | 1 | Employee | 000 |
| E_D04AT |  |  | 2 | Self-employed | 100 |
| E_D04AT |  |  | 6 | Valid skip | 010 |
| E_Q01aFIX | 4 | Can I check, is your last job <INSERT JOB TITLE>? | -1 | Missing | 001 |
| E_Q01aFIX |  |  | 1 | Yes | 000 |
| E_Q01aFIX |  |  | 2 | No | 100 |
| E_Q01aFIX |  |  | 6 | Valid skip | 010 |
| E_Q01aFR1 | 11 | Last job - Job status | -1 | Missing | 0000000001 |
| E_Q01aFR1 |  |  | 1 | Civil servant workin | 0000000000 |
| E_Q01aFR1 |  |  | 2 | Civil servant workin | 1000000000 |
| E_Q01aFR1 |  |  | 3 | Employee on the Soci | 0100000000 |
| E_Q01aFR1 |  |  | 4 | Employee of a public | 0010000000 |
| E_Q01aFR1 |  |  | 5 | Employee of private | 0001000000 |
| E_Q01aFR1 |  |  | 6 | Employee of and indi | 0000100000 |
| E_Q01aFR1 |  |  | 7 | Employee in your own | 0000010000 |
| E_Q01aFR1 |  |  | 8 | Running your own bnu | 0000001000 |
| E_Q01aFR1 |  |  | 9 | Helping one of your | 0000000100 |
| E_Q01aFR1 |  |  | 96 | Valid skip | 0000000010 |
| E_Q01aFR3 | 10 | Last job-Job classification | -1 | Missing | 000000001 |
| E_Q01aFR3 |  |  | 1 | Unskilled industrial | 000000000 |
| E_Q01aFR3 |  |  | 2 | Skilled industrial w | 100000000 |
| E_Q01aFR3 |  |  | 3 | Technician | 010000000 |
| E_Q01aFR3 |  |  | 4 | Civil servant with a | 001000000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| E_Q01aFR3 | 10 | Last job - Job classification | 5 | Civil servant with a | 000100000 |
| E_Q01aFR3 |  |  | 6 | Civil servant with a | 000010000 |
| E_Q01aFR3 |  |  | 7 | Civil servant with a | 000001000 |
| E_Q01aFR3 |  |  | 8 | Other. Specify. | 000000100 |
| E_Q01aFR3 |  |  | 96 | Valid skip | 000000010 |
| E_Q01aFR4 |  |  | -1 | Missing | 000000001 |
| E_Q01aFR4 |  |  | 1 | Unskilled industrial | 000000000 |
| E_Q01aFR4 |  |  | 2 | Skilled industrial w | 100000000 |
| E_Q01aFR4 |  |  | 3 | Technician | 010000000 |
| E_Q01aFR4 |  |  | 4 | Foreman, salesman | 001000000 |
| E_Q01aFR4 |  |  | 5 | Engineer, executive | 000100000 |
| E_Q01aFR4 |  |  | 6 | Chief executive, top | 000010000 |
| E_Q01aFR4 |  |  | 7 | Office clerck, sales | 000001000 |
| E_Q01aFR4 |  |  | 8 | Other. Specify. | 000000100 |
| E_Q01aFR4 |  |  | 96 | Valid skip | 000000010 |
| E_Q01aFR5 | 10 | Last job - Job classification | -1 | Missing | 000000001 |
| E_Q01aFR5 |  |  | 1 | Director of your own | 000000000 |
| E_Q01aFR5 |  |  | 2 | Leading manager of a | 100000000 |
| E_Q01aFR5 |  |  | 3 | Free manager or rent | 010000000 |
| E_Q01aFR5 |  |  | 4 | Minority manager | 001000000 |
| E_Q01aFR5 |  |  | 5 | Associate | 000100000 |
| E_Q01aFR5 |  |  | 6 | Partner in a busines | 000010000 |
| E_Q01aFR5 |  |  | 7 | Other self-employed | 000001000 |
| E_Q01aFR5 |  |  | 8 | Other. Specify. | 000000100 |
| E_Q01aFR5 |  |  | 96 | Valid skip | 000000010 |
| E_Q01aFR6 | 12 | Last job - Main task | -1 | Missing | 00000000001 |
| E_Q01aFR6 |  |  | 1 | Production, construc | 00000000000 |
| E_Q01aFR6 |  |  | 2 | Repairing, maintaini | 10000000000 |
| E_Q01aFR6 |  |  | 3 | Cleaning, caretaking | 01000000000 |
| E_Q01aFR6 |  |  | 4 | Handing, logistics | 00100000000 |
| E_Q01aFR6 |  |  | 5 | Secretary, reception | 00010000000 |
| E_Q01aFR6 |  |  | 6 | Accounting, administ | 00001000000 |
| E_Q01aFR6 |  |  | 7 | Sales and marketing | 00000100000 |
| E_Q01aFR6 |  |  | 8 | Research and develop | 00000010000 |
| E_Q01aFR6 |  |  | 9 | Education, healthcar | 00000001000 |
| E_Q01aFR6 |  |  | 10 | Other. Specify. | 00000000100 |
| E_Q01aFR6 |  |  | 96 | Valid skip | 00000000010 |
| E_Q01aNOX | 4 | Last job - Job title - Is registry correct | -1 | Missing | 001 |
| E_Q01aNOX |  |  | 1 | Yes | 000 |
| E_Q01aNOX |  |  | 2 | No | 100 |
| E_Q01aNOX |  |  | 6 | Valid skip | 010 |
| E_Q02aNOX | 4 | Last job - Kind of business, industry or service | -1 | Missing | 001 |
| E_Q02aNOX |  |  | 1 | Yes | 000 |
| E_Q02aNOX |  |  | 2 | No | 100 |
| E_Q02aNOX |  |  | 6 | Valid skip | 010 |

\begin{tabular}{|c|c|c|c|c|c|}
\hline ITEM_ID \& N Contrast \& LABEL \& VALUE \& Category Label \& CONTRAST <br>
\hline E_Q03US \& \multirow[t]{19}{*}{5
8
8

6} \& \multirow[t]{13}{*}{Last job - Economic sector} \& -1 \& Missing \& 0001 <br>
\hline E_Q03US \& \& \& 1 \& The private sector ( \& 0000 <br>
\hline E_Q03US \& \& \& 2 \& The public sector (f \& 1000 <br>
\hline E_Q03US \& \& \& 3 \& A non-profit organis \& 0100 <br>
\hline E_Q03US \& \& \& 6 \& Valid skip \& 0010 <br>
\hline E_Q04AT1 \& \& \& -1 \& Missing \& 0000001 <br>
\hline E_Q04AT1 \& \& \& 1 \& white-collar worker \& 0000000 <br>
\hline E_Q04AT1 \& \& \& 2 \& blue-collar worker \& 1000000 <br>
\hline E_Q04AT1 \& \& \& 3 \& magistrate \& 0100000 <br>
\hline E_Q04AT1 \& \& \& 4 \& Contract agent \& 0010000 <br>
\hline E_Q04AT1 \& \& \& 5 \& Freelancer \& 0001000 <br>
\hline E_Q04AT1 \& \& \& 6 \& self-employed \& 0000100 <br>
\hline E_Q04AT1 \& \& \& 96 \& Valid skip \& 0000010 <br>
\hline E_Q04AT2 \& \& \multirow[t]{6}{*}{Last job - Degree of difficulty of the job-NATIO} \& -1 \& Missing \& 00001 <br>
\hline E_Q04AT2 \& \& \& 1 \& easy tasks \& 00000 <br>
\hline E_Q04AT2 \& \& \& 2 \& average tasks \& 10000 <br>
\hline E_Q04AT2 \& \& \& 3 \& higher tasks \& 01000 <br>
\hline E_Q04AT2 \& \& \& 4 \& highly skilled tasks \& 00100 <br>
\hline E_Q04AT2 \& \& \& 6 \& Valid skip \& 00010 <br>
\hline E_Q04AU \& \multirow[t]{5}{*}{5} \& \multirow[t]{5}{*}{Last job - Employee or self-employed} \& -1 \& Missing \& 0001 <br>
\hline E_Q04AU \& \& \& 1 \& Employer \& 0000 <br>
\hline E_Q04AU \& \& \& 2 \& Own business \& 1000 <br>
\hline E_Q04AU \& \& \& 3 \& Other/Uncertain \& 0100 <br>
\hline E_Q04AU \& \& \& 6 \& Valid skip \& 0010 <br>
\hline E_Q04AU1 \& \multirow[t]{4}{*}{4} \& \multirow[t]{4}{*}{Last job - Form of payment - Wage or Salary} \& -1 \& Missing \& 001 <br>
\hline E_Q04AU1 \& \& \& 1 \& Wage/Salary \& 000 <br>
\hline E_Q04AU1 \& \& \& 2 \& Other/Uncertain \& 100 <br>
\hline E_Q04AU1 \& \& \& 6 \& Valid skip \& 010 <br>
\hline E_Q04AU2 \& \multirow[t]{11}{*}{11} \& \multirow[t]{11}{*}{Last job - Payment or working arrangements} \& -1 \& Missing \& 0000000001 <br>
\hline E_Q04AU2 \& \& \& 1 \& Contractor/Subcontra \& 0000000000 <br>
\hline E_Q04AU2 \& \& \& 2 \& Own business/Partner \& 1000000000 <br>
\hline E_Q04AU2 \& \& \& 3 \& Commission only \& 0100000000 <br>
\hline E_Q04AU2 \& \& \& 4 \& Commission with reta \& 0010000000 <br>
\hline E_Q04AU2 \& \& \& 5 \& In a family business \& 0001000000 <br>
\hline E_Q04AU2 \& \& \& 6 \& Payment in kind \& 0000100000 <br>
\hline E_Q04AU2 \& \& \& 7 \& Paid by the price/it \& 0000010000 <br>
\hline E_Q04AU2 \& \& \& 8 \& Wage/salary earner \& 0000001000 <br>
\hline E_Q04AU2 \& \& \& 9 \& Other \& 0000000100 <br>
\hline E_Q04AU2 \& \& \& 96 \& Valid skip \& 0000000010 <br>
\hline E_Q04AU3 \& \multirow[t]{4}{*}{4} \& \multirow[t]{4}{*}{Last job - Employees working for you} \& -1 \& Missing \& 001 <br>
\hline E_Q04AU3 \& \& \& 1 \& Yes \& 000 <br>
\hline E_Q04AU3 \& \& \& 2 \& No \& 100 <br>
\hline E_Q04AU3 \& \& \& 6 \& Valid skip \& 010 <br>
\hline E_Q04AU4 \& \multirow[t]{2}{*}{4} \& \multirow[t]{2}{*}{Last job - Is business incorporated} \& -1 \& Missing \& 001 <br>
\hline E_Q04AU4 \& \& \& 1 \& Yes \& 000 <br>
\hline
\end{tabular}



PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| E_Q08DE | 10 | Last job - Type of contract | 3 | A temporary employme | 010000000 |
| E_Q08DE |  |  | 4 | An apprenticeship or | 001000000 |
| E_Q08DE |  |  | 5 | A honorary or freela | 000100000 |
| E_Q08DE |  |  | 6 | Seasonal contract | 000010000 |
| E_Q08DE |  |  | 7 | No written contract | 000001000 |
| E_Q08DE |  |  | 8 | Other | 000000100 |
| E_Q08DE |  |  | 96 | Valid skip | 000000010 |
| E_Q08EE |  |  | -1 | Missing | 000000001 |
| E_Q08EE |  |  | 1 | Indefinite contract | 000000000 |
| E_Q08EE |  |  | 2 | Fixed term contract | 100000000 |
| E_Q08EE |  |  | 3 | A temporary subcontr | 010000000 |
| E_Q08EE |  |  | 4 | Indenture, incl publ | 001000000 |
| E_Q08EE |  |  | 5 | An apprenticeship co | 000100000 |
| E_Q08EE |  |  | 6 | A temporary contract | 000010000 |
| E_Q08EE |  |  | 7 | No contract | 000001000 |
| E_Q08EE |  |  | 8 | Other, please specif | 000000100 |
| E_Q08EE | 9 |  | 96 | Valid skip | 000000010 |
| E_Q08FR |  | Last job - Type of contract | -1 | Missing | 00000001 |
| E_Q08FR |  |  | 1 | An indefinite contra | 00000000 |
| E_Q08FR |  |  | 2 | A fixed term contrac | 10000000 |
| E_Q08FR |  |  | 3 | A temporary employme | 01000000 |
| E_Q08FR |  |  | 4 | An apprenticeship | 00100000 |
| E_Q08FR |  |  | 5 | Training contract | 00010000 |
| E_Q08FR |  |  | 6 | No contract | 00001000 |
| E_Q08FR |  |  | 7 | Other. Specify. | 00000100 |
| E_Q08FR |  |  | 96 | Valid skip | 00000010 |
| E_Q08IT | 9 | Last job - Type of contract | -1 | Missing | 00000001 |
| E_Q08IT |  |  | 1 | An indefinite contra | 00000000 |
| E_Q08IT |  |  | 2 | A fixed term contrac | 10000000 |
| E_Q08IT |  |  | 3 | A temporary employme | 01000000 |
| E_Q08IT |  |  | 4 | An apprenticeship or | 00100000 |
| E_Q08IT |  |  | 5 | Project-based contra | 00010000 |
| E_Q08IT |  |  | 6 | No contract | 00001000 |
| E_Q08IT |  |  | 7 | Other | 00000100 |
| E_Q08IT |  |  | 96 | Valid skip | 00000010 |
| E_Q08JP | 12 | Last job- Type of contract | -1 | Missing | 00000000001 |
| E_Q08JP |  |  | 1 | Regular staff(indefi | 00000000000 |
| E_Q08JP |  |  | 2 | Regular staff(fixted | 10000000000 |
| E_Q08JP |  |  | 3 | A contract employee | 01000000000 |
| E_Q08JP |  |  | 4 | A part-time worker(i | 00100000000 |
| E_Q08JP |  |  | 5 | A part-time worker(f | 00010000000 |
| E_Q08JP |  |  | 6 | A temporary employme | 00001000000 |
| E_Q08JP |  |  | 7 | An entrusted employe | 00000100000 |
| E_Q08JP |  |  | 8 | An apprenticeship | 00000010000 |
| E_Q08JP |  |  | 9 | No contract | 00000001000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| E_Q08JP | 5 | KO_Last job - Type of contract | 10 | Other | 00000000100 |
| E_Q08JP |  |  | 96 | Valid skip | 00000000010 |
| E_Q08KOX1 |  |  | -1 | Missing | 0001 |
| E_Q08KOX1 |  |  | 1 | A permanent worker | 0000 |
| E_Q08KOX1 |  |  | 2 | A temporary worker | 1000 |
| E_Q08KOX1 |  |  | 3 | A daily worker | 0100 |
| E_Q08KOX1 |  |  | 96 | Valid skip | 0010 |
| E_Q08KOX2 | 4 | KO_Last job - regular_irregural | -1 | Missing | 001 |
| E_Q08KOX2 |  |  | 1 | regular | 000 |
| E_Q08KOX2 |  |  | 2 | irregular | 100 |
| E_Q08KOX2 |  |  | 96 | Valid skip | 010 |
| E_Q08RU | 7 | Last job - Type of contract | -1 | Missing | 000001 |
| E_Q08RU |  |  | 1 | An indefinite contra | 000000 |
| E_Q08RU |  |  | 2 | A fixed term contrac | 100000 |
| E_Q08RU |  |  | 3 | An apprenticeship or | 010000 |
| E_Q08RU |  |  | 4 | No contract | 001000 |
| E_Q08RU |  |  | 5 | Other | 000100 |
| E_Q08RU |  |  | 96 | Valid skip | 000010 |
| E_Q08SE | 10 | Last job - Type of contract | -1 | Missing | 000000001 |
| E_Q08SE |  |  | 1 | Fast/tillsvidare | 000000000 |
| E_Q08SE |  |  | 2 | Fast/tillsvidare II | 100000000 |
| E_Q08SE |  |  | 3 | Fast/tillsvidare II | 010000000 |
| E_Q08SE |  |  | 4 | Fast/tillsvidare II | 001000000 |
| E_Q08SE |  |  | 5 | Kallas vid behov | 000100000 |
| E_Q08SE |  |  | 6 | Karling, praktik | 000010000 |
| E_Q08SE |  |  | 7 | Arbetsmarknadspoliti | 000001000 |
| E_Q08SE |  |  | 8 | Annan beskriv | 000000100 |
| E_Q08SE |  |  | 96 | Valid skip | 000000010 |
| E_Q09KOX3 | 6 | KO_Last job - shift | -1 | Missing | 00001 |
| E_Q09KOX3 |  |  | 1 | No shift | 00000 |
| E_Q09KOX3 |  |  | 2 | 2 shifts | 10000 |
| E_Q09KOX3 |  |  | 3 | 3 shifts and over | 01000 |
| E_Q09KOX3 |  |  | 4 | Work every other day | 00100 |
| E_Q09KOX3 |  |  | 6 | Valid skip | 00010 |
| E_Q10AT | 13 | Last job - Reason for end of job -NATIONAL | -1 | Missing | 000000000001 |
| E_Q10AT |  |  | 1 | I was dismissed | 000000000000 |
| E_Q10AT |  |  | 2 | I was made redundant | 100000000000 |
| E_Q10AT |  |  | 3 | It was a temporary j | 01000000000 |
| E_Q10AT |  |  | 4 | I resigned | 001000000000 |
| E_Q10AT |  |  | 5 | I gave up work for h | 000100000000 |
| E_Q10AT |  |  | 6 | I took early retirem | 000010000000 |
| E_Q10AT |  |  | 7 | 1 retired (at or aft | 000001000000 |
| E_Q10AT |  |  | 8 | I gave up work becau | 000000100000 |
| E_Q10AT |  |  | 9 | I gave up work in or | 000000010000 |
| E_Q10AT |  |  | 10 | I went to military s | 000000001000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| E_Q10AT | 8 | Last job - Reason for end of job | 11 | I left for some othe | 000000000100 |
| E_Q10AT |  |  | 96 | Valid skip | 000000000010 |
| E_Q10JPX |  |  | -1 | Missing | 0000001 |
| E_Q10JPX |  |  | 1 | Slumping business or | 0000000 |
| E_Q10JPX |  |  | 2 | Just temporary job | 1000000 |
| E_Q10JPX |  |  | 3 | Low income | 0100000 |
| E_Q10JPX |  |  | 4 | Bad working conditio | 0010000 |
| E_Q10JPX |  |  | 5 | I am not suited for | 0001000 |
| E_Q10JPX |  |  | 6 | Other reason | 0000100 |
| E_Q10JPX |  |  | 96 | Valid skip | 0000010 |
| F_Q01aca1_01 | 4 | Skill use work - Language used most often at work | -1 | Missing | 001 |
| F_Q01aca1_01 |  |  | 1 | Marked | 000 |
| F_Q01aca1_01 |  |  | 2 | Not marked | 100 |
| F_Q01aca1_01 |  |  | 6 | Valid skip | 010 |
| F_Q01aca1_02 | 4 | Skill use work - Language used most often at work | -1 | Missing | 001 |
| F_Q01aca1_02 |  |  | 1 | Marked | 000 |
| F_Q01aca1_02 |  |  | 2 | Not marked | 100 |
| F_Q01aca1_02 |  |  | 6 | Valid skip | 010 |
| F_Q01aca1_03 | 4 | Skill use work - Language used most often at work | -1 | Missing | 001 |
| F_Q01aca1_03 |  |  | 1 | Marked | 000 |
| F_Q01aca1_03 |  |  | 2 | Not marked | 100 |
| F_Q01aca1_03 |  |  | 6 | Valid skip | 010 |
| F_Q07bEEX1 | 7 | Skill use to establish an enterprise - Have experi | -1 | Missing | 000001 |
| F_Q07bEEX1 |  |  | 1 | Not at all | 000000 |
| F_Q07bEEX1 |  |  | 2 | Very little | 100000 |
| F_Q07bEEX1 |  |  | 3 | To some extent | 010000 |
| F_Q07bEEX1 |  |  | 4 | To a high extent | 001000 |
| F_Q07bEEX1 |  |  | 5 | To a very high exten | 000100 |
| F_Q07bEEX1 |  |  | 6 | Valid skip | 000010 |
| F_Q07bEEX2 | 7 | Skill use to establish an enterprise - Business pl | -1 | Missing | 000001 |
| F_Q07bEEX2 |  |  | 1 | Not at all | 000000 |
| F_Q07bEEX2 |  |  | 2 | Very little | 100000 |
| F_Q07bEEX2 |  |  | 3 | To some extent | 010000 |
| F_Q07bEEX2 |  |  | 4 | To a high extent | 001000 |
| F_Q07bEEX2 |  |  | 5 | To a very high exten | 000100 |
| F_Q07bEEX2 |  |  | 6 | Valid skip | 000010 |
| F_Q07bEEX4 | 7 | Skill use to establish an enterprise - Know whom t | -1 | Missing | 000001 |
| F_Q07bEEX4 |  |  | 1 | Not at all | 000000 |
| F_Q07bEEX4 |  |  | 2 | Very little | 100000 |
| F_Q07bEEX4 |  |  | 3 | To some extent | 010000 |
| F_Q07bEEX4 |  |  | 4 | To a high extent | 001000 |
| F_Q07bEEX4 |  |  | 5 | To a very high exten | 000100 |
| F_Q07bEEX4 |  |  | 6 | Valid skip | 000010 |
| F_Q07bEEX9 | 7 | Skill use to establish an enterprise - Have experi | -1 | Missing | 000001 |
| F_Q07bEEX9 |  |  | 1 | Not at all | 000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables



## PIAAC Contrast Coding used for Conditioning - National Variables





| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| I_Q10bUSX2b | 6 About yourself - Health - Health information from |  | 3 | A little | 01000 |
| I_Q10bUSX2b |  |  | 4 | None | 00100 |
| I_Q10bUSX2b |  |  | 6 | Valid skip | 00010 |
| I_Q10bUSX2c |  |  | -1 | Missing | 00001 |
| I_Q10bUSX2c |  |  | 1 | A lot | 00000 |
| I_Q10bUSX2c |  |  | 2 | Some | 10000 |
| I_Q10bUSX2c |  |  | 3 | A little | 01000 |
| I_Q10bUSX2c |  |  | 4 | None | 00100 |
| I_Q10bUSX2c |  |  | 6 | Valid skip | 00010 |
| I_Q10bUSX2d | 6 | About yourself - Health - Health information from | -1 | Missing | 00001 |
| I_Q10bUSX2d |  |  | 1 | A lot | 00000 |
| I_Q10bUSX2d |  |  | 2 | Some | 10000 |
| I_Q10bUSX2d |  |  | 3 | A little | 01000 |
| I_Q10bUSX2d |  |  | 4 | None | 00100 |
| I_Q10bUSX2d |  |  | 6 | Valid skip | 00010 |
| I_Q10bUSX2e | 6 | About yourself - Health - Health information from | -1 | Missing | 00001 |
| I_Q10bUSX2e |  |  | 1 | A lot | 00000 |
| I_Q10bUSX2e |  |  | 2 | Some | 10000 |
| I_Q10bUSX2e |  |  | 3 | A little | 01000 |
| I_Q10bUSX2e |  |  | 4 | None | 00100 |
| I_Q10bUSX2e |  |  | 6 | Valid skip | 00010 |
| I_Q10bUSX2f | 6 | About yourself - Health - Health information from | -1 | Missing | 00001 |
| I_Q10bUSX2f |  |  | 1 | A lot | 00000 |
| I_Q10bUSX2f |  |  | 2 | Some | 10000 |
| I_Q10bUSX2f |  |  | 3 | A little | 01000 |
| I_Q10bUSX2f |  |  | 4 | None | 00100 |
| I_Q10bUSX2f |  |  | 6 | Valid skip | 00010 |
| I_Q10bUSX2g | 6 | About yourself - Health - Health information from | -1 | Missing | 00001 |
| I_Q10bUSX2g |  |  | 1 | A lot | 00000 |
| I_Q10bUSX2g |  |  | 2 | Some | 10000 |
| I_Q10bUSX2g |  |  | 3 | A little | 01000 |
| I_Q10bUSX2g |  |  | 4 | None | 00100 |
| I_Q10bUSX2g |  |  | 6 | Valid skip | 00010 |
| I_Q10bUSX2h | 6 | About yourself - Health - Health information from | -1 | Missing | 00001 |
| I_Q10bUSX2h |  |  | 1 | A lot | 00000 |
| I_Q10bUSX2h |  |  | 2 | Some | 10000 |
| I_Q10bUSX2h |  |  | 3 | A little | 01000 |
| I_Q10bUSX2h |  |  | 4 | None | 00100 |
| I_Q10bUSX2h |  |  | 6 | Valid skip | 00010 |
| I_Q10bUSX3a | 4 | About yourself - Health - Flu shot in past year | -1 | Missing | 001 |
| I_Q10bUSX3a |  |  | 1 | Yes | 000 |
| I_Q10bUSX3a |  |  | 2 | No | 100 |
| I_Q10bUSX3a |  |  | 6 | Valid skip | 010 |
| I_Q10bUSX3b | 4 | About yourself - Health - Mammogram in past year | -1 | Missing | 001 |
| I_Q10bUSX3b |  |  | 1 | Yes | 000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| I_Q10bUSX3b | 4 | About yourself - Health - Pap smear in past year | 2 | No | 100 |
| I_Q10bUSX3b |  |  | 6 | Valid skip | 010 |
| I_Q10bUSX3c |  |  | -1 | Missing | 001 |
| I_Q10bUSX3c |  |  | 1 | Yes | 000 |
| I_Q10bUSX3c |  |  | 2 | No | 100 |
| I_Q10bUSX3c |  |  | 6 | Valid skip | 010 |
| I_Q10bUSX3d | 4 | About yourself - Health - Screen for colon cancer | -1 | Missing | 001 |
| I_Q10bUSX3d |  |  | 1 | Yes | 000 |
| I_Q10bUSX3d |  |  | 2 | No | 100 |
| I_Q10bUSX3d |  |  | 6 | Valid skip | 010 |
| I_Q10bUSX3e | 4 | About yourself - Health - Vision check in past yea | -1 | Missing | 001 |
| I_Q10bUSX3e |  |  | 1 | Yes | 000 |
| I_Q10bUSX3e |  |  | 2 | No | 100 |
| I_Q10bUSX3e |  |  | 6 | Valid skip | 010 |
| I_Q10bUSX3f | 4 | About yourself - Health - Screen for prostate canc | -1 | Missing | 001 |
| I_Q10bUSX3f |  |  | 1 | Yes | 000 |
| I_Q10bUSX3f |  |  | 2 | No | 100 |
| I_Q10bUSX3f | 4 |  | 6 | Valid skip | 010 |
| I_Q10bUSX3g |  | About yourself - Health - Screen for osteoporosis | -1 | Missing | 001 |
| I_Q10bUSX3g |  |  | 1 | Yes | 000 |
| I_Q10bUSX3g |  |  | 2 | No | 100 |
| I_Q10bUSX3g |  |  | 6 | Valid skip | 010 |
| I_Q10bUSX3h | 4 | About yourself - Health - Seen dentist in past yea | -1 | Missing | 001 |
| I_Q10bUSX3h |  |  | 1 | Yes | 000 |
| I_Q10bUSX3h |  |  | 2 | No | 100 |
| I_Q10bUSX3h |  |  | 6 | Valid skip | 010 |
| I_Q10UKX | 5 | About yourself - Disability - Day-to-day activitie | -1 | Missing | 0001 |
| I_Q10UKX |  |  | 1 | Yes, limited a lot | 0000 |
| I_Q10UKX |  |  | 2 | Yes, limited a littl | 1000 |
| I_Q10UKX |  |  | 3 | No | 0100 |
| I_Q10UKX |  |  | 6 | Valid skip | 0010 |
| J_N05a2DK | 4 | Did the respondent mention more than 1 language? | -1 | Missing | 001 |
| J_N05a2DK |  |  | 1 | Yes | 000 |
| J_N05a2DK |  |  | 2 | No | 100 |
| J_N05a2DK |  |  | 96 | Valid skip | 010 |
| J_N05bDEX1 | 4 | Background - More than one language spoken at home | -1 | Missing | 001 |
| J_N05bDEX1 |  |  | 1 | Yes | 000 |
| J_N05bDEX1 |  |  | 2 | No | 100 |
| J_N05bDEX1 |  |  | 6 | Valid skip | 010 |
| J_N05bDEX2 | 4 | Background - More than one language spoken at age | -1 | Missing | 001 |
| J_N05bDEX2 |  |  | 1 | Yes | 000 |
| J_N05bDEX2 |  |  | 2 | No | 100 |
| J_N05bDEX2 |  |  | 6 | Valid skip | 010 |
| J_Q01AU | 8 | Background - People in household AU | -1 | Missing | 0000001 |
| J_Q01AU |  |  | 1 | 1 | 0000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q01AU | 12 | Background - Living with spouse or partner | 2 | 2 | 1000000 |
| J_Q01AU |  |  | 3 | 3 | 0100000 |
| J_Q01AU |  |  | 4 | 4 | 0010000 |
| J_Q01AU |  |  | 5 | 5 | 0001000 |
| J_Q01AU |  |  | 6 | 6 or more | 0000100 |
| J_Q01AU |  |  | 96 | Valid skip | 0000010 |
| J_Q02aUK |  |  | -1 | Missing | 00000000001 |
| J_Q02aUK |  |  | 1 | single, that is neve | 00000000000 |
| J_Q02aUK |  |  | 2 | married and living w | 10000000000 |
| J_Q02aUK |  |  | 3 | living with someone | 01000000000 |
| J_Q02aUK |  |  | 4 | a civil partner in a | 00100000000 |
| J_Q02aUK |  |  | 5 | married and separate | 00010000000 |
| J_Q02aUK |  |  | 6 | divorced | 00001000000 |
| J_Q02aUK |  |  | 7 | widowed | 00000100000 |
| J_Q02aUK |  |  | 8 | Spontaneous only - L | 00000010000 |
| J_Q02aUK |  |  | 9 | Spontaneous only - C | 00000001000 |
| J_Q02aUK |  |  | 10 | Spontaneous only - S | 00000000100 |
| J_Q02aUK |  |  | 96 | Valid skip | 00000000010 |
| J_Q02bCZ | 15 | Background - Highest education level partner has e | -1 | Missing | 00000000000001 |
| J_Q02bCZ |  |  | 1 | ISCED 1 | 0000000000000 |
| J_Q02bCZ |  |  | 2 | ISCED 2 | 10000000000000 |
| J_Q02bCZ |  |  | 3 | ISCED 3C shorter tha | 0100000000000 |
| J_Q02bCZ |  |  | 4 | ISCED 3C 2 years or | 00100000000000 |
| J_Q02bCZ |  |  | 5 | ISCED 3A-B | 00010000000000 |
| J_Q02bCZ |  |  | 6 | ISCED 3 (without dis | 00001000000000 |
| J_Q02bCZ |  |  | 7 | ISCED 4C | 00000100000000 |
| J_Q02bCZ |  |  | 8 | ISCED 4A-B | 00000010000000 |
| J_Q02bCZ |  |  | 9 | ISCED 4 (without dis | 00000001000000 |
| J_Q02bCZ |  |  | 10 | ISCED 5B | 00000000100000 |
| J_Q02bCZ |  |  | 11 | ISCED 5A, bachelor d | 00000000010000 |
| J_Q02bCZ |  |  | 12 | ISCED 5A, master deg | 00000000001000 |
| J_Q02bCZ |  |  | 13 | ISCED 6 | 00000000000100 |
| J_Q02bCZ |  |  | 96 | Valid skip | 00000000000010 |
| J_Q02bFR | 16 | Background - Highest education level partner has e | -1 | Missing | 000000000000001 |
| J_Q02bFR |  |  | 1 | No formal qualificat | 000000000000000 |
| J_Q02bFR |  |  | 2 | ISCED 1 | 100000000000000 |
| J_Q02bFR |  |  | 3 | ISCED 2 | 010000000000000 |
| J_Q02bFR |  |  | 4 | ISCED 3C shorter tha | 001000000000000 |
| J_Q02bFR |  |  | 5 | ISCED 3C 2 years or | 000100000000000 |
| J_Q02bFR |  |  | 6 | ISCED 3A-B | 000010000000000 |
| J_Q02bFR |  |  | 7 | ISCED 3 (without dis | 000001000000000 |
| J_Q02bFR |  |  | 8 | ISCED 4C | 000000100000000 |
| J_Q02bFR |  |  | 9 | ISCED 4A-B | 000000010000000 |
| J_Q02bFR |  |  | 10 | ISCED 4 (without dis | 000000001000000 |
| J_Q02bFR |  |  | 11 | ISCED 5B | 000000000100000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q02bFR | 11 | Background - Work situation of spouse of partner | 12 | ISCED 5A, bachelor d | 000000000010000 |
| J_Q02bFR |  |  | 13 | ISCED 5A, master deg | 000000000001000 |
| J_Q02bFR |  |  | 14 | ISCED 6 | 000000000000100 |
| J_Q02bFR |  |  | 96 | Valid skip | 000000000000010 |
| J_Q02cCZ |  |  | -1 | Missing | 0000000001 |
| J_Q02cCZ |  |  | 1 | Full-time employed ( | 0000000000 |
| J_Q02cCZ |  |  | 2 | Part-time employed ( | 1000000000 |
| J_Q02cCZ |  |  | 3 | Unemployed | 0100000000 |
| J_Q02cCZ |  |  | 4 | Pupil, student | 0010000000 |
| J_Q02cCZ |  |  | 5 | Apprentice, internsh | 0001000000 |
| J_Q02cCZ |  |  | 6 | In retirement or ear | 0000100000 |
| J_Q02cCZ |  |  | 7 | Permanently disabled | 0000010000 |
| J_Q02cCZ |  |  | 8 | Fulfilling domestic | 0000001000 |
| J_Q02cCZ |  |  | 9 | Other | 0000000100 |
| J_Q02cCZ |  |  | 96 | Valid skip | 0000000010 |
| J_Q02cIE | 11 | Background - Work situation of spouse or partner | -1 | Missing | 0000000001 |
| J_Q02cIE |  |  | 1 | Full-time employed ( | 0000000000 |
| J_Q02cIE |  |  | 2 | Part-time employed ( | 1000000000 |
| J_Q02cIE |  |  | 3 | Unemployed | 0100000000 |
| J_Q02cIE |  |  | 4 | Pupil, student | 0010000000 |
| J_Q02cIE |  |  | 5 | Apprentice, internsh | 0001000000 |
| J_Q02cIE |  |  | 6 | In retirement or ear | 0000100000 |
| J_Q02cIE |  |  | 7 | Permanently disabled | 0000010000 |
| J_Q02cIE |  |  | 8 | Fulfilling domestic | 0000001000 |
| J_Q02cIE |  |  | 9 | Other | 0000000100 |
| J_Q02cIE |  |  | 96 | Valid skip | 0000000010 |
| J_Q02cNL | 11 | Background - Work situation of spouse or partner | -1 | Missing | 0000000001 |
| J_Q02cNL |  |  | 1 | Full-time employed ( | 0000000000 |
| J_Q02cNL |  |  | 2 | Part-time employed ( | 1000000000 |
| J_Q02cNL |  |  | 3 | Unemployed | 0100000000 |
| J_Q02cNL |  |  | 4 | Pupil, student | 0010000000 |
| J_Q02cNL |  |  | 5 | Apprentice, internsh | 0001000000 |
| J_Q02cNL |  |  | 6 | In retirement or ear | 0000100000 |
| J_Q02cNL |  |  | 7 | Permanently disabled | 0000010000 |
| J_Q02cNL |  |  | 8 | Fulfilling domestic | 0000001000 |
| J_Q02cNL |  |  | 9 | Other | 0000000100 |
| J_Q02cNL |  |  | 96 | Valid skip | 0000000010 |
| J_Q03aAU | 4 | Background - Children | -1 | Missing | 001 |
| J_Q03aAU |  |  | 1 | Yes | 000 |
| J_Q03aAU |  |  | 2 | No | 100 |
| J_Q03aAU |  |  | 6 | Valid skip | 010 |
| J_Q03bAUa | 6 | Background - Number of children (AUS) | -1 | Missing | 00001 |
| J_Q03bAUa |  |  | 1 | 1 | 00000 |
| J_Q03bAUa |  |  | 2 | 2 | 10000 |
| J_Q03bAUa |  |  | 3 | 3 | 01000 |

PIAAC Contrast Coding used for Conditioning - National Variables


## PIAAC Contrast Coding used for Conditioning - National Variables



PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q04bAT | 12 | Background - Country of birth (AUS) | 10 | Czech Republic | 00000000100000 |
| J_Q04bAT |  |  | 11 | Turkey | 00000000010000 |
| J_Q04bAT |  |  | 12 | Hungary | 00000000001000 |
| J_Q04bAT |  |  | 13 | Other country | 0000000000100 |
| J_Q04bAT |  |  | 96 | Valid skip | 0000000000010 |
| J_Q04bAU |  |  | -1 | Missing | 00000000001 |
| J_Q04bAU |  |  | 1 | England | 00000000000 |
| J_Q04bAU |  |  | 2 | New Zealand | 10000000000 |
| J_Q04bAU |  |  | 3 | Italy | 01000000000 |
| J_Q04bAU |  |  | 4 | Viet Nam | 00100000000 |
| J_Q04bAU |  |  | 5 | India | 00010000000 |
| J_Q04bAU |  |  | 6 | Scotland | 00001000000 |
| J_Q04bAU |  |  | 7 | Philippines | 00000100000 |
| J_Q04bAU |  |  | 8 | Greece | 00000010000 |
| J_Q04bAU |  |  | 9 | Germany | 00000001000 |
| J_Q04bAU |  |  | 10 | Other | 00000000100 |
| J_Q04bAU |  |  | 96 | Valid skip | 00000000010 |
| J_Q04bAUa | 4 | Background - Country of birth (AUS) | -1 | Missing | 001 |
| J_Q04bAUa |  |  | 1 | Main English speakin | 000 |
| J_Q04bAUa |  |  | 2 | Other countries | 100 |
| J_Q04bAUa |  |  | 96 | Valid skip | 010 |
| J_Q04bBE | 12 | Background - Country of birth | -1 | Missing | 00000000001 |
| J_Q04bBE |  |  | 1 | The Netherlands | 00000000000 |
| J_Q04bBE |  |  | 2 | Italy | 10000000000 |
| J_Q04bBE |  |  | 3 | France | 01000000000 |
| J_Q04bBE |  |  | 4 | Germany | 00100000000 |
| J_Q04bBE |  |  | 5 | Spain | 00010000000 |
| J_Q04bBE |  |  | 6 | Morocco | 00001000000 |
| J_Q04bBE |  |  | 7 | Turkey | 00000100000 |
| J_Q04bBE |  |  | 8 | Poland | 00000010000 |
| J_Q04bBE |  |  | 9 | Former Yugoslavia | 00000001000 |
| J_Q04bBE |  |  | 10 | Other country | 00000000100 |
| J_Q04bBE |  |  | 96 | Valid skip | 00000000010 |
| J_Q04bca2 | 12 | Background - Country of birth | -1 | Missing | 00000000001 |
| J_Q04bca2 |  |  | 1 | China (People's Repu | 00000000000 |
| J_Q04bca2 |  |  | 2 | Germany | 10000000000 |
| J_Q04bca2 |  |  | 3 | Hong Kong | 01000000000 |
| J_Q04bca2 |  |  | 4 | India | 00100000000 |
| J_Q04bca2 |  |  | 5 | Italy | 00010000000 |
| J_Q04bca2 |  |  | 6 | Jamaica | 00001000000 |
| J_Q04bca2 |  |  | 7 | Philippines | 00000100000 |
| J_Q04bca2 |  |  | 8 | United Kingdom (e.g. | 00000010000 |
| J_Q04bca2 |  |  | 9 | United States | 00000001000 |
| J_Q04bca2 |  |  | 10 | Other - specify | 00000000100 |
| J_Q04bca2 |  |  | 96 | Valid skip | 00000000010 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q04bca3 | 4 | Background - Canadian by birth, naturalization, la | -1 | Missing | 001 |
| J_Q04bca3 |  |  | 1 | Yes | 000 |
| J_Q04bca3 |  |  | 2 | No | 100 |
| J_Q04bca3 |  |  | 6 | Valid skip | 010 |
| J_Q04bca4 | 6 | Background - Immigration programs | -1 | Missing | 00001 |
| J_Q04bca4 |  |  | 1 | $N$ the refugee progra | 00000 |
| J_Q04bca4 |  |  | 2 | N the program of re- | 10000 |
| J_Q04bca4 |  |  | 3 | ... the points syste | 01000 |
| J_Q04bca4 |  |  | 4 | ... or other? | 00100 |
| J_Q04bca4 |  |  | 6 | Valid skip | 00010 |
| J_Q04bca7 | 4 | Background - First came to Canada as a refugee | -1 | Missing | 001 |
| J_Q04bca7 |  |  | 1 | Yes | 000 |
| J_Q04bca7 |  |  | 2 | No | 100 |
| J_Q04bca7 |  |  | 6 | Valid skip | 010 |
| J_Q04bCY | 8 | Background - Country of birth | -1 | Missing | 0000001 |
| J_Q04bCY |  |  | 1 | Greece | 0000000 |
| J_Q04bCY |  |  | 2 | United Kingdom | 1000000 |
| J_Q04bCY |  |  | 3 | Russian Federation | 0100000 |
| J_Q04bCY |  |  | 4 | Bulgaria | 0010000 |
| J_Q04bCY |  |  | 5 | Georgia | 0001000 |
| J_Q04bCY |  |  | 6 | Other country | 0000100 |
| J_Q04bCY |  |  | 96 | Valid skip | 0000010 |
| J_Q04bCZ | 9 | Background - Country of birth | -1 | Missing | 00000001 |
| J_Q04bCZ |  |  | 1 | Country 1 | 00000000 |
| J_Q04bCZ |  |  | 2 | Country 2 | 10000000 |
| J_Q04bCZ |  |  | 3 | Country 3 | 01000000 |
| J_Q04bCZ |  |  | 4 | Country 4 | 00100000 |
| J_Q04bCZ |  |  | 5 | Country 5 | 00010000 |
| J_Q04bCZ |  |  | 6 | Country 6 | 00001000 |
| J_Q04bCZ |  |  | 7 | Other country | 00000100 |
| J_Q04bCZ |  |  | 96 | Valid skip | 00000010 |
| J_Q04bDE | 11 | Background - Country of birth | -1 | Missing | 0000000001 |
| J_Q04bDE |  |  | 1 | Turkey | 0000000000 |
| J_Q04bDE |  |  | 2 | Italy | 1000000000 |
| J_Q04bDE |  |  | 3 | Poland | 0100000000 |
| J_Q04bDE |  |  | 4 | Greece | 0010000000 |
| J_Q04bDE |  |  | 5 | Serbia | 0001000000 |
| J_Q04bDE |  |  | 6 | Croatia | 0000100000 |
| J_Q04bDE |  |  | 7 | Russian Federation | 0000010000 |
| J_Q04bDE |  |  | 8 | Bosnia and Herzegovi | 0000001000 |
| J_Q04bDE | 9 | Background - Country of birth | 9 | Another country | 0000000100 |
| J_Q04bDE |  |  | 96 | Valid skip | 0000000010 |
| J_Q04bDK |  |  | -1 | Missing | 00000001 |
| J_Q04bDK |  |  | 1 | Turkey | 00000000 |
| J_Q04bDK |  |  | 2 | Germany | 10000000 |



| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q04bFR | 10 | Background - Country of birth | 96 | Valid skip | 00000000010 |
| J_Q04bIE |  |  | -1 | Missing | 000000001 |
| J_Q04bIE |  |  | 1 | Poland | 000000000 |
| J_Q04bIE |  |  | 2 | United Kingdom | 100000000 |
| J_Q04bIE |  |  | 3 | Lithuania | 010000000 |
| J_Q04bIE |  |  | 4 | Latvia | 001000000 |
| J_Q04bIE |  |  | 5 | Germany | 000100000 |
| J_Q04bIE |  |  | 6 | Romania | 000010000 |
| J_Q04bIE |  |  | 7 | Northern Ireland | 000001000 |
| J_Q04bIE |  |  | 8 | Other country | 000000100 |
| J_Q04bIE |  |  | 96 | Valid skip | 000000010 |
| J_Q04bIT | 18 | Background - Country of birth | -1 | Missing | 00000000000000001 |
| J_Q04bIT |  |  | 1 | Albania | 00000000000000000 |
| J_Q04bIT |  |  | 2 | China | 10000000000000000 |
| J_Q04bIT |  |  | 3 | Ecuador | 01000000000000000 |
| J_Q04bIT |  |  | 4 | Philippines | 00100000000000000 |
| J_Q04bIT |  |  | 5 | France | 00010000000000000 |
| J_Q04bIT |  |  | 6 | Germany | 00001000000000000 |
| J_Q04bIT |  |  | 7 | Morocco | 00000100000000000 |
| J_Q04bIT |  |  | 8 | Peru | 00000010000000000 |
| J_Q04bIT |  |  | 9 | Poland | 00000001000000000 |
| J_Q04bIT |  |  | 10 | United Kingdom | 00000000100000000 |
| J_Q04bIT |  |  | 11 | Romania | 00000000010000000 |
| J_Q04bIT |  |  | 12 | Spain | 00000000001000000 |
| J_Q04bIT |  |  | 13 | United States of Ame | 00000000000100000 |
| J_Q04bIT |  |  | 14 | Tunisia | 00000000000010000 |
| J_Q04bIT |  |  | 15 | Ukraina | 00000000000001000 |
| J_Q04bIT |  |  | 16 | Other | 00000000000000100 |
| J_Q04bIT |  |  | 96 | Valid skip | 00000000000000010 |
| J_Q04bJP | 12 | Background - Country of birth | -1 | Missing | 00000000001 |
| J_Q04bJP |  |  | 1 | USA | 00000000000 |
| J_Q04bJP |  |  | 2 | Canada | 10000000000 |
| J_Q04bJP |  |  | 3 | UK | 01000000000 |
| J_Q04bJP |  |  | 4 | Australia | 00100000000 |
| J_Q04bJP |  |  | 5 | New Zealand | 00010000000 |
| J_Q04bJP |  |  | 6 | Republic of Korea | 00001000000 |
| J_Q04bJP |  |  | 7 | China | 00000100000 |
| J_Q04bJP |  |  | 8 | Germany | 00000010000 |
| J_Q04bJP |  |  | 9 | France | 00000001000 |
| J_Q04bJP |  |  | 10 | Other country | 00000000100 |
| J_Q04bJP |  |  | 96 | Valid skip | 00000000010 |
| J_Q04bKO | 9 | KO_Background - Country of birth | -1 | Missing | 00000001 |
| J_Q04bKO |  |  | 1 | China | 00000000 |
| J_Q04bKO |  |  | 2 | United States | 10000000 |
| J_Q04bKO |  |  | 3 | Vietnam | 01000000 |

PIAAC Contrast Coding used for Conditioning - National Variables


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q04bRU | 15 | Background - Country of birth | 6 | Other country | 0000100 |
| J_Q04bRU |  |  | 96 | Valid skip | 0000010 |
| J_Q04bSE |  |  | -1 | Missing | 0000000000001 |
| J_Q04bSE |  |  | 1 | Finland | 00000000000000 |
| J_Q04bSE |  |  | 2 | Irak | 10000000000000 |
| J_Q04bSE |  |  | 3 | Serbien | 0100000000000 |
| J_Q04bSE |  |  | 4 | Iran | 00100000000000 |
| J_Q04bSE |  |  | 5 | Polen | 00010000000000 |
| J_Q04bSE |  |  | 6 | Bosnien-Hercegovina | 00001000000000 |
| J_Q04bSE |  |  | 7 | Turkiet | 00000100000000 |
| J_Q04bSE |  |  | 8 | Danmark | 00000010000000 |
| J_Q04bSE |  |  | 9 | Norge | 00000001000000 |
| J_Q04bSE |  |  | 10 | Chile | 00000000100000 |
| J_Q04bSE |  |  | 11 | Tyskland | 00000000010000 |
| J_Q04bSE |  |  | 12 | Kroatien | 00000000001000 |
| J_Q04bSE |  |  | 13 | Annat land var god a | 00000000000100 |
| J_Q04bSE |  |  | 96 | Valid skip | 00000000000010 |
| J_Q04bSK | 9 | Background - Country of birth | -1 | Missing | 00000001 |
| J_Q04bSK |  |  | 1 | Czech republic | 00000000 |
| J_Q04bSK |  |  | 2 | Hungary | 10000000 |
| J_Q04bSK |  |  | 3 | Austria | 01000000 |
| J_Q04bSK |  |  | 4 | Poland | 00100000 |
| J_Q04bSK |  |  | 5 | Germany | 00010000 |
| J_Q04bSK |  |  | 6 | Ukraine | 00001000 |
| J_Q04bSK |  |  | 7 | other country | 00000100 |
| J_Q04bSK |  |  | 96 | Valid skip | 00000010 |
| J_Q04bUK | 16 | Background - Country of birth | -1 | Missing | 000000000000001 |
| J_Q04bUK |  |  | 1 | India | 000000000000000 |
| J_Q04bUK |  |  | 2 | Poland | 100000000000000 |
| J_Q04bUK |  |  | 3 | Pakistan | 010000000000000 |
| J_Q04bUK |  |  | 4 | Germany | 001000000000000 |
| J_Q04bUK |  |  | 5 | South Africa | 000100000000000 |
| J_Q04bUK |  |  | 6 | Bangladesh | 000010000000000 |
| J_Q04bUK |  |  | 7 | Nigeria | 000001000000000 |
| J_Q04bUK |  |  | 8 | Kenya | 000000100000000 |
| J_Q04bUK |  |  | 9 | United States | 000000010000000 |
| J_Q04bUK |  |  | 10 | Phillippines | 000000001000000 |
| J_Q04bUK |  |  | 11 | France | 000000000100000 |
| J_Q04bUK |  |  | 12 | Australia | 000000000010000 |
| J_Q04bUK |  |  | 13 | Republic of Ireland | 000000000001000 |
| J_Q04bUK |  |  | 14 | Other Country | 000000000000100 |
| J_Q04bUK |  |  | 96 | Valid skip | 000000000000010 |
| J_Q04bUS | 9 | Background - Country of birth | -1 | Missing | 00000001 |
| J_Q04bUS |  |  | 1 | Mexico | 00000000 |
| J_Q04bUS |  |  | 2 | China | 10000000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q04bUS | 9 | Background - Citizenship - NATIONAL | 3 | Phillipines | 01000000 |
| J_Q04bUS |  |  | 4 | India | 00100000 |
| J_Q04bUS |  |  | 5 | Russia | 00010000 |
| J_Q04bUS |  |  | 6 | Colombia | 00001000 |
| J_Q04bUS |  |  | 7 | Other country | 00000100 |
| J_Q04bUS |  |  | 96 | Valid skip | 00000010 |
| J_Q04c2ATX |  |  | -1 | Missing | 00000001 |
| J_Q04c2ATX |  |  | 1 | Austria | 00000000 |
| J_Q04c2ATX |  |  | 2 | Germany | 10000000 |
| J_Q04c2ATX |  |  | 3 | Serbia | 01000000 |
| J_Q04c2ATX |  |  | 4 | Turkey | 00100000 |
| J_Q04c2ATX |  |  | 5 | Bosnia and Herzegovi | 00010000 |
| J_Q04c2ATX |  |  | 6 | Croatia | 00001000 |
| J_Q04c2ATX |  |  | 7 | Other country | 00000100 |
| J_Q04c2ATX |  |  | 96 | Valid skip | 00000010 |
| J_Q04c2AUa | 5 | Background - Year of immigration (AUS) | -1 | Missing | 0001 |
| J_Q04c2AUa |  |  | 1 | Arrived 1991 or befo | 0000 |
| J_Q04c2AUa |  |  | 2 | Arrived 1992-2001 | 1000 |
| J_Q04c2AUa |  |  | 3 | Arrived 2002-2012 | 0100 |
| J_Q04c2AUa |  |  | 9996 | Valid skip | 0010 |
| J_Q04c2DEX1 | 4 | Background - Citizenship - German | -1 | Missing | 001 |
| J_Q04c2DEX1 |  |  | 1 | Yes | 000 |
| J_Q04c2DEX1 |  |  | 2 | No | 100 |
| J_Q04c2DEX1 |  |  | 6 | Valid skip | 010 |
| J_Q04c2DEX2 | 4 | Background - Citizenship - Additional to German | -1 | Missing | 001 |
| J_Q04c2DEX2 |  |  | 1 | Yes | 000 |
| J_Q04c2DEX2 |  |  | 2 | No | 100 |
| J_Q04c2DEX2 |  |  | 6 | Valid skip | 010 |
| J_Q04c2DEX3 | 13 | Background - Citizenship - (Second) Citizenship - | -1 | Missing | 000000000001 |
| J_Q04c2DEX3 |  |  | 1 | Turkey | 000000000000 |
| J_Q04c2DEX3 |  |  | 2 | Italy | 100000000000 |
| J_Q04c2DEX3 |  |  | 3 | Poland | 010000000000 |
| J_Q04c2DEX3 |  |  | 4 | Greece | 001000000000 |
| J_Q04c2DEX3 |  |  | 5 | Serbia | 000100000000 |
| J_Q04c2DEX3 |  |  | 6 | Croatia | 000010000000 |
| J_Q04c2DEX3 |  |  | 7 | Bosnia and Herzegovi | 000001000000 |
| J_Q04c2DEX3 |  |  | 8 | Macedonia | 000000100000 |
| J_Q04c2DEX3 |  |  | 9 | Slovenia | 000000010000 |
| J_Q04c2DEX3 |  |  | 10 | Russian Federation | 000000001000 |
| J_Q04c2DEX3 |  |  | 11 | Another citizenship | 000000000100 |
| J_Q04c2DEX3 |  |  | 96 | Valid skip | 000000000010 |
| J_Q04c2DEX4 | 4 | Background - Residence before German reunification | -1 | Missing | 001 |
| J_Q04c2DEX4 |  |  | 1 | In the GDR | 000 |
| J_Q04c2DEX4 |  |  | 2 | In the Federal Repub | 100 |
| J_Q04c2DEX4 |  |  | 6 | Valid skip | 010 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q04c2EEX | 4 | Background - Lived in another country | -1 | Missing | 001 |
| J_Q04c2EEX |  |  | 1 | Yes | 000 |
| J_Q04c2EEX |  |  | 2 | No | 100 |
| J_Q04c2EEX |  |  | 6 | Valid skip | 010 |
| J_Q04dUSX1a | 4 | Background - Hispanic | -1 | Missing | 001 |
| J_Q04dUSX1a |  |  | 1 | Yes | 000 |
| J_Q04dUSX1a |  |  | 2 | No | 100 |
| J_Q04dUSX1a |  |  | 6 | Valid skip | 010 |
| J_Q04dUSX1b_01 | 4 | Background - Hispanic origin - Mexican | -1 | Missing | 001 |
| J_Q04dUSX1b_01 |  |  | 1 | Marked | 000 |
| J_Q04dUSX1b_01 |  |  | 2 | Not marked | 100 |
| J_Q04dUSX1b_01 |  |  | 6 | Valid skip | 010 |
| J_Q04dUSX1b_02 | 4 | Background - Hispanic origin - Puerto Rican | -1 | Missing | 001 |
| J_Q04dUSX1b_02 |  |  | 1 | Marked | 000 |
| J_Q04dUSX1b_02 |  |  | 2 | Not marked | 100 |
| J_Q04dUSX1b_02 |  |  | 6 | Valid skip | 010 |
| J_Q04dUSX1b_03 | 4 | Background - Hispanic origin - Cuban | -1 | Missing | 001 |
| J_Q04dUSX1b_03 |  |  | 1 | Marked | 000 |
| J_Q04dUSX1b_03 |  |  | 2 | Not marked | 100 |
| J_Q04dUSX1b_03 |  |  | 6 | Valid skip | 010 |
| J_Q04dUSX1b_04 | 4 | Background - Hispanic origin - Central/South Ameri | -1 | Missing | 001 |
| J_Q04dUSX1b_04 |  |  | 1 | Marked | 000 |
| J_Q04dUSX1b_04 |  |  | 2 | Not marked | 100 |
| J_Q04dUSX1b_04 |  |  | 6 | Valid skip | 010 |
| J_Q04dUSX1b_05 | 4 | Background - Hispanic origin - Other | -1 | Missing | 001 |
| J_Q04dUSX1b_05 |  |  | 1 | Marked | 000 |
| J_Q04dUSX1b_05 |  |  | 2 | Not marked | 100 |
| J_Q04dUSX1b_05 |  |  | 6 | Valid skip | 010 |
| J_Q04dUSX2_01 | 4 | Background - Race - White | -1 | Missing | 001 |
| J_Q04dUSX2_01 |  |  | 1 | Marked | 000 |
| J_Q04dUSX2_01 |  |  | 2 | Not marked | 100 |
| J_Q04dUSX2_01 |  |  | 6 | Valid skip | 010 |
| J_Q04dUSX2_02 | 4 | Background - Race - Black | -1 | Missing | 001 |
| J_Q04dUSX2_02 |  |  | 1 | Marked | 000 |
| J_Q04dUSX2_02 |  |  | 2 | Not marked | 100 |
| J_Q04dUSX2_02 |  |  | 6 | Valid skip | 010 |
| J_Q04dUSX2_03 | 4 | Background - Race - Asian | -1 | Missing | 001 |
| J_Q04dUSX2_03 |  |  | 1 | Marked | 000 |
| J_Q04dUSX2_03 |  |  | 2 | Not marked | 100 |
| J_Q04dUSX2_03 |  |  | 6 | Valid skip | 010 |
| J_Q04dUSX2_04 | 4 | Background - Race - American Indian | -1 | Missing | 001 |
| J_Q04dUSX2_04 |  |  | 1 | Marked | 000 |
| J_Q04dUSX2_04 |  |  | 2 | Not marked | 100 |
| J_Q04dUSX2_04 |  |  | 6 | Valid skip | 010 |
| J_Q04dUSX2_05 | 4 | Background - Race - Native Hawaiian | -1 | Missing | 001 |

## PIAAC Contrast Coding used for Conditioning - National Variables



| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q04UKX10 | 4 <br>  <br> 9 | Background - Ethnic group - other ethnic (Scot)Background - Ethnic group - UK english | -1 | Missing | 001 |
| J_Q04UKX10 |  |  | 1 | Arab | 000 |
| J_Q04UKX10 |  |  | 2 | Any other | 100 |
| J_Q04UKX10 |  |  | 96 | Valid skip | 010 |
| J_Q04UKX2 |  |  | -1 | Missing | 00000001 |
| J_Q04UKX2 |  |  | 1 | English | 00000000 |
| J_Q04UKX2 |  |  | 2 | Scottish | 10000000 |
| J_Q04UKX2 |  |  | 3 | Welsh | 01000000 |
| J_Q04UKX2 |  |  | 4 | Northern Irish | 00100000 |
| J_Q04UKX2 |  |  | 5 | Other British | 00010000 |
| J_Q04UKX2 |  |  | 6 | Irish | 00001000 |
| J_Q04UKX2 |  |  | 7 | Another white backgr | 00000100 |
| J_Q04UKX2 |  |  | 96 | Valid skip | 00000010 |
| J_Q04UKX3 | 9 | Background - Ethnic group - UK Welsh | -1 | Missing | 00000001 |
| J_Q04UKX3 |  |  | 1 | Welsh | 00000000 |
| J_Q04UKX3 |  |  | 2 | English | 10000000 |
| J_Q04UKX3 |  |  | 3 | Scottish | 01000000 |
| J_Q04UKX3 |  |  | 4 | Northern Irish | 00100000 |
| J_Q04UKX3 |  |  | 5 | Other British | 00010000 |
| J_Q04UKX3 |  |  | 6 | Irish | 00001000 |
| J_Q04UKX3 |  |  | 7 | Another white backgr | 00000100 |
| J_Q04UKX3 |  |  | 96 | Valid skip | 00000010 |
| J_Q04UKX4 | 9 | Background - Ethnic group - UK NI | -1 | Missing | 00000001 |
| J_Q04UKX4 |  |  | 1 | Northern Irish | 00000000 |
| J_Q04UKX4 |  |  | 2 | English | 10000000 |
| J_Q04UKX4 |  |  | 3 | Scottish | 01000000 |
| J_Q04UKX4 |  |  | 4 | Welsh | 00100000 |
| J_Q04UKX4 |  |  | 5 | Other British | 00010000 |
| J_Q04UKX4 |  |  | 6 | Irish | 00001000 |
| J_Q04UKX4 |  |  | 7 | Another white backgr | 00000100 |
| J_Q04UKX4 |  |  | 96 | Valid skip | 00000010 |
| J_Q04UKX5 | 11 | Background - Ethnic group - White origin | -1 | Missing | 0000000001 |
| J_Q04UKX5 |  |  | 1 | Scottish | 0000000000 |
| J_Q04UKX5 |  |  | 2 | English | 1000000000 |
| J_Q04UKX5 |  |  | 3 | Welsh | 0100000000 |
| J_Q04UKX5 |  |  | 4 | Northern Irish | 0010000000 |
| J_Q04UKX5 |  |  | 5 | British | 0001000000 |
| J_Q04UKX5 |  |  | 6 | Irish | 0000100000 |
| J_Q04UKX5 |  |  | 7 | Gypsy/Traveller | 0000010000 |
| J_Q04UKX5 |  |  | 8 | Polish | 0000001000 |
| J_Q04UKX5 |  |  | 9 | Another white backgr | 0000000100 |
| J_Q04UKX5 |  |  | 96 | Valid skip | 0000000010 |
| J_Q04UKX6 | 6 | Background - Ethnic group - White mixed ethnic | -1 | Missing | 00001 |
| J_Q04UKX6 |  |  | 1 | White+Black Caribbea | 00000 |
| J_Q04UKX6 |  |  | 2 | White+Black African | 10000 |

## PIAAC Contrast Coding used for Conditioning - National Variables



PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05a1AU | 13 | Background - First learned language (AUS) | -1 | Missing | 00000000001 |
| J_Q05a1AU |  |  | 1 | English | 00000000000 |
| J_Q05a1AU |  |  | 2 | Italian | 100000000000 |
| J_Q05a1AU |  |  | 3 | Greek | 01000000000 |
| J_Q05a1AU |  |  | 4 | Cantonese | 001000000000 |
| J_Q05a1AU |  |  | 5 | Arabic | 000100000000 |
| J_Q05a1AU |  |  | 6 | Mandarin | 000010000000 |
| J_Q05a1AU |  |  | 7 | Vietnamese | 000001000000 |
| J_Q05a1AU |  |  | 8 | Spanish | 000000100000 |
| J_Q05a1AU |  |  | 9 | German | 000000010000 |
| J_Q05a1AU |  |  | 10 | Hindi | 000000001000 |
| J_Q05a1AU |  |  | 11 | Other | 000000000100 |
| J_Q05a1AU |  |  | 96 | Valid skip | 000000000010 |
| J_Q05a1AU6 | 7 | Background - Reading skills in first language | -1 | Missing | 000001 |
| J_Q05a1AU6 |  |  | 1 | Excellent | 000000 |
| J_Q05a1AU6 |  |  | 2 | Good | 100000 |
| J_Q05a1AU6 |  |  | 3 | Moderate | 010000 |
| J_Q05a1AU6 |  |  | 4 | Poor | 001000 |
| J_Q05a1AU6 |  |  | 5 | Cannot read | 000100 |
| J_Q05a1AU6 |  |  | 6 | Valid skip | 000010 |
| J_Q05a1AU7 | 7 | Background - Writing skills in first language | -1 | Missing | 000001 |
| J_Q05a1AU7 |  |  | 1 | Excellent | 000000 |
| J_Q05a1AU7 |  |  | 2 | Good | 100000 |
| J_Q05a1AU7 |  |  | 3 | Moderate | 010000 |
| J_Q05a1AU7 |  |  | 4 | Poor | 001000 |
| J_Q05a1AU7 |  |  | 5 | Cannot write | 000100 |
| J_Q05a1AU7 |  |  | 6 | Valid skip | 000010 |
| J_Q05a1AU8 | 7 | Background - Reading skills in second language | -1 | Missing | 000001 |
| J_Q05a1AU8 |  |  | 1 | Excellent | 000000 |
| J_Q05a1AU8 |  |  | 2 | Good | 100000 |
| J_Q05a1AU8 |  |  | 3 | Moderate | 010000 |
| J_Q05a1AU8 |  |  | 4 | Poor | 001000 |
| J_Q05a1AU8 |  |  | 5 | Cannot read | 000100 |
| J_Q05a1AU8 |  |  | 6 | Valid skip | 000010 |
| J_Q05a1AU9 | 7 | Background - Writing skills in second language | -1 | Missing | 000001 |
| J_Q05a1AU9 |  |  | 1 | Excellent | 000000 |
| J_Q05a1AU9 |  |  | 2 | Good | 100000 |
| J_Q05a1AU9 |  |  | 3 | Moderate | 010000 |
| J_Q05a1AU9 |  |  | 4 | Poor | 001000 |
| J_Q05a1AU9 |  |  | 5 | Cannot write | 000100 |
| J_Q05a1AU9 |  |  | 6 | Valid skip | 000010 |
| J_Q05a1AUa | 4 | Background - First learned language (AUS) | -1 | Missing | 001 |
| J_Q05a1AUa |  |  | 1 | English | 000 |
| J_Q05a1AUa |  |  | 2 | Other | 100 |
| J_Q05a1AUa |  |  | 96 | Valid skip | 010 |

PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05a1BE | 12 | Background - First learned languageBackground - First learned language | -1 | Missing | 00000000001 |
| J_Q05a1BE |  |  | 1 | Dutch | 00000000000 |
| J_Q05a1BE |  |  | 2 | French | 10000000000 |
| J_Q05a1BE |  |  | 3 | German | 01000000000 |
| J_Q05a1BE |  |  | 4 | English | 00100000000 |
| J_Q05a1BE |  |  | 5 | Italian | 00010000000 |
| J_Q05a1BE |  |  | 6 | Spanish | 00001000000 |
| J_Q05a1BE |  |  | 7 | an Arabic language | 00000100000 |
| J_Q05a1BE |  |  | 8 | Turkish | 00000010000 |
| J_Q05a1BE |  |  | 9 | Polish | 00000001000 |
| J_Q05a1BE |  |  | 10 | Other | 00000000100 |
| J_Q05a1BE |  |  | 96 | Valid skip | 00000000010 |
| J_Q05a1CY |  |  | -1 | Missing | 00000001 |
| J_Q05a1CY |  |  | 1 | Greek | 00000000 |
| J_Q05a1CY |  |  | 2 | English | 10000000 |
| J_Q05a1CY |  |  | 3 | Romanian | 01000000 |
| J_Q05a1CY |  |  | 4 | Russian | 00100000 |
| J_Q05a1CY |  |  | 5 | Armenian | 00010000 |
| J_Q05a1CY |  |  | 6 | Bulgarian | 00001000 |
| J_Q05a1CY |  |  | 7 | Other language | 00000100 |
| J_Q05a1CY |  |  | 96 | Valid skip | 00000010 |
| J_Q05a1CZ | 9 | Background - First learned language | -1 | Missing | 00000001 |
| J_Q05a1CZ |  |  | 1 | Language1 | 00000000 |
| J_Q05a1CZ |  |  | 2 | Language2 | 10000000 |
| J_Q05a1CZ |  |  | 3 | Language3 | 01000000 |
| J_Q05a1CZ |  |  | 4 | Language4 | 00100000 |
| J_Q05a1CZ |  |  | 5 | Language5 | 00010000 |
| J_Q05a1CZ |  |  | 6 | Language6 | 00001000 |
| J_Q05a1CZ |  |  | 7 | Other language | 00000100 |
| J_Q05a1CZ |  |  | 96 | Valid skip | 00000010 |
| J_Q05a1DE | 11 | Background - First learned language | -1 | Missing | 0000000001 |
| J_Q05a1DE |  |  | 1 | German | 0000000000 |
| J_Q05a1DE |  |  | 2 | Turkish | 1000000000 |
| J_Q05a1DE |  |  | 3 | Italian | 0100000000 |
| J_Q05a1DE |  |  | 4 | Polish | 0010000000 |
| J_Q05a1DE |  |  | 5 | Greek | 0001000000 |
| J_Q05a1DE |  |  | 6 | Serbian | 0000100000 |
| J_Q05a1DE |  |  | 7 | Croatian | 0000010000 |
| J_Q05a1DE |  |  | 8 | Russian | 0000001000 |
| J_Q05a1DE |  |  | 9 | Another language | 0000000100 |
| J_Q05a1DE |  |  | 96 | Valid skip | 0000000010 |
| J_Q05a1DK | 10 | Background - First learned language | -1 | Missing | 000000001 |
| J_Q05a1DK |  |  | 1 | Danish | 000000000 |
| J_Q05a1DK |  |  | 2 | Turkish | 100000000 |
| J_Q05a1DK |  |  | 3 | German | 010000000 |

PIAAC Contrast Coding used for Conditioning - National Variables



PIAAC Contrast Coding used for Conditioning - National Variables


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05a1PL | 9 | Background - First learned language | 7 | Lithuanian | 0000010000000 |
| J_Q05a1PL |  |  | 8 | Polish | 0000001000000 |
| J_Q05a1PL |  |  | 9 | Russian | 0000000100000 |
| J_Q05a1PL |  |  | 10 | Slovak | 0000000010000 |
| J_Q05a1PL |  |  | 11 | Ukrainian | 0000000001000 |
| J_Q05a1PL |  |  | 12 | Other language | 0000000000100 |
| J_Q05a1PL |  |  | 96 | Valid skip | 0000000000010 |
| J_Q05a1RU |  |  | -1 | Missing | 00000001 |
| J_Q05a1RU |  |  | 1 | Language1 | 00000000 |
| J_Q05a1RU |  |  | 2 | Language2 | 10000000 |
| J_Q05a1RU |  |  | 3 | Language3 | 01000000 |
| J_Q05a1RU |  |  | 4 | Language4 | 00100000 |
| J_Q05a1RU |  |  | 5 | Language5 | 00010000 |
| J_Q05a1RU |  |  | 6 | Language6 | 00001000 |
| J_Q05a1RU |  |  | 7 | Other language | 00000100 |
| J_Q05a1RU |  |  | 96 | Valid skip | 00000010 |
| J_Q05a1SE | 14 | Background - First learned language | -1 | Missing | 0000000000001 |
| J_Q05a1SE |  |  | 1 | Svenska | 0000000000000 |
| J_Q05a1SE |  |  | 2 | Finska | 1000000000000 |
| J_Q05a1SE |  |  | 3 | Spanska | 0100000000000 |
| J_Q05a1SE |  |  | 4 | Arabiska | 0010000000000 |
| J_Q05a1SE |  |  | 5 | Persiska | 0001000000000 |
| J_Q05a1SE |  |  | 6 | Polska | 0000100000000 |
| J_Q05a1SE |  |  | 7 | Serbokroatiska | 0000010000000 |
| J_Q05a1SE |  |  | 8 | Engelska | 0000001000000 |
| J_Q05a1SE |  |  | 9 | Turkiska | 0000000100000 |
| J_Q05a1SE |  |  | 10 | Bosniska | 0000000010000 |
| J_Q05a1SE |  |  | 11 | Kurdiska | 0000000001000 |
| J_Q05a1SE |  |  | 12 | Kurdiska k ange | 0000000000100 |
| J_Q05a1SE |  |  | 96 | Valid skip | 0000000000010 |
| J_Q05a1SK | 9 | Background - First learned language | -1 | Missing | 00000001 |
| J_Q05a1SK |  |  | 1 | Slovak | 00000000 |
| J_Q05a1SK |  |  | 2 | Czech | 10000000 |
| J_Q05a1SK |  |  | 3 | Hungarian | 01000000 |
| J_Q05a1SK |  |  | 4 | German | 00100000 |
| J_Q05a1SK |  |  | 5 | Roma | 00010000 |
| J_Q05a1SK |  |  | 6 | Polish | 00001000 |
| J_Q05a1SK |  |  | 7 | Other language | 00000100 |
| J_Q05a1SK |  |  | 96 | Valid skip | 00000010 |
| J_Q05a1UK | 12 | Background - First learned language | -1 | Missing | 00000000001 |
| J_Q05a1UK |  |  | 1 | English | 00000000000 |
| J_Q05a1UK |  |  | 2 | Welsh | 10000000000 |
| J_Q05a1UK |  |  | 3 | Irish | 01000000000 |
| J_Q05a1UK |  |  | 4 | Scottish Gaelic | 00100000000 |
| J_Q05a1UK |  |  | 5 | Ulster Scots/Ullans | 00010000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables



PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05a2ATX | 13 | Background - Second learned language (AUS) | 6 | Valid skip | 00010 |
| J_Q05a2AU |  |  | -1 | Missing | 00000000001 |
| J_Q05a2AU |  |  | 1 | English | 00000000000 |
| J_Q05a2AU |  |  | 2 | Italian | 10000000000 |
| J_Q05a2AU |  |  | 3 | Greek | 010000000000 |
| J_Q05a2AU |  |  | 4 | Cantonese | 001000000000 |
| J_Q05a2AU |  |  | 5 | Arabic | 000100000000 |
| J_Q05a2AU |  |  | 6 | Mandarin | 000010000000 |
| J_Q05a2AU |  |  | 7 | Vietnamese | 000001000000 |
| J_Q05a2AU |  |  | 8 | Spanish | 000000100000 |
| J_Q05a2AU |  |  | 9 | German | 000000010000 |
| J_Q05a2AU |  |  | 10 | Hindi | 000000001000 |
| J_Q05a2AU |  |  | 11 | Other | 000000000100 |
| J_Q05a2AU |  |  | 96 | Valid skip | 000000000010 |
| J_Q05a2AUa | 4 | Background - Second learned language (AUS) | -1 | Missing | 001 |
| J_Q05a2AUa |  |  | 1 | English | 000 |
| J_Q05a2AUa |  |  | 2 | Other | 100 |
| J_Q05a2AUa |  |  | 96 | Valid skip | 010 |
| J_Q05a2BE | 12 | Background - Second learned language | -1 | Missing | 00000000001 |
| J_Q05a2BE |  |  | 1 | Dutch | 00000000000 |
| J_Q05a2BE |  |  | 2 | French | 10000000000 |
| J_Q05a2BE |  |  | 3 | German | 01000000000 |
| J_Q05a2BE |  |  | 4 | English | 00100000000 |
| J_Q05a2BE |  |  | 5 | Italian | 00010000000 |
| J_Q05a2BE |  |  | 6 | Spanish | 00001000000 |
| J_Q05a2BE |  |  | 7 | an Arabic language | 00000100000 |
| J_Q05a2BE |  |  | 8 | Turkish | 00000010000 |
| J_Q05a2BE |  |  | 9 | Polish | 00000001000 |
| J_Q05a2BE |  |  | 10 | Other | 00000000100 |
| J_Q05a2BE |  |  | 96 | Valid skip | 00000000010 |
| J_Q05a2CY | 9 | Background - Second learned language | -1 | Missing | 00000001 |
| J_Q05a2CY |  |  | 1 | Greek | 00000000 |
| J_Q05a2CY |  |  | 2 | English | 10000000 |
| J_Q05a2CY |  |  | 3 | Turkish | 01000000 |
| J_Q05a2CY |  |  | 4 | Russian | 00100000 |
| J_Q05a2CY |  |  | 5 | Armenian | 00010000 |
| J_Q05a2CY |  |  | 6 | Bulgarian | 00001000 |
| J_Q05a2CY |  |  | 7 | Other language | 00000100 |
| J_Q05a2CY |  |  | 96 | Valid skip | 00000010 |
| J_Q05a2CZ | 9 | Background - Second learned language | -1 | Missing | 00000001 |
| J_Q05a2CZ |  |  | 1 | Language1 | 00000000 |
| J_Q05a2CZ |  |  | 2 | Language2 | 10000000 |
| J_Q05a2CZ |  |  | 3 | Language3 | 01000000 |
| J_Q05a2CZ |  |  | 4 | Language4 | 00100000 |
| J_Q05a2CZ |  |  | 5 | Language5 | 00010000 |

PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05a2CZ | 11 | Background - Second learned language | 6 | Language6 | 00001000 |
| J_Q05a2CZ |  |  | 7 | Other language | 00000100 |
| J_Q05a2CZ |  |  | 96 | Valid skip | 00000010 |
| J_Q05a2DE |  |  | -1 | Missing | 0000000001 |
| J_Q05a2DE |  |  | 1 | German | 0000000000 |
| J_Q05a2DE |  |  | 2 | Turkish | 1000000000 |
| J_Q05a2DE |  |  | 3 | Italian | 0100000000 |
| J_Q05a2DE |  |  | 4 | Polish | 0010000000 |
| J_Q05a2DE |  |  | 5 | Greek | 0001000000 |
| J_Q05a2DE |  |  | 6 | Serbian | 0000100000 |
| J_Q05a2DE |  |  | 7 | Croatian | 0000010000 |
| J_Q05a2DE |  |  | 8 | Russian | 0000001000 |
| J_Q05a2DE |  |  | 9 | Another language | 0000000100 |
| J_Q05a2DE |  |  | 96 | Valid skip | 0000000010 |
| J_Q05a2DK | 10 | Background - Second learned language | -1 | Missing | 000000001 |
| J_Q05a2DK |  |  | 1 | Danish | 000000000 |
| J_Q05a2DK |  |  | 2 | Turkish | 100000000 |
| J_Q05a2DK |  |  | 3 | German | 010000000 |
| J_Q05a2DK |  |  | 4 | Polish | 001000000 |
| J_Q05a2DK |  |  | 5 | Iraqi | 000100000 |
| J_Q05a2DK |  |  | 6 | Bosniaan | 000010000 |
| J_Q05a2DK |  |  | 7 | Norwegian | 000001000 |
| J_Q05a2DK |  |  | 8 | Other language | 000000100 |
| J_Q05a2DK |  |  | 96 | Valid skip | 000000010 |
| J_Q05a2EE | 5 | Background - Second learned language | -1 | Missing | 0001 |
| J_Q05a2EE |  |  | 1 | Estonian | 0000 |
| J_Q05a2EE |  |  | 2 | Russian | 1000 |
| J_Q05a2EE |  |  | 3 | Other, please specif | 0100 |
| J_Q05a2EE |  |  | 96 | Valid skip | 0010 |
| J_Q05a2ES | 13 | Background - Second learned language | -1 | Missing | 000000000001 |
| J_Q05a2ES |  |  | 1 | Not sn | 000000000000 |
| J_Q05a2ES |  |  | 2 | Nrabe | 10000000000 |
| J_Q05a2ES |  |  | 3 | Nrabeol | 010000000000 |
| J_Q05a2ES |  |  | 4 | Nrabeon | 001000000000 |
| J_Q05a2ES |  |  | 5 | Euskera | 000100000000 |
| J_Q05a2ES |  |  | 6 | Gallego | 000010000000 |
| J_Q05a2ES |  |  | 7 | Ingles | 000001000000 |
| J_Q05a2ES |  |  | 8 | Quechuak | 000000100000 |
| J_Q05a2ES |  |  | 9 | Rumano | 000000010000 |
| J_Q05a2ES |  |  | 10 | Valenciano | 000000001000 |
| J_Q05a2ES |  |  | 11 | Otro idioma | 000000000100 |
| J_Q05a2ES |  |  | 96 | Valid skip | 000000000010 |
| J_Q05a2FI | 11 | Background - Second learned language | -1 | Missing | 0000000001 |
| J_Q05a2FI |  |  | 1 | Finnish | 0000000000 |
| J_Q05a2FI |  |  | 2 | Swedish | 1000000000 |

PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05a2FI | 12 | Background - Second learned language | 3 | Sami | 0100000000 |
| J_Q05a2FI |  |  | 4 | Romani | 0010000000 |
| J_Q05a2FI |  |  | 5 | Russian | 0001000000 |
| J_Q05a2FI |  |  | 6 | Estonian | 0000100000 |
| J_Q05a2FI |  |  | 7 | English | 0000010000 |
| J_Q05a2FI |  |  | 8 | German | 0000001000 |
| J_Q05a2FI |  |  | 9 | Other | 0000000100 |
| J_Q05a2FI |  |  | 96 | Valid skip | 0000000010 |
| J_Q05a2FR |  |  | -1 | Missing | 00000000001 |
| J_Q05a2FR |  |  | 1 | French | 00000000000 |
| J_Q05a2FR |  |  | 2 | Regional language or | 10000000000 |
| J_Q05a2FR |  |  | 3 | Arabic | 01000000000 |
| J_Q05a2FR |  |  | 4 | German | 00100000000 |
| J_Q05a2FR |  |  | 5 | English | 00010000000 |
| J_Q05a2FR |  |  | 6 | Portuguese | 00001000000 |
| J_Q05a2FR |  |  | 7 | Italian | 00000100000 |
| J_Q05a2FR |  |  | 8 | Spanish | 00000010000 |
| J_Q05a2FR |  |  | 9 | Turkish | 00000001000 |
| J_Q05a2FR |  |  | 10 | Other. Please specif | 00000000100 |
| J_Q05a2FR |  |  | 96 | Valid skip | 00000000010 |
| J_Q05a2IE | 10 | Background - Second learned language | -1 | Missing | 000000001 |
| J_Q05a2IE |  |  | 1 | English | 000000000 |
| J_Q05a2IE |  |  | 2 | Irish | 100000000 |
| J_Q05a2IE |  |  | 3 | Polish | 010000000 |
| J_Q05a2IE |  |  | 4 | Lithuanian | 001000000 |
| J_Q05a2IE |  |  | 5 | Latvian | 000100000 |
| J_Q05a2IE |  |  | 6 | German | 000010000 |
| J_Q05a2IE |  |  | 7 | Romanian | 000001000 |
| J_Q05a2IE |  |  | 8 | Other | 000000100 |
| J_Q05a2IE |  |  | 96 | Valid skip | 000000010 |
| J_Q05a2IT | 23 | Background - Second learned language | -1 | Missing | 0000000000000000000001 |
| J_Q05a2IT |  |  | 1 | Italian | 0000000000000000000000 |
| J_Q05a2IT |  |  | 2 | Albanian | 1000000000000000000000 |
| J_Q05a2IT |  |  | 3 | Chinese | 0100000000000000000000 |
| J_Q05a2IT |  |  | 4 | English | 0010000000000000000000 |
| J_Q05a2IT |  |  | 5 | Filipino | 0001000000000000000000 |
| J_Q05a2IT |  |  | 6 | French | 0000100000000000000000 |
| J_Q05a2IT |  |  | 7 | German | 0000010000000000000000 |
| J_Q05a2IT |  |  | 8 | Moroccan | 0000001000000000000000 |
| J_Q05a2IT |  |  | 9 | Polish | 0000000100000000000000 |
| J_Q05a2IT |  |  | 10 | Romanian | 0000000010000000000000 |
| J_Q05a2IT |  |  | 11 | Romany (Gypsy) | 0000000001000000000000 |
| J_Q05a2IT |  |  | 12 | Spanish | 0000000000100000000000 |
| J_Q05a2IT |  |  | 13 | Tunisian Arabic | 0000000000010000000000 |
| J_Q05a2IT |  |  | 14 | Ukrainian | 0000000000001000000000 |

PIAAC Contrast Coding used for Conditioning - National Variables


## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05a2NO | 14 | Background - Second learned language | 10 | Serbo-Croat | 00000000100000000000 |
| J_Q05a2NO |  |  | 11 | Singhalese | 00000000010000000000 |
| J_Q05a2NO |  |  | 12 | Somali | 00000000001000000000 |
| J_Q05a2NO |  |  | 13 | Spanish | 00000000000100000000 |
| J_Q05a2NO |  |  | 14 | Swedish | 00000000000010000000 |
| J_Q05a2NO |  |  | 15 | Turkish | 00000000000001000000 |
| J_Q05a2NO |  |  | 16 | German | 00000000000000100000 |
| J_Q05a2NO |  |  | 17 | Urdu | 0000000000000010000 |
| J_Q05a2NO |  |  | 18 | Vietnamese | 0000000000000001000 |
| J_Q05a2NO |  |  | 19 | Other language | 0000000000000000100 |
| J_Q05a2NO |  |  | 186 | Valid skip | 00000000000000000010 |
| J_Q05a2PL |  |  | -1 | Missing | 0000000000001 |
| J_Q05a2PL |  |  | 1 | Byelorussian | 0000000000000 |
| J_Q05a2PL |  |  | 2 | Czech | 1000000000000 |
| J_Q05a2PL |  |  | 3 | Dutch | 0100000000000 |
| J_Q05a2PL |  |  | 4 | English | 0010000000000 |
| J_Q05a2PL |  |  | 5 | French | 0001000000000 |
| J_Q05a2PL |  |  | 6 | German | 0000100000000 |
| J_Q05a2PL |  |  | 7 | Lithuanian | 0000010000000 |
| J_Q05a2PL |  |  | 8 | Polish | 0000001000000 |
| J_Q05a2PL |  |  | 9 | Russian | 0000000100000 |
| J_Q05a2PL |  |  | 10 | Slovak | 0000000010000 |
| J_Q05a2PL |  |  | 11 | Ukrainian | 0000000001000 |
| J_Q05a2PL |  |  | 12 | Other language | 0000000000100 |
| J_Q05a2PL |  |  | 96 | Valid skip | 0000000000010 |
| J_Q05a2RU | 9 | Background - Second learned language | -1 | Missing | 00000001 |
| J_Q05a2RU |  |  | 1 | Language1 | 00000000 |
| J_Q05a2RU |  |  | 2 | Language2 | 10000000 |
| J_Q05a2RU |  |  | 3 | Language3 | 01000000 |
| J_Q05a2RU |  |  | 4 | Language4 | 00100000 |
| J_Q05a2RU |  |  | 5 | Language5 | 00010000 |
| J_Q05a2RU |  |  | 6 | Language6 | 00001000 |
| J_Q05a2RU |  |  | 7 | Other language | 00000100 |
| J_Q05a2RU |  |  | 96 | Valid skip | 00000010 |
| J_Q05a2SE | 14 | Background - Second learned language | -1 | Missing | 0000000000001 |
| J_Q05a2SE |  |  | 1 | Svenska | 0000000000000 |
| J_Q05a2SE |  |  | 2 | Finska | 1000000000000 |
| J_Q05a2SE |  |  | 3 | Spanska | 0100000000000 |
| J_Q05a2SE |  |  | 4 | Arabiska | 0010000000000 |
| J_Q05a2SE |  |  | 5 | Persiska | 0001000000000 |
| J_Q05a2SE |  |  | 6 | Polska | 0000100000000 |
| J_Q05a2SE |  |  | 7 | Serbokroatiska | 0000010000000 |
| J_Q05a2SE |  |  | 8 | Engelska | 0000001000000 |
| J_Q05a2SE |  |  | 9 | Turkiska | 0000000100000 |
| J_Q05a2SE |  |  | 10 | Bosniska | 0000000010000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05a2SE | 9 | Background - Second learned language | 11 | Kurdiska | 0000000001000 |
| J_Q05a2SE |  |  | 12 | Kurdiska k ange | 0000000000100 |
| J_Q05a2SE |  |  | 96 | Valid skip | 0000000000010 |
| J_Q05a2SK |  |  | -1 | Missing | 00000001 |
| J_Q05a2SK |  |  | 1 | Slovak | 00000000 |
| J_Q05a2SK |  |  | 2 | Czech | 10000000 |
| J_Q05a2SK |  |  | 3 | Hungarian | 01000000 |
| J_Q05a2SK |  |  | 4 | German | 00100000 |
| J_Q05a2SK |  |  | 5 | Roma | 00010000 |
| J_Q05a2SK |  |  | 6 | Polish | 00001000 |
| J_Q05a2SK |  |  | 7 | Other language | 00000100 |
| J_Q05a2SK |  |  | 96 | Valid skip | 00000010 |
| J_Q05a2UK | 12 | Background - Second learned language | -1 | Missing | 00000000001 |
| J_Q05a2UK |  |  | 1 | English | 00000000000 |
| J_Q05a2UK |  |  | 2 | Welsh | 10000000000 |
| J_Q05a2UK |  |  | 3 | Irish | 01000000000 |
| J_Q05a2UK |  |  | 4 | Scottish Gaelic | 00100000000 |
| J_Q05a2UK |  |  | 5 | Ulster Scots/Ullans | 00010000000 |
| J_Q05a2UK |  |  | 6 | Hindi | 00001000000 |
| J_Q05a2UK |  |  | 7 | Urdu | 00000100000 |
| J_Q05a2UK |  |  | 8 | Punjabi | 00000010000 |
| J_Q05a2UK |  |  | 9 | Polish | 00000001000 |
| J_Q05a2UK |  |  | 10 | Other | 00000000100 |
| J_Q05a2UK |  |  | 96 | Valid skip | 00000000010 |
| J_Q05a2US | 9 | Background - Second learned language | -1 | Missing | 00000001 |
| J_Q05a2US |  |  | 1 | English | 00000000 |
| J_Q05a2US |  |  | 2 | Spanis | 10000000 |
| J_Q05a2US |  |  | 3 | French | 01000000 |
| J_Q05a2US |  |  | 4 | Italian | 00100000 |
| J_Q05a2US |  |  | 5 | Chinese | 00010000 |
| J_Q05a2US |  |  | 6 | German | 00001000 |
| J_Q05a2US |  |  | 7 | Other language | 00000100 |
| J_Q05a2US |  |  | 96 | Valid skip | 00000010 |
| J_Q05a2USX2 | 8 | Background - Age learned English | -1 | Missing | 0000001 |
| J_Q05a2USX2 |  |  | 1 | 1-4 years old | 0000000 |
| J_Q05a2USX2 |  |  | 2 | 5-10 years old | 1000000 |
| J_Q05a2USX2 |  |  | 3 | 11-15 years old | 0100000 |
| J_Q05a2USX2 |  |  | 4 | 16-20 years old | 0010000 |
| J_Q05a2USX2 |  |  | 5 | 21 years or older | 0001000 |
| J_Q05a2USX2 |  |  | 6 | Does not speak Engli | 0000100 |
| J_Q05a2USX2 |  |  | 96 | Valid skip | 0000010 |
| J_Q05bAT | 25 | Background - Language spoken at home - NATIONAL | -1 | Missing | 000000000000000000000001 |
| J_Q05bAT |  |  | 1 | German | 000000000000000000000000 |
| J_Q05bAT |  |  | 2 | Turkish | 100000000000000000000000 |
| J_Q05bAT |  |  | 3 | Bosnian | 010000000000000000000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05bAT | 26 Background - Language beside mother tongue - NATIO |  | 4 | Croatian | 001000000000000000000000 |
| J_Q05bAT |  |  | 5 | Serbian | 000100000000000000000000 |
| J_Q05bAT |  |  | 6 | Arabic | 000010000000000000000000 |
| J_Q05bAT |  |  | 7 | Chinese | 000001000000000000000000 |
| J_Q05bAT |  |  | 8 | English | 000000100000000000000000 |
| J_Q05bAT |  |  | 9 | French | 000000010000000000000000 |
| J_Q05bAT |  |  | 10 | Italian | 000000001000000000000000 |
| J_Q05bAT |  |  | 11 | Kurdish | 000000000100000000000000 |
| J_Q05bAT |  |  | 12 | Macedonian | 000000000010000000000000 |
| J_Q05bAT |  |  | 13 | Persian | 000000000001000000000000 |
| J_Q05bAT |  |  | 14 | Polish | 000000000000100000000000 |
| J_Q05bAT |  |  | 15 | Romanes | 000000000000010000000000 |
| J_Q05bAT |  |  | 16 | Rumanian | 000000000000001000000000 |
| J_Q05bAT |  |  | 17 | Slowakian | 000000000000000100000000 |
| J_Q05bAT |  |  | 18 | Slovenian | 000000000000000010000000 |
| J_Q05bAT |  |  | 19 | Spanish | 000000000000000001000000 |
| J_Q05bAT |  |  | 20 | Swedish | 000000000000000000100000 |
| J_Q05bAT |  |  | 21 | Czech | 000000000000000000010000 |
| J_Q05bAT |  |  | 22 | Hungarian | 000000000000000000001000 |
| J_Q05bAT |  |  | 23 | Other Lanugage | 000000000000000000000100 |
| J_Q05bAT |  |  | 96 | Valid skip | 000000000000000000000010 |
| J_Q05bATX1 |  |  | -1 | Missing | 0000000000000000000000001 |
| J_Q05bATX1 |  |  | 0 | No further language | 0000000000000000000000000 |
| J_Q05bATX1 |  |  | 1 | German | 1000000000000000000000000 |
| J_Q05bATX1 |  |  | 2 | Turkish | 0100000000000000000000000 |
| J_Q05bATX1 |  |  | 3 | Bosnian | 0010000000000000000000000 |
| J_Q05bATX1 |  |  | 4 | Croatian | 0001000000000000000000000 |
| J_Q05bATX1 |  |  | 5 | Serbian | 0000100000000000000000000 |
| J_Q05bATX1 |  |  | 6 | Arabic | 0000010000000000000000000 |
| J_Q05bATX1 |  |  | 7 | Chinese | 0000001000000000000000000 |
| J_Q05bATX1 |  |  | 8 | English | 0000000100000000000000000 |
| J_Q05bATX1 |  |  | 9 | French | 0000000010000000000000000 |
| J_Q05bATX1 |  |  | 10 | Italian | 0000000001000000000000000 |
| J_Q05bATX1 |  |  | 11 | Kurdish | 0000000000100000000000000 |
| J_Q05bATX1 |  |  | 12 | Macedonian | 0000000000010000000000000 |
| J_Q05bATX1 |  |  | 13 | Persian | 0000000000001000000000000 |
| J_Q05bATX1 |  |  | 14 | Polish | 0000000000000100000000000 |
| J_Q05bATX1 |  |  | 15 | Romanes | 0000000000000010000000000 |
| J_Q05bATX1 |  |  | 16 | Rumanian | 0000000000000001000000000 |
| J_Q05bATX1 |  |  | 17 | Slowakian | 0000000000000000100000000 |
| J_Q05bATX1 |  |  | 18 | Slovenian | 0000000000000000010000000 |
| J_Q05bATX1 |  |  | 19 | Spanish | 0000000000000000001000000 |
| J_Q05bATX1 |  |  | 20 | Swedish | 0000000000000000000100000 |
| J_Q05bATX1 |  |  | 21 | Czech | 0000000000000000000010000 |
| J_Q05bATX1 |  |  | 22 | Hungarian | 0000000000000000000001000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05bATX1 | 6 Background - Language beside mother tongue - skill |  | 23 | Other Lanugage | 0000000000000000000000100 |
| J_Q05bATX1 |  |  | 96 | Valid skip | 0000000000000000000000010 |
| J_Q05bATX2 |  |  | -1 | Missing | 00001 |
| J_Q05bATX2 |  |  | 1 | 1 just understand fe | 00000 |
| J_Q05bATX2 |  |  | 2 | I can use the most c | 10000 |
| J_Q05bATX2 |  |  | 3 | I understand the mai | 01000 |
| J_Q05bATX2 |  |  | 4 | I can use the langua | 00100 |
| J_Q05bATX2 |  |  | 6 | Valid skip | 00010 |
| J_Q05bAU1 |  |  | -1 | Missing | 00000000001 |
| J_Q05bAU1 | 13 | Background - Language mainly spoken at home (AUS) | 1 | English | 000000000000 |
| J_Q05bAU1 |  |  | 2 | Italian | 10000000000 |
| J_Q05bAU1 |  |  | 3 | Greek | 010000000000 |
| J_Q05bAU1 |  |  | 4 | Cantonese | 001000000000 |
| J_Q05bAU1 |  |  | 5 | Arabic | 000100000000 |
| J_Q05bAU1 |  |  | 6 | Mandarin | 000010000000 |
| J_Q05bAU1 |  |  | 7 | Vietnamese | 000001000000 |
| J_Q05bAU1 |  |  | 8 | Spanish | 000000100000 |
| J_Q05bAU1 |  |  | 9 | German | 000000010000 |
| J_Q05bAU1 |  |  | 10 | Hindi | 000000001000 |
| J_Q05bAU1 |  |  | 11 | Other | 000000000100 |
| J_Q05bAU1 |  |  | 96 | Valid skip | 000000000010 |
| J_Q05bAU1a | 4 | Background - Language mainly spoken at home (AUS) | -1 | Missing | 001 |
| J_Q05bAU1a |  |  | 1 | English | 000 |
| J_Q05bAU1a |  |  | 2 | Other | 100 |
| J_Q05bAU1a |  |  | 96 | Valid skip | 010 |
| J_Q05bAU3 | 6 | Background - Rate speaking english | -1 | Missing | 00001 |
| J_Q05bAU3 |  |  | 1 | Very well | 00000 |
| J_Q05bAU3 |  |  | 2 | Well | 10000 |
| J_Q05bAU3 |  |  | 3 | Not well | 01000 |
| J_Q05bAU3 |  |  | 4 | Not at all | 00100 |
| J_Q05bAU3 |  |  | 6 | Valid skip | 00010 |
| J_Q05bBE | 12 | Background - Language spoken at home | -1 | Missing | 00000000001 |
| J_Q05bBE |  |  | 1 | Dutch | 00000000000 |
| J_Q05bBE |  |  | 2 | French | 10000000000 |
| J_Q05bBE |  |  | 3 | German | 01000000000 |
| J_Q05bBE |  |  | 4 | English | 00100000000 |
| J_Q05bBE |  |  | 5 | Italian | 00010000000 |
| J_Q05bBE |  |  | 6 | Spanish | 00001000000 |
| J_Q05bBE |  |  | 7 | an Arabic language | 00000100000 |
| J_Q05bBE |  |  | 8 | Turkish | 00000010000 |
| J_Q05bBE |  |  | 9 | Polish | 00000001000 |
| J_Q05bBE |  |  | 10 | Other | 00000000100 |
| J_Q05bBE |  |  | 96 | Valid skip | 00000000010 |
| J_Q05bCY | 9 | Background - Language spoken at home | -1 | Missing | 00000001 |
| J_Q05bCY |  |  | 1 | Greek | 00000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05bCY | 9 | Background - Language spoken at home | 2 | English | 10000000 |
| J_Q05bCY |  |  | 3 | Turkish | 01000000 |
| J_Q05bCY |  |  | 4 | Russian | 00100000 |
| J_Q05bCY |  |  | 5 | Armenian | 00010000 |
| J_Q05bCY |  |  | 6 | Bulgarian | 00001000 |
| J_Q05bCY |  |  | 7 | Other language | 00000100 |
| J_Q05bCY |  |  | 96 | Valid skip | 00000010 |
| J_Q05bCZ |  |  | -1 | Missing | 00000001 |
| J_Q05bCZ |  |  | 1 | Language1 | 00000000 |
| J_Q05bCZ |  |  | 2 | Language2 | 10000000 |
| J_Q05bCZ |  |  | 3 | Language3 | 01000000 |
| J_Q05bCZ |  |  | 4 | Language4 | 00100000 |
| J_Q05bCZ |  |  | 5 | Language5 | 00010000 |
| J_Q05bCZ |  |  | 6 | Language6 | 00001000 |
| J_Q05bCZ |  |  | 7 | Other language | 00000100 |
| J_Q05bCZ |  |  | 96 | Valid skip | 00000010 |
| J_Q05bDE | 11 | Background - Language spoken at home | -1 | Missing | 0000000001 |
| J_Q05bDE |  |  | 1 | German | 0000000000 |
| J_Q05bDE |  |  | 2 | Turkish | 1000000000 |
| J_Q05bDE |  |  | 3 | Italian | 0100000000 |
| J_Q05bDE |  |  | 4 | Polish | 0010000000 |
| J_Q05bDE |  |  | 5 | Greek | 0001000000 |
| J_Q05bDE |  |  | 6 | Serbian | 0000100000 |
| J_Q05bDE |  |  | 7 | Croatian | 0000010000 |
| J_Q05bDE |  |  | 8 | Russian | 0000001000 |
| J_Q05bDE |  |  | 9 | Another language | 0000000100 |
| J_Q05bDE |  |  | 96 | Valid skip | 0000000010 |
| J_Q05bDEX1 | 11 | Background - Second language spoken at home | -1 | Missing | 0000000001 |
| J_Q05bDEX1 |  |  | 1 | German | 0000000000 |
| J_Q05bDEX1 |  |  | 2 | Turkish | 1000000000 |
| J_Q05bDEX1 |  |  | 3 | Italian | 0100000000 |
| J_Q05bDEX1 |  |  | 4 | Polish | 0010000000 |
| J_Q05bDEX1 |  |  | 5 | Greek | 0001000000 |
| J_Q05bDEX1 |  |  | 6 | Serbian | 0000100000 |
| J_Q05bDEX1 |  |  | 7 | Croatian | 0000010000 |
| J_Q05bDEX1 |  |  | 8 | Russian | 0000001000 |
| J_Q05bDEX1 |  |  | 9 | Another language | 0000000100 |
| J_Q05bDEX1 |  |  | 96 | Valid skip | 0000000010 |
| J_Q05bDEX2 | 11 | Background - Language at age 16 | -1 | Missing | 0000000001 |
| J_Q05bDEX2 |  |  | 1 | German | 0000000000 |
| J_Q05bDEX2 |  |  | 2 | Turkish | 1000000000 |
| J_Q05bDEX2 |  |  | 3 | Italian | 0100000000 |
| J_Q05bDEX2 |  |  | 4 | Polish | 0010000000 |
| J_Q05bDEX2 |  |  | 5 | Greek | 0001000000 |
| J_Q05bDEX2 |  |  | 6 | Serbian | 0000100000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05bDEX2 | 11 | Background - Second language spoken at age 16 | 7 | Croatian | 0000010000 |
| J_Q05bDEX2 |  |  | 8 | Russian | 0000001000 |
| J_Q05bDEX2 |  |  | 9 | Another language | 0000000100 |
| J_Q05bDEX2 |  |  | 96 | Valid skip | 0000000010 |
| J_Q05bDEX3 |  |  | -1 | Missing | 0000000001 |
| J_Q05bDEX3 |  |  | 1 | German | 0000000000 |
| J_Q05bDEX3 |  |  | 2 | Turkish | 1000000000 |
| J_Q05bDEX3 |  |  | 3 | Italian | 0100000000 |
| J_Q05bDEX3 |  |  | 4 | Polish | 0010000000 |
| J_Q05bDEX3 |  |  | 5 | Greek | 0001000000 |
| J_Q05bDEX3 |  |  | 6 | Serbian | 0000100000 |
| J_Q05bDEX3 |  |  | 7 | Croatian | 0000010000 |
| J_Q05bDEX3 |  |  | 8 | Russian | 0000001000 |
| J_Q05bDEX3 |  |  | 9 | Another language | 0000000100 |
| J_Q05bDEX3 |  |  | 96 | Valid skip | 0000000010 |
| J_Q05bDK | 10 | Background - Language spoken at home | -1 | Missing | 000000001 |
| J_Q05bDK |  |  | 1 | Danish | 000000000 |
| J_Q05bDK |  |  | 2 | Turkish | 100000000 |
| J_Q05bDK |  |  | 3 | German | 010000000 |
| J_Q05bDK |  |  | 4 | Polish | 001000000 |
| J_Q05bDK |  |  | 5 | Iraqi | 000100000 |
| J_Q05bDK |  |  | 6 | Bosniaan | 000010000 |
| J_Q05bDK |  |  | 7 | Norwegian | 000001000 |
| J_Q05bDK |  |  | 8 | Other language | 000000100 |
| J_Q05bDK |  |  | 96 | Valid skip | 000000010 |
| J_Q05bDKx1 | 7 | last 12 months, how often have you used the langua | -1 | Missing | 000001 |
| J_Q05bDKx1 |  |  | 1 | Never | 000000 |
| J_Q05bDKx1 |  |  | 2 | Less than once a mon | 100000 |
| J_Q05bDKx1 |  |  | 3 | Less than once a wee | 010000 |
| J_Q05bDKx1 |  |  | 4 | At least once a week | 001000 |
| J_Q05bDKx1 |  |  | 5 | Every day | 000100 |
| J_Q05bDKx1 |  |  | 96 | Valid skip | 000010 |
| J_Q05bDKx2 | 7 | last 12 months, how often have you used other fore | -1 | Missing | 000001 |
| J_Q05bDKx2 |  |  | 1 | Never | 000000 |
| J_Q05bDKx2 |  |  | 2 | Less than once a mon | 100000 |
| J_Q05bDKx2 |  |  | 3 | Less than once a wee | 010000 |
| J_Q05bDKx2 |  |  | 4 | At least once a week | 001000 |
| J_Q05bDKx2 |  |  | 5 | Every day | 000100 |
| J_Q05bDKx2 |  |  | 96 | Valid skip | 000010 |
| J_Q05bEE | 5 | Background - Language spoken at home | -1 | Missing | 0001 |
| J_Q05bEE |  |  | 1 | Estonian | 0000 |
| J_Q05bEE |  |  | 2 | Russian | 1000 |
| J_Q05bEE |  |  | 3 | Other, please specif | 0100 |
| J_Q05bEE |  |  | 96 | Valid skip | 0010 |
| J_Q05bEEX1 | 7 | Background - Proficiency in this (Estonian/Russian | -1 | Missing | 000001 |



PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05bFI | 12 | Background - Language spoken at home | 3 | Sami | 0100000000 |
| J_Q05bFI |  |  | 4 | Romani | 0010000000 |
| J_Q05bFI |  |  | 5 | Russian | 0001000000 |
| J_Q05bFI |  |  | 6 | Estonian | 0000100000 |
| J_Q05bFI |  |  | 7 | English | 0000010000 |
| J_Q05bFI |  |  | 8 | German | 0000001000 |
| J_Q05bFI |  |  | 9 | Other | 0000000100 |
| J_Q05bFI |  |  | 96 | Valid skip | 0000000010 |
| J_Q05bFR |  |  | -1 | Missing | 00000000001 |
| J_Q05bFR |  |  | 1 | French | 00000000000 |
| J_Q05bFR |  |  | 2 | Regional language or | 10000000000 |
| J_Q05bFR |  |  | 3 | Arabic | 01000000000 |
| J_Q05bFR |  |  | 4 | German | 00100000000 |
| J_Q05bFR |  |  | 5 | English | 00010000000 |
| J_Q05bFR |  |  | 6 | Portuguese | 00001000000 |
| J_Q05bFR |  |  | 7 | Italian | 00000100000 |
| J_Q05bFR |  |  | 8 | Spanish | 00000010000 |
| J_Q05bFR |  |  | 9 | Turkish | 00000001000 |
| J_Q05bFR |  |  | 10 | Other. Please specif | 00000000100 |
| J_Q05bFR |  |  | 96 | Valid skip | 00000000010 |
| J_Q05bIE | 10 | Background - Language spoken at home | -1 | Missing | 000000001 |
| J_Q05bIE |  |  | 1 | English | 000000000 |
| J_Q05bIE |  |  | 2 | Irish | 100000000 |
| J_Q05bIE |  |  | 3 | Polish | 010000000 |
| J_Q05bIE |  |  | 4 | Lithuanian | 001000000 |
| J_Q05bIE |  |  | 5 | Latvian | 000100000 |
| J_Q05bIE |  |  | 6 | German | 000010000 |
| J_Q05bIE |  |  | 7 | Romanian | 000001000 |
| J_Q05bIE |  |  | 8 | Other | 000000100 |
| J_Q05bIE |  |  | 96 | Valid skip | 000000010 |
| J_Q05bIT | 23 | Background - Language spoken at home | -1 | Missing | 0000000000000000000001 |
| J_Q05bIT |  |  | 1 | Italian | 0000000000000000000000 |
| J_Q05bIT |  |  | 2 | Albanian | 1000000000000000000000 |
| J_Q05bIT |  |  | 3 | Chinese | 010000000000000000000 |
| J_Q05bIT |  |  | 4 | English | 0010000000000000000000 |
| J_Q05bIT |  |  | 5 | Filipino | 0001000000000000000000 |
| J_Q05bIT |  |  | 6 | French | 0000100000000000000000 |
| J_Q05bIT |  |  | 7 | German | 0000010000000000000000 |
| J_Q05bIT |  |  | 8 | Moroccan | 0000001000000000000000 |
| J_Q05bIT |  |  | 9 | Polish | 0000000100000000000000 |
| J_Q05bIT |  |  | 10 | Romanian | 0000000010000000000000 |
| J_Q05bIT |  |  | 11 | Romany (Gypsy) | 0000000001000000000000 |
| J_Q05bIT |  |  | 12 | Spanish | 0000000000100000000000 |
| J_Q05bIT |  |  | 13 | Tunisian Arabic | 0000000000010000000000 |
| J_Q05bIT |  |  | 14 | Ukrainian | 0000000000001000000000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05bIT | 9 | Background - Language spoken at home | 15 | Catalano | 0000000000000100000000 |
| J_Q05bIT |  |  | 16 | Franco Provenzale | 0000000000000010000000 |
| J_Q05bIT |  |  | 17 | Friulano | 0000000000000001000000 |
| J_Q05bIT |  |  | 18 | Occitano | 0000000000000000100000 |
| J_Q05bIT |  |  | 19 | Sardo | 0000000000000000010000 |
| J_Q05bIT |  |  | 20 | Serbo-Croatian | 0000000000000000001000 |
| J_Q05bIT |  |  | 21 | Other | 0000000000000000000100 |
| J_Q05bIT |  |  | 96 | Valid skip | 0000000000000000000010 |
| J_Q05bJP |  |  | -1 | Missing | 00000001 |
| J_Q05bJP |  |  | 1 | Japanese | 00000000 |
| J_Q05bJP |  |  | 2 | Korean | 10000000 |
| J_Q05bJP |  |  | 3 | Chinese | 01000000 |
| J_Q05bJP |  |  | 4 | English | 00100000 |
| J_Q05bJP |  |  | 5 | Portuguese | 00010000 |
| J_Q05bJP |  |  | 6 | Spanish | 00001000 |
| J_Q05bJP |  |  | 7 | Other language | 00000100 |
| J_Q05bJP | 8 |  | 96 | Valid skip | 00000010 |
| J_Q05bJPX |  | Background - Experience of living abroad | -1 | Missing | 0000001 |
| J_Q05bJPX |  |  | 1 | Never | 0000000 |
| J_Q05bJPX |  |  | 2 | Less than 1 year | 1000000 |
| J_Q05bJPX |  |  | 3 | 1 to 2 years | 0100000 |
| J_Q05bJPX |  |  | 4 | 2 to 5 years | 0010000 |
| J_Q05bJPX |  |  | 5 | 5 to 10 years | 0001000 |
| J_Q05bJPX |  |  | 6 | 10 years or more | 0000100 |
| J_Q05bJPX |  |  | 96 | Valid skip | 0000010 |
| J_Q05bKO | 9 | KO_Background - Language spoken at home | -1 | Missing | 00000001 |
| J_Q05bKO |  |  | 1 | Korean | 00000000 |
| J_Q05bKO |  |  | 2 | Chinese | 10000000 |
| J_Q05bKO |  |  | 3 | English | 01000000 |
| J_Q05bKO |  |  | 4 | Vietnamese | 00100000 |
| J_Q05bKO |  |  | 5 | Filipino | 00010000 |
| J_Q05bKO |  |  | 6 | Japanese | 00001000 |
| J_Q05bKO |  |  | 7 | Other language | 00000100 |
| J_Q05bKO |  |  | 96 | Valid skip | 00000010 |
| J_Q05bNL | 9 | Background - Language spoken at home | -1 | Missing | 00000001 |
| J_Q05bNL |  |  | 1 | dutch | 00000000 |
| J_Q05bNL |  |  | 2 | arabic | 10000000 |
| J_Q05bNL |  |  | 3 | turkish | 01000000 |
| J_Q05bNL |  |  | 4 | chinese | 00100000 |
| J_Q05bNL |  |  | 5 | french | 00010000 |
| J_Q05bNL |  |  | 6 | english | 00001000 |
| J_Q05bNL |  |  | 7 | other language | 00000100 |
| J_Q05bNL |  |  | 96 | Valid skip | 00000010 |
| J_Q05bNO | 21 | Background - Language spoken at home | -1 | Missing | 00000000000000000001 |
| J_Q05bNO |  |  | 1 | Norwegian | 00000000000000000000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05bNO | 14 Background - Language spoken at home |  | 2 | Danish | 10000000000000000000 |
| J_Q05bNO |  |  | 3 | English | 0100000000000000000 |
| J_Q05bNO |  |  | 4 | French | 0010000000000000000 |
| J_Q05bNO |  |  | 5 | Hindi | 0001000000000000000 |
| J_Q05bNO |  |  | 6 | Kurd | 0000100000000000000 |
| J_Q05bNO |  |  | 7 | Persian | 0000010000000000000 |
| J_Q05bNO |  |  | 8 | Punjabi | 00000010000000000000 |
| J_Q05bNO |  |  | 9 | Serbian | 00000001000000000000 |
| J_Q05bNO |  |  | 10 | Serbo-Croat | 00000000100000000000 |
| J_Q05bNO |  |  | 11 | Singhalese | 00000000010000000000 |
| J_Q05bNO |  |  | 12 | Somali | 00000000001000000000 |
| J_Q05bNO |  |  | 13 | Spanish | 00000000000100000000 |
| J_Q05bNO |  |  | 14 | Swedish | 00000000000010000000 |
| J_Q05bNO |  |  | 15 | Turkish | 00000000000001000000 |
| J_Q05bNO |  |  | 16 | German | 00000000000000100000 |
| J_Q05bNO |  |  | 17 | Urdu | 0000000000000010000 |
| J_Q05bNO |  |  | 18 | Vietnamese | 00000000000000001000 |
| J_Q05bNO |  |  | 19 | Other language | 0000000000000000100 |
| J_Q05bNO |  |  | 96 | Valid skip | 0000000000000000010 |
| J_Q05bPL |  |  | -1 | Missing | 0000000000001 |
| J_Q05bPL |  |  | 1 | Byelorussian | 0000000000000 |
| J_Q05bPL |  |  | 2 | Czech | 1000000000000 |
| J_Q05bPL |  |  | 3 | Dutch | 0100000000000 |
| J_Q05bPL |  |  | 4 | English | 0010000000000 |
| J_Q05bPL |  |  | 5 | French | 0001000000000 |
| J_Q05bPL |  |  | 6 | German | 0000100000000 |
| J_Q05bPL |  |  | 7 | Lithuanian | 0000010000000 |
| J_Q05bPL |  |  | 8 | Polish | 0000001000000 |
| J_Q05bPL |  |  | 9 | Russian | 0000000100000 |
| J_Q05bPL |  |  | 10 | Slovak | 0000000010000 |
| J_Q05bPL |  |  | 11 | Ukrainian | 0000000001000 |
| J_Q05bPL |  |  | 12 | Other language | 0000000000100 |
| J_Q05bPL |  |  | 96 | Valid skip | 0000000000010 |
| J_Q05bRU |  |  | -1 | Missing | 00000001 |
| J_Q05bRU | 9 |  | 1 | Language1 | 00000000 |
| J_Q05bRU |  |  | 2 | Language2 | 10000000 |
| J_Q05bRU |  |  | 3 | Language3 | 01000000 |
| J_Q05bRU |  |  | 4 | Language4 | 00100000 |
| J_Q05bRU |  |  | 5 | Language5 | 00010000 |
| J_Q05bRU |  |  | 6 | Language6 | 00001000 |
| J_Q05bRU |  |  | 7 | Other language | 00000100 |
| J_Q05bRU |  | Background - Language spoken at home | 96 | Valid skip | 00000010 |
| J_Q05bSE | 14 |  | -1 | Missing | 0000000000001 |
| J_Q05bSE |  |  | 1 | Svenska | 0000000000000 |
| J_Q05bSE |  |  | 2 | Finska | 1000000000000 |



## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q05cUSX1 |  |  | 4 | Spanish only | 001000 |
| J_Q05cUSX1 |  |  | 5 | Other only | 000100 |
| J_Q05cUSX1 |  |  | 6 | Valid skip | 000010 |
| J_Q05cUSX2 | 4 | Background - English outside home | -1 | Missing | 001 |
| J_Q05cUSX2 |  |  | 1 | Yes | 000 |
| J_Q05cUSX2 |  |  | 2 | No | 100 |
| J_Q05cUSX2 |  |  | 6 | Valid skip | 010 |
| J_Q05cUSX3a | 6 | Background - Ability to understand spoken English | -1 | Missing | 00001 |
| J_Q05cUSX3a |  |  | 1 | Very well | 00000 |
| J_Q05cUSX3a |  |  | 2 | Well | 10000 |
| J_Q05cUSX3a |  |  | 3 | Not well | 01000 |
| J_Q05cUSX3a |  |  | 4 | Not at all | 00100 |
| J_Q05cUSX3a |  |  | 6 | Valid skip | 00010 |
| J_Q05cUSX3b | 6 | Background - Ability to speak English | -1 | Missing | 00001 |
| J_Q05cUSX3b |  |  | 1 | Very well | 00000 |
| J_Q05cUSX3b |  |  | 2 | Well | 10000 |
| J_Q05cUSX3b |  |  | 3 | Not well | 01000 |
| J_Q05cUSX3b |  |  | 4 | Not at all | 00100 |
| J_Q05cUSX3b |  |  | 6 | Valid skip | 00010 |
| J_Q05cUSX3d | 6 | Background - Ability to read English | -1 | Missing | 00001 |
| J_Q05cUSX3d |  |  | 1 | Very well | 00000 |
| J_Q05cUSX3d |  |  | 2 | Well | 10000 |
| J_Q05cUSX3d |  |  | 3 | Not well | 01000 |
| J_Q05cUSX3d |  |  | 4 | Not at all | 00100 |
| J_Q05cUSX3d |  |  | 6 | Valid skip | 00010 |
| J_Q05cUSX3e | 6 | Background - Ability to write English | -1 | Missing | 00001 |
| J_Q05cUSX3e |  |  | 1 | Very well | 00000 |
| J_Q05cUSX3e |  |  | 2 | Well | 10000 |
| J_Q05cUSX3e |  |  | 3 | Not well | 01000 |
| J_Q05cUSX3e |  |  | 4 | Not at all | 00100 |
| J_Q05cUSX3e |  |  | 6 | Valid skip | 00010 |
| J_Q05cUSX4 | 4 | Background - ESL class/tutor in past year | -1 | Missing | 001 |
| J_Q05cUSX4 |  |  | 1 | Yes | 000 |
| J_Q05cUSX4 |  |  | 2 | No | 100 |
| J_Q05cUSX4 |  |  | 6 | Valid skip | 010 |
| J_Q05cUSX5 | 5 | Background - Reason for ESL class/tutor | -1 | Missing | 0001 |
| J_Q05cUSX5 |  |  | 1 | WORK-RELATED | 0000 |
| J_Q05cUSX5 |  |  | 2 | PERSONAL INTEREST | 1000 |
| J_Q05cUSX5 |  |  | 3 | BOTH EQUALLY | 0100 |
| J_Q05cUSX5 |  |  | 6 | Valid skip | 0010 |
| J_Q05cUSX6 | 4 | Background - Class/tutor learn English as adult | -1 | Missing | 001 |
| J_Q05cUSX6 |  |  | 1 | Yes | 000 |
| J_Q05cUSX6 |  |  | 2 | No | 100 |
| J_Q05cUSX6 |  |  | 6 | Valid skip | 010 |
| J_Q06aAU | 4 | Background - Mother/female guardian - Whether born | -1 | Missing | 001 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q06aAU | 11 | Background - Mother/female guardian - country of b | 1 | Yes | 000 |
| J_Q06aAU |  |  | 2 | No | 100 |
| J_Q06aAU |  |  | 6 | Valid skip | 010 |
| J_Q06aDEX |  |  | -1 | Missing | 0000000001 |
| J_Q06aDEX |  |  | 1 | Turkey | 0000000000 |
| J_Q06aDEX |  |  | 2 | Italy | 1000000000 |
| J_Q06aDEX |  |  | 3 | Poland | 0100000000 |
| J_Q06aDEX |  |  | 4 | Greece | 0010000000 |
| J_Q06aDEX |  |  | 5 | Serbia | 0001000000 |
| J_Q06aDEX |  |  | 6 | Croatia | 0000100000 |
| J_Q06aDEX |  |  | 7 | Russian Federation | 0000010000 |
| J_Q06aDEX |  |  | 8 | Bosnia and Herzegovi | 0000001000 |
| J_Q06aDEX |  |  | 9 | Another country | 0000000100 |
| J_Q06aDEX |  |  | 96 | Valid skip | 0000000010 |
| J_Q06bAT | 9 | Background - Mother/female guardian - Highest leve | -1 | Missing | 00000001 |
| J_Q06bAT |  |  | 1 | Compulsory school | 00000000 |
| J_Q06bAT |  |  | 2 | Apprenticeship | 10000000 |
| J_Q06bAT |  |  | 3 | Vocational School | 01000000 |
| J_Q06bAT |  |  | 4 | Master Craftsman's c | 00100000 |
| J_Q06bAT |  |  | 5 | Secondary school wit | 00010000 |
| J_Q06bAT |  |  | 6 | Academic Study | 00001000 |
| J_Q06bAT |  |  | 7 | Other education afte | 00000100 |
| J_Q06bAT |  |  | 96 | Valid skip | 00000010 |
| J_Q06bAU | 17 | Background - Mother/female guardian - Highest leve | -1 | Missing | 000000000000001 |
| J_Q06bAU |  |  | 1 | Year 8 or below | 0000000000000000 |
| J_Q06bAU |  |  | 2 | Year 9 or equivalent | 100000000000000 |
| J_Q06bAU |  |  | 3 | Year 10 or equivalen | 010000000000000 |
| J_Q06bAU |  |  | 4 | Year 11 or equivalen | 0010000000000000 |
| J_Q06bAU |  |  | 5 | Year 12 or equivalen | 0001000000000000 |
| J_Q06bAU |  |  | 6 | Certificate I | 0000100000000000 |
| J_Q06bAU |  |  | 7 | Certificate II | 0000010000000000 |
| J_Q06bAU |  |  | 8 | Certificate III | 0000001000000000 |
| J_Q06bAU |  |  | 9 | Certificate IV | 0000000100000000 |
| J_Q06bAU |  |  | 10 | Diploma | 0000000010000000 |
| J_Q06bAU |  |  | 11 | Advanced Diploma and | 0000000001000000 |
| J_Q06bAU |  |  | 12 | Bachelor degree (inc | 0000000000100000 |
| J_Q06bAU |  |  | 13 | Graduate Diploma or | 0000000000010000 |
| J_Q06bAU |  |  | 14 | Masters | 0000000000001000 |
| J_Q06bAU |  |  | 15 | Doctorate | 0000000000000100 |
| J_Q06bAU |  |  | 96 | Valid skip | 000000000000010 |
| J_Q06bCA | 9 | Background - Mother/female guardian - Highest leve | -1 | Missing | 00000001 |
| J_Q06bCA |  |  | 1 | No formal education | 00000000 |
| J_Q06bCA |  |  | 2 | Less than high schoo | 10000000 |
| J_Q06bCA |  |  | 3 | High school diploma | 01000000 |
| J_Q06bCA |  |  | 4 | Apprenticeship certi | 00100000 |

## PIAAC Contrast Coding used for Conditioning - National Variables



## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q06bDE2_REC |  | Background - Mother/female guardian - Highest leve | 1 | No professional qual | 000000000000 |
| J_Q06bDE2_REC |  |  | 2 | Apprenticeship (Lehr | 10000000000 |
| J_Q06bDE2_REC |  |  | 3 | Basic vocational tra | 01000000000 |
| J_Q06bDE2_REC |  |  | 4 | Training at Fachschu | 001000000000 |
| J_Q06bDE2_REC |  |  | 5 | Berufsakademie, Fach | 000100000000 |
| J_Q06bDE2_REC |  |  | 6 | Bachelor at Fachhoch | 000010000000 |
| J_Q06bDE2_REC |  |  | 7 | Master/Diplom at Fac | 000001000000 |
| J_Q06bDE2_REC |  |  | 8 | Bachelor at universi | 000000100000 |
| J_Q06bDE2_REC |  |  | 9 | Master/Diplom at uni | 000000010000 |
| J_Q06bDE2_REC |  |  | 10 | Doctorate | 000000001000 |
| J_Q06bDE2_REC |  |  | 11 | Another professional | 000000000100 |
| J_Q06bDE2_REC |  |  | 96 | Valid skip | 000000000010 |
| J_Q06bFR |  |  | -1 | Missing | 000000000000001 |
| J_Q06bFR |  |  | 1 | No formal qualificat | 000000000000000 |
| J_Q06bFR |  |  | 2 | ISCED 1 | 100000000000000 |
| J_Q06bFR |  |  | 3 | ISCED 2 | 010000000000000 |
| J_Q06bFR |  |  | 4 | ISCED 3C shorter tha | 001000000000000 |
| J_Q06bFR |  |  | 5 | ISCED 3C 2 years or | 000100000000000 |
| J_Q06bFR |  |  | 6 | ISCED 3A-B | 000010000000000 |
| J_Q06bFR |  |  | 7 | ISCED 3 (without dis | 000001000000000 |
| J_Q06bFR |  |  | 8 | ISCED 4C | 000000100000000 |
| J_Q06bFR |  |  | 9 | ISCED 4A-B | 000000010000000 |
| J_Q06bFR |  |  | 10 | ISCED 4 (without dis | 000000001000000 |
| J_Q06bFR |  |  | 11 | ISCED 5B | 000000000100000 |
| J_Q06bFR |  |  | 12 | ISCED 5A, bachelor d | 000000000010000 |
| J_Q06bFR |  |  | 13 | ISCED 5A, master deg | 000000000001000 |
| J_Q06bFR |  |  | 14 | ISCED 6 | 000000000000100 |
| J_Q06bFR |  |  | 96 | Valid skip | 000000000000010 |
| J_Q06bPL | 6 | Background - Mother/female guardian - Highest leve | -1 | Missing | 00001 |
| J_Q06bPL |  |  | 1 | ISCED123cshort | 00000 |
| J_Q06bPL |  |  | 2 | ISCED3clong | 10000 |
| J_Q06bPL |  |  | 3 | ISCED3ba4 | 01000 |
| J_Q06bPL |  |  | 4 | ISCED56 | 00100 |
| J_Q06bPL |  |  | 6 | Valid skip | 00010 |
| J_Q06bUK | 11 | Background - Mother/female guardian - Highest leve | -1 | Missing | 0000000001 |
| J_Q06bUK |  |  | 1 | No qualifications | 0000000000 |
| J_Q06bUK |  |  | 2 | Key Skills, Basic sk | 1000000000 |
| J_Q06bUK |  |  | 3 | O levels, GCSE or eq | 0100000000 |
| J_Q06bUK |  |  | 4 | NVQ Level2, City \& G | 0010000000 |
| J_Q06bUK |  |  | 5 | A Levels or equivale | 0001000000 |
| J_Q06bUK |  |  | 6 | Trade apprenticeship | 0000100000 |
| J_Q06bUK |  |  | 7 | NVQ Level 3, City \& | 0000010000 |
| J_Q06bUK |  |  | 8 | Degree or higher deg | 0000001000 |
| J_Q06bUK |  |  | 9 | NVQ Level 4 or 5, HN | 0000000100 |
| J_Q06bUK |  |  | 96 | Valid skip | 0000000010 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q06bUS | 5 | Background - Mother/female guardian - Highest leve | -1 | Missing | 0001 |
| J_Q06bUS |  |  | 1 | Less than high schoo | 0000 |
| J_Q06bUS |  |  | 2 | High school diploma/ | 1000 |
| J_Q06bUS |  |  | 3 | College degree or hi | 0100 |
| J_Q06bUS |  |  | 6 | Valid skip | 0010 |
| J_Q06cBE | 5 | Mother/female guardian - paid job | -1 | Missing | 0001 |
| J_Q06cBE |  |  | 1 | Yes | 0000 |
| J_Q06cBE |  |  | 2 | No | 1000 |
| J_Q06cBE |  |  | 3 | N/A | 0100 |
| J_Q06cBE |  |  | 6 | Valid skip | 0010 |
| J_Q06cCZ | 5 | Background - Mother/female guardien - paid job | -1 | Missing | 0001 |
| J_Q06cCZ |  |  | 1 | Yes | 0000 |
| J_Q06cCZ |  |  | 2 | No | 1000 |
| J_Q06cCZ |  |  | 3 | Not applicable, no f | 0100 |
| J_Q06cCZ |  |  | 96 | Valid skip | 0010 |
| J_Q06cDEX | 5 | Background - Mother - Hold a paying job | -1 | Missing | 0001 |
| J_Q06cDEX |  |  | 1 | Yes | 0000 |
| J_Q06cDEX |  |  | 2 | No | 1000 |
| J_Q06cDEX |  |  | 3 | Not applicable, moth | 0100 |
| J_Q06cDEX |  |  | 6 | Valid skip | 0010 |
| J_Q06cES | 5 | Empleo remunerado madre o tutora | -1 | Missing | 0001 |
| J_Q06cES |  |  | 1 | Not stated or inferr | 0000 |
| J_Q06cES |  |  | 2 | No | 1000 |
| J_Q06cES |  |  | 3 | No es pertinente, ma | 0100 |
| J_Q06cES |  |  | 6 | Valid skip | 0010 |
| J_Q06cIE | 5 | Background - Motherlfemale guardian - Work situati | -1 | Missing | 0001 |
| J_Q06cIE |  |  | 1 | Yes | 0000 |
| J_Q06cIE |  |  | 2 | No | 1000 |
| J_Q06cIE |  |  | 3 | Not applicable, pare | 0100 |
| J_Q06cIE |  |  | 96 | Valid skip | 0010 |
| J_Q06cIT | 5 | Background - Mother/female guardian - Hold a payin | -1 | Missing | 0001 |
| J_Q06cIT |  |  | 1 | Yes | 0000 |
| J_Q06cIT |  |  | 2 | No | 1000 |
| J_Q06cIT |  |  | 3 | Not applicable, no m | 0100 |
| J_Q06cIT |  |  | 6 | Valid skip | 0010 |
| J_Q06cPL | 5 | Background - Mother/female guardian - Hold a payin | -1 | Missing | 0001 |
| J_Q06cPL |  |  | 1 | Yes | 0000 |
| J_Q06cPL |  |  | 2 | No | 1000 |
| J_Q06cPL |  |  | 3 | Not applicable, no m | 0100 |
| J_Q06cPL |  |  | 6 | Valid skip | 0010 |
| J_Q06cUK | 5 | Mother/Female guardian - hold paying job | -1 | Missing | 0001 |
| J_Q06cUK |  |  | 1 | Yes | 0000 |
| J_Q06cUK |  |  | 2 | No | 1000 |
| J_Q06cUK |  |  | 3 | Not applicable, moth | 0100 |
| J_Q06cUK |  |  | 6 | Valid skip | 0010 |

PIAAC Contrast Coding used for Conditioning - National Variables

\begin{tabular}{|c|c|c|c|c|c|}
\hline ITEM_ID \& N Contrast \& LABEL \& VALUE \& Category Label \& CONTRAST <br>
\hline J_Q06dFR1 \& \multirow[t]{18}{*}{6

12} \& \multirow[t]{18}{*}{Background - Mother/female guardian - Job status
Background - Mother/female guardian - Job main tas} \& -1 \& Missing \& 00001 <br>
\hline J_Q06dFR1 \& \& \& 1 \& Running his/her own \& 00000 <br>
\hline J_Q06dFR1 \& \& \& 2 \& Helping one of his/h \& 10000 <br>
\hline J_Q06dFR1 \& \& \& 3 \& As a civil servant w \& 01000 <br>
\hline J_Q06dFR1 \& \& \& 4 \& As an employee \& 00100 <br>
\hline J_Q06dFR1 \& \& \& 6 \& Valid skip \& 00010 <br>
\hline J_Q06eFR \& \& \& -1 \& Missing \& 00000000001 <br>
\hline J_Q06eFR \& \& \& 1 \& Production, construc \& 00000000000 <br>
\hline J_Q06eFR \& \& \& 2 \& Repairing, maintaini \& 10000000000 <br>
\hline J_Q06eFR \& \& \& 3 \& Cleaning, caretaking \& 01000000000 <br>
\hline J_Q06eFR \& \& \& 4 \& Handing, logistics \& 00100000000 <br>
\hline J_Q06eFR \& \& \& 5 \& Secretary, reception \& 00010000000 <br>
\hline J_Q06eFR \& \& \& 6 \& Accounting, administ \& 00001000000 <br>
\hline J_Q06eFR \& \& \& 7 \& Sales and marketing \& 00000100000 <br>
\hline J_Q06eFR \& \& \& 8 \& Research and develop \& 00000010000 <br>
\hline J_Q06eFR \& \& \& 9 \& Education, healthcar \& 00000001000 <br>
\hline J_Q06eFR \& \& \& 10 \& Other. Specify. \& 00000000100 <br>
\hline J_Q06eFR \& \& \& 96 \& Valid skip \& 00000000010 <br>
\hline J_Q07aAU \& \multirow[t]{4}{*}{4} \& \multirow[t]{4}{*}{Background - Father/male guardian - Whether born i} \& -1 \& Missing \& 001 <br>
\hline J_Q07aAU \& \& \& 1 \& Yes \& 000 <br>
\hline J_Q07aAU \& \& \& 2 \& No \& 100 <br>
\hline J_Q07aAU \& \& \& 6 \& Valid skip \& 010 <br>
\hline J_Q07aDEX \& \multirow[t]{11}{*}{11} \& \multirow[t]{11}{*}{Background - Father/male guardian - country of bir} \& -1 \& Missing \& 0000000001 <br>
\hline J_Q07aDEX \& \& \& 1 \& Turkey \& 0000000000 <br>
\hline J_Q07aDEX \& \& \& 2 \& Italy \& 1000000000 <br>
\hline J_Q07aDEX \& \& \& 3 \& Poland \& 0100000000 <br>
\hline J_Q07aDEX \& \& \& 4 \& Greece \& 0010000000 <br>
\hline J_Q07aDEX \& \& \& 5 \& Serbia \& 0001000000 <br>
\hline J_Q07aDEX \& \& \& 6 \& Croatia \& 0000100000 <br>
\hline J_Q07aDEX \& \& \& 7 \& Russian Federation \& 0000010000 <br>
\hline J_Q07aDEX \& \& \& 8 \& Bosnia and Herzegovi \& 0000001000 <br>
\hline J_Q07aDEX \& \& \& 9 \& Another country \& 0000000100 <br>
\hline J_Q07aDEX \& \& \& 96 \& Valid skip \& 0000000010 <br>
\hline J_Q07bAT \& \multirow[t]{9}{*}{9} \& \multirow[t]{9}{*}{Background - Father/male guardian - Highest level} \& -1 \& Missing \& 00000001 <br>
\hline J_Q07bAT \& \& \& 1 \& Compulsory school \& 00000000 <br>
\hline J_Q07bAT \& \& \& 2 \& Apprenticeship \& 10000000 <br>
\hline J_Q07bAT \& \& \& 3 \& Vocational School \& 01000000 <br>
\hline J_Q07bAT \& \& \& 4 \& Master Craftsman's c \& 00100000 <br>
\hline J_Q07bAT \& \& \& 5 \& Secondary school wit \& 00010000 <br>
\hline J_Q07bAT \& \& \& 6 \& Academic Study \& 00001000 <br>
\hline J_Q07bAT \& \& \& 7 \& Other education afte \& 00000100 <br>
\hline J_Q07bAT \& \& \& 96 \& Valid skip \& 00000010 <br>
\hline J_Q07bAU \& \multirow[t]{3}{*}{17} \& \multirow[t]{3}{*}{Background - Father/male guardian - Highest level} \& -1 \& Missing \& 000000000000001 <br>
\hline J_Q07bAU \& \& \& 1 \& Year 8 or below \& 0000000000000000 <br>
\hline J_Q07bAU \& \& \& 2 \& Year 9 or equivalent \& 100000000000000 <br>
\hline
\end{tabular}

## PIAAC Contrast Coding used for Conditioning - National Variables



| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q07bDE1_REC | 13 | Background - Father/male guardian - Highest level | 5 | Left the Polytechnis | 000100000 |
| J_Q07bDE1_REC |  |  | 6 | Fachhochschulereife, | 000010000 |
| J_Q07bDE1_REC |  |  | 7 | Abitur/EOS (General | 000001000 |
| J_Q07bDE1_REC |  |  | 8 | Another school leavi | 000000100 |
| J_Q07bDE1_REC |  |  | 96 | Valid skip | 000000010 |
| J_Q07bDE2 |  |  | -1 | Missing | 000000000001 |
| J_Q07bDE2 |  |  | 1 | No professional qual | 000000000000 |
| J_Q07bDE2 |  |  | 2 | Apprenticeship (Lehr | 10000000000 |
| J_Q07bDE2 |  |  | 3 | Basic vocational tra | 01000000000 |
| J_Q07bDE2 |  |  | 4 | Training at Fachschu | 001000000000 |
| J_Q07bDE2 |  |  | 5 | Berufsakademie, Fach | 000100000000 |
| J_Q07bDE2 |  |  | 6 | Bachelor at Fachhoch | 000010000000 |
| J_Q07bDE2 |  |  | 7 | Master/Diplom at Fac | 000001000000 |
| J_Q07bDE2 |  |  | 8 | Bachelor at universi | 000000100000 |
| J_Q07bDE2 |  |  | 9 | Master/Diplom at uni | 000000010000 |
| J_Q07bDE2 |  |  | 10 | Doctorate | 000000001000 |
| J_Q07bDE2 |  |  | 11 | Another professional | 000000000100 |
| J_Q07bDE2 |  |  | 96 | Valid skip | 000000000010 |
| J_Q07bDE2_REC | 13 | Background - Father/male guardian - Highest level | -1 | Missing | 000000000001 |
| J_Q07bDE2_REC |  |  | 1 | No professional qual | 000000000000 |
| J_Q07bDE2_REC |  |  | 2 | Apprenticeship (Lehr | 100000000000 |
| J_Q07bDE2_REC |  |  | 3 | Basic vocational tra | 01000000000 |
| J_Q07bDE2_REC |  |  | 4 | Training at Fachschu | 001000000000 |
| J_Q07bDE2_REC |  |  | 5 | Berufsakademie, Fach | 000100000000 |
| J_Q07bDE2_REC |  |  | 6 | Bachelor at Fachhoch | 000010000000 |
| J_Q07bDE2_REC |  |  | 7 | Master/Diplom at Fac | 000001000000 |
| J_Q07bDE2_REC |  |  | 8 | Bachelor at universi | 000000100000 |
| J_Q07bDE2_REC |  |  | 9 | Master/Diplom at uni | 000000010000 |
| J_Q07bDE2_REC |  |  | 10 | Doctorate | 000000001000 |
| J_Q07bDE2_REC |  |  | 11 | Another professional | 000000000100 |
| J_Q07bDE2_REC |  |  | 96 | Valid skip | 000000000010 |
| J_Q07bFR | 16 | Background - Father/male guardian - Highest level | -1 | Missing | 000000000000001 |
| J_Q07bFR |  |  | 1 | No formal qualificat | 000000000000000 |
| J_Q07bFR |  |  | 2 | ISCED 1 | 100000000000000 |
| J_Q07bFR |  |  | 3 | ISCED 2 | 010000000000000 |
| J_Q07bFR |  |  | 4 | ISCED 3C shorter tha | 001000000000000 |
| J_Q07bFR |  |  | 5 | ISCED 3C 2 years or | 000100000000000 |
| J_Q07bFR |  |  | 6 | ISCED 3A-B | 000010000000000 |
| J_Q07bFR |  |  | 7 | ISCED 3 (without dis | 000001000000000 |
| J_Q07bFR |  |  | 8 | ISCED 4C | 000000100000000 |
| J_Q07bFR |  |  | 9 | ISCED 4A-B | 000000010000000 |
| J_Q07bFR |  |  | 10 | ISCED 4 (without dis | 000000001000000 |
| J_Q07bFR |  |  | 11 | ISCED 5B | 000000000100000 |
| J_Q07bFR |  |  | 12 | ISCED 5A, bachelor d | 000000000010000 |
| J_Q07bFR |  |  | 13 | ISCED 5A, master deg | 000000000001000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q07bFR | 6 | Background - Father/male guardian - Highest level | 14 | ISCED 6 | 000000000000100 |
| J_Q07bFR |  |  | 96 | Valid skip | 000000000000010 |
| J_Q07bPL |  |  | -1 | Missing | 00001 |
| J_Q07bPL |  |  | 1 | ISCED123cshort | 00000 |
| J_Q07bPL |  |  | 2 | ISCED3clong | 10000 |
| J_Q07bPL |  |  | 3 | ISCED3ba4 | 01000 |
| J_Q07bPL |  |  | 4 | ISCED56 | 00100 |
| J_Q07bPL |  |  | 6 | Valid skip | 00010 |
| J_Q07bUK | 11 | Background - Father/male guardian - Highest level | -1 | Missing | 0000000001 |
| J_Q07bUK |  |  | 1 | No qualifications | 0000000000 |
| J_Q07bUK |  |  | 2 | Key Skills, Basic sk | 1000000000 |
| J_Q07bUK |  |  | 3 | O levels, GCSE or eq | 0100000000 |
| J_Q07bUK |  |  | 4 | NVQ Level2, City \& G | 0010000000 |
| J_Q07bUK |  |  | 5 | A Levels or equivale | 0001000000 |
| J_Q07bUK |  |  | 6 | Trade apprenticeship | 0000100000 |
| J_Q07bUK |  |  | 7 | NVQ Level 3, City \& | 0000010000 |
| J_Q07bUK |  |  | 8 | Degree or higher deg | 0000001000 |
| J_Q07bUK |  |  | 9 | NVQ Level 4 or 5, HN | 0000000100 |
| J_Q07bUK |  |  | 96 | Valid skip | 0000000010 |
| J_Q07bUS | 5 | Background - Father/male guardian - Highest level | -1 | Missing | 0001 |
| J_Q07bUS |  |  | 1 | Less than high schoo | 0000 |
| J_Q07bUS |  |  | 2 | High school diploma/ | 1000 |
| J_Q07bUS |  |  | 3 | College degree or hi | 0100 |
| J_Q07bUS |  |  | 6 | Valid skip | 0010 |
| J_Q07cBE | 5 | Paying job - Father/male guardian | -1 | Missing | 0001 |
| J_Q07cBE |  |  | 1 | Yes | 0000 |
| J_Q07cBE |  |  | 2 | No | 1000 |
| J_Q07cBE |  |  | 3 | N/A | 0100 |
| J_Q07cBE |  |  | 6 | Valid skip | 0010 |
| J_Q07cCZ | 5 | Background - Father/male guardien - paid job | -1 | Missing | 0001 |
| J_Q07cCZ |  |  | 1 | Yes | 0000 |
| J_Q07cCZ |  |  | 2 | No | 1000 |
| J_Q07cCZ |  |  | 3 | Not applicable, no f | 0100 |
| J_Q07cCZ |  |  | 96 | Valid skip | 0010 |
| J_Q07cDEX | 5 | Background - Father - Hold a paying job | -1 | Missing | 0001 |
| J_Q07cDEX |  |  | 1 | Yes | 0000 |
| J_Q07cDEX |  |  | 2 | No | 1000 |
| J_Q07cDEX |  |  | 3 | Not applicable, moth | 0100 |
| J_Q07cDEX |  |  | 6 | Valid skip | 0010 |
| J_Q07cES | 5 | Empleo remunerado padre o tutor | -1 | Missing | 0001 |
| J_Q07cES |  |  | 1 | Not stated or inferr | 0000 |
| J_Q07cES |  |  | 2 | No | 1000 |
| J_Q07cES |  |  | 3 | No es pertinente, pa | 0100 |
| J_Q07cES |  |  | 6 | Valid skip | 0010 |
| J_Q07cIE | 5 | Background - Fatherlmale guardian - Work situation | -1 | Missing | 0001 |

## PIAAC Contrast Coding used for Conditioning - National Variables



| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| J_Q09aIEX | 4 | Income sources - Unemployment benefit | -1 | Missing | 001 |
| J_Q09aIEX |  |  | 1 | Yes | 000 |
| J_Q09aIEX |  |  | 2 | No | 100 |
| J_Q09aIEX |  |  | 6 | Valid skip | 010 |
| J_Q09bIEX | 4 | Income sources - Disability benefit | -1 | Missing | 001 |
| J_Q09bIEX |  |  | 1 | Yes | 000 |
| J_Q09bIEX |  |  | 2 | No | 100 |
| J_Q09bIEX |  |  | 6 | Valid skip | 010 |
| J_Q09cIEX | 4 | Income sources - Illness benefit | -1 | Missing | 001 |
| J_Q09cIEX |  |  | 1 | Yes | 000 |
| J_Q09cIEX |  |  | 2 | No | 100 |
| J_Q09cIEX |  |  | 6 | Valid skip | 010 |
| J_Q09dIEX | 4 | Income sources - Early retirement benefit | -1 | Missing | 001 |
| J_Q09dIEX |  |  | 1 | Yes | 000 |
| J_Q09dIEX |  |  | 2 | No | 100 |
| J_Q09dIEX |  |  | 6 | Valid skip | 010 |
| J_q09edkx2 | 4 | Do you expect to stop working entirely when you re | -1 | Missing | 001 |
| J_q09edkx2 |  |  | 1 | 1 expect to stop wor | 000 |
| J_q09edkx2 |  |  | 2 | I expect to retire g | 100 |
| J_q09edkx2 |  |  | 96 | Valid skip | 010 |
| J_Q09edkx3 | 5 | Do you expect to retire because you have to.....? | -1 | Missing | 0001 |
| J_Q09edkx3 |  |  | 1 | 1 expect to retire w | 0000 |
| J_Q09edkx3 |  |  | 2 | I expect that retire | 1000 |
| J_Q09edkx3 |  |  | 3 | 1 expect | 0100 |
| J_Q09edkx3 |  |  | 96 | Valid skip | 0010 |
| J_Q09edkx4 | 7 | What do you expect will be the primary source of i | -1 | Missing | 000001 |
| J_Q09edkx4 |  |  | 1 | Early retirement wag | 000000 |
| J_Q09edkx4 |  |  | 2 | Own pension savings | 100000 |
| J_Q09edkx4 |  |  | 3 | Old age pension | 010000 |
| J_Q09edkx4 |  |  | 4 | Disability pension | 001000 |
| J_Q09edkx4 |  |  | 5 | Other | 000100 |
| J_Q09edkx4 |  |  | 96 | Valid skip | 000010 |
| J_Q09eIEX | 4 | Income sources - Retirement benefit | -1 | Missing | 001 |
| J_Q09eIEX |  |  | 1 | Yes | 000 |
| J_Q09eIEX |  |  | 2 | No | 100 |
| J_Q09eIEX |  |  | 6 | Valid skip | 010 |
| J_Q09eIEX1 | 4 | Income sources - Maternity benefit | -1 | Missing | 001 |
| J_Q09eIEX1 |  |  | 1 | Yes | 000 |
| J_Q09eIEX1 |  |  | 2 | No | 100 |
| J_Q09eIEX1 |  |  | 6 | Valid skip | 010 |
| J_Q09eIEX2 | 4 | Income sources - Family Income Supplement | -1 | Missing | 001 |
| J_Q09eIEX2 |  |  | 1 | Yes | 000 |
| J_Q09eIEX2 |  |  | 2 | No | 100 |
| J_Q09eIEX2 |  |  | 6 | Valid skip | 010 |
| J_Q10UKX1 | 13 | Background - Religion - Scotland | -1 | Missing | 000000000001 |

## PIAAC Contrast Coding used for Conditioning - National Variables



PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| K_Q01AU | 8 Income - Wages or salaries - Period |  | 6 | Valid skip | 010 |
| K_Q01bAU |  |  | -1 | Missing | 0000001 |
| K_Q01bAU |  |  | 1 | Week | 0000000 |
| K_Q01bAU |  |  | 2 | Fortnight | 1000000 |
| K_Q01bAU |  |  | 3 | Four weeks | 0100000 |
| K_Q01bAU |  |  | 4 | Calendar month | 0010000 |
| K_Q01bAU |  |  | 5 | Year | 0001000 |
| K_Q01bAU |  |  | 6 | Other (please specif | 0000100 |
| K_Q01bAU |  |  | 96 | Valid skip | 0000010 |
| K_Q02bAU | 14 | Income - Current pensions | -1 | Missing | 0000000000001 |
| K_Q02bAU |  |  | 1 | Australian Age Pensi | 0000000000000 |
| K_Q02bAU |  |  | 2 | Service Pension from | 1000000000000 |
| K_Q02bAU |  |  | 3 | Disability Support P | 0100000000000 |
| K_Q02bAU |  |  | 4 | Newstart Allowance | 0010000000000 |
| K_Q02bAU |  |  | 5 | Carer Payment | 0001000000000 |
| K_Q02bAU |  |  | 6 | Partner Allowance | 0000100000000 |
| K_Q02bAU |  |  | 7 | Widow Allowance from | 0000010000000 |
| K_Q02bAU |  |  | 8 | Wife Pension | 0000001000000 |
| K_Q02bAU |  |  | 9 | Mature Age Allowance | 0000000100000 |
| K_Q02bAU |  |  | 10 | Sickness Allowance | 0000000010000 |
| K_Q02bAU |  |  | 11 | Special Benefit | 0000000001000 |
| K_Q02bAU |  |  | 12 | No/None of these | 0000000000100 |
| K_Q02bAU |  |  | 96 | Valid skip | 0000000000010 |
| K_Q02bAU2 | 8 | Income - Current pension - Period | -1 | Missing | 0000001 |
| K_Q02bAU2 |  |  | 1 | Week | 0000000 |
| K_Q02bAU2 |  |  | 2 | Fortnight | 1000000 |
| K_Q02bAU2 |  |  | 3 | Four weeks | 0100000 |
| K_Q02bAU2 |  |  | 4 | Calendar month | 0010000 |
| K_Q02bAU2 |  |  | 5 | Year | 0001000 |
| K_Q02bAU2 |  |  | 6 | Other (please specif | 0000100 |
| K_Q02bAU2 |  |  | 96 | Valid skip | 0000010 |
| K_Q03AU_01 | 4 | Income - Current pensions2 | -1 | Missing | 001 |
| K_Q03AU_01 |  |  | 1 | Marked | 000 |
| K_Q03AU_01 |  |  | 2 | Not marked | 100 |
| K_Q03AU_01 |  |  | 6 | Valid skip | 010 |
| K_Q03AU_02 | 4 | Income - Current pensions2 | -1 | Missing | 001 |
| K_Q03AU_02 |  |  | 1 | Marked | 000 |
| K_Q03AU_02 |  |  | 2 | Not marked | 100 |
| K_Q03AU_02 |  |  | 6 | Valid skip | 010 |
| K_Q03AU_03 | 4 | Income - Current pensions2 | -1 | Missing | 001 |
| K_Q03AU_03 |  |  | 1 | Marked | 000 |
| K_Q03AU_03 |  |  | 2 | Not marked | 100 |
| K_Q03AU_03 |  |  | 6 | Valid skip | 010 |
| K_Q03AU_04 | 4 | Income - Current pensions2 | -1 | Missing | 001 |
| K_Q03AU_04 |  |  | 1 | Marked | 000 |

## PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| K_Q03AU_04 | 4 | Income - Current pensions2 | 2 | Not marked | 100 |
| K_Q03AU_04 |  |  | 6 | Valid skip | 010 |
| K_Q03AU_05 |  |  | -1 | Missing | 001 |
| K_Q03AU_05 |  |  | 1 | Marked | 000 |
| K_Q03AU_05 |  |  | 2 | Not marked | 100 |
| K_Q03AU_05 |  |  | 6 | Valid skip | 010 |
| K_Q03AU_06 | 4 | Income - Current pensions2 | -1 | Missing | 001 |
| K_Q03AU_06 |  |  | 1 | Marked | 000 |
| K_Q03AU_06 |  |  | 2 | Not marked | 100 |
| K_Q03AU_06 |  |  | 6 | Valid skip | 010 |
| K_Q03AU_07 | 4 | Income - Current pensions2 | -1 | Missing | 001 |
| K_Q03AU_07 |  |  | 1 | Marked | 000 |
| K_Q03AU_07 |  |  | 2 | Not marked | 100 |
| K_Q03AU_07 | 4 |  | 6 | Valid skip | 010 |
| K_Q03AU_08 |  | Income - Current pensions2 | -1 | Missing | 001 |
| K_Q03AU_08 |  |  | 1 | Marked | 000 |
| K_Q03AU_08 |  |  | 2 | Not marked | 100 |
| K_Q03AU_08 |  |  | 6 | Valid skip | 010 |
| K_Q03AU_09 | 4 | Income - Current pensions2 | -1 | Missing | 001 |
| K_Q03AU_09 |  |  | 1 | Marked | 000 |
| K_Q03AU_09 |  |  | 2 | Not marked | 100 |
| K_Q03AU_09 |  |  | 6 | Valid skip | 010 |
| K_Q03cAU | 8 | Income - Current pension2 - Period | -1 | Missing | 0000001 |
| K_Q03cAU |  |  | 1 | Week | 0000000 |
| K_Q03cAU |  |  | 2 | Fortnight | 1000000 |
| K_Q03cAU |  |  | 3 | Four weeks | 0100000 |
| K_Q03cAU |  |  | 4 | Calendar month | 0010000 |
| K_Q03cAU |  |  | 5 | Year | 0001000 |
| K_Q03cAU |  |  | 6 | Other (please specif | 0000100 |
| K_Q03cAU |  |  | 96 | Valid skip | 0000010 |
| K_Q03eAU | 8 | Income - Family Tax Benefit - Period | -1 | Missing | 0000001 |
| K_Q03eAU |  |  | 1 | Week | 0000000 |
| K_Q03eAU |  |  | 2 | Fortnight | 1000000 |
| K_Q03eAU |  |  | 3 | Four weeks | 0100000 |
| K_Q03eAU |  |  | 4 | Calendar month | 0010000 |
| K_Q03eAU |  |  | 5 | Year | 0001000 |
| K_Q03eAU |  |  | 6 | Other (please specif | 0000100 |
| K_Q03eAU |  |  | 96 | Valid skip | 0000010 |
| K_Q04aAU2 | 8 | Income - Child Support or Maintenance - Period | -1 | Missing | 0000001 |
| K_Q04aAU2 |  |  | 1 | Week | 0000000 |
| K_Q04aAU2 |  |  | 2 | Fortnight | 1000000 |
| K_Q04aAU2 |  |  | 3 | Four weeks | 0100000 |
| K_Q04aAU2 |  |  | 4 | Calendar month | 0010000 |
| K_Q04aAU2 |  |  | 5 | Year | 0001000 |
| K_Q04aAU2 |  |  | 6 | Other (please specif | 0000100 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| K_Q04aAU2 | 4 | Income - Other listed sources | 96 | Valid skip | 0000010 |
| K_Q04AU_01 |  |  | -1 | Missing | 001 |
| K_Q04AU_01 |  |  | 1 | Marked | 000 |
| K_Q04AU_01 |  |  | 2 | Not marked | 100 |
| K_Q04AU_01 |  |  | 6 | Valid skip | 010 |
| K_Q04AU_02 | 4 | Income - Other listed sources | -1 | Missing | 001 |
| K_Q04AU_02 |  |  | 1 | Marked | 000 |
| K_Q04AU_02 |  |  | 2 | Not marked | 100 |
| K_Q04AU_02 |  |  | 6 | Valid skip | 010 |
| K_Q04AU_03 | 4 | Income - Other listed sources | -1 | Missing | 001 |
| K_Q04AU_03 |  |  | 1 | Marked | 000 |
| K_Q04AU_03 |  |  | 2 | Not marked | 100 |
| K_Q04AU_03 | 4 |  | 6 | Valid skip | 010 |
| K_Q04AU_04 |  | Income - Other listed sources | -1 | Missing | 001 |
| K_Q04AU_04 |  |  | 1 | Marked | 000 |
| K_Q04AU_04 |  |  | 2 | Not marked | 100 |
| K_Q04AU_04 | 8 |  | 6 | Valid skip | 010 |
| K_Q04bAU2 |  | Income - Superannuation, annuity or private pensio | -1 | Missing | 0000001 |
| K_Q04bAU2 |  |  | 1 | Week | 0000000 |
| K_Q04bAU2 |  |  | 2 | Fortnight | 1000000 |
| K_Q04bAU2 |  |  | 3 | Four weeks | 0100000 |
| K_Q04bAU2 |  |  | 4 | Calendar month | 0010000 |
| K_Q04bAU2 |  |  | 5 | Year | 0001000 |
| K_Q04bAU2 |  |  | 6 | Other (please specif | 0000100 |
| K_Q04bAU2 |  |  | 96 | Valid skip | 0000010 |
| K_Q04cAU2 | 8 | Income - Workers' compensation - Period | -1 | Missing | 0000001 |
| K_Q04cAU2 |  |  | 1 | Week | 0000000 |
| K_Q04cAU2 |  |  | 2 | Fortnight | 1000000 |
| K_Q04cAU2 |  |  | 3 | Four weeks | 0100000 |
| K_Q04cAU2 |  |  | 4 | Calendar month | 0010000 |
| K_Q04cAU2 |  |  | 5 | Year | 0001000 |
| K_Q04cAU2 |  |  | 6 | Other (please specif | 0000100 |
| K_Q04cAU2 |  |  | 96 | Valid skip | 0000010 |
| K_Q05aAU | 5 | Income - Rental investment property - profit/loss | -1 | Missing | 0001 |
| K_Q05aAU |  |  | 1 | Profit | 0000 |
| K_Q05aAU |  |  | 2 | Loss | 1000 |
| K_Q05aAU |  |  | 3 | Neither | 0100 |
| K_Q05aAU |  |  | 6 | Valid skip | 0010 |
| K_Q05AU | 4 | Income - Rental investment property | -1 | Missing | 001 |
| K_Q05AU |  |  | 1 | Yes | 000 |
| K_Q05AU |  |  | 2 | No | 100 |
| K_Q05AU | 6 |  | 6 | Valid skip | 010 |
| K_Q06AU1 |  | Income - Business - current fin year - profit/loss | -1 | Missing | 00001 |
| K_Q06AU1 |  |  | 1 | Profit | 00000 |
| K_Q06AU1 |  |  | 2 | Loss | 10000 |


| ITEM_ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| K_Q06AU1 | 4 Income - Other business |  | 3 | Neither | 01000 |
| K_Q06AU1 |  |  | 4 | Previously reported | 00100 |
| K_Q06AU1 |  |  | 6 | Valid skip | 00010 |
| K_Q06AU4 |  |  | -1 | Missing | 001 |
| K_Q06AU4 |  |  | 1 | Yes | 000 |
| K_Q06AU4 |  |  | 2 | No | 100 |
| K_Q06AU4 |  |  | 6 | Valid skip | 010 |
| K_Q06AU5 | 5 | Income - Other business - profit/loss | -1 | Missing | 0001 |
| K_Q06AU5 |  |  | 1 | Profit | 0000 |
| K_Q06AU5 |  |  | 2 | Loss | 1000 |
| K_Q06AU5 |  |  | 3 | Neither | 0100 |
| K_Q06AU5 |  |  | 6 | Valid skip | 0010 |
| K_Q07AU | 4 | Income - Shares | -1 | Missing | 001 |
| K_Q07AU |  |  | 1 | Yes | 000 |
| K_Q07AU |  |  | 2 | No | 100 |
| K_Q07AU |  |  | 6 | Valid skip | 010 |
| K_Q07bAU | 4 | Income - Shares - less than \$100 | -1 | Missing | 001 |
| K_Q07bAU |  |  | 1 | Yes | 000 |
| K_Q07bAU |  |  | 2 | No | 100 |
| K_Q07bAU |  |  | 6 | Valid skip | 010 |
| K_Q08AU | 4 | Income - Interest | -1 | Missing | 001 |
| K_Q08AU |  |  | 1 | Yes | 000 |
| K_Q08AU |  |  | 2 | No | 100 |
| K_Q08AU |  |  | 6 | Valid skip | 010 |
| K_Q08bAU | 4 | Income - Interest - less than \$100 | -1 | Missing | 001 |
| K_Q08bAU |  |  | 1 | Yes | 000 |
| K_Q08bAU |  |  | 2 | No | 100 |
| K_Q08bAU |  |  | 6 | Valid skip | 010 |
| K_Q09AU | 4 | Income - Any other sources | -1 | Missing | 001 |
| K_Q09AU |  |  | 1 | Yes | 000 |
| K_Q09AU |  |  | 2 | No | 100 |
| K_Q09AU |  |  | 6 | Valid skip | 010 |
| K_Q09bAU | 8 | Income - Any other sources - Period | -1 | Missing | 0000001 |
| K_Q09bAU |  |  | 1 | Week | 0000000 |
| K_Q09bAU |  |  | 2 | Fortnight | 1000000 |
| K_Q09bAU |  |  | 3 | Four weeks | 0100000 |
| K_Q09bAU |  |  | 4 | Calendar month | 0010000 |
| K_Q09bAU |  |  | 5 | Year | 0001000 |
| K_Q09bAU |  |  | 6 | Other (please specif | 0000100 |
| K_Q09bAU |  |  | 96 | Valid skip | 0000010 |
| K_Q11AU | 11 | Income - Main source | -1 | Missing | 0000000001 |
| K_Q11AU |  |  | 1 | Wages or salary, inc | 0000000000 |
| K_Q11AU |  |  | 2 | Government pension o | 1000000000 |
| K_Q11AU |  |  | 3 | Child support or mai | 0100000000 |
| K_Q11AU |  |  | 4 | Superannuation, an a | 0010000000 |



## PIAAC Contrast Coding used for Conditioning - National Variables



PIAAC Contrast Coding used for Conditioning - National Variables

| ITEM ID | N Contrast | LABEL | VALUE | Category Label | CONTRAST |
| :---: | :---: | :---: | :---: | :---: | :---: |
| RESPONDENTAU | 4 Attending secondary school |  | 2 | No | 100 |
| RESPONDENTAU |  |  | 6 | Valid skip | 010 |
| SecSchaU |  |  | -1 | Missing | 001 |
| SecSchaU |  |  | 1 | Yes | 000 |
| SecSchAU |  |  | 2 | No | 100 |
| SecSchaU |  |  | 6 | Valid skip | 010 |
| TerSchAU | 4 | Attending full-time tertiary study | -1 | Missing | 001 |
| TerSchAU |  |  | 1 | Yes | 000 |
| TerSchaU |  |  | 2 | No | 100 |
| TerSchAU |  |  | 6 | Valid skip | 010 |

## Appendix 3: Design Effect Tables

PIAAC Design Effects

|  | Literacy Scale overall |  |  |
| :--- | :---: | :---: | :---: |
|  |  |  | Design |
| CNTRYID | Average | (s.e.) | Effect |
| Australia | 280.40 | 0.91 | 2.39 |
| Austria | 269.45 | 0.74 | 1.41 |
| Canada | 273.49 | 0.57 | 3.45 |
| Cyprus* | 268.84 | 0.75 | 1.54 |
| Czech Republic | 274.01 | 0.98 | 3.53 |
| Denmark | 270.79 | 0.62 | 1.24 |
| England (UK) | 272.58 | 1.05 | 2.33 |
| England/N. Ireland (UK) | 272.46 | 1.02 | 3.81 |
| Estonia | 275.88 | 0.72 | 2.00 |
| Finland | 287.55 | 0.67 | 0.94 |
| Flanders (Belgium) | 275.48 | 0.83 | 1.55 |
| France | 262.14 | 0.59 | 1.01 |
| Germany | 269.81 | 0.92 | 2.01 |
| Ireland | 266.54 | 0.92 | 2.25 |
| Italy | 250.48 | 1.09 | 2.75 |
| Japan | 296.24 | 0.68 | 1.54 |
| Korea | 272.56 | 0.58 | 1.31 |
| Netherlands | 284.01 | 0.71 | 1.10 |
| Northern Ireland (UK) | 268.70 | 1.93 | 6.62 |
| Norway | 278.43 | 0.61 | 0.83 |
| Poland | 266.90 | 0.60 | 1.48 |
| Russian Federation* | 275.23 | 2.73 | 15.77 |
| Slovak Republic | 273.85 | 0.62 | 1.35 |
| Spain | 251.79 | 0.71 | 1.27 |
| Sweden | 279.23 | 0.68 | 0.80 |
| United States | 269.81 | 1.05 | 2.21 |

* Please refer to notes $A$ and $B$ regarding Cyprus, and the note regarding the Russian Federation in the Note to Readers section of this report.

PIAAC Design Effects

|  | Literacy Scale by Gender |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Female |  |  |  |  | Male |  |  |
|  |  |  | Design |  | Design |  |  |  |
|  | Average | (s.e.) | Effect | Average | (s.e.) | Effect |  |  |
|  | 279.48 | 1.11 | 1.92 | 281.32 | 1.28 | 2.19 |  |  |
|  | 267.39 | 0.93 | 1.19 | 271.53 | 1.04 | 1.36 |  |  |
|  | 272.34 | 0.79 | 3.65 | 274.63 | 0.86 | 3.59 |  |  |
|  | 269.60 | 0.97 | 1.57 | 267.99 | 1.18 | 1.46 |  |  |
| Czech Republic | 272.32 | 1.30 | 3.37 | 275.68 | 1.26 | 2.61 |  |  |
| Denmark | 271.00 | 0.80 | 1.12 | 270.58 | 1.03 | 1.55 |  |  |
| England (UK) | 271.21 | 1.33 | 2.25 | 273.96 | 1.41 | 1.71 |  |  |
| England/N. Ireland (UK) | 271.03 | 1.29 | 3.70 | 273.90 | 1.37 | 2.77 |  |  |
| Estonia | 276.64 | 0.81 | 1.45 | 275.06 | 1.09 | 1.96 |  |  |
| Finland | 289.15 | 0.99 | 1.09 | 285.96 | 1.21 | 1.49 |  |  |
| Flanders (Belgium) | 272.81 | 1.08 | 1.39 | 278.09 | 0.97 | 1.01 |  |  |
| France | 262.23 | 0.69 | 0.71 | 262.05 | 0.87 | 1.05 |  |  |
| Germany | 267.21 | 1.19 | 1.76 | 272.35 | 1.17 | 1.58 |  |  |
| Ireland | 265.43 | 1.10 | 1.91 | 267.71 | 1.17 | 1.55 |  |  |
| Italy | 250.61 | 1.32 | 2.25 | 250.36 | 1.50 | 2.32 |  |  |
| Japan | 294.69 | 1.01 | 1.80 | 297.78 | 0.88 | 1.18 |  |  |
| Korea | 269.43 | 0.87 | 1.57 | 275.72 | 0.75 | 1.02 |  |  |
| Netherlands | 280.92 | 0.94 | 1.00 | 287.06 | 1.08 | 1.22 |  |  |
| Northern Ireland (UK) | 265.62 | 1.83 | 3.80 | 271.89 | 2.39 | 3.88 |  |  |
| Norway | 276.43 | 0.91 | 0.92 | 280.34 | 0.97 | 1.05 |  |  |
| Poland | 270.08 | 0.86 | 1.61 | 263.66 | 0.97 | 1.81 |  |  |
| Russian Federation* | 277.37 | 2.88 | 12.42 | 272.90 | 2.98 | 6.03 |  |  |
| Slovak Republic | 274.22 | 0.82 | 1.30 | 273.47 | 0.86 | 1.21 |  |  |
| Spain | 249.45 | 1.04 | 1.42 | 254.11 | 1.00 | 1.17 |  |  |
| Sweden | 277.54 | 1.10 | 1.02 | 280.88 | 1.08 | 1.06 |  |  |
| United States | 269.47 | 1.33 | 2.02 | 270.16 | 1.21 | 1.31 |  |  |

* Please refer to notes A and B regarding Cyprus, and the note regarding the Russian Federation in the Note to Readers section of this report.

|  | Literacy Scale by Age Group |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 24 or less |  |  | 25-34 |  |  | 35-44 |  |  | 45-54 |  |  | 55 plus |  |  |
| CNTRYID | Average | (s.e.) | Design Effect | Average | (s.e.) | Design Effect | Average | (s.e.) | Design Effect | Average | (s.e.) | Design Effect | Average | (s.e.) | Design Effect |
| Australia | 284.13 | 2.21 | 2.01 | 287.49 | 1.67 | 1.70 | 288.73 | 1.46 | 1.62 | 276.86 | 1.76 | 1.79 | 262.75 | 1.72 | 1.75 |
| Austria | 277.72 | 1.47 | 1.04 | 279.80 | 1.46 | 1.03 | 274.64 | 1.69 | 1.56 | 266.16 | 1.37 | 1.27 | 249.81 | 1.59 | 1.47 |
| Canada | 275.73 | 1.27 | 3.67 | 285.14 | 1.26 | 3.18 | 279.65 | 1.36 | 3.96 | 267.98 | 1.29 | 3.79 | 260.38 | 1.09 | 2.79 |
| Cyprus* | 267.14 | 1.67 | 1.25 | 275.13 | 1.72 | 1.84 | 269.92 | 1.55 | 1.42 | 270.03 | 1.66 | 1.49 | 260.67 | 1.61 | 1.38 |
| Czech Republic | 280.53 | 2.11 | 4.23 | 286.72 | 1.82 | 2.79 | 275.15 | 2.02 | 2.73 | 265.76 | 1.71 | 1.53 | 262.38 | 1.98 | 3.40 |
| Denmark | 276.06 | 1.32 | 1.07 | 282.06 | 1.75 | 1.17 | 281.11 | 1.65 | 1.69 | 265.50 | 1.41 | 1.28 | 252.42 | 1.05 | 1.37 |
| England (UK) | 265.45 | 2.37 | 1.76 | 280.10 | 2.13 | 1.93 | 279.19 | 1.62 | 1.23 | 271.25 | 1.82 | 1.49 | 265.33 | 1.98 | 1.91 |
| England/N. Ireland (UK) | 265.69 | 2.28 | 2.91 | 280.02 | 2.07 | 3.18 | 279.02 | 1.57 | 2.06 | 270.98 | 1.75 | 2.40 | 265.03 | 1.94 | 3.04 |
| Estonia | 287.07 | 1.28 | 1.35 | 285.90 | 1.66 | 2.01 | 277.75 | 1.21 | 1.21 | 268.79 | 1.42 | 1.58 | 260.62 | 1.51 | 2.07 |
| Finland | 296.71 | 1.86 | 1.66 | 308.87 | 1.73 | 1.42 | 298.78 | 2.07 | 1.70 | 283.62 | 1.81 | 1.41 | 259.73 | 1.45 | 1.42 |
| Flanders (Belgium) | 285.03 | 1.64 | 1.45 | 290.77 | 1.78 | 1.35 | 282.38 | 1.60 | 1.15 | 271.89 | 1.61 | 1.40 | 255.04 | 1.55 | 1.21 |
| France | 275.03 | 1.29 | 1.00 | 278.00 | 1.43 | 1.14 | 266.80 | 1.32 | 1.02 | 253.71 | 1.16 | 0.91 | 241.81 | 1.25 | 1.12 |
| Germany | 278.91 | 1.61 | 1.39 | 281.31 | 1.78 | 1.39 | 275.26 | 1.61 | 1.25 | 263.64 | 1.65 | 1.54 | 253.62 | 1.66 | 1.40 |
| Ireland | 270.57 | 1.82 | 1.48 | 275.62 | 1.51 | 1.54 | 271.09 | 1.75 | 2.05 | 259.30 | 2.09 | 2.09 | 250.51 | 1.81 | 1.65 |
| Italy | 260.80 | 2.72 | 2.06 | 260.24 | 2.21 | 1.86 | 252.77 | 1.91 | 2.37 | 248.78 | 1.82 | 1.87 | 233.36 | 2.21 | 2.71 |
| Japan | 299.42 | 1.56 | 1.52 | 309.21 | 1.74 | 2.23 | 307.01 | 1.01 | 1.02 | 297.06 | 1.50 | 1.57 | 273.35 | 1.60 | 1.89 |
| Korea | 292.94 | 1.72 | 2.84 | 289.53 | 1.16 | 1.31 | 277.55 | 1.20 | 1.67 | 258.60 | 1.35 | 1.76 | 244.10 | 1.43 | 1.39 |
| Netherlands | 294.61 | 1.64 | 1.41 | 298.07 | 2.00 | 1.42 | 293.98 | 1.84 | 1.63 | 277.24 | 1.74 | 1.49 | 260.80 | 1.57 | 1.37 |
| Northern Ireland (UK) | 272.35 | 2.72 | 2.10 | 277.62 | 2.87 | 2.88 | 273.92 | 2.33 | 2.45 | 262.49 | 2.63 | 2.71 | 255.11 | 3.22 | 3.69 |
| Norway | 275.04 | 1.43 | 1.05 | 288.53 | 1.85 | 1.22 | 288.16 | 1.56 | 1.12 | 277.45 | 1.52 | 1.26 | 261.87 | 1.47 | 1.11 |
| Poland | 281.48 | 1.07 | 2.95 | 277.19 | 1.49 | 2.07 | 268.11 | 1.91 | 1.42 | 259.09 | 1.69 | 1.07 | 249.12 | 1.72 | 1.40 |
| Russian Federation* | 274.03 | 3.98 | 11.08 | 272.79 | 4.06 | 6.96 | 277.70 | 3.86 | 4.79 | 277.22 | 3.69 | 4.44 | 274.73 | 3.88 | 5.51 |
| Slovak Republic | 276.00 | 1.61 | 1.88 | 278.36 | 1.45 | 1.49 | 278.32 | 1.37 | 1.26 | 270.08 | 1.30 | 1.26 | 265.97 | 1.27 | 1.23 |
| Spain | 263.88 | 1.57 | 1.37 | 262.80 | 1.48 | 1.23 | 259.57 | 1.33 | 1.15 | 248.48 | 1.53 | 1.26 | 226.73 | 1.87 | 1.55 |
| Sweden | 282.76 | 1.68 | 1.13 | 290.01 | 1.92 | 0.99 | 287.39 | 1.85 | 1.06 | 276.01 | 1.68 | 1.07 | 262.37 | 1.33 | 0.91 |
| United States | 271.53 | 2.00 | 1.78 | 275.48 | 1.96 | 1.52 | 273.38 | 1.83 | 1.31 | 265.93 | 1.69 | 1.16 | 262.89 | 1.54 | 1.00 |

* Please refer to notes A and B regarding Cyprus, and the note regarding the Russian Federation in the Note to Readers section of this report.

PIAAC Design Effects

|  | Numeracy Scale Overall |  |  |
| :--- | :---: | :---: | :---: |
|  |  |  | Design |
| CNTRYID | Average | (s.e.) | Effect |
| Australia | 267.63 | 0.95 | 2.06 |
| Austria | 275.04 | 0.88 | 1.61 |
| Canada | 265.46 | 0.71 | 4.39 |
| Cyprus* | 264.63 | 0.79 | 1.25 |
| Czech Republic | 275.73 | 0.93 | 2.75 |
| Denmark | 278.28 | 0.73 | 1.47 |
| England (UK) | 261.81 | 1.10 | 2.03 |
| England/N. Ireland (UK) | 261.73 | 1.07 | 3.33 |
| Estonia | 273.12 | 0.53 | 1.02 |
| Finland | 282.23 | 0.70 | 1.00 |
| Flanders (Belgium) | 280.39 | 0.83 | 1.34 |
| France | 254.19 | 0.61 | 0.81 |
| Germany | 271.73 | 1.00 | 1.89 |
| Ireland | 255.59 | 1.02 | 2.16 |
| Italy | 247.13 | 1.06 | 2.08 |
| Japan | 288.17 | 0.74 | 1.48 |
| Korea | 263.39 | 0.69 | 1.52 |
| Netherlands | 280.35 | 0.71 | 0.99 |
| Northern Ireland (UK) | 259.17 | 1.82 | 4.71 |
| Norway | 278.30 | 0.79 | 1.05 |
| Poland | 259.77 | 0.82 | 2.47 |
| Russian Federation* | 269.93 | 2.74 | 16.62 |
| Slovak Republic | 275.81 | 0.79 | 1.58 |
| Spain | 245.82 | 0.62 | 0.88 |
| Sweden | 279.05 | 0.82 | 0.99 |
| United States | 252.84 | 1.17 | 2.05 |

* Please refer to notes A and B regarding Cyprus, and the note regarding the Russian Federation in the Note to Readers section of this report.

PIAAC Design Effects

|  | Numeracy Scale by Gender |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Female |  |  |  |  | Male |  |  |
|  |  |  | Design |  | Design |  |  |  |
|  | Average | (s.e.) | Effect | Average | (s.e.) | Effect |  |  |
|  | 260.77 | 1.20 | 1.84 | 274.47 | 1.42 | 2.14 |  |  |
|  | 268.47 | 1.14 | 1.48 | 281.66 | 1.20 | 1.42 |  |  |
|  | 258.17 | 0.95 | 4.46 | 272.75 | 0.90 | 3.23 |  |  |
|  | 261.19 | 1.17 | 1.65 | 268.46 | 1.13 | 1.02 |  |  |
| Czech Republic | 271.19 | 1.30 | 2.95 | 280.20 | 1.36 | 2.71 |  |  |
| Denmark | 273.09 | 0.95 | 1.40 | 283.40 | 1.20 | 1.83 |  |  |
| England (UK) | 254.70 | 1.47 | 2.22 | 268.97 | 1.43 | 1.42 |  |  |
| England/N. Ireland (UK) | 254.62 | 1.42 | 3.68 | 268.88 | 1.39 | 2.29 |  |  |
| Estonia | 270.26 | 0.80 | 1.39 | 276.24 | 0.86 | 1.15 |  |  |
| Finland | 277.11 | 1.00 | 1.08 | 287.29 | 1.20 | 1.38 |  |  |
| Flanders (Belgium) | 272.28 | 1.15 | 1.42 | 288.31 | 1.14 | 1.21 |  |  |
| France | 248.92 | 0.89 | 0.90 | 259.72 | 0.88 | 0.82 |  |  |
| Germany | 262.99 | 1.32 | 1.75 | 280.28 | 1.31 | 1.66 |  |  |
| Ireland | 249.76 | 1.33 | 2.18 | 261.68 | 1.29 | 1.47 |  |  |
| Italy | 241.76 | 1.38 | 1.93 | 252.50 | 1.39 | 1.65 |  |  |
| Japan | 281.98 | 1.06 | 1.75 | 294.29 | 1.13 | 1.53 |  |  |
| Korea | 258.27 | 0.99 | 1.71 | 268.56 | 0.90 | 1.21 |  |  |
| Netherlands | 271.94 | 0.97 | 1.00 | 288.68 | 1.09 | 1.14 |  |  |
| Northern Ireland (UK) | 252.25 | 2.10 | 4.16 | 266.33 | 2.10 | 2.40 |  |  |
| Norway | 270.72 | 1.07 | 0.99 | 285.55 | 1.17 | 1.17 |  |  |
| Poland | 258.83 | 0.90 | 1.62 | 260.73 | 1.24 | 2.53 |  |  |
| Russian Federation* | 271.41 | 2.77 | 12.11 | 268.32 | 3.31 | 7.65 |  |  |
| Slovak Republic | 274.62 | 0.97 | 1.30 | 277.00 | 1.08 | 1.35 |  |  |
| Spain | 239.54 | 0.95 | 1.13 | 252.04 | 0.99 | 1.04 |  |  |
| Sweden | 272.17 | 0.98 | 0.72 | 285.73 | 1.31 | 1.31 |  |  |
| United States | 245.96 | 1.46 | 1.85 | 260.05 | 1.27 | 1.08 |  |  |

[^0]|  | Numeracy Scale by Age Group |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 24 or less |  |  | 25-34 |  |  | 35-44 |  |  | 45-54 |  |  | 55 plus |  |  |
| CNTRYID | Average | (s.e.) | Design Effect | Average | (s.e.) | Design Effect | Average | (s.e.) | Design Effect | Average | (s.e.) | Design Effect | Average | (s.e.) | Design Effect |
| Australia | 270.06 | 2.55 | 2.08 | 275.05 | 1.82 | 1.64 | 275.85 | 1.69 | 1.64 | 264.66 | 1.83 | 1.51 | 250.43 | 2.00 | 1.92 |
| Austria | 279.27 | 1.63 | 1.10 | 282.06 | 1.73 | 1.10 | 281.35 | 2.01 | 1.72 | 274.48 | 1.67 | 1.49 | 257.48 | 1.74 | 1.26 |
| Canada | 268.33 | 1.55 | 4.22 | 276.50 | 1.43 | 3.43 | 271.87 | 1.47 | 3.87 | 260.69 | 1.41 | 3.82 | 251.40 | 1.41 | 3.82 |
| Cyprus* | 264.21 | 2.07 | 1.43 | 273.14 | 2.00 | 1.94 | 268.96 | 1.63 | 1.24 | 264.56 | 1.76 | 1.20 | 250.17 | 1.75 | 1.18 |
| Czech Republic | 277.99 | 1.64 | 2.21 | 288.37 | 1.77 | 2.15 | 277.36 | 1.75 | 1.83 | 271.88 | 2.25 | 2.35 | 263.21 | 1.95 | 2.80 |
| Denmark | 273.09 | 1.54 | 1.20 | 286.72 | 1.89 | 1.18 | 290.01 | 1.60 | 1.35 | 276.79 | 1.60 | 1.39 | 265.35 | 1.20 | 1.53 |
| England (UK) | 256.27 | 2.68 | 1.90 | 266.72 | 2.24 | 1.60 | 268.84 | 1.90 | 1.35 | 259.10 | 1.93 | 1.32 | 256.93 | 1.92 | 1.40 |
| England/N. Ireland (UK) | 256.53 | 2.60 | 3.20 | 266.75 | 2.18 | 2.64 | 268.74 | 1.85 | 2.30 | 258.87 | 1.87 | 2.16 | 256.58 | 1.87 | 2.21 |
| Estonia | 278.54 | 1.22 | 1.10 | 283.63 | 1.69 | 1.95 | 275.10 | 1.13 | 0.97 | 268.96 | 1.44 | 1.54 | 259.44 | 1.26 | 1.39 |
| Finland | 284.77 | 1.83 | 1.34 | 302.45 | 2.08 | 1.90 | 292.03 | 2.15 | 1.69 | 279.27 | 1.97 | 1.46 | 260.05 | 1.26 | 1.01 |
| Flanders (Belgium) | 282.82 | 1.74 | 1.33 | 295.01 | 1.86 | 1.34 | 289.32 | 1.78 | 1.22 | 280.34 | 1.87 | 1.57 | 259.87 | 1.59 | 1.09 |
| France | 263.36 | 1.55 | 1.14 | 269.36 | 1.45 | 0.88 | 262.07 | 1.57 | 1.05 | 245.99 | 1.42 | 0.98 | 234.13 | 1.47 | 1.17 |
| Germany | 275.10 | 1.81 | 1.48 | 281.97 | 1.78 | 1.26 | 278.62 | 2.01 | 1.51 | 268.21 | 1.93 | 1.57 | 256.38 | 1.91 | 1.31 |
| Ireland | 257.87 | 2.25 | 1.70 | 265.50 | 1.65 | 1.47 | 260.48 | 1.74 | 1.53 | 249.59 | 2.11 | 1.65 | 238.27 | 2.34 | 2.06 |
| Italy | 251.30 | 2.63 | 1.63 | 262.41 | 2.28 | 1.67 | 250.88 | 1.88 | 1.86 | 243.71 | 1.95 | 1.62 | 229.37 | 2.21 | 2.06 |
| Japan | 283.21 | 2.29 | 2.30 | 297.32 | 1.64 | 1.51 | 296.64 | 1.33 | 1.27 | 291.47 | 1.71 | 1.52 | 273.22 | 1.62 | 1.56 |
| Korea | 280.92 | 1.91 | 2.83 | 280.69 | 1.37 | 1.50 | 270.64 | 1.48 | 2.13 | 251.06 | 1.42 | 1.57 | 231.76 | 1.67 | 1.52 |
| Netherlands | 285.40 | 1.76 | 1.36 | 292.98 | 1.81 | 1.07 | 287.38 | 2.08 | 1.72 | 277.10 | 1.70 | 1.22 | 261.98 | 1.66 | 1.30 |
| Northern Ireland (UK) | 263.59 | 3.40 | 2.64 | 267.58 | 2.90 | 2.42 | 265.78 | 2.43 | 2.20 | 251.64 | 2.13 | 1.40 | 245.18 | 3.06 | 2.54 |
| Norway | 270.93 | 1.73 | 1.14 | 284.93 | 2.02 | 1.09 | 289.02 | 1.89 | 1.18 | 280.30 | 1.69 | 1.17 | 264.72 | 1.73 | 1.13 |
| Poland | 268.59 | 1.11 | 2.64 | 270.43 | 1.50 | 1.89 | 261.72 | 2.17 | 1.59 | 254.23 | 2.10 | 1.47 | 243.65 | 1.85 | 1.41 |
| Russian Federation* | 272.54 | 3.75 | 10.51 | 268.64 | 4.22 | 7.56 | 270.04 | 3.58 | 4.71 | 272.11 | 3.16 | 3.40 | 266.64 | 3.94 | 5.60 |
| Slovak Republic | 277.98 | 1.76 | 1.65 | 278.82 | 1.65 | 1.34 | 281.37 | 1.65 | 1.29 | 275.36 | 1.62 | 1.37 | 265.28 | 1.55 | 1.30 |
| Spain | 255.15 | 1.72 | 1.53 | 257.29 | 1.32 | 0.91 | 254.90 | 1.27 | 0.99 | 242.32 | 1.59 | 1.22 | 220.53 | 1.75 | 1.17 |
| Sweden | 278.21 | 1.73 | 1.01 | 287.75 | 1.95 | 0.88 | 286.11 | 2.04 | 1.10 | 276.31 | 2.28 | 1.54 | 268.26 | 1.69 | 1.20 |
| United States | 249.42 | 2.19 | 1.57 | 259.85 | 2.19 | 1.46 | 257.68 | 1.89 | 1.04 | 249.77 | 2.07 | 1.26 | 247.15 | 1.77 | 0.99 |

* Please refer to notes $A$ and $B$ regarding Cyprus, and the note regarding the Russian Federation in the Note to Readers section of this report.

PIAAC Design Effects

|  | PSTRE Scale Overall |  |  |
| :--- | :---: | :---: | :---: |
|  |  |  | Design |
| CNTRYID | Average | (s.e.) | Effect |
| Australia | 288.68 | 0.88 | 2.81 |
| Austria | 283.98 | 0.73 | 1.44 |
| Canada | 282.43 | 0.68 | 4.80 |
| Czech Republic | 282.99 | 1.10 | 2.87 |
| Denmark | 283.08 | 0.68 | 1.56 |
| England (UK) | 280.50 | 0.95 | 2.18 |
| England/N. Ireland (UK) | 280.33 | 0.93 | 3.59 |
| Estonia | 277.62 | 1.01 | 2.95 |
| Finland | 289.37 | 0.83 | 1.73 |
| Flanders (Belgium) | 280.76 | 0.82 | 1.45 |
| Germany | 282.58 | 1.04 | 2.58 |
| Ireland | 276.80 | 1.01 | 2.57 |
| Japan | 294.03 | 1.19 | 2.38 |
| Korea | 282.97 | 0.79 | 2.02 |
| Netherlands | 286.40 | 0.76 | 1.50 |
| Northern Ireland (UK) | 275.03 | 1.97 | 7.14 |
| Norway | 286.49 | 0.57 | 0.88 |
| Poland | 274.92 | 1.33 | 4.54 |
| Russian Federation* | 276.25 | 4.34 | 22.33 |
| Slovak Republic | 281.08 | 0.82 | 1.74 |
| Sweden | 287.77 | 0.65 | 0.86 |
| United States | 277.44 | 1.15 | 2.84 |

* Please refer to the note regarding the Russian Federation in the Note to Readers section of this report.

PIAAC Design Effects

|  | PSTRE Scale by Gender |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Female |  |  | Male |  |  |
| CNTRYID | Average | (s.e.) | Design Effect | Average | (s.e.) | Design Effect |
| Australia | 288.61 | 1.18 | 2.77 | 288.74 | 1.21 | 2.36 |
| Austria | 279.22 | 1.04 | 1.45 | 288.56 | 0.95 | 1.25 |
| Canada | 281.47 | 0.98 | 5.60 | 283.39 | 0.77 | 2.74 |
| Czech Republic | 280.91 | 1.49 | 2.88 | 284.87 | 1.72 | 3.20 |
| Denmark | 280.92 | 0.95 | 1.68 | 285.30 | 0.96 | 1.44 |
| England (UK) | 275.87 | 1.09 | 1.76 | 285.09 | 1.44 | 2.05 |
| England/N. Ireland (UK) | 275.67 | 1.08 | 3.02 | 284.96 | 1.40 | 3.22 |
| Estonia | 275.64 | 1.24 | 2.50 | 279.81 | 1.34 | 2.28 |
| Finland | 287.62 | 1.01 | 1.34 | 291.13 | 1.14 | 1.56 |
| Flanders (Belgium) | 277.71 | 1.16 | 1.52 | 283.68 | 1.07 | 1.21 |
| Germany | 279.80 | 1.24 | 1.88 | 285.11 | 1.37 | 2.17 |
| Ireland | 274.15 | 1.16 | 1.99 | 279.70 | 1.40 | 2.15 |
| Japan | 289.41 | 1.56 | 2.09 | 297.83 | 1.40 | 1.66 |
| Korea | 279.98 | 1.18 | 2.43 | 285.87 | 0.91 | 1.24 |
| Netherlands | 282.21 | 0.96 | 1.22 | 290.44 | 1.14 | 1.72 |
| Northern Ireland (UK) | 269.42 | 2.32 | 6.57 | 280.78 | 2.12 | 3.13 |
| Norway | 283.37 | 0.87 | 1.01 | 289.45 | 0.86 | 1.00 |
| Poland | 271.28 | 1.73 | 4.01 | 278.66 | 1.79 | 3.99 |
| Russian Federation* | 279.26 | 3.83 | 12.30 | 273.08 | 5.67 | 12.48 |
| Slovak Republic | 280.27 | 1.01 | 1.39 | 281.88 | 1.31 | 2.09 |
| Sweden | 285.58 | 0.98 | 1.01 | 289.88 | 1.01 | 1.03 |
| United States | 275.08 | 1.36 | 2.36 | 279.99 | 1.42 | 1.84 |

* Please refer to the note regarding the Russian Federation in the Note to Readers section of this report.

PIAAC Design Effects

|  | PSL Scale by Age Group |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 24 or less |  |  | 25-34 |  |  | 35-44 |  |  | 45-54 |  |  | 55 plus |  |  |
| CNTRYID | Average | (s.e.) | Design Effect | Average | (s.e.) | Design Effect | Average | (s.e.) | Design Effect | Average | (s.e.) | Design Effect | Average | (s.e.) | Design Effect |
| Australia | 295.46 | 2.15 | 2.55 | 295.52 | 1.59 | 2.03 | 291.15 | 1.36 | 1.73 | 283.26 | 1.90 | 2.83 | 269.97 | 1.84 | 2.36 |
| Austria | 294.22 | 1.42 | 1.25 | 296.37 | 1.55 | 1.55 | 284.65 | 1.64 | 1.72 | 274.49 | 1.47 | 1.44 | 259.56 | 1.81 | 1.36 |
| Canada | 293.84 | 1.42 | 5.24 | 292.01 | 1.54 | 4.97 | 287.54 | 1.43 | 4.78 | 273.78 | 1.28 | 3.78 | 261.19 | 1.40 | 4.00 |
| Czech Republic | 296.68 | 2.15 | 4.11 | 297.04 | 1.67 | 1.79 | 276.59 | 2.55 | 2.61 | 269.53 | 2.56 | 2.20 | 263.00 | 2.83 | 3.21 |
| Denmark | 293.55 | 1.40 | 1.42 | 302.79 | 1.50 | 1.21 | 290.72 | 1.27 | 1.18 | 274.67 | 1.58 | 1.90 | 254.37 | 1.42 | 2.63 |
| England (UK) | 287.79 | 1.93 | 1.75 | 292.07 | 1.81 | 1.83 | 283.26 | 1.50 | 1.33 | 271.89 | 1.81 | 1.54 | 263.00 | 2.02 | 1.97 |
| England/N. Ireland (UK) | 287.76 | 1.89 | 2.98 | 291.84 | 1.76 | 3.05 | 282.98 | 1.46 | 2.22 | 271.62 | 1.78 | 2.47 | 262.76 | 1.97 | 2.97 |
| Estonia | 293.30 | 1.57 | 2.16 | 288.89 | 1.55 | 1.82 | 274.60 | 1.31 | 1.21 | 259.42 | 1.77 | 1.70 | 249.35 | 1.90 | 1.65 |
| Finland | 302.90 | 1.92 | 2.79 | 310.22 | 1.82 | 2.25 | 296.41 | 1.66 | 1.65 | 277.43 | 1.52 | 1.40 | 253.07 | 1.64 | 1.69 |
| Flanders (Belgium) | 298.95 | 1.66 | 1.72 | 297.04 | 1.62 | 1.33 | 285.58 | 1.65 | 1.36 | 269.51 | 1.61 | 1.48 | 253.26 | 2.05 | 1.61 |
| Germany | 294.81 | 1.79 | 2.09 | 295.51 | 2.01 | 1.95 | 285.49 | 1.77 | 1.66 | 273.11 | 1.72 | 1.70 | 259.81 | 2.40 | 2.20 |
| Ireland | 285.68 | 1.75 | 1.59 | 284.73 | 1.63 | 2.01 | 274.67 | 1.64 | 1.88 | 266.33 | 2.14 | 1.98 | 251.49 | 2.33 | 1.63 |
| Japan | 299.94 | 2.12 | 1.60 | 309.67 | 1.95 | 1.80 | 301.74 | 1.71 | 1.54 | 282.47 | 2.34 | 1.91 | 261.88 | 3.02 | 2.05 |
| Korea | 303.53 | 1.48 | 2.27 | 292.94 | 1.57 | 2.39 | 276.66 | 1.30 | 1.83 | 261.49 | 1.82 | 1.99 | 255.69 | 2.82 | 2.04 |
| Netherlands | 300.08 | 1.77 | 2.01 | 300.68 | 1.93 | 1.66 | 292.61 | 1.66 | 1.75 | 277.53 | 1.62 | 1.74 | 260.81 | 1.69 | 1.80 |
| Northern Ireland (UK) | 287.20 | 2.94 | 3.23 | 285.04 | 2.50 | 2.87 | 274.51 | 2.43 | 2.92 | 262.50 | 2.82 | 2.93 | 253.47 | 2.90 | 2.68 |
| Norway | 295.66 | 1.39 | 1.35 | 301.63 | 1.53 | 1.34 | 292.58 | 1.24 | 1.03 | 277.30 | 1.35 | 1.18 | 259.21 | 1.76 | 1.54 |
| Poland | 286.78 | 1.35 | 3.49 | 280.23 | 2.29 | 3.34 | 271.28 | 3.12 | 1.72 | 257.63 | 3.29 | 1.44 | 244.12 | 4.13 | 1.80 |
| Russian Federation* | 282.84 | 5.07 | 14.76 | 277.30 | 7.10 | 13.99 | 268.34 | 5.03 | 4.31 | 283.87 | 3.65 | 2.25 | 258.86 | 7.19 | 4.63 |
| Slovak Republic | 286.84 | 1.61 | 2.21 | 284.50 | 1.70 | 1.91 | 279.14 | 2.07 | 2.15 | 274.78 | 2.36 | 2.29 | 271.24 | 2.46 | 1.64 |
| Sweden | 301.91 | 1.66 | 1.72 | 304.71 | 1.50 | 1.03 | 293.64 | 1.73 | 1.22 | 278.33 | 1.65 | 1.22 | 259.25 | 1.47 | 1.09 |
| United States | 285.16 | 2.24 | 2.55 | 283.41 | 2.03 | 1.95 | 278.97 | 2.22 | 2.00 | 270.70 | 1.73 | 1.31 | 266.77 | 2.53 | 2.69 |

* Please refer to the note regarding the Russian Federation in the Note to Readers section of this report.


## Appendix 4: PIAAC-IALS-ALL Trend Variables

| $\begin{aligned} & \text { Appendix 4: PIAAC-IALS-ALL trend variables } \\ & \square \text { means exact same question; } \\ & \text { ₹means similar question but slightly different wording; } \\ & \text { * means same concept but different wording/answer categories } \end{aligned}$ |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| PIAAC BQ MS version 2.1 d.d. 15-12-2010 | IALS BQ | ALL BQ | Comparison status | Notes |
| Section A. General Information + Section B Education and Training + Section J Background Information | Section A. General Information | Section A. General Information |  |  |
| Date of birth |  |  |  |  |
| $\quad$ A_Q01a. Can you please tell me in which year you were born? $\downarrow$ A_Q01b And in which month were you born? |  | $\nabla \mathrm{AA} 1$. On what date were you born? | TREND |  |
| Gender |  |  |  |  |
| چ_N01. Is the respondent male or female? |  | $\approx$ AA2. Is the respondent male or female? | TREND |  |
| Respondent's origin |  |  |  |  |
| F_Q04a. Were you born in \#insert country name\#? | FWere you born in \#insert country name\#? | FWere you born in \#insert country name\#? | TREND |  |
| F_Q04b. In what country were you born? | 〒A2. In what country were you born? | Æ11D. In what country were you born? | TREND |  |
| VJ_Q04c. At what age or in which year did you first immigrate to \#insert country name\#? | ₹A3. In what year did you first immigrate to \#insert country name\#? | 〒22. In what year did you first immigrate to \#insert country name\#? | TREND |  |


|  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | 1momm | Numo | cmimem |  |
|  | 2mim |  |  |  |
|  | $==$ | $\pm=$ |  |  |
|  |  |  |  |  |
| -mam | 2maw |  |  |  |
|  |  | $\pm$ |  |  |
|  |  | 2ax |  |  |
| m |  |  |  |  |
|  |  | $=3$ |  |  |
|  |  |  |  |  |
|  |  |  |  |  |


| Appendix 4 (cont.): PIAAC-IALS-ALL trend variables <br> means exact same question; ※means similar question but slightly different wording; <br> * means same concept but different wording/answer categories |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| PIAAC BQ MS version 2.1 d.d. 15-12-2010 | IALS BQ | ALL BQ | Comparison status | Notes |
| Section J Background Information | Section B. Linguistic Information | Section B. Linguistic Information |  |  |
| Language background |  |  |  |  |
| ₹_Q05a What is the language that you first learned at home in childhood AND STILL UNDERSTAND? | $\nabla$ B8. What language did you first learn to read and write? | $\approx$ ®1. What is the language that you first learned at home in childhood and still understand? | TREND |  |
| F_Q05b What language do you speak most often at home? | ®14. What language do you speak most often at home? | 〒2. What language do you speak most often at home? | TREND |  |
| Section J Background Information | Section C. Parental Information | Section C. Parental Information |  |  |
| Respondent's mother's background |  |  |  |  |
| ₹_Q6a Was your mother or female guardian born in \#insert country name\#? | ₹e2. Was your mother (female guardian) born in \#insert country name\#? | ₹Was your mother or female guardian born in \#insert country name\#? | TREND |  |
| ※_Q06b What was the highest level of education your mother or female guardian ever completed? | ₹5. What was the highest level of schooling that your mother (female guardian) ever completed? | ₹e2. What was the highest level of schooling that your mother or female guardian ever completed? | TREND |  |
| Respondent's father's background |  |  |  |  |
| ₹_Q7a Was your father or male guardian born in \#insert country name\#? | ₹e8. Was your father (male guardian) born in \#insert country name\#? | FWas your father or male guardian born in \#insert country name\#? | TREND |  |
| ₹_Q07b What was the highest level of education your father or male guardian ever completed? | $\approx \in 11$. What was the highest level of schooling that your father (male guardian) ever completed? | ₹モ6. What was the highest level of schooling that your father or male guardian ever completed? | TREND |  |


| Appendix 4 (cont.): PIAAC-IALS-ALL trend variables <br> $\square$ means exact same question; चmeans similar question but slightly different wording; <br> * means same concept but different wording/answer categories |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| PIAAC BQ MS version 2.1 d.d. 15-12-2010 | IALS BQ | ALL BQ | Comparison status | Notes |
| Section C Current Status and Work History | Section D. Labor Force Information | Section D. Labor Force Activities |  |  |
| Respondent's employment status |  |  |  |  |
| *C_Q07 Please look at this card and tell me which ONE of the statements best describes your current situation. If more than one statement applies to you, please indicate the statement that best describes how you see yourself. | VD1. I would now like to talk about your employment status. What is your current work situation? Are you employed, retired, unemployed / looking for work, a student (including Work Programs), homemaker or other? | $\begin{array}{r}\text { D1. I would now like to }\end{array}$ talk about your employment status. What is your current work situation? Are you now employed or self employed, not working and looking for work, retired, a student (including work programs), doing unpaid household work or other? | TREND | $\begin{aligned} & \text { Combine PIAAC(1,2) } \\ & \text { to ALL(1), } \\ & \text { PIAAC(4.5) to } \\ & \text { ALL(4), } \\ & \text { PIAAC(7,8,10) to } \\ & \text { ALL(6) } \end{aligned}$ |


| Appendix 4 （cont．）：PIAAC－IALS－ALL trend variables <br> $\square$ means exact same question； चmeans similar question but slightly different wording； <br> ＊means same concept but different wording／answer categories |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| PIAAC BQ MS version 2.1 d．d． 15－12－2010 | IALS BQ | ALL BQ | Comparison status | Notes |
| Work history－Past 12 months |  |  |  |  |
| 『C＿Q08b During the last 12 months，that is since $\wedge$ MonthYear，did you have any paid work？Please include self－employment． | VD2．Did you work at a job or business at any time in the past 12 months（regardless of the number of hours per week）？ | VD2．Did you work at a job or business at any time in the last 12 months；that is， from＜month and year＞to ＜month and year＞ （regardless of the number of hours per week）？PLEASE INCLUDE AS WORK TIME OFF FOR VACATION，ILLNESS， MATERNITY／PATERNIT Y LEAVE，STRIKES AND LOCKOUTS． | TREND | PIAAC CD09（1，2）to D2（1）；CD09（3，4）to D2（2）；CD09（5）to D2（8 or 9） |
| Job information－Current job or last（past 12 months）job held |  |  |  |  |
| VD＿Q02a In what kind of business，industry or service do you work？Please give a full description．D＿Q02b What does your firm or organization mainly make or do？Please give a full description． | 〒 8 ．What kind of business， industry or service was this？ （Give full description，e．g．fish canning plant，automobile manufacturing plant，municipal government） | 〒 26 ．What kind of business，industry or service was／is this？（Give full description，e．g．fish canning plant，automobile manufacturing plant， municipal government .) | Not comparable |  |

## Appendix 4 (cont.): PIAAC-IALS-ALL trend variables

$\square$ means exact same question;
$\approx$ means similar question but slightly different wording;

* means same concept but different wording/answer categories

| PIAAC BQ MS version 2.1 d.d. 15-12-2010 | IALS BQ | ALL BQ | Comparison status | Notes |
| :---: | :---: | :---: | :---: | :---: |
| $\nabla \mathrm{D} \_$Q01 What is your job title? What are your most important responsibilities? Please give a full description. | VD9. What kind of work were you doing at this job? (Give full description or occupational title, e.g. office clerk, machine operator, computer programmer) | VD27. What kind of work were/are you doing at this job? (Give full description or occupational title, e.g. office clerk, machine operator, computer programmer.). D28. What were/are your most important activities or duties? (Give full description e.g. filing documents, drying vegetables, forest examiner.) | TREND | ISCO 1 digit to make it comparable |
| *D_Q12a Still talking about your current job: If applying today, what would be the usual qualifications, if any, that someone would need to GET this type of job? |  | *D28B. What level of education was required to do your main job? | Not comparable |  |
| *D_Q04 In this job, are you working as an employee or are you self-employed? D_Q07a. Do you have employees working for you? Please include family members working paid or unpaid in the business. <br> *D7b. How many employees do you employ? Would that be .... D_Q08a Do you manage or supervise other employees? <br> *D_Q08b. How many people do you supervise or manage, directly or indirectly? | $\approx 11$. What was your status at this job? Was it as an employee without supervisory responsibilities, an employee with limited supervisory or management responsibilities (5 persons or less), an employee with more extensive supervisory or management responsibilities (more than 5 persons), a selfemployed without employees, a self employed with employees or a family worker (unpaid)? | $\approx 29$. What was/is your status at this job or business? Were/are you...an employee without supervisory responsibilities, an employee with supervisory or management responsibilities for up to 5 persons, an employee with supervisory or management responsibilities for more than 5 persons, selfemployed without employees, self employed with employees or unpaid family worker? | TREND | OK with new derived variables |


| Appendix 4 (cont.): PIAAC-IALS-ALL trend variables$\nabla$ means exact same question;₹means similar question but slightly different wording; |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | ${ }_{\text {lalsbo }}$ | all bo | Comprision | Notes |
|  | *D12. What type of job was <br> this? Was or is this job a <br> permanent job or work contract <br> of unlimited duration or a <br> temporary job or work contract <br> of limited duration? |  |  |  |
| VD_Q10 How many hours do you usually work per week in this <br> job? Include any usual paid or unpaid overtime, but exclude lunch <br> breaks or other breaks |  |  | men |  |
|  | *D10. In total, about how many persons are employed by this business at all locations in \#insert country name\#? |  | mame |  |
|  |  | $\pm$. | Nocommable |  |


| Appendix 4 (cont.): PIAAC-IALS-ALL trend variables$\square$ means exact same question;चmeans similar question but slightly different wording; |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | ${ }_{\text {ILIS }} \mathrm{BQ}$ | all bo | Compersion | Notes |
|  |  |  |  |  |
|  |  |  | nemo |  |
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| ICratome | Wexteme |  |  |  |
|  |  |  | meno |  |


| Appendix 4 （cont．）：PIAAC－IALS－ALL trend variables <br> means exact same question； <br> ₹means similar question but slightly different wording； <br> ＊means same concept but different wording／answer categories |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| PIAAC BQ MS version 2.1 d．d． 15-12-2010 | IALS BQ | ALL BQ | Comparison status | Notes |
| $\checkmark$ G＿R01 The following questions are about reading activities that you＾UndertakeUndertook as part of your $\wedge$ JobLastjob．Please only report reading that $\wedge$ IsWas part of your $\wedge$ JobLastjob，not reading you $\wedge$ DoDid in your non－work time．Include any reading you might do on computer screens or other electronic displays． | चE1．The following questions refer to the job at which you worked the most hours in the last 12 months． | VE1．The next questions are about your reading，writing and mathematics activities at your main job－whether these activities are done on paper or on computer． | TREND |  |
| ＊G＿Q01a．In your＾JobLastjob，how often＾DoDid you usually ．．． | FHow often（do／did）you read or use information from each of the following as part of your main job？Would you say every day，a few times a week，once a week， less than once a week，rarely or never？ | FHow often do／did you read or use information from one of the following as part of your main job？Would you say at least once a week，less than once a week，rarely or never． | TREND | PIAAC and ALL／IALS categorical equivalence： PIAAC（1）＝ALL（4）；PI AAC（2，3）＝ALL（2，3）；P IAAC（4，5）＝ALL（1）； RF and DK are the same |
| EG＿Q01a read directions or instructions <br> $\mathcal{E}_{\text {＿}} \mathrm{Q} 01 \mathrm{~b}$ read letters，memos or e－mails？ | $\approx$ A．Letters or memos <br> ＊B．Reports，articles，magazines or journals | శ̃）Letters，memos or e－ mails <br> ＊b）Reports，articles， magazines，or journals |  |  |
| ＊G＿Q01c read articles in newspapers，magazines or newsletters？ | $\approx$ ₹．Manuals or reference books， including catalogues | 〒e）Manuals or reference books including catalogues |  |  |
| $\mathcal{E G}_{-}$Q01f read manuals or reference materials？ | 〒．Diagrams or schematics | ＊d）Diagrams or schematics |  |  |
| $\mathcal{E}_{-}$Q01g read bills，invoices，bank statements or other financial statements？ | 玉．Bills，invoices，spreadsheets or budget tables | $\widetilde{\text { e）}}$ Directions or instructions |  |  |
| ＊G＿Q01h read diagrams，maps or schematics？ |  | ₹）Bills，invoices， spreadsheets or budget tables |  |  |


| Appendix 4 (cont.): PIAAC-IALS-ALL trend variables <br> means exact same question; ₹means similar question but slightly different wording; <br> * means same concept but different wording/answer categories |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| PIAAC BQ MS version 2.1 d.d. 15-12-2010 | IALS BQ | ALL BQ | Comparison status | Notes |
| चThe following questions are about writing activities that you $\wedge$ UndertakeUndertook as part of your $\wedge$ JobLastjob. Include any writing you might do on computers or other electronic devices. | चE2. How often (do/did) you write or fill out each of the following as part of your main job? Would you say every day, a few times a week, once a week, less than once a week, rarely or never? | चE2. How often do/did you write or fill out each of the following as part of your main job? Would you say at least once a week, less than once a week, rarely or never. | Not comparable |  |
| IIn your $\wedge$ JobLastjob, how often $\wedge$ DoDid you usually ... <br> ₹G_Q02a. Write letters, memos or e-mails? <br> चG_Q02b Write articles for newspapers, magazines or newsletters? <br> चG_Q02c. Write reports? <br> चG_Q02d. Fill in forms? | A. Letters or memos <br> चB. Forms or things such as bills, invoices, or budgets <br> चC. Reports or articles | a) Letters, memos or e-mails <br> चb) Reports, articles, magazines or journals चe) Bills, invoices, spreadsheets or budget tables |  |  |
| VThe following questions are about activities that you $\wedge$ UndertakeUndertook as part of your $\wedge$ JobLastjob and that involve numbers, quantities, numerical information, statistics or mathematics. | चE3. In your main job, how often do you use arithmetic or mathematics (that is, adding, subtracting, multiplying or dividing) to: | 『E3. How often do/did you do each of the following as part of your main job? Would you say at least once a week, less than once a week, rarely or never. | Not comparable |  |
| चIn your $\wedge$ JobLastjob, how often $\wedge$ DoDid you usually ... $\mathcal{E}_{\text {_ }} \mathrm{Q} 03 \mathrm{~b}$ calculate prices, costs or budgets? | ॠ) Calculate prices, costs or budgets? | 〒) Calculate prices, costs, or budgets |  |  |


| Appendix 4 (cont.): PIAAC-IALS-ALL trend variables <br> $\square$ means exact same question; $\approx$ means similar question but slightly different wording; <br> * means same concept but different wording/answer categories |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| PIAAC BQ MS version 2.1 d.d. 15-12-2010 | IALS BQ | ALL BQ | Comparison status | Notes |
| Section B Education and Training | Section F. Adult Education | Section F. Participation in Education and Learning |  |  |
| Education or training which the respondent has taken in the past 12 months |  |  |  |  |
| VDerived variable based on B_Q02a, B_D03d, B_Q04a and B_Q12 | 〒uring the past 12 months, that is, since August 1993, did you receive any training or education including courses, private lessons, correspondence courses, workshops, on- the-job training, apprenticeship training, arts, crafts, recreation courses or any other training or education? | $\approx 1$. During this time, did you take any education or training? This education or training would include programs, courses, private lessons, correspondence courses, workshops, on-thejob training, apprenticeship training, arts, crafts, recreation courses, or any other training or education? | TREND | if any B_Q02a or B_Q04a or B_Q12a, or B_Q12c or B_Q12e or B_Q12g is yes or if B_D03d $=<12$, then equivalent to ALL F1(yes). |
| VDerived variable based on B_Q04b and B_Q12 | VF2. In total, how many courses did you take in the past 12 months? |  | Not comparable |  |
|  |  | *(Compared to IALS BQ, items are divided into " $a$ program of studies" and "courses not a part of a program of studies".) |  |  |

## Appendix 4 (cont.): PIAAC-IALS-ALL trend variables

$\boxtimes$ means exact same question;
$\approx$ means similar question but slightly different wording;

* means same concept but different wording/answer categories

| $\begin{gathered} \hline \text { PIAAC BQ MS version } 2.1 \text { d.d. } \\ 15-12-2010 \\ \hline \end{gathered}$ | IALS BQ | ALL BQ | $\begin{gathered} \hline \text { Comparison } \\ \text { status } \\ \hline \end{gathered}$ | Notes |
| :---: | :---: | :---: | :---: | :---: |
| VB_Q02a Are you currently studying for any kind of formal qualification? B_Q04a During the last 12 months, that is since $\wedge$ MonthYear, have you studied for any formal qualification, either full-time or part-time? | VF5. Were you taking this training or education towards a university degree/diploma/certificate, a college diploma/certificate, a trade-vocational diploma/certificate, an apprenticeship certificate, an elementary or secondary school diploma or professional or career upgrading? | चF2. During the last 12 months, that is, from < month and year > to < month and year > did you take any courses as part of a PROGRAM of studies toward a certificate, diploma or degree? Examples would include a high school diploma; a trade/vocational diploma or registered apprenticeship certificate; a college or CEGEP diploma; a diploma granted from a program of studies at a private school; a university certificate, diploma or degree? | TREND | If any B_Q02a or B_Q04a is yes or if B_D03d=<12 then equivalent to ALL F2(yes) |


| Appendix 4 (cont.): PIAAC-IALS-ALL trend variables <br> means exact same question; <br> ₹means similar question but slightly different wording; <br> * means same concept but different wording/answer categories |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| PIAAC BQ MS version 2.1 d.d. 15-12-2010 | IALS BQ | ALL BQ | Comparison status | Notes |
| $\nabla \mathrm{B} \_$Q05c Were the main reasons for choosing to study for this qualification job related? |  | चF13. What was the main reason you took this program of studies? Was it for job or career-related reasons or personal interest such as hobby/leisure, volunteer activities, to improve some general skills (reading, writing) or for general education? | TREND |  |
| *Derived variable based on B_Q12 |  | *F15. During the last 12 months, did you participate in any courses that were NOT PART OF YOUR PROGRAM OF STUDIES? | TREND | If any B_Q12a, or B_Q12c or B_Q12e or B_Q12g is yes |
| Education or training wanted but not taken in the past 12 months |  |  |  |  |
| VB26a. In the last 12 months, were there $\wedge$ MoreAny learning activities you wanted to participate in but did not? Include both learning activities that lead to formal qualifications and other organized learning activities. | ₹ 15 . Since August 1993, was there any training or education that you WANTED to take for career or job-related reasons but did not? | F27. During the last 12 months, was there any training or education that you wanted to take for career or job-related reasons but did not? | TREND | if yes to either of 2 ALL/IALS questions then PIAAC B26a is yes, if no to both for IALS/ALL questions then PIAAC B26a is no |


| Appendix 4 (cont.): PIAAC-IALS-ALL trend variables <br> means exact same question; <br> $\approx$ means similar question but slightly different wording; <br> * means same concept but different wording/answer categories |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| PIAAC BQ MS version 2.1 d.d. 15-12-2010 | IALS BQ | ALL BQ | Comparison status | Notes |
|  | ₹17. Since August 1993, was there any other training that you WANTED to take but did not, such as hobby, recreational or interest courses? | ₹28. During the last 12 months, was there any other training or education that you wanted to take but did not, such as hobby, recreational, or personal interest courses? |  |  |
| Section H. Skill use literacy, numeracy and ICT in everyday life + Section I About yourself | Section G. Reading and Writing General | Section G. Literacy and Numeracy Practices Generally, Social Capital and Well Being |  |  |
| Reading and writing in respondents' daily life |  |  |  |  |
| 『H_R01 ^TalkedAboutWork I would now like to talk about your reading activities $\wedge$ EverydayReading Include any reading you might do on computer screens or other electronic displays. | ₹ G . How often (do/did) you read or use information from each of the following as part of your daily life? Would you say every day, a few times a week, once a week, less than once a week, rarely or never? | ₹ 3 3. How often do you read or use information from each of the following sources as part of your daily life? Please don't include time spent as part of your job or schooling. Would you say at least once a week, less than once a week, rarely or never? | TREND | $\begin{aligned} & \text { PIAAC(1)=ALL(4);PI } \\ & \text { AAC(2,3)=ALL(2,3);P } \\ & \text { IAAC(4,5)=ALL(1); } \end{aligned}$ <br> RF and DK are the same; Take maximum frequency of either G3a and G3b to make equivalent derived variable to PIAAC H_Q01c. |
| 『H_Q01 ^Ineverydaylife, how often do you usually ... | $\nabla \mathrm{A}$. Letters or memos. | శa) How often do you read or use information from newspapers as part of your daily life? G3A2. How often do you read newspapers in < insert language >? |  |  |



| Appendix 4 (cont.): PIAAC-IALS-ALL trend variables <br> $\square$ means exact same question; $\approx$ means similar question but slightly different wording; <br> * means same concept but different wording/answer categories |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| PIAAC BQ MS version 2.1 d.d. 15-12-2010 | IALS BQ | ALL BQ | Comparison status | Notes |
| Civic participation - volunteer work |  |  |  |  |
| *Q05f. In the last 12 months, how often, if at all, did you do voluntary work, including unpaid work for a charity, political party, trade union or other non-profit organization? |  | *G8. The next questions are about your volunteer work and the organizations in which you participate. During the last 12 months did you participate in any of the following groups or organizations? <br> *a) A political organization <br> *e) A neighborhood, civic or community association or a school group <e.g. Parent/Teachers Association, your neighborhood community association> | Not comparable |  |
| Health |  |  |  |  |
| $\approx$ _Q08. In general, would you say your health is excellent, very good, good, fair or poor? |  | ₹ 11 . In general, would you say your health is? | TREND |  |


| Appendix 4 (cont.): PIAAC-IALS-ALL trend variables <br> means exact same question; ะmeans similar question but slightly different wording; * means same concept but different wording/answer categories |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| PIAAC BQ MS version 2.1 d.d. 15-12-2010 | IALS BQ | ALL BQ | Comparison status | Notes |
| Section G. Skill use literacy, numeracy and ICT at work + Section H. Skill use literacy, numeracy and ICT in everyday life |  | Section H. Information and Communication Technology Literacy (ICTL) |  |  |
| Use of information technologies - computer use |  |  |  |  |
| चderived variable based on G_Q04a ^DoiDid you use a computer in your ^JobLastjob? H_Q04a Have you ever used a computer? |  | चH2. Have you ever used a computer? H7. In the last 12 months, did you use a computer in your job? (If you have more than one job, tell us about the one at which you work the most hours) | TREND | YES only for the general question on computer experience. Use derived variable of computer experience of PIAAC |
| Section J. Background Information | Section H. Family Literacy | Section K. Household Information and Income |  |  |
|  | Section J. Household Information |  |  |  |
| Respondents' children's education |  |  |  |  |
| VJ_Q01. Including yourself, how many people usually live in your household? Please include people who are temporarily living elsewhere.' | ₹4. Including yourself, how many people live in this household? | ₹1. The next questions ask for general household information. Including yourself, how many people live in your household? | TREND |  |

## Appendix 4 (cont.): PIAAC-IALS-ALL trend variables

$\boxtimes$ means exact same question;
$\approx$ means similar question but slightly different wording;

* means same concept but different wording/answer categories

| PIAAC BQ MS version 2.1 d.d. | IALS BQ | ALL BQ | Comparison <br> status | Notes |
| :--- | :--- | :--- | :--- | :--- |

## Appendix 5: Mapping of ISCED Levels to Years of Schooling

| Variable name | Variable: VET |
| :--- | :--- |
| Description | Label: Highest level of education attained at ISCED 3 or ISCED 4 level has vocational orientation. |
| Rationale | Rationale: For analysis of effects of education tracking it is useful to have an indicator of whether <br> the highest level of education attained was in vocational or general education |
| Alert | Caveat: Users of the data must be aware that a scheme attaching the vocational orientation to the <br> highest education degree obtained can be indicative only and neglects country differences and <br> different traditions with regard to vocational education. |
| F | Derivation: Based on answers to national version of B_Q01a, supplemented by information <br> provided by National Project Managers (NPMs) and OECD LSO network experts |
| Labels | Categories: VET=1 if highest level of education attained (only ISCED3 or 4) has vocational <br> orientation; VET=0 if highest level of education attained (only ISCED3 or 4) has general/academic <br> orientation; VET=.v distinction of orientation not applicable for this ISCED level, VET=.n <br> information of orientation for all respondents in this country is missing because either PIAAC <br> categories make ex-post distinction impossible or orientation information is missing for this <br> country. |
| Variable name | Variable: YRSQUAL <br> Description <br> Rationale <br> Label: Years of schooling associated with the highest level of education attained <br> Prerequisites/inputRationale: For returns to education analyses it is useful to have an estimate of the years of <br> schooling associated with the highest level of education attained |
| Alert | Derivation: based on the answers to question B_Q01a, supplemented by information provided by <br> National Project Managers (NPMs) and OECD LSO network experts on association with years of |
| schooling and educational categories used to gather information on highest level of education |  |
| attained. |  |


| Prerequisites/input | Derivation: Based on the answers to question D_Q12s (qualification needed to get the job), <br> supplemented by information provided by National Project Managers (NPMs) and OECD LSO <br> network experts on association with years of schooling and educational categories used to gather <br> information on level of education. Since years of schooling necessary to get the current job have <br> been derived using the same information as for YRSQUAL, the difference between the two <br> variables should provide a good indication of the respondent's vertical education-job match. |
| :--- | :--- |
|  | Caveat: Users of the data must be aware that a scheme converting qualification necessary to get the <br> current job into years of schooling represents an oversimplification of the flexibility of national <br> education systems (see also note of Australian Government Department of Education, Employment <br> and Workplace Relations). The following countries did not use the same show cards (educational <br> categories) in B_Q01a and D_Q12a: Canada, Germany and Sweden. In these countries, mismatch <br> variables created by substracting YRSQUAL and YRSGET could be artificially non-zero. These <br> countries should be excluded from any analysis using mismatch variables based on YRSQUAL and <br> YRSGET. |
|  | YRSUS |



| AUSTRIA |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version | Int. <br> Value Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
| B_Q01a | Which of the qualifications on this card is the highest you have obtained? |  | Was ist Ihre höchste abgeschlossene Schulbildung? | Which of the following qualifications is the highest you have obtained? |  |  | 6 |
|  | No formal qualification or below ISCED 1 | 1 |  | No correspondence |  |  |  |
|  | ISCED 1 | 2 | Kein Pflichtschulabschluss | No compulsory school | 7 |  |  |
|  | ISCED 2 | 3 | Pflichtschulabschluss | Compulsory school | 8 |  |  |
|  | ISCED 3C shorter than 2 years | 4 | Fach-oder <br> Handelsschule: kürzer als 2 Jahre | Vocational School (<2 Years) | 9 | V |  |
|  | ISCED 3C 2 years or more | 5 |  | No correspondence |  |  |  |
|  | ISCED 3A-B | 6 | Lehre mit Berufschule | Apprenticeship | 12 | V |  |
|  |  |  | Fach-oder Handelsschule: 2 Jahre und länger | Vocational School (2 Years and longer) | 11 | V |  |
|  |  |  | AHS (z.B. Gymnasium) | Academic Secondary School | 12 | A |  |
|  | ISCED 3 (without distinction A-B-C, $2 y+$ ) | 7 |  | No correspondence |  |  |  |
|  | ISCED 4C | 8 |  |  |  |  |  |
|  | ISCED 4A-B | 9 | Fach-oder Handelsschule: Diplomkrankenpflege | Nursing | 15 | V |  |
|  |  |  | BHS (z.B. HAK, HTL, BAKIP) | Vocational college | 13 | V |  |
|  | ISCED 4 (without distinction A-B-C) | 10 |  | No correspondence |  |  |  |
|  | ISCED 5B | 11 | Meister- und Werkmeisterprüfung, Bauhandwerkerprüfung | Master craftsman's certificate | 14 |  |  |


| AUSTRIA |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version | Int. <br> Value <br> Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
|  |  |  | Kolleg, <br> Abiturientenlehrgang | Post-secondary courses | 14 |  |  |
|  |  |  | Akademie (z.B. Pädak, SozAK, BPA, Med.Tech. Akademie, LW, MilAK) | Post-secondary colleges | 15 |  |  |
|  |  |  | Universitäre Lehrgänge (ohne vorangeganges Studium) | University courses | 14 |  |  |
|  | ISCED 5A, bachelor degree | 12 | Universität oder Fachhochschule: Bakkalaureat/Bachelor | University-Bachelor | 15 |  |  |
|  | ISCED 5A, master degree | 13 | Universität oder <br> Fachhochschule: <br> Magisterium/Master <br> (Diplomstudium, <br> Doktorat als <br> Erstabschluss) | University-Master | 17 |  |  |
|  |  |  | Postgraduale Universitätslehrgänge (z.B. MBA, MAS) | Post-graduate courses | 19 |  |  |
|  | ISCED 6 | 14 | Doktorat nach akademischem Erstabschluss | Doctoral Programme | 19 |  |  |


| CANADA |  |  |  |  |  |  |
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| International English Version | Int. <br> Value <br> Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School <br> starting age |
| Which of the qualifications on this card is the highest you have obtained? |  |  |  |  |  | 6 |
| No formal qualification or below ISCED 1 | 1 | Less than Grade 6 |  |  |  |  |
|  |  | No formal education |  |  |  |  |
| ISCED 1 | 2 | Grade 6 |  | 6 |  |  |
| ISCED 2 | 3 | Grade 7-8 (Secondary 1 or 2 in QUE) |  | 9 |  |  |
|  |  | Grade 9 (Secondary 3 in QUE or Senior 1 in MAN) |  | 9 |  |  |
|  |  | Grade 10-13 (Secondary 4 or 5 in QUE, Senior 2, 3 or 4 in MAN, Level I, II or III in NFLD, OAC in ONT) |  | 9 |  |  |
| ISCED 3C shorter than 2 years | 4 | No correspondence |  |  |  |  |
| ISCED 3C 2 years or more | 5 | No correspondence |  |  |  |  |
| ISCED 3A-B | 6 | No correspondence |  |  |  |  |
| $\begin{aligned} & \text { ISCED } 3 \text { (without } \\ & \text { distinction A-B-C, } 2 \mathrm{y}+\text { ) } \end{aligned}$ | 7 | High school diploma or equivalent |  | 12 | A |  |
| ISCED 4C | 8 | Apprenticeship certificate |  | 13 | V |  |


| CANADA |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| International English Version | Int. Value Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  |  | Trade/vocational certificate (includes an attestation of vocational training, diploma of vocational studies or attestation of vocational specialization offered in Quebec) with duration of less than 2 years |  | 12-13 <br> (Quebec for range) | V |  |
|  |  | Non-university certificate or diploma from a college, school of nursing, technical institute with duration less than 2 years |  | 12-13 <br> (Quebec for range) | V |  |
|  |  | CEGEP diploma or certificate as part of university transfer program |  | 13 | V |  |
| ISCED 4A-B | 9 | CEGEP diploma or certificate not part of a university transfer program with duration less than 2 years, only Quebec |  | 13 | A |  |
|  |  | University transfer program |  | 14 | A |  |
| ISCED 4 (without distinction $\mathrm{A}-\mathrm{B}-\mathrm{C}$ ) | 10 | No correspondence |  |  |  |  |


| CANADA |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| International English Version | Int. <br> Value Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
| ISCED 5B | 11 | CEGEP diploma or certificate not part of a university transfer program with duration 2 years or more, only Quebec |  | 14 |  |  |
|  |  | Trade/vocational certificate (includes an attestation of vocational training, diploma of vocational studies or attestation of vocational specialization offered in Quebec) with duration of 2 years or more, only outside Quebec |  | 14 |  |  |
|  |  | Non-university certificate or diploma from a college, school of nursing, technical institute with duration 2 years or more, only outside Quebec |  |  |  |  |
|  |  | University certificate or diploma below bachelor's degree |  | 14 |  |  |
| ISCED 5A, bachelor degree | 12 | Bachelor's degree |  | 16 |  |  |
|  |  | University certificate above the bachelor's |  | 16 |  |  |


| CANADA |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| International English Version | Int. Value Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  |  | First professional degree (medical, veterinary medicine, dental, optometry, law, divinity). |  | 16 |  |  |
| ISCED 5A, master degree | 13 | Master's |  | 18 |  |  |
| ISCED 6 | 14 | Ph.D. |  | 22 |  |  |


| CYPRUS* |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version | Int. <br> Value <br> Code | National version | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
| B_Q01a | Which of the following qualifications is the highest you have obtained? |  |  | Which of the following qualifications is the highest you have obtained? |  |  | 6 |
|  | No formal qualification or below ISCED 1 | 1 |  | I never went to school |  |  |  |
|  | ISCED 1 | 2 |  | Primary school | 6 |  |  |
|  | ISCED 2 | 3 |  | Public/Private Secondary <br> School (3 years), <br> Secondary School <br> (Evening Classes) | 9 |  |  |
|  | ISCED 3C shorter than 2 years | 4 |  |  |  |  |  |
|  | ISCED 3C 2 years or more | 5 |  |  |  |  |  |
|  | ISCED 3A-B | 6 |  |  |  |  |  |
|  | ISCED 3 (without distinction A-B-C, 2y+) | 7 |  | High School/Vocational Technical School (day and night attendance for early school leaverssecond chance schools) | 12 | VET NOT POSSIBLE. CATEGORY MIXED. |  |
|  | ISCED 4C | 8 |  |  |  |  |  |
|  | ISCED 4A-B | 9 |  |  |  |  |  |
|  | ISCED 4 (without distinction A-B-C) | 10 |  |  |  |  |  |


| CYPRUS* |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version | Int. Value Code | National version | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  | ISCED 5B | 11 | ТрıтоßáӨرıа Mn-Паvєптьтı | Non-University Degree/Diploma/Certific ate leading to labour market, jobs at specific professional bodies i.e. policy, nursing, tourism, or ISCED5A | 14 |  |  |
|  | ISCED 5A, bachelor degree | 12 | Птихío Паvєппоттиıiou | Undergraduate degree | 16 |  |  |
|  | ISCED 5A, master degree | 13 |  | Postgraduate degree, Master's Degree-taught and research based | 18 |  |  |
|  | ISCED 6 | 14 | \ıठ̄акторıко́ | Doctorate | 21 |  |  |
|  |  |  |  |  |  |  |  |

[^1]| CZECH REPUBLIC |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. <br> Questio <br> No <br> B_Q01a | International English Version | Int. <br> Value <br> Code | Jakého stupně vzdělání dosáhnete po ukončení Vašeho současného studia? | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  | Which of the following qualifications is the highest you have obtained? |  |  | And which of these qualifications is the highest you have obtained? |  |  | 6 |
|  | No formal qualification or below ISCED 1 | 1 | Žádné formální vzdělání n | No formal education |  |  |  |
|  | ISCED 1 | 2 | Dokončený první stupeň z | First level of basic school ISCED 1 | 5 |  |  |
|  | ISCED 2 | 3 | Základní vzdělání | basic ISCED 2 | 9 |  |  |
|  | ISCED 3C shorter than 2 years | 4 | Vyučení bez maturity kratš | vocational without maturita shorter than 2 years ISCED 3C shorter than 2 years | 11 | V |  |
|  | ISCED 3C 2 years or more | 5 | Vyučení bez maturity delši | vocational without maturita longer than 2 years ISCED 3C longer than 2 years | 12 | V |  |
|  | ISCED 3A-B | 6 | Vyučení s maturitou | ISCED 3A vocational with maturita | 13 | V |  |
|  |  |  | Střední odborné s maturitd | ISCED 3A technical with maturita | 13 | V |  |
|  |  |  | Střední všeobecné s matu | ISCED 3A general with maturita | 13 | A |  |
|  | ISCED 3 (without distinction A-B-C, 2y+) | 7 |  |  |  |  |  |
|  | ISCED 4C | 8 |  |  |  |  |  |
|  | ISCED 4A-B | 9 |  |  |  |  |  |
|  | ISCED 4 (without distinction A-B-C) | 10 | Středoškolská nástavba | ISCED 4 follow-up course | 14 | V |  |




| DENMARK |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version | Int. Value Code | National version (text) | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
|  | ISCED 3 (without distinction A-B-C, 2y+) | 7 | Erhvervsfag lig eller gymnasial uddannelse , 2 år og derover | Upper secondary undefined, 2 years or more | 12 | VET NOT POSSIBLE. CATEGORY MIXED. |  |
|  | ISCED 4C | 8 | Kort videregåen de erhvervsrett et uddannelse , under 2 år | Post secondary short programme, less than 2 years, lead to labour market | 13 | VET NOT POSSIBLE. CATEGORY MIXED. |  |
|  | ISCED 4A-B | 9 | Kort videregåen de studierettet uddannelse , under 2 år | Post secondary entrance course, access to tertiary education | 13 | A |  |
|  | ISCED 4 (without distinction A-B-C) | 10 | Kort videregåen de studierettet uddannelse , under 2 år | Post secondary non tertiary education, less than 2 years | 13 | VET NOT POSSIBLE. CATEGORY MIXED. |  |


| DENMARK |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version | Int. <br> Value <br> Code | National version (text) | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  | ISCED 5B | 11 | Kort/ <br> mellemlang videregåen de uddannelse , 2 år og derover/ Professions bachelor, ikke forskningsb aseret | Tertiary not research based education, lead to labour market | 15 |  |  |
|  | ISCED 5A, bachelor degree | 12 | Bachelor grad | Bachelor degree | 15 |  |  |
|  | ISCED 5A, master degree | 13 | Kandidat <br> eller master <br> grad | Master degree | 17 |  |  |
|  | ISCED 6 | 14 | Ph.d eller anden forskerudda nnelse | Ph.d or otther research programme | 20 |  |  |
|  | Foreign qualification | 15 |  | Foreign qualification |  |  |  |



| ENGLAND/NORTHERN IRELAND |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version |  | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational/ <br> Academic | School <br> starting age |
|  |  |  | SCOTVEC, SCOTEC or SCOTBEC (Scotland) | SCOTVEC, SCOTEC or SCOTBEC (Scotland) | 11 | V |  |
|  |  |  | BTEC, BEC, TEC or EdExcel (Level 1) | BTEC, BEC, TEC or EdExcel (Level 1) | 11 | V |  |
|  | ISCED 3C 2 years or more | 5 | City and Guilds (Level 2) | City and Guilds (Level 2) | 11 | V |  |
|  |  |  | RSA/ OCR (Level 2) | RSA/ OCR (Level 2) | 11 | V |  |
|  |  |  | National Qualifications (including SGA) (Scotland) | National Qualifications (including SGA) (Scotland) | 11 | A |  |
|  |  |  | Standard Grade or O Grade (Scotland) | Standard Grade or O Grade (Scotland) | 11 | A |  |
|  |  |  | Intermediate 1 or 2 NQs (Scotland) | Intermediate 1 or 2 NQs (Scotland) | 11 | A |  |
|  |  |  | O Level/GCSE/Vocational GCSE/CSE or equivalent | O Level/GCSE/Vocational GCSE/CSE or equivalent | 11 | A |  |
|  |  |  | GNVQ/ GSVQ (Level 2) | GNVQ/ GSVQ (Level 2) | 11 | V |  |
|  |  |  | NVQ/ SVQ (Level 2) | NVQ/ SVQ (Level 2) | 11 | V |  |
|  |  |  | SCOTVEC, SCOTEC or SCOTBEC (Scotland) | SCOTVEC, SCOTEC or SCOTBEC (Scotland) | 11 | V |  |
|  |  |  | BTEC, BEC, TEC or EdExcel (Level 2) | BTEC, BEC, TEC or EdExcel (Level 2) | 11 | V |  |
|  | ISCED 3A-B | 6 | City and Guilds (Level 3) | City and Guilds (Level 3) | 13 | V |  |
|  |  |  | RSA/ OCR (Level 3) | RSA/ OCR (Level 3) | 13 | V |  |
|  |  |  | Advanced Highers or Certificate of 6th Year Studies (CSYS) (Scotland) | Advanced Highers or Certificate of 6th Year Studies (CSYS) (Scotland) | 12 | A |  |


| ENGLAND/NORTHERN IRELAND |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version | Int. <br> Value <br> Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
|  |  |  | AS level/ Vocational AS level or equivalent | AS level/ Vocational AS level or equivalent | 12 | A |  |
|  |  |  | GNVQ/ GSVQ (Level 3) | GNVQ/ GSVQ (Level 3) | 13 | V |  |
|  |  |  | NVQ/ SVQ (Level 3) | NVQ/ SVQ (Level 3) | 13 | V |  |
|  |  |  | Highers (Scotland) | Highers (Scotland) | 12 | A |  |
|  |  |  | A Level/ Vocational A Level or equivalent | A Level/ Vocational A Level or equivalent | 13 | A |  |
|  |  |  | SCOTVEC, SCOTEC or SCOTBEC (Scotland) | SCOTVEC, SCOTEC or SCOTBEC (Scotland) | 13 | V |  |
|  |  |  | BTEC, BEC, TEC or EdExcel (Level 3) | BTEC, BEC, TEC or EdExcel (Level 3) | 13 | V |  |
|  |  |  | ONC/OND (Level 3) | ONC/OND (Level 3) | 13 | V |  |
|  | ISCED 3 (without distinction A-B-C, 2y+) | 7 |  |  |  |  |  |
|  | ISCED 4C | 8 |  |  |  |  |  |
|  | ISCED 4A-B | 9 |  |  |  |  |  |
|  | ISCED 4 (without distinction A-B-C) | 10 | Access to HE | Access to HE | 13 | A |  |
|  | ISCED 5B | 11 | RSA/ OCR (Level 4/5) | RSA/ OCR (Level 4/5) | 15 |  |  |
|  |  |  | NVQ/ SVQ (Level 4/5) | NVQ/ SVQ (Level 4/5) | 15 |  |  |
|  |  |  | Other Higher Education qualification below degree level | Other Higher Education qualification below degree level | 15 |  |  |
|  |  |  | SCOTVEC, SCOTEC or SCOTBEC (Scotland) | SCOTVEC, SCOTEC or SCOTBEC (Scotland) | 15 |  |  |
|  |  |  | BTEC, BEC, TEC or EdExcel (Level 4/5) | BTEC, BEC, TEC or EdExcel (Level 4/5) | 15 |  |  |
|  |  |  | HNC/HND (Level 4/5) | HNC/HND (Level 4/5) | 15 |  |  |
|  |  |  | Diploma in higher education | Diploma in higher education | 15 |  |  |
|  | ISCED 5A, bachelor degree | 12 |  |  |  |  |  |


| ENGLAND/NORTHERN IRELAND |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version | Int. Value Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  | ISCED 5A, master degree | 13 |  |  |  |  |  |
|  | ISCED 6 | 14 |  |  |  |  |  |
|  | Foreign qualification | 15 | Foreign qualifications |  |  |  |  |
|  | Higher education <br> (ISCED5A or ISCED6) | 16 | Nursing or other medical qualification not yet mentioned | Nursing or other medical qualification not yet mentioned | 15 |  |  |
|  |  |  | Teaching qualification (excluding PGCE) | Teaching qualification (excluding PGCE) | 16 |  |  |
|  |  |  | Degree level qualification including foundation degrees, graduate membership of a professional institute or PGCE, or higher | Degree level qualification including foundation degrees, graduate membership of a professional institute or PGCE, or higher | 19 |  |  |


|  |  |  |  |  | ESTONIA |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code | National version (text) | English translation of the national version | Total years of schooling when level is completed (on average) | School starting age | Total years <br> of schooling <br> when level <br> is <br> completed <br> (born before <br> 1980, <br> mother <br> tonque <br> Russian) | School starting age | Total years <br> of schooling <br> when level <br> is <br> completed <br> (born 1980- <br> 1986, <br> mother <br> tonque <br> Russian) | School starting age |
| B_Q01a | Which of the following qualifications is the highest you have obtained? |  | Milline sellel kaardil nimetatuist on Teie kõrgeim haridustase? | Which of the following qualifications is the highest you have obtained? |  | 7 |  | 7 |  | 6 |
|  | No formal qualification or below ISCED 1 | 1 | Alghariduseta (vähem kui 3 klassi) | Without primary education |  |  |  |  |  |  |
|  | ISCED 1 | 2 | Algharidus (3-6 klassi) | Primary education | 6 |  | 3 |  | 4 |  |
|  | ISCED 2 | 3 | $\begin{aligned} & \hline \text { Põhiharidus (7-9 } \\ & \text { klassi) } \\ & \hline \end{aligned}$ | Basic education | 8 |  | 7 |  | 8 |  |
|  |  |  | Kutseharidus (sisseastumisel ei nõutud põhiharidust) | (basic education not required at admission) | 9.5 |  | 8.5 |  | 9.5 |  |
|  | ISCED 3C shorter than 2 years | 4 | Kutseharidus põhihariduse baasil (õppekava nominaalkestus alla 2 aasta) | Vocational education on the basis of basic education (nominal time of studies less than 2 years) | 9.5 |  | 8.5 |  | 9.5 |  |


|  |  |  |  |  | ESTONIA |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version | Int. <br> Value <br> Code | National version (text) | English translation of the national version | Total years of schooling when level is completed (on average) | School starting age | Total years <br> of schooling <br> when level <br> is <br> completed <br> (born before <br> 1980, <br> mother <br> tonque <br> Russian) | School starting age | Total years of schooling when level is completed (born 19801986, mother tonque Russian) | School starting age |
|  | ISCED 3C 2 years or more | 5 | Kutseharidus põhihariduse baasil (õppekava nominaalkestus 2 aastat või enam) | Vocational education on the basis of basic education (nominal time of studies 2 years or more) | 10.5 |  | 9.5 |  | 10.5 |  |
|  | ISCED 3A-B | 6 | Üldkeskharidus | General secondary education | 11 |  | 10 |  | 11 |  |
|  |  |  | Kutsekeskharidus põhihariduse baasil | Vocational secondary education on the basis of basic education | 11 |  | 10 |  | 11 |  |
|  |  |  | Keskeriharidus põhihariduse baasil | Secondary specialised education on the basis of basic education | 11 |  | 10 |  | 11 |  |
|  | ISCED 3 (without distinction A-B-C, 2y+) | 7 |  |  |  |  |  |  |  |  |
|  | ISCED 4C | 8 |  |  |  |  |  |  |  |  |


|  |  |  |  |  | ESTONIA |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code | National version (text) | English translation of the national version |  | School starting age | Total years <br> of schooling <br> when level <br> is <br> completed <br> (born before <br> 1980, <br> mother <br> tonque <br> Russian) | School starting age | Total years <br> of schooling <br> when level <br> is <br> completed <br> (born 1980- <br> 1986, <br> mother <br> tonque <br> Russian) | School starting age |
|  | ISCED 4A-B | 9 | Kutsekeskharidus keskhariduse baasil | Vocational secondary education on the basis of secondary education | 13 |  | 12 |  | 13 |  |
|  | ISCED 4 (without distinction A-B-C) | 10 |  |  |  |  |  |  |  |  |
|  | ISCED 5B | 11 | Keskeriharidus keskhariduse baasil | Secondary specialised education on the basis of secondary education | 14 |  | 13 |  | 14 |  |
|  |  |  | Kutsekõrgharidus, diplomiõpe, rakenduskõrgharidus | Applied higher education | 15.5 |  | 13.5 |  | 14.5 |  |
|  | ISCED 5A, bachelor degree | 12 | Bakalaureusekraad (3+2 süsteemi järgi, alustatud pärast 2002.a) | Bachelor's degree (3+2 system, started after 2002) | 15 |  | 13 |  | 14 |  |
|  | ISCED 5A, master degree | 13 | Bakalaureusekraad (4+2 süsteemi järgi, alustatud enne 2002.a) | Bachelor's degree (4+2 system, started before 2002) | 15 |  | 14 |  | 15 |  |


|  |  |  |  |  | ESTONIA |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code | National version (text) | English translation of the national version | Total years of schooling when level is completed (on average) | School starting age | Total years <br> of schooling <br> when level <br> is <br> completed <br> (born before <br> 1980, <br> mother <br> tonque <br> Russian) | School starting age | Total years <br> of schooling <br> when level <br> is <br> completed <br> (born 1980- <br> 1986, <br> mother <br> tonque <br> Russian) | School starting age |
|  |  |  | Enne 1992. aastat alustatud kõrgharidus (diplomeeritud spetsialistiõpe) | Higher education (studies for diploma of specialist), started before 1992 | 16 |  | 15 |  | 16 |  |
|  |  |  | Magistrikraad (3+2 süsteemi järgi, sh integreeritud bakalaureuse- ja magistriõpe) | Master's degree (3+2 system, incl integrated Bachelor and Master's studies) | 17 |  | 15 |  | 16 |  |
|  |  |  | Magistrikraad (4+2 <br> süsteemi järgi) | Master's degree (4+2 system) | 17 |  | 16 |  | 17 |  |
|  | ISCED 6 | 14 | Doktorikraad (sh kandidaadikraad) | Doctoral degree (incl Candidate of Doctor) | 21 |  | 20 |  | 21 |  |
|  | Foreign qualification | 15 | Välisriigis omandatud haridus, palun täpsusta | Foreign qualification, please specify |  |  |  |  |  |  |


|  |  |  |  |  | ESTONIA |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version | Int. <br> Value <br> Code | National version (text) | English translation of the national version | Total years <br> of schooling <br> when level <br> is <br> completed <br> (born before <br> 1983, <br> mother <br> tonque <br> Estonian) | School starting age | Total years of schooling when level is completed (Estonian mother tonque, born 1983 or after; Russian mother tonque, born 1987 or after) | School starting age | Vocational/ General |
| B_Q01a | Which of the following qualifications is the highest you have obtained? |  | Milline sellel kaardil nimetatuist on Teie kõrgeim haridustase? | Which of the following qualifications is the highest you have obtained? |  | 7 |  | 6 |  |
|  | No formal qualification or below ISCED 1 | 1 | Alghariduseta (vähem kui 3 klassi) | Without primary education |  |  |  |  |  |
|  | ISCED 1 | 2 | $\begin{aligned} & \hline \begin{array}{l} \text { Algharidus (3-6 } \\ \text { klassi) } \end{array} \\ & \hline \end{aligned}$ | Primary education | 3 |  | 6 |  |  |
|  | ISCED 2 | 3 | Põhiharidus (7-9 klassi) | Basic education | 8 |  | 9 |  |  |
|  |  |  | Kutseharidus (sisseastumisel ei nõutud põhiharidust) | (basic education not required at admission) | 9.5 |  | 9.5 |  |  |
|  | ISCED 3C shorter than 2 years | 4 | Kutseharidus põhihariduse baasil (õppekava nominaalkestus alla 2 aasta) | Vocational education on the basis of basic education (nominal time of studies less than 2 years) | 9.5 |  | 10.5 |  | V |


|  |  |  |  |  | ESTONIA |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code | National version (text) | English translation of the national version | Total years <br> of schooling <br> when level <br> is <br> completed <br> (born before <br> 1983, <br> mother <br> tonque <br> Estonian) | School starting age | Total years of schooling when level is completed (Estonian mother tonque, born 1983 or after; Russian mother tonque, born 1987 or after) | School starting age | Vocational/ General |
|  | ISCED 3C 2 years or more | 5 | Kutseharidus põhihariduse baasil (õppekava nominaalkestus 2 aastat või enam) | Vocational education on the basis of basic education (nominal time of studies 2 years or more) | 10.5 |  | 11.5 |  | V |
|  | ISCED 3A-B | 6 | Üldkeskharidus | General secondary education | 11 |  | 12 |  | A |
|  |  |  | Kutsekeskharidus põhihariduse baasil | Vocational secondary education on the basis of basic education | 11 |  | 12 |  | V |
|  |  |  | Keskeriharidus põhihariduse baasil | Secondary specialised education on the basis of basic education | 11 |  | 12 |  | V |
|  | ISCED 3 (without distinction A-B-C, 2y+) | 7 |  |  |  |  |  |  |  |
|  | ISCED 4C | 8 |  |  |  |  |  |  |  |


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| Int. Question No | International English Version | Int. <br> Value <br> Code | National version (text) | English translation of the national version | Total years of schooling when level is completed (born before 1983, mother tonque Estonian) | School starting age | Total years of schooling when level is completed (Estonian mother tonque, born 1983 or after; Russian mother tonque, born 1987 or after) | School starting age | Vocational/ General |
|  | ISCED 4A-B | 9 | Kutsekeskharidus keskhariduse baasil | Vocational secondary education on the basis of secondary education | 13 |  | 14 |  | V |
|  | ISCED 4 (without distinction A-B-C) | 10 |  |  |  |  |  |  |  |
|  | ISCED 5B | 11 | Keskeriharidus keskhariduse baasil | Secondary specialised education on the basis of secondary education | 14 |  | 15 |  |  |
|  |  |  | Kutsekõrgharidus, diplomiõpe, rakenduskõrgharidus | Applied higher education | 14.5 |  | 15.5 |  |  |
|  | ISCED 5A, bachelor degree | 12 | Bakalaureusekraad (3+2 süsteemi järgi, alustatud pärast 2002.a) | Bachelor's degree (3+2 system, started after 2002) | 14 |  | 15 |  |  |
|  | ISCED 5A, master degree | 13 | Bakalaureusekraad (4+2 süsteemi järgi, alustatud enne 2002.a) | Bachelor's degree (4+2 system, started before 2002) | 15 |  | 16 |  |  |


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| Int. Question No | International English Version | Int. <br> Value <br> Code | National version (text) | English translation of the national version | Total years <br> of schooling <br> when level <br> is <br> completed <br> (born before <br> 1983, <br> mother <br> tonque <br> Estonian) | School starting age | Total years of schooling when level is completed (Estonian mother tonque, born 1983 or after; Russian mother tonque, born 1987 or after) | School starting age | Vocationall General |
|  |  |  | Enne 1992. aastat alustatud kõrgharidus (diplomeeritud spetsialistiõpe) | Higher education (studies for diploma of specialist), started before 1992 | 16 |  |  |  |  |
|  |  |  | Magistrikraad (3+2 süsteemi järgi, sh integreeritud bakalaureuse- ja magistriõpe) | Master's degree (3+2 system, incl integrated Bachelor and Master's studies) | 16 |  | 17 |  |  |
|  |  |  | $\begin{aligned} & \text { Magistrikraad (4+2 } \\ & \text { süsteemi järgi) } \\ & \hline \end{aligned}$ | Master's degree (4+2 system) | 17 |  | 18 |  |  |
|  | ISCED 6 | 14 | Doktorikraad (sh kandidaadikraad) | Doctoral degree (incl Candidate of Doctor) | 21 |  | 21 |  |  |
|  | Foreign qualification | 15 | Välisriigis omandatud haridus, palun täpsusta | Foreign qualification, please specify |  |  |  |  |  |


| FINLAND |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
| B_Q01a | Which of the qualifications on this card is the highest you have obtained? |  | Mikä on korkein suorittamanne tutkinto? | Which of the following qualifications is the highest you have obtained? |  |  | 7 |
|  | No formal qualification or below ISCED 1 | 1 | Ei muodollista tutkintoon johtavaa koulutusta | No formal education |  |  |  |
|  | ISCED 1 | 2 | Peruskoulun luokat 1-6, kansakoulu, osa keskikoulua | Grades 1-6 of comprehensive school, primary school, part of middle school (ISCED 1) | 6 |  |  |
|  | ISCED 2 | 3 | Peruskoulun luokat 79(10), keskikoulu | Grades 7-9(10) of comprehensive school, middle school (ISCED 2) | 9 |  |  |
|  | ISCED 3C shorter than 2 years | 4 |  |  |  |  |  |
|  | ISCED 3C 2 years or more | 5 |  |  |  |  |  |
|  | ISCED 3A-B | 6 |  |  |  |  |  |
|  | ISCED 3 (without distinction A-B-C, 2y+) | 7 | Ammatillinen kouluasteen tutkinto, ammatillinen perustutkinto, ammattitutkinto | Upper secondary vocational education and training (ISCED 3) | 11 | V |  |
|  |  |  | Lukio | General upper secondary school (ISCED 3) | 12 | A |  |
|  | ISCED 4C | 8 |  |  |  |  |  |
|  | ISCED 4A-B | 9 |  |  |  |  |  |
|  | ISCED 4 (without distinction A-B-C) | 10 | Erikoisammattitutkinto | Specialist vocational qualification (ISCED 4) | 12 | V |  |


| FINLAND |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  | ISCED 5B | 11 | Ammatillinen opistoasteen tutkinto | Vocational postsecondary qualification (ISCED 5B) | 14 |  |  |
|  | ISCED 5A, bachelor degree | 12 | Ammattikorkeakoulututkin to | Polytechnic degree (ISCED 5A) | 16 |  |  |
|  |  |  | Alempi korkeakoulututkinto, kandidaatin tutkinto | Bachelor's degree (ISCED 5A) | 15 |  |  |
|  | ISCED 5A, master degree | 13 | Ylempi korkeakoulututkinto, maisterin tutkinto, ylempi ammattikorkeakoulututkin to | Master's degree (ISCED 5A) | 17 |  |  |
|  | ISCED 6 | 14 | Lisensiaatin ja tohtorin tutkinnot | Licentiate's and doctor's degrees (ISCED 6) | Licentiate 19 Doctor 21 |  |  |


| FLANDERS (BELGIUM) |  |  |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. Value Code | National version | English translation of the national version | Recoding suggestion by DPC | Recoding instructio $n$ by country | Total years of schooling when level is completed | Vocationall Academic | School starting age |
| B_Q01a | Which of the following qualifications is the highest you have obtained? |  |  | What is the highest level of education you have ever successfully completed? | $\begin{gathered} \text { B_Q01aBE } \\ >\text { B_Q01a } \\ 1-->1 \\ 2->2 \\ 3-->3 \\ 4-->5 \\ 5-->6 \\ 6-->7 \\ 7->9 \\ 8-->11 \\ 9 \text {--> } 12 \\ 10 ~-->~ 13 \\ 11 ~-->~ \\ 12 \\ 12 \end{gathered}$ |  |  |  | 6 |
|  | No formal qualification or below ISCED 1 | 1 | Geen onderwijs of het lager onderwijs niet beëindigd | No education or not completed primary education |  | Use <br> internation <br> al <br> Response <br> category 1 |  |  |  |
|  | ISCED 1 | 2 | Lager onderwijs of basiseducatie | Primary education or adult basic education |  | Use internation al Response category 2 | 6 |  |  |


| FLANDERS (BELGIUM) |  |  |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. Value Code | National version | English translation of the national version | Recoding suggestion by DPC | Recoding instructio n by country | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  | ISCED 2 | 3 | Lager secundair onderwijs (of eerste graad) | Lower secondary education (or first stage secondary education) |  | Use internation al Response category 3 | 8 |  |  |
|  | ISCED 3C shorter than 2 years | 4 |  | No correspondence |  |  |  |  |  |
|  | ISCED 3C 2 years or more | 5 | Volledig beroepssecundair onderwijs | Vocational secondary education |  | Use internation al Response category 5 | 12 | VET NOT POSSIBLE, CATEGORY MIXED |  |
|  | ISCED 3A-B | 6 | Volledig algemeen, technisch of kunst secundair onderwijs | General or technical secondary education |  | Use internation al Response category 6 | 12 |  |  |
|  | ISCED 3 (without distinction A-B-C, 2y+) | 7 | Hoger secundair onderwijs (geen onderwijsvorm) | Upper secondary education (no education form) |  | Use internation al Response category 7 | 12 |  |  |
|  | ISCED 4C | 8 |  | No correspondence |  |  |  |  |  |


| FLANDERS (BELGIUM) |  |  |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code | National version | English translation of the national version | Recoding suggestion by DPC | Recoding $n$ by country | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
|  | ISCED 4A-B | 9 | Voortgezet secundair onderwijs dat toegang geeft tot hoger onderwijs (vierde graad of derde jaar van de derde graad van het secundair onderwijs) | Post-secondary nontertiary education giving access to higher education (4th stage or 3rd year of 3rd stage secondary education) |  | Use internation al Response category 9 | 13 |  |  |
|  | ISCED 4 (without distinction A-B-C) | 10 |  | No correspondence |  |  | 13 |  |  |
|  | ISCED 5B | 11 | Hoger onderwijs van één cyclus (korte type / professionele bacheloropleiding) | 1 cycle higher education (short type / professional bachelor courses) |  | Use internation al Response category 11 | 15 |  |  |
|  | ISCED 5A, bachelor degree | 12 | Academische bacheloropleiding (universitaire kandidatuuropleiding | Academic bachelor courses (University candidate degree) |  | Use internation al Response category 12 | 15 |  |  |
|  | ISCED 5A, master degree | 13 | Universitair onderwijs of hoger onderwijs van twee cycli (lange type / masteropleiding) | University education or 2 cycle higher education (long type / master courses) |  | Use internation al Response category 13 | 16 |  |  |


| FLANDERS (BELGIUM) |  |  |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code | National version | English translation of the national version | Recoding suggestion by DPC | Recoding instructio $n$ by country | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
|  | ISCED 6 | 14 | doctoraat | Doctorate |  | Use internation al Response category 14 | 20 |  |  |
|  |  |  |  |  |  | Use internation al Response category 15 |  |  |  |

FRANCE

| Int. Question No | International English Version | Int. Value Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B_Q01a | Which of the qualifications on this card is the highest you have obtained? |  |  |  |  |  | 6 |
|  | No formal qualification or below ISCED 1 | 1 | Aucun ou enseignement primaire inachevé | Never been to school or incomplete primary | 5 |  |  |
|  | ISCED 1 | 2 | École primaire | Primary school | 5 |  |  |
|  | ISCED 2 | 3 | Aucun diplôme (No diploma) | No diploma | 5 |  |  |
|  |  |  | Certificat d'études primaires (CEP) ou équivalent | Primary school certificate | 5 |  |  |
|  |  |  | Brevet des collèges ou équivalent | Secondary education, 1st cycle diploma like "brevet des collèges" | 9 |  |  |
|  | ISCED 3C shorter than 2 years |  |  |  |  |  |  |
|  | ISCED 3C 2 years or more | 4 | CAP, BEP ou diplôme de ce niveau | Vocational training diploma like "CAP" or "BEP" | 11 | V |  |
|  |  | 5 | Brevet professionnel (BP, BPA) ou de technicien (BT, BTA) ou diplôme de ce niveau | Professional or technical "brevet" or similar diploma | 14 | V |  |
|  | ISCED 3A-B | 6 | Baccalauréat professionnel | Professional baccalauréat | 13 | V |  |
|  | $\begin{aligned} & \text { ISCED } 3 \text { (without } \\ & \text { distinction A-B-C, } 2 \mathrm{y}+\text { ) } \end{aligned}$ | 7 | Baccalauréat technologique | Technological baccalauréat | 12 | A |  |
|  |  |  | Baccalauréat général (General baccalauréat) | General baccalauréat | 12 | A |  |
|  | ISCED 4C | 8 |  |  |  |  |  |
|  | ISCED 4A-B | 9 |  |  |  |  |  |
|  | ISCED 4 (without distinction $\mathrm{A}-\mathrm{B}-\mathrm{C}$ ) | 10 |  |  |  |  |  |
|  | ISCED 5B | 11 | BTS, DUT, DEUST, Diplôme des professions sociales et de la santé de niveau bac+2 (infirmière, kinésithérapeute, assistante sociale...) | Vocational training and technical diplomas up to Bac+2, BTS, DUT, DEUST, diplomas related to healthcare up to Bac+2 | 14 |  |  |

FRANCE

| Int. Question No | International English Version | Int. Value Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
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|  | ISCED 5A, bachelor degree | 12 | Diplôme de 1er cycle universitaire, DEUG, DUEL, DUES, PCEM, certificat d'aptitude pédagogique, certificat de fin d'études normales (CFEN) | University education, 1st cycle DEUG, DUEL, DUES, PCEM or other diplomas | 14 |  |  |
|  |  |  | Diplôme de 2ème cycle universitaire : Licence, maîtrise, IUFM, CAPE, CAPES, CAPET, agrégation... | University education, 2nd cycle diplomas like licence, maîtrise, IUFM, CAPE, CAPES, CAPET, agrégation... | 15 |  |  |
|  | ISCED 5A, master degree | 13 | Diplôme d'une grande école (ingénieur, commerce...), diplôme d'études comptables supérieures (DECS), d'avocat (CAPA), d'expert comptable, ingénieur du CNAM,... | Higher engineering school, higher business school, expert accounting qualification, lawyer qualification | 17 |  |  |
|  |  |  | University education, 3rd cycle (DES, DEA, DESS (=MPHIL), master) ; thesis and doctorate (=PHD) related to healthcare | University education, 3rd cycle (DES, DEA, DESS (=MPHIL), master) ; thesis and doctorate (=PHD) related to healthcare | 17 |  |  |
|  | ISCED 6 | 14 | Thesis and doctorate (=PHD) NOT related to healthcare | Thesis and doctorate (=PHD) NOT related to healthcare | 20 |  |  |


| GERMANY |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. Value Code | National version (text) | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
| B_Q01a | Which of the qualifications on this card is the highest you have obtained? |  | Welchen höchsten allgemein bildenden Schulabschluss haben Sie? Bitte sagen Sie es mir anhand dieser Liste. | What is the highest general education school leaving certificate that you hold? Please tell me according to this list. |  |  | 6 |
|  | No formal qualification or below ISCED 1 | 1 | Von der Schule abgegangen ohne Hauptschulabschluss (Volksschulabschluss), aber nach Beendigung der Grundschule | No formal education or left school without completing primary school grades |  |  |  |
|  | ISCED 1 | 2 | Von der Schule abgegangen ohne Hauptschulabschluss (Volksschulabschluss) | Completed primary school grades, but left school without a Hauptschulabschluss (general education school leaving certificate obtained on completion of grade 9) or a leaving certificate from the Volksschule (the former name for compulsory school) | 7 |  |  |


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| Int. Question No | International English Version | Int. Value Code | National version (text) | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
|  | ISCED 2 | 3 | Hauptschulabschluss (Volksschulabschluss) | Hauptschulabschluss (general education school leaving certificate obtained on completion of grade 9 at a Hauptschule or any other lower secondary level school) or a leaving certificate from the Volksschule (the former name for compulsory school) | 9 |  |  |
|  |  |  | Realschulabschluss (Mittlere Reife) | Realschulabschluss (general education school leaving certificate obtained on completion of grade 10 at a Realschule or, under certain circumstances, at other lower secondary level school types. It can also be obtained at a later stage during vocational training at upper secondary level). | 10 |  |  |


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| Int. Question No | International English Version | Int. <br> Value Code | National version (text) | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  |  |  | Abgang von der Polytechnischen Oberschule nach der 8. Klasse nach 1965 | Left the Polytechnische Oberschule (Polytechnical High School, main secondary school type in former GDR) after 8th grade after 1965. | 8 |  |  |
|  |  |  | Abgang von der Polytechnischen Oberschule nach der 10. Klasse (vor 1965: 8. Klasse) | Left the Polytechnische Oberschule (Polytechnical High School, main secondary school type in former GDR) after10th grade (pre 1965: 8th grade) | 10 |  |  |
|  | ISCED 3C shorter than 2 years | 4 | n/a |  |  |  |  |
|  | ISCED 3C 2 years or more | 5 | n/a |  |  |  |  |
|  | ISCED 3A-B | 6 | Fachhochschulreife, Abschluss Fachoberschule | Fachhochschulreife, a qualification obtained at a Fachoberschule (vocational school at upper secondary level) after 12 years of schooling. It entitles the holder to study at a Fachhochschule (technical college/university of applied sciences). | 12 | A |  |


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| Int. Question No | International English Version | Int. Value Code | National version (text) | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  |  |  | Allgemeine oder fachgebundene Hochschulreife/ Abitur (Gymnasium bzw. EOS, EOS mit Lehre) | General higher education entrance qualification entitling holder to study all subjects at a higher education institution, or a discipline-specific qualification entitling the holder to study only certain subjects | 13 | A |  |
|  |  |  | Beruflich-betriebliche Berufsausbildung (Lehre) | (Completed) apprenticeship in the dual system (combination of in company training and training at vocational school at upper secondary level) | 13 | V |  |
|  |  |  | Beruflich-schulische Ausbildung (Berufffachschule, Handelsschule, Kollegschule oder Schule des Gesundheitswesens (1-jährig) | Basic vocational training at a Berufsfachschule (ful time vocational school at upper secondary level), Handelsschule (commercial college), Kollegschule (vocational college) or a school for medical assistants (1year course) | 12 | V |  |
|  | ISCED 3 (without distinction A-B-C, $2 \mathrm{y}+$ ) | 7 | n/a |  |  |  |  |
|  | ISCED 4C | 8 | n/a |  |  |  |  |


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| Int. Question No | International English Version | Int. <br> Value <br> Code | National version (text) | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  | ISCED 4A-B | 9 | Abitur oder Hochschulreife an der Abendschule | General higher education entrance qualification at evening school | 14 | V |  |
|  | ISCED 4 (without distinction A-B-C) | 10 | (Fach)Hochschulreife + berufliche Ausbildung | Higher education entry qualification but did not go to higher education but completed apprenticeship | 14 | V |  |
|  | ISCED 5B | 11 | Meister, Techniker oder gleichwertiger <br> Fachschulabschluss | Trade and Technical school | 15 |  |  |
|  |  |  | Berufs- oder Fachakademie, Schule des Gesundheitswesens (2- bis 3-jährig) | Specialised academy, Vocational Academy, Health Sector School (23 years) | 15 |  |  |
|  | ISCED 5A, bachelor degree | 12 | Fachhochschulabschluss (Bachelor) | Bachelor's degree from a Fachhochschule (university of applied sciences/technical college) | 16 |  |  |
|  |  |  | Hochschulabschluss (Bachelor) | (here) a Bachelor's degree from a university (as opposed to a university of applied sciences ) | 16 |  |  |
|  | ISCED 5A, master degree | 13 | Fachhochschulabschluss <br> (Master; Diplom) | Master's or Diplom degree from a Fachhochschule (university of applied sciences/technical college) | 17 |  |  |


| GERMANY |  |  |  |  |  |  |  |
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| $\begin{gathered} \text { Int. } \\ \text { Question } \\ \text { No } \\ \hline \end{gathered}$ | International English Version | Int. <br> Value <br> Code | National version (text) | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
|  |  |  | Hochschulabschluss <br> (Diplom. Magister, <br> Staatsexamen; Master) | (Here) an advanced degree (Diplom, Magister, Master's, or State Examination in medicine, teaching or law) from a university as opposed to a university of applied sciences | 18 |  |  |
|  | ISCED 6 | 14 | Promotion | doctorate | 21 |  |  |


| IRELAND |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
| B_Q01a | Which of the qualifications on this card |  |  | What is the highest level of edcuation or training |  |  | - |
|  | No formal qualification or below ISCED 1 | 1 |  | No formal education or training \Pre-primary education (or new FETAC certificate at NFQ level 1) |  |  |  |
|  | ISCED 1 | 2 |  | Primary education (or FETAC Certificate at NFQ level 2) | 8 |  |  |
|  | ISCED 2 | 3 |  | Secondary 1 <br> (Junior/Inter/Group <br> Certificate, NCVA foundation Certificate, FAS IAS Certificate or FETAC Certificate at NFQ level 3) | 11 |  |  |
|  |  |  |  | Transition year programme | 12 |  |  |
|  | ISCED 3C shorter than 2 years | 4 |  |  |  |  |  |
|  | ISCED 3C 2 years or more | 5 |  |  |  |  |  |
|  | ISCED 3A-B | 6 |  |  |  |  |  |
|  | ISCED 3 (without distinction A-B-C, 2y+) | 7 |  | Secondary 2 (Leaving Certificate, traditional, vocational applied) | 14 | A |  |


| IRELAND |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
|  | ISCED 4C | 8 |  | Technical or Vocational (e.g. Secretarial courses, Certificate in Hotel Operations, PLCs, FAS National Skills/Specific Skills Certificate or FETAC Certificate at NFQ level 4 \& 5) | 15 | V |  |
|  |  |  |  | Advanced Certificate (Completed apprenticeships, Teagasc Farming or Horticulture Certificate, National Craft Certificate or FETAC Advanced certificate at NFQ level 6) | 18 | V |  |
|  | ISCED 4A-B | 9 |  |  |  |  |  |
|  | ISCED 4 (without distinction $A-B-C)$ | 10 |  |  |  |  |  |
|  | ISCED 5B | 11 |  | Higher Certificate (e.g. National Certificate (NCEA/DIT/IOT), Cadetship (army, air corps or naval service), Diploma in Police Studies or HETAC/DIT Higher Certificate at NFQ level 6) | 16 |  |  |


| IRELAND |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  |  |  |  | Diploma (e.g. National Diploma (HETAC/NCEA), Bachelor Degree (DIT), 3 year Diploma or new Ordinary Bachelor Degree at NFQ level 7) | 17 |  |  |
|  | ISCED 5A, bachelor degree | 12 |  | Honours Bachelor Degree, Graduate Diploma (or Higher Diploma at NFQ level 8) | 18 |  |  |
|  |  |  |  | Professional (Honours Bachelor Degree equivalent or higher) | 18 |  |  |
|  | ISCED 5A, master degree | 13 |  | Post-Graduate (e.g. Post Graduate Diploma at NFQ level 9, Masters Degree (taught or researched) at NFQ level 9) | 19 |  |  |
|  | ISCED 6 | 14 |  | Doctorate or higher (e.g. Doctoral Degree/higher Doctorate at NFQ level 10) | 21 |  |  |
|  | Foreign qualification | 15 |  | Foreign qualification | N/A |  |  |
| B_Q02b |  |  |  |  |  |  |  |



| ITALY |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
|  | ISCED 4 (without distinction A-B-C) | 10 | Corso post-diploma non accademico (IFTS e corsi regionali di II livello) (ISCED 4) | Post-secondary non tertiary education (Regional vocational training qualification 2nd level or Certification of higher technical specialisation) | 15 | V |  |
|  | ISCED 5B | 11 | Diploma di Conservatorio di musica, di Accademia di belle arti, di Accademia di danza, di Attore o Regista o ISIA (ISCED 5B) | Music Conservatory Diploma or National Dance Academy Diploma or Diploma of actor or director | 16 | V |  |
|  | ISCED 5A, bachelor degree | 12 | Laurea di 3-5-6 anni (compreso Vecchio Ordinamento) o Diploma accademico (ISCED 5A) | First stage of tertiary education (Universitary Diploma or Laurea degree or Second level degree). | 18 | N.A. |  |
|  | ISCED 5A, master degree | 13 | Corsi post-laurea (ISCED 5A) OR Corso di specializzazione post-laurea (di almeno 2 anni) - (ISCED 5A) | First or second level postlauream master degree or specialisation degree (ISCED 5A) | 19 | N.A. |  |
|  | ISCED 6 | 14 | Dottorato di ricerca (ISCED 6) | Research Doctoral degree | 21 | N.A. |  |
|  | Foreign qualification | 15 | 12. Titolo rilasciato all'estero (specificare) | Foreign qualification, please specify |  | - |  |



| JAPAN |  |  |  |  |  |  |  |  |
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| Int． Question No | International English Version | Int． Value Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational／ Academic | School starting age | Country comment |
|  | ISCED 3C 2 years or more | 5 | 高校の専門学科，専修学校高等課程 | （Full day／day／evening／ corresponding） Specialized course of upper secondary school， （Full day／day／evening） Specialized course of secondary education school（upper division）， Specialized course of special education school （upper secondary department）， <br> Specialized training college（upper secondary course） | 12 | V |  |  |


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| Int． Question No | International English Version | Int． <br> Value <br> Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational／ Academic | School starting age | Country comment |
|  | ISCED 3A－B | 6 | 高校の普通科または総合学科 高等専門学校（第1－ 3学年） | General／integrated course of Upper <br> Secondary school （including correspondence course）， General／integrated course of secondary education school（upper division）， <br> General course of special education school（upper secondary department）， College of technology （1st－3rd year） | 12 | A |  |  |
|  | ISCED 3 （without distinction A－B－C，2y＋） | 7 | 高卒認定合格者（旧大検合格者を含む） | Passed Upper Secondary School Equivalency Examination， Unknown | 9 |  |  |  |
|  | ISCED 4C | 8 |  |  |  |  |  |  |
|  | ISCED 4A－B | 9 |  |  |  |  |  |  |


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| Int． Question No | International English Version | Int． Value Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational／ Academic | School starting age | Country comment |
|  | ISCED 4 （without distinction $\mathrm{A}-\mathrm{B}-\mathrm{C}$ ） | 10 | 高校の専攻科， <br> 短期大学または大学の別科 | Advanced course of upper secondary school， Advanced course of secondary education school（upper division）， Advanced course of special education school （upper secondary department）， <br> Short－term course of junior college， <br> Short－term course of univerity | 13 | V |  |  |
|  | ISCED 5B | 11 | 短期大学，高等専門学校 （第4－5学年）， <br> 短期大学または高等専門学校の専攻科 <br> 専門学校（専修学校専門課程） | Regular course of junior college（including correspondence course）， <br> Advanced course of junior college， <br> Regular course of college of technology， <br> Advanced course of college of technology， Specialised training college（post－secondary course） | 14 |  |  |  |


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| Int． Question No | International English Version | Int． Value Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age | Country comment |
|  | ISCED 5A，bachelor degree | 12 | 大学学士課程，大学の専攻科 | Undergraduate programs of University（including correspondence course）， Advanced course of university | 16 |  |  |  |
|  | ISCED 5A，master degree | 13 | 大学院修士課程または博士前期課程， <br> 大学院専門職学位課程（法科大学院を含む） | Master＇s programs／ Doctoral programs（lower division）of university （including correspondence course）， Professional degree＇s programs of university （including correspondence course）， Professional degree＇s programs of graduate law school | 18 |  |  |  |
|  |  |  | 博士課程満期退学 | Completed all work of doctoral program except doctoral thesis | 21 |  |  |  |
|  | ISCED 6 | 14 | 大学院博士課程 | Doctoral programs of university（including correspondence course） | 21 |  |  |  |
|  |  |  | 専修学校一般課程，各種学校 | Specialised training college（general course）， Miscellaneous school | 9 |  |  |  |



| KOREA |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
|  | ISCED 5A, bachelor degree | 12 | 일반 4년제 대학교 졸(학사) <br> 특수 4년제대학(교육대학, 산업대 학, 경찰대학 등) 졸(학사) | 4 year university(Bachelor degree) | 16 |  |  |
|  | ISCED 5A, master degree | 13 | 일반대학원 석사 학위취득 특수대학원 석사 학위취득 전문대학원 석사 학위취득 | Master's degree(general univeristies) | 18 |  |  |
|  | ISCED 6 | 14 | 박사 학위취득 | Doctoral degree | 22 |  |  |



| NETHERLANDS |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value Code | National version (text) | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  | ISCED 2 | 3 | vmbo praktijkonderwijs, ibo, ivbo, speciaal voortgezet onderwijs | secondary education, first cycle, middle (isced 2c, piaac 3) | 11 |  |  |
|  |  |  | vmbo (bl, kl), lbo, vbo, bol/mbo 1 jarig (assistentenopleiding), kmbo 1 jarig, bbl 1 jarig | secondary education, first cycle, middle (isced 2, piaac 3) | 11 |  |  |
|  |  |  | mulo, mavo, vmbo (tl, gl) | secondary education, first cycle, high (isced 2b, piaac 3) | 11 |  |  |
|  | ISCED 3C shorter than 2 years | 4 |  |  |  |  |  |
|  | ISCED 3C 2 years or more | 5 | leerlingwezen primair, bbl 2 jarig | secondary education, first cycle, middle (isced 2c, piaac 5) | 13 | V |  |
|  |  |  | bol/mbo 2 jarig, kmbo 2 jarig | secondary education, second cycle, low (isced 3c, piaac 5) | 13 | V |  |
|  |  |  | leerlingwezen secundair of tertiair, bbl 3- of 4-jarig | secondary education, second cycle, middle (isced 3c, piaac 5) | 14 | V |  |
|  | ISCED 3A-B | 6 | bol/mbo 3 of 4 jarig | secondary education, second cycle, high (isced 3a, piaac 6) | 14 | V |  |
|  |  |  | havo, mms | secondary education, second cycle, middle (isced 3a, piaac 6) | 12 | A |  |
|  |  |  | vwo, gymnasium, hbs | secondary education, second cycle, high (isced 3a, piaac 6) | 13 | A |  |
|  | ISCED 3 (without distinction A-B-C, 2y+) | 7 |  |  |  |  |  |
|  | ISCED 4C | 8 |  |  |  |  |  |


| NETHERLANDS |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value Code | National version (text) | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  | ISCED 4A-B | 9 |  |  |  |  |  |
|  | ISCED 4 (without distinction $\mathrm{A}-\mathrm{B}-\mathrm{C}$ ) | 10 |  |  |  |  |  |
|  | ISCED 5B | 11 | kort hbo, associate degree | tertiary education, first cycle, low (isced 5b, piaac 11) | 14 |  |  |
|  | ISCED 5A, bachelor degree | 12 | hbo 4 jarig, hbo bachelor | tertiary education, first cycle, middle (isced 5a, piaac 12) | 16 |  |  |
|  |  |  | universiteit bachelor | tertiary education, first cycle, high (isced 5a, piaac 12) | 16 |  |  |
|  | ISCED 5A, master degree | 13 | universiteit doctoraal, hbo/universiteit master | tertiary education, second cycle (isced 5a, piaac 13) | 17 |  |  |
|  | ISCED 6 | 14 | doctoraat, medisch specialist | tertiary education, third cycle (isced 6, piaac 14) | 21 |  |  |


| NORWAY |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code |  | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
| B_Q01a | Which of the following qualifications is the highest you have obtained? | 1 |  | What is the highest education you have obtained? |  |  | 5 |
|  | No formal qualification or below ISCED 1 |  | Ingen formell utdanning | No formal education |  |  |  |
|  | ISCED 1 | 2 | Barneskole | Primary school | 7 |  |  |
|  | ISCED 2 | 3 | Ungdomsskole, folkeskole | Compulsory school. General education school leaving certificate obtained on completion of grade 10 (or any other lower secondary level school) or a leaving certificate from Folkeskole (the former name for compulsory school) | 10 |  |  |
|  | ISCED 3C shorter than 2 years | 4 | Gymnas, videregående utdanning, realskole, folkehøyskole to år eller mindre, ikke direkte studiekompetansegivende | Vocational/high school /folk high school education 2 years or shorter, not giving direct access to ISCED 5 level | 12 | V |  |
|  | ISCED 3C 2 years or more | 5 | Videregående utdanning som gir fagbrev, svennebrev eller tilsvarende yrkesfaglig kompetanse. 2 års varighet eller mer. | Vocational education with craft certificate, no direct access to ISCED 5 level. | 14 | V |  |
|  | ISCED 3A-B | 6 | Gymnas, realskole eller videregående opplæring som gir generell studiekompetanse | Vocational/high school education giving direct access to ISCED 5 leve, 3 years or shorter. | 13 | A |  |


| NORWAY |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code |  | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  | ISCED 3 (without distinction A-B-C, 2y+) | 7 |  |  |  |  |  |
|  | ISCED 4C | 8 | Fagskoleutdanning og annen yrkesrettet påbygging til videregående opplæring | 2 years education at high school or supplementary education for adults giving access to ISCED 5 level | 15 | V |  |
|  | ISCED 4A-B | 9 | Forkurs til universitet og høgskole som ikke gir vekttall/studiepoeng | Introductory course to provide direct access to college/university. predegree foundation courses or short vocational programmes | 14 | A |  |
|  | ISCED 4 (without distinction $\mathrm{A}-\mathrm{B}-\mathrm{C}$ ) | 10 |  |  |  |  |  |
|  | ISCED 5B | 11 | Toårig høgskolekandidatgrad | Education at college/university or other post secondary education 2 years or shorter | 15 |  |  |
|  | ISCED 5A, bachelor degree | 12 | Bachelor, cand. Mag. eller annen universitets- og høgskoleutdanning, tilsvarende inntil fire års heltidsstudier (80 vekttall/240 studiepoeng eller mindre) | Education at college/university or other post secondary education 3 years or shorter | 16 |  |  |
|  | ISCED 5A, master degree | 13 | Master, hovedfag eller annen universitetsog høgskoleutdanning, tilsvarende mer enn fire års heltidsstudier (mer enn 80 vekttall/240 studiepoeng) | Education at college/university or other post secondary education, 4 years or longer | 18 |  |  |
|  | ISCED 6 | 14 | Forskerutdanning | Second stage of tertiary education (post graduate) | 21 |  |  |



| POLAND |  |  |  |  |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code | National Version | English translation of the national version | Total years of schooling when level is completed, born before 1952 | School starting age | Total years of schooling when level is completed, born after 1951 and before 1986 | School starting age | Total years of schooling when level is completed, born after 1985 | School starting age | Vocational/ Academic |
|  | ISCED 5B | 11 |  |  |  |  |  |  |  |  |  |
|  | ISCED 5A, bachelor degree | 12 | Licencjat (ISCED 5A) (studia I stopnia) | BA, ISCED 5A (I degree) | 14 |  | 15 |  | 15 |  |  |
|  | ISCED 5A, master degree | 13 | Magisterium (ISCED <br> 5A) (studia II stopnia) | MA, ISCED 5A (II degree) | 16 |  | 17 |  | 17 |  |  |
|  | ISCED 6 | 14 | Doktorat, profesura (ISCED 6) | $\begin{aligned} & \text { PhD, Professor, } \\ & \text { ISCED } 6 \end{aligned}$ | 20 |  | 21 |  | 21 |  |  |


| RUSSIAN FEDERATION* |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
| B_Q01a | Which of the following qualifications is the highest you have |  | Какой наивысший уровень образования Вы получили? | Which of the following qualifications is the highest you have |  |  | 6 |
|  | No formal qualification or below ISCED 1 | 1 | Без образования | Without education | 6 |  |  |
|  | ISCED 1 | 2 | Не закончил школу (менее 9ти классов) | Doesn't graduated from secondary school (Less than 9 classes) | 6 |  |  |
|  | ISCED 2 | 3 | 9 классов средней школы | 9 classes of secondary school | 9 |  |  |
|  | ISCED 3C shorter than 2 years | 4 |  |  |  |  |  |
|  | ISCED 3C 2 years or more | 5 |  |  |  |  |  |
|  | ISCED 3A-B | 6 |  |  |  |  |  |
|  | ISCED 3 (without distinction A-B-C, 2y+) | 7 | Средняя школа (10-11 классов) | secondary school (10-11 classes) | 11 | A |  |
|  | ISCED 4C | 8 |  |  |  |  |  |
|  | ISCED 4A-B | 9 |  |  |  |  |  |
|  | ISCED 4 (without distinction A-B-C) | 10 | профессиональное образование (например, | education in specialized school | 11 | V |  |
|  | ISCED 5B | 11 | Среднее профессиональное образование (например, техникум) | technical secondary school | 12 |  |  |
|  | ISCED 5A, bachelor degree | 12 | Незаконченное высшее образование, бакалавр | Incomplete higher education, bachelor | 16 |  |  |
|  | ISCED 5A, master degree | 13 | Высшее образование, магистр | Higher education, master's degree | 18 |  |  |
|  | ISCED 6 | 14 | Ученая степень (кандидат, доктор наук) или два высших образования | Academic degree or two higher educations | 21 |  |  |


| RUSSIAN FEDERATION* |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
|  | Foreign qualification | 15 | Зарубежное образование | Foreign education |  |  |  |

* Please refer to the note regarding the Russian Federation in the Note to Readers section of this report.

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| Int. Question No | International English Version | Int. Value Code |  | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
| B_Q01a | Which of the following qualifications is the highest you have obtained? |  | De las titulaciones incluidas en esta ficha, ¿cuál es la más alta que ha obtenido? | Which of the following titles the highest you have finished? |  |  | 5 |
|  | No formal qualification or below ISCED 1 | 1 | Menos de 5 años de escolarización. | Infant education, "párvulos" school, nursery school and similar. We do not consider that there exists formal education at any level below primary education. |  |  |  |
|  | ISCED 1 | 2 | Educación Primaria; 5 ó más años de escolarización; Educación General Básica (5 cursos); y similares. | Primary education, certificate of primary studies, Spanish languages for immigrants, EGB Basic General Education (years 1-5) and similar. | 6 |  |  |


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| Int. Question No | International English Version | Int. Value Code |  | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
|  | ISCED 2 | 3 | Educación Secundaria Obligatoria; Certificado de Estudios Primarios;Educación General Básica ( $2^{\text {a }}$ etapa ); Bachilleratos Elementales; Formación Profesional, programa de aprendizaje de tareas; Pruebas de acceso a ciclos formativos de Grado Medio; y similares. | Compulsory Secondary Education; Basic General Education (years 6-8), Elementary <br> Baccalaureats; Vocational Education, programme for the learning of skills; Social guarantee programme in 1 year; Initial vocational quallification programme in 1 year; and similar. | 10 |  |  |
|  | ISCED 3C shorter than 2 years | 4 | Programa de Garantía Social; Programa de cualificación profesional inicial; y similares. | Professional technical studies for adults; occupational education, and similar | 11 | V |  |
|  | ISCED 3C 2 years or more | 5 | Grado Medio de Música y Danza; certificado de la Escuela Oficial de Idiomas; FPI; y similares. | Specific Vocational Education, Programme for Initial Vocational Qualification, in 2 years; middle level of Official Schools of Languages; tests for access to university for people over 25; former Vocational Education 1st level. And similar. | 12 | V |  |


| SPAIN |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code |  | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  | ISCED 3A-B | 6 | Bachillerato, antiguos <br> Bachilleratos Superiores y cursos preuniversitarios; BUP,COU; Formación Profesional Específica, Artes Plásticas y Enseñanzas deportivas de grado medio;FPI; Oficialía; y similares. | Baccalaureate , former Higher Baccalaureates and pre-university courses. And similar. | 12 | A |  |
|  | ISCED 3 (without distinction A-B-C, 2y+) | 7 |  |  |  |  |  |
|  | ISCED 4C | 8 |  |  |  |  |  |
|  | ISCED 4A-B | 9 | Pruebas de acceso a ciclos formativos de grado superior; y similares. | Tests to have access to Specific Vocational Education, higher level, and similar Tests to have access to Vocational Education, higher level, and similar | 14 | A |  |
|  | ISCED 4 (without distinction A-B-C) | 10 |  |  |  |  |  |
|  | ISCED 5B | 11 | Formación Profesional Específica, Artes plásticas y Enseñanzas deportivas de grado superior; FPII; Maestría industrial; y similares. | Specific Vocational <br> Education, higher level; <br> Higher Level of <br> Music/Dance <br> Conservatories; Higher <br> level in Plastic <br> Arts/Design/Sports <br> Technician;and similar | 14 |  |  |


| SPAIN |  |  |  |  |  |  |  |
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| Int. Question No | International English Version | Int. <br> Value <br> Code |  | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
|  | ISCED 5A, bachelor degree | 12 | Diplomatura; Ingeniería y <br> Arquitectura técnica; licenciatura; estudios superiores de Artes Plásticas y Diseño; Estudios de Conservación y restauración; títulos de grado; y similares. | University Diploma; Tecnical Engineering and Architecture; University "Licenciatura", Higher Engineering and Architecture, titles of "Grado" and similar | 15 |  |  |
|  | ISCED 5A, master degree | 13 | Máster oficial;licenciatura; ingeniería superior y arquitectura; especialidades sanitarias de posgrado; y similares. | Master Degrees and postgraduate medical specializations. And similar. | 17 |  |  |
|  | ISCED 6 | 14 | Doctorado. | Doctoral courses with a thesis, or equivalent requirements. | 21 |  |  |



| SLOVAK REPUBLIC |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version | Int. Value Code | National Version | English translation of the national version | Total years of schooling when level is completed | Vocational/ Academic | School starting age |
|  | ISCED 5A, master degree | 13 | Vysokoškolské vzdelanie II. stupňa (napr. Mgr., Ing., MUDr., PhDr.) | Master degree | 18 |  |  |
|  | ISCED 6 | 14 | Vysokoškolské vzdelanie III. stupňa (napr. PhD.) | PhD studies, Second stage of tertiary education | 21 |  |  |
|  | Foreign qualification | 15 |  |  |  |  |  |



| SWEDEN |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version | Int. Value Code | National Version | English translation of the national version | Total years of schooling when level is completed (for respondents who did not confirm validity of register data YRSQUAL was calculated on the basis of more detailed Swedish <br> B_Q01aSE1 variable) | Vocationall Academic | School starting age |
|  |  |  | Grundskole-kompetens inom vuxen- utbildning, folkhögskola | Received certificate corresponding to education at lower secondary level from adult education or folk high schools (ISCED 2) | 9 |  |  |
|  |  |  | Flickskola | girls' school (ISCED 2) | 10 (9)* |  |  |
|  | ISCED 3C shorter than 2 years | 4 | Gymnasieutbildning kortare än 2 år, Fackskola och yrkesutbildning kortare än 2 år | Education at upper secondary schools shorter than 2 years, vocational education shorter than 2 years (ISCED 3C < 2 years) | 10 |  |  |
|  | ISCED 3C 2 years or more | 5 | 3-årigt gymnasium, även yrkes- utbildning 3 år | Education at upper secondary schools 2 years, vocational education 2 years (ISCED 32 years and more) | 12 |  |  |
|  | ISCED 3A-B | 6 | Gymnasieutbildning 2 år, Fackskola eller yrkesutbildning 2 år | Education at upper secondary schools 3 years, vocational education 3 years (ISCED 32 years and more) | 11 |  |  |
|  | ISCED 3 (without distinction A-B-C, 2y+) | 7 |  |  |  |  |  |


| SWEDEN |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version | Int. Value Code | National Version | English translation of the national version | Total years of schooling when level is completed (for respondents who did not confirm validity of register data YRSQUAL was calculated on the basis of more detailed Swedish B_Q01aSE1 variable) | Vocationall Academic | School starting age |
|  |  |  | Vuxen-utbildning motsvarande gymnasium 2 3 år, även inom folkhögskola | Adult education on upper secondary level 2-3 years, also in folk high schools (ISCED 32 years and more) | 12 |  |  |
|  | ISCED 4C | 8 |  |  |  |  |  |
|  | ISCED 4A-B | 9 |  |  |  |  |  |
|  | ISCED 4 (without distinction A-B-C) | 10 | 4-årigt gymnasium, basår eller påbyggnadsutbildning för vuxna utöver 3 års gymnasial utbildning | 4 years education at upper secondary schools or supplementary education for adults (based on 3 years education at upper secondary school) (ISCED 4) | 13 |  |  |
|  |  |  | Högskole- <br> /universitetsutbildning och annan eftergymnasial utbildning motsvarande heltidsstudier kortare än 2 år | Education at college/university or other post secondary education shorter than 2 years (ISCED 4) | 13 |  |  |


| SWEDEN |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version | Int. Value Code | National Version | English translation of the national version | Total years of schooling when level is completed (for respondents who did not confirm validity of register data YRSQUAL was calculated on the basis of more detailed Swedish B_Q01aSE1 variable) | Vocational/ Academic | School <br> starting age |
|  | ISCED 5B | 11 | Högskole/universitetsutbildning motsvarande 2 års heltidsstudier och annan eftergymnasial utbildning motsvarande 2 års heltidsstudier eller längre | Education at college/university 2 years or other post secondary education 2 years or longer (ISCED 5B) | 14 |  |  |
|  | ISCED 5A, bachelor degree | 12 | Högskole/universitetsutbildning motsvarande 3 års heltidsstudier | Education at college/university 3 years (ISCED 5A) | 15 |  |  |
|  | ISCED 5A, master degree | 13 | Högskole/universitetsutbildning motsvarande heltidsstudier i 4 år eller längre | Education at college/university 4 years or longer (ISCED 5A) | 16 |  |  |
|  | ISCED 6 | 14 | Forskarutbildning (Fil lic eller Fil Dr) | Post graduate education (Licentiate of Ph or PhD degree) (ISCED 6) | 20 |  |  |
|  |  | * for respondents who confirmed validity of register data YRSQUAL was calculated on the basis of international B_Q01a variable. Therefore, Swedish B_Q01aSE1 categories belonging to international value code 3 could not be distinguished. They were all assigned value 9 as minority of respondents belong to Yrkesutbildning and Flickskola |  |  |  |  |  |



| UNITED STATES |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int. Question No | International English Version | Int. <br> Value <br> Code | National version (text) | English translation of the national version | Total years of schooling when level is completed | Vocationall Academic | School starting age |
|  | ISCED 5A, master degree | 13 | Master's degree (e.g. MA MS, Meng, MEd, MSW, MBA) |  | 18 |  |  |
|  | ISCED 5A, master degree | 13 | Professional degree (e.g. MD, DDS, DVM, LLB, JD) |  | 19 |  |  |
|  | ISCED 6 | 14 | Doctorate degree (e.g. PhD, EdD) |  | 21 |  |  |

## Appendix 6: PIAAC Consortium - Staff, Expert Group and National Project Manager Listings

## PIAAC Consortium

## Educational Testing Service (ETS) - Overall Management, Test Development, Psychometrics, Analysis and Data Products

Irwin Kirsch (International Project Director)
Claudia Tamassia (International Project Manager)
Kentaro Yamamoto (Director, Psychometrics and Analysis)
Matthias von Davier (Co-Director, Psychometrics and Analysis)
Marylou Lennon (Test Development, Literacy and PSTRE)
John P. Sabatini (Test Development, Reading Components)
Kelly M. Bruce (Test Development, Reading Components)
Eugenio Gonzalez (Training and Technical Report)
Michael Wagner (Director, Platform Development)
Larry Hanover (Editorial Support)
Judy Mendez (Project Support)
Lisa Hemat (Project Support)
Jason Bonthron (Platform Development)
Mike Ecker (Platform Development)
Ramin Hemat (Platform Development)
Tom Florek (Platform Development)
Debbie Pisacreta (Platform Development)
Janet Stumper (Platform Development)
John Barone (Director, Data Analysis and Database Preparation)
Scott Davis (Data Analysis)
Justin Herbert (Data Analysis)
Steven Holtzman (Data Analysis)
Laura Jerry (Data Analysis)
Mathew Kandathil (Data Analysis Leader)
Debra Kline (Data Management)
Nan Kong (Data Analysis)
Phillip Leung (Data Analysis Leader)
Chen Li (Data Analysis)
Mei-Jang Lin (Data Analysis)
Michael Narcowich (Data Analysis)
Alfred Rogers (Data Analysis Leader)
Jonathan Steinberg (Data Analysis)
Joan Stoeckel (Data Analysis and Data Management)
Ruopei Sun (Data Analysis)
Minhwei Wang (Data Analysis Leader)
Kei Sing Wong (Data Analysis)
Lingjun Wong (Data Analysis)
Jeffrey Wright (Data Analysis)
Fred Yan (Data Analysis)
Ningshan Zhang (Data Analysis)
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Dorothée Behr
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Silke Martin
Natascha Massing
Anouk Zabal

# Deutsches Institut für Internationale Pädagogische Forschung (DIPF) - Development of the PIAAC Test Delivery Platform 

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Simon Brüchner (Software Development)
Mahtab Dalir (Software Development)
Gabriele Gissler (Item Development)
Frank Goldhammer (Test Development, Deputy Project Co-Director)
Roland Johannes (Software Development)
Elham Müller (Software Development)
Jean-Paul Reeff (International Consultant)
Marc Rittberger (Director)
Heiko Rölke (Project Co-Director)
Alexander During (Software Development)
Maya Schnitzler (Software Development)
Felix Toth (Software Development)
Britta Upsing (Project Coordinator)
cApStAn - Linguistic Quality Control
Steve Dept (Verification Operations)
Andrea Ferrari (Verification Methodology and Management)
Laura Wäyrynen (Verification Methodology and Management)
Elica Krajčeva (Verification Management)
Raphaël Choppinet (Verification Management)
Shinoh Lee (Verification Management)
Irene Liberati (Verification Management)
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Rolf van der Velden (Coordinator, Development Background Questionnaire)
Jim Allen (Development Background Questionnaire)
Martin Humburg (Development Background Questionnaire)
International Association for the Evaluation of Educational Achievement (IEA) - Data Cleaning and Database Preparation
Alena Becker (Data Processing and National Adaptations)
Christine Busch (Meta-data and Processing)
Ralph Carstens (Lead International Data Management and Analysis Support/Training)
Mark Cockle (Quality Control and Manuals)
Tim Daniel (Co-Lead International Data Management)
Bastian Deppe (Software Testing and Data Cleaning)
Limiao Duan (Processing Systems Development)
Daniela Tranziska (Processing Systems Development)
Christian Harries (Software Development)
Pamela Inostroza (Processing Systems Development)
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Maike Junod (Software Development)
Alexander Konn (Processing Systems Development)
Kamil Kowolik (Data Processing and National Adaptations)
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Sebastian Meyer (Data Processing and National Adaptations)
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Brice Nzuakue Diogni (Software Testing)
Dirk Oehler (Quality Control and Processing Systems)
Martin Olszewski (Processing Systems Testing)
Daniel Radtke (Data Processing and National Adaptations)
Frank Wohnfurter (Software Development)

## Westat - Sample Design and Selection, Weighting, Survey Operations, and Quality Control

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Pat Montalvan (Director, Survey Operations)
Tom Krenzke (Manager, Sampling Activities)
Michael Lemay (Manager, Survey Operations)
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Valerie Hsu (Leader, Sampling Activities)
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Lillian Diaz-Hoffmann (Survey Operations Material Development and Training)
Sylvia Dohrmann (Senior Survey Statistician)
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Wen-Chau Haung (Senior Systems Analyst)
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Robin Jones (Senior Systems Analyst)
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Chao Zhou (Survey Statistician)
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Lionel Lecaque (Platform Integration)
Jérôme Bogaerts (Lead Developer)
Joël Billard (Questionnaire Development)
Damien Arcani (Contents Designer)
Somsack Sipasseuth (Workflow Development)
Primaël Lorbat (Multilingual Framework Development)
Younes Djaghloul (Multilingual Framework Development)
Igor Ribassin (Virtual Machine Integration)
Pierre Goulaieff (Communication)

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Lene Johansen, Aalborg University, Denmark
Terry Maguire, Institute of Technology Tallaght-Dublin, Ireland
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Scott Murray, DataAngel Policy Research Incorporated, Canada
Jürgen Schupp, German Institute for Economic Research DIW in Berlin, Germany
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## PIAAC Technical Advisory Group

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Roel Bosker, University of Groningen, the Netherlands
Henry Braun, Boston College, United States of America
Lars Lyberg, Stockholm University, Sweden
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Irini Moustaki, London School of Economics, the United Kingdom

## National Project Managers

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Belgium: Inge De Meyer
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Cyprus: Athena Michaelidou
Czech Republic: Jana Strakova
Denmark: Anders Rosdahl
Estonia: Aune Valk
Finland: Antero Malin
France: Nicolas Jonas
Germany: Beatrice Rammstedt
Ireland: Donal Kelly
Italy: Gabriella Di Francesco
Japan: Atsushi Kogirima
Korea: Eon Lim

Netherlands: Willem Houtkoop
Norway: Birgit Bjørkeng
Poland: Jan Burski
Slovak Republic: Adriana Mesarosova
Spain: Luis Sanz and Ines Sancha
Sweden: Ann-Charlott Larsson
United Kingdom: Julie Sewell and Rebecca Wheater
United States: Eugene Owen

# Appendix 7: Data Adjudication in PIAAC 

PIAAC Consortium and William Thorn

## Section A7-1. Data adjudication - content, process and outcome

This section describes the content and process for the evaluation of quality - known as adjudication - of the data collected by participating countries, and provides a brief summary of the outcome of the process. The objective of the data adjudication process was to arrive at a judgment regarding the global quality of the data from PIAAC for each participating country and to determine, if necessary, any limitations that should be applied to the public dissemination and use of these data.

The PIAAC Technical Standards and Guidelines (TSG) ${ }^{1}$ established requirements relating to the quality of PIAAC survey data with respect to representation of the target population and data comparability across countries, and provided standard procedures for quality assurance. Throughout the survey process, the Consortium conducted continuous quality monitoring activities aimed at limiting the magnitude of quality variation among countries. Communication between the country and its assigned Consortium contacts for sampling, operations and other components of the survey was critical to understanding various aspects of country samples and for assessing the quality and comparability of PIAAC data nationally and across countries. Communication allowed the Consortium to recommend ways to improve the quality of the country samples at the same time as minimizing the quality variation among countries.

The quality control (QC) process collected information regarding the country status following the TSG. The National Survey Design and Planning Report was the initial tool for collecting information from the countries about country-specific approach to maintaining compliance with the TSG for the total survey process. The implementation of those planned processes was monitored closely. For example, operations were monitored through conference calls on a regular basis and reports provided from the country relating to response rates and validation. Also, for sampling, the primary vehicles for the communication were the QC Sample Selection and Sample Monitoring forms. Real-time monitoring of all aspects of sampling was critical in allowing the Consortium to uncover problems with sampling and for the countries to incorporate changes if necessary.

As emphasized above, compliance with the TSG was an important component in the assessment of national data. However, in the adjudication process, a wider definition of quality was used - that of

[^2]"fitness for use." In other words, the goal was to go beyond compliance to assess whether the data produced were of a sufficient quality in terms of their intended uses or applications. In assessing overall quality level, the focus was on four key areas:

- Sampling
- Coverage and nonresponse bias
- Data collection
- Instrumentation

The core element of the adjudication process was an assessment of the quality of data in each of the domains identified above in terms of performance against a set of quality indicators. These indicators are listed in Table A7-1 below and described in detail in Section A7-2. These indicators reflect the major requirements of the TSG in the domains concerned and help to assess the variation in quality when attempting to compare estimates across countries.

Table A7-1: Quality domains and associated indicators

| Domain | $\quad$ Indicators $^{2}$ |
| :--- | :--- |
| 1- Sampling | 1.A Sampling plan <br>  <br> 3 <br>  <br>  <br>  <br>  <br>  <br> 1.B Sample selection (home office) ${ }^{2}$ <br> 1.C Sample selection (field) <br> 1.D Sample weighting <br> 1.E Sampling error (DEF) |
| 2 - Coverage and <br> nonresponse bias <br> (NRBA) | 2.A Population coverage (frame) <br> 2.B Population coverage (field) <br> 2.C Weighted response rate, and coverage rate <br> 2.D NRBA (Basic) |
|  | 2.E NRBA (extended) |

In each of the four domains, the Consortium made an assessment of the level of performance of countries, first, at the level of each of the individual indicators and, second, at the level of the domain as a whole (see Table 2). A three-category assessment schema was used to summarize the assessments in respect to each indicator and, globally for each domain - "passed" (i.e., relevant requirements completely met), "caution" (i.e., relevant requirements met to a reasonable extent) and "failed" (i.e., relevant requirements generally not met). Explanations of what the assessment categories mean in relation to the quality indicators are provided in Section A7-2. At the level of individual indicators, the assessment was based on compliance with relevant standards, the information provided by countries as part of the quality control process, and the analysis of the response data from the Main Study. At the level of the domain, the assessment was based on consideration of performance in relation to the relevant indicators and their interrelationships. For example, evidence of a high level of undercoverage bias could be judged to be a serious problem for quality even if response rates were high and nonresponse bias low.

[^3]Table A7-2: Levels of quality assessment

| Domain | Assessment against <br> Indicators | Overall Assessment |
| :--- | :--- | :--- |
| Sampling | 1.A (pass, caution, fail) <br> 1.B (pass, caution, fail) <br> 1.C (pass, caution, fail) <br> 1.D (pass, caution, fail) <br> $1 . E$ (pass, caution, fail) | Pass, caution, fail |
| Coverage and <br> nonresponse bias | 2.A (pass, caution, fail) <br> nata collection | 3.A (pass, caution, fail) <br> Instrumentation |
| 4.A (pass, caution, fail) | Pass, caution, fail |  |
| $\ldots$ | Pass, caution, fail |  |

The Consortium summarized the outcome of the assessment for each indicator and domain in an initial report that presented the results to the PIAAC Technical Advisory Group (TAG) at its meeting in December 2012. Countries were provided with the initial report soon after it was circulated to the TAG. The TAG reviewed the results of the quality assessment (and any country responses) and provided a report to the OECD Secretariat and to the BPC containing recommendations regarding the presentation and use of data for each country. The adjudication process was finalized after countries performed the required analyses based on the proficiency estimates that became available to countries prior to the 1618 January 2013 workshop in Paris.

A decision was made to recommend that some conditions be placed on the release of a country's data if it received a "fail" grade in one or more domains. The conditions could range from placing results from the country concerned "under the line" in tables accompanied by an appropriate annotation when reporting results to suppressing data in some tables or, at the extreme, not releasing a country's data as part of the PIAAC international dataset. Similarly, receipt of a "caution" for two or more domains could lead to a recommendation that conditions be placed on release of a country's data.

The content of any recommendations made regarding the conditions applying to the release of a country's data reflected, in addition to the principles articulated in the TSG regarding response rates (Standard 4.7.4 and associated guidelines) described in Table 5 below, the extent and nature of the problems concerning data quality.

From the point of view of providing a secure basis for making inferences regarding the target population, some indicators are more important than others. For example, as discussed in Chapter 14, probability sampling is a necessary condition for a representative sample. Failure to provide evidence that sample selection both at the design stage and in the field resulted in a probability sample would represent a more serious concern than a failure to follow the standards relating to the training of interviewers and would lead, other things being equal, to more stringent conditions being placed on data
release. Also, for example, as given in Chapter 16, design effects (DEFFs) are an example of one of the more visible indicators of quality variation among countries. DEFFs are a measurable summary of quality and take into account the impact on sampling error due to clustering, stratification, unequal probabilities of selection, weight adjustments (Chapter 15) and multiple imputation. Design effects were estimated prior to sample selection, and for countries with relatively high design effects it was recommended to attempt to improve the stratification in their designs by finding good correlates with the PIAAC outcomes, and to revisit the clustering in their sample designs.

As discussed in the TSG, given the relationships between bias and undercoverage and response rates, countries must keep the exclusion rates low and implement procedures to reduce the potential for nonresponse bias and attain high response rates. There were several ways to reduce the potential for nonresponse bias. First and foremost was to plan and implement field procedures that obtain a high level of cooperation. Response rate was a valuable data quality component of the analysis of nonresponse bias, which was an important input to the data adjudication process. As explained in Section A7-2 below, two types of nonresponse bias analysis (NRBA) were required from countries. All countries were to complete a basic NRBA designed to provide evidence for the selection of variables to be used in nonresponse weighting adjustments. Countries with overall response rates of less than 70 percent were also required to complete an extended NRBA designed to evaluate the impact of the weighting adjustments implemented on the proficiency estimates. Chapter 16 includes a description of the basic and extended NRBA, and the outcome of the analysis is included in the country reports in Section A7-3.

Table 3 presents the PIAAC Data Quality Evaluation results for all quality indicators. Section A7-3 includes each country's adjudication report.

Table A7-3: PIAAC data quality evaluation summary table ${ }^{5}$

| Country | Sampling | Coverage and <br> Nonresponse Bias ${ }^{6}$ | Data Collection | Instrumenta- <br> tion |
| :--- | :--- | :--- | :--- | :--- |
| Australia | Caution-Quality partially known, <br> due to confidentiality restrictions | Pass | Pass | Pass |
| Austria | Pass | Caution-Bias low | Pass | Pass |
| Canada | Pass | Caution-Bias minimal | Pass | Pass |
| Cyprus $^{7}$ | Pass | Caution-Bias low | Pass | Pass |
| Czech Republic | Pass | Caution-Bias low | Pass | Pass |
| Denmark | Pass | Caution-Bias low | Caution-Partial <br> Compliance | Pass |
| England (UK) | Pass low | Pass | Pass |  |
| Estonia | Pass | Caution-Bias low | Pass | Pass |
| Finland | Pass | Caution-Bias low | Caution-Partial <br> Compliance | Pass |
| Flanders (Belgium) | Pass | Caution-Partial | Pass |  |
| France | Caution-Probabilities of selection <br> derived from simulation | Cass low | Pass | Pass |
| Germany | Pass | Caution-Bias low | Pass | Pass |
| Ireland | Pass | Pass |  |  |
| Italy |  |  | Pass |  |

[^4]Table A7-3 (cont.): PIAAC data quality evaluation summary table

| Country | Sampling | Coverage and <br> Nonresponse Bias | Data Collection | Instrumenta- <br> tion |
| :--- | :--- | :--- | :--- | :--- |
| Japan | Caution-Approved deviation <br> from standards | Caution-Bias low | Pass | Pass |
| Korea | Pass | Pass | Pass | Pass |
| Netherlands | Cass | Caution-Bias low | Pass | Pass |
| Northern Ireland (UK) | Pass | Caution-Bias low | Pass | Pass | Pass | Pass |
| :--- |
| Norway |
| Poland |
| Pass |
| Russian Federation ${ }^{8}$ |
| Caution - Noncompliance |
| Slovak Republic |
| Caution-Bias level |
| unknown level ${ }^{9}$ |

${ }^{8}$ Please refer to the note regarding the Russian Federation in the Note to Readers section of this report.
${ }^{9}$ Bias level unknown due to incomplete nonresponse bias analyses.
${ }^{10}$ See "Data Adjudication Summary" section in the Russian Federation Adjudication Report for details.

## Section A7-2: Data quality - indicators used for adjudication

## 1. Sampling

## 1.A Sampling plan

- A complete sampling plan was provided.
- The country responded to feedback from the Consortium.

Rating: "Pass" = requirements fully met; "caution" = plan provided but only limited response to suggestions; "fail" = no plan provided, plan provided but country did not respond to feedback.

## 1.B Sample selection: Home office

- Complete QC sample selection forms were provided prior to data collection.
- Each person in the PIAAC target population had a nonzero and known (calculable) probability of selection resulting from the application of established and professionally recognized principles of scientific sampling.
- No substitution of sampling units.

Rating: "Pass" = requirements fully met; "caution" = evidence that sample selection process was not based on probability principles, but that effects were not significant; "fail" = no information provided, evidence that sample selection process was not based on probability principles and that effects were potentially significant.

## 1.C Sample selection: In field

- Persons were selected from within households using a fully enumerated grid of household members.
- No more than two persons were selected in a household, and fewer than $10 \%$ of households had two persons selected.
- Each person in the PIAAC target population had a nonzero and known (calculable) probability of selection resulting from the application of established and professionally recognized principles of scientific sampling.
- No substitution of sampling units.

Rating: "Pass" = requirements fully met; "caution" = only partial information provided or evidence that sample selection process was not based on probability principles, but that effects are not significant; "fail" = no information or insufficient provided, evidence that sample selection process was not based on probability principles and that effects were potentially significant.

## 1.D Sample weighting

- The country fully completed and returned the applicable QC weighting forms.
- Persons who did not complete the survey for a literacy-related reason (e.g., language barrier) were excluded from the adjustment for nonliteracy-related nonresponse. Literacyrelated nonrespondents (LRNR) at the screener stage or without age and gender collected were represented by BQ LRNR with age and gender collected and assessment LRNR. The BQ LRNR with age and gender collected has final weights and was included in the benchmarking adjustment with the BQ respondents.
- At a minimum, weights were benchmarked to control totals for age and gender.
- Control totals were from a survey of higher quality than PIAAC and match the concepts and definitions in PIAAC.
- Between 15 and 80 replicate weights were created using one of the following methods: delete-one jackknife, paired jackknife, balanced repeated replication, or Fay's method.
- All weight adjustments conducted for the full sample were conducted on each replicate weight to capture the variation created, or reduced, by the weight adjustments.

Rating: "Pass" = requirements fully met; "caution" = requirement generally met; "fail" = requirements met to a very limited extent or not at all.

## 1.E Sampling error

- The design effect, as a result of clustering, differential sampling rates and weighting adjustments, is at an adequate level (less than 2.5) for proficiency measures. Two statistics are computed: 1) the unequal weighting effect, resulting from variable sampling weights, and 2) effective sample size, as the ratio of the final sample size and the design effect computed using the first plausible value for the literacy component.

Rating: "Pass" = requirements fully met; "caution" = requirement generally met; "fail" = requirements met to a very limited extent or not at all.

## 2. Coverage and nonresponse bias

## 2.A Population coverage: Frame

- The estimated percentage of the target population excluded from the frame

Rating: "Pass" = exclusions $\leq 5 \%$; "caution" $=5 \%<$ exclusions $\leq 8 \%$; "fail" = exclusions $>8 \%$

## 2.B Population coverage: Data collection

- The weighted percentage of cases excluded because they are inaccessible. Rating: not applicable. This is provided as an information item.


## 2.C Weighted response rate

- The value of the overall design weighted response rate.

Rating: Pass" $=$ response rate $\geq 70 \%$; "caution" $=50 \% \leq$ response rate $<70 \%$; "fail" = response rate < 50\%

- The value of the overall design weighted coverage rate.

Rating: not applicable. This is provided as an indication of the overall coverage of the target population.

## 2.D NRBA: Basic

- The country performed all required basic NRBA analyses and returned the basic NRBA report.
- Variables related to age, gender, education, employment and region were analyzed.
- Characteristics showing bias were used in weighting adjustments or justification was provided for not including the variable in weighting.

Rating: "Pass" = requirements fully met; "caution" = requirement generally met; "fail" = requirements met to a very limited extent or not at all.

## 2.E NRBA: Extended 1-5 (only required if the overall weighted response rate was < 70\%)

- The country completed the required analyses and returned the extended NRBA report.
- No evidence of significant, substantial undercoverage or nonresponse bias.

Rating: "Pass" = required analysis undertaken. No evidence of significant or substantial undercoverage or nonresponse bias; "caution" = required analysis undertaken. Evidence of a moderate level of undercoverage or nonresponse bias; "fail" = required analysis either not undertaken or undertaken to a limited extent. Evidence of a high level of undercoverage or nonresponse bias.

## 3. Data collection

## 3A. Validation/rechecks

- Overwhelming majority of validation cases were selected randomly.
- Close to $10 \%$ of each interviewer's cases were validated.
- Cases selected for validation included completes, refusals, noncontacts and ineligibles.

Rating: "Pass" = evidence provided that demonstrates that requirements were fully met; "caution" = evidence provided that demonstrates that requirements were generally met; "fail" = no information provided or available evidence indicates that requirements were not met or met only to a very limited extent.

## 3B. Data collection (staffing, training, management/monitoring)

- Sufficient and qualified staff were hired to conduct data collection (i.e., obtain required number of completes and acceptable response rates within the study timeframe).
- Interviewer training was conducted using adapted Consortium training scripts.
- Depending on experience, interviewers were offered at least 20-30 hours of in-person training.
- Interviewer training consisted of at least 10 hours covering BQ and direct assessment administration and four hours on gaining respondent cooperation.
- Field supervisors were responsible for no more than 30 interviewers.
- Meetings between interviewers and supervisors to manage and monitor field work were held at least every other week.

Rating: "Pass" = evidence provided that demonstrates that requirements were fully met; "caution" = evidence provided that demonstrates that requirements were generally met; "fail" = no information provided or available evidence indicates that requirements were not met or met only to a very limited extent.

## 4. Instrumentation

## 4.A Cognitive assessment

- Literacy, numeracy and problem-solving scales are reliable, valid and comparable.

Rating: "Pass" = significant deviations from international item characteristic curves (ICCs) observed in only a small number of cases; "caution" = significant deviations from international ICCs observed in some cases; "fail" = significant deviations from international ICCs observed in a large number of some cases.

## 4.B $B Q$

- BQ items and indices are reliable, valid and comparable.

Rating: "Pass" = data quality high (e.g., low levels of item nonresponse for key variables, scales reliable); "caution" = data quality moderate; "fail" = data quality low.

## 4.C Translation

- Translation conducted by two independent translators, followed by reconciliation by a third translator.
- Full verification undertaken before the Field Test, partial verification of any revisions undertaken before the Main Study.
- All BQ adaptations approved.

Rating: "Pass" = requirements fully met; "caution" = requirements generally met; "fail" = requirements met to a very limited extent or not at all.

## 4.D Coding and scoring

- Rates of agreement between countries of scoring of anchor booklets (literacy, numeracy).
- Level of scoring reliability within countries.
- Countries provided a description of their coding system and coding quality control procedures.

Rating: "Pass" = Evidence that the required scoring reliability studies were conducted correctly. Interrater reliability between and within countries was within expected bounds. Required information on coding provided; "caution" = evidence that the required scoring reliability studies may not have been conducted correctly. Interrater reliability between and/or within countries was outside expected bounds. Not all information on coding provided; "fail" = evidence that the required scoring reliability studies were not been conducted correctly. Interrater reliability between and/or within countries was well outside expected bounds. Required information on coding either not provided or only limited information provided.

## 4.E Item nonresponse

- Number of BQ items for which response rate is less than $85 \%$.
- Item nonresponse bias analysis conducted for all BQ items with response rates below 85\%.

Rating: "Pass" = requirements fully met; "caution" = requirement generally met; "fail" = requirements met to a very limited extent or not at all.

## Section A7-3: Adjudication reports

## Australia

## Sampling

To the best of the Consortium's knowledge, Australia followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting, with one minor deviation (noted below under sample weighting). However, Australia was unable to provide all QC information because of confidentiality restrictions, so the Consortium cannot fully verify its compliance.

- Sampling plan: No issues
- Sample selection
o Home office: For confidentiality reasons, Australia was unable to provide the Consortium with selection probabilities and could not report on most of the information in the QC sample selection forms. Therefore, the Consortium is unable to verify whether the sample adheres to the TSG.
o In field: See above
- Sample weighting: For confidentiality reasons, Australia was unable to provide some of the information in the standard weighting QC forms. However, the Consortium corresponded with Australia to verify whether the main weighting standards were met. Australia performed person-level nonresponse adjustments and benchmarking to adjust for undercoverage and nonresponse at the household and person level, rather than doing separate adjustments at the household and person level according to the standard weighting procedures in the PIAAC Weighting and Variance Estimation Plan. Its procedure included a separate adjustment for literacy-related nonrespondents, as required by the TSG. The replicates were adjusted at each calibration stage but were not adjusted for nonresponse, which is in violation of Standard 14.11. However, per Australia, "Since the [nonresponse adjustment] factors are derived at such a broad level, they would vary very little if derived separately for each replicate group. Whilst this theoretically may result in variances being understated, in practice the magnitude of the impact is unlikely to be discernible."
- Sampling error: Australia's design effect due to unequal weights is 1.60 for a sample size of 7,428 adults ages $16-65$. The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 3,061 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (2.39). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. Australia produces both National and State level estimates for PIAAC so there are different probabilities of selection across the States/Territories. Since this survey design feature increases the design effect for the National estimates, Australia
increased its sample size to account for it. Further variation in the weights was added through within-household sampling, nonresponse and calibration adjustments, but if a weight was lower than $50 \%$ or higher than $300 \%$ of the initial weight after adjustments and benchmarking, benchmark classes were collapsed to reduce the weight fluctuation.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $3.3 \%$ (persons living in very remote areas; persons living in discrete indigenous communities; persons residing in non-institutional special dwellings; non-Australian diplomats, diplomatic staff and members of their household; nonAustralian defense forces and their dependants).
o Data collection: Not applicable
- Weighted response rate: 71\%
- Nonresponse bias analysis
o Basic: Instead of the standard analyses required by the Consortium, Australia performed a coverage analysis and calculated BQ response rates by subgroup. The Consortium agreed that the coverage analysis could serve as a substitute for the chi-square analysis. It encouraged Australia to perform a multivariate analysis (e.g., logistic regression). However, Australia explained that its coverage analysis is iterative-the potential bias after standard calibration is looked at first (by comparing weighted estimates to external totals) and then the weights are calibrated further if necessary. This is done in a way that would serve a similar purpose as a multivariate analysis.
Australia evaluated nonresponse by region, but could not share the results because of confidentiality reasons. As well, an under-representation was found of males, younger age groups, less educated, and not employed. Gender, age, education, Labor force status and region were all used in weighting adjustments. No other variables were analyzed for nonresponse bias.
o Extended (preliminary): Not required


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, Australia generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 10.9.3 on fieldwork validation and Guidelines 8.1.1B and 8.1.2A on management of field staff.

However, Australia met a reduced requirement on interviewer training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the Consortium. Australian interviewers were provided with 20 to 28 hours of in-person training.

## Instrument data quality

## Translation

To the best of the Consortium’s knowledge, Australia followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{11}$ prior to the Field Test and a partial verification ${ }^{12}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Australia followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 98.3\%
o Literacy Items: 98.8\%
o Numeracy Items: 96.3\%
- Scoring reliability of paper-based national booklets
o Core items: 99.7\%
o Literacy Items: 98.1\%
o Numeracy Items: 99.2\%


## Assessment data

Overall, $96.5 \%$ of respondents who completed the $B Q$ went on to take some cognitive assessment in either computer or paper format. In Australia, $78.0 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $19.7 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Australia, 14.4\% of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $2.8 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

[^5]The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Australia followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Australia. If a respondent started the interview, the likelihood that she/he provided data is at a level above $98 \%$ with practically only one exception: Income related questions. In Australia, 93.2\% of respondents provided yearly income reported in either direct amount or categories.

If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Australia, we observed 1.9\% of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Australia, these percentages were $10.2 \%$ for Literacy and $7.4 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computerbased items in Australia, the percentage of nonresponse for Literacy was $5.9 \%$, for Numeracy it was $4.6 \%$, and for PSTRE it was $0.2 \%$.

## Austria

## Sampling

Austria followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. All QC materials related to sampling plan, sample selection, and sample weighting were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
o Home office: No issues
o In field: Not applicable
- Sample weighting: Austria followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights.
- Sampling error: Austria's design effect due to unequal weights is 1.09 for a sample size of 5,130 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 3,561 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (1.41). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $0.6 \%$ (undocumented immigrants).
o Data collection: The weighted percentage of cases excluded because they were inaccessible was $0.8 \%$.
- Weighted response rate: 53\%
- Nonresponse bias analysis
o Basic: Austria performed all required analyses. The basic analysis showed significantly low response rates for low educated, non-Austrian, and people living in Styria and Vienna, based on registry information. Age, gender, province, urbanization, education, and nationality were used in weighting adjustments.
o Extended: Austria performed all required analyses except the analysis for noninterview report form. The extended analysis showed that bias was reduced through the weighting adjustments.
- Analysis 1 - Comparisons of estimates before and after weighting: Bias in age, education, nationality, urbanization, and region was reduced through the weighting process as these variables were used in weighting adjustments. Sex was also analyzed but did not show significant bias.
- Analysis 2 - Comparisons of estimates to external totals: Significant differences were found between PIAAC estimates (using final weights) and Labor Force Survey (LFS) quarter 4 of 2011 estimates of employment status. Per Austria, the difference could be caused by the different time spans of the two surveys. In addition, the definition of employment status
differs between LFS and PIAAC, as the latter follows the ILO concept that says "all members of the armed forces, including conscripts, should be defined as being in PAID work." In the LFS, this group of people (armed forces including conscripts) is excluded from the employment analysis.
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was above average at 0.43 ( 0.44 for numeracy). The correlation between the raking dimensions and literacy scores was above average at 0.55 ( 0.55 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.56 ( 0.57 for numeracy), which was above the average across countries. Although Austria's response rate was low (53\%), this analysis shows that weighting adjustments were effective in reducing NRB because of the high correlation between the survey outcomes and the weighting variables. However, data users need to be cautioned that the analysis is based on correlations between the responding sample ( $53 \%$ of the selected sample) and the weighting variables. That is, the analysis assumes that the same correlations exist for the remaining sampled cases that have no scores ( $47 \%$ of sampled cases).
- Analysis 4 - Comparisons of estimates from alternative weightings: To calculate new weights, the final weighted data were re-calibrated by adding an additional raking dimension. Very small differences were found in the proficiency estimates before and after re-weighting.
- Analysis 5 - Analysis of variables collected during data collection: Austria looked at characteristics of the literacy-related nonrespondents and found that they belonged to the expected sociodemographic groups, except that the low amount of literacy-related cases in one province was unexpected. Bias was reduced by the LRNR weighting adjustment.
- Analysis 6 - Level-of-effort analysis: Austria compared mean literacy scores, as well as age, sex, education, region, urbanization, and nationality, between low level-of-effort cases (interviews conducted with three or fewer contacts) and high level-of-effort cases (interviews conducted with more than three contacts). No significant differences of mean literacy score were found between high level-of-effort and low level-of-effort cases except for the 16-25 years old.
- Analysis 7 - Range of bias: The literacy scores’ first plausible value was used to compute the range of scores within the responding sample and predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 64 and the maximum score was 447 , for a range of 383. Using weighting adjustment cells, and with an extreme assumption that nonrespondents would all score at the $10^{\text {th }}$ percentile within each weighting cell, and at the other extreme they would all score at the $90^{\text {th }}$ percentile within each weighting cell, the predicted maximum range of the mean was computed to be 48, indicating a minimal potential for bias in outcome statistic. This is a reflection of an effective nonresponse adjustment strategy carried out during weighting. That is,
even though Austria's response rate was low (53\%), the effective nonresponse adjustment weighting reduced the potential bias in the outcome statistics to a low level. However, data users need to be cautioned that the analysis is based on assumptions about the range of proficiency scores for sampled cases that have no scores ( $47 \%$ of the sample).


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, Austria partially met a reduced requirement on validation. Standard 10.9.3 called for the validation of $10 \%$ of cases for all (100\%) interviewers, selected randomly across all dispositions. For the purpose of data evaluation, countries were considered to have met the standard if they had validated at least $7 \%$ of cases for at least $96 \%$ of its interviewers, selected randomly, across all dispositions. Austria reached the 7\% threshold for $94 \%$ of its interviewers.

Austria also partially met a reduced requirement on management. Guidelines 8.1.1B and 8.1.2A required weekly meetings between interviewers and supervisors and an interviewer-supervisor ratio of 20 or less. For the purpose of data evaluation, countries were considered to have met the standard if the meetings between interviewers and supervisors were held every other week and the interviewer-supervisor ratio was 30 or less. Meetings between supervisors and interviewers only occurred on an as-needed basis.

Austria met a reduced requirement on training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the Consortium. All of Austria's interviewers were provided with at least 15 hours of training. About one-third of interviewers were provided with about 30 hours.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Austria followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed

[^6]
## Scoring

To the best of the Consortium's knowledge, Austria followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 96.0\%
o Literacy Items: 97.9\%
o Numeracy Items: 95.8\%
- Scoring reliability of paper-based national booklets
o Core items: 99.1\%
o Literacy Items: 98.2\%
o Numeracy Items: 98.4\%


## Assessment data

Overall, $99.0 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Austria, $73.4 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $24.2 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Austria, 12.4\% of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $4.4 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Austria followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Austria. If a respondent started the interview, the likelihood that she/he provided data is at a level above $98 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Austria, about $81.6 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $10.9 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Austria, we observed $1.8 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Austria, these percentages were 9.9\% for Literacy and $6.8 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computer-based items in Austria, the percentage of nonresponse for Literacy was $5.6 \%$, for Numeracy it was $3.4 \%$, and for PSTRE it was 0.1\%.

## Canada

## Sampling

Canada followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. All QC materials were completed fully.

- Sampling plan: No issues
- Sample selection
o Home office: The sample selection forms SS-2_DU and SS-2_Person were not submitted until after the data collection period.
o In field: Canada projected a lack of aboriginal respondents in Yukon and replaced the (not worked) Yukon general sample by an oversample of aboriginals.
- Sample weighting: Canada followed closely to the standards and communicated closely with the Consortium. In order to produce variances that are comparable with other countries and accurately reflect the degrees of freedom for subnational variance estimates using the JK1 approach, Canada implemented a replication approach recommended by the Consortium that is different from the method used in 2003 IALSS. In addition, Canada applied an ad hoc adjustment to integrate the weights/combine all sampled parts (general sample and supplementary samples covering members of the official language minority, individuals between ages 16 and 24 , recent immigrants, Aboriginals and Métis).
- Sampling error: Canada's design effect due to unequal weights is 2.76 for a sample size of 27,285 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 7,848 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (3.45). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. Variation in the weights resulted from some very small initial probabilities of selection and a large number of persons in some households. Further variation was added through nonresponse adjustments. Canada's targeted number of completed cases was 5 000 in English and 4500 in French. Respondents could choose to answer PIAAC in either English or French.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $1.8 \%$ (residents of Indian reserves, smaller communities in the northern territories, remote and very low population density areas in provinces, non-institutional collective dwellings, other than students in residences).
o Data collection: Not applicable
- Weighted response rate: $59 \%$
- Nonresponse bias analysis
o Basic: Canada performed all required analyses using both the general and supplementary samples. Dwelling units located in areas with a higher percentage of individuals having the minority language as a mother tongue showed a lower
response rate. The response rate at the BQ level was higher for women than for men. The non-respondents also tended to live alone or with another individual of the same gender, in apartments, and/or belong to a younger age group (less than 34). All the variables examined in the analyses were used in weighting adjustments.
o Extended: Canada performed all required analyses using both the general and supplementary samples. Their extended analysis provides evidence that bias was reduced through the weighting adjustments.
- Analysis 1 - Comparisons of estimates before and after weighting: At the screener level, bias in type of dwelling, gender, variables related to household composition, and legal marital status was reduced through weighting. At the BQ level, bias in variables related to household composition, presence of adults having French as a mother tongue in the household, and gender was reduced through weighting.
- Analysis 2 - Comparisons of estimates to external totals: Some PIAAC estimates (computed using final weights) were outside the confidence intervals produced using the Labor Force Survey for April 2012 data, but there was an overlap between the confidence intervals produced by the two surveys for all industry classification categories.
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was below average at 0.22 ( 0.23 for numeracy). The correlation between the raking dimensions and literacy scores was above average at 0.53 ( 0.52 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.54 ( 0.53 for numeracy), which was about the average across countries. Although the response rate was $59 \%$, this analysis shows an effective reduction in potential NRB due to the moderate correlation between the survey outcomes and the weighting variables. However, data users need to be cautioned that the analysis is based on correlations between the responding sample (59\% of the selected sample) and the weighting variables. That is, the analysis assumes that the same correlations exist for the remaining sampled cases that have no scores ( $41 \%$ of sampled cases).
- Analysis 4 - Comparisons of estimates from alternative weightings: Canada recalibrated to a more basic set of auxiliary variables (province, age, gender, language, immigrant status, and highest level of education). Results calculated using final weights were generally slightly lower than re-weighted proficiency estimates and standard errors were generally smaller, suggesting that additional calibration variables were useful in reducing a potential upward bias in the estimates.
- Analysis 5 - Analysis of variables collected during data collection: Literacy-related nonrespondents had a specific profile compared to other nonrespondents. They tended to live in apartments, in areas with a lower percentage of individuals being married or living in a common law relationship, in areas with lower median income, in households with more than two adult members, and in households where all adults had a mother
language other than English or French. They tended to be older (aged 55+) and the percentage of women was also higher. Bias was reduced by the LRNR weighting adjustment.
- Analysis 6 - Level-of-effort analysis: Canada defined level-of-effort as the number of days between the first attempt to contact a case and the day of the PIAAC interview. Immigration status and highest level of education completed were characteristics separating low level-of-effort respondents from high level-of-effort respondents. High level-of-effort respondents tended to achieve significantly lower scores than low level-of-effort respondents. There were no significant differences in the distribution of respondents' gender or age.
- Analysis 7 - Range of bias: The literacy scores’ first plausible value was used to compute the range of scores within the responding sample and predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 36 and the maximum score was 423 , for a range of 386. Using weighting adjustment cells, and with an extreme assumption that nonrespondents would all score at the $10^{\text {th }}$ percentile within each weighting cell, and at the other extreme they would all score at the $90^{\text {th }}$ percentile within each weighting cell, the predicted maximum range of the mean was computed to be 47, indicating a minimal potential for bias in outcome statistics. This is a reflection of an effective nonresponse adjustment strategy carried out during weighting. That is, even though Canada's response rate was low (59\%), the effective nonresponse adjustment weighting reduced the potential bias in the outcome statistics to a low level. However, data users need to be cautioned that the analysis is based on assumptions about the range of proficiency scores for sampled cases that have no scores ( $41 \%$ of the sample).


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, Canada appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 9.4.2 on interviewer training and Guidelines 8.1.1B and 8.1.2A on management of field staff.

Canada partially met a reduced requirement on validation. Standard 10.9.3 called for the validation of $10 \%$ of cases for all ( $100 \%$ ) interviewers, selected randomly across all dispositions. For the purpose of data evaluation, countries were considered to have met the standard if they had validated at least $7 \%$ of cases for at least $96 \%$ of their interviewers, selected randomly, across all dispositions. Canada reached the $7 \%$ threshold for $85 \%$ of its interviewers. Fifteen percent of interviewers were validated at less than the $7 \%$ level.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Canada followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for
new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Canada followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 98.3\%
o Literacy Items: 98.3\%
o Numeracy Items: 96.4\%
- Scoring reliability of paper-based national booklets
o Core items: 99.4\%
o Literacy Items: 96.9\%
o Numeracy Items: 98.3\%


## Assessment data

Overall, $96.6 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Canada, $83.5 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $14.7 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Canada, $6.3 \%$ of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $5.2 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, 11.8\% of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and

[^7]Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Canada followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Canada. If a respondent started the interview, the likelihood that she/he provided data is at a level above $99 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Canada, about $93.4 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $2.3 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Canada, we observed $0.9 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Canada, these percentages were $13.0 \%$ for Literacy and $9.6 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computerbased items in Canada, the percentage of nonresponse for Literacy was $8.6 \%$, for Numeracy it was $6.4 \%$, and for PSTRE it was $0.1 \%$.

## Cyprus ${ }^{13}$

## Sampling

Cyprus followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. All QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
o Home office: No issues
o In field: No field issues detected
- Sample weighting: The Consortium followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights for Cyprus.
- Sampling error: Cyprus’ design effect due to unequal weights is 1.39 for a sample size of 5,053 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 2,855 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (1.54). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. Cyprus’ sample design involved an equal probability selection at the household level; however, there was variation in the selection probabilities at the person level. Further variation in the weights was added through within-household sampling, nonresponse and calibration adjustments, although the Consortium followed standard procedures to balance bias and variance.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was less than 2\% (people living in houses built after December 2010)
o Data collection: Not applicable
- Weighted response rate: 73\%
- Nonresponse bias analysis
o Basic: Cyprus performed all required analyses. Its analysis showed that lower response rates were identified in urban areas and larger districts at the screener level. Potential bias in variables examined were observed also at the screener level for District and Locale, while at the BQ level, statistically significant differences were observed between the respondents and nonrespondents only within Districts. District and Locale have been used in the weighting process (nonresponse adjustment and raking).
o Extended: The extended analysis provides evidence that bias was reduced through the weighting adjustments. Since Cyprus has a high BQ response rate, analyses 1, 4 , and 7 were not required.

[^8]- Analysis 1 - Comparisons of estimates before and after weighting: Cyprus was not required to do this analysis.
- Analysis 2 - Comparisons of estimates to external totals: PIAAC estimates were compared to Census 2011 and Labor Force Survey 2011 by age, gender, region, education, and employment status. PIAAC estimates are different from Census in the age group 16-19 and the Paphos Urban area.
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was below average at 0.21 ( 0.28 for numeracy). The correlation between the raking dimensions and literacy scores was also below average at 0.39 ( 0.47 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.39 ( 0.47 for numeracy), which was below the average across countries. This indicates some potential for reducing NRB due to the correlation between the survey outcomes and the weighting variables.
- Analysis 4 - Comparisons of estimates from alternative weighting: Cyprus was not required to do this analysis.
- Analysis 5 - Analysis of variables collected during data collection: Even though significant differences were found in the distribution by region between the literacy-related cases and the comparison group, these differences cannot be attributed to a possible impact on bias, since for some categories the literacy-related cases are very few. Bias was reduced by the LRNR weighting adjustment.
- Analysis 6 - Level-of-effort analysis: Cyprus compared mean proficiency scores, as well as age, sex, region, urbanization, education, and employment status, between low level-of-effort cases (interviews conducted with five or fewer contacts) and high level-of-effort cases (interviews conducted with more than five contacts). For literacy, low level-of-effort cases were found to have significantly higher proficiency scores than high level-of-effort cases for Nicosia and Larnaca, age group 16-24, and adults with less than upper secondary education. For numeracy, low level-of-effort cases were found to have significantly higher proficiency scores than high level-of-effort cases for Paphos, age group 16-24, adults with less than upper secondary education, and adults out of the labor force.
- Analysis 7 - Range of bias: Cyprus was not required to do this analysis.


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, Cyprus generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 10.9.3 on fieldwork validation and Guidelines 8.1.1B and 8.1.2A on management of field staff.

However, Cyprus met a reduced requirement on interviewer training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15
hours of training instead of the 30 hours required by the training programme provided by the Consortium. Cyprus interviewers were provided with 18 hours of in-person training.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Cyprus followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Cyprus followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 98.3\%
o Literacy Items: 98.8\%
o Numeracy Items: 96.9\%
- Scoring reliability of paper-based national booklets
o Core items: 99.5\%
o Literacy Items: 99.2\%
o Numeracy Items: 98.2\%


## Assessment data

Overall, $99.9 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Cyprus, $43.7 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $38.2 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Cyprus, $28.2 \%$ of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $2.8 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$

[^9]of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Cyprus followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Cyprus. If a respondent started the interview, the likelihood that she/he provided data is at a level above $82 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Cyprus, about $85.7 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $3.4 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Cyprus, we observed $17.7 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Cyprus, these percentages were 10.1\% for Literacy and 7.5\% for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computer-based items in Cyprus, the percentage of nonresponse for Literacy was $10.1 \%$ and for Numeracy it was $7.1 \%$. Cyprus did not administer the assessment for PSTRE.

## The Czech Republic

## Sampling

The Czech Republic collected data for two samples: main and supplemental. The target age for the supplemental sample was 16 to 29 year olds, whereas the main sample targeted 16 to 65 year olds. Most QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
o Home office: The main, reserve, and supplemental samples were selected in a sequential manner, and the selection probabilities provided by the Czech Republic for the reserve and supplemental samples reflected conditional probabilities given the household was not selected for the previous sample. Since the QC sample selection forms were not submitted until after data collection, this was not discovered in time to revise its selection method. Therefore, to create weights that could be used for the combined sample, the Consortium needed to adjust the Czech Republic's probabilities of selection.
o In field: The Czech Republic used year of birth for screening rather than age or date of birth. This resulted in more cases outside of the target age range. Again, since the QC sample selection forms were not submitted until after data collection, this was not discovered in time to revise its selection method.
- Sample weighting: Selecting the sample in stages required the Consortium to weight the two samples separately and composite them in a final weighting step. Also, using year of birth for screening resulted in 87 persons of age 30 in the supplemental sample. The Czech Republic wanted such cases treated as eligible, so they were weighted with the 29-year-olds.
- Sampling error: The Czech Republic's design effect due to unequal weights is 2.88 for a sample size of 6,102 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 1,725 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (3.53). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. The oversampling of 16 to 29 year olds resulted in variation in the selection probabilities. Further variation in the weights was added through withinhousehold sampling, nonresponse and calibration adjustments, although the Consortium followed standard procedures to balance bias and variance.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $1.8 \%$.
o Data collection: Not applicable
- Overall weighted response rate: 66\%
- Nonresponse bias analysis
o Basic: The Czech Republic performed all required analyses. The decision tree included the following variables as significant predictors of response status at the screener: NUTS (Region); area-level unemployment, gender and age (main sample only); type of municipality; area-level percentage of foreigners (main sample only), household PC and internet connection and educational attainment. Significant predictors at the BQ level according to decision tree analysis are: NUTS (supplemental sample only); municipality; area-level educational attainment, gender, age (main sample only); area-level employment status and entrepreneurs (main sample only).

1) Variables used in the screener level weighting adjustment for both the main and supplemental samples included: NUTS (Region); type of municipality; area-level gender, age, unemployment, entrepreneurs and educational attainment (high school); area-level percentage of foreigners and HH PC and internet connection availability.
Variables used in the BQ level weighting adjustment for both the main and supplemental samples included: type of municipality; NUTS (Region); gender; age; area-level unemployment, entrepreneurs, educational attainment (high school), educational attainment (college degree) and HH PC and internet connection availability.
o Extended (preliminary): The Czech Republic performed some, but not all required analyses. Its extended analysis provides evidence that bias was reduced through the weighting adjustments.

- Analysis 1 - Comparisons of estimates before and after weighting: Potential nonresponse bias in region, age, and gender were reduced through the nonresponse adjustments. However, there were large differences (relative difference $>2$ ) in region and age distributions when comparing the main sample before calibration to the combined sample after calibration.
- Analysis 2 - Comparisons of estimates to external totals: The Czech Republic compared PIAAC estimates of employment status, reading of books and newspapers, and highest education of father and mother to estimates from the Adult Education Survey (AES) 2011. They also compared PIAAC estimates of household size to European Union Statistics on Income and Living Conditions (EU-SILC) 2011. Per the Czech Republic, "AES data are significantly different from PIAAC data only in questions such as reading books and newspapers, where even wording and context can influence responses (PIAAC did not stress electronic media and last 12 months)." There were also significant differences in level of education of father and mother and in household size.
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was around the average at 0.35 ( 0.33 for numeracy). The correlation between the raking dimensions and literacy scores was above average at 0.52 ( 0.57 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was
0.56 ( 0.60 for numeracy), which was above the average across countries. This analysis shows an effective reduction in potential NRB due to the high correlation between the survey outcomes and the weighting variables.
- Analysis 4 - Comparisons of estimates from alternative weightings: This analysis was not performed. Per the Czech Republic, "our possibilities to gain another survey data for alternative weighting are rather limited."
- Analysis 5 - Analysis of variables collected during data collection: An evaluation of the characteristics of literacy-related nonrespondents was not performed because there were a limited number of literacy-related nonrespondents in the Czech Republic. Bias was reduced by the LRNR weighting adjustment.
- Analysis 6 - Level-of-effort analysis: The average literacy score was found to increase with additional visits. The Czech Republic also identified an increase in the percentage employed and differences in age and municipality. This indicates that the thorough data collection efforts helped reduce the bias due to nonresponse.
- Analysis 7 - Range of bias: The literacy scores' first plausible value was used to compute the range of scores within the responding sample and predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 83 and the maximum score was 445 , for a range of 362. Using weighting adjustment cells, and with an extreme assumption that nonrespondents would all score at the $10^{\text {th }}$ percentile within each weighting cell, and at the other extreme they would all score at the $90^{\text {th }}$ percentile within each weighting cell, the predicted maximum range of the mean was computed to be 52, indicating a low potential for bias in outcome statistics. This is a reflection of the higher-than-average response rate (66\%) in Czech Republic, combined with an effective nonresponse adjustment carried out during weighting.


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, the Czech Republic generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 10.9.3 on fieldwork validation.

The Czech Republic also partially met a reduced requirement on training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the Consortium. About 75\% of the Czech Republic's interviewers were provided with more than 15 hours; however, about $25 \%$ were provided with significantly fewer hours. The Czech Republic offered significantly fewer training hours than recommended on all key aspects (gaining cooperation, BQ administration and assessment administration).

The Czech Republic also partially met a reduced requirement on management. Guidelines 8.1.1B and 8.1.2A required weekly meetings between interviewers and supervisors and an interviewersupervisor ratio of 20 or less. For the purpose of data evaluation, countries were considered to have met the standard if the meetings between interviewers and supervisors were held every
other week and the interviewer-supervisor ratio was 30 or less. Interviewer-supervisor meetings occurred only on an as-needed basis.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, the Czech Republic followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, the Czech Republic followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: $98.3 \%$
o Literacy Items: 97.2\%
o Numeracy Items: 96.5\%
- Scoring reliability of paper-based national booklets
o Core items: $100.0 \%$
o Literacy Items: 99.6\%
o Numeracy Items: 100.0\%


## Assessment data

Overall, $99.8 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In the Czech Republic, $74.4 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $24.4 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computerbased form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In the Czech Republic, 13.5\% of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $2.4 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries,

[^10]$11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, the Czech Republic followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for the Czech Republic. If a respondent started the interview, the likelihood that she/he provided data is at a level above $99 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In the Czech Republic, about $83.4 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $5.2 \%$ reported income in broad categories (4.2\% across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In the Czech Republic, we observed $0.6 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In the Czech Republic, these percentages were $5.9 \%$ for Literacy and $3.7 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computerbased items in the Czech Republic, the percentage of nonresponse for Literacy was $5.9 \%$, for Numeracy it was $3.3 \%$, and for PSTRE it was 0.0\%.

## Denmark

## Sampling

Denmark followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. Most QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
o Home office: The sample selection form was not submitted prior to the data collection period. One source of attrition is due to 14.5 of the Danish population aged $16-65$ years who are registered in a so-called opt-out register. That is, they have informed the authorities that their names, addresses, and phone numbers must not be given to research institutions, etc., wanting to contact them for an interview. Only persons without researcher protection can be contacted. Statistics Denmark was able to get all required register information regarding the persons in the opt-out register, and included them for the weighting and nonresponse bias analysis.
o In field: Not applicable
- Sample weighting: Denmark followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights. Not all could be verified, including:
o The comparison with alternative external totals was not done by Denmark, therefore, we were not able to validate the totals. However, Denmark has registered information and adjusted the weights to reflect the population totals. Therefore, they found it superfluous to check the totals against alternative external totals-the source would be the same in most cases or the quality would be much lower.
- Sampling error: Denmark's design effect due to unequal weights is 1.27 for a sample size of 7,328 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 5,861. The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (1.24). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. The sample design involved an oversample of immigrants and adults 55-65 years old. Further variation in the weights was added through nonresponse and calibration adjustments, although they followed standard procedures to balance bias and variance.


## Coverage and nonresponse bias

- Population Coverage
o Frame: The estimated percentage of the target population excluded from the frame was less than $0.1 \%$ (undocumented immigrants).
o Data collection: The weighted percentage of cases excluded because they were inaccessible was 5.0\%.
- Weighted response rate: $50 \%$
- Nonresponse bias analysis
o Basic: Denmark performed all required analyses. Prior to weighting adjustments, age, region, education, and employment show significant potential for bias. In particular, overrepresentation occurred for older adults, regions close to the capital, people with higher education, employed people, and students. All required variables were used in the NRBA, as well as income, type of family, ethnicity, and mobility. The logistic regression was done by strata (age group). Within the 10 strata, there are several indications of the potential for bias. Region, education level, and mobility showed significant effects for at least five of the strata. Logistic regressions show that non-weighting variables of disposable income and average family income had a significant potential for bias for a small number of age groups. However, these are likely correlated with gross income, which was used in weighting.
o Extended: Denmark performed all required analyses. Its extended analysis provides evidence that bias was reduced through the weighting adjustments.
- Analysis 1 - Comparisons of estimates before and after weighting: There were very small standard errors, which may lead to more statistically significant results. The calibrated weights reflect the population distribution according to the registers. The base weights on the eligible sample gives the same picture, indicating that the eligible sample represents the population. The nonresponse pattern results in skewed estimates and thus substantial possibility for nonresponse bias. However, the nonresponse adjusted weight, to a large extent, remedies this. For variables not used in the weighting, the base weights for the eligible sample gave the same picture as the calibrated weights. The nonresponse pattern results in different estimates, and thus substantial possibility for nonresponse bias. However, the nonresponse adjusted weight, to a large extent, remedies this.
- Analysis 2 - Comparisons of estimates to external totals: The external totals table shows differences between the PIAAC estimates on age and income using the final calibrated weight, with estimates from the registry. Significant differences were found for age groups 16-20 (higher in PIAAC), 21-25 (lower), 56-60 (lower), 61-65 (higher); and in low income (lower). Since the final weights were calibrated by age group using registry totals, it is a bit surprising, although it was done for different categories of age than what was used for calibration.
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse-related variables and literacy scores was above average at 0.47 ( 0.42 for numeracy). The correlation between the raking dimensions and literacy scores was slightly below average at 0.43 ( 0.39 for numeracy). The correlation between literacy scores and the combination of nonresponse related variables and raking dimensions was 0.50 ( 0.46 for numeracy), which was about the average across countries. This indicates some potential for reducing NRB due to the moderate correlation between the survey outcomes and the weighting variables. The analysis shows that weighting adjustments were moderately effective in reducing NRB because of the correlation between the survey
outcomes and the weighting variables. However, data users need to be cautioned that the analysis is based on correlations between the responding sample ( $50 \%$ of the selected sample) and the weighting variables. That is, the analysis assumes that same correlations exist for the remaining sampled cases that have no scores ( $50 \%$ of sampled cases).
- Analysis 4 - Comparisons of estimates from alternative weightings: The standard errors on the estimates are small and of the same size in both cases.
- The estimates themselves are larger in the re-weighting. Denmark expected nonresponse bias to result in overestimation of the proficiency scores, and the re-weighting results support the hypothesis that the more elaborated calibration model used in PIAAC weighting reduces bias the most.
- Analysis 5 - Analysis of variables collected during data collection: Region, gender, and age groups all showed differences, however, the Denmark weighting procedures separated the LRNR cases, therefore treating them appropriately.
- Analysis 6 - Level-of-effort analysis: No differences were found between men and women in the level-of-effort needed to attain response. Differences between the regions were found in the level-of-effort needed to attain response. In the Sealand region more than half of the responses were attained with low level-of-effort, whereas in the other regions it was around $40 \%$. Differences between the age groups were found in the level-of-effort needed to attain response. The overall trend being "the younger the higher level-of-effort needed." The most difficult group to attain response from was however the 25-34 year-olds. There was a tendency toward a higher PVLIT1-score among low level-of-effort part of the citizens in the capital. Also, a tendency toward a higher PVLIT1-score among the high level-of-effort part of the 35-44 year-olds was seen. In general, such differences between low and high level-of-effort indicates some reduction in nonresponse bias.
- Analysis 7 - Range of bias: The literacy scores’ first plausible value was used to compute the range of scores within the responding sample and predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 38 and the maximum score was 405, for a range of 366 . Using weighting adjustment cells, and with an extreme assumption that nonrespondents would all score at the $10^{\text {th }}$ percentile within each weighting cell, and at the other extreme they would all score at the $90^{\text {th }}$ percentile within each weighting cell, the predicted maximum range of the mean was computed to be 50, indicating a low potential for bias in outcome statistics. This is a reflection of an effective nonresponse adjustment strategy carried out during weighting. That is, even though Denmark's response rate was low (50\%), the effective nonresponse adjustment weighting reduced the potential bias in the outcome statistics to a low level. However, data users need to be cautioned that the analysis
is based on assumptions about the range of proficiency scores for sampled cases that have no scores ( $50 \%$ of the sample).


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, Denmark generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 10.9.3 on fieldwork validation.

Denmark met a reduced requirement on interviewer training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the Consortium. About half of Denmark's interviewers were provided with a minimum of 15 hours of training.

Denmark met a reduced requirement on management. Guidelines 8.1.1B and 8.1.2A required weekly meetings between interviewers and supervisors and an interviewer-supervisor ratio of 20 or less. For the purpose of data evaluation, countries were considered to have met the standard if the meetings between interviewers and supervisors were held every other week and the interviewer-supervisor ratio was 30 or less. In Denmark, supervisor assignments were between 20 and 30 interviewers.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Denmark followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Denmark followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 97.1\%
o Literacy Items: 97.3\%
o Numeracy Items: 95.9\%
- Scoring reliability of paper-based national booklets

[^11]o Core items: 99.7\%
o Literacy Items: 98.9\%
o Numeracy Items: 99.3\%

## Assessment data

Overall, $97.4 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Denmark, $87.1 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $11.8 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Denmark, $5.7 \%$ of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $4.3 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Denmark followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Denmark. If a respondent started the interview, the likelihood that she/he provided data is at a level above $99 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Denmark, about $96.3 \%$ of respondents reported income in exact amounts (88.6\% across countries) and about $1.0 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which
indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Denmark, we observed $0.4 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Denmark, these percentages were $18.0 \%$ for Literacy and $10.3 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computerbased items in Denmark, the percentage of nonresponse for Literacy was 7.9\%, for Numeracy it was $5.4 \%$, and for PSTRE it was $0.3 \%$.

## England/Northern Ireland (UK)

## Sampling

England/Northern Ireland (UK) followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting.

- Sampling plan: No issues
- Sample selection
o Home office: No issues
o In field: The theoretical person base weights (THEOR_PBWT) were derived from imputed values of the number of eligible people in the sampled household (NUM_ELG) for 52 cases (49 in England (UK) and 3 in Northern Ireland (UK)) due to a technical problem with the contact data that the interviewers entered.
- Sample weighting: The Consortium followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create two sets of weights separately for England (UK) and Northern Ireland (UK). England/Northern Ireland (UK) did not collect age and gender for all sampled persons during the screener. A special adjustment was implemented so that literacy-related nonrespondents with age and gender successfully collected represented those with age or gender not successfully collected.
- Sampling error: The design effect due to unequal weights is 1.35 for England (UK) for a sample size of 5,131 ; and 1.54 for Northern Ireland (UK) for a sample size of 3,761 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 2176 for England (UK) and 563 for Northern Ireland (UK). The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy ( 2.33 for England (UK) and 6.62 for Northern Ireland (UK)). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. England/Northern Ireland (UK)'s address sample was an equal probability sample in both England (UK) and Northern Ireland (UK). Variation in the selection probabilities was introduced from (a) subsampling households for addresses containing multiple households, and (b) the within-household selection at the person level. Further variation in the weights was added through nonresponse and calibration adjustments, although the Consortium followed standard procedures to balance bias and variance.


## Coverage and nonresponse bias

- Population Coverage
o Frame: The combined estimated percentage of the target population excluded from the frame in England (UK) and Northern Ireland (UK) was 2.0\% (individuals living in private residences that are not listed on the "residential" version of the Postal Address File; or, in Northern Ireland (UK), not listed on the NI(POINTER) database).
o Data collection: Not applicable
- Weighted response rate: 59\% for England (UK); 65\% for Northern Ireland (UK)
- Nonresponse bias analysis
o Basic: England/Northern Ireland (UK) performed all required analyses and used all required analysis variables (neighborhood characteristics).
- England (UK): The screener response rate varied by region (from 77\% in London to $89 \%$ in North East England (UK)). The highest category screener response rate was $90 \%$ (Output Area Classification: terraced blue collar neighborhoods) and the lowest was 74\% (Output Area Classification: transient communities). The highest category BQ response rate was $84 \%$ (third quintile category of \% Indian) and the lowest was $59 \%$ (Output Area Classification: transient communities). The lowest regional BQ response rate was in London (61\%). Screened households differed from nonscreened households in terms of neighborhood profile. Neighborhoods with a high proportion of residents not born in the UK or of Black or Bangladeshi descent were underrepresented in the screened household sample. London was also underrepresented. Neighborhoods with a high proportion of Black residents were underrepresented in the BQ respondent sample while neighborhoods with a high proportion of older people (aged 65+) and of those with a caring responsibility were overrepresented. London was underrepresented. The classification tree found that region was the only significant screener response rate predictor. The classification tree identified the proportion aged 65+ as the only significant BQ response rate predictor. BQ response rates tended to be higher in neighborhoods with an older-than-average age profile.
- Northern Ireland (UK): The highest category screener response rate was 90\% (Output Area Classification: senior communities) and the lowest was 25\% (Output Area Classification: Asian communities). Excluding this very small sample size category, the lowest was 70\% (Output Area Classification: public housing). It is notable that the screener response rate in the capital Belfast was only 72\%. The highest category BQ response rate - excluding categories with small sample sizes - was $86 \%$ (Output Area Classification: young families in terraced homes and the lowest was 65\% (Output Area Classification: village life). The lowest regional BQ response rate was in the North (75\%). Neighborhoods in Belfast were the most underrepresented in the screened household sample. There were no significant profile differences between BQ responders and nonresponders in Northern Ireland (UK). The classification tree identified region and the proportion aged 65+ as strong discriminators of screener response rates.

The classification tree identified the proportion aged 65+ as the strongest predictor of BQ response rates.
o Extended: England/Northern Ireland (UK) did not perform all required analyses. Although some paradata were collected, the three agencies responsible for fieldwork did not collect them in a consistent fashion so that it could be used for analytical purpose.

- Analysis 1 - Comparisons of estimates before and after weighting: In England (UK) and Northern Ireland (UK), at both the screener and BQ levels, bias in region was reduced through the weighting process as it was used in weighting adjustments. The base-weighted respondent profile was very similar to the base-weighted sampled person profile.
- Analysis 2 - Comparisons of estimates to external totals: In both England (UK) and Northern Ireland (UK), large differences were found between PIAAC estimates (using final weights) and Census 2011 totals of employment status, ethnic group and general health. In Northern Ireland (UK), nontrivial differences were also found for qualification. (In England (UK), Census 2011 data on qualification will not be released until late August, 2013.) For age, a large difference was found for category 60-65 (higher in PIAAC), which came as a surprise given the PIAAC control totals were based on census totals updated by birth, death, and immigration/emigration data. England/Northern Ireland (UK) noted that disparities between the PIAAC estimates and Census 2011 totals may reflect the difference in the interview mode (interviewer-assisted vs. selfadministered).
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates:
- England (UK): The correlation between the BQ nonresponse cells and literacy scores was below average at 0.32 ( 0.35 for numeracy). The correlation between the raking dimensions and literacy scores was average at 0.48 ( 0.51 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.52 ( 0.56 for numeracy), which was about the average across countries. Although the response rate was $59 \%$, this analysis shows an effective reduction in potential NRB due to the moderate correlation between the survey outcomes and the weighting variables. However, data users need to be cautioned that the analysis is based on correlations between the responding sample ( $59 \%$ of the selected sample) and the weighting variables. That is, the analysis assumes that the same correlations exist for the remaining sampled cases that have no scores ( $41 \%$ of sampled cases).
- Northern Ireland (UK): The correlation between the BQ nonresponse cells and literacy scores was below average at 0.33 ( 0.36 for numeracy). The correlation between the raking dimensions and literacy scores was above average at 0.55 ( 0.58 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.57 (0.60
for numeracy), which was higher than average across countries. Although the response rate was $65 \%$, this analysis shows an effective reduction in potential NRB due to the high correlation between the survey outcomes and the weighting variables. However, data users need to be cautioned that the analysis is based on correlations between the responding sample ( $65 \%$ of the selected sample) and the weighting variables. That is, the analysis assumes that the same correlations exist for the remaining sampled cases that have no scores ( $35 \%$ of sampled cases).
- Analysis 4 - Comparisons of estimates from alternative weightings: This analysis was not performed.
- Analysis 5 - Analysis of variables collected during data collection: This analysis was not performed due to limited data on nonrespondents: gender in most cases (when the household was screened) but very rarely age for nonrespondents.
- Analysis 6 - Level-of-effort analysis: This analysis was not performed due to the lack of consistent paradata on the number of visits per case. Date of interview could not be used because the sample was released in batches (and it was more of a drip-feed approach in Northern Ireland (UK)). The alternative approach England/Northern Ireland (UK) took was to report the correlation between the effective "response factor" and the proficiency scores, showing that the lower the response propensity, the lower the proficiency score. This suggests a slight upwards bias may remain in the estimates, reflecting the partial, not total ability of calibration to counter nonresponse bias.
- Analysis 7 - Range of bias:
- England (UK): The response rate for England (UK) was 59\%. The Literacy scores’ first plausible value was used to compute the range of scores within the responding sample and to predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 84 and the maximum score was 409 , for a range of 325 . Using weighting adjustment cells, and with an extreme assumption that nonrespondents would all score at the 10th percentile within each weighting cell, and at the other extreme they would all score at the 90th percentile within each weighting cell, the predicted maximum range of the mean was computed to be 47, indicating a minimal potential for bias in outcome statistics. This is a reflection of an effective nonresponse adjustment strategy carried out during weighting. That is, even though England (UK)'s response rate was low (59\%), the effective nonresponse adjustment weighting reduced the potential bias in the outcome statistics to a low level. However, data users need to be cautioned that the analysis is based on assumptions about the range of proficiency scores for sampled cases that have no scores ( $41 \%$ of the sample).
- Northern Ireland (UK): The response rate for Northern Ireland (UK) was $65 \%$. The Literacy scores' first plausible value was used
to compute the range of scores within the responding sample and to predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 97 and the maximum score was 419, for a range of 322 . Using weighting adjustment cells, and with an extreme assumption that nonrespondents would all score at the 10th percentile within each weighting cell, and at the other extreme they would all score at the 90th percentile within each weighting cell, the predicted maximum range of the mean was computed to be 37, indicating a minimal potential for bias in outcome statistics. This is a reflection of the relatively high response rate (65\%) in Northern Ireland (UK), combined with an effective nonresponse adjustment carried out during weighting.


## Data collection

England (UK)
Based on information provided on QC forms and during monthly QC conference calls, England (UK) generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Guidelines 8.1.1B and 8.1.2A on management of field staff.

England (UK) partially met a reduced requirement on training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the Consortium. Interviewers were provided with about 10 hours of in-person training and were offered significantly fewer training hours than recommended on key aspects (gaining cooperation and assessment administration). However, interviewers were experienced and had previously received general interviewing techniques training and at-home project-specific training.

England (UK) did not meet a reduced requirement on validation. Standard 10.9.3 called for the validation of $10 \%$ of cases for all (100\%) interviewers, selected randomly across all dispositions. For the purpose of data evaluation, countries were considered to have met the standard if they had validated at least $7 \%$ of cases for at least $96 \%$ of its interviewers, selected randomly, across all dispositions. England (UK) reached the $7 \%$ threshold for $20 \%$ of its interviewers. Eighty percent of interviewers were validated at less than the $7 \%$ level. However, at least $10 \%$ of cases were validated overall.

## Northern Ireland (UK)

Based on information provided on QC forms and during monthly QC conference calls, Northern Ireland (UK) generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Guidelines 8.1.1B and 8.1.2A on management of field staff.

Northern Ireland (UK) partially met a reduced requirement on training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the

Consortium. Interviewers were provided with about 10 hours of in-person training and were offered significantly fewer training hours than recommended on key aspects (gaining cooperation and assessment administration). However, interviewers were experienced and had previously received general interviewing techniques training and at-home project-specific training.

Northern Ireland (UK) partially met a reduced requirement on validation. Standard 10.9.3 called for the validation of $10 \%$ of cases for all (100\%) interviewers, selected randomly across all dispositions. For the purpose of data evaluation, countries were considered to have met the standard if they had validated at least $7 \%$ of cases for at least $96 \%$ of its interviewers, selected randomly, across all dispositions. Northern Ireland (UK) reached the $7 \%$ threshold for $95 \%$ of its interviewers. Five percent of interviewers were validated at less than the $7 \%$ level.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, England/Northern Ireland (UK) followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, England/Northern Ireland (UK) followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring international anchor booklets
o Core items: 98.4\%
o Literacy Items: 98.8\%
o Numeracy Items: 96.6\%
- Scoring reliability of paper-based national booklets
o Core items: 100.0\%
o Literacy Items: 100.0\%
o Numeracy Items: 100.0\%


## Assessment data

Overall, $97.4 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In England/Northern Ireland (UK), 83.4\% of the

[^12]respondents who completed the BQ took the computer-based cognitive assessment, while $14.1 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In England/Northern Ireland (UK), 4.8\% of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $5.8 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, England/Northern Ireland (UK) followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for England/Northern Ireland (UK). If a respondent started the interview, the likelihood that she/he provided data is at a level above $98 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In England/Northern Ireland (UK), about 89.8\% of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $2.8 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In England/Northern Ireland (UK), we observed $1.4 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In England/Northern Ireland (UK), these
percentages were $10.5 \%$ for Literacy and $7.2 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computer-based items in England/Northern Ireland (UK), the percentage of nonresponse for Literacy was $7.2 \%$, for Numeracy it was $5.5 \%$, and for PSTRE it was $0.1 \%$.

## Estonia

## Sampling

Estonia followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. All QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
o Home office: No issues
o In field: Not applicable
- Sample weighting: The Consortium followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights for Estonia.
- Sampling error: Estonia's design effect due to unequal weights is 1.04 for a sample size of 7,632 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 3785 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (2.00). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $2.8 \%$ (undocumented immigrants and people without a detailed address).
o Data collection: The weighted percentage of cases excluded because they were inaccessible was $0.6 \%$.
- Weighted response rate: 63\%
- Nonresponse bias analysis
o Basic: Estonia performed all required analyses. Its basic analysis showed significantly low response rates for males, 26-35 year olds, people with nonEstonian mother tongue, several counties, big city, and areas with higher education. Age, gender, mother tongue, counties, urbanization, education, and unemployment were used in weighting adjustment.
o Extended: The extended analysis provides evidence that bias was reduced through the weighting adjustments.
- Analysis 1 - Comparisons of estimates before and after weighting: Bias in age, gender, mother tongue, urbanization, county, area-level education and unemployment was reduced through the weighting process as these variables were used in weighting adjustments. No other variables were analyzed.
- Analysis 2 - Comparisons of estimates to external totals: PIAAC estimates were compared to Census 2011 by age, gender, county, and area-level unemployment. PIAAC estimates are larger than Census both overall and for most of the domains compared. This is probably due to the fact that

PIAAC estimates are based on Population Register, which includes people who moved to other countries, while Census has some undercoverage.

- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was below average at 0.31 ( 0.30 for numeracy). The correlation between the raking dimensions and literacy scores was also below average at 0.31 ( 0.29 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.37 ( 0.35 for numeracy), which was below the average across countries. That is, weighting adjustments were not as effective in reducing bias, as compared to other countries, because of the lower-than-average correlation between the survey outcomes and the weighting variables. However, Estonia had a higher-than-average response rate (63\%), as compared to other countries, implying that the potential for bias is likely to be somewhat lower as compared to countries with lower response rates. This indicates some potential for reducing NRB due to the moderate correlation between the survey outcomes and the weighting variables.
- Analysis 4 - Comparisons of estimates from alternative weightings: To calculate new weights, the final weighted data were recalibrated by the area-level percent of unemployment. Very small differences were found in the proficiency estimates before and after reweighting.
- Analysis 5 - Analysis of variables collected during data collection: Estonia will not perform this analysis since they do not have any additional information besides disposition codes and its proportion of literacy-related cases is very low ( $0.3 \%$ ). Bias was reduced by the LRNR weighting adjustment.
- Analysis 6 - Level-of-effort analysis: Estonia compared mean proficiency scores, as well as age, sex, mother tongue, urbanization, county, area-level education and unemployment, between low level-of-effort cases (interviews conducted with five or fewer contacts) and high level-of-effort cases (interviews conducted with more than five contacts). High level-ofeffort cases were found to have significantly lower proficiency scores than low level-of-effort cases for females, 16-25 years old, 36-45 years old, and several counties, suggesting a high amount of contact should be carried out.
- Analysis 7 - Range of bias: The literacy scores’ first plausible value was used to compute the range of scores within the responding sample and predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 91 and the maximum score was 406 , for a range of 315 . Using weighting adjustment cells, and with an extreme assumption that nonrespondents would all score at the 10th percentile within each weighting cell, and at the other extreme they would all score at the 90th percentile within each weighting cell, the predicted maximum range of the mean was computed to be 41, indicating a minimal potential for bias in outcome statistics. This is a reflection of the higher-thanaverage response rate (63\%) in Estonia. That is, as a result of achieving a
higher response rate, the potential for remaining bias is minimal even though the weighting adjustments were not as effective, as compared to other countries, in reducing bias in outcome statistics.


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, Estonia generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 10.9.3 on fieldwork validation and Guidelines 8.1.1B and 8.1.2A on management of field staff.

Estonia met a reduced requirement on interviewer training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the Consortium. Estonian interviewers were provided with at least 24 hours of in-person training.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Estonia followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Estonia followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 95.5\%
o Literacy Items: 95.5\%
o Numeracy Items: 95.5\%
- Scoring reliability of paper-based national booklets
o Core items: 99.5\%
o Literacy Items: 97.9\%
o Numeracy Items: 98.7\%

[^13]
## Assessment data

Overall, $99.0 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Estonia, $70.7 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $28.5 \%$ took the PBA. Across all countries, 73.5\% of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Estonia, $17.4 \%$ of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $3.5 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Estonia followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
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- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Estonia. If a respondent started the interview, the likelihood that she/he provided data is at a level above $99 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Estonia, about $82.0 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $1.5 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Estonia, we observed $0.4 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Estonia, these percentages were 9.2\% for Literacy and $6.6 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computer-based items in Estonia, the percentage of nonresponse for Literacy was $7.8 \%$, for Numeracy it was $4.8 \%$, and for PSTRE it was $0.1 \%$.

## Finland

## Sampling

Finland followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. All QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
o Home office: No issues
o In field: Not applicable
- Sample weighting: The Consortium followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights for Finland.
- Sampling error: Finland's design effect due to unequal weights is 1.05 for a sample size of 5,464 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 5 464. The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (0.94). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. The effective sample size is set equal to the actual number of cases with plausible values since the overall design effect is less than 1.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $0.2 \%$ (undocumented immigrants and asylum seekers).
o Data collection: The weighted percentage of cases excluded because they are inaccessible was 0.5\%.
- Weighted response rate: 66\%
- Nonresponse bias analysis
o Basic: Finland performed all required analyses. However, employment was not included in the analysis and they didn't state why. Its analysis showed significantly lower response propensities for people with lower education (0) and urban municipalities, and higher response rates among high education groups (56), adults age 56-64, Swedish speakers and rural municipalities. Logistic regression also shows significant influence of region and family status. Age, gender, education, native language, major region and urbanism were used in weighting adjustments.
o Extended: Finland performed analyses of comparisons of before and after weighting adjustments, comparisons of weighted estimates to external totals, correlation of auxiliary variables and proficiency estimates, literacy-related disposition codes, level-of-effort analysis, and calculation of the range of potential bias. The extended analysis provides evidence that bias was reduced through the weighting adjustments.
- Analysis 1 - Comparisons of estimates before and after weighting: Relative difference was reduced for all categories. Among those with
relative difference>2 and absolute difference>1 before weighting categories, ages 56-64, education and urbanism's relative difference was reduced to less than two, while language's difference was reduced to less than 0.11 (relative difference was still large due to low variance).
- Analysis 2 - Comparisons of estimates to external totals: Estimates of age and gender are consistent with the registry. The unemployed and not in Labor force counts are significantly different from that in the Labor Force Survey. This could be because of differences in definition and questionnaire structure.
- Analysis 3 - The correlation between the BQ nonresponse cells and literacy scores was 0.53 ( 0.50 for numeracy). The correlation between the raking dimensions and literacy scores was 0.59 ( 0.56 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.60 ( 0.58 for numeracy), which was above the average across countries. The analysis shows that weighting adjustments were effective in reducing NRB because of the high correlation between the survey outcomes and the weighting variables.
- Analysis 4 - Comparisons of estimates from alternative weighting: Per Finland, "Various alternative weights were tried during the data collection phase and finally we ended up to the current ones: no improvement could be achieved with other potential variables."
- Analysis 5 - Analysis of variables collected during data collection: Finland looked into literacy-related nonrespondents and found they are mostly less educated and speak other languages. They are also more likely to live in capital areas and urban municipalities. The result shows that bias was reduced by the LRNR weighting adjustment.
- Analysis 6 - Level-of-effort analysis: Finland defined level-of-effort using three variables: number of contacts, time gap between the first attempt and the last, and a proxy for overall effort (standardized principal component of 1 and 2 above plus information on how many interviewers were assigned to handle the problematic cases). A binary indicator was created for each factor using a cut-off point at the third quartile. There are significant differences in the distribution- late respondents have a higher percentage of young, live in the southern parts and urban areas, or speak a different language. Late respondents tend to have higher score, although the difference is not significant.
- Analysis 7 - Range of bias: The literacy scores’ first plausible value was used to compute the range of scores within the responding sample and predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 30 and the maximum score was 441, for a range of 411. Using weighting adjustment cells, and with an extreme assumption that nonrespondents would all score at the $10^{\text {th }}$ percentile within each weighting cell, and at the other extreme they would all score at the $90^{\text {th }}$ percentile within each weighting cell, the predicted maximum range of the mean was computed to be 35 , indicating a minimal potential for bias in outcome statistics. This is a reflection of the relatively high
response rate (66\%) in Finland, combined with an effective nonresponse adjustment step carried out during weighting.


## Data collection

Finland met a reduced requirement on training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the Consortium. Finland's interviewers were provided with 15 hours of training.

Finland met a reduced requirement on management. Guidelines 8.1.1B and 8.1.2A required weekly meetings between interviewers and supervisors and an interviewer-supervisor ratio of 20 or less. For the purpose of data evaluation, countries were considered to have met the standard if the meetings between interviewers and supervisors were held every other week and the interviewer-supervisor ratio was 30 or less. Meetings between supervisors and interviewers occurred at least every two weeks and the interviewer-supervisor ratio was between 20 and 30 .

Finland did not meet a reduced requirement on validation. Standard 10.9.3 called for the validation of $10 \%$ of cases for all (100\%) interviewers, selected randomly across all dispositions. For the purpose of data evaluation, countries were considered to have met the standard if they had validated at least $7 \%$ of cases for at least $96 \%$ of its interviewers, selected randomly, across all dispositions. Finland reached the 7\% threshold for $46 \%$ of its interviewers. Fifty-four percent of interviewers were validated at less than the $7 \%$ level.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Finland followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Finland followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: $97.5 \%$

[^14]o Literacy Items: 98.4\%
o Numeracy Items: 96.1\%

- Scoring reliability of paper-based national booklets
o Core items: 99.8\%
o Literacy Items: 96.4\%
o Numeracy Items: 98.9\%


## Assessment data

Overall, $97.2 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Finland, $83.2 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $16.2 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Finland, $10.0 \%$ of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $3.6 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Finland followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Finland. If a respondent started the interview, the likelihood that she/he provided data is at $100 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Finland, about $93.5 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $3.7 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent
decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Finland, we observed $0.0 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Finland, these percentages were $11.2 \%$ for Literacy and $8.3 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computerbased items in Finland, the percentage of nonresponse for Literacy was 4.7\%, for Numeracy it was $3.0 \%$, and for PSTRE it was $0.4 \%$.

# Flanders (Belgium) 

## Sampling

Flanders (Belgium) followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. All QC materials were completed fully.

- Sampling plan: No issues
- Sample selection
o Home office: No issues
o In field: Not applicable
- Sample weighting: The Consortium followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights for Flanders (Belgium). An unknown eligibility adjustment was not needed because there were no inaccessible cases with unknown whereabouts. A literacy-related nonresponse adjustment was also not needed because all literacy-related nonrespondents had age and gender collected.
- Sampling error: Flanders (Belgium)'s sample design involved an equal probability sample. The design effect due to unequal weights is 1.04 for a sample size of 5,463 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 3,215 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (1.55). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $1.0 \%$ (undocumented immigrants).
o Data collection: The weighted percentage of cases excluded because they are inaccessible was 4.0\%.
- Weighted response rate: 62\%
- Nonresponse bias analysis
o Basic: Flanders (Belgium) performed all required analyses. The required variables education and employment from the Labor Force Survey were not included in all required analyses. Its analysis showed a lower response rate for 26 to 35 year olds and males, based on registry information. Respondents and nonrespondents were significantly different by age, gender, province, employment status and educational attainment. The classification tree analysis indicated that there was a large proportion of nonrespondents in Vlaams Brabant (13.9\%) due to literacy related reasons. This result was expected because of the large proportions of French-speaking Flemings and foreign speakers in Vlaams Brabant. Age, gender, and province were used in weighting adjustments.
o Extended: Flanders (Belgium) performed all required analyses. Its extended analysis provides evidence that bias was reduced through the weighting adjustments.
- Analysis 1 - Comparisons of estimates before and after weighting: Flanders (Belgium) examined age, gender and province. Bias in age and province was reduced through the weighting adjustments as these variables were used in weighting. No bias was found in gender before the weighting adjustments.
- Analysis 2 - Comparisons of estimates to external totals: Large differences were found between the PIAAC estimates (computed using final weights) and the 2011 Labor Force Survey estimates of age and educational attainment. Flanders (Belgium) did not provide an explanation for the differences.
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was below average at 0.32 ( 0.33 for numeracy). The correlation between the raking dimensions and literacy scores was below average at 0.33 ( 0.33 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.36 ( 0.36 for numeracy), which was below the average across countries implying that weighting adjustments were not as effective in reducing NRB, as compared to other countries, on average. This is due to the low correlation between the survey outcomes and the weighting variables. However, the Flanders (Belgium) response rate (62\%) was slightly higher than the average response rate, implying that the potential for bias is lower as compared to countries with lower response rates.
- Analysis 4 - Comparisons of estimates from alternative weightings: To compute alternative weights, the final weighted data were recalibrated to employment status and educational attainment, which were not available at the time of weighting. Although results calculated using final weights were generally slightly lower than re-weighted proficiency estimates, the estimates were very similar.
- Analysis 5 - Analysis of variables collected during data collection: Flanders (Belgium) compared literacy-related nonrespondents with non-literacy-related nonrespondents on age, gender and province and found a large proportion of literacy-related nonrespondents in Vlaams Brabant. This result was expected and confirmed its finding from the basic analysis. Bias was reduced by the LRNR weighting adjustment.
- Analysis 6 - Level-of-effort analysis: Flanders (Belgium) defined level-ofeffort by the number of attempts to contact (no reconversion= less than 5 attempts vs. reconversion $=5$ or more attempts). There was significant difference between the two level-of-effort groups when controlling for province. There were no significant differences in the distribution of respondents' age, gender, employment status and educational attainment. High level-of-effort respondents generally achieved lower scores than low level-of-effort respondents. Easier-to-contact men had higher proficiency scores than difficult-to-contact men. Easier-to-contact respondents in Limburg had significantly higher proficiency scores than difficult-tocontact participants from Limburg. Easier-to-contact participants with jobs
had significantly higher proficiency scores than difficult-to-contact participants with jobs. Easier-to-contact respondents with ISCED 3 or ISCED 4 qualifications had significantly higher proficiency scores than difficult-to-contact respondents with the same educational level.
- Analysis 7 - Range of bias: The literacy scores' first plausible value was used to compute the range of scores within the responding sample and predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 89 and the maximum score was 441 , for a range of 323. Using weighting adjustment cells, and with an extreme assumption that nonrespondents would all score at the $10^{\text {th }}$ percentile within each weighting cell, and at the other extreme they would all score at the $90^{\text {th }}$ percentile within each weighting cell, the predicted maximum range of the mean was computed to be 47, indicating a minimal potential for bias in outcome statistics. This is a reflection of the higher-thanaverage response rate (62\%) in Flanders (Belgium). That is, as a result of achieving a higher response rate, the potential for remaining bias is minimal even though the weighting adjustments were not as effective, as compared to other countries, in reducing bias in outcome statistics.


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, Flanders (Belgium) generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 9.4.2 on interviewer training.

Flanders (Belgium) partially met a reduced requirement on validation. Standard 10.9.3 called for the validation of $10 \%$ of cases for all ( $100 \%$ ) interviewers, selected randomly across all dispositions. For the purpose of data evaluation, countries were considered to have met the standard if they had validated at least $7 \%$ of cases for at least $96 \%$ of its interviewers, selected randomly, across all dispositions. Flanders (Belgium) reached the $7 \%$ threshold for $84 \%$ of its interviewers.

Flanders (Belgium) met a reduced requirement on management. Guidelines 8.1.1B and 8.1.2A required weekly meetings between interviewers and supervisors and an interviewer-supervisor ratio of 20 or less. For the purpose of data evaluation, countries were considered to have met the standard if the meetings between interviewers and supervisors were held every other week and the interviewer-supervisor ratio was 30 or less. Flanders (Belgium)'s supervisor assignments included 25 interviewers.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Flanders (Belgium) followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking
cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Flanders (Belgium) followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 99.0\%
o Literacy Items: 97.8\%
o Numeracy Items: 95.8\%
- Scoring reliability of paper-based national booklets
o Core items: 99.7\%
o Literacy Items: 99.4\%
o Numeracy Items: 99.4\%


## Assessment data

Overall, $99.2 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Flanders (Belgium), $78.7 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $15.2 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computerbased form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Flanders (Belgium), 5.3\% of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $3.7 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and

[^15]Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Flanders (Belgium) followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Flanders (Belgium). If a respondent started the interview, the likelihood that she/he provided data is at a level above $94 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Flanders (Belgium), about $84.2 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $10.6 \%$ reported income in broad categories (4.2\% across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Flanders (Belgium), we observed 5.2\% of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Flanders (Belgium), these percentages were $11.1 \%$ for Literacy and $6.0 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computerbased items in Flanders (Belgium), the percentage of nonresponse for Literacy was 6.9\%, for Numeracy it was $4.9 \%$, and for PSTRE it was $0.0 \%$.

## France

## Sampling

France followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. All QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues.
- Sample selection
o Home office: No issues
o In field: Not applicable
- Sample weighting: The Consortium followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights for France.
- Sampling error: France’s design effect due to unequal weights is 1.05 for a sample size of 6,993 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 6,867 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (1.01). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. France selected the sample in two stages, and in the first stage the Interviewer Action Areas (IAAs) were selected using a balanced sampling design. During the weighting process, Westat used the approximate variance estimator for balanced samples proposed by Deville and Tille (2005) and followed Fay's method (1984) to generate 80 replicate weights.


## Coverage and Nonresponse Bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was less than $2.6 \%$ (young adults who never claimed any income and are not attached to its parents' households (0.6\%) and undocumented immigrants (less than 2\%)).
o Data collection: The weighted percentage of cases excluded because they were inaccessible was 1.4\%.
- Weighted response rate: 67\%
- Nonresponse bias analysis
o Basic: France performed all required analyses. The chi-square analysis showed differential response rates by age, region, and income.
o Extended: France did not complete all the required analyses.
- Analysis 1 - Comparisons of estimates before and after weighting: Bias in age, gender, region and income was reduced through the weighting process as these variables were used in weighting adjustments.
- Analysis 2 - Comparisons of estimates to external totals: Was not performed.
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was above average at 0.44 ( 0.46 for numeracy). The correlation between the
raking dimensions and literacy scores was also above average at 0.57 ( 0.61 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.60 ( 0.64 for numeracy), which was above the average across countries. This analysis shows that weighting adjustments were effective in reducing NRB because of the high correlation between the survey outcomes and the weighting variables. However, data users need to be cautioned that the analysis is based on correlations between the responding sample ( $67 \%$ of the selected sample) and the weighting variables. That is, the analysis assumes that same correlations exist for the remaining sampled cases that have no scores ( $33 \%$ of the sampled cases).
- Analysis 4 - Comparisons of estimates from alternative weightings: Was not performed.
- Analysis 5 - Analysis of variables collected during data collection: Was not performed.
- Analysis 6 - Level-of-effort analysis: Was not performed.
- Analysis 7 - Range of bias: The literacy scores' first plausible value was used to compute the range of scores within the responding sample and predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 65 and the maximum score was 422 , for a range of 357. Using weighting adjustment cells, and with an extreme assumption that nonrespondents would all score at the 10th percentile within each weighting cell, and at the other extreme they would all score at the 90th percentile within each weighting cell, the predicted maximum range of the mean was computed to be 37 , indicating a minimal potential for bias in outcome statistics. This is a reflection of the relatively high response rate (67\%) in France, combined with an effective nonresponse adjustment steps carried out during weighting.


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, France generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Guidelines 8.1.1B and 8.1.2A on management of field staff.

France met a reduced requirement on training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the Consortium. All of France's interviewers were provided with at least 15 hours of training.

France did not meet a reduced requirement on validation. Standard 10.9.3 called for the validation of $10 \%$ of cases for all (100\%) interviewers, selected randomly across all dispositions. For the purpose of data evaluation, countries were considered to have met the standard if they had validated at least 7\% of cases for at least $96 \%$ of its interviewers, selected randomly, across
all dispositions. France reached $10 \%$ for $100 \%$ of its interviewers. However, only completes were validated and not any other dispositions.

## Instrument Data Quality

## Translation

To the best of the Consortium's knowledge, France followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, France followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
a) Core items: 96.5\%
b) Literacy Items: 87.5\%
c) Numeracy Items: 92.3\%
- Scoring reliability of paper-based national booklets
d) Core items: 99.3\%
e) Literacy Items: 98.4\%
f) Numeracy Items: 98.8\%


## Assessment Data

Overall, $96.9 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In France, $71.5 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $26.3 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

[^16]Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In France, $12.7 \%$ of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $5.8 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, France followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labour Force Survey: Education: Standard met/Passed
- Comparison with Labour Force Survey: Occupation: Standard met/Passed
- Comparison with Labour Force Survey: Industry: Standard met/Passed


## BQ Data

Background data were of very high quality for the France. If a respondent started the interview, the likelihood that she/he provided data is at a level above $99 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In France, about $90.5 \%$ of respondents reported income in exact amounts (88.6\% across countries) and about $3.9 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In France, we observed $0.8 \%$ of cases with breakoffs.

## Item Nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In France, these percentages were 18.6\% for Literacy and $15.1 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computerbased items in France, the percentage of nonresponse for Literacy was $10.6 \%$ and for Numeracy it was $7.8 \%$. France did not administer the assessment for PSTRE.

## Germany

## Sampling

Germany followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. All QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
o Home office: Through Consortium review of the preliminary SDIF, an anomaly was detected in the age distribution of the sample, with spikes at ages 30,40 , and 50. Germany investigated the reason for this pattern and discovered an error in the sample selection algorithm at the last stage of selection. Germany provided evidence that the sample remained probability-based despite this error and corrected the selection probabilities to reflect the actual selection algorithm used. However, they were unable to calculate exact selection probabilities, so the probabilities are based on a simulation.
o In field: Not applicable
- Sample weighting: The Consortium followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights for Germany.
- Sampling error: Germany’s design effect due to unequal weights is 1.22 for a sample size of 5,465 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 2,680 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (2.01). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. Germany's sample design involved an equal probability sample; however, the error in the sampling algorithm (see above) resulted in a variation in the selection probabilities. Further variation in the weights was added through nonresponse and calibration adjustments, although the Consortium followed standard procedures to balance bias and variance.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $0.5 \%$ (undocumented immigrants).
o Data collection: The weighted percentage of cases excluded because they are inaccessible was 2\%.
- Weighted response rate: $55 \%$
- Nonresponse bias analysis
o Basic: Germany performed all required analyses. Its analysis showed significantly lower response propensities for age 26+, urban areas and non-Germans, based on registry information. Analysis of interviewer observation variables and area-level data from a consumer marketing survey also indicated lower response to PIAAC for lower education levels, lower socioeconomic status, higher rates of movers
and smaller household sizes. Age, municipality size, nationality, gender, region and education were used in weighting adjustments.
o Extended: Germany performed all required analyses. The extended analysis provides evidence that bias was reduced through the weighting adjustments.
- Analysis 1 - Comparisons of estimates before and after weighting: The nonresponse bias in auxiliary variables (noted above in the Basic NRBA) was reduced through the weighting process. In addition, estimates of education and proxy proficiency changed substantially (relative difference $>2$ ) as a result of the weighting adjustments. However, these estimates are not known for the full eligible sample, so it is difficult to make a conclusion about bias.
- Analysis 2 - Comparisons of estimates to external totals: Significant differences were found between PIAAC estimates (using final weights) and Microcensus 2010 estimates of citizenship, municipality size, ISCED and work status. However, the estimates using the final weights are closer to the external totals than those using the base weights, with the differences diminished through weighting.
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was slightly below average at 0.33 ( 0.30 for numeracy). The correlation between the raking dimensions and literacy scores was above average at 0.57 ( 0.58 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.61 ( 0.62 for numeracy), which was above the average across countries. Although Germany's response rate was low (55\%), this analysis shows that weighting adjustments were effective in reducing NRB because of the correlation between the survey outcomes and the weighting variables. However, data users need to be cautioned that the analysis is based on correlations between the responding sample ( $55 \%$ of the selected sample) and the weighting variables. That is, the analysis assumes that same correlations exist for the remaining sampled cases that have no scores ( $45 \%$ of sampled cases).
- Analysis 4 - Comparisons of estimates from alternative weightings: To calculate new weights, the final weighted data was repoststratified by each of the following variables separately: ISCED, citizenship, federal state and work status. The original weighting had used national education rather than ISCED, citizenship in nonresponse adjustment but not calibration, region but not federal state, and did not include work status. The mean literacy PV1 was significantly different when re-weighting by ISCED, but change was not substantial (differed by $\sim 2$ ). There were no other significant differences.
- Analysis 5 - Analysis of variables collected during data collection: Germany looked at characteristics of the literacy-related nonrespondents and found that they belonged to the expected sociodemographic groups, providing evidence that this disposition code was used as intended. Bias was reduced by the LRNR weighting adjustment. Germany also reviewed
data from interviewer observation forms. The results confirmed its findings from the basic analysis.
- Analysis 6 - Level-of-effort analysis: Germany compared mean proxy proficiency scores, as well as education, work status and citizenship, between interviews conducted during the main release and interviews conducted during the second release of reissued cases. The mean proficiency score was significantly lower for high level-of-effort than low level-of-effort cases at the 10 percent significance level. There were no significant differences in the distribution of respondents' education, employment status, or citizenship status.
- Analysis 7 - Range of bias: The literacy scores’ first plausible value was used to compute the range of scores within the responding sample and predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 78 and the maximum score was 406 , for a range of 328. Using weighting adjustment cells, and with an extreme assumption that nonrespondents would all score at the $10^{\text {th }}$ percentile within each weighting cell, and at the other extreme they would all score at the $90^{\text {th }}$ percentile within each weighting cell, the predicted maximum range of the mean was computed to be 53, indicating a low potential for bias in outcome statistics. This is a reflection of an effective nonresponse adjustment strategy carried out during weighting. That is, even though Germany's response rate was low (55\%), the effective nonresponse adjustment weighting reduced the potential bias in the outcome statistics to a low level. However, data users need to be cautioned that the analysis is based on assumptions about the range of proficiency scores for sampled cases that have no scores ( $45 \%$ of the sample).


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, Germany generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 9.4.2 on interviewer training.

Germany met a reduced requirement on management. Guidelines 8.1.1B and 8.1.2A required weekly meetings between interviewers and supervisors and an interviewer-supervisor ratio of 20 or less. For the purpose of data evaluation, countries were considered to have met the standard if the meetings between interviewers and supervisors were held every other week and the interviewer-supervisor ratio was 30 or less. In Germany, interviewer-supervisor meetings occurred weekly and supervisor assignments ranged between 15 and 25 interviewers.

Germany partially met a reduced requirement on validation. Standard 10.9.3 called for the validation of $10 \%$ of cases for all (100\%) interviewers, selected randomly across all dispositions. For the purpose of data evaluation, countries were considered to have met the standard if they had validated at least $7 \%$ of cases for at least $96 \%$ of its interviewers, selected randomly, across all dispositions. The majority of Germany's validation cases were not selected randomly.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Germany followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Germany followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 96.0\%
o Literacy Items: 97.9\%
o Numeracy Items: 95.8\%
- Scoring reliability of paper-based national booklets
o Core items: 99.9\%
o Literacy Items: 99.4\%
o Numeracy Items: 99.1\%


## Assessment data

Overall, $99.3 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Germany, $80.9 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $17.1 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Germany, $6.5 \%$ of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $3.9 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

[^17]The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium’s knowledge, Germany followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Germany. If a respondent started the interview, the likelihood that she/he provided data is at a level above $98 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Germany, about $90.9 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $3.6 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Germany, we observed 1.5\% of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Germany, these percentages were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computerbased items in Germany, the percentage of nonresponse for Literacy was $7.0 \%$, for Numeracy it was $3.8 \%$, and for PSTRE it was $0.1 \%$.

## Ireland

## Sampling

Ireland followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. Most QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
o Home office: No issues
o In field: No field issues detected
- Sample weighting: The Consortium followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights for Ireland.
- Sampling error: Ireland's design effect due to unequal weights is 1.37 for a sample size of 5,983 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 2,652 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (2.25). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. Ireland's sample design involved an unequal probability sample at the person level due to selecting one person no matter the household size. Further variation in the weights was added through nonresponse and calibration adjustments, although the Consortium followed standard procedures to balance bias and variance.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $0.4 \%$ (The Geo-directory can underestimate mobile dwellings).
o Data collection: N/A
- Weighted response rate: 72\%
- Nonresponse bias analysis
o Basic: Ireland performed all required analyses. Its analysis showed significantly lower response propensities in areas with lower levels of owner occupancy, areas with higher percentages of eligible non-Irish adults, areas where lower percentages of eligible adults spoke English as a native language, and areas with higher levels of unemployment. The overall response rate also varied by region (from 69\% in Mid-East to $77 \%$ in South-West). There were no significant differences between respondents and nonrespondents across educational levels. Percentage non-English language spoken at home, percentage unemployment, percentage with lower secondary-level education or below, percent owner occupied, region, age, and gender were used in nonresponse adjustments.
o Extended: Ireland performed analyses of comparison of weighted estimates to external totals, correlation of auxiliary variables and proficiency estimates and calculation of the range of potential bias. The preliminary extended analysis provides evidence that bias was reduced through the weighting adjustments.
- Analysis 1 - Not required because overall response rate is above 70\%.
- Analysis 2 - Comparisons of estimates to external totals: Differences were found between the PIAAC estimates (computed using final weights) and the 2011 census estimates of gender and educational attainment, but in percentage terms the overall shape of the distribution is very similar.
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was below average at 0.51 ( 0.51 for numeracy). The correlation between the raking dimensions and literacy scores was 0.50 ( 0.50 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.52 ( 0.53 for numeracy), which was about the average across countries. This indicates some potential for reducing NRB due to the correlation between survey outcome and weighting variables.
- Analysis 4 - Not required because overall response rate is above $70 \%$.
- Analysis 5 - Not required because overall response rate is above $70 \%$.
- Analysis 6 - Not required because overall response rate is above $70 \%$.
- Analysis 7 - Range of bias: The literacy scores' first plausible value was used to compute the range of scores within the responding sample and predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 87 and the maximum score was 413 , for a range of 326. Using weighting adjustment cells, and with an extreme assumption that nonrespondents would all score at the $10^{\text {th }}$ percentile within each weighting cell, and at the other extreme they would all score at the $90^{\text {th }}$ percentile within each weighting cell, the predicted maximum range of the mean was computed to be 27, indicating a minimal potential for bias in outcome statistics. This is a reflection of the very high response rate (72\%) in Ireland. That is, even though the variables used for weighting had only moderate correlation with outcome scores, the high response rate has minimized the potential for nonresponse bias in the outcome statistics.


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, Ireland appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 10.9.3 on fieldwork validation, Standard 9.4.2 on interviewer training and Guidelines 8.1.1B and 8.1.2A on management of field staff.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Ireland followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items.

All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Ireland followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 97.1\%
o Literacy Items: 96.7\%
o Numeracy Items: 95.0\%
- Scoring reliability of paper-based national booklets
o Core items: 99.6\%
o Literacy Items: 99.2\%
o Numeracy Items: 99.3\%


## Assessment data

Overall, $97.6 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Ireland, $68.3 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $30.7 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Ireland, 19.4\% of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $4.3 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and

[^18]Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Ireland followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Ireland. If a respondent started the interview, the likelihood that she/he provided data is at a level above $99 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Ireland, about $90.8 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $1.8 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Ireland, we observed $0.5 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Ireland, these percentages were 10.0\% for Literacy and 7.5\% for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computer-based items in Ireland, the percentage of nonresponse for Literacy was $7.2 \%$, for Numeracy it was $5.1 \%$, and for PSTRE it was $0.1 \%$.

## Italy

## Sampling

Italy followed the PIAAC technical standards and guidelines (TSG) related to sampling and weighting. All QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
o Home office: No issues
o In field: Not applicable
- Sample weighting: Italy followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights.
- Sampling error: Italy's design effect due to unequal weights is 1.43 for a sample size of 4,621 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 1,666 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (2.75). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. The goal of the sample design was to arrive at equal probabilities of selection for individuals. However, there was some variation observed in the base weights. Further variation in the weights was added through within-household sampling, nonresponse and calibration adjustments, although they followed standard procedures to balance bias and variance.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $0.8 \%$ (people in noninstitutional collective dwelling units).
o Data collection: The weighted percentage of cases excluded because they were inaccessible was 1.8\%.
- Weighted response rate: 55\%
- Nonresponse bias analysis
o Basic: Italy performed all required analyses. The required variables for education and employment were not available for use in the basic NRBA. The two-variable combination of age classes by gender, which was not used in weighting, showed some indications of potential nonresponse bias. Micro-regions, not used in weighting, did not show indications of potential bias. Indications of the potential for bias prior to weighting were found in age classes, household size, municipality size, and micro-region. Most significant specific categories are 16-25-year-olds (overrepresented) and 56-65 (under); 1 and 2 person households (under); large municipalities (under); North West (under) and North East and South (over). Among variables not used in weighting, the age by sex groups show possible underrepresentation for younger ages 16-34 for both sexes, and overrepresentation for 55-65 females. The logistic regression show significant effects among all six variables in the analysis.
o Extended (preliminary): Italy performed all required analyses. Its extended analysis provides evidence that bias was reduced through the weighting adjustments.
- Analysis 1 - Comparisons of estimates before and after weighting: Significant differences 'before' NR adjustments among age classes, household size, and regions. Differences still over 2 standard errors away for single person household, North West, North East and South after NR adjustments, however, the standard errors (denominator) were small, which may overstate the size of the difference in the percentages. After calibration, in general the absolute differences were reduced for the regions, except for the South. Italy conducted significance testing that showed a slightly different picture, where significant potential bias remained for the North West only after the NR adjustment, among all the subgroups. Nonweighting variables were not used in the analysis.
- Analysis 2 - Comparisons of estimates to external totals: Employment and education totals from the Labor Force Survey are significantly different from those from Italian Multipurpose Survey (used for PIAAC calibration). In order to explain these differences, it is important to note that the LFS is a rotated sample with the effect of attrition and substitution being allowed, while for the Italian Multipurpose Survey, the substitution is not allowed and is based on a two- stage sampling design of 60,000 units (observed sample persons). For Education, the largest absolute differences are for categories ISCED 3A-B and ISCED 2. For employment status, none of the confidence intervals for PIAAC and LFS overlap and the largest absolute differences are categories Not in Labor force and Unemployed. Italy provided an explanation of differences between PIAAC and the external source, and said it is not possible to say if these differences are due to a bias into the PIAAC estimates. For education, the largest differences (st_PIAAC - st_LFS) correspond to categories ISCED 3A-B and ISCED 2, where the relative differences are $-8.0 \%$ and $5.5 \%$, respectively. For employment status, the largest differences are for Not in Labor force and Unemployed ( $-2.6 \%$ and $3.8 \%$ ). For the reasons described above, it is not possible to say if these differences are due to a bias into the PIAAC estimates.
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was below average at 0.22 ( 0.21 for numeracy). The correlation between the raking dimensions and literacy scores was average at 0.48 ( 0.52 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.49 ( 0.53 for numeracy), which was about the average across countries. This indicates some potential for reducing NRB due to the moderate correlation between the survey outcomes and the weighting variables. However, data users need to be cautioned that the analysis is based on correlations between the responding sample (55\% of the selected sample) and the weighting
variables. That is, the analysis assumes that the same correlations exist for the remaining sampled cases that have no scores ( $45 \%$ of sampled cases).
- Analysis 4 - Comparisons of estimates from alternative weightings: The re-weighted estimate from the alternative more detailed education and employment status showed no important difference with the estimates based on the final weights. The overall difference is significant however, and with the alternative weights resulting in a higher average by four points. Therefore, there is some potential for bias in the resulting scores.
- Analysis 5 - Analysis of variables collected during data collection: The Italy weighting procedures separated the LRNR, therefore treating the LRNR cases appropriately. There were no domains with unexpected differences between LRNR and the comparison group. They provided frequencies from its NIR; however, only 133 completed the forms and therefore it is not possible to draw conclusions.
- Analysis 6 - Level-of-effort analysis: There were significant differences by level of effort for age class 46-55 (higher for low effort) and HH_size=1 (higher for low effort). This indicates that the thorough data collection efforts helped to reduce the bias due to nonresponse.
- Analysis 7 - Range of bias: The literacy scores’ first plausible value was used to compute the range of scores within the responding sample and to predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 92 and the maximum score was 439 , for a range of 347. Using weighting adjustments cells, and with an extreme assumption that nonrespondents would all score at the $10^{\text {th }}$ percentile within each weighting cell, and at the other extreme they would all score at the $90^{\text {th }}$ percentile within each weighting cell, the predicted maximum range of the mean was computed to be 62, indicating a low potential for bias in outcome statistics. This is a reflection of an effective nonresponse adjustment strategy carried out during weighting. That is, even though Italy's response rate was low (55\%), the effective nonresponse adjustment weighting reduced the potential bias in the outcome statistics to a low level. However, data users need to be cautioned that the analysis is based on assumptions about the range of proficiency scores for sampled cases that have no scores ( $45 \%$ of the sample).


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, Italy generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Guidelines 8.1.1B and 8.1.2A on management of field staff.

Italy met a reduced requirement on validation. Standard 10.9.3 called for the validation of $10 \%$ of cases for all (100\%) interviewers, selected randomly across all dispositions. For the purpose of data evaluation, countries were considered to have met the standard if they had validated at least $7 \%$ of cases for at least $96 \%$ of its interviewers, selected randomly, across all dispositions. Italy reached the $7 \%$ threshold for $99 \%$ of its interviewers.

Italy also met a reduced requirement on training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the Consortium. Italian interviewers were provided with 27 hours of in-person training.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Italy followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Italy followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 97.9\%
o Literacy Items: 97.0\%
o Numeracy Items: 96.2\%
- Scoring reliability of paper-based national booklets
o Core items: 99.4\%
o Literacy Items: 96.2\%
o Numeracy Items: 96.7\%


## Assessment data

Overall, $98.8 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Italy, $57.9 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $41.4 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Italy, $19.6 \%$ of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $3.2 \%$ of those who reported having some

[^19]computer experience failed the ICT Core and took the PBA. Overall, across all countries, 11.8\% of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Italy followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Italy. If a respondent started the interview, the likelihood that she/he provided data is at a level above $99 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Italy, about $80.3 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $9.0 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Italy, we observed $0.7 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Italy, these percentages were 13.7\% for Literacy and $10.3 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computerbased items in Italy, the percentage of nonresponse for Literacy was $12.8 \%$ and for Numeracy it was 9.0\%. Italy did not administer the assessment for PSTRE.

Japan

## Sampling

Japan followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. All QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
o Home office: Japan had to adjust its sampling frame to take into account the unique circumstances caused by earthquake and tsunami. The alternative sample design deviates from an unbiased probability sample design as required by PIAAC's TSGs. However, an in-depth evaluation of the alternative approach indicated that the potential for bias in outcome statistics was expected to be minimal. Therefore, this alternative design is expected to produce national estimates for Japan that are comparable with other countries and with acceptable quality. Disproportionate sample allocation across strata Method was used in the alternative approach. Under this method, the maximum number of SPs allowed per PSU was 50. Strata with similar literacy levels were combined to reduce the impact on variances due to this upper bound limitation. This approach helped spread the sample across a larger number of PSUs, and reduce the sample weight variation. Initial base weights were adjusted to reflect all these changes.
o In field: Not applicable
- Sample weighting: Japan followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create its weights.
- Sampling error: Japan's design effect due to unequal weights is 1.10 for a sample size of 5,278 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 3,362 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (1.54). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance.
- Japan started with an equal probability sample design. Due to changes (as described in sampling plan) the final design is an almost-equal probability sample. Further variation in the weights was added through nonresponse and calibration adjustments, although they followed standard procedures to balance bias and variance.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $2.2 \%$ (non-nationals, undocumented immigrants).
o Data collection: The weighted percentage of cases excluded because they are inaccessible was 2.8\%.
- Weighted response rate: $50 \%$
- Nonresponse bias analysis
o Basic: Japan performed all required analyses.
o Extended: Japan performed all required analyses. The extended analysis provides evidence that bias was reduced through the weighting adjustments.
- Analysis 1 - Comparisons of estimates before and after weighting: 19 variables were analyzed. Some of them are ratios, for example, the ratio of junior college or college graduate to the high school graduate. Estimates related to region, education, employment and age changed substantially (relative difference $>2$ ) as a result of the weighting adjustments. However, these estimates are not known for the full eligible sample, so it is difficult to make a conclusion about bias. Half of the variables were used in weighting and the rest were not.
- Analysis 2 - Comparisons of estimates to external totals: Japan took BQ variables to derive education and Labor force, and compared the estimates to the control totals. "PIAAC estimates were computed with final adjusted weights. Because the analysis variables are calibration variables, the estimates are just control totals."
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was below average at 0.17 ( 0.20 for numeracy). The correlation between the raking dimensions and literacy scores was above average at 0.52 ( 0.51 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.53 ( 0.52 for numeracy), which was about the average across countries. Although Japan's response rate was low (50\%), this analysis shows that weighting adjustments were moderately effective in reducing NRB because of the correlation between the survey outcomes and the weighting variables. However, data users need to be cautioned that the analysis is based on correlations between the responding sample ( $50 \%$ of the selected sample) and the weighting variables. That is, the analysis assumes that same correlations exist for the remaining sampled cases that have no scores (50\% of sampled cases).
- Analysis 4 - Comparisons of estimates from alternative weightings: To calculate new weights, the first plausible variable for literacy was used as a proficiency measure, and nonresponse adjustment cells were formed using different variables from those used in the original analysis, plus gender and age. Weights were calibrated using the same variables as in the original analysis. Proficiency estimates for respondents were obtained using the recalibrated weights. No differences were found in any domains.
- Analysis 5 - Analysis of variables collected during data collection: Japan looked at type of building, floor in apartment building, and automatic lock house or apartment. People of higher socioeconomic class tend to occupy upper floors and live in automatic lock houses. The response rate of people living in apartments is low. Floor and automatic lock shown no differences.
- Analysis 6 - Level-of-effort analysis: Japan compared number of visits, and developed a questionnaire to allow comparisons of response-related variables such as: at home vs. out, participate vs. refuse, cooperative vs.
annoying, and interested vs. not-interested. The first plausible value for literacy was used as a proficiency measure, and a regression analysis was performed. Japan's conclusion is as follows: High level-of-effort respondents due to not-at-home have such characteristics as male, young, and employed; its proficiency estimates are higher than those of stay-athome respondents in every domain except not-in-Labor-force. Respondents who were cooperative and interested in the survey had such characteristics as young and highly educated; its proficiency estimates are higher than those of evasive respondents in every domain.
- Analysis 7 - Range of bias: The Literacy scores’ first plausible value was used to compute the range of scores within the responding sample and to predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 126 and the maximum score was 418 , for a range of 292. Using weighting adjustments cells, and with an extreme assumption that nonrespondents would all score at the $10^{\text {th }}$ percentile within each weighting cell, and at the other extreme they would all score at the $90^{\text {th }}$ percentile within each weighting cell, the predicted maximum range of the mean was computed to be 51, indicating a low potential for bias in outcome statistics. This is a reflection of an effective nonresponse adjustment strategy carried out during weighting. That is, even though Japan's response rate was low (50\%), the effective nonresponse adjustment weighting reduced the potential bias in the outcome statistics to a low level. However, data users need to be cautioned that the analysis is based on assumptions about the range of proficiency scores for sampled cases that have no scores ( $50 \%$ of the sample).


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, Japan appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Guidelines 8.1.1B and 8.1.2A on management of field staff.

Japan met a reduced requirement on training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the Consortium. Japan provided 24 hours.

Japan partially met a reduced requirement on validation. Standard 10.9.3 called for the validation of $10 \%$ of cases for all ( $100 \%$ ) interviewers, selected randomly across all dispositions. For the purpose of data evaluation, countries were considered to have met the standard if they had validated at least $7 \%$ of cases for at least $96 \%$ of its interviewers, selected randomly, across all dispositions. Cases finalized as ineligible had no chance of being selected for validation, and the majority of validation cases were not selected randomly.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Japan followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Japan followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 99.2\%
o Literacy Items: 97.9\%
o Numeracy Items: 97.0\%
- Scoring reliability of paper-based national booklets
o Core items: 99.9\%
o Literacy Items: 99.8\%
o Numeracy Items: 99.7\%


## Assessment data

Overall, 99.9\% of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Japan, 61.8\% of the respondents who completed the BQ took the computer-based cognitive assessment, while $36.8 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Japan, $17.9 \%$ of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $12.1 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

[^20]The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Japan followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Japan. If a respondent started the interview, the likelihood that she/he provided data is at a level above $98 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Japan, about $91.8 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $3.0 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Japan, we observed $1.2 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Japan, these percentages were $6.5 \%$ for Literacy and $5.7 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computer-based items in Japan, the percentage of nonresponse for Literacy was $4.5 \%$, for Numeracy it was $3.1 \%$, and for PSTRE it was 0.0\%.

## Korea

## Sampling

Korea followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. All QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
o Home office: No issues
o In field: No field issues detected
- Sample weighting: The Consortium followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights for Korea. Upon review of the distribution of raked weights, it was discovered that 20 - to 26 -year-olds were underrepresented in the sample and the raking dimension defined by age needed to be redefined to account for the underrepresentation. After discussions with Korea about this issue, a new raking dimension was submitted by Korea defined by age crossed with educational attainment.
- Sampling error: Korea's design effect due to unequal weights is 1.19 for a sample size of 6,667 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 5,086 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (1.31). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. The goal of the sample design was to arrive at equal probabilities of selection for households. However, there was some variation observed in the base weights. Further variation in the weights was added through within-household sampling, nonresponse and calibration adjustments, although they followed standard procedures to balance bias and variance.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was 2.4\% (residents of small islands).
o Data collection: Not applicable
- Weighted response rate: 75\%
- Nonresponse bias analysis
o Basic: Korea performed all required analyses. For the screener response rate, region, administrative district and residential type each showed statistical significance while region, residential type, gender, age, educational attainment, job type and household income were significantly different in the BQ response rate. Age, gender, occupation, urbanicity, region and education were used in weighting adjustments.
o Extended: Not required


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, Korea generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 10.9.3 on fieldwork validation, Standard 9.4.2 on interviewer training and Guidelines 8.1.1B and 8.1.2A on management of field staff.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Korea followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Korea followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 98.8\%
o Literacy Items: 99.1\%
o Numeracy Items: 96.7\%
- Scoring reliability of paper-based national booklets
o Core items: $100.0 \%$
o Literacy Items: 100.0\%
o Numeracy Items: 100.0\%


## Assessment data

Overall, $97.9 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Korea, $70.9 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $28.6 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Korea, $5.9 \%$ of respondents who reported having some computer experience

[^21]refused the CBA and took the PBA. An additional $10.4 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, 11.8\% of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Korea followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Korea. If a respondent started the interview, the likelihood that she/he provided data is at a level above $99 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Korea, about $93.9 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $1.5 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Korea, we observed $0.3 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Korea, these percentages were $7.4 \%$ for Literacy and $5.8 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computer-based items in Korea, the percentage of nonresponse for Literacy was $2.6 \%$, for Numeracy it was $2.0 \%$, and for PSTRE it was 0.2\%.

## The Netherlands

## Sampling

The Netherlands followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. All QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
o Home office: No issues
o In field: Not applicable
- Sample weighting: The Netherlands followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create its weights.
- Sampling error: The Netherlands' design effect due to unequal weights is 1.10 for a sample size of 5,170 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 4,635 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (1.10). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. The Netherlands’ sample design involved an equal probability sample. Variation in the weights was added through nonresponse and calibration adjustments, although they followed standard procedures to balance bias and variance.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $0.9 \%$ (undocumented immigrants).
o Data collection: The weighted percentage of cases excluded because they are inaccessible was $1.8 \%$.
- Weighted response rate: 51\%
- Nonresponse bias analysis
o Basic: The Netherlands performed all required analyses. For all candidate auxiliary variables, except gender, the characteristics of the respondents and nonrespondents differ significantly. Therefore an inclusion of all candidate auxiliary variables, except gender, in the weighting model might result in a reduction of nonresponse bias.
o Extended: The Netherlands performed all required analyses. The extended analysis provides evidence that bias was reduced through the weighting adjustments.
- Analysis 1 - Comparisons of estimates before and after weighting were made for 19 variables. The variables included gender, age, generation, origin, degree of urbanization, group of provinces, household composition, social status, economic activity, type of dwelling, property-value of dwelling, monthly gross income, term of registration and low-, middle-, high-level of education. Estimates related to all the variables but gender
changed substantially (relative difference $>2$ ) as a result of the weighting adjustments. Half of these variables were included in weighting.
- Analysis 2 - Comparisons of estimates to external totals: The Netherlands compared PIAAC estimates for education, employment status, occupation and industry to estimates from the Dutch Labor Survey. Statistical tests were not performed to check if differences are significant. Because the surveys differ in timing, observation mode, question wording, coding of education, profession and industry, performing proper statistical tests was found to be difficult. Therefore, it is hard to correctly interpret the differences in estimates.
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was below average at 0.26 ( 0.25 for numeracy). The correlation between the raking dimensions and literacy scores was above average at 0.57 ( 0.55 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.57 ( 0.55 for numeracy), which was above the average across countries. Although the response rate for The Netherlands was $51 \%$, this analysis indicates potential for reducing NRB due to the high correlation between the survey outcomes and the weighting variables. However, data users need to be cautioned that the analysis is based on correlations between the responding sample ( $51 \%$ of the selected sample) and the weighting variables. That is, the analysis assumes that same correlations exist for the remaining sampled cases that have no scores (49\% of sampled cases).
- Analysis 4 - Comparisons of estimates from alternative weightings: To calculate new weights, the first plausible variable for literacy variable was used as a proficiency measure, and the nonresponse adjusted weights were recalibrated using five of the original raking dimensions (gender by age, origin by generation, degree of urbanization by group of provinces, household composition, social status by income, term of registration in population registry), plus an alternative education variable. Proficiency estimates were obtained using the recalibrated weights. No differences were found.
- Analysis 5 - Analysis of variables collected during data collection: The Netherlands looked at the same 13 variables listed in Analysis 1 for the LR. Its conclusion states that "because some people of a first foreign background do not speak the Dutch language, it is considered not unlikely that $80 \%$ of the literacy related cases are people of a first generation foreign background". However, the Netherlands’ weighting procedures separated the LRNR cases, therefore treating them appropriately.

2) An analysis of noninterview report data was not performed.

- Analysis 6 - Level-of-effort analysis: A variable with 3 levels was created: a person contacted 1-4 times, a person is contacted 5-6 times, and after initially refusing the person is contacted again. Two groups are formed: early respondents (1-4 contacts) and late respondents. A twosample t-test was used to compare the literacy scores of these two groups.

Although the mean proficiency score of the late respondents is mostly higher than that of the other respondents, the differences are not significant.

- Analysis 7 - Range of bias: The literacy scores’ first plausible value was used to compute the range of scores within the responding sample and to predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 81 and the maximum score was 440 , for a range of 359 . Using weighting adjustments cells, and with an extreme assumption that nonrespondents would all score at the $10^{\text {th }}$ percentile within each weighting cell, and at the other extreme they would all score at the $90^{\text {th }}$ percentile within each weighting cell, the predicted maximum range of the mean was computed to be 60 , indicating a low potential for bias in outcome statistics. This is a reflection of an effective nonresponse adjustment strategy carried out during weighting. That is, even though The Netherlands’ response rate was low (51\%), the effective nonresponse adjustment weighting reduced the potential bias in the outcome statistics to a low level. However, data users need to be cautioned that the analysis is based on assumptions about the range of proficiency scores for sampled cases that have no scores ( $49 \%$ of the sample).


## Data collection

The Netherlands partially met a reduced requirement on validation. Standard 10.9.3 called for the validation of $10 \%$ of cases for all ( $100 \%$ ) interviewers, selected randomly across all dispositions. For the purpose of data evaluation, countries were considered to have met the standard if they had validated at least $7 \%$ of cases for at least $96 \%$ of its interviewers, selected randomly, across all dispositions. The Netherlands reached the $7 \%$ threshold for $86 \%$ of its interviewers. Fourteen percent of interviewers were validated at less than the $7 \%$ level.

The Netherlands also partially met a reduced requirement on training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the Consortium. About $60 \%$ of Netherlands's interviewers were provided with more than 15 hours; however, about $40 \%$ were provided with significantly fewer hours. The Netherlands offered significantly fewer training hours than recommended on all key aspects (gaining cooperation, BQ administration and assessment administration).

The Netherlands also partially met a reduced requirement on management. Guidelines 8.1.1B and 8.1.2A required weekly meetings between interviewers and supervisors and an interviewersupervisor ratio of 20 or less. For the purpose of data evaluation, countries were considered to have met the standard if the meetings between interviewers and supervisors were held every other week and the interviewer-supervisor ratio was 30 or less. Netherlands’ supervisor assignments were more numerous than the standard- 55 interviewers, working on more than one project.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, the Netherlands followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, the Netherlands followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 95.6\%
o Literacy Items: 92.1\%
o Numeracy Items: 95.5\%
- Scoring reliability of paper-based national booklets
o Core items: 99.5\%
o Literacy Items: 99.9\%
o Numeracy Items: 99.9\%


## Assessment data

Overall, $98.2 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In the Netherlands, $87.5 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $9.7 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computerbased form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In the Netherlands, $4.5 \%$ of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $3.2 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

[^22]The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, the Netherlands followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for the Netherlands. If a respondent started the interview, the likelihood that she/he provided data is at a level above $97 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In the Netherlands, about $88.9 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $4.5 \%$ reported income in broad categories (4.2\% across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In the Netherlands, we observed $2.3 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In the Netherlands, these percentages were $10.0 \%$ for Literacy and $5.6 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computerbased items in the Netherlands, the percentage of nonresponse for Literacy was $4.6 \%$, for Numeracy it was $3.2 \%$, and for PSTRE it was $0.2 \%$.

## Norway

## Sampling

Norway followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. Most QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
o Home office: No issues
o In field: Not applicable
- Sample weighting: Norway followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights.
- Sampling error: Norway's design effect due to unequal weights is 1.05 with a sample size of 5,128 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 4,947 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (0.83). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. The effective sample size is set equal to the actual number of cases with plausible values since the overall design effect is less than 1.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $0.4 \%$ (undocumented immigrants).
o Data collection: The weighted percentage of cases excluded because they are inaccessible was $0.4 \%$.
- Weighted response rate: 62\%
- Nonresponse bias analysis
o Basic: Norway performed all required analyses. Chi-square analysis shows that there is significant dependence between response status and all the auxiliary variables except for gender, immigration category and country background. Age, special field, occupation, industry, income, region and education were used in BQ NR adjustments.
o Extended: Norway performed most of the analysis except NIR (they do not have such data). The extended analysis provides evidence that bias was mostly reduced through the weighting adjustments
- Analysis 1 - Comparisons of estimates before and after weighting: Most of the bias was reduced except for a few levels of certain categories, but there is no sign of significant bias (either rel diff $<2$ or abs diff $<1$ or both).
- Analysis 2 - Comparisons of estimates to external totals: Significant differences were found between PIAAC estimates (using final weights) and different registers of the following categories: education (9), special field $(2,6)$, occupation $(2,4)$, and income after taxes (4). According to its reply, the number of people in the category "missing" tends to be
underestimated (for all variables), thus these people are probably underrepresented in our respondent sample. For other categories, the confidence interval contains the register total in most cases except for special field categories 2 and 6, occupation categories 2 and 4 , and income category 4.
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was above average at 0.45 . The correlation between the raking dimensions and literacy scores was below average at 0.23 ( 0.22 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.48 , which was about average across countries. That is, weighting adjustments were not as effective in reducing bias, as compared to other countries, because of the level of correlation between the survey outcomes and the weighting variables. However, Norway had a higher than average response rate (62\%), as compared to other countries, implying that the potential for bias could be somewhat lower as compared to countries with lower response rates.
- Analysis 4 -Comparisons of estimates from alternative weightings: Norway used 5-year age groups, immigration category, and income after taxes in the reweighting, and very little differences were found between the estimates using final weights and reweighted weights.
- Analysis 5 - Analysis of variables collected during data collection: Norway looked at characteristics of the literacy-related nonrespondents and found that they belonged to immigration groups, certain age groups (too young or too old), certain regions and lower education, providing evidence that this disposition code was used as intended. So bias was reduced by the LRNR weighting adjustment.
- Analysis 6 - Level-of-effort analysis: Norway defined level of effort by the interview time before or after December 31, 2011. There was significant difference in the distribution of respondents’ education. The late respondents generally have a lower average proficiency score, except for immigration 3 group (Norwegian-born to immigrant parents), whose late respondents have a higher score than early ones’.
- Analysis 7 - Range of bias: The Literacy scores' first plausible value was used to compute the range of scores within the responding sample and to predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 67 and the maximum score was 441 , for a range of 344 . Using weighting adjustments cells, and with an extreme assumption that nonrespondents would all score at the 10th percentile within each weighting cell, and at the other extreme they would all score at the 90th percentile within each weighting cell, the predicted maximum range of the mean was computed to be 51, indicating a low potential for bias in outcome statistics. This is a reflection of the higher than average response rate (62\%) in Norway. That is, as a result of achieving a relatively higher response rate, the potential for remaining bias is low even
though the weighting adjustments were not as effective, as compared to other countries, in reducing bias in outcome statistics.


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, Norway generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 10.9.3 on fieldwork validation and Guidelines 8.1.1B and 8.1.2A on management of field staff.

Norway partially met a reduced requirement on training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the Consortium. Overall training duration was significantly shorter than recommended. Some interviewers were offered significantly fewer training hours than recommended on all key aspects (gaining cooperation, BQ administration and assessment administration).

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Norway followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Norway followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 96.6\%
o Literacy Items: 96.5\%
o Numeracy Items: 95.9\%
- Scoring reliability of paper-based national booklets
o Core items: 99.0\%
o Literacy Items: 97.5\%
o Numeracy Items: 98.5\%

[^23]
## Assessment data

Overall, $97.2 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Norway, $85.5 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $11.2 \%$ took the PBA. Across all countries, 73.5\% of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Norway, $6.5 \%$ of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $3.7 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Norway followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Norway. If a respondent started the interview, the likelihood that she/he provided data is at a level above $97 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Norway, about $97.6 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $0.5 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Norway, we observed 2.2\% of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Norway, these percentages were $9.6 \%$ for Literacy and $8.1 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computer-based items in Norway, the percentage of nonresponse for Literacy was $5.2 \%$, for Numeracy it was $3.6 \%$, and for PSTRE it was $0.2 \%$.

## Poland

## Sampling

Poland followed the technical standards and guidelines (TSG) related to sampling and weighting. All QC materials were completed fully and returned in a timely manner except some of the sample selection forms, which were not submitted until data collection started.

- Sampling Plan: No issues
- Sample selection
o Home office: No issues
o In field: Not applicable
- Sample weighting: The Consortium followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights for Poland. The only exception is that no separate adjustment for literacy-related nonrespondents (LRNR) was performed to avoid extreme weights, since none of the BQ LRNR have age and gender collected, and there is only one assessment LRNR.
- Sampling error: Poland's design effect due to unequal weights is 1.91 for a sample size of 9,366 adults ages $16-65$. Poland oversampled 19-26-year-olds, which increases the design effect. Further variation in the weights was added through nonresponse and calibration adjustments, although the Consortium followed standard procedures to balance bias and variance. The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 6,320 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (1.48). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $0.8 \%$ (undocumented immigrants and foreigners staying in Poland fewer than 3 months).
o Data collection: The weighted percentage of cases excluded because they are inaccessible was 4.2\%.
- Weighted response rate: $56 \%$
- Nonresponse bias analysis
o Basic: Poland performed all required analyses. Its analysis showed significantly lower response propensities for ages 26-35, areas with high education or low unemployment, and several regions. Age, gender, region, unemployment level, locality size, income level, number of cities, density of middle-school students, and density of middle-school students per computer with internet were used in weighting adjustments.
o Extended: Poland performed all of the required analyses except the analysis on non-interview report form. The extended analysis provides evidence that bias was reduced through the weighting adjustments.
- Analysis 1 - Comparisons of estimates before and after weighting: Bias in age, area-level education, area-level unemployment, locality size, and region was reduced through the weighting process as most of these variables were used in weighting adjustments. Gender was also analyzed but it did not show bias between the respondent and eligible sample.
- Analysis 2 - Comparisons of estimates to external totals: PIAAC estimates (using final weights) are generally smaller than the Census 2011 estimates of age, gender, and region. Per Poland, "The registry and Census data were collected by two different institutions. Despite the fact there are significant differences between PIAAC estimates and external control totals, we have not made any adjustments because the relative frequencies of Age, Gender, and Region characteristics are virtually identical for Census and Registry data."
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was below average at 0.29 ( 0.28 for numeracy). The correlation between the raking dimensions and literacy scores was below average at 0.33 ( 0.30 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.40 ( 0.37 for numeracy), which was below the average across countries. That is, weighting adjustments were not as effective in reducing bias, as compared to other countries, because of the lower than average correlation between survey outcomes and weighting variables. Also data users need to be cautioned that the analysis is based on correlations between the responding sample ( $56 \%$ of the selected sample) and the weighting variables. That is, the analysis assumes that the same correlations exist for the remaining sampled cases that have no scores ( $44 \%$ of sampled cases).
- Analysis 4 - Comparisons of estimates from alternative weightings: To calculate new weights, the final weighted data were re-raked by employment status and education. The mean literacy scores by education are virtually the same before and after re-weighting. The mean literacy scores by employment status are slightly different before and after reweighting, which may be due to the random imputation of six cases with missing employment status.
- Analysis 5 - Analysis of variables collected during data collection: Poland looked at characteristics of the literacy-related nonrespondents and found that they belonged to the expected sociodemographic groups, providing evidence that this disposition code was used as intended. Poland did not perform analysis on data from non-interview report (NIR) forms. Per Poland, "In our opinion, NIR analysis does not bring any valid information since data were collected in open-ended form using two different kinds of software (TAO, CMS). There are significant differences between input data for the same respondents."
- Analysis 6 - Level-of-effort analysis: Poland does not have information on the number of contacts to define level-of-effort. So they compared interviews conducted in the first 6 months of data collection with the
interviews conducted in the last 3 months of data collection, assuming the interviews in the first 6 months required less effort than the last 3 months. The analysis variables include mean literacy scores, proportions by age, sex, area-level education, area-level unemployment, locality size, and region. Significant differences of mean literacy score were found between the two groups for some of the domains.
- Analysis 7 - Range of bias: The Literacy scores’ first plausible value was used to compute the range of scores within the responding sample and to predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 59 and the maximum score was 446 , for a range of 388 . Using weighting adjustments cells, and with an extreme assumption that nonrespondents would all score at the 10th percentile within each weighting cell, and at the other extreme they would all score at the 90th percentile within each weighting cell, the predicted maximum range of the mean was computed to be 54, indicating a low potential for bias in outcome statistics. However, data users need to be cautioned that the analysis is based on assumptions about the range of proficiency scores for sampled cases that have no scores ( $44 \%$ of the sample).


## Data collection

Based on information provided on QC forms and during monthly QC conference calls, Poland generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 9.4.2 on interviewer training.

Poland met a reduced requirement on management. Guidelines 8.1.1B and 8.1.2A required weekly meetings between interviewers and supervisors and an interviewer-supervisor ratio of 20 or less. For the purpose of data evaluation, countries were considered to have met the standard if the meetings between interviewers and supervisors were held every other week and the interviewer-supervisor ratio was 30 or less. In Poland, meetings between supervisors and interviewers occurred only on an as-needed basis and/or biweekly.

Poland did not meet a reduced requirement on validation. Standard 10.9.3 called for the validation of $10 \%$ of cases for all ( $100 \%$ ) interviewers, selected randomly across all dispositions. For the purpose of data evaluation, countries were considered to have met the standard if they had validated at least $7 \%$ of cases for at least $96 \%$ of its interviewers, selected randomly, across all dispositions. Poland reached the $7 \%$ threshold for $40 \%$ of its interviewers. Sixty percent of interviewers were validated at less than the 7\% level. Only some cases were selected randomly.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Poland followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items.

All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Poland followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 99.0\%
o Literacy Items: 97.3\%
o Numeracy Items: 96.0\%
- Scoring reliability of paper-based national booklets
o Core items: 99.6\%
o Literacy Items: 98.2\%
o Numeracy Items: 98.7\%


## Assessment data

Overall, $99.0 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Poland, $50.4 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $49.3 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Poland, $29.3 \%$ of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $7.9 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and

[^24]Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Poland followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Poland. If a respondent started the interview, the likelihood that she/he provided data is at a level of $100 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Poland, about $81.8 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $6.5 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Poland, we observed $0.0 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Poland, these percentages were 9.0\% for Literacy and $6.2 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computer-based items in Poland, the percentage of nonresponse for Literacy was $8.4 \%$, for Numeracy it was $5.3 \%$, and for PSTRE it was 0.0\%.

## The Russian Federation ${ }^{14}$

## Sampling

It is unclear whether the Russian Federation followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling due to the lack of information provided.

- Sampling Plan: During the sample design stage, the Consortium suggested increasing stratification levels and reducing the clustering to the maximum extent possible to reduce design effects. However, the Russian Federation was not able to implement this suggestion. The Russian Federation selected 25 PSUs (regions; three were selfrepresenting) and 93 SSUs (cities, towns, villages).
- Sample Selection
o Home office: The Russian Federation provided minimal information in their QC forms, so the Consortium was not able to adequately QC any stage of their sample selection.
o In field: No field issues detected.
- Sample weighting: The Consortium followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights for the Russian Federation. A literacyrelated nonresponse adjustment was not needed because there were no literacy-related non-respondents at any stage of the data collection. Also, BQ nonresponse adjustment was not conducted because the BQ response rate was close to $100 \%$.
- Sampling error: The Russian Federation's design effect due to unequal weights is 2.09 for a sample size of 3 892. The Russian Federation’s overall design effects are substantial due to the high level of clustering in the sample (small numbers of PSUs and SSUs), and thus failing to meet the quality measures (related to design effects) established for PIAAC. For example, the overall design effect for literacy is 15.77 (other Round 1 country design effects range from 0.80 to 3.81 ), and the effective sample size is 247 (the effective sample size for other Round 1 countries range from 1,666 to 7,848 ). The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, was computed as the number of cases with plausible values divided by the overall design effect for literacy. The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. Further variation in the weights was added through nonresponse and calibration adjustments, although the Consortium followed standard procedures to balance bias and variance.


## Coverage and Nonresponse Bias

- Population Coverage

[^25]o Frame: The estimated percentage of the target population excluded from the frame was $1.5 \%$ (Chechnya region, due to war in the region).
o Data collection: 1220 cases were identified during the quality control processes that did not accurately reflect the true proficiencies of respondents. These respondents had implausible response times, duplicate cases, and abnormal response patterns and were excluded from the Russian Federation's database:

1) 116 duplicate cases identified. These were cases involving respondents with identical responses to items, response times, and number of actions to completion.
2) 144 cases with an average response time per item less than 10 seconds. Very rapid responses were best understood as being not representative of the respondents' skills.
3) 949 cases collected by the most prolific 8 interviewers. The cases collected by these interviewers were unusually homogeneous and had very different characteristics compared to other respondents in Russia.
4) 11 cases from the same household with a sampled person that met one of the aforementioned criteria. These cases were determined to be incongruent.
The exclusion of data from the 8 most prolific interviewers resulted in the removal of all cases from the Moscow municipal area (two certainty PSUs). The final Russian data set is therefore representative of the Russian Federation resident population aged 16-65, excluding those residing in the Moscow municipal area ${ }^{15}$.

- Weighted response rate: 52\%
- Nonresponse bias analysis
o Basic: The Russian Federation evaluated nonresponse bias at the screener stage only, because their self-computed BQ response rate was around $99 \%$. The Russian Federation did not use all required analysis variables. Age, gender, education, and employment were not used because "virtually all refusals occurred at the initial stage of contact with any member of the household or the gatekeeper and it was not possible to obtain any information on household members." The Russian Federation performed all required analyses. Non-respondents tended to live in towns and villages, in regions with a higher percentage of employed people, and in regions with a lower percentage of people with higher education than respondents. The chi-square analysis also showed differential response rates by region, type of settlement (city, town, village), and level of education in the region.

[^26]o Extended: The Russian Federation did not perform all the required analyses using the final weights and proficiency scores. As a result, nonresponse bias could not be fully evaluated.

- Analysis 1 - Comparisons of estimates before and after weighting: The Consortium was unable to determine whether bias in the auxiliary variables was reduced through the weighting process due to insufficient information provided for this analysis. The percentage distribution of sample cases at each weighting step at the screener level was not provided. Additionally, the definition of the eligible sample was unclear.
- Analysis 2 - Comparisons of estimates to external totals: Differences were found between PIAAC estimates (using final weights) and census 2010 estimates of percent unemployed by region. In 13 of the 23 regions, the PIAAC unemployment rate was lower than that of the census estimate, which may be due to the possibility that unemployed or those who concealed their unemployment status categorically refused to take part in the survey, suggesting possible nonresponse bias.
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the raking dimensions and literacy scores was 0.35 ( 0.34 for numeracy), which was below the average across countries. That is, weighting adjustments were not as effective in reducing bias, as compared to other countries, because of the low correlation between the survey outcomes and the weighting variables.
- Analysis 4 - Comparisons of estimates from alternative weightings: This analysis was not performed using the final weights and proficiency scores.
- Analysis 5 - Analysis of variables collected during data collection: This analysis was not conducted because there were no literacy-related nonrespondents.
- Analysis 6 - Level-of-effort analysis: This analysis was not conducted due to the inability to classify respondents as difficult-to-contact. $99.6 \%$ of the respondents agreed to be interviewed after one follow-up attempt.
- Analysis 7 - Range of bias: This analysis was not performed using the final weights and proficiency scores.


## Data Collection

Based on information provided on QC forms and during monthly QC conference calls, the Russian Federation generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 9.4.2 on interviewer training and Standard 10.9.3 on fieldwork validation.

However, analysis of the data revealed evidence of a range of irregularities related to data collection (see above) affecting a significant proportion of cases, which should have been detected by validation. The fact that they were not detected suggests that validation was not conducted in a sufficiently rigorous manner. Therefore, the Russian Federation failed to meet the adjudication requirements on data collection validation.

The Russian Federation met a reduced requirement on management. Guidelines 8.1.1B and 8.1.2A required weekly meetings between interviewers and supervisors and an interviewersupervisor ratio of 20 or less. For the purpose of data evaluation, countries were considered to have met the standard if the meetings between interviewers and supervisors were held every other week and the interviewer-supervisor ratio was 30 or less. The Russian Federation reported that meetings between their supervisors and interviewers occurred every other week.

## Instrument Data Quality

## Translation

To the best of the Consortium's knowledge, the Russian Federation followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for background questionnaire materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, the Russian Federation followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
g) Core items: 94.0\%
h) Literacy Items: 86.7\%
i) Numeracy Items: 91.5\%
- Scoring reliability of paper-based national booklets
j) Core items: 100\%

[^27]k) Literacy Items: 100\%
l) Numeracy Items: 100\%

## Assessment Data

Overall, $99.1 \%$ of respondents who completed the background questionnaire (BQ) went on to take some cognitive assessment in either computer or paper format. In the Russian Federation, $66.5 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $33.4 \%$ took the paper-based assessment. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paperbased form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In the Russian Federation, 15.7\% of respondents who reported having some computer experience refused the computer-based assessment and took the paper-based assessment. An additional $2.8 \%$ of those who reported having some computer experience failed the ICT Core and took the paper-based assessment. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the paper-based assessment.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, the Russian Federation followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## Background Questionnaire Data

Background data were of very high quality for the Russian Federation. If a respondent started the interview, the likelihood that she/he provided data is at a level of $100 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In the Russian Federation, about $81.6 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $5.9 \%$ reported income in broad categories (4.2\% across countries). If a respondent decided to break off the interview, the interviewer was able to
collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In the Russian Federation, we observed $0.0 \%$ of cases with breakoffs.

## Item Non-Response

3) Overall, the average proportions of non-response (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In the Russian Federation, these percentages were $11.6 \%$ for Literacy and $7.8 \%$ for Numeracy. Overall for computer-based items, the level of non-response was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computer-based items in the Russian Federation, the percentage of non-response for Literacy was $12.2 \%$, for Numeracy it was $7.3 \%$, and for PSTRE it was $0.0 \%$.

## Data Adjudication Summary

As noted above analysis of the data from the Russian Federation revealed evidence of irregularities affecting a significant proportion of cases that were not picked up by validation. As a consequence, the Russian Federation failed to meet the adjudication requirements on data collection validation.

The TAG recommended and the OECD and Russian Federation agreed to remove from the database some 1220 cases that were determined to not accurately reflect on the true proficiencies of respondents. Three criteria were used: very rapid response times, duplicate cases, and abnormal response patterns. Applying these criteria led to the exclusion of data from the 8 most prolific interviewers, which resulted in the removal of all cases from the Moscow municipal area. The remaining data met the minimum requirements for psychometric modelling and were subsequently scaled and weighted to represent the 16-65 year old population excluding residents of the Moscow region. .

The criteria for the removal of the most egregious cases relating to response time and duplication applied only to respondents assessed using CBA. Thus the number of potential cases not accurately representing the proficiency or the background variables of other respondents could not be fully evaluated. If such cases remain in the database it is likely we would observe reduced relationships between proficiency and background variables. For this reason, the TAG noted that, while the application of the three criteria would be likely to improve the fit and coherence of the data base, "the deficiencies associated with the Russian data can neither be completely eradicated nor the accuracy of the data fully restored". As a result, the Russian Federation received a Caution for Instrument Data Quality.

# A Proposal to Improve Data Quality by Filtering Incongruent Cases from the Most Recent Russian Database 

Prepared by ETS, August 2013

## Summary Statement unanimously supported by TAG:

The delivery of the Russian PIAAC data lacked timely evidential validity during sampling, data collection and database preparation which severely hampered the consortium's ability to validate the Russian data. In addition, a substantial number of cases were identified during the quality control processes that do not accurately reflect the true proficiencies of respondents. These respondents had implausible response times, duplicate cases, and aberrant response patterns. As a result, it was recommended and approved by the TAG and the OECD that these identifiable cases be dropped from the database. Moreover, it was recognized by the TAG that while the deficiencies associated with the Russian data can neither be completely eradicated nor the accuracy of the data fully restored, the removal of the three groups of respondents identified through the criteria suggested by the consortium will significantly improve the reliability and comparability of the Russian database.

## Adjudication_RussianFederation_2013 09_DRAFT.DOCXContext

As requested by the OECD, ETS convened a virtual TAG meeting on July 29 to review and discuss quality issues surrounding the Russian data based on in depth analyses of the most recent database. There was unanimous agreement among the participating TAG members that the Russian data lacked sufficient quality with regards to reliability, validity and comparability. The major reasons for the poor overall quality of the data were identified as:

1) insufficient or untimely information provided to the consortium around sampling and survey operations undermined the evidential validity of the data;
2) a substantial number of respondents could not have read and answered the literacy and numeracy items correctly in the time-interval logged by the computer platform. More than 400 respondents were found to have an average time per item below 10 seconds, which is insufficient to process the sometimes extensive reading and stimulus material presented in the PIAAC tasks;
3) other quality control checks performed by the consortium resulted in the identification of a number of duplicated cases - 46 of these with responses and timing data that match exactly with other cases;
4) respondent data provided by the most prolific 8 interviewers are not consistent with other respondents in Russia; and,
5) a substantial number of items do not fit the common latent skill based psychometric model within the Russian data, and also do not fit the aggregate international database. These findings contradict the field test results, where such deviations were not observed, and also are incongruent with the PIAAC main test data from the Russian speaking sample from Estonia.

## Rationale

Without knowing exactly what was done during sampling, survey administration, scoring and preparing the database, the inherent deficiencies observed in the data cannot be completely addressed without a full audit of the sampling and survey procedures. And, even if a full audit were feasible at this time it is unlikely that we will fully understand everything that has contributed to the incongruence in the Russian data.

However, it appears that the consortium can offer a proposal that will improve the quality of the Russian data by filtering out a significant proportion of the incongruent cases. Our suggestion is based on removing those cases that are identified as belonging to incongruent groups. These cases can be identified by applying a set of criteria that do not take into account the performance on the cognitive items. The consortium expects that applying these criteria will increase the coherence and comparability of the Russian national data as well as the fit of these data to the international database that forms the basis of the PIAAC.

## Proposal for Salvaging the Majority of the Russian Data

While it has to be understood that procedure proposed below will not fully remediate the deficiencies present in the Russian database, it will provide the OECD with a strategy that helps to salvage more than $70 \%$ of the existing data. After careful analyses of the existing database, we suggest three criteria be applied to increase reliability and comparability of the Russian data. These include:

1) Drop all duplicate cases that have been identified. Duplicate cases involve respondents with exact same responses to items, the exact same response times, and the same number of actions. These duplicate cases are impossible to obtain without errors introduced by some form of intervention. These duplicated response patterns should be eliminated from the data as they do not represent the skills of two independent respondents.
2) Drop all cases with an average response time per item less than 10 seconds. It is nearly impossible to meaningfully respond to any open-ended questions involving multiple paragraphs in less than 10 seconds. Overall, the average response time for the Russian database is reduced compared to other countries participating in PIAAC (see Figures 1 and 2 below). We believe these very fast responses are best understood as being not representative of the respondents' skills. In part this understanding is based on our analyses of the reading components data with proficient readers and the time needed to respond to each of three components.
3) Drop all cases collected by the "most prolific 8 interviewers". This group was identified not based on performance or other characteristics, but only on the fact that these

8 interviewers each provided many more cases than the other interviewers. Analyses show that these cases are unusually homogeneous and have very different characteristics when compared to other respondents in Russia. Their respondents produced nearly always correct answers on the majority of items and on some items nearly always incorrect responses (even below the level of the respondents interviewed by the remainder of interviewers, see figure 3). Their proportions correct do not resemble the rest of Russian data, and often contradict each other. They were nearly always incorrect on some of the easy items and nearly always correct on some of the very difficult items, which typically reflect erratic responding not related to the underlying skills. In contrast, most of the other respondents in the Russian database and in other countries show a systematic pattern between difficulty of the item and the skill of the respondent. These response patterns contribute to the poor fit of the measurement model and, therefore, do not represent true skills of respondents. In contrast, the respondents from the remaining interviewers show high congruence with the Russian speaking sample collected in Estonia (see figure 4), and exhibit a similar association when comparing these results in other pairs of countries (Figure 5).

In total, there are between 1400 and 1500 cases identified by these three criteria that should be dropped from the database because they are not representative of the true skills of respondents, and do not adequately reflect the distribution of the skills in the country. The removal of these cases together with proper weighting of remaining cases should increase the overall reliability and comparability of Russian data.


Figure 1: The unit of time is in minute for respondent who took Literacy module.

Cumulative distribution of mean response time


Figure 2: Mean item response time was calculated for those who took either Literacy or Numeracy or both core CBA items and/or CBA modules.


Figure 3: Eight out of 167 interviewers collected 1033 out of 5069 respondents. Two sets of P+ were calculated based on the 1033 cases and 4036 cases. Preliminary weights and standardized path weights for the CBA items were used. Above plots include both literacy and numeracy items. A very strong interaction of interviewers by $\mathrm{P}+$ can be recognized that indicates that the data from the 8 most prolific interviewers does not align with the item $\mathrm{P}+$ measures found in the remainder of the sample.


Figure 4: About 1400 of Russian speaking Estonians participated in the PIAAC survey in Estonia. The percent correct ( $\mathrm{P}+$ ) for this sample was compared against $\mathrm{P}+$ of 4036 cases who were not associated with the 8 most prolific interviewers. The above plot includes both literacy and numeracy items. It can be seen that a very strong correlation of item P+ measures exists across the two samples.


Figure 5: This plot is based on the $\mathrm{P}+$ of Finland and USA and shows a very typical correlation of difficulty measures across countries. Despite of substantial differences in proficiency means of these two countries, the P+s have a very high correlation. The above plot includes both literacy and numeracy items.

# A Note to the TAG regarding the outcomes of the process to improve the reliability, validity and comparability of data from the Russian Federation 

OECD, September 2013

## Introduction

At its meeting of July 29, the TAG reviewed the Russian data from PIAAC. At this meeting, the TAG concluded that:

The delivery of the Russian PIAAC data lacked timely evidential validity during sampling, data collection and database preparation, and severely hampered the consortium's ability to validate the Russian data. In addition, a substantial number of cases were identified during the quality control processes that do not accurately reflect the true proficiencies of respondents. These respondents had implausible response times, duplicate cases, and aberrant response patterns. As a result, it was recommended and approved by the TAG and the OECD that these identifiable cases be dropped from the database. Moreover, it was recognized by the TAG that while the deficiencies associated with the Russian data can neither be completely eradicated nor the accuracy of the data fully restored, the removal of the three groups of respondents identified through the criteria suggested by the consortium will significantly improve the reliability and comparability of the Russian database.

The TAG helped establish this proposal to improve the fit of these data to the international database. This involved removing cases that were judged to belonging to incongruent groups from the data base. It is important to note that the groups in question were to be defined by applying a set of criteria that did not take into account performance on the cognitive items or the location where the interviewers collected the data. Removal of these groups of cases from the data base was expected to increase the coherence and comparability of the Russian national data as well as the fit of these data to the international database.

This proposal was implemented and the following groups of cases were excluded from the database:

1) All duplicate cases identified. These were cases involving respondents with identical responses to items, response times, and number of actions to completion.
2) All cases with an average response time per item less than 10 seconds. The 10 second criteria was chosen because it represents a set of cases with severely deviating response times; approximately $1 / 6^{\text {th }}$ of the average response time per item observed for the other participating countries. Very rapid responses are best understood as being not representative of the respondents' skills (e.g. Wise \& DeMars, 2005).
3) All cases collected by the most prolific 8 interviewers. The cases collected by these interviewers were unusually homogeneous and had very different characteristics compared to other respondents in Russia.

In total, some 1220 cases identified by the above three criteria were dropped from the Russian data base. The exclusion of the aberrant data from the 8 most prolific interviewers resulted in the removal of all cases that were identified by the Russian national PIAAC team as coming from the Moscow region. The final Russian data set is therefore representative of the Russian resident population aged 16-65, excluding those residing in the Moscow metropolitan area. The weighting procedures applied to the remaining cases assumed duplicated cases are random and rapid responders are not related to any of the background variables.

As a consequence of the removal of the aberrant cases, the fit of the Russian data to international item parameters was improved. The statistical properties of the sample showed more regularities, and the difficulties of the PIAAC items was more in line with the international sample, as well as with the sample taking the test in Russian collected as part of the population survey in Estonia.

Analysis of the resulting data indicates that the relationships between proficiency and the background variables usually associated with proficiency are considerably weaker in Russia than in other countries. However, the Russian PIAAC team has reviewed this and believes that it reflects particularities of the Russian society and economy.

The PIAAC adjudication process for the Russian data was reinitiated by first reviewing the cases that were dropped from the sample. Data collection validation (rechecks) is critical to data validity; it is the most important quality control feature of household data collection. Analysis of the dropped data revealed evidence that validation was not conducted in a manner that would detect possible falsification. Therefore, the Russian Federation failed to meet the adjudication requirements on data collection validation. Russia is the only country failing these requirements.

In addition, the Russian Federation sample failed to meet the PIAAC requirements for sample efficiency. The overall design effects are substantial mainly because the sample involves a high level of clustering in the sample. For example, the overall design effect for literacy is 15.77 (other Round 1 country design effects range from 0.80 to 3.81 ), and the effective sample size is 247 (the effective sample size for other Round 1 countries range from 1,666 to 7,848). The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, was computed as the number of cases with plausible values divided by the overall design effect for literacy. Russia is the only country failing these requirements.

The weighted response rate is equal to $52 \%$. The correlation between weighting variables and outcome statistics was only 0.35 (other Round 1 countries correlations ranged from 0.37 to 0.70 ) indicating that weighting was not as effective in reducing bias as compared to other countries. However, the overall impact of nonresponse bias on the outcome statistics
is unknown since the Russian Federation has not yet completed the required nonresponse bias analysis (as of September 20 ${ }^{\text {th }}$ ).

## Release of Russian Data

The OECD proposes to release the Russian data. Readers will be informed that the estimates for the Russian Federation relate to residents of the Russian Federation excluding Moscow in the following way:

Results for the Russian Federation are included only in the data tables in the Annex to Chapter 2 of the report due to the timing of the processing of the Russian data.

The data from the Russian Federation is preliminary and may be subject to change. Readers should note that the sample for the Russian Federation does not include the population of the Moscow municipal area. The data published, therefore, do not represent the entire resident population aged 16-65 years in Russia but rather the population of Russia excluding the population residing in the Moscow municipal area.

More detailed information regarding the data from the Russian Federation as well as that of other countries can be found in the Technical Report of the Survey of Adult Skills.

Access to data from the Russian Federation will also be provided through the PIAAC Data Explorer and in in the form of a Public Use File.

The documentation provided in the Technical Report about the data from the Russian Federation will be the same as that provided for other countries. The public will have access to a full adjudication report covering compliance with the Technical Standards and Guidelines as well as information on process undertaken to improve the validity, reliability and comparability of the data as described above.

Members of the TAG are asked to:

- Establish that the recommendations from its meeting on 29 July have been appropriately implemented
- Agree that the note as stated above that will be included in the international report to qualify the data from the Russian Federation.


# The Slovak Republic 

## Sampling

The Slovak Republic followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. All QC materials were completed fully.

- Sampling plan: No issues
- Sample selection
o Home office: No issues
o In field: Not applicable
- Sample weighting: The Consortium followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights for the Slovak Republic. An unknown eligibility adjustment was not needed because there were no inaccessible cases with unknown whereabouts.
- Sampling error: The Slovak Republic's design effect due to unequal weights is 1.23 for a sample size of 5,723 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 4,236 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (1.35). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. The Slovak Republic's sample design involved an equal probability sample. Variation in the weights was added through nonresponse and calibration adjustments, although the Consortium followed standard procedures to balance bias and variance.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $0.07 \%$ (undocumented immigrants).
o Data collection: The weighted percentage of cases excluded because they are inaccessible was 4.9\%.
- Weighted response rate: $66 \%$
- Nonresponse bias analysis
o Basic: The Slovak Republic performed all required analyses. For required variables education and employment, PSU-level variables were used. The lowest weighted BQ response rate was in Bratislava region and other big cities (i.e., size of municipality more than 100,000 inhabitants). Moreover, females were more likely to respond as compared to males. PSUs with a lower employment rate and lower education degree achieved higher weighted BQ response rates. The classification tree analysis indicated that the response status was influenced by respondent's region, size of municipality, age cross gender, gender, and age category. Bratislavsky region had the highest nonresponse rate among all regions in the Slovak Republic (with higher ratio of middle-aged males). Large and medium-sized municipalities showed lower response-rate in comparison to small municipalities (except for Bratislavsky region). More nonrespondents were in the
middle category of persons aged 30-50 (seldom younger). The logistic regression showed significant relationships between response propensity and age, gender, region, size of municipality, employment, urbanicity, and education. All but education and employment were used in weighting.
o Extended: The Slovak Republic performed all required analyses, with questions pending on Analyses 4 and 6.
- Analysis 1 - Comparisons of estimates before and after weighting: Bias in age, gender, region, municipality size, urbanicity, employment, and education was reduced through the weighting process.
- Analysis 2 - Comparisons of estimates to external totals: The PIAAC estimates (calibrated using the Census 2011 control totals) of age, gender, region, and urbanicity were generally in line with the registry data. Some inconsistencies were found for the size of municipality. However, the Census data were deemed more reliable. It is the responsibility of each person to register with the local authorities when changing one's permanent or temporary residence, but this is rarely done in reality.
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was below average at 0.33 ( 0.32 for numeracy). The correlation between the raking dimensions and literacy scores was below average at 0.33 ( 0.34 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.38 ( 0.38 for numeracy), which was below the average across countries. That is, weighting adjustments were not as effective in reducing bias, as compared to other countries, because of the low correlation between the survey outcomes and the weighting variables. However, Slovak had a relatively high response rate (66\%), as compared to other countries, implying that the potential for bias could be lower in Slovak as compared to countries with lower response rates.
- Analysis 4 - Comparisons of estimates from alternative weightings: To compute alternative weights, the final weighted data were recalibrated to registry data. Percentages (rather than proficiency estimates) were incorrectly provided for this analysis.
- Analysis 5 - Analysis of variables collected during data collection: There were no significant differences between the literacy-related nonrespondents ( $\mathrm{n}=22$ ) and nonliteracy-related nonrespondents ( $\mathrm{n}=5701$ ) in terms of age, gender, region, size of municipality, urbanicity, employment, and education. To glean additional information on the nonrespondents, the Slovak Republic also examined its registry information and found that the highest proportions of nonrespondents were middle-aged males across all regions. Moreover, the ratio of older women aged 56-65 was higher in big cities compared to the same age category of males.
- Analysis 6 - Level-of-effort analysis: The Slovak Republic defined level-of-effort by the number of visits required for the final disposition code that was obtained (early respondents were those needing two or less visits to
close the case, late respondents were those needing three or more visits to close the case). There were significant differences in the distribution of respondents' age, region, size of municipality, urbanicity, employment, and education. Since proficiency estimates were not provided, it is not possible to tell if high-level-of-effort respondents achieved higher or lower scores than low-level-of-effort respondents.
- Analysis 7 - Range of bias: The Literacy scores’ first plausible value was used to compute the range of scores within the responding sample and to predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 97 and the maximum score was 390 , for a range of 293. Using weighting adjustments cells, and with an extreme assumption that nonrespondents would all score at the 10th percentile within each weighting cell, and at the other extreme they would all score at the 90th percentile within each weighting cell, the predicted maximum range of the mean was computed to be 37 , indicating a minimal potential for bias in outcome statistics. This is a reflection of the relatively high response rate (66\%) in Slovak. That is, as a result of achieving a higher response rate, the potential for the remaining bias is low even though the weighting adjustments were not as effective, as compared to other countries, in reducing bias in outcome statistics.


## Data collection

The Slovak Republic met a reduced requirement on validation. Standard 10.9.3 called for the validation of $10 \%$ of cases for all ( $100 \%$ ) interviewers, selected randomly across all dispositions. For the purpose of data evaluation, countries were considered to have met the standard if they had validated at least $7 \%$ of cases for at least $96 \%$ of its interviewers, selected randomly, across all dispositions. The Slovak Republic reached the $7 \%$ threshold for $97 \%$ of its interviewers.

The Slovak Republic also met a reduced requirement on training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the Consortium. Slovak interviewers were provided with 20 hours of in-person training.

The Slovak Republic also met a reduced requirement on management. Guidelines 8.1.1B and 8.1.2A required weekly meetings between interviewers and supervisors and an interviewersupervisor ratio of 20 or less. For the purpose of data evaluation, countries were considered to have met the standard if the meetings between interviewers and supervisors were held every other week and the interviewer-supervisor ratio was 30 or less. Meetings occurred every other week and supervisor assignments included 12 to 16 interviewers.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, the Slovak Republic followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking
cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, the Slovak Republic followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 99.6\%
o Literacy Items: 95.0\%
o Numeracy Items: 96.1\%
- Scoring reliability of paper-based national booklets
o Core items: 100.0\%
o Literacy Items: 100.0\%
o Numeracy Items: 100.0\%


## Assessment data

Overall, $98.9 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In the Slovak Republic, $63.2 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $36.2 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computerbased form of the assessment and 23.9\% took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In the Slovak Republic, $15.7 \%$ of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $2.7 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and

[^28]Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, the Slovak Republic followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for the Slovak Republic. If a respondent started the interview, the likelihood that she/he provided data is at a level above 99\% with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In the Slovak Republic, about $84.5 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $7.0 \%$ reported income in broad categories (4.2\% across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In the Slovak Republic, we observed $0.3 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In the Slovak Republic, these percentages were $3.7 \%$ for Literacy and $3.3 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computer-based items in the Slovak Republic, the percentage of nonresponse for Literacy was $5.4 \%$, for Numeracy it was $3.5 \%$, and for PSTRE it was $0.0 \%$.

## Spain

## Sampling

Spain followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. Except for the End of data collection (SM-1) form that was not possible to generate, all QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
o Home office: No issues
o In field: Not applicable
- Sample weighting: Spain followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create its weights.
o 3,266 of the 14,400 released cases were untraceable (disposition code 24 or 25 ).
0 Large variation in sample-person base weights (55.8529-12947.5). Spain needed to respect the minimum sample size required for each community.
- Sampling error: Spain's design effect due to unequal weights is 1.21 for a sample size of 6,055 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 4,710 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (1.27). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. Spain's sample design involved an unequal probability sample. Further variation in the weights was added through nonresponse and calibration adjustments, although they followed standard procedures to balance bias and variance.


## Coverage and nonresponse bias

- Population coverage
o Frame: Spain's frame did not have exclusions of the target population.
o Data collection: The weighted percentage of cases excluded because they are inaccessible was 5\%.
- Weighted response rate: $48 \%$
- Nonresponse bias analysis
o Basic: Spain performed all required analyses. Only base weights were used for all the analyses. Nonresponse is higher for age group 26-35, lower secondary level of education, nationality (ESP), and population in the third quartile of unemployment rate.
o Extended: Spain performed all required analyses. The extended analysis provides evidence that bias was reduced through the weighting adjustments.
- Analysis 1 - Comparisons of estimates before and after weighting: gender, age, degree of urbanization and employment rate showed reduction in bias through the weighting adjustments. These variables were used in weighting.
- Analysis 2 - Comparisons of estimates to external totals: significant differences for "Full-time employed" and "other" were found between

PIAAC estimates (using final weights) and activity status from LFS (other categories: part-time employed, unemployed, pupil/student, apprentice/internship, retired/early retirement, permanently disabled, in compulsory military or community service, domestic work; no estimate, and therefore no comparison was done for the external source of apprentice/internship). This variable was not included in weighting. Definition is different in both surveys and it affects its comparison.

- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was above average at 0.53 ( 0.55 for numeracy). The correlation between the raking dimensions and literacy scores was above average at 0.59 ( 0.60 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.62 ( 0.62 for numeracy), which was above the average across countries. Although the response rate for Spain was very low (48\%), this analysis shows that weighting adjustments were effective in reducing NRB because of the high correlation between the survey outcomes and the weighting variables. However, data users need to be cautioned that the analysis is based on correlations between the responding sample ( $48 \%$ of the selected sample) and the weighting variables. That is, the analysis assumes that same correlations exist for the remaining sampled cases that have no scores ( $52 \%$ of the sampled cases).
- Analysis 4 - Comparisons of estimates from alternative weightings: To calculate new weights, Spain used the first plausible variable for literacy and numeracy as a proficiency measure, and re-raked the final weights using different categories of the same raking dimensions used in weighting (sex by age, and education by region) plus activity variable (described in Analysis 2). No differences were found.
- Analysis 5 - Analysis of variables collected during data collection: Spain compared the LR groups with the distribution of other nonrespondents. They looked at the variables used in weighting: age, gender, nationality, education, degree of urbanization and region. Spain's conclusion is that they "found significant differences in the variables considered. The groups in which the percentage of LR is greater than the comparison groups are: people over 56 years old, foreign people, and illiterate and Primary education levels." However, Spain's weighting procedures separated the LRNR cases, therefore treating them appropriately. Spain did not perform the non-interview report data.
- Analysis 6 - Level-of-effort analysis: Spain compared the number of attempts to contact a respondent. Two analyses were performed: a descriptive analysis of the number of attempts with the variables age and gender, and a regression analysis to compare the mean score of literacy and numeracy given the number of attempts (1-6 vs. more than 6). There are no significant differences between the groups. Among the completed cases, it has shown that six attempts were enough to get most of the respondents.
- Analysis 7 - Range of bias: The Literacy scores’ first plausible value was used to compute the range of scores within the responding sample and to predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 64 and the maximum score was 394 , for a range of 330 . Using weighting adjustment cells, and with an extreme assumption that nonrespondents would all score at the $10^{\text {th }}$ percentile within each weighting cell, and at the other extreme they would all score at the $90^{\text {th }}$ percentile within each weighting cell, the predicted maximum range of the mean was computed to be 63, indicating a low potential for bias in outcome statistics. This is a reflection of an effective nonresponse adjustment strategy carried out during weighting. That is, even though Spain's response rate was very low (48\%), the effective nonresponse adjustment weighting reduced the potential bias in the outcome statistics to a low level. However, data users need to be cautioned that the analysis is based on assumptions about the range of proficiency scores for sampled cases that have no scores ( $52 \%$ of the sample).
- Other - A significant test of the null hypothesis is that the probability of every dichotomous variable generated from the BQ variables does not depend on the nonresponse status. Variables included in the analysis were: highest education level and reading habits, from the LFS and Survey on Cultural Habits and Practices in Spain 2010-2011. These two surveys differ from PIAAC data collection and methodology, so results should be compared with caution. Most of the differences appear not to be significant; significant differences for "Full-time employed" and "In retirement or early retirement and other" agree with results obtained in Analysis 2. Spain's conclusion is that "the results suggest that nonresponse is not conditional on BQ variables."

Spain submitted an additional Extended Nonresponse Bias analysis (performed by Ricardo Mora from Universidad Carlos III Madrid). The analyses are different from those established by the consortium. Results show the same conclusions as the Extended NRBA conducted by the PIAAC team.

## Data collection

Based on information provided on QC forms and during monthly QC conference calls, Spain generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 10.9.3 on fieldwork validation and Guidelines 8.1.1B and 8.1.2A on management of field staff.

Spain met a reduced requirement on interviewer training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the Consortium. Spanish interviewers were provided with an average of 18 hours of in-person training.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Spain followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Spain followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3 .

- Coding agreement of scoring anchor booklets
o Core items: 97.7\%
o Literacy Items: 96.3\%
o Numeracy Items: 95.7\%
- Scoring reliability of paper-based national booklets
o Core items: 100.0\%
o Literacy Items: 99.9\%
o Numeracy Items: 100.0\%


## Assessment data

Overall, $97.3 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Spain, 66.0\% of the respondents who completed the BQ took the computer-based cognitive assessment, while $33.1 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Spain, 13.0\% of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $7.1 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

[^29]The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Spain followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Spain. If a respondent started the interview, the likelihood that she/he provided data is at a level above $99 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Spain, about $84.5 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $4.4 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Spain, we observed $0.8 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Spain, these percentages were 14.5\% for Literacy and $9.8 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computer-based items in Spain, the percentage of nonresponse for Literacy was $11.3 \%$ and for Numeracy it was $7.6 \%$. Spain did not administer the assessment for PSTRE.

## Sweden

## Sampling

Sweden followed the technical standards and guidelines (TSG) related to sampling and weighting. All QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample Selection
o Home office: No issues
o In field: Not applicable
- Sample weighting: Sweden's weighting procedure is different from what is described in PIAAC Weighting and Variance Estimation plan. They did not conduct a separate adjustment for nonresponse and its unknown eligibility adjustment is the last step of weighting. However, its procedure adheres to the PIAAC standards.
- Sampling error: Sweden’s design effect due to unequal weights is 1.13 for a sample size of 4,469 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 4,469 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (0.80). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. The effective sample size is set equal to the actual number of cases with plausible values since the overall design effect is less than 1.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was less than $1 \%$ (undocumented immigrants).
o Data collection: The weighted percentage of cases excluded because they are inaccessible was $0 \%$.
- Weighted response rate: $45 \%$
- Nonresponse bias analysis
o Basic: Sweden performed all required analyses. Its analysis showed significantly lower response propensities for people with low education, low income, not employed, age 26-35, certain occupations, and several regions. Education, region, employment, age, occupation, income, sex, country of birth, and year of immigration were used in weighting adjustments. Although the last three variables did not show significant relationship to response propensities, they were included in the weighting adjustment because it is known that they are related to proficiency and identify important subgroups.
o Extended: Sweden performed all of the required analyses except the $5^{\text {th }}$ analysis below. The extended analysis provides evidence that bias was reduced through the weighting adjustments.
- Analysis 1 - Comparisons of estimates before and after weighting: Bias in BQ education, employment status, and country of birth was reduced through the weighting process as similar register variables were used in weighting adjustments. Bias for employment benefits and social benefits was also reduced through the weighting process. Sweden also analyzed Skill use work - negotiating with people, Skill use everyday life - literacy -read books, literacy score, and numeracy score. It is hard to tell if bias was reduced for these variables since they are not available for nonrespondents.
- Analysis 2 - Comparisons of estimates to external totals: PIAAC estimates (using final weights) were compared to both Labor Force Survey (LFS) 2011 and Census 2011 estimates. The differences between them for education, country of birth, region, occupation, and economic activity are in most cases not significant. There are some significant differences for employment status, probably caused by the different age coverage (LFS: 16-64- year- olds, Census: 15-64- year- olds) and definitions of employment status.
- Analysis 3 - Correlation of auxiliary variables and proficiency estimates: Sweden did not perform a separate nonresponse adjustment in weighting. The correlation between literacy scores and the raking dimensions was 0.7 ( 0.7 for numeracy), which was the highest across countries. Although Sweden's response rate was very low (45\%), this analysis shows that weighting adjustments were very effective in reducing NRB because of the high correlation between the survey outcomes and the weighting variables. However, data users need to be cautioned that the analysis is based on correlations between the responding sample ( $45 \%$ of the selected sample) and the weighting variables. That is, the analysis assumes that same correlations exist for the remaining sampled cases that have no scores ( $55 \%$ of sampled cases).
- Analysis 4 - Comparisons of estimates from alternative weightings: The alternative weights were created by calibrating the weights using fewer and different cells (specifically, occupation and education by year of immigration were dropped from the calibration cell, and broader categories for country of birth were used). Sweden found only minor differences in the mean literacy score, distribution of education, employment status, and country of birth before and after re-weighting.
- Analysis 5 - Analysis of variables collected during data collection: Sweden has not finished this analysis yet. Bias was reduced by the LRNR weighting adjustment.
- Analysis 6 - Level-of-effort analysis: Sweden compared mean proficiency scores (both literacy and numeracy), as well as sex, age, education, employment status and country of birth, between low level-of-effort cases (1-3 contacts), medium level-of-effort cases (4-10 contacts) and high
level-of-effort cases (11+ contacts). There are no significant differences in the proficiency scores between easy, medium, and hard cases. There is a significant difference in the age group 56-65 years and people who are employed. People who are older or not employed are overrepresented among easy cases and underrepresented among hard cases. One might suspect that this would lead to lower proficiency score among easy cases than hard cases. There is no such effect though.
- Analysis 7 - Range of bias: The Literacy scores’ first plausible value was used to compute the range of scores within the responding sample and to predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 24 and the maximum score was 412 , for a range of 389 . Using weighting adjustments cells, and with an extreme assumption that nonrespondents would all score at the 10th percentile within each weighting cell, and at the other extreme they would all score at the 90th percentile within each weighting cell, the predicted maximum range of the mean was computed to be 54 , indicating a low potential for bias in outcome statistics. This is a reflection of an effective nonresponse adjustment strategy carried out during weighting. That is, even though Sweden's response rate was very low (45\%), the effective nonresponse adjustment weighting reduced the potential bias in the outcome statistics to a low level. However, data users need to be cautioned that the analysis is based on assumptions about the range of proficiency scores for sampled cases that have no scores ( $55 \%$ of the sample).


## Data collection

Sweden partially met a reduced requirement on validation. Standard 10.9.3 called for the validation of $10 \%$ of cases for all ( $100 \%$ ) interviewers, selected randomly across all dispositions. For the purpose of data evaluation, countries were considered to have met the standard if they had validated at least $7 \%$ of cases for at least $96 \%$ of its interviewers, selected randomly, across all dispositions. Sweden reached the $7 \%$ threshold for $91 \%$ of its interviewers. Nine percent of interviewers were validated at less than the $7 \%$ level.

Sweden also partially met a reduced requirement on training. For the purpose of data evaluation, countries were considered to have met the standard if they provided a minimum of 15 hours of training instead of the 30 hours required by the training programme provided by the Consortium. About half of Sweden's interviewers were provided with more than 15 hours; however, about half were provided with significantly fewer hours.

Sweden met a reduced requirement on management. Guidelines 8.1.1B and 8.1.2A required weekly meetings between interviewers and supervisors and an interviewer-supervisor ratio of 20 or less. For the purpose of data evaluation, countries were considered to have met the standard if the meetings between interviewers and supervisors were held every other week and the interviewer-supervisor ratio was 30 or less. Sweden's supervisor assignments included 23 interviewers.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, Sweden followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, Sweden followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
o Core items: 96.5\%
o Literacy Items: 98.7\%
o Numeracy Items: 96.8\%
- Scoring reliability of paper-based national booklets
o Core items: 99.9\%
o Literacy Items: 99.8\%
o Numeracy Items: 99.9\%


## Assessment data

Overall, $96.9 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In Sweden, $90.1 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $9.4 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computer-based form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Sweden, $5.2 \%$ of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $2.8 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

[^30]The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, Sweden followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for Sweden. If a respondent started the interview, the likelihood that she/he provided data is at a level of $100 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Sweden, about $96.7 \%$ of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $1.1 \%$ reported income in broad categories ( $4.2 \%$ across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Sweden, we observed $0.0 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In Sweden, these percentages were $13.5 \%$ for Literacy and $9.1 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computerbased items in Sweden, the percentage of nonresponse for Literacy was $6.2 \%$, for Numeracy it was $4.3 \%$, and for PSTRE it was $0.3 \%$.

## The United States

## Sampling

The United States followed the technical standards and guidelines (TSG) related to sampling and weighting. All QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
o Home office: No issues
o In field: Not applicable
- Sample weighting: The United States followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights.
- Sampling error: The United States’ DEFF due to unequal weights is 1.27 for a sample size of 5,010 . The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 2,211 . The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy (2.21). The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. The United States’ sample design involved an equal probability sample of dwelling units. Further variation in the weights was added through within-household sampling, nonresponse and calibration adjustments, although the United States followed standard procedures to balance bias and variance.


## Coverage and nonresponse bias

- Population coverage
o Frame: The estimated percentage of the target population excluded from the frame was $0.08 \%$ (people in a gated community).
o Data collection: The weighted percentage of cases excluded because they were inaccessible was 0\%.
- Weighted response rate: 70\%.
- Nonresponse bias analysis
o Basic: The United States performed all required analyses. At the screener level, only the percentage of the population below $150 \%$ of the poverty level was significant. This indicates that there are fewer nonrespondents in the higher poverty levels. At the BQ level, the NRBA found the following variables that were significant at the $\alpha=0.05$ level: region; percent of the population below $150 \%$ of the poverty level; percent of the population age 18-64 that is employed; age category; indicator for children under age 16 in household; and gender. The multivariate analysis identified the lowest response rate for the following characteristics:
- Hispanics age 26 and older,
- With no children in the household,
- Not living in the Northeastern United States,
- Living in segments with unemployment exceeding 4.8 percent, and
- Living in areas (Census tracts) with less than 5.1 percent of the population being linguistically isolated.
The presence of children in the household was a dominant variable in distinguishing response rate groups. In general, younger persons were found to be more available to participate in an in-person household survey, as are those with children ages 16 and younger, and women.
- Since all significant variables in both the screener and BQ analyses were used in the respective weighting adjustments, the potential for nonresponse bias should be reduced by those adjustments.
- One source of undercoverage was the portion of the population that does not have a usual home. This is primarily the homeless population. An attempt was made to correct this minor level of noncoverage (estimated to be less than $1 \%$ ) by including poverty indicators in the nonresponse adjustment. The only other known undercoverage of the population was in a particular segment in the Western region that was selected for the survey but to which our survey staff were not granted access.
o Extended: The analysis was not required since the weighted response rate was greater than or equal to $70 \%$.


## Data collection

Based on information provided on QC forms, the United States generally appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 10.9.3 on fieldwork validation, Standard 9.4.2 on interviewer training and Guidelines 8.1.1B and 8.1.2A on management of field staff.

## Instrument data quality

## Translation

To the best of the Consortium's knowledge, the United States followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for BQ materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification ${ }^{[1]}$ prior to the Field Test and a partial verification ${ }^{[2]}$ prior to the Main Survey.

- Outcome: TSG followed/Passed


## Scoring

To the best of the Consortium's knowledge, the United States followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

[^31]- Coding agreement of scoring anchor booklets
o Core items: 99.1\%
o Literacy Items: 99.5\%
o Numeracy Items: 97.3\%
- Scoring reliability of paper-based national booklets
o Core items: 99.1\%
o Literacy Items: 97.2\%
o Numeracy Items: 98.9\%


## Assessment data

Overall, $98.9 \%$ of respondents who completed the BQ went on to take some cognitive assessment in either computer or paper format. In the United States, $79.9 \%$ of the respondents who completed the BQ took the computer-based cognitive assessment, while $14.9 \%$ took the PBA. Across all countries, $73.5 \%$ of respondents who completed the BQ took the computerbased form of the assessment and $23.9 \%$ took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In the United States, $6.9 \%$ of respondents who reported having some computer experience refused the CBA and took the PBA. An additional $4.3 \%$ of those who reported having some computer experience failed the ICT Core and took the PBA. Overall, across all countries, $11.8 \%$ of respondents who reported computer experience refused to take the assessment on the computer and $4.7 \%$ failed the ICT Core and were therefore routed to the PBA.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

## Coding

To the best of the Consortium's knowledge, the United States followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- Double coding Occupation: Standard met/Passed
- Double coding Industry: Standard met/Passed
- Comparison with Labor Force Survey: Education: Standard met/Passed
- Comparison with Labor Force Survey: Occupation: Standard met/Passed
- Comparison with Labor Force Survey: Industry: Standard met/Passed


## BQ data

Background data were of very high quality for the United States. If a respondent started the interview, the likelihood that she/he provided data is at a level above $95 \%$ with practically only one exception: Income related questions are reported either in exact monetary amounts or in
broad categories. In the United States, about 93.4\% of respondents reported income in exact amounts ( $88.6 \%$ across countries) and about $1.5 \%$ reported income in broad categories (4.2\% across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about $2.0 \%$ cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In the United States, we observed $4.2 \%$ of cases with breakoffs.

## Item nonresponse

Overall, the average proportions of nonresponse (omitted or not reached) for the paper-based items were $10.8 \%$ for Literacy and $7.6 \%$ for Numeracy. In the United States, these percentages were $12.3 \%$ for Literacy and $6.5 \%$ for Numeracy. Overall for computer-based items, the level of nonresponse was $7.2 \%$ for Literacy, $4.9 \%$ for Numeracy, and $0.1 \%$ for PSTRE. For computerbased items in the United States, the percentage of nonresponse for Literacy was $5.3 \%$, for Numeracy it was $3.7 \%$, and for PSTRE it was $0.2 \%$.

Table 7F-4. PIAAC Data Quality Evaluation Table - Sampling

| Country | Sampling |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Sample Design and Selection |  |  | Sample Weighting | Sampling Error (DEF) |  |
|  |  | Sample <br> Selection |  |  |  | ~~ |
|  | Sampling Plan |  |  |  |  |  |
|  | (1.A) | (1.B) | (1.C) | (1.D) | (1.E) |  |
| Australia | P | C-U | C-U | C-PC | 1.6 | 3,061 |
| Austria | P | P | NA | P | 1.09 | 3,561 |
| Canada | P | P | P | P | 2.76 | 7,848 |
| Cyprus ${ }^{2}$ | P | P | P | P | 1.39 | 2,855 |
| Czech <br> Republic | P | C-NC | P | P | 2.88 | 1,725 |
| Denmark | P | P | NA | P | 1.27 | 5,861 |
| England (UK) | P | P | C-PC | P | 1.35 | 2,176 |
| Estonia | P | P | NA | P | 1.04 | 3,785 |
| Finland | P | P | NA | P | 1.05 | 5,464 |
| Flanders (Belgium) | P | P | NA | P | 1.04 | 3,215 |
| France | P | P | NA | P | 1.05 | 6,867 |
| Germany | P | C | NA | P | 1.22 | 2,680 |
| Ireland | P | P | P | P | 1.37 | 2,652 |
| Italy ${ }^{3}$ | P | P | P | P | 1.43 | 1,666 |

P: Pass (relevant requirement completely met)
C: Caution (relevant requirement met to a reasonable extent)
C-A: Caution, approved deviation
C-NC: Caution, did not comply
C-PC: Caution, partial compliance
C-U: Caution, quality level unknown due to country confidentiality restrictions or unavailability of data
F: Fail
${ }^{1}$ The effective sample size is the sample size needed to achieve the same sampling variance as a simple random sample. The effective sample size was computed as the number of cases with plausible values divided by the overall design effect for literacy. The overall design effect incorporates the design effects due to sampling variance (unequal weights, stratification and clustering) and imputation variance. The effective sample size is set equal to the actual number of cases with plausible values for countries where the overall design effect is less than or equal to 1 .
${ }^{2}$ Please refer to notes A and B regarding Cyprus in the Note to Readers section of this report.

Table 7F-4 (cont). PIAAC Data Quality Evaluation Table - Sampling

| Country | Sampling |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Sample Design and Selection |  |  | Sample Weighting | Sampling Error (DEF) |  |
|  |  | Sample <br> Selection |  |  |  | $\text { Effective Sample Size }^{1}$ |
|  | $\begin{gathered} \text { Sampling } \\ \text { Plan } \\ \hline \end{gathered}$ |  |  |  |  |  |
|  | (1.A) | (1.B) | (1.C) | (1.D) | (1.E) |  |
| Japan | P | C-A | NA | P | 1.1 | 3,362 |
| Korea | P | P | P | P | 1.19 | 5,086 |
| Netherlands | P | P | NA | P | 1.1 | 4,635 |
| Northern Ireland (UK) | P | P | C-PC | P | 1.54 | 563 |
| Norway | P | P | NA | P | 1.05 | 4,947 |
| Poland | P | P | NA | C | 1.9 | 6,320 |
| Russian Federation ${ }^{3}$ | C-PC | C-NC | P | P | 2.09 | 247 |
| Slovak <br> Republic | P | P | NA | P | 1.23 | 4,236 |
| Spain | P | P | NA | P | 1.21 | 4,710 |
| Sweden | P | P | NA | P | 1.13 | 4,469 |
| United States | P | P | P | P | 1.27 | 2,211 |

P: Pass (relevant requirement completely met)
C: Caution (relevant requirement met to a reasonable extent)
C-A: Caution, approved deviation
C-NC: Caution, did not comply
C-PC: Caution, partial compliance
C-U: Caution, quality level unknown due to country confidentiality restrictions or unavailability of data
F: Fail
${ }^{3}$ Please refer to the note regarding the Russian Federation in the Note to Readers section of this report.

Table 7F-5. PIAAC Data Quality Evaluation Table - Coverage and Nonresponse Bias)

| Country | Coverage and Nonresponse Bias |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Population Coverage (Exclusions) |  | Weighted Reponses Rate (RR) and Coverage Rate (CR) |  | Nonresponse Bias Analysis (NRBA) |  |  |  |  |  |  |  |
|  | 皆 |  |  |  | $\begin{aligned} & \text { U } \\ & \text { 品 } \end{aligned}$ | Extended ${ }^{1}$ |  |  |  |  |  |  |
|  |  |  |  |  |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|  | (2.A) | (2.B) | (2.C) |  | (2.D) | (2.E) |  |  |  |  |  |  |
| Australia | 3.30\% | NA | 71\% | 69\% | P | NA | NA | NA | NA | NA | NA | NA |
| Austria | 0.60\% | 0.80\% | 53\% | 52\% | $\mathrm{P}^{\mathrm{U}}$ | $\mathrm{P}^{\mathrm{U}}$ | P | $\mathrm{P}^{-2}$ | P | P | $\mathrm{P}^{+}$ | $\mathrm{P}^{-1}$ |
| Canada | 1.80\% | NA | 59\% | 57\% | P | P | P | $\mathrm{P}^{-3}$ | P | P | $\mathrm{P}^{+}$ | $\mathrm{P}^{-1}$ |
| Cyprus ${ }^{2}$ | $<2.0 \%$ | NA | 73\% | 72\% | P | NA | $\mathrm{P}^{\text {C }}$ | $\mathrm{P}^{-3}$ | NA | P | $\mathrm{P}^{+}$ | NA |
| Czech <br> Republic | 1.80\% | NA | 66\% | 65\% | P | $\mathrm{P}^{\text {C }}$ | $\mathrm{P}^{\text {C }}$ | P 2 | C-U | P | $\mathrm{P}^{+}$ | P 2 |
| Denmark | $<0.1 \%$ | 5.00\% | 50\% | 48\% | P | P | $\mathrm{P}^{\text {C }}$ | $\mathrm{P}^{-} 3$ | P | P | $\mathrm{P}^{+}$ | P-4 |
| England (UK) | 2.00\% | NA | 59\% | 58\% | P | P | $\mathrm{P}^{\text {C }}$ | $\mathrm{P}^{-3}$ | C-NC | $\mathrm{P}^{\mathrm{U}}$ | C-U | $\mathrm{P}^{-1}$ |
| Estonia | 2.80\% | 0.60\% | 63\% | 61\% | P | $\mathrm{P}^{\mathrm{U}}$ | P | P 4 | P | P | $\mathrm{P}^{+}$ | P 1 |
| Finland | 0.20\% | 0.50\% | 66\% | 66\% | $\mathrm{P}^{\mathrm{U}}$ | P | P | P 2 | P | P | P | P 1 |
| Flanders (Belgium) | 1.00\% | 4.00\% | 62\% | 59\% | $\mathrm{P}^{\mathrm{U}}$ | $\mathrm{P}^{\mathrm{U}}$ | $\mathrm{P}^{\text {C }}$ | P 4 | P | P | $\mathrm{P}^{+}$ | P 1 |
| France | $<2.6 \%$ | 2.40\% | 67\% | 63\% | $\mathrm{P}^{\mathrm{U}}$ | P | C-NC | P 2 | C-NC | C-NC | C-NC | P 1 |
| Germany | 0.50\% | 2.00\% | 55\% | 54\% | P | P | P | $\mathrm{P}^{-} 2$ | P | P | P | $\mathrm{P}^{-} 2$ |
| Ireland | 0.40\% | NA | 72\% | 72\% | P | NA | $\mathrm{P}^{\text {C }}$ | P 3 | NA | NA | NA | P 2 |
| Italy | 0.8\% ${ }^{3}$ | 1.90\% | 56\% | 54\% | $\mathrm{P}^{\mathrm{U}}$ | $\mathrm{P}^{\mathrm{U}}$ | P | $\mathrm{P}^{-3}$ | $\mathrm{P}^{\text {c }}$ | P | $\mathrm{P}^{+}$ | $\mathrm{P}^{-} 4$ |
| Japan | 2.20\% | 2.80\% | 50\% | 47\% | P | P | $\mathrm{P}^{\mathrm{U}}$ | $\mathrm{P}^{-3}$ | P | P | $\mathrm{P}^{+}$ | $\mathrm{P}^{-} 2$ |

P: Pass (relevant requirement completely met) C: Caution (relevant requirement met to a reasonable extent) C-A: Caution, approved deviation C-NC: Caution, did not comply
C-PC: Caution, partial compliance C-U: Caution, quality level unknown due to country confidentiality restrictions or unavailability of data F: Fail
${ }^{1}$ See explanation on page following the end of this table.
${ }^{2}$ Please refer to notes A and B regarding Cyprus in the Note to Readers section of this report.
${ }^{3}$ Italy's population exclusions was estimated to be $0.8 \%$, however, the estimate does not include the illegal immigrant population. No estimate of the percentage of illegal immigrant population was available.

Table 7F-5. PIAAC Data Quality Evaluation Table - Coverage and Nonresponse Bias

| Country | Coverage and Nonresponse Bias |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Population Coverage (Exclusions) |  | Weighted <br> Reponses <br> Rate (RR) and <br> Coverage <br> Rate (CR) |  | Nonresponse Bias Analysis (NRBA) |  |  |  |  |  |  |  |
|  | 坒 |  |  |  | $\begin{aligned} & \text { U } \\ & \\ & \text { No } \end{aligned}$ | Extended ${ }^{1}$ |  |  |  |  |  |  |
|  |  |  |  |  |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | (2.A) | (2.B) | (2.C) |  | (2.D) | (2.E) |  |  |  |  |  |  |
| Korea | 2.40\% | NA | 75\% | 73\% | P | NA | NA | NA | NA | NA | NA | NA |
| Netherlands | 0.90\% | 1.80\% | 51\% | 50\% | P | P | P | $\begin{aligned} & \hline \mathrm{P}^{-} \\ & 2 \\ & \hline \end{aligned}$ | P | P | $\mathrm{P}^{+}$ | P- 2 |
| Northern Ireland (UK) | 2.00\% | NA | 65\% | 64\% | P | P | $\mathrm{P}^{\mathrm{C}}$ | P 2 | $\begin{aligned} & \hline \mathrm{C}- \\ & \mathrm{NC} \\ & \hline \end{aligned}$ | $\mathrm{P}^{\mathrm{U}}$ | $\begin{aligned} & \hline \mathrm{C}- \\ & \mathrm{U} \end{aligned}$ | P 1 |
| Norway | 0.40\% | 0.40\% | 62\% | 62\% | P | P | $\mathrm{P}^{\text {C }}$ | P 4 | P | P | $\mathrm{P}^{+}$ | P 2 |
| Poland | 0.80\% | 4.20\% | 56\% | 53\% | P | P | $\mathrm{P}^{\mathrm{C}}$ | $\begin{aligned} & \hline \mathrm{P}^{-} \\ & 4 \end{aligned}$ | P | P | $\mathrm{P}^{+}$ | P- |
| Russian <br> Federation ${ }^{4}$ | 1.50\% | NA | 52\% | 51\% | $\mathrm{P}^{\mathrm{U}}$ | $\begin{aligned} & \text { C- } \\ & \text { PC } \end{aligned}$ | $\mathrm{P}^{\mathrm{C}}$ | $\begin{aligned} & \mathrm{P}^{-} \\ & 4 \end{aligned}$ | $\begin{aligned} & \mathrm{C}- \\ & \mathrm{NC} \end{aligned}$ | NA | $\begin{aligned} & \mathrm{C}- \\ & \mathrm{U} \end{aligned}$ | $\begin{aligned} & \mathrm{C}- \\ & \mathrm{NC} \end{aligned}$ |
| Slovak <br> Republic | 0.10\% | 4.90\% | 66\% | 63\% | P | P | P | P 4 | $\begin{aligned} & \mathrm{C}- \\ & \mathrm{PC} \end{aligned}$ | P | $\begin{aligned} & \text { C- } \\ & \text { PC } \end{aligned}$ | P 1 |
| Spain | 0.00\% | 5.00\% | 48\% | 46\% | P | $\mathrm{P}^{\mathrm{U}}$ | P | C 2 | P | P | $\mathrm{P}^{+}$ | C 2 |
| Sweden | <1.0\% | 0.00\% | 45\% | 45\% | P | P | P | C 1 | P | $\mathrm{P}^{\mathrm{U}}$ | $\mathrm{P}^{+}$ | C 2 |
| United States | 0.10\% | NA | 70\% | 70\% | P | NA | NA | NA | NA | NA | NA | P |

P: Pass (relevant requirement completely met) C: Caution (relevant requirement met to a reasonable extent)
C-A: Caution, approved deviation C-NC: Caution, did not comply
C-PC: Caution, partial compliance C-U: Caution, quality level unknown due to country confidentiality restrictions or unavailability of data
F: Fail
${ }^{4}$ Please refer to the note regarding the Russian Federation in the Note to Readers section of this report.

## Explanation regarding footnote No. 1:

There are four types of Pass: P = Pass, P+= Pass with evidence of bias reduction (used for Analysis 6 only), PU = Pass with only a partially completed analysis (i.e., the quality level is unknown) due to unavailability of data, PC = Pass with caution because there are some indications of some signification differences without further explanation, leading to a possible indication for some limited potential for bias, PIR = Pass with only one item with item response rate below $85 \%$.

For Analysis 3, the codes represent the following:

| P: | RR $\quad>=60 \%$ | Moderate |
| :--- | :--- | :--- |
| P-: | RR $\quad 50-60 \%$ | Low |
| C: | RR $<50 \%$ | Very low |
|  |  |  |
| $1:$ | Correlation $>=.65$ | Very High |
| $2:$ | $.55<=$ Correlation $<.65$ | High |
| $3:$ | $.45<=$ Correlation $<.55$ | Moderate |
| $4:$ | $.35<=$ Correlation $<.45$ | Low |
| $5:$ | Correlation $<.35$ | Very low |

For Analysis 7, the codes represent the following:

| P: | RR $\quad>=60 \%$ | Moderate |
| :--- | :--- | :--- |
| P-: | RR $\quad 50-60 \%$ | Low |
| C: | RR $<50 \%$ | Very low |
|  |  |  |
| 1: | Range of Bias $<50$ | Minimal |
| 2: | $50<=$ Range of Bias $<65$ | Low |
| 3: | $65<=$ Range of Bias $<80$ | Moderate |
| 4: | $80<=$ Range of Bias $<95$ | High |
| 5: | Range of Bias $>=95$ | Very High |

Table 7F-6. PIAAC Data Quality Evaluation Table - Data Collection and Instrument Data Quality

| Country | Data Collection |  |  | Instrument Data Quality |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | مٍ |  | نٍ |  |  |
|  | (3.A) | (3.B) | (3.C) | (4.C) | (4.D) | (4.A) | (4.D) | (4.B) | (4.E) |
| Australia | P | P | P | P | P | P | P | P | P |
| Austria | C-PC | P | $\begin{aligned} & \mathrm{C}- \\ & \mathrm{PC} \\ & \hline \end{aligned}$ | P | P | P | P | P | P |
| Canada | C-PC | P | P | P | P | P | P | P | P |
| Cyprus ${ }^{2}$ | P | P | P | P | P | P | P | P | P |
| Czech <br> Republic | P | $\begin{aligned} & \mathrm{C}- \\ & \mathrm{PC} \\ & \hline \end{aligned}$ | $\begin{aligned} & \text { C- } \\ & \text { PC } \\ & \hline \end{aligned}$ | P | P | P | P | P | $\mathrm{P}^{\text {IR }}$ |
| Denmark | P | P | P | P | P | P | P | P | P |
| England (UK) | $\mathrm{C}-\mathrm{NC}^{8}$ | $\begin{aligned} & \mathrm{C}- \\ & \mathrm{PC} \\ & \hline \end{aligned}$ | P | P | P | P | P | P | P |
| Estonia | P | P | P | P | P | P | P | P | $\mathrm{P}^{\text {IR }}$ |
| Finland | $\mathrm{C}-\mathrm{NC}^{3}$ | P | P | P | P | P | P | P | P |
| Flanders (Belgium) | C-PC | P | P | P | P | P | P | P | P |
| France | $\mathrm{C}-\mathrm{NC}^{4}$ | P | P | P | P | P | P | P | P |
| Germany | C-PC | P | P | P | P | P | P | P | P |
| Ireland | P | P | P | P | P | P | P | P | P |
| Italy | P | P | P | P | P | P | P | P | $\mathrm{P}^{\text {IR }}$ |
| Japan | C-PC | P | P | P | P | P | P | P | P |

P: Pass (relevant requirement completely met)
C: Caution (relevant requirement met to a reasonable extent)
C-A: Caution, approved deviation
C-NC: Caution, did not comply
C-PC: Caution, partial compliance
C-U: Caution, quality level unknown due to country confidentiality restrictions or unavailability of data F: Fail

[^32]Table 7F-6. PIAAC Data Quality Evaluation Table - Data Collection and Instrument Data Quality

| Country | Data Collection |  |  | Instrument Data Quality |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 巽 |  |  | مٍ |  | on |  |  |
|  | (3.A) | (3.B) | (3.C) | (4.C) | (4.D) | (4.A) | (4.D) | (4.B) | (4.E) |
| Korea | P | P | P | P | P | P | P | P | P |
| Netherlands | C-PC | $\begin{aligned} & \text { C- } \\ & \text { PC } \\ & \hline \end{aligned}$ | $\begin{aligned} & \text { C- } \\ & \text { PC } \\ & \hline \end{aligned}$ | P | P | P | P | P | P |
| Northern Ireland (UK) | C-PC | $\begin{aligned} & \text { C- } \\ & \text { PC } \end{aligned}$ | P | P | P | P | P | P | P |
| Norway | P | $\begin{aligned} & \hline \text { C- } \\ & \text { PC } \end{aligned}$ | P | P | P | P | P | P | P |
| Poland | $\mathrm{C}-\mathrm{NC}^{6}$ | P | P | P | P | P |  | P | $\mathrm{P}^{\text {IR }}$ |
| Russian <br> Federation ${ }^{5}$ | $\mathrm{F}^{7}$ | P | P | P | P | $\mathrm{C}^{9}$ | P | P | P |
| Slovak <br> Republic | P | P | P | P | P | P | P | P | $\mathrm{P}^{\mathrm{IR}}$ |
| Spain | P | P | P | P | P | P | P | P | P |
| Sweden | C-PC | $\begin{aligned} & \text { C- } \\ & \text { PC } \end{aligned}$ | P | P | P | P | P | P | P |
| United States | P | P | P | P | P | P | P | P | P |

P: Pass (relevant
requirement completely
met)
C: Caution (relevant
requirement met to a
reasonable extent)
C-A: Caution, approved
deviation
C-NC: Caution, did not
comply
C-PC: Caution, partial
compliance
C-U: Caution, quality
level unknown due to
country confidentiality
restrictions or
unavailability of data
F: Fail
${ }^{5}$ Please refer to the note regarding the Russian Federation in the Note to Readers section of this report.
${ }^{6} 7 \%$ or more for $40 \%$ FIs; less than $7 \%$ for $60 \%$ FIs
${ }^{7}$ Based on information provided on quality-control (QC) forms and during monthly QC conference calls, the Russian Federation followed validation requirements. However, analysis of the data revealed irregularities affecting a significant proportion of cases. This level of irregularities should have been detected by validation. The fact that it was not suggests that validation was not conducted in a manner sufficiently adequate to detect it. Therefore, the Russian Federation did not meet the requirements on validation.
${ }^{8} 7 \%$ or more for $20 \%$ FIs; less than $7 \%$ for $80 \%$ FIs
${ }^{9}$ See "Data Adjudication Summary" section in the Russian Federation Adjudication Report for details.

## Table 7F-6. PIAAC Data Quality Evaluation Table - Data Collection and Instrument Data Quality

## Explanation regarding footnote No. 1:

There are four types of Pass: P = Pass, $\mathrm{P}+=$ Pass with evidence of bias reduction (used for Analysis 6 only), PU = Pass with only a partially completed analysis (i.e., the quality level is unknown) due to unavailability of data, PC = Pass with caution because there are some indications of some signification differences without further explanation, leading to a possible indication for some limited potential for bias, PIR = Pass with only one item with item response rate below $85 \%$.

For Analysis 3, the codes represent the following:

| P: | RR $\quad>=60 \%$ | Moderate |
| :--- | :--- | :--- |
| P-: | RR $\quad 50-60 \%$ | Low |
| C: | RR $<50 \%$ | Very low |
|  |  |  |
| 1: | Correlation $>=.65$ | Very High |
| 2: | $.55<=$ Correlation $<.65$ | High |
| 3: | $.45<=$ Correlation $<.55$ | Moderate |
| 4: | $.35<=$ Correlation $<.45$ | Low |
| 5: | Correlation $<.35$ | Very low |

For Analysis 7, the codes represent the following:

| P: | RR $\quad>=60 \%$ | Moderate |
| :--- | :--- | :--- |
| P-: | RR $50-60 \%$ | Low |
| C: | RR $<50 \%$ | Very low |
|  |  |  |
| 1: | Range of Bias $<50$ | Minimal |
| 2: | $50<=$ Range of Bias $<65$ | Low |
| 3: | $65<=$ Range of Bias $<80$ | Moderate |
| 4: | $80<=$ Range of Bias $<95$ | High |
| 5: | Range of Bias $>=95$ | Very High |


[^0]:    * Please refer to notes A and B regarding Cyprus, and the note regarding the Russian Federation in the Note to Readers section of this report.

[^1]:    * Please refer to notes A and B regarding Cyprus in the Note to Readers section of this report.

[^2]:    ${ }^{1}$ The December 2010 version of the TSG can be accessed from the following link: http://www.oecd.org/site/piaac/PIAACNPM(2010_12)PIAAC_Technical_Standards_and_Guidelines.pdf (accessed 24 September 2013).

[^3]:    ${ }^{2}$ Indicator codes as in Annex 1.
    ${ }^{3}$ The goal of the Consortium was to have the sampling plan and sample selection verified for all countries before they went to the field. The schedule was set up so countries had enough time to incorporate corrections to their sampling steps before data collection. However, a number of countries had major delays in submitting their forms and thus there was no chance for correcting errors or improving upon deficiencies, if any, in these samples.
    ${ }^{4}$ Data collection validation (rechecks) is critical to data validity; it is the most important quality control feature of household data collection. However, because this is the first cycle of PIAAC, it was understood if a country had not fully met the standards surrounding this activity. However, serious consideration will be given to raising the importance of this adjudication feature for the next cycle of PIAAC.

[^4]:    ${ }^{5}$ This table represents summarized information that is extracted from Tables A7-4, A7-5 and A7-6 at the end of this Annex.
    ${ }^{6}$ The ratings provided in this column are based on sample coverage, response rate, and the outcome of NRBA. The analysis showed that nonresponse adjustment weighting was effective in reducing the potential for bias in all countries. However, there is still a potential for either minimal or low level of bias in the outcome statistics for countries with response rates lower than $70 \%$. The analysis concluded that there was not enough evidence showing any moderate or high level of bias, based on assumptions made about the proficiency scores of nonrespondents. Therefore, data users need to be cautioned when interpreting the results of the analysis for countries with very low response rates because different assumptions could lead into different results.
    ${ }^{7}$ Please refer to notes A and B regarding Cyprus in the Note to Readers section of this report.

[^5]:    ${ }^{11}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{12}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^6]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^7]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^8]:    ${ }^{13}$ Please refer to notes A and B regarding Cyprus in the Note to Readers section of this report.

[^9]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^10]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^11]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^12]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^13]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{\text {[2] }}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^14]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^15]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^16]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^17]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^18]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^19]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{\text {[2] }}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^20]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^21]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^22]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{\text {[2] }}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^23]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{\text {[2] }}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^24]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^25]:    ${ }^{14}$ Please refer to the note regarding the Russian Federation in the Note to Readers section of this report.

[^26]:    ${ }^{15}$ This approach was discussed with and validated by the PIAAC Technical Advisory Group (TAG). Copies of two memos prepared for the TAG outlining the criteria used to identify the cases for removal and the outcomes of this process are included at the end of this adjudication report.

[^27]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{\text {[2] }}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^28]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{\text {[2] }}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^29]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^30]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^31]:    ${ }^{[1]}$ Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.
    ${ }^{[2]}$ Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

[^32]:    ${ }^{1}$ See explanation on page following the end of this section.
    ${ }^{2}$ Please refer to notes A and B regarding Cyprus in the Note to Readers section of this report.
    ${ }^{3} 7 \%$ or more for $46 \%$ FIs; less than $7 \%$ from $54 \%$ FIs
    ${ }^{4}$ Only completes were validated

