Working From Home Around the World

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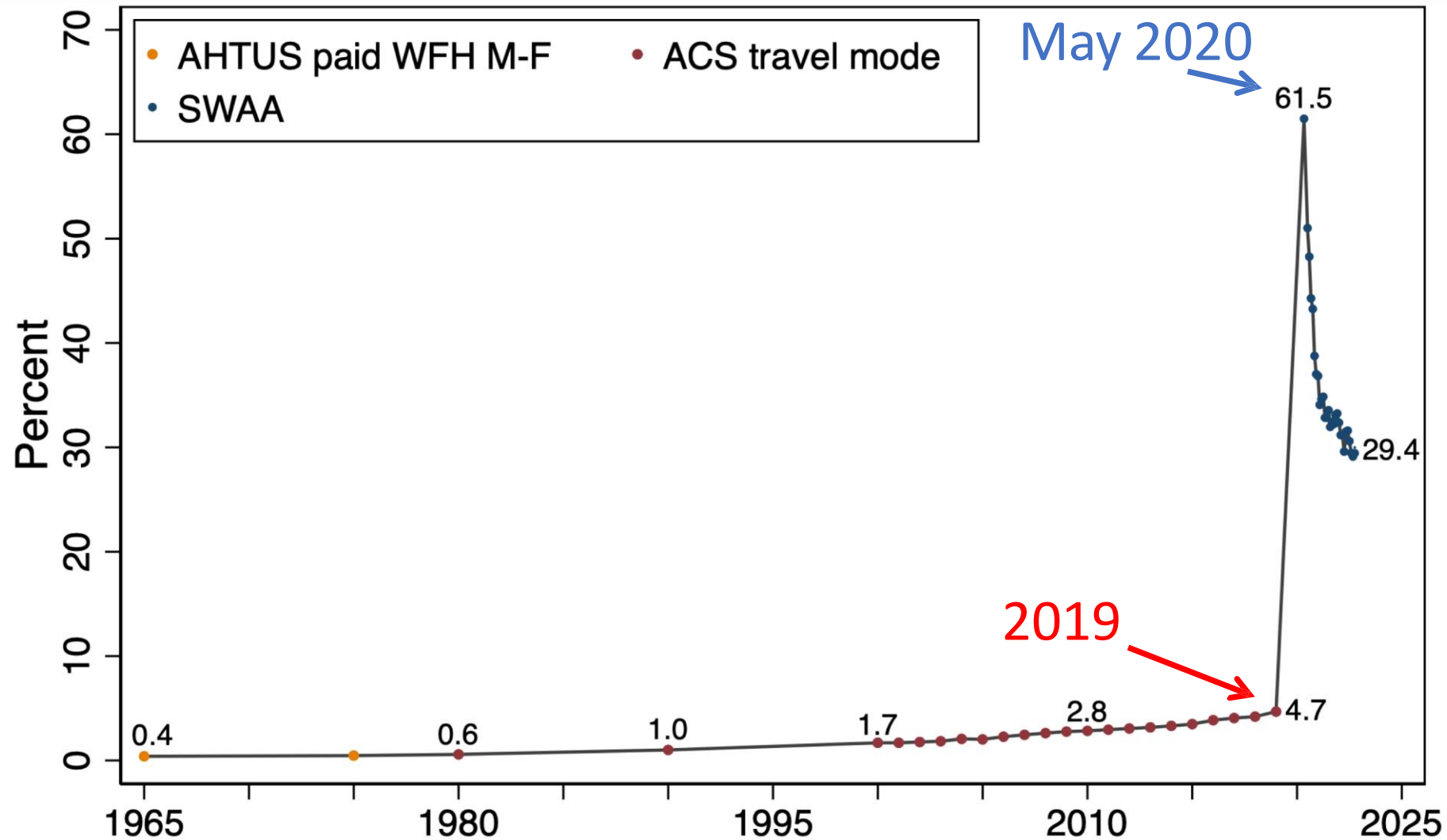**Mathias Dolls** (ifo Institute)
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Percent of Full Paid Workdays Performed at Home in the United States, Workers 20-64, 1965 to October 2022

1965-1975 uses data from the American Historical Time Use Survey.
1980-2019 uses data from American Community Survey.
May 2020 - October 2022 uses data from the Survey of Working Arrangements and Attitudes.

Percentage of paid full days worked from home
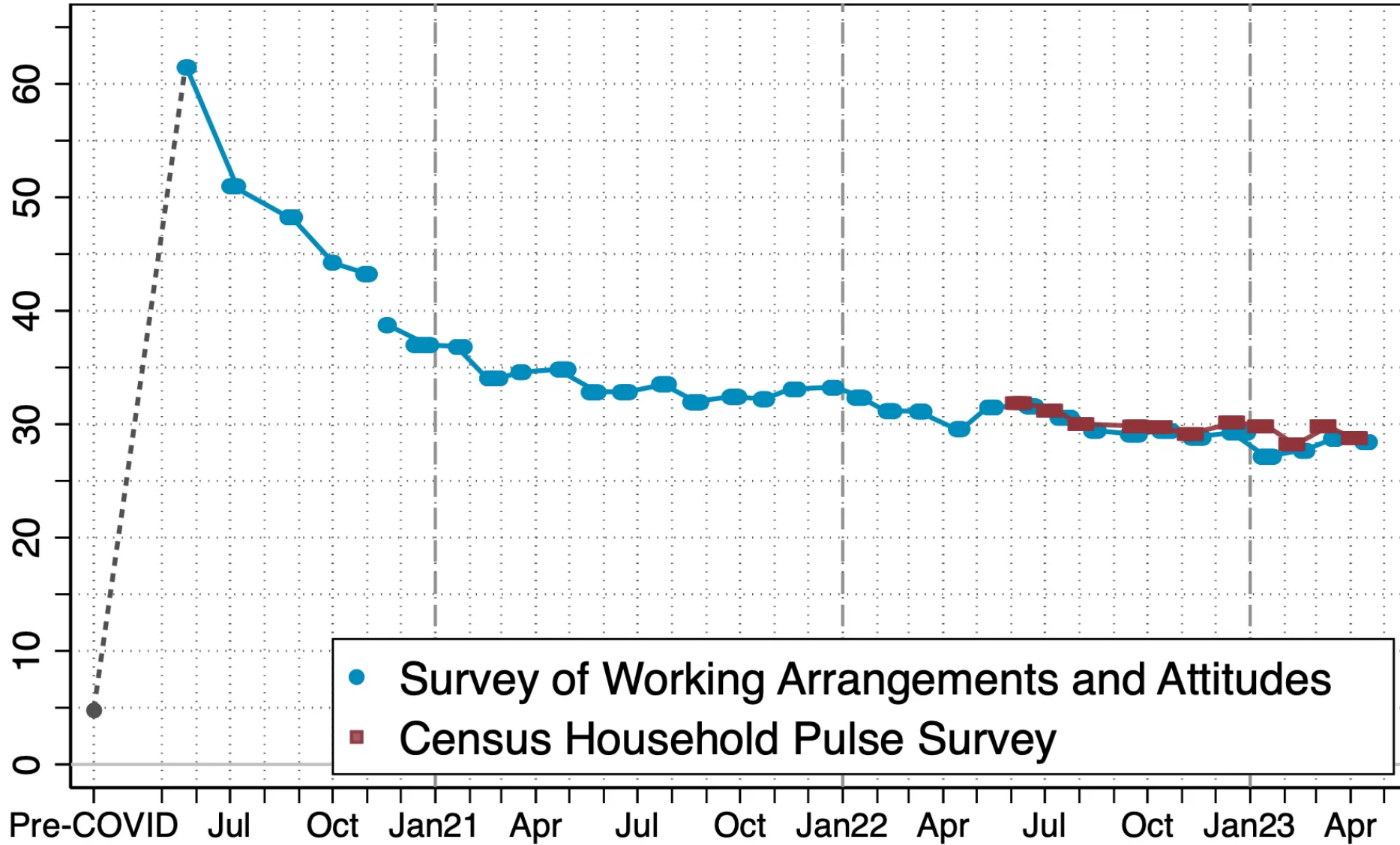
*Pre-COVID estimate taken from the 2017-2018 American Time Use Survey

*The break in the series in November 2020 reflects a change in the survey question.

Overview

1) Global Survey of Working Arrangements (G-SWA)

2) Work from Home (WFH) levels, plans, and desires

3) How much do workers like or dislike WFH?

4) Perceptions about WFH productivity

5) How do societal experiences during the pandemic (deaths, lockdowns) influence future WFH levels?

Global Survey of Working Arrangements (G-SWA)

Target Population: Full-time employees, aged 20-59, who finished primary school in 27 countries (waves 1 and 2) around the world.

Implementation: [Respondi](#), a professional survey firm, fields the G-SWA as an online survey. Three waves (more to come):
- Wave 1: July-August 2021, 15 countries, N= 12,229 (after drops)
- Wave 2: January-February 2022, 25 countries, N=23,849 (after drops)
- Wave 3: April-May 2023, 37 countries, N=43,500 (expected)

Quality Control: We drop "speeders," defined as the bottom 5% of the completion-time distribution in each country. In addition, we drop the roughly 15% of respondents who fail an attention-check question.

More on the G-SWA and How We Use It

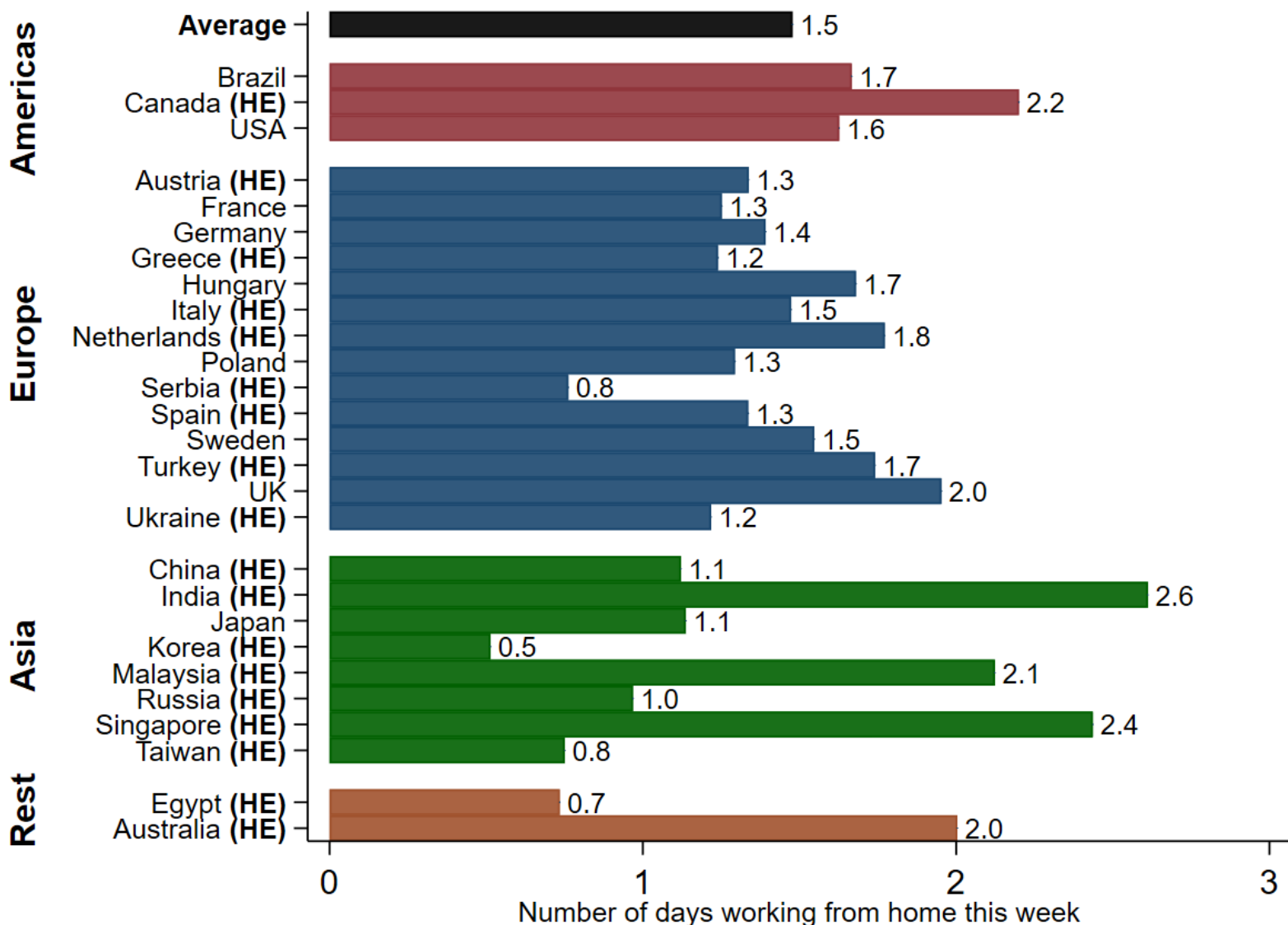**Median Response Times**: 7.3 to 9.5 minutes, after drops.

Representativeness:

- Samples broadly representative by age and gender within countries (but too few less-educated persons, in particular in less-developed economies).

- For cross-country comparisons, we estimate conditional mean outcomes at the country level.

- Controls: age (20-29, 30-39, 40-49, 50-59), sex, education (Secondary, Tertiary, Graduate), 18 industry sectors, and survey wave.

WFH Levels, Plans, and Desires

Working from Home Is Now a Global Phenomenon

Paid Full Days Working from Home in the Survey Week, Country-Level Conditional Means

Americas
- Average: 1.5
- Brazil: 1.7
- Canada (HE): 2.2
- USA: 1.6

Europe
- Austria (HE): 1.3
- France: 1.3
- Germany: 1.4
- Greece (HE): 1.2
- Hungary: 1.7
- Italy (HE): 1.5
- Netherlands (HE): 1.8
- Poland: 1.3
- Serbia (HE): 0.8
- Spain (HE): 1.3
- Sweden: 1.5
- Turkey (HE): 1.7
- UK: 2.0
- Ukraine (HE): 1.2

Asia
- China (HE): 1.1
- India (HE): 2.6
- Japan: 1.1
- Korea (HE): 0.5
- Malaysia (HE): 2.1
- Russia (HE): 1.0
- Singapore (HE): 2.4
- Taiwan (HE): 0.8

Rest
- Egypt (HE): 0.7
- Australia (HE): 2.0

Number of days working from home this week

Question: "How many full paid days are you working from home this week?"

The chart reflects country dummies in OLS regressions that control for age (20-29, 30-39, 40-49, 50-59), sex, education (Secondary, Tertiary, Graduate), 18 industry sectors and survey wave, treating the raw U.S. mean as the baseline value. We fit the regression to data for 33,091 G-SWA respondents surveyed in mid 2021 and early 2022. The "Average" value is the simple mean of the country-level conditional means.

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Planned Levels of Working from Home after the Pandemic

Average number of WFH days per week that employers plan
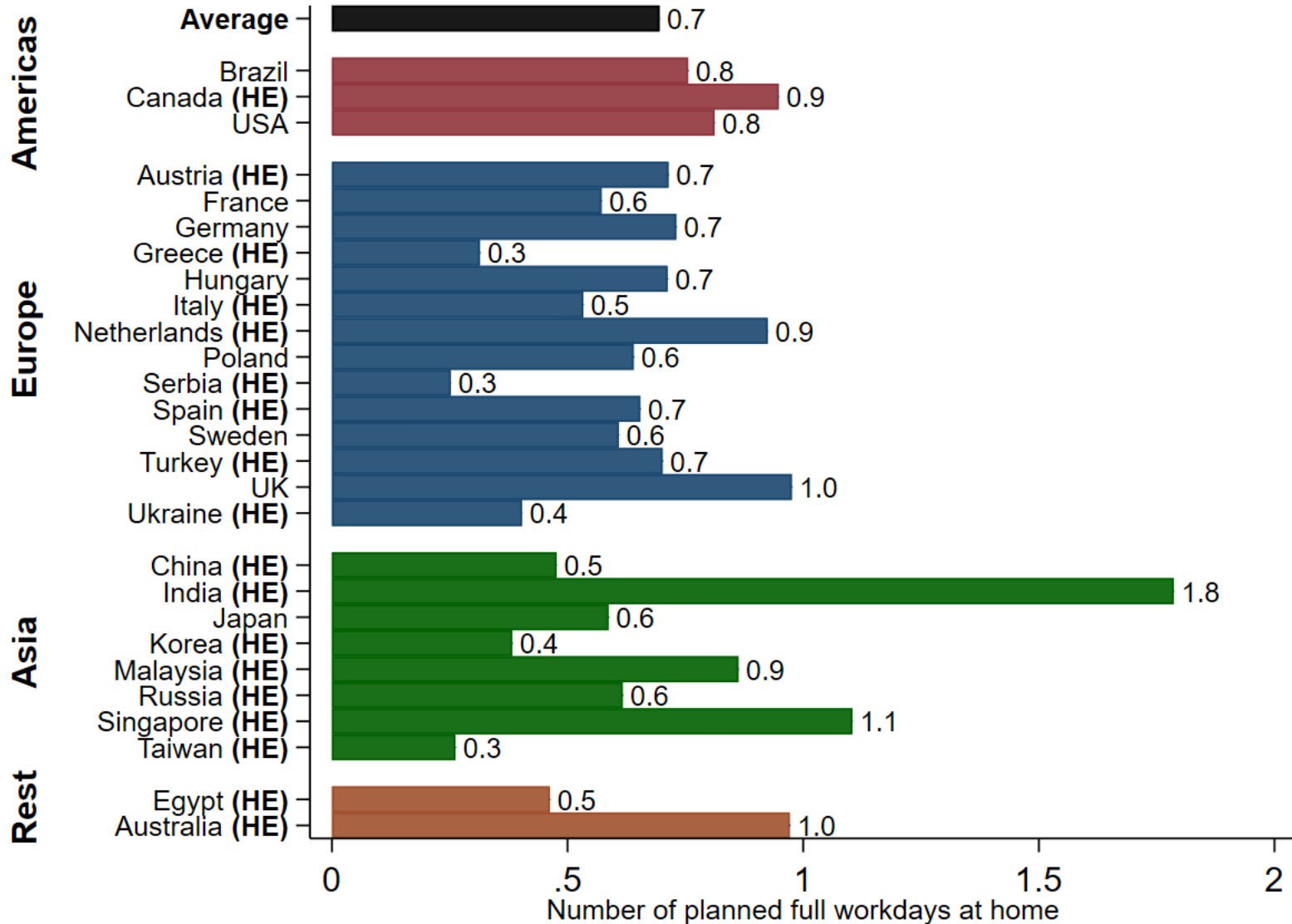
Question: "After COVID, in 2022 and later, how often is your employer planning for you to work full days at home?"

Response Options:
-- Never
-- About once or twice a month
-- 1 day per week
-- 2 days per week
-- 3 days per week
-- 4 days per week
-- 5+ days per week
-- My employer has not discussed this matter with me or announced a policy about it
-- I have no employer

Desired Levels of Working from Home after the Pandemic

Average number of WFH days per week that employees desire
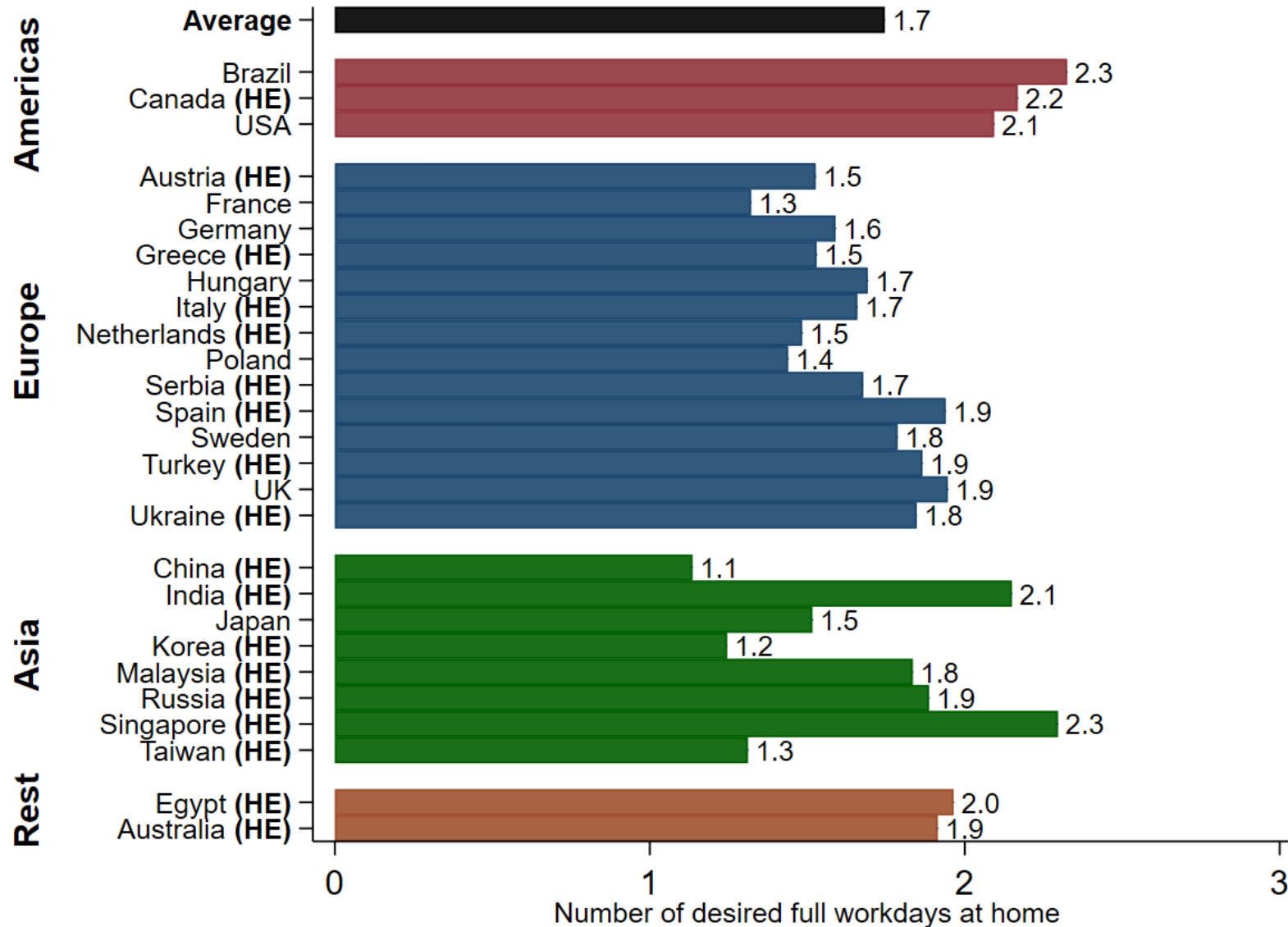
Question: "After COVID, in 2022 and later, how often would you like to work from home?"

The chart reports coefficients on country dummies in OLS regressions that control for gender, age, education, industry and survey wave, treating the raw U.S. mean as the baseline value. We fit the regression to data for 36,078 G-SWA respondents who were surveyed in mid 2021 and early 2022. The "Average" value is the simple mean of the the country-level values.

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People highly value the opportunity to WFH

Willingness to Pay for the Option to Work from Home

Average amenity value of the option to WFH 2-3 days per week, as a percent of pay
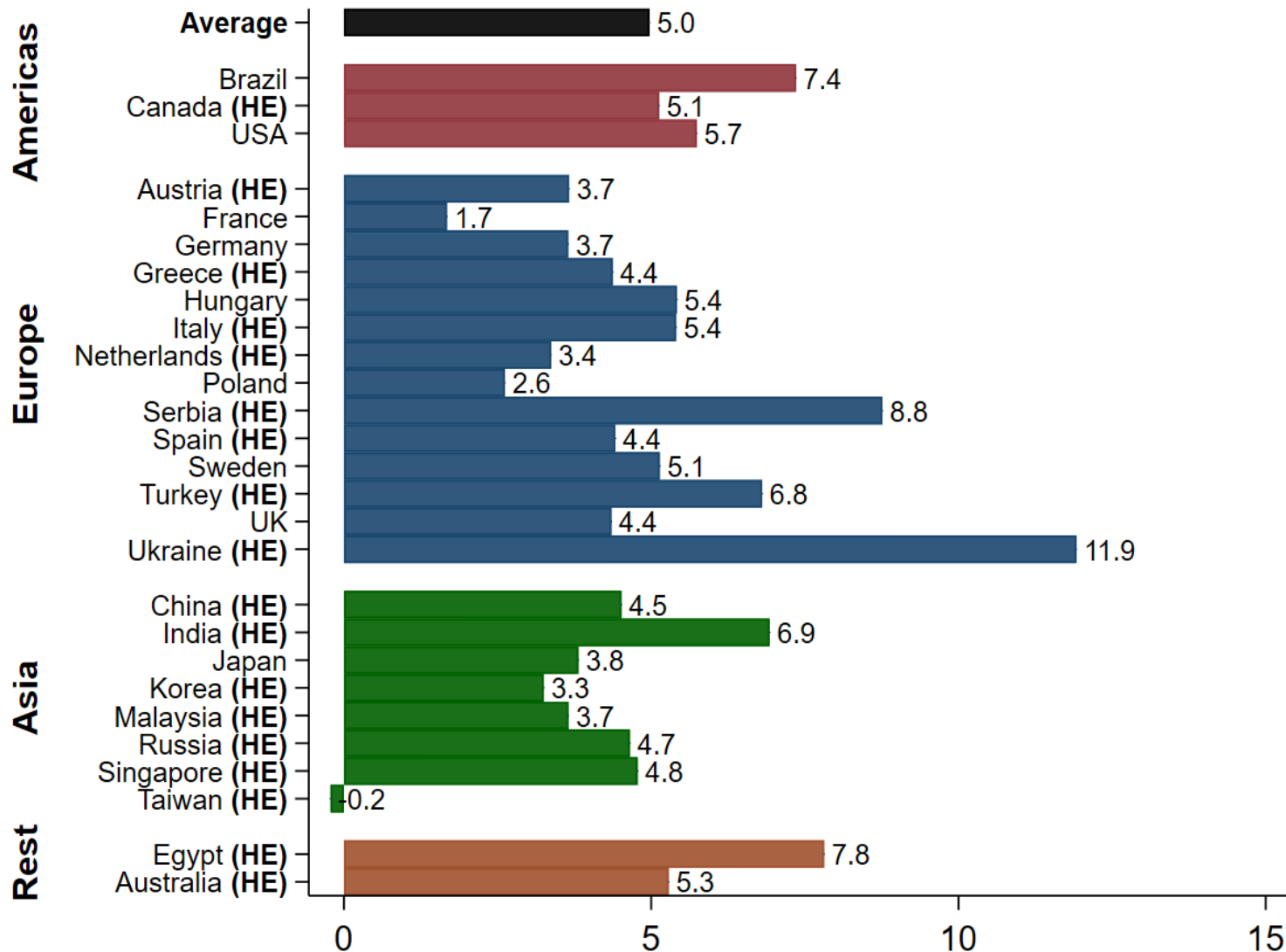
Questions: "After COVID-19, in 2022 and later, how would you feel about working from home 2 or 3 days a week?" If response is "neutral," set WTP = 0. Otherwise, ask:
"How much of a pay raise [cut] (as a percent of your current pay) would you value as much as the option to work from home 2 or 3 days a week?"

Many Workers Will Quit Or Seek a New Job If Required to Return to the Employer's Worksite 5+ days Days Per Week

Percent of employees that would quit immediately or seek a new job that allows WFH
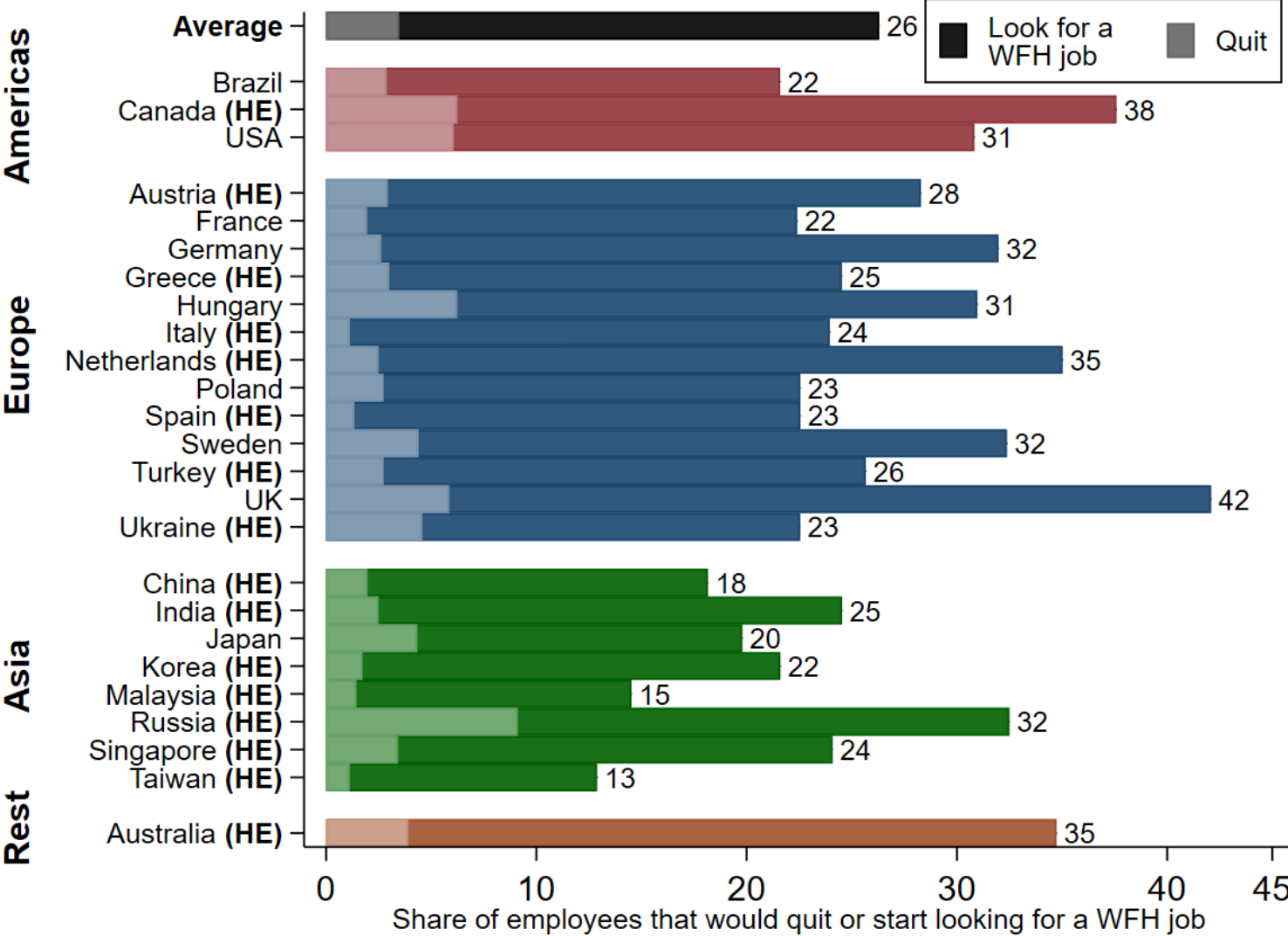
Question: "How would you respond if your employer announced that all employees must return to the worksite 5+ days a week, starting on February 1, 2022?" Options:
- Comply and return.
- Seek job that lets me WFH 1-2 days
- I would quit the job

The chart reports regression-adjusted conditional means, as in the previous figures. We fit the regression data for 9,975 G-SWA respondents in early 2022 who worked from home at least one day in the survey week.

Daily Commute Times Average More than One Hour Per Day

Daily Round-Trip Commute Time, Minutes
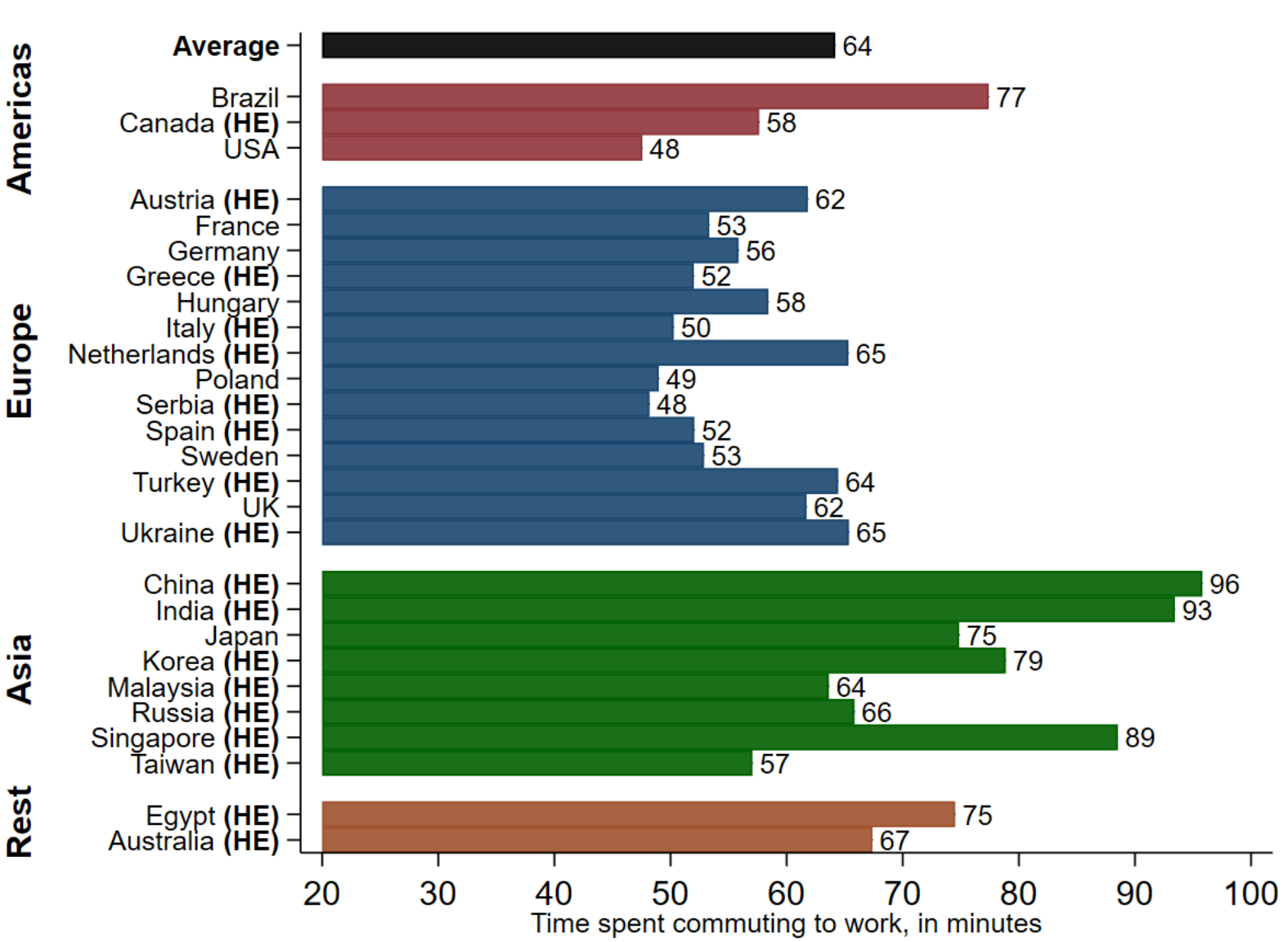
Questions:

<u>Wave 1</u>: "In 2019 (before COVID) how long was your typical commute to work in minutes (one-way)?"

<u>Wave 2</u>: "How long do you usually spend commuting to and from work (in minutes). If you are not currently commuting to work, please answer based on your commute time in 2019 (before COVID)".

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The Structure of Preferences over WFH

Average willingness to pay for WFH option = 5% of pay

WFH option is more highly valued by:

- Women than otherwise similar men: differential = 1% of pay

- People with children under 14: 1% of pay for both men and women

- More educated: Graduate degree holder vs. HS = 2.5% of pay

- Those with longer commutes: Differential exceeds 2% of pay for RT commute > 1 hour compared to < 20 minutes
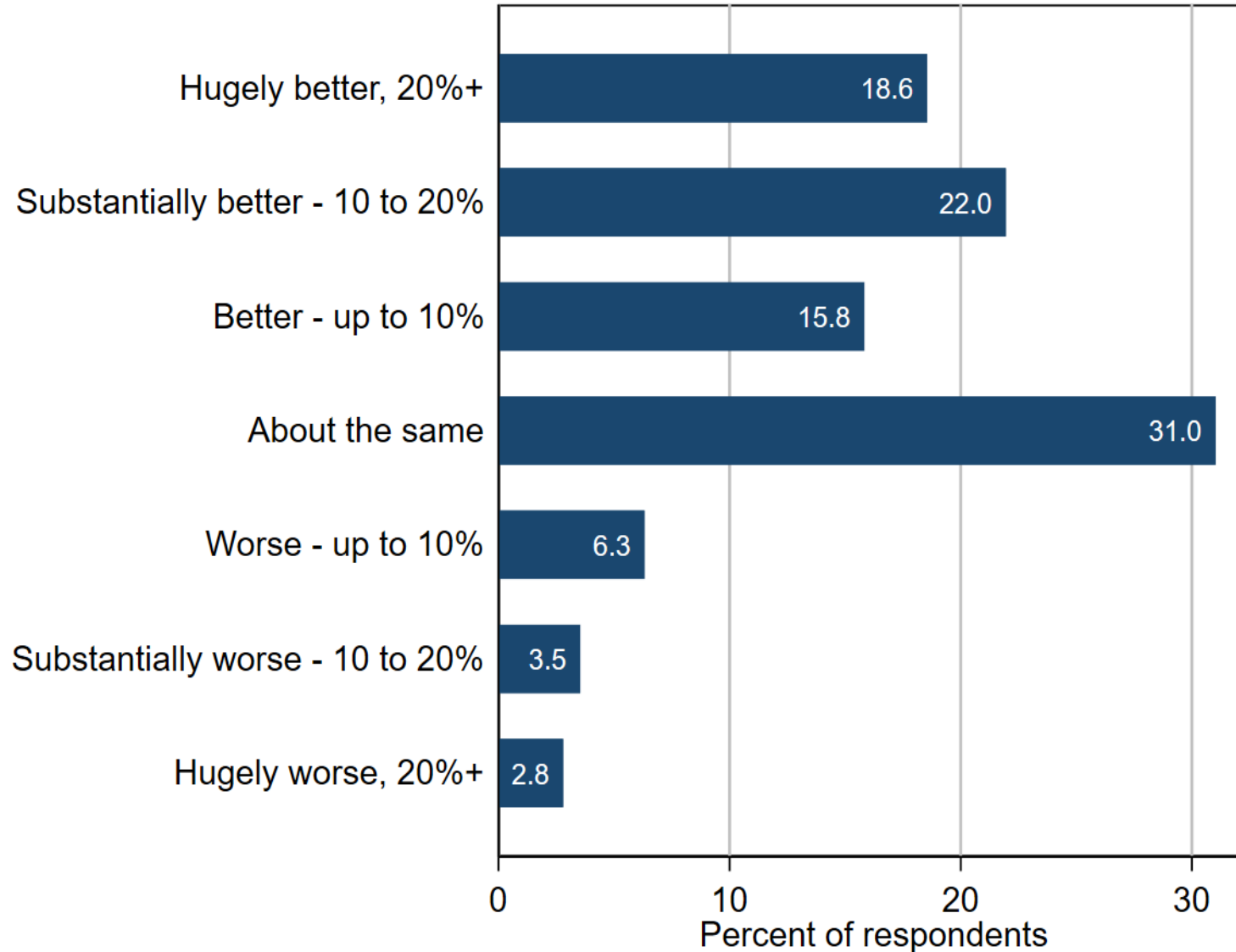
People will sort by desired working arrangements & across employers

Perceptions about WFH Productivity
&
Social Attitudes regarding WFH

The Distribution of WFH Productivity Relative to Expectations
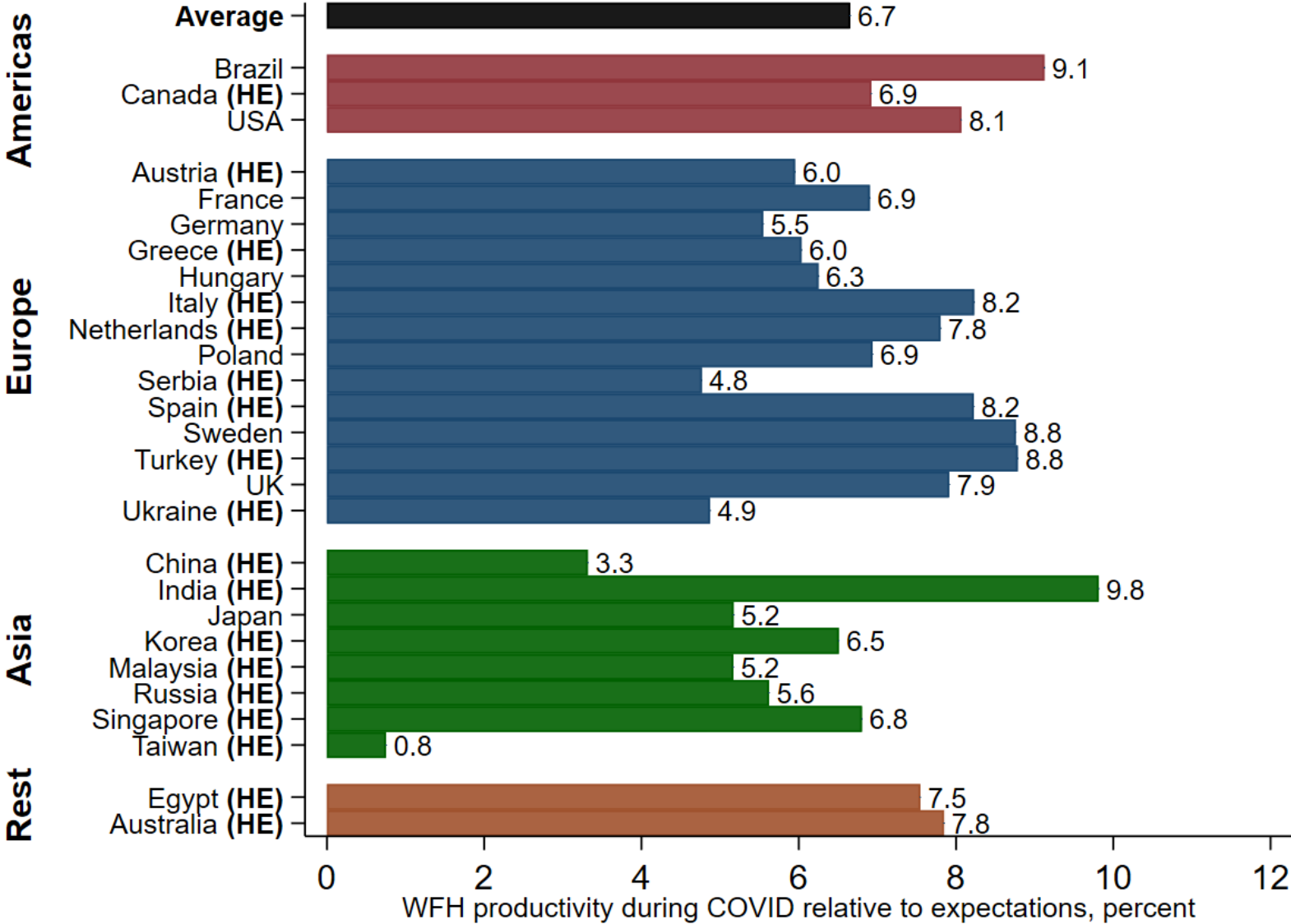
WFH productivity, relative to expectations

Question: Compared to your expectations **before COVID (in 2019)** how has working from home turned out for you?'
- Hugely better – I am 20%+ more productive than I expected
- Substantially better – I am to 10% to 19% more productive than I expected
- Better – I am 1% to 9% more productive than I expected
- About the same
- Worse – I am 1% to 9% less productive than I expected
- Substantially worse – I am to 10% to 19% less productive than I expected
- Hugely worse – I am 20%+ less productive than I expected

Sample of 19,027 G-SWA respondents in mid 2021 and early 2022 who worked mainly from home at some point during the COVID-19 pandemic.
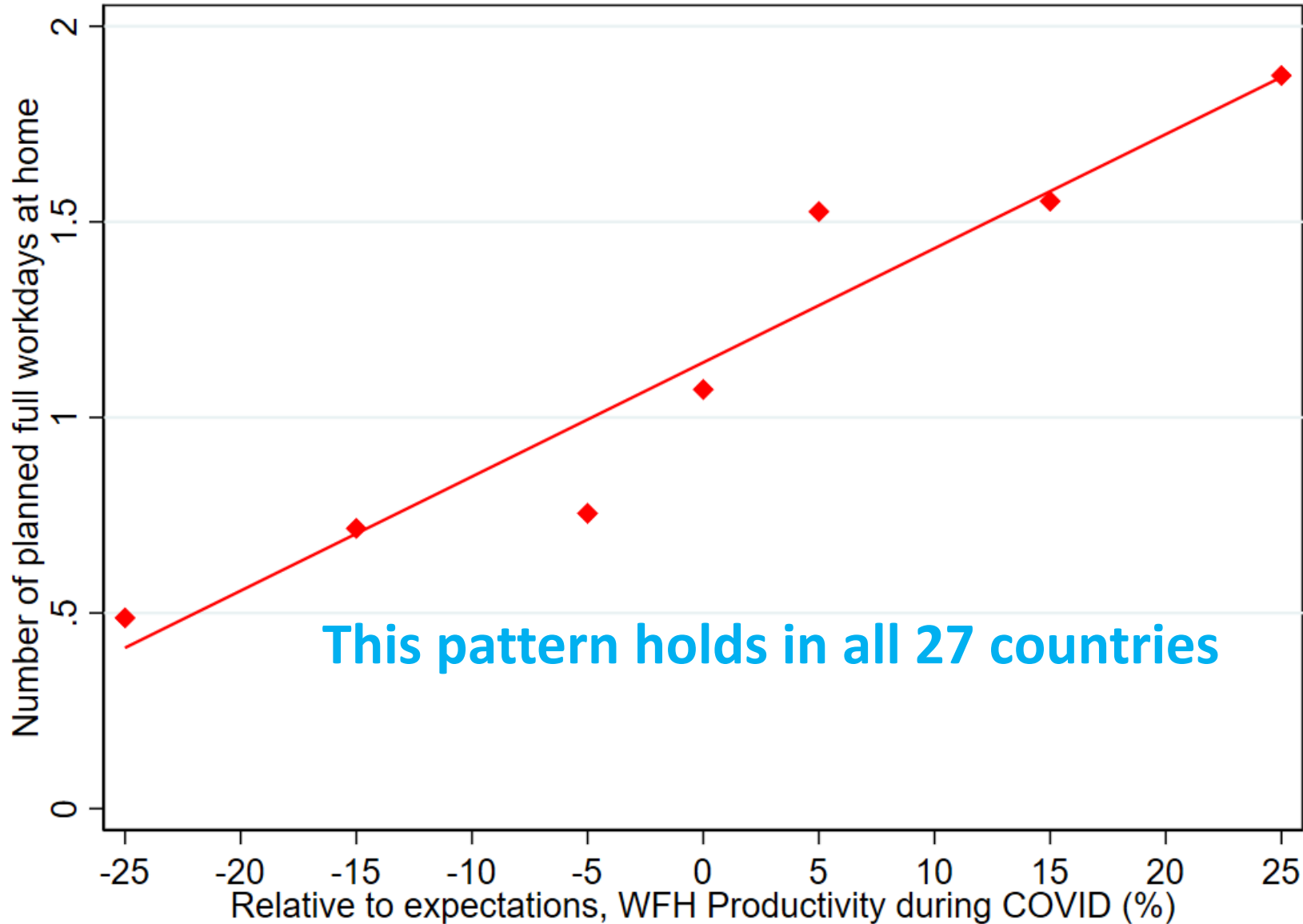
WFH Productivity Surprises Are Positive, on Average, in All Countries

WFH productivity, relative to expectations

Question: "Compared to your expectations before COVID how has working from home turned out for you?"

Planned levels of WFH __after__ the pandemic rise with WFH productivity surprises __during__ the pandemic
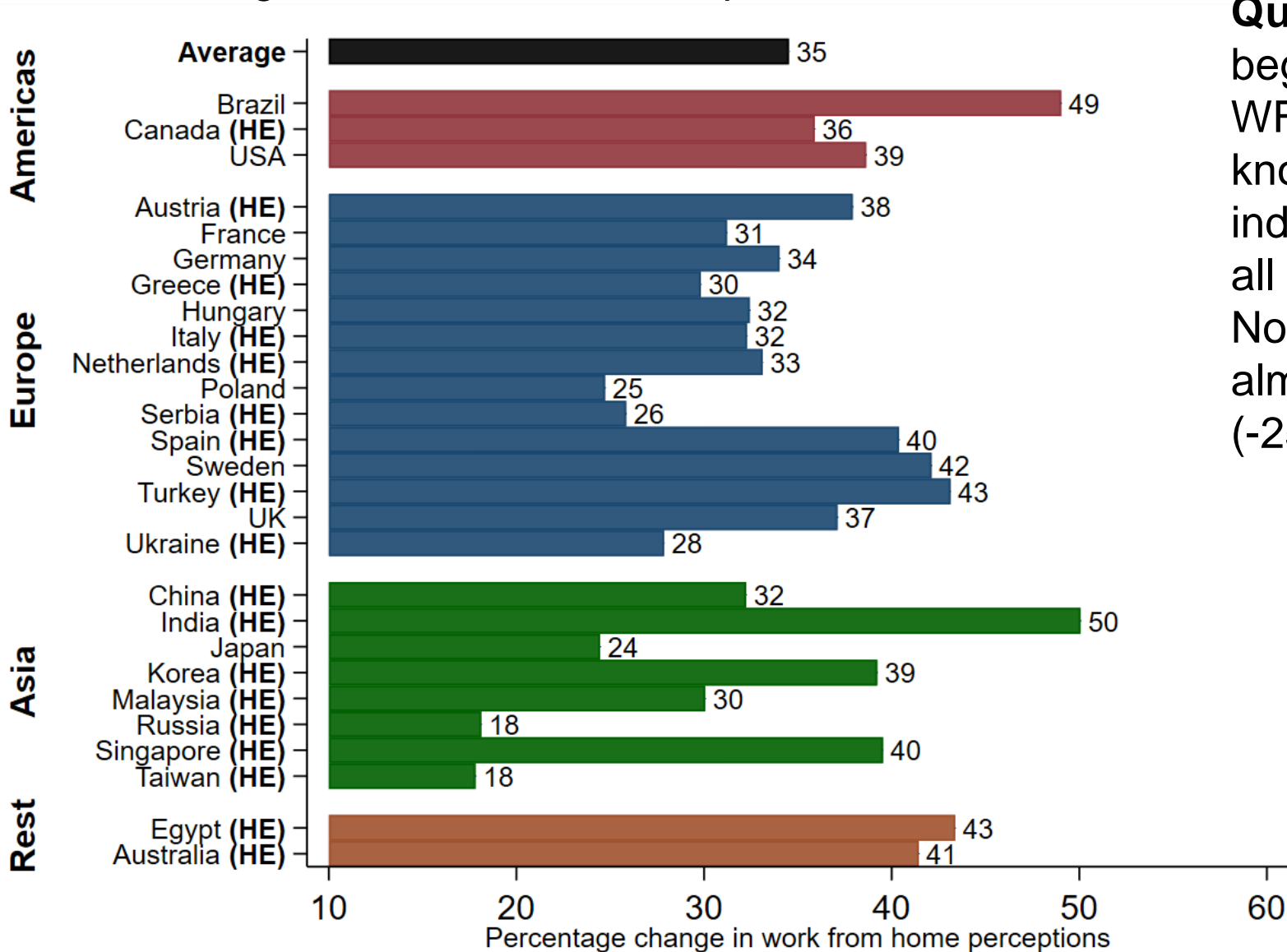

This pattern holds in all 27 countries

Questions:
-- Compared to your expectations **before COVID,** how has working from home turned out for you?
-- After COVID, in 2022 and later, how often is your employer planning for you to work full days at home?

The Social Acceptance of Work from Home Is Much Greater Now than before the Pandemic

Change Index for Social Acceptance of WFH

Question: "Since the COVID pandemic began, how have perceptions about WFH changed among people you know?" Response options and assigned index values: Improved among almost all (95%), most (70%) or some (25%), No change (0%), and Worsened among almost all (-95%), most (-70%) or some (-25%).

Societal Experiences and Post-Pandemic WFH Levels

Current and planned levels of WFH rise with the cumulative stringency of government-mandated lockdowns

Outcome →	(1) Current WFH days per week	(2) Desired WFH days per Week	(3) Planned WFH days per Week	(4) Amenity value of option to WFH 2-3 days a week
Cumulative Lockdown Stringency	0.204** (0.078)	0.085 (0.057)	0.136*** (0.047)	0.363 (0.418)
Cumulative COVID-19 deaths per capita	-0.005 (0.086)	0.044 (0.059)	-0.039 (0.056)	0.263 (0.299)
Observations	33091	36078	34875	36078
R^2	0.098	0.069	0.086	0.057

Note: All regressions include controls for log real GDP per capita, gender, 4 age groups, 3 education groups, 18 industry sectors, and wave fixed effects. The reported COVID deaths and lockdown stringency measures are standardized to zero mean and unit standard deviation across countries. Errors clustered at the country level.

Conclusions

- COVID-19 pandemic catalyzed a large and enduring uptake in WFH

- Looking across individuals in the 27 countries covered by waves 1 and 2 of the G-SWA, we advance a three-part explanation:

  1. Pandemic compelled a mass social experiment in WFH

  2. Experimentation generated a tremendous flow of new information about WFH leading to a shift in perceptions

  3. Individuals and organizations re-optimized, choosing much more WFH than before the pandemic

- Number of post-pandemic full WFH days planned by employers rises strongly with employee assessments of WFH productivity surprises during the pandemic

Thank you for your attention!
dolls@ifo.de

Appendix

Countries in the sample

Legend:
- Included in both waves
- Included in 1st wave
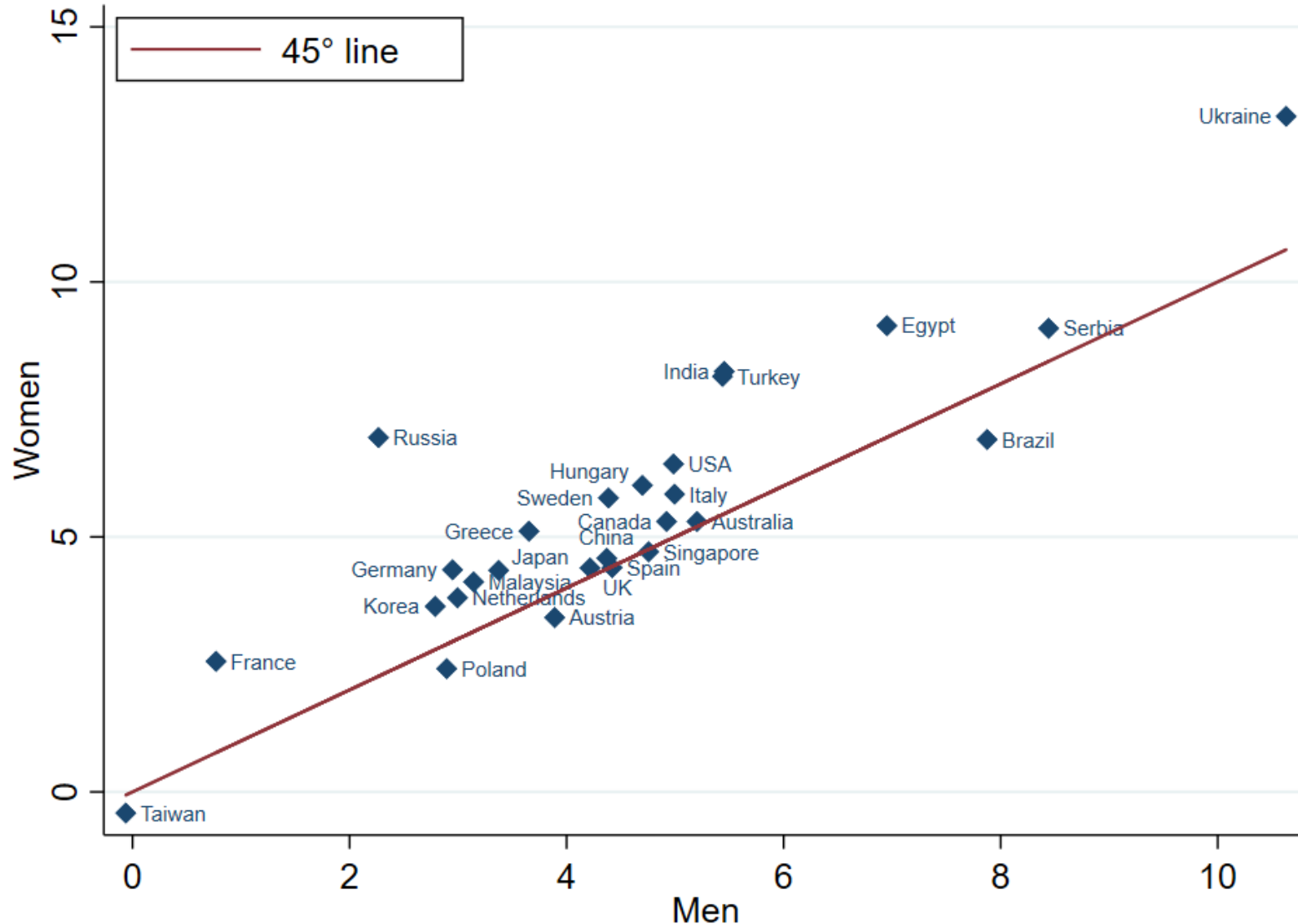- Included in 2nd wave
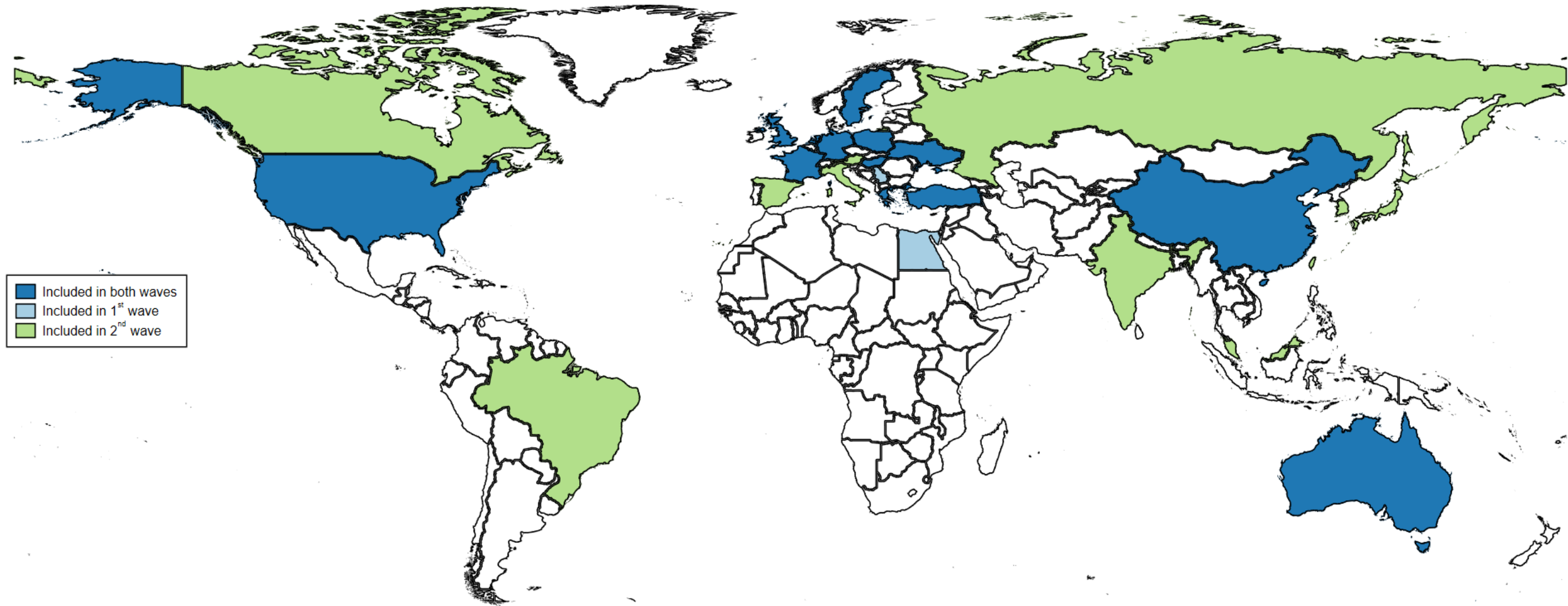
Women More Highly Value the Option to WFH in Most Countries

Average amenity value of the option to WFH 2-3 days per week, as a percent of pay.


Notes: This figure draws on the same questions and data as Figure 4. It also uses the same specification, except that we fit the regression separately for men and women.

How the Amenity Value of WFH Differs by Sex and Family Circumstances, Conditional Means by Country

Panel A: Married men, comparison between with and without children

Panel B: Married women, comparison between with and without children

Panel C: Unpartnered/single persons, comparison between men and women
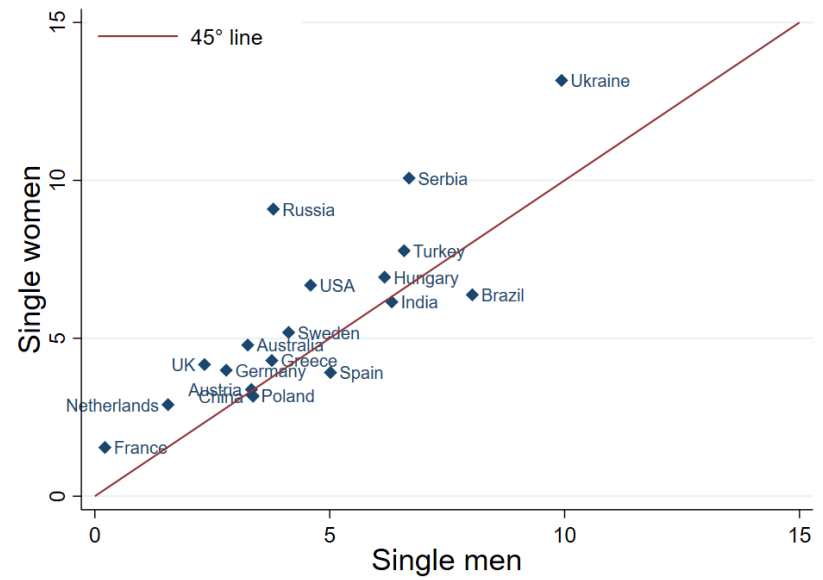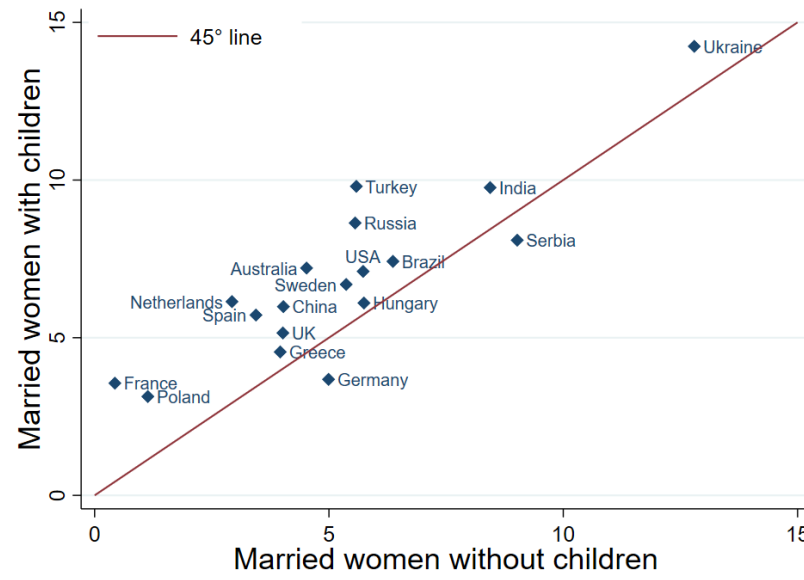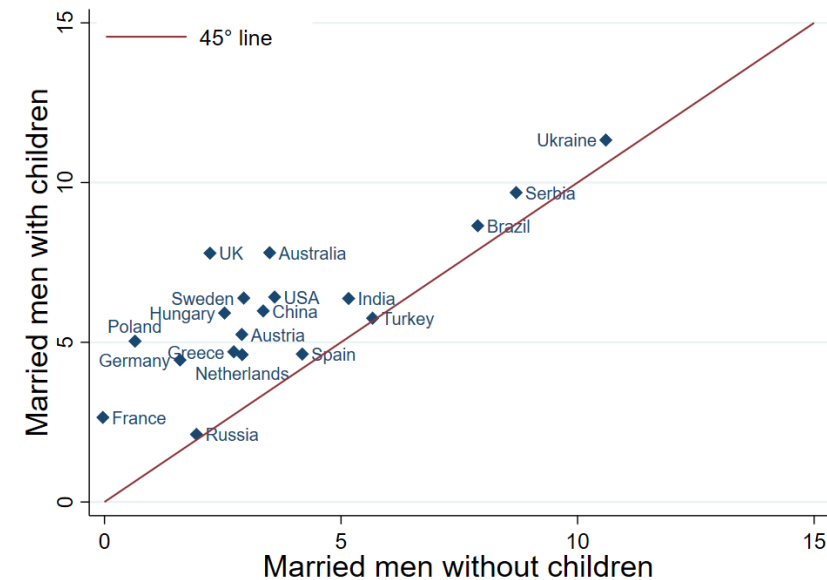
Note: These charts report country-level conditional means as follows: Panel A, married men with and without children; Panel B, married women with and without children; and Panel C, single men and single women, without children in both cases. The regression specification is the same as in Figures 4 and 5, but we fit six separate regressions, one for each of indicated subsamples.

Do National Differences in Pandemic Experiences Affect Planned WFH Levels in the Post-Pandemic Economy?

- We use regression models to investigate how national (and regional) pandemic experiences affect employer plans re WFH in the post-pandemic economy and other outcomes. We focus on the role of pandemic severity, as measured by cumulative COVID deaths per capita, and the cumulative severity and duration of government-mandated lockdown measures.

- We measure cumulative COVID deaths per capita through the end of the month before the survey wave. Data on COVID deaths are from the Johns Hopkins Coronavirus Resource Center at https://coronavirus.jhu.edu.

- To measure cumulative lockdown stringency to date, we draw on the widely used data described in "Oxford COVID-19 Government Response Tracker." These data are available at www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker.

- For each country (or region), we construct an index that combines the severity and duration of government restrictions on commercial and social activity, following the approach in "State-Level Economic Policy Uncertainty." We first compute the monthly Lockdown Stringency Value for country c in month t as:

$$LSI_{ct} = \text{Max}\{\text{SIPO}, (3/4)\text{BCO} + (1/4)\text{SCO}\}$$

where SIPO = 1 when a shelter-in-place order is in effect, 0 otherwise; BCO = 1 when a broad-based business closure order is in effect; and SCO = 1 when schools are closed. These indicator variables can take fractional values when an order is in effect part of the month or part of the country in question. Second, for any given country, we cumulate the Lockdown Stringency Values from March 2020 through the month before the survey wave.

Lockdown Effects Are Stronger for the More Educated

Outcome →	(1) Current WFH days per week	(2) Desired WFH days per Week	(3) Planned WFH days per Week	(4) Amenity value of option to WFH 2-3 days a week
A. Restricting the Sample to Persons with a College Degree				
Cumulative Lockdown	0.282***	0.092	0.170**	0.503
Stringency	(0.097)	(0.067)	(0.064)	(0.433)
Cumulative COVID-19	-0.037	0.035	-0.059	0.337
deaths per capita	(0.106)	(0.075)	(0.066)	(0.347)
Observations	22210	24054	23317	24054
R^2	0.085	0.058	0.075	0.049
B. Restricting the Sample to Persons with a Graduate Degree				
Cumulative Lockdown	0.410***	0.144**	0.266***	0.380
Stringency	(0.139)	(0.059)	(0.086)	(0.401)
Cumulative COVID-19	-0.113	-0.025	-0.105	0.180
deaths per capita	(0.118)	(0.055)	(0.075)	(0.335)
Observations	10954	11826	11468	11826
R^2	0.082	0.056	0.088	0.036

Note: This table uses the same specifications and measures as Table 2. Errors clustered at the country level.

The Structure of Preferences over WFH

	Amenity value of option to WFH 2-3 days a week				
	(1)	(2)	(3)	(4)	(5)
Tertiary Education	1.19***	1.06***	1.23***	1.31***	1.17***
	(0.38)	(0.37)	(0.21)	(0.24)	(0.28)
Graduate Degree	3.17***	3.02***	2.47***	2.78***	2.12***
	(0.24)	(0.23)	(0.35)	(0.46)	(0.38)
Married	0.34	0.34	0.36	0.23	0.51**
	(0.22)	(0.23)	(0.21)	(0.32)	(0.21)
1(Men)	-1.11***	-1.14***	-1.17***		
	(0.22)	(0.23)	(0.25)		
1(Lives with children under 14)	1.27***	1.21***	0.92***	1.07***	0.72**
	(0.33)	(0.32)	(0.30)	(0.29)	(0.27)
1(Men) x 1(Lives with children under 14)	0.06	0.06	0.005		
	(0.50)	(0.50)	(0.48)		
Round trip commute time in hours		0.68***	0.66***	0.60***	0.72***
		(0.19)	(0.15)	(0.11)	(0.22)
Sample	All	All	All	Men	Women
Dependent variable S.D.:	11.293	11.293	11.293	11.313	11.234
Observations	26,689	26,689	26,689	13,605	13,084
R^2	0.035	0.039	0.074	0.070	0.078
Country F.E.:			Y	Y	Y

Note: The dependent variable is the willingness to pay for the option to WFH 2-3 days per week, computed using the two-part question structure described in the main text. The sample contains individual-level data in the 20 countries for which we have data on the number of children and marital status. All specification include fixed effects for age groups and survey wave. We cluster errors at the country level.

Implications of the Big Shift to WFH

1. <u>Large direct benefits, on average, for workers and families</u>:

   - Savings in time and money costs of commuting

   - More flexibility in managing time and the household

   - Greater personal autonomy and more comfortable surroundings

2. Direct <u>benefits flow mainly to the college-educated</u>, who are a larger share in richer countries.

3. <u>Not everyone benefits</u>: People who value daily in-person encounters with colleagues, or people who lose out on learning and networking may be worse off. Others (e.g., immobile urban poor) may be hurt by equilibrium effects on jobs and local public goods.

4. <u>Pace of innovation</u>: Countervailing effects. Hard to draw firm conclusions, but we are optimistic for reasons set forth in the paper.

Implications

5. <u>Challenges for Cities</u>: The rise of remote work …

   - <u>Reduces the local tax base</u> in cities that had organized themselves to support a large volume of inward commuters and a high density of commercial activity.

   - <u>Raises the elasticity of the local tax base</u> with respect to the quality of local governance – more so in cities like San Francisco where so many well-paying jobs are amenable to remote work.

     - <u>Creates sharper incentives</u> for sensible, efficient local governance

     - <u>Creates more scope for a downward spiral in city fortunes</u>, whereby poor governance amplifies outmigration and the loss of inward commuters, eroding the local tax base and undercutting the fiscal capacity to supply local public goods, which then leads to more outmigration and less inward commuting, …