

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 satisfaction vanishes after controlling for employee compensation, occupation, demographics, and workplace environment characteristics (e.g., feeling appreciated at work). Employees who always WFH also have a higher intention to leave their job than employees who never work from home. In contrast, less frequent WFH arrangements relate to higher satisfaction but no difference in intention to leave, and their impact is limited relative to workplace environment characteristics. We draw on work-psychology and employee well-being models to explore potential mechanisms. Working from home more frequently tends to confer higher satisfaction when employees have jobs requiring less coordination with others and when employees believe they have a “bad boss,” suggesting an interplay between WFH arrangements and employees’ psychological states. Our results suggest that WFH is not a one-size-fits-all approach for organizations and may not be a panacea that resolves employee engagement and retention challenges.

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 employee 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 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 different 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 and intention to leave their job within six months. 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, feel-

ing 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 0.20 standard deviation (sd) higher levels of job satisfaction, whereas those with mostly (sometimes) WFH arrangements have 0.25sd (0.23sd) higher levels of satisfaction relative to employees who report never working from home. However, these associations weaken or vanish after controlling for other dimensions of the employment relationship, most notably aspects of employers' work environment. After controlling for industry, occupation, employee demographics, 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, its economic magnitude is fairly limited relative to the relation between job satisfaction and attributes of the workplace environment.

We extend these results by examining the association between different 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, controlling for industry, occupation, employee demographics, and attributes of the workplace environment, we find that employees who always WFH are 3.8 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 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 satisfaction 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 tend to prefer working from home more often. This evidence suggests working from home has a greater impact on employees' psychological states when they work for a "bad boss." Both sets of results provide suggestive evidence of the role of employees' 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 document additional empirical facts. For instance, we find evidence that the WFH–job satisfaction relation may have vanished by the end of our sample period (mid-2021), yet the relation between WFH and intention to leave remains robust across time. We also find that the positive association between *sometimes* WFH arrangements and satisfaction generally persists across income levels, work experience, gender, and age, suggesting this less frequent WFH arrangement is robustly associated with higher job satisfaction on average. In contrast, we find that the positive correlation between *mostly* WFH arrangements and job satisfaction fails to persist across across income levels, work experience, and among younger workers, but does persist across gender. Moreover, we find that always working from home increases employees' intention to leave the firm across time, income levels, work experience, gender, and age, 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 for the option to work from home in a full-time job. [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), and Mongey 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.

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, with a median (75th percentile) number of respondents from the same firm of 2 (10).

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 reporting incentives. First, the large sample size allows PayScale to leverage the benefits of the “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 accurately because the quality of their predicted market wage and job recommendations are governed by the accuracy of their survey responses. The benefits of a large sample size and enhanced reporting incentives are particularly useful given PayScale’s rich data

set, which captures respondents' demographic information (age, gender, work experience, tenure, and ethnicity), industry and occupation classifications, metropolitan area, total cash compensation, 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 WFH” 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.² These proportions are similar to our sample, in which 22 percent of employees report always or 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 our sample period.³

²<https://news.gallup.com/poll/321800/covid-remote-work-update.aspx>

³Please see Appendix A for comparisons of the PayScale data with the Current Population Survey and Occupational Employment Statistics (OES). Overall, the PayScale data tilts toward college-educated workers

2.3 Employee 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.” Respondents are somewhat satisfied with their current job (an average response between 3 and 4 on the 1-5 scale) and 47 percent report that they are looking for a job within the next six months. 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 different WFH arrangements. For example, higher productivity workers tend to have greater bargaining power (e.g., better outside options), thereby potentially enabling them to select into more flexible work arrangements. These selection effects are likely to be present during the COVID-19 pandemic as some digitally-intensive sectors experienced a substantial boom in labor demand (Bai et al., 2021). If higher 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

who self-report as working in management positions; there is a high degree of overlap with OES data on total annual compensation.

from the transitions towards remote work over the past few 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, ethnicity, and years of work 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. We view our set of control variables as substantial attempts to assuage concerns that our estimates of the relationship between different WFH arrangements, job satisfaction, and intention to leave simply reflect selection effects.

2.4.1 Compensation

We measure total cash compensation as 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 its algorithms flag as errors. The average (median) total compensation in our sample is roughly \$65,000 (\$61,000), ranging from \$20,000 to \$200,000 and an inter-quartile range

from \$40,000 to \$79,000. We use the natural logarithm of total cash compensation in our analyses to smooth out the earnings distribution.

2.4.2 Characteristics of the 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 drives 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 approach this measurement issue by focusing on 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.
- I feel that I am paid fairly.

- There is frequent, two-way communication between management and myself.
- My employer provides me with sufficient opportunities for learning and development.
- I feel appreciated at work.

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. We label the responses as Pay Transparency, Fairness of Pay, Intra-firm Communication, Development/Training, and Degree of Appreciation, respectively.

3 Empirical facts about work-from-home arrangements across the labor market

We begin by documenting a series of empirical facts about working from home to help illustrate our data and bring context to our analysis. We main focus on cross-sectional differences rather than inter-temporal variation due to concerns about selection into when an individual appears in the PayScale data. Recall that a key reason individuals complete salary profiles is to obtain an assessment of their market value. Hence, the number of site logins will naturally be lower during the national and state quarantine policies as firms froze hiring and reduced the size of their workforce. Instead, we focus on cross-sectional differences in WFH arrangements by industry, occupation, demographic characteristics, job task characteristics, and employee compensation levels and compensation growth. We believe it is important to examine these empirical facts as they may reveal potential sources of selection effects

and can help establish the appropriateness of the controls we use in our empirical tests. We also view these empirical facts as interesting in their own right as they shed light on working from home during the pandemic period. The remainder of this section explores these cross-sectional analyses in more detail.

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.⁴ 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 particularly high in, for example, 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 variation across industry and occupation in the analyses, as these appear to be correlated with various WFH arrangements.

⁴All figures are best viewed in color. We combine "mostly WFH" and "sometimes WFH" for brevity.

[INSERT FIGURE 1 HERE]

3.2 Demographic and job task characteristics

Figure 2 reveals differences in WFH arrangements across demographic and job task characteristics. Panel A documents the shares of WFH arrangements across different demographic brackets. Of note, Panel A highlights that large fractions of workers across all years of work experience had WFH arrangements, as well as workers of different genders and ethnicity.

[INSERT FIGURE 2 HERE]

Panel B of Figure 2 reports the shares of WFH arrangements across occupational classifications based on the intensity of coordination-based job tasks. We use 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 (Autor and Handel, 2013). We gather every wave of the survey between 2014 and 2018 to produce a harmonized time series reflecting pre-pandemic job 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 various remote work arrangements, and we test for heterogeneity later in our analyses regarding 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 WFH” working arrangement and the increasing intensity of job task coordination in an occupation. This is consistent with the previously documented incidence of an increasing presence of WFH arrangements in occupations such as management, and in industries such as professional services. The perhaps unintuitive direct relationship of a greater share of WFH arrangements as job task coordination intensity increases is additional evidence of the importance to account for industry and occupation in our analysis of the relationship between WFH arrangements, job satisfaction, and intention to leave. Otherwise, the raw correlations reflect substantial degrees of selection into particular industries, occupations, and job tasks.

3.3 Employee compensation levels and growth

Lastly, we explore the relationship between work-from-home arrangements and employee compensation to further illustrate the PayScale data, which includes total cash compensation, rather than just salary. Failing to account for differences between total cash compen-

sation an salary could be a 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 -0.71, 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 first examine 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 appears to be correlated with WFH arrangements.

[INSERT FIGURE 3 HERE]

Next, we investigate how *changes* in WFH are related with *changes* in total cash compensation. To capture more of the period during the initial round of pandemic lockdowns relative to the reopening of establishments, we compute the average compensation and percentage of employees reporting WFH arrangements between May to July 2020 and March to July 2021; there is an increase in reporting always WFH (mostly WFH/sometimes WFH)

arrangements from approximately 5 percent (28 percent) to 15 percent (40 percent) between these periods. Here, we weight each three-digit standard occupational classification (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 controlling for compensation levels may be more critical than controlling for 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 WFH arrangements, job satisfaction, and employees' intention to leave their job within six months:

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

where s_{ijot} denotes either employee 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 different WFH arrangements (i.e., WFH, always WFH, mostly WFH, sometimes WFH), w denotes logged total cash compensation, \mathbf{c} denotes a vector of workplace environment characteristics, and ϕ , ψ , and λ denote fixed effects for the 6-digit standard occupational classification (SOC) code, the 2-digit North American Industry Classification Standard (NAICS) code, 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 different WFH arrangements. As discussed previously, higher productivity workers tend to have greater bargaining power (e.g., better outside options), thereby raising the possibility for them to select into more flexible work arrangements. If higher productivity workers also sort into jobs that confer higher job satisfaction, then we will overestimate (underestimate) the effect of WFH arrangements on satisfaction (intent-to-leave). As we will show, omitted variables bias is a meaningful concern—simply controlling for employee demographic characteristics does little to address the essence of the selection problem.

Equation 1 attempts to address this situation by controlling directly for total cash compensation and workplace environment characteristics, together with employee demographic characteristics and both industry and occupational fixed effects. This approach ensures that we compare workers in the same six-digit SOC code and two-digit NAICS code after adjusting for compensation and differences in the workplace environment beyond working from home. Even though some residual unobserved variation could be correlated with different WFH arrangements, we nonetheless view our estimates as useful 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 Employee job satisfaction

Table 1 documents the results associated with Equation 1 under differing levels of controls. Beginning with our simplest specification in column 1, which includes a WFH indicator and controls only for demographic characteristics, any WFH arrangement is positively associated with job satisfaction. For example, those who have an opportunity to WFH have 0.313sd higher satisfaction relative to those who never WFH. Column 2 disaggregates the WFH variable into the different WFH arrangements; again, each of the 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 different WFH arrangements decline in magnitude as we layer in additional controls. Column 3 adds total cash compensation, reducing the coefficient magnitudes on the WFH arrangements by 19 percent to 23 percent compared with column 2. Column 4 incorporates respondents' perceived workplace environment characteristics. These perceptions are highly predictive of job satisfaction, raising the R -squared from 0.03 to 0.54 between columns 3 and 4 and

addressing concerns about unobserved heterogeneity. Of note, the coefficients on the WFH arrangements decline substantially after including the workplace environment characteristics in the model, decreasing by approximately 85 percent to 0.031 and 0.038 for mostly and sometimes WFH, respectively. Notably, the coefficient on always WFH becomes statistically insignificant. Each of the workplace environment characteristics are statistically and economically meaningful.

Finally, columns 5 and 6 sequentially add 6-digit occupation and time (year and month), and 2-digit industry fixed effects. Their inclusion again changes the coefficient estimates. Here, the coefficient estimate on always WFH remains insignificant, while those on mostly WFH declines to 0.021-0.027, and the estimates on sometimes WFH declines to 0.026-0.029. Overall, it appears that the favorable relation between WFH and job satisfaction is concentrated among the mostly and sometimes WFH arrangements, albeit the coefficient estimates decline significantly once the analysis incorporates workplace environment characteristics.

To put the economic significance of 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 score 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 specification in column 6 of Table 1. We find coefficients ranging between 0.132 (for high levels of pay transparency, $p < 0.01$) to 0.520 (for high levels of appreciation, $p < 0.01$), meaning that respondents who score their workplace highly on pay transparency and appreciation report 0.132 and 0.520 higher job satisfaction. In this sense, the corresponding coefficients of 0.064 and 0.067 on mostly and sometimes WFH are significant in a statistical sense ($p < 0.01$, untabulated), but are much less economically meaningful viewed with the impact that other

aspects of the workplace environment appear to have on job satisfaction.

[INSERT TABLE 1 HERE]

4.2.2 Intention to leave

We extend these results by investigating the association between different WFH arrangements and employees' intention to leave their firm within six months. Note that selection effects in a naive model will likely cause us to overestimate this relationship—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. Hence, including a robust set of controls is critical.

Table 2 documents the results of our analyses. Column 1 reports that employees who have any type of WFH arrangement are 8.9 percentage points (pp) less likely to report they intend to leave their organization within the next six months relative to those who never WFH. Column 2 shows that employees in always WFH, mostly WFH, and sometimes WFH are 1.5pp, 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 WFH. Given that the share of employees reporting intent to leave in our sample is 11 percent (untabulated), these gradients are economically meaningful—they amount to roughly half of the sample average. However, as we discussed previously, these estimates are contaminated with selection effects.

Consistent with our concerns about selection issues, we note that after introducing total cash compensation as a control in column 3, the coefficient estimates on all WFH arrangements decline by at least one-third. Furthermore, after adding perceptions of the workplace

environment in column 4, the estimates on mostly and sometimes WFH become statistically insignificant, while the estimate on always WFH becomes positive and increases to 4.2pp (statistically significant at the 1 percent level). Crucially, the estimate on always WFH remains positive and statistically significant to the inclusion of occupational, time, and industry fixed effects in the subsequent columns. Overall, employees in always WFH arrangements have no higher levels of job satisfaction after our attempts to pin down selection (Table 1), but they do have higher intentions to leave the firm within six months (Table 2). In contrast, employees in mostly or sometimes WFH arrangements have higher levels of job satisfaction (Table 1) and no higher intentions to leave (Table 2).

[INSERT TABLE 2 HERE]

We interpret these results as follows. First, our results indicate that anecdotal evidence about WFH arrangements relating to higher job satisfaction are perhaps explained by other factors, particularly other work environment characteristics. For example, when we introduce these characteristics in column 4 of Table 1, the R -squared increases from 0.02 to 0.54 relative to column 2, the coefficient on always WFH becomes indistinguishable from zero, and the positive coefficients on mostly WFH and sometimes WFH decline in economic magnitude by over 80 percent. When the outcome is intent to leave, column 4 of Table 2 highlights how the R -squared increases from 0.01 to 0.21 after including the workplace environment characteristics relative to column 2, the coefficient on always WFH becomes positive and statistically significant, and the statistical significance of mostly WFH and sometimes WFH vanishes. Hence, the workplace environment appears to be a much more consequential determinant of job satisfaction than whether work is done in person versus remotely. Second,

our analyses reveal a potential downside of WFH arrangements. In particular, we see in columns 4 through 6 of Table 2 that employees who always WFH are more likely to report that they intend to leave their firm. This result suggests that firms moving towards fully remote work arrangements may experience an increase in employees' intention to leave.

4.3 Additional results

We leverage the uniqueness of our data to provide additional empirical facts regarding the interplay between WFH arrangements, job satisfaction, and intention to leave. Table 3 now allows for heterogeneity across three dimensions: time (Q42020, Q12021, and Q22021), income (above/below the median total compensation of \$61,000), and years of total work experience (above/below the median of 6 years) in our preferred specification (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.

Column 1 reveals that earlier in the COVID-19 pandemic period (Q42020), all forms of WFH were positively associated with job satisfaction. However, columns 2 and 3 show that this positive relationship fades, becoming statistically insignificant for all forms of working-from-home by Q22021. This result provides some suggestive evidence that workers valued WFH arrangements early in the pandemic but this value faded after parts of the economy began to reopen. Columns 4 through 7 report that the positive association between mostly WFH arrangements and satisfaction is particularly present among higher income, more expe-

rienced employees. Furthermore, the positive association between sometimes WFH arrangements and job satisfaction persists across income and work experience. Hence, working from home less frequently (i.e., the sometimes WFH arrangement) is robustly associated with job satisfaction, but weakens across our sample period. Moreover, columns 8 through 14 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.

Overall, 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 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 income levels and work experience, albeit with a potentially weakening relation across the sample period, with no relationship to an employee's intention to leave the firm.⁵

[INSERT TABLE 3 HERE]

⁵We conduct a series of additional subsample tests to shed further light on these associations. In these tabulated results, the positive association between sometimes WFH arrangements and satisfaction persists across gender and age groupings (under 30 years of age, between 30 and 50 years of age, over 50 years of age), suggesting this less frequent WFH arrangement is associated with higher job satisfaction on average in these subsamples. In contrast, we find that the positive correlation between mostly WFH arrangements and job satisfaction fails to persist among younger workers (under 30 years of age), but does persist across gender. Moreover, we find that always working from home increases employees' intention to leave the firm across gender and age groupings, while other WFH arrangements have no relation to intent-to-leave in any of these subsamples.

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 in economic magnitude 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, such as working remotely and having flexible work schedules, on various outcomes is generally grounded in work–psychology theories at the employee level, and relate employees’ on the job experiences to sentiments or behaviors that may impact 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’ performance. If so, different 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 higher 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 relationship 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 association between work–life initiatives such as flexible working arrangements and employee outcomes. Relatedly, reciprocity, as discussed by Konrad and Mangel (2000), implies that WFH arrangements may relate to an increase in employees’ commitment to the organization. Studies devote attention 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 finds correlations of 0.60 with job satisfaction. Consequently, a measure that captures the employee’s workplace well-being, e.g., *the employee-direct manager relationship* may help to explain the relationship between different WFH arrangements and our outcomes of interest—job satisfaction and intention to leave. From this general 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 and intention to leave as our outcome variables. Columns 1 and 2 present our estimates when we restrict the sample to employees in jobs with low versus high coordination intensity. Of

note, employees who always WFH in jobs with low coordination intensity have 0.038sd higher job satisfaction. However, in column 2, we see that employees who always WFH and have jobs with high coordination intensity show no higher job satisfaction than workers who never work remotely—only mostly and sometimes WFH are positively associated with job satisfaction for employees in coordination-intensive jobs. This is consistent with more intensive WFH arrangements conferring higher job satisfaction when employees work in jobs that require less coordination with others. This result provides suggestive evidence that always WFH arrangements have less impact on employees' psychological states when employees are working from home in a job that requires less coordination with others.

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 deleterious in–person interactions with their “bad boss” and increase their 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.

We find that employees who always WFH have no higher job satisfaction in either the good manager or bad manager situation, although the coefficient in the bad manager situation (column 4) nearly reaches marginal statistical significance ($p < 0.104$). We do find that mostly and sometimes WFH arrangements have a higher 0.054sd and 0.054sd level of job satisfaction among employees with a bad manager, respectively, while employees with a good manager have a higher 0.017sd job satisfaction only for sometimes WFH arrangements. This

evidence suggests employees with a bad manager prefer to WFH more often but employees with a good manager prefer to WFH only sometimes. This pattern of evidence is consistent with more intensive WFH arrangements conferring higher job satisfaction when employees perceive their direct manager *unfavorably*, suggesting WFH has less impact on employees' workplace well-being 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 under good management.

[INSERT TABLE 4 HERE]

To round out our additional analyses, we examine the intent to leave as the outcome variable. Again, we document that always WFH arrangements are associated with roughly 3.2-4.1 percentage point higher probabilities of an employee having an intention to leave within six months, regardless of job task coordination intensity or perceptions of the direct supervisor. Furthermore, the other WFH arrangements—mostly and sometimes—are unrelated to lower intent to leave, consistent with the baseline results discussed previously. 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. It appears that work-psychology and employee well-being models are important drivers of the main results on the interplay between different WFH arrangements, employee job satisfaction, and intention to leave the firm.

6 Conclusion

There is a large literature about the value of non-wage amenities (Mas and Pallais, 2017), including the role of flexible work arrangements (Chen et al., 2019, 2020; He et al., 2021). Given the expansion of different work-from-home (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.

We leverage the surge in remote work over the COVID-19 pandemic to study the relationship between WFH arrangements and both employee job satisfaction and intention to leave the firm. We use proprietary data from PayScale, which information on various remote work arrangements—always WFH, mostly WFH, sometimes WFH, and never WFH—as well as data on employee compensation, employees’ perceptions about their organization’s workplace environment, and an array of employee demographic, occupation, and industry characteristics.

Our basic empirical evidence reveals statistically and economically significant associations between WFH and job satisfaction in the cross-section. However, after including an extensive set of controls, including 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 is a fraction of the relation between job satisfaction and 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 statistically and economically significant associations in the cross-section, these correlations also vanish as we control for other dimensions of the employment relationship. Critically, we find that always WFH arrangements relate to *higher* intentions to leave, while less frequent WFH arrangements are unrelated to these intentions.

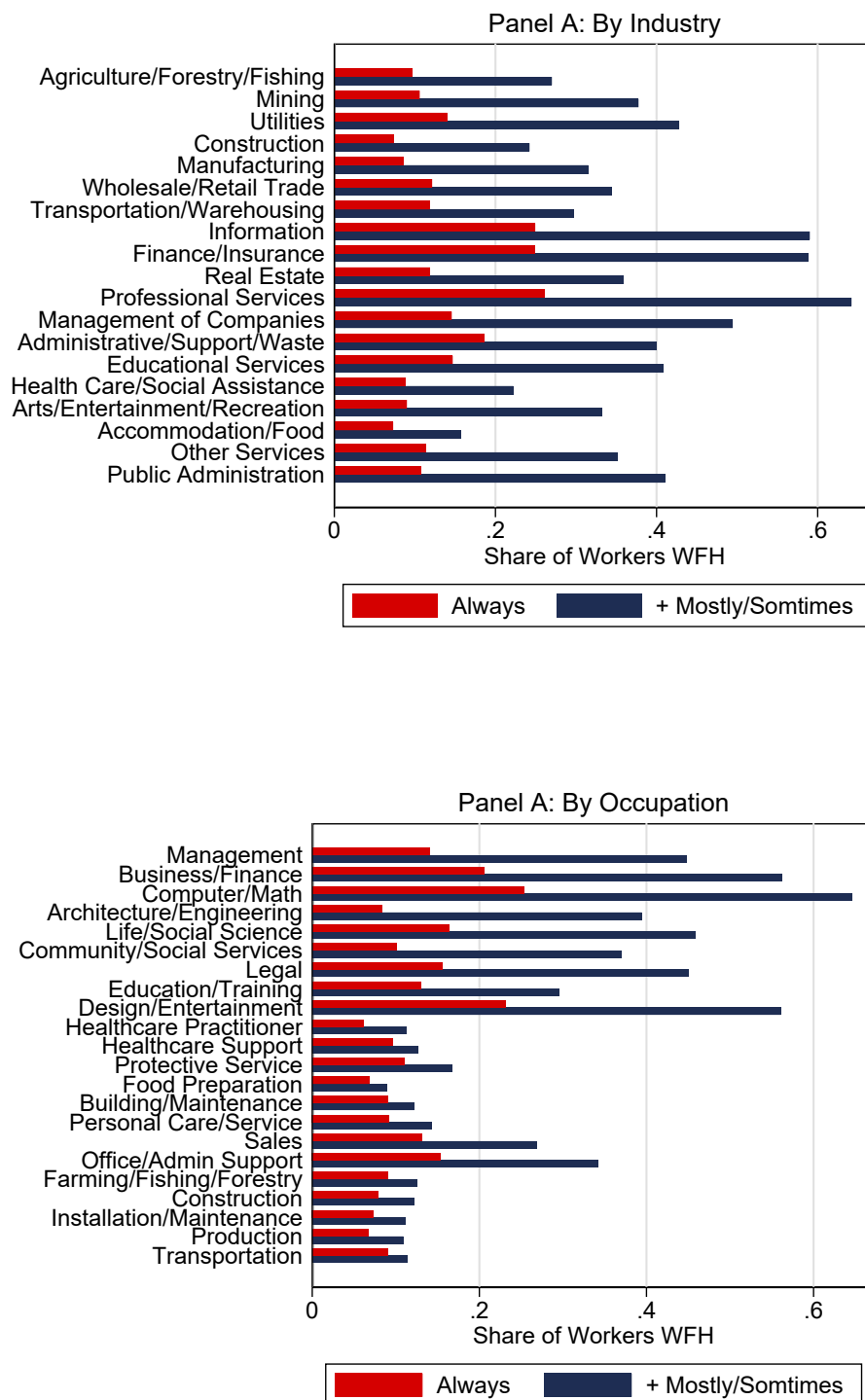
To understand the drivers of these results, we focus on the coordination intensity of the job and the relationship an employee has with their direct manager. We find that more frequent WFH arrangements confer higher job satisfaction when employees work in jobs that require less coordination with others and when employees perceive their direct manager unfavorably. The latter result 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. Both sets of results suggest the important role of employees' psychological states in understanding the interplay between different WFH arrangements, job satisfaction, and intention to leave.

Our paper suggests questions for future research. What is the long-run effect of remote work on job satisfaction and intention to leave? We provide suggestive evidence that by mid-2021, the relationships between all WFH arrangements and job satisfaction vanished, but more work is needed to understand the long-run effect of remote work. What are the 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.

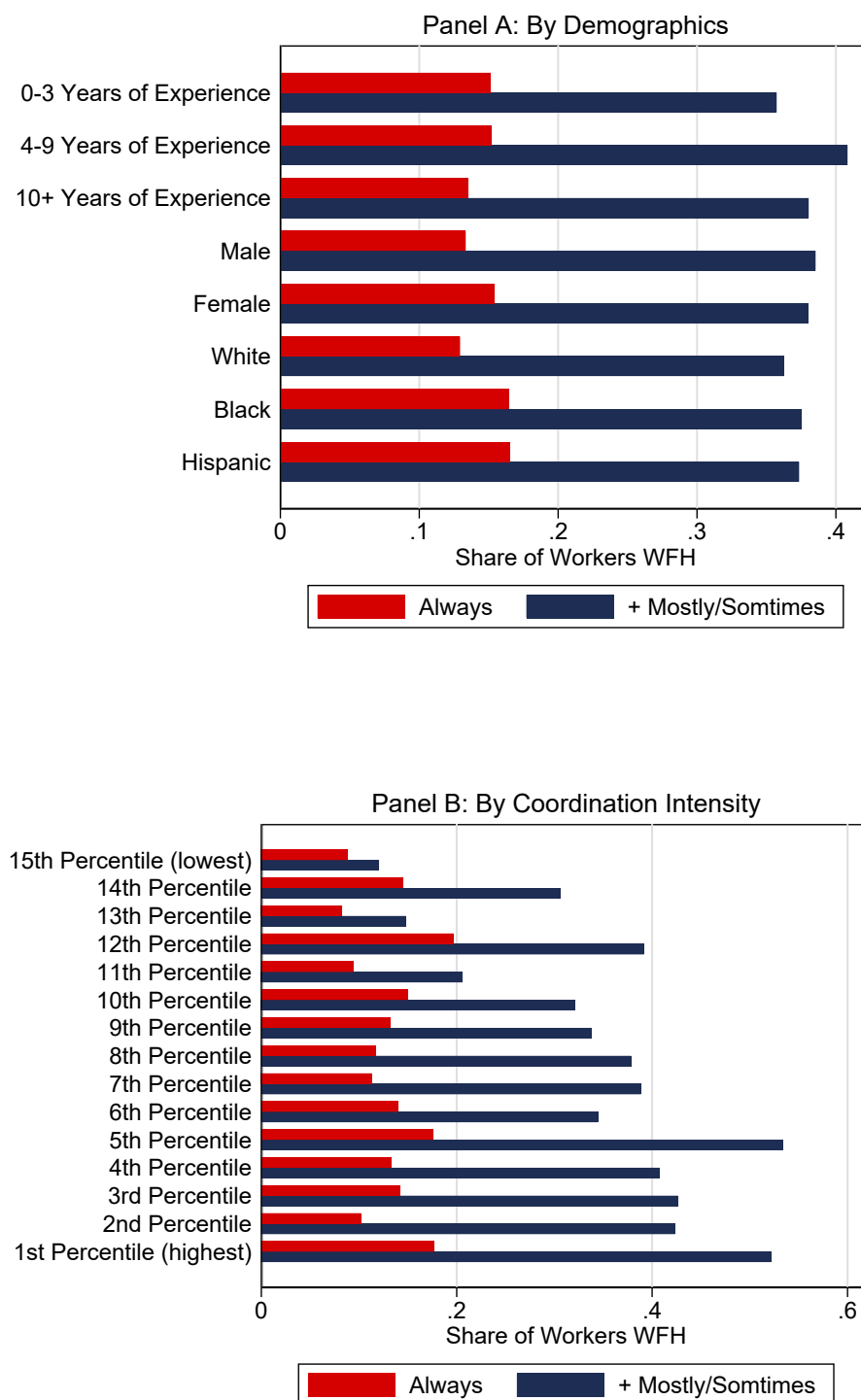
Tables and Figures

Figure 1: Work-From-Home Arrangements, by Industry and Occupation



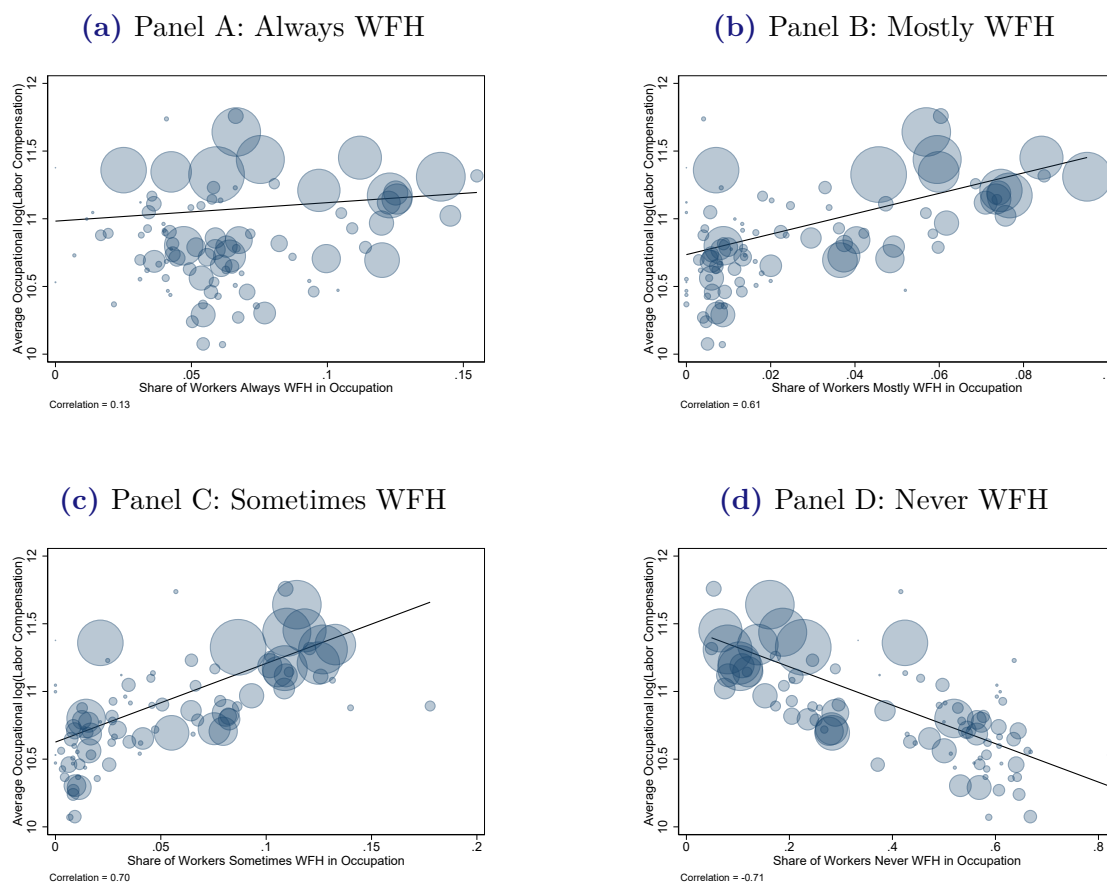
Notes.—Sources: Payscale (2020-2021). The figure plots the percentage of workers in different work from home (WFH) arrangements: “always WFH,” “mostly WFH,” and “sometimes WFH,” by two-digit NAICS industry and occupation.

Figure 2: Work-From-Home Arrangements, by Demographics and Coordination Intensity

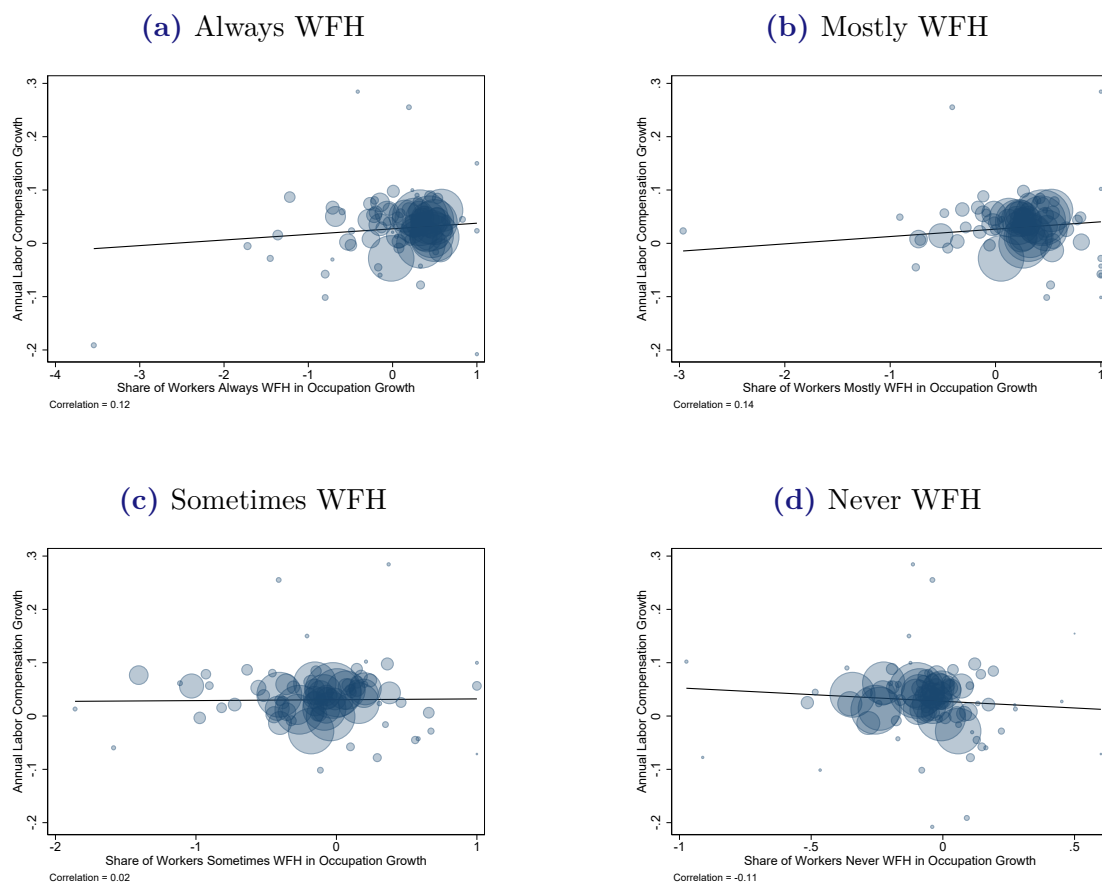


Notes.—Sources: Payscale (2020-2021) and O*NET (2014-2018). The figure plots the percentage of workers in different work from home (WFH) arrangements: “always WFH,” “mostly WFH,” and “sometimes WFH,” by demographic brackets and 15 percentiles across the distribution of coordination intensity. We measure coordination intensity using 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: Work-From-Home Arrangements and Compensation by Occupation



Notes.—Sources: Payscale (2020-2021). The figure plots the relationship between the log of total cash compensation and the percentage of workers in different work-from-home arrangements at a three-digit standard occupational classification level. We weight observations by the number of respondents in an occupation.

Figure 4: Work-From-Home Arrangements and Growth in Compensation by Occupation

Notes.—Sources: Payscale (2020-2021). The figure plots the relationship between the growth rate of total cash compensation and the percentage of workers in different work-from-home arrangements at a three-digit standard occupational classification level between May to July 2020 and March to July 2021. We winsorize growth rates at the top and bottom percentiles and weight observations by the number of respondents in an occupation. Observations are weighted by the number of respondents in an occupation.

Table 1: Work-From-Home Arrangements and Employee Job Satisfaction

Dep. var. =	Job Satisfaction (z-score)					
	(1)	(2)	(3)	(4)	(5)	(6)
WFH	.313*** [.008]					
Always WFH		.195*** [.011]	.157*** [.011]	.010 [.008]	.005 [.008]	.011 [.008]
Mostly WFH		.246*** [.013]	.190*** [.013]	.031*** [.009]	.021** [.009]	.026*** [.009]
Sometimes WFH		.230*** [.010]	.183*** [.010]	.038*** [.007]	.027*** [.007]	.029*** [.007]
log(Total Cash Compensation)			.260*** [.010]			
Pay Transparency				.050*** [.003]	.050*** [.003]	.050*** [.003]
Fairness of Pay				.119*** [.003]	.120*** [.003]	.120*** [.003]
Intra-firm Communication				.192*** [.004]	.190*** [.004]	.190*** [.004]
Development/Training				.163*** [.004]	.164*** [.004]	.164*** [.004]
Degree of Appreciation				.315*** [.004]	.312*** [.004]	.312*** [.004]
Managerial Relationship				.087*** [.004]	.086*** [.004]	.086*** [.004]
R-squared	.03	.02	.03	.54	.54	.54
Sample Size	73257	73257	73257	73257	73191	73191
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
6-digit SOC FE	No	No	No	No	Yes	Yes
Year/Month FE	No	No	No	No	Yes	Yes
Industry 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 WFH, mostly WFH, or sometimes WFH (relative to never WFH), controlling for logged total cash compensation (including bonuses, tips, and commission), and several attributes of the workplace environment (indices of pay transparency, perceived fairness of pay, intra-firm communication, development/training opportunities, appreciation, and managerial relationship), together with layers of fixed effects and individual controls (age, male, race (White, Black, Hispanic, Missing), education (associates, bachelors, PhD, high school, masters), and years of work experience). Standard errors are heteroskedasticity-robust.

Table 2: Work-From-Home Arrangements and Intentions to Leave the Firm

Dep. var. =	Intent-to-Leave (1/0)					
	(1)	(2)	(3)	(4)	(5)	(6)
WFH	-.089*** [.004]					
Always WFH		-.015*** [.006]	.001 [.006]	.042*** [.005]	.041*** [.005]	.038*** [.005]
Mostly WFH		-.064*** [.007]	-.041*** [.007]	.002 [.006]	.007 [.006]	.005 [.006]
Sometimes WFH		-.061*** [.005]	-.041*** [.006]	-.001 [.005]	.007 [.005]	.005 [.005]
log(Total Cash Compensation)			-.109*** [.005]			
Pay Transparency				.008*** [.002]	.005*** [.002]	.006*** [.002]
Fairness of Pay				-.065*** [.002]	-.064*** [.002]	-.064*** [.002]
Intra-firm Communication				-.033*** [.002]	-.031*** [.002]	-.031*** [.002]
Development/Training				-.063*** [.002]	-.062*** [.002]	-.062*** [.002]
Degree of Appreciation				-.106*** [.003]	-.106*** [.003]	-.106*** [.003]
Managerial Relationship				-.026*** [.002]	-.025*** [.002]	-.025*** [.002]
R-squared	.01	.01	.01	.21	.22	.22
Sample Size	73257	73257	73257	73257	73191	73191
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
6-digit SOC FE	No	No	No	No	Yes	Yes
Year/Month FE	No	No	No	No	Yes	Yes
Industry 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 WFH, mostly WFH, or sometimes WFH (relative to never WFH), controlling for several attributes of the workplace environment (indices of pay transparency, perceived fairness of pay, intra-firm communication, development/training opportunities, appreciation, and managerial relationship), together with layers of fixed effects and individual controls (age, male, race (White, Black, Hispanic, Missing), education (associates, bachelors, PhD, high school, masters), and years of work experience). Standard errors are heteroskedasticity-robust.

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

Dep. var. =	Job Satisfaction								Intent-to-Leave							
	Q42020	Q12021	Q2021	High Inc	Low Inc	High Exper	Low Exper	Q42020	Q12021	Q2021	High Inc	Low Inc	High Exper	Low Exper		
Always WFH	.045**	.011	-.016	.008	.015	.015	.010	.041***	.052***	.029***	.041***	.036***	.037***	.038***		
	[.020]	[.017]	[.017]	[.012]	[.012]	[.012]	[.011]	[.012]	[.011]	[.011]	[.008]	[.008]	[.008]	[.007]		
Mostly WFH	.049**	.002	.014	.028**	.018	.034**	.020	.006	.005	.002	.017**	-.012	.002	.005		
	[.022]	[.020]	[.019]	[.012]	[.016]	[.014]	[.013]	[.014]	[.013]	[.013]	[.008]	[.011]	[.009]	[.009]		
Sometimes WFH	.044***	.042***	.023	.030***	.028**	.023**	.035***	-.006	.002	.013	.015**	-.011	.010	-.001		
	[.017]	[.016]	[.016]	[.010]	[.012]	[.011]	[.011]	[.012]	[.011]	[.011]	[.007]	[.008]	[.007]	[.007]		
Pay Transparency	.059***	.055***	.043***	.043***	.057***	.041***	.058***	.006	.018***	-.007	.008**	.004	.005*	.006**		
	[.008]	[.007]	[.007]	[.005]	[.005]	[.005]	[.005]	[.005]	[.005]	[.004]	[.003]	[.003]	[.003]	[.003]		
Fairness of Pay	.114***	.120***	.127***	.110***	.134***	.102***	.140***	-.054***	-.076***	-.073***	-.070***	-.061***	-.047***	-.082***		
	[.008]	[.007]	[.007]	[.005]	[.005]	[.005]	[.005]	[.005]	[.005]	[.004]	[.003]	[.003]	[.003]	[.003]		
Intra-firm Communication	.190***	.176***	.184***	.196***	.186***	.207***	.175***	-.029***	-.025***	-.036***	-.043***	-.025***	-.029***	-.033***		
	[.010]	[.009]	[.009]	[.006]	[.006]	[.006]	[.006]	[.006]	[.005]	[.005]	[.004]	[.003]	[.004]	[.003]		
Development/Training	.161***	.146***	.173***	.161***	.165***	.151***	.176***	-.063***	-.062***	-.058***	-.057***	-.066***	-.056***	-.067***		
	[.009]	[.008]	[.008]	[.006]	[.005]	[.006]	[.005]	[.006]	[.005]	[.005]	[.004]	[.003]	[.003]	[.003]		
Degree of Appreciation	.306***	.320***	.312***	.321***	.302***	.316***	.305***	-.111***	-.118***	-.098***	-.113***	-.101***	-.113***	-.099***		
	[.011]	[.010]	[.009]	[.007]	[.006]	[.007]	[.006]	[.006]	[.006]	[.005]	[.004]	[.003]	[.004]	[.004]		
Managerial Relationship	.102***	.078***	.082***	.076***	.093***	.087***	.085***	-.022***	-.029***	-.023***	-.025***	-.024***	-.026***	-.024***		
	[.009]	[.008]	[.008]	[.006]	[.005]	[.006]	[.005]	[.005]	[.005]	[.004]	[.003]	[.003]	[.003]	[.003]		
R-squared	.56	.54	.54	.53	.55	.55	.55	.24	.25	.24	.22	.23	.22	.24		
Sample Size	13488	15904	17560	33963	39143	34833	38283	13488	15904	17560	33963	39143	34833	38283		
Individual Controls	Yes	Yes	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	Yes	Yes		
Year/Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Industry FE	Yes	Yes	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 always WFH, mostly WFH, or sometimes WFH (relative to never WFH) separately by time (Q42020, Q12021, and Q22021), income (above/below the median total cash compensation of \$61,000), and work experience (above/below the median experience of 6 years), controlling for several attributes of the workplace environment (indices of pay transparency, perceived fairness of pay, intra-firm communication, development/training opportunities, appreciation, and managerial relationship), together with layers of fixed effects and individual controls (age, male, race (White, Black, Hispanic, Missing), education (associates, bachelors, PhD, high school, masters), and years of work experience). Standard errors are heteroskedasticity-robust.

Table 4: Understanding the Mechanism Behind Working-from-Home and Job Satisfaction / Intent-to-Leave

Dep. var. =	Job Satisfaction (z-score)				Intent-to-Leave (1/0)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Always WFH	.038*** [.014]	-.002 [.010]	.003 [.009]	.030 [.018]	.032*** [.009]	.041*** [.007]	.038*** [.006]	.039*** [.010]
Mostly WFH	.024 [.020]	.025** [.011]	.011 [.011]	.054** [.021]	.008 [.013]	.003 [.007]	.009 [.007]	-.003 [.013]
Sometimes WFH	.043*** [.015]	.023*** [.009]	.017** [.008]	.054*** [.017]	.009 [.010]	.005 [.006]	.009 [.006]	.003 [.010]
Pay Transparency	.042*** [.006]	.055*** [.004]	.055*** [.004]	.036*** [.007]	.010*** [.003]	.004 [.003]	.006*** [.002]	.007* [.004]
Fairness of Pay	.129*** [.006]	.115*** [.004]	.121*** [.004]	.115*** [.007]	-.060*** [.004]	-.067*** [.003]	-.068*** [.003]	-.055*** [.004]
Intra-firm Communication	.179*** [.007]	.196*** [.005]	.196*** [.005]	.180*** [.008]	-.027*** [.004]	-.034*** [.003]	-.032*** [.003]	-.030*** [.004]
Development/Training	.171*** [.007]	.161*** [.005]	.168*** [.005]	.152*** [.007]	-.057*** [.004]	-.065*** [.003]	-.066*** [.003]	-.053*** [.004]
Degree of Appreciation	.314*** [.008]	.310*** [.006]	.308*** [.005]	.317*** [.008]	-.107*** [.004]	-.106*** [.003]	-.108*** [.003]	-.102*** [.005]
R-squared	.56	.54	.48	.39	.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
Industry 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) and intent-to-leave over the next six months on an indicator for always WFH, mostly WFH, or sometimes WFH (relative to never WFH), controlling for several attributes of the workplace environment (indices of pay transparency, perceived fairness of pay, intra-firm communication, development/training opportunities, appreciation), together with layers of fixed effects and individual controls (age, male, race (White, Black, Hispanic, Missing), education (associates, bachelors, PhD, high school, masters), and years of work 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.

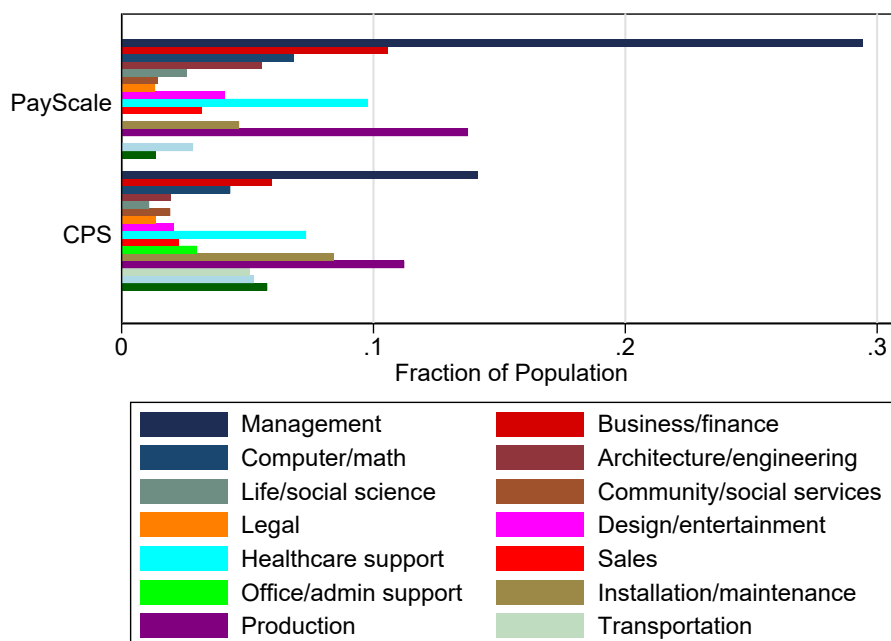
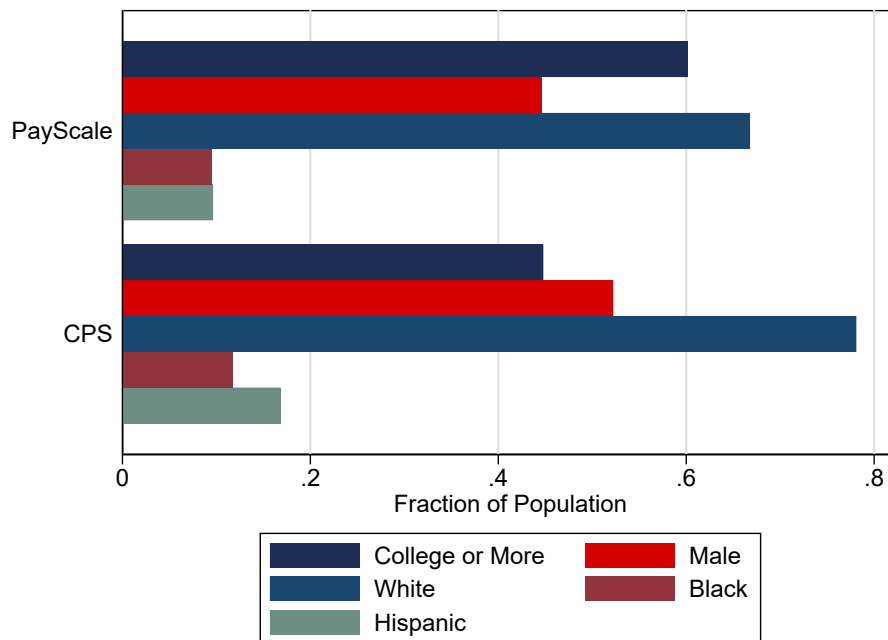
A Appendix

A.1 Benchmarking the Payscale Data

We benchmark the PayScale data using the Current Population Survey (CPS) March 2020 and 2021 samples to shed light on how the PayScale data may or may not differ from characteristics of the broader labor force.

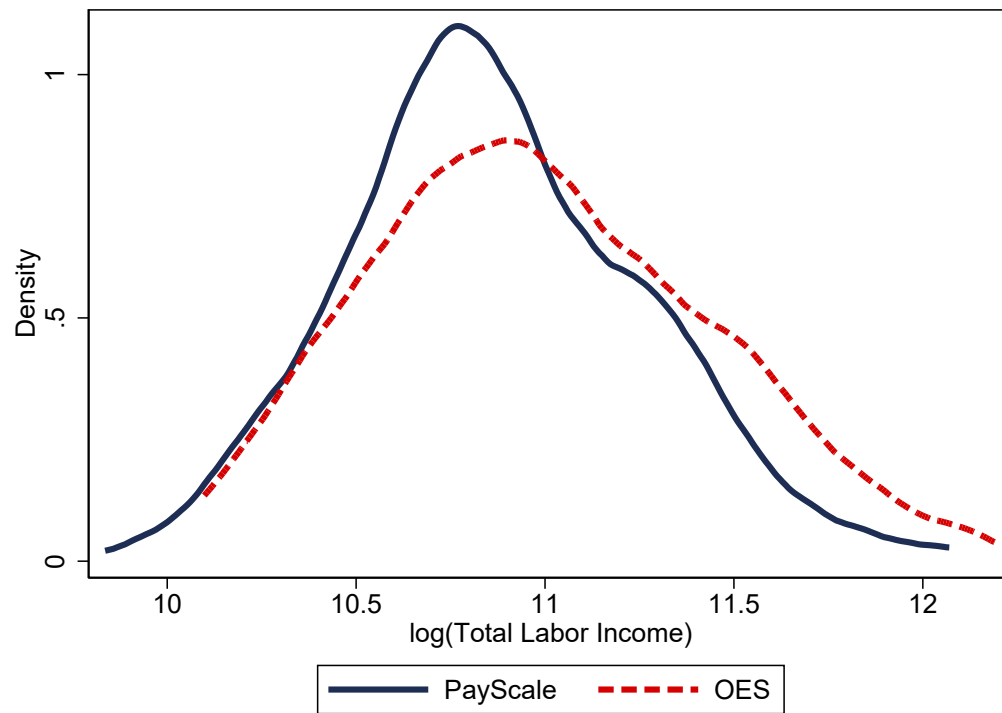
Figure A.1 plots various demographic dimensions between PayScale and the CPS. The upper panel reveals that PayScale has a somewhat larger percentage of workers with at least a college degree and a slightly lower percentage of White individuals. The lower panel highlights how PayScale includes a larger percentage of workers who self-report as management relative to the CPS data. To further understand the comparability between the types of workers covered by PayScale relative to the CPS, Figure A.2 plots the distribution of total annual income between PayScale and the Occupational Employment Statistics (OES) for 2020. The figure suggests a high degree of overlap in the two distributions. Overall, the PayScale data tends to skew towards more college-educated workers who self-report as working in management positions, and has a high degree of overlap with OES data on total annual income.

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



Source: PayScale and Current Population Survey (2020-2021). The figure plots the percentage 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).

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