CHICAGO BOOTH
The University of Chicago Booth School of Business

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COVID and Productivity: One Year After

Remarks by Steven J. Davis

Based on work with Jose Maria Barrero, Nick Bloom, Yulia Zhestkova and others.

CompNet and Banque de France

2 February 2021

COVID Affects Productivity in Many Ways

1. A mass social experiment in working from home (WFH) → New knowledge → Re-optimization of working practices → post-pandemic productivity ↑ due to re-optimization
2. Less commuting time → effective productivity gain
3. Re-directed technical change → WFH and other forms of remote interactivity will get better for many years.
4. Whether and how well economies adjust to the reallocative aspects of COVID-19 will matter a lot for medium-run productivity developments.

Here, I offer evidence on 1-3 but make no claim they are the only ways in which COVID affects productivity. See Barrero, Bloom and Davis (2020b and 2021a) on item 4 and Mauro and Syverson (2020) for discussion of a broad set of factors.

COVID-19 Compelled Firms and Workers to Experiment at Scale with Working from Home

"If you'd said three months ago that 90% of our employees will be working from home and the firm would be functioning fine, I'd say that is a test I'm not prepared to take because the downside of being wrong on that is massive."

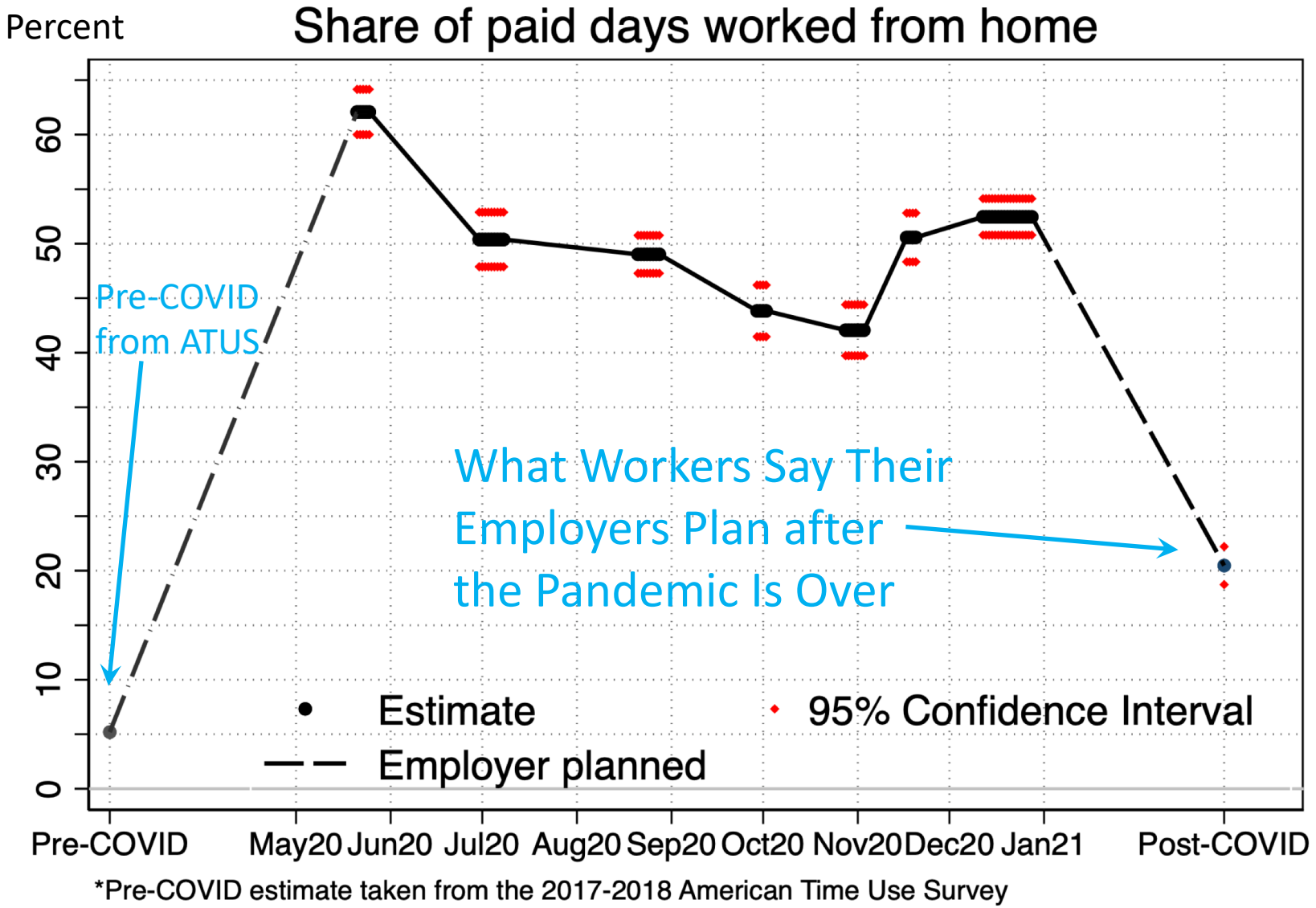
– James Gorman, CEO of Morgan Stanley*

*Cited in Cutter (2020)

James Gorman

PHOTO: AL DRAGO/BLOOMBERG NEWS

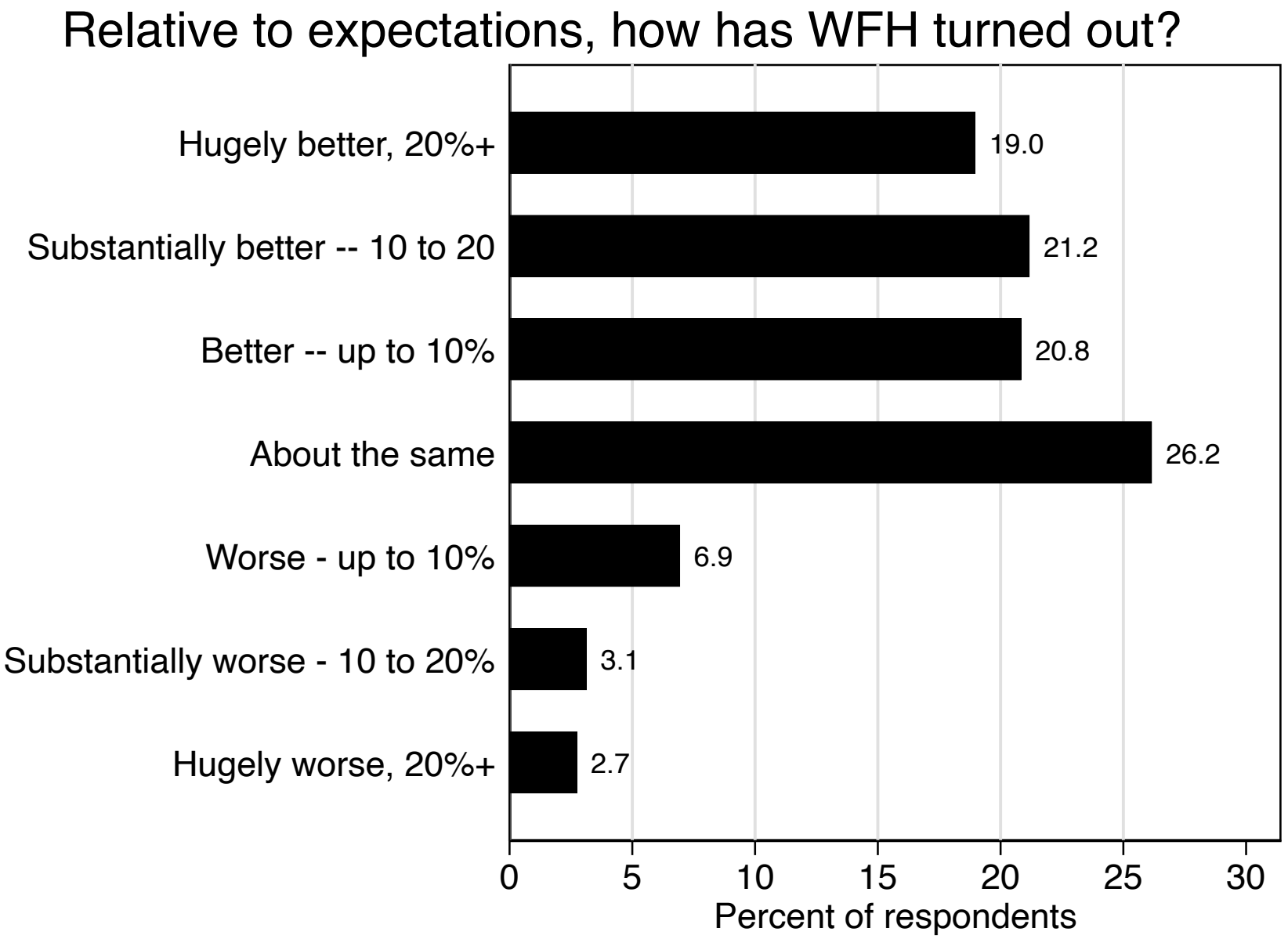
Post-COVID Working Arrangements: Less WFH than Now, But 4-5 Times as Much as Pre-COVID



Notes: Data are from an original survey of our design, fielded by QuestionPro and IncQuery in May, July, August, September/October, November, and December 2020, with 5,000 responses in August and December, 2,500 in other months. We re-weight raw responses to match the share of working-age respondents in the 2010-19 CPS in each industry X state X earnings cell.

Chart reproduced from "Why Working From Home Will Stick," by Jose Maria Barrero, Nick Bloom and Steven J. Davis.

Experimentation: For most, WFH exceeded expectations

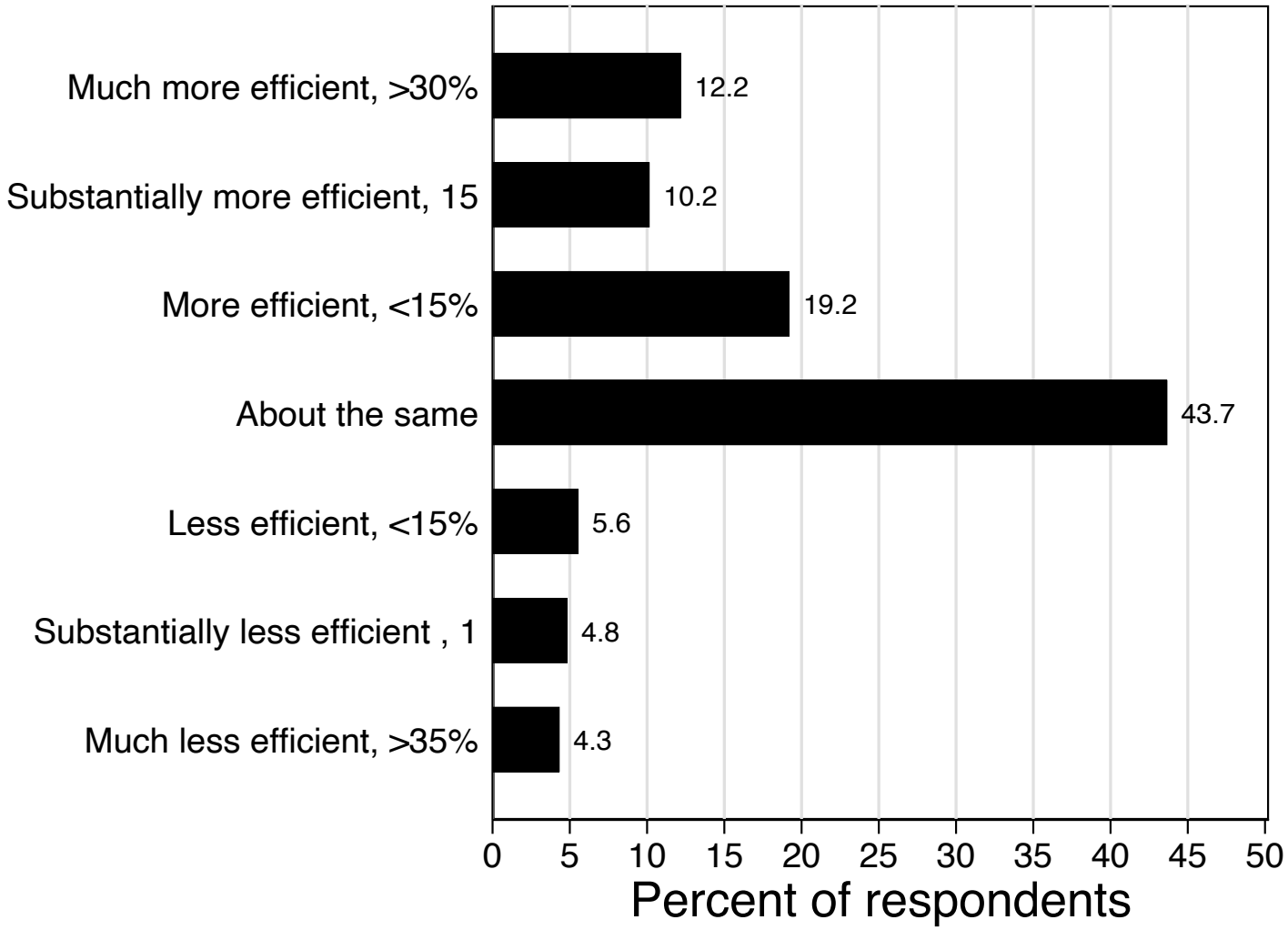


Compared to your expectations ***before COVID (in 2019)*** how has working from home turned out for you?

Notes: Data 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.

Chart reproduced from "Why Working From Home Will Stick," by Jose Maria Barrero, Nick Bloom and Steven J. Davis.

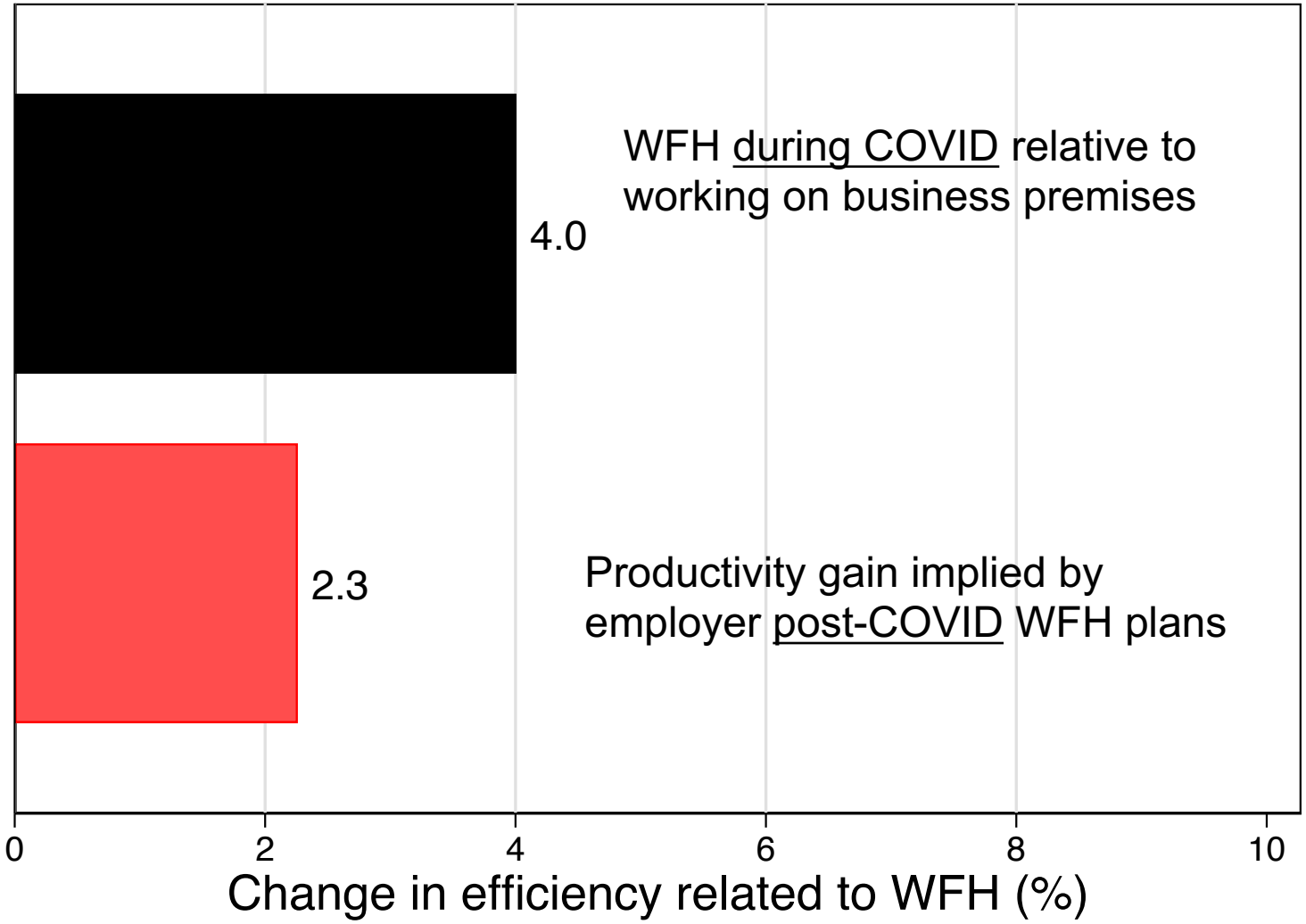
40% of workers say they are *more* productive when WFH



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.

Re-optimizing over working practices after the pandemic will boost labor productivity by 2.3%, according to our survey data



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. This chart uses responses to questions about productivity while working from home relative to business premises, as well as about employment status and ability to work from home (selection), pay levels (for earnings weights) and, for the red and blue bars, how much their employer plans for them to work from home after the pandemic ends.

Calculations detail

Less Commuting: Implied Productivity Gain

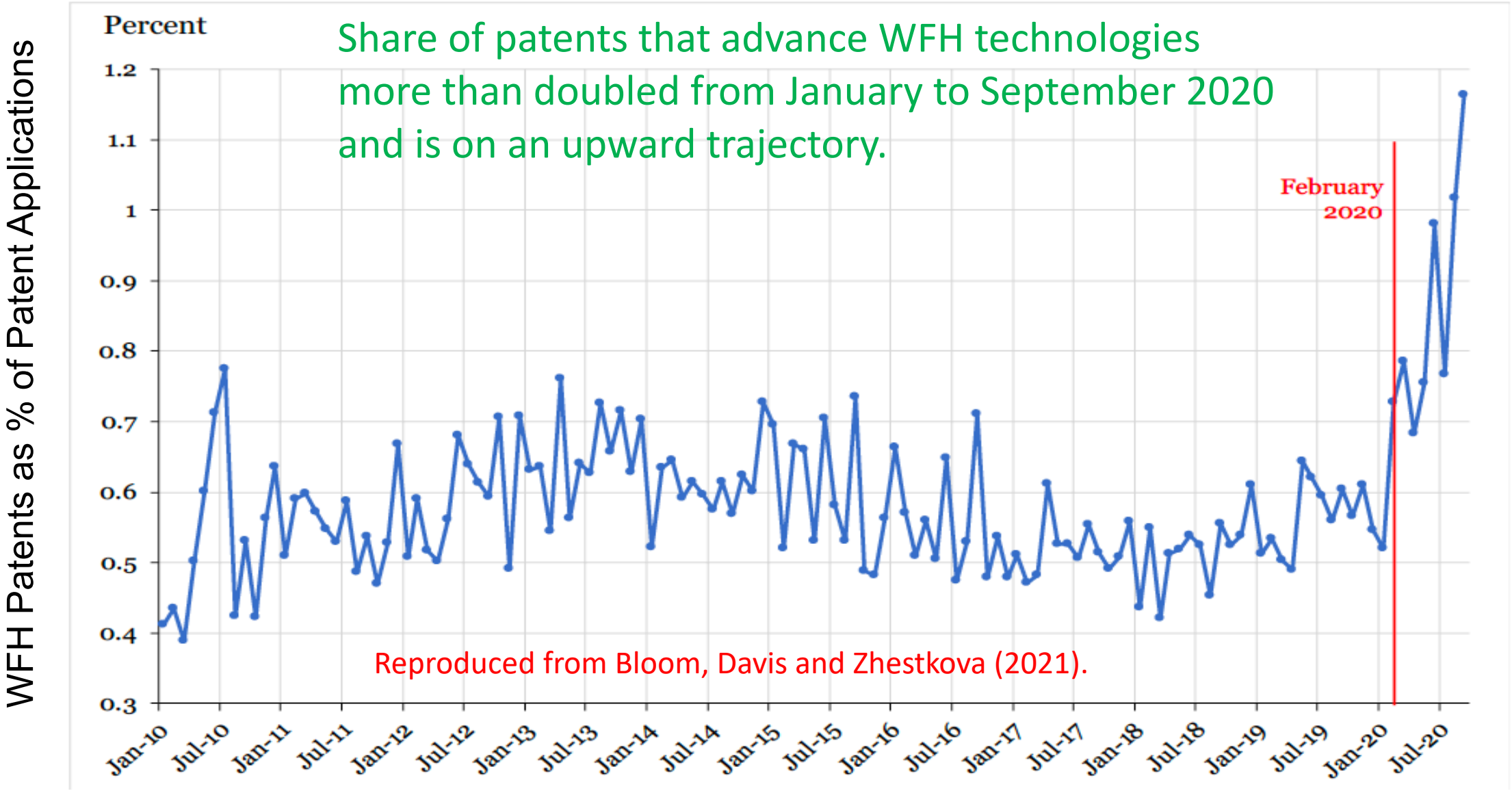
60 million fewer commuting hours per day: How Americans use time saved by working from home

Jose Maria Barrero, Nicholas Bloom, Steven Davis 23 September 2020

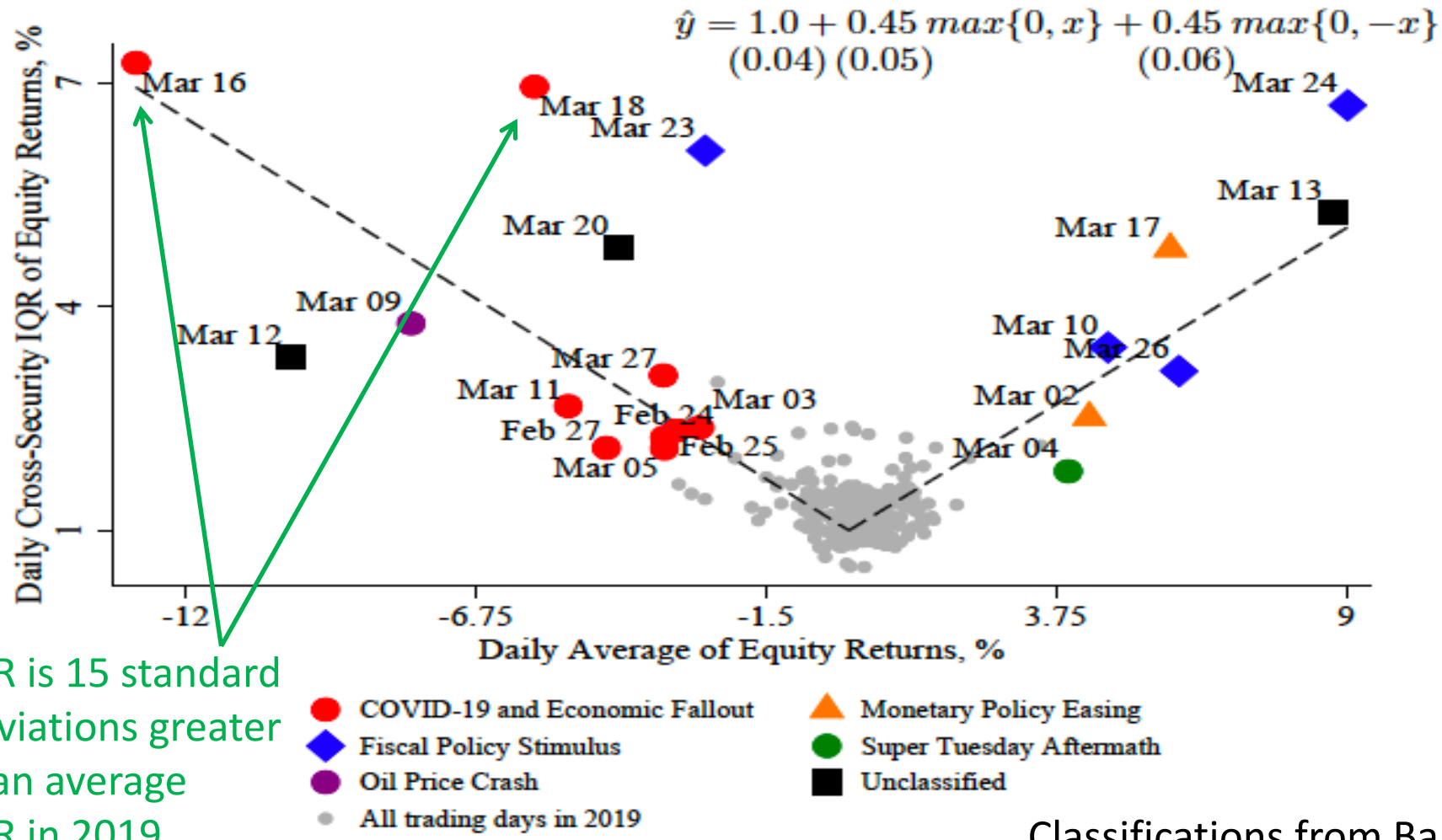
Back-of-the-envelope calculation

1. Paid full work days at home: 5% pre-pandemic → 23% post-pandemic
2. Average commute time per day: 54 minutes (0.9 hours)
3. 40% of commute time is spent on work-related activities
4. Time savings = (0.18)(0.9 hours)(1 - 0.4)(5 days) = 0.5 hours per week
5. Effective labor productivity gain = 0.5/(40 hours) = 1.2%

Re-Directed Technical Change: COVID-19 Shifted Patent Applications to Technologies that Support WFH



Tremendous Dispersion in Firm-Level Stock Price Reactions to COVID News



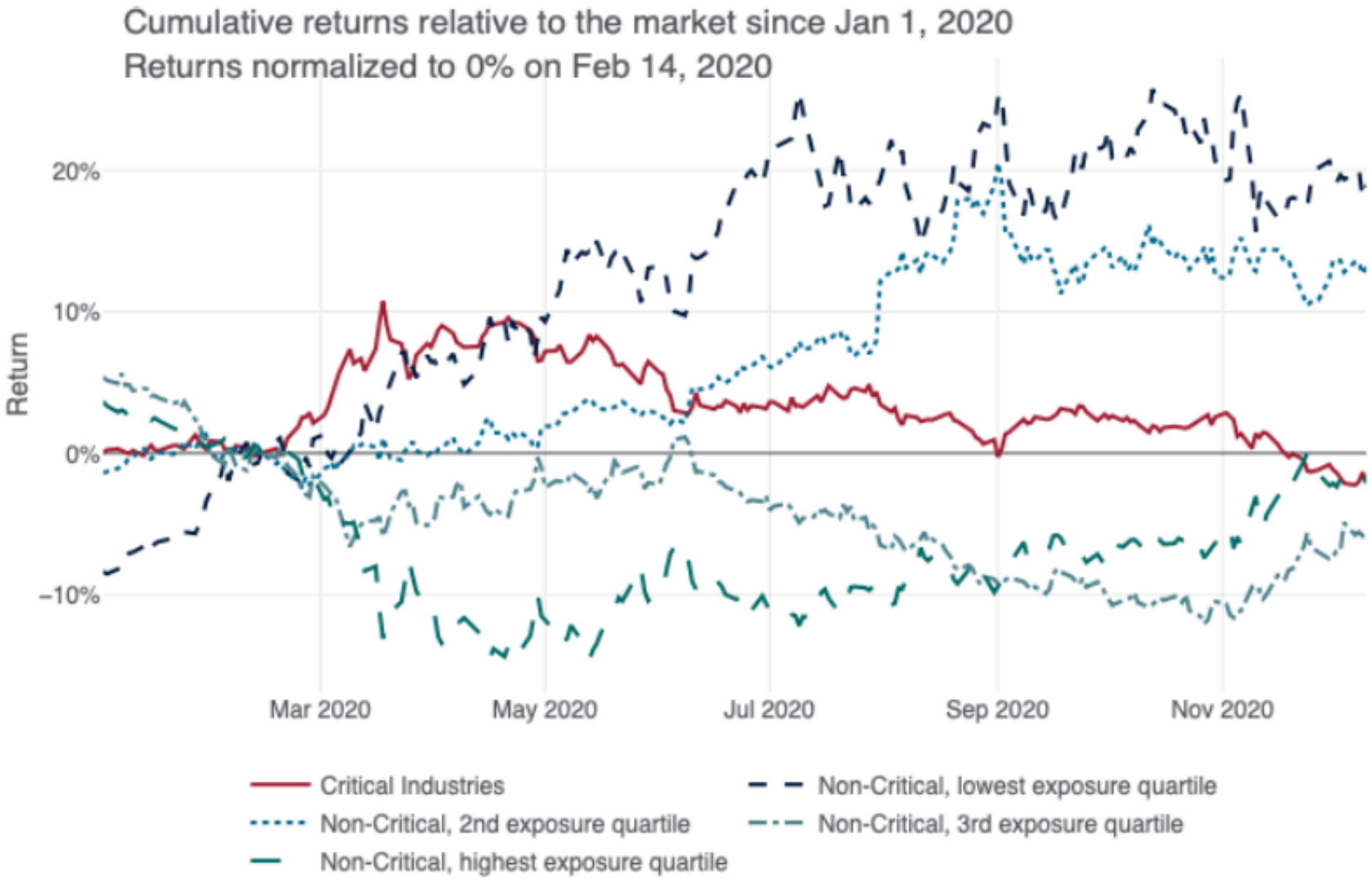
From Davis, Hansen and Seminario-Amez (2020)

IQR is 15 standard deviations greater than average IQR in 2019

Classifications from Baker et al. (2020)

Figure 1: Value-Weighted Mean and Cross-Sectional IQR of U.S. Equity Returns, Daily for 2019 and for Large Daily Jumps in 2020

Equity Markets Think the Shift to WFH Is a Big Deal



Firms outside ”Critical Industries” sorted into quartiles based on the fraction of workers in their industry that can feasibly work from home.

This chart is from https://sites.google.com/site/lawrencedwschmidt/covid19 and is based on work by Schmidt and Papanikalaou (2020).

References

Baker, Scott R., Nick Bloom, Steven J. Davis, Kyle Kost, Marco Sammon and Tasaneeya Viratyosin, 2020. "The Unprecedented Stock Market Reaction to COVID-19," *Review of Asset Pricing Studies,* 10, no. 4.

Barrero, Jose Maria, Nicholas Bloom and Steven J. Davis, 2020a. "60 Million Fewer Commuting Hours Per Day: How Americans Use Time Saved by Working from Home," *VoxEU CEPR Policy Portal,* 16 April.

Barrero, Jose Maria, Nicholas Bloom and Steven J. Davis, 2020b. "COVID-19 Is Also a Reallocation Shock," *Brookings Papers on Economic Activity*, forthcoming.

Barrero, Jose Maria, Nicholas Bloom and Steven J. Davis, 2021a. "COVID-19 Is a Persistent Reallocation Shock," paper prepared for the *AEA Papers & Proceedings*.

Barrero, Jose Maria, Nicholas Bloom and Steven J. Davis, 2021b. "Why Working from Home Will Stick," working paper.

Bloom, Nicholas, Steven J. Davis and Yulia Zhestkova, 2021. "COVID-19 Shifted Patent Applications toward Technologies that Support Working from Home," paper prepared for the *AEA Papers & Proceedings*.

Cutter, Chip, 2020. "What CEOs Really Think about Working from Home," *Wall Street Journal,* 23 September.

Davis, Steven J., Stephen Hansen and Cristhian Seminario-Amez, 2020. "Firm-Level Risk Exposures and Stock Price Reactions to COVID-19," NBER Working Paper 27867.

Mauro, Filippo di and Chad Syverson, 2020. "The COVID Crisis and Productivity Growth," *VoxEU CEPR Policy Portal,* 16 April.

Papanikolaou, Dimitris and Lawrence D.W. Schmidt, 2020. "Working Remotely and the Supply-Side Impact of COVID-19," NBER Working Paper 27330.

Our Ongoing Survey of Working Arrangements and More

Eight survey waves since May 2020: 27,500 worker respondents so far

- May (2,500 respondents), July (2,500), August (5,000), September (2,500), October (2,500), November (2,500), December (5,000)
- January 2021 (5,000) – data not yet included in this slide deck

Random sample of US residents aged 20-64, earning $20K+ in 2019

- Re-weight respondents to match the distribution of workers in the 2010-2019 CPS at the level of {*earnings category* X *industry* X *state}* cells.

About 40 questions per wave on:

- Demographics
- Extent of WFH *during* COVID and desires/plans *after* COVID
- Experience, perspectives on WFH, contagion fears, vaccines, etc.
- Location of workplace, residence, commuting time, etc.

See Barrero, Bloom and Davis (2021) for survey details.