

Does Working from Home Increase Job Satisfaction and Retention?

Evidence from the COVID-19 Pandemic

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Abstract

We study how working-from-home (WFH) impacts employee job satisfaction and retention using proprietary data on the WFH arrangements of over 70,000 employees. We find that the positive association between always WFH and job satisfaction vanishes after controlling for employee compensation, occupation, demographics, and aspects of their work environment (e.g., feeling appreciated at work, access to development & training opportunities). Furthermore, employees who always WFH have a higher intention to leave their job than employees who never work from home. In contrast, less frequent WFH arrangements relate to higher job satisfaction, but no difference in intention to leave. We draw on work-psychology and employee well-being models to explore two potential mechanisms. We find that more frequent WFH arrangements confer greater job satisfaction when employees work in jobs that require less coordination with others and when employees believe they have a "bad boss," suggesting that more frequent WFH arrangements have less impact on employees' psychological states in these situations. The evidence reveals several nuances regarding the influence of various WFH arrangements on employee job satisfaction and intention to leave.

Keywords: flexible work arrangements; remote work; job satisfaction; employee retention; employee turnover; corporate culture.

JEL Codes: D13, D23, E24, G18, J22, M54, R3.

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1 Introduction

The COVID-19 pandemic and associated quarantine policies led to a surge in work-from-home (WFH) arrangements, particularly among skilled workers (Brynjolfsson et al., 2020; Lund et al., 2020). The change in the incidence of WFH and its current popularity has attracted various views about its longevity, ranging from highly favorable (Choudhury, 2020) to deeply concerned (Zitron, 2021). Whether the shift to always WFH or less frequent WFH arrangements persists may have profound effects on productivity (Barrero et al., 2020), the composition of cities (Delventhal and Parkhomenko, 2021; Delventhal et al., 2021), and even the nature of social communication (Yang et al., 2021). Early empirical evidence suggests that some form of WFH may become part of the fabric of the workplace as an increasing number of firms announce plans to go fully or partially remote (Barrero et al., 2020). Given that labor is a significant determinant of firm value (Merz and Yashiv, 2007), it is important to understand the myriad of ways various WFH arrangements may impact employees.

This paper sheds light on how various WFH arrangements affect employee job satisfaction and their intention to leave the firm. We use new large-scale survey data from PayScale, an organization focusing on valuing human capital. The data includes self-reported features of the WFH arrangements of over 70,000 employees from 2020 and 2021 (i.e., always WFH, mostly WFH, sometimes WFH, never WFH). Respondents also provide information on their job satisfaction, measured on a one to five scale, and intention to leave their job within six months, measured as a binary variable. We also observe employee occupation and demographics, along with employee compensation and perceptions of their workplace

environment, such as fairness of pay, development and training opportunities, feeling appreciated at work, and the quality of their managerial relationships. The measures of occupation, compensation, and workplace environment in particular are a comparative advantage of our research, allowing us to control for characteristics and non-pecuniary amenities that are likely correlated with selection into WFH, job satisfaction, and intention to leave.

Our empirical evidence reveals the following. Our basic analyses show statistically and economically significant associations between WFH and job satisfaction in the cross-section—for example, employees who always WFH have 0.19 standard deviation (sd) higher levels of job satisfaction, whereas those with mostly (sometimes) WFH arrangements have 0.24sd (0.23sd) higher levels of satisfaction relative to employees who report never working from home. However, these associations weaken substantially or vanish after controlling for other dimensions of the employment relationship, most notably aspects of employers’ work environment. After exploiting variation within the same industry, occupation, and controlling for employee demographics, compensation, and attributes of the workplace environment, we find that employees who always WFH are no more satisfied with their jobs than employees who never work from home. While we do find evidence that less frequent WFH arrangements, particularly among employees who report sometimes (rather than mostly) working from home, are positively associated with job satisfaction, the economic magnitude of the relation declines approximately 80 percent after accounting for other dimensions of the employer relationship, particularly attributes of the workplace environment.

We extend these results by examining the association between various WFH arrangements and employees’ intention to leave their firm within six months. Again, while we find economically and statistically significant associations in the cross-section—for example, employees

who always WFH are 1.5 percentage points less likely to report that they intend to leave, whereas those with mostly (sometimes) WFH arrangements are 6.4 (6.1) percentage points less likely to report such intentions—these negative correlations also vanish as we control for other dimensions of the employment relationship. Critically, after we exploit variation within the same industry, occupation, and control for employee demographics, compensation, and aspects of the workplace environment, we find that employees who always WFH are 3.4 percentage points *more* likely to report that they intend to leave their jobs; employees with mostly WFH and sometimes WFH arrangements are no less likely to intend to leave than employees who never work from home. Hence, always WFH arrangements relate to *higher* intentions to leave, while less frequent WFH arrangements are unrelated to these intentions.

Next, we explore why various WFH arrangements are closely correlated with job satisfaction and intention to leave in the cross-section, but these correlations vanish or decline substantially after accounting for selection effects and other aspects of the employment relationship. Prior work on flexible work arrangements is often grounded in work–psychology and employee well–being theories at the individual level, and relate employees’ on the job experiences to psychological states (e.g., sentiments, behaviors, attitudes) that may impact their work (see, for example, [de Menezes and Kelliher \(2011\)](#) for a review of the flexible work arrangement literature). From this general theoretical grounding, we explore *job task characteristics* and *perceptions of the employee-direct manager relationship* as potential moderators that can shed additional light on the relationships we have documented between various WFH arrangements, job satisfaction, and intention to leave.

Consistent with the view that the impact of work from home arrangements varies with job task characteristics, we find that always WFH arrangements confer greater job satisfac-

tion when employees work in jobs that require less coordination with others, measured using O*NET data on the task-based coordination intensity of the survey respondent’s occupation. This result suggests that working from home may have less impact on employees’ psychological states when they have a job that requires less coordination. Moreover, consistent with the view that the impact of work from home arrangements varies with employee well-being, we find that employees who perceive their manager unfavorably prefer to WFH more often. This evidence suggests working from home has less impact on employees’ psychological states when they work for a bad manager. Both sets of results indicate the important role of employee’ psychological states in understanding the interplay between various WFH arrangements, job satisfaction, and intention to leave.

Lastly, we leverage the uniqueness of our data to provide additional empirical facts. For instance, we establish that the positive association between sometimes WFH arrangements persists across time, income levels, and work experience, suggesting this less frequent WFH arrangement is robustly associated with higher job satisfaction. In contrast, we find that the positive correlation between mostly WFH arrangements and job satisfaction fails to persist across time, disappearing in 2021 compared to 2020, and fails to persist across income levels and work experience. Moreover, we find that always working from home increases employees’ intention to leave the firm across time, income, and work experience, while other WFH arrangements have no relation to intent-to-leave in any of these subsamples. This casts further doubt that WFH arrangements have strong positive employee retention effects.

Our study relates to three streams of literature that investigate the consequences of WFH arrangements. The first stream examines how WFH arrangements impact employee productivity. [Bloom et al. \(2015\)](#) find that WFH results in a 13 percent average productivity

increase in randomized control trials of call-center workers in China, with the increase due mainly to employees taking fewer breaks. [Harrington and Emanuel \(2021\)](#) report that WFH raises productivity 8 percent in a natural experiment with call-center workers in the US. However, they also present evidence of adverse selection of employees into WFH arrangements. The adoption of a work-from-anywhere approach yielded a 4 percent productivity gain in a natural experiment involving U.S. Patent Office workers ([Choudhury et al., 2021a](#)). [Angelici and Profeta \(2020\)](#) also find that granting employees some flexibility over when and where to work raises productivity in a field experiment at a large Italian firm. Our results on the link between various WFH arrangements and employee job satisfaction and intention to leave the firm broaden our understanding beyond employee productivity effects.

The second stream of research considers how WFH arrangements impact aspects of the work relationship. For instance, in a field experiment involving persons seeking call-center jobs, [Mas and Pallais \(2017\)](#) find that applicants will accept an 8 percent wage cut, on average, for the option to work from home in a full-time job. Examining data for thousands of firms, [DeFilippis et al. \(2020\)](#) find that WFH involves more (but shorter) meetings per day, more email, and longer workdays. Using an RCT in Bangladesh, [Choudhury et al. \(2021b\)](#) vary the number of days that employees come into the office, finding that more days in the office are associated with more emails and emails directed towards more diverse employees in the organization. This is part of a broader literature on alternative working arrangements and work-life balance (e.g., [Bloom et al. \(2009\)](#) and [Mas and Pallais \(2017\)](#)). Our evidence on how the impact of working from home varies by job task characteristics and the employee–direct manager relationship extends these studies by highlighting how various WFH arrangements affect employees’ psychological states not only compensation and how

employees complete their work.

Finally, recent research examines the extent and incidence of WFH during the COVID-19 pandemic in particular and associated outcomes, including: [Adams-Prassl et al. \(2020\)](#), [Barrero et al. \(2021\)](#), [Bartik et al. \(2020\)](#), [Bick et al. \(2021\)](#), [Brynjolfsson et al. \(2020\)](#), [Mongey et al. \(2021\)](#), and [\(Mohring et al., 2021\)](#). There is evidence of adverse and unintended effects, especially when remote work arrangements were adopted poorly or in a rush (e.g., [Gibbs et al. \(2021\)](#)), and that remote work during the pandemic may have reduced family satisfaction ([Mohring et al., 2021](#)). Other work, including [Davis et al. \(2021\)](#), [Favilukis et al. \(2020\)](#), [Pagano et al. \(2020\)](#), and [Papanikolaou and Schmidt \(2020\)](#), examines the association between firm-level stock returns during the pandemic and the capacity of employees to work from home. Regardless of its net benefits and their source, it appears that WFH work arrangements will remain in place for some time ([Barrero et al., 2020](#)). We contribute to these studies by highlighting how WFH arrangements relate to employee job satisfaction and their intention to leave the firm, controlling for important layers of corporate culture.

2 Data and Variable Measurement

2.1 Data

We use data from PayScale, which administers the largest real-time salary survey in the world.¹ Individuals 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

¹See <https://www.payscale.com/about/methodology>.

job recommendations. Upon completing PayScale’s survey, participants receive multiple reports illustrating how their salary compares to other employees with similar education, skills, and work experience. Participants 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 future earning potential.²

We use data from May 2020 to July 2021 to study the impact of WFH arrangements on job satisfaction and retention. PayScale did not modify the survey questions we focus on in our analyses during this time period. Although the number of responses varies from month-to-month, PayScale typically receives 34,000 to 50,000 responses each month during the sample. However, to ensure a consistent sample across our analyses, we restrict the sample to respondents who provide non-missing data on relevant demographic variables, workplace environment attributes, WFH arrangement, and firm name. We observe 42,954 unique firm names in the broader sample, but the distribution is skewed—the median number of respondents from the same firm is 2, although we start seeing 10 near the 75th percentile.

Our use of the PayScale survey data provides at least two advantages over standard publicly-accessible labor market survey data: a large sample size and enhanced incentives to report truthfully. First, the large sample size allows PayScale to leverage the benefits of “wisdom of the crowds” [Surowiecki \(2004\)](#), which describes how aggregating the opinions from a large number of individuals can produce more accurate forecasts than the opinions of a much smaller group of experts. Second, PayScale’s survey respondents have an incentive to report truthfully because the quality of their predicted market wage and job suggestions

²Please see the appendix for comparisons of the PayScale data with the Current Population Survey (CPS) and Occupational Employment Statistics (OES).

is governed by the accuracy of their survey responses.

The “give and get” nature of the survey embeds incentives for truth-telling with recent experimental evidence validated using Glassdoor data (Marinescu et al., 2021). The benefits of a large sample size and enhanced incentives to report truthfully are particularly useful given PayScale’s rich data set, which captures respondents’ demographic information (age, gender, experience, tenure, and race), industry and occupation classifications, metropolitan area, annual earnings (“total cash compensation”), bonus, commission, and profit sharing income, and perceptions of the workplace environment.

2.2 Work From Home Arrangements

We measure our independent variables of interest—the incidence of working from home—using survey 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, 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 construct four WFH arrangements—“always WFH,” “mostly WFH,” “sometimes WFH,” and “never remote” where the “as-needed” and “no” responses are combined and treated as the omitted group throughout our analyses.

We assess the representativeness of our data on WFH arrangements by comparing our descriptive statistics to those of a nationally-representative survey completed by Gallup in October 2020. According to the Gallup survey, 33 percent of employees report always working

remotely, 25 percent sometimes working remotely, and 41 percent never working remotely.³ These proportions are similar to our sample, in which 13 percent of employees report always WFH, 9 percent mostly WFH, 31 percent sometimes WFH, and 47 percent never WFH or as needed. We conclude that the PayScale data provides a reasonable snapshot of the work-from-home environment during 2020 and 2021.

2.3 Job Satisfaction and Intention to Leave

We measure our dependent variables of interest—job satisfaction and intent-to-leave—using responses to two questions from PayScale’s survey: “I am extremely satisfied working for my employer” and “In the next 6 months, I plan on actively seeking new jobs outside of my current company.” The latter is simply a binary variable and the former is a scale from 1-5 that ranges from “very unsatisfied” to “very satisfied.” While these variables are self-reported indices, it is precisely these perceptions that matter in the workplace.

2.4 Control Variables

A key concern with analyses such as ours is that unobserved differences in job satisfaction or intent-to-leave are correlated with selection into various WFH arrangements. For example, higher productivity workers tend to have greater bargaining power (e.g., better outside options), thereby allowing them to select into more flexible arrangements. These selection effects are likely to be present during the COVID-19 pandemic as some digitally-intensive sectors experienced a substantial boom in demand for labor (Bai et al., 2021). If higher

³<https://news.gallup.com/poll/321800/covid-remote-work-update.aspx>

productivity workers also sort into jobs that confer greater job satisfaction, then we will overestimate (underestimate) the effect of various WFH arrangements on job satisfaction (intent-to-leave). These selection effects make it difficult to infer causality from the transitions towards remote work over the past two years.

We attempt to address this situation by controlling directly for total cash compensation and self-reported aspects of the employee’s workplace environment, together with employee demographic characteristics and both occupational and industry fixed effects. The next two subsections describe our compensation and workplace environment controls in detail. Beyond these controls, we include demographic characteristics, including age, race (White, Black, Hispanic, Missing), and years of experience. We also include details on educational attainment, enabling us to create fixed effects denoting whether the respondent has a high school degree, associates degree, bachelors degree, masters degree, or doctorate degree. Taken together, we view our set of control variables as substantial, reducing concerns that our estimates of the relationship between various WFH arrangements, job satisfaction, and intention to leave simply reflect selection effects.

2.4.1 Compensation

We measure total cash compensation, which reflects the sum of salary, tip, commission, bonus, and other stock compensation realized at a given point in time. Given that there is an increasing share of performance pay workers, and these jobs exhibit systematically different labor market dynamics from their fixed wage job counterparts ([Makridis and Gittleman, 2021](#)), having a measure of total cash compensation is important. PayScale uses proprietary

algorithms to validate the accuracy of respondents' compensation data, removing observations that algorithms flag as errors. We use the natural logarithm of total cash compensation throughout our analyses to smooth out the earnings distribution.

2.4.2 Workplace Environment

There is now ample evidence that management practices affect firm productivity (Bloom and Van Reenen, 2007; Bloom et al., 2013) and corporate strategy (Bertrand and Schoar, 2003). However, there is much less empirical evidence on the mechanisms through which they shape the workplace environment and how it feeds into firm productivity. Measuring characteristics of the workplace environment is empirically challenging to pin down and typically subject to the limitations of available survey data. For example, the corporate culture literature draws on the Great Places to Work (GPTW) survey, which contains questions regarding integrity and trust in the workplace, and Guiso et al. (2015) uses this data to examine before and after a firm goes public. Similar approaches use rankings from available surveys. For example, Edmans (2011) and Edmans (2012) examine the stock returns of firms that are ranked within the top hundred in the GPTW survey. Other strategies involve creating and distributing surveys, such as the World Management Survey in Bloom and Van Reenen (2007) and the recent survey of corporate culture in Graham et al. (2017).

We measure five attributes of the workplace environment using responses to questions about the workplace that are rated on a scale of one (lowest) to five (highest), including:

- How pay is determined at my company is a transparent process (Pay Transparency).
- I feel that I am paid fairly (Fairness of Pay).

- There is frequent, two-way communication between management and myself (Intra-firm Communication).
- My employer provides me with sufficient opportunities for learning and development (Development/Training).
- I feel appreciated at work (Degree of Appreciation).

We use responses to these five questions to account for unobserved aspects of the workplace that may jointly determine the incidence of various WFH arrangements, job satisfaction, and an employee's intention to leave the firm.

3 Differences in Work From Home Arrangements Across the Labor Market

We begin by examining cross-sectional differences in working from home to help illustrate our data and contextualize our subsequent empirical evidence.⁴ We focus on cross-sectional differences in WFH arrangements by industry, occupation, demographic characteristics, the coordination intensity of occupations, and occupation compensation. We view these analyses as important because they can reveal differences that could be important sources of bias in our analyses. This section explores these cross-sectional analyses in more detail.

⁴We do not focus as much on inter-temporal variation because there is some selection into when an individual appears in the PayScale data. As one of the main reasons that individuals complete salary profiles is to obtain an assessment of their market value, the number of site logins will naturally be lower during the national and state quarantine policies as firms froze hiring and laid off many workers.

3.1 Industry and Occupation

Panel A of Figure 1 plots the share of workers in “always WFH” and the combination of “mostly WFH” and “sometimes WFH” by industry.⁵ Panel B does the same, focusing on differences across occupations. The panels reveal considerable heterogeneity across industries and occupations. For example, panel A highlights the incidence of “always WFH” is highest in professional services, finance and insurance, and information (i.e., computer science and mathematics) industries. Naturally, the incidence of “always WFH” is among the lowest in construction, manufacturing, healthcare, and accommodation and food services industries.

Panel B shows that the incidence of “mostly/sometimes WFH” is highest in computer science and mathematics, business and finance, and management occupations, while it is among the lowest in protective services, food preparation, and transportation occupations. Also of note, the panels reveal that many industries and occupations have over twice as large of a share of workers in the “mostly/sometimes WFH” WFH arrangement than those in the “always WFH” arrangement. Hence, it is important to account for industry and occupation in the analyses, as it may be jointly correlated with various WFH arrangements, job satisfaction, and intent to leave.

[INSERT FIGURE 1 HERE]

The patterns are generally consistent with those from Gallup’s nationally representative survey results, which point to a decline from 69 percent in always or sometimes remote in April 2020 to 45 percent in September 2021 (Saad and Wigert, 2021). However, all of

⁵All figures are best viewed in color.

the decline came from the always remote arrangements; if anything, sometimes remote has increased from 15 percent to 20 percent between 2020 and 2021. The patterns from PayScale are slightly larger, on average, likely because the data reflects a somewhat more higher-skilled and professional workforce, which is more likely to be in a WFH arrangement.

3.2 Demographics and Coordination Intensity

Figure 2 reveals additional differences in WFH arrangements across the labor market. Panel A documents the shares of WFH arrangements across different demographic brackets. Of note, Panel A highlights that, in the PayScale sample, large fractions of workers across all years of experience had WFH arrangements, as well as workers of different genders and races. Again, these patterns reflect a somewhat more higher-skilled and professional workforce.

[INSERT FIGURE 2 HERE]

Panel B of Table 2 reports the shares of WFH arrangements across occupational classifications based on their coordination intensity. We draw on data from the O*NET survey to measure the intensity of coordination-based tasks across occupations. In this survey, which the U.S. Department of Labor administers to a random sample of U.S. workers, respondents answer questions on an ordinal scale that generally measures both the importance of a task and the frequency at which different tasks occur on the job. We focus on work activities, taking the product of the importance and frequency weights (when available) to generate an overall intensity for each sub-index task (David H. and Handel, 2013). We gather every wave of the survey between 2014 and 2018 to produce a harmonized time series reflecting pre-pandemic task requirements at the six-digit occupational level.

To construct our measure of coordination intensity, we take the unweighted average of the following work activity sub-indices: “Getting Information,” “Monitor Processes, Materials, or Surroundings,” “Processing Information,” “Communicating with Supervisors, Peers, or Subordinates,” “Organizing, Planning, and Prioritizing Work,” and “Coordinating the Work and Activities of Others.” We then create 15 percentiles across the distribution, ranging from lowest intensity (15th percentile) to highest (1st percentile), to provide a more granular view into the incidence of WFH arrangements by coordination intensity. We subsequently use the index to estimate the relationship between coordination intensity and the incidence of remote work, and we test for heterogeneity later in low versus high coordination jobs.

Panel B highlights the differences in WFH arrangements across coordination-intensity percentiles. Of note, there is an increasing relationship across percentiles between the “mostly/sometimes remote” category and the increasing intensity of coordination in an occupation. This is consistent with the notion of the increasing presence of WFH arrangements in occupations such as management, and in industries such as professional services. The rather unintuitive direct relationship of a greater share of WFH arrangements as coordination intensity of a task increases is additional evidence of the importance to account for industry and occupation—as well as perceptions corporate culture—in our analyses of the relationship between various WFH arrangements, job satisfaction, and intention to leave. Otherwise, the raw correlations reflect substantial degrees of spurious correlation.

3.3 Compensation Levels and Growth

We now examine the relationship between compensation and working from home. One of the advantages of our data is that we have information on total cash compensation, rather than just wage income. Failing to account for such differences could be an important source of bias in our analyses. For example, when we correlate the average share of compensation from salary (relative to total cash compensation) with the share of workers in “always WFH” and “mostly WFH” work arrangements, we obtain correlations of -0.32 and -0.70, respectively (weighted by the number of workers in each occupation, untabulated). Hence, employees who always or sometimes work from home are more likely to have more non-salary cash compensation (e.g., bonuses and stock options) than those who never work from home.

We begin by exploring the cross-sectional relationships between various WFH arrangements and total cash compensation in Figure 3. We find a weak positive correlation of 0.13 between “always WFH” and compensation in Panel A, but much stronger correlations of 0.61 and 0.70 for “mostly WFH” and “sometimes WFH” in Panels B and C, respectively. This reflects the presence of skill-biased technical change—that is, employees in digitally-intensive jobs earn a greater premium in the labor market and their tasks can generally be done remotely. Panel D reports a correlation of -0.71 for “never WFH” and compensation, again suggesting the importance of accounting for compensation in our analyses, as compensation may be jointly correlated with WFH, job satisfaction, and intention to leave.

[INSERT FIGURE 3 HERE]

Next, we investigate how *changes* in WFH are related with *changes* in total cash com-

pensation. To capture more of the period during the initial round of lockdowns with the reopening of establishments, we compute the average labor income and share of employees working from home between May to July 2020 and March to July 2021. Here, we weight each three-digit SOC code by the number of workers in each year-occupational cell to reduce the degree of noise. Figure 4 documents these results. In general, we find a positive correlation between increases in working from home more frequently and increases in compensation, but a negative correlation between increases in the share of people who never WFH and increases in compensation. These correlations are fairly weak and noisy, however, consistent with evidence of fairly rigid wage growth during the initial COVID-19 pandemic period (Kochhar and Bennett, 2021). This situation suggests compensation levels may be more critical than compensation growth in our analyses.

[INSERT FIGURE 4 HERE]

4 Empirical Strategy and Results

4.1 Empirical Strategy

We estimate the following model to examine the interplay between various WFH arrangements, job satisfaction, and employees' intention to leave their job within six months:

$$y_{ijoft} = \gamma \mathbf{r}_{ijot} + \beta X_{ijot} + \xi w_{ijot} + \gamma \mathbf{c}_{ijot} + \phi_o + \psi_j + \zeta_f + \lambda_t + \varepsilon_{ijot} \quad (1)$$

where s_{ijot} denotes either job satisfaction (a standardized z -score of a 1-5 index) or intention to leave (1/0 indicator) for individual i in industry j , occupation o , and firm f in year-month t , $\mathbf{r}$ denotes a vector of indicators for varying WFH arrangements (i.e., always WFH, mostly WFH, sometimes WFH), w denotes logged total cash compensation, $\mathbf{c}$ denotes a vector of workplace environment characteristics, and ϕ , ψ , ζ and λ denote fixed effects for the 6-digit standard occupational classification (SOC) code, the 2-digit North American Industry Classification Standard (NAICS) code, firm, and time (year and month). Standard errors are heteroskedasticity-robust and observations are unweighted.

Our primary concern with Equation 1 is that unobserved differences in job satisfaction or intent-to-leave are correlated with selection into various WFH arrangements. For example, higher productivity workers tend to have greater bargaining power (e.g., better outside options), thereby allowing them to select into more flexible arrangements. These selection effects are likely to be especially present over the COVID-19 pandemic as some digitally-intensive sectors even experienced a substantial boom in demand for labor (Bai et al., 2021). If higher productivity workers also sort into better jobs that confer greater job satisfaction, then we will overestimate (underestimate) the effect of WFH arrangements on job satisfaction (intent-to-leave). As we will show, omitted variables bias is a first-order concern—simply controlling for demographics does little to solve for the essence of the selection problem.

We attempt to address this situation in several ways. In particular, we control directly for total cash compensation and workplace environment characteristics, together with employee demographic characteristics and both occupational and industry fixed effects. This ensures that we compare observationally-equivalent workers in the same six-digit SOC code and two-digit NAICS code even after adjusting for compensation and differences in the workplace

environment. In some specifications, we also include firm fixed effects to isolate variation in perceptions about the workplace environment within the same firm among individuals in comparable occupations over time. That allows us to purge variation in job satisfaction that could be driven by differences in managerial practices and/or the structure of work, which are important for explaining productivity differences (Bloom et al., 2013) and selection (Bloom et al., 2018) across firms. Even though some residual unobserved variation could be correlated with various WFH arrangements, we nonetheless view our estimates as interesting objects because we are able to pin down substantial selection effects. In a practical sense, including perceptions about the workplace environment are among the most substantial controls for ensuring our estimates do not simply reflect selection effects.

4.2 Main Results

4.2.1 Job Satisfaction

Table 1 documents the results associated with Equation 1 under varying levels of controls. Beginning with our simplest specification in column 1, which controls only for demographic characteristics, various WFH arrangements are positively associated with job satisfaction. For example, those who always WFH have 0.195sd higher satisfaction relative to those who never WFH, while those who mostly and sometimes WFH have 0.246sd and 0.230sd higher satisfaction relative to those who never WFH, respectively.

Consistent with our concerns about selection, we note that the marginal effects of various WFH arrangements decline in magnitude as we augment our analyses with additional control

variables. Column 2 adds total cash compensation as a control, reducing the gradients on remote work by roughly 20 percent. Column 3 adds respondents' perceived workplace environment characteristics. Importantly, these perceptions are highly predictive of job satisfaction, raising the R -squared from 0.03 to 0.54 between columns 2 and 3 and addressing concerns about unobserved heterogeneity. Of note, the gradients on the WFH arrangements decline substantially after including the workplace environment characteristics in the model, decreasing to 0.032 and 0.039 for mostly and sometimes WFH, respectively. Moreover, the gradient on always WFH becomes statistically insignificant. Each of the dimensions of the workplace environment are economically meaningful.

Columns 4 and 5 sequentially add 6-digit occupation and time (year and month), and 2-digit industry fixed effects. Their inclusion changes the coefficient estimates slightly. Finally, column 6 introduces firm fixed effects, exploiting variation among demographically-equivalent people in the same firm and occupation over time. Here, the R -squared increases to 0.72, the coefficient estimate on always WFH remains insignificant, the coefficient estimate on mostly remote becomes statistically significant only at the 10 percent level, but the estimate on sometimes remote grows slightly in economic magnitude to 0.052sd. Overall, it appears that always WFH arrangements are unrelated to job satisfaction, while mostly and sometimes WFH arrangements are favorably associated with job satisfaction.

To put these coefficients on remote work in perspective, consider an alternative specification where we binarize the workplace environment variables by assigning a value of one when the index is equal to a value of four or five (on a scale of 1 to 5, with five the highest score), zero otherwise. In untabulated analyses, we examine the coefficients corresponding to the firm fixed effects specification in column 6 of Table 1. We find coefficients ranging

between 0.146 (for high levels of pay transparency) to 0.510 (for high levels of appreciation), meaning that respondents who score their workplace highly on pay transparency and appreciation have 0.146 and 0.510 higher job satisfaction. In this sense, the coefficients of 0.031 and 0.052 on mostly and sometimes WFH are meaningful, but much less economically significant viewed with the impact that other aspects of the workplace environment have on job satisfaction.

[INSERT TABLE 1 HERE]

4.2.2 Intention to Leave

We extend these results by examining the association between various WFH arrangements and employees' intention to leave their firm within six months. Note that selection effects will likely cause us to overestimate the the relationship between various WFH arrangements and intent to leave—if more productive employees are more likely to reside in WFH arrangements, and they have greater bargaining power than counterparts, they are more likely to leave.

Table 2 documents the results of our analyses. Column 1 reports that employees in always WFH, mostly WFH, and sometimes WFH are 1.5 percentage points (pp), 6.4pp, and 6.1pp less likely to report they intend to leave their organization in the next six months, respectively, relative to those who never or rarely WFH. Given that the share of employees reporting intent to leave in our sample is 11 percent (untabulated), these gradients are economically significant: they amount to roughly half of the average. However, as we discussed previously, these estimates are contaminated with selection effects. Whether the estimates are upwards or downwards biased depends on whether these selection effects relate to em-

employees who are more versus less likely to report intent to leave.

Consistent with our concerns about selection issues, we note that after introducing total cash compensation as a control in column 2, the gradients on all WFH arrangements decline by at least one-third. Furthermore, after adding perceptions of the workplace environment in column 3, the gradients on mostly and sometimes WFH become statistically and economically insignificant. However, the gradient on always WFH becomes positive and increases to 4.4pp (statistically significant at the 1 percent level). Crucially, the gradient on always WFH remains positive and statistically significant to the inclusion of occupational, time, industry, and firm fixed effects in the subsequent columns. Overall, employees in always WFH arrangements have no higher levels of job satisfaction after controlling for selection (Table 1), but they do have higher intents to leave (Table 2). In contrast, employees in mostly or sometimes WFH arrangements have higher levels of job satisfaction (Table 1) and no higher levels of intent to leave (Table 2).

[INSERT TABLE 2 HERE]

We interpret these results as follows. First, while there is anecdotal evidence that WFH arrangements are associated with higher levels of job satisfaction, our results show that these differences are largely explained by other factors, particularly other aspects of the workplace environment. For example, when our workplace environment characteristics are introduced in column 3 of Table 1, the R -squared increases from 0.02 to 0.54, the coefficient on always WFH becomes insignificant, and the coefficients on mostly WFH and sometimes WFH remain positive and statistically significant but decline in economic magnitude. When the outcome is intent to leave, column 3 of Table 2 highlights how the R -squared increases from 0.01

to 0.21 after including the workplace environment characteristics, the coefficient on always WFH becomes positive and statistically significant, and the coefficients on mostly WFH and sometimes WFH become statistically insignificant. Hence, the workplace environment appears to be a much more important determinant of job satisfaction than whether work is done in person versus remotely. Second, our analyses reveal a potential dark side of WFH arrangements. In particular, we see in columns 3 through 6 of Table 2 that employees who always WFH are more likely to report that they are planning on leaving their firm, relative to those who never work remotely. This suggests that firms moving towards fully remote work arrangements may experience an increase in employees' intention to leave the firm.

4.3 Additional Results

We leverage the uniqueness of our data to provide additional empirical facts regarding the relationship between WFH arrangements, job satisfaction, and intention to leave. Table 3 now allows for heterogeneity across three dimensions: time (2020 versus 2021), income (above/below the median total income of \$61,000), and years of total work experience (above/below the median of 6 years) in our preferred specification that contains industry and occupation fixed effects (columns 6 of Tables 1 and 2 for job satisfaction and intention to leave, respectively). We choose these three dimensions to explore whether our relations vary across time and across work experience, measured both by income (higher income workers have more work experience) and by number of years of total work experience directly.

Columns 1 through 6 reveal that the positive association between mostly WFH arrangements and job satisfaction disappears in 2021 compared to 2020, and the positive association

was concentrated among higher income, more experienced employees. Furthermore, the positive association between sometimes WFH arrangements and job satisfaction persists across time, income, and work experience. Hence, working from home less frequently (i.e., the sometimes WFH arrangement) is robustly associated with job satisfaction.

Moreover, columns 7 through 12 report that always working from home increases employees' intention to leave the firm across time, income, and work experience, while other WFH arrangements have no relation to intent-to-leave across these subsamples. These results cast further doubt on the notion that WFH arrangements have strong positive employee retention effects and, if anything, may increase employees' intention to leave the firm in the case of the always WFH arrangement.

Taken together, the additional results in Table 3 suggest that employees in always WFH arrangements report no higher job satisfaction by the end of our sample and higher intentions to leave, while employees in mostly WFH arrangements and sometimes WFH arrangements generally report higher job satisfaction and no lower intentions to leave. The most robust evidence appears to be that sometimes WFH arrangements relate to higher job satisfaction across time, income levels, and work experience with no relationship to an employee's intention to leave the firm.

[INSERT TABLE 3 HERE]

5 Evidence on the Mechanism

Our main results show that aspects of the employment relationship other than the WFH arrangement (e.g., industry, occupation, workplace environment) explain variation in job

satisfaction and intent to leave. Next, we explore why various WFH arrangements are closely correlated with job satisfaction and intention to leave in the cross-section, but these correlations vanish or decline substantially after accounting for selection effects and other aspects of the employment relationship. Here, we examine the potential role of job task characteristics and perceptions of the employee-direct manager relationship.

Prior work on the impact of flexible work arrangements, including working remotely and flexible work schedules, on various outcomes is generally grounded in work–psychology theories at the individual level, and relate employees’ on the job experiences to sentiments or behaviors that may impact job satisfaction and retention, among other outcomes (Harrick et al., 1986; Bailey and Kurland, 2002; Gajendran and Harrison, 2007; Golden, 2007). As discussed in de Menezes and Kelliher (2011), studies have used the work adjustment model of Dawis et al. (1968) to explain how flexible work could influence employees’ attitudes, behaviors, and overall performance. This model proposes that correspondence between employees’ abilities or skills and the job requirements (e.g., working from home) predicts higher performance and satisfaction. The Hackman and Oldham (1975) job characteristics model implies that basic characteristics of the job lead to psychological states that influence employees’ job performance. If so, various WFH arrangements may give employees a sense of independence and/or fulfilment, with a potential link to satisfaction and intention to leave. The Karasek (1979) and Karasek (1989) model proposes that discretion (e.g. choice over the working situation) enables workers to cope better with high job demands and thus may buffer their adverse effects, thereby affecting aspects such as job satisfaction. Overall, these work–psychology models suggest *job task characteristics* as a potential moderator of the relation between working from home and our outcomes of interest.

Prior work also draws from social exchange theory (Blau, 1964) and the Akerlof (1982) gift exchange model to explain the potential link between work–life initiatives such as flexible working arrangements and employee outcomes. Relatedly, reciprocity, as discussed by Konrad and Mangel (2000), implies that various WFH arrangements may relate to an increase in employees’ organizational commitment. In investigating this link, attention has been given to employees’ affective commitment (Meyer and Allen, 1991), which appears to be strongly related to other positive employee attitudes, e.g., the Cooper-Hakim and Viswesvaran (2005) meta-analysis found correlations of 0.60 with job satisfaction. Consequently, a measure that captures the employee’s workplace well-being, e.g., *perceptions of the employee-direct manager relationship* may be important in explaining the relationship between various WFH arrangements and our outcomes of interest—job satisfaction and intention to leave.

From this general theoretical grounding, we examine job task characteristics and perceptions of the employee-direct manager relationship as potential moderators of importance to understanding the associations we have documented previously. We begin the analysis using our measure of occupational task-based coordination intensity from O*NET, discussed previously, and estimate our baseline regressions above and below the mean occupational coordination intensity. Table 4 presents these results for job satisfaction as our outcome variable. Columns 1 and 2 present our estimates when we restrict the sample to individuals in low versus high coordination intensity.

Of note, employees who always WFH have 0.040sd higher job satisfaction, relative to employees who never WFH. Although sometimes WFH arrangements are associated with a slightly higher 0.045sd level of job satisfaction, this result is different from the baseline, which suggested a null association between always remote and job satisfaction. However, in column

3, we see that the link between always WFH and job satisfaction is null—only mostly and sometimes WFH are positively associated with job satisfaction. This is consistent with WFH conferring greater job satisfaction when employees work in jobs that require less coordination with others, suggesting that always WFH has less impact on employees’ psychological states when working from home in a job that requires less coordination.

Next, we focus on perceptions of the employee–direct manager relationship, our measure of employee workplace well-being. Employees who have unfavorable perceptions of their direct manager may prefer working from home more often perhaps because it can reduce in-person interactions with their “bad manager” and increase their workplace well-being. Columns 3 and 4 present our estimates when we restrict the sample to employees who perceive their direct supervisor as a “good manager” or a “bad manager” based on their responses to the PayScale survey question “I have a great relationship with my direct manager,” which is measured on a scale of 1 to 5, and binarized as a score of 4 or 5 indicating a good manager.

Employees who always WFH have no higher job satisfaction in either the good manager or bad manager situation. However, we do find that mostly and sometimes WFH arrangements have a higher 0.056sd and 0.052sd level of job satisfaction among employees with a bad manager, respectively, while employees with a good manager have a higher 0.020sd job satisfaction only for sometimes WFH arrangements. This evidence suggests employees with a bad manager prefer to WFH more often (mostly and sometimes WFH) and the impact on job satisfaction is larger—0.056 and 0.052sd for mostly and sometimes WFH, respectively, compared to 0.020sd for sometimes and insignificant for mostly WFH among employees with a good manager relationship. This pattern of evidence is consistent with WFH conferring greater job satisfaction when employees perceive their direct manager unfavorably, suggesting

WFH has less impact on employees’ psychological states when they work for a bad manager. This is consistent with the view that remote work confers fewer benefits in the presence of good management, which could reflect the non-pecuniary value of friendship or even the greater opportunities to learn and develop in the organization under good management.

[INSERT TABLE 4 HERE]

Finally, we focus on intent to leave as the outcome variable. Interestingly, always remote arrangements are always associated with roughly 3.3-3.8 percentage point higher probabilities of intent to leave, regardless of coordination intensity of the job or perception of the direct supervisor, relative to those who are never remote. Furthermore, the other WFH arrangements—mostly and sometimes—are unrelated to higher intent to leave, just like in the baseline results. Overall, we conclude that our measures of job task characteristics (measured using occupational coordination intensity) and employees’ workplace well-being (measured using employees’ perception of their direct manager relationship) moderate the relationship between various WFH arrangements and job satisfaction, but have little influence on employees’ intention to leave the firm.

6 Conclusion

There is a large literature about the value of non-wage amenities (Mas and Pallais, 2017), particularly the role of flexibility (Chen et al., 2019, 2020; He et al., 2021). Given the expansion of various WFH arrangements during the COVID-19 pandemic, largely by necessity due to the national and state quarantine policies, researchers and business leaders alike are debating the future of work and the long-run incidence of remote work. Many questions

remain about the causal effect of remote work on employee and organizational outcomes, with few granular data available for empirical experimentation.

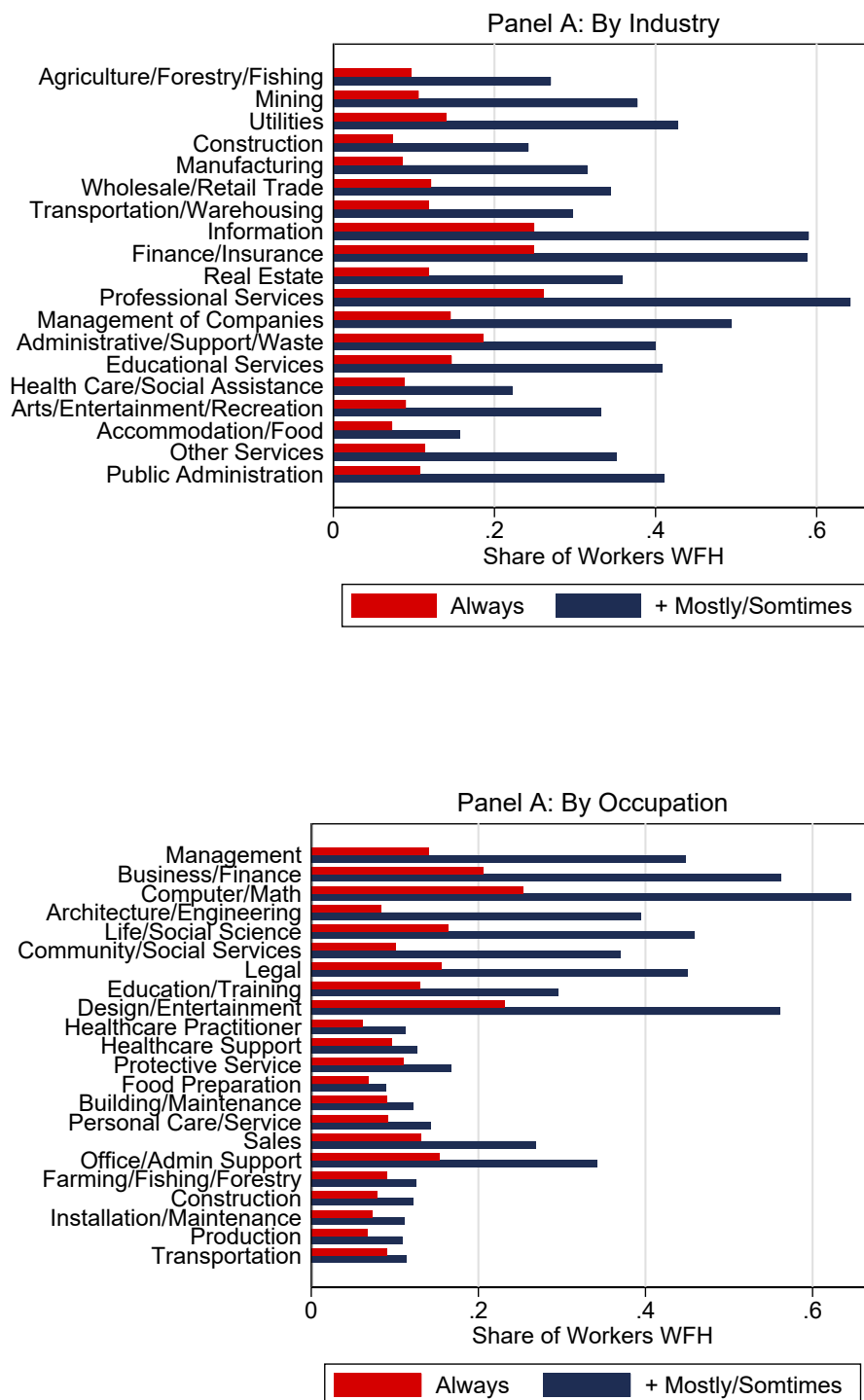
We exploit the surge in remote work over the COVID-19 pandemic to isolate the relationship between the intensity of remote work and both employee job satisfaction and intention to leave the firm, drawing on proprietary data from PayScale from 2020-2021. Importantly, our data contains information on the intensity of remote work, employee compensation, employees' perceptions about their organization's workplace environment, and an array of employee demographic, occupation, and industry characteristics. Our identification strategy exploits differences across demographically-equivalent employees within the same six-digit occupation and two-digit industry over time after controlling for differences in their compensation and workplace environment.

Our multivariate tests show that employees in always WFH arrangements do not report higher levels of job satisfaction but do report higher intentions to leave the firm within six months, relative to those who work in-person. However, employees who sometimes WFH have the highest levels of job satisfaction, but no differences in their intention to leave the firm. To understand the drivers of these results, we focus on the coordination intensity of the job and the relationship an employee has with their direct manager. We find that working from home confers greater job satisfaction when employees work in jobs that require less coordination with others, suggesting that always WFH has less impact on employees' psychological states when working from home in a job that requires less coordination. We also find that working from home confers greater job satisfaction when employees perceive their direct manager unfavorably, suggesting WFH has less impact on employees' psychological states when they work for a bad manager. This is consistent with the view that remote

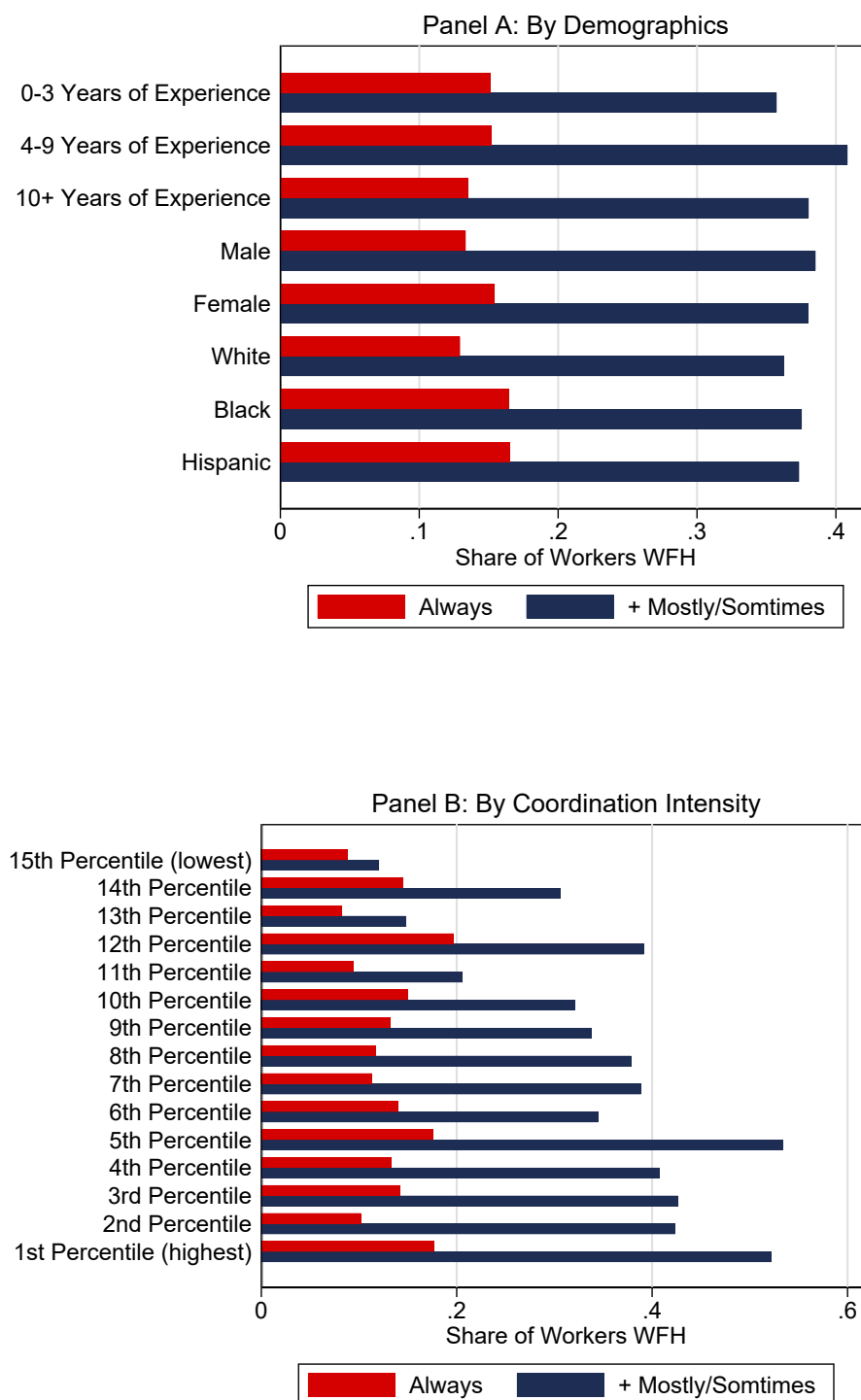
work confers fewer benefits in the presence of good management, which could reflect the non-pecuniary value of friendship or the greater opportunities to learn and develop in the organization under good management.

Our paper suggests questions for future research. What is the long-run effect of remote work on job satisfaction and intention to leave? Even if some workers enjoy working remotely in the short-run, will preferences change or will employees reach a point of saturation? What are the productivity effects and implications for compensation dynamics among employees who vary in their degree of remote work? Will firms redesign jobs to reduce their coordination among employees who desire to work from home more often? How will managers adapt to the changing norms around remote work? Managers have been recognized as fundamental agents for change in organizations, but their scope might be more limited in environments with extensive remote work. We leave these questions for future research.

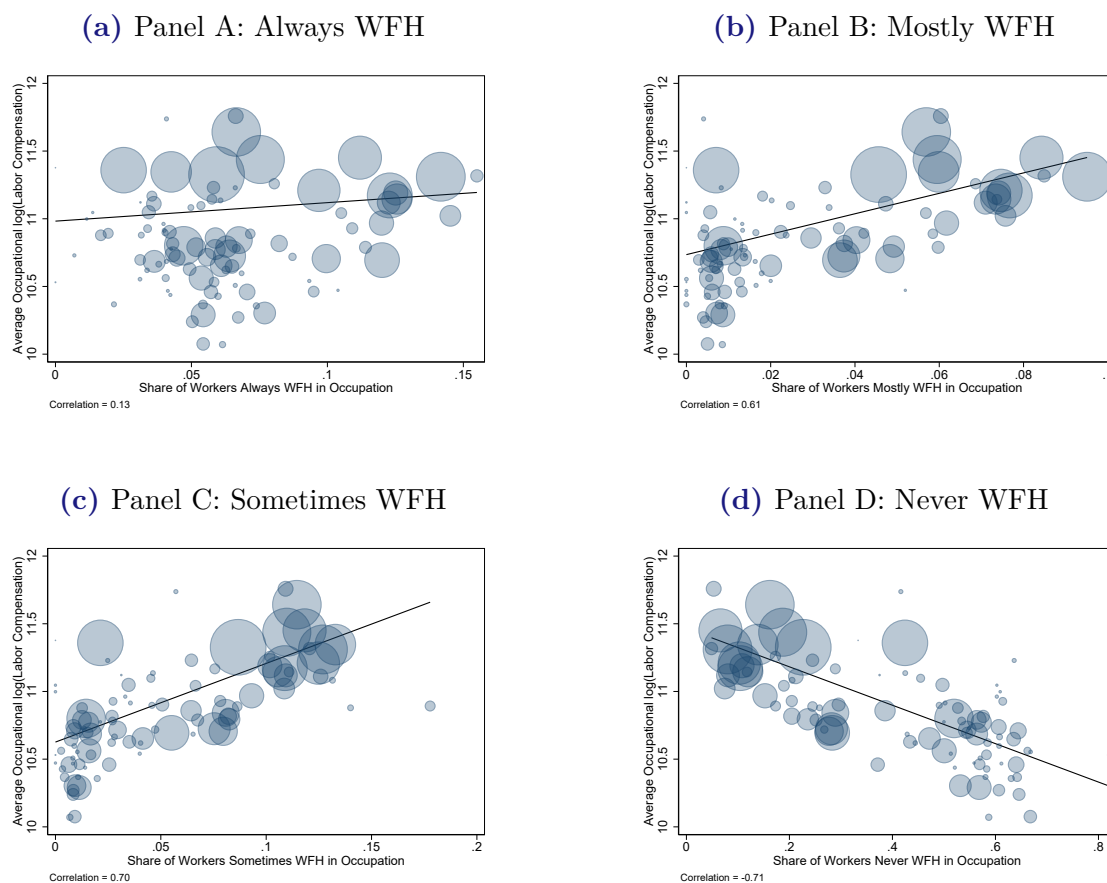
Tables and Figures

Figure 1: Working-from-Home %, by Major Industry and Occupation

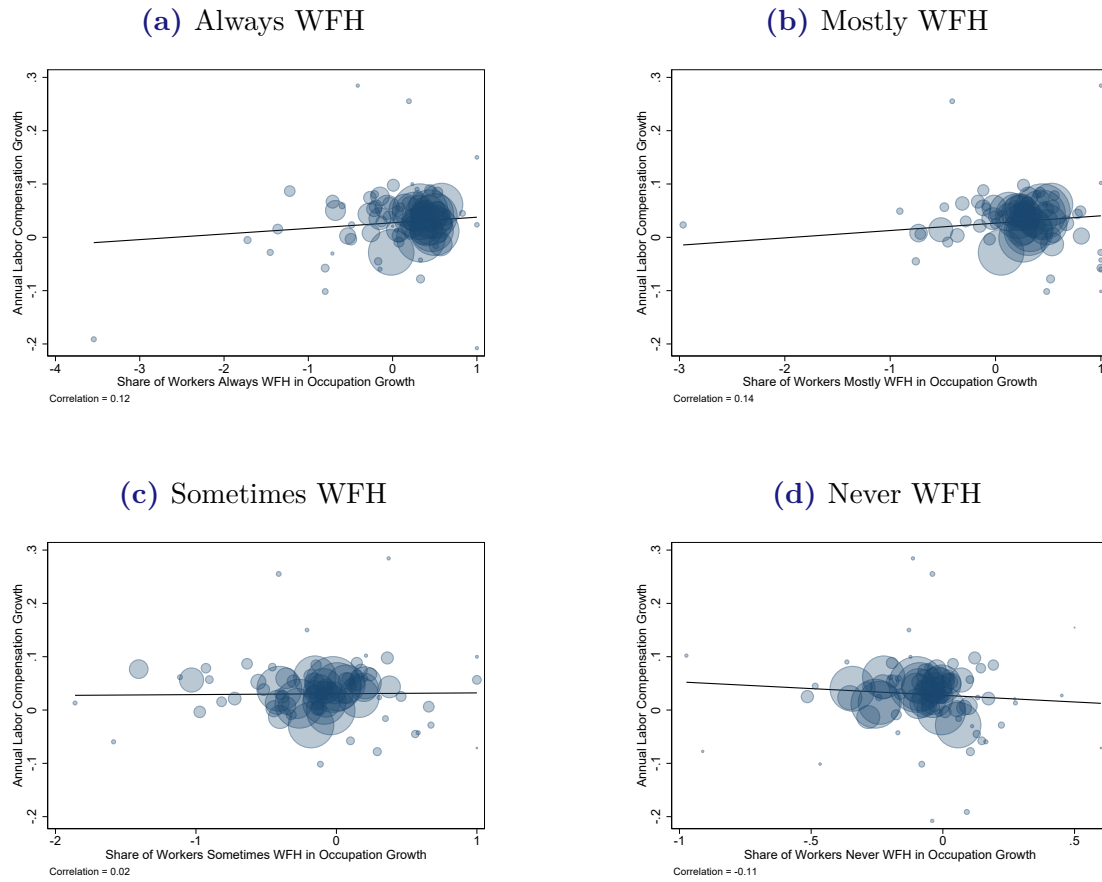
Notes.—Sources: Payscale (2020-2021). The figure plots the share of individuals in different WFH arrangements: “always remote” and the additional “mostly remote” and “sometimes remote” by major two-digit NAICS industry and occupation.

Figure 2: Working-from-Home %, by Demographics and Coordination Intensity

Notes.—Sources: Payscale (2020-2021) and O*NET (2014-2018). The figure plots the share of individuals in different WFH arrangements: “always remote” and the additional “mostly remote” and “sometimes remote” by demographic brackets and 15 percentiles across the distribution of coordination intensity. Our measure of coordination intensity is the unweighted average of the following work activity sub-indices: “Getting Information,” “Monitor Processes, Materials, or Surroundings,” “Processing Information,” “Communicating with Supervisors, Peers, or Subordinates,” “Organizing, Planning, and Prioritizing Work,” and “Coordinating the Work and Activities of Others.”

Figure 3: Average Occupational Incomes and Working-from-Home Intensity

Notes.—Sources: Payscale (2020-2021). The figure plots the relationship between the log total cash compensation (labor income) and the share of WFH workers each at a three-digit SOC level. Observations are weighted by the number of respondents in an occupation.

Figure 4: Growth in Average Occupational Incomes and Working-from-Home Intensity

Notes.—Sources: Payscale (2020-2021). The figure plots the relationship between the growth rate of total cash compensation (labor income) and the share of WFH workers each at a three-digit SOC level between May to July 2020 and March to July 2021. Growth rates are winsorized at the top and bottom percentiles. Observations are weighted by the number of respondents in an occupation.

Table 1: Examining Differences in Job Satisfaction and Working-from-Home

Dep. var. =	Job Satisfaction (z-score)					
	(1)	(2)	(3)	(4)	(5)	(6)
Always WFH	.195*** [.011]	.157*** [.011]	.011 [.008]	.008 [.008]	.014 [.008]	.024 [.015]
Mostly WFH	.246*** [.013]	.190*** [.013]	.032*** [.009]	.025*** [.009]	.029*** [.010]	.031* [.017]
Sometimes WFH	.230*** [.010]	.183*** [.010]	.039*** [.007]	.029*** [.007]	.032*** [.008]	.052*** [.014]
log(Total Cash Compensation)		.260*** [.010]	-.007 [.007]	-.027*** [.008]	-.029*** [.008]	-.075*** [.018]
Pay Transparency			.049*** [.003]	.050*** [.003]	.050*** [.003]	.060*** [.006]
Fairness of Pay			.120*** [.003]	.123*** [.003]	.123*** [.003]	.113*** [.006]
Intra-firm Communication			.192*** [.004]	.190*** [.004]	.190*** [.004]	.186*** [.007]
Development/Training			.163*** [.004]	.164*** [.004]	.165*** [.004]	.179*** [.007]
Degree of Appreciation			.314*** [.004]	.312*** [.004]	.312*** [.004]	.301*** [.008]
Managerial Relationship			.087*** [.004]	.086*** [.004]	.086*** [.004]	.070*** [.006]
R-squared	.02	.03	.54	.54	.54	.72
Sample Size	73257	73257	73257	73191	73191	41984
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
6-digit SOC FE	No	No	No	Yes	Yes	Yes
Year/Month FE	No	No	No	Yes	Yes	Yes
2-digit NAICS FE	No	No	No	No	Yes	Yes
Firm FE	No	No	No	No	No	Yes

Notes.—Sources: Payscale (2020-2021). The table reports the coefficients associated with regressions of job satisfaction (a z-score of a 1-5 index) on an indicator for WFH always, mostly, or sometimes (relative to never), controlling for logged total cash compensation (including bonuses, tips, and commission), and several measures of job quality (indices of pay transparency, perceived fairness of pay, intra-firm communication, development/training opportunities, appreciation, and managerial relationship), together with various layers of fixed effects and individual controls. These controls include: age, male, race (White, Black, Hispanic, Missing), education (associates, bachelors, PhD, high school, masters), and years of experience. Standard errors are heteroskedasticity-robust.

Table 2: Examining Differences in Intent-to-Leave and Working-from-Home

Dep. var. =	Intent-to-Leave (1/0)					
	(1)	(2)	(3)	(4)	(5)	(6)
Always WFH	-.015*** [.006]	.001 [.006]	.044*** [.005]	.039*** [.005]	.036*** [.005]	.034*** [.010]
Mostly WFH	-.064*** [.007]	-.041*** [.007]	.005 [.006]	.005 [.006]	.002 [.006]	.004 [.011]
Sometimes WFH	-.061*** [.005]	-.041*** [.006]	.002 [.005]	.005 [.005]	.003 [.005]	.008 [.009]
log(Total Cash Compensation)		-.109*** [.005]	-.015*** [.004]	.019*** [.005]	.020*** [.006]	.024*** [.011]
Pay Transparency			.007*** [.002]	.006*** [.002]	.006*** [.002]	-.002 [.004]
Fairness of Pay			-.064*** [.002]	-.066*** [.002]	-.066*** [.002]	-.060*** [.004]
Intra-firm Communication			-.033*** [.002]	-.031*** [.002]	-.031*** [.002]	-.030*** [.004]
Development/Training			-.063*** [.002]	-.062*** [.002]	-.062*** [.002]	-.059*** [.004]
Degree of Appreciation			-.106*** [.003]	-.106*** [.003]	-.106*** [.003]	-.103*** [.004]
Managerial Relationship			-.026*** [.002]	-.025*** [.002]	-.025*** [.002]	-.024*** [.004]
R-squared	.01	.01	.21	.22	.22	.54
Sample Size	73257	73257	73257	73191	73191	41984
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
6-digit SOC FE	No	No	No	Yes	Yes	Yes
Year/Month FE	No	No	No	Yes	Yes	Yes
2-digit NAICS FE	No	No	No	No	Yes	Yes
Firm FE	No	No	No	No	No	Yes

Notes.—Sources: Payscale (2020-2021). The table reports the coefficients associated with regressions of an indicator for whether the employee intends to leave their job over the next six months on an indicator for WFH always, mostly, or sometimes (relative to never), controlling for logged total cash compensation (including bonuses, tips, and commission), and several measures of job quality (indices of pay transparency, perceived fairness of pay, intra-firm communication, development/training opportunities, appreciation, and managerial relationship), together with various layers of fixed effects and individual controls. These controls include: age, male, race (White, Black, Hispanic, Missing), education (associates, bachelors, PhD, high school, masters), and years of experience. Standard errors are heteroskedasticity-robust.

Table 3: Examining the Heterogeneous Treatment Effects Between Working-from-Home and Job Satisfaction / Intent-to-Leave

Dep. var. =	Job Satisfaction						Intent-to-Leave					
	2020	2021	High Inc	Low Inc	High Exper	Low Exper	2020	2021	High Inc	Low Inc	High Exper	Low Exper
Always WFH	.031*** [.012]	.000 [.012]	.010 [.012]	.015 [.012]	.018 [.012]	.010 [.011]	.031*** [.008]	.038*** [.008]	.037*** [.008]	.037*** [.008]	.034*** [.008]	.039*** [.007]
Mostly WFH	.045*** [.013]	.013 [.014]	.032*** [.012]	.018 [.017]	.039*** [.014]	.021 [.013]	.003 [.009]	-.000 [.009]	.012 [.008]	-.012 [.011]	-.002 [.009]	.005 [.009]
Sometimes WFH	.025** [.010]	.039*** [.011]	.032*** [.010]	.028** [.012]	.027** [.011]	.036*** [.011]	.003 [.007]	.003 [.008]	.011* [.007]	-.010 [.008]	.007 [.007]	-.000 [.007]
log(Total Cash Compensation)	-.025** [.012]	-.030** [.013]	-.051*** [.014]	-.005 [.018]	-.038*** [.012]	-.014 [.013]	.016** [.008]	.025*** [.008]	.074*** [.010]	-.023** [.011]	.033*** [.008]	-.005 [.009]
Pay Transparency	.049*** [.005]	.049*** [.005]	.043*** [.005]	.057*** [.005]	.041*** [.005]	.058*** [.005]	.007*** [.003]	.006* [.003]	.008*** [.003]	.004 [.003]	.006* [.003]	.006** [.003]
Fairness of Pay	.121*** [.005]	.126*** [.005]	.112*** [.005]	.134*** [.005]	.106*** [.005]	.141*** [.005]	-.059*** [.003]	-.076*** [.003]	-.074*** [.003]	-.060*** [.003]	-.050*** [.003]	-.082*** [.003]
Intra-firm Communication	.196*** [.006]	.181*** [.006]	.197*** [.006]	.186*** [.006]	.207*** [.006]	.175*** [.006]	-.033*** [.003]	-.031*** [.004]	-.043*** [.004]	-.025*** [.003]	-.029*** [.004]	-.033*** [.003]
Development/Training	.168*** [.005]	.160*** [.006]	.161*** [.006]	.165*** [.005]	.152*** [.006]	.176*** [.005]	-.063*** [.003]	-.060*** [.003]	-.057*** [.004]	-.066*** [.003]	-.057*** [.003]	-.067*** [.003]
Degree of Appreciation	.309*** [.006]	.315*** [.007]	.321*** [.007]	.302*** [.006]	.316*** [.007]	.305*** [.006]	-.105*** [.004]	-.106*** [.004]	-.112*** [.004]	-.101*** [.003]	-.113*** [.004]	-.099*** [.004]
Managerial Relationship	.091*** [.005]	.080*** [.006]	.076*** [.006]	.093*** [.005]	.087*** [.006]	.085*** [.005]	-.025*** [.003]	-.026*** [.003]	-.025*** [.003]	-.024*** [.003]	-.026*** [.003]	-.024*** [.003]
R-squared	.56	.53	.53	.55	.55	.55	.23	.24	.23	.23	.22	.24
Sample Size	39541	33555	33963	39143	34833	38283	39541	33555	33963	39143	34833	38283
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6-digit SOC FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year/Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2-digit NAICS FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes

Notes.—Sources: Payscale (2020-2021). The table reports the coefficients associated with regressions of job satisfaction (a z -score of a 1-5 index) and intent-to-leave over the next six months on an indicator for WFH always, mostly, or sometimes (relative to never) separately by time (2020 and 2021), income (above/below the median total cash compensation of \$61,000), and experience (above/below the median experience of 6 years), controlling for logged total cash compensation (including bonuses, tips, and commission), and several measures of job quality (indices of pay transparency, perceived fairness of pay, intra-firm communication, development/training opportunities, appreciation, and managerial relationship), together with various layers of fixed effects and individual controls. These controls include: age, male, race (White, Black, Hispanic, Missing), education (associates, bachelors, PhD, high school, masters), and years of experience. Standard errors are heteroskedasticity-robust.

Table 4: Understanding the Mechanism Behind Working-from-Home and Employee Engagement

Dep. var. =	Job Satisfaction (z-score)				Intent-to-Leave (1/0)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Always WFH	.040*** [.014]	.002 [.010]	.008 [.009]	.026 [.018]	.033*** [.009]	.038*** [.007]	.037*** [.006]	.038*** [.010]
Mostly WFH	.028 [.020]	.028*** [.011]	.016 [.011]	.056*** [.021]	.009 [.013]	.000 [.007]	.007 [.007]	-.007 [.013]
Sometimes WFH	.045*** [.015]	.025*** [.009]	.020** [.008]	.052*** [.017]	.011 [.010]	.003 [.006]	.007 [.006]	.001 [.010]
log(Total Cash Compensation)	-.025 [.016]	-.032*** [.010]	-.050*** [.010]	.020 [.018]	-.011 [.010]	.032*** [.007]	.017** [.007]	.025** [.011]
Pay Transparency	.042*** [.006]	.056*** [.004]	.054*** [.004]	.041*** [.007]	.009*** [.003]	.004* [.003]	.007*** [.002]	.006* [.004]
Fairness of Pay	.131*** [.006]	.116*** [.004]	.124*** [.004]	.111*** [.007]	-.059*** [.004]	-.070*** [.003]	-.070*** [.003]	-.057*** [.004]
Intra-firm Communication	.193*** [.007]	.210*** [.005]	.204*** [.005]	.206*** [.007]	-.030*** [.004]	-.036*** [.003]	-.031*** [.003]	-.038*** [.004]
Development/Training	.174*** [.007]	.163*** [.005]	.170*** [.005]	.158*** [.008]	-.057*** [.004]	-.065*** [.003]	-.066*** [.003]	-.056*** [.004]
Degree of Appreciation								
R-squared	.55	.53	.48	.38	.22	.23	.18	.16
Sample Size	25547	47644	51158	21949	25547	47644	51158	21949
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6-digit SOC FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year/Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2-digit NAICS FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Low Coord	High Coord	Good Manager	Bad Manager	Low Coord	High Coord	Good Manager	Bad Manager

Notes.—Sources: Payscale (2020-2021) and O*NET (2014-2018). The table reports the coefficients associated with regressions of job satisfaction (a z-score of a 1-5 index) on an indicator for WFH always, mostly, or sometimes (relative to never), controlling for logged total cash compensation (including bonuses, tips, and commission), and several measures of job quality (indices of pay transparency, perceived fairness of pay, intra-firm communication, development/training opportunities, appreciation), together with various layers of fixed effects and individual controls. These controls include: age, male, race (White, Black, Hispanic, Missing), education (associates, bachelors, PhD, high school, masters), and years of experience. We partition our sample in two ways. First, we create a task-based standardized z-score of occupational coordination intensity, which consists of the unweighted average of the following work activity sub-indices: “Getting Information,” “Monitor Processes, Materials, or Surroundings,” “Processing Information,” “Communicating with Supervisors, Peers, or Subordinates,” “Organizing, Planning, and Prioritizing Work,” and “Coordinating the Work and Activities of Others.” We subsequently restrict the sample to individuals who reside above versus below the mean (a z-score of zero). Second, we create an indicator for whether the individual has a good relationship with their manager (equal to four or five out of the 1-5 scale). Standard errors are heteroskedasticity-robust.

A Appendix

A.1 Benchmarking the Payscale Data

We benchmark the PayScale data using the Current Population Survey (CPS) March 2020 and 2021 samples. Figure A.1 plots various demographic dimensions between PayScale and the CPS.

To better understand the comparability between the types of workers covered by PayScale, Figure A.2 plots the distribution of total annual income between the Occupational Employment Statistics (OES) and PayScale for 2020. As the PayScale data under-samples many occupations due to the nature of selection into the platform, we restrict the focus to occupations with over 50 respondents in 2020. The results suggest a high degree of overlap in the two distributions.

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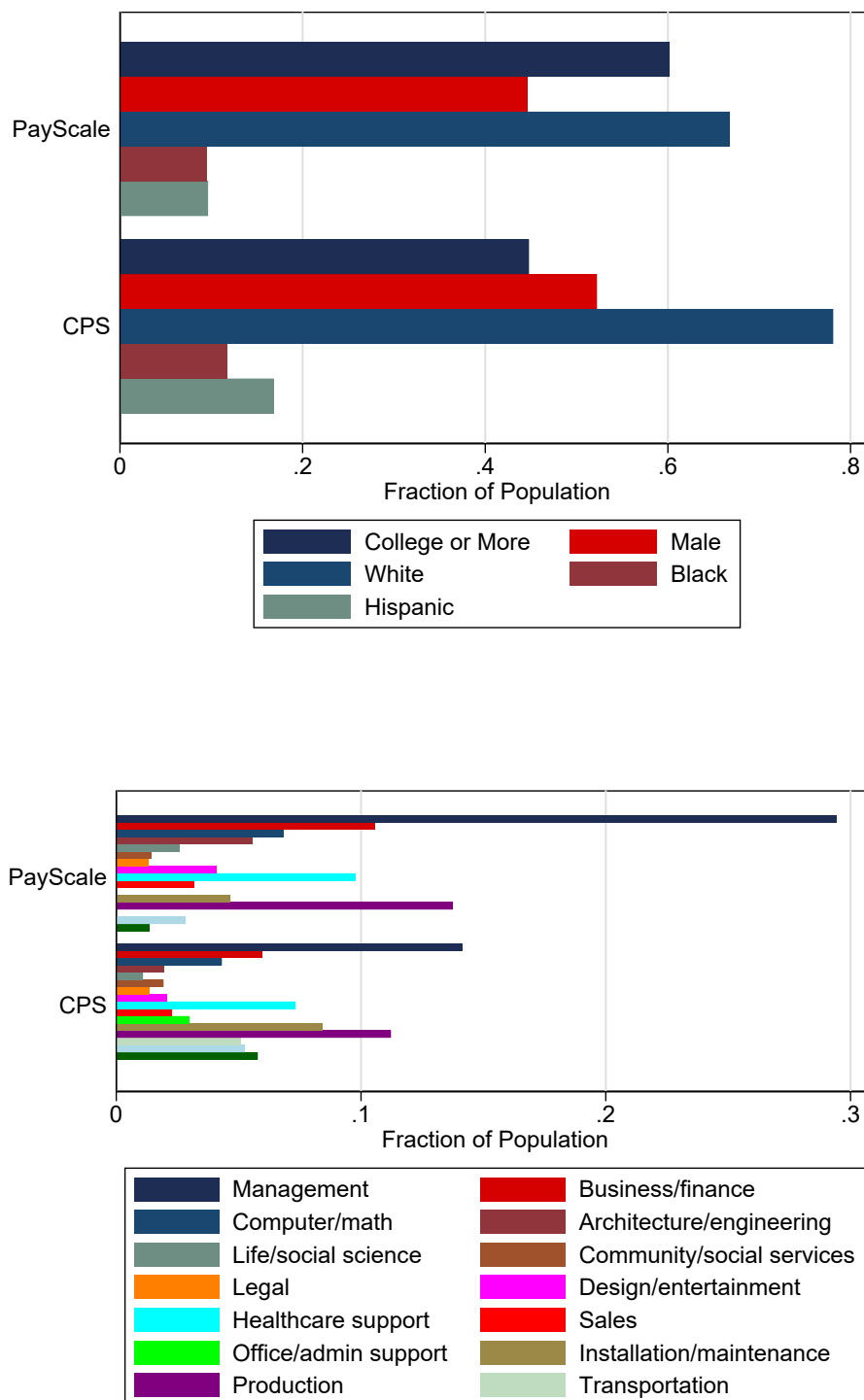
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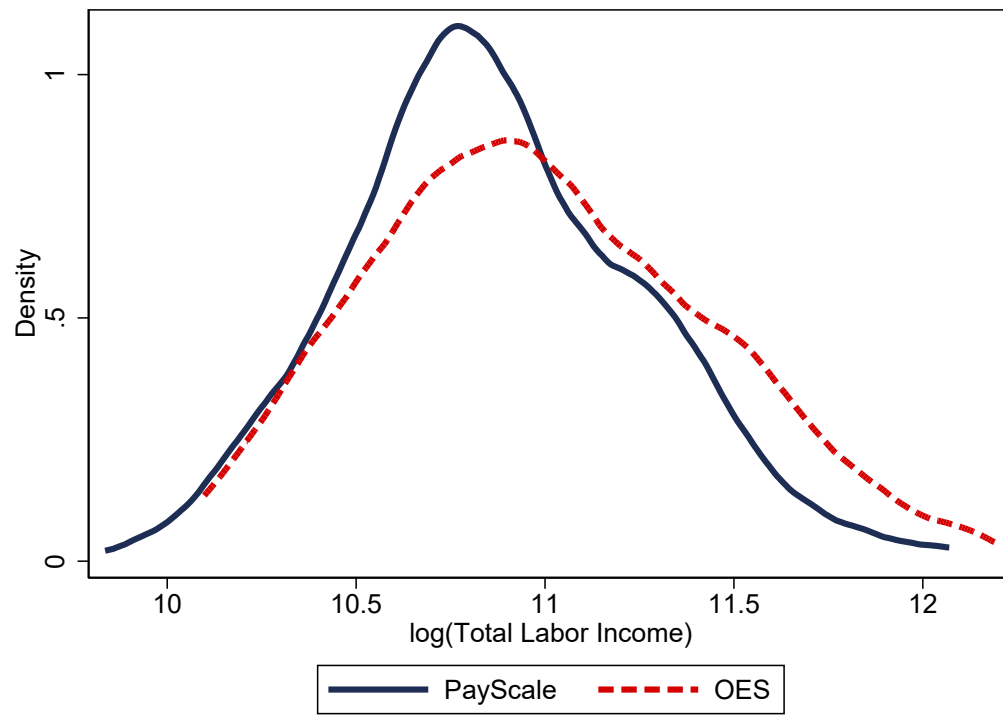
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Figure A.1: Comparison of PayScale to the Current Population Survey



Source: PayScale and Current Population Survey (2020-2021). The figure plots the share of different demographic brackets and occupational composition for the two datasets based on the 2020 and 2021 sampling.

Figure A.2: Comparison of PayScale to the Occupational Employment Statistics



Source: PayScale and Occupational Employment Statistics (2020). The figure plots the distribution of logged labor income. The PayScale data is collapsed to the six-digit occupational level (restricting observations to occupations to over 50 people).