

The Future of Working from Home

Nick Bloom (Stanford), July 1st 2024 WEAI

Based on work with:

Joel Alcedo (Mastercard), Mert Akan (Stanford), Cevat Aksoy (Kings), Jose Barrero (ITAM), Shelby Buckman (Stanford), Gordon Dahl (Davis), Mathias Dolls (IFO), Steve Davis (Stanford), Alex Finan (INRIX), Ruobing Han (CUHK), Hyoseul Kim (Stanford), James Liang (Peking), Arjun Ramani (MIT), Dan-Olof Rooth (Stockholm), Jane Sun (Trip), Liz Wilkie (Gusto) and Pablo Zarate (Princeton)

Review slides (so no paper), but I'll post slides on Linked-in this afternoon



Going to cover three sections

>>>> Current state of working from home

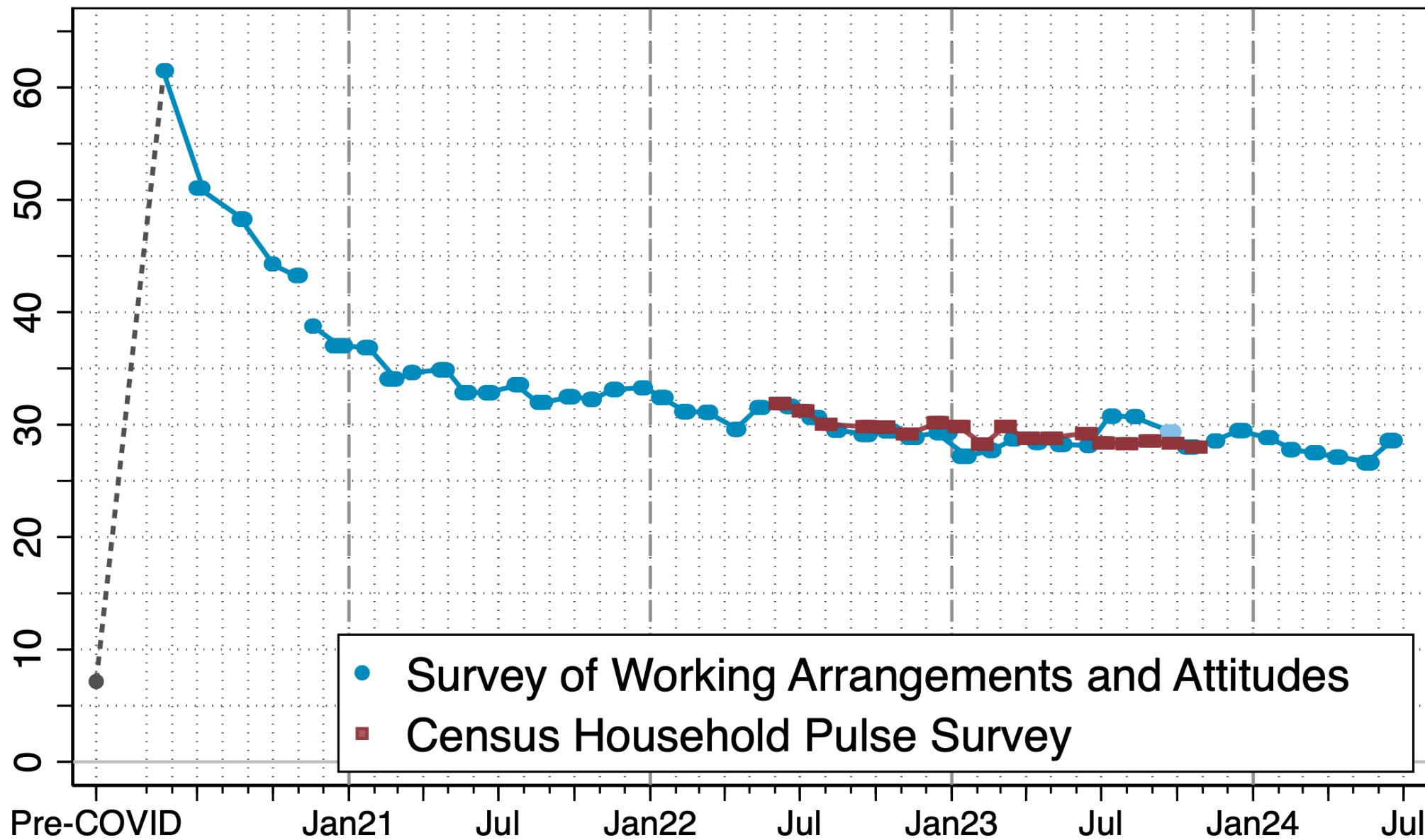
>>>> Thoughts on managing hybrid and remote

>>>> Five impacts on the economy



WFH is stabilizing at about 25% of days: a 5-fold jump vs 2019

US full days worked from home, %



Source: N=147,412 (SWAA) N=432,904 (HHP). SWAA data from survey responses weighted to match the US population. Pre-covid data from the American Time Use Survey. CHPS respondents weighted to match the US population aged 20 to 64 in households with incomes above \$25,000.

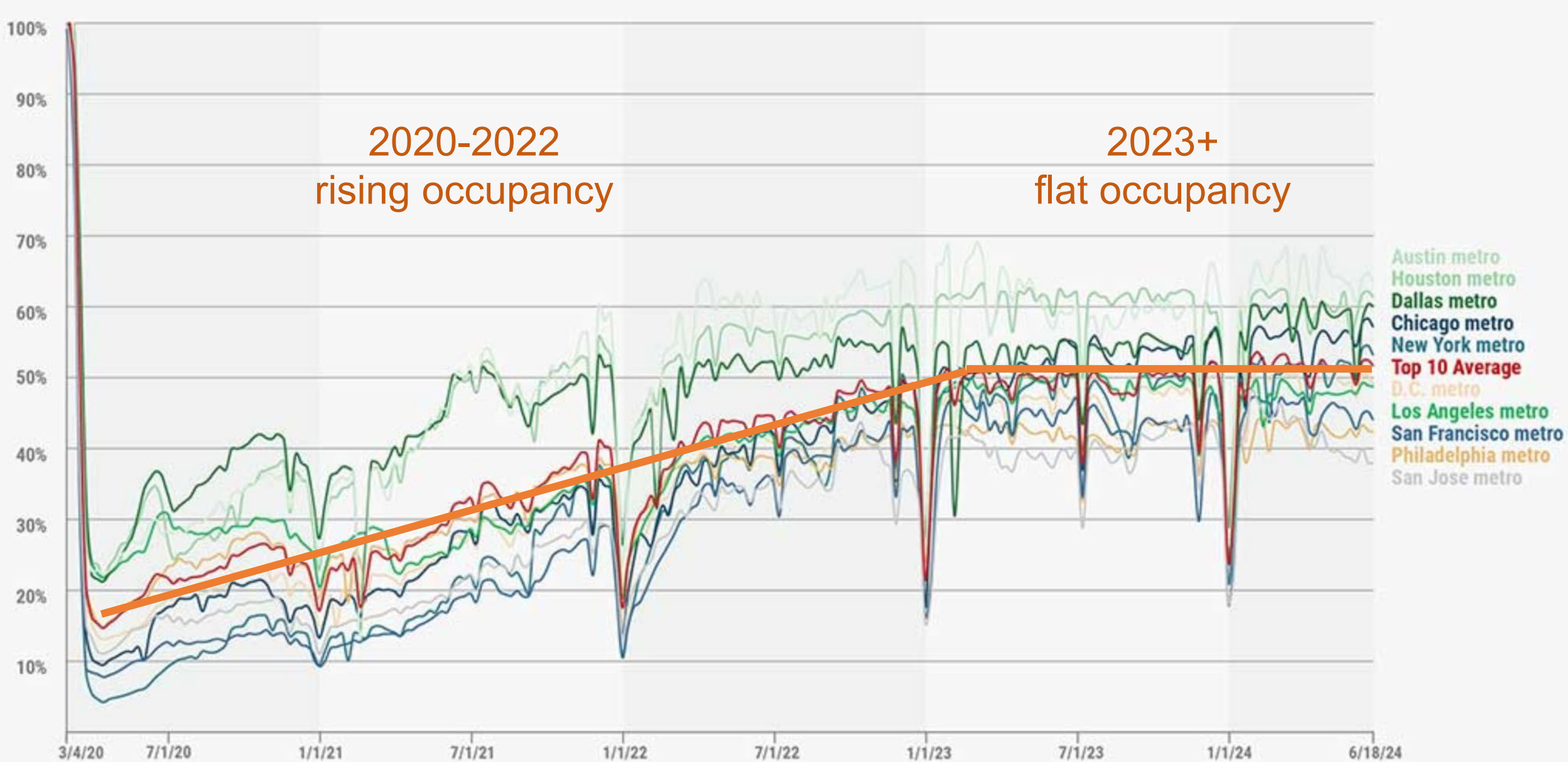
Survey of Workplace Attitudes and Arrangements (Barrero, Bloom and Davis 2021) <https://wfhresearch.com/>

● Survey of Working Arrangements and Attitudes
■ Census Household Pulse Survey

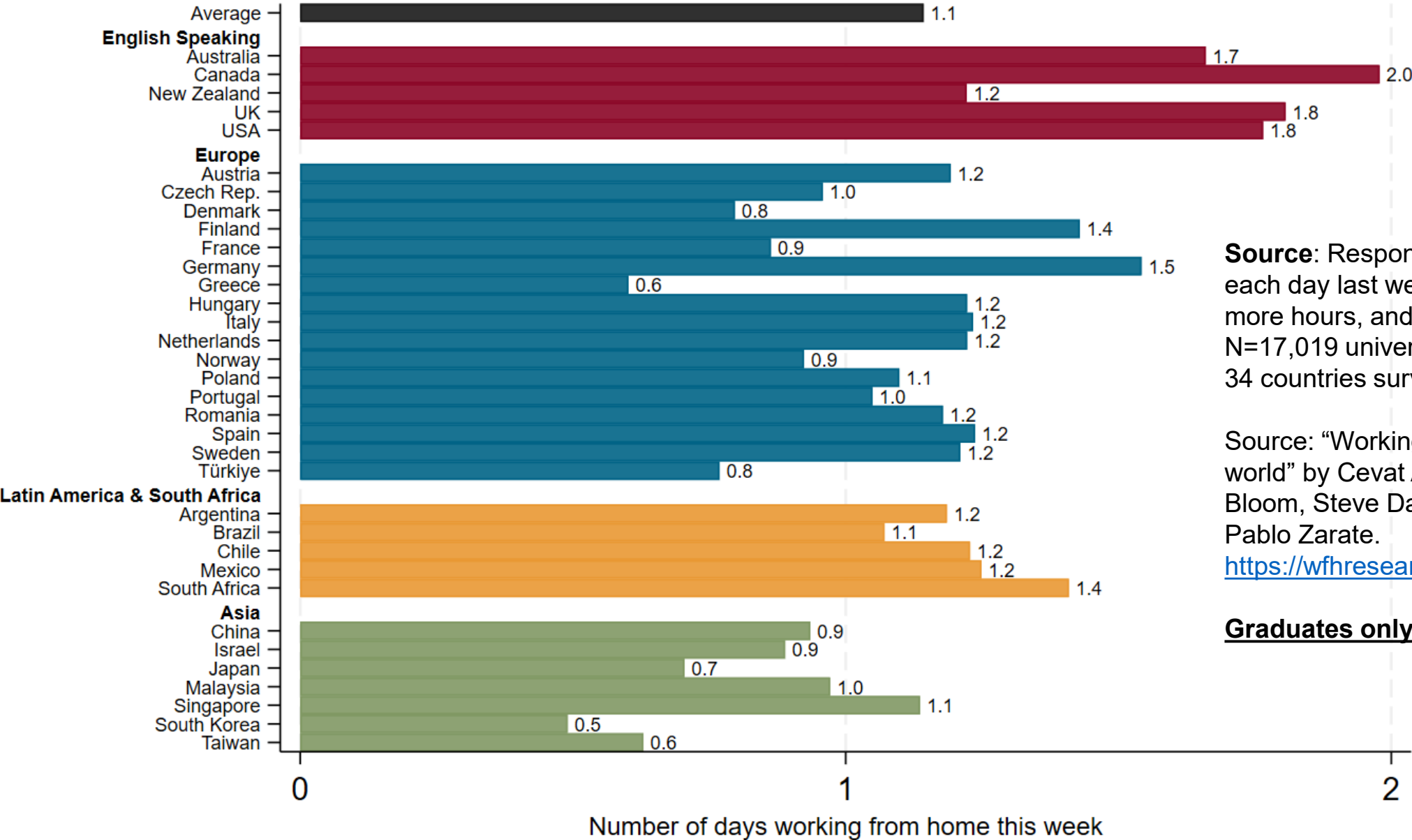


Office occupancy also stabilizing at about 50% of 2019 levels

Kastle office occupancy data



Globally WFH is highest in North America, UK and Australasia, then Europe, Latin America and South Africa and then Asia

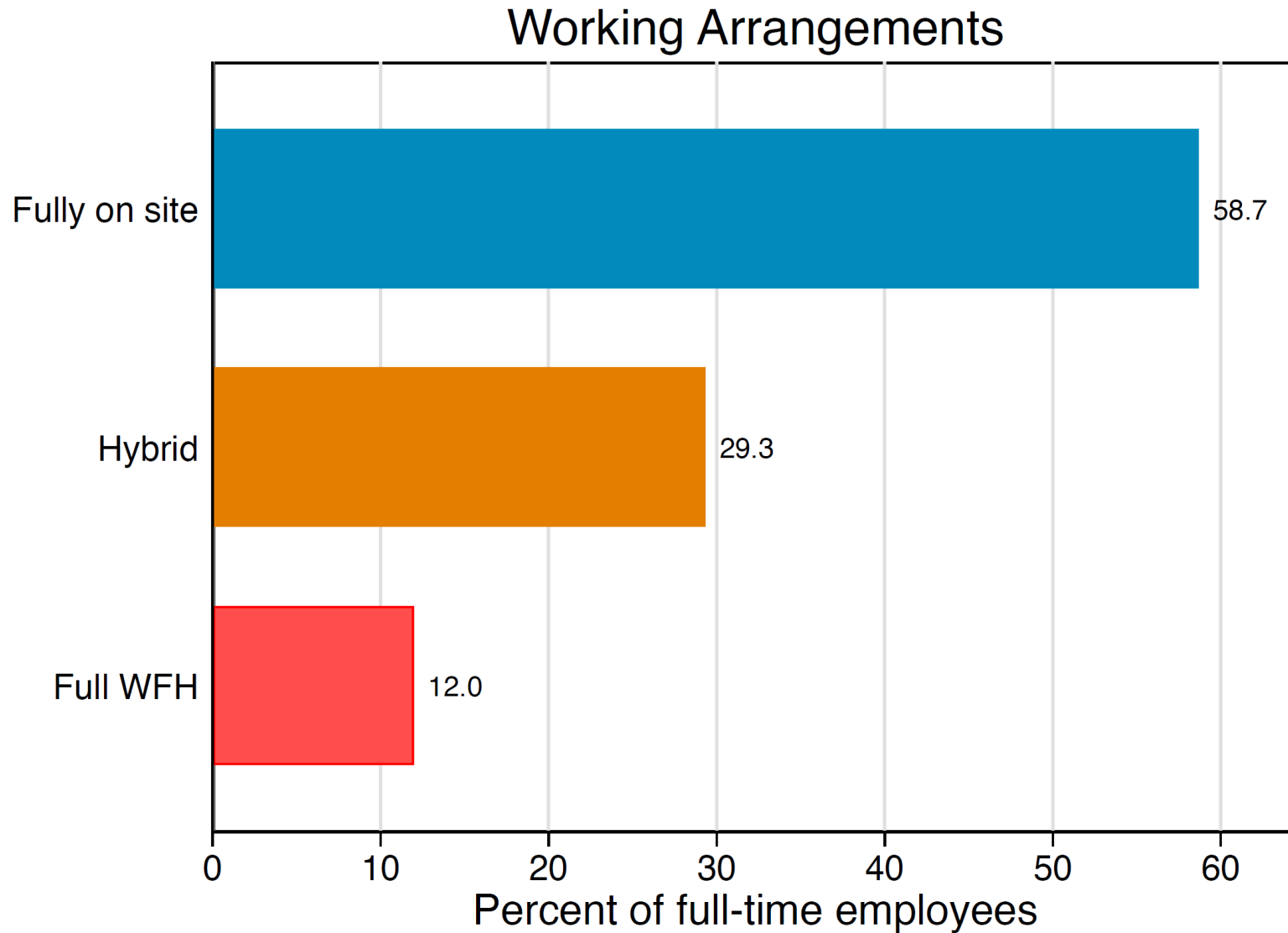


Source: Responses to the question “For each day last week, did you work 6 or more hours, and if so where?”. Sample of N=17,019 university graduate workers in 34 countries surveyed in April-June 2023.

Source: “Working from home around the world” by Cevat Aksoy, Jose Barrero, Nick Bloom, Steve Davis, Mathias Dolls and Pablo Zarate.
<https://wfhresearch.com/gswadata/>

Graduates only

Employees are split into three groups – most firms have some of all



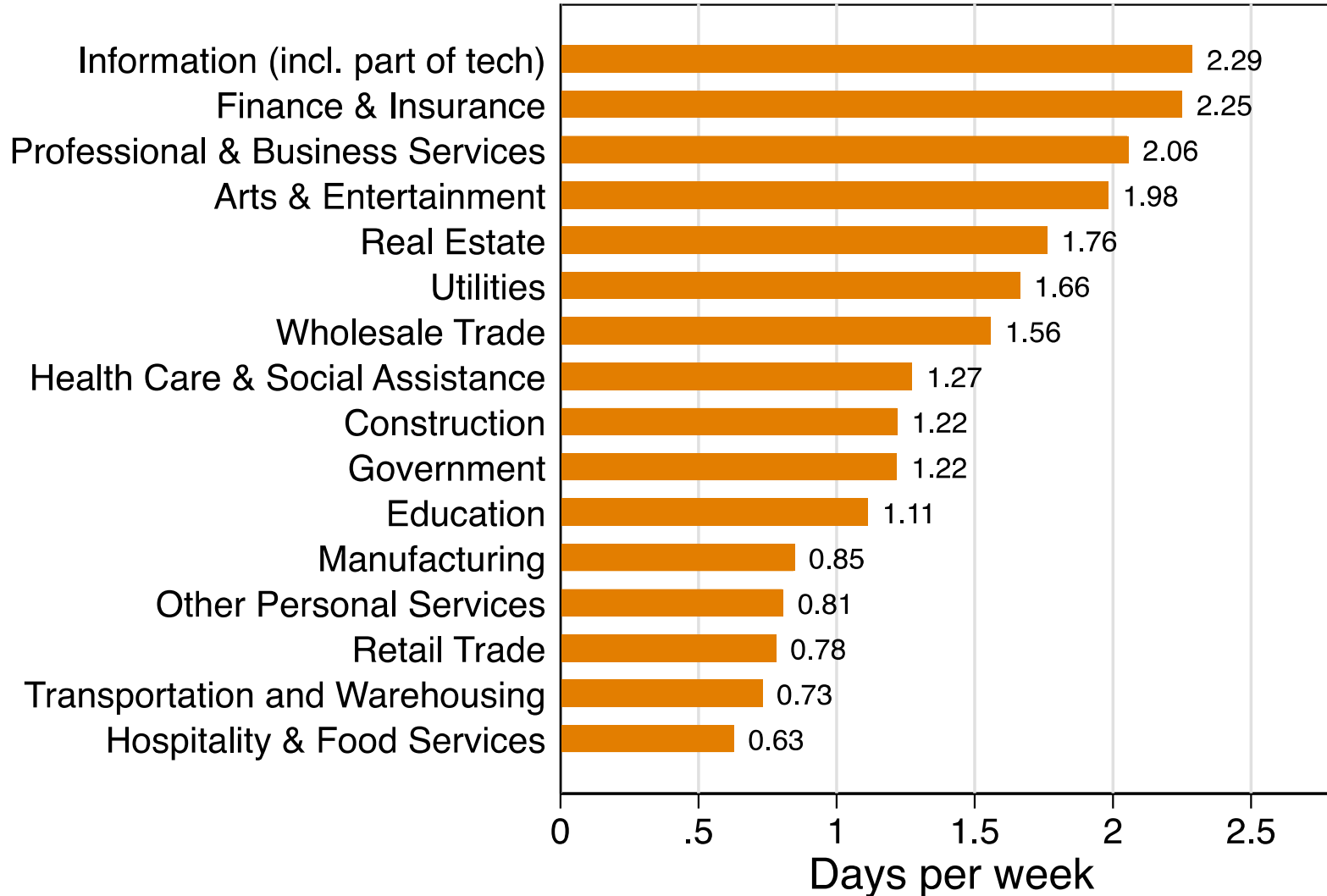
Front-line employees, mostly non-graduates, lower paid,

Professionals and managers, mostly graduates, higher paid

Specialized roles - IT support, payroll etc, often contractors

WFH particularly high in tech and (to a lesser extent) finance

Current WFH: all wage and salary employees by industry



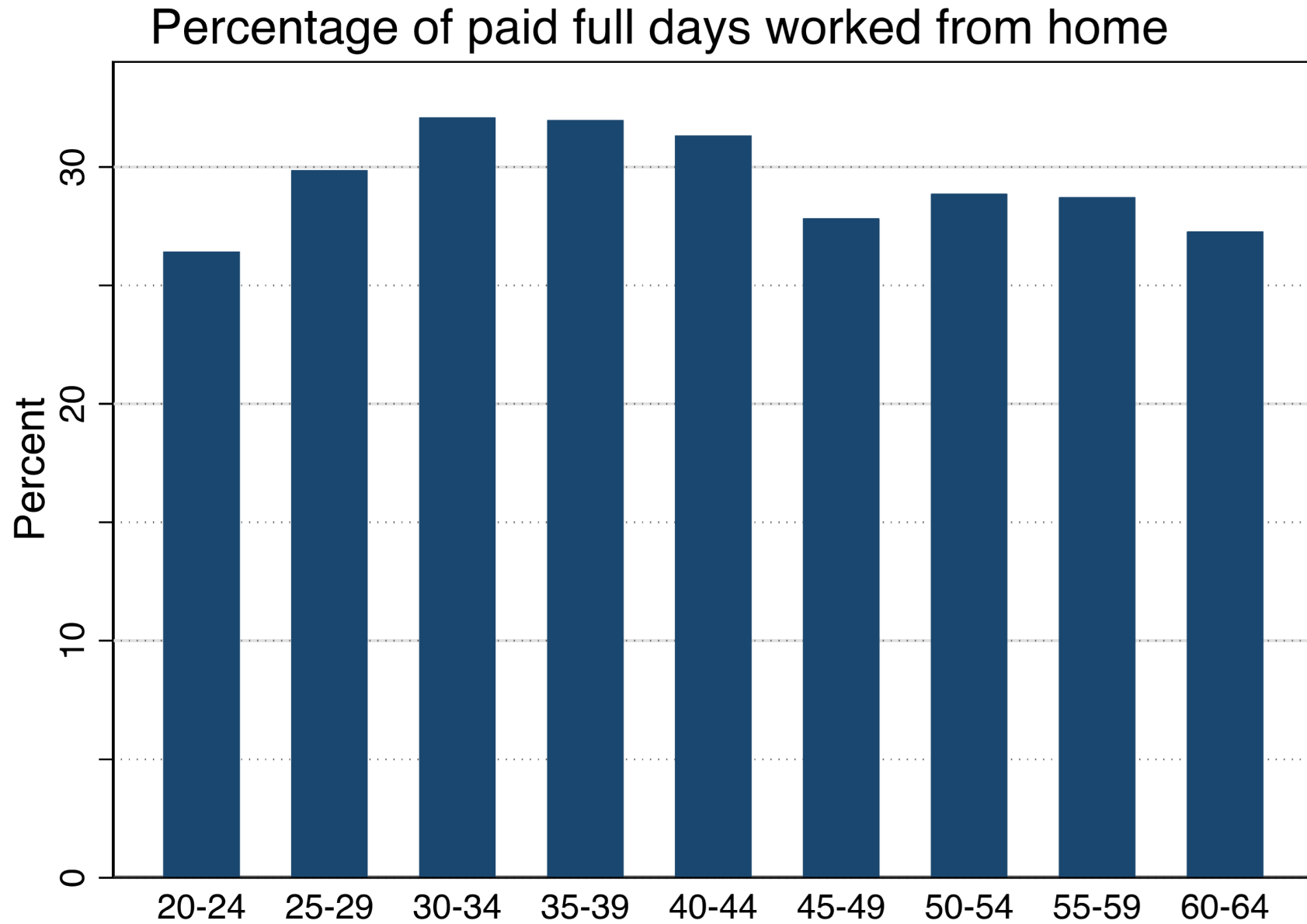
Responses to the question:

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

Sample: Data are from the November 2023 to April 2024 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 = 22,034

Also see a hump-shape over the life-cycle in WFH levels



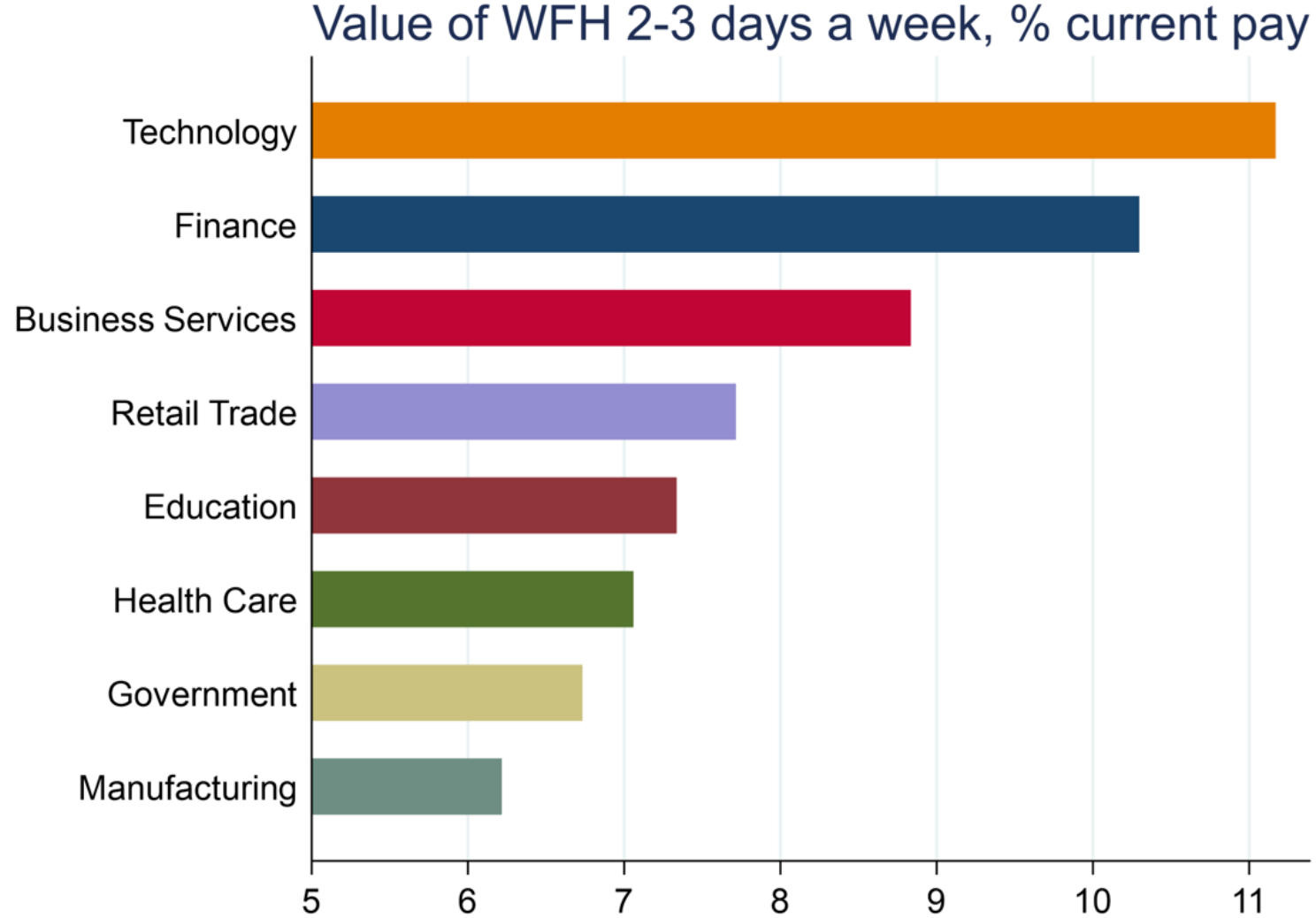
Source: Full days worked from home as a percent of all paid workdays by age group in the Survey of Working Arrangements and Attitudes (Barrero, Bloom, and Davis, 2023b). We drop respondents who fail our attention-check questions.

N = 71,000.

Four Key factors driving WFH choice (focus on the first two – the key drivers)

- 1. Happiness (→recruitment and retention)**
- 2. Productivity**
- 3. Space**
- 4. Talent**

Happiness: Employees like hybrid about as much as 8% more pay...



Source: Data from 17,087 responses through 2021, reweighted to match US population. Industries with 1000+ respondents. Details on <https://wfhresearch.com/>

RCT on 1612 engineers, marketing and finance professionals found hybrid WFH reduced quit rates 35% (and no performance impact)

Hybrid WFH lowered employee quit rates by 35%

Hybrid working from home improves retention without damaging performance

nature

<https://doi.org/10.1038/s41586-024-07500-2> Nicholas Bloom^{1,2,3}, Ruobing Han^{2,3} & James Liang^{1,4,5}

Received: 15 August 2023
Accepted: 30 April 2024
Published online: 12 June 2024

Open access
Check for updates

Working from home has become standard for employees with a university degree. The most common scheme, which has been adopted by around 100 million employees in Europe and North America, is a hybrid schedule, in which individuals spend a mix of days at home and at work each week^{1,2}. However, the effects of hybrid working on employees and firms have been debated, and some executives argue that it damages productivity, innovation and career development³. Here we ran a six-month randomized control trial investigating the effects of hybrid working from home on 1,612 employees in a Chinese technology company in 2021–2022. We found that hybrid working improved job satisfaction and reduced quit rates by one-third. The reduction in quit rates was significant for non-managers, female employees and those with long commutes. Null equivalence tests showed that hybrid working did not affect performance grades over the next two years of reviews. We found no evidence for a difference in promotions over the next two years overall, or for any major employee subgroup. Finally, null equivalence tests showed that hybrid working had no effect on the lines of code written by computer-engineer employees. We also found that the 395 managers in the experiment revised their surveyed views about the effect of hybrid working on productivity, from a perceived negative effect (–2.6% on average) before the experiment to a perceived positive one (+1.0%) after the experiment. These results indicate that a hybrid schedule with two days a week working from home does not damage performance.

Working from home (WFH) surged after the COVID-19 pandemic, with university-graduate employees typically WFH for one to two days a week during 2023 (refs. 2, 6). Previous causal research on WFH has focused on employees who are fully remote, usually working on independent tasks in call-centre, data-entry and helpdesk roles. This literature has found that the effects of fully remote working on productivity are often negative, which has resulted in calls to curtail WFH^{7–10}. However, there are two challenges when it comes to interpreting this literature. First, more than 70% of employees WFH globally are on a hybrid schedule. This group comprises more than 100 million individuals, with the most common working pattern being three days a week in the office and two days a week at home^{2,6,9}. Second, most employees who are regularly WFH are university graduates in creative team jobs that are important in science, law, finance, information technology (IT) and other industries, rather than performing repetitive data-entry or call processing tasks^{10,11}.

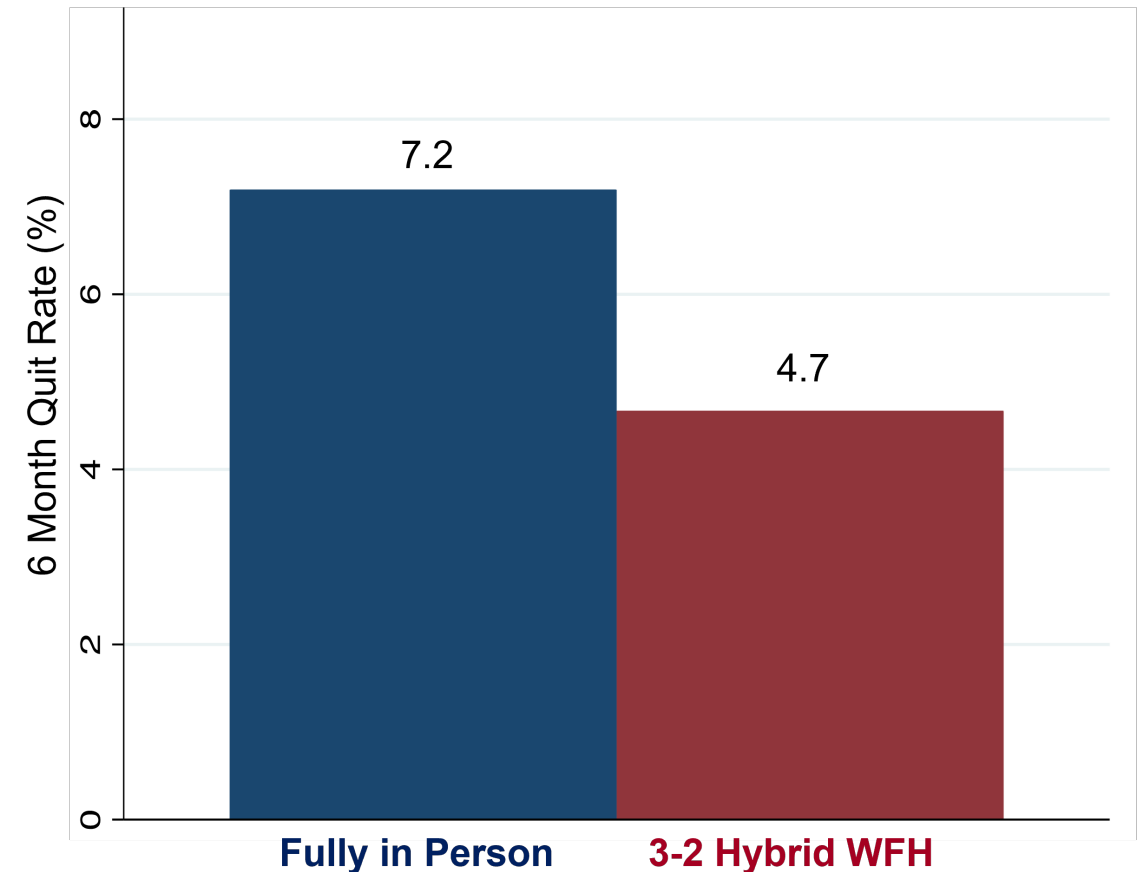
This paper addresses the gap in previous studies in two key ways. First, it uses a randomized control trial to examine the causal effect of a hybrid schedule in which employees are allowed to WFH two days per week. Second, it focuses on university-graduate employees in software engineering, marketing, accounting and finance, whose activities are mainly creative team tasks.

Our study describes a randomized control trial from August 2021 to January 2022, which involved 1,612 graduate employees in the Airfare and IT divisions of a large Chinese travel technology multinational called Trip.com. Employees were randomized by even or odd birthdays into the option to WFH on Wednesday and Friday and come into the office on the other three days, or to come into the office on all five days.

We found that in the hybrid WFH (‘treatment’) group, attrition rates dropped by one-third (mean_{treated} = 7.20, mean_{control} = 4.80, $t(1610) = 2.02$, $P = 0.043$) and work satisfaction scores improved (mean_{treated} = 7.84, mean_{control} = 8.19, $t(1343) = 4.17$, $P < 0.001$). Employees reported that WFH saved on commuting time and costs and afforded them the flexibility to attend to occasional personal tasks during the day (and catch up in the evenings or weekends). These effects on reduced attrition were significant for non-managerial employees (mean_{treated} = 8.59, mean_{control} = 5.33, $t(1215) = 2.23$, $P = 0.026$), female employees (mean_{treated} = 9.19, mean_{control} = 4.18, $t(568) = 2.40$, $P = 0.017$) and those with long (above-median) commutes (mean_{treated} = 6.00, mean_{control} = 2.89, $t(609) = 1.87$, $P = 0.062$).

At the same time, we found no evidence of a significant effect on employees’ performance reviews, on the basis of null equivalence tests, and no evidence of a difference in promotion rates over periods of up to two years (‘Null results’ section of the Methods). We did find significant differences in pre-experiment beliefs about the effects of WFH on productivity between non-managers and managers. Before

¹Department of Economics, Stanford University, Stanford, CA, USA. ²Shenzhen Finance Institute, School of Management and Economics, The Chinese University of Hong Kong, Shenzhen, China. ³National School of Development, Peking University, Beijing, China. ⁴Trip.com, Shanghai, China. ⁵These authors contributed equally: Nicholas Bloom, Ruobing Han. *e-mail: nbloom@stanford.edu; hanruobing@pku.edu.cn; liangj@trip.com



Source: Attrition rates for 1612 engineers, marketing and finance professionals of Trip.com who were randomized between September 2021 and February 2022 by even and odd birthdays into control (5-days a week in the office) and treatment (Mon, Tue and Thur in the office; Weds and Fri working from home). Difference statistically significant at the 5% level. Details in Bloom, Han and Liang (2022) ‘How Hybrid Work from Home Works Out’.

Productivity: Hybrid appears to have about a flat impact. Fully-remote studies find range of impacts from -30% to +13% (average about -10%)

Organized Hybrid

Fully Remote

DOES WORKING FROM HOME WORK? EVIDENCE FROM A CHINESE EXPERIMENT*

NICHOLAS BLOOM
JAMES LIANG
JOHN ROBERTS
ZHICHUN JENNY YING

A rising share of employees now regularly engage in working from home (WFH), but there are concerns this can lead to "shirking from home." We report the results of a WFH experiment at Ctrip, a 16,000-employee, NASDAQ-listed Chinese travel agency. Call center employees who volunteered to WFH were randomly assigned either to work from home or in the office for nine months. Home working led to a 13% performance increase, of which 9% was from working more minutes per shift (fewer breaks and sick days) and 4% from more calls

Hybrid working from home improves retention without damaging performance

Working from home has become standard for employees with a university degree. The most common scheme, which has been adopted by around 100 million employees in Europe and North America, is a hybrid schedule, in which individuals spend a mix of days at home and at work each week. However, the effects of hybrid working on employees and firms have been debated, and some executives argue that it damages productivity, innovation and career development. Here we ran a six-month randomized control trial investigating the effects of hybrid working from home on 1,612 employees in a Chinese technology company in 2021-2022. We found that hybrid working improved job satisfaction and reduced quit rates by one-third. The reduction in quit rates was significant for non-managers, female employees and those with long commutes. Null equivalence tests showed that hybrid working did not affect performance grades over the next two years of reviews. We found no evidence for a difference in promotions over the next two years overall, or for any major employee subgroup. Finally, null equivalence tests showed that hybrid working had no effect on the lines of code written by computer-engineer employees. We also found that the 395 managers in the experiment revised their surveyed views about the effect of hybrid working on productivity, from a perceived negative effect (-2.6% on average) before the experiment to a perceived positive one (+1.0%) after the experiment. These results indicate that a hybrid schedule with two days a week working from home does not damage performance.

Working from home (WFH) surged after the COVID-19 pandemic, with university graduate employees typically WFH for one to two days a week during 2022 (refs. 2, 3). Previous causal research on WFH has focused on employees who are fully remote, usually working on independent tasks in call-center, data-entry and helpdesk roles. This literature has found that the effects of fully remote working on productivity are often negative, which has resulted in calls to curtail WFH^{4, 5}. However, there are two challenges when it comes to interpreting this literature. First, more than 70% of employees WFH globally are on a hybrid schedule. This group comprises more than 100 million individuals, with the most common working pattern being three days a week in the office and two days a week at home^{6, 7}. Second, most employees who are regularly WFH are university graduates in creative team jobs that are important in science, law, finance, information technology (IT) and other industries, rather than performing repetitive data-entry tasks^{8, 9}. This paper addresses the gap in previous studies in two key ways. First, it uses a randomized control trial to examine the causal effect of a hybrid schedule in which employees are allowed to WFH two days per week. Second, it focuses on university graduate employees in software engineering, marketing, accounting and finance, whose activities are mainly creative team tasks.

Our study describes a randomized control trial from August 2021 to January 2022, which involved 1,612 graduate employees in the Airfare

"WORKING" REMOTELY?

SELECTION, TREATMENT, AND THE MARKET FOR REMOTE WORK

Natalia Emanuel · Emma Harrington¹

April 9, 2022

Abstract: How does remote work affect productivity and how productive are workers who choose remote jobs? We decompose these effects using data from the call-centers of a US Fortune 500 retailer. The retailer employed both remote and on-site workers prior to Covid-19 and went entirely remote during the lock-

down
erly c
alrea
ally c
ose o
st th
call-
ckdo

Work-From-Anywhere: The Productivity Effects of Geographic Flexibility

Prithviraj (Raj) Choudhury,¹ Cyrus Foroughi,² and Barbara Larson³

An emerging form of remote work allows employees to *work-from-anywhere*, so that the worker can choose to live in a preferred geographic location. While traditional work-from-home (WFH) programs offer the worker temporal flexibility, work-from-anywhere (WFA) programs offer *both* temporal and geographic flexibility. WFA should be viewed as a nonpecuniary benefit likely to be preferred by workers who would derive greater utility by moving from their current geographic location to their preferred location. We study the effects of WFA on productivity at the United States Patent and Trademark Office (USPTO) and exploit a natural experiment in which the implementation of WFA was driven by negotiations between managers and the patent examiners' union, leading to exogeneity in the timing of individual examiners' transition from a work-from-home to a work-from-anywhere program. This transition resulted in a 4.4 percent increase in output without affecting the incidence of rework. We also report results related to a plausible mechanism: an increase in observable effort as the worker transitions from a WFH to a WFA program. We employ illustrative field interviews, microdata on locations, and machine learning analysis to shed further light on geographic flexibility, and summarize worker, firm, and economy-wide implications of provisioning WFA.

Running Head: Work-From-Anywhere: Productivity Effects

Keywords: geographic flexibility; work-from-anywhere; remote work; telecommuting; worker mobility

Acknowledgements: The authors are thankful to Iain Cockburn, Srinanth Kannan, Jirs Meuris, Chris Rider, Tim Simcoe, and participants and reviewers at Boston University, Harvard Business School, INSEAD Mobility Conference, Stanford GSB OOB Department, Temple University, University of Wisconsin-Madison, and Wharton People and Organizations Conference for comments on a prior draft.

Work from Home and Productivity: Evidence from Personnel and Analytics Data on Information Technology Professionals

Michael Gibbs

University of Chicago and Institute of Labor Economics

Friederike Menged

Univ

Ch

Univ

Article

Virtual communication curbs creative idea generation

nature

<https://doi.org/10.1038/s41586-022-04043-y>

Received: 17 July 2020

Accepted: 14 March 2022

Published online: 27 April 2022

Check for updates

Melanie S. Brucks^{1,2*} & Jonathan Levary^{2*}

*Correspondence

1 Department of Psychology

2 Department of Management

3 Department of Marketing

4 Department of Business

5 Department of Economics

6 Department of Finance

7 Department of Law

8 Department of Public Policy

9 Department of Real Estate

10 Department of Urban and Environmental

11 Department of Applied Economics

12 Department of Applied Social Science

13 Department of Applied Social Science

14 Department of Applied Social Science

15 Department of Applied Social Science

16 Department of Applied Social Science

17 Department of Applied Social Science

18 Department of Applied Social Science

19 Department of Applied Social Science

20 Department of Applied Social Science

21 Department of Applied Social Science

22 Department of Applied Social Science

23 Department of Applied Social Science

24 Department of Applied Social Science

25 Department of Applied Social Science

26 Department of Applied Social Science

27 Department of Applied Social Science

28 Department of Applied Social Science

29 Department of Applied Social Science

30 Department of Applied Social Science

31 Department of Applied Social Science

32 Department of Applied Social Science

33 Department of Applied Social Science

34 Department of Applied Social Science

35 Department of Applied Social Science

NBER WORKING PAPER SERIES

WORKING FROM HOME, WORKER SORTING AND DEVELOPMENT

David Atkin
Antoinette Schour
Sumit Shinde

Working Paper 31515

nature
human behaviour

ARTICLES

<https://doi.org/10.1038/s41562-021-0796-4>

The effects of remote work on collaboration among information workers

Longqi Yang^{1,2*}, David Holtz^{3,4*}, Sonia Jaffe⁵, Siddharth Suri⁶, Shilpi Sinha⁷, Jeffrey Weston⁸, Connor Joyce⁹, Neha Shah¹⁰, Kevin Sherman¹¹, Brent Hecht¹² & Jaime Tevanan¹³

The coronavirus disease 2019 (COVID-19) pandemic caused a rapid shift to full-time remote work for many information workers. Viewing this shift as a natural experiment in which some workers were already working remotely before the pandemic enables us to separate the effects of firm-wide remote work from other pandemic-related confounding factors. Here, we use rich data on the emails, calendars, meetings, audio/video calls and work hours of 61,182 US Microsoft employees over the first six months of 2020 to estimate the causal effects of firm-wide remote work on collaboration and communication. Our results show that firm-wide remote work caused the collaboration network of workers to become more static and siloed, with fewer bridges between disparate parts. Furthermore, there was a decrease in synchronous communication and an increase in asynchronous communication. Together, these effects may make it harder for employees to acquire and share new information across the network.

Before the COVID-19 pandemic, about 5% of Americans worked from home for more than three days per week, whereas it is estimated that, by April 2020, as many as 37% of Americans were working from home (WFH) full-time¹. Thus, a matter of weeks, the pandemic caused about one-third of US workers to shift to WFH and nearly every American that was able to work from home did so². Many technology companies, such as Twitter, Facebook, Square, Box, Slack and Quora, have taken this shift one step further by announcing longer term and, in some cases permanent, remote work policies that will enable at least some employees to work remotely even after the pandemic^{3, 4}. More generally, COVID-19 has accelerated the shift away from traditional office work, such that even firms that do not keep full-time remote work policies in place after the pandemic has ended are unlikely to fully return to their pre-COVID-19 work arrangements⁵. Instead, they are likely to switch to some type of hybrid work model, in which employees split their time between remote and office work, or a mixed-mode model, in which firms are comprised of a mixture of full-time remote employees and full-time office employees. For example, some scholars predict a long-run equilibrium in which information workers will work from home approximately 20% of the time⁶. For long-term policy decisions regarding remote, hybrid and mixed-mode work to be well informed, decision makers need to understand how remote work would impact information work in the absence of the effects of COVID-19. To answer this question, we treat Microsoft's company-wide WFH policy during the pandemic as a natural experiment that, subject to the validity of our identifying assumptions, enables us to causally identify the impact of firm-wide remote work on employees' collaboration networks and communication practices.

Previous research has shown that network topology (including the strength of ties, has an important role in the success of both individuals and organizations. For individuals, it is beneficial to have access to new, non-redundant information through connections to different parts of an organization's formal organization^{7, 8}. We find that the shift to firm-wide remote work may have reduced these benefits by making the collaboration network more

Microsoft Corporation, Redmond, WA, USA; ²Haas School of Business, University of California, Berkeley, CA, USA; ³MIT Initiative on the Digital Economy, Cambridge, MA, USA; ⁴MIT, Cambridge, MA, USA

NATURE HUMAN BEHAVIOUR | www.nature.com/naturehumanbehaviour

Going to cover three sections

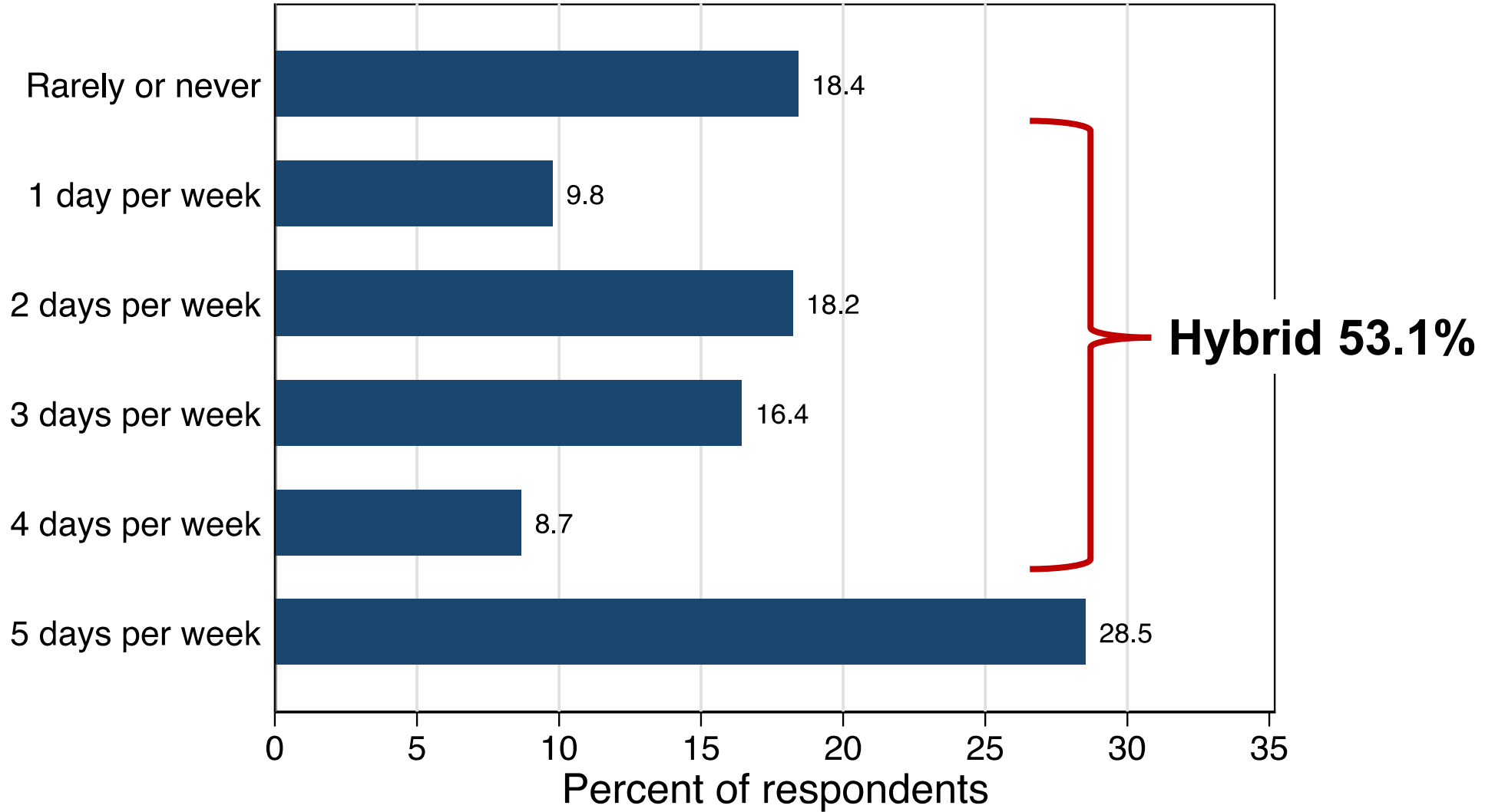
>>>> **Current state of working from home**

>>>> **Thoughts on managing hybrid and remote**

>>>> **Five impacts on the economy**

Managing WFH policy is hard – there is a wide spread of preferences

Worker desired amount of post-COVID WFH days

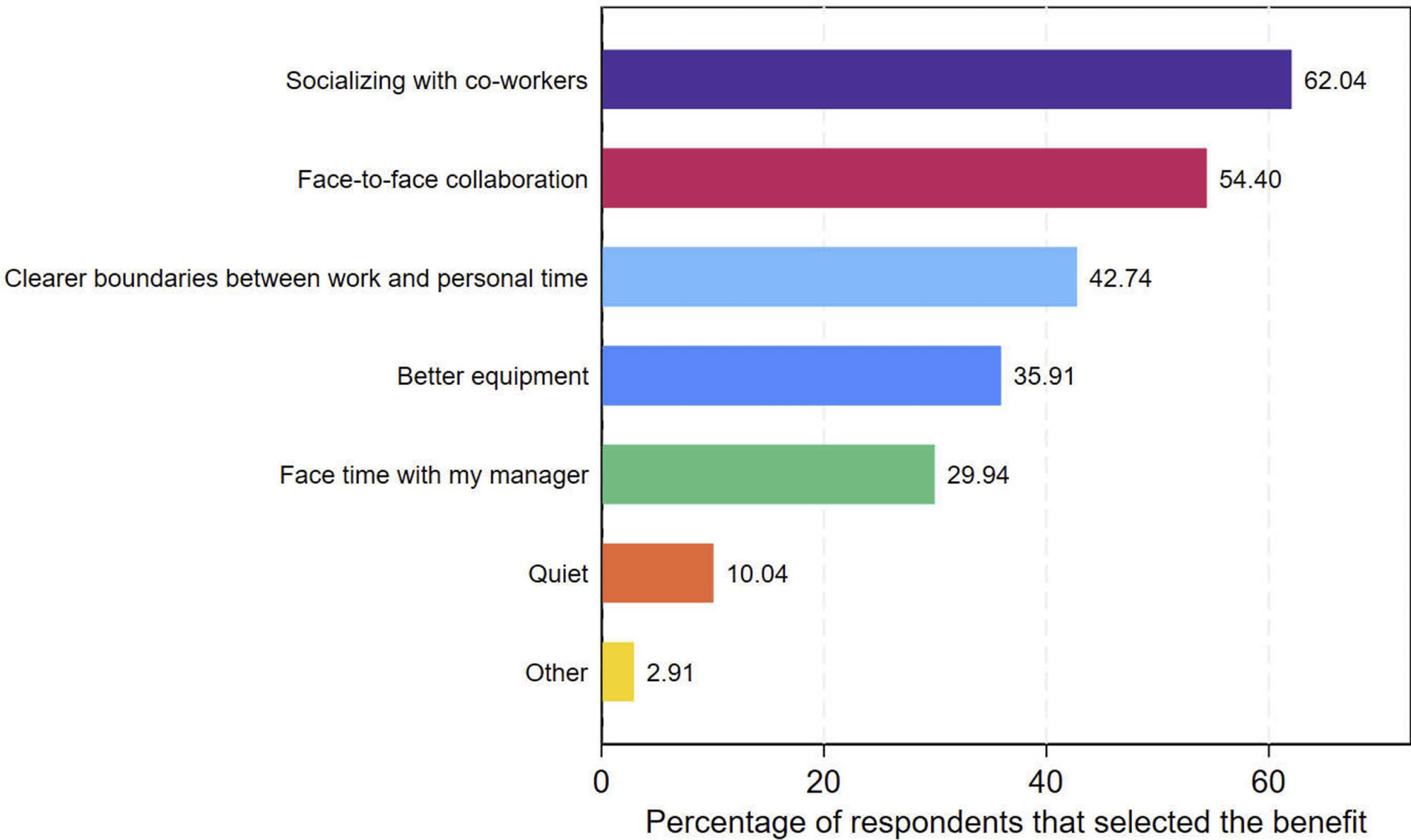


Sample: Full-time wage and salary employees who are able to WFH. N = 11439

Two broad tips come up repeatedly talking to managers

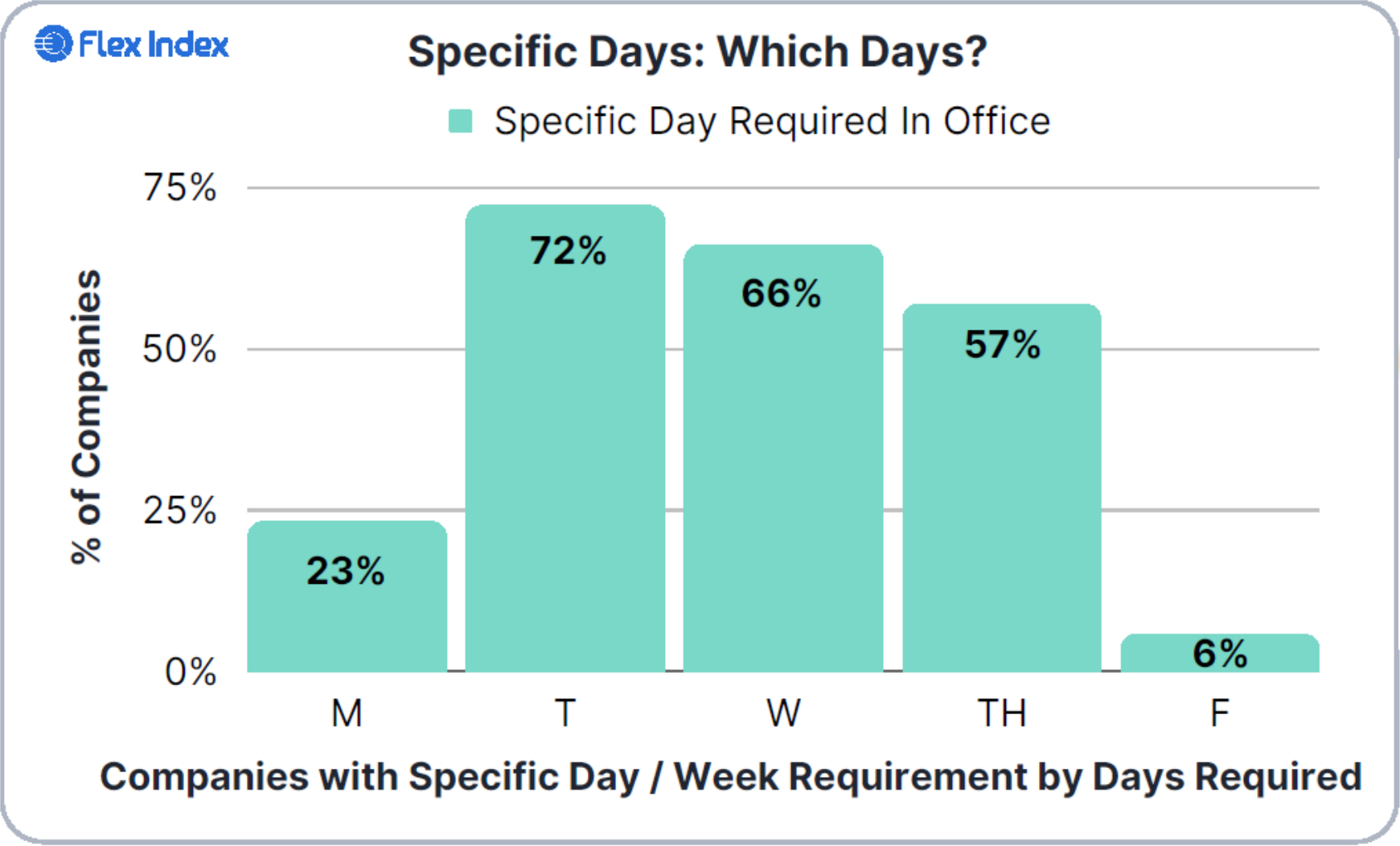
1) Coordination – office benefits are being with co-workers

Qu: “What are the top three benefits of working on your employer’s business premises?”



Notes: Among workers that have work-from home experience during the COVID-19 pandemic. Responses to the question “What are the top benefits of working on your employer’s business premises? Please choose up to three”. Sample of N=20,732 workers in 34 countries surveyed in April-May 2023. All values are available at <https://bit.ly/Figures-GSWA-2023>

Coordination generates the hybrid squeeze into Tuesday to Thursday



Source: [Flex Index](https://flex.scoopforwork.com) (flex.scoopforwork.com) employee surveys and publicly available data on companies with a specific day / week office requirement. N = 229 companies. The Flex Index is presented by [Scoop](https://scoopforwork.com) (scoopforwork.com).

2) Performance reviews critical for managing output with WFH

- Office employees can be (partly) evaluated by observing inputs - hours & activity
- WFH employees instead need outcome evaluation – data, assessments & discussion
- Importantly this is not surveillance, but “outcome” performance reviews



Porte A

	Out	Nov	Dez	4Tri	Jan	Fev	Mar	1Tri
Total Segmentos	61,53	83,64	79,17	73,25	52,27	0,00	0,00	34,37
Total PF	70,15	76,99	75,13	68,82	42,11	0,00	0,00	26,86
Preferencial	58,09	86,85	86,87	76,92	15,16	0,00	0,00	13,43
					18,78	0,00	0,00	18,12
					37,11	0,00	0,00	25,07
					75,99	0,00	0,00	51,89
					47,40	0,00	0,00	41,84
					26,08	0,00	0,00	23,13

Porte A

SEGMENTO	PESO	META	REAL	%	PONTOS	OPORT.
Cientes					0,00	0,00
• Incr. Base Ativa	0	28	146	150,0	0,00	0,00
• Incr. Clientes c/ Ofer...	0	153	0	0,0	0,00	0,00
• Abertura Contas PF	0	120	24	11,3	0,00	0,00
• Abertura Contas Busine...	0	6	0	0,0	0,00	0,00
• Aquisição Com Of. Bási...	0	136	0	0,0	0,00	0,00
• Conversão Of. Básica	0	313	1	0,0	0,00	0,00
Vendas					0,00	0,00
• Super Auto	0	5	2	40,0	0,00	0,00
• Seguro Vida	0	47	26	55,3	0,00	0,00
• Seguro Residencial	0	25	8	32,0	0,00	0,00
• Seguro Auto	0	6	1	16,7	0,00	0,00
• Seguro Vida Master	0	2	0	0,0	0,00	0,00
• Cartões	0	140	75	53,6	0,00	0,00
• CP Protegido	0	295	70	23,7	0,00	0,00
• Capitalização	0	58	6	10,3	0,00	0,00
• Novas Cobranças Ativas	0	4	2	50,0	0,00	0,00
• Títulos Liquidados	0	5.301	1.815	34,2	0,00	0,00
Captações - Captação Líquida					0,00	0,00
• Captação Alvo	0	1.371	1.072	78,2	0,00	0,00
• Previdência Foco PF	0	184	599	325,6	0,00	0,00
• Captação Demais	0	766	-3.001	-391,8	0,00	0,00
Depósito à Vista / Float					0,00	0,00
• DAV / Float	0	100	1.708	999,0	0,00	0,00
Empréstimos - Incr. Saldo Médio					0,00	0,00
• Empréstimos Alvo PF	0	543	-118	-21,7	0,00	0,00

TOTAL SEGMENTOS 52,27

PERÍODO: Jan, Fev, Mar, 1Tri
Tri: 10% Jan: 27%

Voluntário: Ponderação, Atualização, Analisar, Cara a Cara, Histórico, Métricas, Voltar, Imprimir

SUPER RANKING

Going to cover three sections

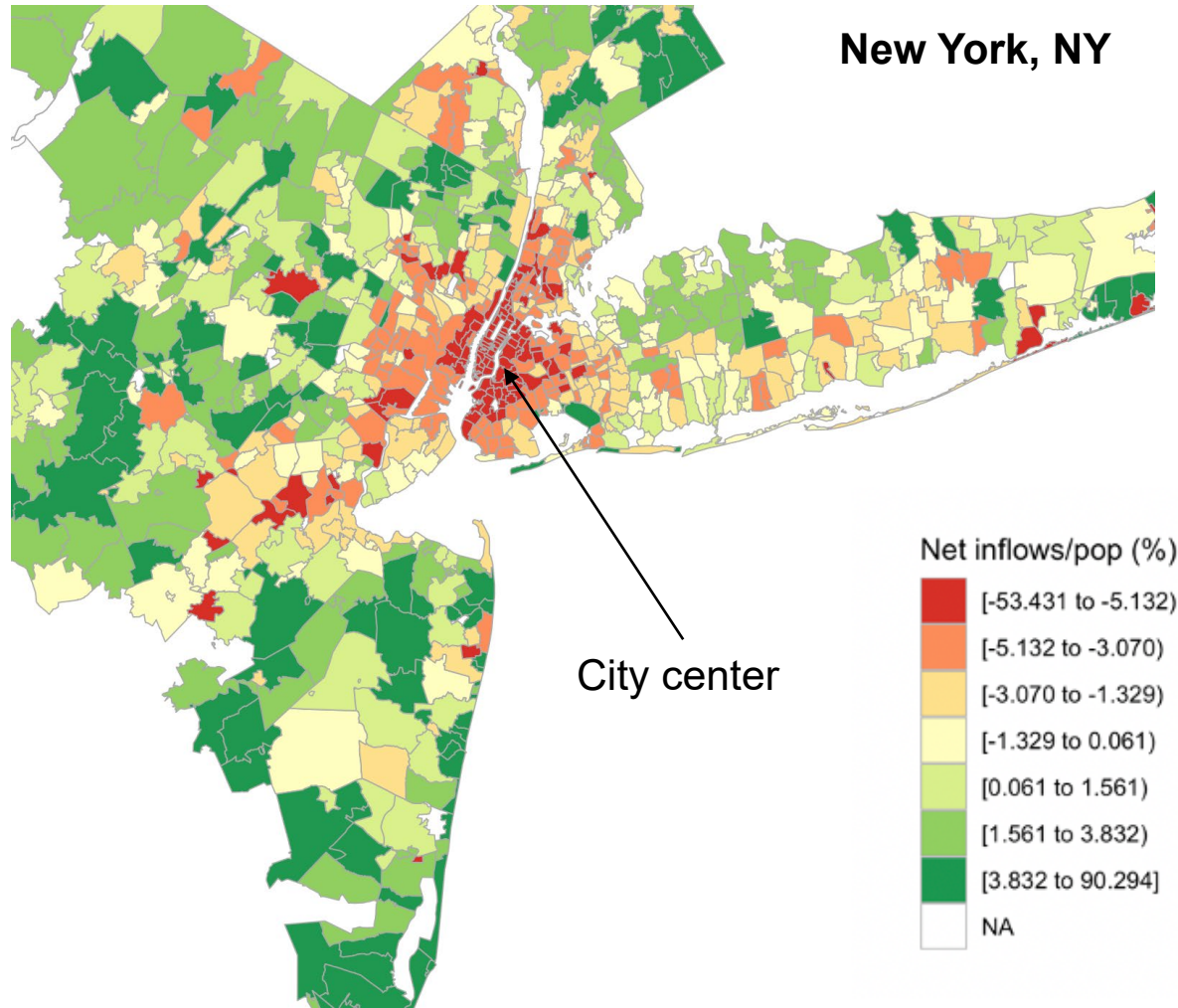
>>>> **Current state of working from home**

>>>> **Thoughts on managing hybrid and remote**

>>>> **Five impacts on the economy**

1) The Donut Effect: almost 1m people have left US big city centers

Cumulative net flows Feb 2020 - June 2023 as % of population



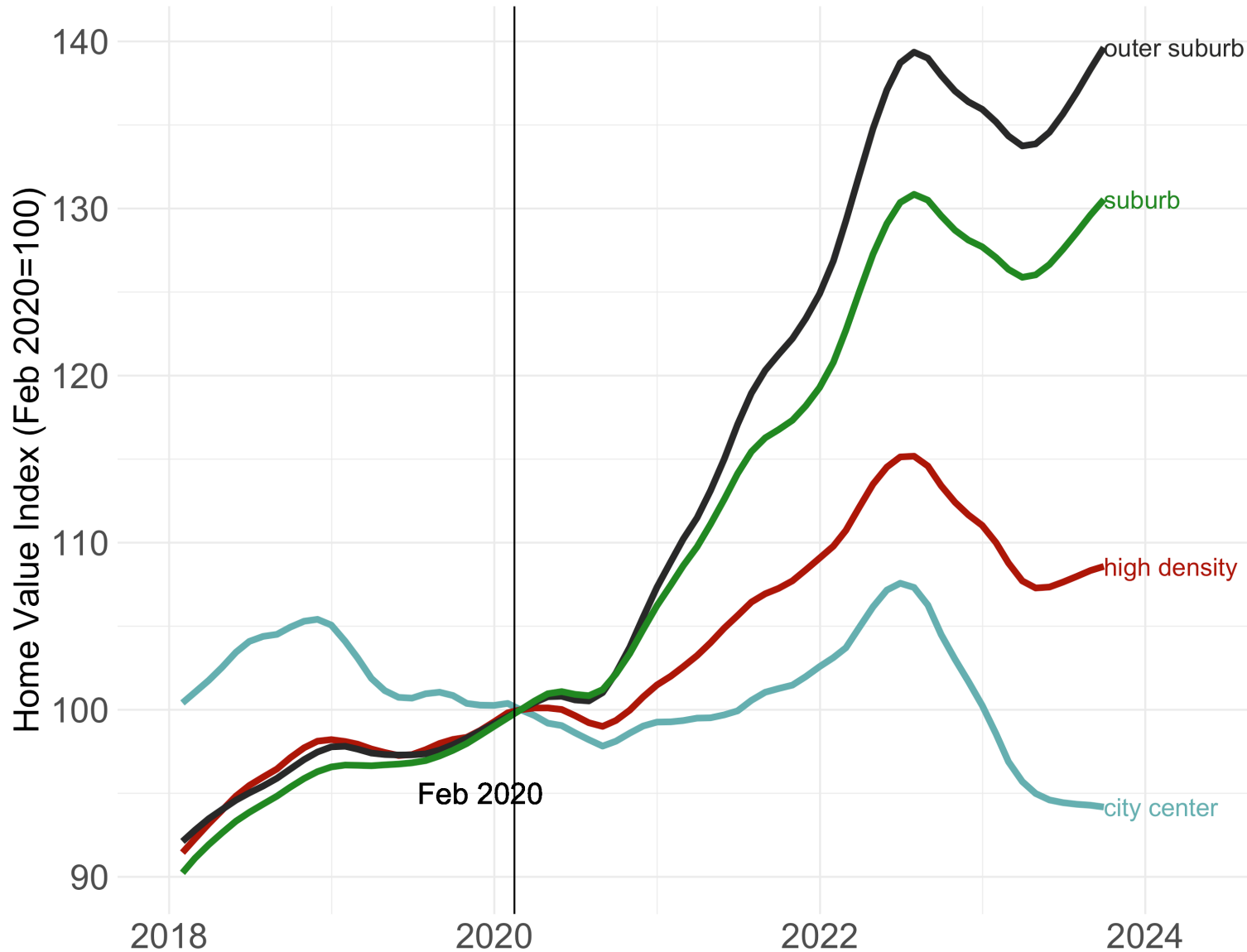
Source: Arjun Ramani and Nicholas Bloom “The Donut Effect”, NBER Working Paper 2021 (updated 2023) using US Postal Service zip-code Change of Address Data <https://nbloom.people.stanford.edu/sites/g/files/sbiybj4746/f/w28876.pdf>



Donut flight is pushing up suburban housing prices



Home values, top 12 US cities

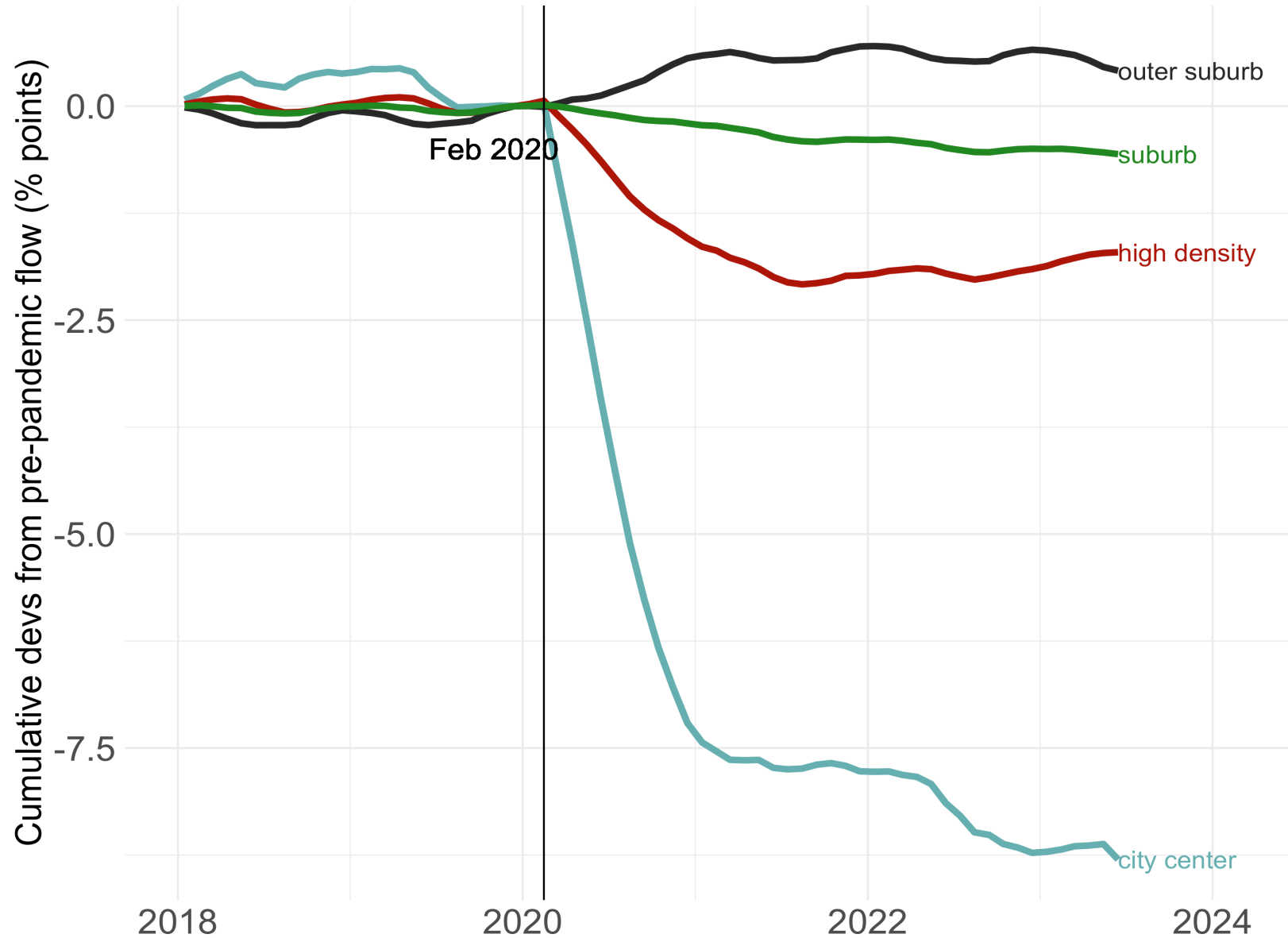


Notes: Zillow's home value index in the 12 largest US metro areas (New York, Los Angeles, Chicago, Dallas, Houston, Miami, Philadelphia, Washington DC, Atlanta, Boston, San Francisco, and Phoenix – ordered by population). Zip codes are grouped by population density or presence in a Central Business District (CBD). A population weighted average is taken across all zipcodes in each bucket, and each aggregated index is normalized such that Feb 2020 = 100. Groups are given by high density = top 10%, suburb = 50-90th percentile, exurb = 0-50th percentile.

Donut flight from big cities has stopped, but is not reversing



Top 12 US cities, monthly cumulative net population flows



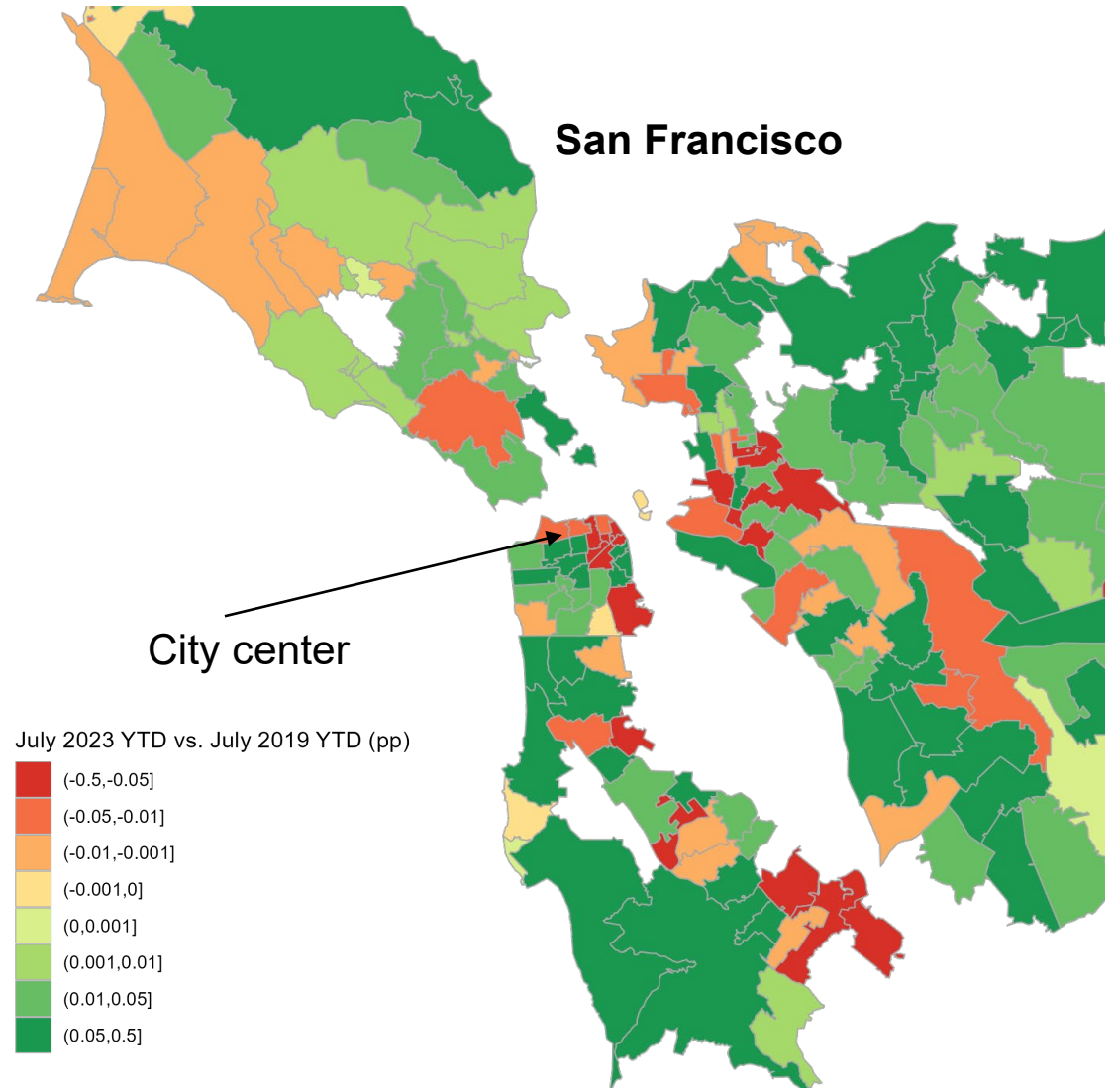
Source: Data: Jan 2019 – Jun 2023. Arjun Ramani and Nicholas Bloom “The Donut Effect”, NBER Working Paper 2021 (updated 2023) using US Postal Service Change of Address Data <https://nbloom.people.stanford.edu/sites/g/files/sbiybj4746/f/w28876.pdf>



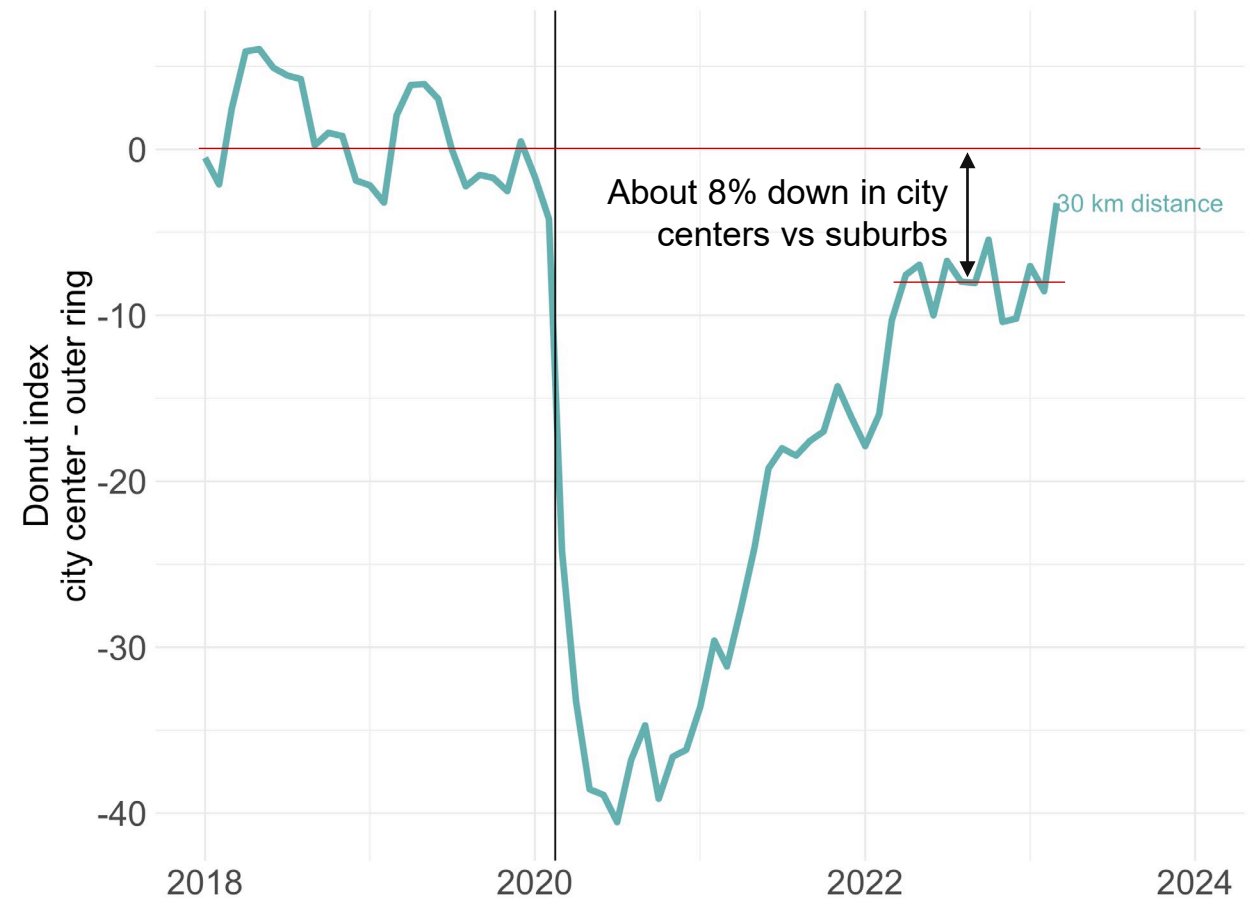
The Donut-Effect is also boosting suburban retail spending



MasterCard spending change heat map



Top 12 largest US cities retail spend, city center less suburb



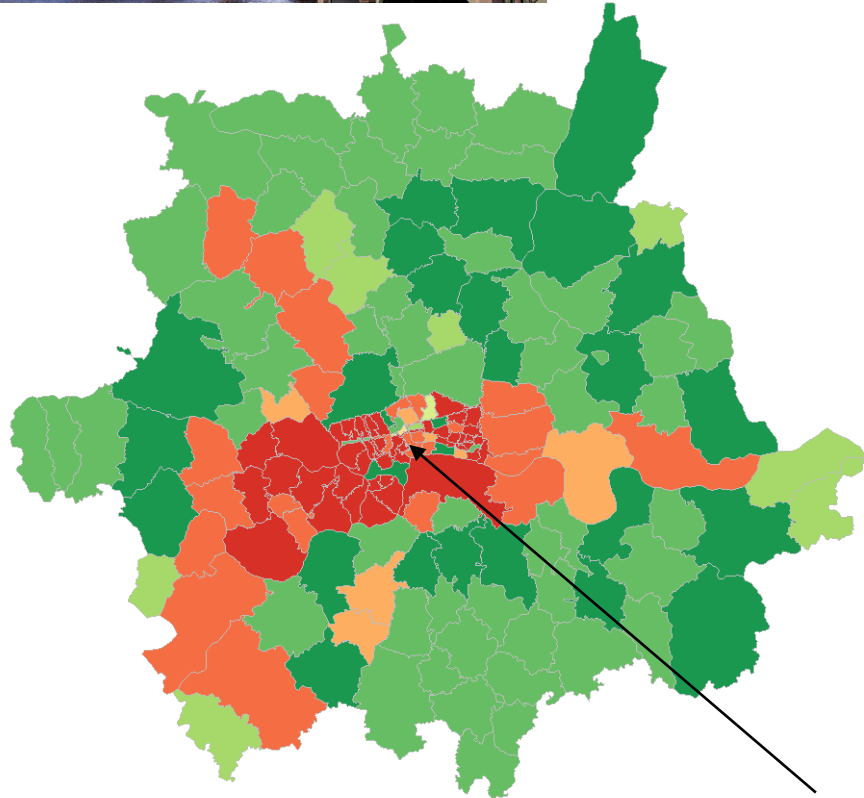
Notes: Constructed using Mastercard spending data. Each spending index is normalized such that the average 2019 value is 100; thus the difference has an average value of 0 in 2019. The level of the index can be interpreted as the relative growth of the city center vs the outer ring. Source Ramani, Alcedo and Bloom (2023)



This Donut Effect on retail spending is a global phenomenon



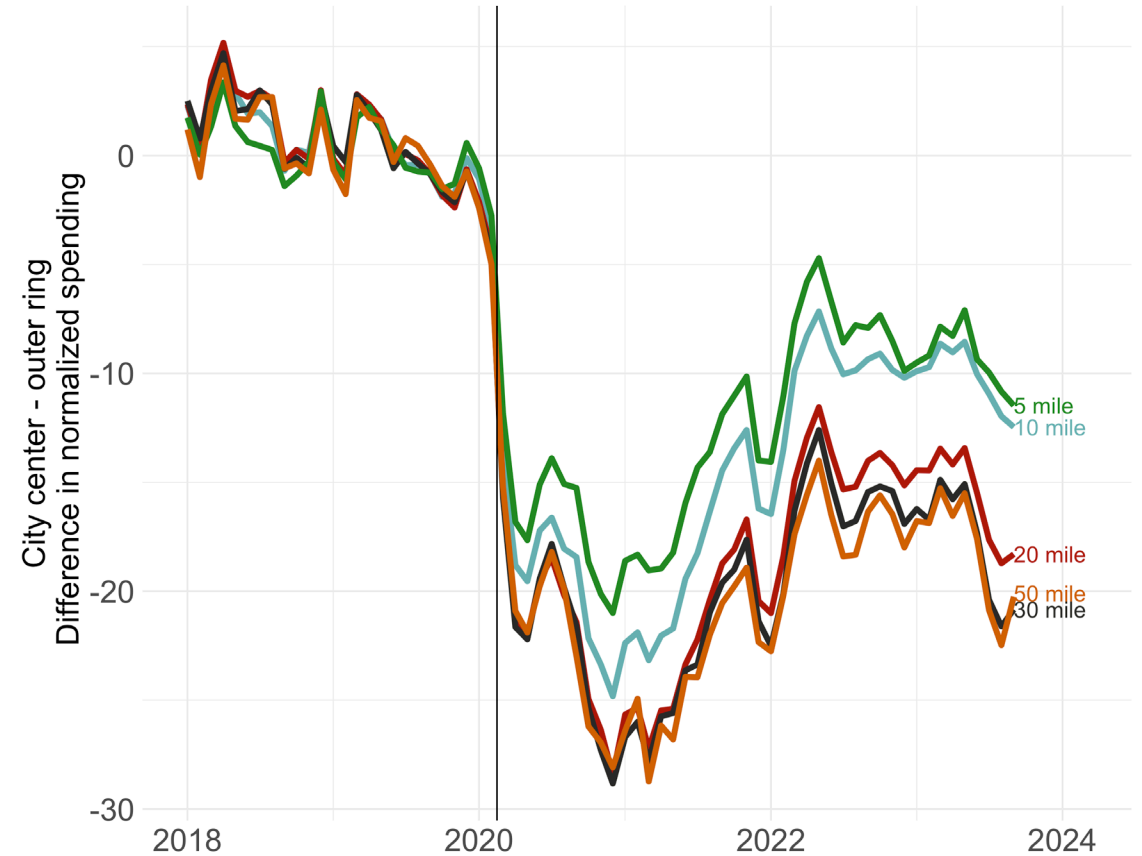
London



City center

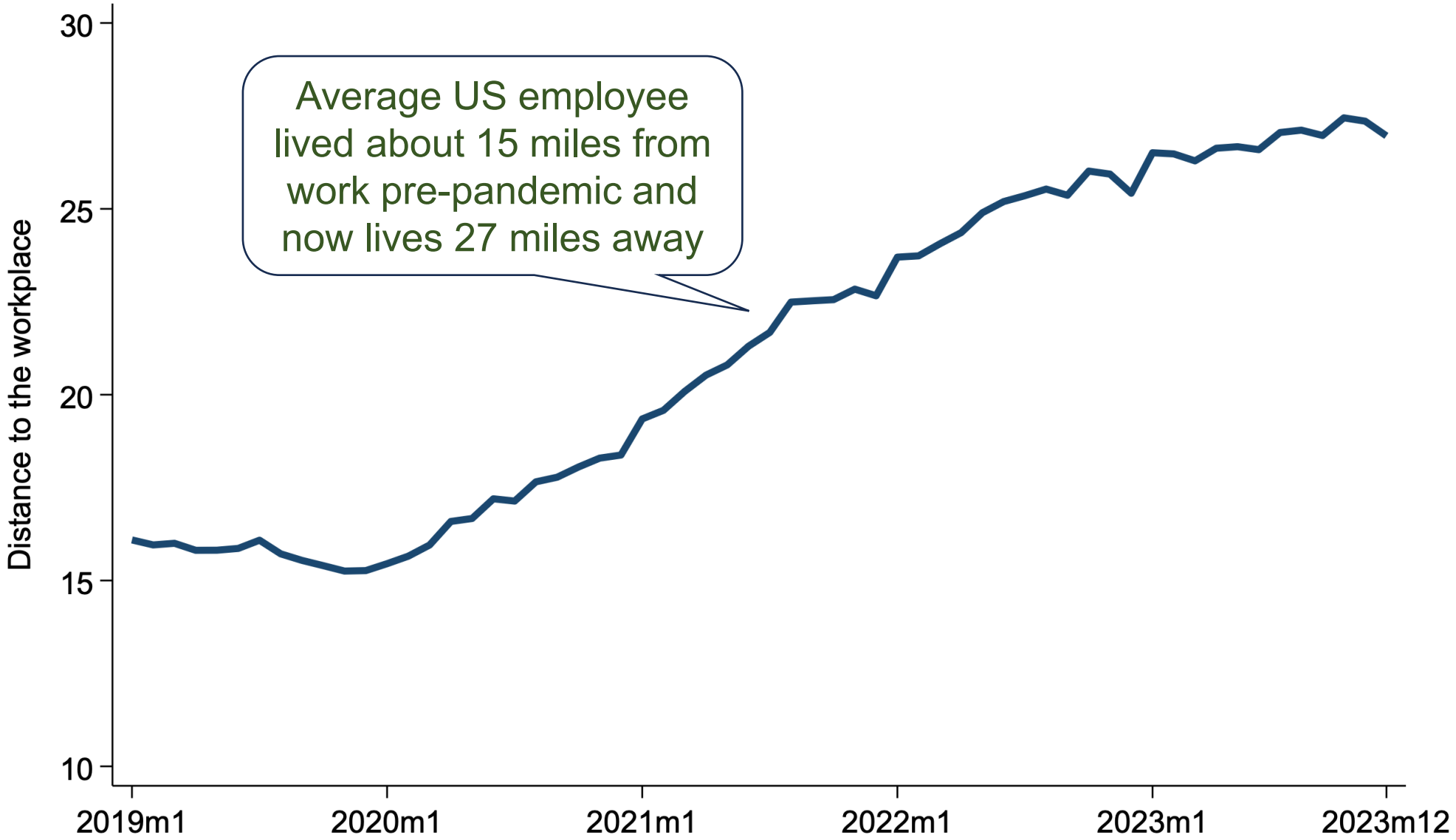


Major global cities sample (N=118)



Notes: Constructed using Mastercard spending data. Each spending index is normalized such that the average 2019 value is 100; thus the difference has an average value of 0 in 2019. The level of the index can be interpreted as the relative growth of the city center vs the outer ring. Source Ramani, Alcedo and Bloom (2023)

2) Employees are living further from work

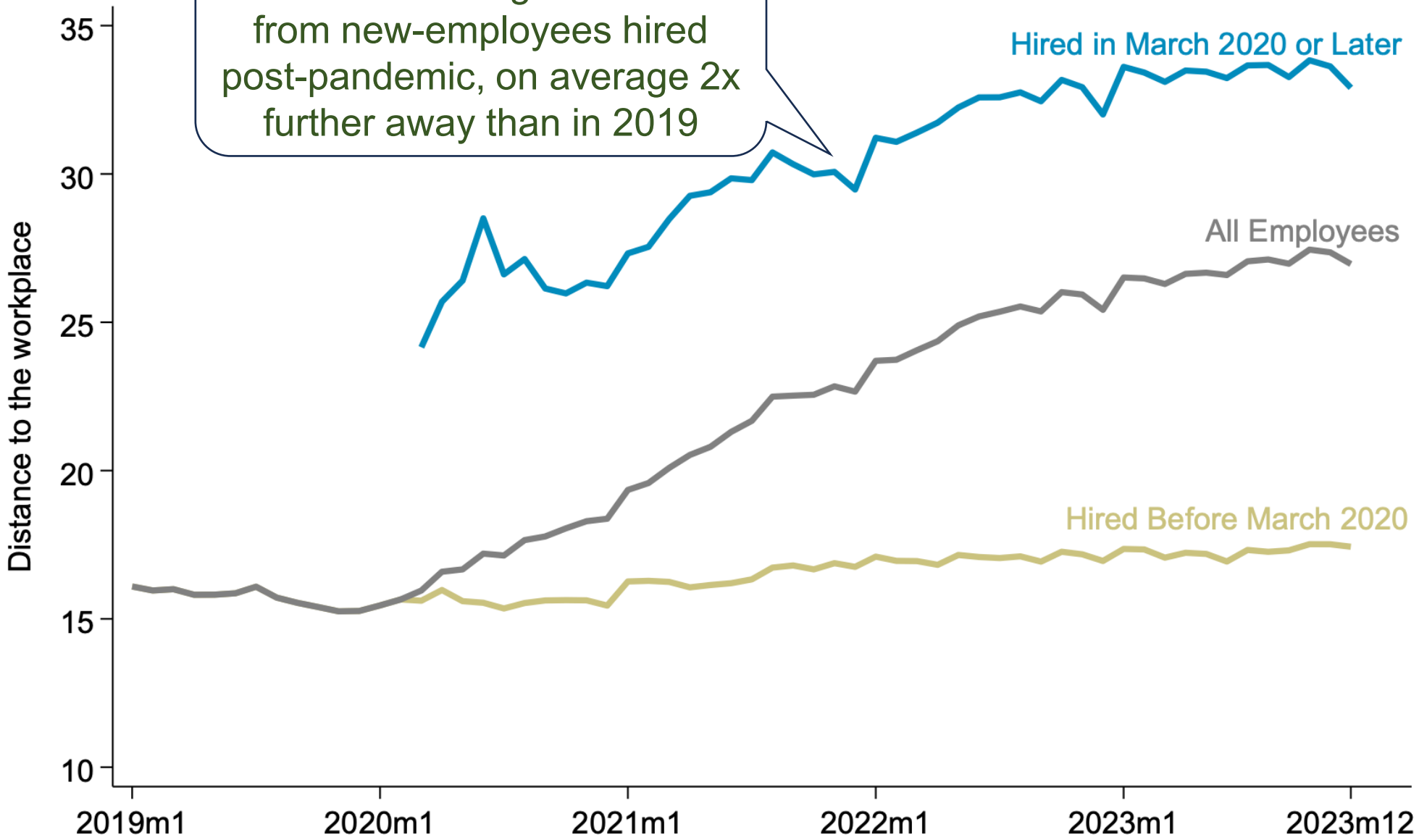


Notes: The sample contains employees of 5,793 firms in a balanced panel of firms. Employee-level data are reweighted to match the CPS distribution by (age bin) X sex X major industry. Distance from home to employer location is winsorized at 500 miles. Authors' calculations using Gusto payroll data.



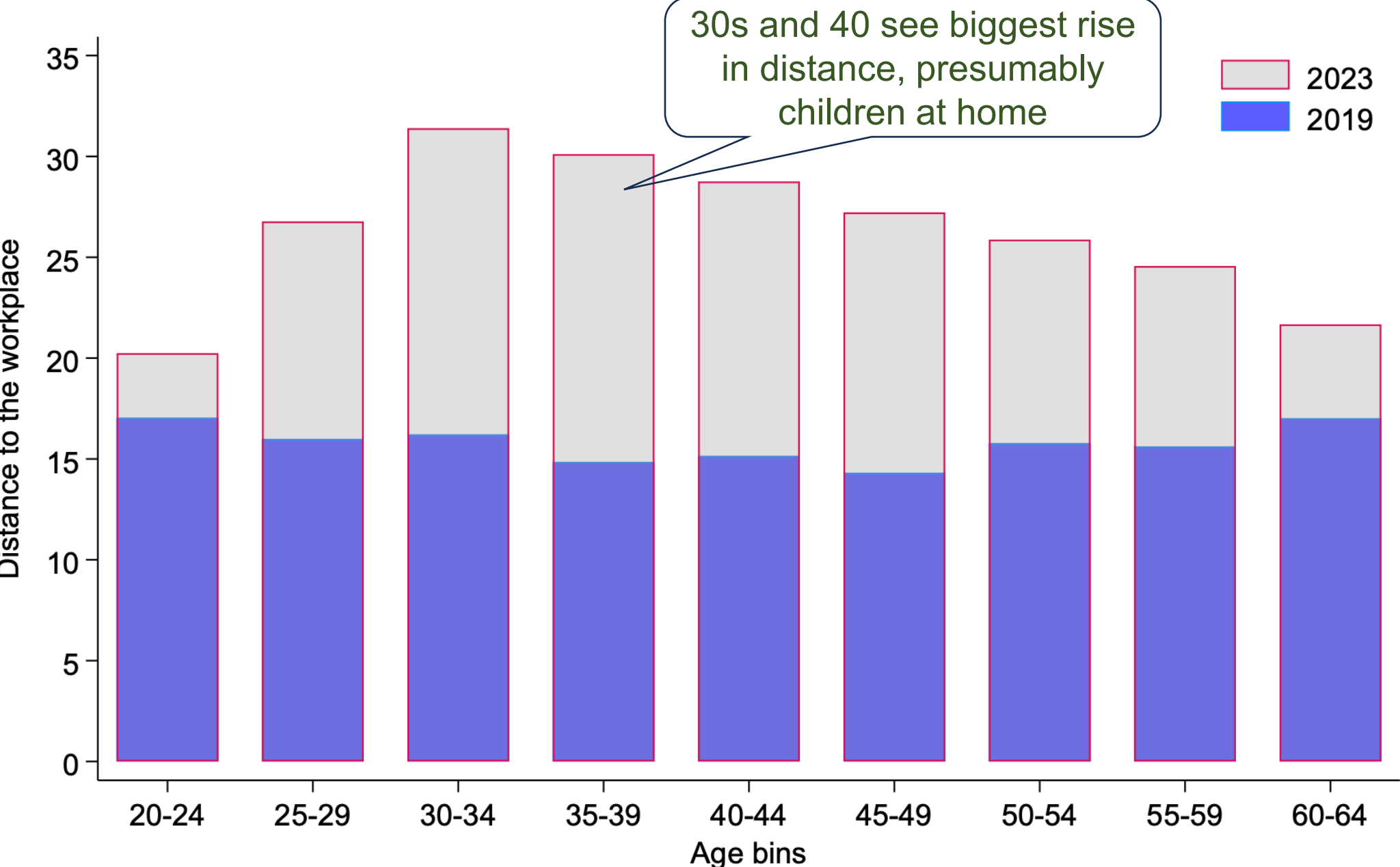
Most of this is new hires - WFH has expanded firm's hiring circle

Most of the rising distance is from new-employees hired post-pandemic, on average 2x further away than in 2019



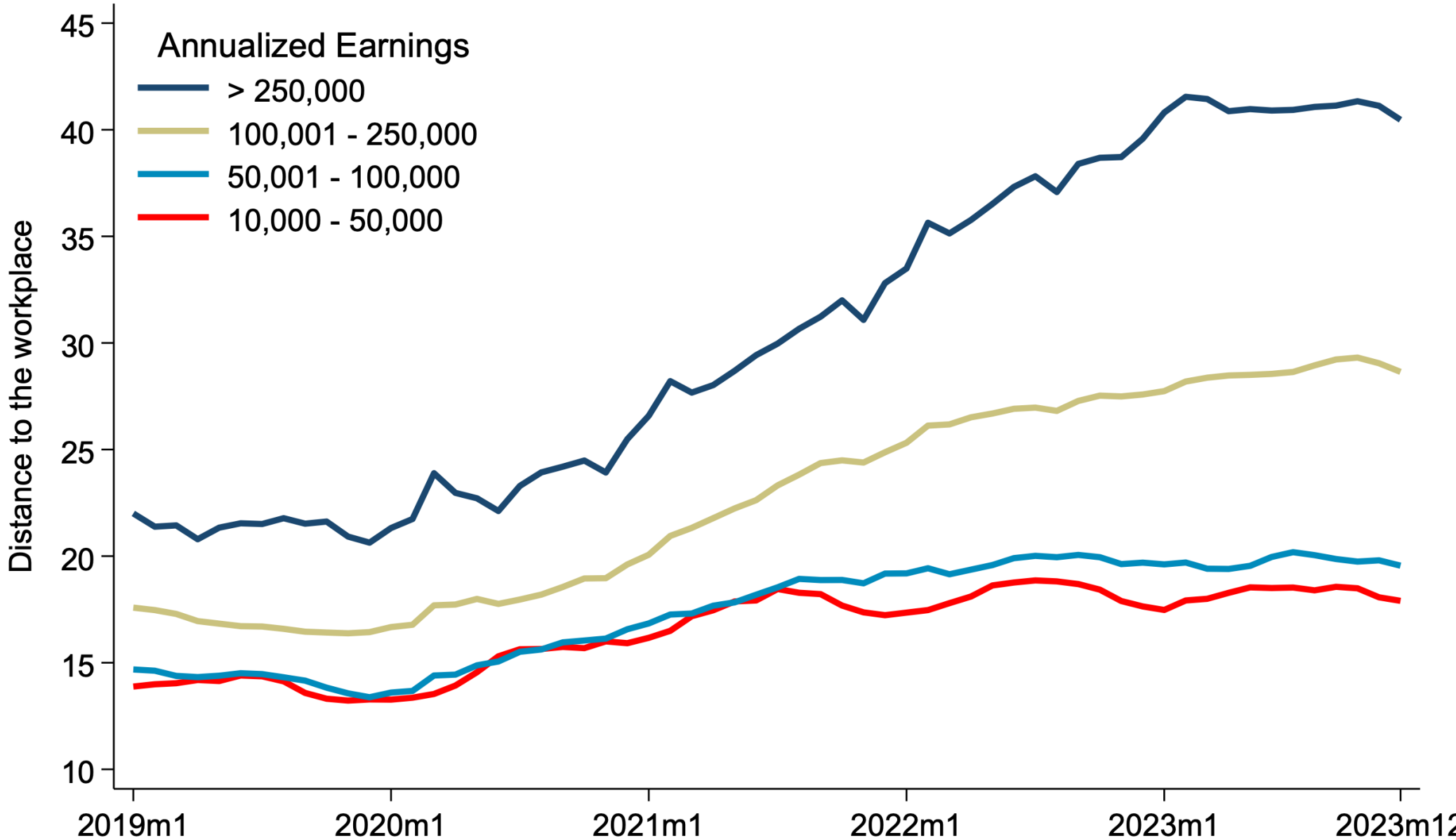
Notes: The sample contains employees of 5,793 firms in a balanced panel of firms in the Gusto payroll data. Employee-level data are reweighted to match the CPS distribution by (age bin) X sex X major industry. Source: Authors' calculations using Gusto payroll data.

Employees in their 30s are particularly living further from work



Notes: The sample contains employees of 5,793 firms in a balanced panel of firms. Employee-level data are reweighted to match the CPS distribution by (age bin) X sex X major industry. Distance from home to employer location is winsorized at 500 miles. Authors' calculations using Gusto payroll data.

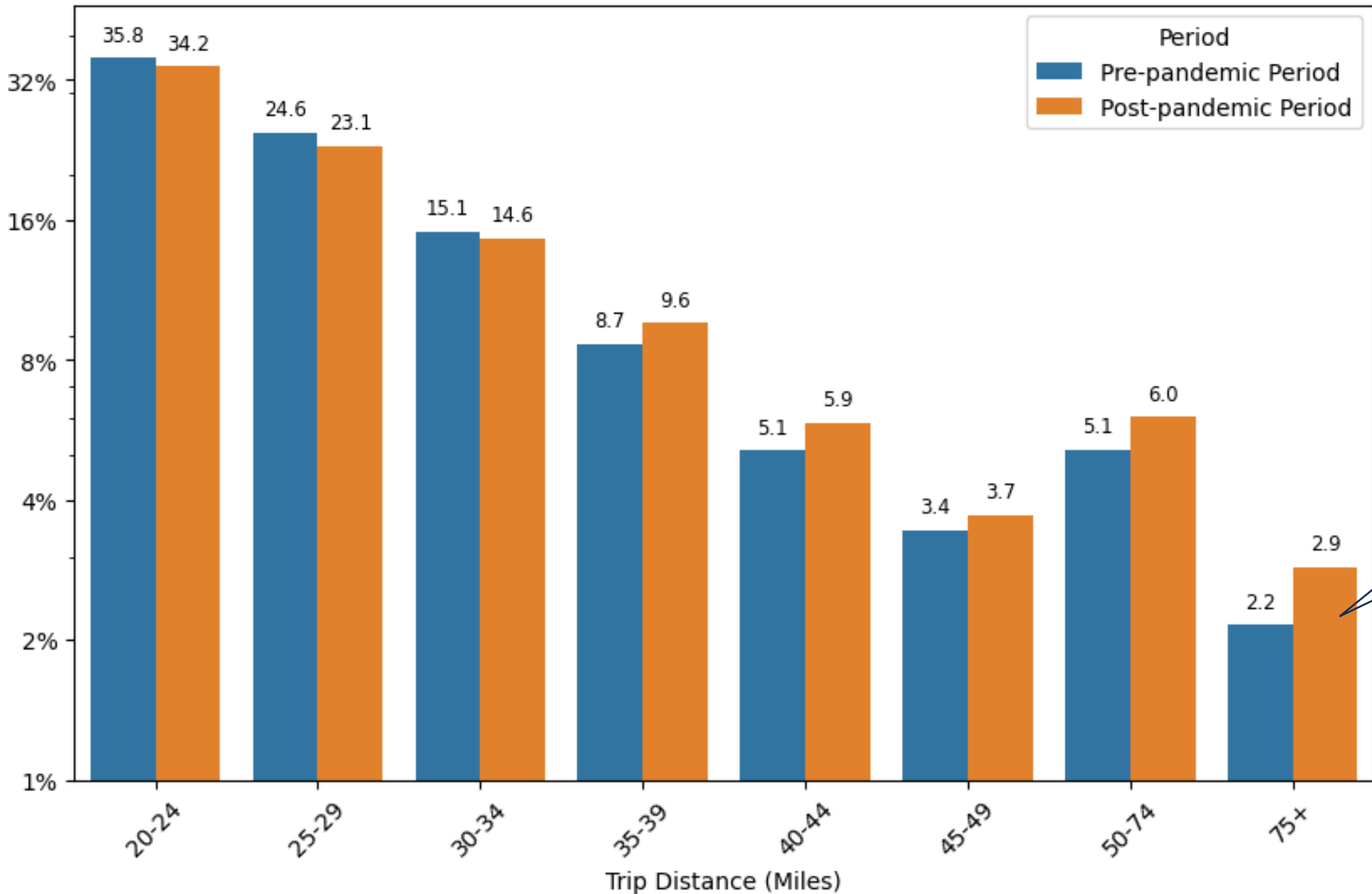
Increase in distance greatest for high earning employees



Notes: Gusto payroll data on a sample of about 450,000 employees in a balanced panel of 15,742 firms. Employee-level data are reweighted to match the CPS distribution by (annualized earnings bin) X (age bin) X sex X major industry. Distance to workplace winsorized at 250 miles.

Not surprisingly this is increasing “Super commuting”

Trip Distance Percentages: Pre-pandemic (2019/2020) vs. Post-pandemic (2023/2024)



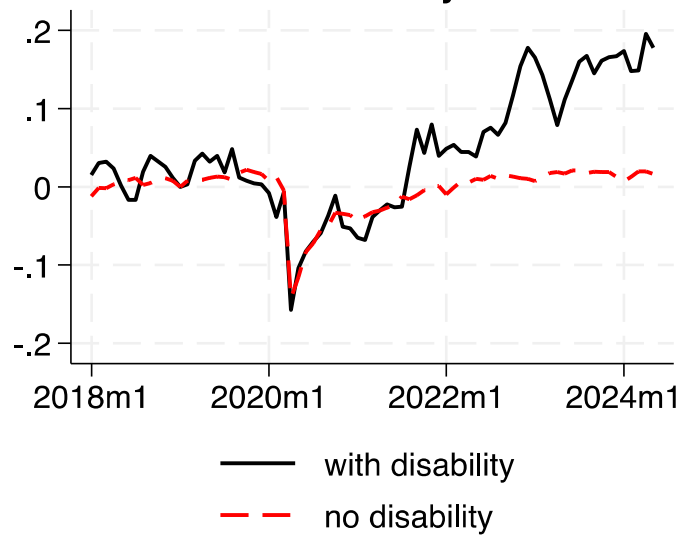
Commutes above 75 miles have risen by a third

Note: INRIX GPS data from November 2019-February 2020 and November 2023-February 2024, covering approximately 4m journeys

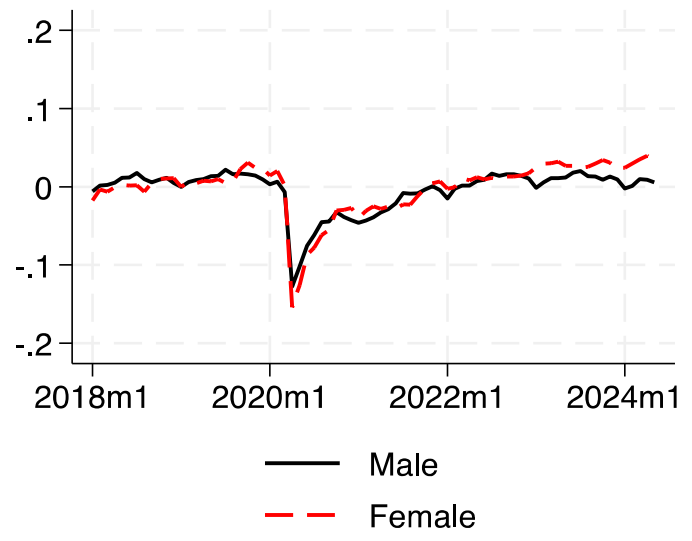


3) Disability employment has increased by about 2m post pandemic

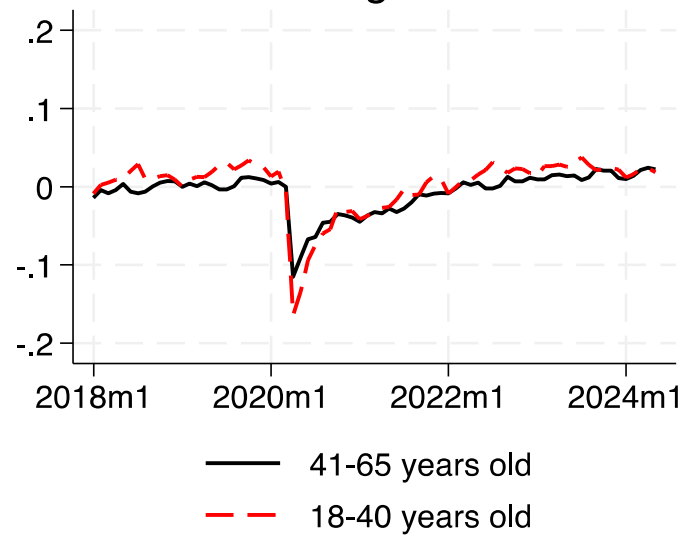
Disability



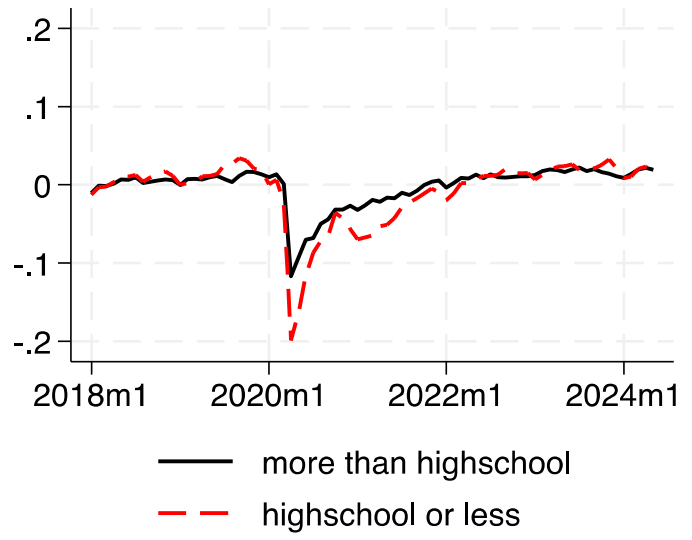
Gender



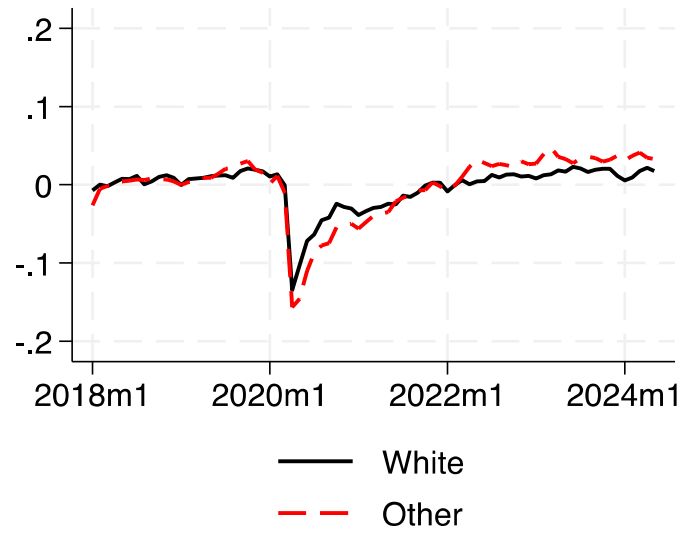
Age



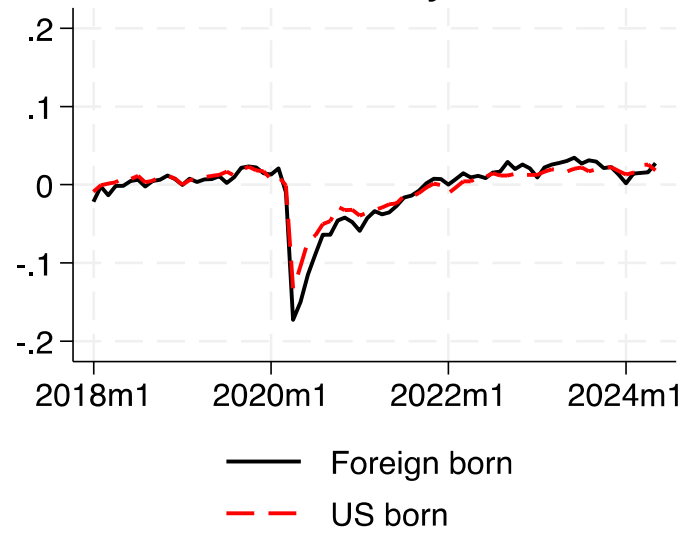
Education



Race

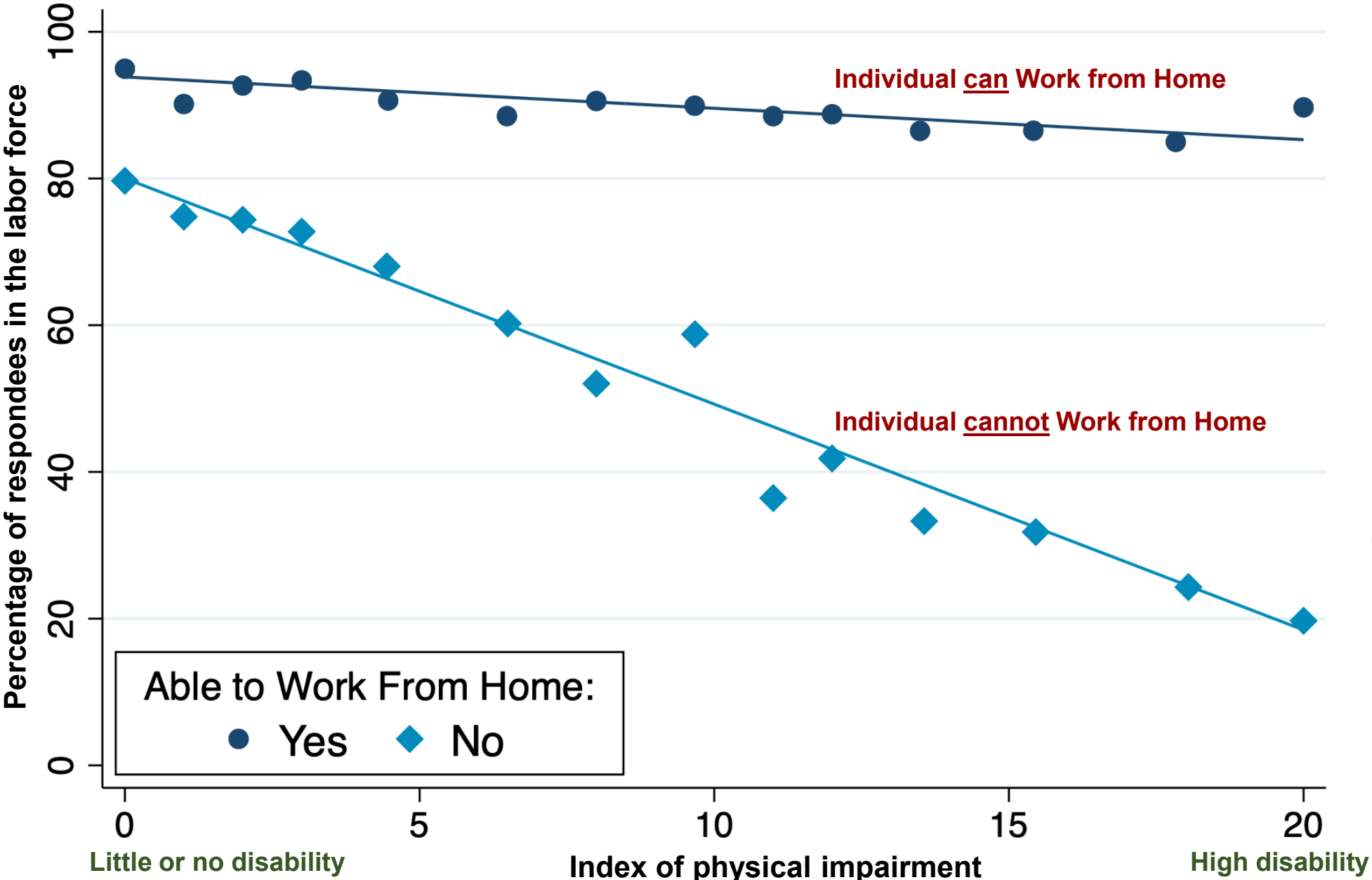


Nativity



Note: Graphs of the percent change in the employment rate relative to January 2019 by disability, gender, age, race, education and native/foreign born (18-64 years old). Data from the US Current Population Survey. Disability includes only physical disabilities. From “*Working from home and disability employment*” with Gordon Dahl and Dan-Olof Rooth

This rise in disability employment looks linked to WFH



Responses to the questions:

- Last week what was your work status?
- The following items are about activities you might do during a typical day. Does your health **currently** limit you in these activities?

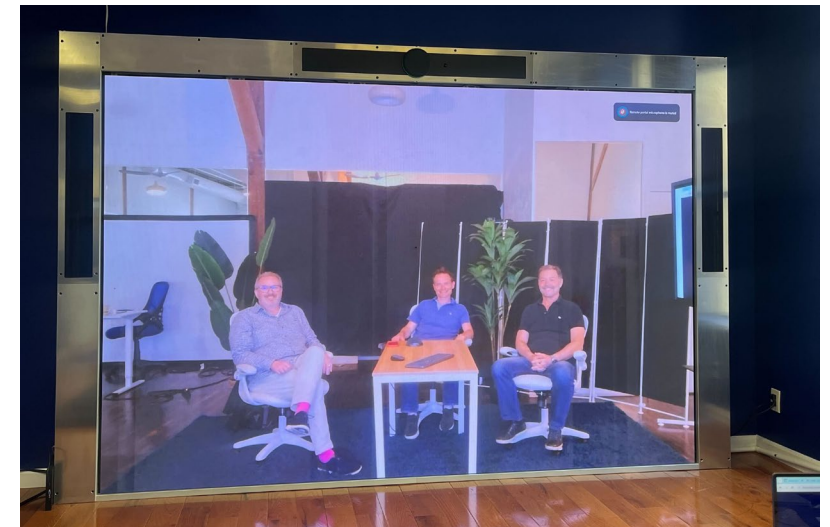
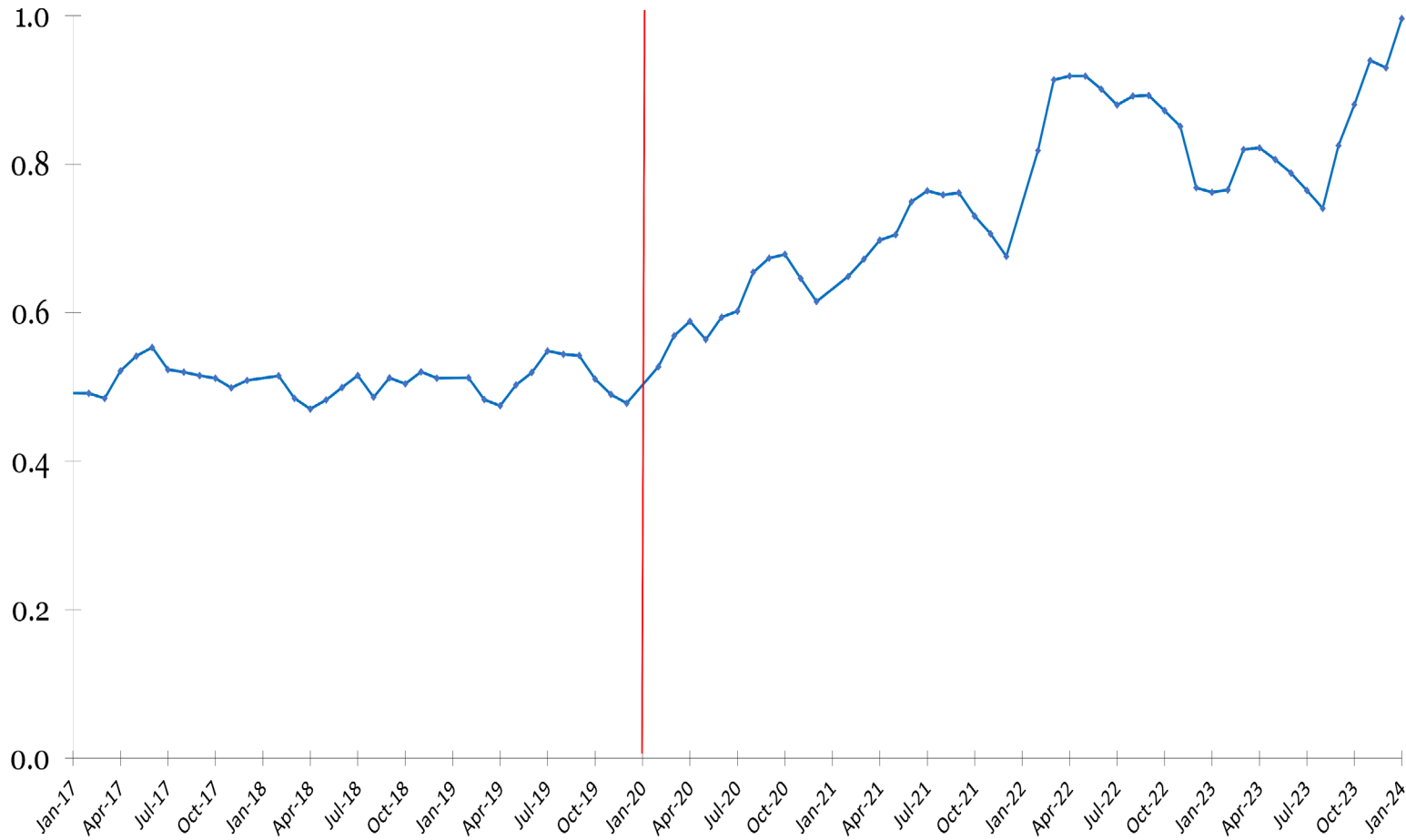
Index of Physical impairment defines on a 0, 1 or 2 basis on 10 activities (question in Appendix X)

Notes: Data are from March to July 2023 SWAA waves. The sample includes persons aged 40 or more who pass all attention check questions. We reweight the sample of US residents earning \$10,000 or more in a prior year to match the Current Population Survey by age, sex, education, and earnings.
N = 14,314

(4) WFH biased technological change

New WFH technologies are being rapidly developed as the market for WFH products has increased 5x. For example, better video, screens, virtual reality and holograms etc

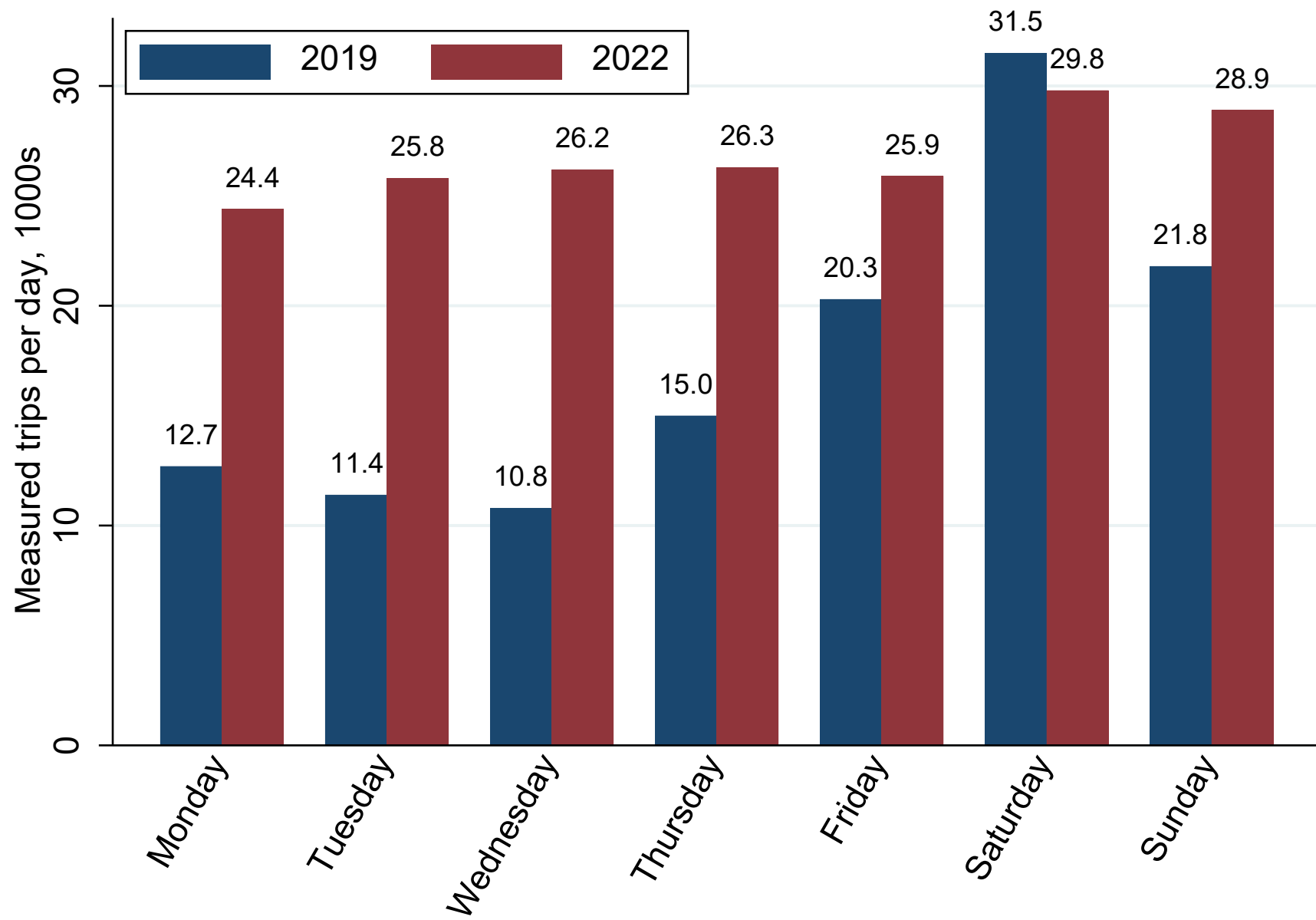
Share of New Patent Applications Supporting WFH



Source: US Patent and Trademark Office new patent application files. Details in Bloom, Nicholas, Codreanu, Mihai, Steven J. Davis, and Yulia Zhestkova from May 2024. "[COVID-19 Shifted Patent Applications toward Technologies that Support Working from Home.](#)"



(5) "Golf effect" - weekday leisure boom

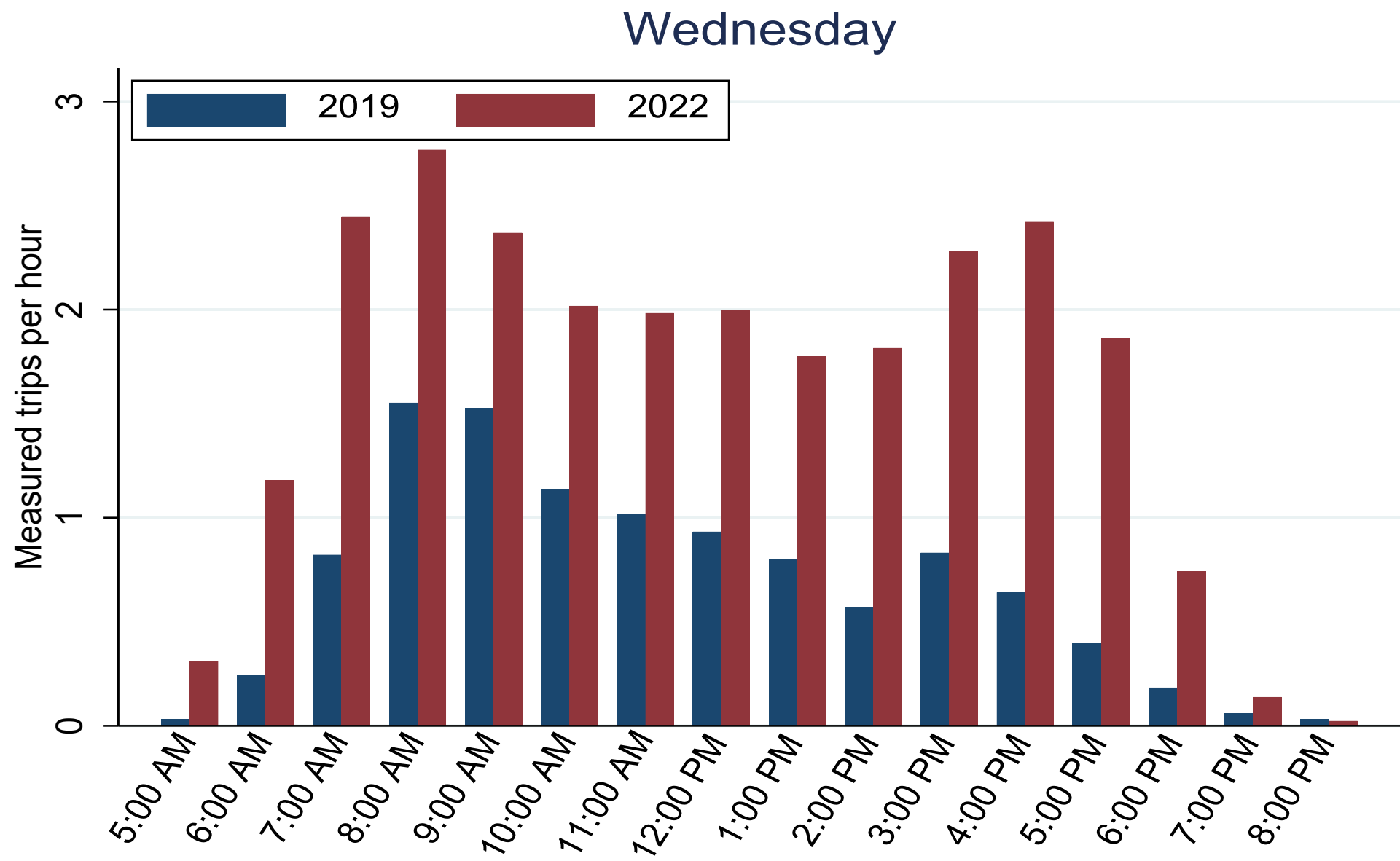


Note: Data for August 2019 and August 2022 for a sample of trips. Those included are trips in the INRIX database, which includes trips in vehicles with GPS and phones with location tracking turned-on. The trip needs to be to one of the 3,400 satellite identified gold courses and to have lasted more than two hours. We estimate we sample about 5% of total golf trips.





...the weekday increase happened throughout the day - for example a 178% increase at 3pm on Wednesday



Note: Data for August 2019 and August 2022 for a sample of trips. Those included are trips in the INRIX database, which includes trips in vehicles with GPS and phones with location tracking turned-on. The trip needs to be to one of the 3,400 satellite identified gold courses and to have lasted more than two hours. We estimate we sample about 5% of total golf trips.





The “Golf-effect” will boost weekdays for many ‘leisure’ activities



Conclusions

WFH is here to stay, typically 2 or 3 days a week

Managing this is hard - coordination and performance review focus

Impacts wide ranging on cities, transport, retail, technology and golf

Post slides on Linked-In