Unstable Work Schedules and Racial Earnings Disparities Among U.S. Workers



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Research demonstrates large and persistence disparities in earnings by race-ethnicity, with white and Asian families generally faring far better than black and Hispanic families. One emerging but underexplored factor that may contribute to racial earnings disparities is unstable work hours. Wage workers often face earnings consequences when volatility is frequent, involuntary, or unanticipated. Leveraging the panel design of the monthly Current Population Survey, we follow a group of hourly workers across a four-month period to assess whether volatility (both magnitude and direction) in the first three months observed relates to their subsequent earnings in the fourth month of observation. We consider how this unfolds when they remain in the same job and when they switch jobs. Substantial volatility, either when work hours increase or decrease, is associated with lower earnings in the near future, both within- and between-jobs. However, when facing more volatile work schedules and substantial changes in month-to-month hours, black workers earn less than white workers when they remain in the same job. This difference is not observed among job changers.

Keywords: earnings inequality, unstable work schedules, racial wage gap, precarious work

The growing consensus is that job quality is crucial to many facets of workers' lives and the pandemic-altered labor market. In addition, related equity issues have put work volatility and wages at the forefront of social science research. Interest in understanding the economic effects of intrayear labor-market churn and particularly work-schedule instability has increased over the past decade; both affect not only workers' well-being but also employers' efficiency and the economy more broadly. Over the past two decades, the United States has undergone drastic changes in labor-market structures that have hampered job quality across

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many low-wage sectors. The deregulation and privatization of industry has also placed downward pressure on not only wages, but also on work hours for low-income and middle-class workers (Hacker 2008).

Between the early and mid-2010s, U.S. job growth was more concentrated in lower-wage sectors, including food service, retail trade, and administrative support services. More than two of every five jobs created during this period were in low-wage industries (NELP 2014). Due to business shutdowns at the onset of the COVID-19 pandemic, some workers holding jobs in these sectors faced a high risk of losing their jobs (Hardy, Hokayem, and Roll 2021). The remaining workforce who maintained their jobs kept communities safe and enabled us to meet our basic needs such as food and medical care. However, many of the jobs in these sectors entail not only low pay but also unanticipated work scheduling at the employer's discretion (Alexander and Haley-Lock 2015; Kalleberg, Reskin, and Hudson 2000; Lambert 2008). Further, these are sectors where employee retention can be low as workers seek opportunities with even just slightly better working conditions or wages (Lane 1999; Schweitzer and Khattar 2021). Consequently, hours volatility or employment churn often mark low-wage workers' labor-market experience (Choper, Schneider, and Harknett 2022).

Job churning and in-job hours insecurity have been prevalent within the low-wage market (Howell and Kalleberg 2019). Even in the economic recovery following the Great Recession, low-income workers did not realize positive wage growth until the latter part of the 2010s (Piketty, Saez, and Zucman 2018). However, the pandemic further complicated the economic benefits that had slowly flowed to low-wage workers. They were overwhelmingly the backbone of the workforce at the onset of the pandemic-working in food, retail, warehouses, transportation, and health-care services-and they were more likely people of color and less-educated women (Chaganti et al. 2020). The stagnated wage growth that black and brown workers experienced during the 2000s coupled with the labor shortage in lowwage service occupations that emerged during the pandemic recovery signal a need to better

understand the relationship between volatile hours and long-term earnings.

Despite some progress, racial earning disparities persist in the United States (Aeppli and Wilmers 2022; Cheng et al. 2019; Semyonov and Lewin-Epstein 2009; Wilson and Rodgers 2016). Ample research in the past two decades provides evidence that these racial differences are mostly attributable to occupation segregation, educational attainment, individual characteristics, and other unobserved characteristics (Goldin and Katz 2010; Mandel and Semyonov 2016; Mouw and Kalleberg 2010). Although these characteristics are pivotal, recent research on work schedules points to another key consideration. In-job work scheduling changes and month-to-month job-to-job or episodic employment may entail frequent work hours volatility, which can affect workers' economic well-being, especially that of hourly workers and less advantaged workers. Also, racial and ethnic inequities in work scheduling was evident even before the pandemic (Storer, Schneider, and Harknett 2020).

Yet the research on labor-market experiences does not explain the link between the volatility low-wage workers encounter and their earnings and leaves open numerous pressing questions, such as what, if anything, can be done to reduce racial and ethnic differences in economic well-being. Work-hours volatility may contribute to a more nuanced understanding of the racial earnings differences observed beyond what is attributable, for example, to occupational segregation, educational attainment, and total work hours. However, researchers have not conducted longitudinal research to quantify this relationship (if there is any) and to unpack how the association varies by workers' race and ethnicity.

To bolster this knowledge, the present study uses nationally representative, longitudinally linked data to follow a group of workers over four months to assess whether hours volatility between months one and three connects to workers' subsequent earnings at month four and to determine whether the earning effects of hours volatility vary by race and ethnicity. We contribute to ongoing research by disentangling within-job hours volatility from betweenjob hours variability and by determining how each affects workers' earnings. The study findings have implications for policy development that would reduce unexpected work-schedule instability at the workplace. Finally, we consider changes across periods between 2005 and 2022. This promotes an understanding of how income consequences of hour volatility evolve over time, with a focus on the recent COVID-19 pandemic and recovery from it.

We find that after adjusting for average hours worked, a significant negative relationship remains between month-to-month hours volatility and workers' earnings. Hours volatility—when greater in magnitude and higher in frequency-is correlated with lower income in month four than those with stable hours, net of other factors. That is, when workers face schedule unpredictability that falls in the top tercile of the volatility distribution, or have at least a 20 percent surge or dip in their hours, their earnings are substantially lower. There appears to be racial disparity in earnings according to various experiences of volatility. Specifically, even with a steady job, black workers earn substantially less than their white counterparts when experiencing frequent scheduling instability. Last, we find that the overall pattern holds across different time periods: workers of color have a larger earnings penalty when facing greater unstable work schedules. The significant black-white earnings differences emerged from the Great Recession period persisted through the economic expansion and continued during the recent pandemic years.

BACKGROUND

To understand the link between work-hour instability and a worker's subsequent economic well-being, we briefly review two related areas of research. First, a growing body of literature has examined the prevalence of work-hour precarity in the United States and the heterogeneity therein by race or ethnicity, with some studies focused specifically on low-wage service sectors. Second, we review another line of work that provides a portrait of wage inequality over time and plausible contributing factors. The section ends with a discussion of various measures researchers have used to study the unpredictable, involuntary work schedule changes workers face.

Unstable Work Hours Before and During the Pandemic

Although job growth in the aftermath of the Great Recession was strong by many measures, jobs in low-wage industries expanded nearly twice as much as in some mid-wage industries (NELP 2014). In the economic recovery following the pandemic, food-service work and lowwage health care and education aides are among the job categories that remain vacant (Gould and Kassa 2021). Thus far, the trends observed during the two recoveries corroborate the prior claims that labor-market structures and job characteristics have changed over the last few decades (Kalleberg, Reskin, and Hudson 2000). This is not entirely surprising given the well-documented decline in union jobs, financialization, and firm restructuring in the United States, which transformed the job market and increased the number of workers in the low-wage service and care sectors, making jobs less regular and stable, with fewer nonwage benefits (Western and Rosenfeld 2011). Social scientists have long described these features as evidence of precarious work (Kalleberg 2011).

One other equally important but underresearched facet of precarious work is hours insecurity. When the hours workers are scheduled are unpredictable and sometimes unknown until days or even hours in advance and changes are frequent or unanticipated, the impacts on workers' lives are often detrimental, which may trigger higher job turnover (Choper, Schneider, and Harknett 2022). Even in the years with economic expansion immediately before the pandemic, job churn, inconsistent work hours, and the resulting income instability were common in the lives of workers holding nonmanagerial jobs in the retail service and home health-care sectors (Clawson and Gerstel 2014; Morduch and Schneider 2017). Irregular work hours are a major source of shortterm income instability or substantial income drop (Brown et al. 2014; Morduch and Schneider 2014).

The income insecurity that these low-wage workers experience could be the result of in-job hours variability, job-to-job transitions, or both. As the economy paused to address the pandemic, some of these workers in low-wage sectors faced heightened risk of job loss. Hourly workers with minimal employmentrelated benefits, people of color, women, and immigrants disproportionately held these jobs (Chaganti et al. 2020); indeed, workers holding jobs in frontline industries were significantly more likely to lose a job during the pandemic (Hardy, Hokayem, and Roll 2021). The remaining workers in food, retail, warehouses, transportation, and health-care services continued in-person work and faced heightened risk of viral exposure.

Many of the jobs, then dubbed essential, not only paid less with few benefits but also entailed unanticipated or last-minute changes in hours worked (Kalleberg, Reskin, and Hudson 2000; Lambert 2008). Scheduling accommodated shifting demands, and in the pandemic context, workers might have been called on to cover for coworkers unable to work due to health or family caregiving needs. Thus, service workers continuously faced involuntary scheduling changes at the pandemic's onset (Schneider 2021). Despite the decrease in overall hours instability in 2022, involuntary hours volatility remained elevated for workers of color, lesseducated workers, and those at the bottom of wage distribution, net of other characteristics (Cai 2023).

Furthermore, occupation segregation may have exacerbated disparities in volatility given concentration in low-wage markets, in which service and low-wage health-care jobs are disproportionately held by women and workers of color. In fact, the pandemic recession is the first time in U.S. history that women lost nearly two million more jobs than men. Furthermore, hospitality and food service jobs are primarily occupied by women (U.S. Department of Labor 2022); and a disproportionate number of black and Hispanic women are in home health aide occupations (Goubert, Cai, and Appelbaum 2021). The pandemic amplified horizontal segregation based on gender and race, with the leisure, hospitality, education, and health services sectors undergoing significant job losses.

Racial-Ethnic Differences in Work Volatility and Earnings

Due to the swift response of government measures to mitigate pandemic-induced economic consequences, such as expanded unemployment insurance (UI) and generous child benefits, various groups managed to weather the negative consequences of labor-market churn. However, others, such as some single individuals without dependents and undocumented immigrants, did not directly benefit from these public policies. Before the pandemic, even with the support of social insurance programs, the majority of U.S. workers relied on earned income as their primary financial resource, though many suffered from income instability and insufficiency (Finnigan 2018; Morduch and Schneider 2014).

Volatility in work (caused by changes in jobs or work hours) and thereby earnings is among the most important drivers of household income instability. In fact, nearly 70 percent of individuals experiencing unstable incomes did so as a result of either irregular work schedules or periods of unemployment in 2012 (Brown et al. 2014). Yet most individuals report that they would prefer a stable but low income to a somewhat greater overall income with poor job security or work hours stability (Hill et al. 2013; Morduch and Schneider 2017). Economic insecurity and instability are not experienced evenly across populations. Frequent instability of work hours (either between jobs or within jobs) contributes to substantial income fluctuations, particularly for lower-income families without sufficient savings. Among those raising children, Hispanic parents are more likely than their white counterparts to encounter earnings shocks, a decline of 20 percent or more in total earnings from one month to the next (Cai and Fremstad 2021). Such income fluidity can significantly undermine workers' savings in the long run and hinder upward mobility (Hill et al. 2017).

Experimental studies have documented racial discrimination in the labor market (Pager 2003; Pager and Shepherd 2008). Devah Pager (2003), for example, found that Hispanic and black job applicants have a lower likelihood of receiving a callback than their white counterparts with comparable qualification, and the penalty is more salient for black job seekers (Quillian et al. 2017). In another scenario, even being exposed to social networks at a similar rate, black applicants' propensity to attain referrals appeared to be lower, which accounted for a nontrivial portion of explaining their lower likelihood in receiving a job offer relative to their white counterparts (Pedulla and Pager 2019). Further, for incumbent workers, even when staying at the same firm, manager discretion may put certain groups of workers in a more disadvantaged position (Lambert and Henly 2012). Although, empirically, the limited available studies suggest mixed results (Ruetschlin and Asante-Muhammad 2015; Swanberg, Watson, and Eastman 2014; Finnigan and Hunter 2018), recent work using detailed firmlevel data reveals racial bias may exist in today's service-sector jobs when it comes to precarious scheduling (Storer, Schneider, and Harknett 2020).

Historically, racial disparity in earnings has been largely attributable to human capital, occupation, or other demographic characteristics (Goldin and Katz 2010; Mouw and Kalleberg 2010). Even after considering these factors, black workers earn less than white workers (Wilson and Rodgers 2016). It is certainly plausible that a number of other factors could contribute to the racial difference in earnings, such as unobserved characteristics, different access to opportunities, school quality during childhood, and interpersonal and structural barriers. However, studies on racial earnings disparity over time generally conclude that racial difference has widened again since 2000, following a decade of black-white wage convergence (Mandel and Semyonov 2016; Couch and Daly 2002). The latter is during a time in which occupation segregation shrank and more equal employment distribution across industry was observed. Nonetheless, scheduling instability or inequality has been mostly neglected in this discussion.

Qualitative research with interviews of human resource staff responsible for hiring or having information about turnover for several types of jobs in retail, hospitality, and services in several major U.S. companies shows that managers tended to perform a series of scheduling practices that may favor certain types of workers (Lambert 2008). For instance, the study reveals that, at the time of hiring, many employers put more weight on candidates who expressed availability or flexibility across a wide span of work hours and might further favor

those who are more on the clock to meet labor demand (Lambert 2008). This favoritism is evident in other case studies in which authors reported that a worker's schedule might be highly determined by staffing constraints and the budget at the moment, which led to substantial manager discretion in giving some workers more favorable schedules (Lambert and Henly 2012), regardless of whether the decision was conscious or unconscious (Wood 2018). Further, work using three differing samples, including personal interviews with front-line workers, also documented that relative to white workers, black workers confronted or perceived significant discrimination in various ways, as noted by more unfavorable treatment in the workplace (Deitch et al. 2003). Given that managerial roles are overwhelmingly held by white employees, nonwhite workers in the low-wage labor market are likely to encounter a manager of a different race-ethnicity (Stainback and Tomaskovic-Devey 2009). Although this is not evidence of discrimination, for this and other reasons, we hypothesize possible racial difference in the association of earnings to scheduling volatility.

Work-hour instability may be an important factor that can contribute to our understanding of these disparities. It is plausible that beyond occupational effects and human capital, there might be a link between work-hour instability and workers' subsequent earnings. Workers may not be able to improve their economic well-being, particularly when instability in hours worked or labor-market flow is frequent.

Variations in work hours may mirror some patterns observed in poverty. Relative to their white counterparts, individuals of color have much higher chances of encountering an episodic poverty spell over a three-year period, with family income falling below their poverty threshold for two consecutive months—about 5 to 22 percentage points higher (Warren and Tettenhorst 2022). Earnings contribute a large portion of a worker's income stream, especially for low-wage workers. The disproportionate representation of people of color holding nonmanagerial service jobs may explain some of the persistent disparities in episodic poverty rates.

Two potential mechanisms explain why vol-

atility might be linked to lower earnings. Workhour volatility may entail spikes, dips, or both within a short period. It is reasonable to expect that modest instability might not be harmful to one's economic well-being. However, constant fluctuations in the number of hours worked could be a source of economic insecurity, especially for those paid by the hour. In fact, instability and insecurity in work schedules are associated with workers' financial insecurity and material hardship (Golden 2015; Schneider and Harknett 2019). Further, even if workers gain hours in the same jobs, the length of time they can maintain those hours is often unknown.

On the other hand, today's private employers may impose last-minute cancellations or on-call jobs to minimize their administrative costs. Research reveals that nearly half of retail workers between the ages of twenty-six and thirty-two reported a difference of about ten hours between weeks (Lambert, Fugiel, and Henly 2014). This was further confirmed in a more recent study (Schneider and Harknett 2019). Workers with unfavorable scheduling are increasingly experiencing higher job turnover (Choper, Schneider, and Harknett 2022). Another recent study using quarterly data finds that one out of two low- or moderate-income households may experience job instability over the course of one year, and approximately 15 percent experience job loss without subsequent job gains during the same year (Cai et al. 2023). Individuals may voluntarily transition out of jobs because of the instability and may face an unemployment spell afterward, resulting in lower subsequent earnings. Others may have unstable employment involuntarily and face unemployment. Although some may have the means to offset a period of not working and wait for a better job, others may have to accept the first job they can find. Given known differences in savings by race (Aladangady, Chang, and Krimmel 2023; Bandelj and Grigoryeva 2021), it is more likely that people of color will need to transition faster into a new job that may offer only lower earnings.

Measuring Unstable Scheduling

Even though researchers have increasingly realized the importance of hour instability for workers' economic well-being, fewer studies have investigated economic outcomes resulting from short-term hour instability or employment churn, partly because of limited suitable national-level survey data. Even with longitudinal datasets, such as NLSY and PSID, respondents are usually surveyed annually or biannually. This makes such data less appropriate for studying such topics as short-term or frequent hour instability. The SHIFT project has started to recruit respondents for a group of targeted low-wage service-sector workers, who are mostly affected by hour insecurity and have less power in the labor market, more frequently within a shorter period. Nationally representative data sets fielded by the Census Bureau include the Current Population Survey (CPS) data, which have a rotation panel that follows workers across four consecutive months and collects information on hours worked in each month within that four-month time window. Additionally, the SIPP data are based on detailed labormarket information and benefit receipt every four months or monthly over the course of a year, depending on the panel selected.

Hours volatility could stem from either jobto-job transitions or within-job hours variability, both of which may influence the variability of hours worked from month to month and, consequently, financial security. Studies on work-hour instability have mostly measured employment changes based on between-job instability (job loss or gain), nonstandard work schedule (full and part time), day and night shifts, and frequent job changes (Morduch and Schneider 2017; Wolf et al. 2014). However, relying solely on measures such as nonstandard work schedules or job transitions may not sufficiently capture unanticipated aspects of hours instability; in other words, it may not portray the nuances of the magnitude of such instability.

Looking specifically at within-job hours instability, some research has used dichotomous variables in surveys that asked directly whether respondents had experienced job shocks or whether their hours worked had varied since the previous survey (Finnigan and Hale 2018; Lambert, Fugiel, and Henly 2014). Additionally, the difference between the maximum and minimum numbers of hours workers reported having worked each week is another measure the researchers have been using to understand within-job instability (Schneider and Harknett 2019).

Although this type of measure captures respondents' perceptions of hour variability they might have experienced, it tends to underestimate the actual volatility an individual might encounter in the labor market. It may not be the most effective way to understand shortterm variation if a worker works some number of hours between the reported maximum and minimum range and that information is not used; researchers cannot quantify the magnitude of such variation over time. In addition, reported varying hours tend to be positively correlated with more desirable flexibility according to the respondents' choice (Lambert, Fugiel, and Henly 2014), signaling that this type of dummy variable might not be the best approach for understanding the unfavorable volatility that some workers experience because of involuntary variations in hours. Beyond direct survey questions asking about respondent households' employment or hour status, another line of research draws on longitudinal data to quantify the actual variability in number of hours a worker might work over time. To date, only one study has examined short-term work instability using this approach (LaBriola and Schneider 2020).

In the spirit of this recent work, the present study contributes to the ongoing research by capturing month-to-month hour variability to understand how the magnitude of volatility shapes workers' earnings. Further, we also conceptualize variability by calculating substantial surges or dips in month-to-month hours a worker experiences. We move beyond how hours volatility is perceived to understand the income implications of how it is experienced.

DATA AND METHODS

We use the monthly files of the Current Population Survey collected by the U.S. Census Bureau and made easily available to researchers by the University of Minnesota (Flood et al. 2022). The CPS interviews the same addresses over four consecutive months and resurveys them for another four months after an eight-month gap. We select workers observed across four continuous months, regardless of their first appearance or second entry in the sample. We limit the sample to adult civilians ages nineteen and older who reported being employed and paid hourly at the start of the interview between 2005 to 2022.1 We do not include workers who miss work or work part time due to any of the following reasons: taking a vacation, attending school, taking family leave, experiencing chronic health problems, having civil duties or other personal obligations. This sample selection mostly rules out workers who voluntarily work reduced hours or switch from working to not working by their own choice. Following earlier research (LaBriola and Schneider 2020), we also exclude workers who have only proxy labor-market status instead of their own report. The final analytic sample consists of 267,013 unique worker observations.

Explanatory Variables

As the main focus in the study, the concept of volatility is conceptualized in two ways: the magnitude of hours variability across a threemonth period, and the direction of hours variability. We use the initial three-months of data to compute the work hours instability index, instead of all four months, to have clear temporal ordering between predictors and outcome examined. Specifically, hours variability is measured using the standard deviation of arc percentage change approach. It is operationalized in the following form:

$$v_i = \sqrt{var \left[\frac{HRs_{it} - HRs_{it-1}}{Y}\right]}$$

where v_i is the average volatility index for worker *i* across the first three months of their appearance in a given four-month time window. *HRs*_{*it*} and *HRs*_{*it*-1} denote weekly hours worked for all jobs worker i reported at month t and t-1, respectively. The denominator, *Y*, uses

1. Despite unique identifiers, previous studies suggest using other demographic information to double-verify that the same respondent is followed through months. Hence we use the information on respondents' race, ethnicity, and sex variable to identify further those misclassified as the same person.

a midpoint approach (midpoint between HRs_{it} and $HRs_{it,1}$ to reduce the impact of large changes in total hours worked between months. As a sensitivity check, we also use the coefficient of variation approach, by dividing the standard deviation of a worker's hours by their average hours across the three-month period (results available on request). Both approaches are used in prior studies on income volatility (Gennetian et al. 2015; Ziliak, Hardy, and Bollinger 2011). We restrict the analytic sample to wage workers only, recognizing that the intensity or extent of instability that workers experience may matter quite differently for salaried employees. We define low, moderate, and high volatility using the instability-index terciles and apply them as a key predictor in the regression analysis. Our second set of predictors is four exclusive categories indicating unstable hours throughout, having hours spike only (defined as having 20 percent or more surge in hours from one month to the next), hours dip only (defined as having 20 percent or more decline in month-to-month hours), and both spike and dip.

Outcome Variable

Our primary outcome of interest is workers' reported weekly earnings at the last month observed (the fourth reference month). Earnings are adjusted for inflation to 2020 dollars and are log-transformed.

Control Variables

We include a set of associated covariates that may affect one's earnings, including workers' ages (nineteen through twenty-four, twenty-five through thirty-five, thirty-six through fifty-four, and fifty-five or above), sex, marital status, parenthood status, and education level (one of four categories: less than high school, high school diploma, some college, and college and above), job-related factors, such as the average number of hours worked, whether a job is covered by a union, occupation, industry, and region of residence. To separate the observed volatility within a job from that associated with labor-market transition, we create an indicator denoting whether workers ever change jobs within the four-month period.

METHODS

We begin with a series of descriptive charts illustrating patterns of volatility and earnings over time. We then turn to our multivariate analyses. To address the first question whether the hours' volatility relates to workers' subsequent earnings—we ran two sets of models using ordinary least square estimation to predict workers' earnings during the fourth reference month for each of the key predictors. Each set of models includes two specifications. First, we include workers' demographic and job-related characteristics. We then further include state of residence and time fixed effects in the model. The model estimated is

$$Y_{it4} = \beta_0 + \beta_1 Volatility_i + \beta X_i + \beta Z_i + \gamma_s + \mu_t + \varepsilon_{ist4}$$
(1)

where Y_{it4} is earnings reported by worker i in state j at time t4. β_1 *Volatility*, is one of the two measures for hour instability of worker i. X_i is a list of covariates representing worker i's other sociodemographic background, including race and ethnicity, sex, age, marital status, education level, parenthood status. Z_i is a vector of control representing worker i's job-related characteristics, including average hours worked, union coverage, occupation, and industry. γ_s consists of state indicators. μ_t denotes month and year fixed effects. We run models separately for those who maintained the same jobs and those who changed jobs to better understand possible differences between withinjob work-hour variability and volatility associated with labor-market flow. In our second question, we add interaction terms to test whether and how racial disparity in earnings varies by volatility experience.

$$Y_{it4} = \beta_0 + \beta_1 Volatility_i + \beta_2 Race_i + \delta(Volatility_i * Race_i) + \beta X_i + \beta Z_i + \gamma_s + \mu_t + \varepsilon_{ist4}$$
(2)

where δ represents a set of coefficients of interest, which test how racial differences in earnings vary by volatility. Last, the study covers how the described relationship changed over time and whether any disparity was significant at specific times. To this end, we constructed four time indicators: pre–Great Recession [GR] (2005–November 2007), Great Recession (December 2007–June 2009), post-GR recovery and economic expansion (July 2009–February 2020), and pandemic and post-pandemic recovery (March 2020–2022). Using our preferred specifications with states, time-fixed effects, and a full set of covariates, we reestimate the linear models of the interactions between volatility indicators and race/ethnicity for each period separately to assess whether any racial-ethnic groups exhibit lower or higher earnings at specific times.

DISTRIBUTION OF WAGES AND UNSTABLE WORK HOURS

Table 1 reports descriptive statistics of the main variables of interest for the whole sample and separately by workers' work-hours variability pattern. About 30 percent of the sampled wage workers experienced at least one substantial hours surge or dip, defined as 20 percent increase or decrease in work hours. For those with only hours drop without substantial hours gain, the month-to-month instability index is more than triple the sample average. Not surprisingly, those experiencing both hours surge and dip have an even higher volatility index. Reported earned income at month four does not vary much from the average for those with stable hours throughout and appears to be descriptively higher for those gaining substantial hours without a major drop. However, compared with the average, those with an hours drop have lowest earnings, followed by workers having both major ups and downs in their hours. Nine in ten workers remained in the same employment spell across the time window examined. Roughly 15 percent of the sampled workers had a union job. Workers with the most volatile hours had less education and were more often service or blue-collar job holders. Other basic demographic characteristics reveal that nearly three in four workers were in their prime years (ages twenty-five to fifty-four), and older workers make up around 20 percent of the sample. On average, the analytic sample consists of more than 60 percent white workers. Black and Hispanic workers make up 16 and 14 percent, respectively. Another 9 percent

were Asian American or Pacific Islander (AAPI) or other race.

We proceed by showing the pattern, across time, in volatility and earnings. The three panels of figure 1 show trends for all workers, workers experiencing volatility, and workers with consistent hours. Our analyses revealed that an estimated 67 percent of wage workers experienced volatility nationwide (result available on request). All groups of workers experienced average wage increase in the prosperous period before the COVID-19 pandemic. These continued through the pandemic as these workers were often essential to meeting individuals and families' basic needs. The patterns were generally similar for those experiencing volatility and those with stable hours, though during the Great Recession it appears that those with instability had lower earnings, on average. At the peak of the pandemic, those with volatile hours were better off than those with stable hours, and although both groups have realized earnings declines since then, workers with volatility have plateaued at somewhat higher weekly earnings. However, the results observed so far are descriptive and it is plausible that a number of other sociodemographic or job factors affect the association between volatility and earnings.

Figure 2 illustrates patterns in earnings by the type of hours instability experienced, namely, experiencing hours surge only, experiencing hours dip only, having both surge and dip, or having stable hours throughout. From 2016 through before the pandemic, those with volatility (regardless of surge or dip) experienced relatively higher wage growth, with workers facing hours surges but not dips surpassing the wages of those with stable hours. This is not surprising as the surge represents an increase and there was no obvious return to lower hours. Workers having substantial hours cut or confronting both frequent ups and downs in hours realized noticeable lower earnings over the period examined.

The panels of figure 3 report trends in work hours volatility and earnings by race-ethnicity. Although volatility spiked during the pandemic for all wage workers, the spike was more acute for people of color, most notable among His-

		Stable			Spike and
	All	Hours	Spike Only	Dip Only	Dip
Hours instability index	0.18	0.06	0.29	0.59	0.65
	(0.40)	(0.17)	(0.23)	(0.81)	(0.41)
Earnings per week	839.70	846.74	855.14	794.85	817.54
	(516.04)	(495.89)	(562.49)	(549.21)	(580.41)
Stay with the same job	0.90	0.92	0.89	0.75	0.90
Average hours worked	40.01	40.14	41.12	38.04	40.19
	(9.67)	(8.29)	(11.55)	(12.77)	(12.79)
Job covered by union	0.15	0.14	0.17	0.15	0.16
Worker characteristics					
Female	0.50	0.51	0.48	0.48	0.48
Age: 19–24	0.07	0.07	0.09	0.09	0.08
Age: 25–35	0.27	0.26	0.27	0.27	0.27
Age: 36–54	0.45	0.46	0.45	0.45	0.45
Age: 55 and older	0.21	0.21	0.19	0.19	0.20
White	0.61	0.61	0.62	0.58	0.60
Black	0.16	0.16	0.15	0.17	0.16
Hispanic	0.14	0.14	0.13	0.15	0.14
Others	0.09	0.09	0.09	0.09	0.09
Less than high school	0.09	0.09	0.10	0.11	0.11
High school diploma	0.34	0.34	0.33	0.34	0.33
Some college	0.36	0.36	0.36	0.35	0.35
College or above	0.21	0.21	0.21	0.20	0.21
Unmarried	0.55	0.55	0.57	0.58	0.57
Have children present	0.34	0.33	0.34	0.34	0.35
Broad occupation categories					
Professional and related	0.25	0.25	0.23	0.22	0.23
Services and related	0.20	0.19	0.23	0.23	0.25
Sales and related	0.08	0.08	0.08	0.08	0.08
Office and administrative support	0.17	0.19	0.13	0.12	0.11
Blue-collar jobs	0.30	0.29	0.33	0.34	0.33
Percentage		70	11	12	7
Observations	267,013	189,520	29,054	30,786	17,653

Table 1. Summary Statistics by Volatility Experience

Source: Authors' calculations based on the monthly Current Population Survey 2005–2022 accessed through IPUMS (Flood et al. 2022).

Note: Mean (SD) or proportion presented. Work-hour volatility is calculated as the standard deviation of the arc percent change of household's total work hours. A substantial hours-surge or hours-cut is defined as an increase or decrease in work hours by at least 20 percent from one month to the next. Earnings constant in 2020 dollars.

panic workers and those identifying as Asian American or other racial-ethnic group. This is a bit different than the longer-term trend showing black and Hispanic workers with the greatest variability. Wages, which were already highest among white and Asian workers, grew for all groups, but most slowly among Hispanic workers.

Figure 1. Trends in Volatility and Earnings Over Time



Source: Authors' calculations based on the monthly Current Population Survey 2005–2022 accessed through IPUMS (Flood et al. 2022).



Figure 2. Trends in Earnings by Hours Volatility Experience

Source: Authors' calculations based on the monthly Current Population Survey 2005–2022 accessed through IPUMS (Flood et al. 2022).



Figure 3. Trends in Volatility and Earnings, by Race-Ethnicity

Source: Authors' calculations based on the monthly Current Population Survey 2005–2022 accessed through IPUMS (Flood et al. 2022).

Greater Volatility Links to Lower Earnings

Turning to our multivariate analyses, we find a clear relationship between work-hour volatility and subsequent weekly earnings, as shown in table 2. Greater volatility is associated with lower earnings among both those who remain in their jobs and those experiencing job instability, though the relationship is somewhat stronger for those who change jobs. For those who stayed in the same job, compared to their peers with stable hours, experiencing higher instability (top tercile of instability-index distribution) was associated with 7 percent lower earnings, whereas for those who switched jobs, the top tercile in volatility was associated with 18 percent lower earning than those who changed jobs but had stable hours. This may suggest that those who change jobs experience reduced hours, whether by choice or constraint. The other demographic and control variables illustrate the expected relationships. The regressions in table 2 also point to consistent racial-ethnic disparities, with black and Hispanic workers realizing the lowest wages.

Frequent Scheduling Instability Correlated with Lower Earnings

As models 2 and 4 in table 2 show, when disaggregating volatility into different patterns: surge only, dip only, both surge and dip, with stable hours throughout as the reference, we find similar patterns observed earlier that job changers have larger earnings penalty. As we would expect, those facing both hours spike and dip and those with only substantial hours drop have lower earnings. Relative to working stable hours throughout, when instability is frequent or unanticipated, regardless of direction, it is associated with lower earnings.

Table 3 reports how racial differences in earnings vary by volatility experience. Racial disparity is significant in earnings when volatility happens within a job. For white workers, both surge and dip in volatility correlated with 7 percent lower earnings. For black workers, the same volatility was associated with a higher earnings penalty, at about 12 percent. In addition, when only having hours spike, Hispanics workers' earnings penalty was lower than that

	Model 1 Within Job	Model 2 Within Job	Model 3 Between Jobs	Model 4 Between Jobs
Second tercile, instability	-0.03***		-0.18***	
Third tercile, instability	-0.07***		-0.18***	
Ref: Stable hours throughout	(0.00)		(0101)	
Hours surge only		-0.05***		-0.13***
		(0.00)		(0.01)
Hours dip only		-0.09***		-0.10***
		(0.00)		(0.01)
Both surge and dip		-0.09***		-0.21***
		(0.00)		(0.01)
Black	-0.10***	-0.10***	-0.06***	-0.06***
	(0.00)	(0.00)	(0.01)	(0.01)
Hispanic	-0.10***	-0.09***	-0.06***	-0.07***
	(0.00)	(0.00)	(0.01)	(0.01)
AAPI or other	-0.06***	-0.06***	-0.04***	-0.04**
	(0.00)	(0.00)	(0.01)	(0.01)
Female	-0.15***	-0.15***	-0.15***	-0.16***
	(0.00)	(0.00)	(0.01)	(0.01)
Age: 25–35	0.14***	0.14***	0.12***	0.12***
	(0.00)	(0.00)	(0.01)	(0.01)
Age: 36–54	0.23***	0.23***	0.19***	0.19***
	(0.00)	(0.00)	(0.01)	(0.01)
Age: 55 or older	0.21***	0.21***	0.15***	0.15***
	(0.00)	(0.00)	(0.01)	(0.01)
Have children present	0.02	0.02	0.00	00.0
Linmorriad	(0.00)	(0.00)	(0.01)	(0.01)
Unmarned	-0.04	-0.04	-0.04	-0.04
High school diploma	(0.00)	(0.00)	(0.01)	(0.01)
Figh school diploma	(0.00)	(0.00)	(0.13	(0.01)
Some college	(0.00)	(0.00)	0.15***	0.15***
Some conege	(0,00)	(0,00)	(0.01)	(0.01)
College or above	0.34***	0.34***	0.24***	0.24***
	(0,00)	(0.00)	(0.02)	(0.02)
Average hours worked	0.02***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)
Job covered by union	0.15***	0.16***	0.28***	0.28***
-	(0.00)	(0.00)	(0.01)	(0.01)
Constant	F 11***	E //***	F 00***	E 00***
Constant	5.44	5.44	5.89	5.88
Occupation controls	(0.02)	(0:02)	(0.00)	(0.00)
Industry controls	x	x	x	x
Year and month fixed effects	x	x	X	x
State fixed effects	x	x	x	x
Observations	240.165	240.165	26,849	26,849
R^2	0.38	0.38	0.38	0.38

Table 2. Linear Regressions Predicting Earnings

Source: Author's calculations based on the monthly Current Population Survey 2005–2022 accessed through IPUMS (Flood et al. 2022).

AAPI = Asian American and Pacific Islander. Robust standard errors in parentheses. * p < .10; * p < .05; ** p < .01; *** p < .001

		Model 2		Model 4
	Model 1	Between	Model 3	Between
	Within Job	Jobs	Within Job	Jobs
Second tercile, instability	-0.03***	-0.19***		
	(0.00)	(0.02)		
Third tercile, instability	-0.07***	-0.18***		
	(0.00)	(0.01)		
Black	-0.09***	-0.07***	-0.10***	-0.07***
	(0.00)	(0.02)	(0.00)	(0.01)
Hispanic	-0.11***	-0.07***	-0.10***	-0.07***
	(0.00)	(0.02)	(0.00)	(0.01)
AAPI other	-0.06***	-0.04†	-0.06***	-0.03
	(0.01)	(0.02)	(0.00)	(0.02)
Black x volatility, second tercile	-0.00	0.05		
	(0.01)	(0.04)		
Hispanic x volatility, second tercile	0.02*	0.03		
	(0.01)	(0.04)		
AAPI other x volatility, second tercile	0.01	0.01		
	(0.01)	(0.04)		
Black x volatility, third tercile	-0.03***	0.02		
	(0.01)	(0.02)		
Hispanic x volatility, third tercile	0.02***	0.01		
	(0.01)	(0.02)		
AAPI other x volatility, third tercile	-0.01	-0.01		
	(0.01)	(0.02)		
Hours surge only			-0.04***	-0.14***
			(0.00)	(0.01)
Hours dip only			-0.07***	-0.17***
			(0.00)	(0.01)
Both surge and dip			-0.07***	-0.23***
			(0.01)	(0.02)
Surge only x Black			-0.01	-0.02
			(0.01)	(0.03)
Surge only x Hispanic			0.03**	-0.01
			(0.01)	(0.03)
Surge only x AAPI other			-0.00	-0.03
			(0.01)	(0.03)
Dip only x Black			-0.01	0.02
			(0.01)	(0.02)
Dip only x Hispanic			0.01	0.01
			(0.01)	(0.02)
Dip only x AAPI other			-0.03*	-0.02
			(0.01)	(0.03)
Both surge and dip x Black			-0.05***	0.04
			(0.01)	(0.04)
Both surge and dip x Hispanic			0.02	-0.06
			(0.01)	(0.04)
Both surge and dip x AAPI other			-0.02	-0.05
			(0.02)	(0.05)

Table 3. Earnings Consequence of Volatility by a Worker's Race and Ethnicity

Table 3. (continued)

	Model 1 Within Job	Model 2 Between Jobs	Model 3 Within Job	Model 4 Between Jobs
Female	-0.15***	-0.15***	-0.15***	-0.16***
	(0.00)	(0.01)	(0.00)	(0.01)
Age: 25–35	0.14***	0.12***	0.14***	0.12***
	(0.00)	(0.01)	(0.00)	(0.01)
Age: 36-54	0.23***	0.19***	0.23***	0.19***
	(0.00)	(0.01)	(0.00)	(0.01)
Age: 55 or older	0.21***	0.15***	0.21***	0.16***
	(0.00)	(0.01)	(0.00)	(0.01)
Have children present	0.02***	0.00	0.02***	0.00
	(0.00)	(0.01)	(0.00)	(0.01)
Unmarried	-0.04***	-0.04***	-0.04***	-0.04***
	(0.00)	(0.01)	(0.00)	(0.01)
High school diploma	0.14***	0.13***	0.14***	0.13***
	(0.00)	(0.01)	(0.00)	(0.01)
Some college	0.19***	0.15***	0.19***	0.15***
	(0.00)	(0.01)	(0.00)	(0.01)
College or above	0.34***	0.24***	0.34***	0.24***
	(0.00)	(0.02)	(0.00)	(0.02)
Average hours worked	0.02***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)
Job covered by union	0.15***	0.28***	0.16***	0.28***
	(0.00)	(0.01)	(0.00)	(0.01)
Hours instability index			-0.05***	0.06***
			(0.01)	(0.01)
Constant	5.44***	5.89***	5.45***	5.81***
	(0.02)	(0.05)	(0.02)	(0.05)
Occupation controls	х	х	х	х
Industry controls	х	х	х	х
Year and month fixed effects	х	х	х	х
State fixed effects	х	х	х	х
Observations	240,165	26,849	240,165	26,849
R ²	0.38	0.38	0.38	0.38

Source: Author's calculations based on the monthly Current Population Survey 2005–2022 accessed through IPUMS (Flood et al. 2022).

AAPI = Asian American and Pacific Islander. Robust standard errors in parentheses. [†] p < .10; ^{*} p < .05; ^{**} p < .01; ^{***} p < .001

of white workers. However, for those who switched jobs, we do not find any significant race differences in the association of earnings with volatility. Again, it may be that job changes are associated with voluntary or involuntary decreases in hours triggering the shock.

Given the observed racial-ethnic differences in the effect of within-job hours volatility, we next estimate models limited to those staying in the same job across four time periods, before the Great Recession, during the Great Recession, after the Recession and Recovery-Expansion, and during the pandemic and post-pandemic recovery. We illustrate findings from these models in figure 4 and the full models are reported in table A.1.



Figure 4. Racial Differences in the Relationship Between Volatility and Earnings, by Time Periods

Source: Authors' calculations based on the monthly Current Population Survey 2005–2022 accessed through IPUMS (Flood et al. 2022).

Note: Full models are available in table A.1.

A pattern is consistent across time: lower earnings are evident with higher instability. Although whites always face the smallest penalties, other groups show variation across time within groups. For example, before the Great Recession, Hispanic workers faced the greatest earnings penalties with greater volatility. During the Great Recession and onward from there, black workers appeared to have earned lower income immediately after facing greater unpredictability.

Robustness

We conduct a variety of robustness checks. First, we replicate analysis using an alternative measure—the coefficient of variation method to capture hours volatility. The relationship between hours instability and earnings operates in the same direction, and the point estimates are nearly identical. Specifically, black workers are consistently found to earn less than their white counterparts when facing within-job greater variability in work hours. Second, because we estimate earnings at the fourth month observed using the first three-month work hours, to rule out any possibility that large hours shock between the third and fourth month may affect the earnings at the fourth, we compute a dichotomous variable indicating whether a worker experiences any substantial hours surge and dip. The inclusion of this additional control variable when replicating our analyses yields no substantive differences in the results. In addition, slightly less than onethird of workers do not have any form of instability in work hours, thus, we also run the analysis by restricting the sample to workers with instability experience. This yields highly similar findings with larger magnitude observed (all results available on request).

DISCUSSION AND CONCLUSION

Over the past few decades, the compositional shift in the U.S. workforce toward more servicesector jobs often made work less stable. Both the adoption of on-call scheduling practices in many retail and services jobs and the involuntary employment instability influence workers' nonwork lives, but, more important, might affect their financial well-being. Studies on unpredictable scheduling and job churn have revealed significant different experiences various types of workers face, with people of color experiencing a higher likelihood of encountering lay-offs and scheduling instability on the job. Research on earnings or the wage gap according to a worker's race has generally revealed the difference of an occupation or class divide. No study has documented the disproportionate consequences of frequent involuntary hours instability for workers' economic well-being, as measured through their earnings, and how the relationship differs by racial groups and across time.

To complement this knowledge, we draw insights from both lines of research and take advantage of the rotation panel design from the CPS, one of the few data sets that provide information on workers' hours worked on a monthly basis. We analyze the associations between month-to-month variability in work hours and workers' earnings, separating the effects stemming from in-job schedule changes from those having variable hours because of job switching. Besides the attention paid to various groups of workers according to their race and ethnicity, we further estimate how the relationship evolves through time, ranging from the time before the Great Recession to the most recent years during the COVID-19 pandemic recovery.

This analysis provides new knowledge to our understanding on work schedule uncertainty and its implications for workers' economic security in several ways. First, in the U.S. workforce, inconsistent work hours has become a common phenomenon for hourly workers. About four in six wage workers experience involuntary month-to-month hours instability. Second, we find that work hours instability, when frequent and involuntary, may reduce subsequent earned income, even after we account for a worker's individual and job characteristics, including average hours worked. This finding is more salient for those experiencing job transitions than for those facing frequent in-job hours variability.

Third, although we find evidence of racebased disparity in earnings as a result of hours volatility, this result is only significant when the instability is within a job. Specifically, when staying in the same job, relative to white workers, black workers have been found to have substantially lower earnings when facing greater month-to-month hours instability, in both magnitude and direction. That is, the implications of work hours instability seem to be greater for black workers than white workers, at least in terms of earnings. Additionally, this is in a context where black workers face more work-hour volatility than white workers; thus they are more likely to be in the group with lower earnings and suffer a greater penalty for being in that group.

Finally, the results suggest variation of this relationship across time, spanning from the Great Recession and the pandemic recovery. During periods of economic hardship, Hispanic workers seem to experience greater earnings in the context of hours instability. This may be because they represent those in industries that may be less sensitive to recessions or that, in the context of a slimmer workforce, instability is associated with higher average hours. In general, black workers have a larger earnings penalty when facing greater volatility. The descriptive finding that workers identifying as Hispanic and AAPI see greater variability in hours worked, both during the pandemic and its recovery, may confirm that low-wage service sectors employing overwhelmingly workers of color underwent drastic layoffs and erratic work hours. Also, that AAPI workers are more likely to run small businesses may have put them in a more precarious situation during the pandemic period due to high cost of the lockdown and the subsequent sharp decline in demand.

The findings regarding race-based earnings differences as a function of within-job hours volatility may have direct policy implications that could help promote workplace equity. Unlike wages, work hours are still largely unregulated in the U.S. private-sector job market, which may further marginalize disadvantaged workers with less bargaining power and those in regions where worker organizing and worker protections are relatively weak. To combat such a phenomenon and improve job quality across places, policymakers might consider measures such as the Fair Workweek Ordinance, in which employers are mandated to give workers notice of any changes in hours at least two weeks in advance, provide predictable pay for any employer-driven changes to workers' original schedules, and release available hours to current employees before hiring, among several other provisions. Currently, only a handful of municipalities and one state have implemented similar measures. Although a few earlier studies, through qualitative interviews and empirical analysis, suggest the law's positive effects on workers' health and parenting outcomes (Ananat, Gassman-Pines, and Fitz-Henley 2022; Loustaunau et al. 2020; Schneider and Harknett 2019), more research is needed to understand more thoroughly its effectiveness in stabilizing hours worked and boosting workers' economic well-being. Research could also take account of compliance burden, and how to mitigate it.

Several limitations of the study are worth mentioning. First, because the analysis relies on the data's longitudinal design, some groups of respondents may be more likely to drop out of the survey and may not be linked across the four-month window. The analysis could understate the magnitude of the negative relationship between hours instability and earned income. It is also worth noting that work-hour volatility may not necessarily be a characteristic of a poor-quality job because it could entail solely an increase in hours, leading to a better earnings situation. However, the negative relationship that emerged in the study suggests that regardless of directional shift, when hours variability is frequent and involuntary, workers fare no better in terms of their economic wellbeing. More research is needed to understand this association. Second, although the current analysis controls for a worker's job-related characteristics, the observed relationship between hours instability and a worker's subsequent earnings-in particular, the racial difference emerging among job stayers-could

emerge because of some other workplace factors. However, the current data do not provide fine-grained information about workers' employers, their direct managers, or their job tenure at a workplace, which might influence the wages workers receive. The findings warrant future research to understand why significant earning differences might exist for workers with different racial and ethnic backgrounds, the extent to which these differences are shaped by employer-specific characteristics, such as direct supervisors, working in urban versus rural areas.

Last, even after we adjusted for a rich array of covariates, the results still leave the portion of the racial differences observed in the association of earnings to variable work schedules unexplained. Despite the significant association found, a few limitations should be considered in contextualizing this particular set of results. For example, certain factors that are omitted from the current analysis, such as a criminal record, other unmeasured abilities, or different level of access to opportunities, may contribute to the observed significant racial disparity in the relationship between work hours instability and earnings. Regardless of what scientists believe about the human cultures, researchers and policymakers should also consider that people's belief and values may shape their decisions. Without further accounting for all of these variables, we cannot confirm whether any form of race-based workplace discrimination exists.

Because one of the critical determinants of living standards for workers, particularly those paid hourly, is earned income, racial differences in work remain one of the most enduring aspects of income inequality. Unpredictable scheduling issues and related racial disparity are relatively less developed as a dimension of precarious work. Future research could consider applying a propensity score matching approach to examine economic outcomes for workers with similar backgrounds and the same level of volatility experience. Researchers may also consider conducting field experiments to detect whether any form of discrimination might influence low-wage and hourly workers' labor-market experience. Finally, we acknowledge that this study does not touch on

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decomposition analysis. Along the lines of wage inequality research, future work could disaggregate various factors to better understand the ways in which demographics, human capital, occupation, and variable work schedules drive wage inequality, that is, whether the racial disparity is driven by composition differences or by differential returns to characteristics.

With that in mind, this study adds to the effort to address the salient insufficiency of data on short-term work instability and research intended to help understand how involuntary or unanticipated hour volatility influences workers' economic well-being. The results expand our understanding of the growing spread of work-hour volatility and add a new layer of considering racial and ethnic equity in terms of workers' wages. Although closing the racial earnings gap thoroughly remains arduous, the negative relationship between unanticipated work-schedule volatility and workers' earnings unveils one more plausible policy solution to advance equity at the workplace.

Table A.1. Models Predicting Racial Differences in the Relationship Between Volatility and Earnings, byTime Periods

	Model 1 Pre-Great Recession	Model 2 Great Recession (GR)	Model 3 Post-GR Economic Expansion	Model 4 Pandemic and Post-pandemic Recovery
Hours volatility, second tercile	-0.01†	-0.03***	-0.03***	-0.04***
	(0.01)	(0.01)	(0.00)	(0.01)
Hours volatility, third tercile	-0.05***	-0.08***	-0.08***	-0.04***
	(0.01)	(0.01)	(0.00)	(0.01)
Black	-0.08***	-0.08***	-0.10***	-0.09***
	(0.01)	(0.01)	(0.01)	(0.02)
Hispanic	-0.12***	-0.14***	-0.10***	-0.12***
	(0.01)	(0.02)	(0.01)	(0.01)
AAPI or other	-0.09***	-0.07***	-0.05***	-0.03*
	(0.01)	(0.02)	(0.01)	(0.01)
Black x volatility, second tercile	0.01	-0.01	-0.00	0.00
	(0.02)	(0.02)	(0.01)	(0.03)
Hispanic x volatility, second tercile	0.01	0.06*	0.01	0.05 [†]
	(0.02)	(0.03)	(0.01)	(0.02)
AAPI other x volatility, second tercile	0.03	0.04	0.01	-0.03
	(0.02)	(0.03)	(0.01)	(0.03)
Black x volatility, third tercile	-0.03	-0.05*	-0.02*	-0.05*
	(0.02)	(0.02)	(0.01)	(0.02)
Hispanic x volatility, third tercile	-0.01	0.06**	0.02*	0.04*
	(0.02)	(0.02)	(0.01)	(0.02)
AAPI other x volatility, third tercile	0.00	0.00	-0.01	-0.05*
	(0.02)	(0.02)	(0.01)	(0.02)
Average hours worked	0.02***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)
Job covered by union	0.15***	0.13***	0.16***	0.12***
	(0.01)	(0.01)	(0.00)	(0.01)
Female	-0.15***	-0.16***	-0.15***	-0.15***
	(0.01)	(0.01)	(0.00)	(0.01)
Age: 25–35	0.13***	0.14***	0.14***	0.12***
	(0.01)	(0.01)	(0.01)	(0.01)

			Model 3	Model 4
	Model 1	Model 2 Great Recession (GR)	Post-GR Economic Expansion	Pandemic and Post-pandemic Recovery
	Pre-Great			
	Recession			
Age: 36-54	0.21***	0.21***	0.23***	0.21***
	(0.01)	(0.01)	(0.01)	(0.01)
Age: 55 or older	0.17***	0.18***	0.23***	0.19***
	(0.01)	(0.01)	(0.01)	(0.01)
Have children present	0.01†	0.02*	0.02***	0.02*
	(0.01)	(0.01)	(0.00)	(0.01)
Unmarried	-0.03***	-0.03***	-0.04***	-0.05***
	(0.01)	(0.01)	(0.00)	(0.01)
High school diploma	0.13***	0.13***	0.14***	0.14***
	(0.01)	(0.01)	(0.00)	(0.01)
Some college	0.19***	0.19***	0.19***	0.19***
	(0.01)	(0.01)	(0.00)	(0.01)
College or above	0.32***	0.33***	0.34***	0.35***
	(0.01)	(0.01)	(0.01)	(0.01)
Constant	5.45***	5.45***	5.43***	5.58***
	(0.05)	(0.05)	(0.02)	(0.04)
Occupation controls	х	х	х	х
Industry controls	х	х	х	х
Year and month fixed effects	х	х	х	х
State fixed effects	х	х	х	х
Observations	37,349	22,606	153,096	27,114
R^2	0.38	0.38	0.39	0.33

Table A.1. (continued)

Source: Authors' calculations based on the monthly Current Population Survey 2005–2022 accessed through IPUMS (Flood et al. 2022).

AAPI = Asian American and Pacific Islander. Robust standard errors in parentheses. [†] p < .10; ^{*} p < .05; ^{**} p < .01; ^{***} p < .001

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