Job precarity and economic prospects during the COVID-19 public health crisis

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Abstract
Objective: As labor markets in recent decades have become increasingly volatile and precarious, more workers are susceptible to working conditions threatening their economic security. COVID-19 has further laid bare such economic insecurity from holding a precarious job. We examined the association between precarious employment and the probability of losing income or a job during COVID-19 pandemic.

Methods: A multivariate regression analysis was conducted using a cross-sectional data set collected in May 2020 in the United States.

Results: Our results confirm a strong positive association between precarious employment and losing work or income. Specifically, holding part-time work in the service sector, and feeling disempowered in the workplace, receiving low material rewards, having few benefits, and experiencing obstacles in exercising rights all significantly doubled the probability of losing income or jobs.

Conclusion: Our analysis underscores the increasing vulnerability faced by our workforce and how a public health crisis magnifies the dire consequences of a precarious job.

KEYWORDS
COVID-19, economic conditions, income loss, job loss, pandemic, precarious job

Work constitutes a central part of an individual’s life, and indeed, people tend to define themselves by the type of work they are engaged with. Work not only shapes individuals’ living standards and experiences, but also plays a significant role in (downward/upward) mobility on a socioeconomic ladder within the social structure. Losing one’s job or income is thus likely to affect physical and mental health adversely, and indeed studies have confirmed such a causal relationship (Hellgren and Sverke, 2003; Strazdins et al., 2004). Not surprisingly, people of racial-ethnic minority groups (e.g., Black, Hispanic) or with low-wage or low-skilled jobs were more likely to experience job or income loss (Brand, 2015; Farber, 2010). This is true during both times of economic boom and recession.

Current ongoing public health risk produced by the COVID-19 pandemic has further severely shattered our labor force, pushing the United States to register a 15 percent unemployment rate within 8 weeks since
March 2020, when the unemployment rate was merely 4 percent; this accounts for an unprecedentedly staggering 41 million people in the labor force filing unemployment claims (U.S. Department of Labor, 2020). The most recent recession in the United States, the Great Recession, in comparison, doubled the unemployment rate from 6 percent in 2007 to 12 percent in 2009 (Brand, 2015). This article concerns job and income loss among parents with children amidst this pandemic.

The impact of the pandemic has hit hard on low-wage low-skilled workers, but also on the white-collar workforce. Nonetheless, workers who hold jobs with precarious characteristics (e.g., low-wage, low-skill, irregular work hours, and high instability) have been hit the hardest due to the pandemic (Pilkington and Rao, 2020). Recent workplace trends have not helped but rather worsened the dire situation faced by many workers, particularly the vulnerable ones. Globally, empowered by information technology and the service economy, the global market has polarized the labor force (Kalleberg, 2013). At one end are highly educated and highly skilled workers who typically receive job-associated benefits in exchange for working long hours, at the other end are the low-wage workers, many of whom cannot make ends meet even with more than one job (Kalleberg, 2013). This polarization has not only decreased job security during the economic boom since 2000, but may also further worsen job security during this pandemic. For example, many workers who had already been required to work non-standard or unpredictable schedules and were seeing more volatility in their work status before the pandemic (Kalleberg, 2013), now might experience more volatility in their work status, including being furloughed or laid off (Oppel et al., 2020; Pilkington and Rao, 2020).

Labor market polarization and job precarity may affect not only individuals’ health and well-being (Benach et al., 2014) but also parents’ ability to support healthy child development with essential economic, social, and psychological resources (Li et al., 2014). Precarious jobs, an increasingly prevalent practice in the current labor market, could thus not only exacerbate the adverse impact of such jobs on individuals’ well-being but also have far-reaching implications for workers’ and their families’ life trajectories. In this article, using a sample of 1000 parents from around the United States, we paid attention to how jobs with precarious characteristics might be associated with the probability of losing a job or losing income during this pandemic. To our knowledge, this study is among the first to adopt a more comprehensive measure of job precarity than the existing studies in the United States, in order to examine the associations between job precarity and the probability of losing work or income amidst the current public health crisis. We focused on parents, as this population holds a critical key to the well-being of our future generations. This article thus underscores the vulnerability of our current workforce widely susceptible to precarious jobs. At the same time, a public health risk such as COVID-19 only lays bare the inequities experienced by these workers with far-reaching impacts on our current and next generations of the workforce.

**PRECARIOUS JOB**

Since the late 1970s, globalization and information technology advances have intensified global competition, putting pressure on businesses to cut labor costs with practices like unpredictable hours or contingent work (Kalleberg, 2013), and the accompanying rise of the service economy in many industrialized countries has fundamentally altered working hours and work time requirements. At the same time, the strength of unions has declined, and so has the protection of workers that come with them, causing economic inequality to soar to new heights (Kalleberg, 2013). Globally, work has become more volatile and precarious in terms of earnings, job benefits, and individuals’ control over their schedules and work hours (Benach et al., 2016; Kalleberg, 2013). This volatility is particularly hard on groups with little or no bargaining power with employers (Kalleberg, 2013; Julià et al., 2017). For example, in Australia (Gifillan, 2018), Spain (Julià et al., 2017), and the United States (Golden, 2015; Henly and Lambert, 2014; Kalleberg, 2013), variable or unstable schedules are on the rise, particularly among part-time workers in industries like retail and food preparation. Schedules typically change every day and every week, and such schedules often involve some, if not all, non-standard hours. This trend has led to economic volatility for many families.

Research shows that at least one-third of the labor force in Australia, Canada, the United Kingdom, and the United States have work schedules that fall outside of regular daytime hours (between 6:00 a.m. and...
6:00 p.m., Monday through Friday) (OECD, 2007; Presser, Gornick, and Parashar, 2008). Non-standard work schedules—early mornings, evenings, nights, rotating or split shifts, irregular hours, or weekends—are particularly prevalent among workers in disadvantaged segments of the population, such as less educated or non-white workers (OECD, 2007; Presser, 2003). It is no surprise that workers from the service sector comprise the largest component of precarious employment as these jobs tend to require non-standard hours (Lewchuk et al., 2016). Indeed, low- and semi-skilled workers who serve the information economy during the evening, night, or weekend hours struggle to make living wages with adequate benefits, and many work multiple jobs to make ends meet (Golden, 2015; Lewchuk et al., 2016). Recent discoveries have affirmed that workers worldwide holding precarious jobs prior to the COVID-19 pandemic were hurt the most in terms of losing work, income, and/or housing (Aderman, 2020; Center on Budget and Policy Priorities [CBPP], 2021; Pew Research Center, 2020; Pilkington and Rao, 2020). Whereas low-wage and low-skilled workers are especially at risk for precarious employment, white-collar jobs and jobs that were once thought to be secure and well-paying have proven to be vulnerable now as well (Kalleberg, 2013). The Great Recession significantly impacted middle-class families, and recent research suggests that precarity is no longer limited to solely the most disadvantaged workers (Nau and Soener, 2019).

**CONSEQUENCES OF JOB PRECARITY**

Rodgers and Rodgers (1989) first tied job precarity to the social and economic vulnerabilities that hinder well-being. Job precarity, and the economic inequality that comes with it, has been found to threaten the fabric of society while shrinking the middle class. Research shows that the increase in job precarity might have, at least partly, accounted for the rise in income inequality (Nau and Soener, 2019). Emerging literature has also demonstrated the adverse links between job precarity and a host of negative outcomes, including health, psychological, economic, and social well-being (Benach et al., 2014). For example, job insecurity produced by precarity (low wages, contingent work) has been linked to chronic stress and other adverse mental health outcomes (Glavin and Young, 2017).

Not surprisingly, precarious jobs tend to be associated with a higher likelihood of losing jobs or income than otherwise, for these workers tend to be low-wage and low-skill and thus more likely to be fired first during an economic crisis and hired last during an economic recovery. Job precarity has also increased income volatility, largely due to low wages and unpredictable weekly work hours (Nau and Soener, 2019). As close to 40 percent of workers with precarious jobs reported more weeks without work in a year than their counterparts, while almost 20 percent experienced at least 2 months of unemployment (Lewchuk et al., 2016).

Research has shown that the lasting effects of the Great Recession, in particular, have made it more difficult for the unemployed to once again find full-time employment, especially in comparison to other recessions and historical standards (Farber, 2017). The Great Recession thus has registered more severe and substantial damages to the labor force than during other times in American history (Farber, 2017). While the rate of job loss for full-time workers was higher than the rate of job loss for part-time workers between the years 1996 and 2014, the rate of job loss for part-time workers significantly increased between 2008 and 2010, and did not decrease until 2014, 4 years after the rate of full-time unemployment began to decrease (Farber, 2017). Black men were hit the hardest, with roughly half of all young Black men being unemployed by 2009 (Standing, 2011).

All in all, job precarity is on the rise with devastating consequences on individuals, communities, and the economy. Workers with precarious employment are subjected to income volatility, increased job insecurity, including frequent bouts of unemployment, non-standard work schedules, and poor working conditions. The Great Recession offers us a preview of what an economic crisis may bring to workers with precarious jobs, but most likely provides a view that is gravely underestimating the dire consequences created by the unprecedented public health of COVID-19 pandemic and the resulting economic turbulence (Long et al., 2020). Recent reports have confirmed that the expected financial and emotional toll brought about by
the COVID-19 induced economic recession is more severe than previously expected (CBPP, 2021; Pew Research Center, 2020).

MEASURING JOB PRECARITY

Whereas there has not been a consensus on an all-encompassing definition of job precarity, researchers believe that using a multidimensional approach is necessary and vital to study such phenomenon, regularly associating it with the connection between non-standard work hours (e.g., evenings, nights, weekends), unpredictability in schedules and hours, the temporality of contracts, poor working conditions, and job insecurity (Kalleberg, 2013). To date, reliable and representative data on job precarity have yet to be produced (Julià et al., 2017). What is clear from the existing research, however, is that low-wage and low-skilled workers are more likely to hold contingent work and that part-time workers are disproportionately subject to such work conditions (Henly and Lambert, 2014; Kalleberg, 2018; Julià et al., 2017). Previous research examining precarious employment has provided a helpful guideline to examine precariousness (Julià et al., 2017). For example, the Employment Precarious Scale has been proven in Europe to be a useful tool to identify the groups that are most vulnerable to precarious employment and how precarious employment might then be associated with workers’ physical and mental health (Benach et al., 2016; Julià et al., 2017). In general, and importantly, precarious employment is multidimensional concerning both work conditions and relations. Thus, dimensions such as (low) material rewards, employment (in)stability, (erosion of) workers’ rights and social protection, (de-standardized) working time arrangements, (imbalanced) interpersonal power relations, (dis)empowerment, and (lack of) opportunities for employee representation are all considered to be part of acute situations of employment precariousness (Julià et al., 2017). To our knowledge, no large-scale national data in the United States contain information on job precarity as detailed and comprehensive as that used in this study. This article followed scholarship on documenting vulnerable groups in the labor market (i.e., part-time, non-standard work schedules, in service occupation) (Kalleberg, 2013; Presser, 2003) and the work done by the group established EPRES scales (Julià et al., 2017) to examine the association between job precarity and the likelihood of parents losing employment or losing income amidst the COVID-19 pandemic in the United States.

METHOD

Data

The data were collected online via Qualtrics in May 2020. We used a convenience sampling strategy given resource constraints. The target sample was parents with at least one child aged 17 or younger and currently residing in the United States. Recruitment of parents across the United States was achieved through the authors’ networks. Participants were from every state in the United States including the District of Columbia. The share of the participants from each state was similar to that of the national population by state, although participants from the authors’ home state were overrepresented compared to that of the national share (i.e., 15 percent in the analyzed sample vs. 6 percent in the national sample). Participants were from all socioeconomic backgrounds, although highly educated parents (e.g., graduate degree) might be overrepresented than the national average of educational achievement. This study was approved by the authors’ Institutional Review Board.

Participants

A sample of 1000 parents responded to the online survey. After excluding missing information, the final sample size for analysis was 933; details on missing cases are given below. The majority of the participants
were mothers (vs. fathers), non-Hispanic White, and married. Approximately two thirds of the respondents had annual family income in the range of $50,000 and $99,999, and 60 percent of the respondents were living in urban areas.

Measures

Economic outcomes

Two outcomes were examined in this study, job loss and income loss. A question was asked of participants about whether they lost income due to COVID-19 pandemic with a response of yes or no. A follow-up question was then asked about the reasons for income loss. Job loss was coded 1 if participants offered either of the following two responses: “because my place of work was closed and didn’t offer a remote work option” or “because I was laid off or lost my employment.” Both outcome variables were dichotomous variables. Over 90 percent of participants who answered they had lost income reported the reason to be losing their employment.

Job precarity

We used nine indicators to measure the degree of job precarity. Three of the indicators were based on a consensus from established scholarship (Kalleberg, 2013; Presser, 2003) indicating the most likely characteristics of a precarious job tend to be: low skill (proxies by occupation), part-time, and a non-day time schedule (or nonstandard work schedules). The remaining six indicators were adapted from the Employment Precariousness Scale (EPRES) designed and validated by the Health Inequalities Research Group (GREDS-EMCONET) at Pompeu Fabra University in Spain (Vives et al., 2010, 2015). This scale covers multidimensional aspects of job characteristics that may present precarity to workers’ economic security through work conditions and relations. These dimensions include low material rewards, disempowerment, vulnerability, erosion of workers’ rights and social protection, and employment (in)stability (Vives et al., 2010). Below we provide details on each of these nine indicators.

Part-time

Parents were asked about their usual weekly work hours before the COVID-19 pandemic. Responses ranged from “less than 10 h,” “10–20 h,” “21–34 h,” “35–44 h,” “45–54 h,” or “55+ h.” Participants who answered weekly work hours less than 35 h were categorized as “part-time,” those answered working 35–44 h as “full-time,” and those answered working 45 or more hours per week as “over time.”

Low skill

Parents were asked about their occupation before the COVID-19 pandemic. Ten categories were provided following the U.S. Census survey (i.e., Current Population Survey): professional and related occupations, service occupations, sales and related occupations, office and administrative support occupations, farming, fishing, and forestry occupations, construction and extraction occupations, installation, maintenance, and repair occupations, production occupations, transportation and material moving occupations, or Armed Forces. We created three dichotomous variables: professional or managerial occupation, service/sale/office support occupation, and other occupations. Compared to professional or managerial occupations, we considered services/sales/office support and other occupations to be more likely to be low-skill.

Non-standard work schedule

Respondents were asked about their usual work schedule before the COVID-19 pandemic and since the pandemic. Choices were provided as below: “Daytime (anytime between 6 a.m. and 6 p.m.),” “Evening
(anytime between 2 p.m. and 9 p.m.),” “Nights (anytime between 9 p.m. and 8 a.m.),” “Rotating shift (changes periodically from day to evenings or nights),” “Split shift (consisting of two distinct periods each day),” or “Irregular hours.” Most respondents answered working daytime hours, and thus we created a dichotomous variable to indicate if the participants reported working during any non-day time hours pre-COVID-19. In addition, a dichotomous variable was created to indicate if the participants changed their work schedules from standard daytime hours to non-standard hours since COVID-19.

EPRES-Employment instability
Respondents were asked about the duration of the contract for their current/most recent job with choices ranging from 0 (permanent contract) to 4 (less than 6 months). We treated this as continuous with a higher score representing more unstable (or temporary) employment.

EPRES-Disempowerment
Participants were asked of three questions about the level of negotiation of employment conditions related to wages or salaries, schedule, and weekly work hours. Three choices were provided with 1 (by the union or collective agreement), 2 (by both the employer and employee), or 3 (by the employer). We created an average score from these three items with a higher score representing more disempowerment. This scale has excellent reliability ($\alpha = 0.82$).

EPRES-Vulnerability
This scale was measured with six questions asking participants if they felt defenseless to authoritarian treatment at the workplace. Questions include such as “are treated in a discriminatory and unjust manner,” “are made to feel you can be easily replaced,” with responses ranging from 0 (never) to 4 (always). An average score was calculated from these six items with a higher score representing more vulnerability ($\alpha = 0.83$).

EPRES-Material rewards
This scale was measured with two questions asking participants if the wages or salaries were sufficient to cover basic needs and to cover unexpected expenses. Responses ranged from 0 (very much) to 4 (not at all). An average score was calculated from these two items with a higher score representing lower material reward (and thus potentially economic deprivation) ($\alpha = 0.81$).

EPRES-Entitlement to benefits
Participants were asked to select the benefits they were entitled to at the workplace. Seven benefits were examined, including pension, severance pay, unemployment compensation, maternity/paternity leave, paid vacation, weekly/monthly/annual holidays, and time off due to family or personal reasons. A summed score ranging from 0 to 7 was calculated and then reversed so that the higher the score, the fewer benefits the employee was entitled to; this is consistent with the direction of other EPRES-related variables.

EPRES-Exercise right
Participants were asked if they could exercise five rights at the workplace without difficulties. Each of these five questions used a 5-Likert scale from 0 (always) to 4 (never). These five rights were sick leave, weekly/monthly/annual holiday breaks, take a vacation, request a day off for family or personal reasons, and go to the doctor. We calculated an average score from these five items with a higher score representing more obstacles to exercise workplace rights ($\alpha = 0.88$).

Sociodemographic characteristics
To reduce potential selection bias and omitted-variable bias, we included in our analysis a set of sociodemographic characteristics that have been shown in prior research to be associated with parental work and family economic prospect (e.g., Kalleberg, 2013). We included the following parental characteristics: age
(less than 35 years old, 35–44 years as the reference group, or 45 or older), gender (male vs. female), race-ethnicity (non-Hispanic White as the reference group, non-Hispanic Black, Hispanic, and all other groups), marital status (not-married vs. otherwise), and education (less than a college degree, college degree as the reference group, or graduate degree). We included the following family characteristics: number of children aged 0–5, number of children aged 6–17, number of family members living together, family income (less than $50,000, $50,000–$69,000, $70,000–$99,999 as the reference group, or $100,000 or more), subjective social status, location of the residence (suburban, rural, vs. urban), and region (Midwest, South, and West, vs. Northeast). We used the MacArthur Scale of Subjective Social Status, asking parents to rank themselves in reference to the nation on a ladder ranging from 1–10 (Adler et al., 2000).

**Empirical strategy**

Most of the variables had less than 2 percent of missing data, whereas two job precarity variables contained about 4 percent of missing data (i.e., exercise rights, disempowerment). When the missing rate is less than 5 percent and when the reasons for the missing data are unrelated to the outcome, analyses of complete cases do not lead to bias, which is the case here (Allison, 2000; Jakobsen et al., 2017). The final analyzed samples for both outcomes were 933. Missing data analysis indicates that those excluded from the analysis (i.e., missing independent variables) were more likely to be female, in the age group of 45 or older, single parent, having more family members living together, having income in the category of $50,000 or less, working part-time, more likely to hold non-standard work schedules, and more likely to hold jobs with precarious characteristics related to the temporary contract and low material rewards. These differences were at least at 5 percent significance level. These differences suggest that our estimates were more likely to underestimate the association between job precarity and economic prospects.

Logistic regression analysis was employed for both outcomes. Predicted probabilities were calculated after logistic regression so that the estimates are easier to interpret than the odds ratio. Based on logistic regression, several scenarios were also simulated by manipulating the characteristics related to job precarity. These scenarios demonstrate whether the likelihood of losing employment or losing income would increase or decrease depending on the presence (or absence) of a precarious job characteristic.

**RESULTS**

**Descriptive picture**

Table 1 presents the descriptive statistics for all analyzed variables for the total sample as well as by whether or not they lost work or income. The majority of the respondents were married mothers younger than the ages of 45. And, about two-thirds of the respondents were non-Hispanic White, with another 20 percent and 10 percent of the participants were non-Hispanic Black or Hispanic, respectively. The participants had about, on average, one child of each within the age range of 0–5 and of 6–17, and the average number of family members living together is almost 4. Almost 20 percent each of the participants reported that they had lost work or lost income due to COVID-19. Table 1 also presented the information on job precarity based on the nine indicators detailed in the Measures section.

The demographic characteristics also suggest that the sample might be more advantaged, relatively speaking, than the national averages on several socioeconomic indicators. For example, about two thirds of the participants had a college degree or higher educational attainment. Most of the participants had family income in the range of $50,000 and $99,999, and the average subjective social status was slightly higher than five on a 1–10 scale. Lastly, most of the samples lived in the urban areas, and the share of the sample by region was about equally distributed with a slightly higher share of the participants from the South region.
TABLE 1 Descriptive statistics on analyzed variables (N = 933)

| Variables                  | Total | Lost work |          | Lost income |          |
|----------------------------|-------|-----------|----------|-------------|----------|
|                            |       | Yes | No    | Yes | No    |
| Male (%)                   | 43.77 | 45.76 | 43.34 | 49.23* | 50.77  |
| Age (%)                    |       |      |       |      |        |
| 18—34                      | 32.73 | 34.46 | 32.36 | 35.90 | 31.74  |
| 35—44                      | 48.69 | 51.98 | 47.99 | 51.28 | 48.32  |
| 45+                        | 18.57 | 13.56 | 19.66 | 12.82 | 19.95  |
| Education (%)              |       |      |       |      |        |
| Less than college          | 36.18 | 46.33 | 33.99 | 46.67 | 32.43  |
| College degree             | 48.64 | 42.37 | 50.00 | 42.56 | 51.36  |
| Graduate degree            | 15.18 | 11.30 | 16.01 | 10.77 | 16.21  |
| Race-ethnicity (%)         |       |      |       |      |        |
| Non-Hispanic White         | 63.61 | 48.57 | 66.83 | 46.11 | 68.31  |
| Non-Hispanic Black         | 20.67 | 6.86  | 23.62 | 8.29  | 23.64  |
| Hispanic                   | 10.28 | 32.00 | 5.63  | 30.57 | 4.94   |
| All others                 | 5.44  | 12.57 | 3.92  | 15.03 | 3.12   |
| Not married (%)            | 4.59  | 4.52  | 4.60  | 4.10  | 4.36   |
| Number of living together  | 3.50 (0.88) | 3.84 (1.04)*** | 3.42 (0.82) | 3.75 (1.06)*** | 3.42 (0.80) |
| Number of kids aged 0–5 (>0) | 1.16 (0.45) | 1.26 (0.66)* | 1.14 (0.40) | 1.29 (0.65)** | 1.13 (0.39) |
| Number of kids aged 6–17 (>0) | 1.26 (0.64) | 1.41 (0.83)** | 1.22 (0.57) | 1.44 (0.90)*** | 1.20 (0.52) |
| Income (%)                 |       |      |       |      |        |
| Less than $50,000          | 19.32 | 41.81 | 14.44 | 44.10 | 12.58  |
| $50,000–$69,999            | 31.29 | 24.86 | 32.68 | 24.10 | 32.94  |
| $70,000–$99,999            | 34.91 | 23.16 | 37.45 | 22.56 | 38.78  |
| $100,000+                  | 14.94 | 10.17 | 15.42 | 9.23  | 16.69  |
| Subjective social status   | 5.74 (1.63) | 5.35 (1.44)*** | 5.82 (1.65) | 5.41 (1.47)** | 5.81 (1.66) |
| Location (%)               |       |      |       |      |        |
| Urban                      | 60.27 | 48.54 | 62.75 | 47.89 | 63.12  |
| Suburban                   | 30.54 | 42.11 | 28.09 | 43.16 | 27.43  |
| Rural                      | 9.19  | 9.36  | 9.16  | 8.95  | 9.45   |
| Region (%)                 |       |      |       |      |        |
| Northwest                  | 26.22 | 28.81 | 25.67 | 27.69 | 25.29  |
| Midwest                    | 16.35 | 11.86 | 17.31 | 14.36 | 17.20  |
| South                      | 35.89 | 36.16 | 35.84 | 33.85 | 36.71  |
| West                       | 21.54 | 23.16 | 21.19 | 24.10 | 20.80  |
| Precarity                  |       |      |       |      |        |
| Weekly work hours before COVID-19 (%) |       |      |       |      |        |
| Less than 35 h             | 12.65 | 26.14 | 9.70  | 26.29 | 8.71   |
| 35–44 h                    | 74.80 | 56.82 | 78.73 | 53.61 | 81.27  |
| 45+ hours                  | 12.55 | 17.05 | 11.57 | 20.10 | 10.03  |
TABLE 1  (Continued)

| Variables                                      | Total   | Lost work |       | Lost income |       |
|------------------------------------------------|---------|-----------|--|-------------|------|
|                                                |         | Yes       | No   | Yes         | No   |
| Non-standard work schedule before COVID-19 (%) | 9.57    | 10.98     | 9.27 | 10.99       | 8.39 |
| Non-standard work schedule since COVID-19 (%)  | 31.17   | 54.72***  | 27.99| 57.63***    | 25.87|
| Occupation (%)                                  |         | ***       | ***  |             | ***  |
| Professional/manager                           | 53.54   | 25.99     | 59.44| 25.13       | 61.62|
| Service/sale/clerical                          | 37.79   | 59.89     | 33.05| 61.03       | 31.96|
| All others                                      | 8.67    | 14.12     | 7.51 | 13.85       | 6.42 |
| EPRES-Duration of the contract (%)             |         | ***       | ***  |             | ***  |
| Permanent (0)                                   | 25.23   | 11.11     | 28.19| 10.05       | 27.92|
| One year or more (1)                           | 62.92   | 61.99     | 63.11| 60.85       | 64.55|
| Temporary, non-fixed term (2)                  | 4.86    | 11.11     | 3.55 | 10.05       | 3.51 |
| Temporary, 6–12 months (3)                     | 5.07    | 10.53     | 3.92 | 12.70       | 3.12 |
| Temporary, less than 6 mo. (4)                 | 1.93    | 5.26      | 1.23 | 6.35        | 0.91 |
| EPRES-Disempowerment (1–3)                     | 2.30 (0.65)| 2.51 (0.47)*** | 2.26 (0.67)| 2.46 (0.50)*** | 2.26 (0.68) |
| EPRES-Vulnerability (0–4)                      | 1.19 (0.77)| 1.20 (0.64) | 1.19 (0.80)| 1.21 (0.62) | 1.20 (0.81) |
| EPRES-Material rewards (0–4)                   | 1.76 (0.90)| 2.40 (0.80)*** | 1.63 (0.86)| 2.46 (0.82)*** | 1.58 (0.83) |
| EPRES-Entitlement to benefits (0–7)            | 3.27 (2.02)| 4.51 (1.52)*** | 3.00 (2.01) | 4.48 (1.55)*** | 2.98 (2.01) |
| Exercise rights (0–4)                          | 1.80 (0.93)| 2.10 (0.91)*** | 1.74 (0.93) | 2.16 (0.88)*** | 1.71 (0.92) |
| Lost work (%)                                  | 17.65   | 100.00    | 0.00 | 89.74       | 0.00 |
| Lost income (%)                                | 20.02   | 100.00    | 0.00 | 100.00      | 0.00 |

**Note**: Chi-square test was used to test the descriptive differences between categorical variables, and T-Test or ANOVA were used to test the differences for continuous variables. * p < 0.05. ** p < 0.01. *** p < 0.001.

Furthermore, the right-side of four columns in Table 1 shows how the demographic characteristics, along with precarious job characteristics, might differ by whether the participant lost job or income. The descriptive comparison between those who lost work versus those otherwise or between those who lost income versus those otherwise clearly suggests that people who reported job or income loss were more likely to have a relatively lower educational degree, lower family income, and lower subjective social status. People who reported losing employment also were more likely to be Hispanic, having more family members living together, and living in suburban areas. The information shown in Table 1 also points to the direction that people who lost their employment tended to hold jobs with precarious characteristics, such as part-time, non-standard work schedule, temporary contract, feeling disempowered, low material rewards, low entitlement to workplace benefits, and powerlessness in exercising workplace rights.

Correlation between job precarity and economic outcomes

Table 2 further presents the correlation between precarious job characteristics and two economic outcomes. As expected, each of the nine indicators for job precarity was significantly positively correlated with each other, except that feeling vulnerable at the workplace was negatively correlated with feeling disempowered, having low material rewards, and having a low entitlement to benefits. Furthermore, holding
### TABLE 2  Correlations between job precarity and outcome variables

|                  | 1  | 2               | 3               | 4               | 5               | 6               | 7               | 8               | 9               | 10              | 11              |
|------------------|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 1. Weekly work hours before COVID-19 | –  |                 |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| 2. Non-standard work schedule before COVID-19 | –0.015 | –               |                 |                 |                 |                 |                 |                 |                 |                 |                 |
| 3. Work schedule changed to non-standard hours since COVID-19 | 0.018 * | –0.169 *** | –               |                 |                 |                 |                 |                 |                 |                 |                 |
| 4. Occupation    | 0.027 | 0.149 ***       | 0.128 ***       | –               |                 |                 |                 |                 |                 |                 |                 |
| 5. EPRES-Contract duration | –0.033 | 0.119 ***       | 0.107 **        | 0.169 ***       | –               |                 |                 |                 |                 |                 |                 |
| 6. EPRES-Disempowerment | –0.006 | –0.015          | 0.003           | 0.018           | 0.045           | –               |                 |                 |                 |                 |                 |
| 7. EPRES-Vulnerability | 0.003 | –0.098          | –0.191 ***      | 0.098           | –0.020          | –0.091 **       | –               |                 |                 |                 |                 |
| 8. EPRES-Material rewards | –0.134 *** | 0.192 ***     | 0.231 ***       | 0.254 ***       | 0.329 ***       | 0.078 *         | –0.072 *        | –               |                 |                 |                 |
| 9. EPRES-Entitlement to benefits | –0.056 | 0.195 ***       | 0.141 ***       | 0.026           | 0.369 ***       | 0.234 ***       | –0.422 ***      | 0.385 ***       | –               |                 |                 |
| 10. EPRES-Exercise right | 0.017 | 0.018           | 0.092 **        | –0.034          | 0.287 ***       | 0.152 ***       | –0.021          | 0.177 ***       | 0.404 ***       |                 |                 |
| 11. Lost work    | –0.084 ** | 0.022          | 0.084 **        | 0.236 ***       | 0.230 ***       | 0.151 ***       | 0.002           | 0.328 ***       | 0.284 ***       | 0.300 ***       | –               |
| 12. Lost income  | –0.061 | 0.037           | 0.114 ***       | 0.276 ***       | 0.291 ***       | 0.128 ***       | 0.006           | 0.390 ***       | 0.294 ***       | 0.190 ***       | 0.955 ***       |

* p < 0.05. ** p < 0.01. *** p < 0.001.
Correlations between variables help gauge the possibility for multicollinearity and the degree of the independent variables predicting the dependent variable. Multicollinearity occurs when highly correlated variables are considered in the same models that could produce unreliable coefficient estimates and highly inflated standard errors (Chatterjee, Hadi, and Price, 2000). Data in Table 2 do not suggest multicollinearity. We also used variance inflation factor (VIF) after the multivariate regression analysis, indicating no issue of multicollinearity. Variables whose VIF values are greater than 10 warrant further examination, and all the variables in our analysis had VIF values equal to or smaller than 2 (Chatterjee, Hadi, and Price, 2000).

Association between job precarity and economic outcomes

Table 3 presents the odds ratios produced from logistic regression, controlling for all demographic characteristics detailed in the Measures section. An odds ratio of larger than 1 represents a higher likelihood of the outcomes, whereas an odds ratio of lower than 1 represents a lower likelihood of the outcomes. Turning first to our focal variables related to job precarity, results in Table 3 indicate that eight out of nine precarious job characteristics, except vulnerability, were significantly associated with a higher likelihood of job loss due to COVID-19 pandemic. Specifically, holding occupations in services/sales/clericals or occupations other than professional/managerial, holding temporary contract, feeling disempowered, having low material rewards, having a lower degree of entitlement to workplace benefits, and less power in exercising workplace rights all significantly increased the odds of losing employment. For example, holding occupations in services, sales, or clericals had more than 2.5 times greater chances of losing work. Holding jobs with precarious characteristics related to having temporary versus permanent contracts, feeling disempowered, having low material rewards, and having a low degree of exercising rights all had more than about 1.5 times greater chances of losing employment. Similar results were observed for income loss. In addition, changing work schedules from standard daytime hours prior to COVID-19 to non-standard hours since COVID-19 was significantly associated with a 42 percent decrease in the odds of losing income. This result might suggest that workers may take on non-standard hours to preserve their income and avoid losing their jobs.

There were a few notable results associated with demographic characteristics. Of importance, people of Hispanic and other racial/ethnic groups had a significantly higher likelihood of losing work or losing income than their non-Hispanic White counterparts. As expected, people with a low income had a significantly higher likelihood of losing a job or income due to COVID-19. More family members living together significantly increased the odds of job loss, and more children aged 6–17 significantly increased the odds of income loss. Living in the Midwest region versus those living in the Northeast region had significantly lower odds of losing jobs.

To provide an easy interpretation of odds ratios presented in Table 3, we present in Table 4 the predicted probabilities of several scenarios to demonstrate how the likelihood of losing employment and losing income might increase (or decrease) due to the presence (or absence) of precarious job characteristics. These simulations were based on the logistic regression results reported in Table 3. The first row of Table 4 presents the predicted average probabilities of job loss or income loss, which are about 0.17 and 0.19, respectively, after considering all variables shown in Table 3.

The probability of losing employment doubled, increasing from 0.17 to 0.35, if the workers held a part-time job. And overall, the probabilities would more than double, increasing from 0.17 to 0.38 when the workers held a part-time job in services, sales, or office support occupations that required non-standard work schedules. The remaining Table 4 presents how the probabilities of job loss might change, given the change in the degree of precarity related to employment instability (i.e., duration of the contract), disempowerment, vulnerability, material rewards, entitlement to benefits, and powerlessness in exercising rights. Note that these variables were reverse coded so that the higher values represent more precarity. These
TABLE 3  Logistic regression estimates of job precarity on the probability of lost work/lost income

|                          | Lost work | Lost income |
|--------------------------|-----------|-------------|
| **Weekly work hours before COVID-19 (Ref: 35–44 h)** |           |             |
| Less than 35 h           | 1.01 (0.34) | 1.09 (0.37) |
| 45+ h                   | 0.84 (0.30) | 1.05 (0.38) |
| **Non-standard work schedule before COVID-19** | 0.29 (0.12)** | 0.21 (0.09)*** |
| Work schedule changed to non-standard hours since COVID-19 | 0.65 (0.18) | 0.58 (0.16)* |
| **Occupation (Ref: Professional/Manager)** |           |             |
| Service/sale/clerical    | 2.68 (0.75)*** | 2.94 (0.83)*** |
| All others               | 2.22 (0.87)* | 2.03 (0.81) |
| **EPRES-Duration of the contract (0–4)** | 1.44 (0.21)* | 1.58 (0.23)*** |
| **EPRES-Disempowerment (1–3)** | 1.69 (0.37)* | 1.42 (0.30) |
| **EPRES-Vulnerability (0–4)** | 1.09 (0.22) | 1.12 (0.23) |
| **EPRES-Material rewards (0–4)** | 1.47 (0.23)* | 1.88 (0.30)*** |
| **EPRES-Entitlement to benefits (0–4)** | 1.36 (0.12)*** | 1.30 (0.11)*** |
| **EPRES-Exercise rights (0–4)** | 1.43 (0.21)* | 1.65 (0.25)*** |
| **Male**                 | 0.92 (0.23) | 1.24 (0.30) |
| **Age (Ref: 35–44)**    |           |             |
| 18—34                   | 1.16 (0.32) | 1.25 (0.35) |
| 45+                     | 1.19 (0.42) | 1.36 (0.49) |
| **Education (Ref: College degree)** |           |             |
| Less than college       | 0.81 (0.22) | 0.68 (0.19) |
| Graduate degree         | 0.94 (0.36) | 0.92 (0.35) |
| **Race-Ethnicity (Ref: Non-Hispanic White)** |           |             |
| Non-Hispanic Black      | 0.66 (0.23) | 0.93 (0.31) |
| Hispanic                | 4.94 (1.65)*** | 5.45 (1.86)*** |
| All others              | 4.09 (1.76)*** | 5.71 (2.56)*** |
| **Not married**         | 0.52 (0.32) | 0.42 (0.25) |
| Number of living together | 1.63 (0.25)*** | 1.35 (0.22) |
| Number of kids aged 0–5 | 0.68 (0.14) | 0.88 (0.19) |
| Number of kids aged 6–17 | 1.19 (0.21) | 1.50 (0.26)* |
| **Income (Ref: $70,000–$99,999)** |           |             |
| Less than $50,000       | 2.56 (0.88)** | 3.18 (1.10)*** |
| $50,000–$69,999         | 1.45 (0.48) | 1.46 (0.49) |
| $100,000+               | 1.29 (0.56) | 1.21 (0.52) |
| **Subjective social status** | 0.89 (0.08) | 0.96 (0.08) |
| **Location (Ref: Urban)** |           |             |
| Suburban                | 1.45 (0.39) | 1.49 (0.40) |
| Rural                   | 0.99 (0.46) | 1.00 (0.48) |
| **Region (Ref: Northeast)** |           |             |
| Midwest                 | 0.39 (0.16)* | 0.45 (0.19) |
| South                   | 1.08 (0.32) | 0.98 (0.29) |
| West                    | 0.68 (0.22) | 0.66 (0.21) |
simulated results suggest that the probability of losing employment increased as the degree of precarity increased. Indeed, people holding jobs without any or very low precarity (e.g., rating 0 on each of the six EPRES scales) had a lower probability of losing employment than the reference group. However, the probabilities greatly increased once people holding a job with precarity rating on a score of 2 or higher on each of the six EPRES scales. One exception is related to vulnerabilities, which did not seem to make a difference in the probabilities. We call for caution in interpreting these probabilities particularly related to the simulated scenarios numbered 6 and 7 where very few samples had jobs with such a low or high precarity. We showed these two scenarios with the intention to explore the degree to which job precarity may put workers in a unique risky position to lose employment and or income.

**DISCUSSION AND CONCLUSION**

We set out to investigate the relationship between job precarity and the probabilities of losing jobs and income among parents during the COVID-19 pandemic. We found a strong positive association between job precarity and job loss and income loss. In other words, those with precarious employment were more likely to lose their jobs or income amidst the concurrent global public health and economic crises. In line with prior research, the assumption was that the job insecurity associated with precarious employment, existent during both economic booms and recessions, would make those with precarious jobs especially vulnerable to the unprecedented wave of recent unemployment following the economic shutdowns resulting from this pandemic. We highlight a few results below.

First, with job precarity as a focal point of this study, the results indicate a statistically significant association between precarious employment and our two economic outcomes. Characteristics of job precarity, like part-time work in a service sector and employment in a workplace with temporary contracts, feeling disempowered, receiving low material rewards, having few benefits, and feeling powerless in exercising rights were all significantly associated with job loss and income loss. In other words, economic instability prior to the pandemic only became more unstable and insecure during the pandemic, with the probability of job loss doubling for individuals working in the service sector. These jobs were also strongly associated with precarious employment related to disempowerment, low material rewards, and few entitlements to workplace rights and benefits. In the face of economic insecurity, disempowerment and powerlessness in exercising workplace rights were particularly concerning as these workers lost employment or income while feeling less able to advocate for or protect themselves when most vulnerable. Furthermore, those employed in jobs with low material rewards and low entitlement to workplace benefits are likely to be excluded from the potential resources that others holding less precarious jobs would be entitled to in response to job loss, such as severance pay. Without proper benefits and compensation while employed, workers are likely to be more vulnerable to financial and health-related adversity when unemployed (Pew Research Center, 2020).

The results further suggest that those who were most financially vulnerable before COVID-19 had the highest likelihood of losing employment during the pandemic. Those with relatively lower levels of education and family income, a lower subjective social status, and a greater number of family members living together disproportionately represented those who reported job loss and income loss. These workers are likely to be fired first and hired last, leading to an increase in long-term unemployment or an inescapable
|                          | Lost work | Lost income |
|--------------------------|-----------|-------------|
| 1. Reference group       | 0.17      | 0.19        |
| 2. Working part-time     | 0.35      | 0.38        |
| 3. Working non-standard schedule pre-COVID-19 | 0.20 | 0.22 |
| 4. With service/sale/clerical occupation | 0.28 | 0.31 |
| 5. 2 + 3 + 4             | 0.38      | 0.44        |
| EPRES-Duration of the contract |         |             |
| Permanent (0)            | 0.14      | 0.14        |
| One year or more (1)     | 0.17      | 0.18        |
| Temporary, non-fixed term (2) | 0.20 | 0.23 |
| Temporary, 6–12 months (3) | 0.24 | 0.28 |
| Temporary, less than 6 mo. (4) | 0.29 | 0.34 |
| EPRES-Disempowerment      |           |             |
| 1                        | 0.11      |             |
| 2                        | 0.15      | 0.18        |
| 3                        | 0.20      | 0.21        |
| EPRES-Vulnerability      |           |             |
| 0                        | 0.16      | 0.18        |
| 1                        | 0.17      | 0.19        |
| 2                        | 0.18      | 0.20        |
| 3                        | 0.19      | 0.21        |
| 4                        | 0.20      | 0.22        |
| EPRES-Material rewards    |           |             |
| 0                        | 0.11      | 0.09        |
| 12                       | 0.130.17  | 0.130.18    |
| 3                        | 0.21      | 0.25        |
| 4                        | 0.25      | 0.34        |
| EPRES-Entitlement to benefits |       |             |
| 0                        | 0.08      | 0.11        |
| 1                        | 0.10      | 0.13        |
| 2                        | 0.12      | 0.15        |
| 3                        | 0.15      | 0.17        |
| 4                        | 0.18      | 0.20        |
| 5                        | 0.21      | 0.22        |
| 6                        | 0.25      | 0.25        |
| 7                        | 0.29      | 0.28        |
| EPRES-Exercise right     |           |             |
| 0                        | 0.12      | 0.11        |
| 1                        | 0.14      | 0.15        |
| 2                        | 0.17      | 0.19        |
| 3                        | 0.21      | 0.24        |
6. Average Level of contract, disempowerment, vulnerability, risks on material rewards, entitlement to benefits, exercise rights

|   | Lost work | Lost income |
|---|-----------|-------------|
| 4 | 0.25      | 0.30        |
| 6. | 0.08      | 0.09        |
| 7. | 0.64      | 0.78        |

The cycle of perpetual precarious employment, with economic mobility becoming ever more elusive. Although personal resources, savings, social capital, and access to public health insurance may reduce the negative impact of job loss, lower-income families are less likely to benefit from these buffering factors. They also have the highest level of unmet healthcare needs (Huang, Birkenmaier, and Kim, 2014). Coupled with lower levels of income, these families might be less able to save money for times of need or have access to the financial resources necessary for coping with a pandemic, underscoring a vicious downward spiral (Pew Research Center, 2020). With the loss of income, individuals and families are likely to experience deterioration in well-being while struggling to meet their basic needs (Nieuwenhuis and Yerkes, 2021). Also, for parents living with more family members, comes greater responsibility, making the impact of job and income loss that much more consequential. The higher likelihood of income loss for parents with more children aged 6–17 has substantial implications for their children’s future opportunities for college and higher education. Parents may also struggle to maintain continuous employability while simultaneously balancing family life and caring for their children (Ba’, 2018).

Of importance, respondents who lost their jobs or income were more likely to be Hispanic or other racial/ethnic groups. Hispanics and other racial/ethnic groups have already been shown to be marginalized by pre-existing social structures that systematically underserve non-White communities, exploit labor, restrict access to goods and services, and exclude communities from fully participating in civil society (Musolf, 2017; Pilkington and Rao, 2020). Such vulnerability more likely subjects these groups to hold precarious jobs, further burdened by unemployment and loss of income during economic and public health crises. Worth noting is the extraordinarily high rates of those suffering and dying from COVID-19 among Latinx communities (Pilkington and Rao, 2020). Whatever the progress that has been made over the past decades for Latinx communities (e.g., increasing educational attainment, increasing employment opportunities) (Cardenas and Kerby, 2012) may very well be wiped out within months.

Our study highlights how COVID-19 only lays bare and worsens the existing inequality created by an economic system that polarizes the labor force. Among those affected the most by the ongoing economic recession were racial/ethnic minority groups holding jobs that tend to be low-skills and lowly paid with precarious characteristics (e.g., no or low benefits, and disempowered). It is a tall order for any society to rectify such an unjust economic system that has not served our workforce well, particularly those in vulnerable positions. As the public health crisis and the vaccination efforts continue to evolve, measures that are not only short- but long-term are crucial to protect people in the most vulnerable positions due to job precariousness. Both employment and income policies are essential to address a precarious labor market. For example, we would benefit by fully valuing and appreciating the essential, yet still precarious, workers seemingly taken for granted, not just as integral parts of the economy but also as individuals risking their lives as they struggle to get by during global public health and economic crises. Initiatives like the Paycheck Protection Program that support small businesses in maintain employees on payroll with interest free loans are warranted for returning a sense of economic normalcy (Guilford and Cambon, 2021; U.S. Department of the Treasury, 2020). Income support policies such as the two rounds of stimulus checks since January 2021 in the United States have also proven to be effective in alleviating economic hardships particularly for people with precarious jobs (DeParle, 2021). Furthermore, enhanced work conditions (e.g., living wages) and relations (e.g., feeling empowered) are likely to cushion these workers from falling through in the event of future public health and economic crises.
Limitations

As for any cross-sectional observational studies, this study contains several constraints. The first and foremost is the cross-sectional nature of the data set, making causal claims impossible. Nonetheless, the information gathered to ask respondents about the characteristics of their jobs before the pandemic addresses, at least partially, the temporal sequence required of any causal study. Secondly, due to convenience sampling, our results in no way are generalizable to the broader population, despite our results providing a snapshot of the dire consequences faced widely around the United States. The sharp increase in unemployment rates from a mere 4 to 15 percent within 2 months suggests the likely widespread dire consequences documented in this study. Thirdly, although regional differences were considered in this study to account for the differences in labor market structure and economic opportunities across regions, this study could not consider the differences by state due to the small sample size of each state. Likewise, although this study considered the economic sector related to participants’ occupations, information was unavailable regarding the class of the worker (e.g., public vs. private). Such an analysis by state or by economic sectors would shed light on the disparity in economic opportunities (e.g., unemployment rate experienced by each state due to prevalence of different economic opportunities) to disentangle further the true association between job precarity and job and income loss from the potential association between local economic opportunities and job and income loss. Lastly, although this study adopted a more comprehensive approach to conceptualize job precarity than previous studies, this analysis was constrained due to a small sample size. Indeed, using large national representative data sets in the United States would be ideal for examining the association between job precarity and the probability of losing job and income amidst the current public health crisis, if not for such detailed information being unavailable in these large national data sets. Thus, our study underscores the necessity of collecting multidimensional aspects of work conditions and relations to provide a precise and rich understanding of the extent to which job precarity may shape our workers’ job and income security.

CONCLUSION

The prevalence of job precarity has been growing in breadth and scope over the past several decades. The impact of precarious employment has the potential to be of even greater magnitude with the recent COVID-19 pandemic. While the global challenges to increasing job security are real, public policies and practices are urgently needed to make a significant difference in workers’ and their families’ well-being. The dire consequences of COVID-19 have crystallized the immense underlying social issues that have plagued individuals, communities, and entire nations for too long, with precarious employment and economic insecurity at the forefront, to the point that the need for change and greater security is undeniable. The concurrent public health and economic crises lay bare the glaring injustices experienced by those merely struggling to make ends meet (Long et al., 2020).

Addressing precarity will not only unburden individuals of the associated risks once shared with their employers, but also benefit the entire economy by improving labor relations, employee tenure, and mutual investment into the very companies that make up an integral part of the economy. Precarity increased as a result of newfound neoliberal economic policies and a shift away from an economy based in manufacturing. As the economic landscape continues to evolve, it becomes evermore important to focus on generating more secure jobs while simultaneously addressing the needs of an ever-evolving nation. Economic inequality no longer needs to threaten the middle class and social foundation of the United States, let alone any nation, if we begin to better invest in the existing capital we have been consistently disregarding. The used-to-be-called service workers during normalcy have suddenly become essential workers during public and economic crises, indeed keeping a country afloat during an unprecedented pandemic, and deserve to be treated more as critically valuable figures that they are.
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