



# Working from Home: Will it Persist?

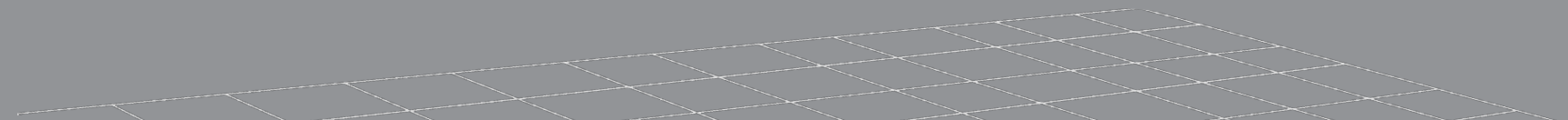
**Nick Bloom**

Stanford

Markus Brunnermeier

Princeton

03. December 2020

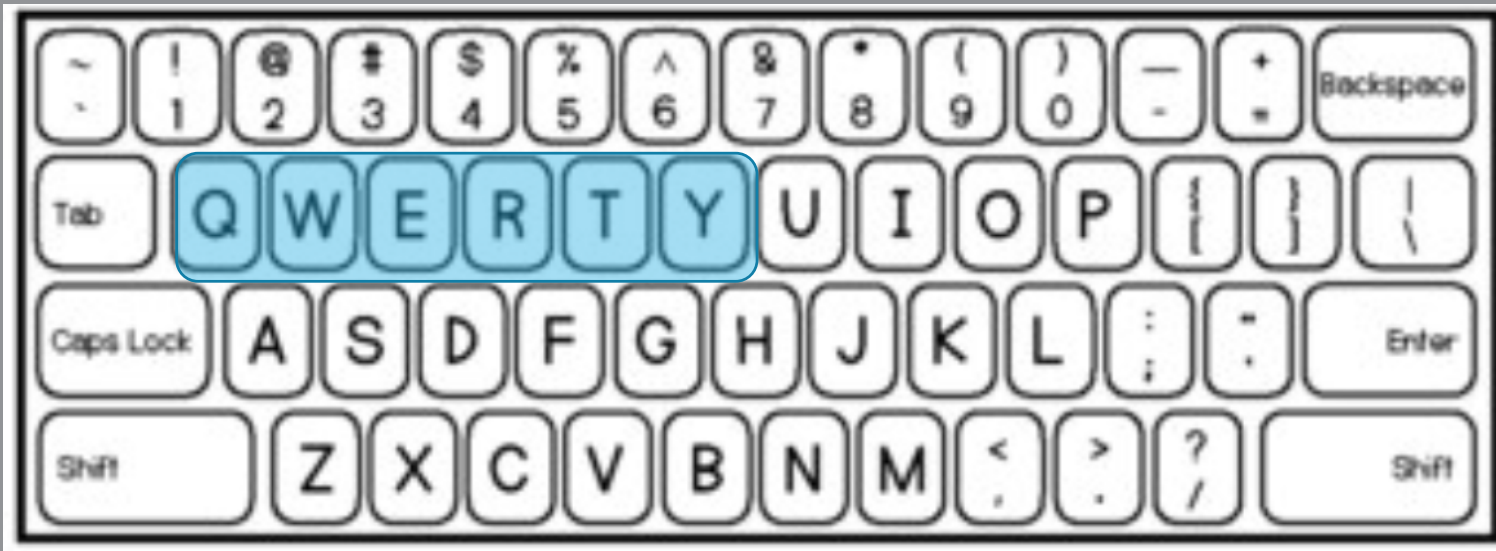


# Poll Results

1. Before COVID (in 2019) how often did you work a full paid day from home:
  - a. Never or rarely
  - b. 1 to 2 days per week
  - c. 3 to 4 days per week
  - d. Full time (5+ days a week)
2. After COVID (2021+) how often will you work a full paid day from home:
  - a. Never or rarely
  - b. 1 to 2 days per week
  - c. 3 to 4 days per week
  - d. Full time (5+ days a week)
3. After COVID (2021+) your views on social distancing
  - a. Complete return to pre-COVID activities
  - b. Substantial return to pre-COVID activities, but wary of subway, elevator, ...
  - c. Partial return to pre-COVID activities, but wary of eating out, taxis, ...
  - d. No return to pre-COVID activities, as I will continue to social distance

# Working from home: A QWERTY Problem

- Trade-offs
  - Less commute
  - Less small talk/info sharing



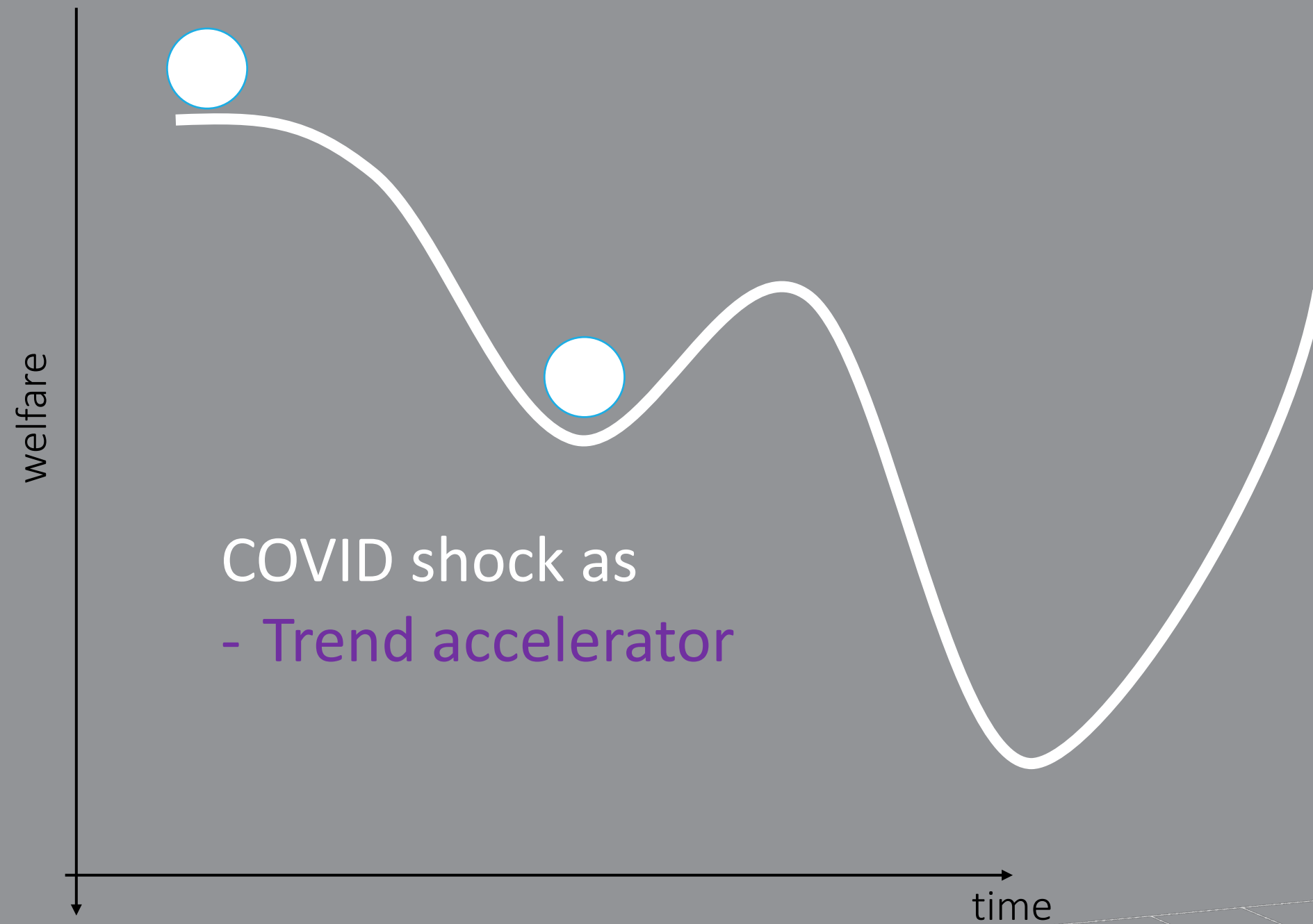
# Working from home: A QWERTY Problem

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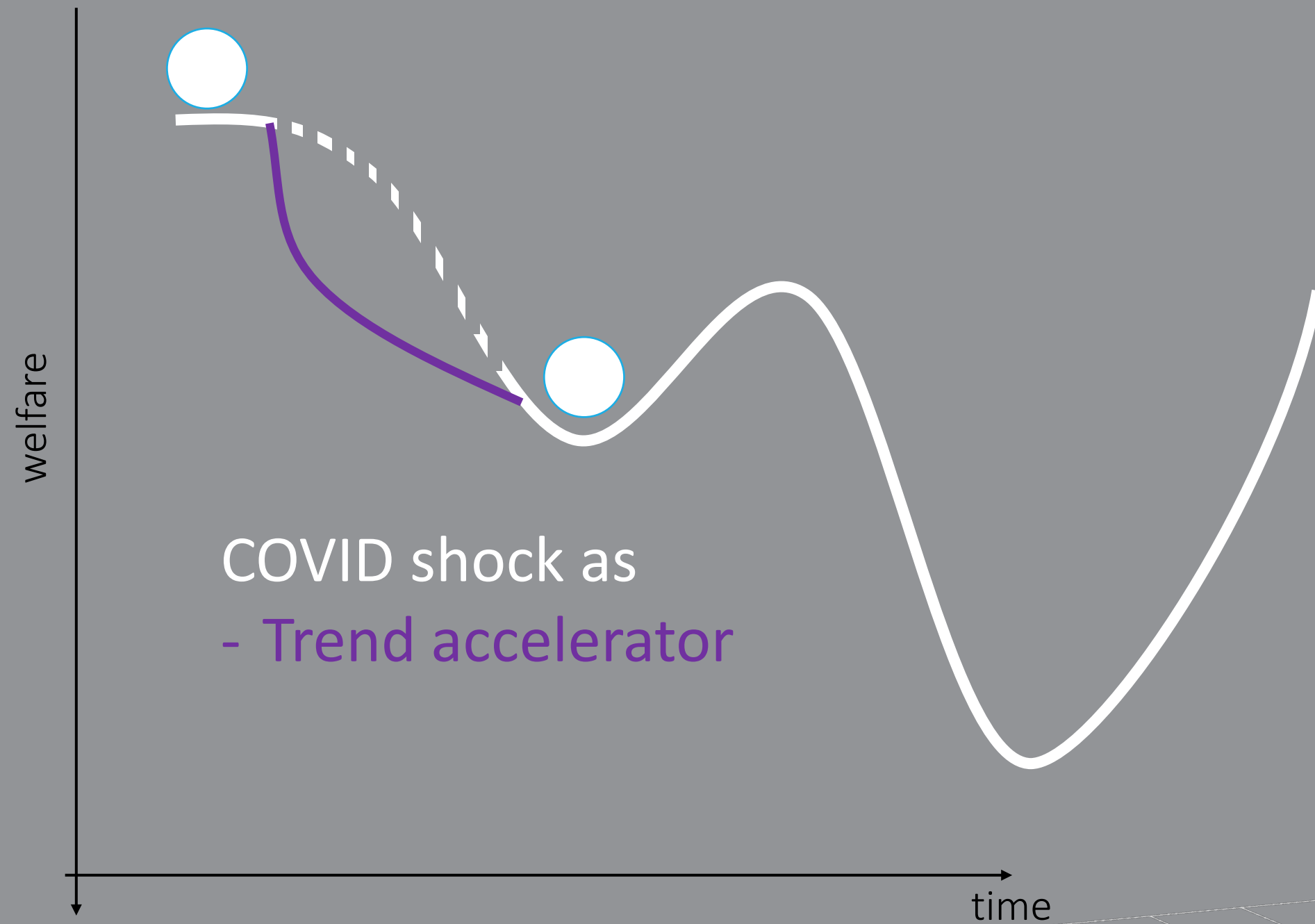
# Dynamic view: Trend accelerator or “QWERTY jump”?

- Economy = self-organizing dynamical system with local basins of attraction
- Path dependency



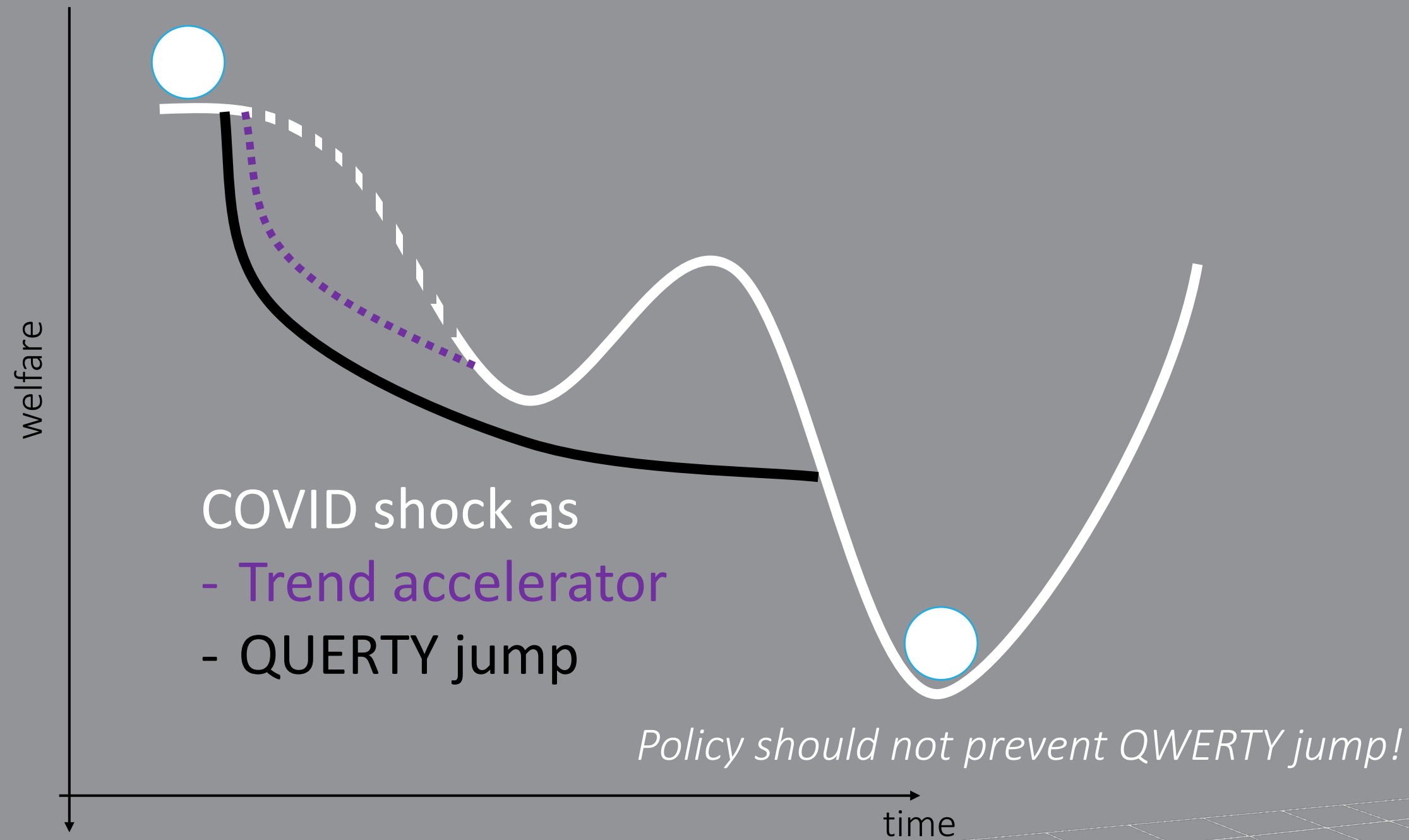
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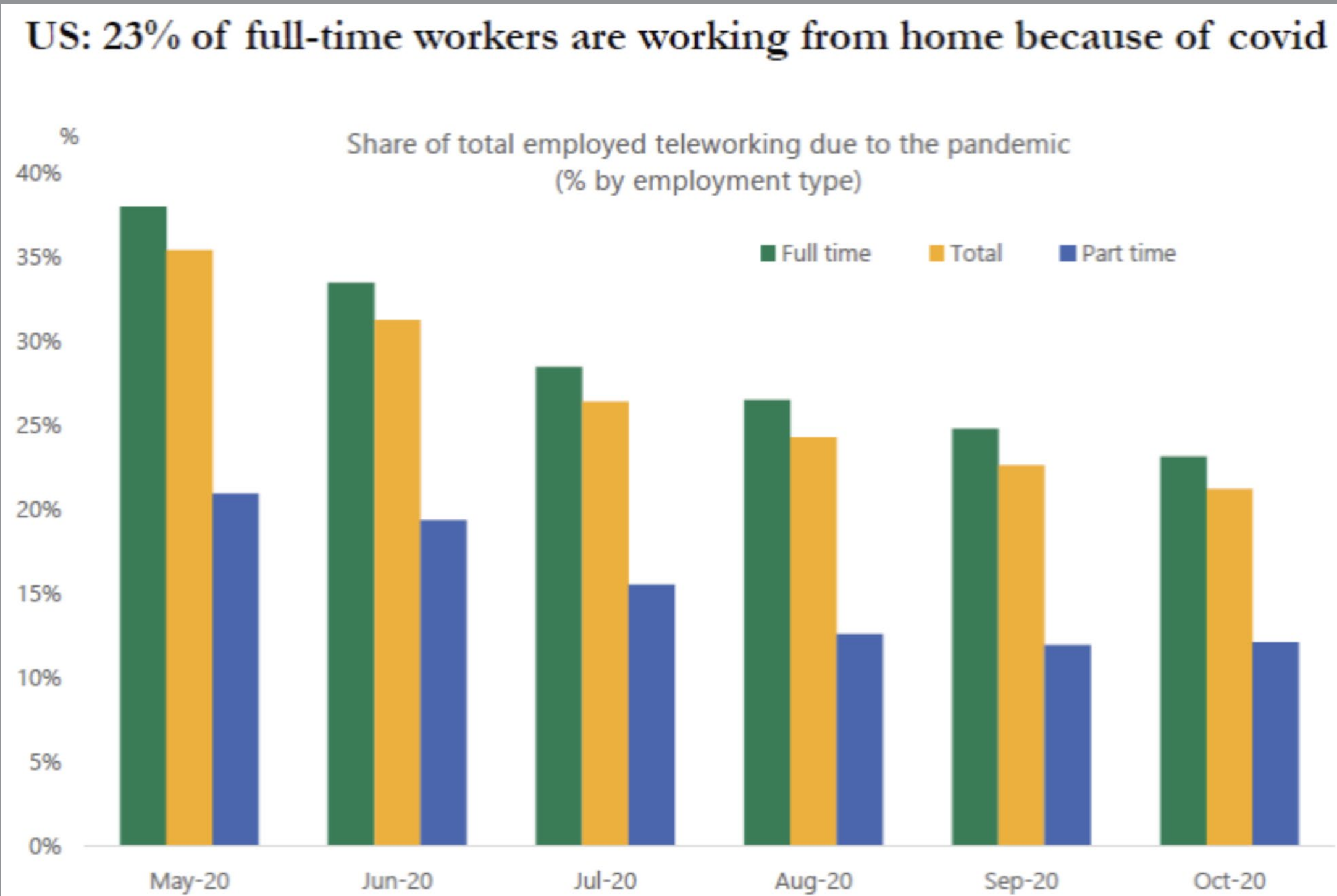


# Impact on Traffic Patterns and Urbanization

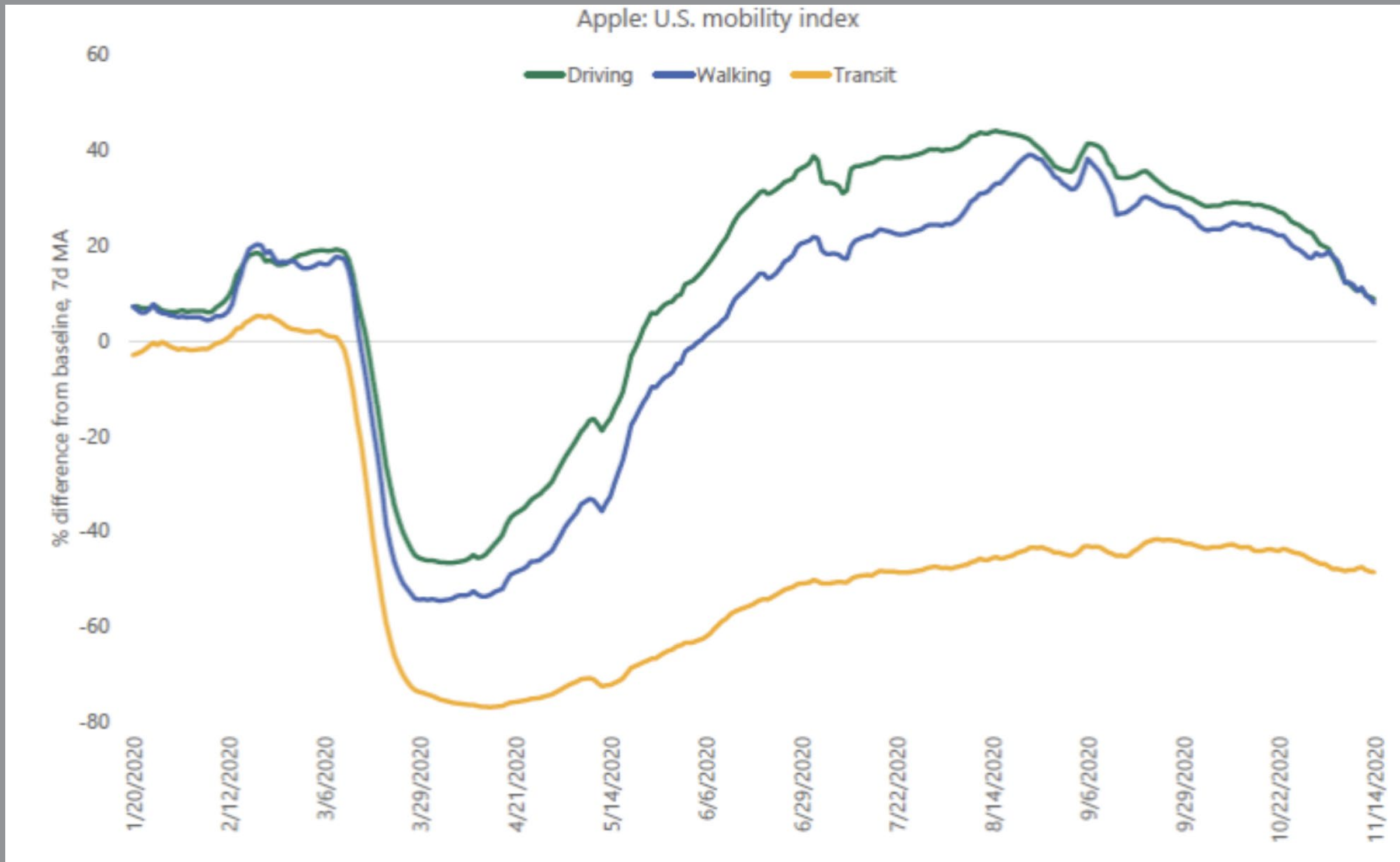
- Redesigning traffic, physical transport & telecommuting
- Impact on climate change
  - 1-2 year window to make it stick
  - Elasticity to change will be high only for a while
- Impact on real estate prices
  - Higher prices in suburbia?
  - Higher office vacancy rate
  - Change in office design
- Impact on couples/marriages
  - Fewer long-distance relationships
  - Better gender equality?
  - More children?



# Working from home – fraction

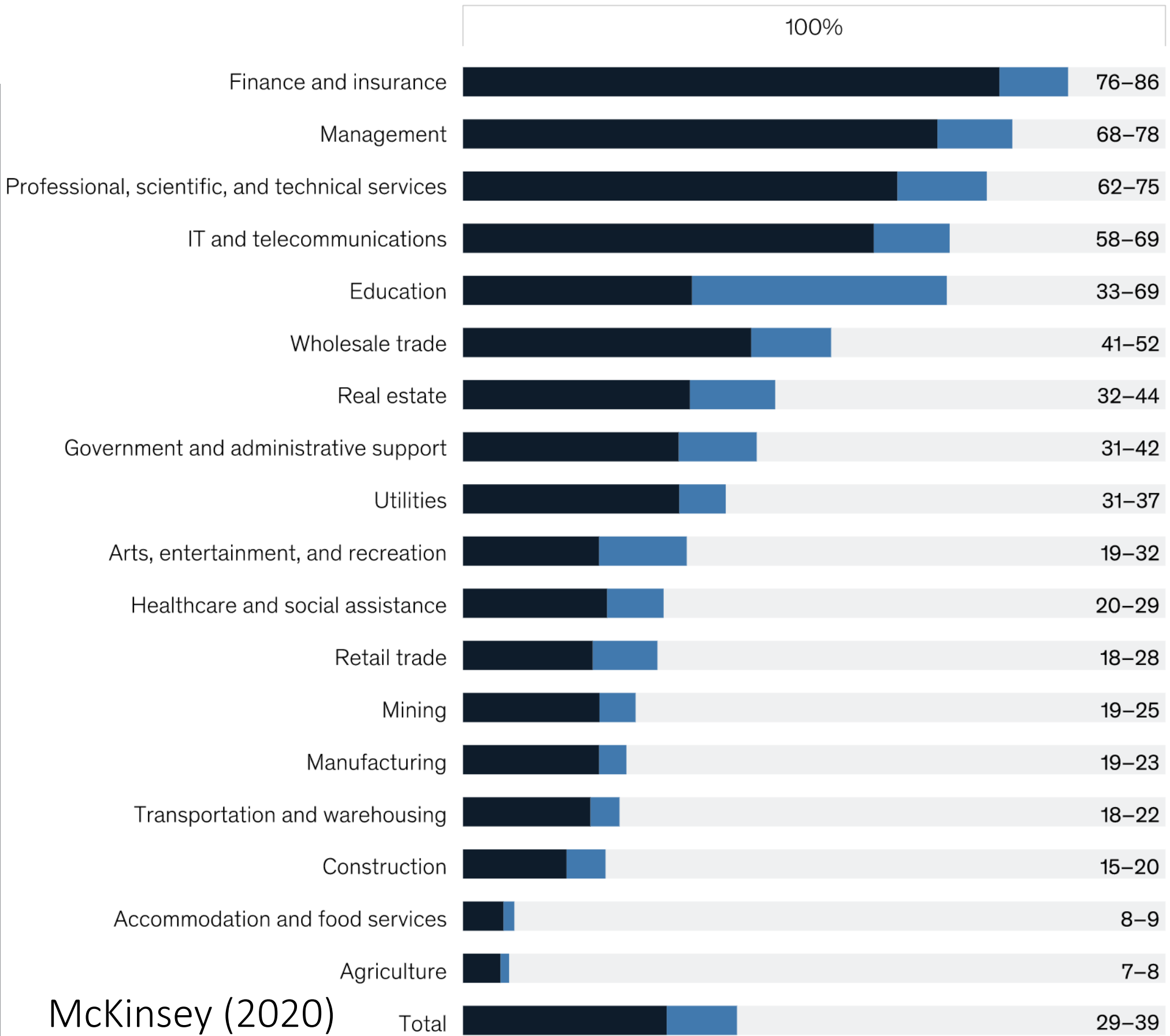


# Mobility index



# Potential share of time spent working remotely by sector in the United States, %

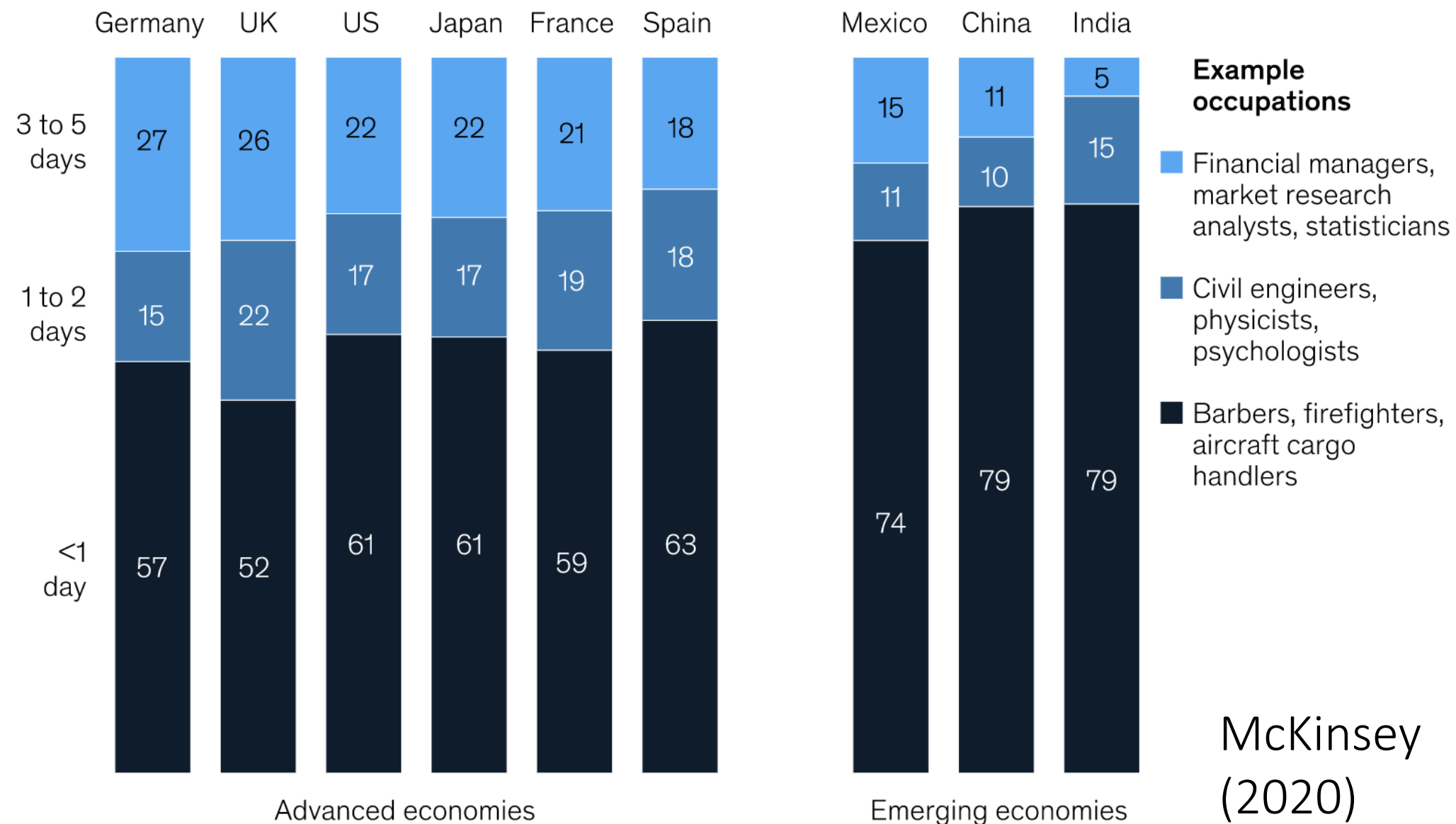
Effective potential (no productivity loss)    Theoretical maximum



# Hybrid work – few days a week

**While the majority of the workforce cannot work remotely, up to one quarter in advanced economies can do so three to five days a week.**

**Workforce with remote-work potential by number of days per week, % of 2018 workforce**  
Number of days per week of potential remote work without productivity loss (effective potential)<sup>1</sup>



# Working From Home: Will It Persist?

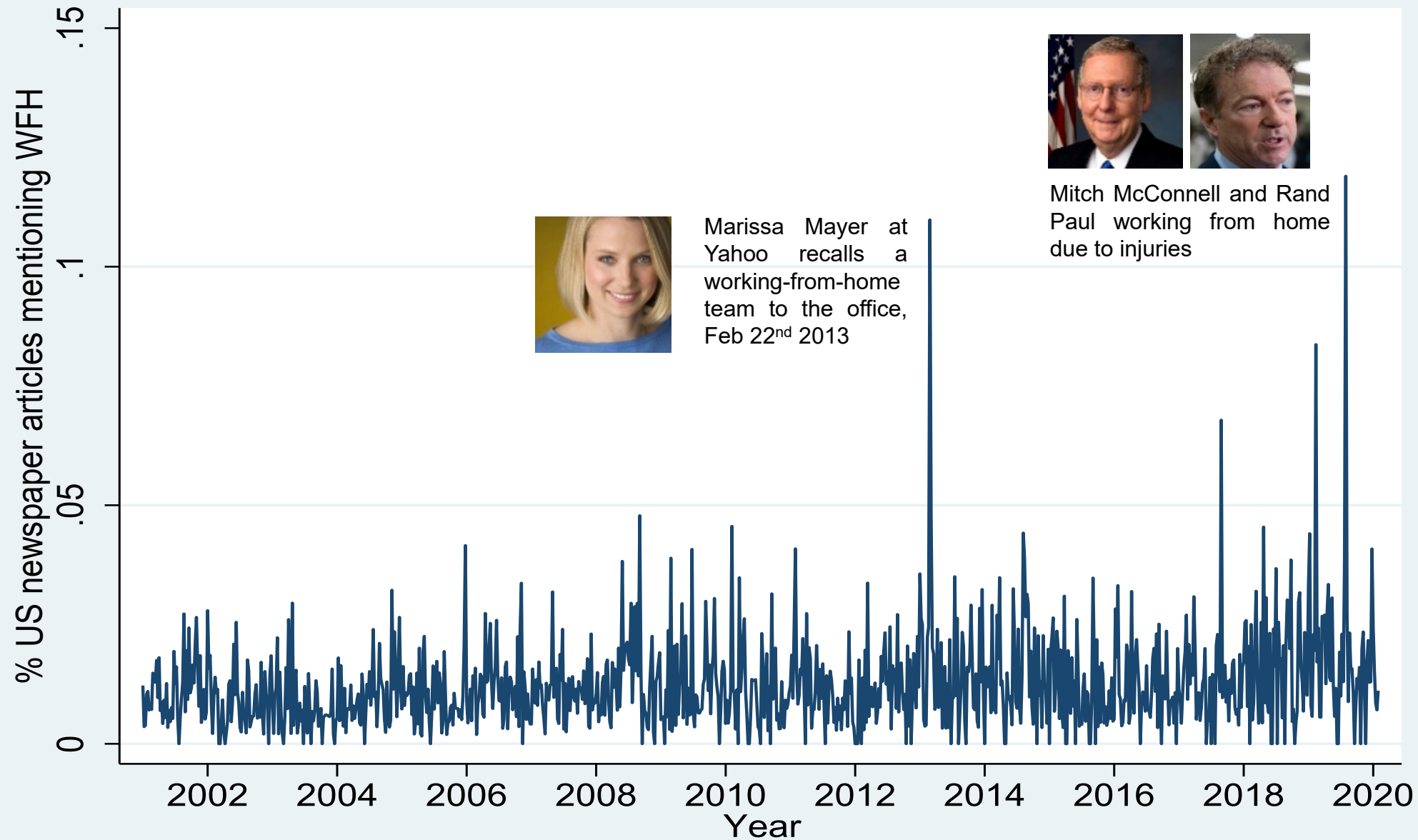
Jose Maria Barrero (ITAM), Nick Bloom (Stanford) & Steven Davis (Chicago)

Princeton Bendheim Markus Academy



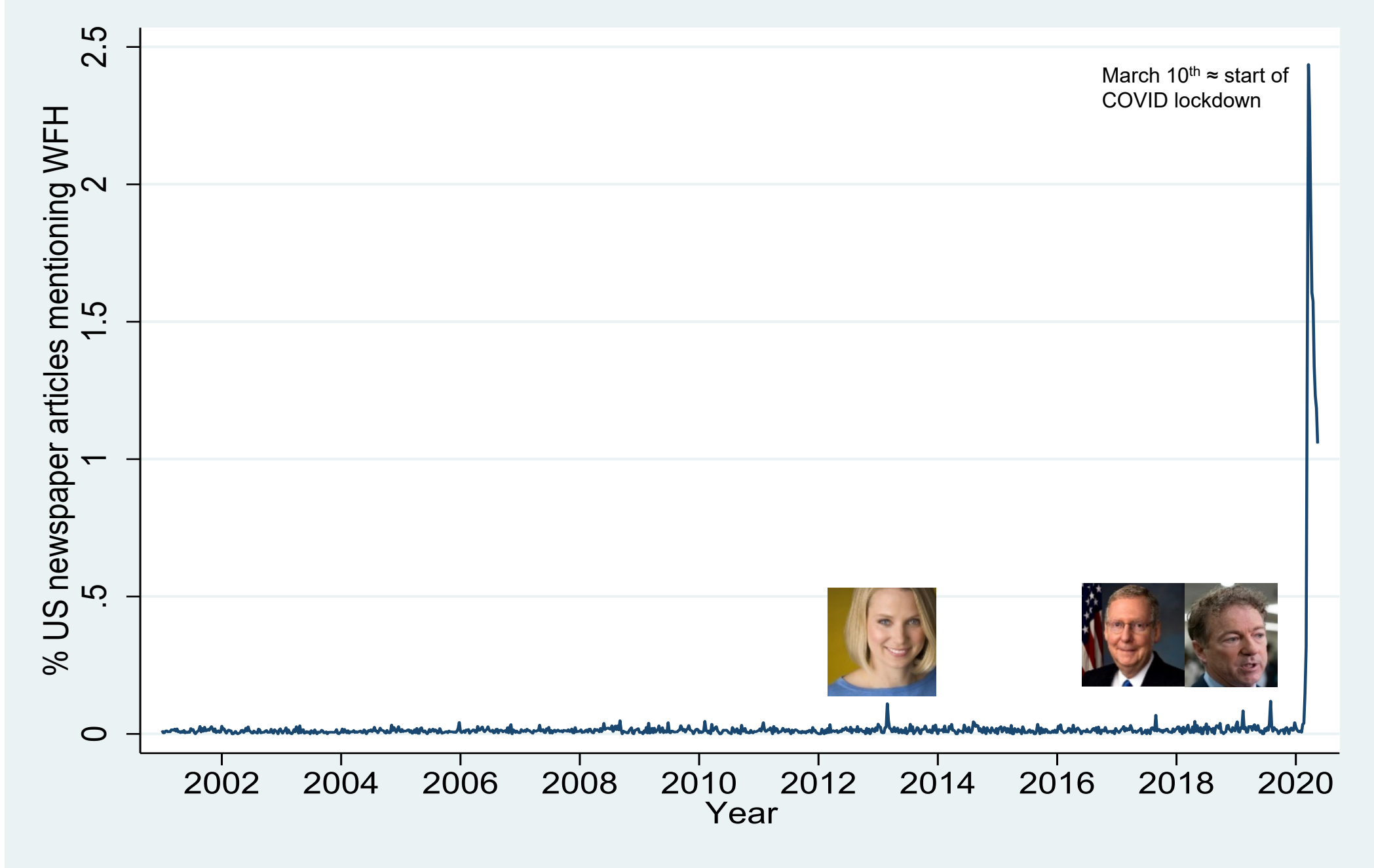
Full Paper Link: [https://nbloom.people.stanford.edu/sites/g/files/sbiybj4746/f/why\\_wfh\\_stick\\_0.pdf](https://nbloom.people.stanford.edu/sites/g/files/sbiybj4746/f/why_wfh_stick_0.pdf)

# Over the last 20 years news on WFH was rising by 5% a year



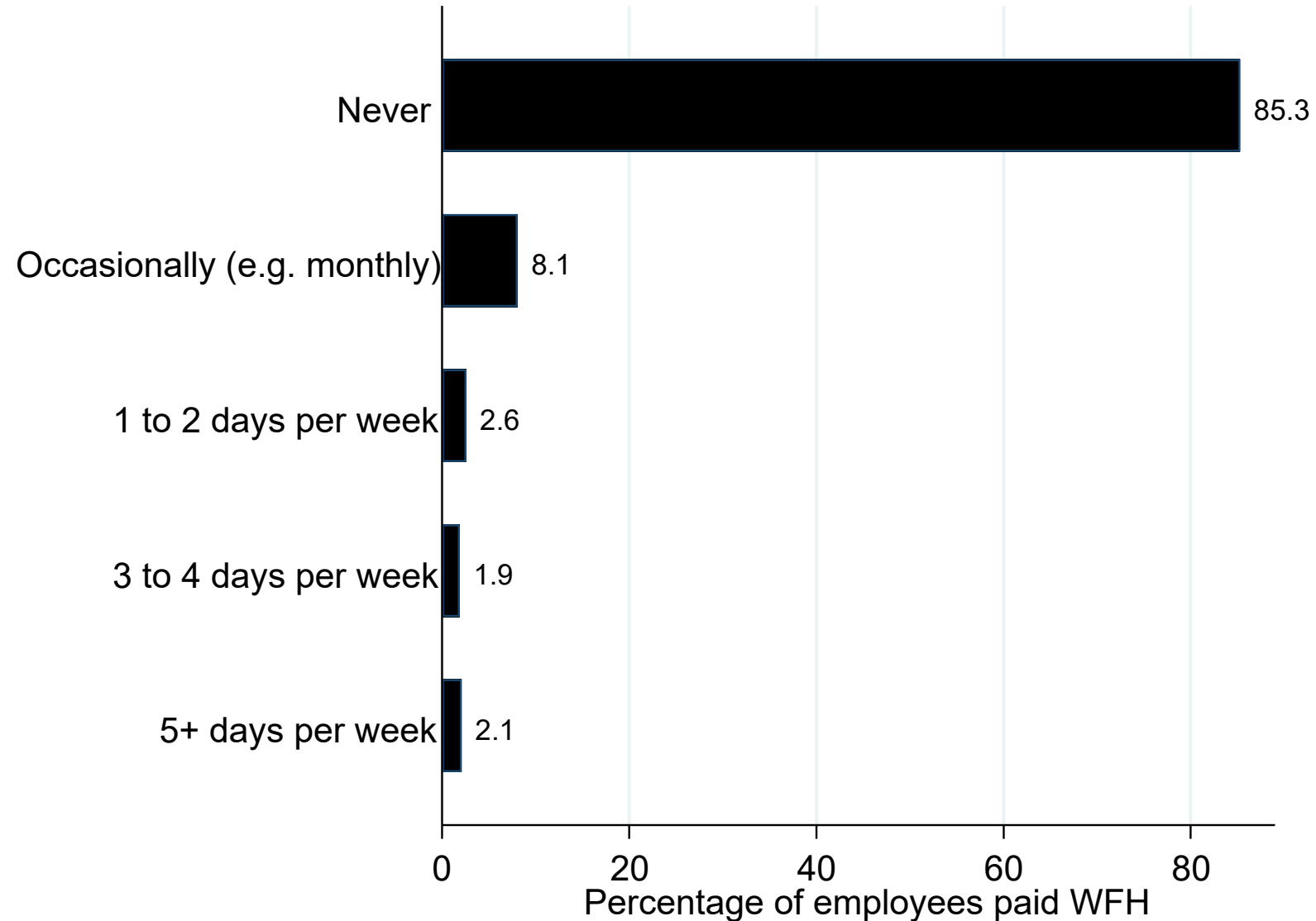
**Source:** Newsbank Access World News collection of approximately 2000 national and local daily US newspapers. Shows the % of articles mentioning “working from home” or “WFH”. Daily data plotted as a weekly average. Data until January 2020

# After COVID this increased by another 12000%



**Source:** Newsbank Access World News collection of approximately 2000 national and local daily US newspapers. Shows the % of articles mentioning “working from home” or “WFH”. Daily data plotted as a weekly average. Data until June 2020

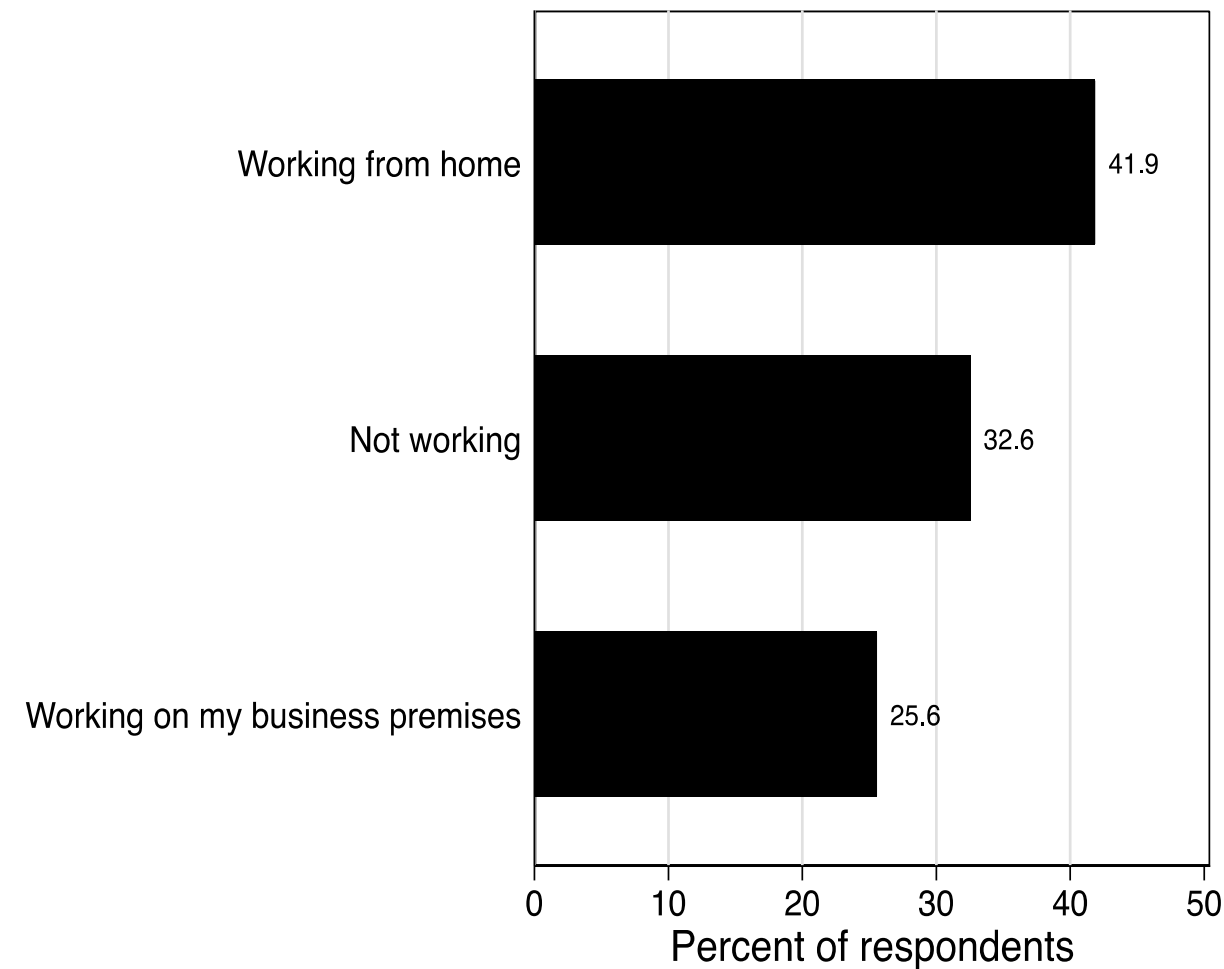
# Before COVID only 2% of Americans WFH full time



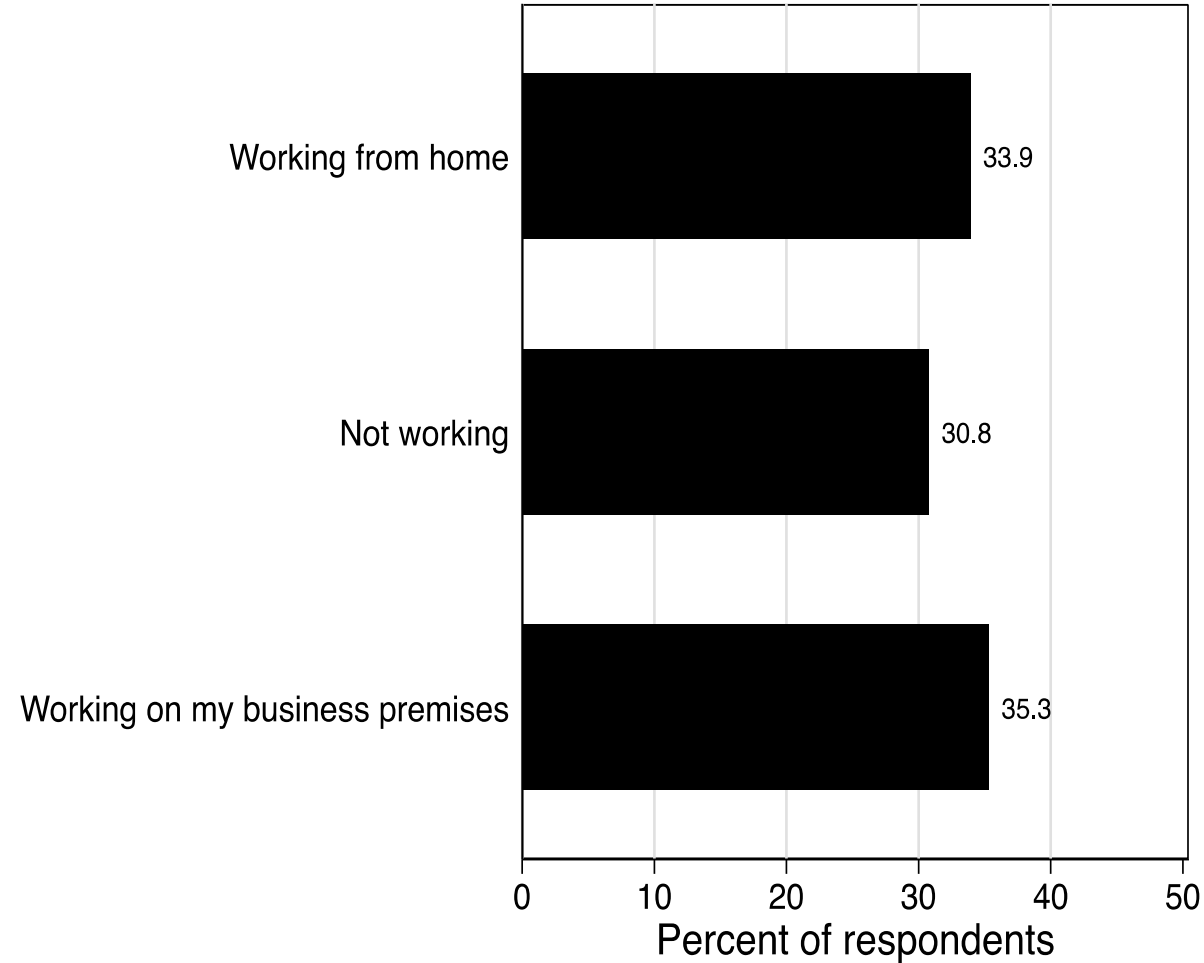
Source: BLS data <https://www.bls.gov/news.release/flex2.htm>

# During COVID this surged to over 40% of Americans WFH

Work status in May 2020



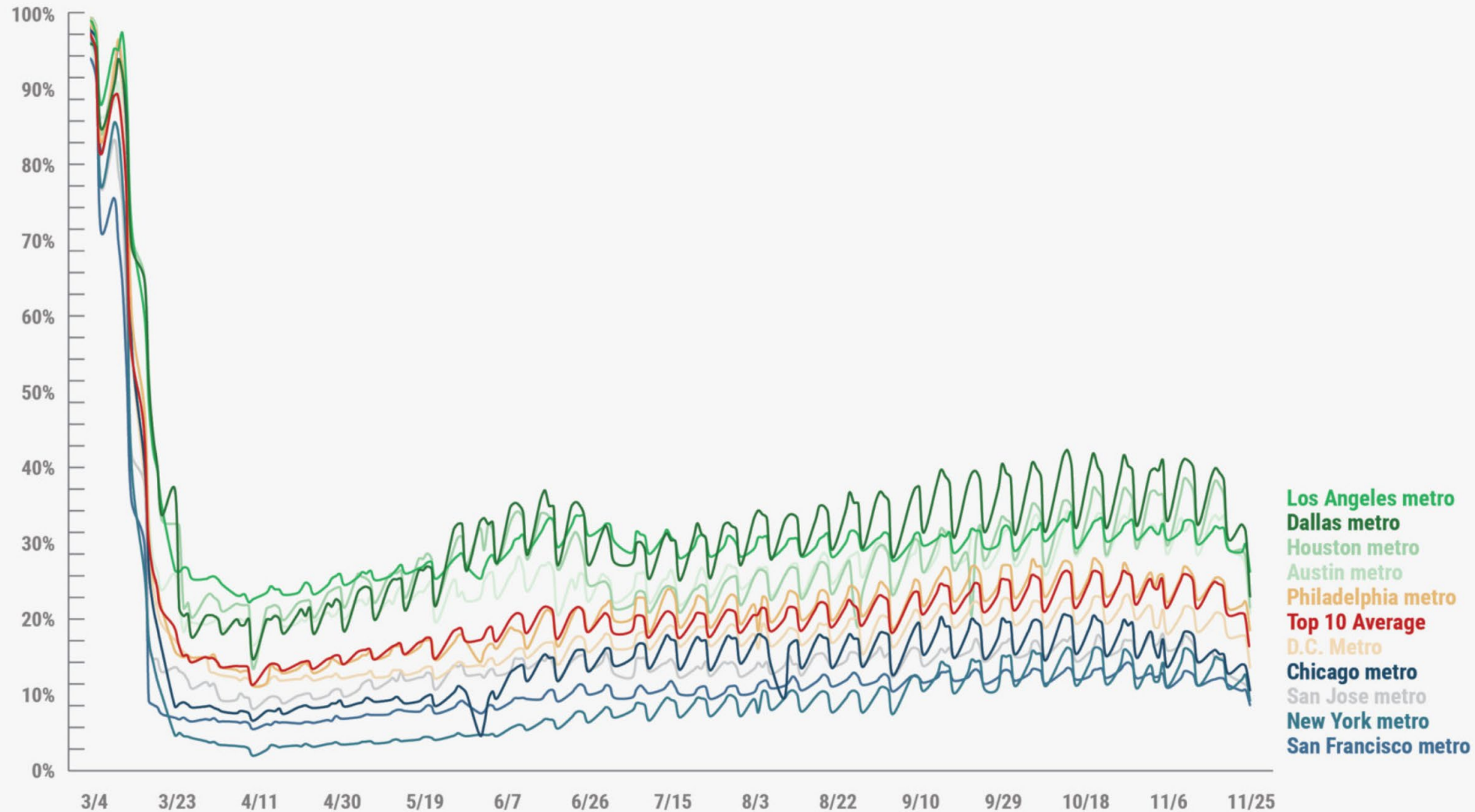
Work status in November 2020



**Notes:** Source Barrero, Bloom and Davis (2020). Shows responses to the question “*Currently (this week) what is your work status?*”. Data are from two surveys of US residents each aged 20 to 64 who earned more than \$20,000 per year in 2019. The May and November surveys covered 2,500 respondees. Carried out by QuestionPro for Stanford University. Sample reweighted to match the US Current Population Survey

# This has left commercial buildings semi-deserted

## OCCUPANCY OVER TIME — MARCH 4 TO NOVEMBER 25



Notes: Kastle security index of swipe card access relative to pre-COVID average

<https://www.kastle.com>

# COVID WFH has generated various challenges



# Someone said their husband zoomed from the crawl-space



# Little consensus on how WFH worked or if it will stick

*“I don't see any positives. Not being able to get together in person, particularly internationally, is a pure negative.”*

– Reed Hastings, CEO of Netflix\*



Reed Hastings

PHOTO: MANU FERNANDEZ/ASSOCIATED PRESS

# Little consensus on how WFH worked or if it will stick

*“We have adapted to work-from-home unbelievably well... We’ve learned that we can work remote, and we can now hire and manage a company remotely.”*

– Heyward Donigan, CEO of Rite Aid\*



Heyward Donigan

PHOTO: MANDEL NGAN/AGENCE FRANCE-PRESSE/GETTY IMAGES

## **Survey and methodology**

Current state of WFH

The future of WFH

Why WFH will Stick

Implications

# Surveying 17,500 US Workers

**Six waves so far (repeated cross sections) via commercial survey provider**

- May: 2,500
- July: 2,500
- August: 5,000
- September: 2,500
- October: 2,500
- November 2,500

**Randomly sample US residents aged 20-64, earning \$20K+ in 2019**

- Re-weight to match 2010-2019 CPS by *{earnings x industry x state}* cell

**Ask 40 questions on:**

- Demographics
- Extent of WFH during COVID and desires/plans *after* COVID
- Experience, perspectives on WFH etc

# Sample Survey Questions

6. **After COVID, in 2022 and later**, how often **is your employer planning** for you to work full days at home?

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

«

Auto-fill

Re-randomize

Continue

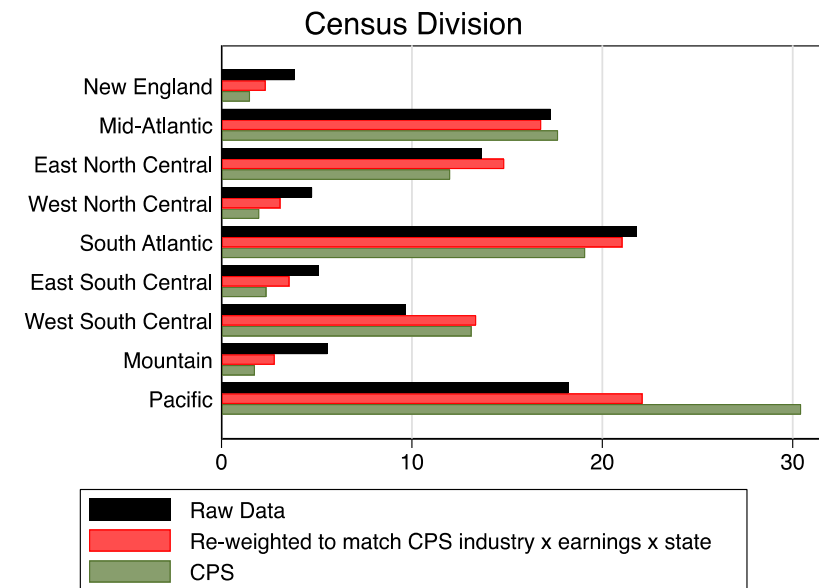
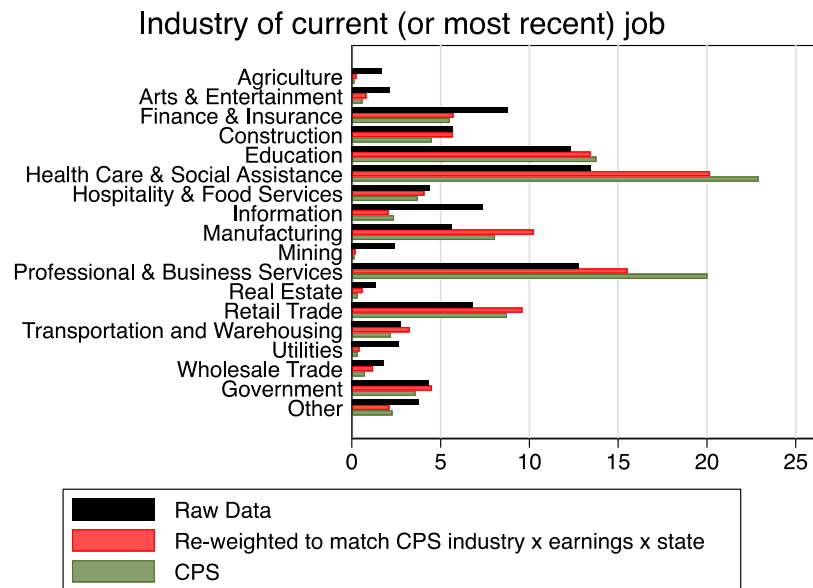
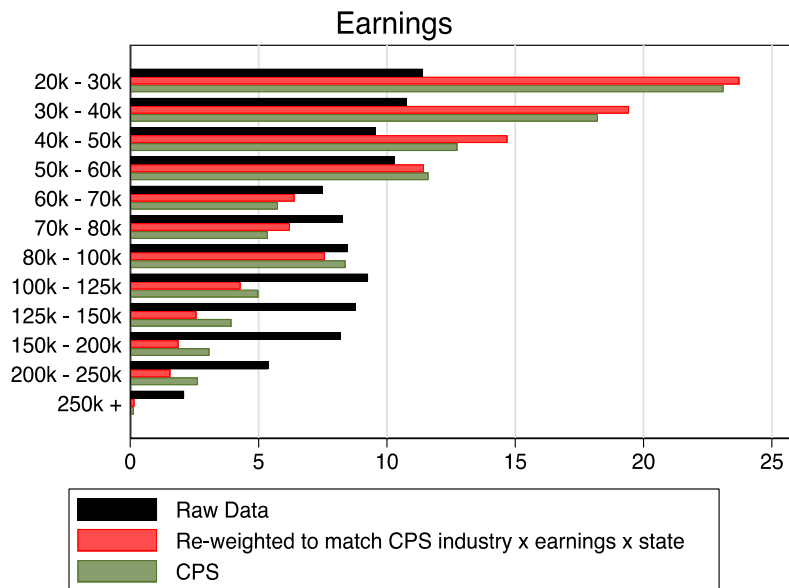
31. Compared to your expectations **before COVID (in 2019)** how has working from home turned out for you?

- ☐ 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

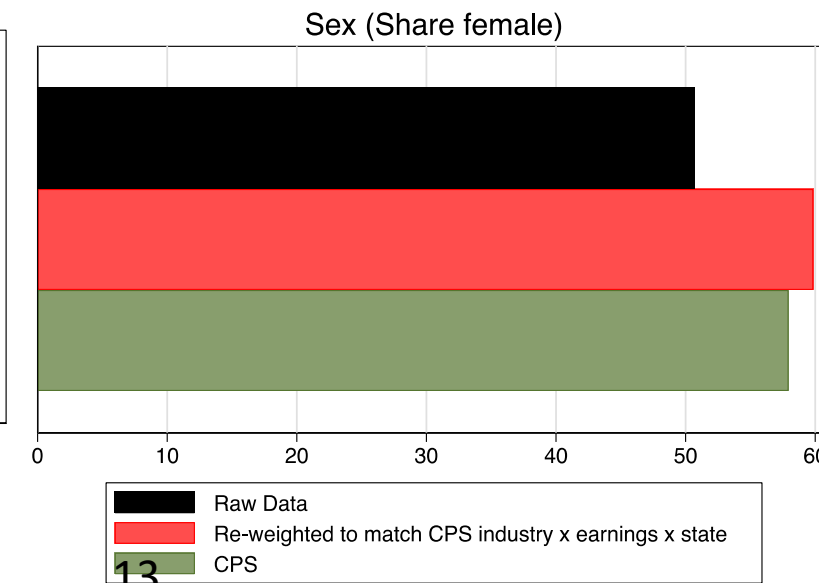
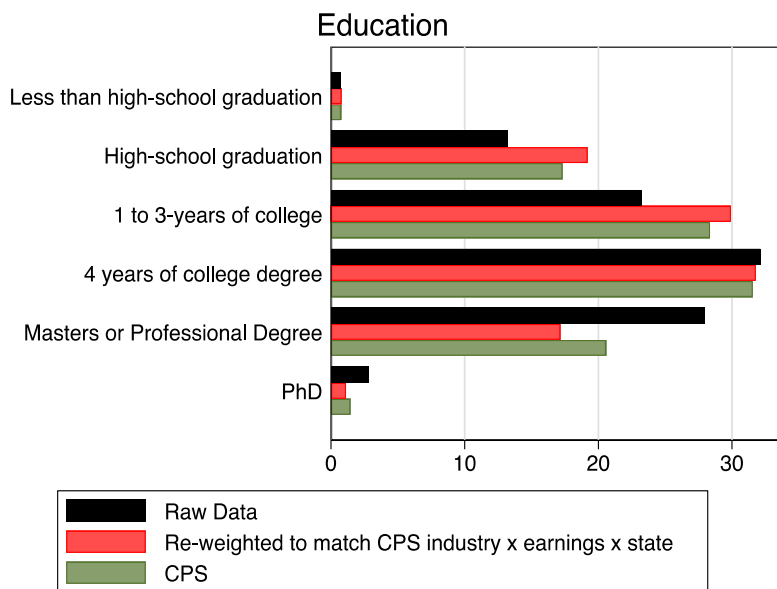
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# Survey Responses vs. CPS

Rewighted



Not Reweighted



Survey and methodology

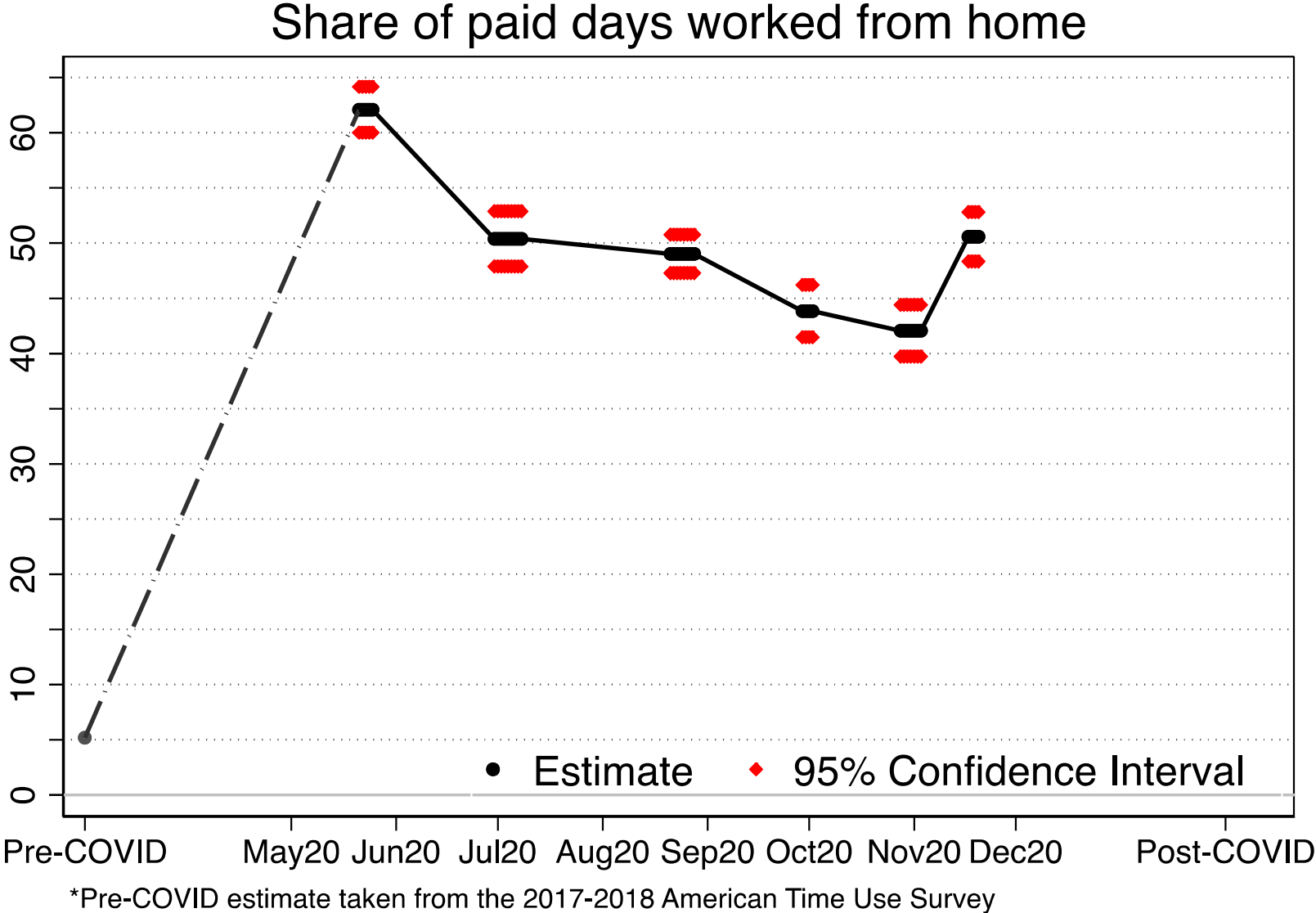
## **Current state of WFH**

The future of WFH

Why WFH will Stick

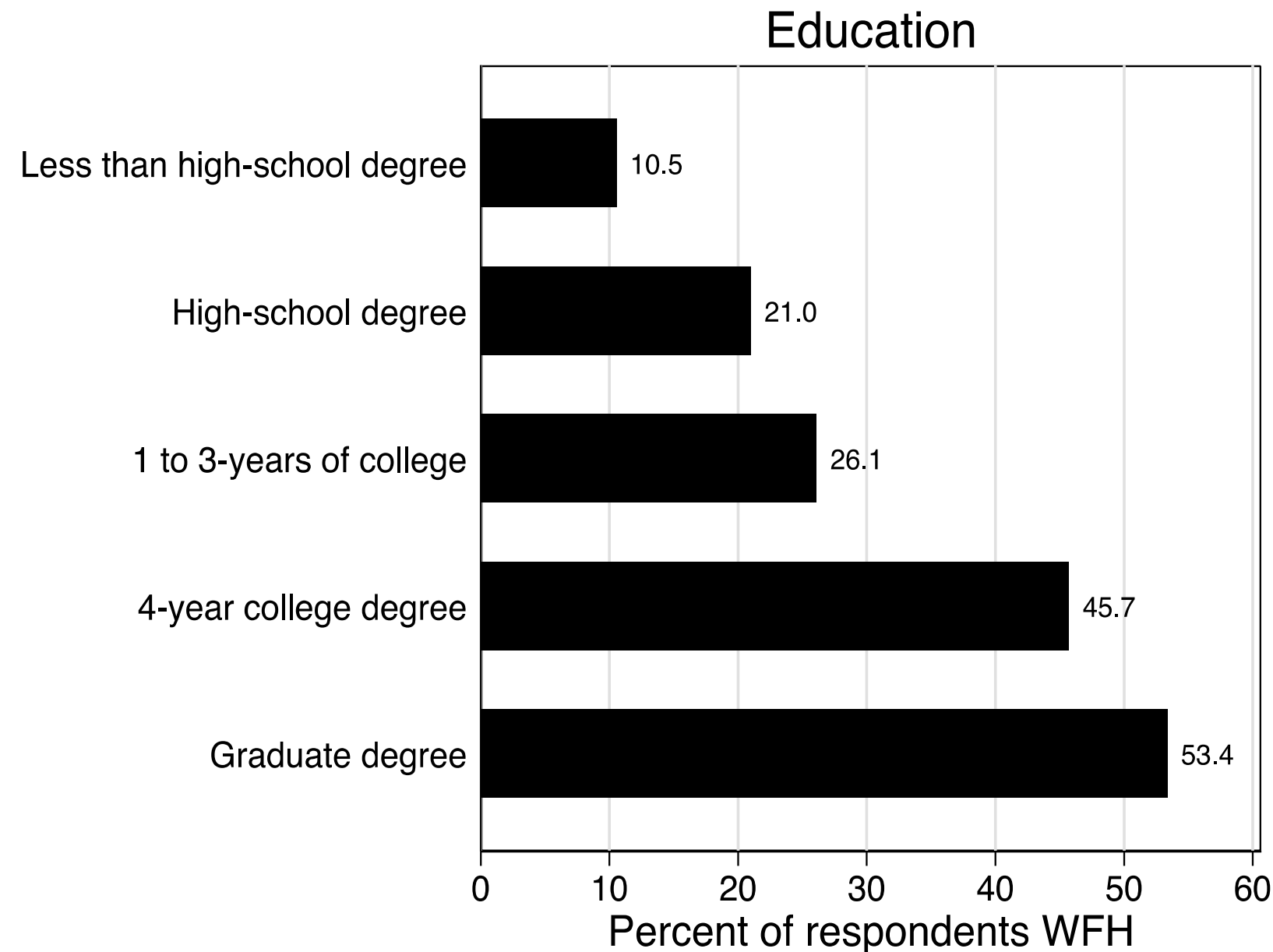
Implications

# Huge increase in WFH: about 10x above pre-COVID



**Notes:** Data are from four survey waves carried out by QuestionPro and IncQuery in May, July, August, September/October and November 2020 with 2,500 responses in the first two and the last, plus 5,000 in August. We re-weight raw responses to match the share of working age respondents in the 2010-2019 CPS in each {industry x state x earnings} cell.

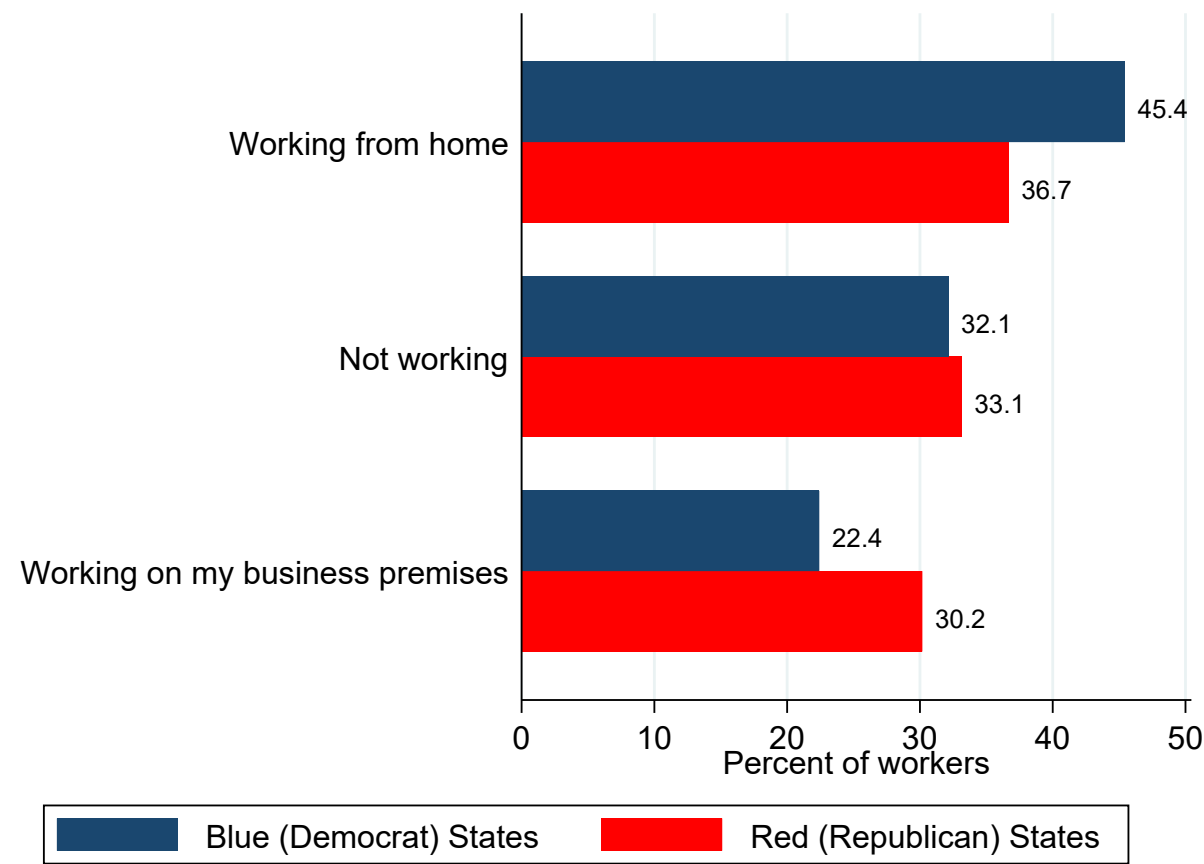
# WFH during COVID higher in more educated



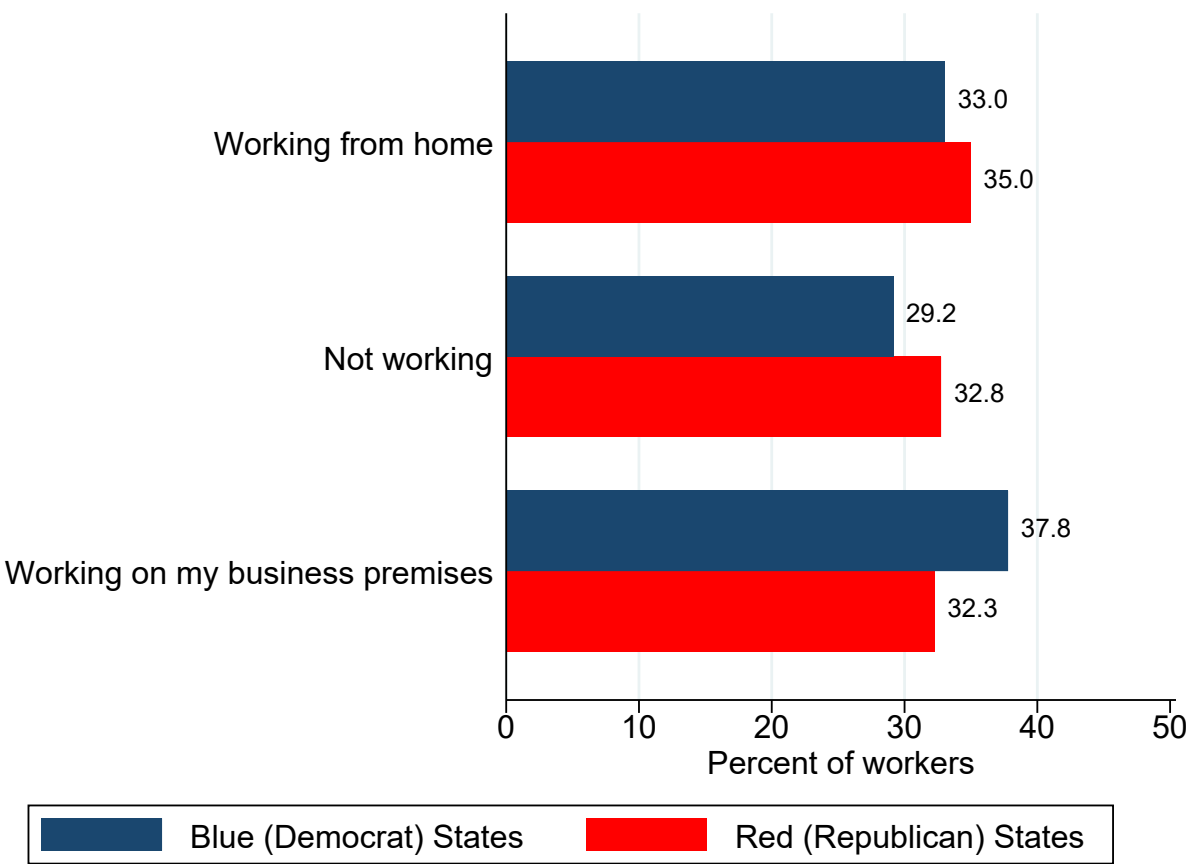
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# WFH higher in “Blue” states early on, “Red” states later on

May 2020



November 2020



**Notes:** Source Barrero, Bloom and Davis (2020). Shows responses to the question “*Currently (this week) what is your work status?*”. Data are from six surveys of US residents each aged 20 to 64 who earned more than \$20,000 per year in 2019, collected between May and November 2020. Carried out by QuestionPro for Stanford University. Sample reweighted to match the US Current Population Survey

Survey and methodology

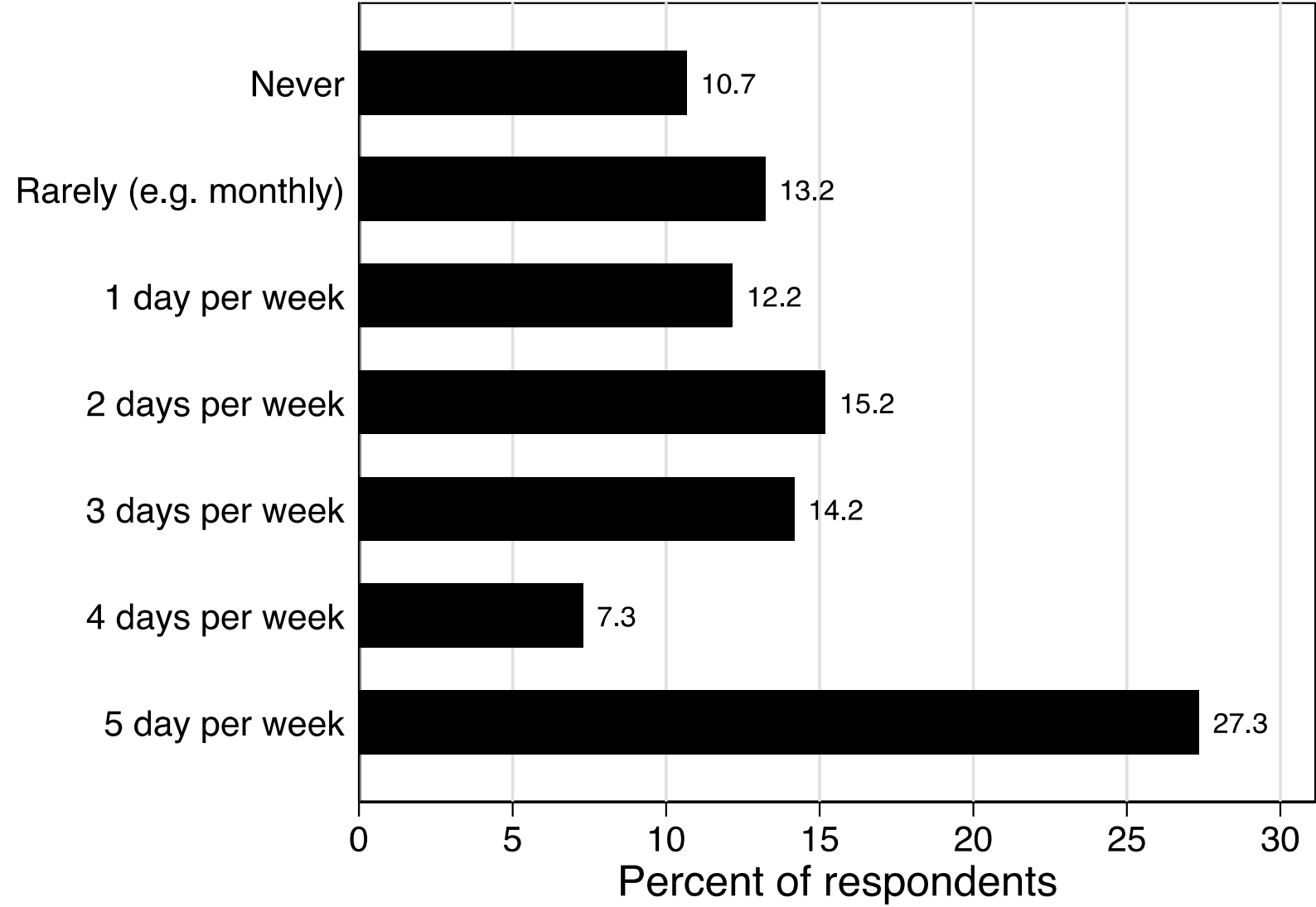
Current state of WFH

**The future of WFH**

Why WFH will Stick

Implications

# Average employee wants about 2 days WFH a week

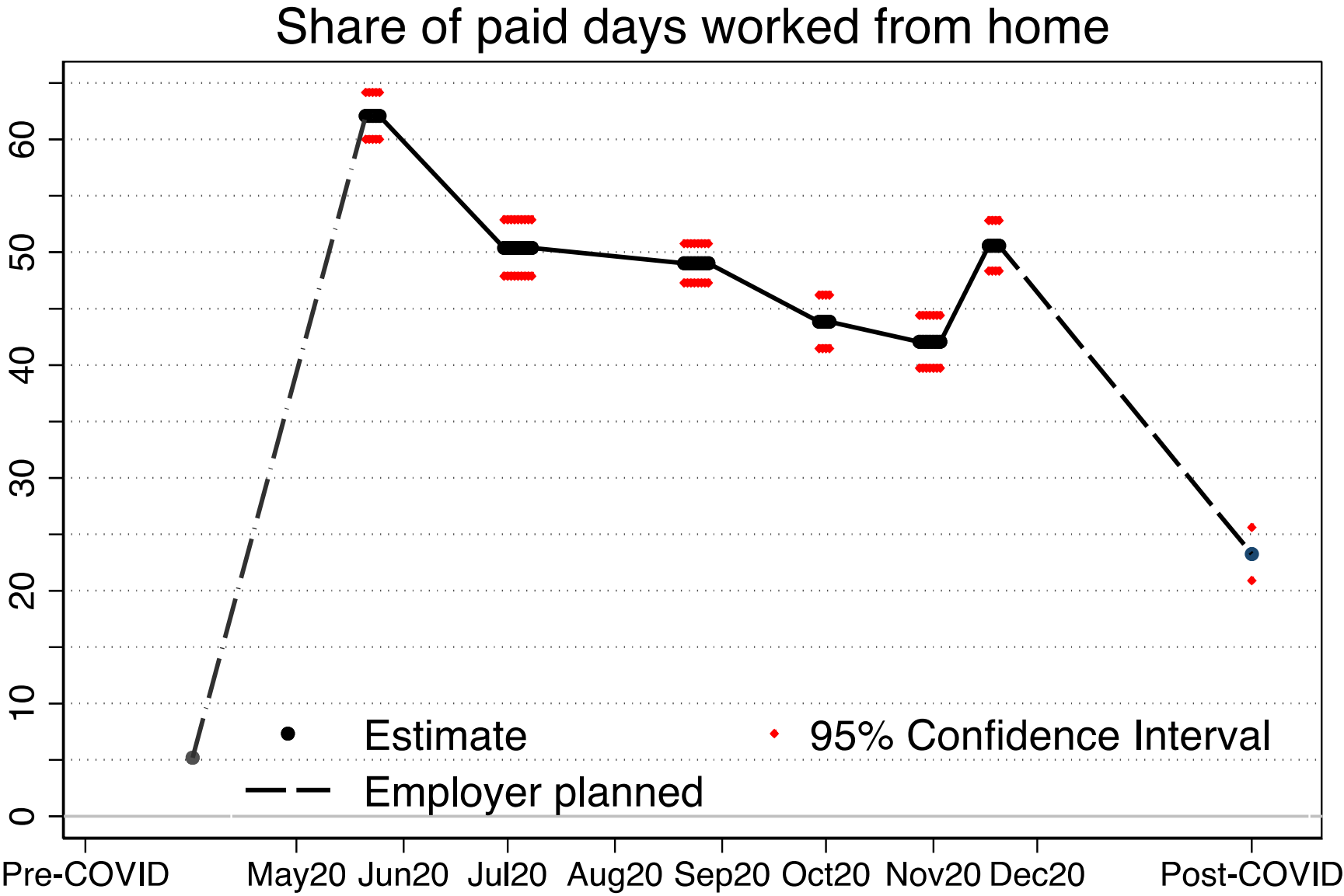


**Source:** Response to the questions: *“In 2021+ (after COVID) how often would you like to have paid work days at home?”*

Data from a survey of 2,500 US residents aged 20 to 64, earning more than \$20,000 per year in 2019 carried out between May 21-25, by QuestionPro on behalf of Stanford University. Sample reweighted to match the US CPS.

\*Sample: Respondents who report being able to WFH or did at some point during COVID

# Firms are planning $\approx 2$ days a week WFH for those who can



**Notes:** Data are from four survey waves carried out by QuestionPro and IncQuery in May, July, August, September/October and November 2020 with 2,500 responses in the first two and the last, plus 5,000 in August. We re-weight raw responses to match the share of working age respondents in the 2010-2019 CPS in each {industry x state x earnings} cell.

[Intensive/extensive margin](#)

\*Pre-COVID estimate taken from the 2017-2018 American Time Use Survey

# Matches statements on post-COVID WFH from most firms

*“In all candor, it’s not like being together physically....[But] I don’t believe that we’ll return to the way we were because we’ve found that there are some things that actually work really well virtually.”*

– Tim Cook, CEO of Apple\*



Survey and methodology

Current state of working from home

The future of WFH

**Why WFH will Stick**

Implications

# 1. WFH pre-COVID negative stigma (“shirking from home”)

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working from home



Size ▾ Color ▾ Type ▾ Layout ▾ People ▾

SafeSearch: Moderate ▾ 14,1

Work From Home  
Funny

Working From Home  
Comics

Working From Home  
Underwear

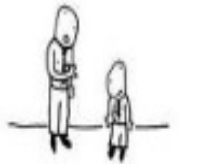
Working From Home  
Cartoon

Work From Home  
Clip Art

Work  
From Home

Working From Home  
Icons

Benefits Of  
Working From Home

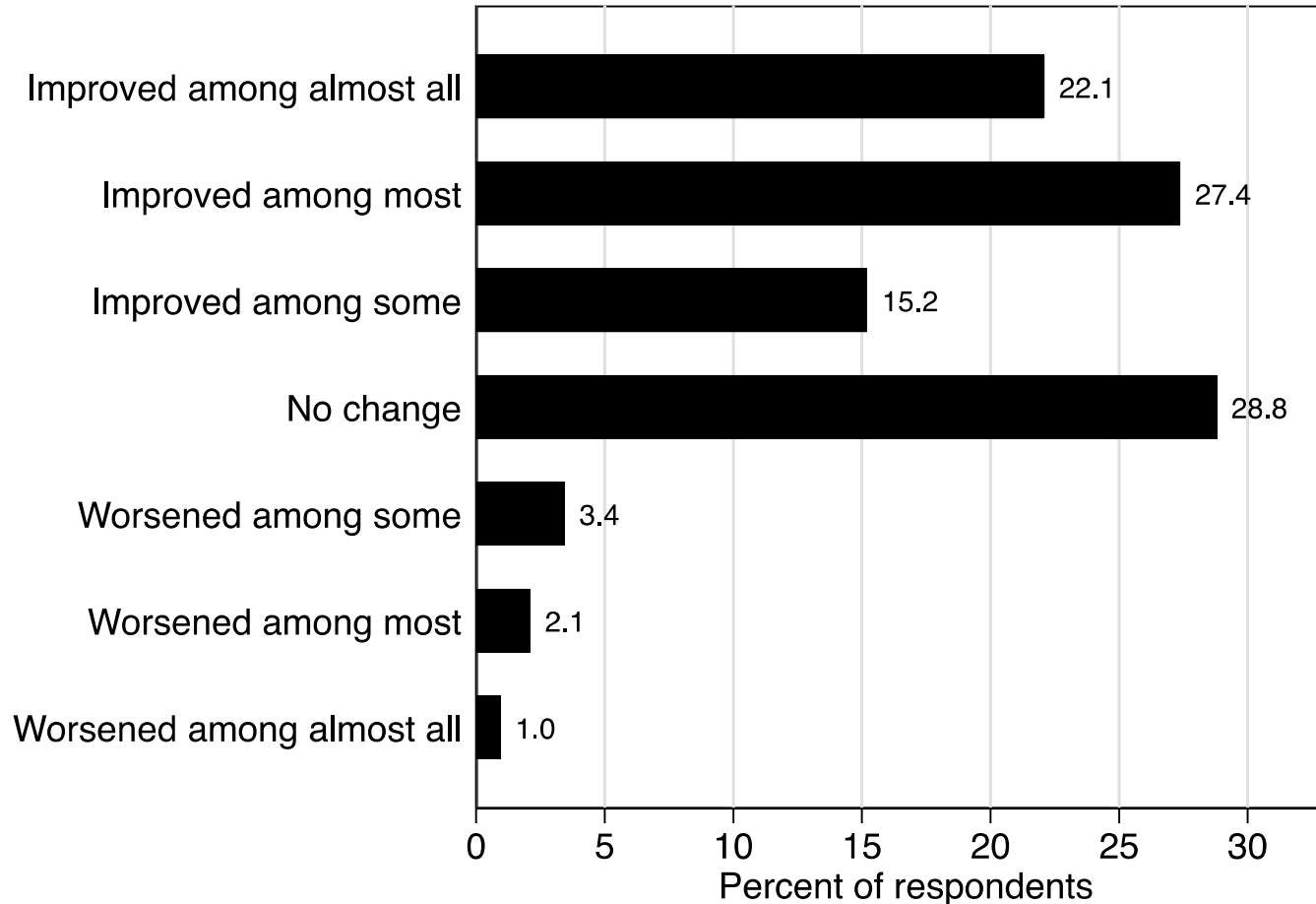


Now let's switch, it'll be your turn to tell me to stay late the rest of the week to cover up your incompetence



# 1. Under COVID, WFH stigma has diminished

Change in WFH Perceptions Among People You Know

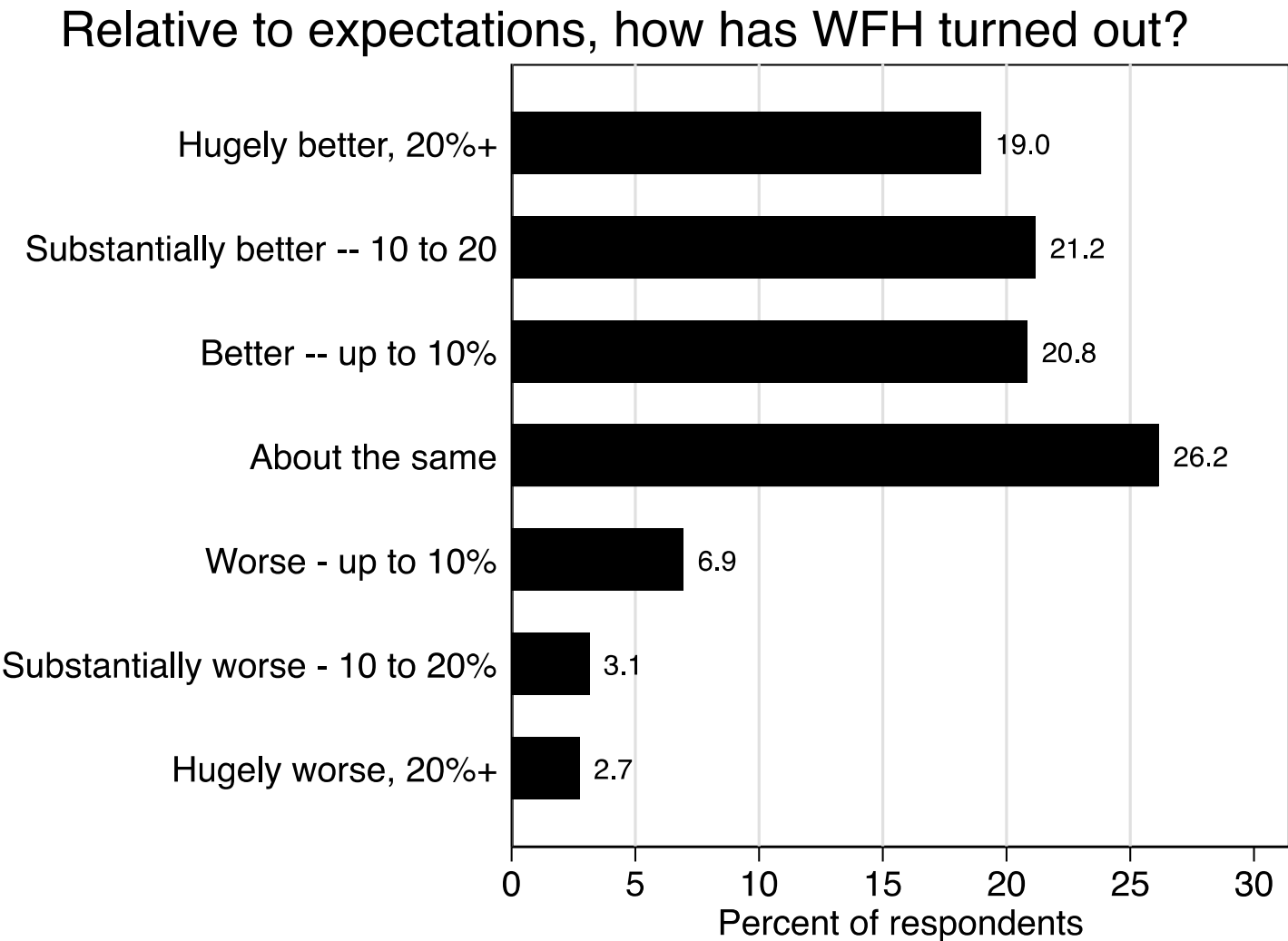


Before COVID-19, "*working from home*" was sometimes seen as "*shirking from home*."

Since the COVID pandemic began, ***how have perceptions about working from home (WFH) changed among people you know?***

**Notes:** Data are from four survey waves carried out by QuestionPro and IncQuery in May, July, August, and September/October 2020 with 2,500 responses in the first two and the last, plus 5,000 in August. We re-weight raw responses to match the share of working age respondents in the 2010-2019 CPS in each {industry x state x earnings} cell.

## 2. Forced Experimentation: WFH exceeded expectations



Compared to your expectations *before COVID (in 2019)* how has working from home turned out for you?

[Table by demographics](#)

**Notes:** Data are from four survey waves carried out by QuestionPro and IncQuery in May, July, August, and September/October 2020 with 2,500 responses in the first two and the last, plus 5,000 in August. We re-weight raw responses to match the share of working age respondents in the 2010-2019 CPS in each {industry x state x earnings} cell.

### 3. Investments (mostly sunk) enabling WFH

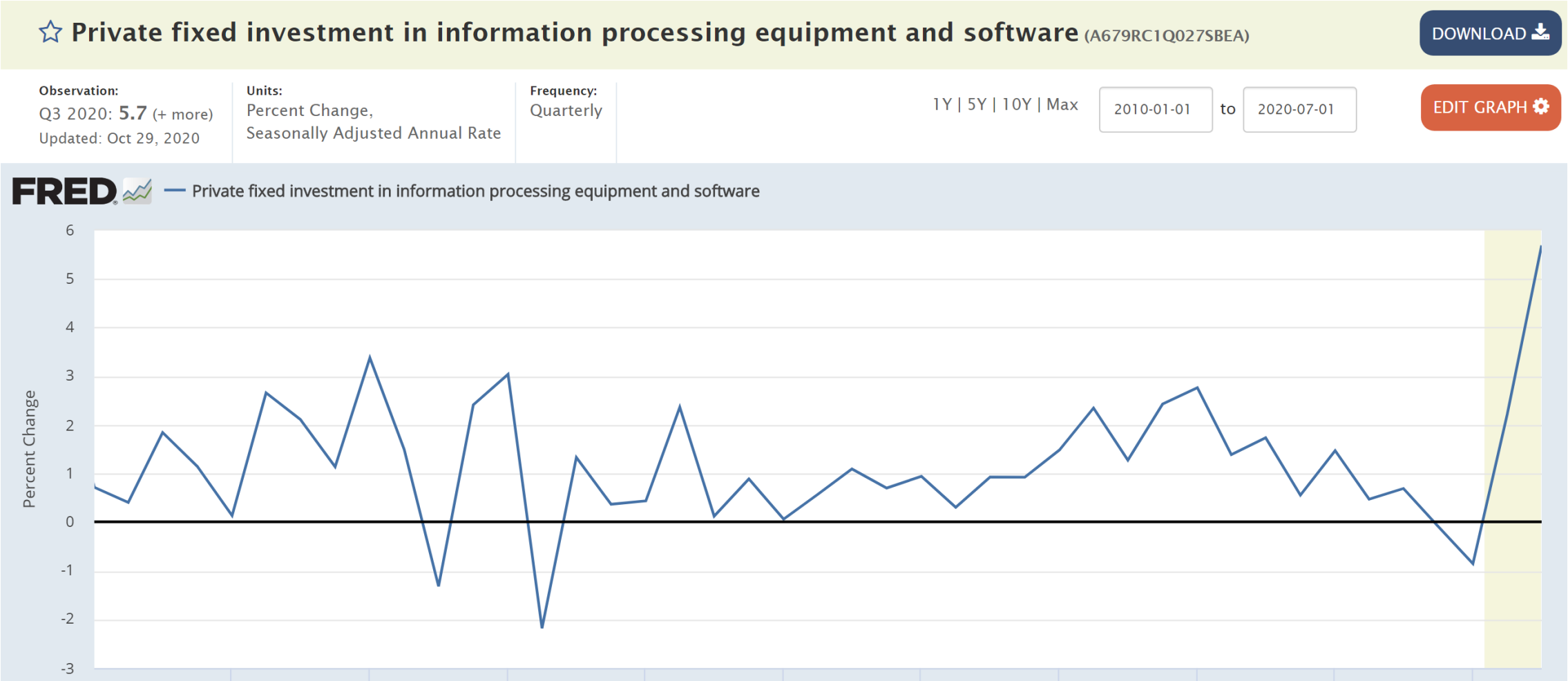
Investment in WFH adds to about 1.2% of GDP

*How many hours have you invested in learning how to work from home effectively (e.g., learning how to use video-conferencing software) and creating a suitable space to work?*      **Mean hours:** 13.0 (SE = 0.3)

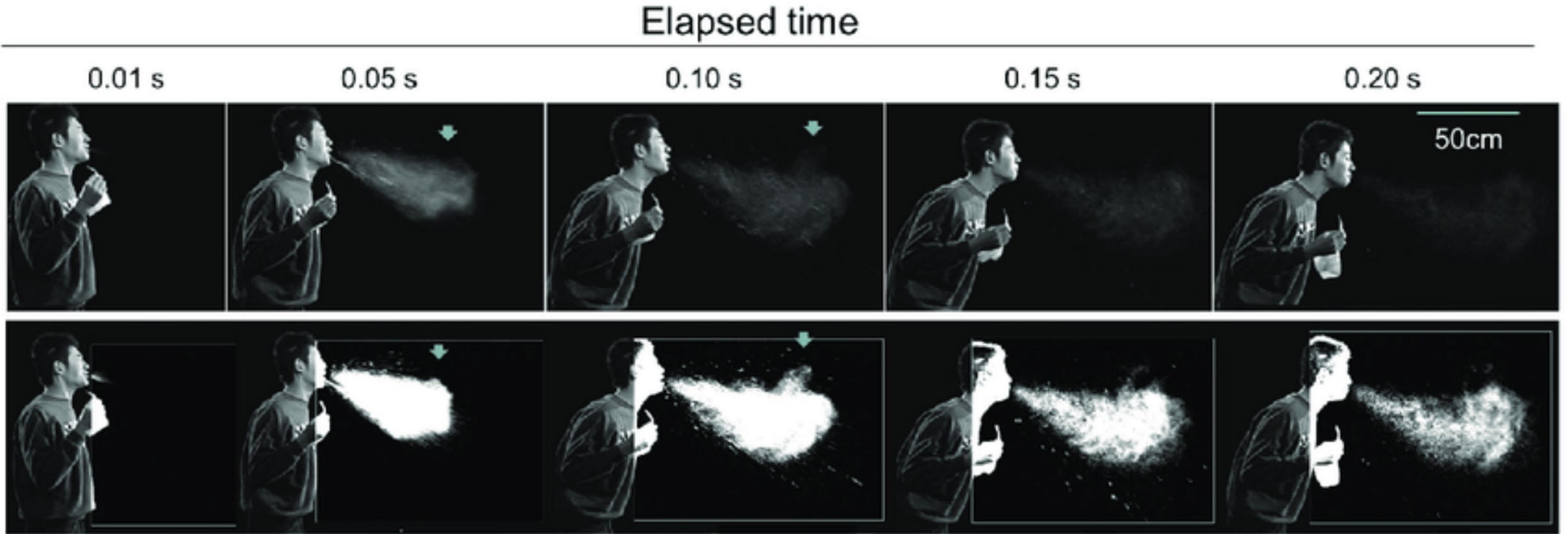
*How much money have you and your employer invested in equipment or infrastructure to help you work from home effectively -- computers, internet connection, furniture, etc.?* **Mean:** \$580 (SE = 18)



# 3. Investments (mostly sunk) enabling WFH



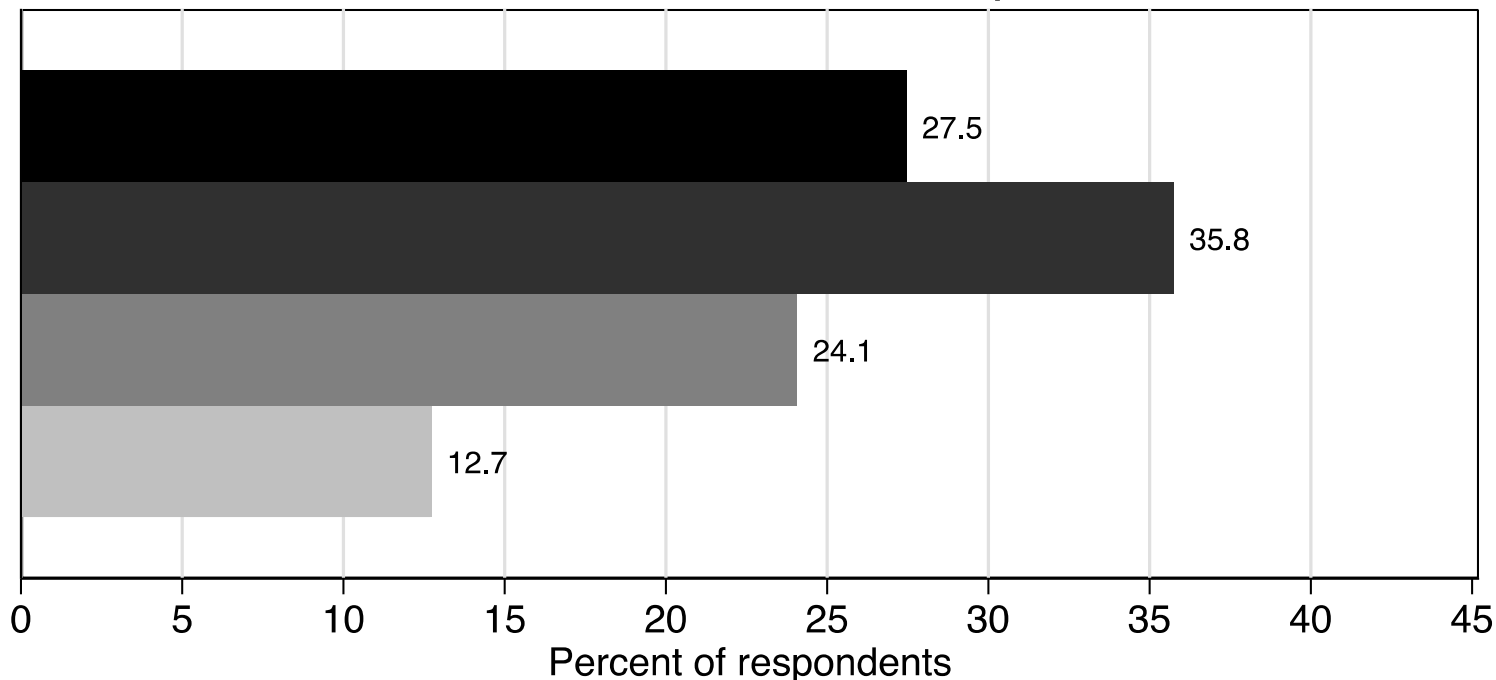
## 4. Residual Fear of Proximity to Other People



Source: Nishimura, Sakata and Kaga (2013, PLoS ONE), "A New Methodology for Studying Dynamics of Aerosol Particles in Sneeze and Cough Using a Digital High-Vision, High-Speed Video System and Vector Analyses"

## 4. Residual Fear of Proximity to Other People

After a vaccine arrives, I would return to pre-COVID activities

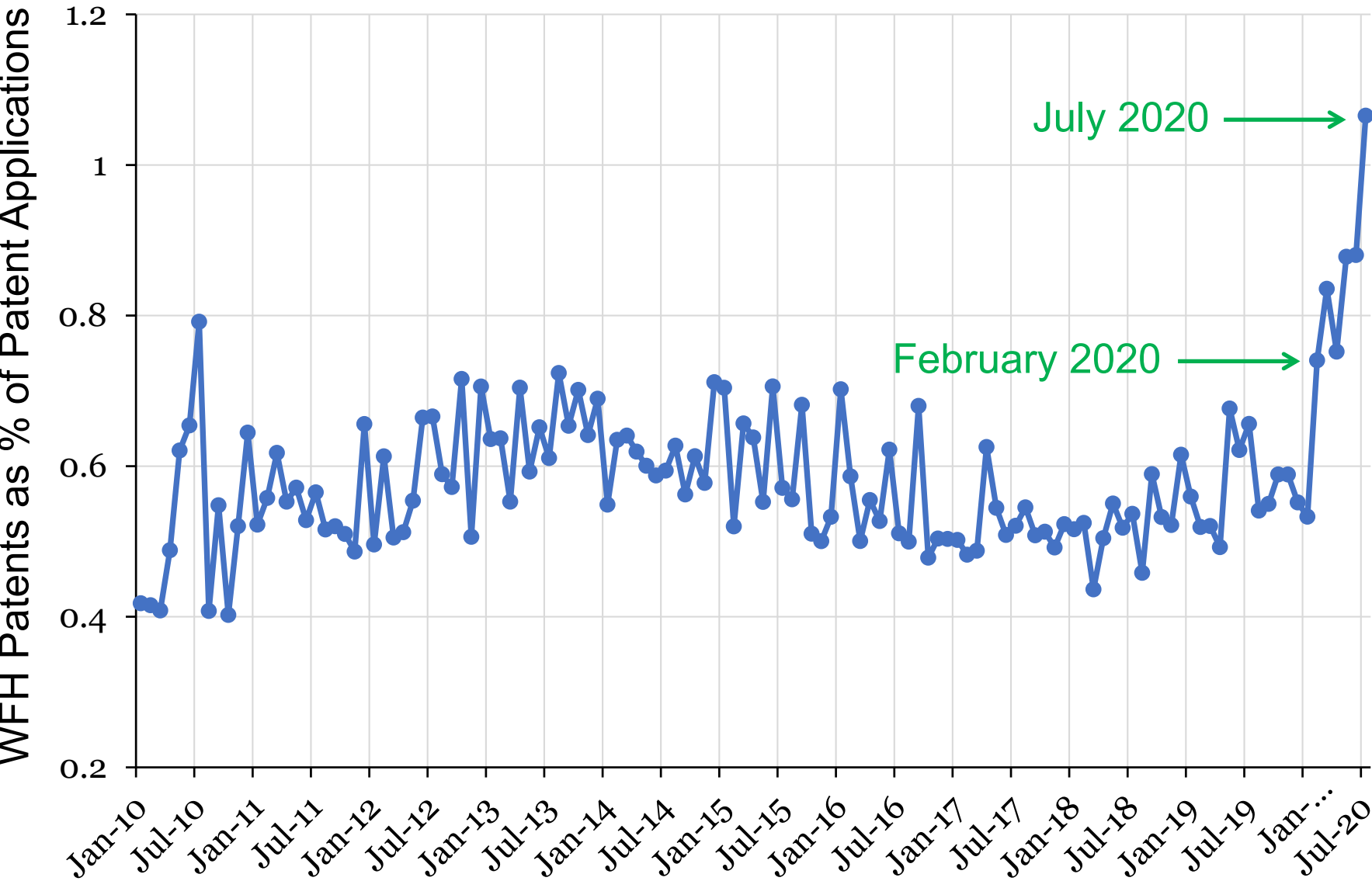


- Completely
- Substantially - I'd avoid the subway, crowded elevators
- Partially - I'd avoid eating out, taxis
- Would not - continued social distancing

If a COVID vaccine is discovered and made widely available, which of the following would best fit your views on social distancing?

**Notes:** Data are from four survey waves carried out by QuestionPro and IncQuery in May, July, August, and September/October 2020 with 2,500 responses in the first two and the last, plus 5,000 in August. We re-weight raw responses to match the share of working age respondents in the 2010-2019 CPS in each {industry x state x earnings} cell.

# 5. Re-Directed Technical Change



One example –  
patenting of WFH  
technologies  
rapidly rising

Source: Bloom, Davis and  
Zhestkova (2020),  
“COVID-19 Shifted Patent  
Applications toward  
Technologies that Support  
Working from Home”

Survey and methodology

Current state of working from home

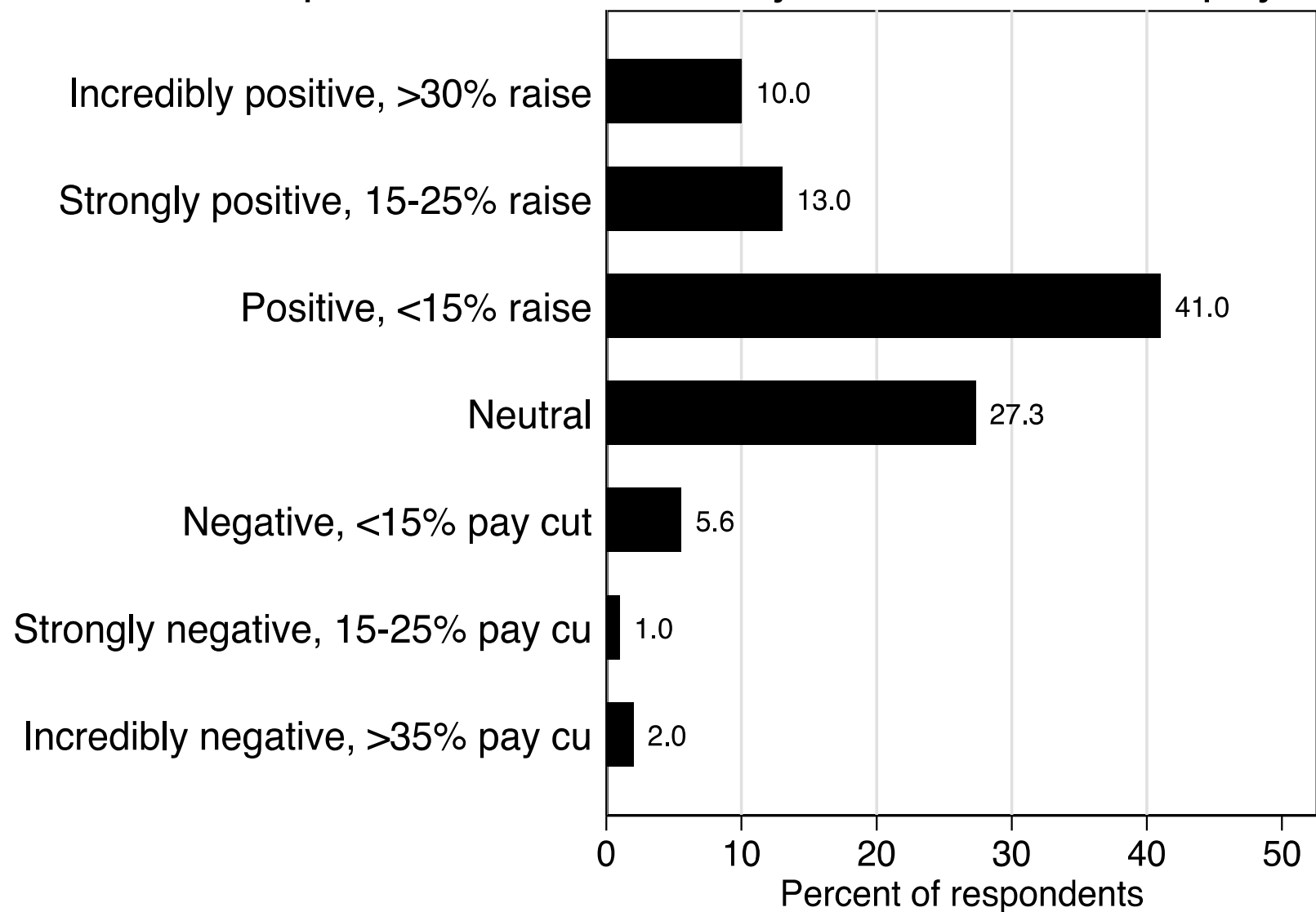
The future of WFH

Why WFH will Stick

**Implications**

# (A) Uneven effects across workers: WFH is a valuable perk

Value of the option to WFH 2 - 3 days/wk, % of current pay?



Matches 8% matches Mas and Pallais (2017, AER)

Notes: Response to a two-part question.

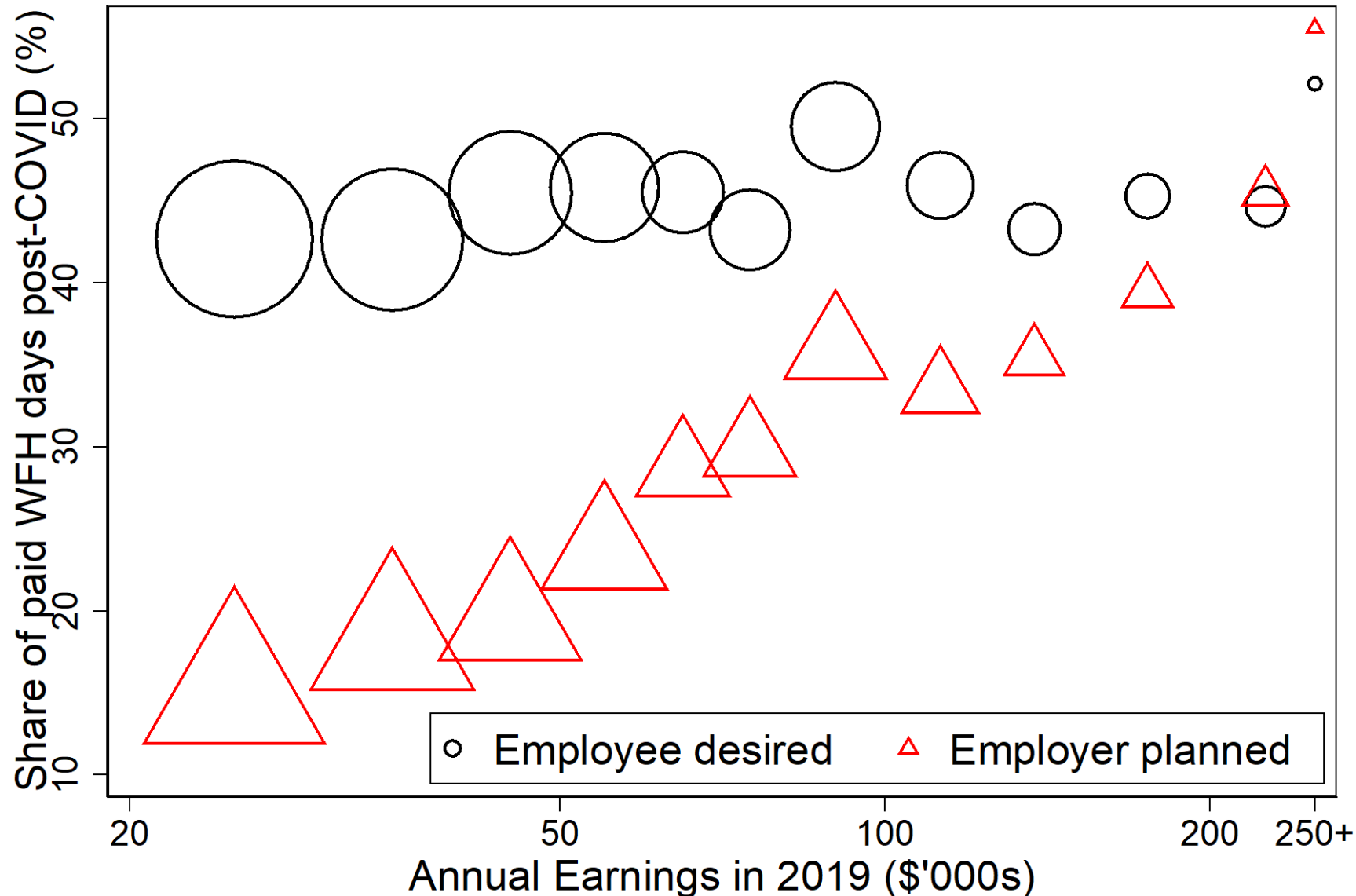
Part 1: “**After COVID, in 2022 and later**, how would you feel about working from home **2 or 3 days** a week?”

- 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 four survey waves carried out by QuestionPro and IncQuery in May, July, August, and September/October 2020 with 2,500 responses in the first two and the last, plus 5,000 in August. We re-weight raw responses to match the share of working age respondents in the 2010-2019 CPS in each {industry x state x earnings} cell.

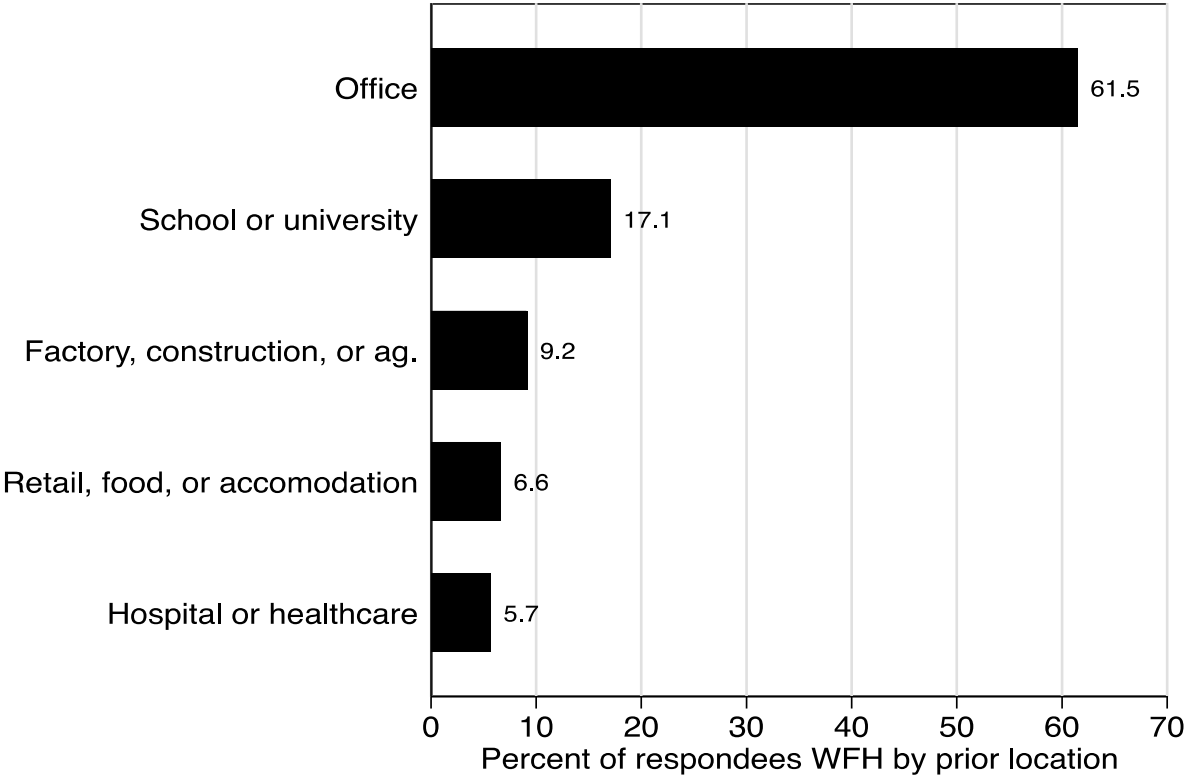
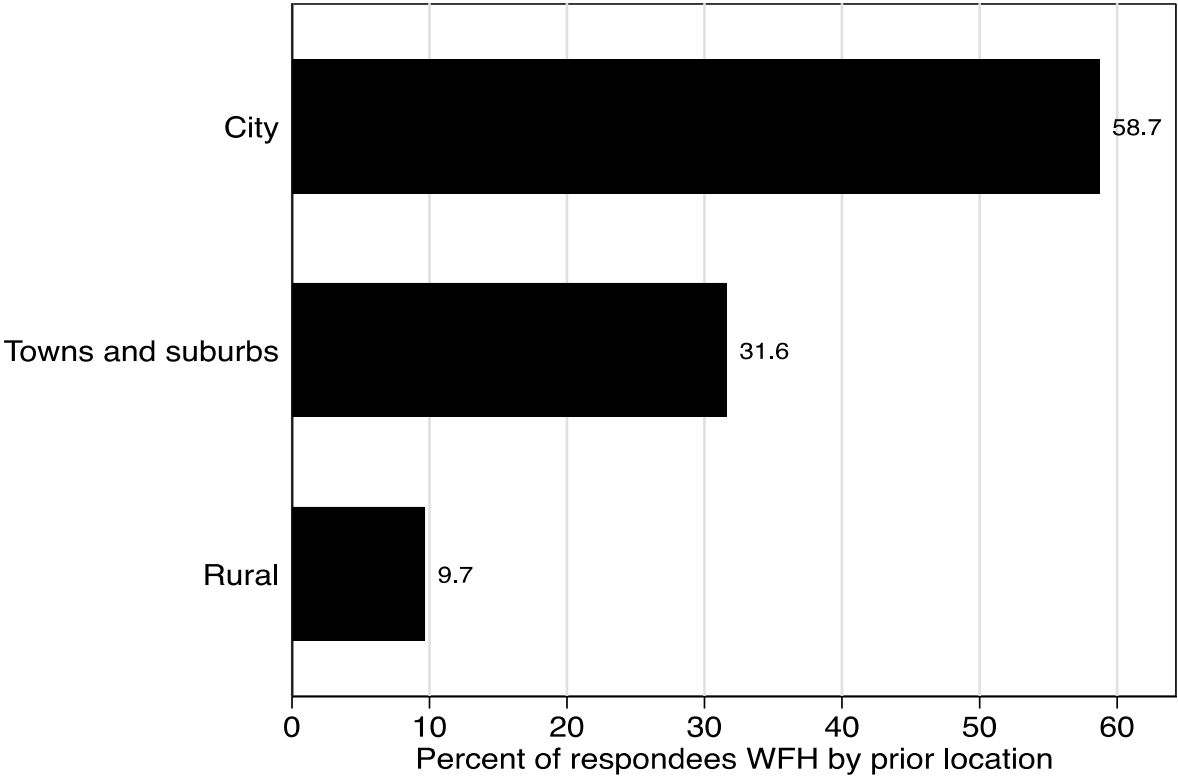
# (A) Uneven effects: higher earners will get to WFH more



**Notes:** Data are from four survey waves carried out by QuestionPro and IncQuery in May, July, August, and September/October 2020 with 2,500 responses in the first two and the last, plus 5,000 in August. We re-weight raw responses to match the share of working age respondents in the 2010-2019 CPS in each {industry x state x earnings} cell.

Note: Marker size is proportional to the number of respondents per income level.

# (B) Cities: WFH highest amongst employees from city offices



**Source:** Data from a survey of 2,500 US residents aged 20 to 64, earning more than \$20,000 per year in 2019 carried out between May 21-25 2020, by QuestionPro on behalf of Stanford University. Sample reweighted to match the US CPS.

## (B) Cities: for example, 10% spending drop in Manhattan

- Manhattan workers plan to WFH **30.7%** working day post-COVID
- Pre-COVID average weekly expenditure near work by these workers **\$283**
- Pre-COVID **2.3M** people commuted into Manhattan for work per day
- Implies **\$10Bn** less spending per year
- Fall of about **10%** of total spending

[Similar calculation for San Francisco](#)



## **(B) Cities – office rents also falling in high-rise buildings**

**Survey evidence shows post-COVID office space demand about flat\***

**But shift from Skyscrapers to Office Parks**



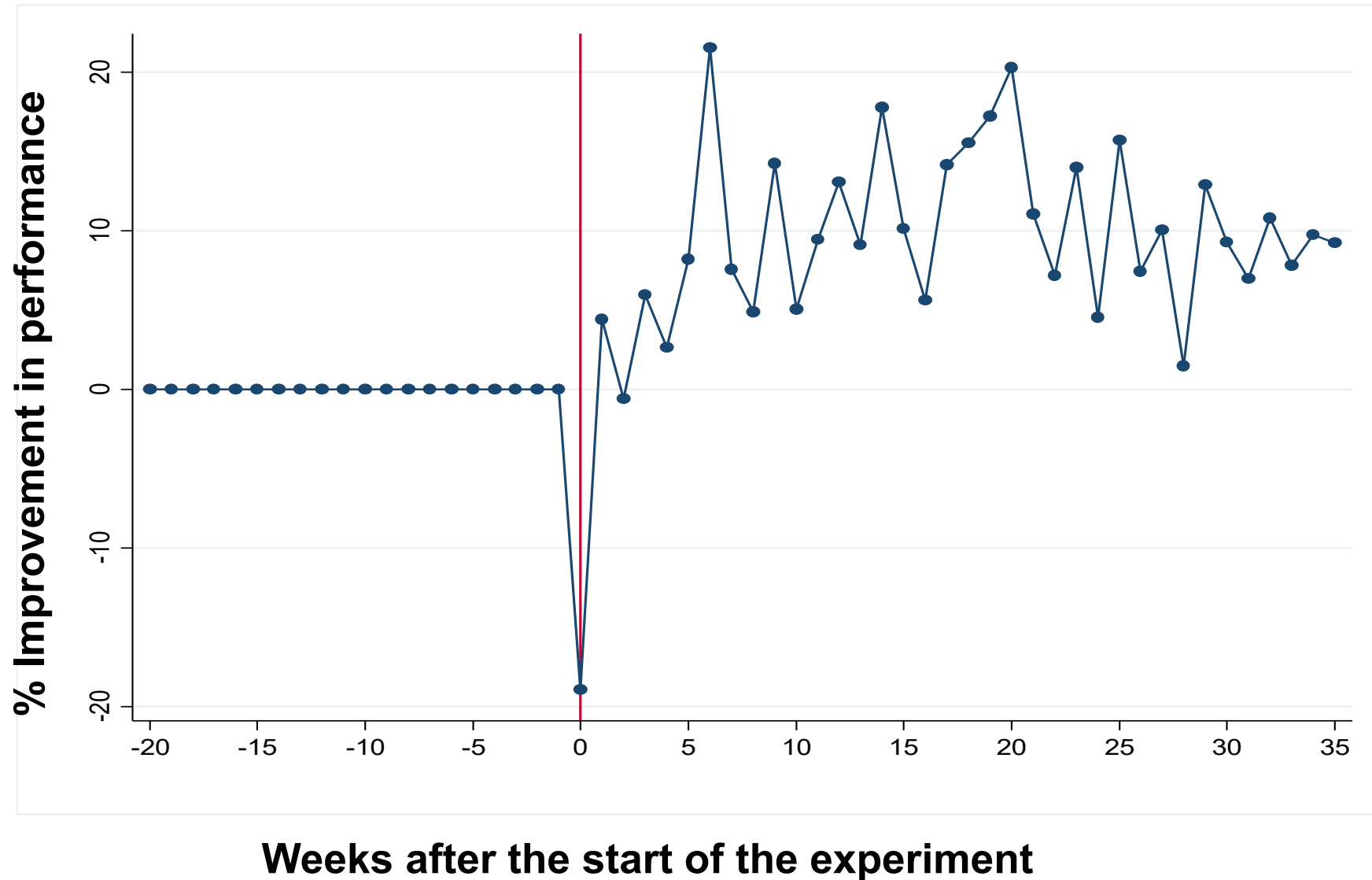
\* <https://www.frbatlanta.org/blogs/macroblog>

## (B) The donut effect: bad for city centers good for suburbs

- Looks like employees WFH 2 or 3 days a week still want to live *near* city centers
- Generating a **Donut-Effect** – City Centers struggling but suburbs booming

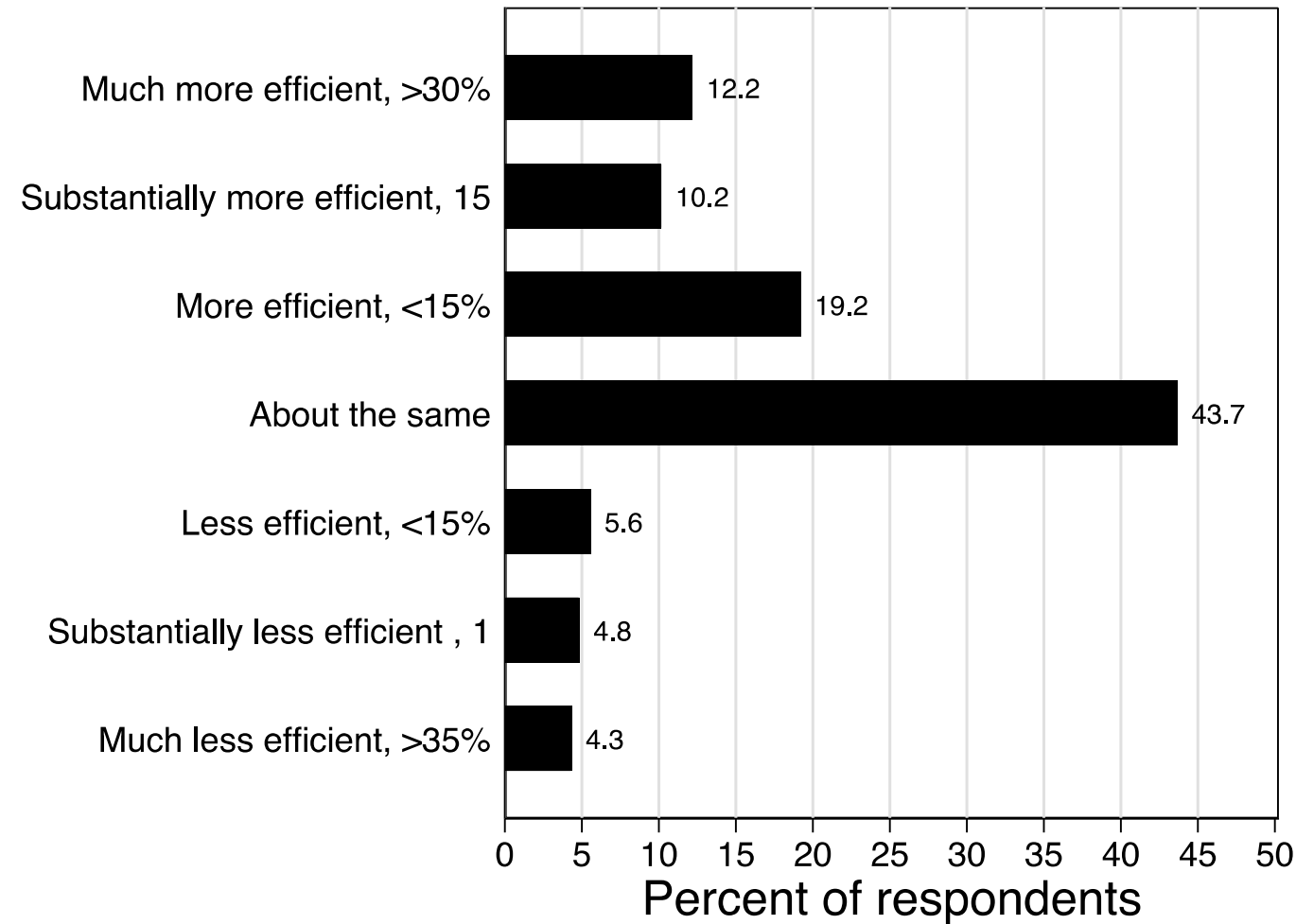


# (C) Productivity – Bloom, Liang, Roberts and Ying (2014) ran a WFH RCT on a Chinese multinational finding a 13% rise in productivity



**Note:** Data from 17806 daily observations on 249 treatment and control employees from January 4<sup>th</sup> 2010 until August 14<sup>th</sup> 2011. Number of phone calls made for order-takers (the group for whom number of phone calls taken is a performance metric) calculated separately for treatment (even-numbered birthdays) and control (odd-numbered birthdays). Once employees quit they are dropped from the data. Source: “Does Working from Home Work? Evidence From a Chinese Experiment”, Quarterly Journal of Economics, November 2014.

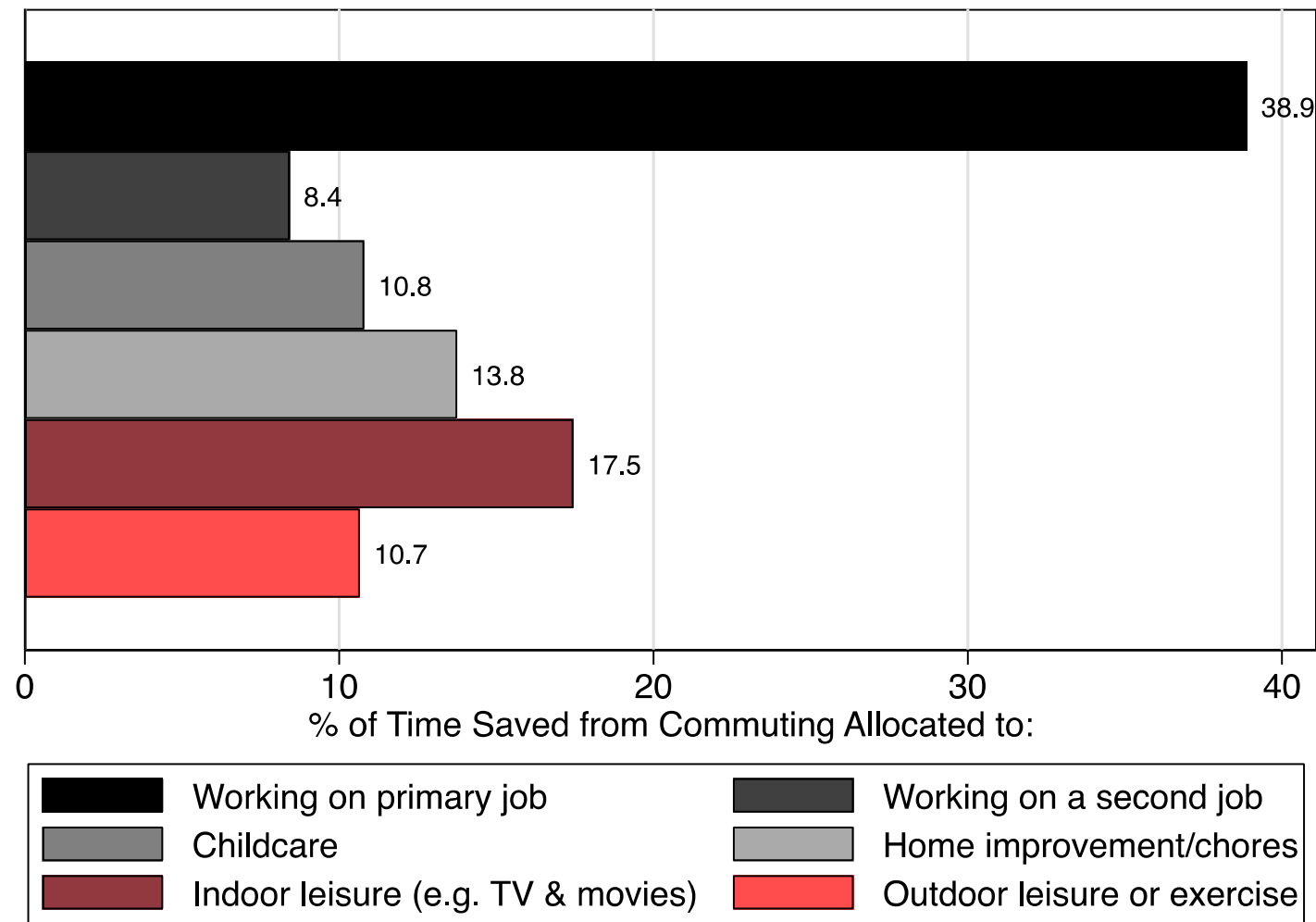
# (C) Productivity: respondents positive on WFH efficiency



How does your efficiency working from home ***during the COVID-19 pandemic*** compare to your efficiency working on business premises ***before the pandemic?***

**Notes:** From August to October 2020, we surveyed 7,500 Americans aged 20-64 with labor earnings > \$20,000 in 2019. We re-weight raw responses to match the industry-state-earnings shares of working-age persons in the CPS from 2010 to 2019. The right chart also uses responses to questions about employment status (selection), pay levels (for earnings weights) and, for the blue bar, how much their employer plans for them to work from home after the pandemic ends. **Source:** "Working from Home Will Stick" by Jose Maria Barrero, Nick Bloom and Steven J. Davis, October 2020.

# (D) Time – WFH saves Americans about 60 million hours a day



*During the COVID-19 pandemic, while you have been working from home, how are you now spending the **time you have saved by not commuting?***

Please assign a percentage to each activity (the total should add to 100%).

**Notes:** Data are from four survey waves carried out by QuestionPro and IncQuery in May, July, August, and September/October 2020 with 2,500 responses in the first two and the last, plus 5,000 in August. We re-weight raw responses to match the share of working age respondents in the 2010-2019 CPS in each {industry x state x earnings} cell.

# Conclusion

WFH days 5% pre-COVID, 60% during COVID, predicting 25% post-COVID

Mechanisms behind a persistent WFH shift

1. Diminished stigma
2. Positive productivity experiences
3. Investments enabling WFH
4. Lingering concerns over density
5. Re-directed innovation

Implications for

- Rising inequality
- Cheaper Cities
- Higher Productivity
- Freed Commute Time

