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The Big Shift in Working Arrangements: Eight Ways Unusual

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DISCUSSION PAPER SERIES

IZA DP No. 16932

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ABSTRACT

The Big Shift in Working Arrangements: Eight Ways Unusual*

The COVID-19 pandemic instigated a big shift in working arrangements. I first describe the scale of this shift in the United States, drawing on the Survey of Working Arrangements and Attitudes and other sources. I then review differences, circa 2023, in work-from-home rates across industries, demographic groups, and countries. The big shift had surprisingly benign (or even positive) effects on productivity, which is one reason it has endured. Compared to other shocks that strike modern economies, the big shift is also unusual in other respects: It relaxes time budget constraints, improves flexibility in time use, enhances individual autonomy, relaxes locational constraints, drives a major re-sorting of workers to jobs and employers, and alters the structure of wages. The big shift also reduces wage-growth pressures during the transition to new working arrangements and life styles. The shift benefits workers, on average, even as it lowers non-labor costs and real product wages for firms.

JEL Classification: D2, D83, E24, J22, J31

Keywords: COVID-19, work from home, remote work, productivity, job amenities, time savings, flexibility in time use, personal autonomy, locational constraints, Great Re-Sorting, wages

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* This paper draws heavily on my data collection efforts and my research with many collaborators, especially Jose Maria Barrero and Nick Bloom. Our data collection activities include the U.S. Survey of Working Arrangements and Attitudes and the Global Survey of Working Arrangements. The latter is a joint undertaking with Cevat Giray Aksoy, Matthias Dolls and Pablo Zarate. Errors and omissions are my own.

The COVID-19 pandemic instigated a major shift in how many of us work and live. Before the pandemic, nearly all employees travelled to their employer's or client's worksite on all or almost all workdays. That's no longer the case. Many of us now put in full paid workdays from home (or other remote location) one or more days per week. Some of us now work from home most or all of the time. This big shift matters for worker well-being, wages, productivity, managerial practices, workplace cultures, transit systems, property values, cities, and more. In this essay, I first present evidence on the scale of the shift to work from home (WFH) in the United States. I then review evidence on differences, circa 2023, in the extent of WFH across industries, demographic groups, and countries. The evidence also shows that people differ greatly in their preferences over working arrangements.

Policy makers, investors, business executives, and researchers are accustomed to thinking about economic shocks associated with financial crises, monetary policy, tax policy, government spending, trade policy, commodity supplies, and geopolitical developments. Compared to these shocks, the recent shift in working arrangements is unusual in several noteworthy respects. For starters, it had surprisingly benign, even positive, effects on productivity in many tasks and jobs. The surprise in question here is relative to the pre-pandemic expectations of workers and managers. That WFH proved to be more practical and effective than anticipated in many jobs and tasks helps explain why the big shift has endured.

The recent shift in working arrangements is also unusual in other ways: It relaxes time budget constraints, improves flexibility in time use, enhances individual autonomy, relaxes locational constraints, drives a major re-sorting of workers to jobs and employers, and alters the structure of wages. The big shift also reduces wage-growth pressures over the course of the transition to a new set of arrangements in how we work and live. The shift benefits workers, on average, even as it lowers non-labor costs and real product wages for firms.

These and other aspects of the big shift are not unprecedented. For example, the transition from an agrarian to an industrial economy involved an enormous re-sorting of workers to jobs and profound changes in how people work and live. High-speed transit systems relax locational constraints and offer at least the potential to save on commuting time. But the industrial revolution and the later transition to a service-oriented economy unfolded over many decades. The development of rapid transit systems also unfolded over long periods of time and happened at

different times in different places. What distinguishes the recent shift in working arrangements is its combination of scale, abruptness, surprise impact, and other unusual features.

I. The Big Shift in Working Arrangements

A. The U.S. Experience

Consider the evolution of work from home in the United States: The share of full paid workdays performed at home drifted upward in the half century before the COVID-19 pandemic, reaching about seven percent in 2019 (Barrero, Bloom and Davis, 2023). Figure 1 picks up the story from there. The WFH rate shot above 50 percent in spring 2020, driven by contagion fears and government restrictions on commercial and social activities. The WFH rate fell over the following two years, stabilizing at around 28 percent of full paid workdays according to the U.S. Survey of Working Arrangements and Attitudes (SWAA).[1] Evidence on working arrangements derived from the text in job vacancy postings also suggests that WFH rates in the United States have stabilized since 2022. See Hansen et al. (2023) and the updates at www.WFHmap.com.

While striking, the statistics in Figure 1 understate the changes over time in how we engage coworkers, customers, and suppliers. As an example, consider a five-person work team. Before the pandemic, suppose that all team meetings took place in person at a common worksite. After the pandemic, suppose that each team member works from home one day per week. To draw out the point as starkly as possible, suppose that each member works from home on a different day of the week. In this example, the share of WFH days by team members rises from zero percent before the pandemic to 20 percent afterwards. At the same time, the fully in-person share of team meetings falls from 100 percent before the pandemic to zero percent afterwards. As the example shows, a twenty-percentage point rise in the WFH rate can drive a complete collapse in the share of work meetings that take place in a fully in-person mode. Of course, this example is just that – an example. We need systematic evidence to assess how we actually engage one another in our work-related activities.

I know of no evidence, covering a broad cross section of workers, on the in-person share of work meetings before the pandemic. We can, however, use recent SWAA data to estimate this

[1] The measured extent of WFH differs markedly across major U.S. survey sources. See Barrero et al. (2024a) for a detailed discussion and a partial reconciliation of WFH rates across sources.

share after the big shift. In March 2024, we asked each employed respondent several questions about work-related meetings on their most recent workdays. Specifically, we elicited information about one randomly selected meeting for each worker. Among other things, we asked about meeting size, meeting duration, and how the participants engaged one another: fully in-person, fully remote, or a mix of in-person and remote participation.

Figure 2 summarizes some of the data. On the horizontal scale, we split workers into three groups defined by their individual working arrangements. As indicated by the values in parentheses, 59 percent of workers operated on their employer's (or client's) premises every workday, 13 percent operated entirely at home or other remote site (e.g., a coffee shop or library), and 28 percent split the workweek between their employer's premises and their home. For each group of workers, Figure 2 also reports a breakdown of meetings by participant engagement mode. Among those with hybrid working arrangements, 42 percent of their meetings involved in-person participants only. Another 28 percent of their work meetings involved a mix of in-person and remote participants. In 29 percent of their work meetings, all participants engaged one another remotely – i.e., via video conference or phone.

Using the statistics in Figure 2, we can compute the simple mean share (over workers) of work meetings that involve in-person participants only as 100[(0.592)(0.766) + (0.279)(0.424) + (0.128)(0.19) = 59.6 percent.[2] In other words, forty percent of work meetings in the United States involve at least one remote participant as of March 2024. As I will discuss shortly, WFH rates are much higher in some industries than others. Thus, we can safely infer that fully remote and mixed-mode meeting participation is now the norm in some industries.

There is little prospect for a widespread return to fully in-person meetings. For one thing, the pandemic triggered an innovation speed-up in technologies that support video conferencing and remote collaboration. That will reinforce the shift to remote work and remote meetings in the years ahead. Bloom et al. (2021) make this point by executing computer-automated readings of U.S. patent applications to quantify the flow of new technologies. They find that the share of new patent applications devoted to technologies that support video conferencing, telecommuting and remote collaboration nearly doubled after the COVID-19 pandemic struck. Barrero et al.

[2] In computing this mean value, I place an equal weight on all workers who had at least one meeting on their most recent workday. I do not weight by meeting frequency (for a given worker), nor do I weight individual meetings by their size or duration.

(2021) and Aksoy et al. (2022) provide a fuller explanation and analysis of why remote work is here to stay, with many pieces of supporting evidence. Indeed, U.S. business executives anticipate that work-from-home rates at their own firms will, on average, rise over the next five years from mid-2023 levels (Bloom et al., 2023).

B. Differences Across Industries[3]

Some tasks and jobs are suitable for remote work, and many others are not (Dingel and Neiman 2020). The share of remote-suitable jobs also differs across industries. Figure 3 reports WFH rates by industry in the United States as of 2023. The Information sector has the highest WFH intensity at 2.6 days per week among employees who work at least five days a week. Finance & Insurance and Professional & Business Services have the next highest work-from-home rates.

These sectors share certain characteristics that facilitate or incentivize work from home: Staff are well paid, jobs are often analytical or computer-intensive in nature, and firms tend to cluster in major cities. Higher earners typically have nicer homes with more room for a home office. They also face higher marginal tax rates, strengthening the tax incentive to accept less pay in exchange for more WFH days. In this regard, it's important to recognize that time savings, greater flexibility in time use over the day, and greater personal autonomy are untaxed benefits of working from home. Turning to another point, many computer-intensive jobs lend themselves to remote work. And many analytically oriented jobs require periods of intense focus, which is easier to find at home for many workers. Finally, because firms in these sectors cluster in dense urban centers, many of their employees face long commutes to the office. That makes it all the more appealing to avoid the commute, thereby saving time, money, and aggravation.

At the other end of the distribution, employees in Retail, Hospitality & Food Services, Transportation & Warehousing, and Manufacturing have low WFH rates, ranging from 0.7 to 0.9 days per week. Most jobs in these industries require a physical presence to engage consumers or to work with specialized equipment and facilities. Because staff work mainly onsite, so do their managers.

There are also striking differences in WFH rates across employers in the same industry. To develop this point, Hansen et al. (2023) exploit granular data on millions of job vacancy postings. In one of their examples, they consider U.S. automobile manufacturers as they recruit

[3] This section borrows heavily from Barrero et al. (2023).

for engineers. In 2022, and restricting attention to engineering positions, the share of vacancy postings that say the job allows some remote work was zero for Tesla, 8 percent for Ford, 23 percent for General Motors, and 45 percent for Honda. It was near zero for all four companies in 2019. These observations illustrate that WFH home intensity is, in part, an outcome of choices about job design, managerial practices, and workplace culture. Organizations can make different choices in this regard, and they do so in the post-pandemic economy.

C. Differences Across Demographic Groups

WFH rates rise steeply with individual-level educational attainment in the post-pandemic economy, as many studies document. This phenomenon overlaps with the pattern of WFH rates across industries reported in Figure 3. In particular, highly educated workers are concentrated in the Information sector, Finance & Insurance, and Professional & Business Services. These sectors—and the people who work in them—have high WFH propensities for the reasons discussed above. As one might anticipate from these remarks, WFH rates also rise steeply with earnings (Barrero et al., 2021).

The presence of young children in the household is also robustly associated with more work from home. That's true for both men and women, and this pattern holds across the vast majority of the advanced and middle-income economies considered in Aksoy et al. (2022). Survey evidence also reveals stronger desires to work from home part of the week by persons who live with young children. These preference differences tied to the presence of children in the household help explain another prominent demographic pattern: WFH rates peak among people in their thirties and early forties, which is when parents are typically raising young children. Women tend to work from home more than men, even conditional on the presence of young children, but the difference is modest in the United States. The already-small average difference in WFH rates between American men and women shrinks further or disappears altogether after controlling for women's greater educational attainment (Barrero et al., 2023).

D. Differences Across Countries

Given available data, I cannot quantify the long-sweep evolution of WFH rates in most countries. However, my collaborators and I have fielded a harmonized set of questions about WFH activity across many countries in our Global Survey of Working Arrangements (G-SWA). See Aksoy et al. (2022, 2023ab). Figure 4 draws on the 2023 G-SWA to report mean WFH days

among full-time employees in 34 countries. The underlying country-level samples restrict attention to persons 20-64 years of age who finished secondary school.

According to these data, full-time employees worked from home an average of 1.4 full paid days per week across Australia, Canada, New Zealand, the United Kingdom, and the United States. By way of comparison, WFH levels average only 0.7 days per week in the seven Asian countries covered by the 2023 G-SWA, 0.8 days in the European countries, and 0.9 days across South Africa and the four Latin American covered by the survey. In short, we see large differences across countries in the extent of WFH.

WFH rates vary across countries for several reasons. As discussed earlier, WFH rates rise steeply with individual-level educational attainment in the cross section. Not surprisingly then, WFH rates tend to be higher in countries with more highly educated workforces. As a related point, countries with larger shares of jobs in Information, Finance & Insurance, and Business & Professional Services tend to have relatively high WFH rates. These observations help explain why the United States and the United Kingdom have among the highest WFH rates in the world. Other factors are also in play. Aksoy et al. (2022) find that countries with longer, stricter government-mandated lockdowns in 2020 and 2021 tend to have higher WFH rates, other things equal. Similarly, Adrjan et al. (2023) find that differences across countries in lockdown severity during the pandemic and "digital preparedness" before the pandemic partly explain cross-country differences in the shift to remote work.

Zarate et al. (2024) consider the role of cultural factors in accounting for differences in WFH rates across 34 countries, using data from the 2023 G-SWA. While it's hard to isolate the character and impact of cultural forces, their evidence suggests an important role for individualism, as measured by Hofstede (2011). Australia, Canada, the UK, and the US score highly on individualism and WFH rates, whereas Asian countries score low on both. Other factors such as cumulative lockdown stringency during the pandemic, population density, and industry mix also matter in the analysis of Zarate et al. When looking across individual American workers, Zarate et al. find that industry, local population density, and cumulative lockdown stringency during the pandemic help account for WFH rates as of 2023, as does the partisan leaning of the county in which a worker resides. In summary, the evidence strongly suggests that many factors influence WFH rates, and technological feasibility is only one of them.

E. Heterogeneity in Preferences Over Working Arrangements

As discussed above, preferences over working arrangements and observed WFH rates differ systematically with education, earnings, age, sex, and parental status. Not surprisingly, people who face longer commutes also place higher value on the opportunity to WFH, conditional on other observables. Another striking feature of the data is even more noteworthy: People differ enormously in their preferences over working arrangements.

When asked directly about their willingness to pay for the opportunity to work from home two or three days a week, nearly a tenth of American workers dislike the idea and require a pay premium to willingly do so. More than a quarter of Americans are equally happy to work entirely at their employer's site or to split the workweek between home and employer premises. The rest, a majority, prefer to work from home part of the week, with wide variation in their willingness to accept lower pay to do so. The average willingness to pay for the option to WFH two or three days a week is eight percent of pay among American workers, according to the SWAA data considered by Barrero et al. (2021).

Aksoy et al. (2022) investigate preferences over working arrangements using G-SWA data for 27 countries. They also find great heterogeneity in preferred working arrangements. To highlight this heterogeneity, they regress individual-level willingness to pay for the opportunity to WFH two or three days a week on educational attainment, age, sex, marital status, presence of children, commute time, current working arrangements, survey wave, and country. Even their most expansive and flexible regression specifications yield R-squared values of less than 12 percent. This finding underscores the heterogeneity in preferences over working arrangements. In plain language, people differ greatly in their preferred working arrangements and in their willingness to trade off other considerations, like pay, to attain their preferred arrangements.

The upshot of this preference heterogeneity is that variety in working arrangements is beneficial for society. Even if the median worker were indifferent between traditional and hybrid working arrangements, for example, the new-found ability of individuals to sort into their preferred arrangements is highly valuable. In fact, the evidence says that most people prefer to work from home at least one day a week. That makes it even more socially beneficial to shift from a situation with few WFH opportunities to one with many such opportunities.

II. Eight Ways Unusual

A. Work from Home Worked Better than Expected

The COVID-19 pandemic triggered a mass social experiment in working arrangements. The experimentation lasted for weeks and months, sometimes longer, and extended across most sectors of the economy. All of that experimentation revealed new information about the practicality and effectiveness of remote work across a vast array of tasks, jobs, organizations, and commercial networks. In turn, the new information prompted many workers and employers to reassess their working arrangements.

Barrero et al. (2021) find that most Americans were favorably surprised by their ability to be productive in WFH mode during the pandemic. This is not to say they felt or were equally productive in WFH and onsite work modes. Rather, the point is that their experiences during the pandemic gave many workers a reason to reconsider their working arrangements (and lifestyles). The reader might doubt the accuracy of productivity self-assessments by workers. Mindful of this concern, Barrero et al. also investigate the relationship of worker self-assessments to employer plans for working arrangements. In this respect, and looking across individual workers, they find that the number of WFH days that the *employer* plans for the employee after the pandemic rises strongly with the *employee's* assessment of WFH productivity surprises during the pandemic. This finding says that, on average, employee self-assessments of effectiveness in WFH mode during the pandemic aligns well with the perceptions of their employers.

Aksoy et al. (2022) find the same patterns in G-SWA data for 27 countries. That is, the average worker was favorably surprised by his or her ability to WFH during the pandemic in each country. Moreover, when looking across individuals within a country, the number of WFH days that *employers* plan after the pandemic rises strongly with *employee* assessments of WFH productivity surprises during the pandemic. This pattern holds in every country.

Some observers express puzzlement at the durability of the big shift in working arrangements. If WFH is so great, the argument goes, why was it rare before the pandemic. Among other weaknesses, this argument neglects the costs and consequences of experimentation. When experimentation is sufficiently costly, it may be optimal to exploit known production technologies rather than incur costs and run risks to try unknown and unproven technologies. This (rational) reluctance to experiment can inhibit the discovery of more effective production technologies and working arrangements. If new circumstances then compel experimentation or

make it more attractive, the resulting flow of new information can lead to revised assessments and new arrangements. See Baumol and Quandt (1964) and Aghion et al. (1991) for theoretical variations on this theme in other contexts.

Larcom et al. (2017) present evidence that a strike by London Underground workers led many commuters to try new travel routes and, in some cases, to stick with the new routes after the strike ended. The route-altering responses to the strike were larger for people who lived in areas for which the abstract depictions of the London Underground network presented a more distorted impression of travel distances and times. In short, forced experimentation yielded new information for commuters, causing some of them to re-optimize their choice of travel routes.

The COVID-19 pandemic triggered a forced experimentation in working arrangements, and it did so at scale in countries around the world. The simultaneity of experimentation across suppliers, producers, customers, and commercial networks yielded information and experience that were hard or impossible to acquire before the pandemic. In this respect, the pandemic-instigated experimentation with working arrangements differs in kind from the experimentation in travel routes triggered by the London Underground strike. It was entirely feasible for individual commuters to try alternative travel routes before the strike. In contrast, before the pandemic it was impossible for a large professional services firm, say, to experiment with fully remote work while all of its clients also operated in a fully remote mode. For this reason, the social distancing and lockdown restrictions associated with the pandemic revealed information about the practicality and effectiveness of working arrangements that no worker or firm could have confidently acquired before the pandemic.

Obviously, the pandemic-instigated experimentation was quite costly and highly disruptive. By revealed preference, firms and workers experimented in ways they had preferred to avoid before the pandemic. Nevertheless, those experiences generated new knowledge about the practicality and effectiveness of alternative working arrangements. For many workers and employers, that new knowledge led to a re-optimization and lasting shift in the choice of working arrangements.

B. Other Unusual Aspects of the Big Shift

In addition to a flood of new information about the practicality and effectiveness of alternative working arrangements, the pandemic-instigated big shift has many other unusual aspects and consequences. I briefly discuss several of them in the balance of this section.

1. *Time Savings*

Barrero et al. (2021) quantify the time savings associated with the big shift to WFH in the United States. When American employees work from home, they save an average of 65 minutes per day. The time savings arise mainly from avoided commutes, but Americans also devote about ten minutes less to grooming and dressing on WFH days as compared to onsite workdays. Aggregating, and accounting for individual-level working arrangements before and after the pandemic, Barrero et al. (2021) estimate that the total time savings associated with the big shift equals about two percent of pre-pandemic work hours on an earnings-weighted basis.[4] This figure is an average over people who participated in the big shift, and those who did not.

What's the economic value of these time savings? The after-tax wage rate offers a useful benchmark for the private value of time savings when the individual freely allocates time across activities, as in Becker (1965), and time spent commuting is neither more nor less (un)pleasant than time spent working. Using this benchmark, the time savings associated with the big shift are worth about two percent of after-tax earnings in the United States. That's a large beneficial consequence of the big shift. At the risk of belaboring the obvious, this figure quantifies a flow benefit. The present value benefits of the time savings due to the big shift are twenty times larger at a five percent annual discount rate.

Aksoy et al. (2023a) carry out related calculations for workers, aged 20-59, who finished secondary school in 27 countries. While they cannot compare pre-pandemic and post-pandemic outcomes, they have individual-level data on working arrangements and commute times as of 2021 and 2022. The average daily time savings when working from home is 72 minutes in their sample. When they account for the incidence of WFH across people – including those who never work remotely – they estimate that WFH saves an average of one hour per week per worker in the post-pandemic economy. For a full-time worker, this average time savings is 2.2 percent of a 46-hour workweek (40 paid hours plus six hours of commuting). Of course, average time savings are smaller (larger) in countries with lower (higher) WFH rates and shorter (longer) commutes.

[4] That is, the calculation weights each hour saved by WFH in proportion to the hourly earnings of the worker in question. In effect, the calculation gives more weight to the time savings of people who earn more per hour.

In short, the big shift to WFH relaxes the time budge constraint for millions of workers around the world. WFH also saves on the money costs of commuting and often requires lower expenditures on clothing, laundering, and workday dining.

2. *Greater Flexibility in Time Use over the Day*

When asked "What are the top three benefits of working from home?" in the February 2022 SWAA, the top two choices were "No commute" (60 percent) and "Flexible work schedule" (49 percent). This response pattern confirms that many workers place high value on the flexibility in time use afforded by WFH. It's easy to see why. Working from home two days a week, for example, makes it much easier to coordinate with plumbers or electricians for home repairs, accompany a child to the dentist, or simply chat with your child for a few minutes when he or she returns from school. It also makes it easier to take a work break for exercise or a stroll in the park, while working later into the evening to compensate. In short, work from home offers greater flexibility in time use over the workday, which is likely to be especially valuable for parents with children in the household.

3. More Personal Autonomy

For many people, home offers a more pleasant and productive working environment than the office. At home, the individual controls the ambient temperature and humidity, dresses as he or she sees fit (subject to the requirements of video conferencing), listens to background music or not, and so on. Some people have physical infirmities that are easier to accommodate at home. Some people find it much easier to focus at home. Some people must contend with obnoxious or abusive coworkers in the office. Some people hold religious beliefs or political views that clash with those of coworkers. See Kahn (2022) for a lively and much fuller discussion of how WFH expands personal freedoms.

My point here is not to argue that WFH is suitable for all workers, tasks, jobs, and organizations. Clearly, it is not. Rather my point is that variety in available working arrangements is socially valuable because it works well for some people in some jobs, and because some people like the greater personal autonomy that comes with WFH over and above the benefits associated with time savings and greater flexibiity in time use.

4. Relaxed Locational Constraints

Historically, the choice of where to live was tightly tethered to the location of one's job. The big shift to WFH relaxes that locational constraint. In doing so, it expands employment options for anyone who can work in jobs that are suitable for hybrid or fully remote working arrangements. It also relaxes residential location choices for individuals and families.

Consider a software engineer who lives (or wants to live) in a small town that is located fifty miles away from the nearest city with software jobs. Commuting fifty miles each way five days a week is an unappealing proposition for most people. The same commute once a week is not so onerous. As this example suggests, the big shift in working arrangements can be especially valuable for people who live (or want to live) outside of urban areas.

A similar logic applies to married couples that must contend with joint-location constraints as they seek to manage their separate careers while raising a family or simply sharing a life together. If each member of the couple must commute to the workplace five days a week, it may be impractical or unappealing to work for employers situated 100 miles apart. The same employers and jobs become much more manageable if one or both members of the couple must commute only two days a week.

The big shift also offers new opportunities for employers to recruit employees from areas with deeper talent pools or lower wages, without relocating the business. Akan et al. (2024) provide some evidence on this score by exploiting data from Gusto, a firm that provides payroll processing and other services to mostly smaller and mid-sized employers. They analyze employee-level data linked to a balanced panel of 5,800 firms that operated continuously from 2018 to 2023. As of 2019, less than one percent of the employees at these firms resided more than 50 miles from their employer's worksite. By 2023, about two percent of the employees hired before March 2020 at these firms lived more than 50 miles away. Among employees at these firms who were hired since March 2020, more than seven percent live more than 50 miles away from the employer's worksite as of 2023. This result says that a partial untethering of worker residential locations from employer worksite locations is underway. This process will surely continue to unfold for many years, as company workforces gradually turn over.

5. The Re-Sorting of Workers to Jobs and Employers

In light of their own individual WFH experiences in 2020, the new-found availability of WFH options and the relaxation of locational constraints, many workers chose to quit their old

jobs in favor of new ones with more appealing working arrangements. And many, but not all, employers came to see flexible working arrangements as helpful to their talent recruitment and retention efforts. Even among firms in the same industry competing for talent in the same occupational category, the range of working arrangements on offer is much wider now than before the pandemic.

These developments spurred a surge of worker quits in what is sometimes dubbed the "Great Resignation," but which is more aptly described as the "Great Re-Sorting." According to statistics from the U.S. Job Openings and Labor Turnover Survey, the quit rate among American employees reached record highs in early 2021. Throughout the period from early 2021 to early 2023, U.S. quit rates were higher than any previously recorded quit rate, extending back to the start of the series in December 2020.[5]

Bagga et al. (2023) develop a calibrated equilibrium search model with frictional unemployment that accommodates the amenity-value aspect of work from home in some jobs. Their model explains several unusual features of U.S. labor market dynamics in the wake of the COVID-19 pandemic: the unprecedented surge in quit rates, high vacancy rates, low vacancy fill rates, the peculiar behavior of the Beveridge Curve, the striking drop in matching efficiency, and the Great Re-Sorting of workers to new jobs. Their model also accounts for much of the cross-industry variation in these patterns as a consequence of industry differences in the share of jobs that offer WFH opportunities. Their analysis reinforces my view that the big shift in working arrangements is a highly unusual and consequential shock in several respects. Several otherwise puzzling labor market developments in recent years are easy to understand once we recognize the big shift in working arrangements and the amenity-value gains that it brought.

It is unclear to me (as of April 2024) whether and to what extent a similar dynamic in the joint behavior of quits, unemployment, vacancies, and vacancy fill rates has played out in other countries since 2020, especially countries that saw shifts to WFH comparable in magnitude to that of the United States. Research on this topic would be quite useful.

[5] U.S. Bureau of Labor Statistics, Quits: Total Nonfarm [JTSQUR], retrieved from FRED on 14 April 2024, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/JTSQUR.

6. Reduced Wage-Growth Pressures along the Transition Path

As we have seen, the big shift in working arrangements raises the amenity value of employment in many jobs. These amenity-value gains take the form of time savings, greater flexibility in time use, more personal autonomy, and more locational flexibility. Economic reasoning implies that employers and workers ultimately share the resulting amenity-value gains associated with the big shift. Since workers initially reaped the direct benefits of the shift at pre-determined wages – i.e., wages set before the pandemic struck – employer benefits take the form of slower wage growth along the transition path to a new equilibrium with compensation packages that recognize higher remote work levels.

Barrero et al. (2022) develop novel survey evidence to assess this mechanism and quantify its force. To do so, they put questions to hundreds of U.S. business executives in the Survey of Business Uncertainty, fielded by the Federal Reserve Bank of Atlanta. About four-in-ten executives said their firms relied on expanded WFH to moderate wage-growth pressures when looking back 12 months from April/May 2022. A similar share of executives said their firms expected to rely on WFH to moderate wage growth over the next 12 months, as of April/May 2022. When executives said that expanded WFH opportunities moderated wage growth at their firm, the survey asked how much. Integrating over all firm-level responses, and weighting each firm in proportion to its employment level, Barrero et al. find that the big shift to WFH reduced overall wage growth by about two percentage points over two years centered on April/May 2022. This wage-growth restraint came at a fortuitous time for the Fed, as it reacted to an inflation surge and sought to return inflation rates to acceptable levels.

The shift to remote work affects labor costs in other ways as well. Barrero et al. (2022) present evidence that increased reliance on remote work at the firm level is associated with more use of independent contractors, leased employees, domestic outsourcing and foreign offshoring. These developments are also likely to reduce labor costs. In addition, fully remote employees do not require office space and the overhead costs that come with a physical footprint. To a lesser extent, hybrid working arrangements also let firms economize on space.

It's important to recognize that these employer cost savings do not come at the expense of their employees. WFH yields benefits that most workers appreciate and that some value greatly. Moreover, the relaxation of locational constraints afforded by WFH can simultaneously

raise real worker wages and lower real product wages. To see this point, consider an employee who accepts a ten percent nominal wage cut in exchange for performing his job remotely and re-locating to another city with living costs that are twenty percent lower. In this example, the employee's real wage rises by about ten percent and the employer's real cost of securing his labor services falls by ten percent. Both employer and employee benefit.

7. Persistent Wage-Structure Effects

The big shift to WFH alters the structure of wages as well. To see how, recall that WFH rates rise steeply with educational attainment in the cross section, and that WFH jobs cluster in certain industry sectors (Figure 3). Thus, the amenity-value benefits associated with the big shift are concentrated among these same workers and sectors. A long line of thinking in economics says that wages are lower, other things equal, in jobs with amenity attributes that workers like.[6] Thus, it seems likely that the big shift shrank the college wage premium and put more downward pressure on wages in sectors with larger increases in work-from-home intensity.

While limited, the available evidence favors this hypothesis. In their survey of business executives, Barrero et al. (2022) find smaller wage-growth moderation effects in sectors with few jobs that are suitable for remote work and larger moderation effects in sectors with many such jobs. Autor et al. (2023) document a large and "unexpected compression" in the U.S. wage distribution after the pandemic struck, including a reduction in the college wage premium. Their explanation stresses the pandemic's effects on labor market tightness and wage markdowns, but they observe that amenity-value shocks may also play a role.

III. Concluding Remarks

The big shift in working arrangements benefits workers, on average, even as it lowers non-labor costs and real product wages for firms. To be sure, managers and organizations face new challenges in adjusting to hybrid and remote working arrangements. Some observers worry the shift to remote work will impede learning on the job and professional networking. Some worry that a drop in face-to-face encounters in the workplace will slow the pace of innovation. The shift to WFH and the loss of inward commuters also present huge challenges for some cities,

[6] Rosen (1986) offers a classic statement of this theory of "equalizing differences" or "compensating differentials." As he notes, the basic idea originates in *The Wealth of Nations* by Adam Smith.

including Chicago (my previous home), San Francisco (close to my current home) and Washington, D.C. (my frequent travel destination). These concerns are serious ones, and they warrant attention.

While mindful of the costs and challenges, I see the big shift in working arrangements as, on balance, highly beneficial for reasons reviewed in this essay and for other reasons. See Barrero et al. (2021, 2022, 2023) and Aksoy et al. (2022) for more discussion and analysis, including lengthier treatments of the potential downsides to the big shift.

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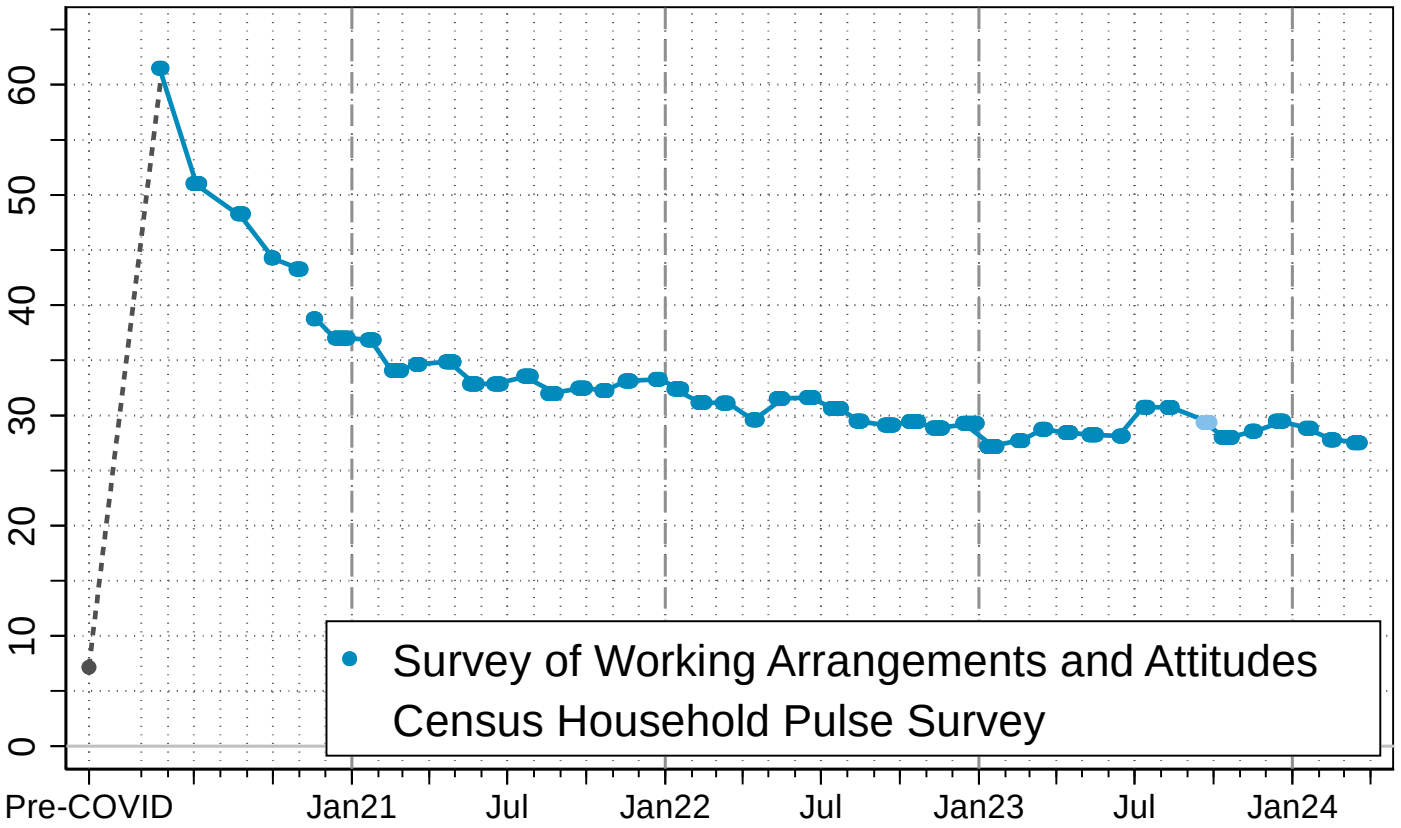
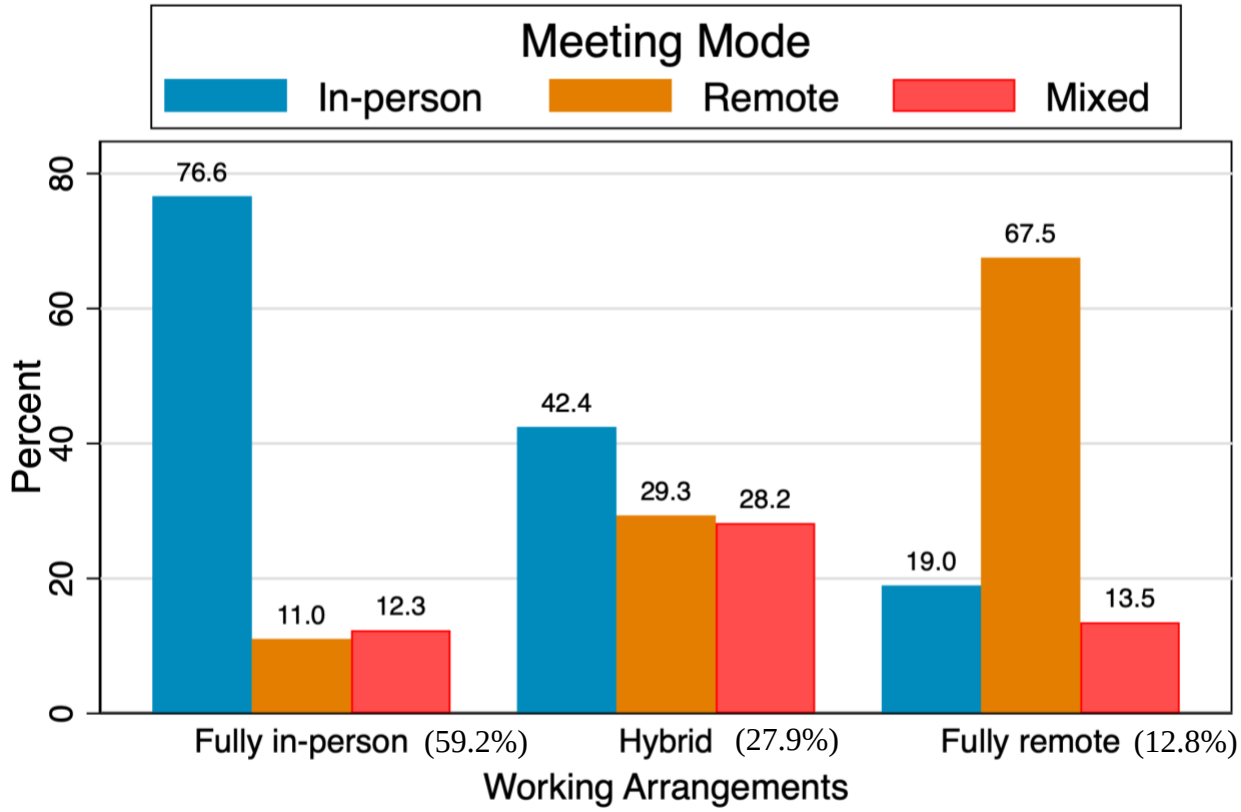
Figure 1: Percentage of Paid Full Days Worked from Home in the United States, 2019 and May 2020 to March 2024



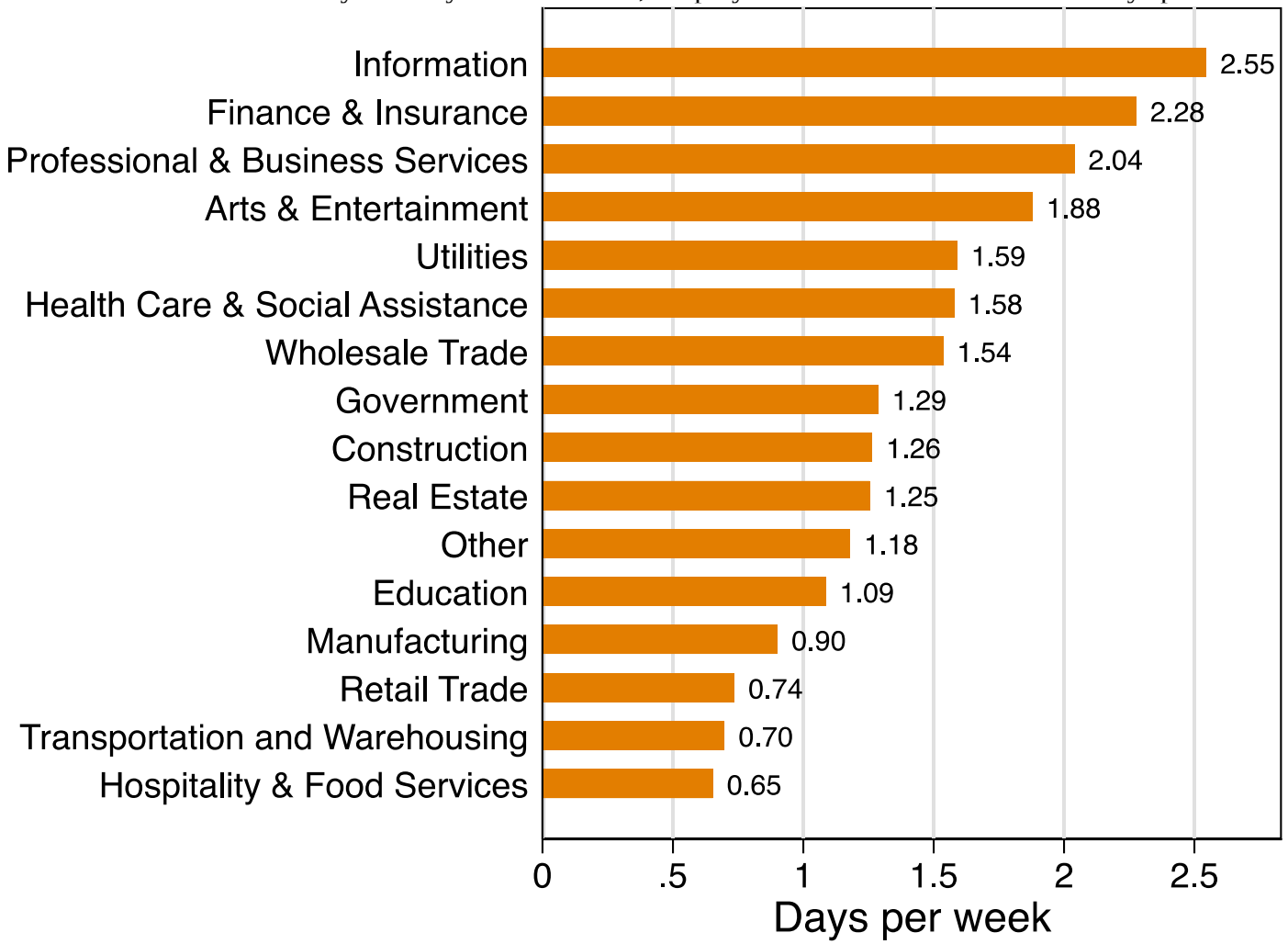
Notes: Reproduced from Barrero et al. (2024b). Monthly updates available at www.WFHresearh.com. We estimate the "Pre-COVID" percentage using data from the 2019 American Time Use Survey. We calculate SWAA statistics based on responses to the following questions: "**Currently (this week)** *what is your work status?* And "*For each day* **last week**, *did you* **work a full day (6 or more hours)**, *and if so* **where?**" We calculate HPS statistics based on responses to: "*In the last 7 days, have you…teleworked or worked from home?"* We limit our samples to persons 20-64 years of age. We drop persons with annualized earnings of less than $10,000 in the ATUS and SWAA and with annual household income of less than $25,000 in the HPS. The break in the SWAA time series in November 2020 reflects a change in the survey question.

Figure 2: Share of Work Meetings by Mode and Working Arrangements, U.S. Data, March 2024



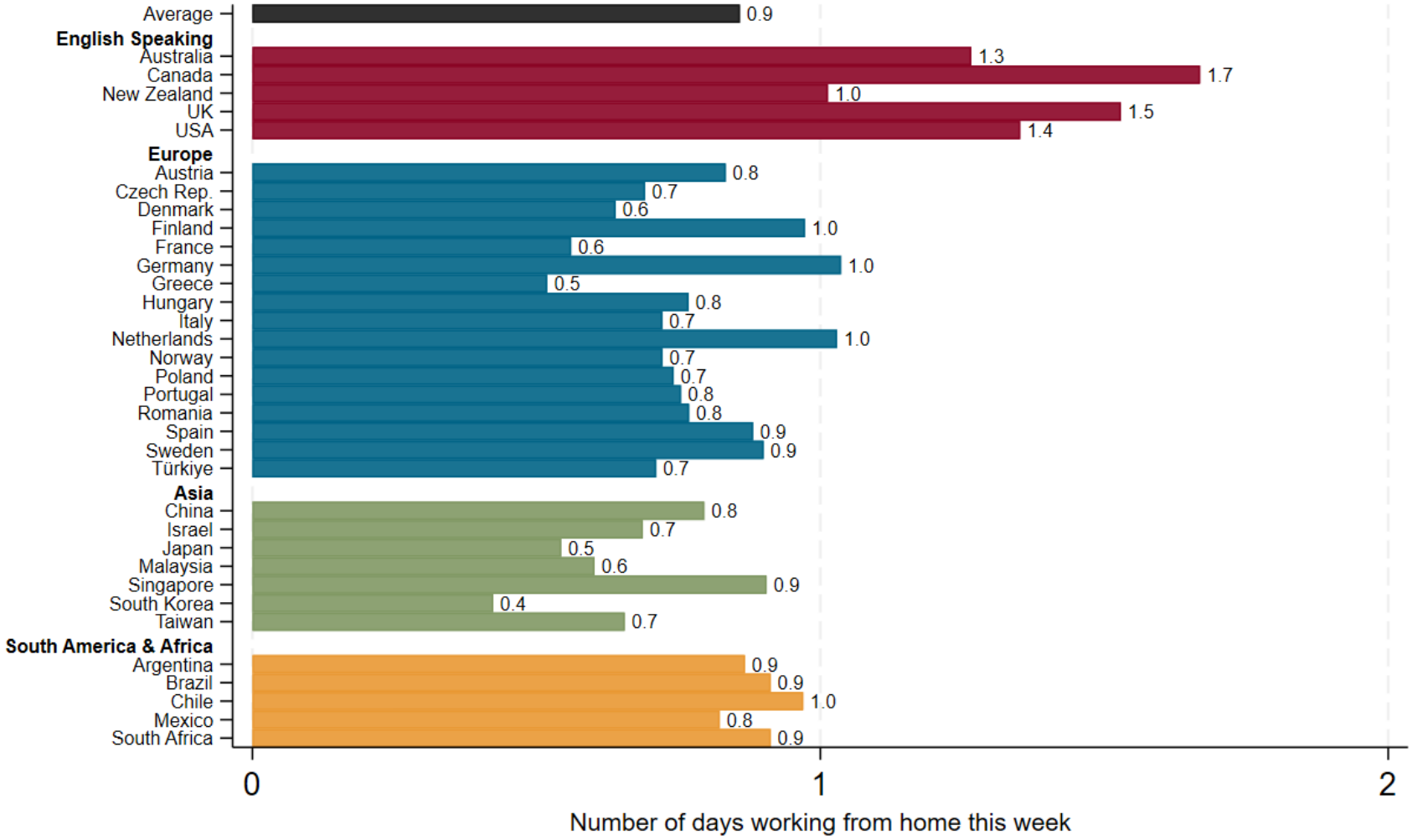
Notes: Reproduced from Barrero et al. (2024b). Based on responses in the Survey of Working Arrangements and Attitudes to the following questions: "*For each day* **last week**, *did you* **work a full day (6 or more hours)**, *and if so* **where?**" And "*Now consider your* ***[randomly selected meeting]*** *on* **your most recent workday.** *...How did meeting participants* **engage with one another** *in that meeting?*" To construct this chart, we first sort employed respondents by their working arrangements in the week before the survey: fully in-person, hybrid mode (at least one WFH day and one onsite day in the week), and fully remote. The figures in parentheses along the horizontal scale report the percentage of workers in each of these three categories. We then compute the distribution of meetings by mode for each working arrangement. To do so, we elicit data on the meeting mode for one randomly selected meeting per respondent. We randomize the reference meeting over the first meeting of the day, the last meeting before lunch, the first meeting after lunch, and the last meeting of the day. We restrict attention to employed respondents who had at least one meeting on their most recent workday. We re-weight SWAA respondents to match the Current Population Survey distribution of employed persons, aged 20 to 64, with annualized earnings of $10,000 or more by age-sex-education-earnings cells. See Barrero et al. (2021) for more information about weighting. **N = 2,142**

Figure 3: U.S. Work-from-Home Rates by Industry Sector in 2023, Employees Who Work Five or More Days per Week



Notes: Reproduced from Barrero et al. (2023). As in Figure 1, this chart is based on data from the Survey of Working Arrangements and Attitudes.

Figure 4: Paid Full Days Worked from Home per Week as of April-June 2023, Full-Time Employees, 20-64 Years of age, Who Finished Secondary School



Notes: Reproduced from Aksoy et al. (2023b). Based on responses to the following questions: "For each day **last week**, did you **work 6 or more hours**, and if so **where**?" Sample of N=42,426 workers in 34 countries surveyed in April-June 2023. The sample covers full-time employees, 20-64 years of age, who finished secondary school.