Working from Home: Why It Will Stick, What It Means

Remarks by Steven J. Davis

Annual Meeting of the National Association of Business Economists

27 September 2021
Work from Home Before, During, and After COVID

Percentage of paid full days worked from home

How much workers say they WFH during the pandemic.

What workers say about employer plans regarding WFH after the pandemic ends

“During” and “After” statistics based on the Survey of Working Arrangements and Attitudes.

Source: "Why Working from Home Will Stick," Barrero, Bloom and Davis, 2021 (BBD)
Why the big shift to WFH will (partly) stick

1. Mass experimentation and learning → re-optimization of working arrangements

2. Investments (in time, equipment, systems, and processes) by workers and firms that enable WFH

3. Attitudinal shifts:
   • Stigma around WFH has plummeted
   • Lingering fears of infection risks

4. A surge in innovation that supports WFH

5. Long COVID pandemic entrenches the shift to WFH
“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*

Quotation from Cutter (2020)
Compared to your expectations before COVID (in 2019) how has working from home turned out for you?

- **Hugely better** -- I am 20%+ more productive than I expected
- **Substantially better** -- I am to 10% to 19% more productive than I expected
- **Better** -- I am 1% to 9% more productive than I expected
- **About the same**
- **Worse** -- I am 1% to 9% less productive than I expected
- **Substantially worse** -- I am to 10% to 19% less productive than I expected
- **Hugely worse** -- I am 20%+ less productive than I expected
Desired and Planned Levels of WFH after the Pandemic Rise with WFH Productivity Surprises during the Pandemic.

- Employee desired
- Employer planned

Graph showing the relationship between percent of working days and relative to expectations, WFH Productivity during COVID (%).
The Pandemic Has Endured and May Become Endemic – Further Entrenching Recent Shifts in Working Arrangements

Reproduced from the Washington Post on 19 September 2021.
Some Managerial Challenges

Employee desires to WFH >> employer plans for WFH

• Bigger gaps for workers with lower earnings.
• Minority-group members and college-educated women with children express stronger desires to WFH.
• >40% of workers say they will quit or seek another job if employer requires a return to the workplace 5 days a week

Bring everyone back 5 days a week?

• Retention and recruitment challenges, might need to pay more

Embrace the Shift to WFH?

• How to make it work for the organization, and employees
Worker Desires for WFH Are Flat with Respect to Earnings, But Employer Plans for WFH Rise with Earnings.

After COVID, in 2022 and later, how often would you like to have paid workdays at home?

After COVID, in 2022 and later, how often is your employer planning for you to work full days at home?

Note: Marker size is proportional to the number of respondents per income level.
People of Color Want More Work-from-Home Days

Black Americans want to work from home 2.6 days per week on average, as compared to 2.5 days per week for Asian Americans, 2.3 days per week for Hispanic Americans, and 2.2 days per week for white Americans, according to surveys of more than 10,000 Americans conducted between May and July 2021.

After Covid, in 2022 and beyond, how often would you like to have paid workdays at home?


College-Educated Women with Children Want More Work-from-Home Days

Among college-educated employees with young children, 34% of women want to work from home five days per week, compared to 26% of men.

After Covid, in 2022 and beyond, how often would you like to have paid workdays at home?
Let me work from home (part of the week), or I will find another job

If my employer announced that all employees must return to the worksite 5+ days a week on Aug. 1, 2021, I would

- Comply & return: 57.2%
- Return & look for a WFH job: 36.4%
- Quit, even without another job: 6.4%

Notes: Data from two surveys in June and July 2021 carried out by IncQuery with 5000 responses each. 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.

Source: [www.wfhresearch.com](http://www.wfhresearch.com)
### Tradeoffs

#### Advantages of the Employer Worksite
1. Often, that’s where to engage customers/clients/patients
2. Good for company culture and cohesion
3. Good for creativity that flows from in-person interactions

#### Advantages of Working From Home
1. Saves on commute
2. More quiet time/fewer distractions
3. Greater workday flexibility

Hybrid working arrangements aim for the best of both. But how to sustain company culture, foster creativity, mentor the less experienced, monitor and manage remote workers, coordinate remote and onsite workers, manage worker expectations and perceptions,...?
Citigroup Plans for Hybrid Workforce Post-Pandemic

Most staffers will be expected to be in the office only three days a week when the world emerges from the coronavirus pandemic.

By David Benoit
March 23, 2021 1:11 pm ET

‘We will be thoughtful about when we ask colleagues to be in the office together,’ Chief Executive Jane Fraser wrote to Citigroup employees.

PHOTO: EMILY ASSIRAN FOR THE WALL STREET JOURNAL
A more flexible work week:

- We’ll move to a hybrid work week where most Googlers spend approximately three days in the office and two days wherever they work best. Since in-office time will be focused on collaboration, your product areas and functions will help decide which days teams will come together in the office. There will also be roles that may need to be on site more than three days a week due to the nature of the work.

Sundar Pichai
CEO of Google and Alphabet

Published May 05, 2021
HSBC CEO Plans for Permanent Hybrid Work, Much Less Jet-Setting

By Denise Wee and Francine Lacqua
September 2, 2021, 2:00 PM PDT

- Lender sees 50% reduction in travel budget post-pandemic
- Bank is slashing real estate footprint across its offices

The bank, which is in the midst of a historic pivot and cost cutting program, predicts it will be operating in a profoundly different way after the virus outbreak ebb, with as many as 70% of its staff backing a hybrid working model and with its business travel budget cut in half.
Amazon opts for three-day hybrid work plan

Amazon expects corporate employees to return to offices in September.

by Jitish Chittara | June 10, 2021

Amazon updated its return-to-office guidelines on Thursday, opting for a "baseline" of three days in-office. The specific in-office days will be determined by individual leadership teams within the company. Employees can show up in person for work four or five days a week, should they desire it.

Most Popular

1. Revolut wants to be the world's financial super app
2. The data that'll show the digital divide closing
3. Apple isn't the only tech company spooked by the delta variant
There is huge variation in what employees want, so let them choose?

Response to: “In 2022+ (after COVID) how often would you like to have paid work-days at home?”

Notes: Data from the SWAA monthly survey of 2,500+ individuals aged 20 to 64 in the US labor force. Carried out by QuestionPro and IncQuery from May 2020 to July 2021. Only the 67% of respondents reporting the ability to work from home 1+ days per week included.

Source: “Why working from home will stick”, Jose Barrero, Nick Bloom and Steve Davis (2021)
Most large firms are not planning on full choice

Q: “Who decides which days and how many days employees work remotely?”

Some Societal and Economic Consequences

1. Less commuting (perhaps especially via mass transit)
2. Large worker benefits, mainly for the well paid and highly educated
3. Productivity boost:
   - Re-optimization over working arrangements → estimated 4.7% gain in (earnings-weighted) labor productivity
   - Three-quarters of gain due to savings in commuting time
3. Additional productivity gains from better internet access
   - Universal access to reliable, high-speed home internet service would raise labor productivity by another 1.1%
   - Gains are nearly three times as large during COVID-like disasters
4. Big worker spending drop in city centers
Death of the Handshake?

Notes: Data are from 5000 responses to the August 2021 wave of the Survey of Working Arrangements and Attitudes, fielded by IncQuery. Source: “Why working from home will stick”, Jose Barrero, Nick Bloom and Steve Davis (2021, NBER WP)

This chart is reproduced from “Wave Goodbye to the Handshake?” in The Economist, 25 September 2021.
Further information:

www.wfhresearch.com

https://stevenjdavis.com
End of Prepared Remarks – Extra Slides Follow
Survey of Working Arrangements and Attitudes

~60,000 respondents, fifteen survey waves to date
  • Fielded monthly since May 2021, ongoing

US residents aged 20-64, earning $20K+ in 2019
  • After dropping “speeders,” we re-weight to match the CPS distribution of workers by age-sex-education-earnings distribution.

40-55 questions per wave
  • Demographics, earnings, hours worked, living arrangements
  • Extent of WFH during COVID and desires/plans after COVID
  • Experience, perspectives on WFH, contagion fears, vaccines, etc.
  • Home and workplace locations, commuting time, spending, etc.
  • WFH efficiency: Relative to worksite productivity and to expectations
  • Relative effectiveness of remote and in-person meeting
  • Who wants to WFH, and why?
6. *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
Notes: Each figure shows the distribution of raw survey responses, survey responses reweighted to match the share of persons in a given (earnings x industry x state) cell in the 2010 – 2019 CPS, and the distribution among persons earning more than $20,000 per year in the 2010 – 2019 CPS. Data are from 22,500 survey responses collected in May, July, August, September, October, November, and December 2020 by Inc-Query and QuestionPro. Each wave collected 2,500 responses, except the August and December waves, which collected 5,000.
Pandemic-induced investments that enable WFH

Investments at home to enable WFH = 0.7% of annual 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 hours: 14.2 (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: $603 (SE = 12)

Valuing time at respondent’s wage, the mean dollar-equivalent investment is $1,499 (36) among those WFH in 2020. → 1.2% of annual labor income and 0.7% of GDP.

NIPA Data: Investment in Info Processing
Equipment & Software rose from 3.8% of GDP in 2019 to 4.2% in 2020Q2 and Q3, even as GDP share of other investment fell 16%.
Since the COVID pandemic began, how have perceptions about working from home (WFH) changed among people you know?

- Hugely improved -- the perception of WFH has improved among almost all (90-100%) the people I know
- Substantially improved -- the perception of WFH has improved among most but not all of the people I know
- Slightly improved -- the perception of WFH has improved among some people I know but not most
- No change
- Slightly worsened -- the perception of WFH has worsened among some, but not most, people I know
- Substantially worsened -- the perception of WFH has worsened among most, but not all, people I know
- Hugely worsened -- the perception of WFH has worsened among almost all (90-100%) the people I know
Long-Lingering Fears of Proximity to Others

If a COVID vaccine is discovered and made widely available, which of the following would best fit your views on social distancing? (N=16,655)

<table>
<thead>
<tr>
<th>Response</th>
<th>Percent of respondents</th>
<th>(SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete return to pre-COVID activities</td>
<td>27.0</td>
<td>(0.3)</td>
</tr>
<tr>
<td>Substantial return to pre-COVID activities, but I would still be wary of things like riding the subway or getting into a crowded elevator</td>
<td>35.2</td>
<td>(0.4)</td>
</tr>
<tr>
<td>Partial return to pre-COVID activities, but I would be wary of many activities like eating out or using ride-share taxis</td>
<td>24.6</td>
<td>(0.3)</td>
</tr>
<tr>
<td>No return to pre-COVID activities, as I will continue to social distance</td>
<td>13.2</td>
<td>(0.3)</td>
</tr>
</tbody>
</table>
Residual fear of proximity to other people (reasons cited)

You have stated that you *would not return completely to pre-COVID activities*, if a COVID vaccine is discovered and made widely available. What *reasons* are behind your answer? Please check all that apply

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percent of respondents</th>
<th>(SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am concerned about the effectiveness/safety/that not enough people will take the COVID vaccine</td>
<td>85.22</td>
<td>(0.546)</td>
</tr>
<tr>
<td>I am concerned about other potential diseases</td>
<td>23.24</td>
<td>(0.649)</td>
</tr>
<tr>
<td>I have gotten used to social distancing, using e-commerce, and avoiding in-person goods and services</td>
<td>19.18</td>
<td>(0.605)</td>
</tr>
</tbody>
</table>

Observations 4,233

**Notes:** Data are from 7,500 survey responses collected in September, October, and November 2020 by Inc-Query and QuestionPro. Each wave collected 2,500 responses, but we only asked this question if the respondent stated they would not return "completely" to pre-COVID activities in the event a vaccine was discovered and made widely available. 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.

Share of new patent applications that advance WFH technologies doubled from January to September 2020.

Reproduced from Bloom, Davis and Zhestkova (2021).
Figure 4: Many Workers Highly Value the Option to Work from Home

Value of the option to WFH 2 - 3 days/wk, % of current pay?

- More than 35% raise: 4.3%
- 25 to 35% raise: 4.4%
- 15 to 25% raise: 10.0%
- 10 to 15% raise: 16.2%
- 5 to 10% raise: 20.9%
- Less than 5% raise: 10.3%
- Neutral: 26.9%
- Less than 5% pay cut: 3.6%
- 5 to 10% pay cut: 1.1%
- 15 to 25% pay cut: 0.7%
- 25 to 35% pay cut: 0.6%
- More than 35% pay cut: 1.1%

Data are from 12,500 survey responses collected in September, October, November, and December 2020 by Inc-Query and QuestionPro. Each wave collected 2,500 responses, except the December waves which collected 5,000. We focus on the above survey waves where we kept the same question and response options. 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.

Source: Responses to a two-part question.

Part 1: After COVID, in 2022 and later, how would you feel about working from home 2 or 3 days a week?
- Positive: I would view it as a benefit or extra pay
- Neutral
- Negative: I would view it as a cost or a pay cut

Part 2: How much of a pay raise [cut] (as a percent of your current pay) would you value as much as the option to work from home 2 or 3 days a week?
Suppose you got an offer for a new job with the same pay as your current job. Would you be more or less likely to take the new job if it let you work from home 2 to 3 days a week?

- More likely to consider: 55.9%
- No effect: 33.2%
- Less likely to consider: 10.9%
A Big Savings in Commuting Time

- 150 million Americans worked for pay as of December 2020.
- Average commute time: 54 minutes per day.
- WFH: 5% of workdays before COVID, 50% during the pandemic.

\[
\text{Time spent commuting fell} \ (0.5 \ - \ 0.05) (150 \ \text{million}) (54/60 \ \text{hours}) \\
= 61 \ \text{million hours per workday during the pandemic – not counting} \\
\text{the contribution of lower employment. That amounts to} \ \frac{5}{7} (30) (61) = 1.3 \ \text{billion hours per month.}
\]

Since our survey data say that about 25 (not 50) percent of full workdays will be supplied from home after the pandemic, the implied reduction in commuting time is about 580 million hours per month.
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%).

Notes: Data are 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.
Large Benefits, Mainly for Well Paid and Highly Educated

<table>
<thead>
<tr>
<th>As a Percent of Earnings</th>
<th>Value of planned Post-COVID WFH</th>
<th>Perk Value of option to WFH 2-3 Days a Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ann. Earnings of $20 to $50K</td>
<td>1.5 (0.1)</td>
<td>6.8 (0.2)</td>
</tr>
<tr>
<td>Ann. Earnings of $50 to $100K</td>
<td>3.0 (0.1)</td>
<td>8.2 (0.2)</td>
</tr>
<tr>
<td>Ann. Earnings of $100 to $150K</td>
<td>4.8 (0.2)</td>
<td>9.6 (0.2)</td>
</tr>
<tr>
<td>Ann. Earnings over $150K</td>
<td>7.3 (0.2)</td>
<td>12.2 (0.3)</td>
</tr>
</tbody>
</table>

| Goods-producing sectors | 2.6 (0.2) | 7.1 (0.3) |
| Service sectors | 2.4 (0.1) | 7.8 (0.1) |

| No children | 1.8 (0.1) | 6.6 (0.2) |
| Living with children under 18 | 3.2 (0.1) | 8.8 (0.1) |

We estimate perk value from:

Q1: “After COVID, in 2022 and later, how would you feel about working from home 2 or 3 days a week?”

Q2: “How much of a pay raise [cut] (as a percent of your current pay) would you value as much as the option to work from home 2 or 3 days a week?”

To obtain the “value of planned post-COVID WFH,” we also use data on employer plans.
## Large Benefits, Mainly for Well Paid and Highly Educated

### As a Percent of Earnings

<table>
<thead>
<tr>
<th></th>
<th>Value of planned Post-COVID WFH</th>
<th>Perk Value of option to WFH 2-3 Days a Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>2.5 (0.1)</td>
<td>7.7 (0.1)</td>
</tr>
<tr>
<td>Women</td>
<td>1.8 (0.1)</td>
<td>7.6 (0.1)</td>
</tr>
<tr>
<td>Men</td>
<td>3.3 (0.1)</td>
<td>7.8 (0.1)</td>
</tr>
<tr>
<td>Age 20 to 29</td>
<td>2.4 (0.1)</td>
<td>8.3 (0.2)</td>
</tr>
<tr>
<td>Age 30 to 39</td>
<td>2.9 (0.1)</td>
<td>8.6 (0.2)</td>
</tr>
<tr>
<td>Age 40 to 49</td>
<td>2.9 (0.1)</td>
<td>8.4 (0.2)</td>
</tr>
<tr>
<td>Age 50 to 64</td>
<td>1.7 (0.1)</td>
<td>5.4 (0.2)</td>
</tr>
<tr>
<td>Less than high school</td>
<td>1.9 (0.6)</td>
<td>3.6 (1.3)</td>
</tr>
<tr>
<td>High school</td>
<td>1.4 (0.1)</td>
<td>6.1 (0.3)</td>
</tr>
<tr>
<td>1 to 3 years of college</td>
<td>1.6 (0.1)</td>
<td>7.0 (0.2)</td>
</tr>
<tr>
<td>4-year college degree</td>
<td>2.6 (0.1)</td>
<td>7.9 (0.2)</td>
</tr>
<tr>
<td>Graduate degree</td>
<td><strong>4.5</strong> (0.1)</td>
<td><strong>10.0</strong> (0.2)</td>
</tr>
</tbody>
</table>

Notes:
The "value of planned WFH" is equal to the "perk value of WFH" 2 to 3 days per week scaled by how much work from home each respondent's employer is planning.

The "perk value of WFH" itself comes from responses to the following two-part question:

**Part 1:** 
After COVID, in 2022 and later, how would you feel about working from home 2 or 3 days a week?

**Part 2:** 
How much of a pay raise [cut] (as a percent of your current pay) would you value as much as the option to work from home 2 or 3 days a week.

Data are from 20,000 survey responses collected in July, August, September, October, November, and December 2020 by Inc-Query and QuestionPro.

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. This table excludes data from the May wave because we didn't ask about post-COVID employer plans that month.
Productivity Effect of Shift to WFH
Implied Gains from Less Commuting

Weekly time savings from greater WFH in post-pandemic economy:

\[ TS_i = (WFH_i^{Plan} - WFH_i^{Pre})(1 - f_i)C_i, \]

\( C_i = \) daily round-trip commute time expressed in hours, and
\( f_i = \) fraction of commute time devoted to work-related activities.

Implied productivity gain in percentage terms:

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

\( L_i = \) total weekly hours devoted to paid work, inclusive of commuting time.
\( H_i = \) is conventional measure of weekly work hours (pre-pandemic)
\( Days_i^{Pre} = \) number of full workdays per week (pre-pandemic)
40% of workers say they are more efficient when working from home

Responses to the question:

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

In follow-up questions, workers attribute most of the WFH efficiency advantage to the savings in commuting time.
Using SWAA micro data to implement equations above, the commuting time savings imply an average productivity gain of:

- 1.8 (0.1) percent on an equal-weighted basis (N=4,447).
- 2.1 (0.1) percent an on earnings-weighted basis (N=4,447).

We also estimate the average full productivity gain using:

$$Gain_{i}^{True} = PrDiff_{i} \left( \frac{WFH_{i}^{Plan} - WFH_{i}^{Pre}}{Days_{i}^{Pre}} \right) + X_{i}Gain_{i}^{Imp}$$

- 3.5 (0.3) percent on an equal-weighted basis (N=1,562).
- 4.7 (0.3) percent an on earnings-weighted basis (N=1,562).
But a Small Boost, as Conventionally Measured

The conventional approach ignores commuting time and yields a measured productivity boost of

$$Gain_{i}^{conv} = (1 - \delta_i)PrDiff_i \left( \frac{WFH_{i}^{plan} - WFH_{i}^{pre}}{Days_{i}^{pre}} \right),$$

$$\delta_i = \text{fraction of the self-assessed efficiency advantage of WFH that respondent attributes to reduced commuting time.}$$

- 0.8 (0.1) percent on an equal-weighted basis (N=2,456)
- 1.0 (0.3) percent an on earnings-weighted basis (N=2,456)

Conventional measurement approaches will largely miss the productivity gains arising from the shift to WFH.
Given Lots of WFH after the Pandemic Ends, Universal Home Access to High-Quality Internet Service Would:

1. Raise earnings-weighted average labor productivity by an estimated 1.1% in the post-pandemic economy.
   • Implied output gains are $160 billion per year.
   • $4 trillion when capitalized at a 4% annual rate.

2. Raise flow output during future COVID-like disasters by three times as much.
   • Thus, widespread high-quality home internet access promotes greater economic resilience during future disasters that inhibit travel and in-person interactions.

See “Internet Access and its Implications for Productivity, Inequality, and Resilience” by Barrero, Bloom and Davis, July 2021, NBER w.p. 29102 for details.
Impact on City Centers
Commercial buildings remain semi-deserted in U.S. cities

Notes: Kastle security index of swipe card access relative to pre-COVID average

https://www.kastle.com
COVID-19 donut effect on residential property prices and rents

Notes: Generated using data for the largest 12 US cities from Zillow Observed Rental Index and Zillow Home Value Index of residential property rental rates and purchases respectively by zip-code.

Responses to the questions “In 2019, before COVID, in what ZIP code was your job located?”, “In 2019, when you worked at your employer's business premises, roughly how much money did you spend during a typical day on food and drinks (e.g., lunch, coffee, snacks, etc.)?”, and “In 2019, when you worked at your employer's business premises, roughly how much money did you spend during a typical week in bars, restaurants, and other entertainment venues that are near to your workplace?”
The Decline of Commuting Will Cut Spending in City Centers

Among inward commuters to urban area $U$, the average drop in weekly worker spending near employer premises is

$$AvgSpDrop_{IN}^U = (\sum_{i \in IN} s_i)^{-1} \sum_{i \in IN} s_i (WFH_i^{plan} - WFH_i^{pre})SP_i,$$

$AvgSpGain_{OUT}^U$ is analog for outward commuters. Now compute

$$AvgSpDrop_{IN}^U (# \text{ Inward Commuters for } U) - AvgSpGain_{OUT}^U (# \text{ Outward Commuters for } U)$$

Multiply by 50 weeks, divide by 2019 consumer spending in $U$, then multiply by 100 to get the projected percentage drop in consumer spending for area $U$ associated with the persistent shift to WFH.
A Simpler Calculation for Manhattan

- Inward commuters spent $304 per week on services, food, shopping, & entertainment near their workplaces before COVID.
- Their employers’ plans imply 34% of workdays from home after COVID.
- Manhattan had 2.3 million net inward commuters per day in 2019. → Annual spending drop of $11 Billion = 12% of 2019 taxable sales.
- Analogous calculations for San Francisco imply a 4% drop.

This simplified calculation neglects the positive cross-sectional correlation between (a) spending near workplaces in 2019 and (b) the size of the shift to WFH. Also, our current approach greatly understates the drop in worker spending in and around the main commercial centers of large cities.
References


