The Big Shift in Working Arrangements

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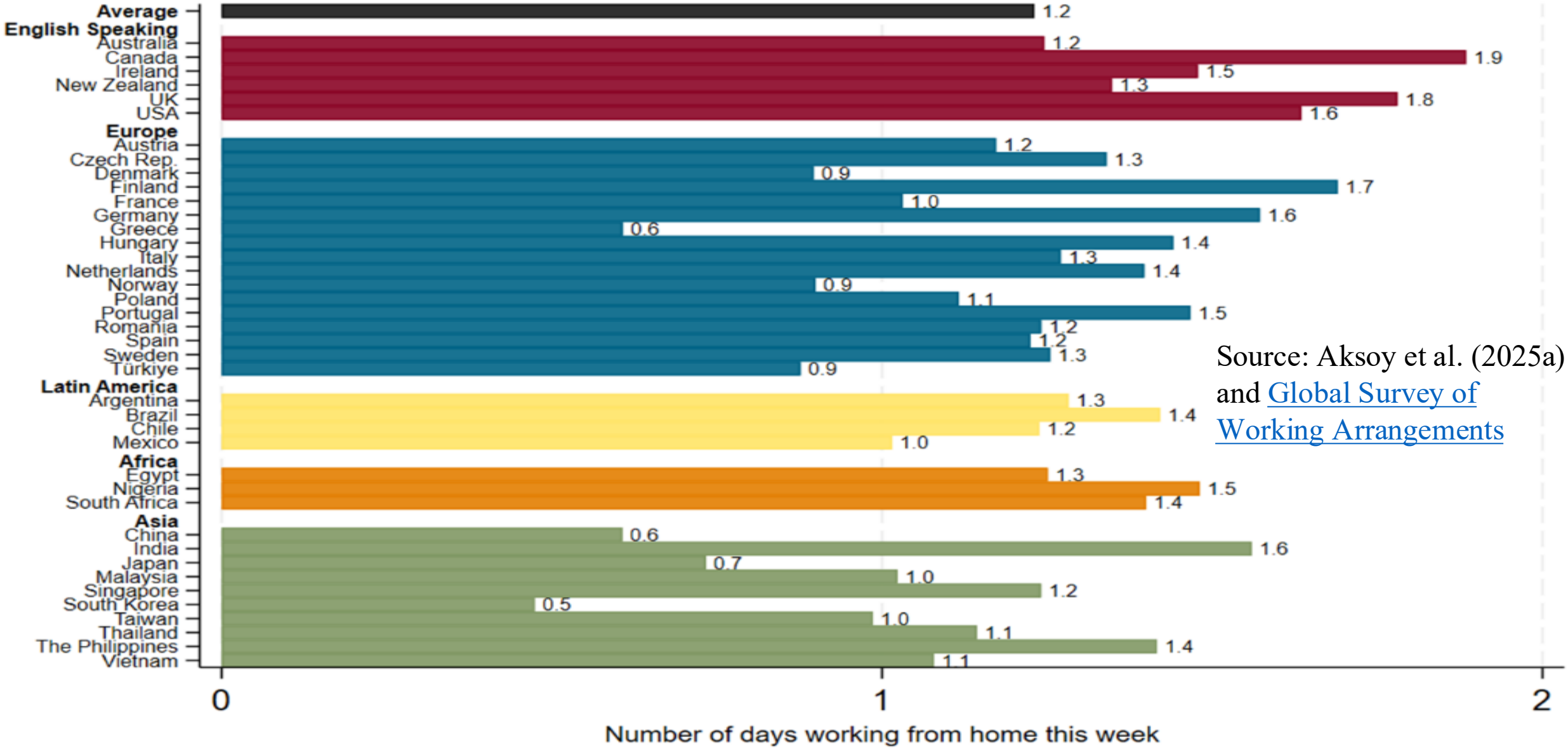
Plan of the Talk

1. The Big Shift to Work from Home
2. How the Pandemic Instigated the Shift, and Why It Will Stick
3. Selected Implications and Consequences
   - Direct worker benefits of WFH
   - WFH and locational flexibility
   - Labor market footprint of firms and industries
   - Case study: A large customer-service company in Turkey

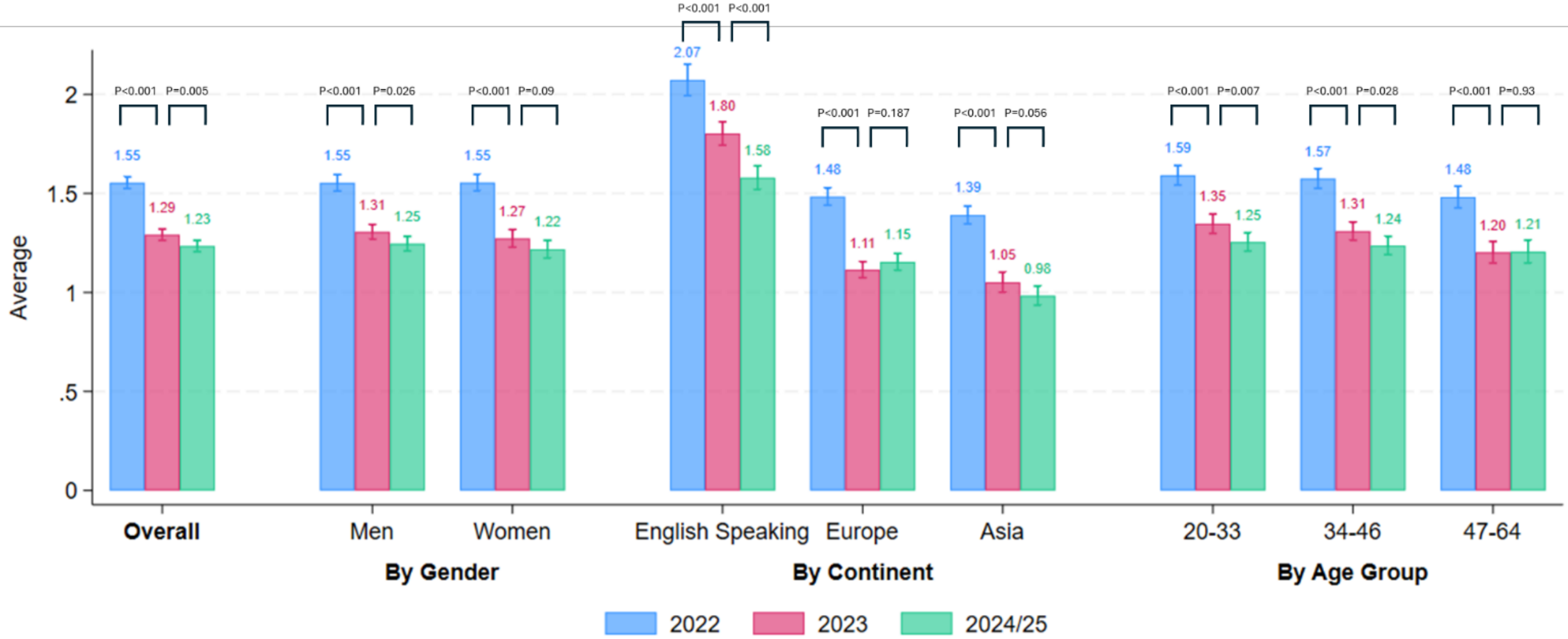
WFH Rates Vary Greatly Across Countries: Highest in the Anglosphere, Lowest in Asia



Source: Aksoy et al. (2025a) and Global Survey of Working Arrangements

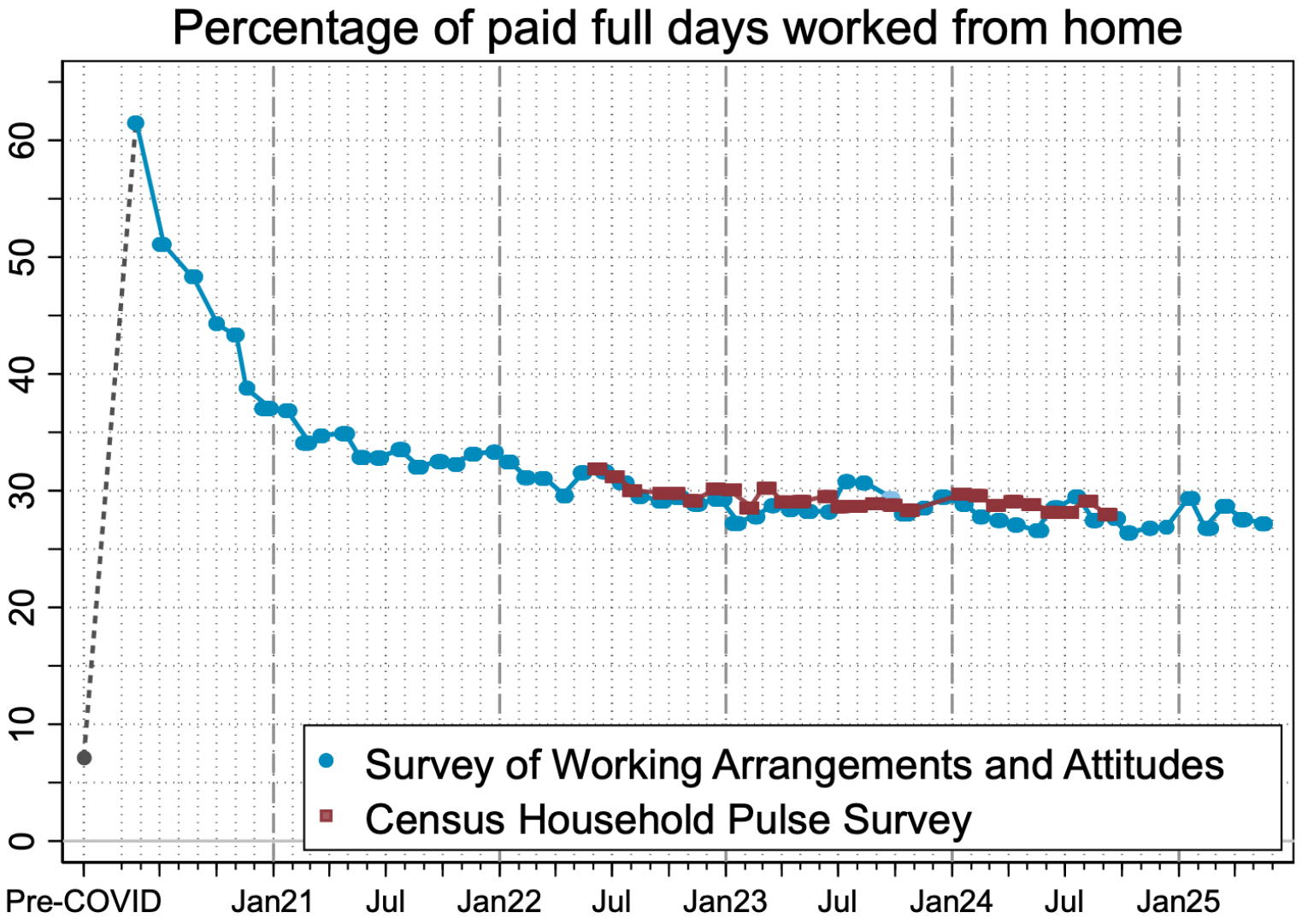
Note: Responses to the question "For each day **last week**, did you **work 6 or more hours**, and if so **where**?" N=16,422 ***college-educated workers*** in 40 countries surveyed from November 2024 to February 2025.

WFH Rates Have Stabilzed Globally Since 2023, College-Educated Workers in 23 Countries



Responses to: "For each day last week, did you work 6 or more hours, and if so where?" Surveys of college-educated workers (N=42,938) across 23 countries (Australia, Austria, Brazil, Canada, China, France, Germany, Greece, Hungary, India, Italy, Japan, Malaysia, Netherlands, Poland, Singapore, South Korea, Spain, Sweden, Taiwan, Türkiye, UK, USA) in 2022, 2023 and 2024/25. Brazil is excluded in the split by continent. Source: Aksoy et al. (2025a) and Global Survey of Working Arrangements.

U.S. WFH Rate: 27% of Paid Workdays as of May 2025, Little Change Since Early 2023



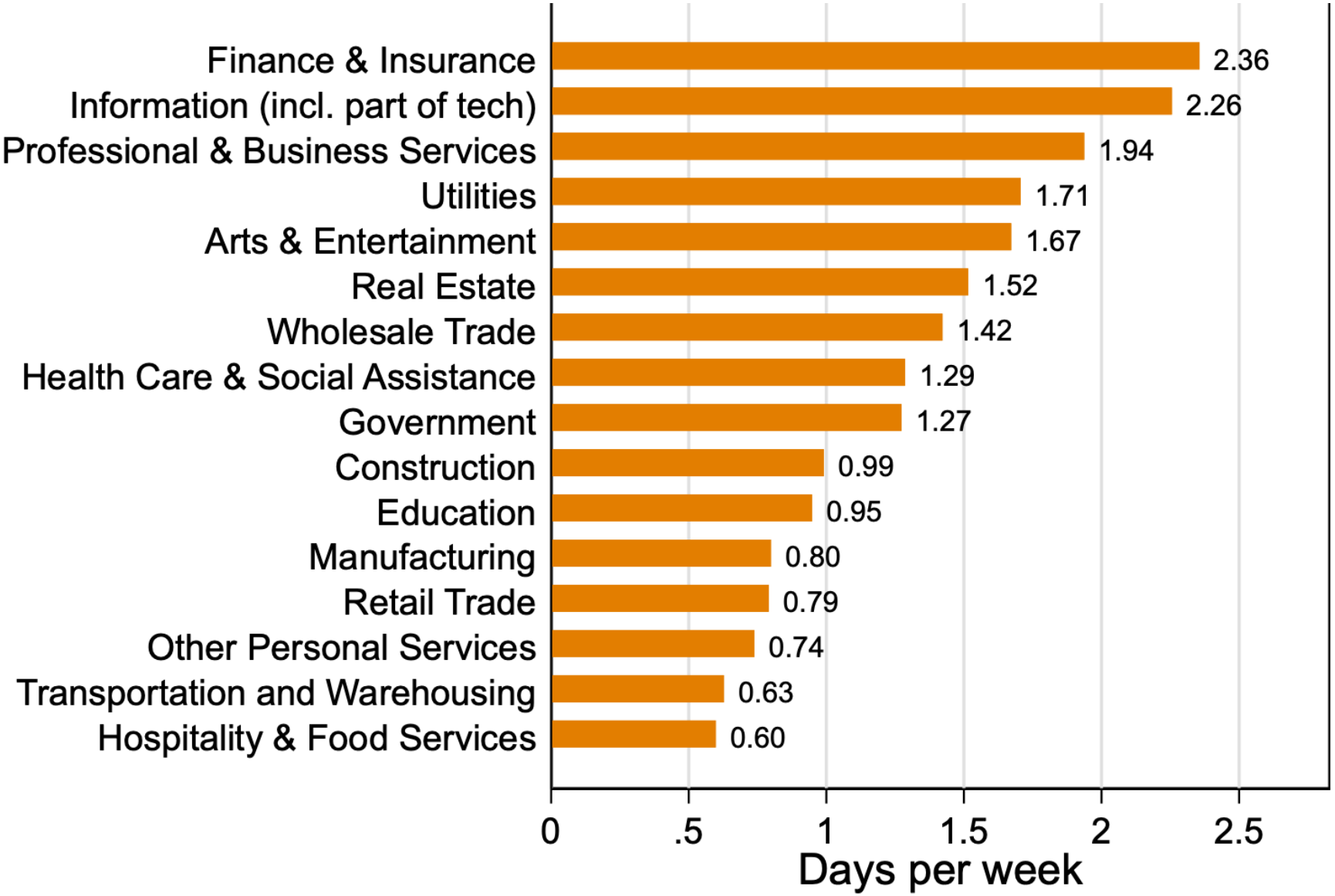
Source: Responses to the questions:

- **Currently (this week)** *what is your work status? (SWAA)*
- *For each day* **last week**, *did you* **work a full day (6 or more hours)**, *and if so* **where?** (SWAA)
- *In the last 7 days, have you…teleworked or worked from home? (HHP)*

Notes: For each wave, we compute the percent of paid full days worked from home in the SWAA and Household Pulse Survey (HHP) and plot it on the vertical axis. The horizontal-axis location shows when the survey was in the field. The pre-COVID figure is from the 2017-2018 American Time Use Survey. SWAA: Before November 2020, we asked the first question above. Since November 2021, we have asked the second question. From November 2020 to October 2021, we back-cast responses to the current question using a regression model based on current-question responses and another question (not shown). We re-weight the sample of US residents aged 20 to 64 earning $10,000 or more in a prior year to match CPS shares by age-sex-education-earnings cells. HHP: We focus on individuals aged 20 to 64 with household incomes above $25,000 per year. We assign 30% of days WFH if the respondent did so for "for 1-2 days;" 70% if they did so "for 3-4 days;" 100% if "5 or more days;" and 0 for "No."

N = 240,206 (SWAA) N = 923,587 (HHP)

WFH Rates Are Highest in the Information Sector, Finance & Insurance, and Professional & Business Services



Source: Survey of Working Arrangements and Attitudes

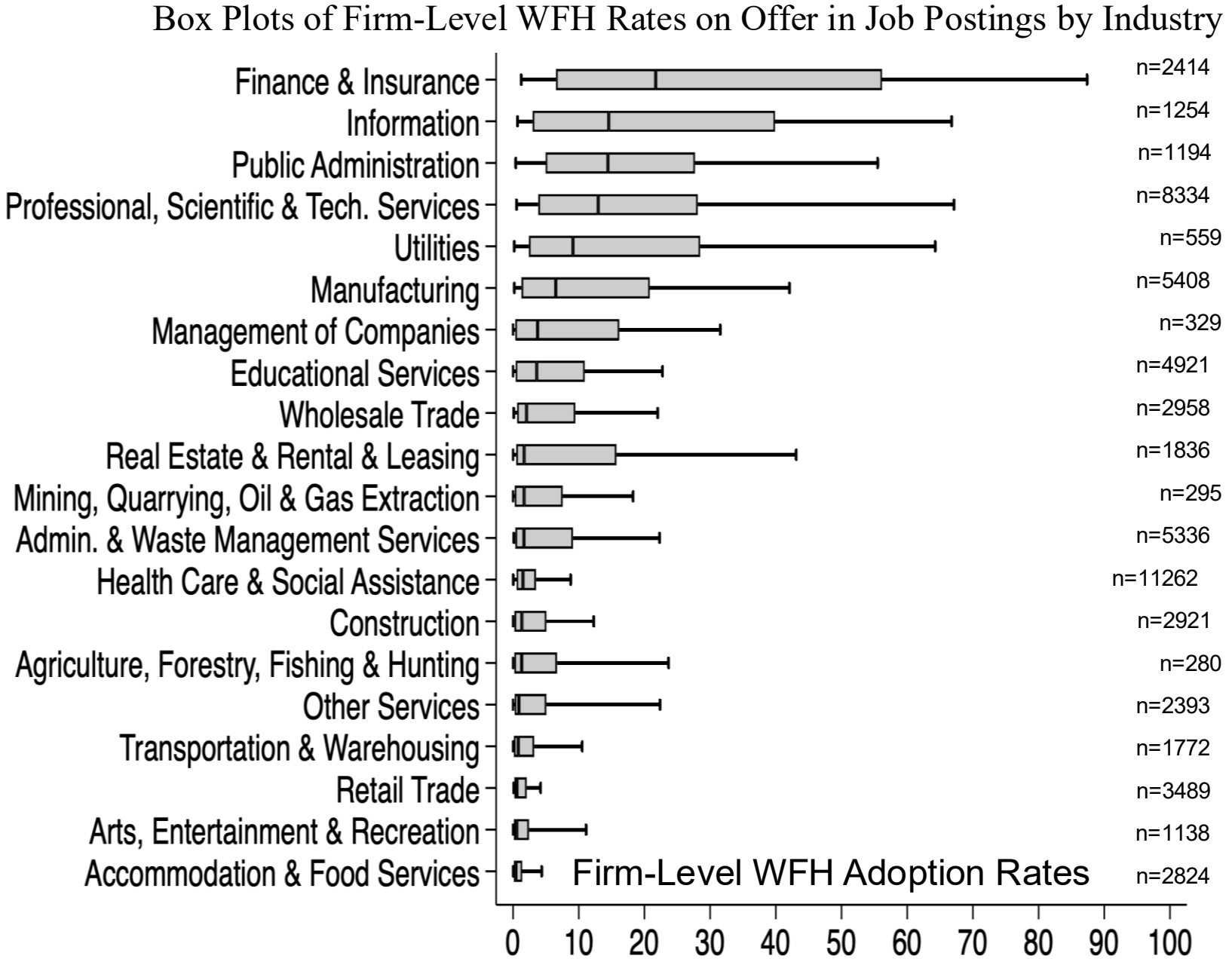
Responses to the question:

- *For each day* **last week**, *did you* **work a full day (6 or more hours)**, *and if so* **where?**

Sample: Data are from the December 2024 to May 2025 SWAA waves. The sample includes all wage and salary employees who pass the attention-check questions. We exclude mining due to insufficient observations and agriculture to focus on non-farm jobs. We re-weight the sample of US residents aged 20 to 64 earning $10,000 or more in a prior year to match Current Population Survey on age, sex, education, and earnings.

N = 21,822

Heterogeneity across U.S. Firms in Their WFH Rates on Offer



Note: These box plots show percentiles of the (posting-weighted) distribution of firm-level remote-work rates on offer and the number of firms by industry sector. We compute these percentiles using data on U.S. job postings from January 2023 to May 2024 by firms with at least 50 job postings during this period.

Source: Hansen et al. (2023)

The Rise in the WFH Rate Understates the Rise of Remote Engagement in Work

An Example with a five-person work team:

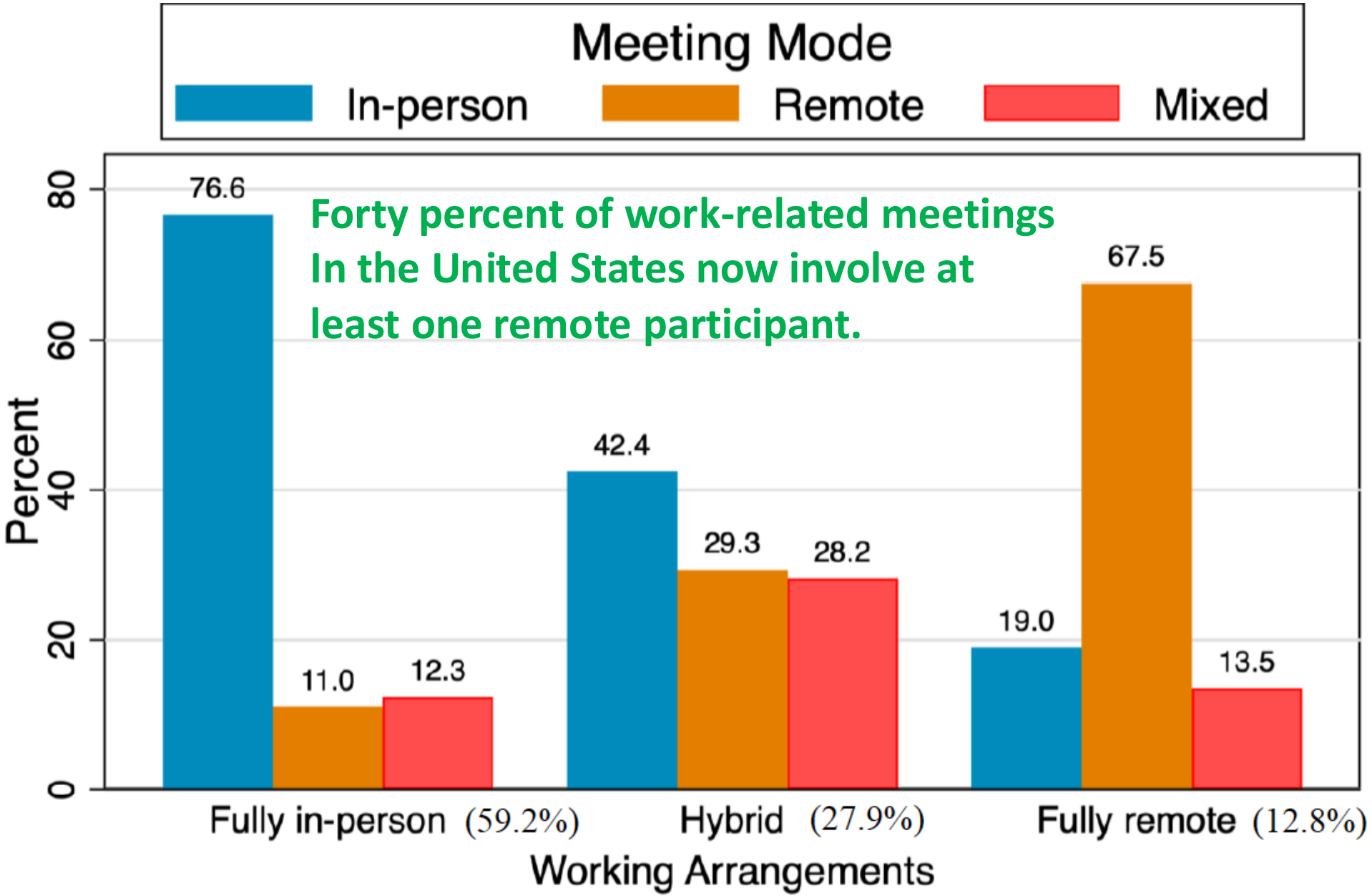
- Before pandemic, all team meetings are in person at a common worksite.
- After pandemic, each team member works from home one day per week.
- Each member works from home on a different day of the week.

→ Share of WFH days by team members rises from 0 before pandemic to 20% afterwards.

→ Fully in-person meeting share falls from 100% before pandemic to zero afterwards.

→ A 20ppt rise in the WFH rate involves a complete collapse in the share of work meetings that take place in a fully in-person mode.

Joint Distribution of Individual-Level Working Arrangements and the Meeting Mode of Work-Related Meetings



The data cover one randomly selected meeting per employed respondent in the survey reference week in the March 2024 Survey of Working Arrangements and Attitudes. See next slide for details.

Reproduced from Davis (2024).

Detailed Notes to Previous Chart: Share of Work Meetings by Mode and Working Arrangements, U.S. Data, March 2024

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 CPS distribution of employed persons, 20 to 64, with annualized earnings of $10,000 or more by age-sex-education-earnings cells. **N = 2,142**

In computing the 40% figure reported on the chart, 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.

How the Pandemic Instigated a Lasting Shift in Working Arrangements

A Story with Multiple Elements

1. Mass experimentation → learning and revision of prior views → re-optimization of working arrangements
   - Even with unbiased priors, some re-optimization is to be expected
   - Prior views of WFH were, on average, overly pessimistic
2. Investments in time, equipment, systems, processes, and management practices that enable and improve WFH
3. A surge in innovation that supports WFH
4. Attitudinal shifts: Stigma around WFH plummeted. Infection risks became more salient, raising the desire to WFH (for some)
5. Stricter, longer lockdowns during the pandemic → higher levels of planned WFH after the pandemic
6. Over time, firms and workers exploit the locational flexibility of WFH in ways that make it harder to reverse.

The pre-conditions were in place for a big shift to WFH. Coordination externalities amplify the impact of exogenous drivers of the shift to WFH.

COVID-19 Compelled Firms and Workers to Experiment at Scale with Working from Home

"If you'd said three months ago that 90% of our employees will be working from home and the firm would be functioning fine, I'd say that is a test I'm not prepared to take because the downside of being wrong on that is massive."

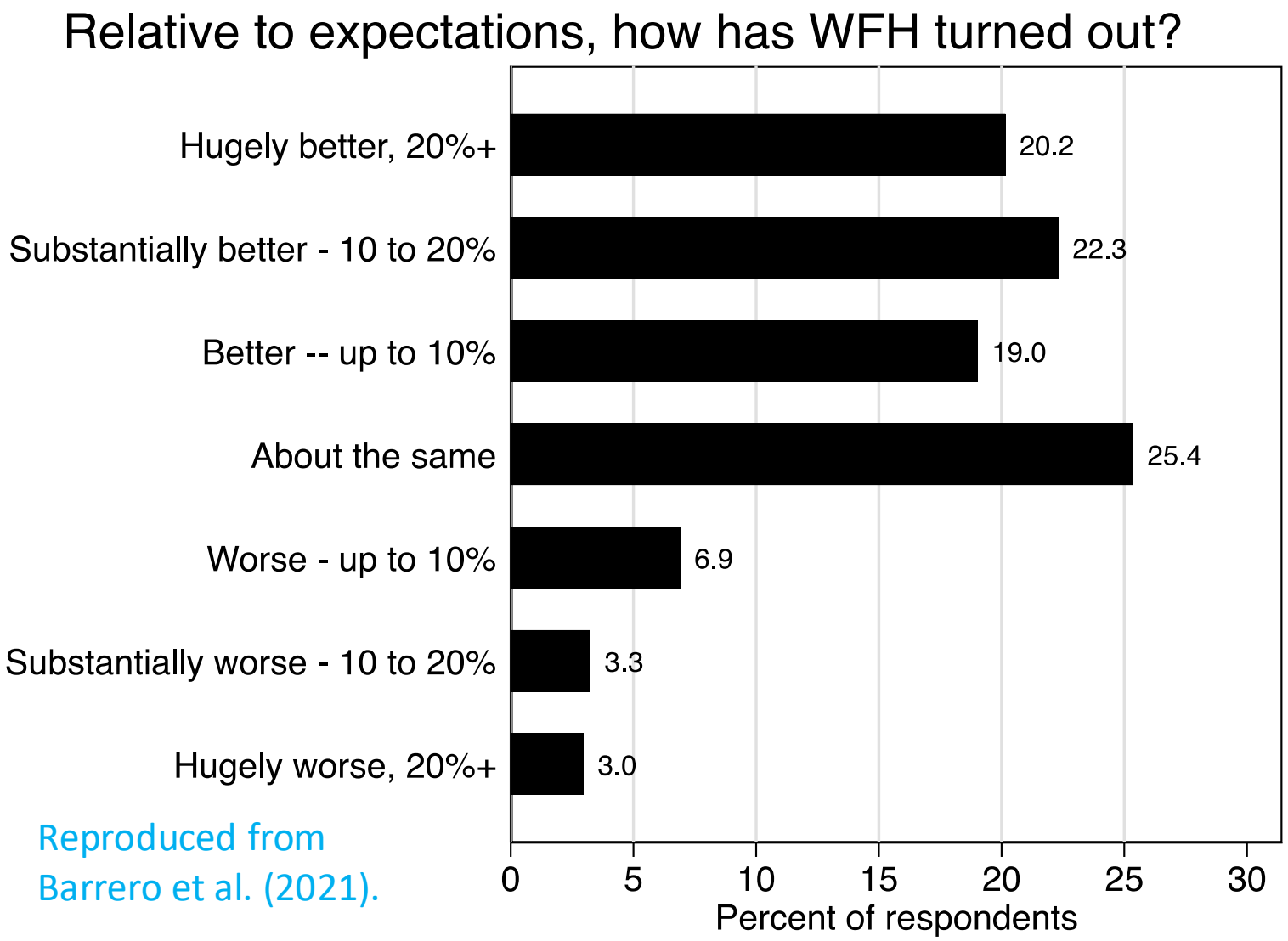
– James Gorman, CEO of Morgan Stanley*

Quotation from Cutter (WSJ, 2020)

James Gorman

PHOTO: AL DRAGO/BLOOMBERG NEWS

Forced Experimentation: WFH productivity during the pandemic exceeded prior expectations. U.S. SWAA, July 2020 to March 2021

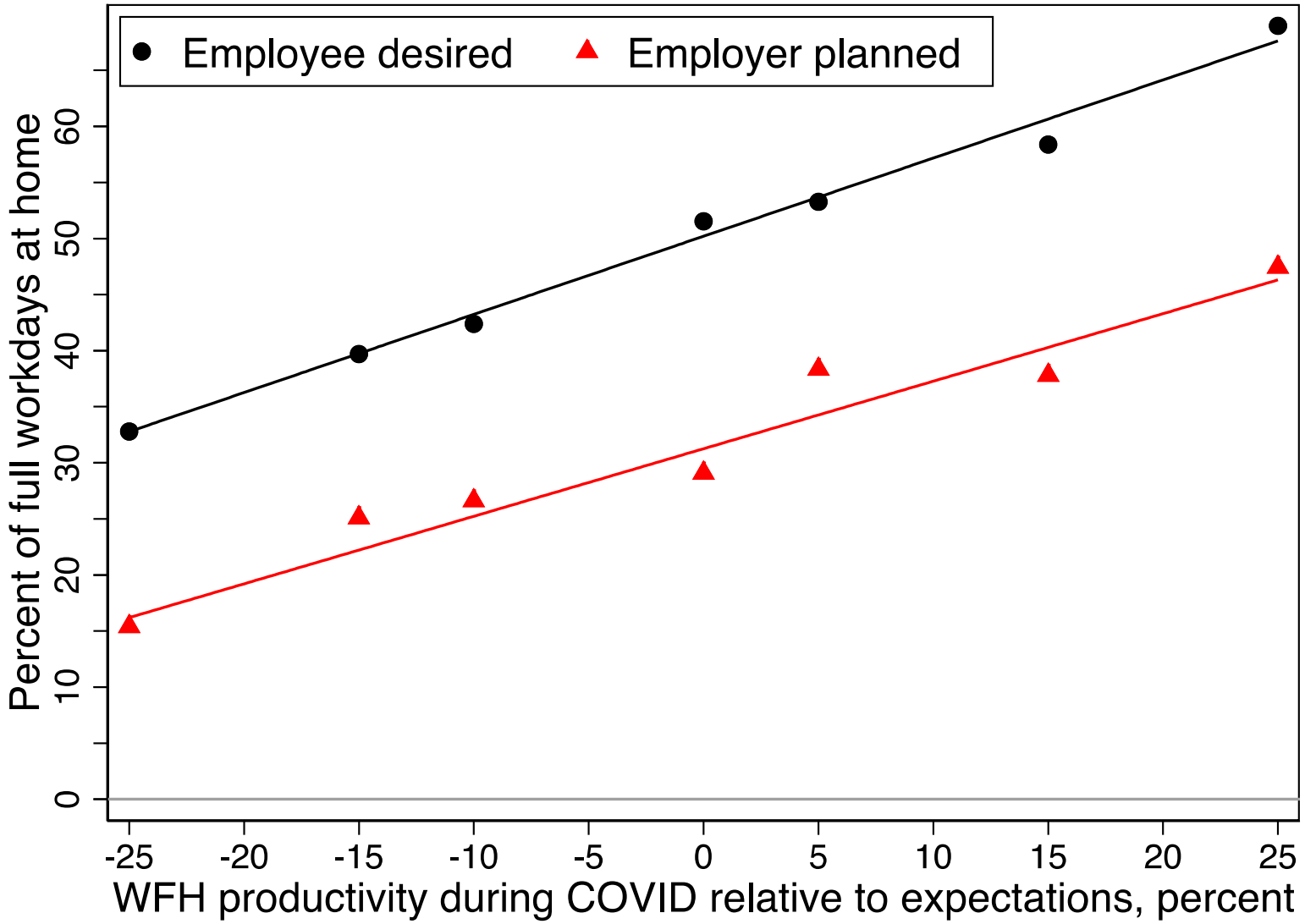


Reproduced from Barrero et al. (2021).

*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*

Planned levels of WFH <u>after</u> the pandemic increase with WFH productivity surprises <u>during</u> the pandemic



Source: Response to the questions:

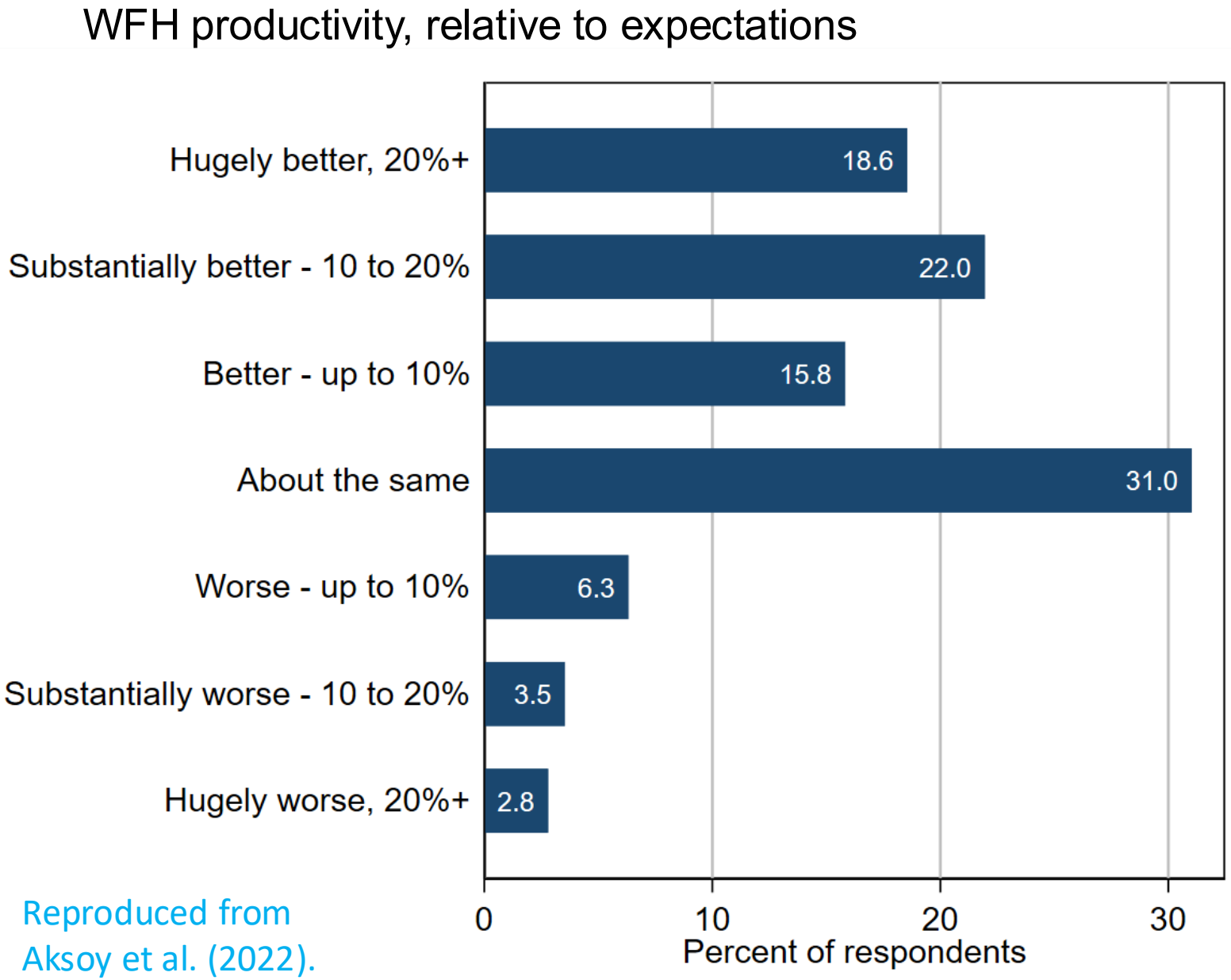
> ***After COVID, in 2022 and later,*** *how often would you like to have paid workdays at home?*
>
> ***After COVID, in 2022 and later,*** *how often is your employer planning for you to work full days at home?*
>
> *Compared to your expectations* ***before COVID (in 2019)*** *how has working from home turned out for you?*

Notes: This figure shows bin scatters of worker desires and employer plans for WFH after the pandemic against WFH productivity surprises during the pandemic.

Data are from 30,750 survey responses collected from July 2020 to March 2021 and reweighted to match the share of working age respondents in the 2010-2019 CPS in a given {age x sex x education x earnings} cell. We did not ask about productivity relative to expectations in May 2020.

Using data form the U.S. SWAA, July 2020 to March 2021. Reproduced from Barrero et al. (2021).

The Distribution of WFH Productivity Relative to Expectations In a 27-Country Sample, Mid 2021 and Early 2022



Reproduced from Aksoy et al. (2022).

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
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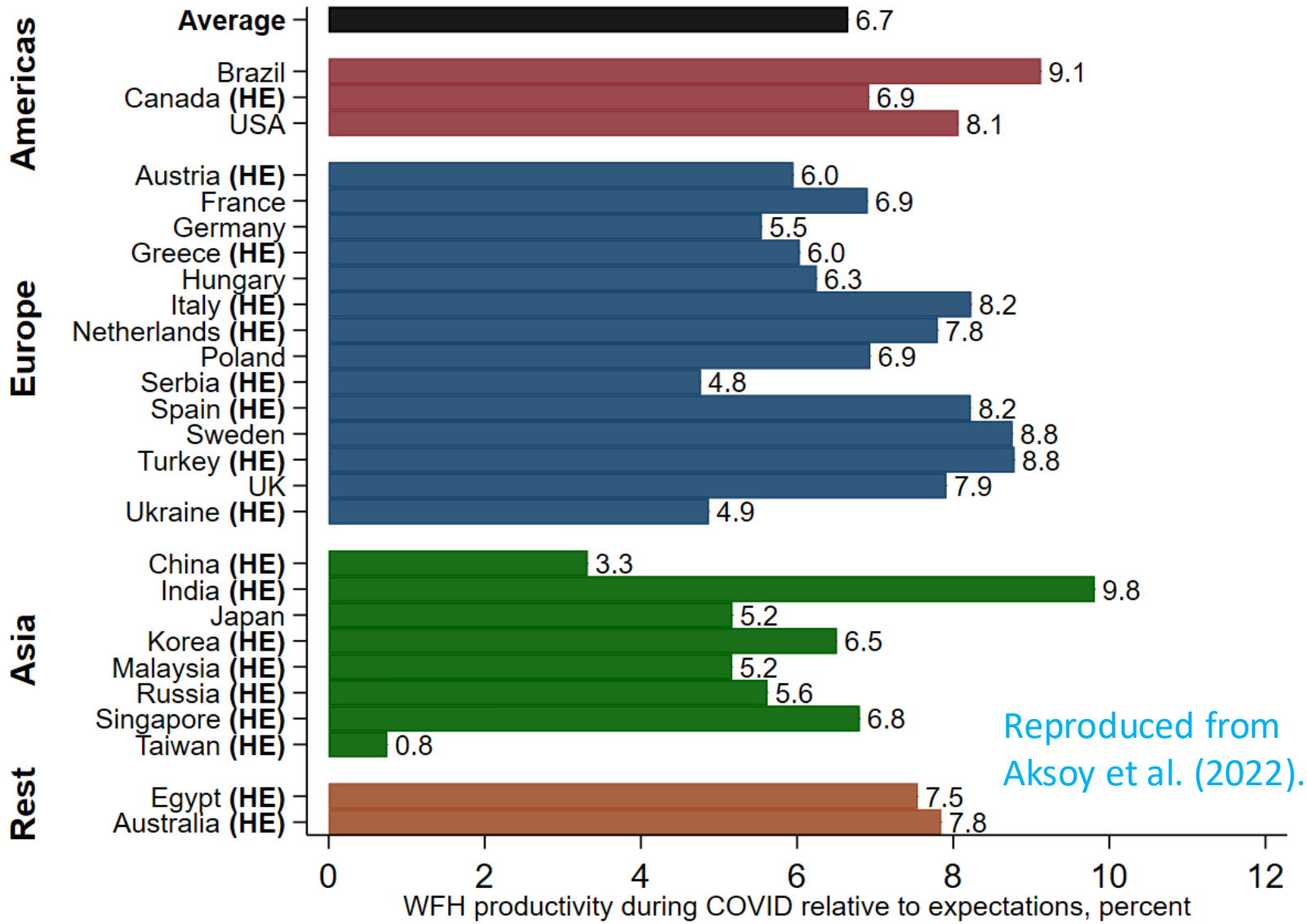
- Better – I am 1% to 9% more productive than I expected
- About the same
- Worse – I am 1% to 9% less productive than I expected
- Substantially worse – I am to 10% to 19% less productive than I expected
- Hugely worse – I am 20%+ less productive than I expected

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

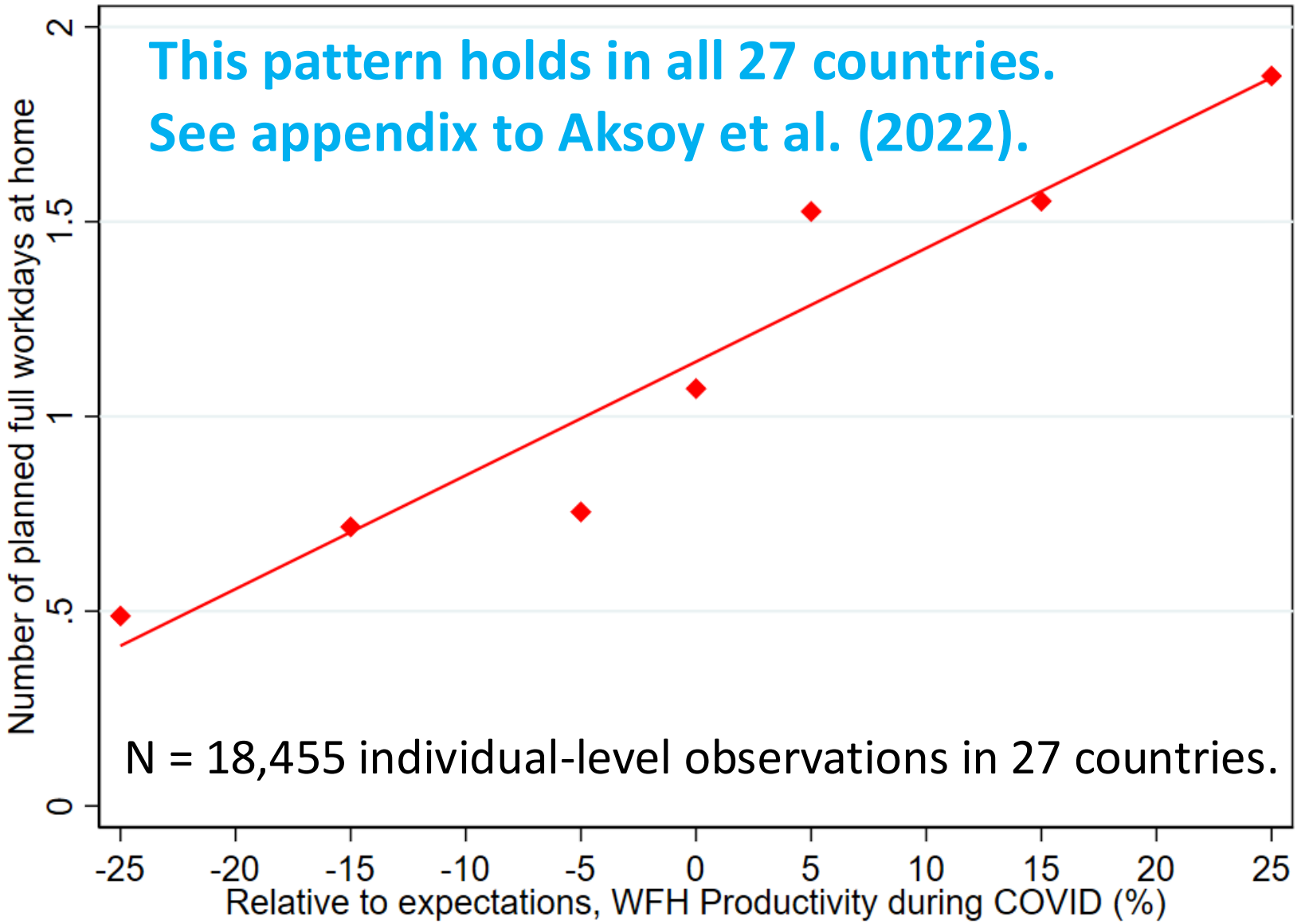


Reproduced from Aksoy et al. (2022).

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

Country-level values are conditional means. The "Average" value is the simple mean of the country-level conditional means.

Planned levels of WFH <u>after</u> the pandemic rise with WFH productivity surprises <u>during</u> the pandemic



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?

Vertical scale: How many days per week, on average, employers plan for respondents to WFH after the pandemic ends.

Discussion, 1

The foregoing evidence strongly supports a three-part explanation of how the pandemic catalyzed a large, lasting uptake in WFH:

1. The pandemic drove a mass, compulsory experiment in WFH.
2. Mass experimentation generated new information and shifted perceptions about the feasibility and productivity of WFH.
3. The shift in perceptions drove a re-optimization of working arrangements, which included a large, lasting shift to much higher WFH levels.

The **pre-conditions** for the shift were also in place: the internet, the "cloud," web-based video-conferencing technologies, other remote collaboration tools, and widespread access to high-speed broadband service in American households. If the same virus had struck twenty years earlier, we would not have seen a comparable shift to WFH.

Discussion, 2

This explanation and supporting evidence do not imply the big shift to WFH raised productivity. To see this point, consider a toy model:

- Before the pandemic, all workers and their employers perceive WFH to be 10 percent less productive than onsite work.
- Suppose, as well, that all workers are willing to accept a 5 percent pay discount to WFH.

No one works from home in these circumstances, because the perceived productivity loss exceeds the willingness to pay. Now consider what happens in reaction to a pandemic that forces employers and workers to WFH for weeks or months.

- Based on experiences during the pandemic, suppose half of workers (and their employers) learn that WFH is about as (un)productive as expected, while **the other half learns it is Δ percent more productive than expected**.

Discussion, 3

Three cases:

i. When $0 < \Delta < 5$, WFH levels return to zero after the pandemic ends. In this case, the positive productivity surprise is too small to trigger a lasting change in working arrangements.

ii. When $5 < \Delta < 10$, half of workers stick with WFH after the pandemic ends, because they now face a productivity discount of only $10 - \Delta$ percent, which is smaller than their willingness to pay to WFH.

- In this case, the productivity surprise triggers a lasting shift to WFH and a productivity fall of $(\frac{1}{2})(10 - \Delta)$ percent.
- For example, if the pandemic leads half of workers to conclude that WFH is only 2 percent less productive than onsite work ($\Delta = 8$), then economy-wide productivity falls 1 percent.

Discussion, 4

iii. When $\Delta > 10$, the productivity surprise drives a lasting shift to WFH and a productivity rise of $(\frac{1}{2})(\Delta - 10)$ percent.

Thus, when forced experimentation leads to a lasting shift to WFH, it can bring higher or lower productivity.

- Barrero et al. (2021) build a much more elaborate model along these lines, fit it directly to SWAA data in a highly granular manner, and use the model to conduct various counterfactuals.
- Their fitted model implies that the lasting shift to WFH raises U.S. labor productivity by about 1 percent. (They abstract from learning by doing at the individual and organization levels, which would generate larger productivity gains.)
- Welfare gains are larger in their model, because WFH lowers time and money costs of commuting and (for some) raises utility directly.

Discussion, 5

Our explanation for the big shift also addresses another question: If WFH is now attractive for many employees and organizations, why did the shift not happen sooner and more gradually?

Answer: The full benefits of WFH went unrecognized and unrealized before the pandemic drove a sudden, huge surge in experimentation that led to major revisions in perceptions about the feasibility and productivity of WFH.

The *simultaneity* of large-scale experimentation is important in this regard. A law firm, for example, could have experimented with WFH before the pandemic. What it could not have done was experiment with WFH when the courts and other firms – including clients, rival law firms, consultants, and suppliers – also worked remotely.

Had the pandemic not occurred, our evidence suggests that the big shift to WFH would have taken place much more slowly over many years.

Selected Aspects and Implications of the Big Shift to WFH

Direct Worker Benefits of WFH

Most workers like to work from home at least part of the week, because doing so …

1. Saves on time and money costs of commuting and grooming
2. Increases flexibility in time use over the day
3. Expands personal autonomy
4. Relaxes locational constraints

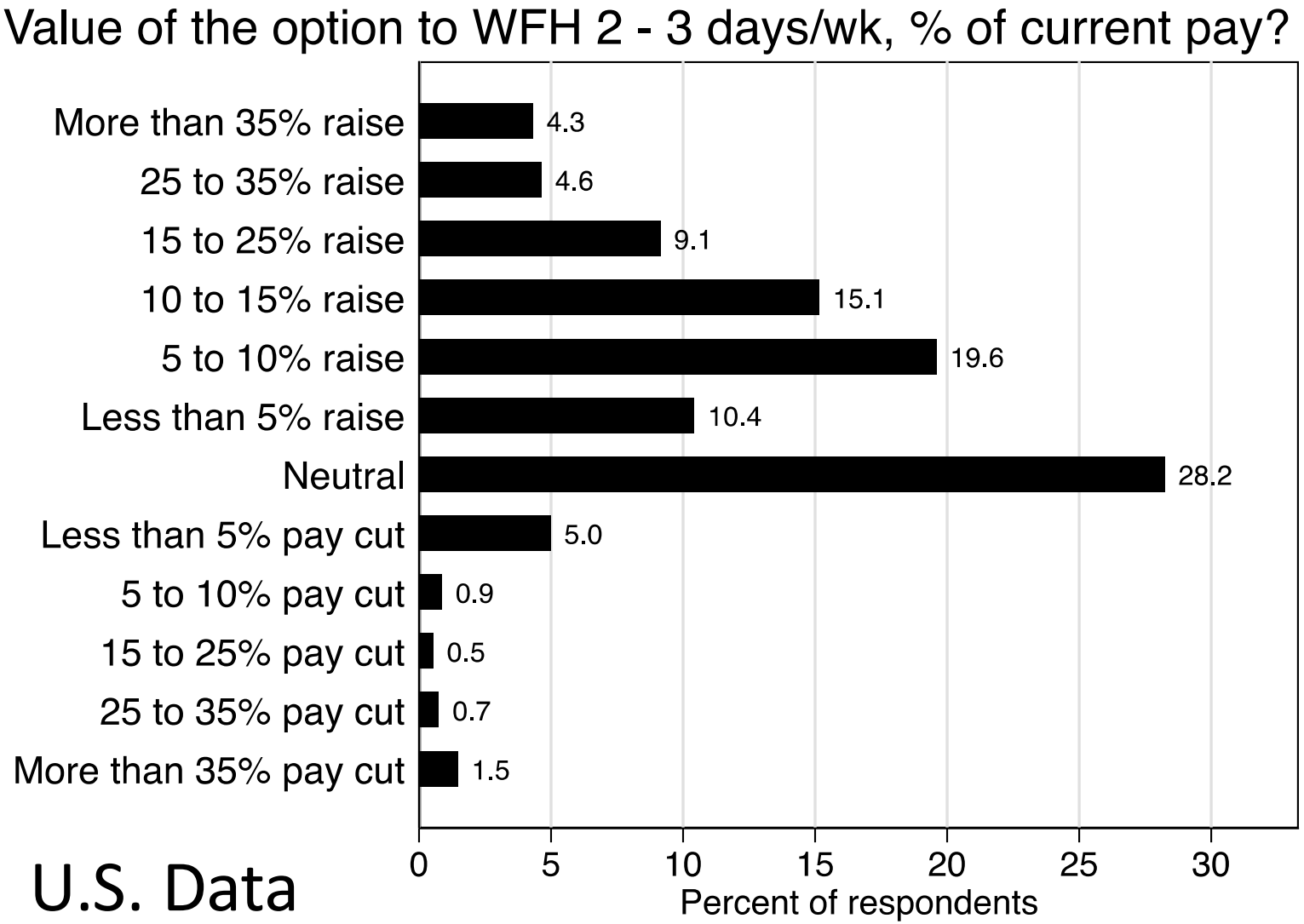
And for some, WFH is complementary to care-giving activities.

These direct benefits of WFH are untaxed job amenities (or involve after-tax cost savings).

Thus, labor income taxes encourage substitution to WFH on the margin, more so for workers with higher marginal tax rates.

When Asked Directly, People Place a High Value on the Option to Work from Home

Mean Value = 8% of Pay, Similar to Findings in Experimental Settings with Narrower Samples



U.S. Data

Source: SWAA responses to a two-part question.

Part 1: ***After COVID, in 2022 and later,*** *how would you feel about working from home* ***2 or 3 days*** *a week?"*

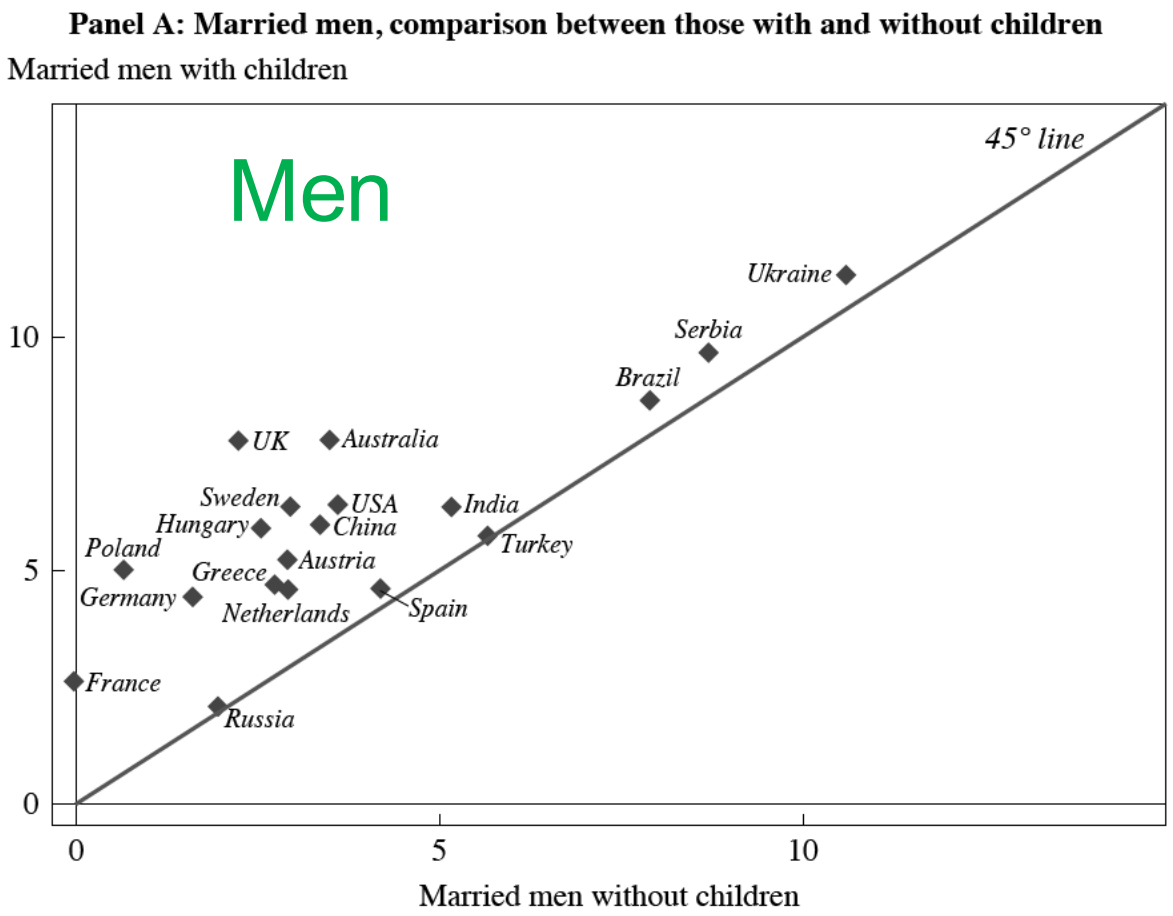
- *Positive: I would view it as a benefit or extra pay*
- *Neutral*
- *Negative: I would view it as a cost or a pay cut*

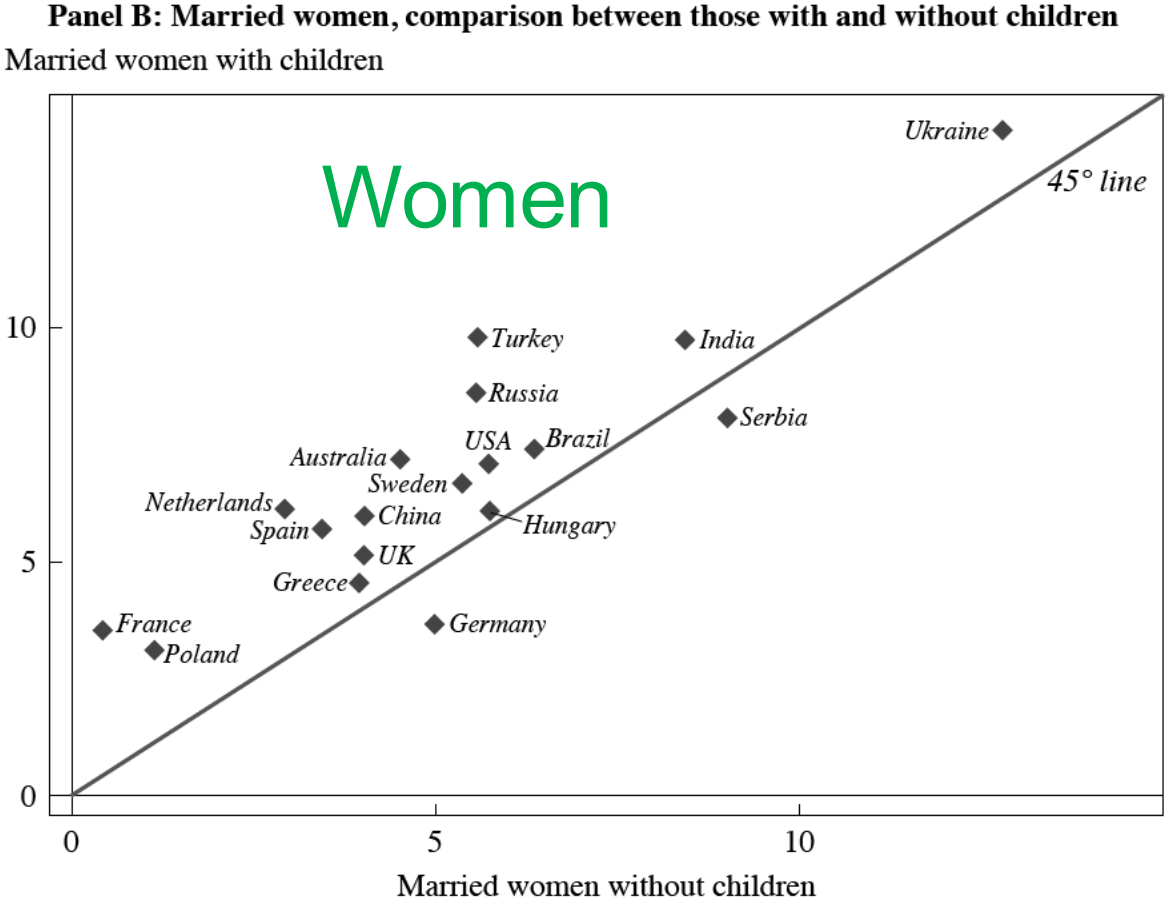
Part 2: *How much of a* ***pay raise [cut]*** *(as a percent of your current pay) would you value as much as the option to work from home 2 or 3 days a week?*

Data are from 20,750 survey responses collected from September 2020 to February 2021 by Inc-Query and QuestionPro. We asked a similar question in earlier and subsequent waves, but we focus on the above waves, which use identical questions and response options. We re-weight raw responses to match the share of working-age respondents in the 2010-2019 CPS by {age x sex x education x earnings} cells.

People with Children Express a Greater Willingness To Pay for the Option to WFH 2-3 Days Per Week

Willingness to Pay for Option to WFH 2-3 Days Per Week, % of Pay





Reproduced from Aksoy et al. (2022)

Workers with children also WFH at higher rates that than otherwise similar people.

“Time Savings When Working from Home” (Aksoy et al., 2023)

Abstract: We quantify the commute time savings associated with work from home, drawing on survey data for 27 high-income and middle-income countries. The average daily time savings when working from home is 72 minutes in our sample. We estimate that WFH saves about one hour per week per worker in the post-pandemic economy, relative to a no WFH situation and averaging across the countries in our sample. Workers allocate 40 percent of their time savings to their jobs, 34 percent to leisure, and about 11 percent to caregiving activities. People living with children allocate more of their time savings to caregiving.

Valuing the Time Savings of WFH

The after-tax wage rate offers a useful benchmark for the private value of commute time savings. This valuation is apt when time is freely allocated across activities, as in Becker (1965), and time spent commuting is neither more nor less (un)pleasant than time spent working. For someone who works 40 hours a week and spends 4 hours commuting, a one-hour time savings is worth 2.3% of after-tax earnings under the Beckerian benchmark.

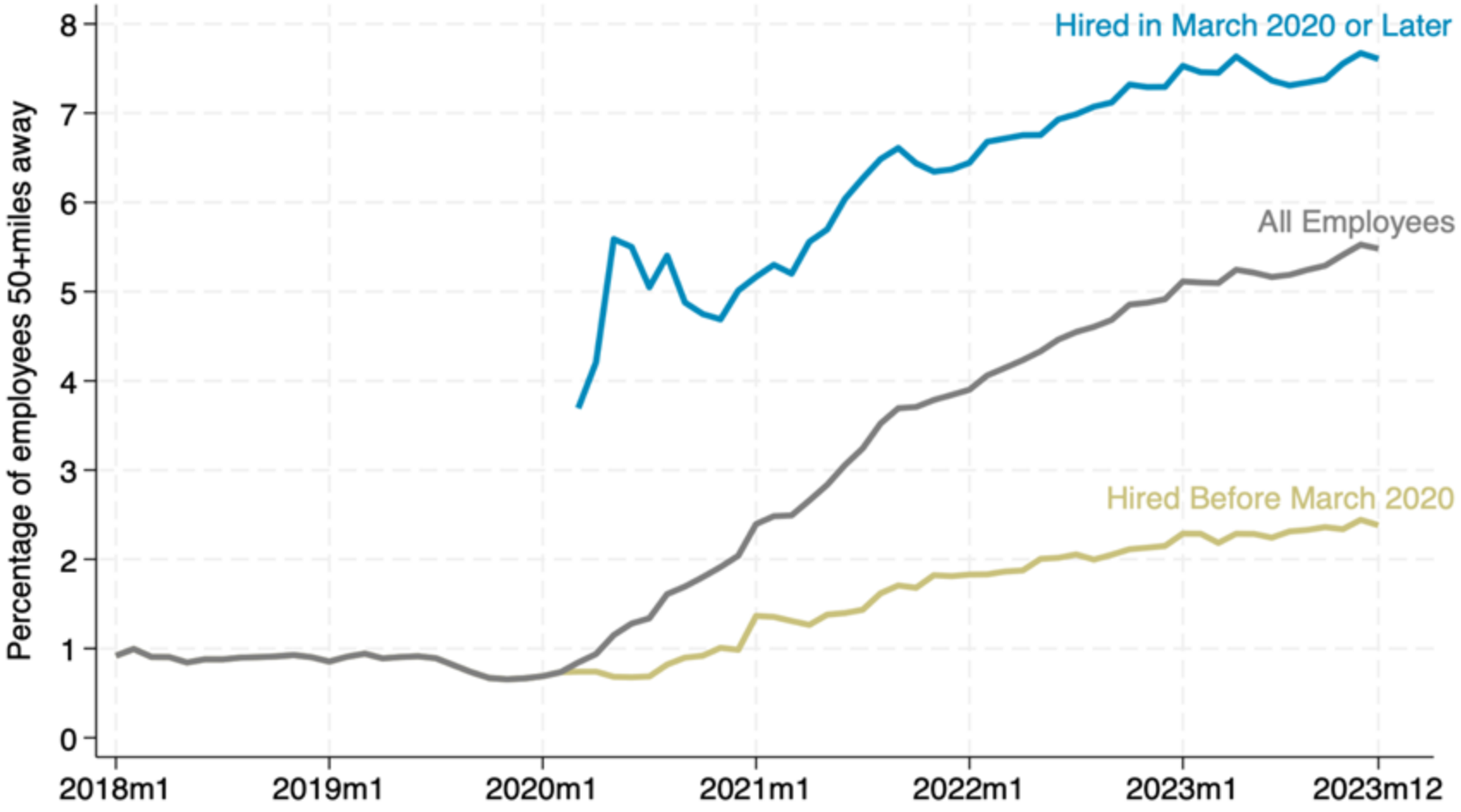
Later research, as reviewed in Jara-Díaz (2007) and Small (2012), highlights reasons for departures from the benchmark. The (marginal) value of commute time rises with trip duration, because longer trips are more tiresome and because the overall time constraint binds more tightly. Commuters strongly dislike unpredictable travel times, and automobile drivers strongly dislike congested road conditions. Thus, long commutes, unpredictable commute times, and congested road conditions push the private value of time savings above the after-tax wage. Conversely, short, predictable and pleasant commutes push the private value below the after-tax wage.

WFH and Locational Flexibility

1. More workers now live far from their employers.
2. WFH facilitates worker relocation to states/countries with lower tax rates and areas with lower housing costs.
   - Outmigration pressures are most acute for cities with high housing costs, situated in high-tax states or countries, and high employment shares in industries with remote-suitable jobs.
   - San Francisco is the poster child for this city profile.
3. WFH broadens and diffuses the geographic footprint of individual employers and industries.
4. Separation and hiring rates of distant employees are more responsive to employer-level growth rates.

Workers Are Becoming Less Tied to Employer Locations

Percentage of Employees Living More than 50 Miles from Employer Location



Source: Akan et al. (2025), using Gusto data.

Three corollaries:

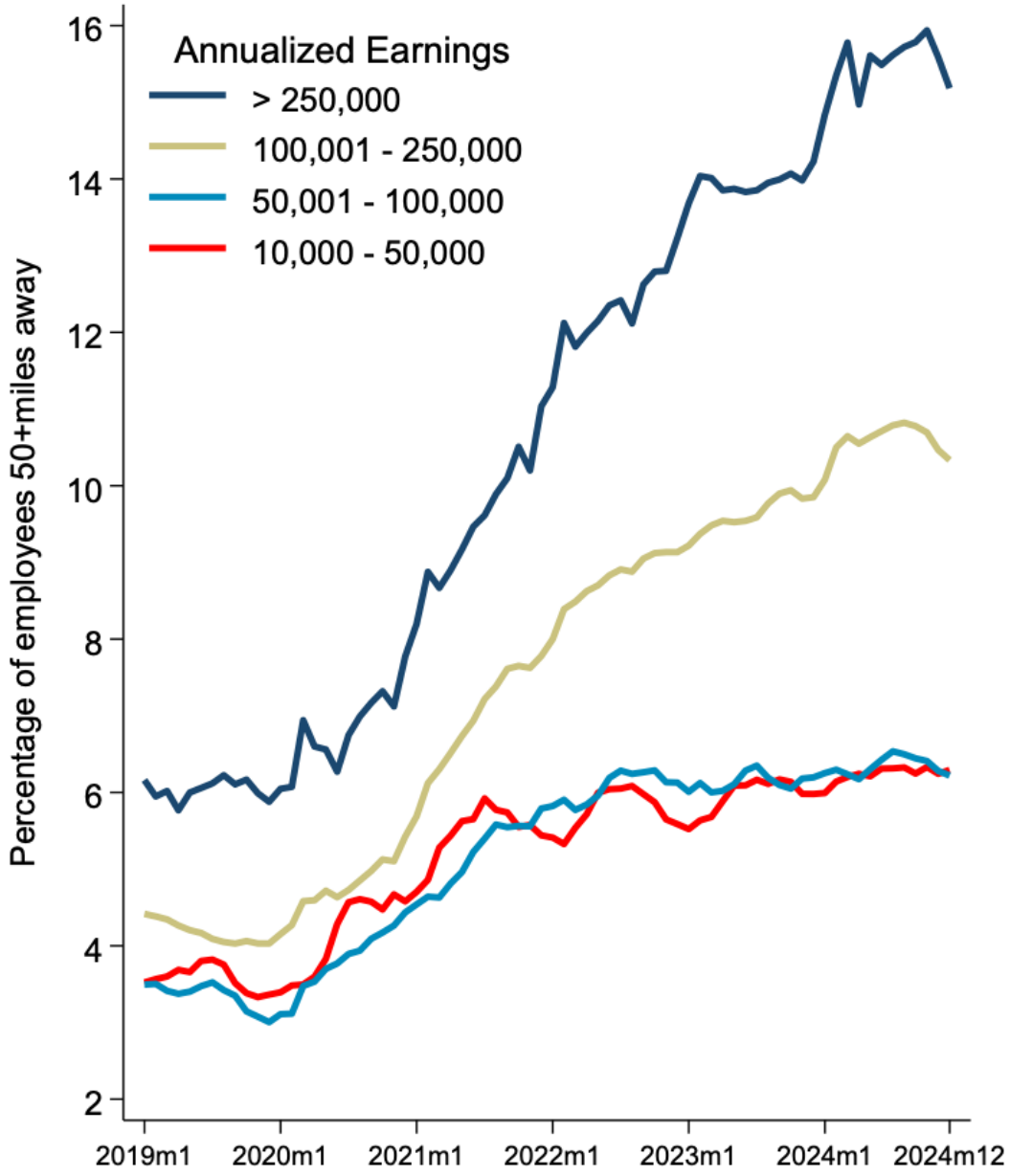
(1) Job displacements due to industry and firm-level declines will be less clustered in space.

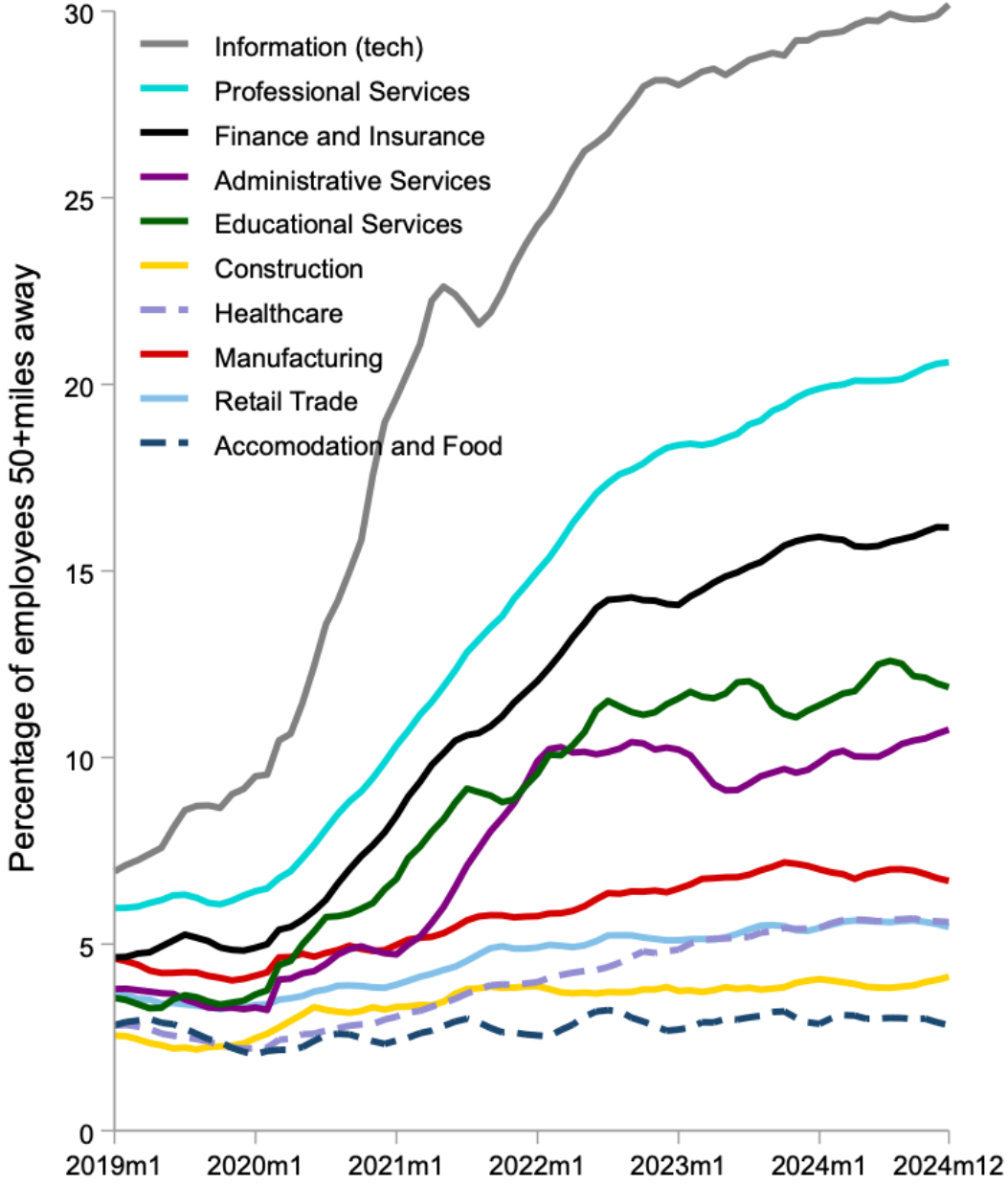
(2) Fewer job losers will be displaced into highly depressed local labor markets

(3) The geographic reach of many labor markets is now greater than before the pandemic. Effectively, many markets are now larger and thicker.

Notes: The sample contains employees of 5,793 firms in a balanced panel of mostly smaller and mid-sized firms. Employee-level data are reweighted to match the CPS distribution by (age bin) X sex X major industry. Authors' calculations using proprietary data from Gusto, a payroll processing and HR services firm.

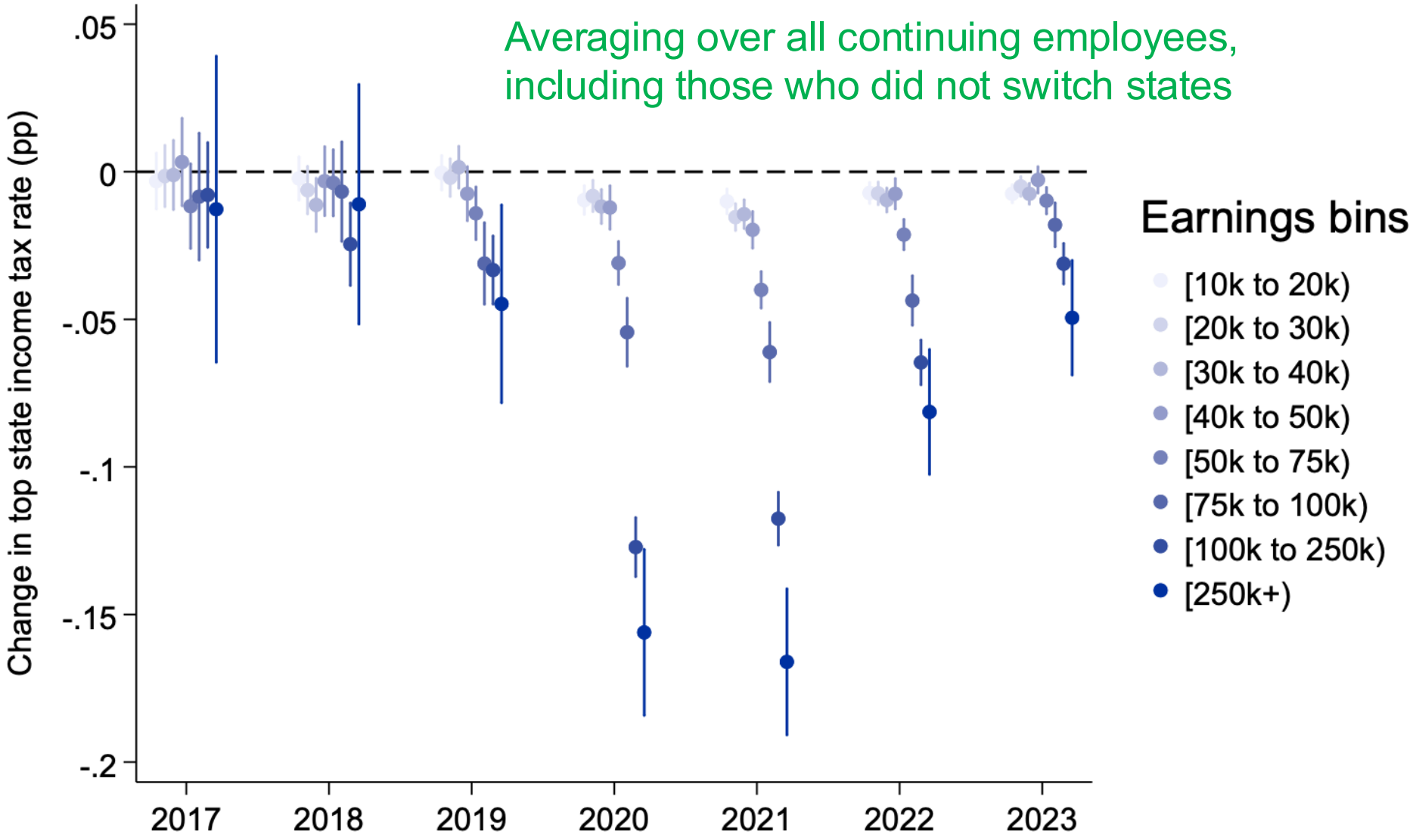
High earners in Information, Professional Services, and Finance saw the greatest increases in distance to the employer's workplace





Notes: Gusto payroll data for 371,849 employees in a balanced panel of 12,454 firms. We re-weight the employee-level data to match the CPS distribution by (annualized earnings bin) X (age bin) X sex X major industry. We winsorize distance at 250 miles when computing mean distance.

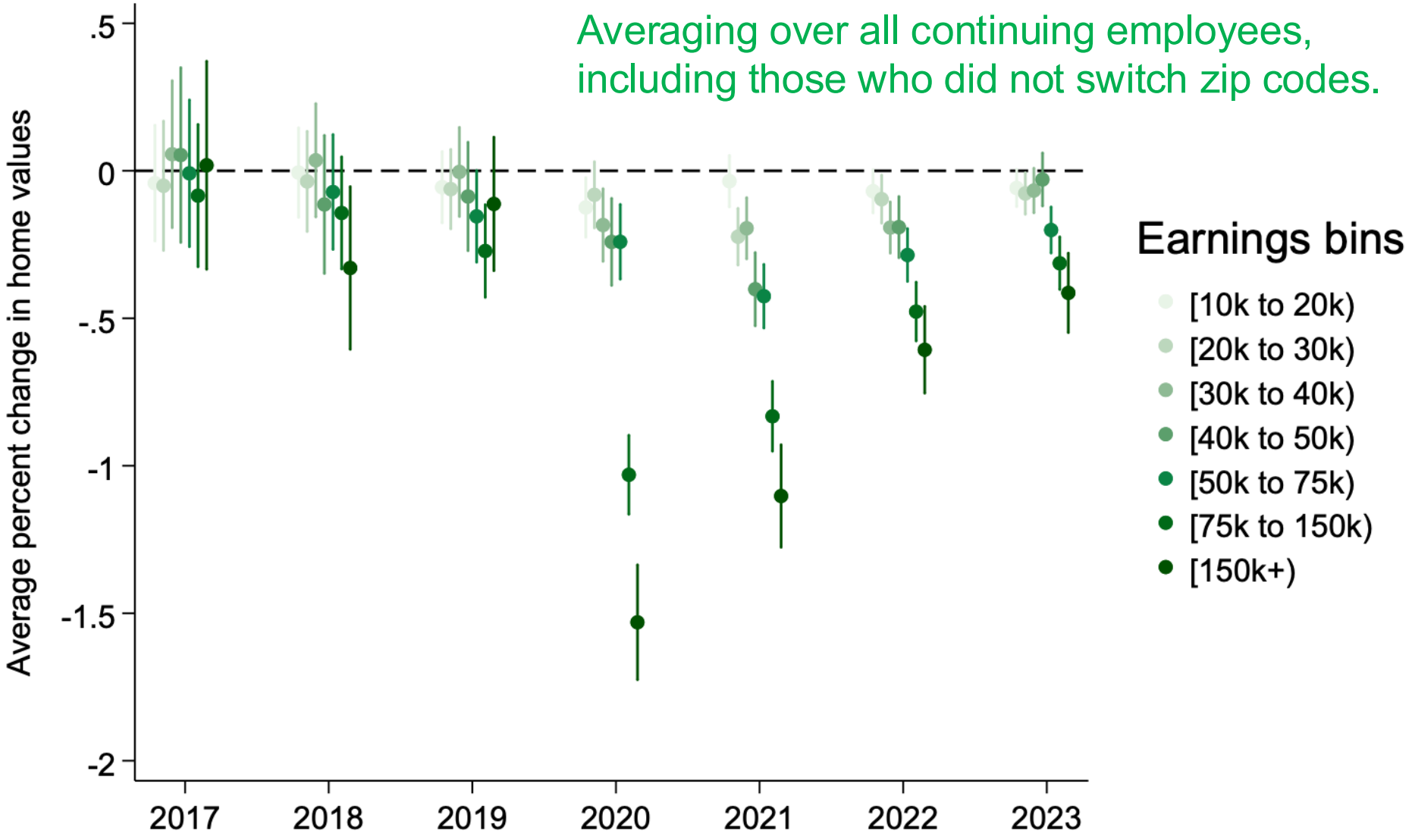
Figure 6: Continuing employees moved to states with lower tax rates after the pandemic struck, with stronger migration responses for higher earners



Notes: This chart reports the mean net change in the top state-level labor income tax rate among 1 million employees who remained with the same employer from December of Year Y-1 to December of Y, where Y is reported on the horizontal scale. For example, an employee moving from California to Texas in 2019 would have a net change value of -12.3 percentage points. If an employee does not switch states, we set his or her net tax rate change to zero. Depending on the year, 52 to 64% of employees in the Gusto data set remain with their employer from December of Y-1 to December of Y. The vertical lines depict 95% confidence intervals. See Figure A.7 for a chart that reports corresponding changes in top tax rates conditional on moving between states.

Source: Akan et al. (2025), using Gusto data.

Figure 7: Continuing employees moved to areas with cheaper housing after the pandemic struck, with stronger migration responses for higher earners



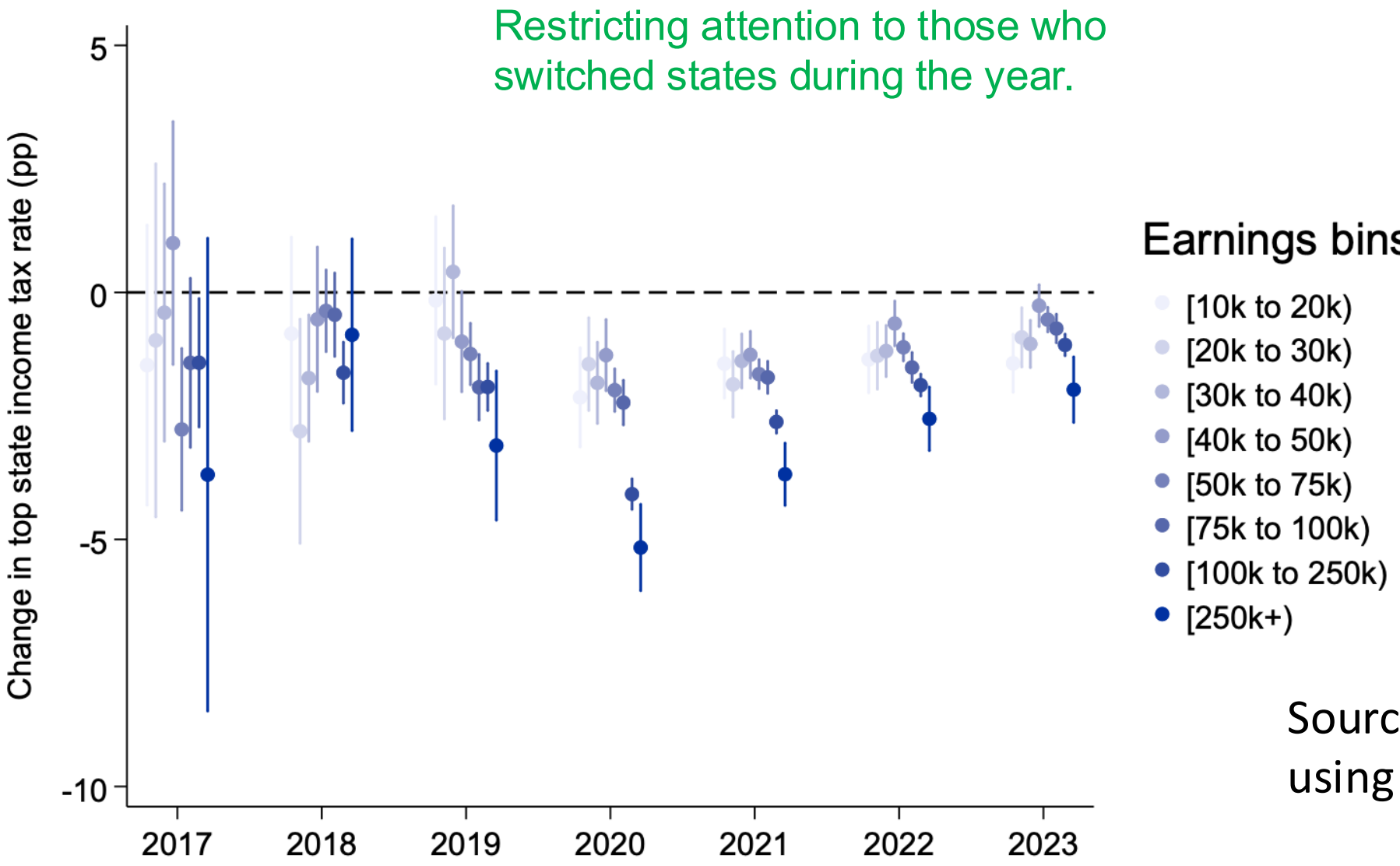
Notes: This chart reports the mean net change in zip-code level home values among 1 million employees who stayed with the same employer from December of Year Y-1 to December of Y, where Y is reported on the horizontal scale. We set zip-code level home values to the average monthly Zillow Home Value Index for each zip code from January 2017 to December 2023. The vertical lines depict 95% confidence intervals.
See Figure A8 for a chart that reports the corresponding percent change in local home prices conditional on moving between zip codes.

Source: Akan et al. (2025), using Gusto data.

Relocation can bring large drops in tax rates and housing costs, especially for the affluent.

A. Consider workers with annual earnings > $250K who stay with the same employer from one year to the next. Persons in this group who moved between states in 2020 (i.e., December 2019 to December 2020) lowered their (top) state-level income tax rates by **an average of 5.2 ppts**.
B. Persons with annual earnings > $150K who stayed with the same employer but moved to a new zip code in 2020 experienced **a 16% reduction in local housing costs, on average**.
C. High earners who moved in 2021, 2022 and 2023 also enjoyed large savings in taxes and housing costs
D. *WFH can yield large private welfare gains beyond its effects on productivity, commuting, personal autonomy, flexibility in time use over the day, and a relaxation of joint-location constraints in two-earner households.*

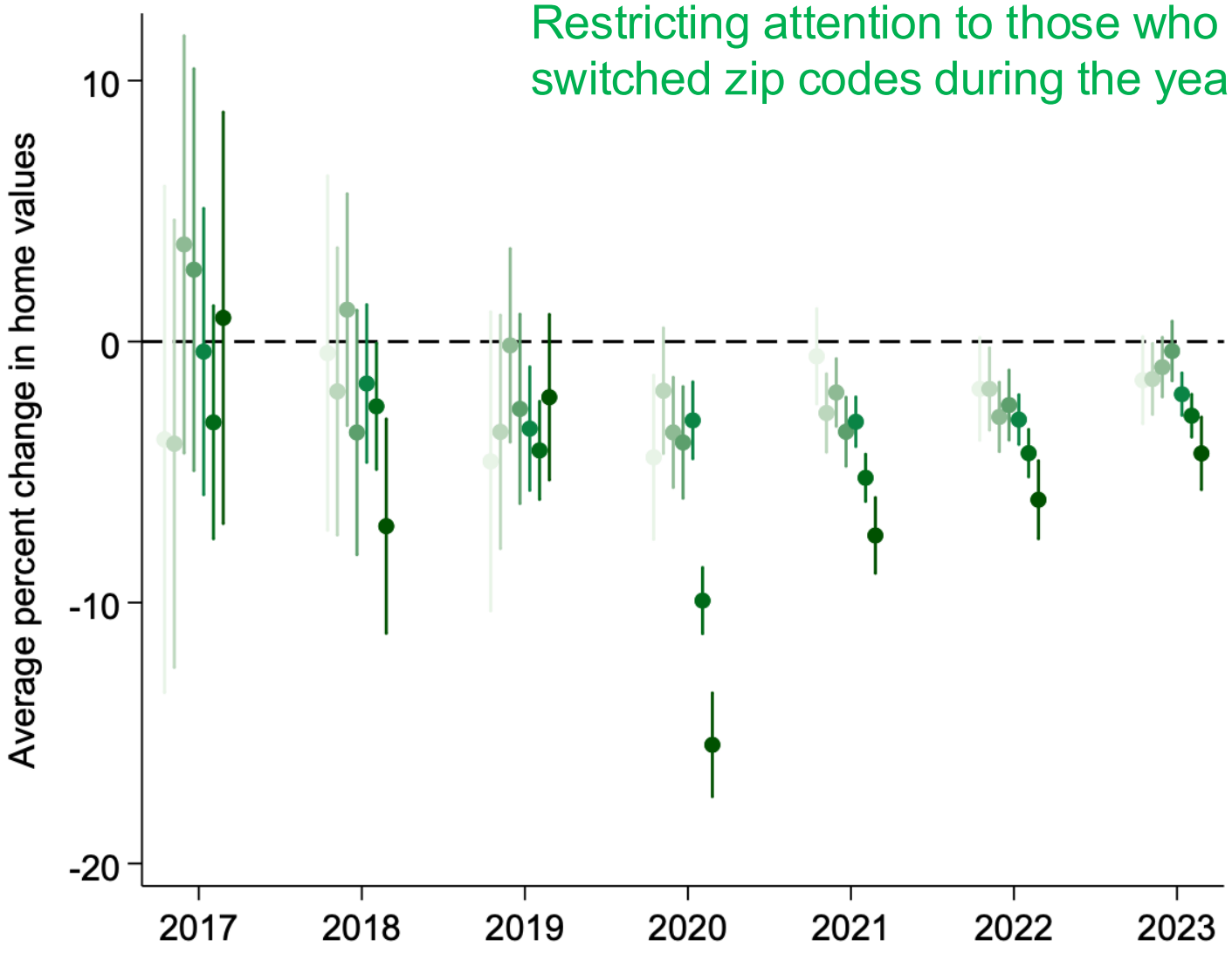
Figure A7: Mean changes in top tax rates, continuing employees who move between states



Notes: We construct this chart using the same approach as in Figure 6 in the main text, except that we now restrict attention to continuing employees who switched their state of residence from Year Y-1 to year Y.

Source: Akan et al. (2025), using Gusto data.

Figure A8: Mean percent changes in local home prices, continuing employees who moved between zip codes



Notes: We construct this chart using the same approach as in Figure 7 in the main text, except that we now restrict attention to continuing employees who moved between between zip codes from Year Y-1 to Year Y.

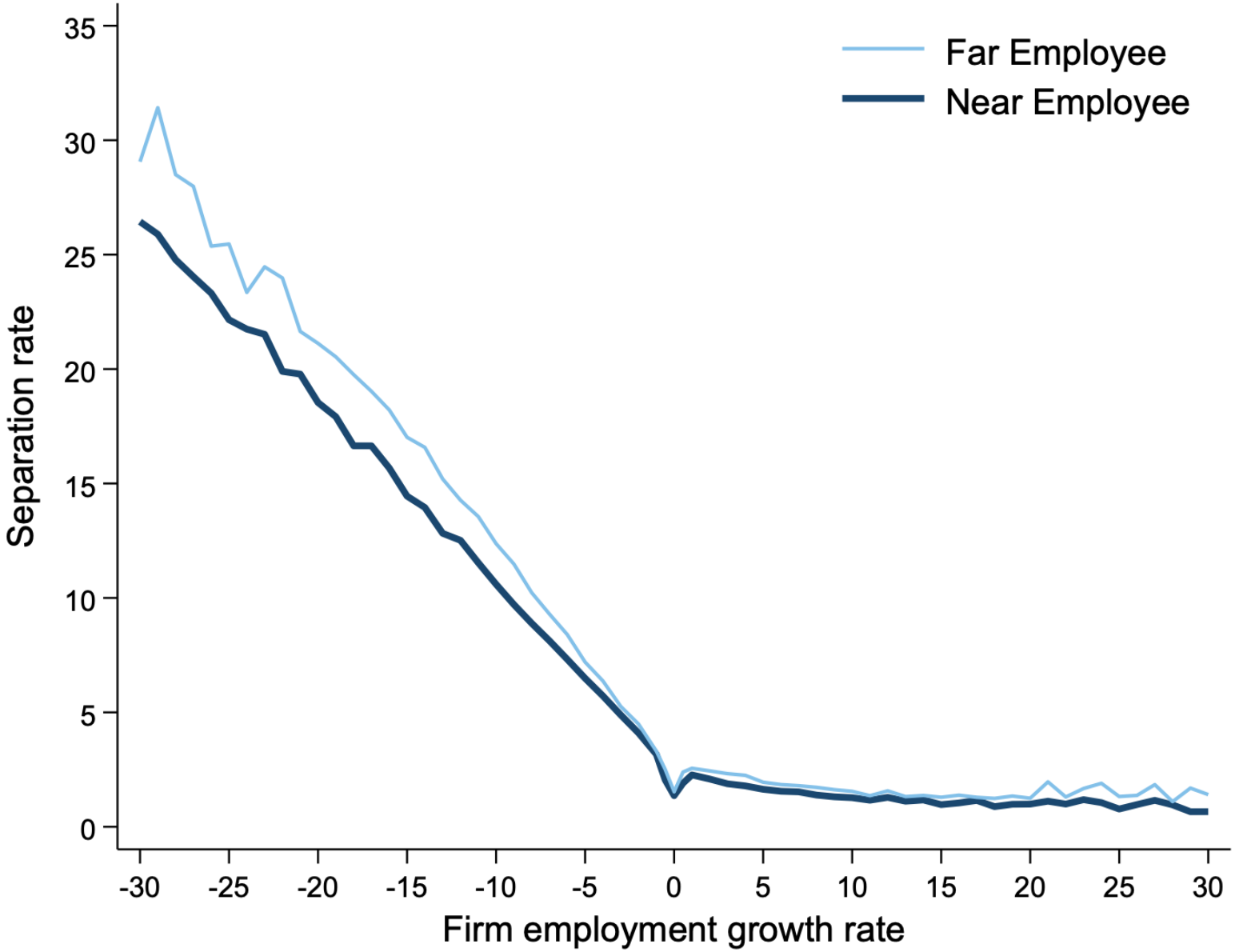
Source: Akan et al. (2025), using Gusto data.

Figure 8: Separation and hiring rates are greater, and more responsive to employer growth, for distant employees

Notes: Gusto payroll data of a sample of about 3.8 million employees and 140 thousand companies from 2017 to 2023. We obtain these plots from nonparametric least-squares regressions of separation and hiring rates on monthly employer-level growth rate bins. There are four separate regressions: two for the hiring rates of far and near employees, and two for the hiring rates of far and near employees.

Source: Akan et al. (2025), using Gusto data.

Far Out, First Out (FOFO): Separation rates remain more responsive to firm-level growth for far employees when controlling for individual-level job tenure, age, and sex



Notes: We obtain these plots from nonparametric least-squares regressions of individual-level monthly separation values on monthly employer-level growth rate bins and controls for job tenure, age, and sex of the employee. For each person employed in month $t-1$, we set the separation value to 1 if he or she longer works for the same firm in month t, and 0 otherwise. We pool the data over months from 2017 to 2023 and distinguish far and near employees. We fit separate regressions for far and near employees. In each case, we regress the individual-level separations value on an exhaustive set of interval dummies for firm-level growth rates at t (using the same set of interval dummies as in Figure 8), an exhaustive set of dummies for the individual's current tenure with the firm (one month, two months, three months,…), an exhaustive set of dummies for the individual's age, and the individual's sex. As in Figure 8, we read the plotted relationships directly from the coefficients on the interval dummies for firm-level growth rates. The near-employee sample contains 46.9 million individual-level observations, and the far-employee sample contains 5.8 million observations.

WFH & Locational Flexibility: Summary

WFH relaxes locational constraints for workers, families, and employers. In doing so,

1. It expands employment options for anyone who can work in jobs that are suitable for hybrid or fully remote work.
2. It expands residential location options for individuals and families, and it relaxes joint location constraints for working couples.
3. It allows employers to recruit broadly, including from areas with lower wages or deeper talent pools, without relocating the business.
4. It diffuses the labor market footprint of individual employers.

These developments have important implications for cities, housing markets, tax revenues, labor supply, wage determination, business dynamics, and the effects of labor market downturns.

A Case Study (Aksoy et al., 2025b)

- Tempo, a major call-center company in Turkey, has about 3,500 employees.
- The company services a broad clientele that includes banks, mobile phone operators, food chains, and embassy visa sections.
- Before COVID-19, Tempo operated offices in seven provinces, including its headquarters in Istanbul.
- In response to the national lockdown imposed in Turkey on March 11, 2020, Tempo executed a rapid transition to remote work.
- Within two weeks, the company shifted its entire workforce of 3,500 call center agents to remote operations.
- To facilitate this transition, Tempo provided laptops and internet support to its employees.
- Tempo stuck with remote work after the lockdown ended.

The Working Environment Before (A) and After (B) the Shift

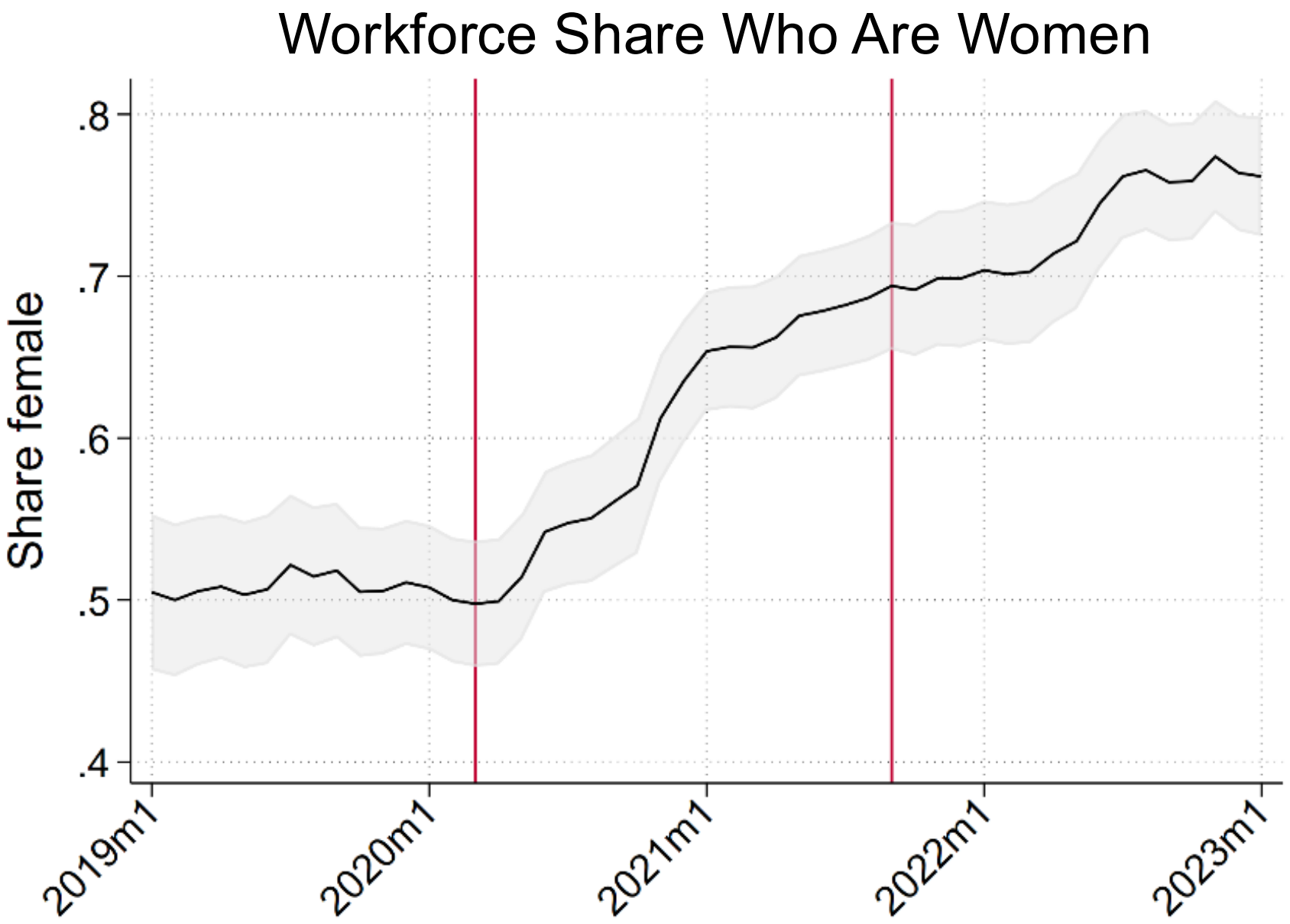
A: Working from the office

B: Working from home

Main Findings

1. The shift to remote work led to sharp rises in the company's workforce shares of women, older and more-educated workers, **and persons who reside outside metropolitan areas**.
2. Average workforce productivity rose by 6 percent from 2019 (onsite work) to 2022-2023 (remote work), and individual-level productivity rose by 10 percent.
   - The productivity gains mainly reflect shorter call durations, with no loss of service quality.
3. Productivity effects are similar for men and women.

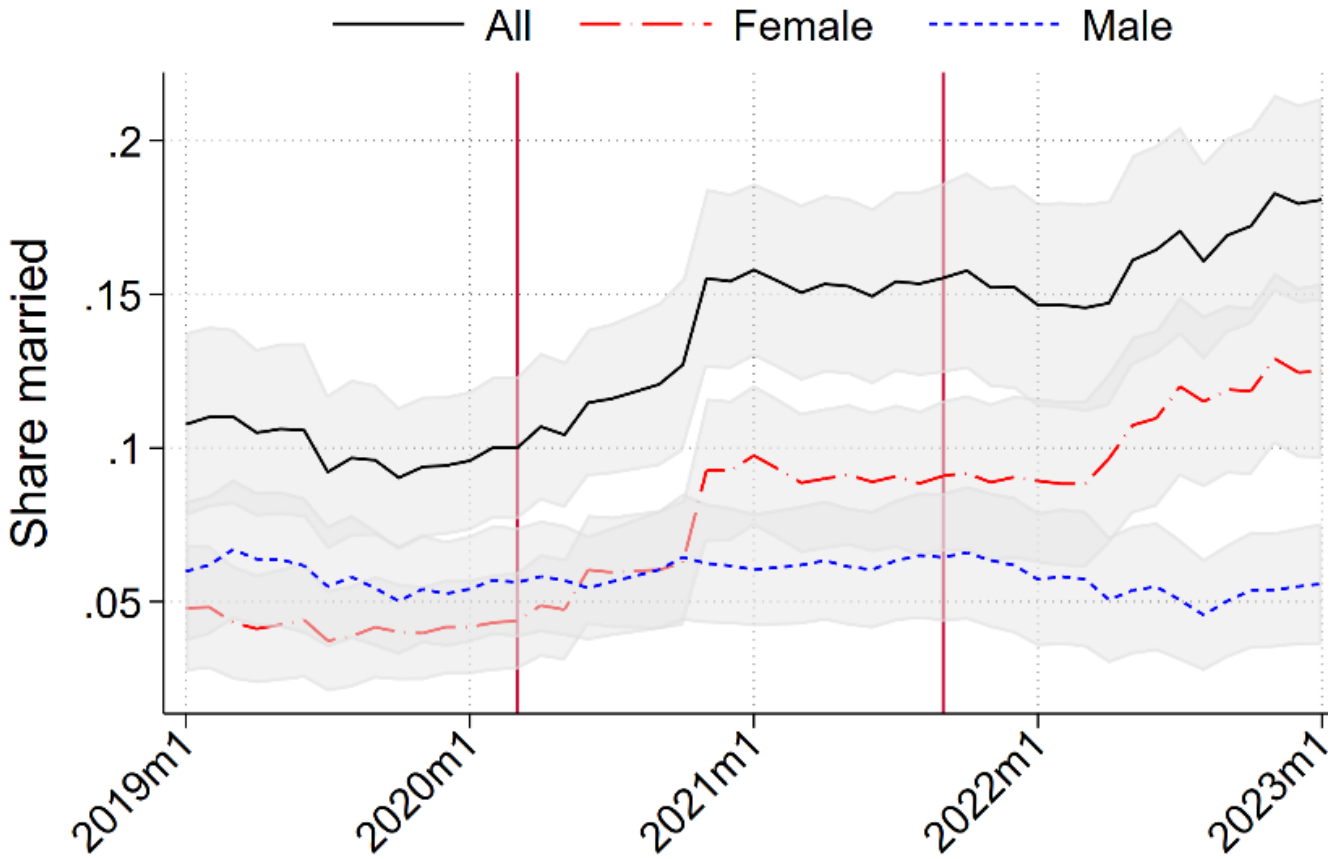
Company Workforce Mix, January 2019 to January 2023



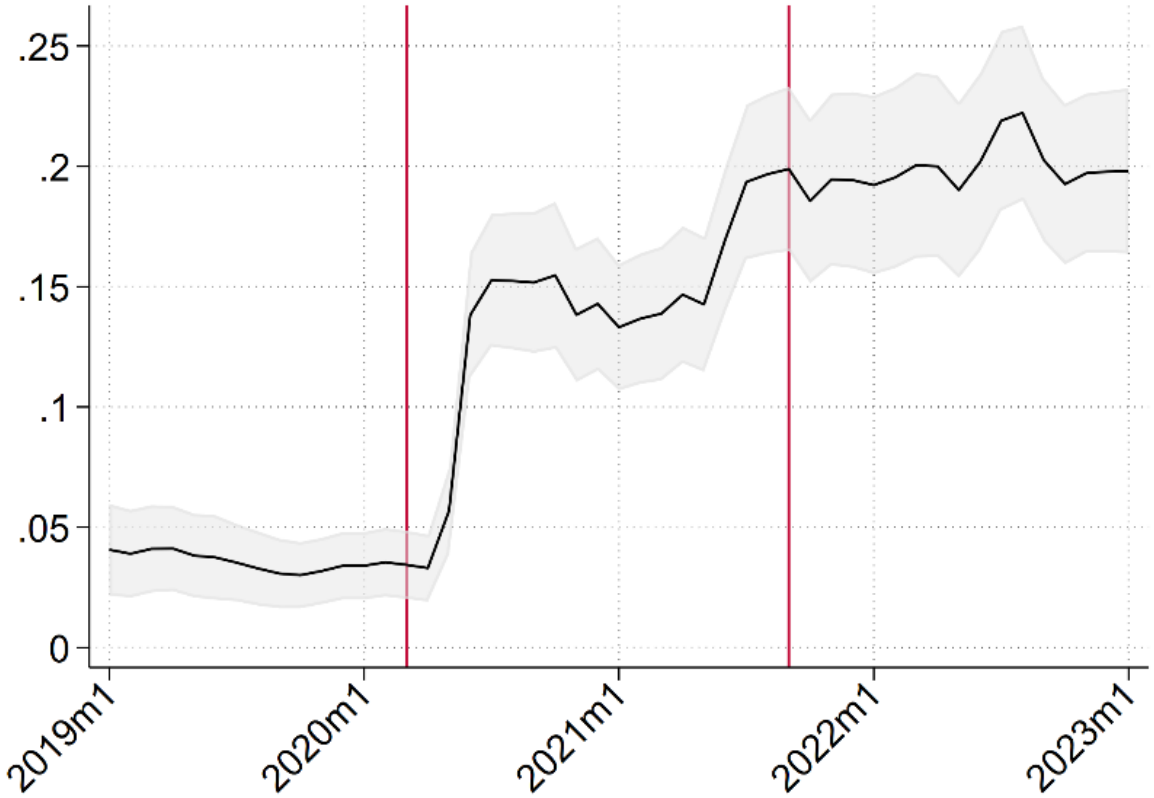
Notes: The first vertical line shows when Turkey introduced lockdown restrictions. The second line shows when Turkey ended the restrictions. Shaded areas show 95 percent confidence intervals around monthly means.

Company Workforce Mix, January 2019 to January 2023

Share Who Are Married

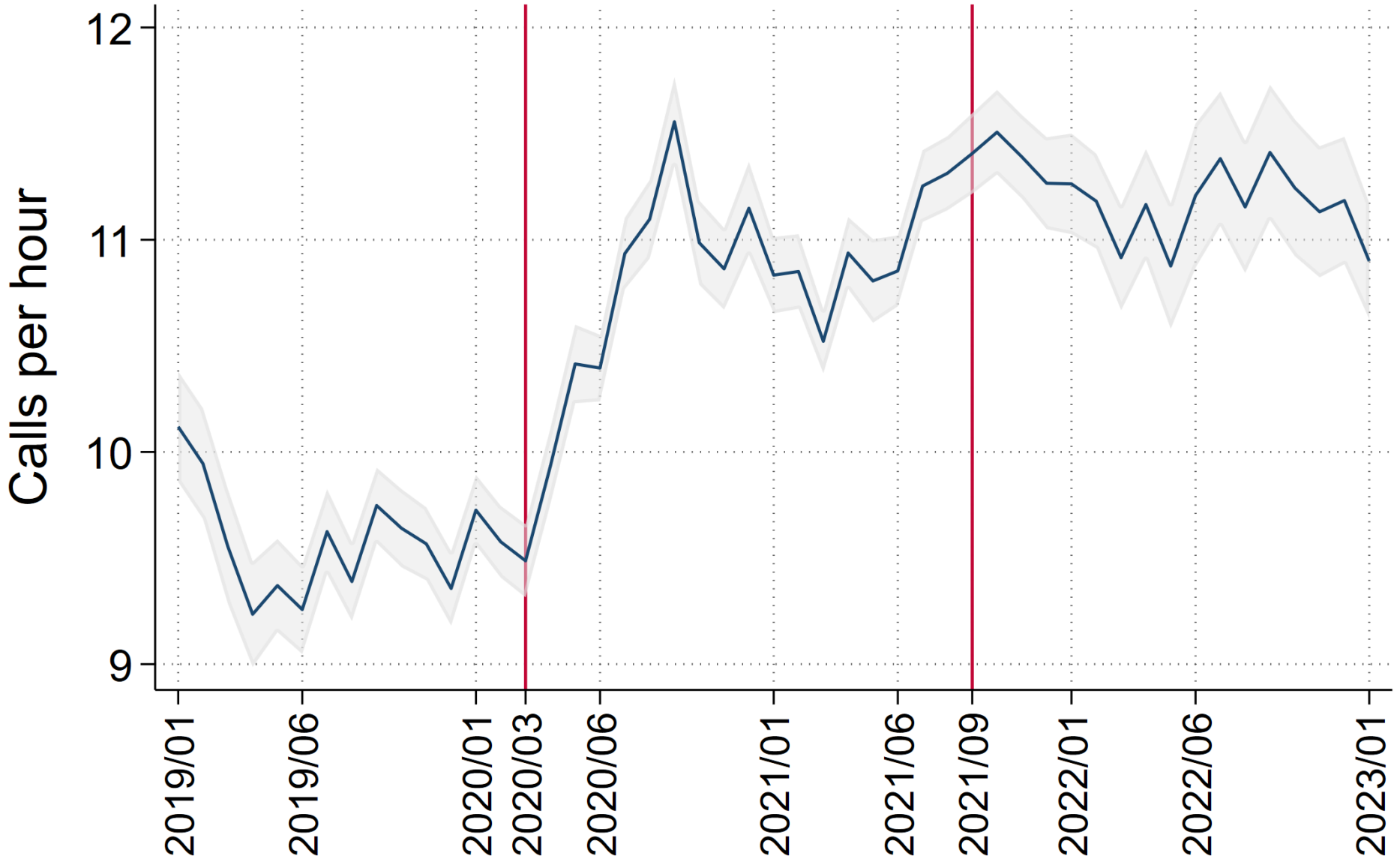


Share in Less Populous Provinces



"Less Populous Provinces" have fewer than 750,000 persons each. 33 of 60 covered provinces meet this criterion.

Individual-level productivity rose after the shift to remote work



Notes: This figure shows regression coefficients on monthly dummies, controlling for the mix of calls, repeat calls, and agent fixed effects. Shaded areas show 95 percent CIs based on errors clustered at the agent level.

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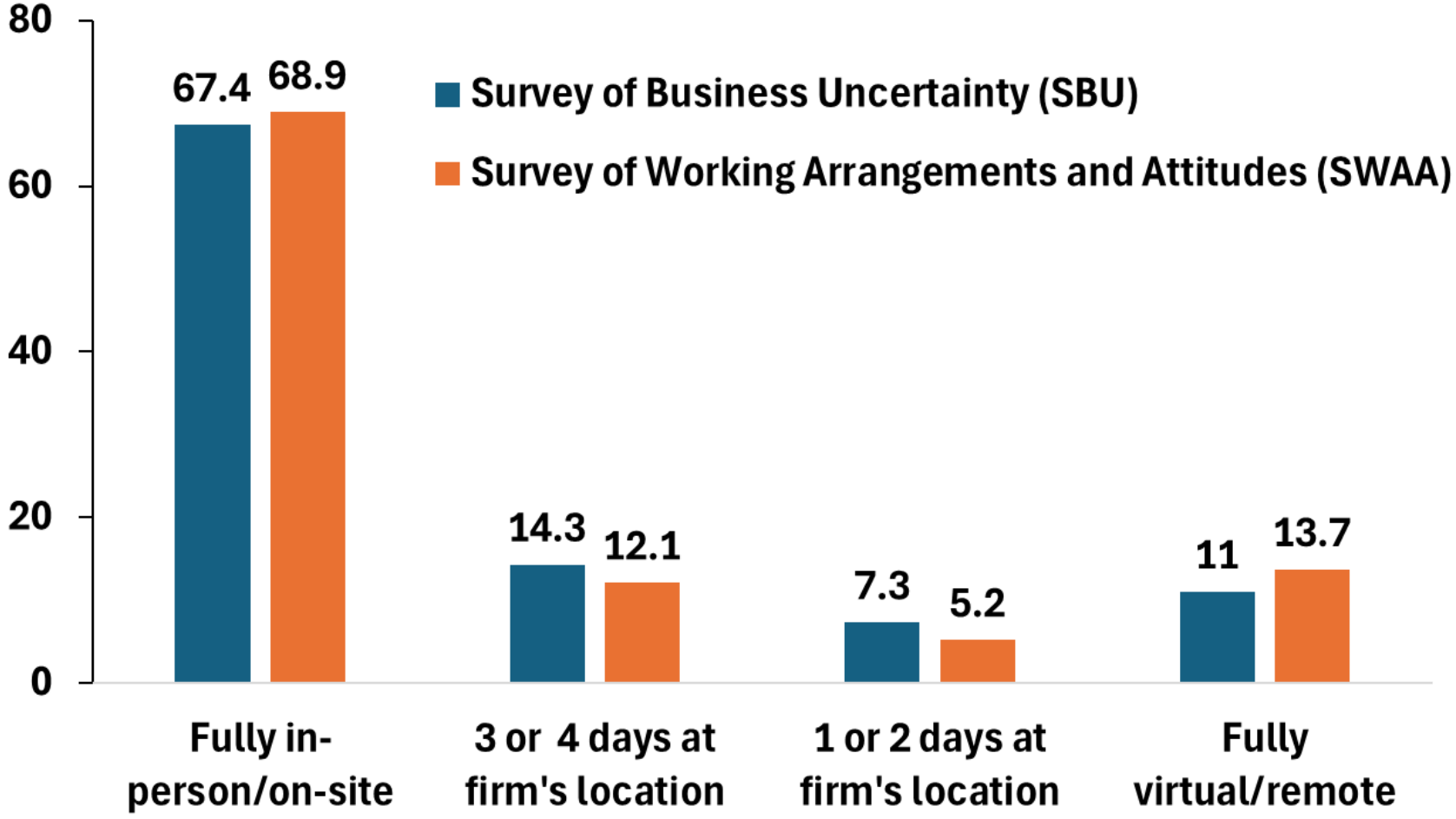
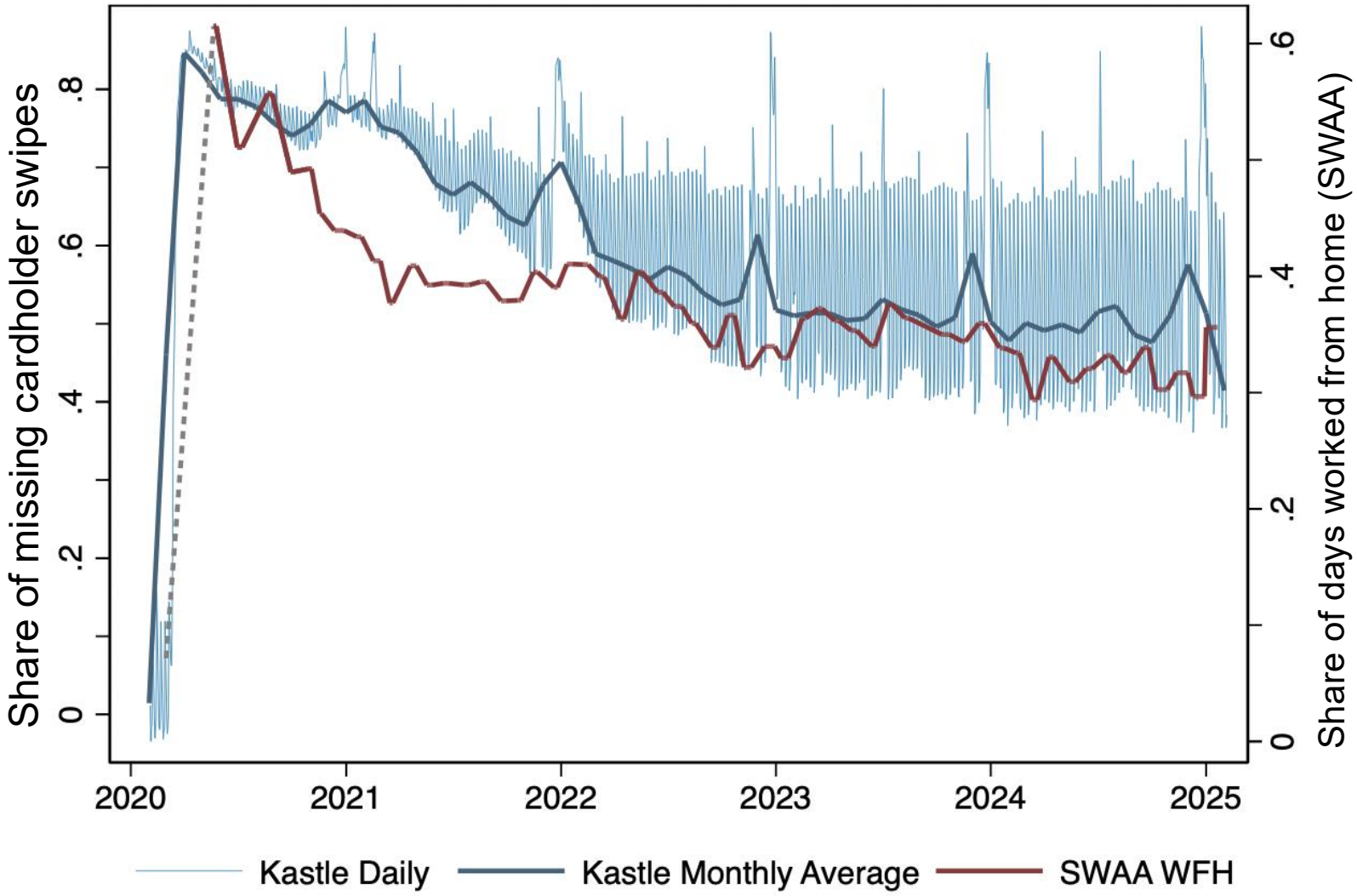
Extra Slides

WFH rates reported by managers in the Atlanta Fed's Survey of Business Uncertainty align with those in a comparable SWAA sample



Notes: The Atlanta Fed fields the SBU to senior executives at firms across all U.S. states and industry groups. The SBU is broadly representative across major groups and the distribution of employees by firm size, but it excludes government employees and the self-employed, and it has little coverage of younger firms (five years or less since first paid employee). We have tailored the SWAA sample to reflect SBU coverage in this chart.

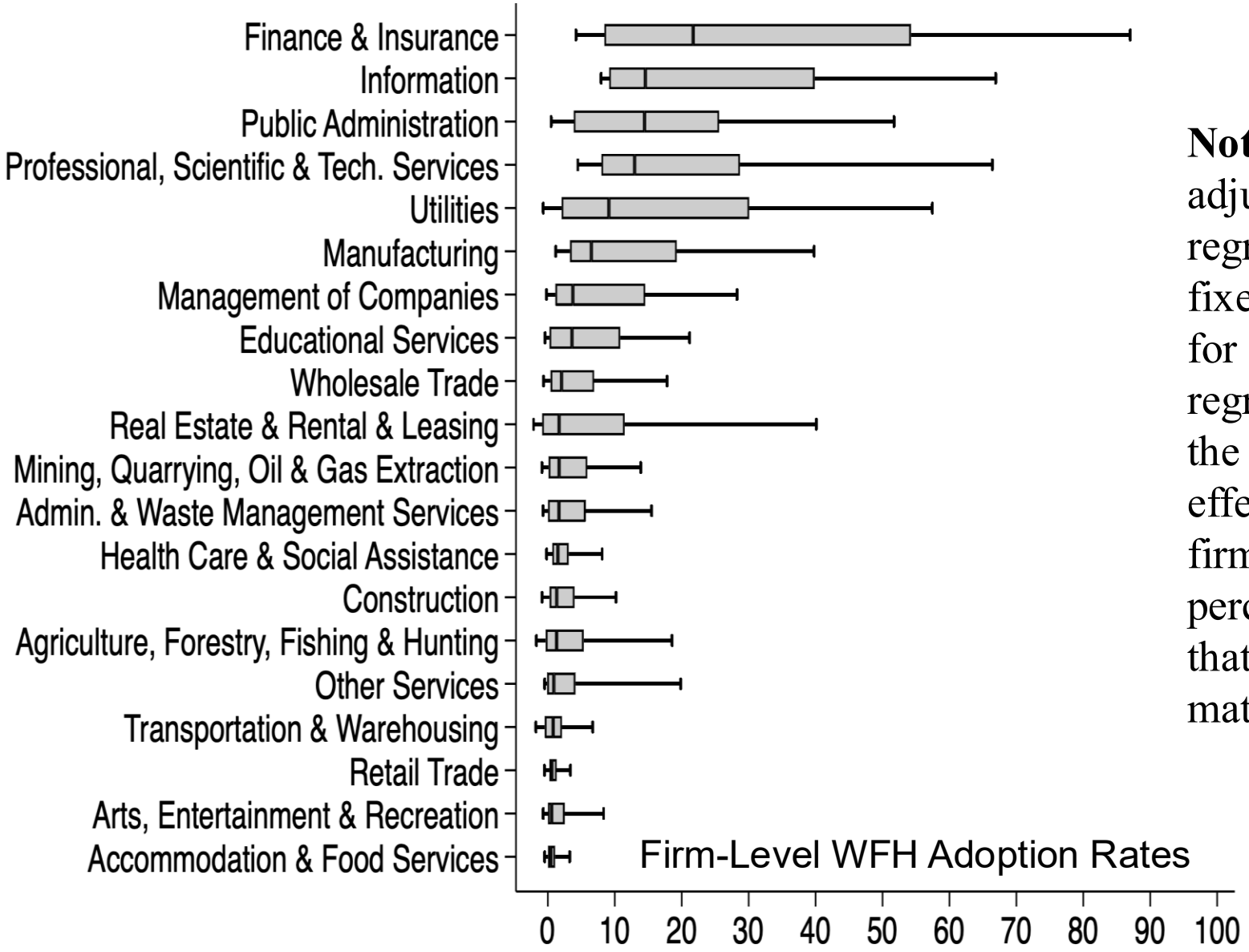
Data on "Missing" Office Workers in Top 10 U.S. MSAs Also Point to Stabilization of WFH Rates Since 2023



Notes: SWAA and Kastle data are both restricted to the top 10 MSAs include Washington DC, NYC, Chicago, Houston, Philadelphia, SF, LA, Dallas, San Jose, Austin. SWAA includes all employed individuals 20-64 earning at least $10,000. Kastle includes employed individuals of all ages and earnings, primarily office workers. We construct the Kastle data as 1 - (percent of cardholder swipes into the office normalized to February 3 – February 13 2020) where 0 is equal to pre-pandemic in person work and 1 is equal to full remote work.

Heterogeneity across Firms in WFH Rates on Offer, Controlling for Occupational Mix

Box Plots of Regression-Adjusted Firm-Level WFH Rates on Offer in Job Postings by Industry



Note: These box plots report regression-adjusted percentiles, which we obtain by regressing the posting-level observations on fixed effects for three-digit occupations and for firm-level fixed effects. We fit a separate regression for each industry sector, recover the coefficients on the firm-level fixed effects, and compute the percentiles of these firm-level effects. Before plotting these percentiles, we additively adjust them so that the median remote-work adoption rate matches the raw median for the industry.

Source: Hansen et al. (2023)

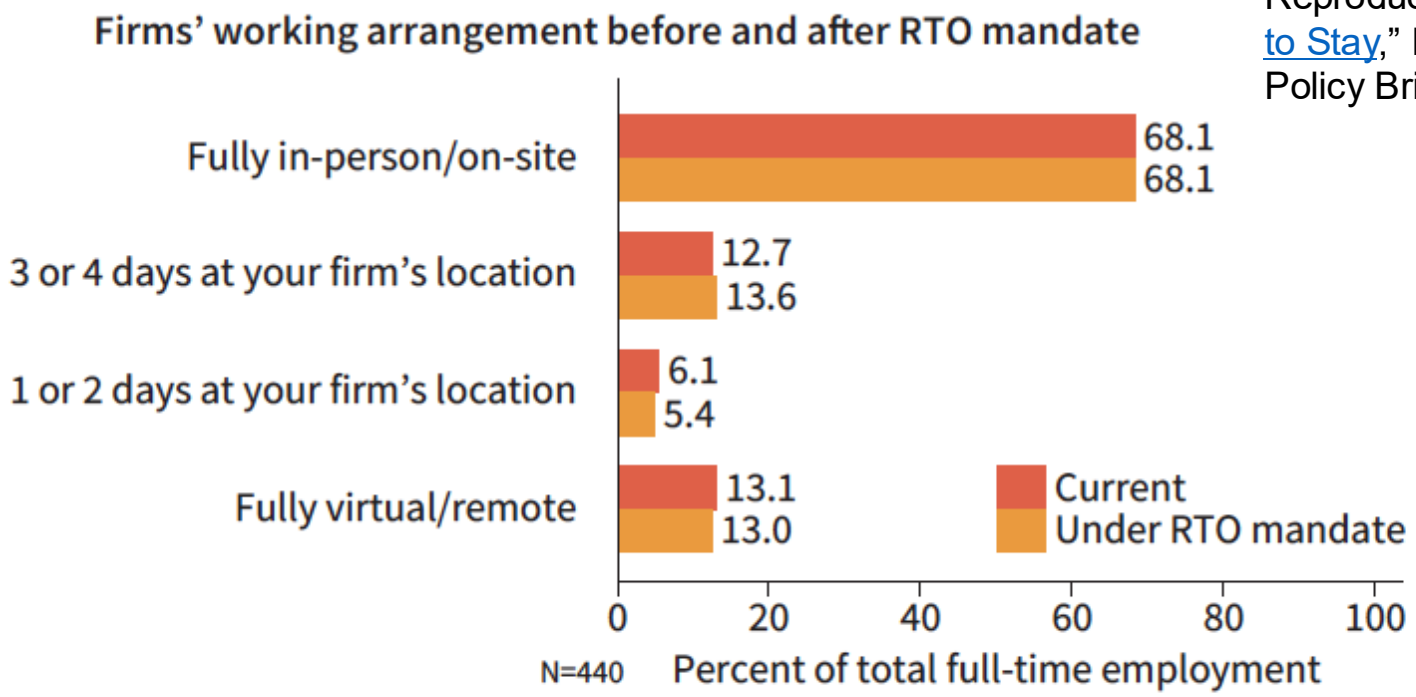
Regarding RTO mandates, we asked the executives to look ahead:

> **"During the next 12 months, is your firm planning a return-to-office mandate for those employees who currently work in hybrid or fully remote arrangements?"**

Just 12 percent of the executives that currently have hybrid or remote workers report plans for an RTO mandate in the year ahead. And many of these mandates don't involve a full return to onsite work. Instead, more than a quarter of the planned RTOs will require onsite work only 1 to 4 days a week.

FIGURE 1: Return-to-office mandates barely move the needle on WFH

Question: What do you expect would be the share of your firm's full-time employees in each category under the return-to-office mandate? Answers should sum to 100 Your firm's current shares are in parentheses.



Reproduced from "U.S. Executives Predict Work from Home Is Here to Stay," Barrero, Bloom, Davis, Foster, Meyer and Mihaylov. SIEPR Policy Brief, March 2025.

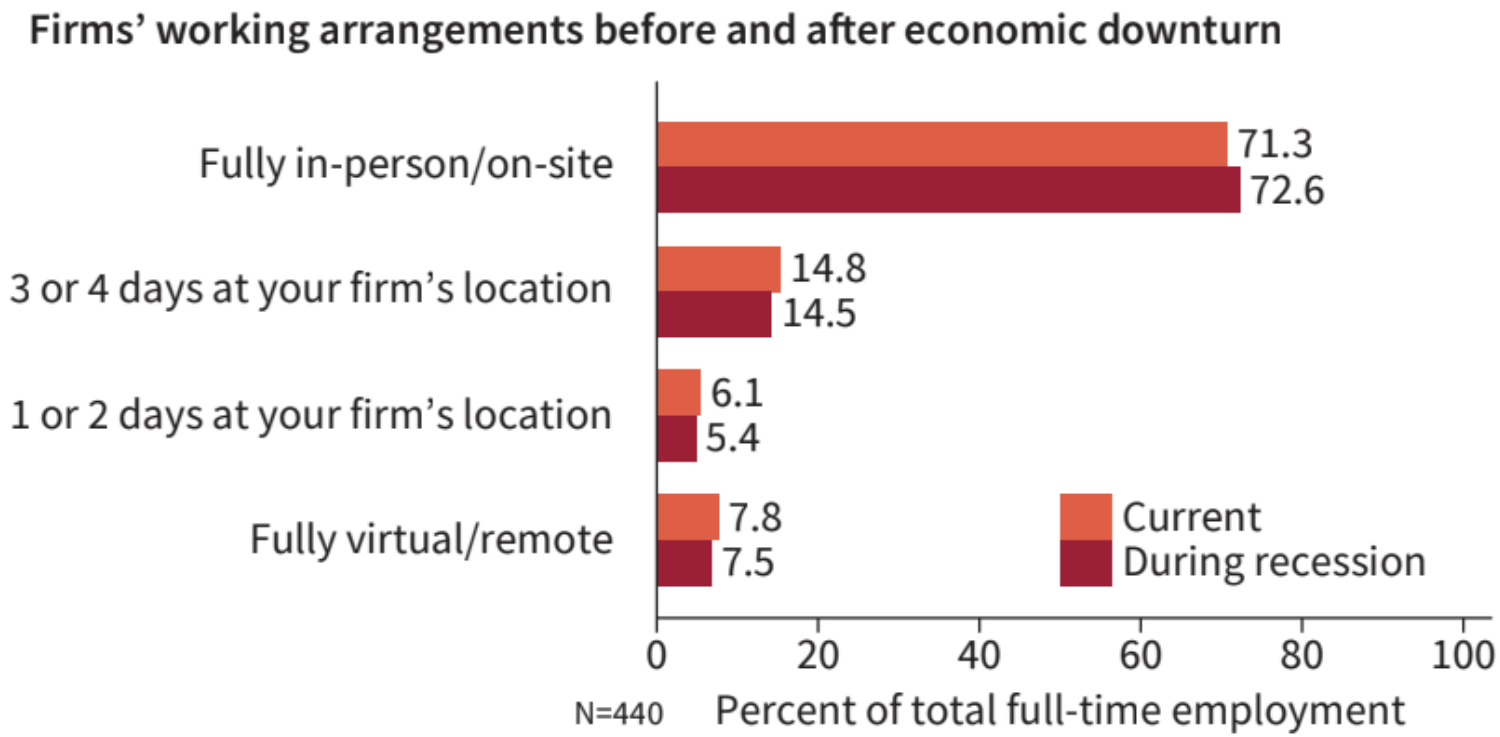
- Paid working days at home as a percent of all working days currently: 21.2%
- Paide working days at home as a percent of all working days after under the return-to-office mandate: 20.8%

Paid working days at home as a percent of all working days is calculated by converting the number of days at home to a fraction of the 5-day workweek (0.3 for 1-2 days, 0.7 for 3-4 days, and 1 for 5 days)

Note: Results are weighted by firm employment. These questions were fielded in the February 2025 SBU survey wave.

FIGURE 3: A significant turndown in economic conditions motivates a slight decline in WFH.

Question: You said that your firm would increase/reduce the share of hybrid or fully-remote employees if the unemployment rate were to double. What do you expect would be the share of your firm's full-time employees in each category under the new policy? Answers should sum to 100. Your firm's current shares are in parentheses.

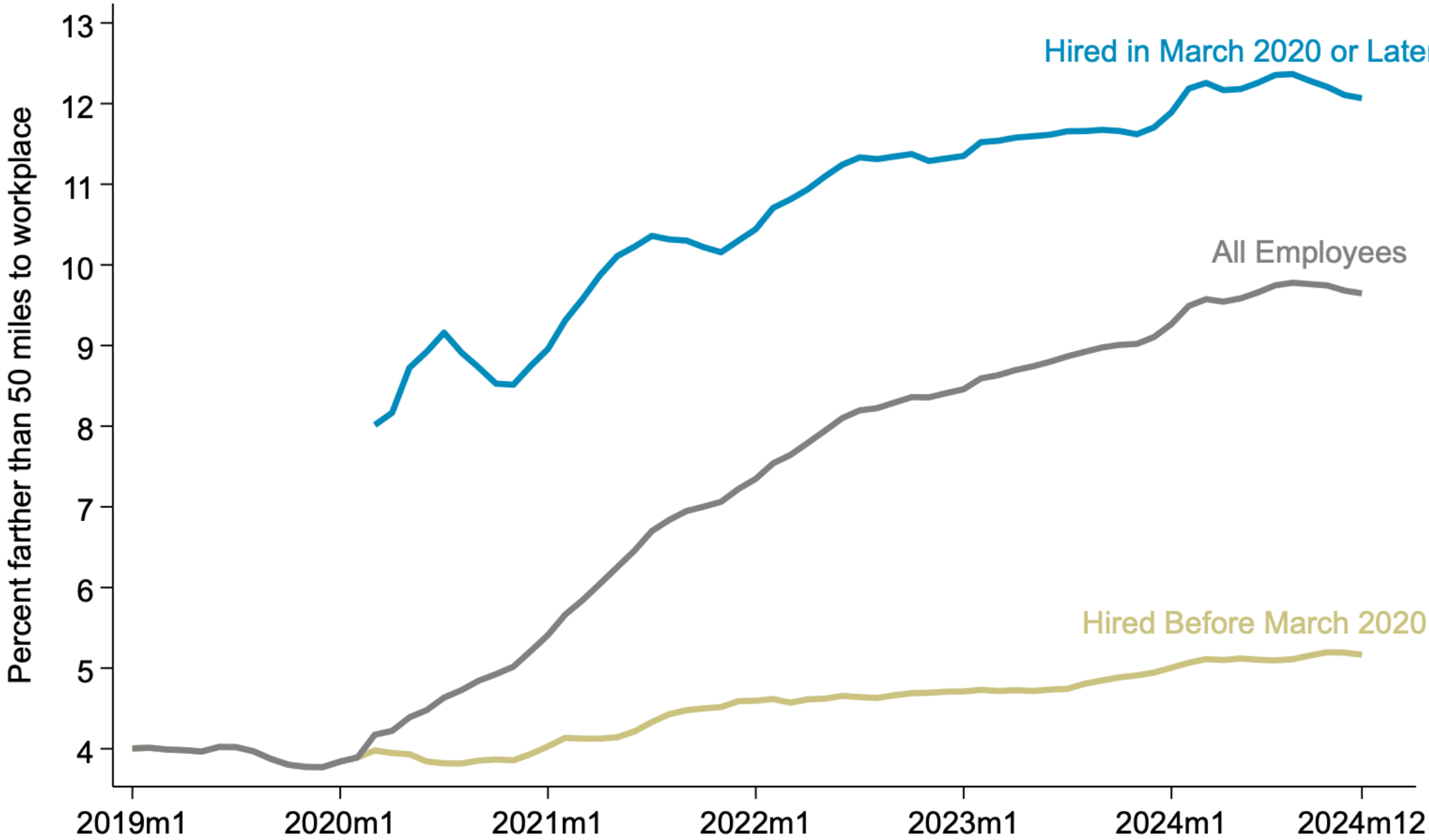


Note: Results are weighted by firm employment. These questions were fielded in the February 2025 SBU survey wave.

Gusto Data

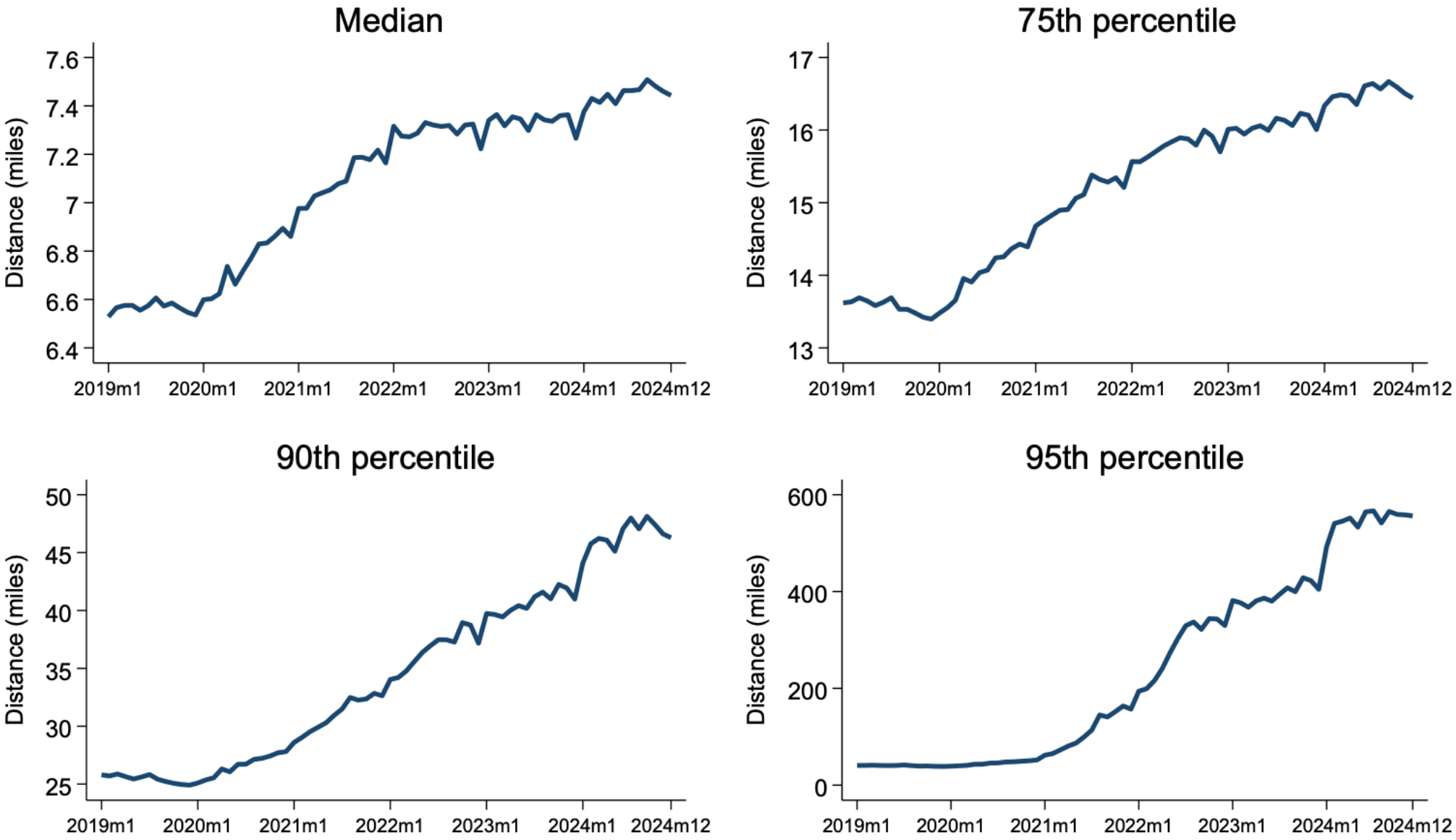
- Gusto provides payroll processing, tax, and other services to mostly small and mid-sized employers.
- We use anonymized, matched employer-employee data, following both over time. We weight individual-level data by the cross product of age bin, sex, annualized earnings bins and major industry group to match Current Population Survey
- **Balanced panel of firms** (and their employees) that operated continuously from January 2019 to December 2023.
- **All continuing employees**: Those who remained with the same employer from one December to the next.
- **Full dataset**: All observations except those pertaining to a firm's first and last month in the Gusto universe.

Figure 3: New hires since March 2020 account for the rise in distant employees



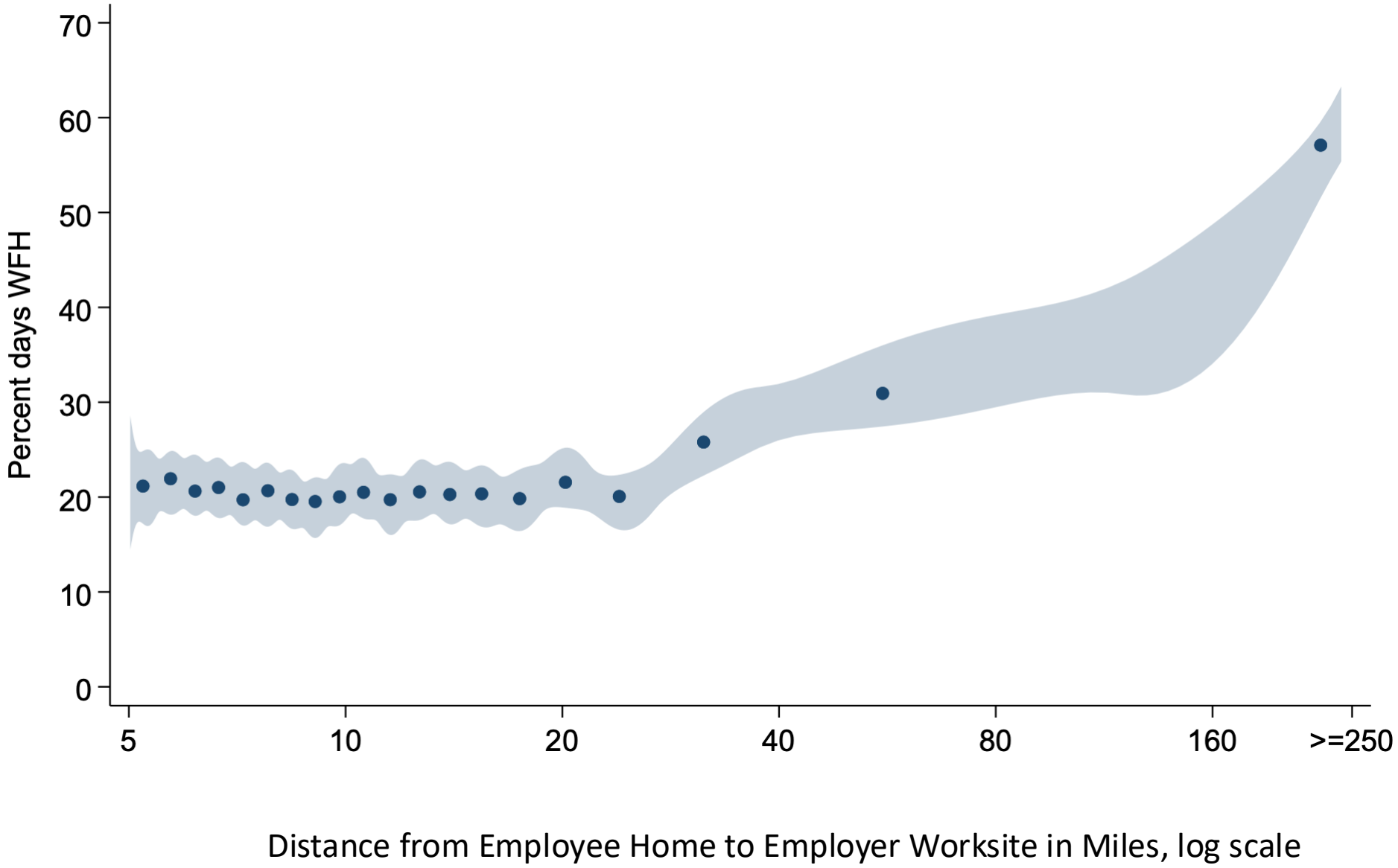
Notes: Gusto payroll data for 371,849 employees in a balanced panel of 12,454 firms. We re-weight the employee-level data to match the CPS distribution by (annualized earnings bin) X (age bin) X sex X major industry. We winsorize distance at 250 miles when computing mean distance.

Figure A2: Distance to employer rose across the entire distribution after the pandemic struck



Notes: See notes to Figure 2.

Figure 1: Work from home intensity rises with distance to employer

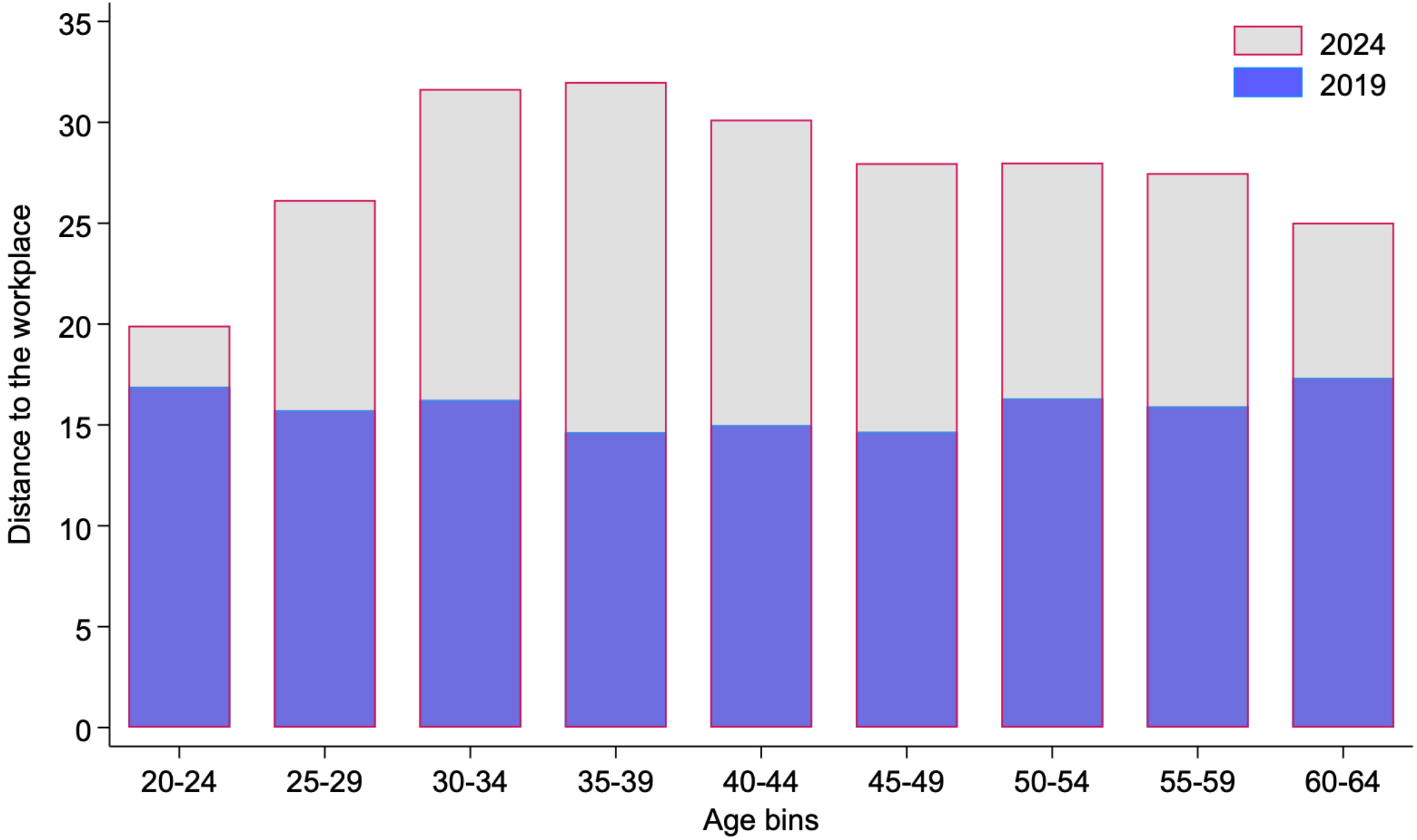


Notes: This chart plots the fitted relationship from a regression of Percent Days WFH on home-worksite distance with controls for education bins, earnings bins, age bins, and sex. We fit the regression to data on 44,110 respondents in the Survey of Working Arrangements and Attitudes (SWAA) from January 2022 to May 2024. We measure Percent Days WFH as the WFH percent of full paid workdays in the week. Our sample contains persons 20-64 years of age with prior-year earnings of $10,000 or more. We compute the haversine distance between the employee's home zip code centroid and the employer's worksite zip code centroid to obtain our distance measure. We drop employees who live within five miles of the employer's worksite because our measure is too coarse to accurately distinguish among short distances. Shaded regions denote 95 percent confidence bands.

Figure A5: Employers in areas with high housing prices have a much greater share of distant employees, 2023 data

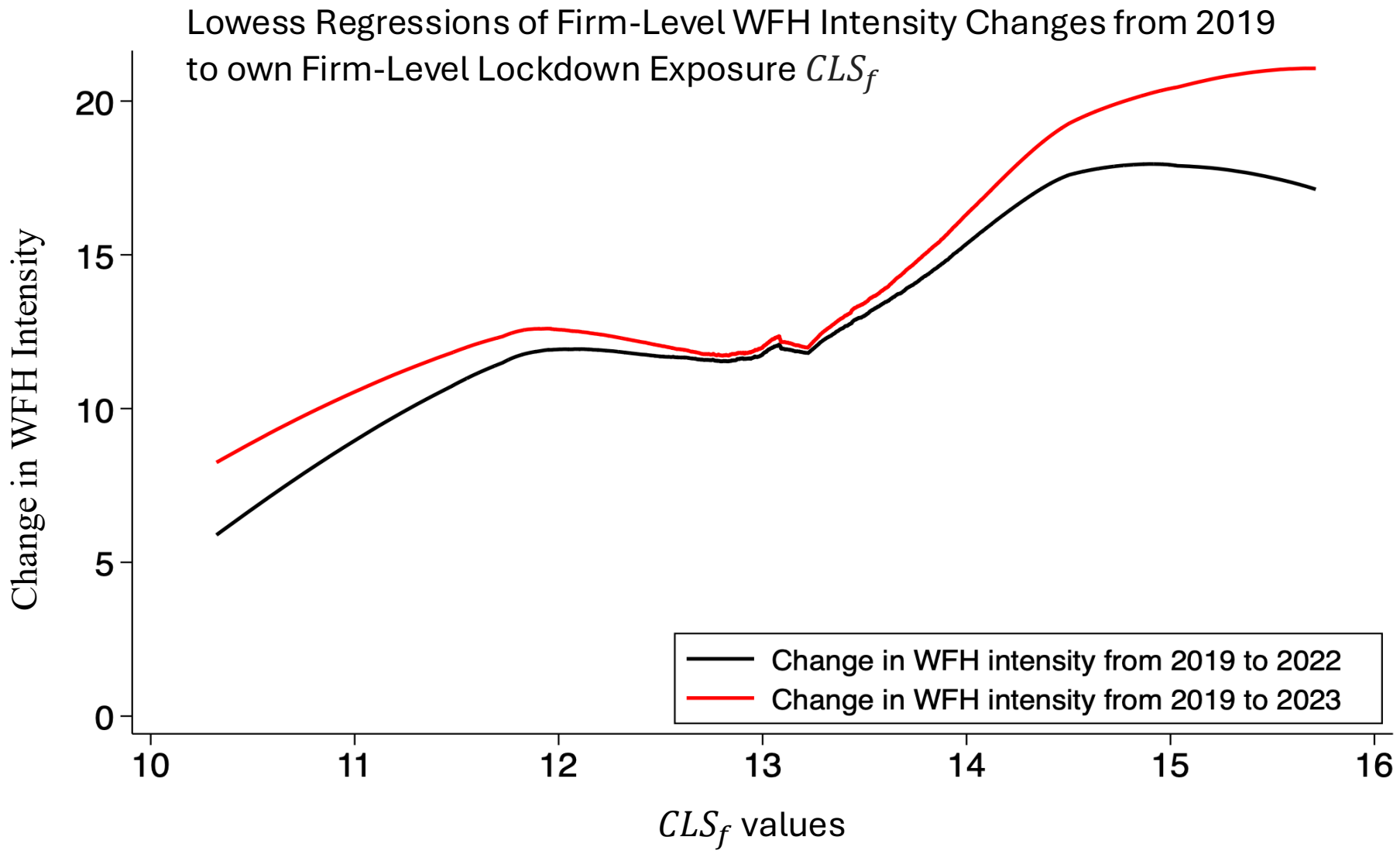
Notes: Gusto payroll data in 2023. Employee-level data are reweighted to match the CPS distribution by (annualized earnings bin) X (age bin) X sex X major industry.

Figure 4: Employees in their 30s and 40s have largest rise in distance to employer



Notes: Gusto payroll data for 371,849 employees in a balanced panel of 12,454 firms. We re-weight the employee-level data to match the CPS distribution by (annualized earnings bin) X (age bin) X sex X major industry. We winsorize distance at 250 miles when computing mean distance.

Firms that Faced Greater Lockdown Intensity in Pandemic Saw Bigger Rises in WFH



Note: The figure shows a Lowess (Locally weighted scatterplot smoothing) regression line depicting the firm-level change in WFH intensity from 2019 to 2022 (black line) and 2019 to 2023 (red line) as a function of firm-level lockdown exposure CLS_f. The sample includes private firms with 50+ postings across multiple states in 2019, with a dataset unit of one observation per firm (***N=23,720***).