



# Free agents or cogs in the machine? Classed, gendered, and racialized inequities in hazardous working conditions

Jerzy Eisenberg-Guyot PhD, MPH<sup>1</sup>  | Seth J. Prins PhD, MPH<sup>1,2</sup>  |  
Carles Muntaner MD, PhD, MHS<sup>3,4</sup>

<sup>1</sup>Department of Epidemiology, Mailman School of Public Health, Columbia University, New York City, New York, USA

<sup>2</sup>Department of Sociomedical Sciences, Mailman School of Public Health, Columbia University, New York City, New York, USA

<sup>3</sup>Division of Social and Behavioural Health Sciences, Dalla Lana School of Public Health, University of Toronto, Toronto, Ontario, Canada

<sup>4</sup>Bloomberg Faculty of Nursing, University of Toronto, Toronto, Ontario, Canada

## Correspondence

Jerzy Eisenberg-Guyot, PhD, MPH,  
Department of Epidemiology, Mailman School  
of Public Health, Columbia University,  
722 West 168th Street, New York,  
NY 10032, USA.  
Email: [je2433@cumc.columbia.edu](mailto:je2433@cumc.columbia.edu)

## Funding information

National Institute of Mental Health,  
Grant/Award Number: T32MH013043

## Abstract

**Introduction:** Few epidemiologic studies have used relational social class measures based on control over productive assets and others' labor to analyze inequities in health-affecting working conditions. Moreover, these studies have often neglected the gendered and racialized dimensions of class relations, dimensions which are essential to understanding population patterns of health inequities. Our study fills these gaps.

**Methods:** Using data from the 2002–2018 U.S. General Social Survey, we assigned respondents to the worker, manager, petit bourgeois, or capitalist classes based on their supervisory authority and self-employment status. Next, we estimated class, class-by-gender, and class-by-race inequities in compensation/safety, the labor process, control, and conflict, using Poisson models. We also estimated gender-by-race inequities among workers.

**Results:** We identified substantial class inequities, with worse conditions for workers, which is the largest class within genders and racialized groups, but also disproportionately consists of women and people of color (POC), particularly women of color (WOC). For example, relative to workers, capitalists were less likely to report that safety is not a priority (prevalence ratio [PR]: 0.41, 95% confidence interval [CI]: 0.21, 0.82), repetitive tasks (PR: 0.36, 95% CI: 0.21, 0.61), and lacking freedom (PR: 0.11, 95% CI: 0.05, 0.24). We also identified inequities among workers, with women and POC, particularly WOC, reporting worse conditions than white male workers, especially greater discrimination/harassment (WOC PR: 1.70, 95% CI: 1.36, 2.13).

**Conclusion:** We identified substantial inequities in working conditions across intersecting classes, genders, and racialized groups. These inequities threaten workers' health, particularly among women and POC.

## KEYWORDS

division of labor, health inequities, neo-Marxist, occupational health, racism, sexism, social class, working conditions

## 1 | INTRODUCTION

### 1.1 | Overview

How does the interplay between class relations and structural sexism and racism in the United States shape inequities in working conditions that affect health? Epidemiologic research has identified health inequities across genders and racialized groups.<sup>1–4</sup> Epidemiologic research has also revealed health inequities across social classes, where class is operationalized relationally in terms of power and control over labor and production<sup>5,6</sup>; as well as across different work structures, such as the material and psychosocial characteristics of different occupational contexts, which reflect underlying class dynamics.<sup>7</sup> In recent decades, employers have profited by degrading employment and working conditions, and structural sexism and racism have continually funneled women and Black, Indigenous, and people of color (BIPOC)—especially BIPOC women—into particularly degraded work.<sup>1–4,8</sup> Although these social mechanisms, as well as relational class theories, suggest that health-affecting material and psychosocial working conditions should vary across intersecting classes, genders, and racialized groups, to our knowledge, no epidemiologic studies in the United States have comprehensively documented such disparities. The present study fills this gap.

### 1.2 | Relational social class, working conditions, and health

Our political economy's structuring of production, appropriation, and distribution has implications for population health and health inequities. In capitalist societies, social groups differ in their abilities to obtain health-promoting resources and in their abilities to control their livelihoods and the terms and conditions of their work, factors that affect many health outcomes.<sup>5,8</sup> Identifying the root causes of these inequities requires a relational theory of social class that distinguishes classes in terms of power and control over productive assets (i.e., capital) and others' labor rather than in terms of individual-level attributes like income and education (i.e., socioeconomic status [SES]).<sup>5</sup>

In this study, we apply Wright's neo-Marxist theory, which is the most influential relational class theory in epidemiology and quantitative sociology, and which Wright developed to analyze complex and heterogeneous class dynamics in modern capitalist societies.<sup>5,9,10</sup> Drawing from Wright, we measure class along two dimensions: capital ownership and control and authority over labor and policy in the workplace.<sup>5,9,10</sup> The fundamental distinction is between: (1) capitalists, who own productive assets, control workers' labor processes (domination), and extract as surplus the difference in value between what workers produce and what they are paid (exploitation); and (2) workers, who own no capital, and thus to sustain their livelihoods, must sell their labor power to capitalists for a wage.<sup>5,9,10</sup> The relationship between capitalists and workers causes class inequities because capitalists' profits relate inversely to labor costs and positively to labor effort; that is, the material welfare of capitalists *depends* upon workers' deprivation, subjugation, and overexertion.<sup>9</sup>

In postindustrial societies like the United States, however, substantial segments of the workforce occupy “contradictory” locations between workers and capitalists.<sup>9</sup> For example, most managers (like workers) lack productive assets and must sell their labor power to capitalists, but managers control others' labor and often develop company policy (like capitalists).<sup>9</sup> Meanwhile, members of the petit bourgeoisie, e.g., independent shopkeepers, own productive assets (like capitalists), but they often do not control workers' labor and instead must labor themselves.<sup>9</sup> Managers' and the petit bourgeoisie's intermediate positions in hierarchies of ownership and control subject them to different, but related, material risks.<sup>9,11</sup>

Capitalism's profit imperative operates to degrade working conditions, causing health inequities across classes.<sup>5,6,11</sup> For example, insofar as businesses can (and must to survive) increase profits by lengthening working hours and reducing wages, benefits, rights, and safety, or by increasing efficiency through intensification, mechanization, or automation of labor processes, capitalists' profits come at the expense of workers' health, who may face overwork, disaffection, insecurity, and occupational hazards, as well as inadequate income, food, housing, and healthcare.<sup>5–7,11,12</sup> Moreover, while capitalists may benefit from increased control, security, and respect, workers may face conflict, alienation, insecurity, and powerlessness, factors associated with mental illness and other adverse health outcomes.<sup>5–7,11</sup>

Managers and the petit bourgeoisie may face unique hazards, even if they are less exploited and dominated than workers. For example, although they may operate relatively autonomously, the petit bourgeoisie often lack sufficient resources to compete with capitalists—particularly in an increasingly monopolized economy<sup>13</sup>—causing proletarianization (descent into the working class), stress, and privation.<sup>14</sup> Likewise, while high-level managers often enjoy substantial pay and authority, low-level managers may be exploited and dominated by upper management *and* face hostility from subordinates, inducing stress and other risks.<sup>11</sup> Indeed, some prior research has estimated that the petit bourgeoisie and low-level managers face morbidity and mortality risks similar to or greater than workers,<sup>11,14</sup> findings that are not expected or explicable under stratificationist theories of class (e.g., those that center on measures of SES and the “socioeconomic gradient”), which anticipate linear class-outcome relationships.<sup>11</sup>

Profits under capitalism are bolstered by structural sexism and racism, which work to disempower women and BIPOC and to enable their heightened exploitation and domination, especially of Black, Indigenous, and undocumented women, with deleterious consequences for their working conditions, living conditions, and health.<sup>1–4</sup> This system of patriarchy and racial capitalism (a term denoting the role of racism in structuring capitalist exploitation and domination<sup>3,15–17</sup>) siphons women and BIPOC, especially BIPOC women, into the working class, where they often receive lower wages and benefits, have less control and power, and experience greater physical, emotional, and cognitive job demands, as well as discrimination and harassment, than their male or white counterparts.<sup>1–4,6,16,18–20</sup> Moreover, deleterious conditions extend beyond, but are tied to, these workplace relations. For example, women, especially BIPOC women, are often overburdened with waged labor and domestic labor responsibilities.<sup>21,22</sup> This unpaid (or low-paid) domestic labor

relieves capitalists from paying for the workforce's welfare, heightening capitalists' profits.<sup>22</sup> Meanwhile, across genders, BIPOC often face greater levels of health-harming conditions than their white counterparts, including residential segregation, disinvestment in public and social services, environmental degradation, policing, and hyper-incarceration.<sup>2-4,23</sup>

The balance of power between labor and capital shapes the class inequities. For example, over the last several decades in the United States, capitalists and their allied policy elites have endeavored to restore economic growth and profitability by intensifying workers'—particularly BIPOC workers'—exploitation and domination.<sup>8</sup> They have decimated unions, weakened labor protections, and introduced new technologies and management techniques, like surveillance systems, to heighten control over and deskill workers' labor.<sup>7,8,12,24,25</sup> Moreover, capitalists have increasingly relied on temporary and "gig" workers, who are easily fired and denied adequate pay, benefits, and safety protections.<sup>8,24</sup> Since the early 1980s, union density has fallen from 20% to 10% overall, including from 27% to 11% among Black workers, and wages for the bottom 90% of workers have stagnated.<sup>26,27</sup> Simultaneously, productivity, the share of income accruing to capitalists, and the cost of certain necessities have skyrocketed.<sup>27-30</sup> Deteriorating working conditions among those at the bottom of the class structure have likely contributed to burgeoning health inequities across classes<sup>8,29</sup> and exacerbated racialized health inequities.<sup>16,31</sup>

### 1.3 | Linking relational and psychosocial models

The mechanisms linking class relations and health resemble those in common psychosocial models.<sup>21,32</sup> For example, the demand-control model predicts jobs with low control (e.g., lack of authority) and high demands (e.g., conflict and overwork) will harm health,<sup>33</sup> while the effort-reward imbalance model predicts jobs with high efforts (i.e., demands) and low rewards (e.g., meager wages) will be harmful.<sup>34</sup> Many studies have supported these models' predictions.<sup>33-37</sup> Nonetheless, psychosocial models lack explanatory force because they do not directly engage with how the structural organization of work determines workplace-level stressors and other hazards<sup>38</sup>; they also struggle to explain population patterns of these factors.<sup>21,32</sup> In contrast, neo-Marxist relational theories suggest the stressors and hazards are produced by fundamental class antagonisms.<sup>21,32,39</sup> For example, if capitalists profit from workers' unpaid labor,<sup>40,41</sup> then effort-reward imbalance is inherent to wage labor, and effective interventions must challenge the underlying class relations rather than target individual workplaces or workers. Thus, identifying the economic and power relations driving psychosocial stressors and other hazards, as relational theories do, can improve their explanatory power and their usefulness for public health practice.<sup>32</sup>

### 1.4 | Research gaps and aims

Due to data scarcity<sup>42</sup> and theoretical barriers (e.g., methodological individualism<sup>5</sup>), few public health studies have used Wright's neo-Marxist

framework to examine class inequities in working conditions and health.<sup>5-7</sup> Moreover, these studies have often neglected the gendered and racialized dimensions of exploitation and domination, dimensions which are key to understanding how capitalism patterns population health and health inequities in the United States.<sup>3</sup> To address this gap, we applied a relational class theory to nationally representative General Social Survey (GSS) data on health-affecting material and psychosocial working conditions across intersecting classes, genders, and racialized groups. Our specific aims were to: (1) estimate class, class-by-gender, and class-by-race inequities in such working conditions, and (2) estimate gender-by-race inequities in such working conditions within the working class, which is the largest class across genders and racialized groups and which also tends to have worse health outcomes than other classes.<sup>6</sup> Findings from these aims can help identify specific mechanisms that may explain health inequities across relational classes, genders, and racialized groups.

## 2 | METHODS

### 2.1 | Data and analysis overview

The GSS is a nationally representative survey of noninstitutionalized adults ages  $\geq 18$  conducted annually from 1972 to 1994 and biennially thereafter.<sup>43</sup> The GSS has used full-probability sampling since 1975; moreover, it has included Spanish speakers in the target population since 2006.<sup>43</sup> With funding from the National Institute for Occupational Safety and Health (NIOSH), the GSS administered the Quality of Worklife Module (QWL) in 2002, 2006, 2010, 2014, and 2018 to monitor changes in working conditions over time.<sup>43</sup> The GSS conducts most interviews in-person.<sup>43</sup>

Our sample included QWL respondents working fulltime/part-time or temporarily not working; the QWL was not administered to others.<sup>43</sup> We excluded all respondents on survey ballot "d" and 2002 respondents on ballot "b", as GSS did not administer the QWL to these respondents either.<sup>43</sup> An additional 12% of eligible 2006 and 2014 respondents ended their interviews before taking the QWL module; we also excluded them from our sample.<sup>44</sup>

We conducted our analyses using R version 4.0.2.<sup>45</sup> We weighted all our estimates to make them nationally representative<sup>43</sup> and accounted for the complex survey design using Taylor series linearization.<sup>43,46</sup> Our R code is on GitHub ([https://github.com/Critical-Social-Epi/GSS\\_class\\_working\\_conditions](https://github.com/Critical-Social-Epi/GSS_class_working_conditions)); GSS data are publicly available ([gss.norc.org](https://www.norc.umd.edu/gss/)).

### 2.2 | Measures

#### 2.2.1 | Class

We drew from Wright's neo-Marxist theory<sup>9,10</sup> and prior GSS analyses<sup>6,47,48</sup> to measure respondents' classes; see eAppendix 1 for a graphical representation and eAppendix 2 for questionnaire wording. Workers were those who did not supervise others, who were not

self-employed, and who did not have “chief executive” occupations (Census 2010 occupation code). Managers were those who did supervise others, who were not self-employed, and who did not have “chief executive” occupations. The petit bourgeoisie were those who did not supervise others, but who were self-employed or had “chief executive” occupations. Finally, capitalists were those who did supervise others, and who were self-employed or had “chief executive” occupations. We classified chief executives as petit bourgeois or capitalist because they often own considerable productive assets (e.g., stocks) and receive delegated ownership authority through corporate structures.<sup>10</sup> Removing the chief executive criterion and basing our class measure on supervisory authority and self-employment status alone would have only changed the class positions of 1% of the petit bourgeoisie and 7% of capitalists.

### 2.2.2 | Quality of worklife

We analyzed 16 QWL variables regarding compensation and safety, the labor process, control, and conflict at respondents' main jobs. Respondents answered most questions using Likert scales; to increase interpretability and mitigate data sparseness, we transformed them into binary variables (e.g., strongly agree or agree vs. disagree or strongly disagree). The variables were as follows:

- Compensation and safety: dissatisfied with job; income alone does not pay bills; poor safety conditions; safety not a priority.
- Labor process: repetitive work tasks; job does not require learning new things; face conflicting demands made by others; need to work fast.
- Control: do not take part with others in decision making; lack freedom to decide how to do work; mandatory extra hours of work; cannot change schedule on daily basis.
- Conflict: bad worker-management relations; do not trust management; not treated with respect; face racism, sexism, sexual harassment, ageism, or other discrimination and harassment.

eAppendix 3 contains questionnaire wording.

### 2.2.3 | Covariates

Covariates of interest included respondents' age, race/ethnicity (self-identified), gender (assigned by the interviewer as “female”/“male”), education, census region of residence, and family income.

## 2.3 | Analyses

First, we calculated class-stratified descriptive statistics of our sample. Next, we characterized the class composition of each gender-race group and the gender-race composition of each class. In these analyses, we categorized respondents' racialized group membership as “non-Hispanic white” (hereafter referred to as “white”, unless

otherwise noted) or Black/Hispanic/Latinx (hereafter referred to as “person of color” or “POC”, unless otherwise noted). We excluded respondents identifying as “non-Hispanic other” (4% of the sample), as their working conditions typically differed considerably from those of other POC. Unfortunately, due to data sparseness, analyzing “non-Hispanic other” respondents as a standalone category was not possible, nor was disaggregating “POC” respondents. Disaggregating genders beyond “female”/“male” was not possible either, as GSS did not collect such data until 2018.<sup>43,49</sup>

Second, we estimated class inequities in QWL by estimating the prevalence of each adverse condition among each class relative to the prevalence among workers (i.e., prevalence ratios [PRs]) using Poisson models<sup>50</sup> adjusted for age and year, which we specified as three-knot restricted cubic splines.<sup>51</sup> We did not adjust for additional confounders to capture the total magnitude of class inequities, knowing the inequities would in part be caused by the segregation of oppressed and low-SES groups into more exploited and dominated classes.

Third, we estimated class-by-gender and class-by-race inequities in QWL. Specifically, we estimated the prevalence of each adverse condition among each class-gender or class-race relative to the prevalence among male workers or white workers by including class-by-gender or class-by-race terms in the Poisson models. In the class-by-race models, we again categorized race as white or POC and excluded those identifying as “non-Hispanic other.”

Finally, we examined gender-by-race inequities in QWL within the working class. Specifically, we first restricted our sample to workers. Next, we estimated the prevalence of each adverse condition among each gender-race relative to the prevalence among white men by including gender-by-race terms in the Poisson models. Again, we categorized race as white or POC and excluded those identifying as “non-Hispanic other.”

## 2.4 | Missing data

Most variables in our full sample ( $n = 6806$ ) contained some unplanned missingness (class measure: <1%; QWL measures: ≤4%; covariates: ≤8%). To calculate our descriptive statistics, we analyzed complete-case samples. To calculate our regression estimates, we addressed missingness using multiple imputation by chained equations with 20 replications and 25 iterations,<sup>52</sup> assuming missing values were missing at random conditional on measured values of the class, covariate, QWL, and socio-demographic variables.<sup>53</sup> In our regression analyses, we excluded those with imputed values of a given outcome variable<sup>54</sup> and combined estimates from regressions run on each of the multiply imputed datasets using Rubin's Rules.<sup>52,53</sup>

## 2.5 | Institutional review board approval

Our study used publicly available, deidentified data and thus was exempt from IRB review.

### 3 | RESULTS

#### 3.1 | Descriptive statistics

In our sample, 55% of respondents were workers, 31% were managers, 8% were petit bourgeoisie, and 6% were capitalists (Table 1). However, we found gendered and racialized labor segregation, as theorized above and consistent with prior evidence. For example, while just 47% of white men were workers, 59% of white women, 61% of POC men, and 65% of POC women were workers (Figure 1). Moreover, while the working class was just 31% white men, the managerial, petit bourgeois, and capitalist classes were 40%, 40%, and 66% white men, respectively (Figure 1). Thus, workers were more often women and POC than other classes; they also tended to have lower education levels and incomes. Meanwhile, managers tended to have higher education levels and incomes than the petit bourgeoisie, although they were otherwise similar. Finally, capitalists were more

often men and white than other classes; they also tended to have higher education levels and incomes.

#### 3.2 | Class, class-by-gender, and class-by-race inequities in QWL

We found large relative class, class-by-gender, and class-by-race inequities in QWL, with workers tending to report much worse conditions than others. Absolute inequities were often more modest (eAppendix 4).

#### 3.3 | Compensation and safety

Regarding compensation and safety (Figure 2, eAppendix 6), workers tended to report the worst conditions, followed by managers, the petit

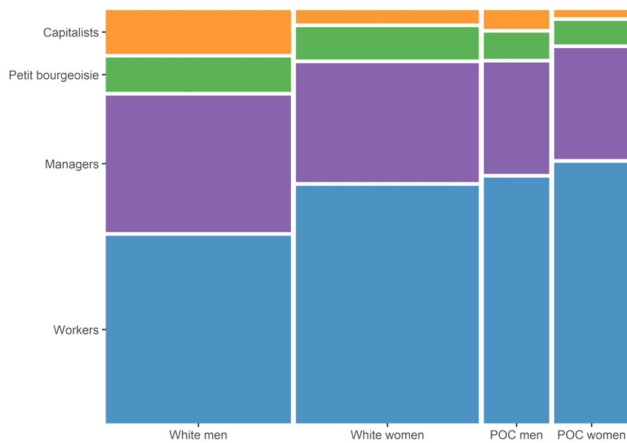
**TABLE 1** Sociodemographic composition of sample stratified by class

	Workers	Managers	Petit bourgeoisie	Capitalists
Percent	54.9	31.3	7.5	6.2
Women (%)	55.1	48.2	48.9	22.6
Race/ethnicity (%)				
NH <sup>a</sup> white	66.3	71.1	71.9	81.2
NH <sup>a</sup> Black	15.7	11.6	7.4	6.0
NH <sup>a</sup> other	3.7	5.3	7.3	5.6
Hispanic	14.4	12.0	13.4	7.3
Highest degree (%)				
Less than high school	9.3	7.6	11.4	7.3
High school	54.3	44.0	48.1	39.3
Junior college	9.1	10.6	8.7	7.7
College plus	27.3	37.8	31.8	45.6
Marital status (%)				
Married	51.5	55.7	60.2	71.3
Never married	30.5	26.3	19.2	10.2
Widowed/divorced/separated	18.0	18.0	20.6	18.5
Region (%)				
Midwest	25.2	22.6	18.7	20.8
Northeast	15.3	17.8	15.7	12.8
South	38.7	34.5	35.3	35.9
West	20.7	25.1	30.3	30.5
Age (median [quartile 1, quartile 3])	40 [30, 51]	41 [31, 51]	49 [37, 57]	51 [41, 58]
Income (median [quartile 1, quartile 3]) <sup>b</sup>	6.4 [3.5, 10.2]	8.4 [4.9, 12.9]	6.4 [3.2, 12.3]	12.3 [6.9, 23.1]

<sup>a</sup>Non-Hispanic.

<sup>b</sup>Family income in tens of thousands of 2018 dollars.

Note: Estimates are based on survey-weighted data from the 2002, 2006, 2010, 2014, and 2018 waves of the General Social Survey's Quality of Worklife module excluding respondents with any missing values of relevant variables (9%), producing a sample size of 6193.



**FIGURE 1** Mosaic plot depicting the class composition of each gender-race group (vertical) and the gender-race composition of each class (horizontal), with the area of each rectangle proportional to each group's sample size. Notes: Estimates are based on survey-weighted data from the 2002, 2006, 2010, 2014, and 2018 waves of the General Social Survey's Quality of Worklife module excluding respondents identifying as "non-Hispanic other" (4%) and those with any missing values of relevant variables (1%), producing a sample size of 6456. "White" group consists of those identifying as "non-Hispanic white"; "POC" group consists of those identifying as "non-Hispanic Black" or "Hispanic." POC, people of color [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

bourgeoisie, and capitalists. For example, relative to workers, capitalists were less likely to report job dissatisfaction (PR: 0.58, 95% confidence interval [CI]: 0.34, 0.98) and that safety is not a priority (PR: 0.41, 95% CI: 0.21, 0.82).

Within genders and racialized groups, patterns were generally similar. However, relative to male workers, women of all but the capitalist class were more likely to report that their incomes alone do not pay their bills, particularly female workers and female petit bourgeoisie. Meanwhile, respondents of color of all but the capitalist class tended to report similar conditions to white workers, although estimates were imprecise.

### 3.4 | Labor process

Regarding the labor process (Figure 3, eAppendix 6), workers and the petit bourgeoisie tended to report more monotony than others, while managers and capitalists tended to report more intensity. For example, relative to workers, managers and capitalists were less likely to report repetitive job tasks (managers PR: 0.39, 95% CI: 0.31, 0.49; capitalists PR: 0.36, 95% CI: 0.21, 0.61), but more likely to report needing to work fast (managers PR: 1.15, 95% CI: 1.11, 1.20; capitalists PR: 1.26, 95% CI: 1.17, 1.35).

Within genders and races, patterns were generally similar. Regarding gendered inequities, however, while male petit bourgeoisie were less likely than male workers to report their job does not require

learning new things, female petit bourgeoisie reported similar conditions to female (and male) workers. Likewise, while male capitalists were more likely than male workers to report conflicting demands, female capitalists reported similar conditions to female (and male) workers. Regarding racialized inequities, unlike among white respondents, POC managers reported similar levels of conflicting demands to POC workers, while POC capitalists reported lower levels than POC workers. Additionally, POC workers and POC petit bourgeoisie were more likely than white workers to report repetitive tasks and that their job does not require learning new things, particularly POC petit bourgeoisie.

### 3.5 | Control

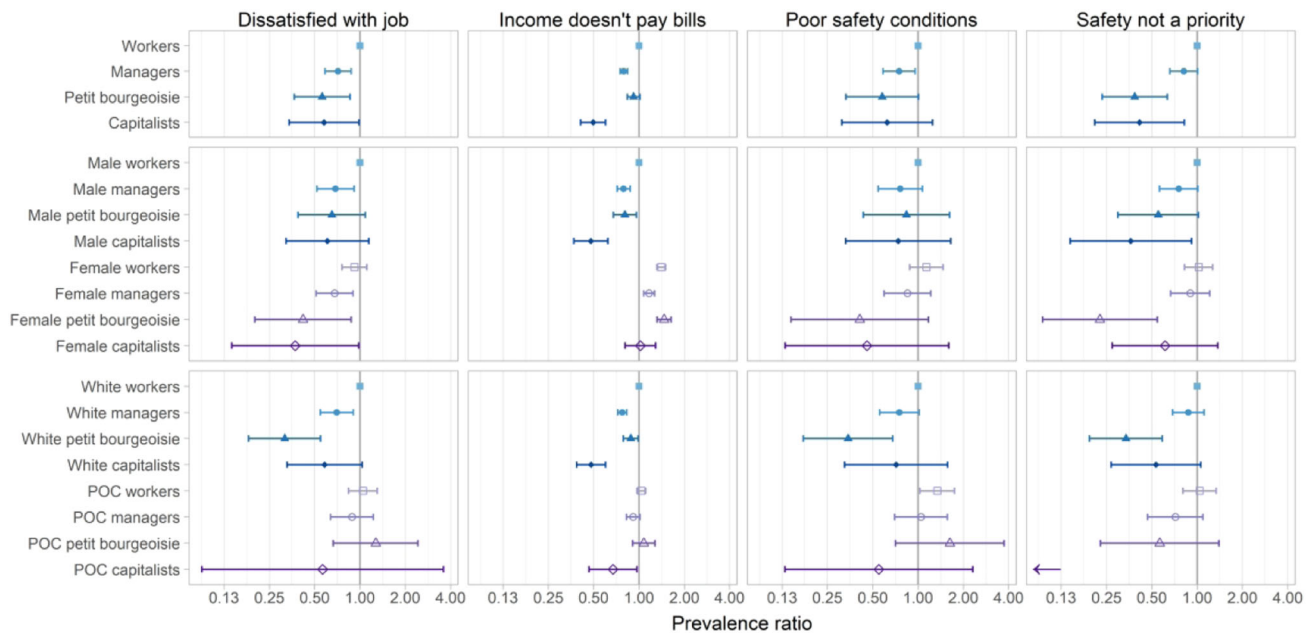
Regarding control (Figure 4, eAppendix 6), patterns were mixed. For example, although managers (PR: 0.39, 95% CI: 0.33, 0.45) and capitalists (PR: 0.53, 95% CI: 0.41, 0.70) were less likely than workers to report not taking part with others in decision making, the petit bourgeoisie were more likely (PR: 1.37, 95% CI: 1.19, 1.59). Meanwhile, all classes were less likely than workers to report lacking freedom, especially capitalists (PR: 0.11, 95% CI: 0.05, 0.24). However, managers (PR: 1.21, 95% CI: 1.10, 1.34) and capitalists (PR: 1.37, 95% CI: 1.18, 1.61) were more likely than workers to report mandatory extra working hours. Finally, all classes were less likely than workers to report being unable to change their schedules, particularly the petit bourgeoisie (PR: 0.24, 95% CI: 0.18, 0.31) and capitalists (PR: 0.28, 95% CI: 0.21, 0.39).

Within genders and races, patterns were generally similar. Regarding gendered inequities, however, female petit bourgeoisie were more likely than others to report not taking part with others in decision making. Additionally, female workers and female petit bourgeoisie were less likely than men of all classes to report mandatory extra working hours. Regarding racialized inequities, POC workers and POC petit bourgeoisie were more likely than others to report not taking part with others in decision making, while POC capitalists (unlike white capitalists) reported similar levels to white workers. Moreover, POC managers were the only POC class more likely than white workers to report mandatory extra working hours.

### 3.6 | Conflict

Regarding conflict (Figure 5, eAppendix 6), workers tended to report the worst conditions, followed by managers, the petit bourgeoisie, and capitalists. For example, relative to workers, capitalists were less likely to report worker-management conflict (PR: 0.23, 95% CI: 0.10, 0.50), not trusting management (PR: 0.23, 95% CI: 0.14, 0.36), and not being treated with respect (PR: 0.34, 95% CI: 0.18, 0.64). Nonetheless, managers were more likely than workers to report facing any discrimination or harassment (PR: 1.17, 95% CI: 1.04, 1.31).

Within genders and races, patterns were generally similar. However, relative to male workers, female workers and female managers were



**FIGURE 2** Prevalence of each adverse compensation/safety-related condition among each class, class-gender, or class-race relative to the prevalence among workers, male workers, or non-Hispanic white workers. Notes: Estimates come from Poisson models adjusted for age and year with 3-knot restricted cubic splines, with SEs calculated via Taylor series linearization. Models run on survey-weighted, multiply imputed data from the 2002, 2006, 2010, 2014, and 2018 waves of the General Social Survey's Quality of Worklife (QWL) module. Sample included 6806 respondents before excluding observations with missing values of a given outcome variable ( $\leq 4\%$ ). Class-race models additionally excluded respondents identifying as "non-Hispanic other" (4%). "White" group consists of those identifying as "non-Hispanic white"; "POC" group consists of those identifying as "non-Hispanic Black" or "Hispanic". Arrow indicates zero respondents in the given subgroup reported the adverse condition, and thus the point estimate was too small to plot. POC, people of color [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

more likely to report facing any discrimination or harassment. Meanwhile, POC respondents of all classes were more likely than white workers to report facing any discrimination or harassment, particularly POC managers and POC capitalists.

### 3.7 | Gender-by-race inequities in QWL within the working class

We estimated gender-by-race inequities in QWL within the working class, with white men tending to report better conditions than other workers (Figure 6, eAppendix 7).

### 3.8 | Compensation and safety

Regarding compensation and safety, white women and POC women were more likely than white men to report their incomes alone do not pay their bills (white women PR: 1.43, 95% CI: 1.32, 1.56; POC women PR: 1.46, 95% CI: 1.33, 1.60). Moreover, POC were more likely than white men to report poor safety conditions (POC men PR: 1.43, 95% CI: 0.93, 2.17; POC women PR: 1.53, 95% CI: 1.07, 2.19). However, white women were somewhat less likely to report job dissatisfaction than white men (PR: 0.83, 95% CI: 0.66, 1.04).

### 3.9 | Labor process

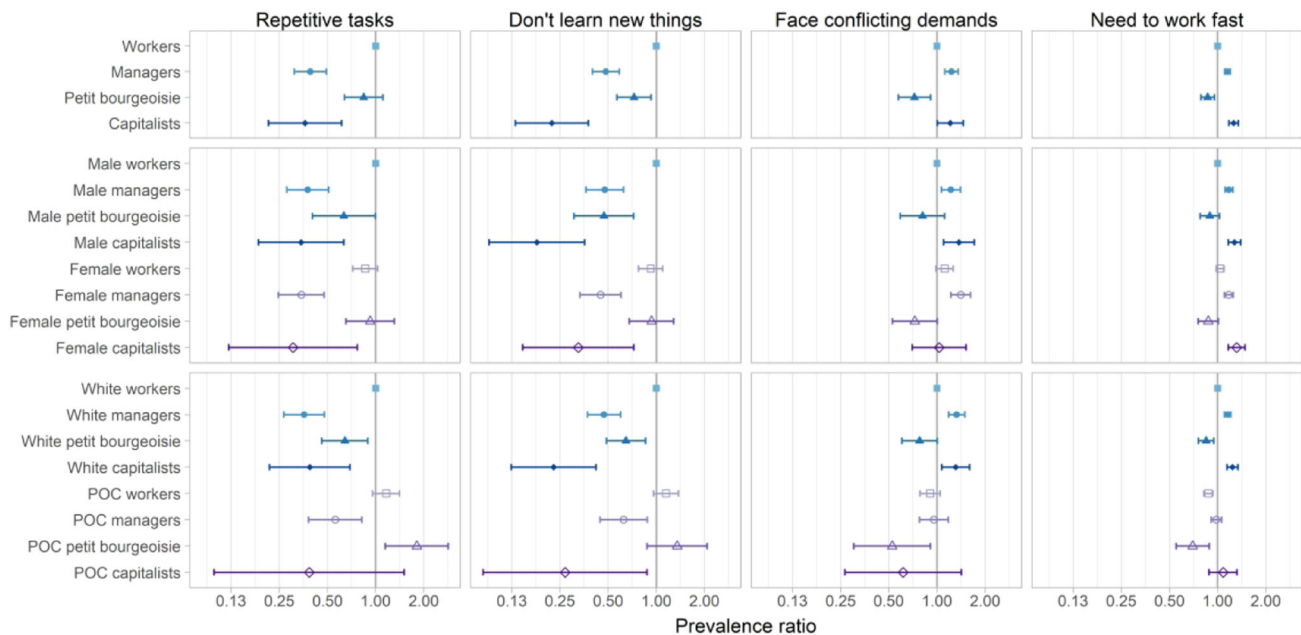
Regarding the labor process, inequities across gender-races were modest. However, white women were less likely than white men to report repetitive job tasks (PR: 0.78, 95% CI: 0.61, 1.00).

### 3.10 | Control

Regarding control, white respondents tended to report better conditions than others. For example, POC were more likely than white men to report not taking part with others in decision making (POC men PR: 1.43, 95% CI: 1.18, 1.73; POC women PR: 1.46, 95% CI: 1.23, 1.74), and more likely to report being unable to change their schedules (POC men PR: 1.25, 95% CI: 1.11, 1.41; POC women PR: 1.22, 95% CI: 1.10, 1.37). However, white women and POC women were less likely than white men to report mandatory extra working hours (white women PR: 0.70, 95% CI: 0.60, 0.83; POC women PR: 0.81, 95% CI: 0.67, 0.97).

### 3.11 | Conflict

Finally, regarding conflict, white women and POC were more likely than white men to report facing any discrimination or harassment



**FIGURE 3** Prevalence of each adverse labor-process-related condition among each class, class-gender, or class-race relative to the prevalence among workers, male workers, or non-Hispanic white workers. Notes: Estimates come from Poisson models adjusted for age and year with 3-knot restricted cubic splines, with SEs calculated via Taylor series linearization. Models run on survey-weighted, multiply imputed data from the 2002, 2006, 2010, 2014, and 2018 waves of the General Social Survey's Quality of Worklife (QWL) module. Sample included 6,806 respondents before excluding observations with missing values of a given outcome variable ( $\leq 4\%$ ). Class-race models additionally excluded respondents identifying as "non-Hispanic other" (4%). "White" group consists of those identifying as "non-Hispanic white"; "POC" group consists of those identifying as "non-Hispanic Black" or "Hispanic." POC, people of color [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

(white women PR: 1.65, 95% CI: 1.39, 1.97; POC men PR: 1.69, 95% CI: 1.34, 2.14; POC women PR: PR: 1.70, 95% CI: 1.36, 2.13). However, POC men were less likely than white men to report worker-management conflict (PR: 0.63, 95% CI: 0.40, 0.99).

## 4 | DISCUSSION

### 4.1 | Summary of results

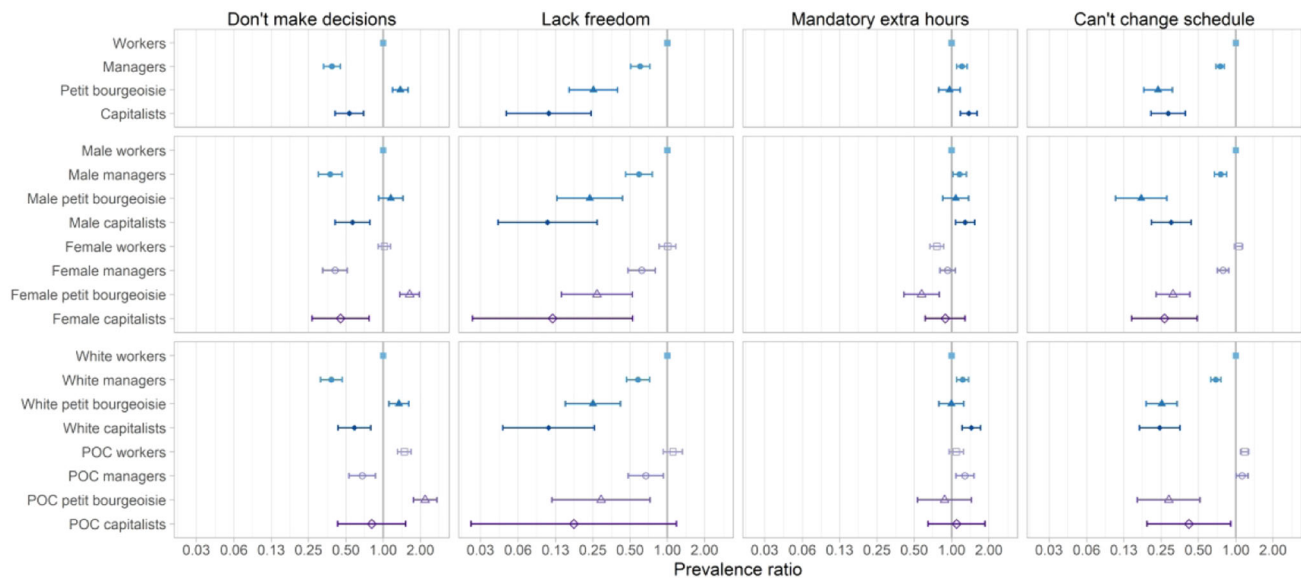
Applying a neo-Marxist class theory to nationally representative data, we estimated inequities in health-affecting working conditions across intersecting classes, genders, and racialized groups, and estimated gender-by-race inequities in those factors within the working class.

We identified large class inequities, with workers tending to report worse conditions than others, particularly than capitalists, who were up to 10-times less likely than workers to report adverse conditions. These findings align with neo-Marxist predictions regarding patterns of exploitation and domination across classes, as well as with prior research in different contexts.<sup>5,21</sup> Nonetheless, managers and capitalists did tend to report somewhat greater labor-process intensity and mandatory extra hours than workers; managers also reported greater discrimination and harassment. The findings among managers are predicted by contradictory class location theory, which

suggests that managers, particularly low-level managers, may be subjected to greater job strain than others.<sup>11</sup> Meanwhile, less intensity among workers may be due to other degraded aspects of their labor process, such as the repetitiveness and mundanity of their job tasks.<sup>7</sup> Finally, workers' fewer mandatory extra hours may result from labor laws that—although often violated<sup>55</sup>—mandate that waged workers be paid for their working hours. These laws often do not apply to salaried managers, petit bourgeoisie, and capitalists, who may work more (unpaid) hours than others.<sup>56</sup>

Patterns across classes were generally similar within genders and racialized groups. Nonetheless, the gendered and racialized dimensions of exploitation and domination remain substantial sources of inequity.<sup>57</sup> This is evident because, consistent with prior research,<sup>3,6,20</sup> we found that women and POC—particularly women of color—were segregated into the working class and that, class aside, they often reported worse conditions than others, particularly greater discrimination and harassment (eAppendix 5). Moreover, conditional on class, women and POC did report worse conditions than others on specific measures. For example, women, particularly female workers, tended to report worse compensation and greater discrimination and harassment than men of all classes. Meanwhile, POC workers and POC petit bourgeoisie tended to report worse safety than white people of all classes; all POC classes also reported greater discrimination and harassment. Finally, within the working class, white male workers often reported somewhat better





**FIGURE 4** Prevalence of each adverse control-related condition among each class, class-gender, or class-race relative to the prevalence among workers, male workers, or non-Hispanic white workers. Notes: Estimates come from Poisson models adjusted for age and year with 3-knot restricted cubic splines, with SEs calculated via Taylor series linearization. Models run on survey-weighted, multiply imputed data from the 2002, 2006, 2010, 2014, and 2018 waves of the General Social Survey's Quality of Worklife (QWL) module. Sample included 6806 respondents before excluding observations with missing values of a given outcome variable ( $\leq 4\%$ ). Class-race models additionally excluded respondents identifying as "non-Hispanic other" (4%). "White" group consists of those identifying as "non-Hispanic white"; "POC" group consists of those identifying as "non-Hispanic Black" or "Hispanic". "Can't change schedule" question not administered in 2018. POC, people of color [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

conditions than others, particularly than female POC workers, findings which align with theories and empirical research regarding the super-exploitation of workers from oppressed groups.<sup>18,19,58</sup> As a whole, these findings suggest that structural sexism and racism in the division and structure of labor continue to degrade working conditions for women and POC in the United States, particularly for those in the working class.<sup>1-4</sup>

These findings may partially explain previously identified health inequities across classes, genders, and racialized groups, suggesting a set of mechanisms connecting relations of property, exploitation, and domination in economic production to hazards in the organization and structure of work.<sup>1-5</sup> For example, workers tended to be exposed to much worse conditions than others, including to adverse compensation/safety, labor process, and control conditions, which have repeatedly been shown to harm health.<sup>5,8,29,35</sup> Meanwhile, managers tended to face greater labor-process intensity and discrimination and harassment than others, which may explain the heightened burden of certain outcomes, like anxiety, among those in contradictory class locations.<sup>11</sup> Finally, women and POC were segregated into the working class and generally faced worse conditions than others, which may contribute to persistent health inequities across genders and racialized groups.<sup>1-4</sup> Future research should test the effects of these disparities on health inequities, as well as the health effects of policy and labor organizing aimed at eliminating these disparities and their structural causes.

## 4.2 | Limitations

Our analyses should be interpreted considering the following limitations. First, the GSS uses subjective measures of working conditions. Responses to such measures may not exclusively depend on respondents' objective conditions, but may also depend on other factors, including respondents' dispositions, expectations, and circumstances.<sup>32,59</sup> For example, oppressed groups may judge their conditions less harshly than others (if their subordinated social positions lead them to expect worse conditions), or more harshly than others (if they depend more heavily on the quality of their jobs to survive). Alternatively, the subordinated positions of oppressed groups may motivate them to understand their objective conditions and give them privileged insights, making them more reliable and valid than others.<sup>60</sup> Regardless, differential reporting between oppressed and dominant groups may have affected our inequity estimates, although the net effects of such differential reporting are difficult to predict.

Second, our exclusion of unwaged domestic labor, predominately performed by women,<sup>21</sup> and unemployed and incarcerated respondents, disproportionately working class POC<sup>3</sup> (particularly POC men<sup>61,62</sup>), may have also biased our estimates by making the groups under study appear spuriously similar.

Third, our petit bourgeois category may have contained some workers employed in the "gig" economy who identified as self-employed but whose true relationship to capital and others' labor



**FIGURE 5** Prevalence of each adverse conflict-related condition among each class, class-gender, or class-race relative to the prevalence among workers, male workers, or non-Hispanic white workers. Notes: Estimates come from Poisson models adjusted for age and year with 3-knot restricted cubic splines, with SEs calculated via Taylor series linearization. Models run on survey-weighted, multiply imputed data from the 2002, 2006, 2010, 2014, and 2018 waves of the General Social Survey's Quality of Worklife (QWL) module. Sample included 6806 respondents before excluding observations with missing values of a given outcome variable ( $\leq 4\%$ ). Class-race models additionally excluded respondents identifying as "non-Hispanic other" (4%). "White" group consists of those identifying as "non-Hispanic white"; "POC" group consists of those identifying as "non-Hispanic Black" or "Hispanic". Arrow indicates zero respondents in the given subgroup reported the adverse condition, and thus the point estimate was too small to plot. POC, people of color [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

placed them in the working class. This misclassification would make working conditions among workers and the petit bourgeoisie appear spuriously similar.

Fourth, due to data sparseness, we were unable to subdivide classes, including workers (e.g., precariously employed vs. not precariously employed), managers (e.g., low-level vs. high-level), and capitalists (e.g., small vs. large). Thus, working conditions likely varied considerably within our class categories, and we were unable to identify those in the most contradictory class locations, such as low-level managers and supervisors.<sup>11</sup> Low-level managers and supervisors likely constituted a substantial portion of those classified as "managers", as nearly 75% of "managers" in our sample did not report that their supervisees supervised others, an indicator used in prior research to identify such groups.<sup>6,48</sup>

Fifth, due to data limitations, we grouped together respondents identifying as Black or Hispanic/Latinx and excluded those identifying as "non-Hispanic other". Such respondents may be subjected to different forms of racism and oppression.<sup>4</sup> Thus, grouping them together (or excluding them) prevented us from identifying likely inequities in working conditions across those groups.

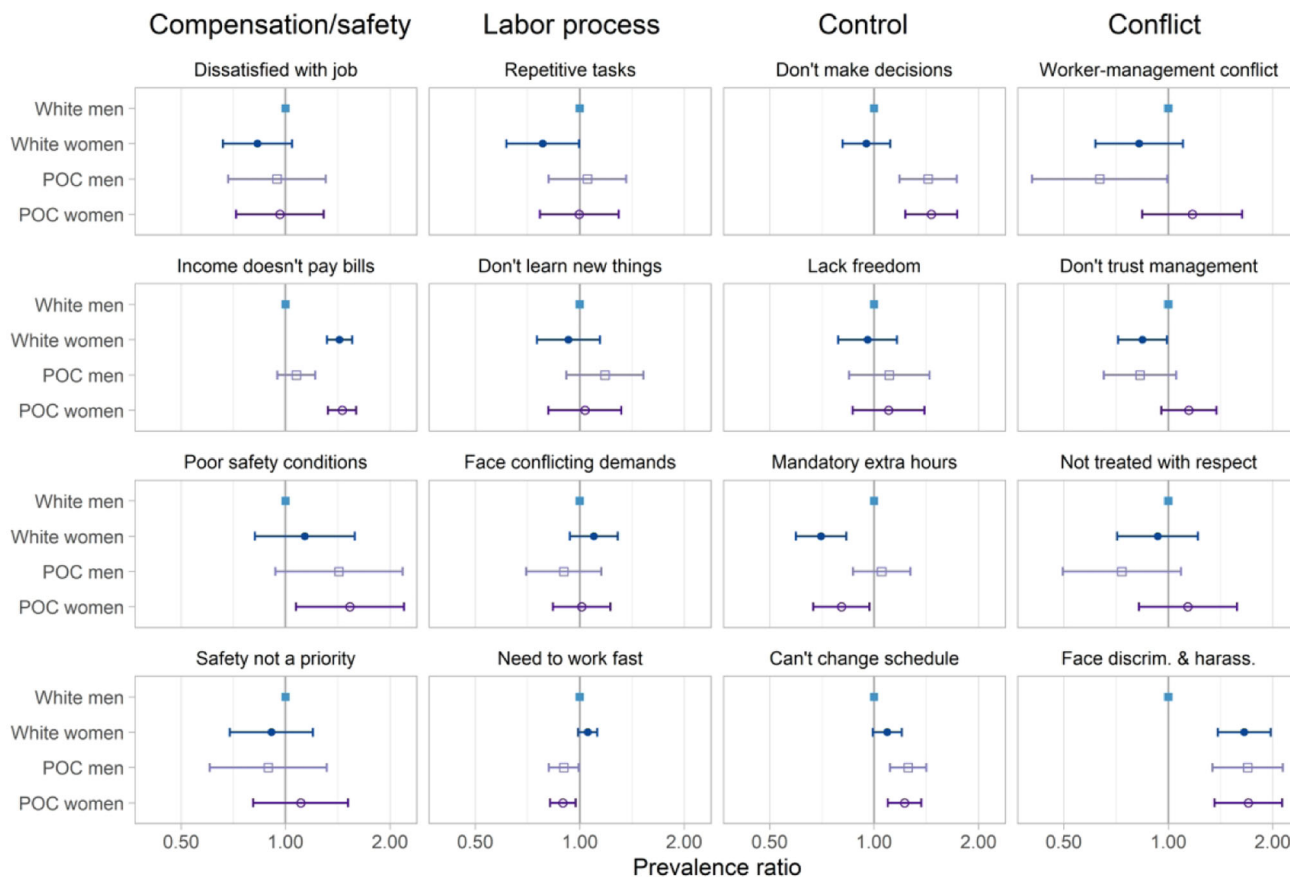
Finally, gender in the GSS was assigned by the interviewer and dichotomized as "female" or "male".<sup>43,49</sup> Such an approach assumes gender can be accurately determined through interviewer observation and erases those identifying as transgender, nonbinary, or otherwise.<sup>63</sup> Although the 2018 GSS survey did contain questions that allowed respondents to self-identify their gender (including as

"transgender" or "as a gender not listed"), such questions were only administered to a subsample of respondents.<sup>43,49</sup>

Future research should address these limitations, particularly by exploring inequities in working conditions within and across finer class categories, additional genders, racialized groups, and ethnicities, and various immigration and documentation statuses. Such research would benefit from an increased GSS-QWL sample size, which may require greater NIOSH funding. Future research should also explore the role of the "gig" economy in the identified inequities, including how it affects the distribution of class membership and respondents' working conditions. Finally, future research should investigate classed, gendered, and racialized inequities in working conditions in other types of societies, including in societies with socialist, communist, or mixed socioeconomic systems, and/or in societies in the Global South.

## 5 | CONCLUSION

We identified substantial inequities in material and psychosocial working conditions across relational social classes, with generally worse conditions for workers, which is the largest class within each gender and racialized group, but also disproportionately consists of women and POC, particularly women of color. We also identified inequities affecting women and POC—especially women of color—within the working class, with such workers tending to report worse conditions than other workers. These inequities threaten workers' health, particularly the health of female



**FIGURE 6** Among workers, prevalence of each adverse condition among each gender-race group relative to the prevalence among non-Hispanic white men. Notes: Estimates come from Poisson models adjusted for age and year with 3-knot restricted cubic splines, with SEs calculated via Taylor series linearization. Models run on survey-weighted, multiply imputed data from the 2002, 2006, 2010, 2014, and 2018 waves of the General Social Survey's Quality of Worklife (QWL) module. Sample excluded respondents identifying as "non-Hispanic other", producing a sample size of 3640 workers on average across imputations before excluding observations with missing values of a given outcome variable ( $\leq 4\%$ ). "White" group consists of those identifying as "non-Hispanic white"; "POC" group consists of those identifying as "non-Hispanic Black" or "Hispanic". "Can't change schedule" question not administered in 2018. POC, people of color [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

workers and workers of color. However, because they are grounded in class relations of exploitation and domination and in structural sexism and racism, remedying the inequities will require dismantling the underlying structural relations that produce them, not ministering to individual workers and workplaces. Such structural interventions include: shorter-term efforts to increase worker power through working-class organizations like labor unions, political parties, and worker cooperatives and committees; social movements fighting racial capitalist oppression, exploitation, and domination; and longer-term efforts to democratize the ownership and control of productive assets.<sup>64,65</sup>

#### ACKNOWLEDGEMENTS

JEG's research was supported by a grant from the National Institute of Mental Health of the National Institutes of Health (T32 MH013043).

#### CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest.

#### ETHICS APPROVAL AND INFORMED CONSENT

This study used publicly-available, deidentified data and thus was exempt from IRB review and informed consent requirements.

#### DISCLOSURE BY AJIM EDITOR OF RECORD

Paul A. Landsbergis declares that he has no conflict of interest in the review and publication decision regarding this article.

#### AUTHOR CONTRIBUTIONS

**Jerzy Eisenberg-Guyot:** conceived and designed the study, acquired the data, conducted the analyses, interpreted the results, and drafted the initial version of the manuscript. The other authors advised Jerzy Eisenberg-Guyot on study conceptualization and design and results interpretation, and provided feedback on subsequent drafts of the manuscript. All authors approved the final version of the manuscript and agree to be accountable for all aspects of the work.

## DATA AVAILABILITY STATEMENT

The R code used to conduct our analyses is available on GitHub ([https://github.com/Critical-Social-Epi/GSS\\_class\\_working\\_conditions](https://github.com/Critical-Social-Epi/GSS_class_working_conditions)); GSS data are publicly available ([gss.norc.org](https://gss.norc.umd.edu)).

## ORCID

Jerzy Eisenberg-Guyot  <http://orcid.org/0000-0003-3851-267X>

Seth J. Prins  <http://orcid.org/0000-0003-2622-614X>

## REFERENCES

- Krieger N. Measures of racism, sexism, heterosexism, and gender binarism for health equity research: from structural injustice to embodied harm—an ecosocial analysis. *Annu Rev Public Health*. 2020; 41(1):37-62. doi:10.1146/annurev-publhealth-040119-094017
- Bailey ZD, Krieger N, Agénor M, Graves J, Linos N, Bassett MT. Structural racism and health inequities in the USA: evidence and interventions. *The Lancet*. 2017;389(10077):1453-1463. doi:10.1016/S0140-6736(17)30569-X
- Laster Pirtle WN. Racial capitalism: a fundamental cause of novel coronavirus (COVID-19) pandemic inequities in the United States. *Health Educ Behav*. 2020;47:1-5. doi:10.1177/1090198120922942
- Gee GC, Ford CL. Structural racism and health inequities: old issues, new directions. *Bois Rev Soc Sci Res Race*. 2011;8(1):115-132. doi:10.1017/S1742058X11000130
- Muntaner C, Ng E, Chung H, Prins SJ. Two decades of neo-Marxist class analysis and health inequalities: a critical reconstruction. *Soc Theory Health*. 2015;13(3-4):267-287. doi:10.1057/sth.2015.17
- Eisenberg-Guyot J, Prins SJ. Relational social class, self-rated health, and mortality in the United States. *Int J Health Serv*. 2020;50(1):7-20. doi:10.1177/0020731419886194
- Prins SJ, McKetta S, Platt J, Muntaner C, Keyes KM, Bates LM. Mental illness, drinking, and the social division and structure of labor in the United States: 2003-2015. *Am J Ind Med*. 2019;62(2):131-144. doi:10.1002/ajim.22935
- Benach J, Vives A, Amable M, Vanroelen C, Tarafa G, Muntaner C. Precarious employment: understanding an emerging social determinant of health. *Annu Rev Public Health*. 2014;35(1):229-253. doi:10.1146/annurev-publhealth-032013-182500
- Wright EO. *Class Counts: Comparative Studies in Class Analysis*. New York: Cambridge University Press; 1997.
- Wright EO. Understanding class: towards an integrated analytical approach. *New Left Rev*. 2009;60(Nov/Dec):101-116.
- Prins SJ, Bates LM, Keyes KM, Muntaner C. Anxious? Depressed? You might be suffering from capitalism: contradictory class locations and the prevalence of depression and anxiety in the USA. *Sociol Health Illn*. 2015;37(8):1352-1372. doi:10.1111/1467-9566.12315
- Braverman H. *Labor and Monopoly Capital. 25th Anniversary*. Monthly Review Press; 1998.
- Foster JB. What is monopoly capital? *Mon Rev*. 2018;69(8):56-62. doi:10.14452/MR-069-08-2018-01\_5
- Eisenberg-Guyot J, Hajat A. Under capital's thumb: longitudinal associations between relational social class and health. *J Epidemiol Community Health*. 2020;74(5):453-459. doi:10.1136/jech-2019-213440
- Pulido L. Geographies of race and ethnicity II: environmental racism, racial capitalism and state-sanctioned violence. *Prog Hum Geogr*. 2017;41(4):524-533. doi:10.1177/0309132516646495
- McClure ES, Vasudevan P, Bailey Z, Patel S, Robinson WR. Racial capitalism within public health: how occupational settings drive COVID-19 disparities. *Am J Epidemiol*. 2020;189(11):1244-1253. doi:10.1093/aje/kwaa126
- Robinson CJ. *Black Marxism: The Making of the Black Radical Tradition*. University of North Carolina Press; 2000.
- Dawson MC. *Then & Now: On Racial Capitalism and Racial Conflict*. Social Science Research Council. Published November 15, 2016. Accessed May 14, 2021. <https://items.ssrc.org/reading-racial-conflict/then-now-on-racial-capitalism-and-racial-conflict/>
- Boggs J. *Racism and the Class Struggle: Further Pages from a Black Worker's Notebook*. Monthly Review Press; 1970.
- Chung-Bridges K, Muntaner C, Fleming LE, et al. Occupational segregation as a determinant of US worker health. *Am J Ind Med*. 2008;51(8):555-567. doi:10.1002/ajim.20599
- Borrell C, Muntaner C, Benach J, Artazcoz L. Social class and self-reported health status among men and women: what is the role of work organisation, household material standards and household labour? *Soc Sci Med*. 2004;58(10):1869-1887. doi:10.1016/S0277-9536(03)00408-8
- Ferguson A, Hennessy R, Nagel M. Feminist perspectives on class and work. The Stanford Encyclopedia of Philosophy. Spring 2019. *Metaphysics Research Lab*. Stanford University; 2019. Accessed June 27, 2020 <https://plato.stanford.edu/archives/spr2019/entries/feminism-class/>
- Taylor K-Y. *Race for Profit: How Banks and the Real Estate Industry Undermined Black Homeownership*. University of North Carolina Press; 2019.
- Ahonen EQ, Baron SL, Brosseau LM, Vives A. Health and safety issues for workers in nonstandard employment. *Oxford Research Encyclopedia of Global Public Health*. Oxford University Press; 2018. doi:10.1093/acrefore/9780190632366.013.68
- Clawson D, Clawson MA. IT is watching: workplace surveillance and worker resistance. *New Labor Forum*. 2017;26(2):62-69. doi:10.1177/1095796017699811
- Eisenberg-Guyot J, Mooney SJ, Barrington WE, Hajat A. Union burying ground: mortality, mortality inequities, and sinking labor-union membership in the United States. *Epidemiology*. 2021;32(5):721-730. doi:10.1097/EDE.0000000000001386
- Mishel L, Gould E, Bivens J. Wage stagnation in nine charts. Economic Policy Institute. Published 2015. Accessed May 14, 2021. <https://www.epi.org/publication/charting-wage-stagnation/>
- Dickman SL, Woolhandler S, Bor J, McCormick D, Bor DH, Himmelstein DU. Health spending for low-, middle-, and high-income Americans, 1963-2012. *Health Aff (Millwood)*. 2016; 35(7):1189-1196. doi:10.1377/hlthaff.2015.1024
- Bor J, Cohen GH, Galea S. Population health in an era of rising income inequality: USA, 1980-2015. *The Lancet*. 2017;389(10077):1475-1490. doi:10.1016/S0140-6736(17)30571-8
- Smith M, Yagan D, Zidar O, Zwick E. Capitalists in the twenty-first century. *Q J Econ*. 2019;134(4):1675-1745. doi:10.1093/qje/qjz020
- Chen Y-H, Glymour M, Riley A, et al. Excess mortality associated with the COVID-19 pandemic among Californians 18-65 years of age, by occupational sector and occupation: March through November 2020. In: Devleeschauwer B, ed. *PLOS ONE*. 16, (6), 2021:e0252454 doi:10.1371/journal.pone.0252454
- Muntaner C, O'Campo PJ. A critical appraisal of the demand/control model of the psychosocial work environment: epistemological, social, behavioral and class considerations. *Soc Sci Med*. 1993;36(11):1509-1517. doi:10.1016/0277-9536(93)90393-I
- Schnall PL, Landsbergis PA, Baker D. Job strain and cardiovascular disease. *Annu Rev Public Health*. 1994;15:381-411.
- van Vegchel N, de Jonge J, Bosma H, Schaufeli W. Reviewing the effort-reward imbalance model: drawing up the balance of 45 empirical studies. *Soc Sci Med*. 2005;60(5):1117-1131. doi:10.1016/j.socscimed.2004.06.043

35. Häusser JA, Mojzisch A, Niesel M, Schulz-Hardt S. Ten years on: a review of recent research on the Job Demand–Control (-Support) model and psychological well-being. *Work Stress*. 2010;24(1):1-35. doi:10.1080/02678371003683747
36. Stansfeld SA, Fuhrer R, Shipley MJ, Marmot MG. Work characteristics predict psychiatric disorder: prospective results from the Whitehall II Study. *Occup Environ Med*. 1999;56(5):302-307. doi:10.1136/oem.56.5.302
37. Stansfeld S, Candy B. Psychosocial work environment and mental health—a meta-analytic review. *Scand J Work Environ Health*. 2006; 32(6):443-462. doi:10.5271/sjweh.1050
38. Muntaner C. Whither occupational class health gradients?: Why we need more social class theory, mechanisms, indicators, and scientific realism. *Epidemiology*. 2019;30(3):445-448. doi:10.1097/EDE.0000000000000994
39. Muntaner C, Eaton WW, Diala C, Kessler RC, Sorlie PD. Social class, assets, organizational control and the prevalence of common groups of psychiatric disorders. *Soc Sci Med*. 1998;47(12):2043-2053. doi:10.1016/S0277-9536(98)00309-8
40. Waitzkin H. A marxist view of medical care. *Ann Intern Med*. 1978; 89(2):264-278. doi:10.7326/0003-4819-89-2-264
41. Marx K. *Capital Volume I*. Penguin Classics; 1992.
42. Krieger N, Williams DR, Moss NE. Measuring social class in US public health research: concepts, methodologies, and guidelines. *Annu Rev Public Health*. 1997;18(1):341-378. doi:10.1146/annurev.publhealth.18.1.341
43. Smith TW, Davern M, Freese J & Morgan SL General Social Surveys, 1972-2018 [Machine-Readable Data File]. NORC; 2019:1 data file (64,814 logical records) and 1 codebook (3,758 pp).
44. Email correspondence with GSS help desk in December, 2020 (issue number 6557).
45. R Core Team. R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing; 2020. <https://www.R-project.org/>
46. Lumley T Package “survey” (Version 4.0.); 2020. Accessed March 18, 2021. <https://cran.r-project.org/web/packages/survey/survey.pdf>
47. Wodtke GT. Continuity and change in the American class structure: workplace ownership and authority relations from 1972 to 2010. *Res Soc Stratif Mobil*. 2015;42:48-61. doi:10.1016/j.rssm.2015.07.002
48. Wodtke GT. Social relations, technical divisions, and class stratification in the United States: an empirical test of the death and decomposition of class hypotheses. *Soc Forces*. 2017;95(4):1479-1508. doi:10.1093/sf/sox012
49. Carian EK More inclusive gender questions added to the General Social Survey. The Clayman Institute for Gender Research. Published May 15, 2019. Accessed September 28, 2021. <https://gender.stanford.edu/news-publications/gender-news/more-inclusive-gender-questions-added-general-social-survey>
50. Spiegelman D. Easy SAS calculations for risk or prevalence ratios and differences. *Am J Epidemiol*. 2005;162(3):199-200. doi:10.1093/aje/kwi188
51. Harrell FE Package “rms” (Version 6.2-0); 2021. Accessed March 18, 2021. <https://cran.r-project.org/web/packages/rms/rms.pdf>
52. van Buuren S Package “mice” (Version 3.11.0); 2021. Accessed March 18, 2021. <https://cran.r-project.org/web/packages/mice/mice.pdf>
53. Rubin DB. *Multiple Imputation for Nonresponse in Surveys*. John Wiley and Sons; 2004.
54. von Hippel PT. Regression with missing Ys: an improved strategy for analyzing multiply imputed data. *Sociol Methodol*. 2007;37(1): 83-117. doi:10.1111/j.1467-9531.2007.00180.x
55. Bernhardt A, Milkman R, Theodore N, et al. Broken Laws, Unprotected Workers: Violations of Employment and Labor Laws in America's Cities. National Employment Law Project; 2009. Accessed April 9, 2021. <https://www.nelp.org/publication/broken-laws-unprotected-workers-violations-of-employment-and-labor-laws-in-americas-cities/>
56. Prins SJ, McKetta S, Platt J, Muntaner C, Keyes KM, Bates LM. “The serpent of their agonies”: exploitation as structural determinant of mental illness. *Epidemiology*. 2021;32(2):303-309. doi:10.1097/EDE.0000000000001304
57. Oliver MN, Muntaner C. Researching health inequities among African Americans: the imperative to understand social class. *Int J Health Serv*. 2005;35(3):485-498. doi:10.2190/PPQX-47DY-KW0X-78Y8
58. Brown H, Fremstad S, Rho HJ Racial inequality among workers in frontline industries: Black workers are overrepresented and undercompensated. Center for Economic and Policy Research. Published June 4, 2020. Accessed May 14, 2021. <https://cepr.net/racial-inequality-among-workers-in-frontline-industries-black-workers-are-overrepresented-and-undercompensated/>
59. Muntaner C, Borrell C, Chung H. Class relations, economic inequality and mental health: why social class matters to the sociology of mental health. In: Avison WR, McLeod JD, Pescosolido BA, eds. *Mental Health, Social Mirror*. US: Springer. 2007:127-141 doi:10.1007/978-0-387-36320-2\_6
60. Grasswick H. Feminist social epistemology. The Stanford Encyclopedia of Philosophy. Fall 2018. *Metaphysics Research Lab*. Stanford University; 2018. Accessed April 8, 2021 <https://plato.stanford.edu/archives/fall2018/entries/feminist-social-epistemology/>
61. Bucknor C, Barber A The price we pay: economic costs of barriers to employment for former prisoners and people convicted of felonies. Center for Economic and Policy Research. Published June 16, 2016. Accessed September 27, 2021. <https://cepr.net/report/the-price-we-pay-economic-costs-of-barriers-to-employment-for-former-prisoners-and-people-convicted-of-felonies/>
62. Austin A Addressing the unique labor market challenges of Black men. Center for Economic and Policy Research. Published September 1, 2021. Accessed September 27, 2021. <https://cepr.net/addressing-the-unique-labor-market-challenges-of-black-men/>
63. Westbrook L, Saperstein A. New categories are not enough: rethinking the measurement of sex and gender in social surveys. *GenD Soc*. 2015; 29(4):534-560. doi:10.1177/0891243215584758
64. Levins R. Is capitalism a disease? The crisis in U.S. public health. *Mon Rev*. 2000;52(4):8-33.
65. Taylor K-Y. *From #BlackLivesMatter to Black Liberation*. Haymarket Books; 2016.

## SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

**How to cite this article:** Eisenberg-Guyot J, Prins SJ, Muntaner C.. Free agents or cogs in the machine? Classed, gendered, and racialized inequities in hazardous working conditions. *Am J Ind Med*. 2021;1-13. doi:10.1002/ajim.23314