

THE COVID REALLOCATION SHOCK  
AND THE  
BIG SHIFT TO WORKING FROM HOME

Jose Maria Barrero (ITAM Business)

July 2022

# THIS PRESENTATION

Examine the latest data on:

1. The COVID-19 *reallocation shock* in the United States
  
  
  
  
  
  
  
  
  
  
2. The big shift to *working from home* (WFH)

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**1. The COVID-19 *reallocation shock* in the United States**

- ▶ Dispersion in *realized* + *expected* sales growth rates
- ▶ Spike in *realized* + *expected* sales and job reallocation
- ▶ Persistence (?) and lessons for policy

**2. The big shift to *working from home* (WFH)**

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## 2. The big shift to *working from home* (WFH)

- ▶ WFH stabilizing at **~30%** of full paid days in the US
- ▶ Employers increasingly embracing working from home
- ▶ Increase in *efficiency* and *time saved*

# SOURCE MATERIAL

## Survey of Business Uncertainty ([www.atlantafed.org/sbu](http://www.atlantafed.org/sbu))

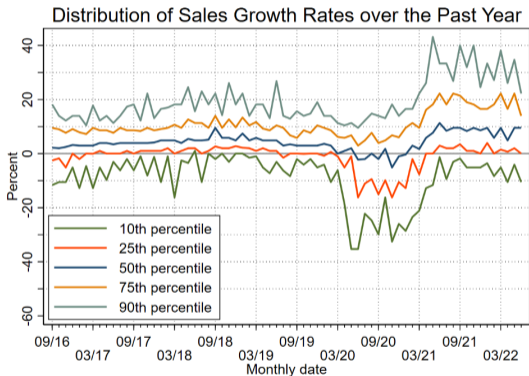
- ▶ Monthly panel of ~ 500 US firms
- ▶ Current and expected sales growth and employment
- ▶ **Atlanta Fed**, in collaboration w/ researchers at **Chicago**, **Stanford**, and **ITAM**

## Survey of Working Arrangements and Attitudes ([www.WFHResearch.com](http://www.WFHResearch.com))

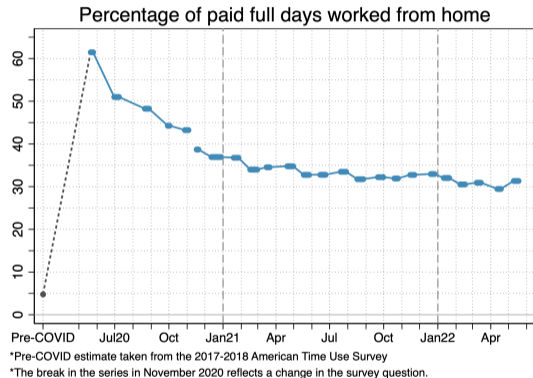
- ▶ Monthly cross section of ~ 5,000 US residents earning \$10,000/year recently
- ▶ Current WFH and post-pandemic *plans* for WFH, *efficiency* of WFH
- ▶ **Chicago**, **Stanford**, and **ITAM**

# IN PICTURES

## Sales Dispersion Jumps During COVID



## The Big Shift to Working From Home



**Notes:** The left chart shows percentiles of the distribution of sales growth rates as reported by respondents to the Atlanta Fed/Chicago Booth/Stanford Survey of Business Uncertainty. See [atlantafed.org/sbu](http://atlantafed.org/sbu) and Bunn et al. (2021). The right chart shows the percent of full paid days worked from home from the Survey of Working Arrangements and Attitudes. See [wfhresearch.com](http://wfhresearch.com) and Barrero, Bloom, and Davis (2021b).

# OUTLINE

## COVID Reallocation Shock

- ▶ Dispersion in sales growth rates
- ▶ Rates of job and sales reallocation
- ▶ Persistence (?) and lessons for policy

## Shift to WFH

- ▶ The future is (almost) now
- ▶ Productivity and time saved
- ▶ Long Social Distancing

# OUTLINE

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# SBU Survey of Business Uncertainty



For the current quarter, what would you estimate the total dollar value of your **SALES REVENUE** will be?

\$

---

Looking back, over the last 12 months, what was your approximate percentage **SALES REVENUE** GROWTH rate?

%

# SBU Survey of Business Uncertainty



Looking ahead, from now to four quarters from now, what approximate percentage **SALES REVENUE** growth rate would you assign to each of the following scenarios?

The LOWEST percentage sales revenue growth rate would be about:	<input type="text" value="-2"/> %
A LOW percentage sales revenue growth rate would be about:	<input type="text" value="0"/> %
A MIDDLE percentage sales revenue growth rate would be about:	<input type="text" value="4"/> %
A HIGH percentage sales revenue growth rate would be about:	<input type="text" value="6"/> %
The HIGHEST percentage sales revenue growth rate would be about:	<input type="text" value="10"/> %



# Survey of Business Uncertainty



FEDERAL RESERVE BANK of ATLANTA



CHICAGO BOOTH  
The University of Chicago Booth School of Business

Stanford  
University

Please assign a percentage likelihood to the **SALES REVENUE** growth rates you entered. (Values should sum to 100%)

LOWEST: The likelihood of realizing a **-2%** sales revenue growth rate would be:  %

LOW: The likelihood of realizing a **0%** sales revenue growth rate would be:  %

MIDDLE: The likelihood of realizing a **4%** sales revenue growth rate would be:  %

HIGH: The likelihood of realizing a **6%** sales revenue growth rate would be:  %

HIGHEST: The likelihood of realizing a **10%** sales revenue growth rate would be:  %

Total  %

Back - 2 of 7

Next - 4 of 7

# REALIZED AND FORECAST SALES GROWTH RATES

## Realized sales growth, past 12 months:

Measure directly from the survey

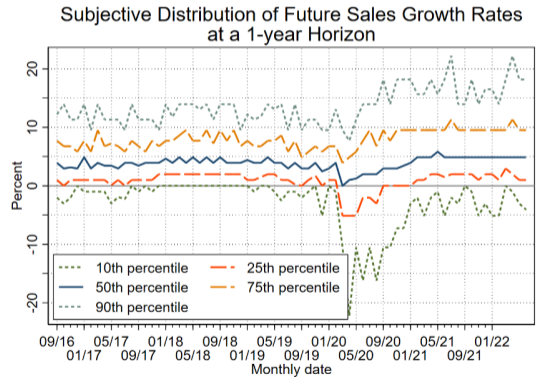
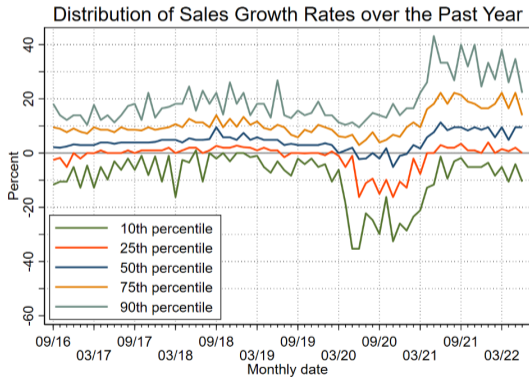
## Sales growth scenarios, next 4 quarters:

lowest / low / middle / high / highest

## Two distributions: *realized* or *expected* sales outcomes

- ▶ In each month compute 10th, 25th, 50th, 75th, 90th percentiles
- ▶ Plot across time

# A TALE OF TWO TAILS: BIG NEGATIVE, THEN BIG POSITIVE SHOCKS



**Notes:** The left chart shows percentiles of the distribution of sales growth rates as reported by respondents to the Atlanta Fed/Chicago Booth/Stanford Survey of Business Uncertainty. The right chart shows quantiles of the distribution of future sales growth outcomes (at a 1-year horizon) also using data from the Survey of Business Uncertainty. We compute these quantiles by taking into account the probability associated with each of the low-est/low/middle/high/highest scenarios. See [atlantafed.org/sbu](http://atlantafed.org/sbu) and Bunn et al. (2021).

# A TALE OF TWO TAILS: BIG NEGATIVE, THEN BIG POSITIVE SHOCKS

**(Some) Firms *contract sharply* in 2020 at the pandemic onset**

**By 2021 (some) firms *expect to grow sharply***

**And we see (some) realized fast growth rates by mid-2020**

**The second tail is still there as of mid-2022**

# OUTLINE

## COVID Reallocation Shock

- ▶ Dispersion in sales growth rates
- ▶ **Rates of job and sales reallocation**
- ▶ Persistence (?) and lessons for policy

## Shift to WFH

- ▶ The future is (almost) now
- ▶ Productivity and time saved
- ▶ Long Social Distancing



# REALLOCATION

**Q:** How much economic activity has *shifted to or from the average firm* since the start of COVID?

**A:** Rates of job and sales reallocation  
(e.g., see Davis and Haltiwanger, 1992 *QJE*)

# REALIZED + EXPECTED RATES OF REALLOCATION

**Firm-level 24-month growth rates ( $g_{it}^{24}$ ) covering  $t - 12$  to  $t + 12$  by adding:**

- ▶ Firm  $i$ 's realized employment/sales growth rate from  $t - 12$  to  $t$
- ▶ Firm  $i$ 's expected employment/sales growth rate from  $t$  to  $t + 12$

**Implied 24-month (realized + expected future) reallocation rates:**

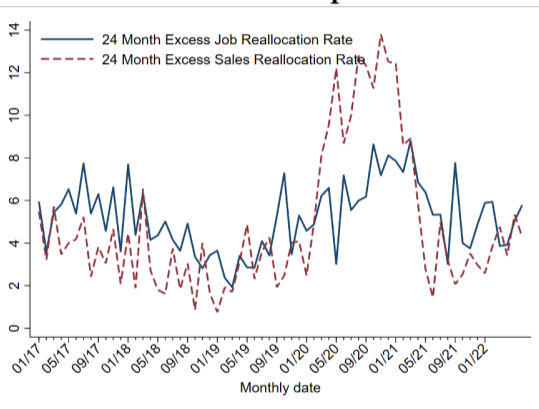
$$X_t^{24} = \underbrace{\sum_j \frac{z_t}{Z_t} g_{tj}^{24}}_{\text{Job/Sales Creation + Destruction}} - \underbrace{\left\| \sum_j \frac{z_t}{Z_t} g_{tj}^{24} \right\|}_{\text{Abs. Net Employment/Sales Growth}}$$

where  $\frac{z_t}{Z_t}$  are appropriate activity weights.

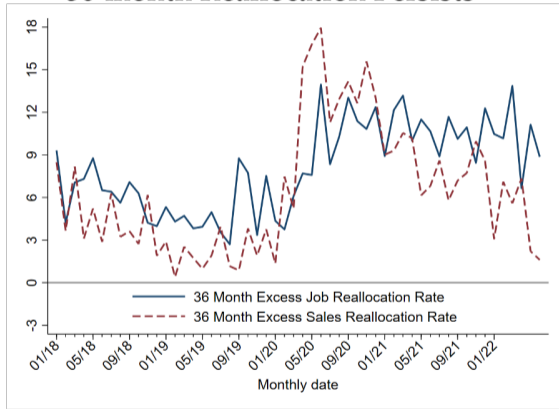
**And similar for the 36-months covering  $t - 24$  to  $t + 12$**

# REALIZED + EXPECTED REALLOCATION

## 24-month Reallocation Spikes in 2020



## 36-month Reallocation Persists



**Notes:** The left chart rates of job and sales reallocation covering the 24 months between  $t - 12$  and  $t + 12$  based on realized and expected growth rates. The right chart shows the same for the 36 months covering  $t - 24$  and  $t + 12$ . Data are from the Atlanta Fed/Chicago Booth/Stanford Survey of Business Uncertainty. See [atlantafed.org/sbu](http://atlantafed.org/sbu) and Barrero, Bloom, Davis, and Meyer (2021).

# OUTLINE

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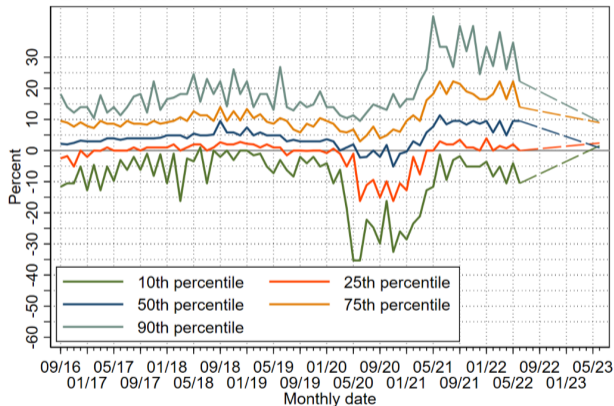
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- ▶ The future is (almost) now
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# A PERSISTENT REALLOCATION SHOCK?

## Past growth linked to growth forecasts

Distribution of Sales Growth Rates over the Past Year



**Notes:** The solid lines on the chart shows percentiles of the distribution of of sales growth rates as reported by respondents to the Atlanta Fed/Chicago Booth/Stanford Survey of Business Uncertainty. The dashed lines show growth rate forecasts looking 4 quarters ahead for firms within +/- 5 percentiles of the indicated percentile. See [atlantafed.org/sbu](http://atlantafed.org/sbu) and Barrero, Bloom, Davis, and Meyer (2021).

Firms growing the most in the year up to June '22 forecast *higher growth* for the year to June '23 than firms growing less

We saw the same pattern in *December 2020* in Barrero, Bloom, Davis, and Meyer (2021)

⇒ Still experiencing shocks, and we're not done yet

# MESSAGES FOR POLICY

**The COVID-driven transformation of the economy is ongoing**

**Still seeing much *upside* and some *downside* in business outlook.**

- ▶ Ongoing supply issues
- ▶ Difficult macroeconomic, geopolitical environment even as the pandemic recedes

***Enabling and supporting* the ongoing reallocation process will support a strong recovery and post-pandemic economy**

# OUTLINE

## COVID Reallocation Shock

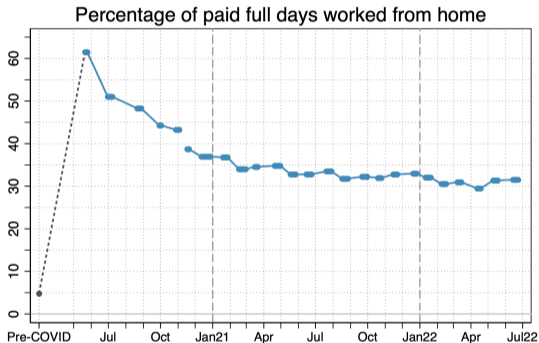
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# CURRENT STATE OF WORKING FROM HOME

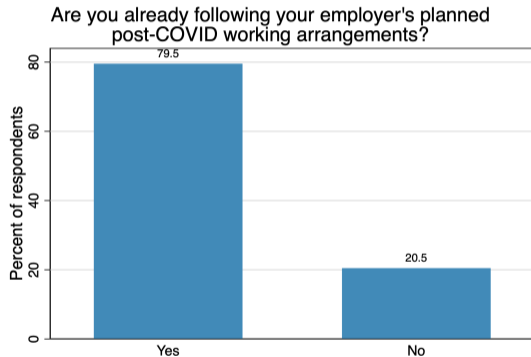
## Working From Home Before & During COVID



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

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

## 80% of Remote Workers At Their Long-term Plan



Sample: Respondents working from home 1 or more days per week.

**Notes:** The left chart shows the percent of paid days that are full working from home days in all SWAA waves covering May 2020 to June 2022. The right chart shows whether respondents who are currently working from home 1+ days per week are already operating under their employer's long-term plan for post-COVID working arrangements in May and June 2022. See [wfhresearch.com](https://www.wfhresearch.com) and Barrero, Bloom, and Davis (2021b).

N = 75,345 (left) N = 3,666 (right)



# QUESTION: PLANS FOR POST-COVID WFH

***As the pandemic ends, 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

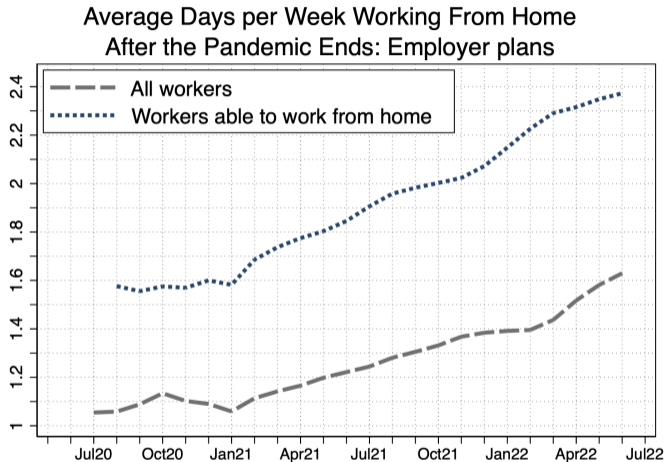
5+ days per week

My employer has not discussed this matter with me or announced a policy about it

I have no employer

Continue

# POST-COVID WFH PLANS RISING SINCE 2021



**Notes:** Data are from 78,250 survey responses collected between May 2020 and October 2021. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell. In each month we project employer plans for post-COVID working from home based on the average responses to the question: “After COVID, in 2022 and later, how often is your employer planning for you to work full days at home?” Then we compute a three-month moving average of the monthly averages, except at the endpoints where we use a two-month moving average.

# OUTLINE

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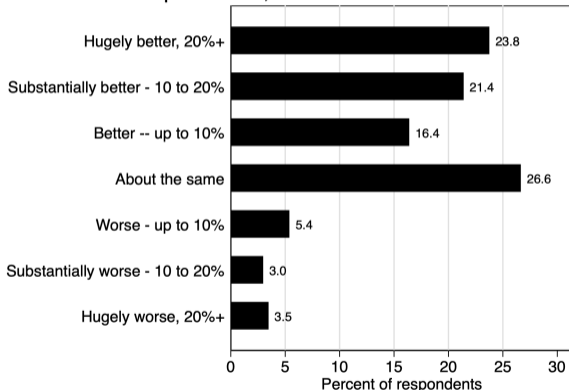
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# WHY WFH WILL STICK: FORCED EXPERIMENTATION AND LEARNING

Relative to expectations, how has WFH turned out?

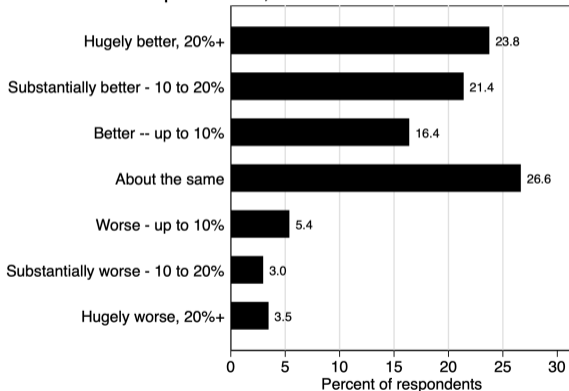


*Compared to your expectations before COVID (in 2019), how has working from home turned out for you [in terms of productivity/efficiency]?*

**Notes:** Data are from the July 2020 to April 2022 SWAA waves. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell. N = 55,609.

# WHY WFH WILL STICK: FORCED EXPERIMENTATION AND LEARNING

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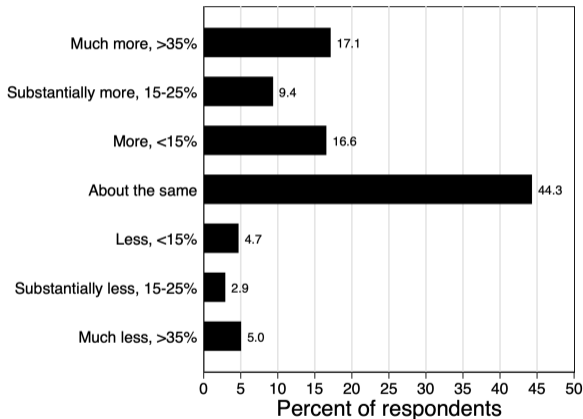
**Two effects:**

- ▶ High realized payoffs under WFH for some
- ▶ Experimentation reveals pessimistic priors about WFH

**Notes:** Data are from the July 2020 to April 2022 SWAA waves. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell. N = 55,609.

# 43% REPORT HIGHER EFFICIENCY WHILE WFH

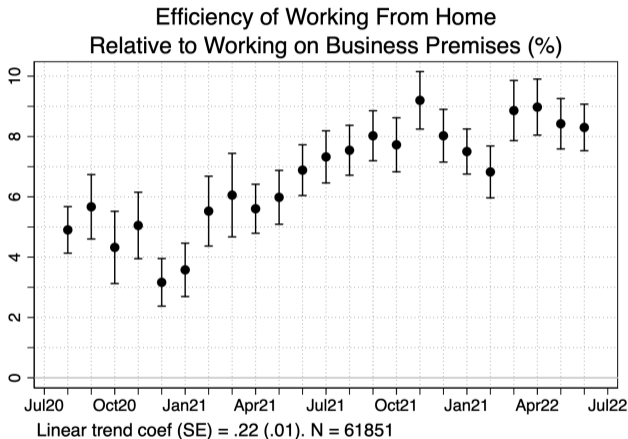
## Relative efficiency of WFH



*How does your efficiency working from home compare to your efficiency working on business premises?*

**Notes:** Data are from the August 2020 to June 2022 SWAA waves. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell. The sample includes persons who worked from home at some point during the pandemic. N = 62,511.

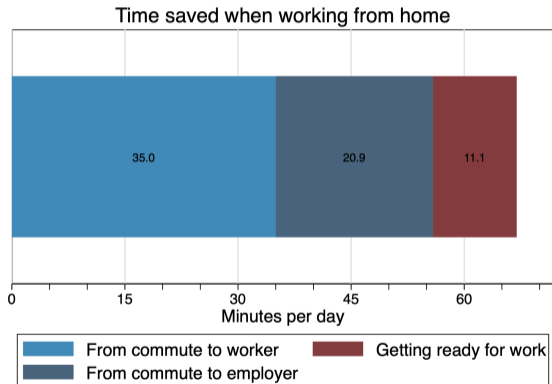
# RELATIVE EFFICIENCY OF WFH HAS INCREASED



*How does your efficiency working from home compare to your efficiency working on business premises?*

**Notes:** Data are from the August 2020 to March 2022 SWAA waves. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell. The figure shows a binned scatter plot and 95% confidence intervals after controlling for age, gender, the presence of children, industry of current (or most recent) job, race/ethnicity, log(earnings) and years of education.

# ALSO, AVERAGE WORKER SAVES >1 HOUR/DAY WHEN WFH



**Notes:** Data are from the August 2020 to June 2022 SWAA waves. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell. N = 54,035 (commute time). N = 26,243 (time getting ready for work)

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

*How much time do you spend on grooming and/or getting ready for work when:*

- ▶ *You commute to your employer's or client's worksite?*
- ▶ *You work from home?*



# SHIFT TO WFH COULD RAISE EFFICIENCY 3.9%

## Efficiency gains from the persistent shift to WFH (%)

Measure	Aggregate impact (%)
Commuting time savings only	1.7
Excluding commuting time from hours supplied	1.1
Including commuting time in hours supplied	<b>3.9</b>

**Notes:** For each respondent who worked 35 or more hours per week in 2019, we obtain commuting time savings from their one-way commuting time, the amount of working from home their employer is planning after COVID, and the amount of commuting time not reallocated to working. True productivity gain (including commuting time savings) is based on the survey question "How does your efficiency working from home during the COVID-19 pandemic compare to your efficiency working on business premises before the pandemic?" We impute relative efficiency to zero for workers who have no work-from-home experience during the pandemic, since they are likely unable to. We then scale relative efficiency by the respondent's increase in working-from-home between the pre- and post-COVID periods. Finally, we add commuting time savings to these responses for workers who report that their relative efficiency excludes commuting time savings. We estimate the conventionally-measured productivity gains also using the survey question on relative working-from-home efficiency, but explicitly excluding the part of those productivity gains that comes from saved commuting time.

# OUTLINE

## COVID Reallocation Shock

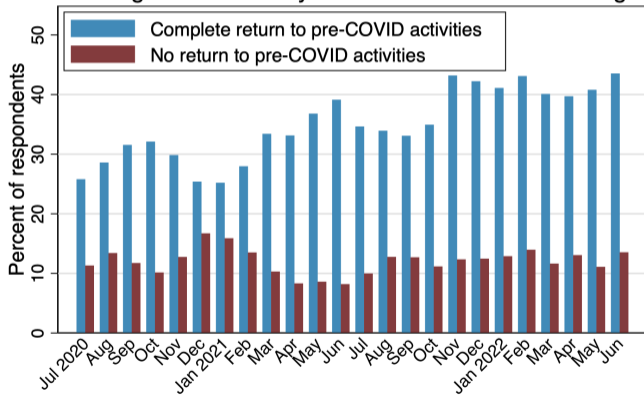
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# LONG SOCIAL DISTANCING: ~10% WILL CONTINUE DOING SO

Once the COVID-19 pandemic has ended, which of the following would best fit your views on social distancing?



# Long Social Distancing LOWERS LF PARTICIPATION BY ~ 2.5P.P. AS OF JAN-MARCH 2022

Question: *Once the COVID-19 pandemic has ended, which of the following would best fit your views on social distancing?*

<u>Dependent variable:</u> 100 x 1(Not working and not looking for work)		Percent of sample	Implied Drag on LF Participation Rate (ppts)
Complete return to pre-COVID activities (baseline)	-	41.5	-
Substantial return to pre-COVID activities (e.g. avoid subway, crowded elevators)	3.1*** (0.8)	30.3	0.9
Partial return to pre-COVID activities (e.g. avoid eating out, taxi/ride-share)	4.0*** (1.0)	16.0	0.6
No return to pre-COVID activities	7.7*** (1.4)	12.2	0.9
		<b>Total drag =</b>	<b>2.5</b>

**FE for:** survey wave, age category (e.g., 20 to 29), sex, education category, and industry of current or most recent job

Observations 12,646  
R-squared 0.09

**Notes:** We report robust standard errors in parentheses with \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. The second column shows the percent of respondents that chose each response to the social distancing question in the first column. The final column computes the implied drag of continued social distancing on labor force participation by multiplying the coefficient from the first column with the percent/100 from the second column. Data are from the January to March 2022 SWAA waves.

# DISCUSSION & MESSAGES FOR POLICY

## A huge shift to remote work

Which will raise efficiency through *time savings* and *innately*

- ▶ Much more efficient than expected
- ▶ Greater efficiency over time (learning-by-doing?)

**Also, challenges for businesses and policymakers:**

- ▶ Coordination, managing a remote workforce
- ▶ Amenity value, but mostly to high-earning
- ▶ Presenteeism, diversity
- ▶ *Long Social Distancing* depresses labor force participation

# CONCLUSION: TWO HUGE SHOCKS

**Reallocation and dispersion in firm outcomes**

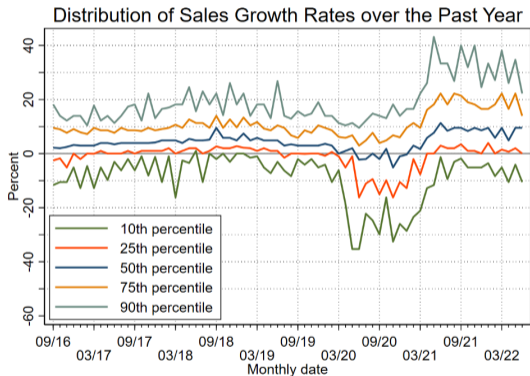
**A huge shift to working from home**

**Both are *ongoing* and *persistent*. It's a brave new world.**

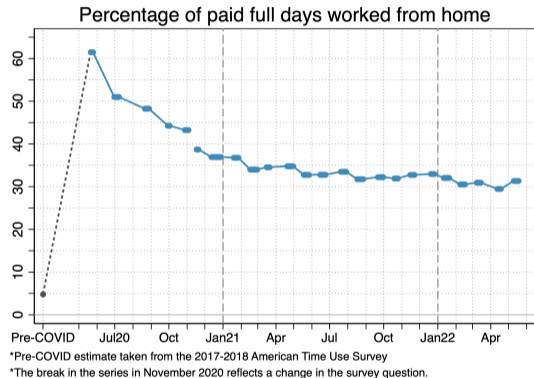
**Facilitate, think of challenges, and support the reallocation/transformation**

# CONCLUSION: TWO HUGE SHOCKS

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## The Big Shift to Working From Home



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## REFERENCES

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**Barrero, Jose Maria, Nicholas Bloom, and Steven J. Davis** (2021b). “Why Working From Home Will Stick.” NBER Working Paper 28731.

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