

THE WORK-FROM-HOME OUTLOOK IN 2022 AND BEYOND

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January 2022

SOURCE MATERIAL

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

See www.WFHResearch.com for regular updates, media coverage, and all our research output

*We thank the Templeton World Charity Foundation, the Smith Richardson Foundation, MIT Mobility Initiative, Stanford HAI, Kauffman Foundation, and TNIT for financial support.

PRIMARY DATA SOURCE FOR THESE SLIDES

Chicago-ITAM-MIT-Stanford *Survey of Working Arrangements & Attitudes*

- ▶ 19 monthly waves (repeated cross sections) from May 2020 to December 2021
- ▶ 78,000+ responses so far (ongoing)
- ▶ Collected by commercial survey providers on our behalf

Target population: Americans aged 20 to 64, earning >\$10K in 2019

- ▶ Reweight to 2010-2019 CPS pop. by {age × sex × education × earnings}

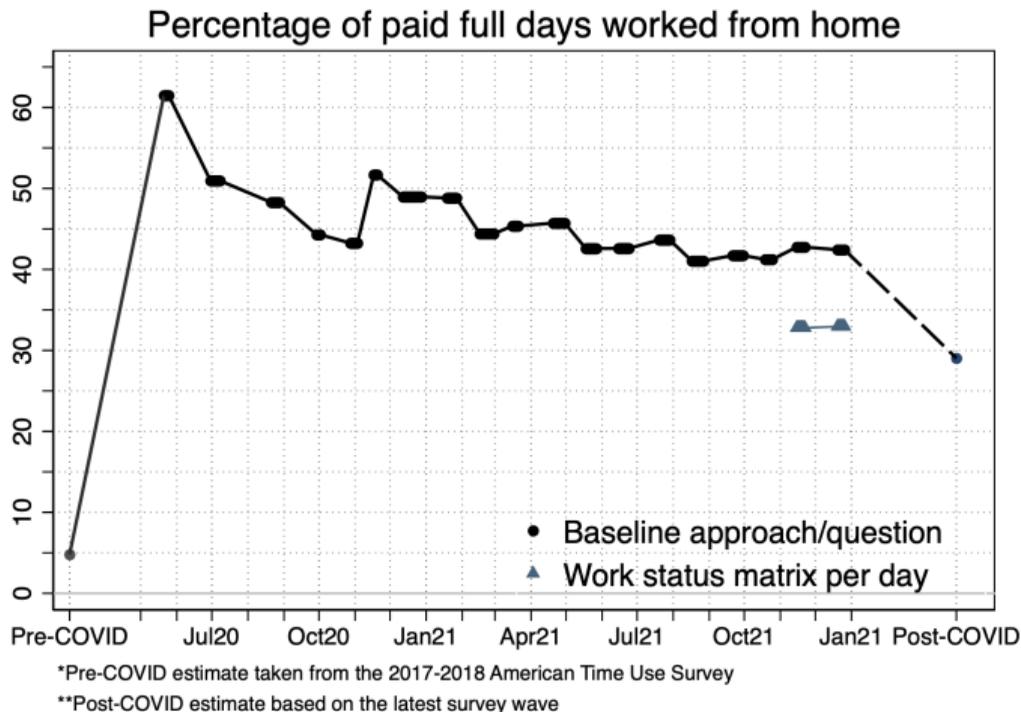
60+ questions per wave:

- ▶ Demographics, earnings, hours worked, commuting time, spending
- ▶ Extent of WFH during COVID
- ▶ **Worker desires** & **employer plans** for WFH after COVID
- ▶ Experiences, perspectives on WFH

KEY TAKE-AWAYS

1. **Work-from-home will account for **nearly 28%** of full paid working days after the end of the pandemic**
 - ▶ Up from **20%** at the start of 2021
 - ▶ Median business will opt for a “**hybrid**” arrangement
2. **Two key reasons why WFH will (partly) stick:**
 - ▶ Mass experimentation & learning \Rightarrow re-optimization
 - ▶ Investments by workers & firms
3. **Challenges of managing a hybrid workforce include:**
 - ▶ Choice and coordination
 - ▶ Presenteeism bias
 - ▶ Recruiting and firm culture

WFH BEFORE, DURING, AND AFTER COVID



Notes: Data are from 78,250 survey responses collected between May 2020 and December 2021. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell. Prior to November 2020, we asked respondents to classify themselves: “Currently (this week) what is your work status?” From November 2020 we ask them for the number of days worked in the current week and the number of days WFH. Starting in November 2021 we ask them to report whether they worked and where on each day of the survey’s reference week.

QUESTION: PLANS FOR POST-COVID WFH

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

PROJECTING POST-COVID WFH

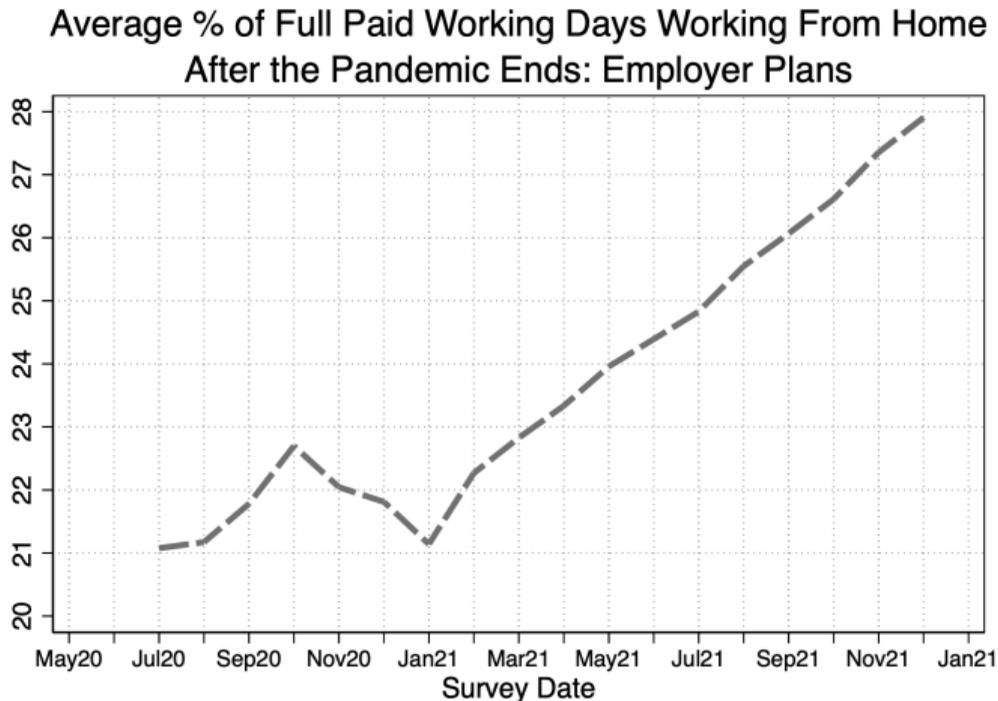
Assign 0 days (0%) to respondents who choose:

- ▶ *Never*
- ▶ *About once or twice per month*
- ▶ *My employer has not discussed this matter with me or announced a policy about it*

For other choices assign:

- ▶ 20% if *1 day per week*
- ▶ 40% if *2 days per week*
- ▶ ...

POST-COVID WFH PLANS ROSE THROUGH 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.

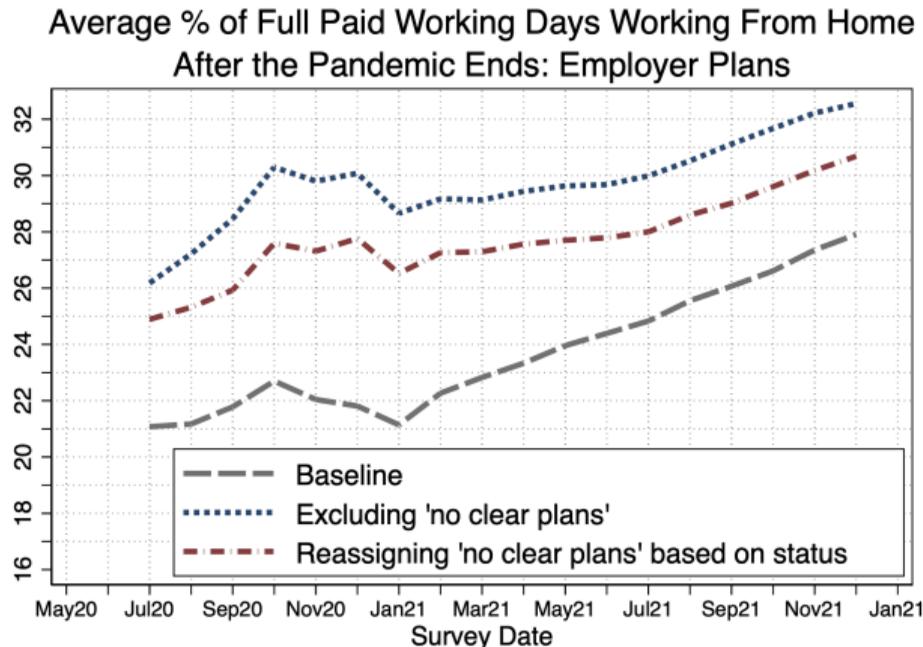
“HYBRID” (SOME WFH) INCREASINGLY POPULAR

Evolution of Plans for Post-COVID Working Arrangements
by survey wave



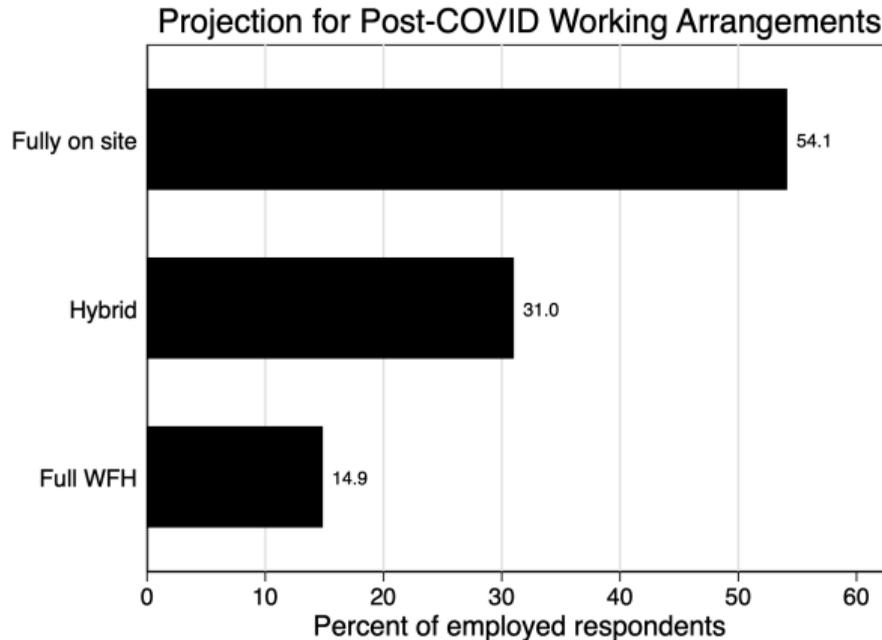
Notes: Data are from 78,250 survey responses collected between May 2020 and October 2021. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell. In each month starting on January 2021 we breakdown responses to the following question by broad working arrangements: “After COVID, in 2022 and later, how often is your employer planning for you to work full days at home?” Our overall projection for post-COVID working from home assigns zeros to respondents who report their employer has not given them clear plans.

50% OF THE INCREASE COMES FROM INCREASE IN THE NUMBER OF POST-COVID WFH DAYS



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.

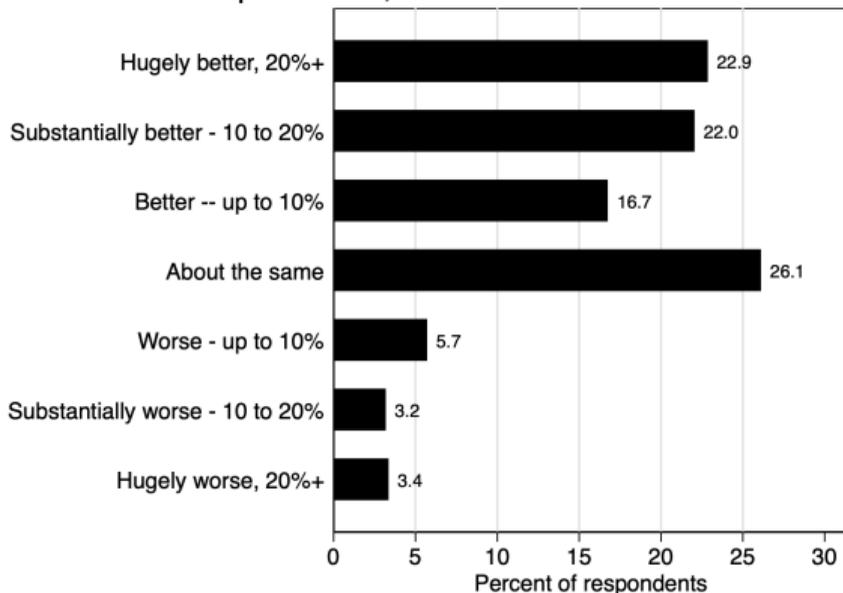
POST-COVID WFH PLANS: 2× MORE HYBRID THAN FULL-REMOTE



Notes: Data are from 6,092 survey responses collected between October and December 2021, focused on wage and salary employees who responded correctly to an attention-check question. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell. We reassign respondents who report receiving “no clear plans” about post-COVID work-from-home from their employer according to their current working status and the responses of others who did report their employers’ plans.

WHY WFH WILL STICK: FORCED EXPERIMENTATION AND LEARNING

Relative to expectations, how has WFH turned out?



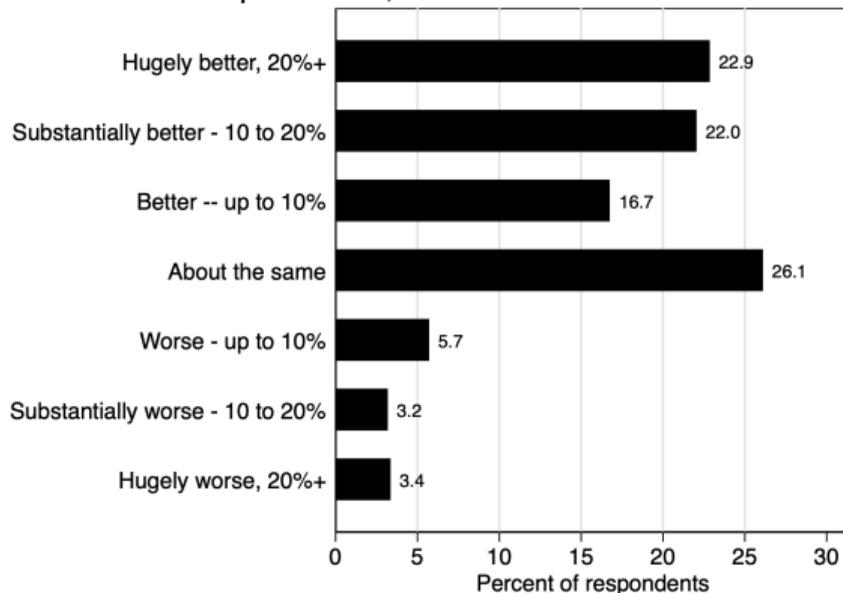
*Compared to your expectations **before COVID (in 2019)**, how has working from home turned out for you [in terms of productivity/efficiency]?*

▶ Time series

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.

WHY WFH WILL STICK: FORCED EXPERIMENTATION AND LEARNING

Relative to expectations, how has WFH turned out?



Two effects:

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

▶ Time series

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.

WHY WFH WILL STICK: INVESTMENTS ENABLING WFH

Investment into WFH adds up to 0.7% 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?

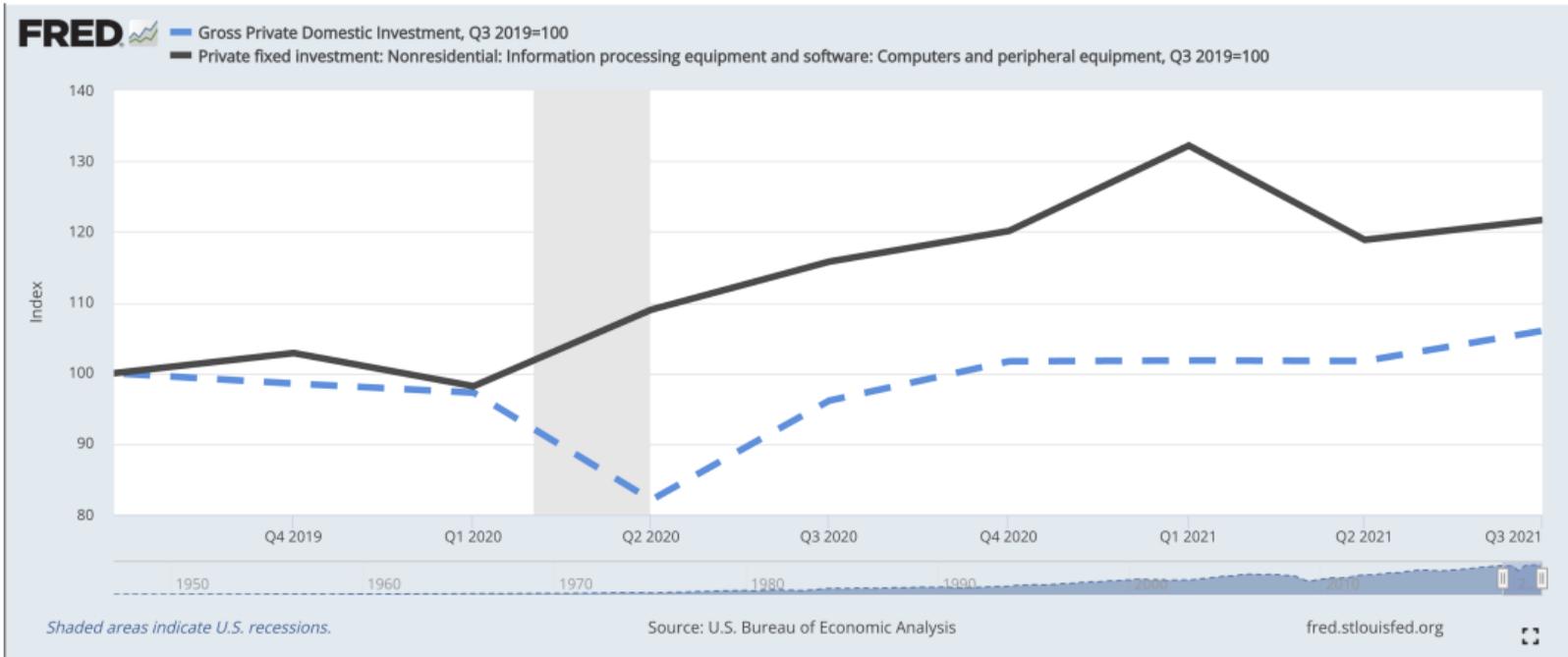
- ▶ **Mean:** 15.0 hours (SE = 0.2)

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:** \$561 (SE = 9)

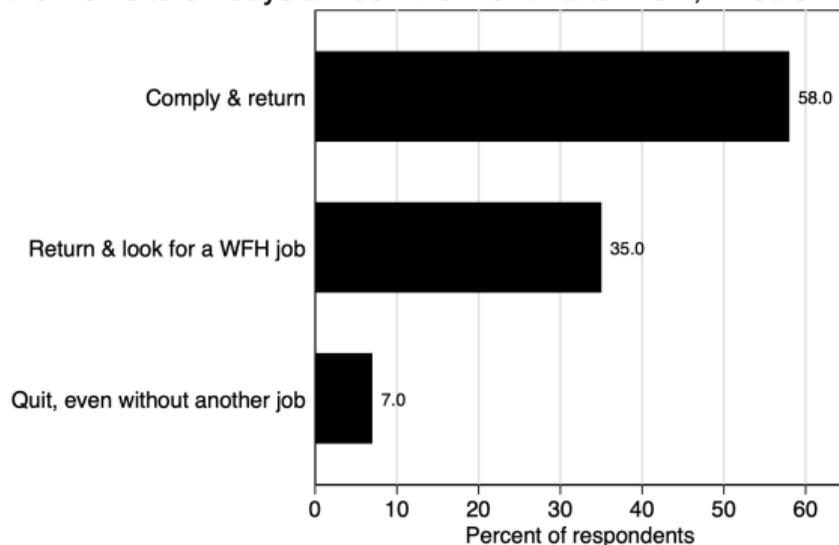
Additionally, firms have made investments on business premises

BUSINESS INVESTMENT IN NIPA DATA



FAILING TO OFFER WFH COULD MAKE IT DIFFICULT TO ATTRACT TALENT

If my employer announced that all employees must return to the worksite 5+ days a week the month-after-next, I would:

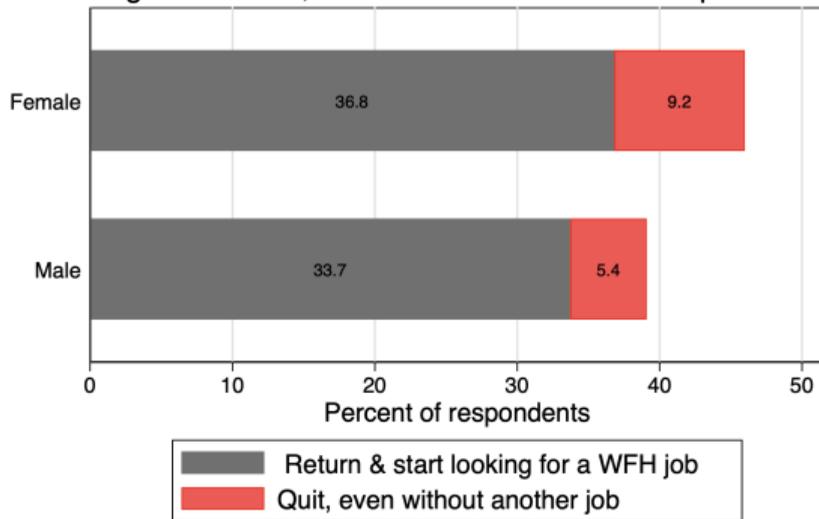


How would you respond if your employer announced that all employees must return to the worksite 5+ days a week starting [month-after-next]?

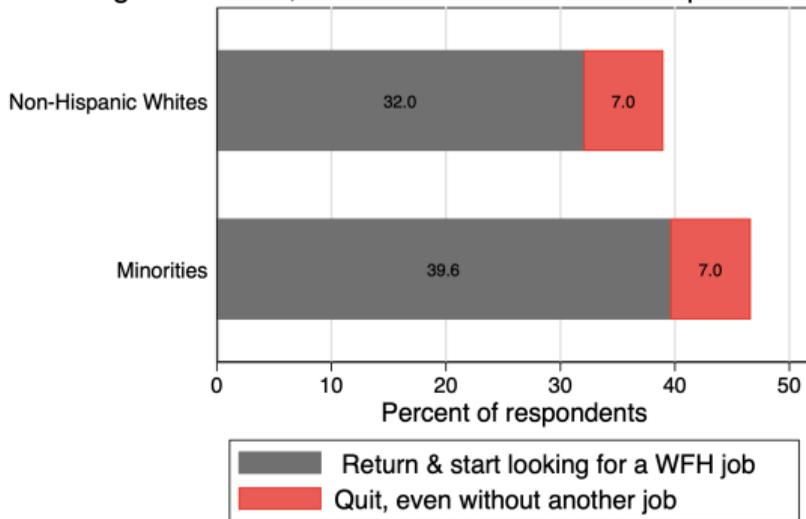
Notes: Data are from 35,000 survey responses collected between June and December 2021. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell. The sample includes respondents who were working from home 1 or more days per week during the week of the survey.

PARTICULARLY FOR DIVERSE TALENT

Percent of respondents who would quit or search for a job allowing some WFH, if asked to return full-time in-person



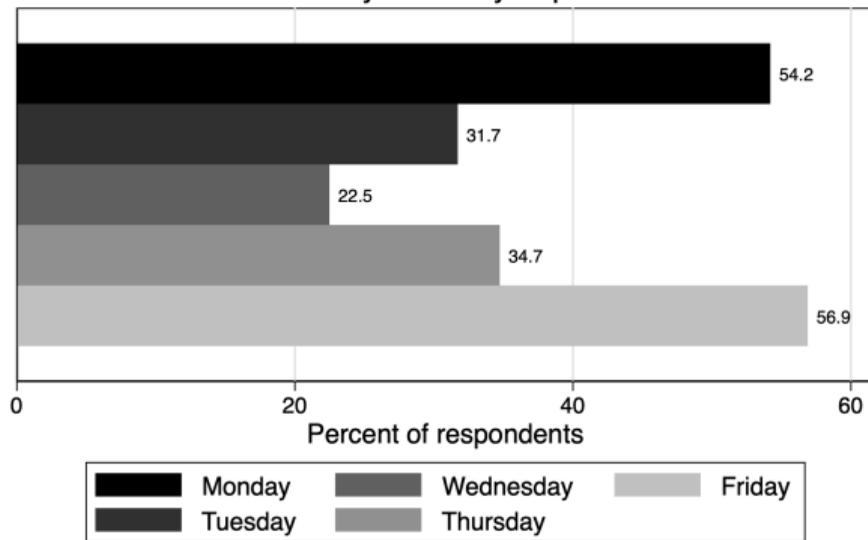
Percent of respondents who would quit or search for a job allowing some WFH, if asked to return full-time in-person



Notes: Responses to the question: “How would you respond if your employer announced that all employees must return to the worksite 5+ days a week starting [month-after-next]?” Data are from 10,175 survey responses collected between June and December 2021. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell.

LETTING WORKERS CHOOSE THEIR WFH DAYS CAN BE PROBLEMATIC

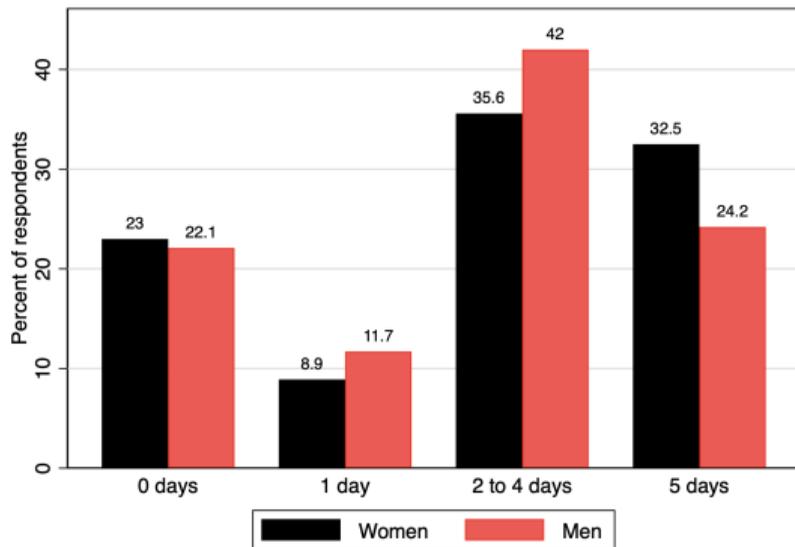
If you could work from home two days of the week, which days would you prefer?



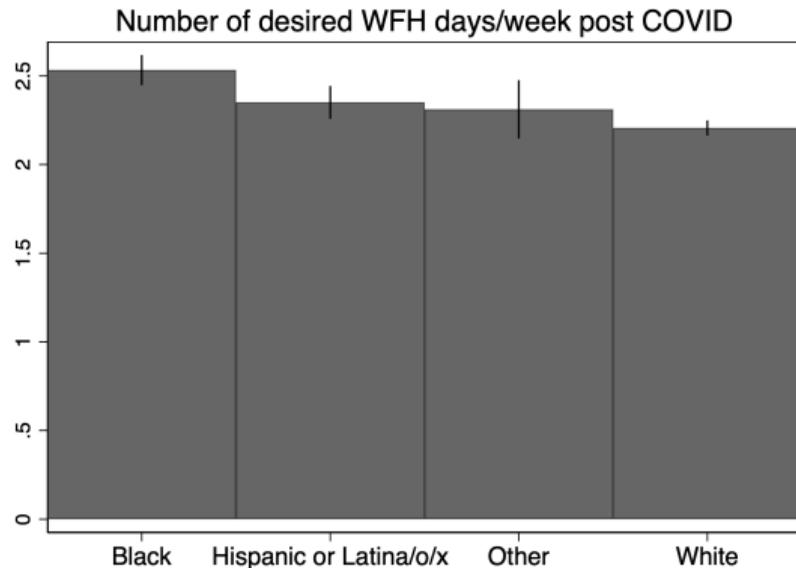
How would you respond if your employer announced that all employees must return to the worksite 5+ days a week starting [month-after-next]?

Notes: Data are from 3,604 survey responses collected in June 2021. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell. The sample includes all respondents other than those expressing no preference.

LETTING WORKERS CHOOSE THEIR WFH DAYS CAN BE PROBLEMATIC



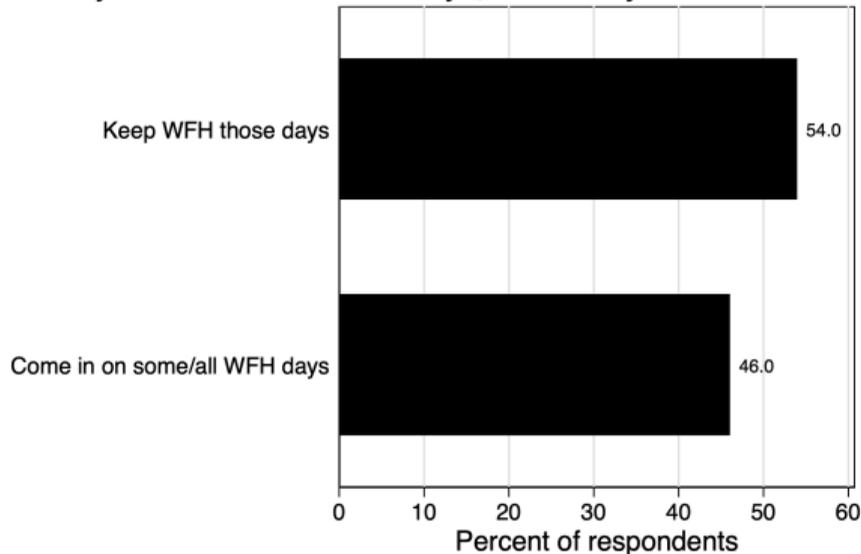
Sample: Respondents with at least some college and children under 12



Notes: Responses to the question: “After COVID, in 2022 and later, how often would you like to have paid workdays at home?” Data are from 35,000 survey responses collected between June and December 2021. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell.

THE THREAT OF PRESENTEEISM BIAS

If your manager starts coming in on some of your work-from-home days, what will you do?



Notes: The sample includes respondents who (1) report their employer plans for them to work from home 1, 2, 3, or 4 days per week after COVID in 2022 and later, and (2) who report their manager will work from home on the same days as them after the pandemic. N = 989.

Will your manager work from home on the same days as you after the pandemic is over?

If yes, ask: If your manager starts coming into your employer's place of business on some of your work-from-home days, what will you do?

CONCLUSION (INCL. MORE MATERIAL)

WFH days: **5%** pre-COVID, **45%** during COVID, predicting **28%** post-COVID

Mechanisms behind a persistent shift to WFH:

1. Experimentation and learning to overcome inertia & biased expectations
2. Investments enabling WFH
3. Worker demand in a tight labor market
4. Diminished stigma
5. Lingering concerns about health risks post-COVID

Consequences:

- ▶ Managerial challenges: choice, diversity, presenteeism,
- ▶ Uneven benefits for workers
- ▶ Higher productivity onboarding

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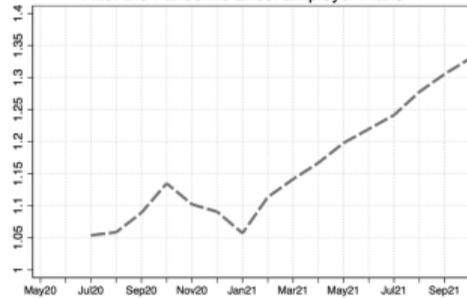


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EMPLOYER PLANS FOR POST-COVID WORKING FROM HOME

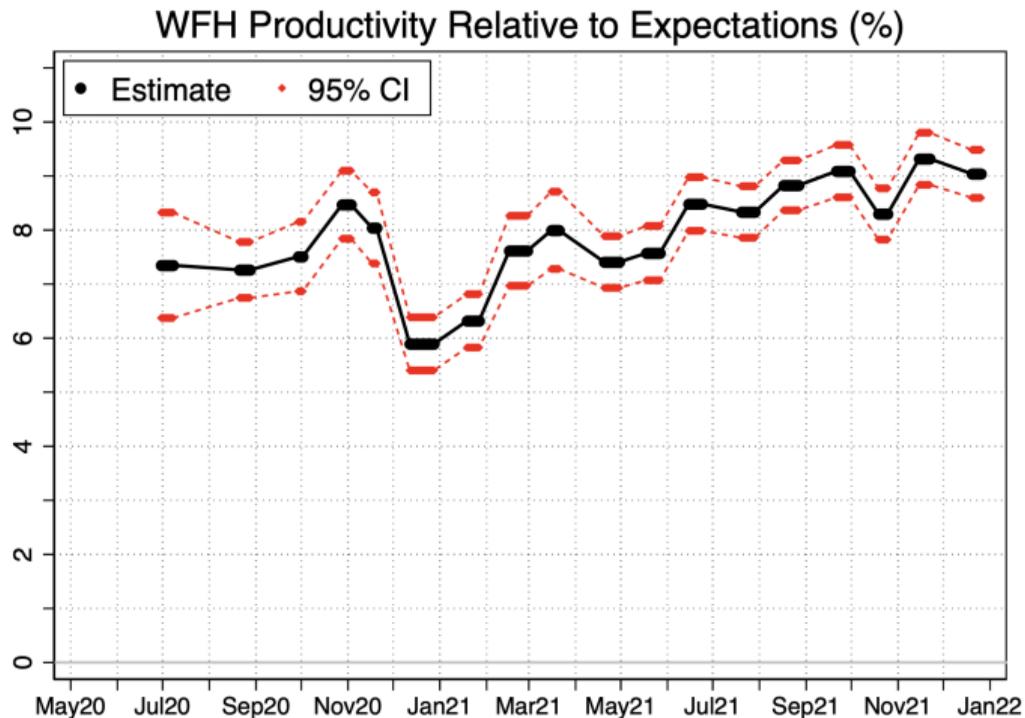
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Average Days per Week Working From Home
After the Pandemic Ends: Employer Plans



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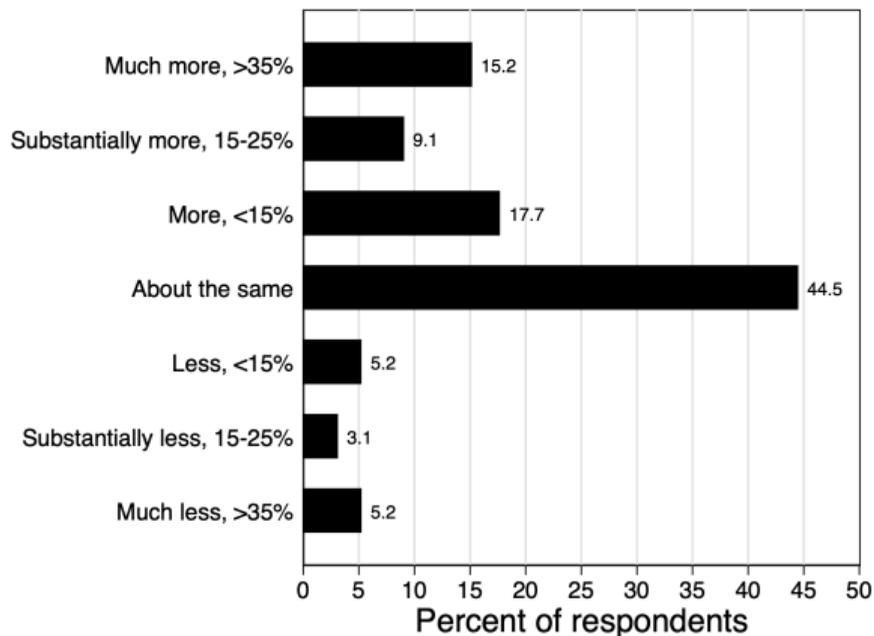
EVOLUTION OF THE PRODUCTIVITY SURPRISE



Notes: Responses to the question “Compared to your expectations before COVID (in 2019), how has working from home turned out for you [in terms of productivity/efficiency]?” 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.

42% REPORT HIGHER EFFICIENCY WHILE WFH

Relative efficiency of WFH



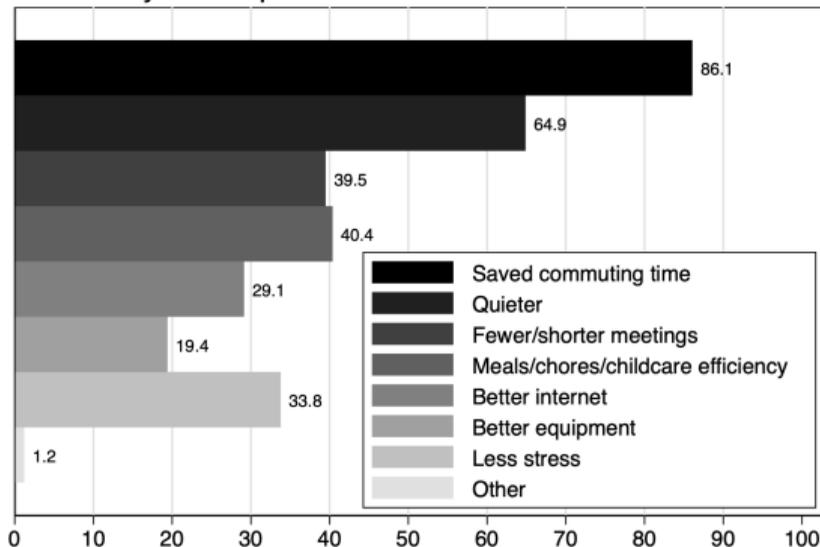
How does your efficiency working from home [during the COVID-19 pandemic] compare to your efficiency working on business premises before the pandemic?

▶ Time series

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.

COMMUTING TIME SAVINGS ARE A SIGNIFICANT SOURCE OF PRODUCTIVITY

Why are respondents more efficient while WFH?



Is time saved by not commuting part of your extra efficiency when working from home?

Apart from saving time by not commuting, why are you more efficient when working from home? Please select all that apply.

Notes: Data are from 4,469 survey responses collected between August and October 2021. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell.

ESTIMATING THE PRODUCTIVITY IMPACT OF SAVED COMMUTING TIME

Weekly time savings from greater WFH post-COVID:

$$TS_i = (WFH_i^{Plan} - WFH_i^{Pre})(1 - f_i)C_i$$

C_i = weekly round-trip commute time in hours

f_i = fraction of commute time reallocated to work [▶ Detail](#)

ESTIMATING THE PRODUCTIVITY IMPACT OF SAVED COMMUTING TIME

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Implied productivity gain in percentage terms:

$$Gain_i^{Imp} = 100 \cdot \frac{TS_i}{L_i} = 100 \cdot \frac{(WFH_i^{Plan} - WFH_i^{Pre})(1 - f_i)C_i}{H_i^{Pre} + C_i(Days_i^{Pre} - WFH_i^{Pre})}$$

L_i = weekly work hours (including commute time)

H_i^{Pre} = conventional measure of weekly work hours pre-COVID

$Days_i^{Pre}$ = no. of full days the respondent works in the survey week

WFH_i^{Pre} = pre-COVID WFH days

WFH_i^{Plan} = planned post-COVID WFH days

ESTIMATING THE TRUE PRODUCTIVITY GAIN

True productivity gain (including commute time savings) for respondent i :

$$Gain_i^{True} = PrDiff_i \left(\frac{WFH_i^{Plan} - WFH_i^{Pre}}{Days_i} \right) + \chi_i Gain_i^{Imp}$$

$PrDiff_i$ = relative productivity of WFH (equals 0 if respondent i is unable to WFH)

WFH_i^{Pre} = pre-COVID WFH days

WFH_i^{Plan} = planned post-COVID WFH days

$Days_i$ = no. of full days the respondent works in the survey week

$\chi_i = \mathbf{1}(PrDiff_i \text{ excludes commuting time savings})$

Note: In our preferred specification, we impute $Gain_i^{True} = 0$ when $Gain_i^{True} < 0$ on the view that individuals for whom WFH is a negative won't.

CONVENTIONALLY-MEASURED PRODUCTIVITY GAIN

Conventionally-measured productivity gain (excl. commute time savings):

$$Gain_i^{Conv} = (1 - \delta_i) PrDiff_i \left(\frac{WFH_i^{Plan} - WFH_i^{Pre}}{Days_i} \right)$$

$PrDiff_i$ = relative productivity of WFH (equals zero if i is unable to WFH)

WFH_i^{Pre} = pre-COVID WFH days

WFH_i^{Plan} = planned post-COVID WFH days

$Days_i$ = no. of full days the respondent works in the survey week

δ_i = fraction of $PrDiff_i$ that the respondent attributes to reduced commuting time

SHIFT TO WFH COULD RAISE PRODUCTIVITY 5.0%

Productivity gains from the persistent shift to WFH (%)

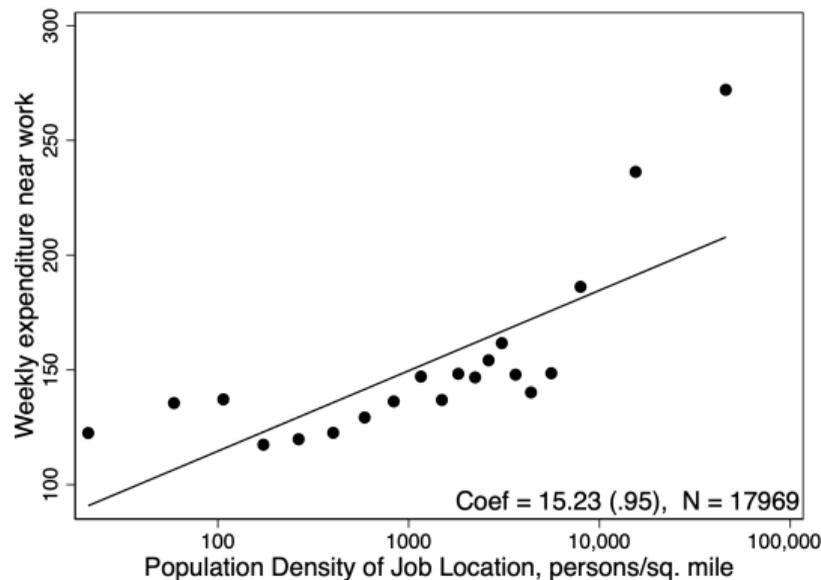
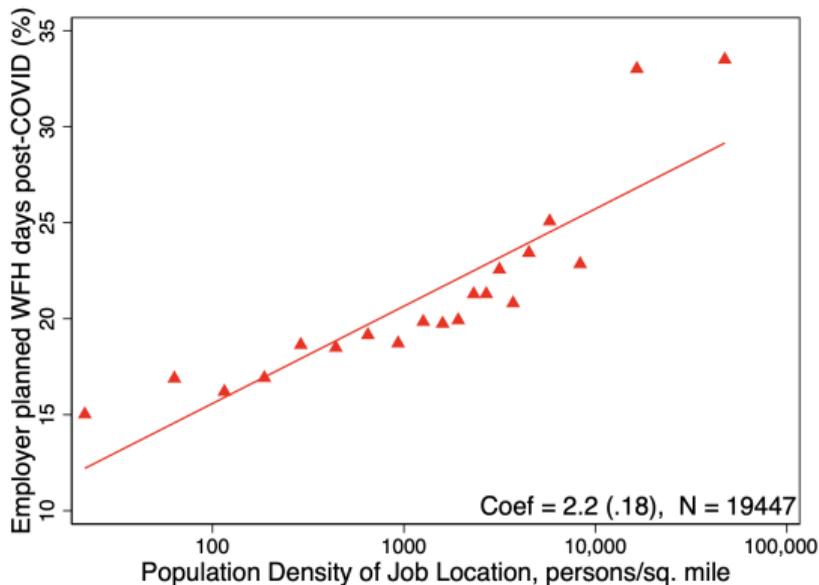
Measure	Equal-weighted Mean	Earnings-weighted Mean
Commuting time savings only	1.9 (0.03)	2.3 (0.03)
True productivity gain	4.0 (0.08)	5.0 (0.09)
Conventionally-measured	1.1 (0.03)	1.2 (0.03)

Notes: Standard errors in parentheses. 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.

MESSAGES FOR POLICY

1. **Shift to WFH brings large benefits, but they will be:**
 - ▶ Disproportionately enjoyed by men, high earners and the highly-educated
 - ▶ *Productivity benefits* will be unrecorded in productivity statistics
2. **Facilitating repurposing of commercial/residential space in cities should be a priority**
 - ▶ Otherwise, creative destruction spurred by COVID-19 could mainly be “destruction” in many urban areas [▶ Detail](#)

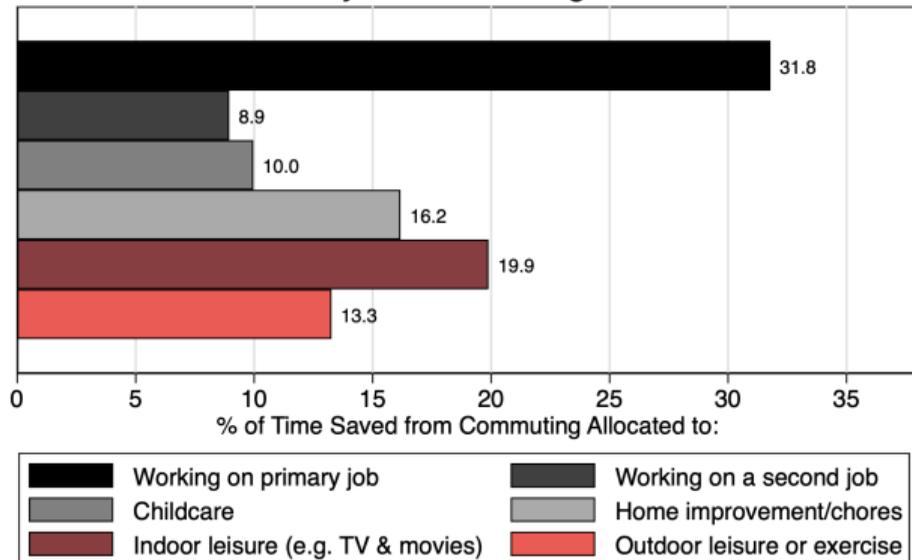
SPATIAL REALLOCATION OF JOBS & SPENDING AWAY FROM DENSE CITY CENTERS



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.

FEARS OF SOCIAL PROXIMITY OVER TIME

How are you now spending the time you have saved by not commuting?

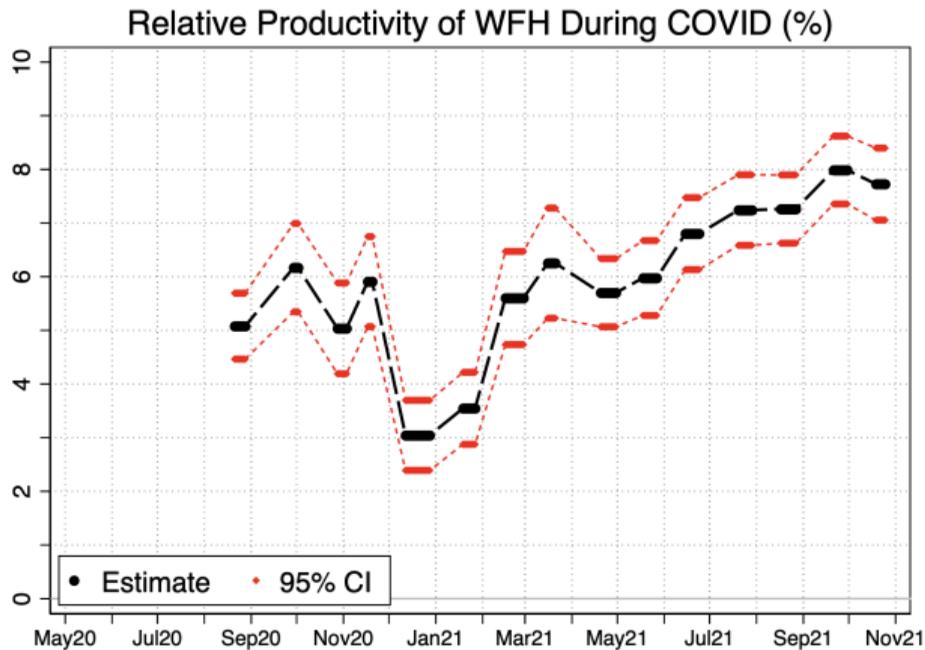


During the COVID-19 pandemic, while you have been working from home, how are you now spending the time you have saved by not commuting? Please assign a percentage to each activity (the total should add to 100%).

[▶ Back](#)

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.

RELATIVE EFFICIENCY OF WFH OVER TIME



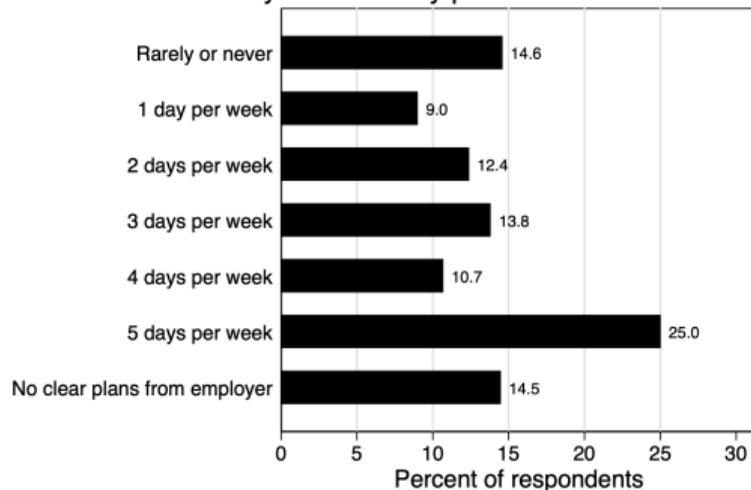
How does your efficiency working from home during the COVID-19 pandemic compare to your efficiency working on business premises before the pandemic?

▶ Back

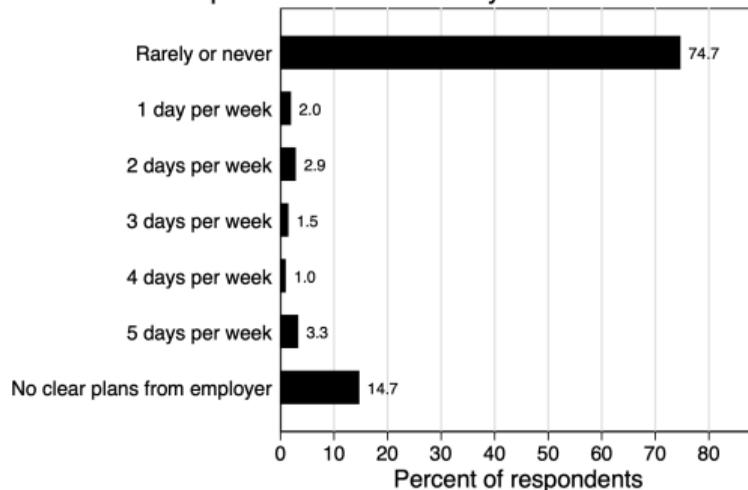
Notes: Data are from 78,250 survey responses collected between May 2020 and October 2021. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell.

POST-COVID WFH PLANS BY FALL 2021 STATUS: 84% MORE HYBRID THAN FULL-REMOTE

Employer plans for post-COVID WFH among those currently WFH 1+ day per week



Employer plans for post-COVID WFH: Respondents Not Currently WFH



Notes: Data are from 15,000 survey responses collected between August and October 2021. We re-weight raw responses to match 2010-2019 CPS pop. by {age × sex × education × earnings} cell. We show the response distribution for the following separately for those working from home in Fall 2021 and those who are not: “After COVID, in 2022 and later, how often is your employer planning for you to work full days at home?” Our overall projection for post-COVID working from home assigns zeros to respondents who report their employer has not given them clear plans.