

HC2.1. LIVING SPACE

Definitions and methodology

Space is an important dimension of housing quality. Several studies outline the negative effects of limitations in space and overcrowded dwellings on health, and particularly on child outcomes (OECD 2021a). As discussed below, the COVID-19 pandemic renewed such concerns, as evidence from some countries found that people living in overcrowded dwellings recorded higher infection rates of the virus (see OECD, 2021b).

This indicator reports (1) the *average number of rooms per household member* to illustrate how space constraints differ across countries as well as across households within countries, and (2) *overcrowding* as a complementary measure of dwelling space that takes into account household composition. Rooms refer to bedrooms, living and dining rooms and, in non-European countries, also kitchens (see the section, *Data on Comparability Issues*, for further details).

While the number of rooms available to household members highlights the importance of adequate space for housing quality, it makes no distinction between the different needs of households, depending on their composition. Yet, the space requirements for a two-adult household with, for example, three toddlers may be quite different compared to those of a single-parent family with two sons aged 21 and 16 and a daughter aged 17. The overcrowding rate takes into account households' different personal space needs depending on household members' age, gender and relationship.

This indicator follows the EU-wide agreed definition of overcrowding (Eurostat, 2016). A household is considered overcrowded if it does not have at its disposal a minimum number of rooms equal to:

- one room for the household;
- one room per adult couple in the household;
- one room for each single person aged 18 and over;
- one room per pair of single persons of the same sex between 12 and 17 years of age;
- one room for each single person between 12 and 17 years of age and not included in the previous category;
- one room per pair of children under 12 years of age.

Key findings

Outright owner households have, on average, more rooms per person than owners with a mortgage or tenants.

Figure HC2.1.1 shows the average number of rooms per household member among homeowners (see HC2.1.A1 in the online worksheet for earlier years). Outright homeowner households have on average more rooms at their disposal than owners with a mortgage. This relates in part to people's housing situation over the life cycle: typically, younger people with children are owners paying off a mortgage;

This document, as well as any data and any map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

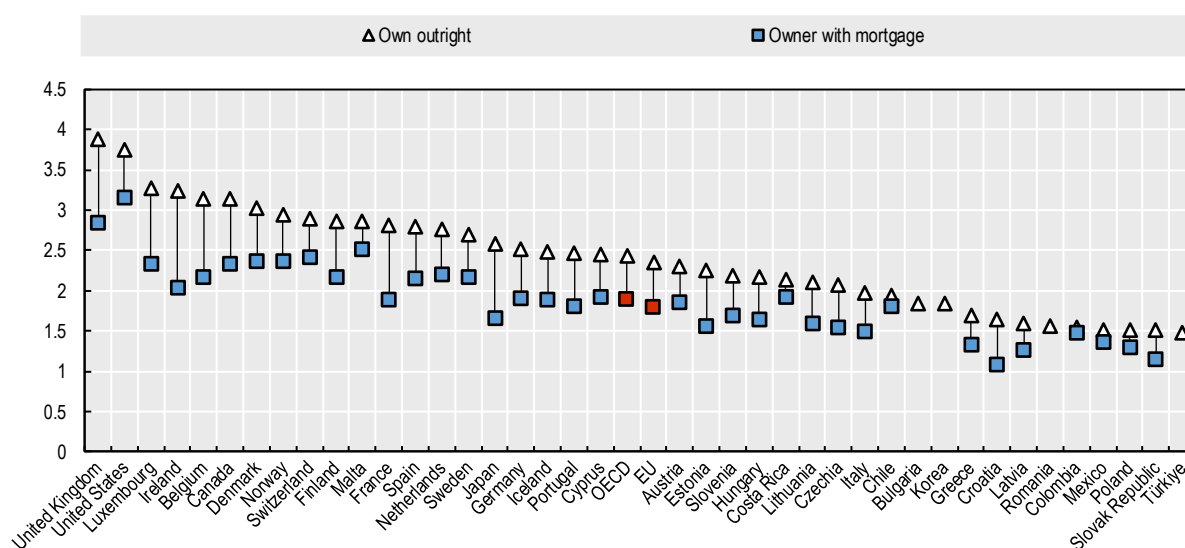
Please cite this as: OECD (2024), OECD Affordable Housing Database - indicator HC2.1 Living space, <https://oe.cd/ahd>.

they become outright owners by the time their children move out (also see indicator HM1.3 on Tenure structure in general).

Outright owners in many Central and Eastern European countries, as well as in Chile, Colombia, Korea, Mexico, and Türkiye have on average fewer than two rooms per household member. In most Southern European, Nordic and German-speaking countries, as well as in Costa Rica, Estonia, France, the Netherlands, and Japan, homes that are owned outright have on average between two and three rooms per household member. The United Kingdom and the United States top the list, with outright homeowners having, on average, well over three rooms per household member (about 3.8 rooms per household member).

Figure HC2.1.1. Average number of rooms per household member among homeowners

Average number of rooms per household member, by type of ownership, 2022 or latest year available^{1, 2, 3, 4}



- Note:1. See "Data and comparability issues" of Indicator HC2.1 on limits to comparability across countries due to the definition of rooms.
- 2. Data for Japan only available on the respondent level due to data limitations. Results therefore refer to the population, rather than to households.
- 3. Data for Canada are adjusted by Statistics Canada based on the assumption of the presence of a kitchen in dwellings where it is expected.
- 4. Data for Japan, Korea, Switzerland, the United Kingdom, and the United States refer to 2021, for Norway and Türkiye to 2020, for Iceland to 2018, for Canada to 2016, for Chile to 2013.

Source: OECD calculations based on the European Survey on Income and Living Conditions (EU-SILC 2022), except for Switzerland (2021), Norway (2020) and Iceland (2018); calculations from Statistics Canada based on the 2016 Canada Census of Population for Canada; Encuesta de Caracterización Socioeconómica Nacional (CASEN 2013) for Chile; the Gran Encuesta Integrada de Hogares (GEIH) for Colombia (2022); the Encuesta Nacional de Hogares (ENAH) for Costa Rica (2022); the Korean Housing Survey (2021); the Japan Household Panel Study (JHPS 2021) for Japan; the Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) for Mexico (2022); Türkiye-National SILC (2020); Understanding Society - The UK Household Longitudinal Study (2021); the American Community Survey (ACS) for the United States (2021).

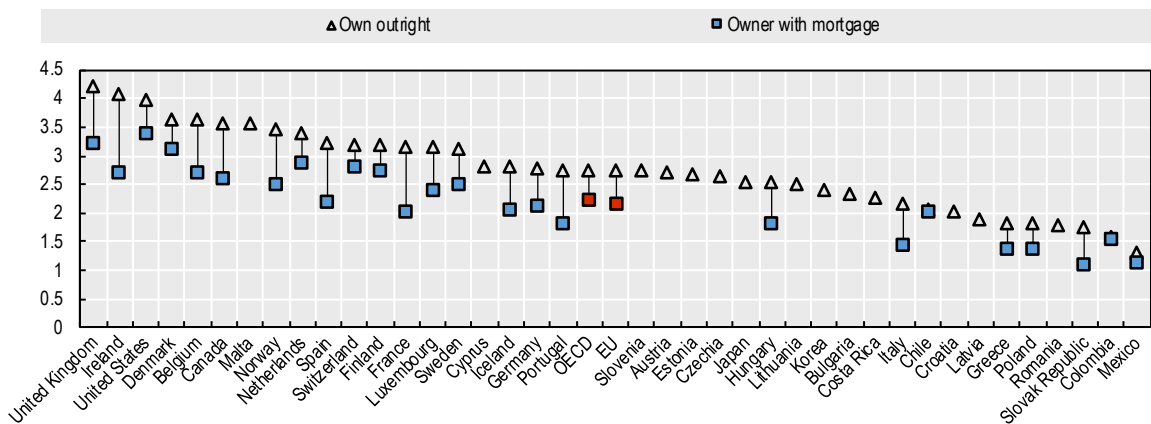
Note by the Republic of Türkiye: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Türkiye recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Türkiye shall preserve its position concerning the "Cyprus issue".

Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Türkiye. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

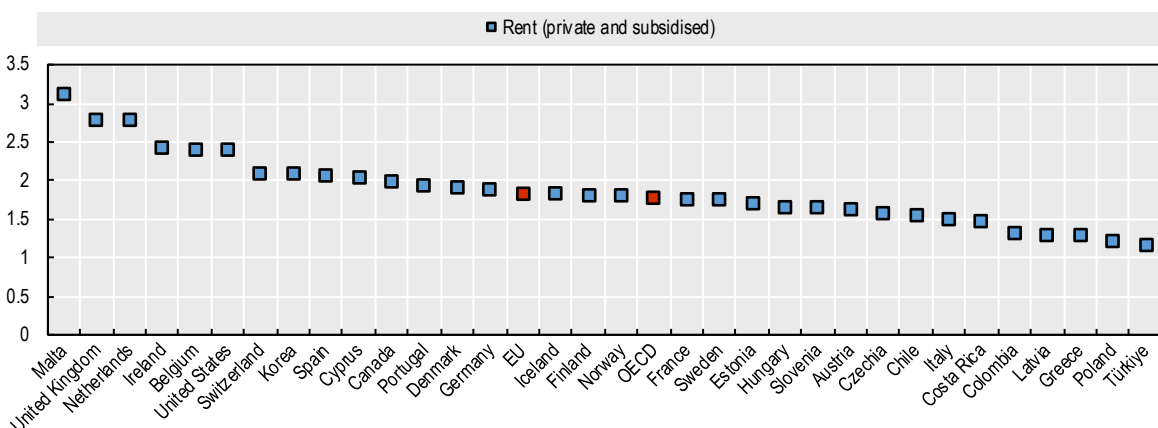
Figure HC2.1.2 shows the average number of rooms per household member in low-income households for owners (Panel A) and tenants (Panel B). The basic patterns observed in Figure HC2.1.1 persist across countries for low-income households: in most countries, outright owners live in dwellings with on average more rooms per household member than mortgaged owners and tenants. Yet, the differences between outright owners and owners paying off a mortgage are considerably larger for low-income households, except in Chile and Colombia.

Figure HC2.1.2. Number of rooms per household member in low-income households by tenure type

A. Average number of rooms per household member in owner households (with and without mortgage) in the bottom quintile of the income distribution, 2022 or latest year available ^{1, 2, 3, 4, 5}



B. Average number of rooms per household member in tenant households (private market and subsidised rent combined) in the bottom quintile of the income distribution, 2022 or latest year available ^{1, 2, 3, 4, 5}



Note: 1. See "Data and comparability issues" of Indicator HC2.1 on limits to comparability across countries due to the definition of rooms.
 2. Low-income households are households in the bottom quintile of the (net) income distribution. In Chile, Colombia, Mexico, Korea, Türkiye and the United States, gross income is used due to data limitations. In the United Kingdom, net income is not adjusted for local council taxes and housing benefits due to data limitations.
 3. Data for Japan only available on the respondent level due to data limitations. Results therefore refer to the population, rather than to households.
 4. Data for Canada are adjusted by Statistics Canada based on the assumption of the presence of a kitchen in dwellings where it is expected. "Bottom quintile" for Canada is defined as the first quintile of adjusted after-tax household income.
 5. Data for Japan, Korea, Switzerland, the United Kingdom, and the United States refer to 2021, for Norway and Türkiye to 2020, for Iceland to 2018, for Canada to 2016, for Chile to 2013.

Source: OECD calculations based on the European Survey on Income and Living Conditions (EU-SILC 2022), except for Switzerland (2021), Norway (2020) and Iceland (2018); calculations from Statistics Canada based on the 2016 Canada Census of Population for Canada; Encuesta de Caracterización Socioeconómica Nacional (CASEN 2013) for Chile; the Gran Encuesta Integrada de Hogares (GEIH) for Colombia (2022); the Encuesta Nacional de Hogares (ENAH) for Costa Rica (2022); the Korean Housing Survey (2021); the Japan Household Panel Study (JHPS 2021) for Japan; the Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) for Mexico (2022); Türkiye-National SILC (2020); Understanding Society - The UK Household Longitudinal Study (2021); the American Community Survey (ACS) for the United States (2021).

Overcrowding is higher in low-income households, but is also a reality in better-off households in many countries.

Overcrowding rates vary considerably across countries (Figure HC2.1.3, see online worksheet HC2.1.A3 for earlier years and additional quintiles). Fewer than 3% of households are considered overcrowded, regardless of their income level in Canada, Cyprus, Malta, New Zealand, Japan, and the United Kingdom. However, overcrowding rates are much higher in Bulgaria, Colombia, Mexico, Latvia, Poland, Romania, and Türkiye.

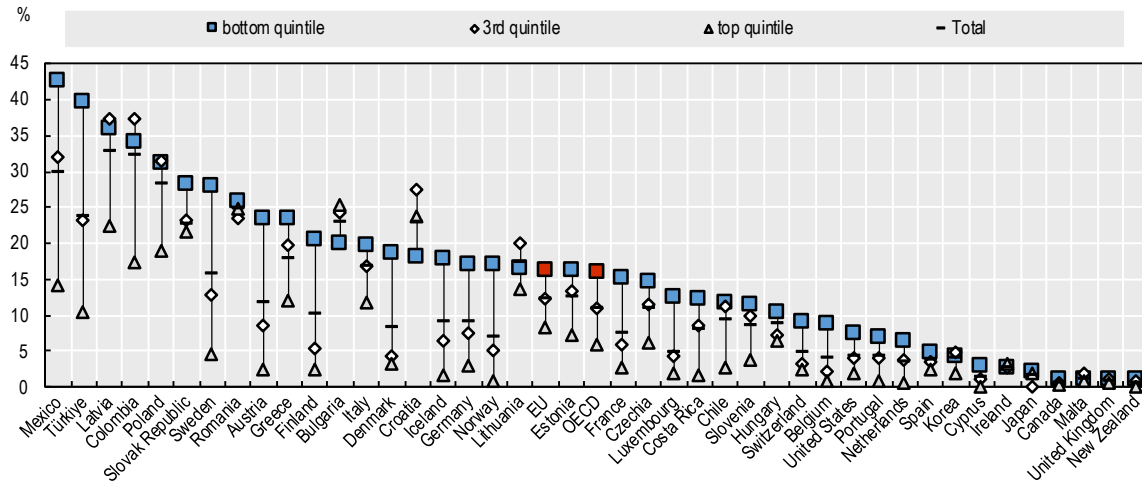
Among households in the bottom quintile, overcrowding rates are highest in Colombia, Latvia, Mexico, Poland and Türkiye, with overcrowding affecting at least 35% low-income households. By contrast, fewer than one in ten low-income households lives in overcrowded dwellings in Belgium, Canada, Cyprus, Ireland, Japan, Korea, Malta, the Netherlands, New Zealand, Portugal, Spain, Switzerland, the United Kingdom, and the United States.

In Bulgaria, Croatia, Latvia, Romania and the Slovak Republic, overcrowding is also an issue for households in the top quintile of the income distribution: in each country, over 20% of top-quintile households live in overcrowded housing conditions.

In most countries, the overcrowding rate decreases as household income increases, and overcrowding rates in the bottom quintile are higher than for households in the third quintile. In Colombia, Korea, Latvia, Lithuania, Malta, and Poland overcrowding rates are higher in the third quintile than in the bottom quintile, but still lowest in the top quintile. Households in the top quintile record the highest rates of overcrowding rates across income quintiles in Bulgaria and Ireland.

Figure HC2.1.3. Overcrowding rates in households across the income distribution

Share of overcrowded households, by quintiles of the income distribution, in percent, 2022 or latest year available 1, 2, 3, 4, 5



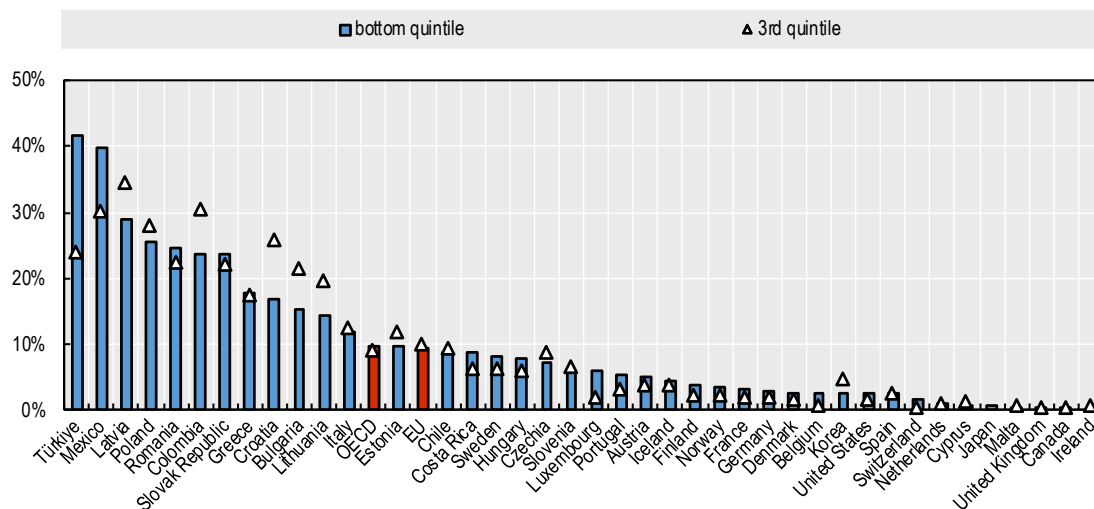
Note: 1. See "Data and comparability issues" of Indicator HC2.1 on limits to comparability across countries due to the definition of rooms.
 2. Low-income households are households in the bottom quintile of the (net) income distribution. In Chile, Colombia, Mexico, Korea, Türkiye and the United States, gross income is used due to data limitations. In the United Kingdom, net income is not adjusted for local council taxes and housing benefits due to data limitations.
 3. Data for Japan only available on the respondent level due to data limitations. Results therefore refer to the population, rather than to households.
 4. Data for Canada are adjusted by Statistics Canada based on the assumption of the presence of a kitchen in dwellings where it is expected. Income quintiles for Canada are based on adjusted after-tax household income.
 5. Data for Japan, Korea, New Zealand, Switzerland, the United Kingdom, and the United States refer to 2021, for Norway and Türkiye to 2020, for Iceland to 2018, for Canada to 2016, for Chile to 2013.
 Source: OECD calculations based on the European Survey on Income and Living Conditions (EU-SILC 2022), except for Switzerland (2021), Norway (2020) and Iceland (2018); calculations from Statistics Canada based on the 2016 Canada Census of Population for Canada; Encuesta de Caracterización Socioeconómica Nacional (CASEN 2013) for Chile; the Gran Encuesta Integrada de Hogares (GEIH) for Colombia (2022); the Encuesta Nacional de Hogares (ENAH) for Costa Rica (2022); the Korean Housing Survey (2021); the Japan Household Panel Study (JHPS 2021) for Japan; the Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) for Mexico (2022); estimates provided by Stats New Zealand (2021); Türkiye-National SILC (2020); Understanding Society - The UK Household Longitudinal Study (2021); the American Community Survey (ACS) for the United States (2021).

Low-income tenant households are more likely than low-income owner households to live in overcrowded conditions.

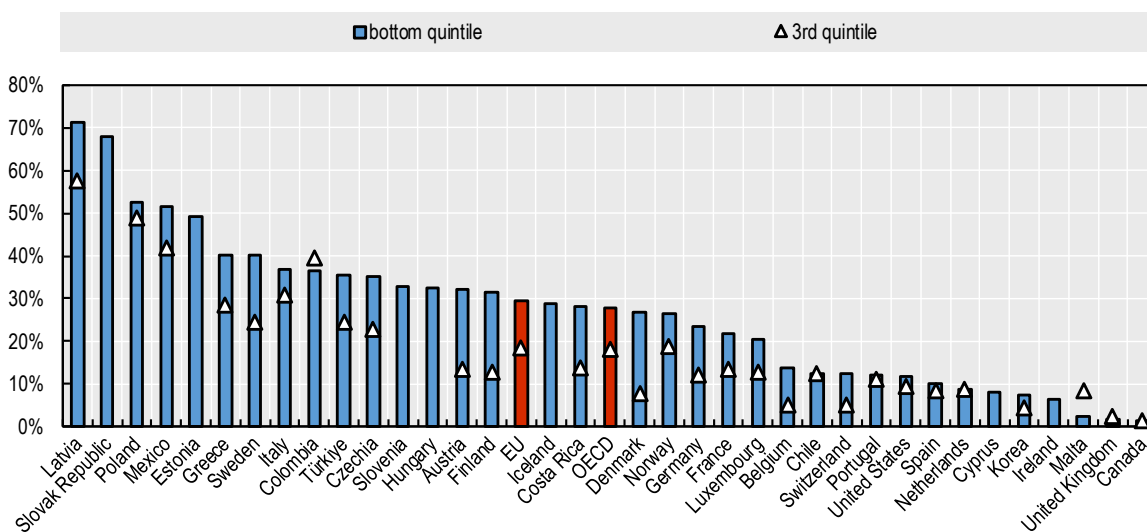
In most countries, the difference in overcrowding rates between the bottom and the third quintile is more pronounced among tenant households (Figure HC1.2.4, Panel B) than among owner households (Figure HC2.1.4, Panel A; see HC2.1.A4 in the online Annex for earlier years and a further breakdown by tenure type). At more than 15 percentage points, the greatest differences by income level for tenant households are in Austria, Denmark, Finland, and Sweden. Differences in overcrowding rates between low- and middle-income tenant households are smallest in Canada and the United Kingdom (where overcrowding rates are low overall), as well as in Chile and the Netherlands.

Figure HC2.1.4. Overcrowding rates of low and middle-income households, by tenure type

A: Share of overcrowded owner households (with and without mortgage), bottom and third quintile of the income distribution, in percent, 2022 or latest year available ^{1, 2, 3, 4}



B: Share of overcrowded tenant households (renting at market or subsidised rate), bottom and third quintile of the income distribution, in percent, 2022 or latest year available



Note: 1. For Chile, Mexico, Denmark, the Netherlands and the United States no information on subsidised tenants due to data limitations. See section "Data and comparability issues" of Indicator HC2.1 on limits to comparability across countries due to the definition of rooms.

2. Low-income households are households in the bottom quintile of the (net) income distribution. In Chile, Colombia, Mexico, Korea, Türkiye and the United States, gross income is used due to data limitations. In the United Kingdom, net income is not adjusted for local council taxes and housing benefits due to data limitations.

3. Data for Canada are adjusted by Statistics Canada based on the assumption of the presence of a kitchen in dwellings where it is expected. Income quintiles for Canada are based on adjusted after-tax household income.

4. Data for Japan, Korea, Switzerland, the United Kingdom, and the United States refer to 2021, for Norway and Türkiye to 2020, for Iceland to 2018, for Canada to 2016, for Chile to 2013.

Source: OECD calculations based on the European Survey on Income and Living Conditions (EU-SILC 2022), except for Switzerland (2021), Norway (2020) and Iceland (2018); calculations from Statistics Canada based on the 2016 Canada Census of Population for Canada; Encuesta de Caracterización Socioeconómica Nacional (CASEN 2013) for Chile; the Gran Encuesta Integrada de Hogares (GEIH) for Colombia (2022); the Encuesta Nacional de Hogares (ENAH) for Costa Rica (2022); the Korean Housing Survey (2021); the Japan Household Panel Study (JHPS 2021) for Japan; the Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) for Mexico (2022); Türkiye-National SILC (2020); Understanding Society - The UK Household Longitudinal Study (2021); the American Community Survey (ACS) for the United States (2021).

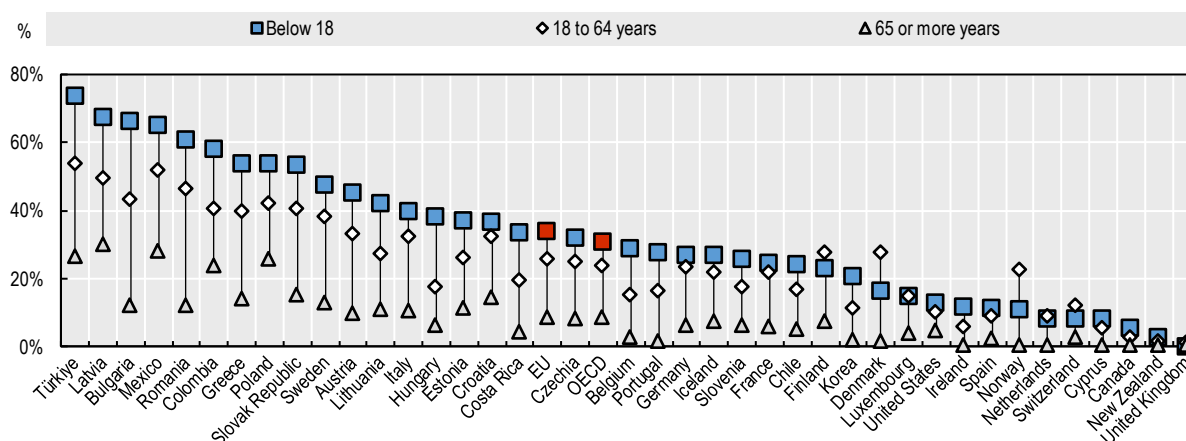
Children are more likely to experience overcrowding than the adult population.

Within the low-income population, children are more likely than other age groups to live in overcrowded dwellings, while elderly people are less likely to live in such conditions (Figure HC2.1.5; refer to HC2.1.A5 for earlier years). In Türkiye, more than seven in ten children (under 18 years of age) in low-income households live in overcrowded dwellings. By contrast, in Canada, Cyprus, the Netherlands, New Zealand, Switzerland and the United Kingdom, fewer than one in ten children in low-income households live in overcrowded dwellings.

Differences in overcrowding rates between age groups are largest in Central and Eastern European countries, and are also considerable in Italy, Greece, Mexico, Sweden and Türkiye. In countries with low or very low overall overcrowding rates, the situation is largely the same for everyone under the age of 65 (e.g. Canada, Cyprus, Malta, the Netherlands, New Zealand, the United Kingdom and the United States).

Figure HC2.1.5. Overcrowding rates among the low-income population, by age group

Share of population in the bottom quintile of the income distribution living in overcrowded dwellings, in percent, 2022 or latest year available ^{1,2,3,4}



Note: 1. See section "Data and comparability issues" of Indicator HC2.1 on limits to comparability across countries due to the definition of rooms.

2. Low-income households are households in the bottom quintile of the (net) income distribution. In Chile, Colombia, Mexico, Korea, Türkiye and the United States, gross income is used due to data limitations. In the United Kingdom, net income is not adjusted for local council taxes and housing benefits due to data limitations.

3. Data for Canada are adjusted by Statistics Canada based on the assumption of the presence of a kitchen in dwellings where it is expected. "Bottom quintile" for Canada is defined as the first quintile of adjusted after-tax household income.

4. Data for Korea, Switzerland, United Kingdom and the United States refer to 2021, for Norway and Türkiye to 2020, for Iceland and New Zealand to 2018, for Canada to 2016, for Chile to 2013.

Source: OECD calculations based on the European Survey on Income and Living Conditions (EU-SILC 2022), except for Switzerland (2021), Norway (2020) and Iceland (2018); calculations from Statistics Canada based on the 2016 Canada Census of Population for Canada; Encuesta de Caracterización Socioeconómica Nacional (CASEN 2013) for Chile; the Gran Encuesta Integrada de Hogares (GEIH) for Colombia (2022); the Encuesta Nacional de Hogares (ENAH) for Costa Rica (2022); the Korean Housing Survey (2021); the Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) for Mexico (2022); estimates provided by Stats New Zealand based on 2018 Census dataset; Türkiye-National SILC (2020); Understanding Society - The UK Household Longitudinal Study (2021); the American Community Survey (ACS) for the United States (2021).

Overcrowding can affect health and education outcomes (World Health Organization (WHO), 2018; OECD, 2021b; United Kingdom Office of the Deputy Prime Minister, 2004). At the outset of the COVID-19 crisis, housing quality gaps gained increased attention, as many people were spending much more time at home. In particular, the pandemic renewed concerns among policy makers around overcrowded housing conditions, which make it more difficult to effectively self-isolate and puts people at greater risk of contracting and spreading infectious diseases (OECD, 2021). Evidence suggest that overcrowded living conditions and high-density living environments were associated with higher infection rates of COVID-19 (OECD, 2021; Inserm, 2020; Barker, 2020).

Data and comparability issues

This indicator is calculated based on household surveys. For European countries, the European Union Statistics on Income and Living Conditions (EU-SILC) survey is used; for Canada, calculations from Statistics Canada based on the 2016 Canada Census of Population; for Chile, the Encuesta de Caracterización Socioeconómica Nacional (CASEN); for Colombia, the Gran Encuesta Integrada de Hogares (GEIH), for Costa Rica the Encuesta Nacional de Hogares (ENAH); for Germany, the German Socioeconomic Panel (GSOEP); for Korea the Korean Housing Survey; for Mexico the Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH); for New Zealand, estimates provided by Stats New Zealand ; for Türkiye, Türkiye-National SILC, for the United Kingdom, Understanding Society - The UK Household Longitudinal Study; for the United States, the American Community Survey (ACS). For Japan, the Japan Household Panel Study is used. Data in the JHPS is sampled on the respondent level and not on the household level, so data reflect housing conditions for the population as individuals, rather than for households.

Data collection for household surveys faced additional limitations during the COVID-19 pandemic, which may affect the quality of data in 2020 and 2021. This included challenges to conducting face-to-face interviews, as well as difficulties to interpret certain questions in the context of the pandemic (e.g. questions relating to the primary place of residence among young people who had returned to live with their parents during the pandemic). With regards to EU-SILC, there were also cross-country differences in how the reference period was defined, as some countries interpreted the reference period as “before the crisis – as usual” while others considered the impacts of the pandemic (Eurostat, 2020).

Data from EU-SILC are also subject to variation across years due to limited sample sizes. Although weights are used to help ensure data are representative of the population, and all indicators in the OECD Affordable Housing Database rely on variables with at least 100 observations, caution should still be exercised when comparing data across years.

The Household and the Income and Labour Dynamics Survey in Australia (HILDA) only records the number of bedrooms; data from Australia are therefore not included in the analysis.

While all surveys do not consider bathrooms as a room, definitions differ for kitchens. JHPS counts kitchens towards the total number of rooms. EU-SILC and GSOEP do not count a kitchen used exclusively for cooking as a room; “kitchen-cum-dining rooms”, by contrast, are counted as rooms. In ACS, CASEN, ENIGH and the Korean Housing Survey, kitchens used exclusively for cooking and “kitchen-cum-dining rooms” both qualify as a room. In Canada, for dwellings where a kitchen would be

expected, the presence of a kitchen is assumed and counted as a room. As ACS, CASEN, ENIGH, the Korean Housing Survey and the data for Canada do not provide detail on which type of kitchen is counted towards number of rooms, it is not possible to completely harmonise the number of rooms between EU-SILC and other surveys. The overcrowding rates for European countries are thus likely to be slightly overestimated compared to other countries.

EU-SILC, GSOEP and ACS also impose minimum space restrictions on rooms: in EU-SILC, spaces with less than four square meters are not considered rooms; in GSOEP, the threshold is six square meters; and in the ACS, rooms "must extend out at least 6 inches and go from floor to ceiling" according to the questionnaire.

Ample space for all household members can be defined in different ways (note that Indicator HC2.2 considers housing quality in terms of sanitary facilities).

Sources and further reading

Clair, A. (2018), "*Housing: An under-explored influence on children's well-being and becoming*", Child Indicators Research, pp. 1-18, <http://dx.doi.org/10.1007/s12187-018-9550-7>.

Eurofound (2016), *Inadequate housing in Europe: Costs and consequences*, Publications Office of the European Union, Luxembourg.

Eurostat (2021), "Statistics Explained: Migrant integration statistics – housing", https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Migrant_integration_statistics_-_housing.

Eurostat (2021), "Statistics Explained: Overcrowding rate", http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Overcrowding_rate.

The Health Foundation (2020), www.health.org.uk/news-and-comment/charts-and-infographics/overcrowding-is-highest-for-those-with-low-incomes.

Jaime Ruiz-Tagle Ignacio Urria (2022), *Household overcrowding trajectories and mental well-being*, <https://doi.org/10.1016/j.socscimed.2021.114051>. OECD (2021a), *Measuring What Matters for Child Well-being and Policies*, OECD Publishing, Paris, <https://doi.org/10.1787/e82fded1-en>.

OECD (2021) "Building for a better tomorrow: Policies to make housing more affordable," *OECD Employment, Labour and Social Affairs Policy Briefs*. <http://oe.cd/affordable-housing-2021>.

OECD (2021), *Brick by Brick (Volume 1): Building Better Housing Policies*, OECD Publishing, Paris, <https://doi.org/10.1787/b453b043-en>.

OECD (2023), *Brick by Brick (Volume 2): Better Housing Policies in the Post-COVID-19 Era*, OECD Publishing, Paris, <https://doi.org/10.1787/e91cb19d-en>.

Tsenkova, S. (2005), *Trends and Progress in Housing Reforms in South Eastern Europe*, Council of Europe Development Bank, Paris, www.ucalgary.ca/cities/files/cities/HousingStudy.pdf.

World Health Organization (WHO) (2018), WHO Housing and Health Guidelines, www.who.int/sustainable-development/publications/housing-health-guidelines/en/.