

Benchmarking SWAA Estimates of the Prevalence of Working From Home

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The Survey of Working Arrangements and Attitudes (SWAA)

- Monthly online survey since May 2020, >100,000 observations to date.
- We design the survey instrument.
- Target population: U.S. residents, 20-64, who earned $\geq \$10K$ in 2019 ($\geq \$20K$ in early survey waves). From January to March 2022, we transitioned to earned $\geq \$10K$ in prior year.
- The SWAA is fielded by market research firms (e.g., [IncQuery](#)) that rely on wholesale aggregators (e.g., [Lucid](#)) for lists of potential survey participants.
- After dropping “speeders” (~16% of sample), we re-weight to match 2010-2019 CPS worker shares in age-sex-education-earnings cells. Dropping those who fail attention checks (roughly another 12%) sharpens some results.
- Median response time: 7 to 12 minutes, after dropping speeders
- Results, micro data, survey instruments, and more are freely available at www.WFHresearch.com.

SWAA WFH Measure

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

Day of the week	Did not work 6 or more hours	Worked <u>from home</u>	Worked at <u>employer or client site</u>
Monday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tuesday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wednesday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thursday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Saturday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sunday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Did not work 6 or more hours Worked from home Worked at employer or client site

- Our current WFH question asks respondents to make an active choice for whether and where they worked each day of the survey’s reference week.
- For each respondent, the percent of full paid days working from home, $WFH_{CurrentQuestion}$
$$= 100 \times \frac{\text{total days working from home}}{\text{total days working}}.$$
- We then compute the average of $WFH_{CurrentQuestion}$ across respondents in each monthly survey wave to obtain the time series value for that wave.
- See the Appendix for a description of how we back-cast responses to this question prior to November 2021.

SWAA Aligns with the American Community Survey, Google Mobility, and Household Pulse Survey Measures of Working from Home

- [The American Community Survey](#) measures the share of employees who work fully from home.
- On a comparable sample – employees aged 20-64 earning at least \$10,000 – the ACS finds 18.39% of employees are fully remote while SWAA finds 19.97%
- [Google Workplace Mobility data](#) measures the reduction in commuting days to workplaces across all cellphone users.
- Google records a 24.4% reduction in daily trips to workplaces, which when added to an ATUS-based estimate of 5% of days WFH pre-pandemic (see Barrero et al, 2021), yields a 29.4% share of WFH days. The corresponding SWAA estimate is 28.2%.
- The [Household Pulse Survey](#) measures the amount of working from home 1-2, 3-4, or 5+ days in the previous week at the individual level. For an aligned sample by age and income from June 2022 to December they estimate 30.2% of days WFH a week compared to 29.3% of days for SWAA
- On all three measures our SWWA data aligns extremely closely and levels and time series, giving us confidence in the accuracy of the analysis using this.

SWAA vs American Community Survey (ACS)

SWAA vs Google Workplace Mobility

SWAA vs. Household Pulse (HHP) Survey

The Exact ACS Question

2021 ACS [top](#)

Questionnaire form

view entire document: [text](#) [image](#)

32. How did this person usually get to work LAST WEEK? *Mark (X) ONE box for the method of transportation used for most of the distance.*

- ☐ Car, truck, or van
- ☐ Bus
- ☐ Subway or elevated rail
- ☐ Long-distance train or commuter rail
- ☐ Light rail, streetcar, or trolley
- ☐ Ferryboat
- ☐ Taxicab
- ☐ Motorcycle
- ☐ Bicycle
- ☐ Walked
- ☐ Worked from home --> *SKIP to question 40a*
- ☐ Other method

Note that respondents are directed to selected the method of transportation used for most of the distance, so that individuals that commute for 1+ day a week (even if they WFH the other days) should choose that commuting option.

So the ACS measures the share of respondents that WFH every day

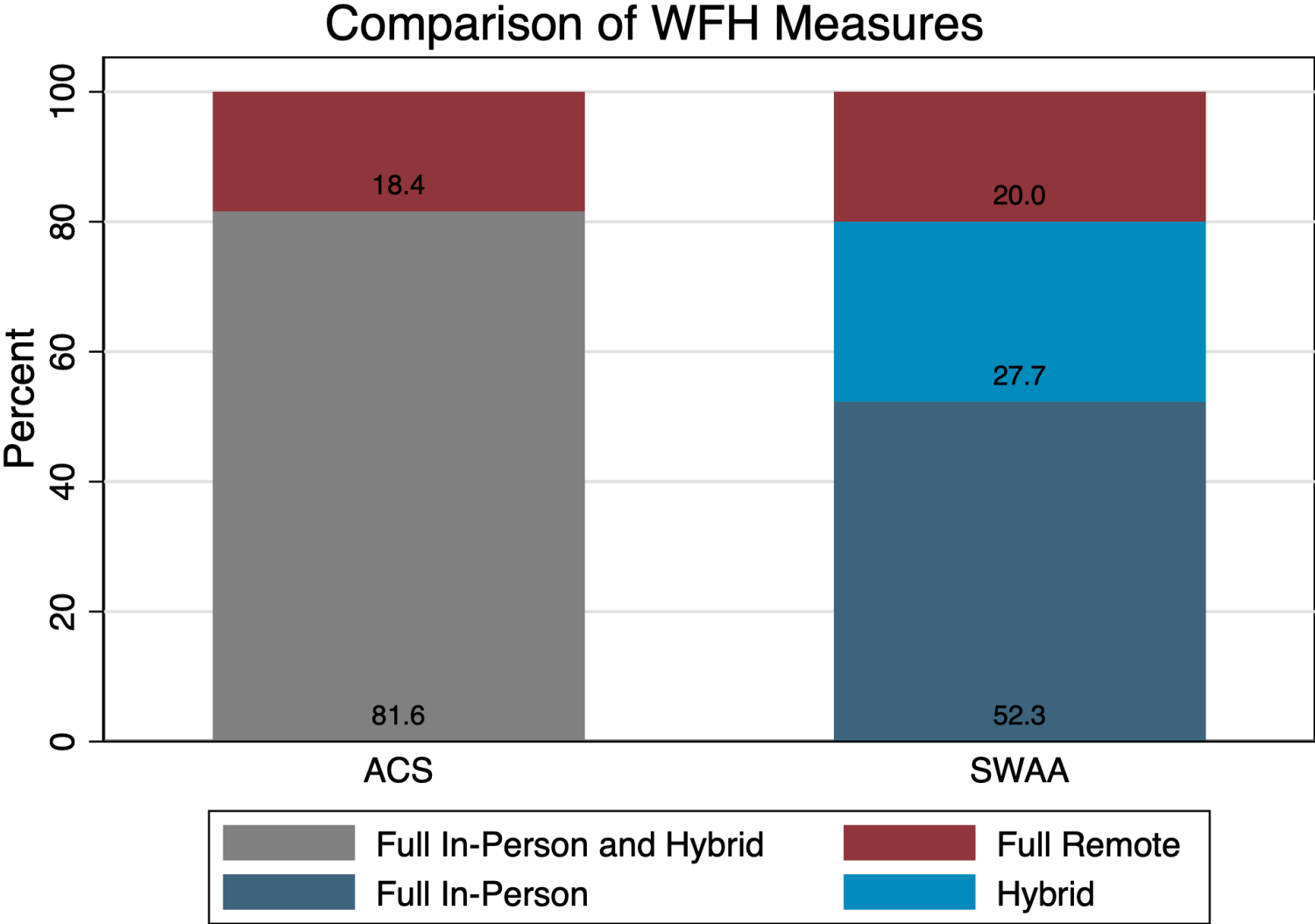
SWAA and ACS Align Very Closely with 19.97% and 18.39% Share of Fully Remote Workers on a Sample of Workers Aged 20-64 Earning \$10,000+

	SWAA	ACS	
	20-64, \$10k	Full Sample	20-64, \$10k
Percent WFH	19.97	17.89	18.39

Notes: SWAA data is pooled from November - December 2021. For all SWAA WFH measures, we dropped individuals who sped through the survey. The share fully remote in SWAA shows the share of individuals who reported working from home 100% of the past week. This was constructed by creating an indicator variable if an individual worked remotely more than 100% of the time and then taking the average for the sample period. ACS data is from 2021. The ACS measures show the share of individuals who *usually* worked from home last week. In the last column we restrict to individuals who are 20-64 and earned at least \$10,000 last year in order to match the SWAA sample population.

N = 6,969

SWAA and ACS Measures are Similar for Fully Remote Workers, while ACS does not distinguish hybrid-WFH from fully in person workers



Notes: SWAA data is pooled from November - December 2021. For all SWAA WFH measures, we dropped individuals who sped through the survey. The share fully remote in SWAA shows the share of individuals who reported working from home 100% of the past week. This was constructed by creating an indicator variable if an individual worked remotely more than 100% of the time and then taking the average for the sample period. ACS data is from 2021. The ACS measures show the share of individuals who *usually* worked from home last week. In the last column we restrict to individuals who are 20-64 and earned at least \$10,000 last year in order to match the SWAA sample population.

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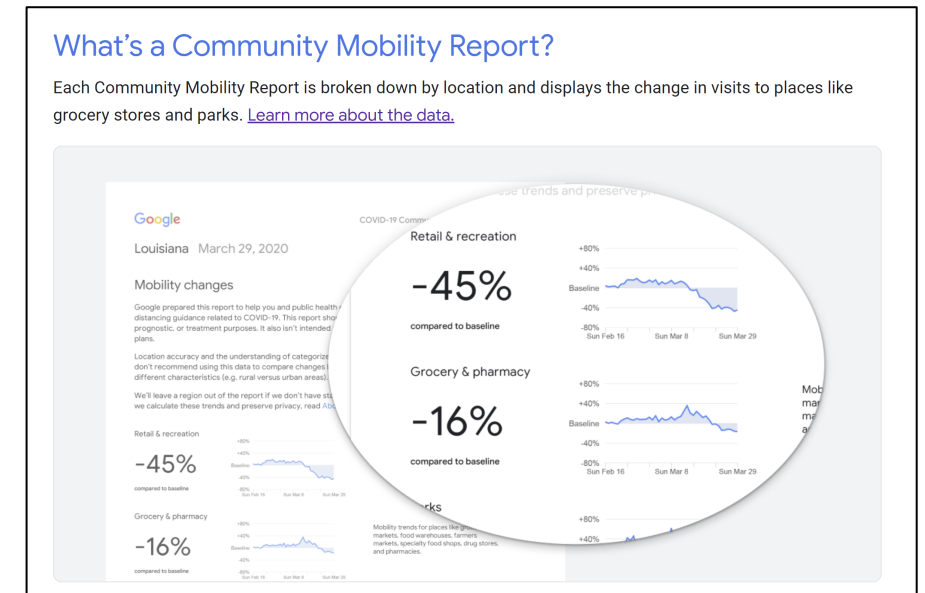
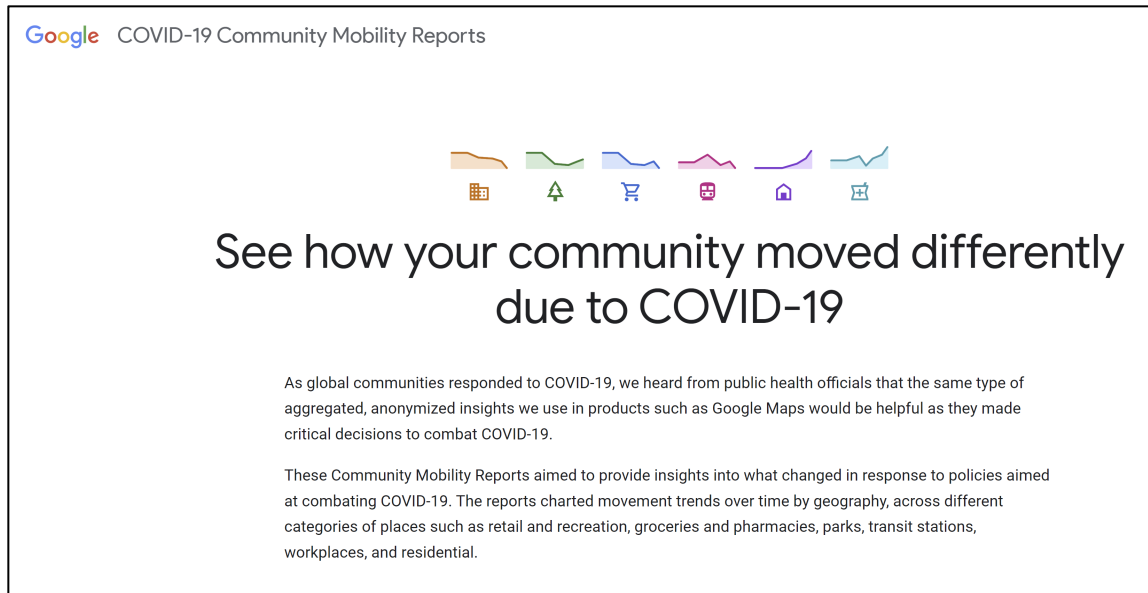
SWAA vs American Community Survey (ACS)

SWAA vs Google Workplace Mobility

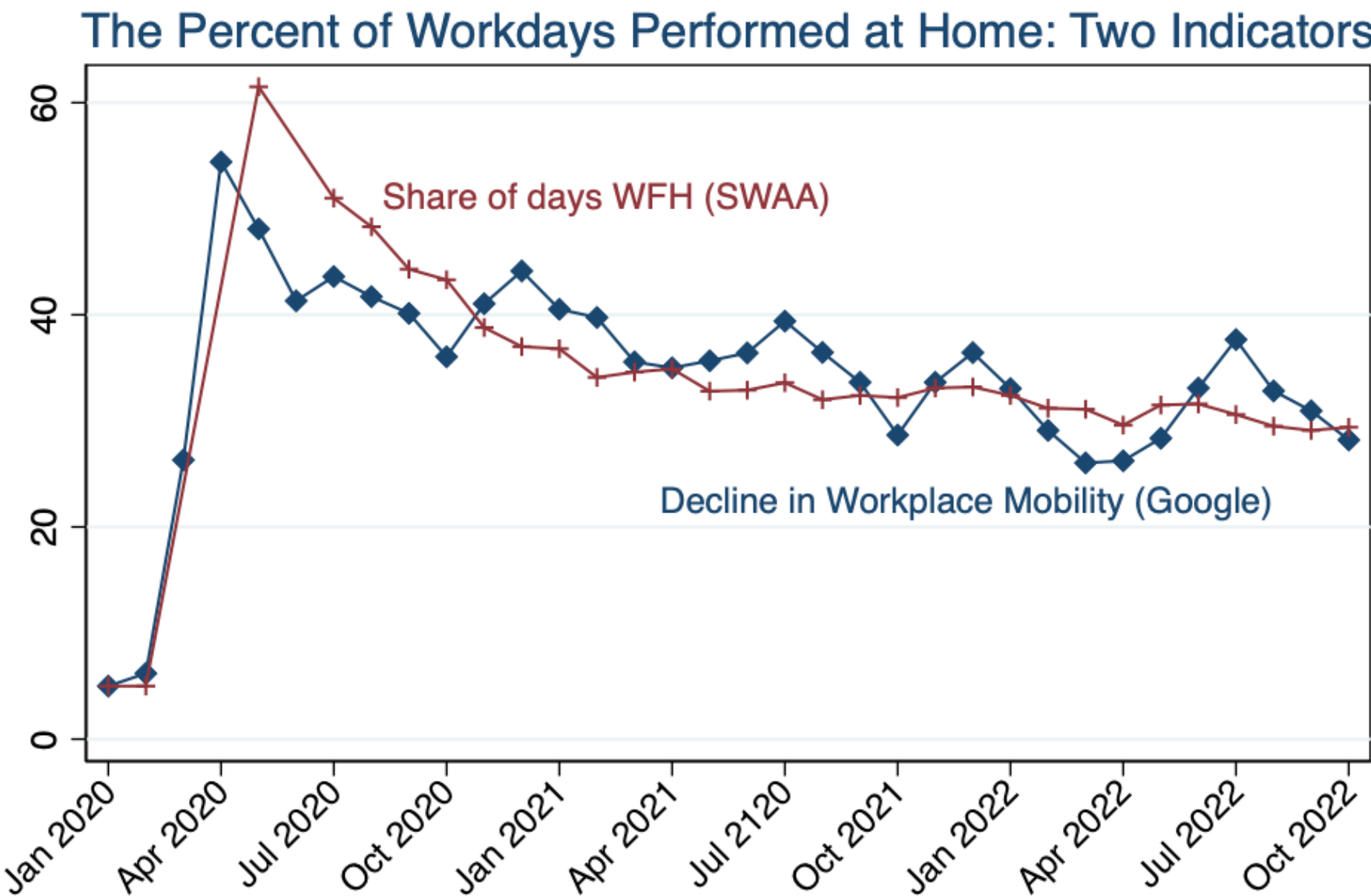
SWAA vs. Household Pulse (HHP) Survey

Google Workplace Mobility Measures Daily Trips

- Using data from location tracker on cellphones Google calculates changes in trip frequency and posts this on <https://www.google.com/covid19/mobility/>
- We use their change from the January 2020 based for “Workplace trips” on weekdays until October 2022 when Google stopped producing the data
- To convert this to a measure of days worked from home we add this reduction in workplace trips to the baseline 5% level of working from home from ATUS measured in the US pre-pandemic in 2018



Monthly SWAA aligns with US Google workplace mobility data



Source: Google Workplace Cellphone Mobility Data from <https://www.google.com/covid19/mobility/> measured as the daily deviation of workplace trips from the January 3 to February 6, 2020 average. Reported here as a monthly average of weekdays, baselined at 5% in January 2020 to match pre-pandemic values from ATUS. SWAA is the amount of full paid working days done from home from home based on the the Survey of Working Arrangements and Attitudes from www.wfhresearch.com minus the pre-pandemic estimate based on the American Time Use Survey as reported in Barrero, Bloom, and Davis (2021).

SWAA vs American Community Survey (ACS)

SWAA vs Google Workplace Mobility

SWAA vs. Household Pulse (HHP) Survey

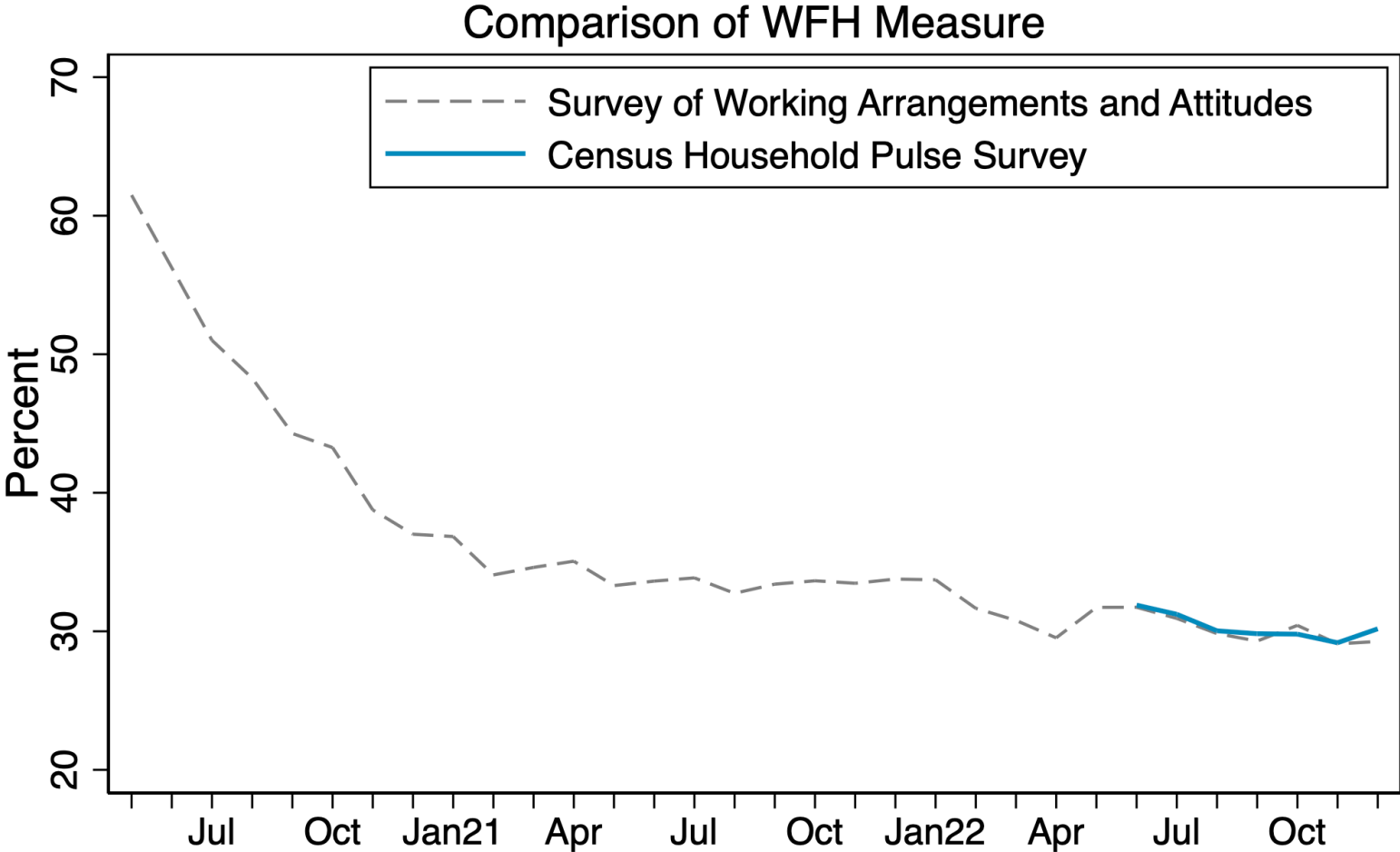
The Household Pulse Survey asks about the frequency of WFH

- **Question:**

In the last 7 days, have you or any of the people in your household teleworked or worked from home?

- 1) Yes, for 1-2 days
- 2) Yes, for 3-4 days
- 3) Yes, for 5 or more days
- 4) No

Monthly SWAA aligns with a comparable measure constructed from 2022 data from the Census Household Pulse Survey



Data for the Survey of Working Arrangements and Attitudes is from May 2020 - December 2022 for individuals 20-64 with annual earnings greater than \$20k.
Data for the Census Household Pulse Survey is from June 2022 - December 2022 for individuals 20-64 with annual household earnings greater than \$25k.

Notes: Both the SWAA and HHP series estimate the share of full paid days working from home. SWAA data is for May 2020 to December 2022. We drop individuals who sped through the survey and focus on persons aged 20 to 64 who earned at least \$20,000 in 2019 or 2021, reweighting to match the CPS on age, sex, education and earnings. See Barrero, Bloom, and Davis (2021) for more details. HHP data focus on workers aged 20 to 64 whose household income is at least \$25,000 (which is the closest income bracket to our \$20,000 cut-off). We assign 30% of days worked from home at the individual level if the response to the HHP working from home question was “Yes, for 1-2 days;” we assign 70% if they said “Yes, for 3-4 days;” 100% if they said “Yes, for 5 or more days;” and 0 for “No.”

References

- Barrero, Jose Maria, Nicholas Bloom, and Steven J. Davis, 2021. “Why working from home will stick,” National Bureau of Economic Research Working Paper 28731.
- Brynjolfsson, Erik, John Horton, Christos A. Makridis, Alex Mas, Adam Ozimek, Daniel Rock and Hong-Yi TuYe, 2022. “How Many Americans Work Remotely?” Working Paper.

Methodological Appendix

SWAA WFH Measures Before November 2021

SWAA WFH Measure: May to October 2020

- From May 2020 - October 2020, we calculate the percent of days worked from home as the percent of respondents who report working from home, among those who worked during the reference week. We use responses to the question :

Currently (this week) what is your working status?

- *Working on my business premises;*
 - *Working from home;*
 - *[Other responses that indicate not working]*
- We then average across respondents in the same survey wave (i.e, in each month of the survey).
- We adjust the resulting series for possible measurement error as described in footnote 11 to Barrero, Bloom, and Davis (2021).

SWAA WFH Measure: November 2020 to October 2021

- From November 2020 – October 2021, the SWAA WFH series is estimated using a regression approach and responses to the following questions, asked to persons who worked during the survey's reference week:
 - 1. How many full days are you working this week?** *1, 2, 3, 4, or 5+ days*
 - 2. How many full paid working days are you working from home this week?** *None, all my paid working days were on business premises; 1; 2; 3; 4; 5+ full paid days WFH*
- We can calculate the percent of days worked from home based on the answers to questions **1.** and **2.** at the individual level, denoted $WFH_{OldQuestion}$.
- Unfortunately, estimates based on these questions seem biased upward, as too many respondents choose *5+ full paid days working from home* compared to our preferred question (shown on page 3).
- We back-cast the amount of individual WFH using a regression model, for responses where we have data on questions **1.** and **2.** as well as the preferred question on page 3.
- We regress $WFH_{CurrentQuestion,i} = \alpha + \beta WFH_{OldQuestion} + \varepsilon_i$ where i indexes individual respondents and $WFH_{CurrentQuestion,i}$ is the percent of working from home from our preferred question. We estimate the regression on a sample covering the November 2021 to April 2022 survey waves, when we have data from both approaches and use the regression estimates to impute $\widehat{WFH}_{CurrentQuestion,i}$ for respondent i . Then we can average across respondents in each survey wave from November 2020 to October 2021 to obtain a back-cast series based on our preferred question.