

Internet Access and its Implications for Productivity, Inequality, and Resilience

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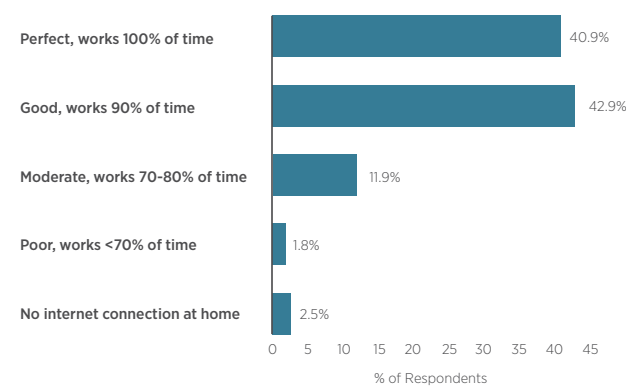
Moving to high-quality, fully reliable home internet service for all Americans would raise earnings-weighted labor productivity by an estimated 1.1% in the coming years, with implied output gains of \$160 billion per year, or \$4 trillion when capitalized at a 4% rate.

Recent work by Barrero, Bloom, and Davis revealed that working from home, a phenomenon that rose to ten times pre-COVID levels in spring 2020, will endure post-pandemic (see “Why Working From Home Will Stick” for the Economic Finding and a link to the working paper). The ability to work from home (WFH), and the quality of such work, is influenced by the quality of internet service, and in this paper the authors explore the impact of internet service on previous and likely future WFH experience, earnings inequality, and the psychological benefits of video conferencing in times of social distancing, among other issues.

To address these questions, the authors tap multiple waves of data from the Survey of Working Arrangements and Attitudes¹ (SWAA), an original cross-sectional survey, fielded monthly since May 2020, and thus far collecting 43,000 responses from working-age Americans who earned at least \$20,000 in 2019. The survey asks about working arrangements during the pandemic, internet access quality, productivity, subjective well-being, employer plans about the extent of WFH after the pandemic ends, and more. The SWAA measure of working from home does not encompass workdays split between home and office or work at satellite business facilities.

Figure 1 • Distribution of Internet Quality Among Survey Respondents

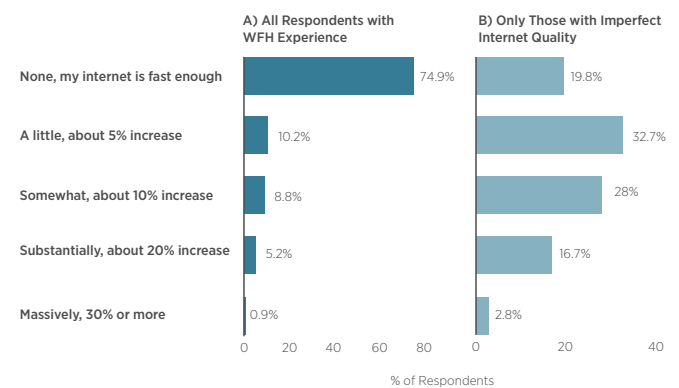
Respondents answering the question, “How reliable is your internet connection?” in the Survey of Working Arrangements and Attitudes.



Notes: Data are from 43,250 survey responses collected from May 2020 to May 2021 by Inc-Query and QuestionPro. The authors re-weight raw responses to match the share of working age respondents in the 2010-2019 CPS in each {age x sex x education x earnings} cell.

Figure 2 • How Much Would Your Efficiency Working from Home Increase If You Had Perfect High-Speed Internet?

Respondents answering the following questions in the Survey of Working Arrangements and Attitudes: “How reliable is your internet connection?” and “How much would your efficiency working from home increase if you had perfect high-speed internet?”



Notes: Efficiency gain is imputed to “None” if the respondent reports perfect internet quality. Some respondents with more than 100% reliable internet report zero potential gains. The sample group only incorporates respondents who report less than 100% reliable internet.

¹ See wfhresearch.com

In their earlier work, the authors estimated that a re-optimization of working arrangements in the post-pandemic economy would boost productivity by 4.6% relative to pre-pandemic levels, mainly attributable to savings in commuting time. This boost reflects a combination of higher productivity when WFH for some workers and the selected nature of who works from home in the post-pandemic economy.

However, what would happen if everyone had access to high-quality internet service? This new work approaches this question by asking people directly about the effect that such service would have on their productivity. The authors also employed regression models that relate SWAA data on the relative productivity of WFH to internet access quality. Under both approaches, they exploit SWAA data on employer plans for who will work from home in the post-pandemic economy, and how much. Their findings include:

- Moving to high-quality, fully reliable home internet service for all Americans (“universal access”) would raise earnings-weighted labor productivity by an estimated 1.1% in coming years.
- The implied output gains are \$160 billion per year, or \$4 trillion when capitalized at a 4% rate. Estimated flow output payoffs to universal access are nearly three times as large in COVID-like disaster states, when many more people work from home.

- Better home internet access increases the propensity to work from home. Universal access would raise the extent of WFH in the post-pandemic economy by an estimated 0.7 percentage points, which slightly raises the authors’ estimate for the earnings-weighted productivity benefits of moving to universal access.
- Better home internet service during the pandemic is also associated with greater subjective well-being, conditional on employment status, working arrangements, and other controls.
- While intuition suggests that improving internet access for lower-income workers would reduce inequality, the authors find that planned levels of WFH in the post-pandemic economy rise strongly with earnings. This effect cuts the other way. On net, they find that universal access would be of little consequence for overall earnings inequality and for the distribution of average earnings across major demographic groups.

The authors stress that the desirability of moving part or all the way to universal access depends on the costs as well as the benefits. Also, this work reveals the extra economic and social benefits of universal access during the pandemic and underscores its resilience value in the face of disasters that inhibit travel and in-person interactions—an important but understudied topic.