

Issue Brief | 2023-2 | September 2023

# Work-hour volatility by the numbers: How do workers fare in the wake of the pandemic?

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The views expressed in this paper are those of the author and do not necessarily represent those of the Federal Reserve Bank of Boston or the Federal Reserve System.

## Abstract

Economic lives have become fluid in the United States during recent decades, with individual or family incomes often varying from month to month, from quarter to quarter, or across years. The income instability that hourly workers and their families are facing is mostly driven by frequent earnings changes, which could be a result of unpredictable work hours or involuntary job churn. This, along with insufficient work hours (another understudied workplace issue), may jointly affect low-income workers' economic security. The current economic recovery, with strong job growth and high rates of jobs switches, provides a unique opportunity to examine work-hour insecurity issues and better understand the extent to which the volatility of work hours has leveled off in the past two years and who does or does not benefit from the ongoing economic recovery.

Using a nationally representative sample of workers, this brief provides a portrait of intra-year work-hour volatility (or instability) and patterns over time, from 2016 to 2022, by wage level, parental status, race and ethnicity, educational attainment, and age. It then explores whether specific demographic groups exhibit higher variability in working hours in the phase of economic recovery, net of other workers' characteristics. For comparison, I also examine levels of work hours across groups. Results reveal that greater volatility is marked among workers from the bottom wage quintile, the less educated, and the young. Unmarried parents and workers of color experience relatively high volatility in hours. Despite regaining hours as the economy reopened, these groups consistently worked fewer hours over the period examined. Prior to the pandemic, the gaps in volatility across groups narrowed; although COVID-19 erased some of this progress, the decline in the level of volatility workers faced in 2022 suggests a return to prepandemic conditions. The extent to which those gains will be sustained remains to be seen as economic recovery progresses.

## Key findings

- Nationwide, workers with the lowest wages, those with less than a high-school diploma, and younger workers faced substantially greater work-hour volatility between 2016 and 2022, even after adjusting for workers' various characteristics.
- Black workers and unmarried parents also experienced higher volatility in hours worked.
- From 2021 onward, the wage-, race-, and age-based gaps in volatility all showed signs of improvement, albeit with unmarried parents and less-educated workers still seeing large differences relative to their child-free and highly educated peers.
- The groups with the most volatile hours remain those working fewer hours. Even though workers are regaining hours, the levels of hours worked and the variability of those hours have not fully returned to those of the prepandemic period for less-advantaged workers.

## Introduction

One of the most important determinants of standard of living for workers and their families is income. When earned income is uncertain and varies frequently or at unanticipated times, it can have detrimental impacts on many facets of workers' lives. Income instability is primarily driven by hours worked and involuntary job churn (Finnigan, 2018; Morduch & Schneider, 2017). Indeed, with the increasingly profound on-demand scheduling phenomenon occurring in workplaces, particularly in the service sector, and the well-documented decline in union coverage, work hours may become volatile (Lambert, 2008; Schneider & Harknett, 2019; Western & Rosenfeld, 2011). Prior to the pandemic, about a quarter of retail workers reported that their week-to-week hours varied at their employer's discretion (Lambert et al., 2014). Approximately one in three service-sector workers said they wanted more hours but could not get them because of their employer's cost-saving strategies (Schneider, 2021). Both precarity and insufficiency of hours may influence workers' take-home pay and trigger higher job turnover (Choper et al., 2022). As a result, the financial security of people working low-wage jobs and hourly workers has been deteriorating (Golden, 2015).

The historic drop in U.S. gross domestic product and rise in unemployment following the COVID-19 pandemic lockdown exposed many people to economic uncertainty. Thanks to the government's massive economic response since the onset of the pandemic, many of those who were unemployed or temporarily laid off managed to weather the adverse effects of the pandemic-led recession. However, essential workers were implored to stay on the job or perform care duties, which kept many people in the workforce throughout the pandemic. Some of these jobs offer low pay and few benefits, and they often entail unpredictable or insufficient hours (Alexander & Haley-Lock, 2015; Kalleberg et al., 2000; Lambert, 2008). Consequently, some essential work has long been described as "precarious work" (Kalleberg, 2011). Although abundant research has examined the level or differential of pay as a key aspect of job quality, the issues of unpredictable scheduling and insufficient hours—also key aspects of job quality—have increasingly gained traction in the research community over the past decade.

Before the pandemic, work-hour insecurity was already an issue, and it applied to a broader population beyond those working in the hospitality and service sectors (Finnigan, 2018). Many individuals and families experienced fluid economic life because income, mainly earnings, tended to fluctuate substantially between or within years (Hill et al., 2017). Work hours have proven to be one of the most important driving forces influencing earned income (Morduch & Schneider, 2017). In 2012, nearly 70 percent of individuals experiencing unstable incomes did so because of either irregular work schedules or periods of unemployment (Schmeiser et al., 2014). As the structure of the U.S. labor market has shifted over the past decades toward job outsourcing and subcontracting, employers have tended to cut costs and transfer risks to employees (Lambert, 2008). This often leaves workers with involuntary schedule changes or part-time work. In fact, unpredictable or last-minute scheduling affected various demographics before the onset of the pandemic, serving as an ongoing issue among low-wage workers, workers of color, and less-educated workers (Golden, 2001; LaBriola & Schneider, 2020; Storer et al., 2020).

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Age and family structure may further complicate the situation of workers in the low-wage market, jointly shaping their economic well-being. For example, young adults may have fewer job options because they lack accumulated work experience; hence, young workers might be likely to work low-wage jobs with unpredictable schedules or short-tenure jobs, which may cause them to experience frequent shifts between employment and unemployment (Lambert et al., 2019). Workers with children, particularly single parents, may also have to work reduced hours or frequently adjust (voluntarily or involuntarily) their number of work hours as they navigate between dependent-care needs and work (Luhr et al., 2022).

Because of the pandemic-related lockdown in 2020, many workers experienced a dramatic reduction in work hours after the onset of the pandemic. Although it was safer to work remotely or not to work, those who remained in the workplace—particularly in industries like hospitality, retail and food services, and personal care—encountered employer-driven changes in work hours as firms continued to offset costs brought on by disrupted business (Chaganti et al., 2020), and when facing a revenue deficit, some employers subtly pressured workers to quit their jobs. Although the expanded unemployment-insurance provisions during the pandemic made being out of work relatively viable for numerous workers (including part-time, younger workers), it was temporary (Clifford & Mattingly, 2020), and many workers inevitably faced economic uncertainty when it came to reemployment. That being said, during the current economic recovery phase, the record-high rate of job openings may give workers many options to switch to better jobs with good benefits and more stable and secure hours. Unsurprisingly, the lowest-paid jobs with the least benefits are the last to be filled (Penn & Nezamis, 2022). Thus, this brief attempts to assess whether there was an improvement in work-hour stability in the 2021 and 2022 recovery phases; further, it examines who does or does not benefit from the ongoing economic recovery.

Over the next decade, four out of the five jobs that the U.S. Bureau of Labor Statistics (2021) has projected will grow the most are paid disproportionately low amounts, are overwhelmingly held by workers of color, and often do not require a college degree. These include health and personal care as well as food- and preparation-related jobs, in which work-hour insecurity is quite prevalent (Lambert et al., 2014). As mentioned above, many employees are scheduled for fewer hours than they want and often receive their work schedules on short notice or experience last-minute cancellations (Hollister, 2011; Lambert & Henly, 2013; Schneider & Harknett, 2021). This greatly limits workers' ability to take on a second job, translating to reduced financial well-being.

That being said, the resulting economic hardship may differ based on the ability of workers and their families to offset the costs of work-hour insecurity. Low-income families may not have the savings needed to minimize the impacts of instability swiftly, whereas their higher-income counterparts may have sufficient liquid assets to do so. Further, private support from family members may lessen the impact of work-hour insecurity for those with dependent-care needs; specifically, two-parent families may be better able to find a balance between attending to dependent-care needs and work arrangements than single-parent families. Single-parent workers may be particularly likely to experience work-hour insecurity if they are unable to access child-care services or other support

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networks, thus requiring them to reduce how often they work or to frequently adjust their schedules to perform caregiving responsibilities.

In prior empirical studies, binary information on whether workers were experiencing a reduction in hours and nonstandard work shifts (e.g., day or night shifts, full- or part-time work) has often been used to capture the unstable work schedules that employees experience. For example, the concept of varying hours has been generally studied either by applying, in several nationally representative surveys, a dichotomous question format that directly asks respondents whether their hours vary (Finnigan & Hale, 2018; Golden, 2015; Henly & Lambert, 2014) or by measuring the range between maximum and minimum hours worked per week in the last month (Lambert et al., 2014; Schneider & Harknett, 2019). Additionally, capturing the difference between actual and desired hours was used to understand volatility (Golden, 2015). Although this is a great step toward understanding subjective well-being and the prevalence of work-hour instability, the binary information tends to understate the reality workers face in terms of labor-market instability, and it has shown that the “hours vary” report might be correlated more with desired flexibility or their own choice (Golden, 2001; Lambert et al., 2014). In some overlapping research areas, others examining nonstandard work schedules have used data from surveys conducted annually, biennially, or at even longer intervals, which often miss the nuances of short-term precarious work (Pilarz et al., 2019; Pilkauskas et al., 2018). Recent research has begun utilizing short-term panel data to understand the actual magnitude of the month-to-month or week-to-week volatility that workers face, as well as the impact of unions as a protective factor against workplace instability (LaBriola & Schneider, 2020).

This study contributes to ongoing research in this area in two ways. First, it utilizes the panel design of the Current Population Survey to examine the frequent involuntary work-hour variability that U.S. workers face. The resulting observations complement a few prior studies along the same lines by further unpacking the different experiences by various demographics, such as race and ethnicity, age, and family configuration. Second, as economic recovery from the pandemic progresses, this study will be one of the first to analyze work-hour volatility and insecurity issues (and the heterogeneity thereof). To this end, using a nationally representative sample of workers, I first describe how volatility in month-to-month working hours varies across different groups of workers (including by wage level, race and ethnicity, parental status, educational attainment, and age). I further report how the conditions among groups differed before and during the pandemic and how the trend evolved in 2021 and early 2022. By comparison, to understand another overlooked workplace issue—insufficient work hours—in a postpandemic economy, I also describe how the levels of work hours look across recent years (see Methodology section for details).

## Results

### Portrait of work-hour volatility, based on worker characteristics

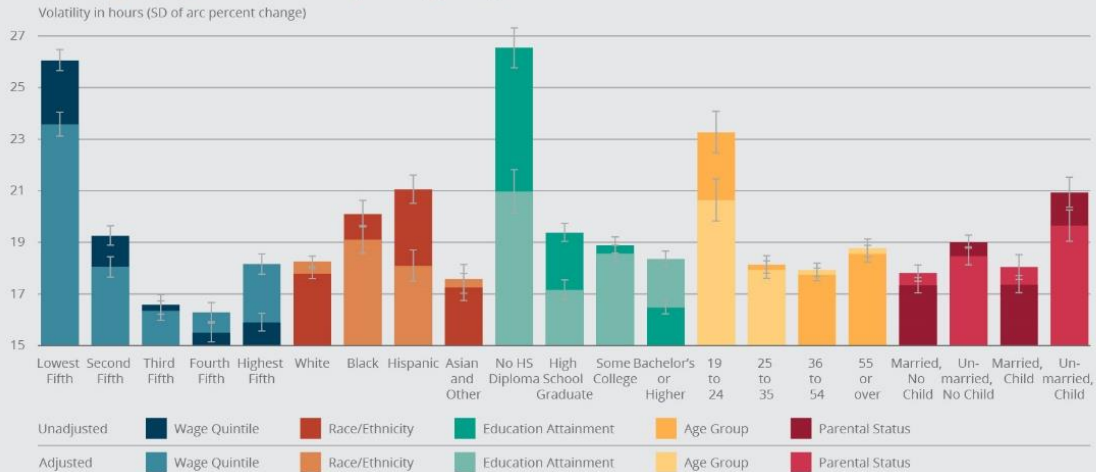
Figure 1 depicts both the bivariate relationship between month-to-month work-hour variability and workers’ characteristics and the adjusted models that accounted for



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demographic factors, occupation, industry, and state of residence. As expected, the results indicate that work-hour volatility is more of an issue among lower-wage, less-educated, and younger workers. This trend holds true in sets of models with control variables added (see lightershaded bars). The volatility also seems relatively higher for workers of color and certain parental statuses.

Figure 1 | Work-hour volatility nationwide before and during the pandemic, by subgroups



Note: Adjusted models include covariates on worker's age, race, sex, education, marital status, income level, presence of children, whether someone is a wage worker or salaried worker, family size, immigration status, occupation, industry, state and time fixed effects.  
Source: Author's analysis from the monthly Current Population Survey 2016-2022.

Although workers in the bottom two wage quintiles exhibited relatively high variability in month-to-month work hours, the variability was particularly profound for those with wages in the bottom quintile. These workers experienced substantially higher volatility than their peers in the second and third wage quintiles did (23 percent and 31 percent higher, respectively). This pattern in the adjusted model mirrors that found in the unadjusted model and remains statistically significant.

Modest racial and ethnic differences in work-hour volatility emerge after accounting for workers' characteristics (see Figure 1, lighter-shaded bars). On average, Black workers had more variation in hours worked than other groups. Black workers' work-hour volatility was about 5 percent higher than their white peers, which is statistically significant. However, the previously observed white–Hispanic instability gap (denoted in orange bars) disappears when I add control variables, including sociodemographic factors, family size, immigration status, whether paid by hours, occupation, industry, and state of residence. In both models, Asian and other racial categories rank lowest in such volatility experiences.

Regarding family structure, marital status seems to matter more than the presence of children does in workers' experience of work-hour volatility. Married, child-free workers experienced, on average, similar variation in their month-to-month hours worked as married parents. Instability for unmarried parents and child-free single workers was

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nearly 14 percent and 5 percent greater, respectively, than it was for child-free, married workers, which is significant in the bivariate and adjusted analyses.

Given that less-educated workers comprise a large portion of those working in the low-wage labor market and may often have the least bargaining power (Cai & Peck, 2022), the results reveal elevated instability for those without a high-school diploma. This magnitude decreases by approximately 19 percent after I adjust for other characteristics, but it remains statistically significant. In addition, work-hour variability seems to affect workers higher up the education ladder because workers with at least some college education experienced relatively noticeable volatility. This finding is consistent with those of prior studies on work-hour volatility and family-income instability (Hacker & Jacobs, 2008; LaBriola & Schneider, 2020). Work-hour volatility is higher at the two tails of workers' age range, with the youngest group (ages 19–24) experiencing the greatest variability.

### How work-hour volatility and insufficiency changed through time

To enhance our understanding of the incidence and evolution of various groups' work-hour volatility and insufficiency, the subsequent figures depict work-hour volatility (left panel) and number of hours worked (right panel) across various demographic groups from 2016 to 2022. In the subsequent figures, I controlled for a set of covariates, as in the adjusted models for Figure 1, and report predicted values. I begin with a discussion on volatility across demographic groups, followed by narratives regarding working hours and the disparities related to working hours.

#### Work-hour volatility

Overall, work hours stabilized prior to 2020, with a noticeable decline in variability for workers with the lowest wages, workers of color, and unmarried parents. This progress was lost during the pandemic labor-market disruption in 2020, when less economically advantaged workers experienced more instability than workers in the top 60 percent of the wage distribution; Hispanic workers and single workers raising children also encountered elevated work-hour variability at this time. Volatility for most workers fell again, and at a steeper rate, during the recovery phase in 2021 and the first few months of 2022. Most of the gaps in stability appear to have narrowed from 2021 to 2022, with a few exceptions related parental status.

Notably, workers in the bottom wage quintile saw a sharper increase in work-hour variability (about 53 percent) from 2019 to 2020, whereas higher-wage workers experienced a modest increase (Figure 2).



Figure 2 | Work-hour volatility and level over time, by wage quintile



However, both the instability gap between low-wage workers and their higher-wage counterparts and the racial/ethnic gap in experiencing such instability (Figure 3) appear to have narrowed as the economy has recovered. Notably, prior to 2020, Hispanic workers experienced a relatively lower level of instability than their white and Black counterparts did. Although they experienced a steeper spike in volatility in 2020, it eased

Figure 3 | Work-hour volatility and level over time, by race and ethnicity

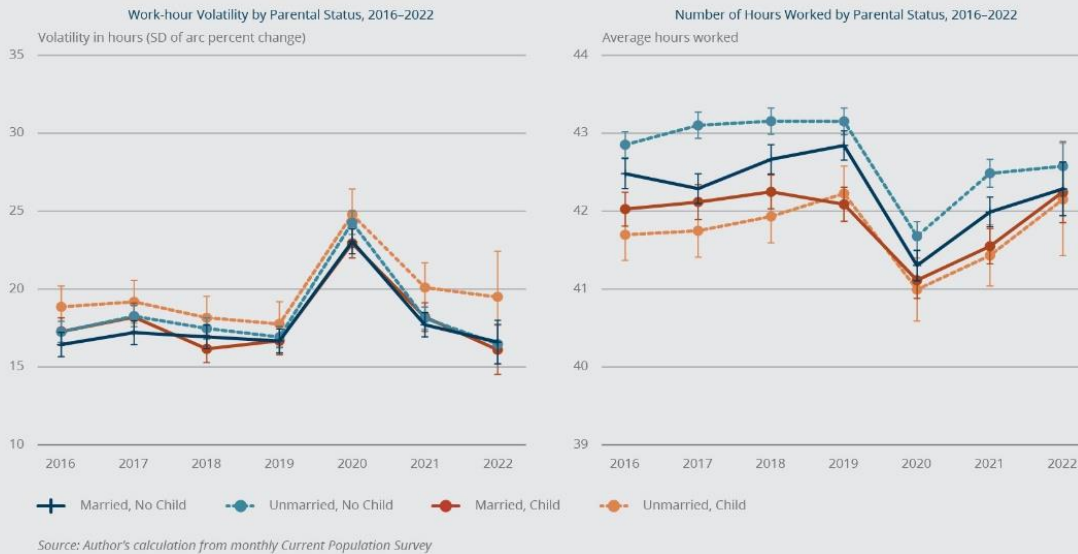


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significantly afterward, and they seem to have caught up with Black workers in 2022. White–Hispanic and white–Black gaps in volatility narrowed in the first half of 2022.

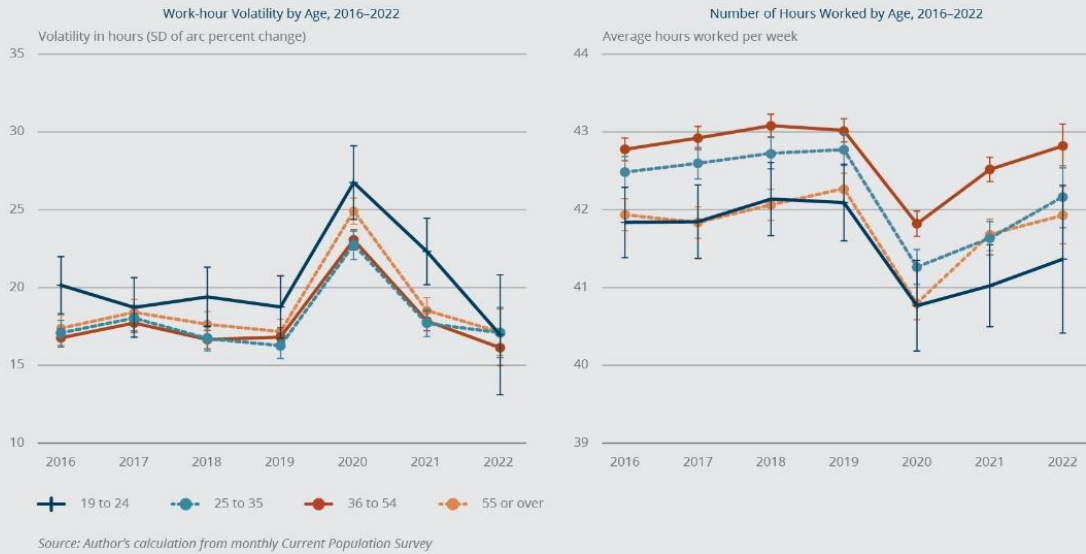
Although volatility decreased by similar amounts for workers in 2021, regardless of their family configuration, a divergence began to emerge between unmarried parents and workers with other family configurations in 2022 (Figure 4).

Figure 4 | Work-hour volatility and level over time, by parental status



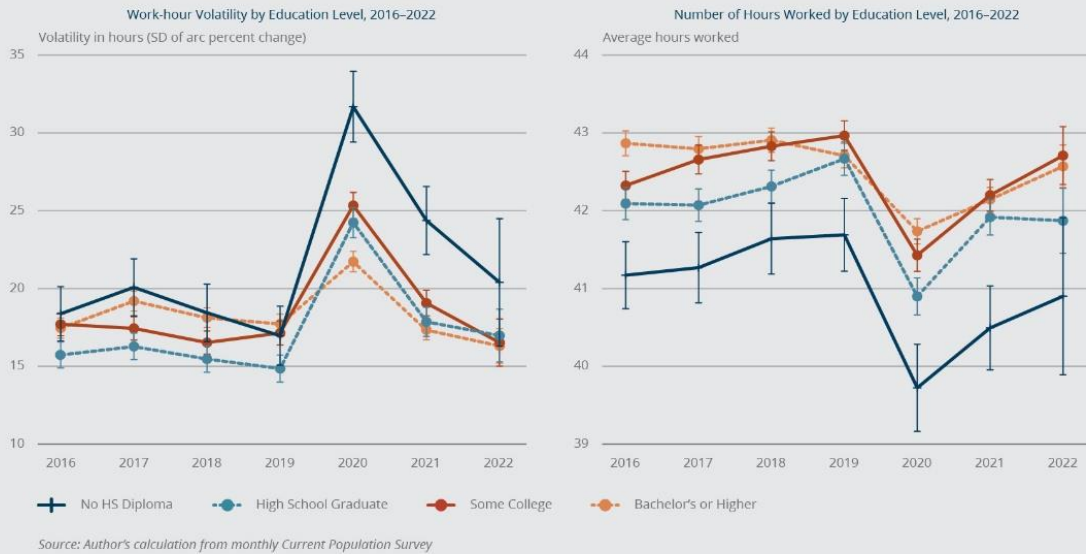
I found persistent results across age groups. Young workers (ages 19–24) experienced consistently higher volatility over the period examined. Despite a relatively comparable amount of change in volatility across various age groups, the gap between younger workers and their older counterparts closes with younger workers' swifter declines in work-hour instability (Figure 5). This finding could imply that younger workers experienced an increase in jobs that offer greater security and stability, given the large number of employment opportunities in the postpandemic labor market.

Figure 5 | Work-hour volatility and level over time, by age



With respect to educational attainment, however, gaps in volatility persist throughout the period examined, even after I take into account workers' characteristics (Figure 6).

Figure 6 | Work-hour volatility and level over time, by educational attainment



## Work-hour insufficiency

In this section, I describe the degree to which the correlation between number of hours worked and various demographic groups might have changed over time. Note that the analytic sample includes both hourly and salaried workers. The average number of hours worked is slightly higher than anticipated, but this is driven by salaried workers, who reported about four hours more than wage workers, on average. In general, patterns in the number of working hours were the inverse of patterns in volatility because those experiencing greater volatility had fewer working hours throughout the study period. I also observed that most of the gaps in work hours narrowed after the pandemic, except for those related to age and education strata.

Trends in the number of hours worked are not identical across the wage spectrum. On average, the pattern follows a V shape during the recovery phase. As one may expect, the lowest-wage workers consistently experienced underemployment despite some improvement during the economic expansion in the few years before 2020. Interestingly, workers with the highest wage ranked second lowest in terms of working hours. Workers in the third wage quintile experienced the lowest level of volatility and the most work hours (see Figure 2).

Regarding racial differences in working hours, apart from the elevated volatility that Hispanic workers faced, reduced hours seem to have been a significant issue for them in 2020, followed by their rapid catch-up in 2021 and early 2022, narrowing the gap between them and their white counterparts. Tracking work hours could provide a reliable picture of racial differences in hours volatility, taking into account the data from the second half of 2022 that have been released post-analysis. Additionally, Asian workers and other multiracial groups showed very slow progress in the number of hours worked in 2022.

Child care may have also influenced the number of hours worked. Child-free single workers consistently work the most, but their hours have not returned to prepandemic levels. I found a substantial increase in work hours among parents, who nearly caught up with their child-free married peers as the economy recovered.

The education and age gaps in the number of hours worked did not seem to improve much in 2021 and 2022. Even after adjusting for workers' characteristics, workers without a high-school diploma consistently worked the fewest hours throughout the period examined, compared with those with at least some college education. Between workers ages 19–24 and those ages 36–54, hours insufficiency diverged after 2020, with the younger group recovering much more slowly.

## Conclusion

Stability and sufficiency of work hours may offer benefits to workers, families, employers, and society. Frequent changes in work hours or insufficient hours can have harmful effects on workers' financial well-being and make it difficult for workers to plan their nonwork lives. Economic stressors, volatility, and insecurity in work hours affect workers who care for dependents, with the potential to create a very unstable environment for children growing up in these families. Such factors also lead to increased job turnover

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and absenteeism, imposing costs on employers and workers (Boushey & Glynn, 2012). In the event of job turnover, employers often bear nontrivial expenses related to productivity loss, finding suitable replacements, and additional training. An unsustainable workplace and unsound labor relations may lead workers to quit and look for new jobs, which creates more job churn and income loss due to intermittent employment.

As documented, groups of workers experienced volatility and insecurity unequally between 2016 and 2022. Nationwide, workers with the lowest wages, those with less than a high-school diploma, and younger workers showed substantially greater work-hour volatility in the workplace, even after adjusting for workers' characteristics. Wage- and age-based volatility tended to be U-shaped, with workers in the lowest and highest wage brackets and those in the youngest and oldest age ranges experiencing more variation in month-to-month work hours. Specifically, workers in the bottom fifth of wage earners experienced nearly 50 percent greater instability than those in the fourth wage quintile did, and workers ages 19–24 years experienced 17 percent greater instability than their counterparts ages 25–54. A racial gap in work-hour instability also emerged but to a lesser degree, with Black workers experiencing slightly higher volatility in hours worked month to month. Single parents also experienced higher volatility than married parents.

Some interesting findings appeared when I analyzed the instability patterns across time. Prior to the pandemic, work-hour instability fluctuated, with a tendency to narrow disparities across groups. While the pandemic erased this progress, volatility began to decrease in 2021 as the economy reopened. The wage-, race-, and age-based gaps in instability all show signs of improvement, with unmarried parents and less-educated workers still seeing large differences relative to their child-free and highly educated peers. Even though workers are regaining hours, the level is lower than that of the pre-pandemic period. The groups with the most volatile hours remain those working fewer hours. This instability and insufficiency may be harmful to the economic security of workers and their families.

Although exploration of how work instability impacts workers' economic well-being is beyond the scope of this brief, the results signal a potential link between frequent work-hour instability and workers' subsequent financial well-being. In addition to the differences among workers in the low-wage market—historically marked by frequent turnover, unstable scheduling, and schedule cutbacks—distinctions among several other demographic subgroups also emerged. Even after adjusting for workers' characteristics and wage levels, some other groups—less-educated workers, young workers, and workers of color, for example—exhibited greater month-to-month volatility. All these groups are generally associated with lower income and higher poverty. And for working parents, balancing dependent-care needs and work may compound the level of instability experienced in the workplace, regardless of whether it is involuntary. That said, the direction of hours change may matter. On one hand, workers may face constant cuts or fluctuations in hours, which could lead to unfavorable outcomes. On the other hand, a scenario in which workers experience consistently increased hours may lead to better economic well-being; this would warrant future research. Given the survey nonresponse bias (Cai & Baker, 2021; Ward & Edwards, 2021), it is possible that the current analytic sample is a group of relatively advantaged workers, which could understate the work-hour insecurity facing different groups of workers. In the same vein, given that less-



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advantaged workers might be less likely to participate in the survey across months, the unique panel data used in this analysis may explain the relatively higher average working hours observed. However, as expected, salaried workers mostly drive this. Future research should pay more attention to hourly workers in certain industries in which work-hour insecurity is more prevalent.

Given that the data have neither information on respondents' desired number of work hours nor dichotomous information on whether respondents wanted more hours, the level captured here of hours worked may not directly reflect insufficiency in terms of hours. The same limitation applies to another main measure in the study—work-hour volatility—because we have not determined an optimal level of stability a worker should experience. The welfare effects of volatility or irregularity of hours rely largely on the lack of input from workers regarding their hours (McCrate et al., 2019). That being said, this seems to be a situation inherent to most studies on economic instability: the higher the volatility index is, the greater the instability level someone experiences. Beyond this layer of understanding, future research is warranted to track and establish a plausible benchmark for volatility that could act as a base comparison level. In addition, the current analytic sample already excludes workers who have stopped working or who work part-time for any of their own reasons. Lastly, in this evolving field of research, it is emerging that unintentional or involuntary instability is associated with adverse adult well-being, work-life conflicts, child poverty, and material hardships (Cai, 2023; Henly & Lambert 2014; Luhr et al., 2022; Schneider & Harknett, 2021). Clearly, regardless of income or employment, such instability, when it is unpredictable or unfavorable, could hinder upward mobility and wealth building in the long run.

While this brief may not have the information available to examine the mechanisms prompting the narrowing gap in work-hour instability from 2021 to 2022, it is possible that the strong labor market and momentum of labor organizations are playing a role in improving working conditions for many. With record-high numbers of job growth, workers have more options, and they may be likely to switch to better jobs, with better benefits and greater stability. Nonetheless, those most impacted by work-hour volatility are the most marginalized. Despite the subgroup analyses' indication that the instability level of many subgroups has returned to 2019 norms, limited educational backgrounds or labor-market discrimination may continue to hinder low-skilled workers' search for better jobs. This is evident in the results demonstrating that workers without any college experience, single workers raising children, and Hispanic and Asian workers all are experiencing volatility levels that exceed those of 2019. From an employer's perspective, the labor shortage for certain low-wage service occupations coupled with labor-union advocacy may encourage them to promote their workplace practice by improving stable scheduling and overtime pay to retain and/or recruit workers. In addition, for certain jobs marked by frequent layoffs, it is possible that employers believe that the cost to maintain, stabilize, or increase workers' hours outweigh the benefits, so they may opt to hire new employees, choosing the costs of turnover and replacement over those of increased work hours and decreased volatility.

On the policy front, although studies on the effectiveness of fair-workweek provisions are still underdeveloped, some earlier research has pointed to the positive impact of fair-workweek laws (Ananat et al., 2022; Loustaunau et al., 2020; Schneider & Harknett,



2019). Several localities and one state have passed scheduling laws, and more cities have legislative initiatives underway; however, without a federal mandate, businesses might not have the incentive to change the labor-saving structures that trigger work-hour instability or insecurity. Legislation regulating these phenomena may be one of the critical measures that policymakers could consider to protect workers in low-wage jobs with frequently unpredictable scheduling. Potential policy solutions, such as the Schedules That Work Act, may be beneficial to sustain the emergent gains of the postpandemic labor market and further address the workplace precarity that has existed since long before the pandemic. Under the act, employers are required to give wage workers in certain industries notice of any changes in hours at least two weeks in advance and provide predictable pay for any employer-driven changes to workers' original schedules, and employees will have a right to request a schedule that works for them. Lastly, policymakers concerned by the economic insecurity of workers with children—particularly unmarried parents in low-wage jobs—may wish to consider family-support policies, such as affordable child-care access and a monthly child allowance.

## Methodology

This project employs the underutilized panel design of the monthly Current Population Survey (CPS), a nationally representative survey used to generate the monthly official unemployment rate. The data are accessed through IPUMS (Flood et al., 2022). The CPS is one of a few nationally presentative datasets (along with the Survey of Income and Program Participation) that collect data on hours worked in a short interval and frequent manner within a year, which makes it suitable to study frequent work-hour instability. Beside the monthly structure, the CPS interviews individuals who stay at the same address over four consecutive months and resurveys them for another four months after an eight-month gap; individuals who move during the four-month period are not captured in the panel subsample. The present analyses utilize this subsample, where an individual is followed across four-month periods, regardless of whether it is their first entry or second appearance in the survey. I limit the sample to nonelderly adult civilians ages 19 and older who reported being employed at the start of the interview between 2016 and 2022. Despite unique identifiers, previous studies suggest using other demographic information to double-verify that the same respondent is followed across months. Hence, I use the information on respondents' race, ethnicity, and sex variable to further identify those misclassified as the same person. I further exclude workers who miss work or work part time because of any of the following reasons: taking a vacation/holiday, attending school, taking maternity/paternity leave, experiencing chronic health problems, having civic duties, and other personal obligations. As a result, the analytic sample includes 187,480 unique worker observations.

Work-hour volatility and work-hour level are two outcomes of interest. As the main focus in this brief, volatility is conceptualized as the magnitude of work-hour variability across a four-month period. Specifically, work-hour volatility is computed using the standard deviation of arc-percent change approach, which is the difference between the number of hours worked in the current month and that of the previous month divided by the average number of hours. As a sensitivity test, work precarity is measured using the coefficient of variation approach, which is the standard deviation of an individual's hours

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worked over the average of hours worked across time. Both approaches are used in prior studies on income volatility (Gennetian et al., 2015; Ziliak et al., 2011). Analyses adopting this alternate method have produced highly similar results. (Results available upon request.) The reported instability index is based on the raw value multiplied by 100. It is worth noting that even though this brief refers to month-to-month work-hour changes, in the CPS, the number of hours worked in each month refers to total weekly working hours reported for all jobs that an individual holds. Apart from the variability in hours that workers experience, reduced or insufficient hours also affect workers' economic well-being. To this end, I also report various groups' number of hours worked in the postpandemic economic recovery phase and how that compares with prior years.

Five key explanatory variables of interest include wage level, race and ethnicity, family structure, educational attainment, and age. These characteristics all derive from the baseline (or the first month of each of the four-month stints). In the monthly CPS, wage information is only available for hourly workers. Following a recent study on a similar topic, I compute wages for salaried workers by dividing the reported weekly earnings by the number of hours worked for all jobs. Wage level is measured as the wage quintile of all workers' reported wages in the sample. To adjust for changes in cost of living, I use the Bureau of Labor Statistics Consumer Price Index for all Urban Consumers series to hold wages constant in 2021 dollars. Workers' race and ethnicity comprise four mutually exclusive groups: non-Hispanic white, non-Hispanic Black, Hispanic, and non-Hispanic others. Note that, sample size permitting, future studies should separate Asian/Pacific Islander from multiracial and Native American in the group labeled as "other." Based on marital status and presence of children under the age of 18, family structure consists of four groups: married individuals, unmarried individuals, married parents, and unmarried parents. The current analysis categorizes those with a cohabiting partner as married individuals. Educational attainment is defined as less than high school diploma, high-school diploma, some college or associate degree, and four-year college education or above. Workers' age is categorized as 19–24, 25–35, 36–54, and 55–65.

### Magnitude of experience in work-hour volatility for workers with various demographic backgrounds

To address the first question—to what extent different groups of workers experienced work-hour volatility—I use the pooled data to estimate multivariate models, adjusting for a set of covariates that may be associated with both the variability in hours worked and the key predictors. I employ ordinary least squares regression estimation to predict work-hour volatility on each set of key demographic predictors and incrementally add in covariates. Each set of models includes two specifications: First, I estimate a bivariate relationship between work-hour volatility and each key predictor. Then, the ordinary least squares models take into account family size, worker's gender, immigration status, occupation, industry, state, time fixed effects, and whether the respondent is an hourly worker or salaried worker. In this brief, I present both unadjusted results and results with the addition of a full set of covariates. I also run models where standard errors are clustered at the individual level, which produces highly similar results with respect to coefficient magnitudes and significance. Those results are available upon request.

## Evolution of recent trends of work-hour instability and insufficiency across different groups of workers

To understand how the postpandemic economy treats workers when it comes to both volatility and level of hours worked, I further examine, separately, the magnitude of instability and the number of working hours that different groups of workers have experienced through time. Specifically, for each of the five key demographic factors, I add interaction terms between the key predictor and a set of binary-coded years. The coefficients for each interaction test the significance of workers' demographic differences in experienced outcomes between 2016 (base year) and subsequent years. Beside the frequent variability measure in hours worked, I also investigate the average level of hours worked across workers' different group memberships and years.

## About the author



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Julie Cai is an economist at the Center for Economic and Policy Research (CEPR) and was a 2022 visiting fellow of the Boston Fed's Regional & Community Outreach department. She studies precarious work and income volatility in the United States. She is interested in how social policy has the potential to buffer instability in earnings and employment. Her recent publications examine the safety net's buffering effects in the context of job instability, the impacts of housing subsidies on poverty, the effects of earnings instability on child well-being, and child poverty measurement. Julie can be reached at [cai@cepr.net](mailto:cai@cepr.net).

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