From Crisis to Norm: Remote Work Trends and Employee Engagement Across Industries, Occupations, and Geography

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Abstract

We use a survey of nearly 160,000 workers conducted from May 2020 through March 2023 to study trends in remote work across time, industry, occupation, and geography, and examine the evolving relationship between remote work and employee engagement. We find remarkable stability in the incidence of remote work since mid-2021, with roughly one-half of workers reporting always working remotely or in a hybrid arrangement. While the incidence of remote work across industries persists, at the occupation level, these arrangements are conspicuously concentrated in certain job classifications. Remote work continues to evolve across the U.S., with 15 (13) states experiencing reported increases (decreases) in remote work rates since 2022, while the most populace states continue experiencing remote working rates exceeding 40% of workers. Empirical evidence shows that while working remotely correlates with higher job satisfaction and lower intentions to quit, these correlations disappear when other workplace characteristics are considered (e.g., pay practices, human resources policies, managerial relationships), a result that persists monthly across 2020-2023. If remote work remains the norm, our results suggest it may not directly influence employee engagement–the workplace still matters.

Keywords: job autonomy; job satisfaction; employee turnover; corporate culture.

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1 Introduction

There is now a voluminous literature on the rise of remote work and its persistence even after over a year of the economy re-opening.[1] While there is increasing recognition that hybrid work—rather than fully remote work (Gibbs et al., 2023; Barrero et al., 2023; Emanuel and Harrington, 2023)—arrangements are likely to persist because of the increased flexibility they confer to workers (Barrero et al., 2023), coupled with their positive effects on employee productivity (Choudhury et al., 2023), much less is known about the potentially time-varying relationship between remote work and employee job satisfaction, particularly during times of crisis versus more normal periods.

This paper documents new stylized patterns about the incidence of remote work across industry, occupation, and geography and its relative efficacy. To answer these questions, we follow Makridis and Schloetzer (2023) by drawing on proprietary data from PayScale, a professional services organization that specializes in valuing human capital, that contains information on not only standard demographics and the intensity of remote work, but also measures of employee engagement, intent to leave the firm, and workplace practices. Such measures are important for evaluating how remote work policies have "worked" in various sub-sectors of the economy because they control for what would normally be unobserved heterogeneity. In particular, these workplace practice controls substantially mitigate selection effects—that is, that higher skilled workers select into jobs that are more likely to offer remote work because of the nature of the involved tasks (i.e., digitally-intensive) and as an additional amenity for attracting talented workers.

Figure 1 begins by plotting the share of remote workers as a function of frequency (always

[1] Much of the literature has focused on measurement; see, for example, Brynjolfsson et al. (2023) for a comprehensive survey and comparison. Other studies have focused on the productivity effects; see, for example, Bloom et al. (2015a), Choudhury et al. (2021), Gibbs et al. (2023), and Emanuel and Harrington (2023), among others.

and always + hybrid) over time. Consistent with the predictions from Barrero et al. (2021), remote work arrangements have remained above trend, growing from under 30% in July 2020 to nearly 50%. While our sample from PayScale skews somewhat toward college-educated workers (Makridis and Schloetzer, 2023), it nonetheless compares reasonably with the Current Population Survey and remains in line with the estimates from Brynjolfsson et al. (2023). Motivated by these trends, we study the evolution of remote work across industry, occupation, and state, and asks whether the relationship between remote work and employee engagement has changed over time.

We document substantial cross-sectional differences in the incidence of remote work. Some of these differences are intuitive. For example, over 70% of Professional Services occupations workers are remote at least some of the time as of 2023, whereas only 15-20% are remote in Accommodation and Food Services. However, some of these differences are surprising. For example, 30-40% of Sales is remote and over 60% of Legal Professionals is at least sometimes remote. We show that remote work has become more, not less, common across industries, occupations, and states, particularly when we focus on jobs that are at least mostly or sometimes remote.

We subsequently leverage our data to reveal more about why the shift in remote work has taken place. On one hand, it could reflect changing employee preferences. On the other hand, it may reflect a change in the composition of jobs. In particular, prior research has shown that the pandemic had heavily heterogeneous effects on employment, and digitally-intensive jobs were much more insulated from the pandemic shock (Gallipoli and Makridis, 2022). We estimate models relating job satisfaction and intent to leave with our narrow and broad measure of remote work, documenting two main results. First, there is some evidence that the *correlation* between remote work and employee engagement, especially for hybrid arrangements, is stronger during the pandemic compared to 2022-23. Second, and more importantly, when we *control* for measures of

workplace practices, the association becomes statistically insignificant and the trend in the point estimate also fades. These results are consistent with prior work highlighting the tenuous relationship between employee engagement and remote work after controlling for workplace characteristics that typically behave as omitted variables (Makridis and Schloetzer, 2023).

Our paper contributes to an active debate about the costs and benefits of remote work, as well as the future of work and persistence of remote work arrangements. There is now a large body of empirical evidence linking remote work, particularly hybrid, with employee productivity for more narrowly defined tasks (Bloom et al., 2015b; Choudhury et al., 2021, 2022; Harrington and Emanuel, 2021). However, there is some ambiguity about the effects on samples of knowledge workers who perform more heterogeneous tasks, pointing towards breakdowns in coordination and communication (DeFilippis et al., 2020; Yang et al., 2021; Gibbs et al., 2022). One reason for conflicting results may stem from the way that remote work is measured, ranging from fully to hybrid remote jobs (Brynjolfsson et al., 2023). Our paper contributes to this debate by highlighting the sustained rise in remote work across different types of jobs.

Our paper also contributes to discussions about the mechanism behind the increasing prevalence of remote work. In particular, the new equilibrium begs the question: "why were jobs not remote four years ago?" We distinguish between the role of changing employee preferences and a change in composition. For example, there is well-known evidence that employees value flexibility (Mas and Pallais, 2017). However, what is not clear is whether that value has changed over time. Consistent with Makridis and Schloetzer (2023) who show that controlling for workplace practices is crucial for overcoming omitted variables bias, and that hybrid work (but not fully or mostly remote) is slightly correlated with higher job satisfaction, we find new evidence of changes in the value of remote work between 2020-23. This suggests that changes in the composition of jobs,

particularly the move to more digitally-intensive jobs, where remote work is arguably easier to implement and more prevalent, may account for the bulk of the sustained increase.

2 Data and Measurement

2.1 Data

We use data from PayScale, which administers one of the world's largest crowd-sourced labor market surveys.[2] As discussed in Makridis and Schloetzer (2023), respondents complete a survey on PayScale's website for many reasons, but often it is to assess how their compensation compares with others in similar positions and to obtain job recommendations. Upon completing PayScale's survey, respondents receive reports illustrating how their compensation compares to respondents with similar education, skills, and work experience. Respondents can also explore how changes such as relocating to a different city, securing a promotion, and returning to school for additional education can affect their earning potential.

Our analysis draws from PayScale data from May 2020 to March 2023; see Makridis and Schloetzer (2023) for comparisons between the PayScale data with the Current Population Survey (CPS) and Occupational Employment Statistics (OES). [3] The data capture differing remote work arrangements, measured by survey questions on the degree to which an employee always works remotely, mostly remote, sometimes remote, or never remote, and self-reported job satisfaction and intentions to leave the firm within six months. PayScale did not modify the survey questions

[2]We refer readers to Makridis and Schloetzer (2023) and `https://www.payscale.com/about/methodology`. for further details.

[3]To summarize, the PayScale data tilts toward college-educated workers who self-report working in management positions, and there is a high degree of overlap with OES data on total annual compensation. These facts suggest the PayScale data is fairly representative of the typical worker.

we use in our analyses during the sample period. We have 221,747 respondents across the sample period, declining to 157,999 when we remove respondents with missing industry, occupation, workplace practices, remote work arrangement, and demographic data (e.g., age, gender, and education).[4] For our descriptive analyses, we utilize the full sample to increase its external validity for uncovering national trends.[5]

The PayScale data provides at least two advantages over standard publicly-accessible labor market survey data—a large sample size and enhanced reporting incentives. The large sample size allows PayScale to leverage the "wisdom of the crowds," which describes how aggregating the opinions from many individuals can yield more accurate forecasts than the opinions of a smaller group of experts. PayScale's respondents have incentives to report accurately because response accuracy governs the quality of their predicted market compensation and job recommendations. These two benefits are particularly useful given PayScale's rich data set, which captures respondents' demographic information, industry and occupation classifications, total cash compensation, and perceptions of the workplace environment.

2.2 Identifying remote work arrangements

We measure remote work using responses to the following question: "Are you able to telecommute/work from home?" Respondents have the following options: "Yes, I telecommute 100% of the time"; "Yes, I telecommute most of the time"; "Yes, I telecommute some of the time"; "Yes,

[4]We retain observations with missing race data since they have a greater non-reporting (53% missing compared to 10% for age, for instance). Instead, we create a binary variable for whether race is missing and include it as a control in our regressions. Although we do not exploit firm-level variation, we also note that the median number of respondents per firm, conditional on reporting a firm name, is 4 and the 75th percentile is 15.

[5]That is, we do not drop observations with missing workplace practices variables, but we do (when plotting the trends in remote work by industry, for instance) drop missing industry information. We find some evidence that missing values are missing at random, but it skews somewhat towards more educated workers being less likely to report an occupational classification or race.

I telecommute on an as-needed basis only (e.g., to receive a furniture delivery)"; "No, I can't telecommute." We use these responses to identify four levels of remote work based on "always WFH," "mostly WFH," "sometimes WFH," and "never WFH" where the "as-needed" and "no" responses are combined and treated as the omitted group throughout much of our analyses.

2.3 Control variables

Our empirical analyses of the relationship between remote work and employee engagement control for total cash compensation and self-reported features of the work environment, along with employee demographics, 6-digit standard occupational classification (SOC) fixed effects, and 2-digit North American Industry Classification Standard (NAICS) fixed effects. We measure total cash compensation as the sum of salary, tips, commission, bonus, and other stock compensation realized at a given point in time.[6] We account for employees' assessments of workplace characteristics using responses to six questions from PayScale's survey that range between one (lowest) to five (highest): (a) How pay is determined at my company is a transparent process; (b) I feel that I am paid fairly; (c) There is frequent, two-way communication between management and myself; (d) My employer provides me with sufficient opportunities for learning and development; (e) I feel appreciated at work; (f) I have a great relationship with my direct manager. We use these to control for heterogeneity in practices related to other organizational design features (e.g., reward systems, human resources policies) that might confound associations between remote work and our employee-level outcomes of interest. Our employee demographics include age, ethnicity, years of work experience, and education fixed effects for having a high school degree, associates degree,

[6] PayScale uses proprietary algorithms to validate the accuracy of respondents' compensation data, removing observations that its algorithms flag as errors.

bachelors degree, masters degree, or doctorate. We view our rich set of controls as substantial attempts to assuage concerns that our estimates of the relationship between various remote work arrangements, job satisfaction, and intention to leave simply reflect selection effects.

3 Evolution of Remote Work Arrangements

3.1 Remote Work Across Time

We begin by investigating trends in remote work across the 2020-2023 period. Figure 1 plots, by month, the percentage of respondents who are "always WFH," "mostly WFH," and "sometimes WFH"–with the mostly and sometimes WFH categories combined for brevity. As would be expected, as the COVID-19 restrictions were taking hold, there was a period of an increasing incidence of remote work arrangements from early 2020 into early 2021. This can be seen by the increase in always WFH (mostly/sometimes WFH) arrangements from below 10% (roughly 27%) in early 2020 to roughly 18% (43%) by early 2021.

Since early 2021, however, the figure highlights how remote work arrangement rates have been fairly steady, with just under 20% of workers reporting always working remotely and 45% to 50% reporting working remotely in some hybrid manner (i.e., a mostly WFH or sometimes WFH arrangement). As respondents to the PayScale survey cannot indicate more than one remote work arrangement, the data suggest that nearly one-half of respondents report some form of remote work arrangement from mid-2021 through the end of our sample in 2023.

3.2 Remote Work Across Industries

Next, we report trends in remote work arrangements across industries. Figure 2 plots the percentage of respondents in different remote work arrangements by two-digit NAICS industry and year. We focus our discussion of descriptive patterns between Panels C and D, which plot the incidence of remote work in 2022 and 2023, respectively, as this time period is arguably less affected by national and state-level COVID-19 restrictions than 2020 and 2021.

There is remarkable persistence in industry-level remote work arrangement rates between 2023 to 2022, and even back to 2021 (reported in Panel B). Respondents in the Finance/Insurance, Information, and Professional Services industries continue reporting the highest rates of remote work–whether always remote or a hybrid arrangement–with more than 30% of respondents in each industry reporting always working remotely and more than 60% to 70% reporting always working remote or in a hybrid arrangement. At the upper end of remote working rates, Management of Companies (NAICS 55) reported the largest decline in hybrid arrangements, down from nearly 75% of respondents in 2022 to slightly above the 50% level in 2023.

In addition, the data reveal no difference between 2022 and 2023 among industries with always remote work arrangements above the 20% level–these industries remain Professional Services, Finance/Insurance, Information, Management of Companies, and Administrative/Support/Waste. There is also no difference between 2022 and 2023 among industries with mostly/sometimes remote work arrangements above the 40% level–these industries remain Professional Services, Information, Finance/Insurance, Management of Companies, Utilities, Public Administration, Mining, Administrative/Support/Waste, Real Estate, and Educational Services. Overall, remote work arrangements continue to persist throughout the economy, with a particular concentration in much

of the Information Supersector as tracked by the U.S. Bureau of Labor Statistics–Information, Finance and Insurance, Real Estate, Professional, Scientific, and Technical Services, Management of Companies, Administrative/Support/Waste, and Educational Services–which employs roughly 40 million U.S. workers as of January 2023.

The top panel in Figure 5 shows the longer-run industry-level change in percentage points between 2020 and 2023. We see that the greatest increase in the Information Supersector–Information, Finance and Insurance, Real Estate, Professional, Scientific, and Technical Services, Management of Companies, Administrative/Support/Waste, and Educational Services–but followed interestingly by the Agriculture, Utilities, Mining, and Transportation/Warehousing industries when measured using mostly or sometimes remote. However, these latter sectors exhibited very little increase, or a net decrease, in remote work when focusing on the always remote criteria. Perhaps the most interesting result is that remote work arrangements remained elevated in 2023, relative to 2020 across a large swath of industries.

3.3 Remote Work Across Occupations

This subsection highlights trends in remote work arrangements across worker occupation. Figure 3 plots the percentage of respondents in different remote work arrangements by standard occupational classification (SOC) code and year. We again focus our discussion of descriptive patterns between Panels C and D, which plot the incidence of remote work in 2022 and 2023, respectively.

Multiple occupations experienced increases in always working remotely. This is particularly the case for positions in the Legal, Healthcare Support, and Protective Service occupations, and also among Architecture/Engineering, Community/Social Services, Education/Training, and Of-

fice/Admin Support occupations. The only notable decline in always working remotely is among Management occupations, albeit a modest decline. Business/Finance and Computer/Math occupations continue to experience high levels of always working remotely. Eleven of the 12 occupational classifications experiencing over 30% of workers in some type of remote working arrangement in 2023 reported the same in 2022, with Protective Services joining the ranks in 2023.

The bottom panel in Figure 5 shows the longer-run occupation-level change in percentage points between 2020 and 2023. We note that while remote work arrangements are prevalent across industries (see the top panel of Figure 5), at the occupation level, the increases remote working arrangements are more concentrated in certain jobs. The greatest increases are in the Computer/Math occupation with a 20 percentage point rise for the broader definition of mostly or sometimes remote, and an even larger near 25 percentage point increase for always remote. Architecture/Engineering also reports a meaningful increase, largely concentrated among mostly and sometimes remote work arrangements. The Personal Care/Service, Protective Service, Healthcare Support, Management, and Business/Finance occupations also experienced an increase in remote work arrangements across the 2020-2023 period. In contrast, Legal, Education/Training, Sales, Farming/Fishing/Forestry, Healthcare Practitioner, Construction, and Production occupations reveal a decline in remote work arrangements in 2023 relative to 2020. This may be due to decreases in distance education (Education/Training) and increases in face-to-face interactions (Legal, Sales, Farming/Fishing/Forestry, Healthcare Practitioner, Construction, and Production).

3.4 Remote Work Across the United States

Finally, we examine trends in remote work across each of the 50 states. Figure 4 plots the percentage of respondents in different remote work arrangements by state and year. We again focus our discussion of descriptive patterns between Panels C and D, which plot the incidence of remote work in 2022 and 2023, respectively.

When comparing state-level remote work patterns, we note that 15 states experienced a reported increase in remote work rates in 2023 relative to 2022, 13 states experienced a decrease, and the remaining 22 states were unchanged. States with reported increases in remote work in 2023 relative to 2022 are: Alabama, Alaska, Arizona, Arkansas, Colorado, Delaware, Kansas, Maine, Maryland, Michigan, Pennsylvania, South Dakota, Virginia, Vermont, and Wyoming. States with reported decreases in remote work are: Georgia, Hawaii, Idaho, Illinois, Kentucky, Minnesota, Missouri, Oregon, South Carolina, Tennessee, Utah, Washington, and West Virginia. Among states with no change in reported remote work arrangement rates, California, Texas, Florida, New York, and Massachusetts continue to have over 40% of workers reporting that their current jobs are always working remotely or in a hybrid remote working arrangement. These descriptive patterns indicate that remote work arrangements continue to shift across the United States, with several of the most populace states experiencing elevated rates of remote work three years after the onset of COVID-19 restrictions. States vary in their attractiveness for remote work, ranging from their business taxes to cost of living to direct incentives for relocation.

Figure 6 illustrates the long-run change in remote work arrangements when considering the share of respondents by state between 2020 and 2023. It is evident that remote work is more prevalent across the United States relative to 2020. While this long-run change is particularly apparent

in the Northeast and Mid-Atlantic regions, it remains the case that remote work arrangements are maintaining their presence throughout the United States.

4 The Efficacy of Remote Work Across Time

Is remote work a more or less important predictive factor for employee job satisfaction and intention to leave the firm at some points in time than others? We explore this question by modifying the model presented in Makridis and Schloetzer (2023) to examine the interplay between remote work arrangements, employee job satisfaction, and their intention to leave their job within six months separately by month-year, conditional on a vector of demographics and workplace practices:

$$y_{it} = \mathbf{r}_{it}\gamma^t + \mathbf{X}_{it}\beta + \mathbf{W}_{it}\psi + \varepsilon_{it} \tag{1}$$

where y_{it} denotes either standardized job satisfaction (a standardized z-score of a 1-5 index) or intention to leave (1/0 indicator) for survey respondent i in month-year t, $\mathbf{r}$ denotes a vector of indicators representing various remote work arrangements (always WFH, mostly/sometimes WFH), X denotes a vector of individual worker characteristics (age, male, race (White, Black, Hispanic, Missing), education (high school, associates, bachelors, masters, Ph.D.), years of work experience, and log total compensation), and W denotes a vector of workplace characteristics (pay transparency, perceived fairness of pay, intra-firm communication, development/training opportunities, appreciation, and managerial relationships). Standard errors are heteroskedasticity-robust, and observations are unweighted.[7]

[7]Unobserved differences in job satisfaction or intent to leave might be correlated with selection into different levels of remote work, and simply controlling for employee demographics does little to address selection. Our measure of total cash compensation is important for purging variation in employee attachment to the firm that reflects compensating differentials between more versus less remote working jobs. Furthermore, our inclusion of

We report the results in Figure 7. We follow the approach in Makridis and Schloetzer (2023) and examine two specifications–Panels A and B exclude workplace characteristics (pay transparency, perceived fairness of pay, intra-firm communication, development/training opportunities, appreciation, and managerial relationships), while Panels C and D include these characteristics. Panel A shows a generally positive and statistically significant association between always working remotely and employee job satisfaction across time, with insignificant coefficient estimates in 2023. Panel B reports a positive and statistically significant, albeit slightly declining, association between hybrid arrangements and satisfaction.

In contrast to these positive correlations, Panels C and D reveal that these associations change after controlling for workplace characteristics. Panel C shows a statistically insignificant association between always working remotely and employee job satisfaction across time. Similarly, Panel D reports insignificant associations between hybrid arrangements and satisfaction. Hence, after controlling for our measures of workplace characteristics (i.e., pay transparency, perceived fairness of pay, intra-firm communication, development/training opportunities, appreciation, and managerial relationships), there is consistently no statistically significant association between remote work and employee job satisfaction, nor a systematic trend. Figure 8 builds upon these results when intent to leave their job is the outcome variable. Overall, we find no statistically significant association between remote work and intent to leave. If anything, in fact, the association between always remote and intent to leave is positive and statistically significant in many cases (see Panel C) and sometimes statistically significant for hybrid work (see Panel D).

workplace characteristics purges variation in our outcomes of interest that could be due to differences in managerial practices and/or the structure of work, which help explain productivity differences (Bloom et al., 2013) and selection across firms (Bloom et al., 2018). Although we recognize that our variation could still reflect some unobserved heterogeneity and therefore is not fully causal, we nonetheless demonstrate that features of the workplace have a first-order effect in explaining associations between remote work, job satisfaction, and intention to leave present in the raw data and conditional correlations.

Next, we explore potential the drivers of this evidence by investigating the gradient on our workplace characteristics, with a specific focus on appreciation responses to the question, "I feel appreciated at work," as empirically it is the most consequential workplace characteristic in the above analyses (results not tabulated). Figure 9 reports these results. The top panel illustrates a strong positive association between feeling appreciated at work and employee job satisfaction. Consistent with the importance of appreciation, the bottom panel reports a strong negative association between feeling appreciated at work and employee intentions to leave the firm within six months. Both panels demonstrate that all months in the 2020-2023 period are statistically significantly related to job satisfaction and intention to leave in the anticipated direction. Overall, workplace characteristics still matter in the age of remote work, and dwarf the role of other factors, particularly employees' perceptions of feeling appreciated at work.

5 Conclusion

This paper explores the incidence and implications of remote work across different industries, occupations, and U.S. states using survey data from PayScale. The results demonstrate a notable shift towards fully remote and hybrid work arrangements from mid-2020 to 2023, varying adoption rates across industries and occupations–with digitally-intensive jobs showing a higher propensity for always remote or hybrid work arrangements–and broad-based changes in remote working patterns across states.

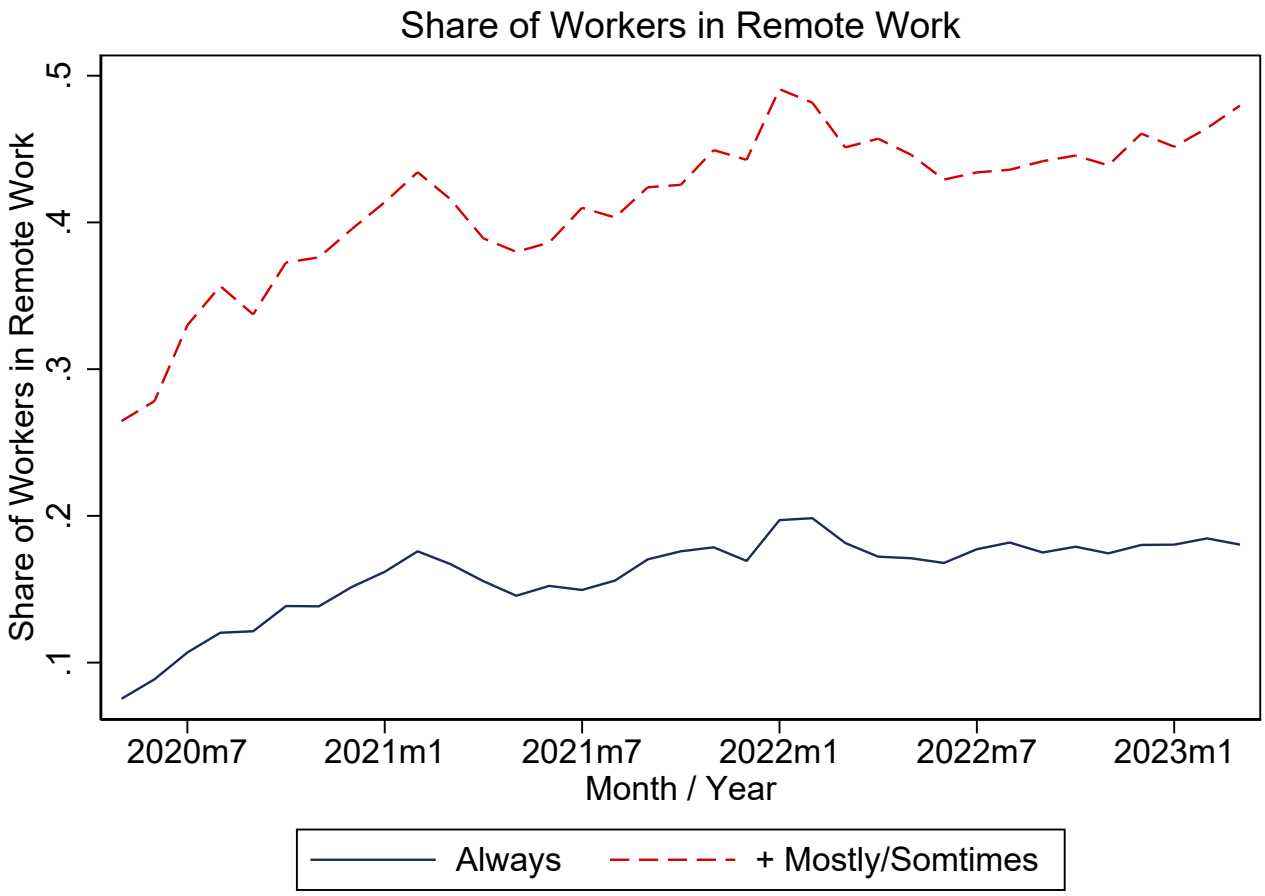
In regards to the implications of remote work arrangements, we focus on the relationship between remote work and two measures of employee engagement–self-reported employee job satisfaction and intention to leave the firm within six months. While empirical evidence initially

shows that working remotely correlates with higher job satisfaction and lower intentions to quit, these correlations disappear when other workplace characteristics are considered (e.g., pay practices, human resources policies, managerial relationships), a result that persists monthly across 2020-2023.

Further exploration is warranted to understand how workplace practices can support the benefits of remote work, particularly in enhancing employee engagement and productivity. Investigating the long-term effects of remote work on organizational culture, employee retention, and firm performance could provide more comprehensive insights. Extending the analysis to different geographical regions and comparing the adoption and impacts of remote work globally could offer a broader perspective. As digital technologies continue to evolve, exploring how emerging tools and platforms could further facilitate remote work and address the challenges associated with remote and hybrid work arrangements would likely be a valuable addition to the literature.

Tables and Figures

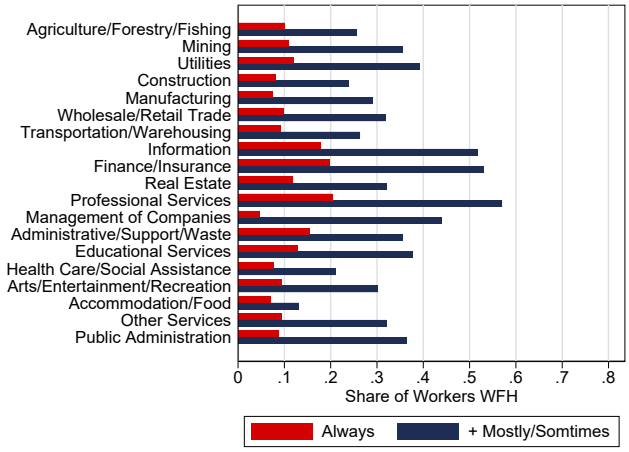
Figure 1: Share of Workers Reporting Remote Work



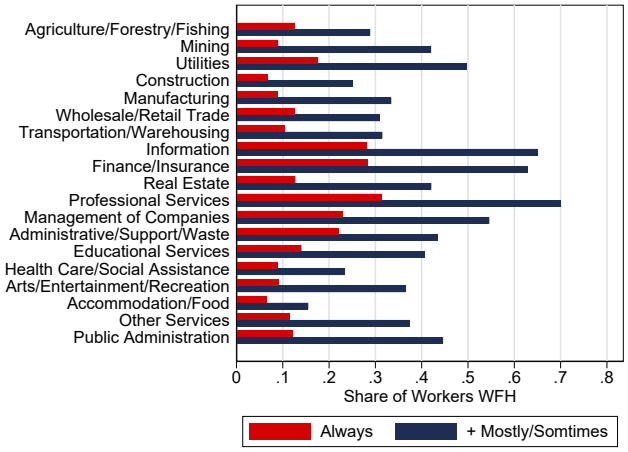
Source: Payscale (May 2020-March 2023). The figure plots the percentage of respondents who report being always and mostly/sometimes working remotely over time. We combine the mostly WFH and sometimes WFH categories for brevity.

Figure 2: Time Series Trends in Remote Work, by Industry

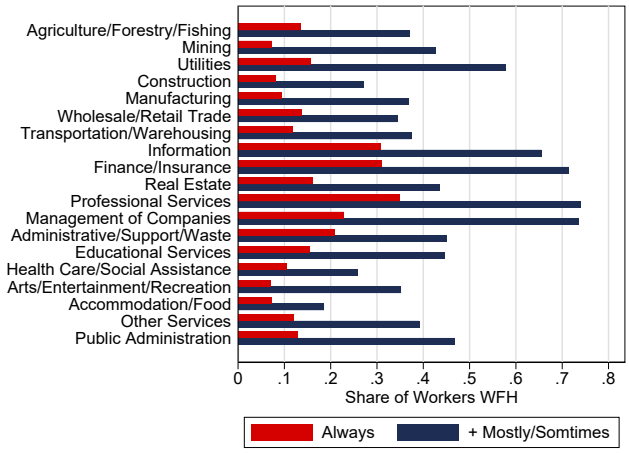
(a) Panel A: 2020



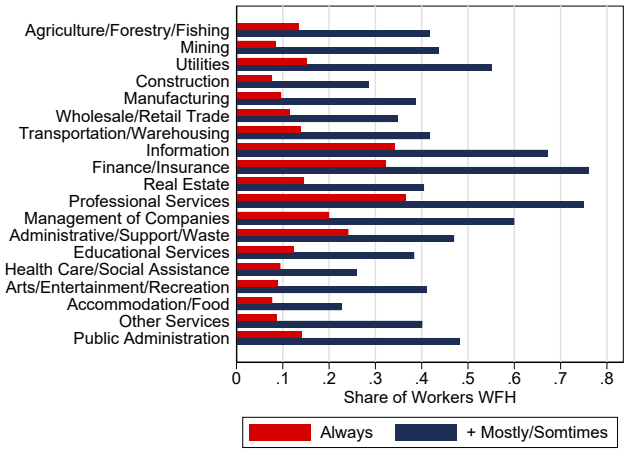
(b) Panel B: 2021



(c) Panel C: 2022



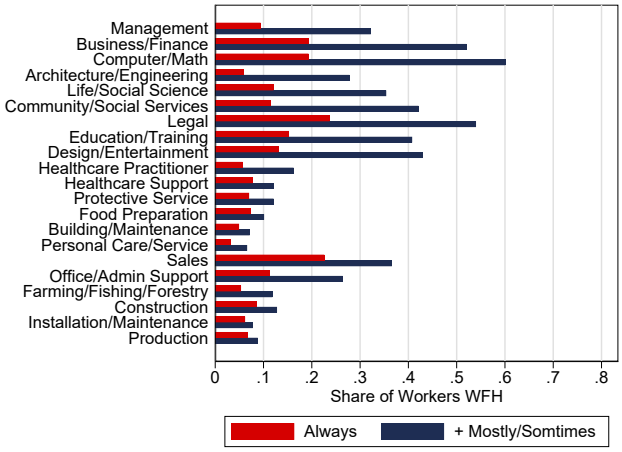
(d) Panel D: 2023



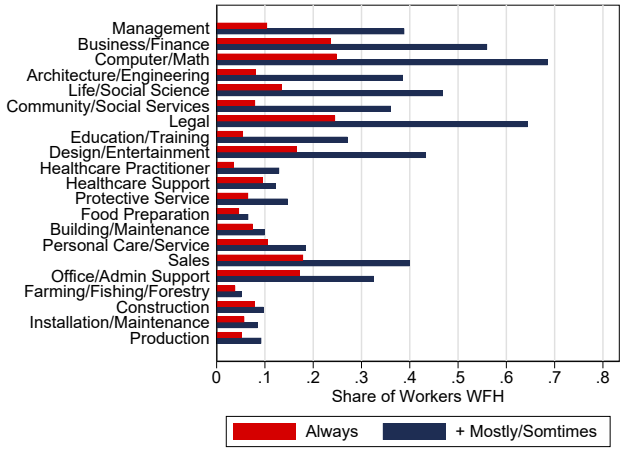
Notes.—Sources: Payscale (May 2020-March 2023). The figure plots the percentage of respondents in different remote work arrangements: "always WFH," "mostly WFH," and "sometimes WFH," by two-digit NAICS industry and year.

Figure 3: Time Series Trends in Remote Work, by Occupation

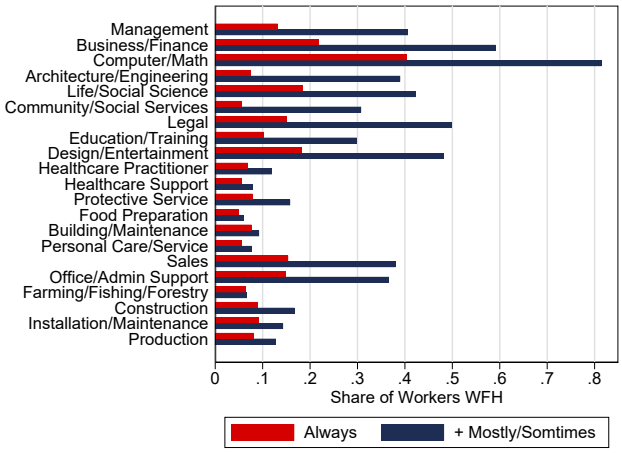
(a) Panel A: 2020



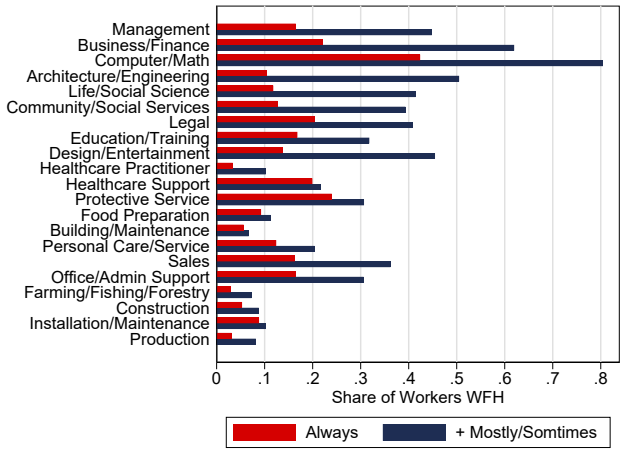
(b) Panel B: 2021



(c) Panel C: 2022



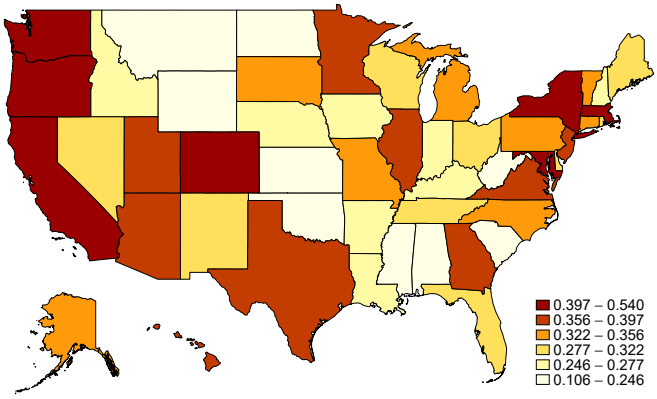
(d) Panel D: 2023



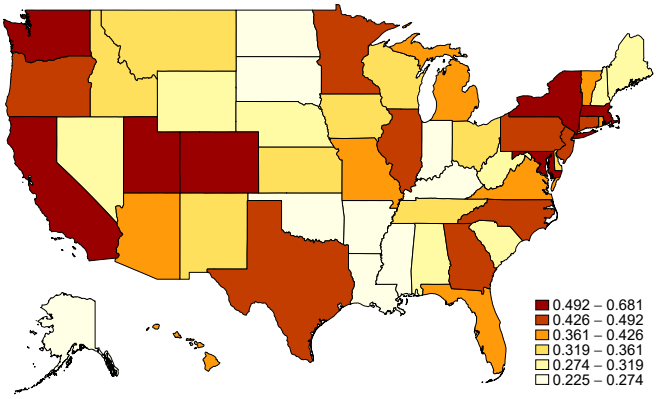
Notes.—Sources: Payscale (May 2020-March 2023). The figure plots the percentage of respondents in different remote work arrangements: "always WFH," "mostly WFH," and "sometimes WFH," by two-digit SOC occupation and year.

Figure 4: Time Series Trends in Remote Work, by State

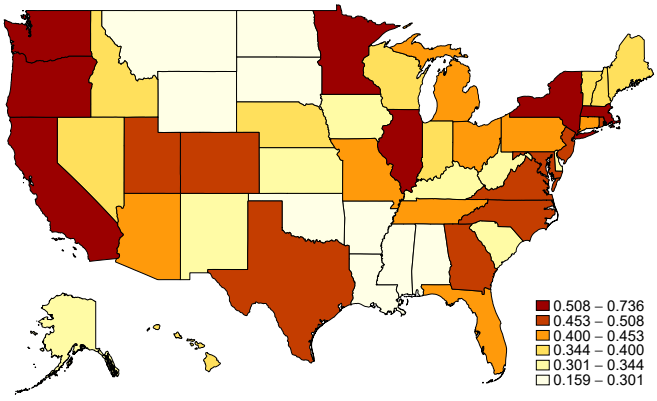
(a) Panel A: 2020



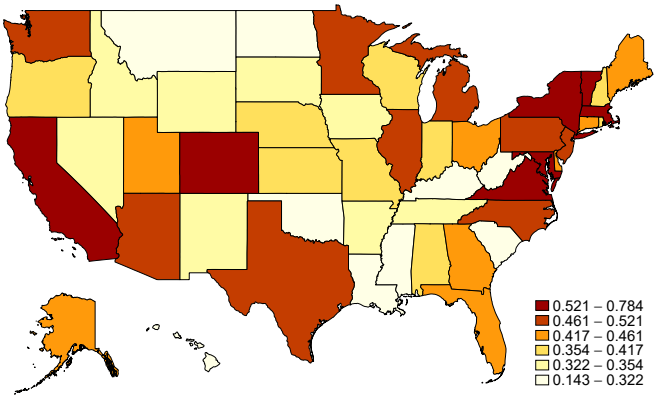
(b) Panel B: 2021



(c) Panel C: 2022

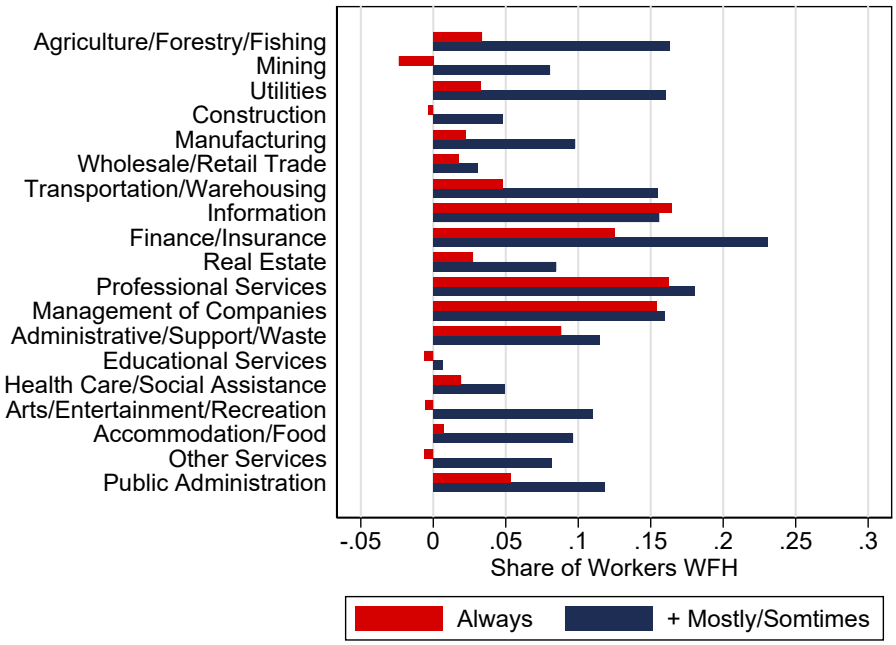


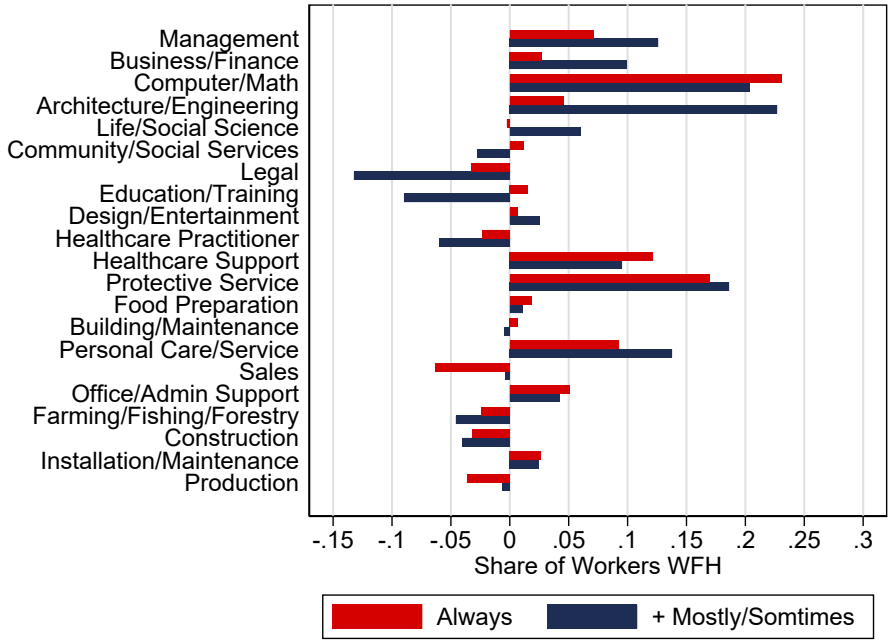
(d) Panel D: 2023



Notes.—Sources: Payscale (May 2020-March 2023). The figure plots the percentage of respondents in any remote work arrangement, by state and year.

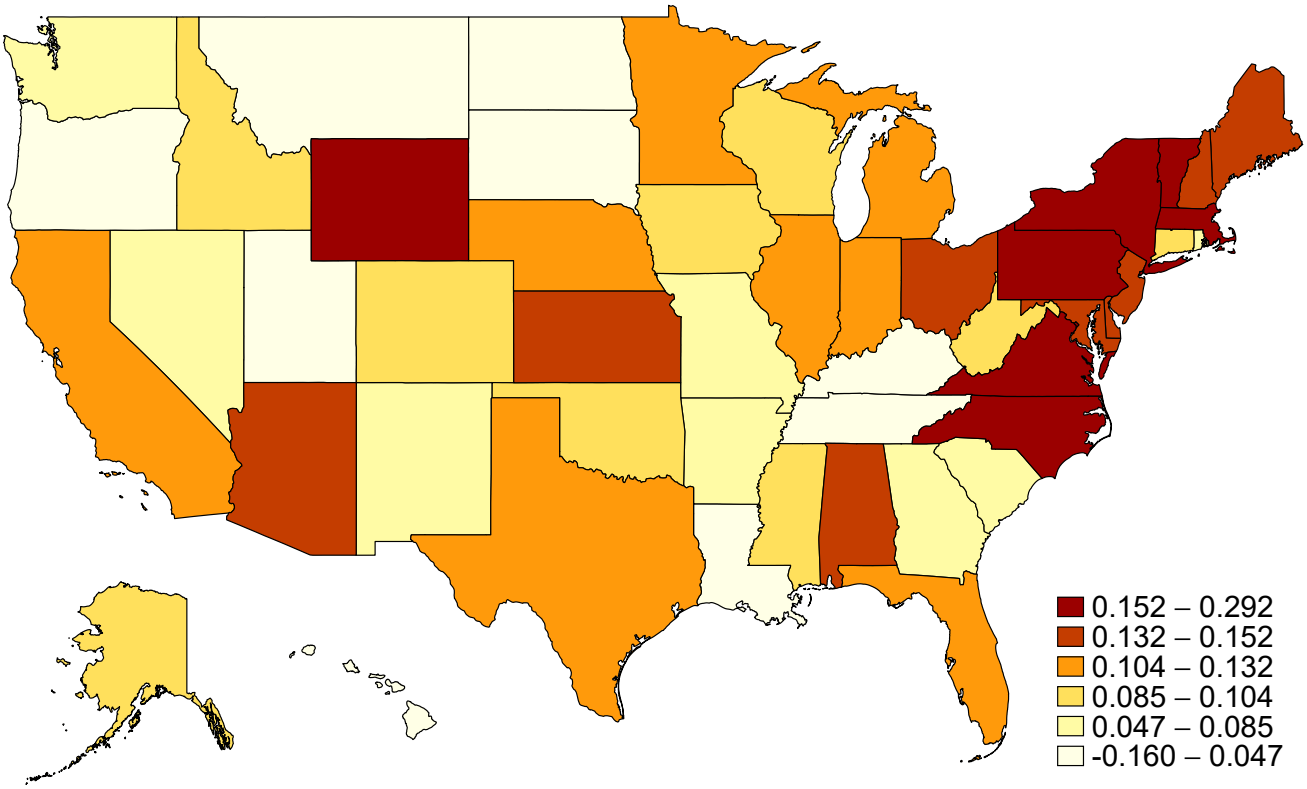
Figure 5: Changes in Remote Work, by Industry and Occupation





Notes.—Sources: Payscale (May 2020-March 2023). The figure plots the change in the share of respondents in different remote arrangements from 2020 to 2023 in percentage points: "always WFH," "mostly WFH," and "sometimes WFH," by two-digit NAICS industry (top panel) and two-digit SOC occupation (bottom panel).

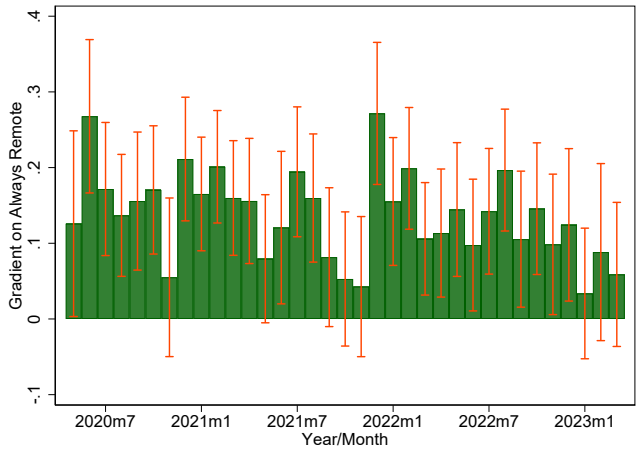
Figure 6: Changes in Remote Work, by State



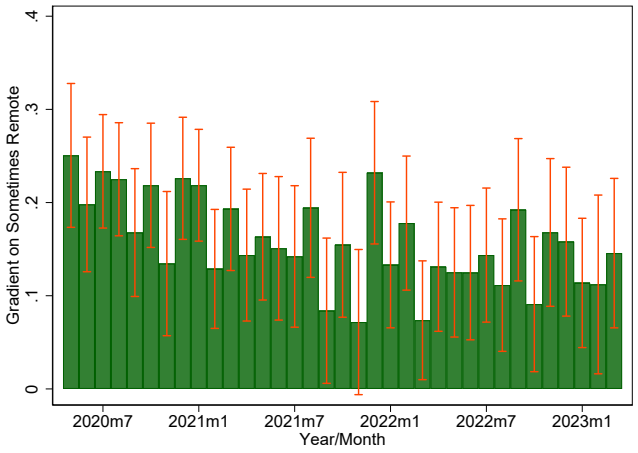
Notes.—Sources: Payscale (May 2020-March 2023). The figure plots the change in the share of respondents in any remote work arrangement from 2020 to 2023 in percentage points, by state.

Figure 7: Association Between Remote Work and Job Satisfaction Over Time

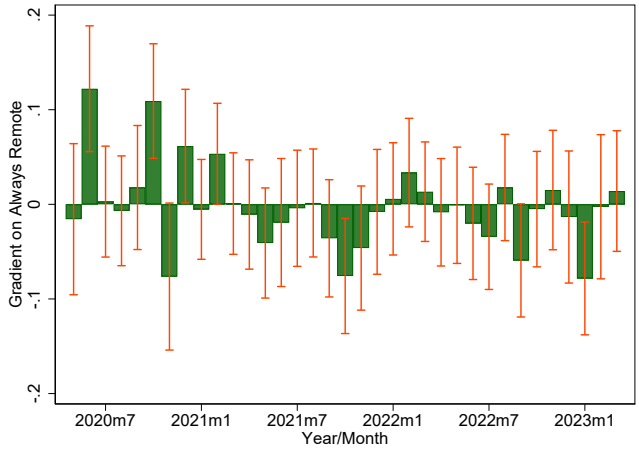
(a) Panel A: Always Remote (No Workplace)



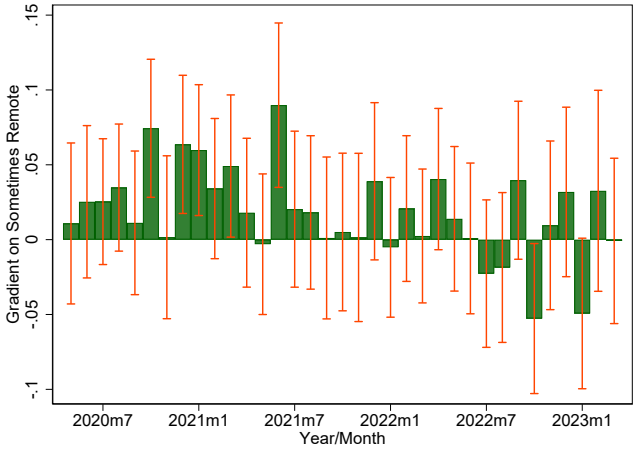
(b) Panel B: Hybrid (No Workplace)



(c) Panel C: Always Remote (With Workplace)



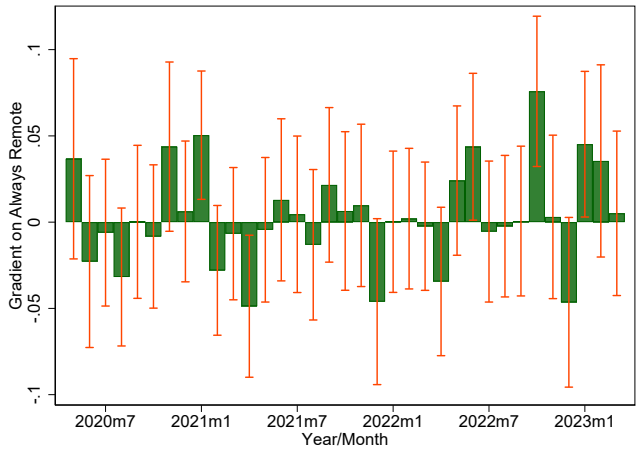
(d) Panel D: Hybrid (With Workplace)



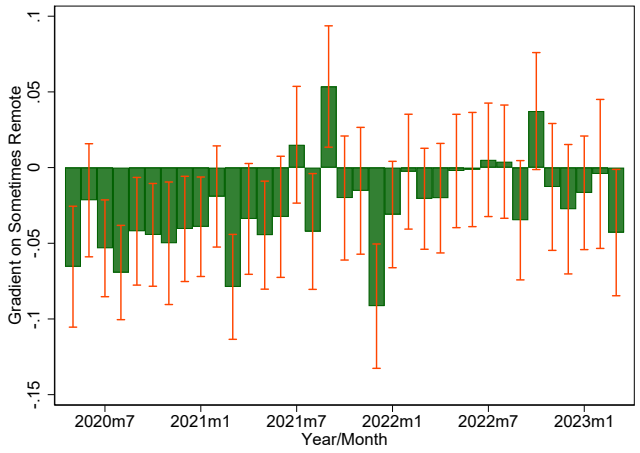
Notes.—Sources: Payscale (May 2020-March 2023). The figures report the coefficients associated with regressions of standardized job satisfaction on an indicator for always working remotely (Always Remote) and mostly/sometimes working remotely (Hybrid) under various specifications by month. All regressions control for logged total cash compensation (including bonuses, tips, and commission), worker demographics: age, male, race (White, Black, Hispanic, Missing), education (associates, bachelors, Ph.D., high school, masters), and years of work experience. Workplace characteristics include standardized indices of pay transparency, perceived fairness of pay, intra-firm communication, development/training opportunities, feeling appreciated at work, and managerial relationships. Standard errors are heteroskedasticity-robust.

Figure 8: Association Between Remote Work and Intent-to-Leave Over Time

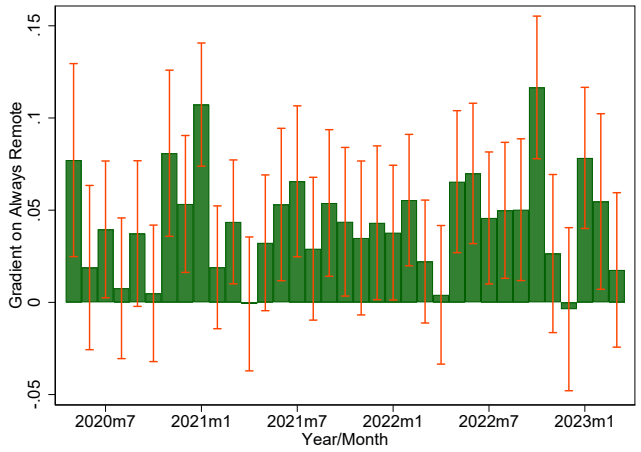
(a) Panel A: Always Remote (No Workplace)



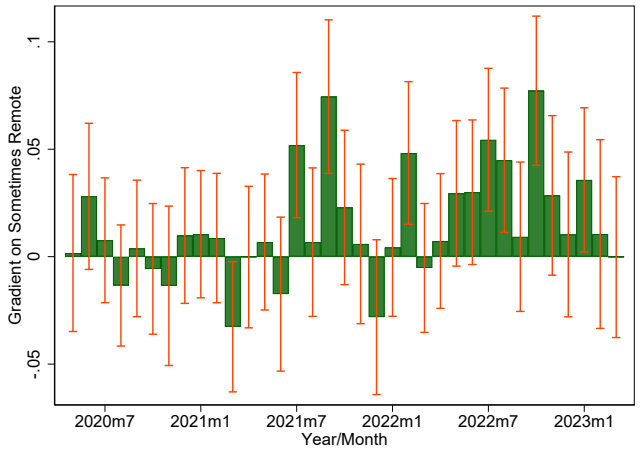
(b) Panel B: Hybrid (No Workplace)



(c) Panel C: Always Remote (With Workplace)

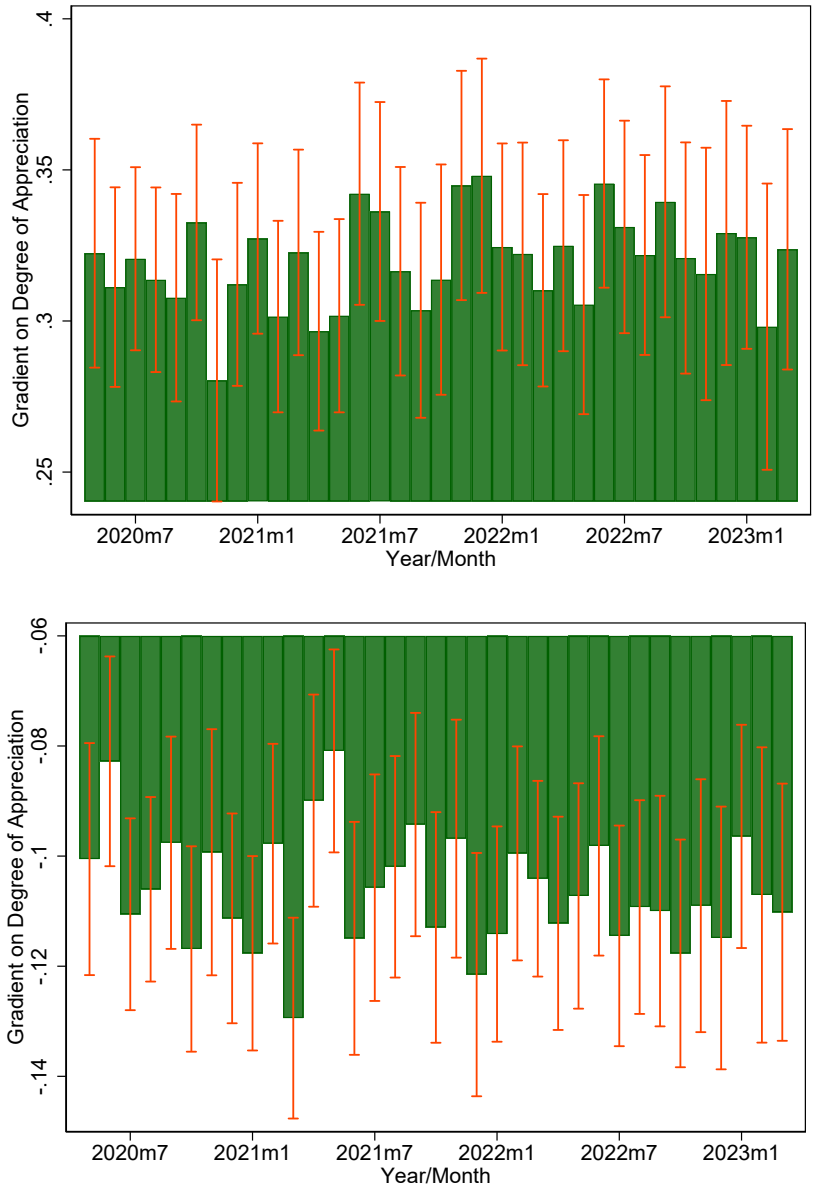


(d) Panel D: Hybrid (With Workplace)



Notes.—Sources: Payscale (May 2020-March 2023). The figures report the coefficients associated with regressions of an indicator for intent to leave their job in the next six months on an indicator for always working remotely (Always Remote) and mostly/sometimes working remotely (Hybrid) under various specifications by month. All regressions control for logged total cash compensation (including bonuses, tips, and commission), worker demographics: age, male, race (White, Black, Hispanic, Missing), education (associates, bachelors, Ph.D., high school, masters), and years of work experience. Workplace characteristics include standardized indices of pay transparency, perceived fairness of pay, intra-firm communication, development/training opportunities, feeling appreciated at work, and managerial relationships. Standard errors are heteroskedasticity-robust.

Figure 9: Association Between Corporate Culture and Employee Engagement Over Time



Source: Payscale (May 2020-March 2023). The figures report the coefficients associated with regressions of standardized job satisfaction and an indicator for intent to leave their job in the next six months on an indicator for always working remotely (Always Remote) and mostly/sometimes working remotely (Hybrid) under various specifications by month. All regressions control for logged total cash compensation (including bonuses, tips, and commission), worker demographics: age, male, race (White, Black, Hispanic, Missing), education (associates, bachelors, Ph.D., high school, masters), and years of work experience. Workplace characteristics include standardized indices of pay transparency, perceived fairness of pay, intra-firm communication, development/training opportunities, feeling appreciated at work, and managerial relationships. The plotted coefficients are for worker responses to the question, "I feel appreciated at work," as empirically it is the most consequential workplace characteristic in the analyses. Standard errors are heteroskedasticity-robust.

References

Barrero, J., Bloom, N., and Davis, S. J. (2021). Why working from home will stick. *NBER working paper*.

Barrero, J., Bloom, N., and Davis, S. J. (2023). The evolution of working from home. *SIEPR working paper*.

Bloom, N., Bender, S., Card, D., Van Reenen, J., and Wolter, S. (2018). Management practices, workforce selection and productivity. *Journal of Labor Economics*, 36(S1):S371–S409.

Bloom, N., Eifert, B., McKenzie, D., Mahajan, A., and Roberts, J. (2013). Does management matter: evidence from india. *Quarterly Journal of Economics*, 128(1):1–51.

Bloom, N., Liang, J., Roberts, J., and Ying, Z. (2015a). Does working from home work? evidence from a chinese experiment. *Quarterly Journal of Economics*, 130(1):165–218.

Bloom, N., Liang, J., Roberts, J., and Ying, Z. J. (2015b). Does Working from Home Work? Evidence from a Chinese Experiment. *Quarterly Journal of Economics*, 130(1):168–218.

Brynjolfsson, E., Horton, J. J., Makridis, C. A., Mas, A., Ozimek, A., Rock, D., and TuYe, H.-Y. (2023). How many americans work remotely? a survey of surveys and their measurement issues. *NBER working paper*.

Choudhury, P., Foroughi, C., and Larson, B. (2021). Work-from-anywhere: The productivity effects of geographic flexibility. *Strategic Management Journal*, 42(4):655–683.

Choudhury, P., Khanna, T., Makridis, C. A., and Schirmann, K. (2023). Is hybrid work the best of both worlds? evidence from a field experiment. *HBS working paper*.

Choudhury, P. R., Khanna, T., Makridis, C. A., and Schirmann, K. (2022). Is Hybrid Work the Best of Both Worlds? Evidence from a Field Experiment. *HBS Working Paper*.

DeFilippis, E., Impink, S. M., Singell, M., Polzer, J. T., and Sadun, R. (2020). Collaborating during coronavirus: The impact of covid-19 on the nature of work. *NBER working paper*.

Emanuel, N. and Harrington, E. (2023). Is working from home working? *SSRN working paper*.

Gallipoli, G. and Makridis, C. A. (2022). Sectoral digital intensity and gdp growth after a large employment shock: A simple extrapolation exercise. *Canadian Journal of Economics*, 55(S1):446–479.

Gibbs, M., Mengel, F., and Siemroth, C. (2022). Work from Home & Productivity: Evidence from Personnel & Analytics Data on IT Professionals. *Journal of Political Economy: Microeconomics, forthcoming*.

Gibbs, M., Mengel, F., and Siemroth, C. (2023). Work from home and productivity: Evidence from personnel and analytics data on information technology professionals. *Journal of Political Economy: Microeconomics*, 1(1).

Harrington, E. and Emanuel, N. (2021). Working' remotely? selection, treatment, and market provision of remote work. *working paper*.

Makridis, C. A. and Schloetzer, J. (2023). Does working from home increase job satisfaction and retention? evidence from the covid-19 pandemic. *SSRN working paper*.

Mas, A. and Pallais, A. (2017). Valuing alternative work arrangements. *American Economic Review*, 107(12):3722–3759.

Yang, L., Holtz, D., Jaffe, S., Suri, S., Sinha, S., Weston, J., Jyoce, C., Shah, N., Sherman, K., Hecht, B., and Teevan, J. (2021). The effects of remote work on collaboration among information workers. *Nature Human Behaviour*.