At the Intersections of Class, Sex, Race, and Nativity:
Work and Nonwork Conditions and Health Status of the U.S. Working Classed

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Abstract

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While the incidence of occupational injuries and fatalities has fallen since the passing of the Occupational Safety and Health Act of 1970, there remains profound segregation and differential risk for occupational and health disparities among the workforce based on socially constructed identities and positions, such as by sex, race, nativity, and class. Systems of power (ideologies) are the root sources for these disparities and are infused in the very systems and structures in which people live and work. While there are different lines of research on the disparate exposures to and experiences of work or nonwork conditions that impact worker health, how these exposures *collectively* contribute to worker health inequities in relation to systems of power have been understudied in worker health equity research. **Purpose.** This dissertation focused on exploring the connection between worker health inequities and systems of power concepts that perpetuate inequities through work and nonwork conditions in order to advance worker health equity and worker health equity research. The specific aims were: **Aim 1)** To explore if and how

health equity terminology has been used in occupational health and safety (OHS) and worker health equity research, as well as to determine if and how concepts of systems of power are included; **Aim 2)** To describe the employment conditions, working conditions, and nonwork conditions, and the health status of the U.S. working classed at the intersections of sex, race, nativity, and class; and **Aim 3)** To explore the association between general health and work and nonwork factors for female Latinx born-outside-U.S. working-classed workers. **Methods.** For Aim 1, a literature review (1990-2021) was conducted of the OHS and worker health equity research literature. For Aims 2 and 3, the 2015 National Health Interview Survey data were used to conduct secondary data analyses. An intersectional approach was applied as a conceptual contribution to expand how worker health inequities are examined. Descriptive statistics were used for Aim 2 to describe work and nonwork conditions and worker health outcomes for the U.S. working classed by sex, race, and nativity. Multivariable logistic regressions were used for Aim 3 to explore the association between general health and work and nonwork conditions for female Latinx born-outside-U.S. working-classed workers. **Results.** For Aim 1, there were varied uses of work- and worker-related *health equity* and no explicit definitions for *worker health equity* or its variations in the 18 articles qualified for the final review. Also, while the majority of articles did mention systems of power concepts, only three articles integrated systems of power concepts extensively. For Aim 2, intersectional analyses revealed that the female Latinx born-outside-U.S. grouping reported findings suggestive of more precarious work and nonwork conditions than for the other groupings across sexes, races, and nativity. These findings were obscured by aggregate analyses that examined the working classed as a whole. For Aim 3, among three work (work arrangement, job insecurity, workplace safety) and three nonwork (healthcare access, housing affordability, food insecurity) predictors, worry about housing

affordability was the only statistically significant predictor of worse general health for female Latinx born-outside-U.S. working-classed workers, after adjusting for education level.

Conclusion. Engagement with systems of power concepts is needed in worker health equity research. An intersectional approach exposed precarious work *and* nonwork conditions for certain systemically marginalized positions otherwise missed by aggregate analyses. Moreover, the findings warrant further conceptual and methodological reconsiderations for female Latinx born-outside-U.S. working-classed workers. There is a continued need for explicit definitions of *health equity* and its variations when using work- and worker-related health equity terminology. Situated knowledges or specific viewpoints that exist beyond disciplinary boundaries are necessary for understanding the various factors that impact the health of worker populations with different social identities and positions. Future worker health equity research will require researchers to venture beyond their disciplinary boundaries (ontological, epistemological, and methodological) in order to advance worker health towards a more equitable future.

Dedication

To my lovely parents, Dosoon Soh and Rev. Samuel Soh.

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Chapter One

Introduction

At the Intersections of Class, Sex, Race, and Nativity: Work and Nonwork Conditions and Health Status of the U.S. Working Classed

On March 25, 1911, the Triangle shirtwaist factory fire in New York City took the lives of 146 garment workers, of which the majority were young, immigrant women between the ages of 14 and 39 (The New York Committee for Occupational Safety and Health [NYCOSH], 2011). One survivor, Rose Cohen, recalled in an interview how arduous the job was – long hours, harsh environment, low pay, and job tasks that were exhausting and physically painful – but how she was utterly dependent on the job in order to support her family (NYCOSH, 2011). This tragedy served as an important event in the labor movement of the U.S. and in the development of standards for occupational health and safety (NYCOSH, 2011). However, persistent exploitation of systemically marginalized workers and their exclusion from fair and just employment, working, and social (nonwork) conditions continue today. Hence, there is an urgent need to address the root sources that create these marginalized positions.

Systems of power (ideologies) are the root sources infused in the very systems and structures in which people live and work (Jones, 2014). Sexism, racism, nativism, and other systems of power simultaneously create hierarchical divisions in labor, work, and nonwork life into what is seen today as the 21st-century capitalist class structure (Glenn, 1985; Melamed, 2015; Robinson, 2000). Marginalized positions are located and reinforced at the bottom of this hierarchical class structure to maintain the dominating positions at the top. Historically and presently, people of color, immigrants, and women (specifically, women of color) have been assigned to these marginalized positions (Benach et al., 2016; Fuller & Vosko, 2008). These positions disproportionately expose marginalized people to unfair and unjust work and nonwork conditions that adversely affect health. While there are different lines of research on the disparate

exposures to and experiences of work or nonwork conditions that impact worker health, how these exposures *collectively* contribute to worker health disparities in relation to systems of power concepts have been understudied in worker health equity research.

Purpose

To advance worker health equity and worker health equity research, this dissertation focused on exploring the connection between worker health inequities and systems of power concepts by addressing the following specific aims:

Aim 1: To explore if and how *health equity* as a terminology has been used in occupational health and safety (OHS) and worker health equity research and to determine if and how concepts of systems of power are included.

Aim 2: To describe the employment conditions, working conditions, nonwork conditions, and the occupational health (OH) status of the U.S. working classed at the intersections of sex, race, nativity, and class.

Aim 3: To explore the association between general health and work and nonwork factors for female Latinx born-outside-U.S. working-classed workers.

Dissertation Structure

This dissertation is composed of five chapters. Chapter One is the introduction to the dissertation. Chapter Two is a review of the worker health equity literature to understand how terminology and concepts of equity (systems of power concepts) are used in the research. Reflections and recommendations are discussed. Chapter Three discusses Aim 2, which describes the work and nonwork conditions and health status of the U.S. working classed using 2015 National Health Interview Survey (NHIS) data. Specifically, an intersectional approach, derived from the social sciences, was applied as a conceptual contribution to expand how worker

health inequities are examined. Intersectional analyses revealed disparities in the work and nonwork environments at the intersections of class, sex, race, and nativity not visible by aggregate analyses that examined the working classed as a whole. The findings are discussed in relation to macrolevel systems of power. Chapter Four focuses on Aim 3, which explores the association between general health and work and nonwork conditions for female Latinx born-outside-U.S. working-classed workers. Informed by the intersectional approach used for Aim 2, the 2015 NHIS data were explored by the aggregate, subgroups (by sex; by race; by nativity), and intersectional subgroup (female Latinx born-outside-U.S.). The decision to focus on female Latinx born-outside-U.S. working-classed workers was informed by the results of Aim 2, which suggested workers of this subgroup experienced more precarious work and nonwork conditions than all other intersectional groups. The analyses at the intersectional subgroup level revealed pertinent and unexpected findings. Finally, Chapter Five concludes the dissertation by providing a reflection on the overall findings and implications for future worker health equity research.

Researcher Reflexivity

Taking note from Norwood (2018): I am a nurse by profession whose training is entrenched in a legacy of positivist tradition. My identity as a health equity researcher is still forming, and I am learning from feminist activism, scholarship, and research how to queer the hegemonic boundaries of my being, knowing, and learning into a liberatory positionality. This dissertation captures my formation and the contentious journey of wrestling between this formation and the predominant positivist paradigms of the disciplines that I am a part of.

My embodiment entails the identities of female, Korean American, U.S.-born, and nonworking-classed that simultaneously privilege and disadvantage me in the various spaces I traverse. I descend from cis-gendered parents who immigrated from South Korea to the U.S.

through educational and occupational opportunities. Their racialized identities, alongside their education and occupations, allowed them access to opportunities and privileges, which I have inherited. I share these particular identities and background as they relate to the focus of this dissertation, which has been on identities of sex, race, nativity, and class. My social location gave rise to implicit assumptions about the working classed that became apparent during the interpretation of the data. To keep these assumptions in check throughout the research and reflective process, I have relied on the life stories of my parents, grandparents, and community. Theirs have been stories of hardship, resistance, joy, and overcoming despite systemic and structural restrictions and exclusions that multiply oppress. Regrettably, the data examined in this dissertation work were bereft of the lived experiences of the workers from whom the data were collected. In sum, my dissertation is offered as a heuristic for other researchers who find themselves in the same contentions of discipline and training as I have in the journey of unlearning and learning to disrupt cycles of injustice and to advance worker health equity.

Chapter Two

Worker Health Equity: A Literature Review and Reflection

Introduction

From the 20th century to the 21st century, there has been a gradual shift in research beyond identifying individual-level (e.g., behaviors, genetics) contributions to health disparities that describe preventable differences affecting health (Centers for Disease Control and Prevention, 2020) to focusing on addressing social determinants of health disparities *and* health inequities (Srinivasan & Williams, 2014). Terminology has changed from *health disparity* to *health equity* to convey this shift. The National Institute for Occupational Safety and Health's (NIOSH) Occupational Health Equity program, formerly known as the Occupational Health Disparities program, is an example of this shift in public health research to conduct and support research focused on health equity (Flynn et al., 2022). However, over the last three decades, there have been inconsistent uses of *health equity* and its application in the research literature likely resulting from ambiguity about the conceptualization and definition of "health equity" (Braveman, 2014). Clarity of terminology is critical in research. How health equity is defined and conceptualized dictates who is included (population of interest), what is examined, how research is conducted, as well as, what and where resources and interventions are dispersed or applied (Braveman, 2014).

More importantly, underlying *health equity* is the notion of systems of power that is central to the concept of health equity. Systems of power (e.g., racism, sexism, classism) are social determinants of equity. As explained by Camara Jones (2014): "If the social determinants of health are the contexts in which individual behaviors arise and convey risk, the social determinants of equity determine the range of contexts available and who is found in which context" (p. S73). This *who* is based on socially constructed identities and positions, or social locations (Anthias, 2012) (e.g., gender identity, class position). These macrolevel systems of

power privilege some groups (*power to*) and oppress others (*powered over*) based on their social locations (Kolmar & Bartkowski, 2010). Moreover, "the well-being of people is determined by power" (Murray, 2012, p. 231). Thus, research on health *inequities* requires investigation that centers on those historically excluded and marginalized and examines these privileging and oppressive systems of power.

Clarity of language and inclusion of systems of power concepts need to be integral to worker health equity research and to advancing the health equity agenda. The purpose of this paper is to explore if and how *health equity* has been used in OHS research as well as to determine if and how concepts of systems of power have been used in worker health equity research. Moreover, the Occupational Health and Safety (OHS) sciences have parsed out the intricacies of multilevel risks and hazards, such as from silica particulate exposure to ergonomics and work organization, which impact the health and wellbeing of workers. Yet, the perspective of OHS sciences has been missing from broader discussions on health equity (Ahonen et al., 2018). This paper seeks to use the knowledge gained to bridge this gap between OHS and public and population health disciplines.

The discussion on health equity is situated within an OHS framing and in the U.S. context. The former is intended to highlight what and how the OHS sciences contribute to discussions on health equity research. The latter acknowledges the sociopolitical and historical differences in structural manifestations and in the function of systems of power. Furthermore, the terminology "*worker* health equity" will be used as opposed to "*occupational* health equity" in order to center the conversation on the lived experience of workers rather than on occupation (except when keeping with the referenced sources).

Methods

A focused review of peer-reviewed articles published between January 1990 and June 2021 was conducted. The time period was selected because the development and expansion of the term *health equity* began around 1990 (Yao et al., 2019). NIOSHTIC-2, PubMed, and Web of Science were accessed, and iterations of *occupational/worker health equity* were used as search terms. Medical subject headings (MeSH) terms were also included. Titles and abstracts of peer-reviewed journal articles were included if written about U.S. adults (ages 18 and older), in the English language, specific to a worker population or work-related issue, and used the term *equity* and its variations (e.g., *health equity*, *health inequity*, or *inequity*) in the title, abstract, or key terms. Duplicates and review articles (e.g., scoping, systematic) on health equity from across the databases were removed.

After this initial review, journal articles were examined in full and included if: 1) investigating or addressing inequitable or disparate conditions, exposures, or outcomes of workers who have been historically disenfranchised (by race, class, etc.) directly or indirectly, and 2) using *equity* and its variations in the main body of the article. The qualified articles were then reviewed in detail for: 1) the use and definition of *health equity* or its variations, and 2) inclusion of systems of power concepts. Since "language is important" (Marmot & Allen, 2014, p. S517), these articles were evaluated for how *health equity* was used, such as to describe a condition or be described as a condition, excluding its use in titles, abstracts, key words, headings, names (e.g., organizations), figures and tables. If and how *health equity* was explicitly defined was also noted. Finally, the article was reviewed to determine if systems of power concepts (e.g., racism, sexism, and other "-isms" or ideologies) were mentioned or were integral to the article, such as being a part of the framework or lens of analysis.

Literature Review Findings

The literature search resulted in a total of 269 articles, of which 18 met the initial review's inclusion criteria. Of these 18 qualified articles, four articles were published in 2021, three were published in 2020, two were published in 2018 and in 2019 each, and one was published in the years 1990, 2006, 2008, 2011, 2013, 2014, and 2015. The majority (*n*=11) of the articles were primary research articles, of which two strictly used qualitative methods. Seven articles were secondary research articles that offered specific worker and work-related knowledge but were not primary research studies. There was no pattern noted between the year published and type of article. A summary of the literature review findings can be found in Tables 2.1 and 2.2. Table 2.1 shows the article type, purpose, and the demographic information (i.e., employment status, age, sex/gender, race, nativity) for the population of interest for each article if made explicit in the methods/results sections. Table 2.2 shows results for the uses and definitions of *worker health equity* or its variations and on the inclusion of systems of power concepts.

Uses and Definitions of "Worker Health Equity"

Of these 18 articles, only two specifically mentioned *occupational health inequities* (Flynn et al., 2021; Lee et al., 2021). Also, among the 18 articles, *health equity* and its variations were mentioned 99 times and used in various ways. For instance, the term was used as distinct from *health* or *health equity* (e.g., "equity efforts", "health and equity", "health and health equity"), as an end result (e.g., "promote equity"), as a process (e.g., "ongoing inequities", "years of inequities"), and in specified forms (e.g., "class, race, gender inequities", "institutional and structural inequities", "financial inequities", "socioeconomic inequities", "wage inequities", "transportation-related inequities", "gendered health inequities"). While *occupational health*

Table 2.1

Literature Review Summary: Article Type, Purpose, and Population of Interest

Author(s)	Year published	Article type	Purpose	Population of interest
Daniels, Paul, & Rosofsky	1990	Secondary	"The purpose of this article is to shed new light on this continuing debate [over the social, economic, and political implications of protectionism] through an examination of the policy insights suggested by a recent study of reproductive hazard policies in Massachusetts" (p. 449)	Men and women workers potentially exposed to job-related reproductive hazards
Krieger, Waterman, Hartman, Bates, Stoddard, Quinn, Sorensen, & Barbeau	2006	Primary	"…to assess the prevalence of social and physical hazards at work and ascertain their combined health impact on workers' health among a multi-racial/ethnic working-class population of women and men. This article reports, as a first step, the distribution of three key social hazards..." (p. 53)	Employed, union members aged 25 to 64 working in or near Boston, Massachusetts (United for Health study participants); majority men, Black and "Latino" races; same proportion of workers were born inside as outside the U.S. (47.8% each); N=1,202
Krieger, Chen, Waterman, Hartman, Stoddard, Quin, Sorensen, & Barbeau	2008	Primary	"In this paper, we analyze associations between the workers' blood pressure and their exposure to social and occupational hazards" (p. 1971)	Employed, union members aged 25 to 64 (United for Health study participants); majority men, Black and "Latino" races; same proportion of workers were born in as much as outside the U.S. (47.8% each); N=1,202
Gaydos, Bhatia, Morales, Lee, Liu, Chang, Salvatore, Krause, & Minkler	2011	Primary	"This article shares the experiences of one local health agency, working in collaboration with community and university partners, to develop and apply an instrument to observe workplace hazards and labor law violations in restaurants" (p. 63)	Restaurants (N=106) and restaurant workers (N=813) in San Francisco's Chinatown; majority male

Table 2.1 Continued

Author(s)	Year published	Article type	Purpose	Population of interest
Zanoni	2013	Secondary	"In this essay I propose that curriculum intervention and evaluation designs such as the fidelity of implementation (FOI) approach offer the flexibility and relevance for educators and their partners encompassing ecologies of learning to describe and document how peer leaders merge disciplinary and experiential content with hybridic cultural practices in community-based learning and work settings" (p. 21)	Occupational health educators partnering with "Latina/o immigrant communities"
Baron, Beard, Davis, Delp, Forst, Kidd-Taylor, Liebman, Linnan, Punnett, & Welch	2014	Secondary	"This paper describes challenges and opportunities to better integrate health protection and health promotion for low-income workers -- at the worksite, through state and local health departments, in community health clinics and through community-based participatory health intervention programs" (p. 2)	Low-income workers
Johnson, Luckhaupt, & Lawson	2015	Primary	"We investigated the prevalence of reported workplace secondhand smoke exposure among women of reproductive age as a proxy for the prevalence of exposure during pregnancy and sociodemographic and workplace characteristics associated with workplace secondhand smoke exposure in this population" (p. e33)	Employed women aged 18 to 44 years (2010 National Health Interview Survey); majority White, born in the U.S.; N=4,088
Harnois & Bastos	2018	Primary	"The present study investigates how perceived gender discrimination and sexual harassment in the U.S. workforce, along with other forms of work-place mistreatment, structure mental and physical health outcomes as well as gendered health disparities" (p. 284)	Employed and unemployed "economically active respondents" aged 18 years and older (2006, 2010, 2014 General Social Surveys); majority women and White; N=3,724

Table 2.1 Continued

Author(s)	Year published	Article type	Purpose	Population of interest
Velonis & Forst	2018	Primary	"This paper describes the CM [concept mapping] methods presented in the [Occupational Health] workshop to illustrate how CM can be used in occupational health as an approach to generating participant/community-driven strategies to address complex health concerns" (p. e610)	Occupational health and general public health workers focusing on “low wage and precarious” workers; majority female; N=68
Lippert, Rosing, & Tendick-Matesanz	2020	Primary	"The goal of this review is to connect the structure of the restaurant to occupational health hazards" (p. 564)	Restaurant and food service workers
Richardson, Steeves-Reece, Martin, Hurtado, Dumet, & Goodman	2019	Primary	"To enhance our understanding of how workers perceive and experience a newly adopted PPL [paid parental leave] policy, we conducted a research study in partnership with Multnomah County, a public sector employer in Portland, Oregon…In this article, we provide the in-depth findings from the qualitative portion of this research, which center employee perceptions of and experiences with this newly adopted PPL policy" (p. 118)	Employees of Multnomah County in Portland, Oregon; majority female and White; N=35
Roberts, Dickinson, Koebele, Neuberger, Banacos, Blanch-Hartigan, Welton-Mitchell, & Birkland	2020	Primary	"This research specifically examined demographics, COVID-19 exposure risk pathways, and COVID-19 risk perceptions, comparing EW [essential workers] and NW [nonessential workers] respondents…" (p. 692)	Employed essential and nonessential workers aged 18 and older residing across Louisiana, Colorado, Massachusetts, Michigan, Iowa, and Washington; majority female and White; N=1,726

Table 2.1 Continued

Author(s)	Year published	Article type	Purpose	Population of interest
Ramos, Lowe, Herstein, Schwedhelm, Dineen, & Lowe	2020	Secondary	"Derived from ethical values grounded in reciprocity, equity, trust, and transparency, we describe three key pillars of action that are owed to essential workers critical to the U.S. food supply…" (p. 380)	Essential workers in agriculture and food-related industries
Eisenberg-Guyot, Peckham, Andrea, Oddo, Seixas, & Hajat	2020	Primary	"…we used a multidimensional 'employment-quality' (EQ) measure and U.S.-based longitudinal data to construct detailed EQ trajectories and examine the associations between EQ, self-rated health (SRH), and mental illness" (p. 3)	Employed and unemployed individuals aged 29 to 50 years (1985-2017 Panel Study of Income Dynamics Surveys); majority women; N=2,779
Flynn, Eggerth, Keller, & Check	2021	Primary	"This paper reports the results of a formative evaluation that tested different media for dissemination of occupational safety and health information to Mexican immigrant workers in the United States through a collaborative partnership with the Mexican consular system" (p. 181)	"Mexican immigrant workers"
Fujishiro, Ahonen, Ruiz de Porras, Chen, & Benavides	2021	Secondary	"In this paper, we propose a conceptual framework that guides health inequity research from an integrated perspective of political economy and occupational health" (p. 2)	"Working" people
Lee, Ingram, Quijada, Yubeta, Cortez, Lothrop, & Beamer	2021	Primary	"The objective of our research is to identify ways that beauty salons and auto shops in Tucson, Arizona can reduce worker chemical exposures in the workplace" (p. 5)	Workers and owners of small businesses (beauty salons and auto repair shops) in Tucson, Arizona; majority women and Latinx; N=22

Table 2.1 Continued

Author(s)	Year published	Article type	Purpose	Population of interest
Sherman, Kelly, & Payne-Foster	2021	Secondary	"This commentary provides guidance for employers to expand their DEI [diversity, equity and inclusion] initiatives to include employee and family health and well-being as a central outcome measure" (p. 609)	Employers and particular focus on low-wage workers

Table 2.2

Literature Review Summary of Findings for "Worker Health Equity" and Systems of Power Concepts

		Definition and use of "worker health equity"		Inclusion of systems of power concepts	
Author(s)	Year published	Definition?	How is it used?	Mentioned or discussed?	If yes, which?
Daniels, Paul, & Rosofsky	1990	No	"gender equity" (p. 449); "health and equity" (p. 458); "health and equity" (p. 460)	Yes, discussed	Protectionism
Krieger, Waterman, Hartman, Bates, Stoddard, Quinn, Sorensen, & Barbeau	2006	No	"gender inequities" (p. 77)	No	--
Krieger, Chen, Waterman, Hartman, Stoddard, Quin, Sorensen, & Barbeau	2008	Yes	"these inequities" (p. 1971); "to understand health inequities" (p. 1980) "eliminate health inequities" (p. 1980)	No	--
Gaydos, Bhatia, Morales, Lee, Liu, Chang, Salvatore, Krause, & Minkler	2011	No	"mitigating health inequities" (p. 63)	No	--
Zanoni	2013	No	"inequity of" (p. 20); "oppression and inequity" (p. 21); "address inequity" (p. 32)	Yes, mentioned	Colonialism; neoliberalism

Table 2.2 Continued

Author(s)	Year published	Definition and use of "worker health equity"		Inclusion of systems of power concepts	
		Definition?	How is it used?	Mentioned or discussed?	If yes, which?
Baron, Beard, Davis, Delp, Forst, Kidd-Taylor, Liebman, Linnan, Punnett, & Welch	2014	No	"health inequities" (p. 2; p. 4; p. 4); "health equity" (p. 3; p. 6; p. 8; p. 9; p. 10; p. 12, p. 13; p. 14)	Yes, mentioned	Societal racism
Johnson, Luckhaupt, & Lawson	2015	No	"ongoing inequities in" (p. e39); "eliminating inequities in" (p. e39)	No	--
Harnois & Bastos	2018	No	"gender-based health inequities" (p. 284); "explain the inequity in" (p. 287); "gendered health inequities" (p. 297)	Yes, discussed	Sexism; heterosexism; racism; ageism
Velonis & Forst	2018	No	"reduce health inequities" (p. e610); "issues of health inequities" (p. e610)	No	--
Lippert, Rosing, & Tendick-Matesanz	2020	No	"fairness and equity" (p. 564); "gender inequity" (p. 565); "social inequities" (p. 571), "inequities" (p. 571)	Yes, mentioned	Racism; sexism

Table 2.2 Continued

Author(s)	Year published	Definition and use of "worker health equity"		Inclusion of systems of power concepts	
		Definition?	How is it used?	Mentioned or discussed?	If yes, which?
Richardson, Steeves-Reece, Martin, Hurtado, Dumet, & Goodman	2019	No	"socioeconomic inequities: (p. 118); "equity-enhancing potential" (p. 118); "health equity" (p. 118); "equity efforts" (p. 118); "inequities by gender and financial standing" (p. 119); "financial inequities" (p. 119); "experiences of inequity" (p. 120); "this inequity" (p. 120); "inequity of experience" (p. 121); "equity of access and experience" (p. 121); "equity concerns" (p. 121); "experiences of inequity" (p. 121); "equity implications" (p. 121); "equity lens" (p. 122; p. 122); "reduce inequities" (p. 122)	No	--
Roberts, Dickinson, Koebele, Neuberger, Banacos, Blanch-Hartigan, Welton-Mitchell, & Birkland	2020	Yes	"of health equity" (p. 690); "historical and contemporary systems of inequity" (p. 690); "health equity" (p. 691); "health disparities and inequities for" (p. 692); "health inequities" (p. 697); "institutional and structural inequities" (p. 697); "COVID-19 testing inequities" (p. 698); "health inequity" (p. 698); "transportation-related inequities" (p. 699)	Yes, mentioned	Systemic racism; structural racism
Ramos, Lowe, Herstein, Schwedhelm, Dineen, & Lowe	2020	No	"years of inequities" (p. 379); "social inequities" (p. 379); "promote equity" (p. 379; p. 381); "equity" (p. 380)	No	--

Table 2.2 Continued

Author(s)	Year published	Definition and use of "worker health equity"		Inclusion of systems of power concepts	
		Definition?	How is it used?	Mentioned or discussed?	If yes, which?
Eisenberg-Guyot, Peckham, Andrea, Oddo, Seixas, & Hajat	2020	No	"socioeconomic inequities in" (p. 2); "health inequities" (p. 2; p. 9); "gender inequities in" (p. 13); "racial and educational inequities in health" (p. 13); "in health inequities" (p. 15)	Yes, mentioned	Capitalism; racism
Flynn, Eggerth, Keller, & Check	2021	No	"these occupational health inequities" (p. 180); "address persistent occupational health inequities for" (p. 181); "occupational health inequities"(p. 189)	No	--
Fujishiro, Ahonen, Ruiz de Porras, Chen, & Benavides	2021	No	"redressing health inequity" (p. 1); "health and health inequity" (p. 1; p. 2; p. 2); "mitigating health inequity" (p. 2); "reduce health inequity" (p. 2; p. 7); "health inequity research" (p. 2); "social origins of…health inequity" (p. 2); "health inequity" (p. 2; p. 7); "create health inequity" (p. 2; p. 3); "inequity" (p. 4); "health inequities" (p. 5)	Yes, mentioned	Racism
Lee, Ingram, Quijada, Yubeta, Cortez, Lothrop, & Beamer	2021	No	"health inequities" (p. 2; p. 9); "occupational health inequities" (p. 2); "health and economic inequities" (p. 5);	Yes, discussed	Neoliberalism; environmental racism
Sherman, Kelly, & Payne-Foster	2021	No	"benefits equity" (p. 609); "achieving greater equity" (p. 609); "reduce the evident inequities" (p. 610); "organizational equity initiatives" (p. 610); "inequities in workforce health" (p. 610); "health inequities" (p. 610); "inequities in employer health benefits offerings" (p. 610); "equity" (p. 610); "wage inequities" (p. 610)	Yes, mentioned	Systemic racism

inequities were used to denote a range of workplace-related disparate conditions of and affecting health, *health equity* was used to relate to both the workplace and broader scenarios.

Notably, there were no definitions provided for worker health equity (occupational health equity) in any of the 18 articles. Even for the definition of health equity, only two articles defined *health inequities* and *health equity*. Baron et al. (2014) defined *health inequities* as disparities in health that "often arise from social disadvantage which has created modifiable and ethically unfair exposures at work, at home, and in the community" (p. 2). Roberts et al. (2020) provided the Robert Wood Johnson Foundation's definition of *health equity*, which was defined as everyone having "a fair and just opportunity to be as healthy as possible…" (p. 691).

Inclusion of Systems of Power Concepts

Of the 18 articles, eight articles did not mention systems of power concepts and the other 10 articles explicitly named ideologies. They included sexism or heterosexism (Harnois & Bastos, 2018; Lippert et al., 2020); racism, environmental racism, structural racism, societal racism, or systemic racism (Baron et al., 2014; Eisenberg-Guyot et al., 2020; Fujishiro et al., 2021; Harnois & Bastos, 2018; Lee et al., 2021; Lippert et al., 2020; Roberts et al., 2020; Sherman et al., 2021); ageism (Harnois & Bastos, 2018); capitalism (Eisenberg-Guyot et al., 2020; Zanoni, 2013); neoliberalism (Lee et al., 2021; Zanoni, 2013); and protectionism (Daniels et al., 1990). Among these 10 articles, seven articles mentioned systems of power concepts, such as part of a framework, as part of the purpose for the article or the rationale for the findings, or even more brief as a mention as opposed to why or how systems of power concepts function in relation to their research focus. For the other three articles, these ideologies were used extensively to form the lens of analysis or as part of the theoretical framework. The similarities and differences in how they did so were broadly noted.

Daniels et al. (1990) centered protectionism in their analysis of insights that had been suggested from a then recent study of reproductive hazard policies in Massachusetts. After grounding their analysis and discussion in the history of gender-specific protectionism and workplace reproductive hazard policies in the U.S., they illustrated how this ideology had mechanized through exclusionary policies into their present day to reinforce gender segregation in workplaces. Focusing on workers in beauty salons and auto shops, Lee et al. (2021) clearly explained how their theoretical framework was informed by neoliberalism and the notions of structural vulnerability and responsibility. In defining these terms, they elucidated the inter-relatedness between these concepts as well as the relation to their study population of interest. They investigated and discussed the ways in which neoliberal responsibilization manifested at the individual (in the setting of structural vulnerabilities), interpersonal (worker and employer), organizational (Latinx-owned small businesses), and structural (occupational health policies) levels.

Lastly, Harnois and Bastos (2018) investigated the extent to which different forms of mistreatment, or discrimination and harassment, contributed independently and intersectionally to gendered health disparities. They classified sexism as a form of mistreatment, adopting the U.S. Equal Employment Opportunity Commission's description of sex discrimination, the larger umbrella for sexual harassment, as "treating someone (an applicant or employee) unfavorably because of their person's sex, sexual orientation, or gender identity (including transgender status)" (p. 284). Gender was broadly conceptualized by the authors as a hierarchical social structure that intersects all social levels–institutions, interpersonal, and individual. They, however, focused their discussion on "the processes through which gender is embodied at the level of the individual" (p. 296) more so than at these various social levels. In general, these

three articles that provided inquiries generating multilevel analyses were found to frame or guide their work by a mix of theories and perspectives or by an existing model or framework, such as variations of a social ecological framework, which was most commonly employed or mentioned.

In summary, of the numerous ways *equity* and *health equity* were used across the articles, *occupational health equity* was only noted in two articles and no definitions were provided nor explicitly cited. Moreover, more than half of the articles (n=10) mentioned systems of power concepts, of which only three of these discussed systems of power concepts in their work.

Reflections and Recommendations

This paper set out to explore the ways in which *worker health equity* has been used and defined as well as if and how systems of power concepts were considered in the OHS research literature. Based on the findings, there is a gap in the literature with how health equity terminology is used and defined with respect to workers and workplaces as well as in consideration of the role of systems of power to health equity. For instance, *worker health equity* ("occupational health equity") was less frequently mentioned and used in the reviewed research literature (published between January 1990 and June 2021) than worker and work-related *health equity.* In a study by Collyer and Smith (2020), they found that U.S. researchers engaged in health disparities research represented various disciplines (namely public health, medicine, sociology, nursing, and psychology). Thus, the present study's finding suggests that there is less OHS disciplinary "branding," and the use of terminologies in the reviewed articles may be a reflection of multiple disciplinarity, or the knowledge contributions from different disciplines (Choi & Pak, 2006).

Additionally, the review revealed a limited number of articles extending their analyses and discussions into the structural and systemic causes of worker health inequities. This finding

suggests a lag between the use of health equity language and the relation to (and development of) systems of power concepts in worker health equity research. Systems of power concepts under study have often been assumed to be self-evident and so are not often explicitly stated, defined, or developed (Bonilla-Silva, 1997). When systems of power concepts are mentioned and defined as only ideas and beliefs divorced from their body of oppressive and hierarchical societal systems and structures, then this "idealist conception of racism [and other systems of power concepts]" (Bonilla-Silva, 1997, p. 467) limits our understanding of *how* they shape conditions and experiences. As such, these analyses do not expose the "contemporary mechanisms and practices that reproduce White advantages [and disadvantages for those who are marginalized]" (Bonilla-Silva, 1997, p. 466). In the movement towards health equity, integrating systems of power concepts beyond a mention will be critical for future worker health equity scholarship.

Recommendations

Based on the findings of this present study, there are a few ways to reshape how OHS researchers approach worker health equity research. First, while repetitive, I echo the remote and recent conversations that worker and work-related health equity and health inequities need to be explicitly defined (and differentiated from health disparities) as each term is conceptually distinct and distinctly valuable in research. For instance, health disparities has been defined as "differences which are unnecessary and avoidable but, in addition, are also considered unfair and unjust" (Whitehead, 1992, p. 5). Unlike health disparity, health inequity tends to " imply a strong judgement about causality..." (Braveman et al., 2011, p. S153). However, *health disparity* is increasingly used interchangeably with *health inequity* (Marmot & Allen, 2014). Thus, what are called health inequities are more often than not health disparities, which does not lessen the importance nor the warrant for investigation but further necessitates clarity of terminology.

An immediate action is for OHS researchers to define worker health equity and related terms or to cite a reference that does so that the content of their work is conceptually, and thereby operationally, clear to researchers and audiences. There are various existing definitions in the research literature, some of which have been noted in this paper. However, the act of theorizing must not go stale. As dynamic as societies and cultures are, so are the prevailing ideologies in how they manifest structurally and systemically in this moment in time and over time, here in this geopolitical location and across borders. Thus, we must continue to theorize and conceptually expand and move our understanding of worker health equity, inequities, and disparities towards definitions that reflect this growth and movement while being conceptually and operationally clear in the process.

Second, a multilevel perspective is intrinsic to worker health equity research (as it is to the body of health equity research). Using research frameworks that facilitate this characteristic is a practical means of guiding research projects. For instance, Bronfenbrenner's (1979) human health ecology model views environments from the microlevel to the macrolevel that are considered topologically as a "nested arrangement of concentric structures, each contained within the next" (p. 22) with the defining features of multidimensionality, dynamic process (interplay between environments and change throughout time and development), and reciprocity (process of mutual accommodation) between actors of the environments. There are a growing number of frameworks that can be used, such as one reviewed in this paper by Fujishiro et al. (2021), other socioecological types (Dover & Belon, 2019; Krieger, 2001), OHS-specific frameworks (Ingram et al., 2021), and conceptual framework by institutions overseeing national and/or global health such as the World Health Organization's Commission on Social Determinants of Health (CSDH) (Solar O, 2010).

The value of these frameworks is that they prevent the generalization and collapsing of the micro- to the macrolevel layers that interrelate and visibilize the ways in which disadvantages and privileges are dispersed to have concrete implications on human lives and environments. Given the diversity of perspectives engaged in the health equity research and the dynamics of society, it is unrealistic to assume one framework to be effective for the entirety of the field (Chatterjee & Leong, 2020). Energy towards applying such frameworks should also be given towards theorizing and development of these types of frameworks. More importantly, because socioecological frameworks and the like illuminate multiple interacting levels or environments, these frameworks can guide OHS researchers in investigating systems of power concepts and how they operate in different space and levels (from the home to the workplace to society) within which workers are embedded. For instance, the notion that White people are superior to people of color (ideology/belief system) underlies race-based thresholds (mechanism of health inequity) for hearing and lung function such that in order for Black workers to be eligible for workers' compensation, they must experience worse hearing and lung function (workplace exposure) than White workers (McClure et al., 2020). Therefore, frameworks with a multilevel perspective are a useful guide for worker health equity research.

Third, these ideologies examined in worker health equity research should not be conflated with structural and individual level actions and behaviors, such as exclusionary policies, discrimination, and stereotyping. Doing so minimizes the appearance, scope, and impact of systems of power. Systems of power are fundamentally virulent in that they adapt, reproduce, and reinforce their existence over time and place. They are ever so prevalent and pervasive. Identifying these causes of inequities and then tracing along their roots to unique and duplicating branches (e.g., mechanisms such as exploitation, domination, and exclusion) in the network of

social systems and societal structures that ultimately shape outcomes will be key to the process of mitigating and eliminating health disparities and health inequities.

Finally, different research paradigms with critical perspectives in OHS research are needed to support worker health equity research. The biomedical paradigm—a predominant paradigm in the OHS sciences and in public health—has been heavily critiqued as being a too-narrow lens that keeps the investigation of health disparities and inequities at the individual-level, generating practices that are culturally inappropriate and interventions that are deficits-based, perpetuating under-representation, and failing to create systems-level change (Golden & Wendel, 2020). Golden and Wendel (2020) further point out that rather than challenging the foundations of biomedicine, researchers and practitioners will "graft new concepts ("root causes," "social determinants") into the existing biomedical structure—attempting to answer questions presented by the social ecological schema with practices developed in response to biomedicine" (p. 2). They note that "the work of health equity requires that public health resolve the mismatch between its historic biomedical paradigm and its evolving social ecological understanding of health" (p. 2). These barriers to health equity arising from this mismatch between research perspective and reality of the social ecology of health are why critical perspectives are foundational to worker health equity research.

Critical methodologies are a wide and inclusive lens that disrupts "white logic and white methods (García, 2017, p. 6) by digging "beneath the surface of social life to uncover the assumptions and masks that keep us from a full and true understanding of how the world works" (Johnson, 2000, p. 67 as cited in Ford & Airhihenbuwa, 2010, p. 1395). The critical foundation of health equity consists of the principles of ethics, social justice, and human rights ((Braveman, 2014; Whitehead, 1992). Critical methodologies compliment those principles and further

compliments the OHS sciences as "equity and social justice do not stand outside of our field…[but] are part and parcel of occupational safety and health" (Murray, 2012, p. 231).

Limitations

This literature review was designed and executed by one person, which allowed room for unintentional errors of misinterpretation. To account for this, other perspectives were sought for guidance and consultation on each aspect of this review and throughout its iterative process, such as a health sciences librarian for refining literature search techniques, and an OHS researcher for content review. Second, this present review was driven by the inquiry of terminology first because clarity of terminology is critical in research. Thus, this work focused on the incidence of *health equity* in the worker health equity research literature rather than its conceptual development. As a result, articles may have been overlooked or excluded even if the concept of health equity may have still been present. Third, there was an implicit assumption that the particular orientation on worker health equity offered in this review was the same standpoint from which the authors of the reviewed literature had conducted their work. Influencing factors such as disciplinary backgrounds and time period in which the work was developed were not explored. This review presents one approach to analyzing and perspective on the vast body of worker health equity research. Future research includes a conceptually driven review of the worker health equity research literature that considers influencing factors such as researcher positionality.

Conclusion

The expertise of the OHS sciences is and *continues to be* a necessary voice and perspective critical to broader discussions on health inequities across disciplines. Discipline-specific expertise, such as worker health equity research, can serve to advance the health equity

agenda since the multifaceted complexities of health inequities requires perspectives from an array of vantage points. The inclusion of diverse disciplinary representation (and diverse representation of researchers) offers this diversity of perspectives. As such, worker health equity research falls within these broader discussions on health equity. Moving forward, OHS researchers conducting worker health equity research are encouraged to break down the walls of research and disciplinary traditions to interrogate the what (e.g., the interplay of factors in and outside the work environment), who (e.g., what identities are and are not centered and by who), how (e.g., critical methodologies and diverse methods; transdisciplinary knowledge-sharing; self-reflexivity and consciousness-raising; mechanisms of oppression and privilege), where (e.g., multilevel analyses) and why (e.g., systems of power concepts) in order to conduct research that bends the arc of worker health inequities towards justice.

Chapter Three

At the Intersections of Class, Sex, Race, and Nativity:

Describing Work and Nonwork Conditions and Health Status of the U.S. Working Classed

Introduction

Health disparities are a "metric we use to measure progress toward achieving health equity" (Braveman, 2014, p. 7). *Health disparities*, in this paper, refer to avoidable and unnecessary differences that are also unjust and unfair (Whitehead, 1992), whereas *inequitable conditions* are systematic disparities in the conditions experienced by different people groups (adaptation of definition by World Health Organization [WHO], 2018). Research has found disparate experiences of the work (employment and working conditions) and the nonwork environment based on class, gender, race, nativity, and other socially constructed identities and positions or locations (Anthias, 2012). In particular, workers at the bottom of the class structure, such as the working classed, have been found to have worse health outcomes than workers at the top (Eisenberg-Guyot & Hajat, 2020; Marmot et al., 1997). Additionally, there is an overrepresentation of workers of color and immigrant workers in precarious employment (Kalweit et al., 2020) and in jobs characterized by poor working conditions (Murray, 2003). Moreover, workers characterized by lower socioeconomic status (SES) and class are more likely to live in poverty and lack adequate health services (Krieger et al., 2005).

Systems of power are ideologies, such as racism and sexism, that create hierarchies of value and differentially value people based on their social locations (Jones, 2014). Those with hegemonic identities (e.g., White men) are systematically more highly valued than those with minoritized identities (e.g., Asian racialized women) and thereby privileged (e.g., given power and access) to advantageous (less precarious) conditions. Additionally, as intersectionality posits, there is a collective embodiment of intersecting identities at the person-level that reflect interlocked and co-constituting ideologies at the macrolevel (Collins, 1998; Crenshaw, 1991). As articulated by Crenshaw (1991):

> ...the experiences Black women face are not subsumed within the traditional boundaries of race or gender discrimination as these boundaries are currently understood...the intersection of racism and sexism factors into Black women's lives in ways that cannot be captured wholly by looking at the race and gender dimensions of those experiences separately. (p. 1244)

Conventional approaches in the occupational health and safety (OHS) sciences, however, often examine identities as independent from one another. The analyses and discussions are often limited to the level of disparities, not the macrolevel ideologies that create inequitable conditions and health disparities. There is an urgent need for OHS research that considers power at both the level of the individual (e.g., intersecting social locations) and at the systems level (e.g., intersecting ideologies). Also, examining power in the context of the work *and* nonwork environment is critical since "workers are people too" (Krieger, 2010, p. 105) who live and work within systems and structures of both. Moreover, a research standpoint that centers on those who have been historically excluded and marginalized and integrating systems of power concepts, as conceptualized above, is necessary to move the health equity and worker health equity agenda forward (National Institute for Occupational Safety and Health, 2019).

This study used a national dataset to advance worker health disparities and inequities by using an intersectional approach to describe the employment conditions, working conditions, nonwork conditions and the health status of the U.S. working classed at the intersections of class, sex, race, and nativity. The intersectional approach will be discussed first, followed by the description of the study and results. The paper will conclude with a discussion of the individual-level findings in context to macrolevel ideologies.

To my knowledge, this is the first study to utilize an intersectional approach that accounts for class, sex, race, and nativity, to describe work and nonwork conditions and the health status of the U.S. working classed. Building upon prior research, notably by Krieger and colleagues (2005, 2006, 2008) and more recently by Eisenberg-Guyot and colleagues (2020, 2022), this present study contributes to the body of worker health equity research and to broader discussions of health equity.

Relational Class: Defining the Working-Classed Population

The notion of class is particularly pertinent to OHS research as class relations and positions are intertwined with capitalism and the processes of selling and extracting labor (e.g., power relations) (Robinson, 2000) that is central to employment and working conditions. However, analyses of class are often excluded or operationalized as unidimensional and by individual attributes, such as level of educational attainment, income, or other indicators of socioeconomic status (Krieger et al., 2005; Wright, 2005). This simple approach to class is predicated on individual attributes rather than the processes (e.g., classism) causing these attributes (Anthias, 2012; Eisenberg-Guyot & Prins, 2020). As such, it limits intervention strategies to mitigate worker health inequities.

Alternately, *relational* class from neo-Marxist traditions centers on social relations (processes) that define class structure and positions (Wright, 1979). This study utilized the notion of relational class to define the working classed ascribed by work positions of low power (non-ownership, nonsupervisory positions) (Wodtke, 2016; Wright, 1980). The strength of the relational class approach is that it invites an analysis of power and its role in creating and maintaining class positions (processes) (Wright, 1979). Prior research using a relational class approach have found that relational class indicators provide greater explanatory power and

sensitivity of disparate health outcomes than nonrelational indicators (Barbeau et al., 2004; Krieger et al., 2005; Muntaner et al., 2010).

Theoretical Framework: Intersectional Approach

Intersectionality extends the notion of relational class by defining, giving meaning, and positioning class in relation to other social distinctions and specific to time and location (Glenn, 1998), such as a racialized and gendered notion of class in the U.S. As such, work and nonwork conditions should be examined by sex, race, *and* class as opposed to sex, race, *or* class. Additionally, the multiple intersections of identities advance analyses beyond *inter*group differences (e.g., working classed and nonworking classed) to highlight *intra*group differences (e.g., between sexes, races, and nativity within the working classed) (Collins, 1998). Therefore, informed by the notion of intersectionality, this research study focused on intraclass differences to further our understanding of the precariousness of conditions indicated by working-classed workers' embodiment of multiple social identities and positions.

It is important to note that intersectionality is both an idea and a paradigm that informs a particular approach to research (Alexander-Floyd, 2012). This present research was informed by the *idea* of, rather than the paradigm of, intersectionality due to its quantitative nature. Kimberlé Crenshaw's (1989) coining of intersectionality, Frances Beal's (2008) notion of double jeopardy, Deborah King's (1988) multiple jeopardy, the Combahee River Collective's (1977) interlocking of oppressions, and Patricia Hill Collins' (2000) account of power on multiple aspects of identity broadly informs the notion of intersectionality applied in this present research. A number of scholars have explicated the theoretical and methodological challenges and opportunities with "quantifying" intersectionality, which originated out of Black feminist and anti-racist activism and scholarship predominately using qualitative methods (see Rodriguez et al., 2016 for their

literature review and references such as Anthias, Bauer, Bowleg, Nash, and colleagues who have written extensively on the subject). This research does not seek to expand upon these robust discussions. Rather, this justice-oriented study was driven by the overarching goal to advance worker health equity from an OHS standpoint. An intersectional approach was used as a means of expanding the purview of worker health equity research from disparate experiences at the individual-level to macrolevel causes of inequitable conditions.

Methods

The 2015 National Health Interview Survey (NHIS) data were utilized to describe work and nonwork conditions for working-classed workers in the United States. The NHIS is a publicly accessible, cross-sectional national annual survey conducted by the National Center for Health Statistics (NCHS) on the households of the civilian, noninstitutionalized population across the U.S. The 2015 NHIS used a multistage sample design involving stratification, clustering, and oversampling of specific population subgroups (i.e., Black, Hispanic, and Asian persons and particularly if aged 65 years or older). This dataset was chosen specifically due to its collection of many demographic and socioeconomic characteristics alongside a wide range of health topics from its participants (NCHS, 2016). Additionally, as a co-sponsoring agency, the National Institute for Occupational Safety and Health (NIOSH) included additional supplemental questions to the 2015 survey estimating workplace exposure prevalence and common health conditions related to work. Public-use (de-identified) data files from the 2015 NHIS were used. An IRB review nor an exempt determination were required for the protection of human participants.

Study Sample

The 2015 data consisted of 41,493 households composed of 103,789 persons in 42,288 families, of which 33,672 were adults aged 18 years and older. The total household response rate was 70.1%, the family response rate was 98.9%, and the conditional response rate (i.e., the number of completed survey interviews divided by the total number of eligible cases) for the sample adult (where the sample adult was a core component of the survey and was the source of occupational data) was 79.7%, yielding a final response rate of 55.2%. For this study, the data were subsetted by those who reported being currently employed (i.e., working for pay at a job or business; with a job or business but not at work; working, but not for pay, at a family-owned job or business), having non-ownership status (i.e., employee of a private company for wages; a federal/state/local government employee), and being in a nonsupervisory work role (i.e., does not supervise other employees as part of their job) at the time of the survey interview. They were not included if seeking work or identifying as a retiree since unemployment presents different experiences in the work and nonwork environments than for those employed. The final study sample consisted of 11,884 working-classed workers.

Variables and Measures

Health status, employment conditions, working conditions, and nonwork conditions were described by a total of 15 items. Worker characteristics were described by 10 items. When applicable, items were reversely coded and/or recoded so that higher scores equated to better health outcomes; and less precarious employment conditions, working conditions, nonwork conditions, and characteristics.

Health Status

Health status is the physical and psychosocial conditions of the worker resulting from engagement in the work and nonwork environment. It was assessed by general health and

psychosocial health. *General health* was measured by one item ("Would you say your health in general is excellent, very good, good, fair, or poor?"). The original scale was a 5-point Likert scale ranging from excellent (1) to poor (5). The scores were reversed and recoded as fair or poor (1), good (2), and very good or excellent (3) in this study. *Psychosocial health* was measured by six items (α = 0.83), such as how often the person felt sad that nothing could cheer them up or felt nervous during the past 30 days. Each item was rated on a recoded 5-point Likert scale ranging from all of the time (0) to none of the time (4) and summed as a composite score (range = 0-24), higher scores indicating less often experiencing adverse symptoms and better psychosocial health during the past 30 days. A score 12 or less indicated serious psychological distress (Ward et al., 2014).

Employment Conditions

Employment conditions, defined as the quality of the contractual and relational dimensions of the relationship between the employer and employee (Benach et al., 2010; Peckham et al., 2019), were assessed by work arrangement, work schedule, job insecurity, and work-related benefits (paid sick leave, health insurance). *Work arrangement* was measured by one item that asked about the best description of their work arrangement where four original response options (e.g., "You are paid by a temporary agency or work for a contractor who provides workers and services to others under contract") were dichotomously recoded as nonstandard arrangement and standard arrangement (regular permanent employee). *Work schedule* was measured by one item that best described the hours usually worked. The original response options of a regular daytime schedule (1) to a rotating shift (4) were reversed and recoded as rotating (non-regular) schedule (1), regular non-daytime (evening or night) schedule (2), and regular daytime schedule (3). *Job insecurity* was measured using a dichotomous item

(yes/no) assessing worry about losing their job. Work-related benefits, *paid sick leave* and *health insurance,* were measured by two dichotomous items that were reversely coded (no/yes).

Working Conditions

Working conditions refer to the quality of the physical and psychosocial components of work (adaptation of definition by Benach et al., 2010). Working conditions were assessed by job demands, workplace safety, workplace harassment, and physical exertion. *Job demands* were measured by one item asking if they had enough time to get their job done. It was reversely coded and dichotomized as disagree or strongly disagree (1) and agree or strongly agree (2) from the original 4-point Likert scale that ranged from strongly agree (1) to strongly disagree (4). *Workplace safety* ("Overall, how safe do you think your workplace is?") was reversed and dichotomously recoded as less safe (1) and very safe (2) from the original 4-point Likert scale ranging from very safe (4) to very unsafe (1). *Workplace harassment* was measured by one dichotomous item (yes/no) ("During the past 12 months, were you threatened, bullied, or harassed by anyone while you were on the job?"). *Physical exertion* was measured by one item ("How often does your job involve repeated lifting, pushing, pulling, or bending?") originally coded on a 5-point Likert scale that ranged from always (0) to never (4). It was recoded as often or always (1), sometimes or seldom (2), and never (3).

Nonwork Conditions

Nonwork conditions refer to the quality of or the extent to which a person has access to resources, such as material, economic, and psychosocial, outside the work environment (Jones, 2014; Schütte et al., 2014). It was assessed by healthcare access, home ownership, housing affordability, and food insecurity. *Healthcare access* was measured by a reversely coded dichotomous item (no/yes) ("Is there a place that you USUALLY go to when you are sick or

need advice about your health?"). *Home ownership* was measured by "Is this house/apartment owned or being bought, rented, or occupied by some other arrangement by [you/or someone in your family]?" The original response options of owned or being bought (1), rented (2), and other arrangement (3) were dichotomously recoded as not owned (1) and owned (2). *Housing affordability* was measured by "How worried are you right now about not being able to pay your rent, mortgage, or other housing costs?" The original response options ranging from very worried (1) to not worried at all (4) were dichotomously recoded as moderately or very worried (1) and not too or at all worried (2). *Food insecurity* was measured by a single item on how frequently the respondents worried about whether their food would run out before they got money to buy more in the last 30 days. The original 3-point scale with response options of often true (1), sometimes true (2), and never true (1) was dichotomously recoded to often or sometimes true (1) and never true (2).

Worker Characteristics

Sex, race, and nativity were used to define the intersectional groupings. Seven other worker characteristics were included to contextualize the work, nonwork, and health status of workers. *Sex* was measured using a dichotomous item ("[Are/Is] [you/person] male or female?"). *Race* was recoded, respectively, from – Hispanic, non-Hispanic White, non-Hispanic Black, non-Hispanic Asian, and non-Hispanic all other race groups – to Latinx, White, Black, Asian, and multiracial/race-not-listed. In this study, Latinx refers to Hispanic, Latin, Latina, Latino, and Latinx (García, 2020). *Nativity* was measured by one question, "[Was person] born in the United States?" with dichotomous response options of born outside the U.S. (born-outside-U.S.) and born in the U.S (U.S.-born).

Industry and *occupation* were measured by main industry and occupation codes based, respectively, on the 2012 North American Industry Classification System (NAICS) used in the U.S. Census and the 2010 Standard Occupational Classification (SOC) occupation classification in the original survey (NCHS, 2016). The survey offered both simple and detailed measures for both industry (21 categories and 79 categories, respectively) and for occupation (23 categories and 94 categories, respectively), of which the simple measures from the original dataset were chosen for this study due to its brevity that still allowed for meaningful interpretation. See Appendix A for the list of industries and occupations used. *Citizenship* was measured using a dichotomous item (no/yes) ("[Is person] a citizen of the United States?"). *Institutionalized educational attainment*, or education level, was measured by one item assessing the highest level of schooling that was completed or the highest degree that was received. The original 21 response options were recoded as 0-12 grades (no diploma) (1), 12 grades (high school diploma) or General Educational Diploma (GED) (2), associate degree or some college (3), and as college degree (≥4 years of college) (4).

Participants were assessed for having *multiple jobs* using a dichotomous item (yes/no). *Annual income* was measured based on self-reported 2014 earnings, which included hourly wages, tips, salaries, and commissions before taxes and deductions. The original 11 response options of $1-$4,999 (1) to $75,000 and over (11) were recoded as <$20,000 (1), $20,000-$44,999 (2), $45,000-$64,999 (3), and ≥$65,000 (4). *Family income to poverty threshold ratio* was calculated in the original 2015 NHIS instrument using several sources due to the 2014 weighted Census poverty thresholds not being available at that time (see NCHS, 2016 for details). For instance, for a family of four in 2014, 100% of the federal poverty level equated to an income of $24,000, $49,000 at 200% of poverty, and $97,000 at 400% of poverty. The

original 18 categorical response options were reduced by recoding as ≤100% of poverty (1), 100%-199% of poverty, (2) 200%-399% of poverty (3), and ≥400% of poverty (4).

Statistical Approach

Statistical software SPSS version 28 (IBM Corp, 2021) was used to conduct all data analyses. Guidelines provided in the 2015 NHIS Survey Description (see Appendix III of NCHS, 2016) were followed due to the multistage, complex sampling strategy of the NHIS. Estimates reported in this study resulted from using 2015 NHIS weighted data where weights were in part derived from population estimates based on the 2010 census (National Center for Health Statistics, 2016). Hereafter, the weighted estimates will refer to the working-classed population unless otherwise noted (i.e., study sample for the unweighted study sample).

Weighted population distributions were calculated at two levels: the entire working-classed population and 16 intersectional groupings. Intersectional groupings, or groupings, refer to subsetted data by sex, race, and nativity (e.g., Asian female born-outside-U.S. working-classed workers). The multiracial/race-not-listed intersectional groupings (smallest unweighted grouping n = 7) were not included in the intersectional analyses due to unreliable estimates from small cell sizes (National Center for Health Statistics [NCHS], 2015). Relative standard errors (RSE) for the population estimates (i.e., weighted percentages) were used to assess if meeting standards of precision or reliability (Agency for Healthcare Research and Quality [AHRQ], n.d.; NCHS, 2015). If not met, these estimates were noted as such in the tables of results. This approach is similar to others who have reported estimates using NHIS data (Alterman et al., 2013; Ward et al., 2014).

Results

Considering the purpose of this paper, major results reported below for the working-classed population's characteristics, health status, employment conditions, working conditions, and nonwork conditions focused on the intersectional groupings, specifically workers of color across sexes and nativity. The results for the working-classed population were included as a comparison. Tables 3.1-3.3 are for worker characteristics; Tables 3.4-3.6 and Tables 3.7-3.9 present major similarities and differences, respectively, in health status and employment, working, and nonwork conditions between the aggregate and intersectional analyses. Other results for the working-classed population and intersectional groupings can be found in Appendix B.

Working-Classed Workers' Characteristics

Just over half of the working-classed population self-identified as female (50.1%), and the majority as White (62.1%) and U.S.-born (80.6%). They most often reported having citizenship (90.8%) and not having multiple jobs (92.0%). They were employed across the 21 industries and 23 occupational survey categories; the health care and social assistance industry (13.8%) and office and administrative support occupations (14.3%) were the most common. Their institutionalized educational attainment ranged from 0-12 grades to a college degree or more, with an associate degree or some college (33.7%) being the most frequently reported. The working-classed population most often reported an annual income between $20,000 and $44,999 (38.8%) and most often fell in the ≥400% of poverty bracket (42.3%).

Similar to the working-classed population, the majority of all 16 groupings reported not having multiple jobs (>90% for each grouping). More than 51% of each born-outside-U.S. grouping most frequently reported having citizenship except for the female (45.7%) and male

(35.0%) Latinx born-outside-U.S. groupings. There were variations by industry, occupation, education level, annual income, and family income to poverty threshold ratio across groupings. The female Latinx born-outside U.S. (19.7%) and U.S.-born (21.8%), female Black born-outside-U.S. (46.7%) and U.S.-born (30.4%), female Asian U.S.-born (22.8%), and female White born-outside-U.S. (26.2%) and U.S.-born (21.6%) groupings most frequently reported employment in the health care and social assistance industry, which was similar to the working-classed population as a whole. However, the female Asian born-outside-U.S. (13.7%), male Asian born-outside-U.S. (20.1%), and male White born-outside-U.S. (27.9%) and U.S.-born (16.7%) groupings most often reported employment in the manufacturing industry; retail trade by the male Latinx U.S.-born (13.1%) and male Black U.S.-born (12.6%) groupings; and construction by the male Latinx born-outside-U.S. (21.6%) grouping.

As for occupation, similar to the working-classed population, female Latinx U.S.-born (26.4%), female Black U.S.-born (21.7%), female Asian born-outside-U.S. (17.6%), and female White born-outside-U.S. (16.8%) and U.S.-born (21.6%) groupings most frequently reported office and administrative support occupations. However, the male Latinx U.S.-born (13.3%) and male Black born-outside-U.S. (16.6%) and U.S.-born (22.9%) groupings most often reported transportation and material moving occupations; construction and extraction occupations by the male Latinx born-outside-U.S. grouping (21.8%); building and grounds cleaning and maintenance occupations by the female Latinx born-outside-U.S. grouping (14.3%); healthcare support occupations by the female Black born-outside-U.S. grouping (24.5%); healthcare practitioners and technical occupations by the female Asian U.S.-born grouping (16.9%); computer and mathematical occupations by the male Asian born-outside-U.S. (21.9%) and male

White born-outside-U.S. (20.6%) groupings; and sales and related occupations by the male White U.S.-born grouping.

For education level, consistent with the working-classed population, a college degree or higher level of educational attainment was most frequently reported by the female Black born-outside-U.S. (39.4%), male Black born-outside-U.S. (38.6%), female Asian born-outside-U.S. (57%) and U.S.-born (58%), male Asian born-outside-U.S. (64.1%) and U.S.-born (52.2%), female White born-outside-U.S. (59.2%), female White U.S.-born (41.3%), and male White born-outside-U.S. (60.3%) groupings. Unlike these groupings, the female Latinx U.S.-born (39.5%), male Latinx U.S.-born (36.8%), female Black U.S.-born (40.7%), male Black U.S.-born (37.4%), and male White U.S.-born (37.1%) groupings most frequently reported having an associate degree or some college. The female (37.8%) and male (47.3%) Latinx born-outside-U.S. groupings were the only groupings to have most frequently reported 0-12 grades of education.

In terms of annual income, similar to the working-classed population, 11 of the 16 groupings (male Latinx born-outside-U.S. = 53.9%; male Latinx U.S.-born = 41.3%; female Black born-outside-U.S = 45.5%; female Black U.S.-born = 41.8%; male Black born-outside-U.S. = 39.7%; male Black U.S.-born = 37.6%; female Asian born-outside-U.S. = 40.5%; female Asian U.S.-born = 37.3%; female White born-outside-U.S. = 45.4%; female White U.S.-born = 37.5%; and male White U.S.-born = 32.2%) most frequently reported annual incomes of $20,000 to $44,999. The exceptions were the female Latinx born-outside-U.S. (54.8%) and U.S.-born (40.5%) groupings who most frequently reported earning less than $20,000 annually, and the male Asian born-outside-U.S. (37%) and U.S.-born (38.7%) and male White born-outside-U.S. (44.8%) groupings, who most often reported earning $65,000 or more annually.

Table 3.1

Working-Classed Population Distributions of Worker Characteristics by Female and Male Latinx Born-Outside-U.S. and U.S.-Born Intersectional Groupings

Distributions

Worker characteristics				Female Latinx born-outside-U.S. ($n^a = 616$)		Female Latinx U.S.-born ($n^a = 529$)		Male Latinx born-outside-U.S. ($n^a = 724$)		Male Latinx U.S.-born ($n^a = 412$)	
	Study Sample[a]	Est.[b] Population	%[c]	n^a	%	n^a	%	n^a	%	n^a	%
Sex											
Female	6,411	45,549	50.4								
Male	5,473	44,835	49.6								
Race											
Latinx	2,282	15,990	17.7								
White	7,035	56,148	62.1								
Nativity											
Born outside the U.S.	2,420	17,493	19.4								
U.S.-born	9,459	72,850	80.6								
Industry[d]											
Construction	512	3,954	4.4	5	†	7	†	160	21.6	36	8.4
Retail Trade	1,199	10,354	11.6	52	9.5	66	14.8	48	13.7	46	13.1
Health care and social assistance	1,770	12,253	13.8	114	19.7	124	21.8	21	1.8	15	†
Occupation[d]											
Building and grounds cleaning and maintenance	535	3,331	3.7	99	14.3	21	†	80	10.8	16	†
Office and administrative support	1,739	12,681	14.2	70	11.4	136	26.4	29	5.4	48	11.9
Construction and extraction	481	3,452	3.9	4	†	3	†	155	21.8	40	8.1
Transportation and material moving	844	6,546	7.4	35	5.4	11	†	94	14.1	48	13.3

Table 3.1 Continued

Worker characteristics	Study Sample[a]	Est. Population[b]	%[c]	Female Latinx born-outside-U.S. (n^a = 616)		Female Latinx U.S.-born (n^a = 529)		Male Latinx born-outside-U.S. (n^a = 724)		Male Latinx U.S.-born (n^a = 412)	
				n^a	%	n^a	%	n^a	%	n^a	%
Citizenship											
No	1,231	8,270	9.2	339	54.3			483	65		
Yes	10,635	81,968	90.8	273	45.7	529		233	35	412	
Education level											
0-12 grades	1,250	8,854	9.8	245	37.8	52	7.0	357	47.3	69	15.0
12 grades (high school diploma) or GED certificate	2,713	20,407	22.7	145	28.0	137	29.0	189	28.3	124	30.6
Associate degree or some college	3,969	30,338	33.7	132	20.8	217	39.5	101	15.3	144	36.8
≥ 4-year College degree	3,918	30,370	33.8	84	13.3	123	24.5	70	9.1	75	17.5
Multiple jobs											
No	10,842	83,057	92.0	590	97.3	488	93.3	688	95.1	379	92.5
Annual income											
< $20,000	2,778	20,141	27.7	265	54.8	158	40.5	178	30.9	96	32.2
$20,000 - $44,999	3,773	27,107	37.3	172	38.0	174	39.6	304	53.9	141	41.3
$45,000 - $64,999	1,608	12,203	16.8	23	4.0	50	12.2	51	9.5	42	11.5
≥ $65,000	1,571	13,242	18.2	19	†	33	7.7	28	5.7	40	14.9
Family income to poverty threshold ratio											
< 100% of poverty	1,371	7,813	9.2	162	23.3	98	14.0	146	18.2	53	10.1
100-199% of poverty	2,172	14,549	17.1	195	34.0	123	23.4	261	36.6	86	21.8
200-399% of poverty	3,610	26,805	31.5	148	27.5	165	36.3	216	36.5	145	38.0
≥ 400% of poverty	4,112	36,029	42.3	79	15.2	118	26.3	57	9.0	107	30.1

Note. Data source: NCHS, National Health Interview Survey, 2015. Est. = estimated. GED = general educational diploma. All estimates are weighted unless otherwise specified.

[a] Unweighted study sample size. [b] Rounded number in thousands. [c] Estimated population percentage. [d] Top industry or occupation reported by the working-classed population or intersectional groupings.

[†] Estimate was not published due to small number of unweighted observations and/or had a high relative standard error.

Table 3.2

Working-Classed Population Distributions of Worker Characteristics by Female and Male Black Born-Outside-U.S. and U.S.-Born Intersectional Groupings Distributions

Worker characteristics	Study Sample[a]	Est.[b] Population	%[c]	Female Black born-outside-U.S. (n^a = 129)		Female Black U.S.-born (n^a = 890)		Male Black born-outside-U.S. (n^a = 126)		Male Black U.S.-born (n^a = 511)	
				n^a	%	n^a	%	n^a	%	n^a	%
Sex											
Female	6,411	45,549	50.4								
Male	5,473	44,835	49.6								
Race											
Black	1,658	11,776	13.0								
White	7,035	56,148	62.1								
Nativity											
Born outside the U.S.	2,420	17,493	19.4								
U.S.-born	9,459	72,850	80.6								
Industry[d]											
Manufacturing	1,199	10,354	11.6	8	†	51	5.8	12	†	65	12.3
Retail Trade	1,174	9,391	10.5	16	†	79	11.9	6	†	59	12.6
Health care and social assistance	1,770	12,253	13.8	56	46.7	268	30.4	18	†	40	7.3
Occupation[d]											
Healthcare support	402	2,666	3.0	28	24.5	71	6.8	2	†	10	†
Office and administrative support	1,739	12,681	14.2	12	†	192	21.7	14	†	62	13.2
Transportation and material moving	844	6,546	7.4	6	†	31	3.4	16	16.6	117	22.9

Table 3.2 Continued

Worker characteristics	Study Sample[a]	Est. Population[b]	%	Female Black born-outside-U.S. (n^a = 129)		Female Black U.S.-born (n^a = 890)		Male Black born-outside-U.S. (n^a = 126)		Male Black U.S.-born (n^a = 511)	
				n^a	%	n^a	%	n^a	%	n^a	%
Citizenship											
No	1,231	8,270	9.2	44	32.7			47	30.7		
Yes	10,635	81,968	90.8	84	67.3	890		79	69.3	511	
Education level											
0-12 grades	1,250	8,854	9.8	9	†	74	8.3	11	†	61	9.0
12 grades (high school diploma) or GED certificate	2,713	20,407	22.7	32	20.6	208	23.4	33	29.0	175	34.7
Associate degree or some college	3,969	30,338	33.7	44	34.3	361	40.7	38	27.6	186	37.4
≥ 4-year College degree	3,918	30,370	33.8	43	39.4	245	27.6	44	38.6	89	19.0
Multiple jobs											
No	10,842	83,057	92.0	124	96.0	798	90.5	117	92.5	458	90.8
Annual income											
< $20,000	2,778	20,141	27.7	28	22.6	244	36.9	27	21.2	126	31.8
$20,000 - $44,999	3,773	27,107	37.3	44	45.5	301	41.8	43	39.7	160	37.6
$45,000 - $64,999	1,608	12,203	16.8	15	†	93	13.2	18	†	82	19.8
≥ $65,000	1,571	13,242	18.2	7	†	59	8.1	12	†	37	10.8
Family income to poverty threshold ratio											
< 100% of poverty	1,371	7,813	9.2	23	15.1	169	18.1	15	†	58	11.0
100-199% of poverty	2,172	14,549	17.1	36	22.5	220	25.4	38	25.8	112	20.1
200-399% of poverty	3,610	26,805	31.5	35	36.7	263	31.5	40	36.8	176	35.1
≥ 400% of poverty	4,112	36,029	42.3	26	25.8	185	25.0	25	26.7	140	33.8

Note. Data source: NCHS, National Health Interview Survey, 2015. Est. = estimated. GED = general educational diploma. All estimates are weighted unless otherwise specified.

[a] Unweighted study sample size. [b] Rounded number in thousands. [c] Estimated population percentage. [d] Top industry or occupation reported by the working-classed population or intersectional groupings.

[†] Estimate was not published due to small number of unweighted observations and/or had a high relative standard error.

Table 3.3

Working-Classed Population Distributions of Worker Characteristics by Female and Male Asian Born-Outside-U.S. and U.S.-Born Intersectional Groupings Distributions

Worker characteristics	Study Sample[a]	Est.[b] Population	%[c]	Female Asian born-outside-U.S. (n^a = 259) n^a	%	Female Asian U.S.-born (n^a = 109) n^a	%	Male Asian born-outside-U.S. (n^a = 308) n^a	%	Male Asian U.S.-born (n^a = 90) n^a	%
Sex											
Female	6,411	45,549	50.4								
Male	5,473	44,835	49.6								
Race											
Asian	767	5,651	6.3								
White	7,035	56,148	62.1								
Nativity											
Born outside the U.S.	2,420	17,493	19.4								
U.S.-born	9,459	72,850	80.6								
Industry[d]											
Manufacturing	1,199	10,354	11.6	31	13.7	6	†	56	20.1	6	†
Professional, scientific, and technical services	714	5,581	6.3	31	10.6	7	†	53	17.3	14	†
Health care and social assistance	1,770	12,253	13.8	32	13.4	23	22.8	23	7.4	7	†
Occupation[d]											
Computer and mathematical	458	3,867	4.3	24	9.3	5	†	65	21.9	14	†
Healthcare practitioners and technical	598	4,537	5.1	19	†	14	16.9	12	†	3	†
Office and administrative support	1,739	12,681	14.2	41	17.6	23	16.5	19	†	5	†

Table 3.3 Continued

Worker characteristics				Female Asian born-outside-U.S. (n^a = 259)		Female Asian U.S.-born (n^a = 109)		Male Asian born-outside-U.S. (n^a = 308)		Male Asian U.S.-born (n^a = 90)	
	Study Sample[a]	Est. Population[b]	%	n^a	%	n^a	%	n^a	%	n^a	%
Citizenship											
No	1,231	8,270	9.2	102	31.8			150	48.7	0	0
Yes	10,635	81,968	90.8	157	68.2	109		158	51.3	90	
Education level											
0-12 grades	1,250	8,854	9.8	17	†	3	†	26	9.7	3	†
12 grades (high school diploma) or GED certificate	2,713	20,407	22.7	40	13.4	9	†	46	11.6	8	†
Associate degree or some college	3,969	30,338	33.7	54	22.8	32	31.9	44	14.6	30	24.5
≥ 4-year College degree	3,918	30,370	33.8	145	57.0	65	58.0	191	64.1	49	52.2
Multiple jobs											
No	10,842	83,057	92.0	240	92.5	96	86.3	284	91.8	84	96.7
Annual income											
< $20,000	2,778	20,141	27.7	50	23.9	15	19.9	61	20.9	11	†
$20,000 - $44,999	3,773	27,107	37.3	77	40.5	28	37.3	74	30.3	19	†
$45,000 - $64,999	1,608	12,203	16.8	38	17.7	21	16.6	33	11.9	17	†
≥ $65,000	1,571	13,242	18.2	38	17.9	22	26.2	89	37.0	24	38.7
Family income to poverty threshold ratio											
< 100% of poverty	1,371	7,813	9.2	21	7.2	13	11.4	40	9.9	4	†
100-199% of poverty	2,172	14,549	17.1	33	11.0	13	8.3	50	18.8	5	†
200-399% of poverty	3,610	26,805	31.5	72	33.7	22	28.2	77	26.2	27	24.1
≥ 400% of poverty	4,112	36,029	42.3	111	48.1	54	52.1	121	45.2	48	14.0

Note. Data source: NCHS, National Health Interview Survey, 2015. Est. = estimated. GED = general educational diploma. All estimates are weighted unless otherwise specified.

[a] Unweighted study sample size. [b] Rounded number in thousands. [c] Estimated population percentage. [d] Top industry or occupation reported by the working-classed population or intersectional groupings.

[†] Estimate was not published due to small number of unweighted observations and/or had a high relative standard error.

Table 3.4

Working-Classed Population Distributions of Health Status and Employment, Working, and Nonwork Conditions: Similar Responses Among Intersectional Groupings, by Female and Male Latinx Born-Outside-U.S. and U.S.-Born Groupings

Health status and work and nonwork factors				Female Latinx born-outside-U.S.		Female Latinx U.S.-born		Male Latinx born-outside-U.S.		Male Latinx U.S.-born	
	Study Sample[a]	Est.[b] Population	%[c]	*n*[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
General health											
Good	3,162	23,390	25.8	232	37.5	163	29.3	232	32.1	123	28.5
Very good or Excellent	7,880	61,485	68.0	320	51.9	311	63.4	440	60.2	268	66.7
		Population *M*	95% CI	*M*	95% CI	*M*	95% CI	*M*	95% CI	*M*	95% CI
Psychosocial health	11,414	21.76	21.7 - 21.9	21.57	21.2 - 21.9	21.34	20.9 - 21.8	22.6	22.4 - 22.8	21.7	21.1 - 22.2
		Est.[b] Population	%[c]	*n*[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
Work arrangement											
Standard	10,360	78,870	87.4	513	84.9	477	90.8	576	79.4	362	90.1
Work schedule											
Regular daytime shift	8,810	66,200	73.4	490	80.5	108	74.4	531	72.6	275	62.9
Job insecurity											
No	10,464	79,647	88.4	492	81.8	475	89.9	573	79.6	368	88.3
Low job demands											
Agree or strongly agree	10,461	79,791	88.6	549	90.2	464	87.6	633	88.2	374	91.2

Table 3.4 Continued

Health status and work and nonwork factors	Study Sample[a]	Est.[b] Population	%[c]	Female Latinx born-outside-U.S.		Female Latinx U.S.-born		Male Latinx born-outside-U.S.		Male Latinx U.S.-born	
				n[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
Workplace harassment											
No	11,024	84,090	93.2	575	94.8	491	93.8	694	96.4	384	94.3
Healthcare access											
Yes	9,786	74,625	83.3	508	81.7	436	85.3	417	58.7	286	70.4
Food insecurity											
Never true	10,274	79,003	87.4	470	79.6	420	81.3	546	74.8	334	82.6

Note. Data source: NCHS, National Health Interview Survey, 2015. Est. = estimated. *M* = mean. CI = confidence interval. All estimates are weighted unless otherwise specified.

[a] Unweighted study sample size. [b] Rounded number in thousands. [c] Estimated population percentage.

Table 3.5

Working-Classed Population Distribution of Employment, Working, and Nonwork Exposures: Similar Responses Between Aggregate and Intersectional Analyses, by Female and Male Black Born-Outside-U.S. and U.S.-Born Groupings

Health status and work and nonwork factors				Female Black born-outside-U.S.		Female Black U.S.-born		Male Black born-outside-U.S.		Male Black U.S.-born	
	Study Sample[a]	Est.[b] Population	%[c]	*n*[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
General health											
Good	3,162	23,390	25.8	30	23.9	295	29.9	26	22.5	114	28.2
Very good or Excellent	7,880	61,485	68.0	93	70.4	500	60.3	92	73.8	315	64.2
		Population *M*	95% CI	*M*	95% CI	*M*	95% CI	*M*	95% CI	*M*	95% CI
Psychosocial health	11,414	21.76	21.7 - 21.9	21.55	20.6-22.5	21.0	21.1-21.7	22.0	21.7-23.1	21.98	21.7-22.3
		Est.[b] Population	%[c]	*n*[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
Work arrangement											
Standard	10,360	78,870	87.4	118	92.4	793	89.2	102	78.7	437	86.2
Work schedule											
Regular daytime shift	8,810	66,200	73.4	89	73.5	648	72.1	76	57.4	320	61.0
Job insecurity											
No	10,464	79,647	88.4	108	83.3	799	91.7	104	83.8	462	92.0
Low job demands											
Agree or strongly agree	10,461	79,791	88.6	110	85.0	771	88.2	119	93.6	460	91.1

Table 3.5 Continued

Health status and work and nonwork factors				Female Black born-outside-U.S.		Female Black U.S.-born		Male Black born-outside-U.S.		Male Black U.S.-born	
	Study Sample[a]	Est.[b] Population	%[c]	*n*[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
Workplace harassment											
No	11,024	84,090	93.2	123	96.5	834	94.9	115	92.5	476	93.1
Healthcare access											
Yes	9,786	74,625	83.3	110	89.4	806	90.9	98	84.7	399	78.3
Food insecurity											
Never true	10,274	79,003	87.4	94	72.6	683	78.2	102	78.9	413	79.2

Note. Data source: NCHS, National Health Interview Survey, 2015. Est. = estimated. *M* = mean. CI = confidence interval. All estimates are weighted unless otherwise specified.

[a] Unweighted study sample size. [b] Rounded number in thousands. [c] Estimated population percentage.

Table 3.6

Working-Classed Population Distribution of Employment, Working, and Nonwork Exposures: Similar Responses Between Aggregate and Intersectional Analyses, by Female and Male Asian Born-Outside-U.S. and U.S.-Born Groupings

Health status and work and nonwork factors				Female Asian born-outside-U.S.		Female Asian U.S.-born		Male Asian born-outside-U.S.		Male Asian U.S.-born	
	Study Sample[a]	Est.[b] Population	%[c]	*n*[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
General health											
Good	3,162	23,390	25.8	54	22.0	24	22.5	74	25.4	19	†
Very good or Excellent	7,880	61,485	68.0	192	72.4	80	72.5	219	70.9	65	71.0
		Population *M*	95% CI	*M*	95% CI	*M*	95% CI	*M*	95% CI	*M*	95% CI
Psychosocial health	11,414	21.76	21.7 - 21.9	22.35	21.9-22.8	21.6	21.0-22.2	22.2	21.7-22.7	22.5	21.8-23.1
		Est.[b] Population	%[c]	*n*[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
Work arrangement											
Standard	10,360	78,870	87.4	224	87.1	98	82.8	269	87.2	82	95.5
Work schedule											
Regular daytime shift	8,810	66,200	73.4	203	79.2	92	74.0	240	76.6	66	68.8
Job insecurity											
No	10,464	79,647	88.4	212	85.0	98	89.7	246	78.3	85	90.8
Low job demands											
Agree or strongly agree	10,461	79,791	88.6	239	93.0	90	82.2	286	94.7	83	98.1

Table 3.6 Continued

Health status and work and nonwork factors	Study Sample[a]	Est.[b] Population	%[c]	Female Asian born-outside-U.S.		Female Asian U.S.-born		Male Asian born-outside-U.S.		Male Asian U.S.-born	
				n[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
Workplace harassment											
No	11,024	84,090	93.2	248	96.8	96	89.5	301	98.7	86	98.4
Healthcare access											
Yes	9,786	74,625	83.3	220	91.6	93	77.3	238	80.1	76	77.6
Food insecurity											
Never true	10,274	79,003	87.4	137	64.2	55	58.7	130	53.5	49	67.3

Note. Data source: NCHS, National Health Interview Survey, 2015. Est. = estimated. *M* = mean. CI = confidence interval. All estimates are weighted unless otherwise specified.

[a] Unweighted study sample size. [b] Rounded number in thousands. [c] Estimated population percentage.

[†] Estimate was not published due to small number of unweighted observations and/or had a high relative standard error.

Table 3.7

Working-Classed Population Distribution of Employment, Working, and Nonwork Exposures: Differing Responses Between Aggregate and Intersectional Analyses, by Female and Male Latinx Born-Outside-U.S. and U.S.-Born Groupings

Work and nonwork factors				Female Latinx born-outside-U.S.		Female Latinx U.S.-born		Male Latinx born-outside-U.S.		Male Latinx U.S.-born	
	Study Sample[a]	Est.[b] Population	%[c]	*n*[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
Paid sick leave											
No	5,078	38,591	43.2	372	61.0	216	42.4	458	60.0	203	48.3
Yes	6,683	50,827	56.8	234	39.0	306	57.6	251	40.0	202	51.7
Health insurance											
No	3,932	30,299	34.0	313	50.7	200	39.4	396	54.3	138	34.4
Yes	7,818	58,792	66.0	289	49.3	319	60.6	311	45.7	268	65.6
Workplace safety											
Less safe	4,872	37,006	41.0	326	55.4	213	38.7	437	61.0	188	50.2
Very safe	6,982	53,153	59.0	287	44.6	316	61.3	280	39.0	223	49.8
Job-related physical exertion											
Often or always	4,903	37,450	41.5	260	40.3	187	35.1	435	61.1	219	52.1
Sometimes or seldom	4,085	31,049	34.4	213	37.1	187	37.9	197	26.1	136	35.2
Never	2,883	21,765	24.1	141	22.6	154	27.0	89	12.7	57	12.6
Home ownership											
Not own	5,387	34,878	38.7	379	56.4	273	42.5	495	63.7	215	44.3
Own	6,480	55,346	61.3	235	43.6	256	57.5	228	36.3	197	55.7
Housing affordability											
Moderately or very worried	2,849	20,251	23.2	326	52.2	155	29.6	329	44.7	95	22.3
Not too or at all worried	8,649	67,188	76.8	275	47.8	356	70.4	377	55.3	307	77.7

Note. Data source: NCHS, National Health Interview Survey, 2015. Est. = estimated. All estimates are weighted unless otherwise specified.

[a] Unweighted study sample size. [b] Rounded number in thousands. [c] Estimated population percentage.

Table 3.8

Working-Classed Population Distribution of Employment, Working, and Nonwork Exposures: Differing Responses Between Aggregate and Intersectional Analyses, by Female and Male Black Born-Outside-U.S. and U.S.-Born Groupings

Work and nonwork factors				Female Black born-outside-U.S.		Female Black U.S.-born		Male Black born-outside-U.S.		Male Black U.S.-born	
	Study Sample[a]	Est.[b] Population	%[c]	*n*[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
Paid sick leave											
No	5,078	38,591	43.2	55	40.7	346	42.7	60	47.8	223	45.1
Yes	6,683	50,827	56.8	71	59.3	533	57.3	66	52.2	284	54.9
Health insurance											
No	3,932	30,299	34.0	41	29.6	266	35.3	45	34.2	157	31.8
Yes	7,818	58,792	66.0	86	70.4	612	64.7	81	65.8	349	68.2
Workplace safety											
Less safe	4,872	37,006	41.0	63	47.4	420	46.4	65	50.0	257	51.0
Very safe	6,982	53,153	59.0	65	52.6	468	53.6	61	50.0	253	49.0
Job-related physical exertion											
Often or always	4,903	37,450	41.5	51	35.7	331	39.1	62	42.9	279	56.7
Sometimes or seldom	4,085	31,049	34.4	42	32.4	314	35.8	43	36.9	145	27.3
Never	2,883	21,765	24.1	36	31.9	243	25.1	21	20.1	87	16.0
Home ownership											
Not own	5,387	34,878	38.7	96	64.3	551	59.2	91	59.5	303	52.1
Own	6,480	55,346	61.3	33	35.7	336	40.8	35	40.5	206	47.9
Housing affordability											
Moderately or very worried	2,849	20,251	23.2	57	44.8	277	30.4	57	51.0	126	24.5
Not too or at all worried	8,649	67,188	76.8	64	55.2	573	69.6	67	49.0	354	75.5

Note. Data source: NCHS, National Health Interview Survey, 2015. Est. = estimated. All estimates are weighted unless otherwise specified.

[a] Unweighted study sample size. [b] Rounded number in thousands. [c] Estimated population percentage.

Table 3.9

Working-Classed Population Distribution of Employment, Working, and Nonwork Exposures: Differing Responses Between Aggregate and Intersectional Analyses, by Female and Male Asian Born-Outside-U.S. and U.S.-Born Groupings

Work and nonwork factors				Female Asian born-outside-U.S.		Female Asian U.S.-born		Male Asian born-outside-U.S.		Male Asian U.S.-born	
	Study Sample[a]	Est.[b] Population	%[c]	*n*[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
Paid sick leave											
No	5,078	38,591	43.2	103	44.5	31	32.3	119	36.4	25	26.1
Yes	6,683	50,827	56.8	151	55.5	77	67.7	186	63.6	65	73.9
Health insurance											
No	3,932	30,299	34.0	91	37.5	22	24.4	87	28.4	20	†
Yes	7,818	58,792	66.0	167	62.5	86	75.6	219	71.6	70	76.5
Workplace safety											
Less safe	4,872	37,006	41.0	95	35.3	46	42.1	109	35.6	36	45.2
Very safe	6,982	53,153	59.0	163	64.7	63	57.9	197	64.4	54	54.8
Job-related physical exertion											
Often or always	4,903	37,450	41.5	57	20.2	32	34.0	82	26.6	33	36.7
Sometimes or seldom	4,085	31,049	34.4	87	35.5	39	33.5	113	36.7	29	32.8
Never	2,883	21,765	24.1	114	44.3	38	32.5	112	36.7	28	30.5
Home ownership											
Not own	5,387	34,878	38.7	121	35.8	53	41.3	177	46.5	41	32.7
Own	6,480	55,346	61.3	137	64.2	55	58.7	130	53.5	49	67.3
Housing affordability											
Moderately or very worried	2,849	20,251	23.2	67	26.5	19	†	78	27.4	9	†
Not too or at all worried	8,649	67,188	76.8	181	73.5	89	83.6	219	72.6	79	86.5

Note. Data source: NCHS, National Health Interview Survey, 2015. Est. = estimated. All estimates are weighted unless otherwise specified.

[a] Unweighted study sample size. [b] Rounded number in thousands. [c] Estimated population percentage.

† Estimate was not published due to small number of unweighted observations and/or had a high relative standard error.

Lastly, as for the family income to poverty threshold ratio, the female (34%) and male (36.6%) Latinx born-outside-U.S. groupings were the only groupings to most frequently fall in the lowest reported family income to poverty threshold ratio bracket (100-199% of poverty), while all eight Asian and White groupings across race and nativity most frequently fell in the highest bracket (≥400% of poverty).

Health Status

Overall, the workers scored high across both general health and psychosocial health measures for worker health and had a similar pattern across both levels of analyses. The working-classed population reported very good or excellent general health (responses of >51% for the total population and all groupings). Of a range of 0 to 24 points, the mean score of psychosocial health was 21.76, 95% CI [21.7, 21.9] for the working-classed population, indicating less frequent experiences of adverse psychosocial symptoms in the past 30 days. Similarly, the ranges of mean scores of psychosocial health for the intersectional groupings were 21.34, 95% CI [20.9, 21.8] to 22.62, 95% CI [22.4, 22.8].

Employment Conditions

The working-classed population and intersectional groupings most frequently reported having a standard work arrangement (>78%), regular daytime schedule (>57%), and job security (>78%). For work-related benefits, 56.8% and 66.0% of the working-classed population reported having paid sick leave and health insurance, respectively. Similarly, more than 51% and more than 60% of responses for each grouping reported having both benefits, respectively. The exceptions were for Latinx born-outside-U.S. groupings across sexes. The minority of the female Latinx born-outside-U.S. grouping reported receiving paid sick leave and health insurance

(39.0% and 49.3%, respectively) and as well as for the male Latinx born-outside-U.S. grouping (40.0% and 45.7%, respectively).

Working Conditions

The majority of the working-classed population (88.6%) and the majority of each grouping (>82%) most frequently reported low job demands (agree or strongly agree to having enough time to complete work) and low levels of workplace harassment in the past 12 months (responses of >88% for the working-classed population and all groupings). The working-classed population (59%) and 11 groupings (female Latinx U.S.-born (61.3%), female Black born-outside-U.S. (52.6%) and U.S.-born (53.6%), female Asian born-outside-U.S. (64.7%) and U.S.-born (57.9%), male Asian born-outside-U.S. (64.4%) and U.S.-born (54.8%), female White born-outside-U.S. (67.9%) and U.S.-born (65.7%), and the male White born-outside-U.S. (65.3%) and U.S.-born (60.8%) groupings) most frequently reported workplace safety as very safe. The exceptions were for the female Latinx born-outside-U.S. (44.6%), male Latinx born-outside-U.S. (39.0%) and U.S.-born (49.8%), and male Black U.S.-born (49.0%) groupings who most often reported workplace safety as less safe. The male Black born-outside-U.S. grouping had split results (very safe = 50.0%; less safe = 50.0%).

For job-related physical exertion, the working-classed population (41.5%) and 10 groupings (female Latinx born-outside-U.S. = 40.3%; male Latinx born-outside-U.S. = 61.1%; male Latinx U.S.-born = 52.1%; female Black born-outside-U.S. = 35.7%; female Black U.S.-born = 39.1%; male Black born-outside-U.S. = 42.9%; male Black U.S.-born = 56.7%; female Asian U.S.-born = 34%; male Asian U.S.-born = 36.7%; male White U.S.-born = 47.5%) most frequently reported their jobs as often or always involving repeated lifting, pushing, pulling, or bending. Sometimes or seldom involvement was most often reported by the female Latinx U.S.-

born (37.9%), male Asian born-outside-U.S. (36.7%), female White U.S.-born (38.4%), and male White born-outside-U.S. (42.9%). The female Asian born-outside-U.S. (44.3%), male Asian born-outside-U.S. (36.7%), and female White born-outside-U.S. (48.6%) were the only groupings that most frequently reported their jobs as never involving such physical exertion.

Nonwork Conditions

Over 83.0% of the working-classed population reported access to healthcare; ≥58% of responses for each intersectional grouping also indicated most frequently having this access. The majority of the working-classed population (87.4%) and groupings (>72% for each grouping) most often reported never experiencing food insecurity. As for home ownership and housing affordability concerns, there were variations between groupings. Home ownership was most frequently reported by 61.3% of the working-classed population and by 57.5% of the female Latinx U.S.-born grouping, 55.7% of the male Latinx U.S.-born grouping, by >53% for all four of the Asian intersectional groupings across sexes and nativity, and by >57% for all four of the White intersectional groupings across sexes and nativity. For concerns about being able to afford housing costs, 76.8% of the total population and the majority of the groupings (female Latinx U.S.-born = 70.4%; male Latinx born-outside-U.S. = 55.3%; male Latinx U.S.-born = 77.7%; female Black born-outside-U.S. = 55.2%; female Black U.S.-born = 69.6%; male Black U.S.-born = 75.5%; female Asian born-outside-U.S. = 73.5%; female Asian U.S.-born = 83.6%; male Asian born-outside-U.S. = 72.6%; male Asian U.S.-born = 86.5%; female White born-outside-U.S. = 69.7%; female White U.S.-born = 80.5%; male White born-outside-U.S. = 81.9%; male White U.S.-born = 86.1%) most often reported not too or at all worried. The exceptions were the female Latinx born-outside-U.S. (52.2%) and the male Black born-outside-U.S. (51%) groupings

that most frequently reported being moderately or very worried about being able to afford housing costs.

Discussion

This study used a national dataset to describe conditions of the work and nonwork environment and indicators of health for U.S. workers at the bottom of the class structure, considering the intersections of class, sex, race, and nativity. By aggregate and intersectional analyses, workers most frequently reported having a standard work arrangement, regular daytime schedule, job security, low degree of job demands, no workplace harassment, healthcare access, food security, and no multiple jobs. However, other indicators (work-related benefits, workplace safety, job-related physical exertion, home ownership, housing affordability, industry, occupation, education level, annual income, and family income to poverty threshold ratio) suggest more precarious conditions of the work and nonwork environment depending on the social locations of groupings, which were not seen by aggregate analysis. Thus, compared to aggregate analyses, intersectional analyses were indeed more sensitive to detecting inequitable conditions within the working classed as noted in prior studies (Barbeau et al., 2004; Krieger et al., 2005; Muntaner et al., 2010).

Sexism, Racism, and Nativism: Persistent Dividers of Work and Nonwork Experiences

Similar to prior findings from the broader equity research literature, the findings of the present study by intersectional analyses suggest the persistence of systemic and structural sexism (Alonso-Villar et al., 2012; Baron et al., 2013; del Río & Alonso-Villar, 2015; Mintz & Krymkowski, 2010; O'Farrell, 1999), racism (Glenn, 1985; Gutiérrez, 2004), and nativism (Harrison & Lloyd, 2013; Ifatunji, 2017; Showers, 2015; Vickerman, 2007) in shaping work and nonwork conditions for the U.S. working classed. For instance, broadly speaking, there was a

general divide in occupation between sexes across races and nativity. Female groupings across races and nativity most often reported employment in service or care work. These occupations have historically been stereotyped as “women’s work” that is devalued—societally and monetarily—due to the undervaluing of the producer of this work (women) and of the skills involved as compared to the valuing of men and their labor (Dwyer, 2013). As such, alongside these findings, male groupings across races and nativity generally most often met higher annual income and family income to poverty ratio threshold brackets.

There were also differences between racialized groupings across sexes and nativity. The majority of Latinx and Black racialized groupings most frequently reported their job as often or always involving physical exertion. This finding is likely explained by the majority of the groupings’ reported employment in physically laborious occupations (e.g., healthcare support, construction and extraction, transportation, and material moving). Workers of color have been historically relegated to “the worst jobs” (Glenn, 1985, p. 87), such as jobs with “dirty” and dangerous work conditions (Glenn, 1985; Gutiérrez, 2004). In addition, the racialized experience across sexes and nativity also manifests in nonwork conditions. The majority of the Latinx and Black groupings across sexes and nativity also most often reported not owning their homes. This finding is consistent with the research literature that has described Latinx and Black racialized individuals as less likely to own their homes compared to White individuals (Desilver & Bialik, 2017). Greater difficulty first obtaining approval for conventional mortgages, and second, if approved, paying higher interest rates compared to White and Asian racialized people have been cited as reasons (Desilver & Bialik, 2017).

Further, differences were noted between born-outside-U.S. and U.S.-born groupings across sexes and races. For instance, female Latinx and Black groupings across nativity most

frequently reported employment in the healthcare and social assistance industry. However, the born-outside-U.S. groupings most often reported occupations described as physically and mentally demanding work compared to their U.S.-born counterparts. Prior studies have reported employers actively selecting and favoring born-outside-U.S. workers to U.S.-born workers based on their vulnerability (or rather, exploitability) (Harrison & Lloyd, 2013; Ifatunji, 2017; Showers, 2015; Vickerman, 2007). Systems and structures (e.g., labor laws, immigration policies) are in place to enable employers to restructure work and working conditions in such ways that only “the most subordinated workers would accept” (Harrison & Lloyd, 2013, p. 282), positions commonly ascribed to workers born outside the U.S. This segregation of work by nativity, as seen between the born-outside-U.S. and U.S.-born groupings across sexes and races, is purposeful and reflects how oppressive ideologies operate behind inequitable conditions to perpetuate unjust employment practices.

These patterns observed in the study’s findings support the previously described persistence of systemic and structural racism, sexism, and nativism noted by sex, race, and nativity in the research literature remarked upon earlier. Most importantly, these patterns did not apply across all intersectional groupings. For example, the female Latinx born-outside-U.S. grouping most often reported conditions more precarious than those reported by the other groupings. However, the Asian groupings across sexes and nativity reported some of the least precarious conditions of work and nonwork than the other groupings. Overall, these findings suggest that analyzing systems of power concepts individually reifies the faulty notion of a hierarchy of oppressions. Rather, oppressions need to be conceptualized as intertwined and co-constituting the human work and nonwork experience. Doing so will help explain why and how

certain intersections of social identities position workers in multiple, simultaneously oppressive work and nonwork conditions.

The Intersections of Internal Colonialism, Racist Nativism, and Shadeism

In addition to sexism, racism, and nativism, the intraclass differences between intersectional groupings also suggest the influence of less overt intersecting power systems: internal colonialism, racist nativism, and shadeism. Internal colonialism, a "system of power relations by which subordinate minorities are kept politically and economically weak so they can be more easily exploited as workers" (Glenn, 1985, p. 87), locates certain groups in subordinated minoritized positions. As discussed in the last section, the female Latinx born-outside-U.S. grouping most often reported conditions more precarious than those reported by the other groupings. The majority of the workers of this grouping reported not having citizenship or work-related benefits and had low annual income. Not only is this grouping simultaneously exposed to multiple exploitative conditions, such as housing insecurity and limited skill development opportunities (Chinchilla et al., 2022; Harrison & Lloyd, 2013), they are in subordinated minoritized positions located at the bottom of the hierarchical power structure (whereas those ascribed hegemonic social locations (i.e., male White U.S.-born nonworking-classed workers) at the top). These power differentials are enforced by racist nativism that assigns "values to real or imagined differences, in order to justify the superiority of the native, to the benefit of the native and at the expense of the non-native, thereby defending the native's right to dominance" (Huber et al., 2008, p. 42). In this context, "native" is not made so distinct from "nonnative" based on legal status, such as citizenship (Huber et al., 2008), but more so on the *perception* of "who is native or 'American'" (Johnson, 1997 as cited in García, 2017). Thus, non-nativeness, or otherness (Smith, 2012), is assigned to those who are perceived as such (female Latinx born-

outside-U.S. working-classed workers, in this case) and reifies the hierarchical social structure to maintain the power imbalance.

Shadeism, a "hierarchical social valuing of skin tones on a spectrum along which the lightest is the most cherished" (strmic-pawl, 2021, p. 289), functions simultaneously with racist nativism and internal colonialism to assign the degree of perceived otherness. Like racism, white supremacy (Huber et al., 2008) is central to shadeism and is maintained, for instance, by allowing "some newcomers into the White racial strata" (Bonilla-Silva, 2002, p. 5), such as "honorary Whites" (p. 5). The perception or proximity of Asianness to whiteness welcomes their membership as "honorary Whites" (Bonilla-Silva, 2002, p. 4) and differentially gives "honorary Whites" access to benefits, such as a good education, decent jobs, and good housing (Bonilla-Silva, 2002). The present study's findings show that the Asian groupings across sexes and nativity generally experienced the least precarious work and nonwork conditions compared to other workers of color groupings across sexes and nativity and similar to or less precarious than findings for the White groupings across sexes and nativity. Likely influenced by shadeism, the Asian groupings are located in less subordinated minoritized positions, which lessens the power differential with those perceived as "native." Furthermore, as shadeism assigns the proximity of Asianness to whiteness, this ideology also reifies the otherness prescribed by internal colonialism and racist nativism by assigning otherness as proximal to Blackness. This location restricts access to systems and structures that afford less precarious conditions of not just work but the nonwork environment (Lee et al., 2022), as suggested by the results for the Latinx and Black groupings across sexes and nativity.

Overall, the findings illuminate the interrelatedness rather than the hierarchy of internal colonialism, racist nativism, and shadeism. Alongside other systems of power, these hegemonic

ideologies are simultaneously and mutually shaping conditions of work and nonwork, as evidenced by the present study's findings. Moreover, power at the macrolevel is reflective of the power observed at the individual level, highlighting the processes through which varying degrees of power and privilege are assigned to particular positions at the intersections of class, sex, race, and nativity.

Innovation for Work Health Equity Research

To my knowledge, there are no prior studies that have described work and nonwork conditions of the U.S. working classed at the intersections examined in the present study. A few studies have examined health outcomes at different intersections of social identities and positions; however, these intersections have predominately been relational class and gender *or* relational class and race distinctions (Eisenberg-Guyot & Prins, 2020; Eisenberg-Guyot et al., 2022; Schwalbe & Staples, 1986). Additionally, interclass analyses predominate, with one recent exception by Eisenberg-Guyot et al. (2022). Part of their interclass study included an intraclass analysis of the working-classed and examined "quality of worklife" (p. 4) variables (encompassing employment and working conditions) at the intersections of relational class, gender (i.e., female, male), and race (i.e., Black/Hispanic/Latinx and non-Hispanic White). Their findings suggest more precarious working conditions for working-classed women of color than for White working-classed men. The present study's findings are broadly consistent with Eisenberg-Guyot et al.'s work with respect to working conditions.

This present study contributes additional empirical evidence to the worker health equity literature by including nonwork conditions and nativity in the research question. In general, the limited studies from the U.S.-based relational class literature have explicitly based social class indicators on mechanisms of employment and work to explain the generation of socioeconomic

inequalities and their potential effect on health (Muntaner et al., 2010). Thus, the relation of class to nonwork conditions (and in addition to employment and working conditions) has largely been understudied despite the known interplay between the work and nonwork environment (Ettlinger, 2007; Motakef, 2019). Nonwork conditions can inform workers' opportunities and choices in the work environment that can affect their overall health and vice versa. Additionally, there is a gap in knowledge on the conditions and experience of workers at the intersections of relational class with nativity. This study contributes to the scant U.S.-based relational class and OHS literature by conducting an intraclass analysis and extending the intersections examined to provide knowledge of work *and* nonwork conditions reported by the female and male Latinx, Black, Asian, and White born-outside-U.S. and U.S.-born workers of the U.S. working classed.

In summary, the present study's findings suggest that precarious and less precarious work and nonwork conditions and the health of the U.S. working classed are informed by persistent hegemonic ideologies. Describing these conditions by aggregate analysis obscures disparities at the intersections of class, sex, race, and nativity. Additionally, the intersectional results suggest that social locations are not stagnant in terms of privilege and oppression. Rather, depending on the context, workers are more or less oppressed (or more or less privileged), such as when being given membership into Whiteness or subordinately minoritized into otherness, to the benefit of maintaining hegemonic ideologies and social locations. Hence, the precariousness and less precariousness of conditions are an important metric for measuring progress towards health equity. This intersectional approach repositioned the level of analysis from individual attributes to the processes that underlie these attributes and thereby connect the conditions in which workers are embedded to hierarchical ideologies and their mechanisms. Moreover, this approach

facilitates the analysis of power, a concept pivotal to advancing worker health equity as "the well-being of people is determined by power" (Murray, 2012, p. 231).

Limitations and Strengths

There were notable limitations associated with using existing national survey data. The present study was limited to the items provided in the original dataset, which were constructed with a different orientation and for different research purposes. For instance, there were missing desired items (e.g., membership in labor union, measure of income sufficiency) as well as high rates of missingness for certain items (e.g., access to primary care services, marital status) that restricted measures of work and nonwork conditions and relevant worker characteristics. Questions such as membership in a labor union, sufficiency of income, access to primary care services, and marital status would have offered further information on factors to evaluate leverage of power through resources in the work and nonwork environment. Additionally, the broad race categories used in the original dataset disguised various ethnic and multiethnic differences, thereby masking disparate exposures to inequitable conditions. This limitation was particularly evident for the Asian intersectional groupings whose experiences of the work and nonwork environment differ substantially by ethnicity and ancestry, such as differential occupational employments and risks for workplace hazards (Azaroff et al., 2003; Siordia & Galley, 2020). Also, the possibility of using measures in this survey that further differentiated the broad racialized categories was limited by small cell sizes when conducting intersectional analyses. Finally, this study used quantitative methods, which limited the inferences drawn from the quantitative analyses. Assessing workers' embodied, lived experiences is arguably not quantifiable and requires qualitative methods from a critical research perspective.

These limitations of the original survey design, measures, and methods chosen, however, were offset by the strengths of these analyses based on a few factors. First, the survey included a large number and variety of variables. Hence, there were alternative options for choosing items that similarly measured the same concepts (e.g., instead of measuring access to primary care services, using a measure of healthcare access). Second, the nationally representative sample of the original survey enabled interpretation of group experiences and provided generalizable data for the adult, civilian and noninstitutionalized U.S. working classed. The exception was for respondents who identified as multiracial or race-not-listed, whose sample size limited the reliability of estimates from which to interpret (e.g., seven respondents in the female race-not-listed migrant grouping). However, this speaks to broader systemic issues with representation and inclusion of diverse, intersectional identities in research more so than a limitation specific to this present study. Finally, the complexity of disparities and inequities requires multiple viewpoints through qualitative and quantitative analyses, of which the latter is offered through this study. Framing quantitative methods with an intersectional approach disrupts "white logic and white methods" (García, 2017, p. 6) and advances how we monitor progress toward health equity.

Implications

While this present study is partial towards reporting and discussing the most frequently reported survey responses for the total population and intersectional groupings, the less frequently reported responses are important to note. For instance, 43.2% and 34.0% of the working-classed population, which are substantial figures, reported *not* having paid sick leave or work-related health insurance, respectively. By intersectional analyses, these work-related benefits are higher for certain intersectional groupings, such as the 47.8% and 34.2% of workers

of the male Black born-outside-U.S. groupings who reported not receiving paid sick leave or health insurance, respectively. These figures suggest that a significant portion of working-classed workers may be experiencing precarious conditions that are being missed if majority responses are the sole focus. Also, there is a continued need to conceptually and methodologically diversify approaches used in worker health equity research to illuminate and monitor disparate experiences and inequitable conditions. Particularly, as the nature of work and workforce characteristics change in the U.S. and globally (Landsbergis et al., 2014; Schulte et al., 2015), repeating such analyses over different time periods would corroborate patterns of conditions to monitor how systems of power and their mechanisms change alongside societal changes. However, such analyses and monitoring of worker and work-related disparities cannot be done if what is used to capture the data is limited (e.g., what questions are being asked) and if who is being included is not representative (e.g., binary categories of sex, monolithic racialized categories), for instance. Moreover, as evidenced by the results of the intersectional analyses of the present study, systems of power are mechanized differently and simultaneously such that conditions of work and nonwork oppress minoritized workers from multiple angles. Thus, in an effort to advance toward health equity and worker health equity, more attention needs to be placed on the mechanisms through which a spectrum of precarious to less precarious conditions are created and maintained. Doing so will enhance our collective understanding of why and how disparities and inequitable conditions persist to improve the health and wellbeing of workers, particularly for those who are (and have historically been) excluded and marginalized.

Conclusion

As remarked by Asada et al. (2014), “no single group characteristic or health outcome represents the whole picture of inequalities…” (p. 7). The intersectional analyses made visible

precarious and less precarious work and nonwork conditions and health status of working-classed workers that would have been missed if examined by as a whole or by separate measures of identity. The analytical approach and resultant findings support the ongoing need to complicate how work and life conditions are quantitatively described in order to more adequately capture the experiences of those workers made most structurally and socially vulnerable by hegemonic ideologies. This present study builds upon prior work to contribute another approach articulating how disparities are examined and interpreted to highlight not just the *what* and *to whom* but also to understand the *where* and the *why to* provide a point of departure for future studies to continue the movement toward a more equitable future.

Chapter Four

Exploring the Association Between General Health and Work and Nonwork Factors for Female Latinx Born-Outside-U.S. Working-Classed Workers

Introduction

Immigration and migration (hereafter, (im)migration) have contributed to the growing shifts in the demographics of the U.S. workforce (Flynn, 2014; Palley, 2021). Particularly, there has been a sharp growth in Latinx (im)migration and also an increase of worker health disparities observed in this workforce (Flippen, 2014; Flynn, 2014). For instance, Latinx (im)migrant workers experience workplace mortality at higher rates than all other workers (Cierpich et al., 2008). (Im)migrant workers, particularly female Latinx racialized (im)migrant workers, differentially experience work conditions, such as unstable and insecure employment and exposures to hazardous workplaces (Cuervo et al., 2021; Flippen, 2014; Velasco-Mondragon et al., 2016). These disparities are avoidable and unnecessary differences that are produced by macrolevel ideologies, such as sexism, racism, nativism, and classism (Alonso-Villar et al., 2012; Gutiérrez, 2004; Harrison & Lloyd, 2013).

Historically, minoritized workers (e.g., by sex, race, and nativity) have been used to fill critical labor needs at the bottom of the hierarchical class structure in the U.S., often translating to jobs with some of the most hazardous employment and working conditions (e.g., dangerous, insecure, low-paying) (Glenn, 1985; Gutiérrez, 2004). Focusing on female Latinx born-outside-U.S. working-classed workers was informed by prior specific aim findings that suggested female Latinx born-outside-U.S. working-classed workers experience more precarious work and nonwork conditions than other working-classed workers across sexes (female, male), races (Black, Asian, White), and nativity (born-outside-U.S., U.S.-born) (see Chapter 3). Moreover, the research literature has suggested that the work and nonwork conditions for Latinx (im)migrant women have progressively become important determinants of health for workers and their families (Flippen, 2014). For instance, there has been substantial research on the

deprivation of material resources in the nonwork environment and its impact on health (Comfort, 2015; Quesada et al., 2011; Whittle et al., 2020). Material deprivation, broadly describing insecurities related to material needs, such as healthcare access, housing affordability, and food insecurity, is harmful to health (Whittle, 2019). However, the relationship between material deprivation and health for female Latinx born-outside-U.S. working-classed workers is less known. Considering work and nonwork conditions in which workers' lives are embedded is important when addressing worker health disparities. Therefore, this specific aim explored the association between general health and work and nonwork factors for female Latinx born-outside-U.S. working-classed workers.

Theoretical and Methodological Approach

The theoretical and conceptual basis for this study was informed by the notion of intersectionality (see Alexander-Floyd, 2012 for further discussion on the notion and paradigm of intersectionality) (Beal, 2008; Collins, 2000; Combahee River Collective, 2019; Crenshaw, 1989; King, 1988). Broadly speaking, intersectionality posits that the person-level embodiment of multiple identities (i.e., one's racialized identity is embodied simultaneously with other identities) directly reflects interconnected and co-constituting ideologies (e.g., racist capitalism) at the macrolevel that differently privilege and oppress (Crenshaw, 1989, 1991).

Female Latinx born-outside-U.S. working-classed workers were centered, and intersecting axes of power and oppression that form work and nonwork conditions were measured at the person-level. Specifically, their embodiment of classed, sexed, racialized, and nativity identities was studied. The new knowledge generated advances worker health equity by examining intersections beyond class and sex or class and race to examine the intersections of

class, sex, race, and nativity, which have not been readily explored in the worker health equity or U.S. relational class literature (Muntaner et al., 2010).

Methods

Secondary data analysis was conducted using data from the 2015 National Health Interview Survey (NHIS), a publicly accessible, cross-sectional national annual survey conducted by the National Center for Health Statistics (NCHS). The 2015 survey was conducted on the U.S. civilian, noninstitutionalized population utilizing a multistage sample design involving stratification, clustering, and oversampling of specific population subgroups (i.e., Black, Hispanic, and Asian persons, particularly those aged 65 years or older) (NCHS, 2016). This dataset was chosen specifically due to its diverse collection of demographic and health topics as well as work-related supplemental questions included by NIOSH, a co-sponsoring agency for the 2015 NHIS (NCHS, 2016). This study was exempt from IRB review as public-use (de-identified) data files from the 2015 NHIS were utilized.

Study Sample

The 2015 NHIS data were used for this study. Different data files (e.g., sample adults, persons, households) were merged to incorporate variables across data files for a given respondent. The sample adult file, for example, was a core component of the survey that provided work-related data, which had a conditional response rate (i.e., the number of completed survey interviews divided by the total number of eligible cases) of 79.7% and a final (or unconditional) response rate of 55.2%. There was a total of 33,672 sample adults aged 18 years and older from which the employed working classed were subsetted by employment, supervisor, and ownership statuses (Wodtke, 2016; Wright, 1980). Respondents who reported being employed (i.e., working for pay at a job or business; with a job or business but not at work;

working, but not for pay, at a family-owned job or business), nonsupervising (i.e., does not supervise other employees as part of their job), and employees (i.e., employee of a private company for wages; a federal/state/local government employee) at the time of the survey interview were included. Respondents who reported seeking work or identifying as a retiree were not included since there are differing experiences of the work and nonwork environment by employment status. The final unweighted study sample consisted of 11,884 employed working-classed workers (hereafter referred to as the total working classed or working-classed population). To account for the embodiment of intersecting identities, this study sample of 11,884 working-classed workers was further subgrouped as female sex only (*n* = 6,411), Latinx race only (*n* = 2,282), born-outside-U.S. only (*n* = 2,420), and intersectionally as female sexed, Latinx racialized, and born-outside-U.S. positions. The final unweighted intersectional subgroup consisted of 616 female Latinx born-outside-U.S. employed working classed workers (hereafter referred to as female Latinx born-outside-U.S. subgroup or intersectional subgroup).

Variables and Measures

A total of eight items were used to measure general health, work conditions, nonwork conditions, and covariates. In addition to the covariates, race, occupation, and family income to poverty threshold ratio were included as demographic variables. Variables included in the models for the female Latinx born-outside-U.S. subgroup were decided *a priori* based on theory and cell sizes. Items were recoded following standards of reliability and precision (Agency for Healthcare Research and Quality [AHRQ], n.d.) and based on conceptual and theoretical consistency. Point estimates based on unweighted sample sizes of 20 or more observations with a relative standard error (RSE) of 30% to 50% were reported but noted as not meeting standards of

reliability or precision (AHRQ, n.d.). Estimates with less than 20 observations with an RSE of 20% or more were not reported (AHRQ, n.d.).

Demographic Variables

Sex was measured using a dichotomous item ("[Are/Is] [you/person] male or female?") recoded as male (0) and female (1). *Race* was recoded, respectively, from – Hispanic, non-Hispanic White, non-Hispanic Black, non-Hispanic Asian, and non-Hispanic all other race groups – to Latinx (3), White (0), Black (2), Asian (1), and multiracial/race-not-listed (4). In this study, Latinx refers to Hispanic, Latin, Latina, Latino, and Latinx (García, 2020). The multiracial/race-not-listed category was not included due to the sample size. *Nativity* was measured by one question, "[Was person] born in the United States?" with dichotomous response options recoded as born in the U.S (U.S.-born; 0) and born outside the U.S. (born-outside-U.S.; 1).

Occupation was measured by 23 original survey codes based on the 2010 Standard Occupational Classification (SOC) occupation classifications (see Appendix A). (Note: Occupation was only used as a demographic variable, not a covariate.) Working-classed positions are assigned low positions of power in the hierarchical class structure, and occupations with lower social power and lower income are inherent to classed positions (Wright, 1980). *Family income to poverty threshold ratio* (or poverty ratio) was measured by one item calculated in the original 2015 NHIS instrument using several sources to create 18 categorical response options. These response options were reduced by recoding as <100% of poverty (0), 100%-199% of poverty (1), 200%-399% of poverty (2), and ≥400% of poverty (3). For context, for a family of four in 2014 (2014 income data was used in the calculations), 100% of the federal poverty

level equated to an income of $24,000, $49,000 at 200% of poverty, and $97,000 at 400% of poverty (NCHS, 2016).

General health

General health (Dwyer-Lindgren et al., 2017; Lenderink et al., 2012) was measured by one item ("Would you say your health in general is excellent, very good, good, fair, or poor?"). The original 5-point Likert scale ranging from excellent (1) to poor (5) was reversed and dichotomously recoded as worse health (fair and poor = 0) and better health (good, excellent, and very good = 1).

Work Conditions

Work conditions encompass the contractual and relational dimensions of the relationship between the employer and employee, as well as the physical and psychosocial components of work (Benach et al., 2010; Peckham et al., 2019). Work conditions were defined by three variables: work arrangement, job insecurity, and workplace safety. *Work arrangement* was measured by one item asking for the best description of their work arrangement (e.g., "You are paid by a temporary agency or work for a contractor who provides workers and services to others under contract"). The four original response options were reversed and dichotomously recoded as nonstandard arrangement (0) and standard arrangement (regular permanent employee = 1). *Job insecurity* was measured by one dichotomous item assessing worry about losing their job (yes = 0; no = 1). *Workplace safety* ("Overall, how safe do you think your workplace is?") was dichotomously recoded as unsafe (unsafe and very unsafe = 0) and safe (safe and very unsafe = 1) from the original 4-point Likert scale ranging from very safe (1) to very unsafe (4).

Nonwork Conditions

Nonwork conditions refer to the quality of or extent to which a person has access to resources outside of the work environment (Jones, 2014; Schütte et al., 2014). Nonwork conditions were defined by three variables: healthcare access, housing affordability, and food insecurity. *Healthcare access* was measured by one question ("Is there a place that you USUALLY go to when you are sick or need advice about your health?") with dichotomous response options reversely coded (no = 0; yes = 1). *Housing affordability* was measured by one item ("How worried are you right now about not being able to pay your rent, mortgage, or other housing costs?"). The original 4-point Likert scale ranging from very worried (1) to not worried at all (2) was dichotomously recoded as moderately or very worried (0) and not too or not at all worried (1). *Food insecurity* was measured by one item assessing the frequency of worry in the last 30 days about whether their food would run out before they got money to buy more. The original 3-point scale with response options of often true (1), sometimes true (2), and never true (1) was dichotomously recoded to sometimes or often true (0) and never true (1).

Covariates

Level of institutionalized educational attainment (or education level) was included as a covariate due to the association with general health and work and nonwork variables (Flippen, 2014; Vega et al., 2009). It was measured by one item assessing the highest level of schooling completed or highest degree received. The original 21 response options were recoded as 0-12 grades (no diploma) (1), 12 grades (high school diploma) or General Educational Diploma (GED) (2), associate degree or some college (3), and as college degree (≥4 years of college) (4). *Citizenship* (Van Natta et al., 2019) was measured using a dichotomous item ("[Is person] a citizen of the United States?") that was reversed and recoded as no (0) and yes (1).

Statistical Approach

Descriptive statistics were first calculated for the distributions of all variables by unweighted frequencies and weighted percentages. Currently unemployed respondents were not asked certain work-related questions included in this study. Hence, there was substantial planned missingness for work-related variables due to this skip logic conditioned on employment status. However, unplanned missingness (i.e., responses of not ascertained, refused, don't know) was predominately less than 1% and no more than 5.5% across all variables used for the regression analyses. All analyses were restricted to key variables with less than 10% missingness to avoid issues incurred by invalid data (Krieger et al., 2008).

Informed by the sample size and variables chosen, multivariable logistic regression analyses were used to estimate the odds of having worse general health (as opposed to better general health) in relation to work and nonwork factors adjusting for education level. Citizenship was initially considered a covariate. Sensitivity analyses ultimately showed that this variable was not statistically significant nor influenced the magnitude or direction of estimates across models. Also, a prior study suggested citizenship is of secondary relevance when included in models with nativity (Kirmanoglu & Baslevent, 2014). Citizenship was ultimately not included to reduce the number of variables.

Statistical software SPSS version 28 (IBM Corp, 2021) was used to conduct all data analyses to account for the multistage, complex sampling strategy of the NHIS (NHIS, 2016). All estimates were weighted to represent the civilian, noninstitutionalized U.S. adult population unless otherwise noted. Analyses by total sample (hereafter referred to as the working-classed population or working classed) and by subgroups of female-only, Latinx-only, and born-outside-U.S.-only were included as a comparison for the female Latinx born-outside-U.S. subgroup (or intersectional subgroup).

Results

Just over half of this working-classed population as a whole were female (50.4%) and predominately White (62.1%) and U.S.-born (80.6%) (Table 4.1). These working-classed workers most often reported employment in office and administrative support occupations (14.2%), falling in the ≥ 400% of poverty bracket for family income to poverty threshold ratio (42.3%), were U.S. citizens (68.2%), and had a 4-year college degree or higher (33.8%). The female-only subgroup had similar findings to the working-classed population across all variables. The Latinx-only subgroup differed from the working-classed population. Specifically, this subgroup was predominately male (56.0%) and most frequently reported being born outside the U.S. (56.9%), fell in the 200-399% poverty bracket (34.6%), and had 0-12 grades of education (no high school diploma; 29.5%). The born-outside-U.S. only subgroup was also predominately male (56.0%) but most often fell in the 100-199% poverty bracket.

The paper focus was on the female Latinx born-outside-U.S. subgroup. Workers of this intersectional subgroup most frequently reported employment in building and ground cleaning and maintenance occupations (14.3%), fell in the 100-199% of poverty bracket (34.0%), were not U.S. citizens (54.3%), and had 0-12 grades of education (no high school diploma; 37.8%). See Table 4.1 for more details.

Results of Inferential Analyses

Female Latinx Born-Outside-U.S. Subgroup Results

For the results of the adjusted model (Table 4.2), there was a higher odds of worse health in a nonstandard work arrangement, *OR* = 1.30, *p* = .378, *95% CI* [0.72, 2.35], than standard work arrangement; if reporting job insecurity, *OR* = 1.04, *p* = .916, *95% CI* [0.55, 1.96], than not; if working in unsafe workplaces, *OR* = 1.10, *p* = .844, *95% CI* [0.44, 2.77], than safe; if

moderately or very worried about being able to afford housing costs, *OR* = 1.79, $p = .019$, *95% CI* [1.10, 2.91], than being not too or at all worried; and if sometimes or often worrying about running out of food before getting money to buy more, *OR* = 1.60, $p = .110$, *95% CI* [0.90, 2.83]. There was a lower odds of worse health if not having healthcare access, *OR* = 0.88, $p = .684$, *95% CI* [0.46, 1.66], than if having. Compared to the unadjusted model, there were only marginal changes in odds ratios, no decreases in p-values below .05, and the design effect factor was about the same across predictors.

Working-Classed Population Results

Based on the adjusted model (Table 4.3), there was a higher odds of worse health if experiencing job insecurity, *OR* = 1.34, $p < .001$, *95% CI* [1.14, 1.57], than not; if working in unsafe workplaces, *OR* = 1.35, $p = .016$, *95% CI* [1.06, 1.72], than safe workplaces; if moderately or very worried about being able to afford housing costs, *OR* = 1.63, $p < .001$, *95% CI* [1.43, 1.86], than being not too or at all worried; and if sometimes or often worrying about running out of food before getting money to buy more, *OR* = 1.70, $p < .001$, *95% CI* [1.44, 2.00]. There was a lower odds of worse health if in nonstandard work arrangements, *OR* = 0.92, $p = .379$, *95% CI* [0.77, 1.10], than if in a standard work arrangement; and if not having healthcare access *OR* = 0.71, $p < .001$, *95% CI* [0.61, 0.82], than if having access. There were only marginal changes in odds ratios, no decreases in p-values below .05, and the design effect factor was about the same across predictors compared to the unadjusted model.

Female Only Subgroup Results

For the results of the adjusted model (Table 4.4), there was a higher odds of worse general health if reporting job insecurity, *OR* = 1.36, $p = .007$, *95% CI* [1.09, 1.69], than not; if working in unsafe workplaces, *OR* = 1.43, $p = .047$, *95% CI* [1.00, 2.04], than safe; if moderately

or very worried about being able to afford housing costs, *OR* = 1.81, $p < .001$, *95% CI* [1.51, 2.17], than being not too or at all worried; and if sometimes or often worrying about running out of food before getting money to buy more, *OR* = 1.78, $p < .001$, *95% CI* [1.44, 2.20]. There was a lower odds of worse health if not having healthcare access, *OR* = 0.73, $p = .010$, *95% CI* [0.57, 0.93], than if having. There was nearly no difference of predicting worse health if having a nonstandard or standard work arrangement *OR* = 0.99, $p = .936$, *95% CI* [0.77, 1.28]. There was a marginal change in the magnitude and thereby direction of the estimate for work arrangement from the unadjusted model (*OR* = 1.01, $p = 9.17$, *95% CI* [0.79, 1.29]) to the adjusted model (*OR* = 0.99, $p = .936$, *95% CI* [0.77, 1.28]). Also, there was a decrease in the odds ratio from the unadjusted model (*OR* = 2.05, $p < .001$, *95% CI* [1.67, 2.52]) to the adjusted model (*OR* = 1.78, $p < .001$, *95% CI* [1.44, 2.20]). The design effect factor was about the same across predictors irrespective of adjustment.

Latinx Only Subgroup Results

Based on the adjusted model (Table 4.5), there was a higher odds of worse general health if reporting job insecurity, *OR* = 1.41, $p = .061$, *95% CI* [0.99, 2.01], than not; if working in unsafe workplaces, *OR* = 1.16, $p = .525$, *95% CI* [0.73, 1.85], than safe; if moderately or very worried about being able to afford housing costs, *OR* = 1.60, $p < .001$, *95% CI* [1.25, 2.05], than being not too or at all worried; and if sometimes or often worrying about running out of food before getting money to buy more, *OR* = 1.25, $p = .141$, *95% CI* [0.93, 1.67]. There was a lower odds of worse health if not having healthcare access, *OR* = 0.58, $p < .001$, *95% CI* [0.45, 0.77], than if having. There was nearly no difference of predicting worse health if having a nonstandard or standard work arrangement *OR* = 0.98, $p = .925$, *95% CI* [0.71, 1.37].

Table 4.1

Descriptive Analyses Results, by Employed Working Classed, Subgroups, and Intersectional Subgroup

	Employed Working Classed			Female only subgroup			Latinx only subgroup			Born-outside-U.S. only subgroup			Female Latinx born-outside-U.S. subgroup (*n* = 616)		
	N[a]	Est.[b] Population	%[c]	*n*[a]	%	*RSE*	*n*[a]	%	*RSE*	*n*[a]	%	*RSE*	*n*[a]	%	*RSE*
Sociodemographics															
Sex															
Female	6,411	45,549	50.4	6,411			1,145	44.0	3.1	1,141	44.0	2.9			
Male	5,473	44,835	49.6				1,137	56.0	2.5	1,279	56.0	2.3			
Race															
Latinx	2,282	15,990	17.7	1,145	15.4	3.9	2,282			1,340	51.9	2.9			
Black	1,658	11,776	13.0	1,021	14.0	3.9				255	10.6	8.2			
Asian	767	5,651	6.3	368	6.1	6.3				567	24.7	5.0			
White	7,035	56,148	62.1	3,796	63.5	1.3				241	11.8	7.9			
Nativity															
Born-outside-U.S.	2,420	17,493	19.4	1,141	16.9	3.8	1,340	56.9	2.6	2,420					
U.S.-born	9,459	72,850	80.6	5,267	83.1	0.8	941	43.1	3.5						
Occupation[d]															
Building and grounds cleaning and maintenance	535	3,331	3.7	261	3.4	8.9	216	8.2	8.0	218	7.5	8.6	99	14.3	12.7
Healthcare support	402	2,666	3.0	364	5.2	7.6	80	3.3	14.2	96	4.1	13.5	41	8.4	19.0
Office and administrative support	1,739	12,681	14.2	1,318	20.6	3.1	283	12.7	7.1	215	9.8	8.5	70	11.4	13.4
Family income to poverty threshold ratio															
< 100% of poverty	1,371	7,813	9.2	830	10.1	5.1	459	16.7	5.6	534	26.6	5.2	162	23.3	9.9
100-199% of poverty	2,172	14,549	17.1	1,198	16.9	4.0	666	30.0	4.7	662	32.2	4.2	195	34.0	7.5
200-399% of poverty	3,610	26,805	31.5	1,889	30.8	2.9	674	34.6	4.3	654	26.4	4.5	148	27.5	8.2
≥ 400% of poverty	4,112	36,029	42.3	2,170	42.2	2.4	361	18.7	5.6	426	14.8	6.1	79	15.2	12.9

Table 4.1 Continued

	Working Classed			Female only subgroup			Latinx only subgroup			Born-outside-U.S. only subgroup			Female Latinx born-outside-U.S. subgroup (n = 616)		
	N[a]	Est.[b] Population	%[c]	*n*[a]	%	*RSE*	*n*[a]	%	*RSE*	*n*[a]	%	*RSE*	*n*[a]	%	*RSE*
Citizenship															
No	1,231	8,270	9.2	512	6.8	6.1	822	34.4	3.9	1,231	47.6	2.8	339	54.3	4.4
Yes	10,635	81,968	90.8	5,891	93.2	0.4	1,447	65.6	2.1	1,176	52.4	2.6	273	45.7	5.3
Education level															
0-12 grades (no HSD)	1,250	8,854	9.8	545	7.4	5.7	724	29.5	4.6	669	25.2	4.6	245	37.8	6.9
GED, 12 grades (HSD)	2,713	20,407	22.7	1,322	20.3	3.4	595	28.9	4.4	529	22.5	5.0	145	28.0	8.9
Associate degree or some college	3,969	30,338	33.7	2,253	34.9	2.5	594	26.5	4.8	488	20.3	4.8	132	20.8	9.9
College degree (4 years of college) or more›	3,918	30,370	33.8	2,271	37.5	2.5	352	15.2	6.7	711	32.0	4.1	84	13.3	12.0
General health															
Worse	4,003	28,885	32.0	2,205	32.1	2.4	941	39.6	3.5	887	36.3	3.6	296	48.1	5.0
Better	7,880	61,485	68.0	4,206	67.9	1.1	1340	60.4	2.3	1,533	63.7	2.1	320	51.9	4.6
Work conditions															
Work arrangement															
Nonstandard	1,501	11,337	12.6	725	11.3	5.4	349	14.7	6.3	398	16.5	5.8	102	15.1	13.6
Standard	10,360	78,869	87.4	5,676	88.7	0.7	1,928	85.3	1.1	2,017	83.5	1.1	513	84.9	2.4
Job insecurity															
Yes	1,383	10,443	11.6	729	11.0	5.2	363	15.8	6.2	450	18.6	5.4	121	18.2	11.5
No	10,464	79,647	88.4	5,662	89.0	0.6	1,909	84.2	1.2	1,953	81.4	1.2	492	81.8	2.6
Workplace safety															
Unsafe	548	4,266	4.7	255	3.7	8.5	165	7.9	9.7	165	6.9	9.5	48	9.2	19.1
Safe	11,306	85,894	96.3	6,143	96.3	0.3	2,106	92.1	0.8	2,240	93.1	0.7	565	90.8	1.9

Table 4.1 Continued

	Working Classed			Female only subgroup			Latinx only subgroup			Born-outside-U.S. only subgroup			Female Latinx born-outside-U.S. subgroup (n = 616)		
	N[a]	Est.[b] Population	%[c]	*n*[a]	%	*RSE*	*n*[a]	%	*RSE*	*n*[a]	%	*RSE*	*n*[a]	%	*RSE*
Nonwork conditions															
Healthcare access															
No	1,999	14,90-	16.7	718	11.0	5.3	615	27.9	4.3	607	23.7	4.6	105	18.3	10.5
Yes	9,786	74,625	83.3	5,644	89.0	7.0	1,648	72.1	1.7	1,794	76.3	1.4	508	81.7	2.3
Housing affordability															
Moderately or very worried	2,849	20,251	23.2	1,686	25.2	3.3	905	38.3	3.6	978	40.0	3.3	326	52.2	4.7
Not too or at all worried	8,649	67,188	76.8	4,507	74.8	1.1	1,316	61.7	2.2	1,370	60.0	2.2	275	47.8	5.1
Food insecurity															
Sometimes or often true	1609	11,376	12.6	920	12.8	4.4	510	21.0	5.1	449	17.3	5.6	145	20.4	9.1
Never true	10274	79,003	87.4	5,490	87.2	6.0	1,771	79.0	1.4	1,970	82.7	1.2	470	79.6	2.3

Note. Data source: NCHS, National Health Interview Survey, 2015. Est. = estimated. RSE = relative standard error (%). HSD = high school diploma. GED = general educational diploma. All estimates are weighted unless otherwise specified.

[a] Unweighted study sample size. [b] Rounded number in thousands. [c] Estimated population percentage. [d] Top reported occupation by total sample, subgroups, and intersectional subgroup.

Table 4.2

Multivariable Models of Odds Ratios for Predicting Worse General Health, by Female Latinx Born-Outside-U.S. Subgroup and the Employed Working Classed

Exposures	Model 1[a] - unadjusted			Model 2[a] - adjusted			Employed Working Classed Model		
	OR (95% CI)	*p*	D_{eft}	OR (95% CI)	*p*	D_{eft}	OR (95% CI)	*p*	D_{eft}
Education level									
0-12 grades (no HSD)				0.45 (0.24, 0.87)	.016	1.017	0.36 (0.39, 0.44)	<.001	0.362
GED, 12 grades (HSD)				0.95 (0.53, 1.70)	.862	1.120	0.56 (0.46, 0.68)	<.001	0.560
Associate degree or some college				0.61 (0.35, 1.06)	.082	1.130	0.71 (0.58, 0.87)	<.001	1.350
College degree (4 years of college) or more				1.00			1.00		
Work arrangement									
Nonstandard	1.41 (0.78, 2.54)	.252	1.075	1.30 (0.72, 2.35)	.378	1.037	0.92 (0.77, 1.10)	.379	0.923
Standard	1.00			1.00			1.00		
Job insecurity									
Yes	1.09 (0.59, 2.01)	.782	1.112	1.04 (0.55, 1.96)	.916	1.126	1.34 (1.14, 1.57)	<.001	1.246
No	1.00			1.00			1.00		
Workplace safety									
Unsafe	1.09 (0.44, 2.70)	.846	1.285	1.10 (0.44, 2.77)	.844	1.259	1.35 (1.06, 1.72)	.016	1.303
Safe	1.00			1.00			1.00		
Healthcare access									
No	0.93 (0.50, 1.71)	.806	1.173	0.88 (0.46, 1.66)	.684	1.197	0.71 (0.61, 0.82)	<.001	1.276
Yes	1.00			1.00			1.00		
Housing affordability									
Moderately or very worried	1.75 (1.09, 2.83)	.021	1.173	1.79 (1.10, 2.91)	.019	1.168	1.63 (1.43, 1.86)	<.001	1.297
Not too or at all worried	1.00			1.00			1.00		
Food insecurity									
Sometimes or often true	1.77 (1.01, 3.13)	.048	1.121	1.60 (0.90, 2.83)	.110	1.111	1.70 (1.44, 2.00)	<.001	1.332
Never true	1.00			1.00			1.00		

Note. Data source: NCHS, National Health Interview Survey, 2015. HSD = high school diploma. GED = general educational diploma. OR = odds ratio. CI = confidence interval. *p* = p-value set at < .05. D_{eft} = design effect factor.

[a] Intersectional subgroup.

Table 4.3

Unadjusted and Adjusted Multivariable Models of Odds Ratios for Predicting Worse General Health, by Employed Working Classed

Exposures	Model 1 - unadjusted			Model 2 - adjusted		
	OR (95% CI)	*p*	D_{eft}	OR (95% CI)	*p*	D_{eft}
Education level						
0-12 grades (no HSD)				0.36 (0.39, 0.44)	<.001	0.362
GED, 12 grades (HSD)				0.56 (0.46, 0.68)	<.001	0.560
Associate degree or some college				0.71 (0.58, 0.87)	<.001	1.350
College degree (4 years of college) or more				1.00		
Work arrangement						
Nonstandard	0.95 (0.80, 1.13)	.558	1.383	0.92 (0.77, 1.10)	.379	0.923
Standard	1.00			1.00		
Job insecurity						
Yes	1.34 (1.15, 1.57)	<.001	1.257	1.34 (1.14, 1.57)	<.001	1.246
No	1.00			1.00		
Workplace safety						
Unsafe	1.42 (1.12, 1.81)	.004	1.314	1.35 (1.06, 1.72)	.016	1.303
Safe	1.00			1.00		
Healthcare access						
No	0.80 (0.70, 0.93)	.003	1.271	0.71 (0.61, 0.82)	<.001	1.276
Yes	1.00			1.00		
Housing affordability						
Moderately or very worried	1.76 (1.55, 2.00)	<.001	1.318	1.63 (1.43, 1.86)	<.001	1.297
Not too or at all worried	1.00			1.00		
Food insecurity						
Sometimes or often true	1.89 (1.60, 2.23)	<.001	1.361	1.70 (1.44, 2.00)	<.001	1.332
Never true	1.00			1.00		

Note. Data source: NCHS, National Health Interview Survey, 2015. HSD = high school diploma. GED = general educational diploma. OR = odds ratio. CI = confidence interval. *p* = p-value set at < .05. D_{eft} = design effect factor.

Table 4.4

Multivariable Models of Odds Ratios for Predicting Worse General Health, by Female Only and Female Latinx Born-Outside-U.S. Subgroups

Exposures	Model 1[a] - unadjusted			Model 2[a] - adjusted			Female Latinx born-outside-U.S. Group Model[b]		
	OR (95% CI)	p	D_{eft}	OR (95% CI)	p	D_{eft}	OR (95% CI)	p	D_{eft}
Education level									
0-12 grades (no HSD)				0.31 (0.23, 0.41)	<.001	1.287	0.45 (0.24, 0.87)	.016	1.017
GED, 12 grades (HSD)				0.55 (0.42, 0.73)	<.001	1.283	0.95 (0.53, 1.70)	.862	1.120
Associate degree or some college				0.62 (0.47, 0.82)	<.001	1.204	0.61 (0.35, 1.06)	.082	1.130
College degree (4 years of college) or more				1.00			1.00		
Work arrangement									
Nonstandard	1.01 (0.79, 1.29)	.917	1.331	0.99 (0.77, 1.28)	.936	1.354	1.30 (0.72, 2.35)	.378	1.037
Standard	1.00			1.00			1.00		
Job insecurity									
Yes	1.34 (1.08, 1.67)	.008	1.214	1.36 (1.09, 1.69)	.007	1.203	1.04 (0.55, 1.96)	.916	1.126
No	1.00			1.00			1.00		
Workplace safety									
Unsafe	1.44 (1.03, 2.01)	.034	1.170	1.43 (1.00, 2.04)	.047	1.192	1.10 (0.44, 2.77)	.844	1.259
Safe	1.00			1.00			1.00		
Healthcare access									
No	0.79 (0.62, 1.00)	.049	1.244	0.73 (0.57, 0.93)	.010	1.241	0.88 (0.46, 1.66)	.684	1.197
Yes	1.00			1.00			1.00		
Housing affordability									
Moderately or very worried	1.96 (1.63, 2.35)	<.001	1.366	1.81 (1.51, 2.17)	<.001	1.341	1.79 (1.10, 2.91)	.019	1.168
Not too or at all worried	1.00			1.00			1.00		
Food insecurity									
Sometimes or often true	2.05 (1.67, 2.52)	<.001	1.210	1.78 (1.44, 2.20)	<.001	1.225	1.60 (0.90, 2.83)	.110	1.111
Never true	1.00			1.00			1.00		

Note. Data source: NCHS, National Health Interview Survey, 2015. HSD = high school diploma. GED = general educational diploma. OR = odds ratio. CI = confidence interval. p = p-value set at $< .05$. D_{eft} = design effect factor.

[a] Female only subgroup model. [b] Adjusted.

Table 4.5

Multivariable Models of Odds Ratios for Predicting Worse General Health, by Latinx Only and Female Latinx Born-Outside-U.S. Subgroups

Exposure	Model 1[a] - unadjusted			Model 2[a] - adjusted			Female Latinx born-outside-U.S. Grouping Model[b]		
	OR (95% CI)	*p*	D_{eft}	OR (95% CI)	*p*	D_{eft}	OR (95% CI)	*p*	D_{eft}
Education level									
0-12 grades (no HSD)				0.44 (0.30, 0.64)	<.001	1.196	0.45 (0.24, 0.87)	.016	1.017
GED, 12 grades (HSD)				0.58 (0.44, 0.77)	<.001	1.132	0.95 (0.53, 1.70)	.862	1.120
Associate degree or some college				0.72 (0.53, 0.96)	.026	1.221	0.61 (0.35, 1.06)	.082	1.130
College degree (4 years of college) or more				1.00			1.00		
Work arrangement									
Nonstandard	1.05 (0.76, 1.46)	.758	1.252	0.98 (0.71, 1.37)	.925	1.238	1.30 (0.72, 2.35)	.378	1.037
Standard	1.00			1.00			1.00		
Job insecurity									
Yes	1.44 (1.00, 2.07)	.049	1.408	1.41 (0.99, 2.01)	.061	1.363	1.04 (0.55, 1.96)	.916	1.126
No	1.00			1.00			1.00		
Workplace safety									
Unsafe	1.20 (0.76, 1.89)	.429	1.282	1.16 (0.73, 1.85)	.525	1.280	1.10 (0.44, 2.77)	.844	1.259
Safe	1.00			1.00			1.00		
Healthcare access									
No	0.65 (0.50, 0.84)	.001	1.233	0.58 (0.45, 0.77)	<.001	1.239	0.88 (0.46, 1.66)	.684	1.197
Yes	1.00			1.00			1.00		
Housing affordability									
Moderately or very worried	1.71 (1.34, 2.18)	<.001	1.229	1.60 (1.25, 2.05)	<.001	1.233	1.79 (1.10, 2.91)	.019	1.168
Not too or at all worried	1.00			1.00			1.00		
Food insecurity									
Sometimes or often true	1.32 (0.98, 1.76)	.064	1.287	1.25 (0.93, 1.67)	.141	1.279	1.60 (0.90, 2.83)	.110	1.111
Never true	1.00			1.00			1.00		

Note. Data source: NCHS, National Health Interview Survey, 2015. HSD = high school diploma. GED = general educational diploma. OR = odds ratio. CI = confidence interval. p = p-value set at $< .05$. D_{eft} = design effect factor.

[a] Female only subgroup model. [b] Adjusted.

Table 4.6

Multivariable Models of Odds Ratios for Predicting Worse General Health, by Born-Outside-U.S. Only and Female Latinx Born-Outside-U.S. Subgroups

Exposure	Model 1[a] - unadjusted			Model 2[a] - adjusted			Female Latinx born-outside-U.S. Grouping Model[b]		
	OR (95% CI)	*p*	D_{eft}	OR (95% CI)	*p*	D_{eft}	OR (95% CI)	*p*	D_{eft}
Education level									
0-12 grades (no HSD)				0.34 (0.25, 0.48)	<.001	1.283	0.45 (0.24, 0.87)	.016	1.017
GED, 12 grades (HSD)				0.49 (0.35, 0.68)	<.001	1.239	0.95 (0.53, 1.70)	.862	1.120
Associate degree or some college				0.55 (0.40, 0.75)	<.001	0.546	0.61 (0.35, 1.06)	.082	1.130
College degree (4 years of college) or more				1.00			1.00		
Work arrangement									
Nonstandard	0.89 (0.64, 1.23)	.467	1.332	0.82 (0.58, 1.15)	.250	1.327	1.30 (0.72, 2.35)	.378	1.037
Standard	1.00			1.00			1.00		
Job insecurity									
Yes	1.37 (0.98, 1.90)	.065	1.375	1.34 (0.96, 1.88)	.083	1.343	1.04 (0.55, 1.96)	.916	1.126
No	1.00			1.00			1.00		
Workplace safety									
Unsafe	1.52 (0.94, 2.46)	.091	1.305	1.37 (0.83, 2.26)	.222	1.298	1.10 (0.44, 2.77)	.844	1.259
Safe	1.00			1.00			1.00		
Healthcare access									
No	0.73 (0.55, 0.97)	.032	1.283	0.61 (0.45, 0.83)	.002	1.343	0.88 (0.46, 1.66)	.684	1.197
Yes	1.00			1.00			1.00		
Housing affordability									
Moderately or very worried	1.98 (1.54, 2.53)	<.001	1.267	1.83 (1.41, 2.36)	<.001	1.268	1.79 (1.10, 2.91)	.019	1.168
Not too or at all worried	1.00			1.00			1.00		
Food insecurity									
Sometimes or often true	1.45 (1.08, 1.94)	.014	1.230	1.23 (0.91, 1.66)	.182	1.218	1.60 (0.90, 2.83)	.110	1.111
Never true	1.00			1.00			1.00		

Note. Data source: NCHS, National Health Interview Survey, 2015. HSD = high school diploma. GED = general educational diploma. OR = odds ratio. CI = confidence interval. *p* = p-value. D_{eft} = design effect factor.

[a] Born-outside-U.S. main group model.

There was a marginal change in the magnitude and thereby direction of the estimate for work arrangement from the unadjusted model (*OR* = 1.05, *p* = 0.758, *95% CI* [0.76, 1.46]) to the adjusted model (*OR* = 0.98, *p* = .925, *95% CI* [0.71, 1.37]). The design effect factor was about the same across predictors irrespective of adjusting for education level.

Born-Outside-U.S. Only Subgroup Results

For the results of the adjusted model (Table 4.6), there was a higher odds of worse general health if reporting job insecurity, *OR* = 1.34, *p* = .083, *95% CI* [0.96, 1.88], than not; if working in unsafe workplaces, *OR* = 1.37, *p* = .222, *95% CI* [0.83, 2.26], than safe; if moderately or very worried about being able to afford housing costs, *OR* = 1.83, *p* < .001, *95% CI* [1.41, 2.36], than being not too or at all worried; and if sometimes or often worrying about running out of food before getting money to buy more, *OR* = 1.23, *p* = 1.82, *95% CI* [0.91, 1.66]. There was a lower odds of worse health if having a nonstandard work arrangement, *OR* = 0.82, *p* = .250, *95% CI* [0.58, 1.15], than a standard arrangement; and if not having healthcare access, *OR* = 0.61, *p* < .002, *95% CI* [0.45, 0.83], than if having. Compared to the unadjusted to the adjusted model, there were marginal changes in odds ratios, no decreases in p-values below .05, and the design effect factor was about the same across predictors except for the food insecurity variable. After adjusting for education level, there was a decrease in the magnitude of the odds ratio and increase in the p-value from *OR* = 1.45, *p* = .014, *95% CI* [1.08, 1.94], to *OR* = 1.23, *p* = .182, *95% CI* [0.91, 1.66]. The design effect factor was about the same across predictors irrespective of adjusting for education level.

Discussion

Guided by an intersectional approach, quantitative analyses were conducted to explore the association between general health and work and nonwork factors for the female Latinx born-

outside-U.S. subgroup. Generally, the demographic characteristics of the female Latinx born-outside-U.S. intersectional subgroup were consistent with the research literature (Flippen, 2014; Velasco-Mondragon et al., 2016). They most often reported employment in occupations associated with lower pay and physically laborious work. Not having formal educational and citizenship opportunities impacts access to employment in occupations with more advantageous conditions of employment and work (e.g., wages, job tasks) (Flippen, 2014). The female Latinx born-outside-U.S. workers most frequently reported having completed 0-12 grades of formal education (37.8%) and not having citizenship (54.3%), suggesting limited career mobility and less advantageous work and employment conditions. Additionally, while workers of this intersectional subgroup reported better general health, standard employment, job security, safe workplaces, healthcare access, and food security, they also most often reported a low family income to poverty ratio threshold bracket and being worried about being able to afford housing costs. A higher proportion of income (Lipman, 2003 as cited in Chinchilla et al., 2022) is required for housing costs. Considering their income level in context to financial poverty, their worry about housing affordability suggests precarious work and nonwork conditions that the female Latinx born-outside-U.S. working-classed experience.

Compared to aggregate analyses, there were notable differences in the most frequently reported characteristics (occupation, family income to poverty threshold ratio bracket, citizenship, education level) found by subgroup and intersectional analyses. Even more, there were differences in occupation type and worry about housing affordability found by intersectional analyses that were not found by subgroup analyses. These descriptive results suggest that intersectional analyses were more sensitive to uncovering disparities than aggregate or subgroup analyses.

Statistically Significant Results: Worry Related to Housing Affordability

Worrying about housing affordability was the only predictor significantly associated with worse general health. The majority (52.2%) of workers of the female Latinx born-outside-U.S. subgroup reported being moderately or very worried about being able to afford housing costs. Those who reported being moderately or very worried were at significantly higher odds (*OR* = 1.79, *95% CI* [1.10, 2.91]) of having worse general health than those who were not too or at all worried. This association between worse health and worrying about housing affordability was also observed for the working classed population and across subgroups. These findings suggest the importance of housing affordability worry on the general health of female, Latinx, and born-outside-U.S. working-classed workers as it does for the female Latinx born-outside-U.S. working-classed intersectional subgroup. In the context of the demographic findings, their worries may stem from their structurally vulnerable positions as working-classed workers identified as female, Latinx, and born-outside-U.S. This position is not inherent to their personhood but rather "produced by his or her location [e.g., the embodiment of class, sex, race, nativity identities, and positions] in a hierarchical social order and its diverse networks of power relationships and effects" (Quesada et al., 2011, p. 341). These power systems (i.e., classism, sexism, racism, and nativism) are mechanized through work and nonwork life structures. For instance, omnibus laws related to immigration and enforcement as well as employment/labor-related (e.g., minimum wage, worker's compensation, overtime pay) policies differentially target (im)migrants and Latinx racialized people, affecting their health, material access (e.g., education, housing), employment, and wages (Philbin et al., 2018; Vargas et al., 2017). These findings suggest that there may be various mechanisms through which structurally vulnerable positions are reinforced, which warrants further study.

Unexpected Findings

The strength of association between worse general health and worry about food security, unsafe workplaces, job insecurity, and nonstandard work arrangements was not statistically significant. However, the directions of the estimates are consistent with the hypothesis (i.e., a higher odds of worse health with exposure to precarious conditions), as supported by the research literature (Benach et al., 2014; Ettlinger, 2007; Lewis et al., 2015). The exception was for healthcare access. Over 81% of the female Latinx born-outside-U.S. subgroup reported having a place they usually go to when they are sick or need advice about their health. The high percentage may relate to coverage expansions of the Affordable Care Act (ACA) implemented in 2014 (a year prior to the collection of the survey data) (Agarwal et al., 2019). However, there was a higher odds of reporting worse general health *if having* access to healthcare than not. This directional pattern and similar magnitude of the estimates for the healthcare access predictor were also noted from the analyses for the working classed and across subgroups but were statistically significant. Further exploration is needed to understand how factors such as type of healthcare access (e.g., emergency services), citizenship, undocumented status, and health insurance coverage may contribute to this finding.

There are a few potential reasons that may account for these overall nonsignificant and unexpected findings for female Latinx born-outside-U.S. subgroup. First, the overall nonsignificance of results for the female Latinx born-outside-U.S. subgroup suggests that there may not be enough power from the small sample size of this intersectional subgroup to detect statistically significant associations (e.g., Type II errors). Second, the influences of self-report bias—including recall bias, social desirability bias—and cultural norms of social presentation may have led to underestimating statistically significant results (Althubaiti, 2016; Hopwood et

al., 2009). Third, there may have been issues with construct validity for the present study. For instance, the single item for healthcare access may not have adequately captured the concept. Prior studies examining healthcare access using NHIS data have used not one but multiple items (e.g., delayed or not getting medical care due to costs, unaffordability of prescription medications, issues with access to care) to capture the concept (Barbeau et al., 2004; Krieger et al., 2005). Additionally, a measure of the type of healthcare access was not included as part of the measure for healthcare access in the present study. If emergency services, for instance, were the predominant type of healthcare access, then the results of having healthcare access as predictive of worse health is more plausible.

Conclusion

The limitations found through this exploratory study challenged the evaluation of whether inferential intersectional analyses were more informative in understanding the association between general health and work and nonwork predictors for female Latinx born-outside-U.S. working-classed workers. Descriptively, however, there were important differences seen by intersectional analyses (i.e., occupation, worry about housing affordability) that were obscured when examining by subgroups or by the working classed as a whole. These results alone suggest that examining beyond the intersections of class and sex, class and race, and class and nativity are critical to identifying and measuring health disparities for female Latinx born-outside-U.S. working-classed workers at the intersections of multiple oppressions. Additionally, these precarious conditions of work and nonwork noted for workers of the female Latinx born-outside-U.S. subgroup warrants further study. In particular, worry about housing in relation to employment conditions and at an additional intersection with citizenship could reveal impactful associations and areas for systems-level interventions for the female Latinx born-outside-U.S.

working classed, and for workers of the other subgroups and for the working classed as a whole. To conduct these complex intersectional analyses, pooling datasets across years (if available) would ensure precision and reliability of measures, provide the sample size needed to detect significant associations when examining multiple intersections, and the ability to make causal inferences (Aneshensel, 2013; West et al., 2008), which was not possible with the cross-sectional data used for the present study. Finally, some studies suggest wide employment patterns and nonwork resources depending on patriarchal family orientations, marital status, and if having children (in the U.S. and transnationally) for Latinx (im)migrant women (Flippen, 2014; Hondagneu-Sotelo & Avila, 1997; McCabe et al., 2017). The potential influence of measures of family structure and dynamics and mothering/parenting locally/transnationally on health outcomes and work and nonwork conditions necessitates further investigation. Using a combination of qualitative and intersectional quantitative methods would allow additional inquiry into the meaning and value of conditions and experiences, as well as an exploration of other factors that may have contributed to the findings for female Latinx born-outside-U.S. workers. Such an approach would provide a “deeper understanding than either method could provide alone” (Bowleg & Bauer, 2016, p. 338), expanding the lens through which systemic injustices are addressed.

Chapter Five

Conclusion

Conclusion

The complexity of worker health inequities requires a diversity of perspectives and varying forms of knowledge and knowing to advance worker health equity. This dissertation sought to offer another perspective using theoretical frameworks derived from the social sciences. Chapter Two provided a brief exploration into the OHS and worker health equity literature to see how worker health equity and related terminology had been used and the inclusion of systems of power concepts. The findings indicate the need for explicit definitions (conceptual, operational) for continued clarity. Shared language is critical to breaking disciplinary silos and facilitates knowledge sharing with other disciplines engaged in worker health equity research. Doing so would bridge worker health equity research to the larger body of health equity research.

Additionally, power is central to equity. As such, engagement with systems of power concepts is needed in worker health equity research. When systems of power concepts are not recognized or left out of analyses, critical roots of inequity are missed, thereby flattening the consciousness-raising and liberating potential of the research to advance worker health equity (Alexander-Floyd, 2012). While these points are important for researchers engaged in worker health equity research, there are potential widescale implications if taken up on the national level, such as by the National Institute for Occupational Safety and Health and the National Institute of Nursing Research. These institutional bodies oversee research directions and funding, holding much power to create change. Thus, the future direction of worker health equity research is interrelated with how these institutions engage with worker health equity terminology and systems of power concepts.

Chapters Three and Four were premised on: 1) centering workers in systematically marginalized positions; 2) contextualizing person-level disparities to systems of power concepts; and 3) expanding the purview of analysis to consider the work and nonwork environment as both inform the health of workers. For Chapter Three, the U.S. working classed was chosen as a population of focus due to the disparities (Whitehead, 1992) noted in the research literature for workers ascribed to these lower positions of power. Intersectional intraclass analyses exposed differences in work and nonwork conditions otherwise obscured by aggregate analyses. Workers in certain structurally marginalized positions reported more precarious work *and* nonwork conditions, which suggests that axes of oppression multiply oppress through the various environments in which workers' lives are embedded. Workers of marginalized positions "have an epistemic advantage, a particular perspective that scholars should consider…when crafting a normative vision of a just society" (Nash, 2008, p. 4). With quantitative methods, a portion of this perspective is captured using an intersectional lens that reveals the many directions from which these positions are structurally marginalized. Furthermore, inequitable nonwork conditions can perpetuate work-related disparities (and vice versa) (Flippen, 2014; Hondagneu-Sotelo & Avila, 1997; Reilly et al., 2018), collectively impacting worker health outcomes adversely and impeding advancement towards worker health equity. The inequities found through this dissertation research warrant serious attention to investigating the interplay between work and nonwork factors and their impact on worker health outcomes.

Finally, Chapter Four focused on female Latinx born-outside-U.S. workers based on descriptive analysis findings (Chapter Three) that suggested the structurally precarious position of this working-classed subgroup. Workers who reported worrying about housing affordability were at statistically significantly higher odds of having worse general health than those who did

not. There were also surprising nonsignificant findings that warrant further conceptual and methodological reconsiderations for workers of this subgroup. Amaro and de la Torre (2002) noted 20 years ago that "…much of the [public health] research on women's health has not contributed to a deeper understanding of the health issues affecting Latinas" (p. 525). A concluding recommendation of theirs for public health researchers is still relevant today for public health–occupational health nursing and OHS disciplines overall:

> Methods of measuring the impact of oppression and power dynamics based on how Latinas experience the intersections of gender, race, and class must be developed if there is to be a full understanding of the health status and access issues faced by this group. (p. 528)

In other words, Chicana/Chicanx/Latina/Latinx epistemological, ontological, and methodological perspectives are critical for advancing health equity for female Latinx workers and should be the orientation from which this research is conducted. More so, this is a critique of the research offered in Chapter Four. While intersectional methods were beneficial for exposing intraclass differences, the utility of intersectionality as a theoretical framework was limited, which was a shortcoming of the researcher and not an inherent deficit of intersectionality. Future worker health equity research centering on Latinx workers, in general, and female Latinx workers, in particular, need to orient their research in Chicana/Chicanx/Latina/Latinx theorizing and knowledge production (e.g., see formative works of Gloria Anzaldúa, Chela Sandoval, and other Chicana/Latina feminist scholars)—a perspective largely missing in the OHS sciences.

In her situating of Chicanx/Latinx feminist onto-epistemologies and methodologies to geographical research, Madelaine Cahuas' (2021) raises the question, how do scholars conduct "ethical and accountable [research] to marginalized communities that you also belong to?" (p. 1).

For outsiders, contending with this question is of even more upmost importance. “The privilege of whiteness…gives leave to disrespect other peoples’ realities and types of knowledge—race and soul remain four-letter words” (Anzaldúa & Keating, 2002, p. 565). Gloria Anzaldúa’s words, while directed towards those with the privilege of whiteness, are an applicable critique to researchers engaged in worker health equity research. Whiteness, as AnaLouise Keating suggests, is a “‘state of mind—dualistic, supremacist, separatist, hierarchical…all the things we’re working to transform…’” (Keating as cited in Anzaldúa & Keating, 2002, p. 570). All researchers across disciplines who are engaged in worker health equity research (and in health equity research, more broadly) are challenged to contend with how their research and research process intersects with the many levels of whiteness—systemic, structural/institutional, interpersonal, and internalized (Jones, 2000). Particularly when applying quantitative methods, self-reflexivity is and will continue to be paramount in disrupting research approaches and methods that reify systems and structures of oppression (Nagar & Geiger, 2007).

Final Thoughts

Over the last six years, from the beginning of my PhD journey to now, and even more acutely from writing Chapter One to this conclusion in Chapter Five, there have been profound transformations of self and scholarship. Staying within the confines of nursing, my disciplinary home, would not have allowed this transformation to happen. Rather, exposure to feminist scholarship through the Department of Gender, Women and Sexuality Studies was a significant catalyst in this transformative process. Feminist perspectives outside of nursing guided my ongoing process of unlearning by interrogating the hegemonic epistemologies and ontologies (and methodologies) of not just nursing but also the OHS sciences, the intersection of various disciplines engaged in work- and worker-related research. Relearning has involved not

abandoning my disciplinary roots but rather returning to nursing's birthplace from spaces of social injustice since new and diverse perspectives "…expands and alters the dialogue, not in an add-on fashion but through a multiplicity that's transformational, such as mestiza consciousness" (Anzaldúa & Keating, 2002, p. 4) (see Anzaldúa, 1987 for the origins of mestiza consciousness). The ongoing challenge for myself, occupational health nurses, and researchers engaged in worker health equity research will be to venture beyond our disciplinary boundaries to understand there is a "multiplicity of situated knowledges in any particular context" (Larner, 1995, p. 187). The act of and process of contending between those situated knowledges and our own will move us towards producing liberating research for a more equitable future.

References

Agarwal, S. D., Goldman, A. L., & Sommers, B. D. (2019). Blue-collar workers had greatest insurance gains after ACA implementation. *Health Affairs*, *38*(7), 1140-1144. https://doi.org/10.1377/hlthaff.2018.05454

Agency for Healthcare Research and Quality. (n.d.). *Precision standards guidelines for reporting MEPS-IC descriptive statistics*. https://meps.ahrq.gov/survey_comp/ic_precision_guidelines.shtml

Ahonen, E. Q., Fujishiro, K., Cunningham, T., & Flynn, M. (2018). Work as an inclusive part of population health inequities research and prevention. *American Journal of Public Health*, *108*(3), 306-311. https://doi.org/10.2105/ajph.2017.304214

Alexander-Floyd, N. (2012). Disappearing acts: Reclaiming intersectionality in the social sciences in a post-Black feminist era. *Feminist Formations*, *24*, 1-25. https://doi.org/10.1353/ff.2012.0003

Alonso-Villar, O., Rio, C. d., & Gradin, C. (2012). The extent of occupational segregation in the United States: Differences by race, ethnicity, and gender. *Industrial relations (Berkeley)*, *51*(2), 179-212. https://doi.org/10.1111/j.1468-232X.2012.00674.x

Alterman, T., Luckhaupt, S. E., Dahlhamer, J. M., Ward, B. W., & Calvert, G. M. (2013). Prevalence rates of work organization characteristics among workers in the U.S.: Data from the 2010 National Health Interview Survey. *American Journal of Industrial Medicine*, *56*(6), 647-659. https://doi.org/10.1002/ajim.22108

Althubaiti, A. (2016). Information bias in health research: definition, pitfalls, and adjustment methods. *Journal of multidisciplinary healthcare*, *9*, 211-217. https://doi.org/10.2147/JMDH.S104807

Amaro, H., & de la Torre, A. (2002). Public health needs and scientific opportunities in research on Latinas. *American Journal of Public Health*, *92*(4), 525-529.

Aneshensel, C. S. (2013). Theory-based data analysis for the social sciences. In (2 ed., pp. 167-196). SAGE Publications, Inc. https://doi.org/10.4135/9781506335094

Anthias, F. (2012). Hierarchies of social location, class and intersectionality: Towards a translocational frame. *International Sociology*, *28*(1), 121-138. https://doi.org/10.1177/0268580912463155

Anzaldúa, G. (1987). *Borderlands = La frontera: The new mestiza* (First edition. ed.). San Francisco : Aunt Lute Books.

Anzaldúa, G., & Keating, A. (2002). *This bridge we call home: Radical visions for transformation*. London: Routledge. https://doi.org/10.4324/9780203952962

Asada, Y., Whipp, A., Kindig, D., Billard, B., & Rudolph, B. (2014). Inequalities in multiple health outcomes by education, sex, and race in 93 US counties: Why we should measure them all. *International Journal for Equity in Health*, *13*(1), 47-47. https://doi.org/10.1186/1475-9276-13-47

Azaroff, L. S., Levenstein, C., & Wegman, D. H. (2003). Occupational health of southeast Asian immigrants in a US city: A comparison of data sources. *American journal of public health (1971)*, *93*(4), 593-598. https://doi.org/10.2105/AJPH.93.4.593

Barbeau, E. M., Krieger, N., & Soobader, M. J. (2004). Working class matters: Socioeconomic disadvantage, race/ethnicity, gender, and smoking in NHIS 2000. *Am J Public Health*, *94*(2), 269-278. https://doi.org/10.2105/ajph.94.2.269

Baron, S. L., Beard, S., Davis, L. K., Delp, L., Forst, L., Kidd-Taylor, A., Liebman, A. K., Linnan, L., Punnett, L., & Welch, L. S. (2014). Promoting integrated approaches to

reducing health inequities among low-income workers: Applying a social ecological framework. *American Journal of Industrial Medicine*, *57*(5), 539-556. https://doi.org/10.1002/ajim.22174

Baron, S. L., Steege, A. L., Marsh, S. M., Menendez, C. C., & Myers, J. R. (2013). Nonfatal work-related injuries and illnesses - United States, 2010. *MMWR. Morbidity and mortality weekly report*, *62*(3), 35-40.

Beal, F. (2008). Double jeopardy: To be Black and female. *Meridians (Middletown, Conn.)*, *8*(2), 166-176.

Benach, J., Muntaner, C., Solar, O., Santana, V., & Quinlan, M. (2010). Introduction to the WHO Commission on Social Determinants of Health Employment Conditions Network (EMCONET) study, with a glossary on employment relations. *International Journal of Health Services*, *40*(2), 195-207. https://doi.org/10.2190/HS.40.2.a

Benach, J., Vives, A., Amable, M., Vanroelen, C., Tarafa, G., & Muntaner, C. (2014). Precarious employment: understanding an emerging social determinant of health. *Annual Review of Public Health*, *35*(1), 229-253. https://doi.org/10.1146/annurev-publhealth-032013-182500

Benach, J., Vives, A., Tarafa, G., Delclos, C., & Muntaner, C. (2016). What should we know about precarious employment and health in 2025? Framing the agenda for the next decade of research. *International Journal of Epidemiology*, *45*(3), 969-969. https://doi.org/10.1093/ije/dyw183

Bonilla-Silva, E. (1997). Rethinking racism: Toward a structural interpretation. *American Sociological Review*, *62*(3), 465-480. https://doi.org/10.2307/2657316

Bonilla-Silva, E. (2002). We are all Americans!: the Latin Americanization of racial stratification in the USA. *Race & society*, *5*(1), 3-16. https://doi.org/10.1016/j.racsoc.2003.12.008

Bowleg, L., & Bauer, G. (2016). Invited reflection: Quantifying intersectionality. *Psychology of Women Quarterly*, *40*(3), 337-341. https://doi.org/10.1177/0361684316654282

Braveman, P. (2014). What are health disparities and health equity? We need to be clear. *Public Health Reports*, *129 Suppl 2*(Suppl 2), 5-8. https://doi.org/10.1177/00333549141291s203

Braveman, P. A., Kumanyika, S., Fielding, J., Laveist, T., Borrell, L. N., Manderscheid, R., & Troutman, A. (2011). Health disparities and health equity: The issue is justice. *American Journal of Public Health*, *101 Suppl 1*, S149-155. https://doi.org/10.2105/AJPH.2010.300062

Cahuas, M. C. (2021). Voicing Chicanx/Latinx feminisms and situating testimonio in geographical research. *Gender, Place & Culture*, 1-14. https://doi.org/10.1080/0966369X.2021.1987199

Centers for Disease Control and Prevention. (2020). *Health Disparities*. Retrieved March 4 from https://www.cdc.gov/healthyyouth/disparities/index.htm#:~:text=Health%20disparities%20are%20preventable%20differences,experienced%20by%20socially%20disadvantaged%20populations.

Chatterjee, D., & Leong, F. T. L. (2020). Occupational health disparities among racial and ethnic minorities: Lessons from diverse research frameworks. *Occupational Health Science*, *4*(3), 215-237. https://doi.org/10.1007/s41542-020-00067-0

Chinchilla, M., Yue, D., & Ponce, N. A. (2022). Housing insecurity among Latinxs. *Journal of Immigrant and Minority Health*, *24*(3), 656-665. https://doi.org/10.1007/s10903-021-01258-9

Choi, B. C. K., & Pak, A. W. P. (2006). Multidisciplinarity, interdisciplinarity and transdisciplinarity in health research, services, education and policy: 1. Definitions, objectives, and evidence of effectiveness. *Clinical and Investigative Medicine*, *29*(6), 351-364.

Cierpich, H., Styles, L., Harrison, R., Davis, L., Chester, D., Lefkowitz, D., Valiante, D., Richardson, S., Castillo, D., Romano, N., & Baron, S. (2008). Work-related injury deaths among Hispanics—United States, 1992-2006. *JAMA : the journal of the American Medical Association*, *300*(21), 2479-2480. https://doi.org/10.1001/jama.300.21.2479

Collins, P. H. (1998). It's all in the family: Intersections of gender, race, and nation. *Hypatia*, *13*(3), 62-82. https://doi.org/10.1111/j.1527-2001.1998.tb01370.x

Collins, P. H. (2000). *Black feminist thought*. Routledge. https://doi.org/10.4324/9780203900055

Collyer, T. A., & Smith, K. E. (2020). An atlas of health inequalities and health disparities research: "How is this all getting done in silos, and why?". *Social science & medicine (1982)*, *264*, 113330-113330. https://doi.org/10.1016/j.socscimed.2020.113330

Combahee River Collective. (2019). A Black feminist statement. *Monthly review (New York. 1949)*, *70*(8), 29-36. https://doi.org/10.14452/MR-070-08-2019-01_3

Comfort, M. (2015). How institutions deprive: Ethnography, social work, and interventionist ethics among the hypermarginalized. *RSF : Russell Sage Foundation journal of the social sciences*, *1*(1), 100-119. https://doi.org/10.7758/rsf.2015.1.1.06

Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *The University of Chicago Legal Forum*, *140*, 139-167.

Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford law review*, *43*(6), 1241-1299. https://doi.org/10.2307/1229039

Cuervo, I., Tsui, E. K., Islam, N. S., Harari, H., & Baron, S. (2021). Exploring the link between the hazards and value of work, and overcoming risk for community-based health interventions for immigrant Latinx low-wage workers. *Qualitative health research*, *31*(1), 3-15. https://doi.org/10.1177/1049732320964262

Daniels, C. R., Paul, M., & Rosofsky, R. (1990). Health, equity, and reproductive risks in the workplace. *Journal of Public Health Policy*, *11*(4), 449-462.

del Río, C., & Alonso-Villar, O. (2015). The evolution of occupational segregation in the United States, 1940-2010: Gains and losses of gender–race/ethnicity groups. *Demography*, *52*(3), 967-988. https://doi.org/10.1007/s13524-015-0390-5

Desilver, D., & Bialik, K. (2017). *Blacks and Hispanics face extra challenges in getting home loans*. Pew Research Center. Retrieved April 23 from https://www.pewresearch.org/fact-tank/2017/01/10/blacks-and-hispanics-face-extra-challenges-in-getting-home-loans/

Dover, D. C., & Belon, A. P. (2019). The health equity measurement framework: A comprehensive model to measure social inequities in health. *International Journal for Equity in Health*, *18*(1), 36. https://doi.org/10.1186/s12939-019-0935-0

Dwyer, R. E. (2013). The care economy? Gender, economic restructuring, and job polarization in the U.S. labor market. *American Sociological Review*, *78*(3), 390-416. https://doi.org/10.1177/0003122413487197

Dwyer-Lindgren, L., Mackenbach, J. P., van Lenthe, F. J., & Mokdad, A. H. (2017). Self-reported general health, physical distress, mental distress, and activity limitation by US county, 1995-2012. *Population Health Metrics*, *15*(1), 16. https://doi.org/10.1186/s12963-017-0133-5

Eisenberg-Guyot, J., & Hajat, A. (2020). Under capital's thumb: Longitudinal associations between relational social class and health. *Journal of Epidemiology & Community Health*, *74*, 453 - 459.

Eisenberg-Guyot, J., Peckham, T., Andrea, S. B., Oddo, V., Seixas, N., & Hajat, A. (2020). Life-course trajectories of employment quality and health in the U.S.: A multichannel sequence analysis. *Social Science & Medicine*, *264*, 1-26. https://doi.org/10.1016/j.socscimed.2020.113327

Eisenberg-Guyot, J., & Prins, S. J. (2020). Relational social class, self-rated health, and mortality in the United States. *International Journal of Health Services*, *50*(1), 7-20. https://doi.org/10.1177/0020731419886194

Eisenberg-Guyot, J., Prins, S. J., & Muntaner, C. (2022). Free agents or cogs in the machine? Classed, gendered, and racialized inequities in hazardous working conditions. *Am J Ind Med*, *65*(2), 92-104. https://doi.org/10.1002/ajim.23314

Eisenberg-Guyot, J., Prins, S. J., & Muntaner, C. (2022). Free agents or cogs in the machine? Classed, gendered, and racialized inequities in hazardous working conditions. *American Journal of Industrial Medicine*, *65*(2), 92-104. https://doi.org/10.1002/ajim.23314

Ettlinger, N. (2007). Precarity unbound. *Alternatives: global, local, political*, *32*(3), 319-340. https://doi.org/10.1177/030437540703200303

Flippen, C. A. (2014). Intersectionality at work: Determinants of labor supply among immigrant Latinas. *Gender & society*, *28*(3), 404-434. https://doi.org/10.1177/0891243213504032

Flynn, M. A. (2014). Safety and the diverse workforce: Lessons from NIOSH's work with Latino Immigrants. *Professional safety*, *59*(6), 52-57.

Flynn, M. A., Check, P., Steege, A. L., Sivén, J. M., & Syron, L. N. (2022). Health equity and a paradigm shift in occupational safety and health. *International Journal of Environmental Research and Public Health*, *19*(1), 349. https://doi.org/10.3390/ijerph19010349

Flynn, M. A., Eggerth, D. E., Keller, B. M., & Check, P. (2021). Reaching "hard to reach" workers: Evaluating approaches to disseminate worker safety information via the Mexican consular network. *Journal of Occupational and Environmental Hygiene*, *18*(4-5), 180-191. https://doi.org/10.1080/15459624.2021.1903014

Ford, C. L., & Airhihenbuwa, C. O. (2010). The public health critical race methodology: Praxis for antiracism research. *Soc Sci Med*, *71*(8), 1390-1398. https://doi.org/10.1016/j.socscimed.2010.07.030

Fujishiro, K., Ahonen, E. Q., Gimeno Ruiz de Porras, D., Chen, I. C., & Benavides, F. G. (2021). Sociopolitical values and social institutions: Studying work and health equity through the lens of political economy. *SSM - Population Health*, *14*, 1-8. https://doi.org/10.1016/j.ssmph.2021.100787

Fuller, S., & Vosko, L. F. (2008). Temporary employment and social inequality in Canada: Exploring intersections of gender, race and immigration status. *Social Indicators Research*, *88*(1), 31-50. http://www.jstor.org/stable/27734685

García, I. (2020). Cultural insights for planners: Understanding the terms Hispanic, Latino, and Latinx. *Journal of the American Planning Association*, *86*(4), 393-402. https://doi.org/10.1080/01944363.2020.1758191

García, S. J. (2017). Bridging critical race theory and migration: Moving beyond assimilation theories. *Sociology Compass*, *11*(6), e12484. https://doi.org/10.1111/soc4.12484

Glenn, E. n. (1985). Racial ethnic women's labor: The intersection of race, gender and class oppression. *The Review of radical political economics*, *17*(3), 86-108. https://doi.org/10.1177/048661348501700306

Glenn, E. N. (1998). Gender, race, and class: Bridging the language-structure divide. *Social science history*, *22*(1), 29-38. https://doi.org/10.1017/S0145553200021684

Golden, T. L., & Wendel, M. L. (2020). Public health's next step in advancing equity: Re-evaluating epistemological assumptions to move social determinants from theory to practice [Perspective]. *Frontiers in Public Health*, *8*. https://doi.org/10.3389/fpubh.2020.00131

Gutiérrez, R. A. (2004). Internal colonialism: An American theory of race. *Du Bois Review*, *1*(2), 281-295. https://doi.org/http://dx.doi.org/10.1017/S1742058X04042043

Harnois, C. E., & Bastos, J. L. (2018). Discrimination, harassment, and gendered health inqualities: Do perceptions of workplace mistreatment contribute to the gender gap in self-reported health? *Journal of Health and Social Behavior*, *59*(2), 283-299. https://doi.org/10.1177/0022146518767407

Harrison, J. L., & Lloyd, S. E. (2013). New jobs, new workers, and new inequalities: Explaining employers' role in occupational segregation by nativity and race. *Social problems (Berkeley, Calif.)*, *60*(3), 281-301. https://doi.org/10.1525/sp.2013.60.3.281

Hondagneu-Sotelo, P., & Avila, E. (1997). "I'm here, but I'm there": The meanings of Latina transnational motherhood. *Gender and Society*, *11*(5), 548-571. http://www.jstor.org/stable/190339

Hopwood, C. J., Flato, C. G., Ambwani, S., Garland, B. H., & Morey, L. C. (2009). A comparison of Latino and Anglo socially desirable responding. *J Clin Psychol*, *65*(7), 769-780. https://doi.org/10.1002/jclp.20584

Huber, L. P., Lopez, C. B., Malagon, M. C., Velez, V., & Solorzano, D. G. (2008). Getting beyond the 'symptom,' acknowledging the 'disease': Theorizing racist nativism. *Contemporary justice review : CJR*, *11*(1), 39-51. https://doi.org/10.1080/10282580701850397

IBM Corp. (2021). *IBM SPSS statistics for Macintosh, version 28.0*. In IBM Corp.

Ifatunji, M. A. (2017). Labor market disparities between African Americans and Afro Caribbeans: Reexamining the role of immigrant selectivity. *Sociological forum (Randolph, N.J.)*, *32*(3), 522-543. https://doi.org/10.1111/socf.12347

Ingram, M., Wolf, A. M. A., Lopez-Galvez, N. I., Griffin, S. C., & Beamer, P. I. (2021). Proposing a social ecological approach to address disparities in occupational exposures and health for low-wage and minority workers employed in small businesses. *Journal of Exposure Science & Environmental Epidemiology*, *31*(3), 404-411. https://doi.org/10.1038/s41370-021-00317-5

Jones, C. P. (2000). Levels of racism: A theoretic framework and a gardener's tale. *American journal of public health (1971)*, *90*(8), 1212-1215. https://doi.org/10.2105/AJPH.90.8.1212

Jones, C. P. (2014). Systems of power, axes of inequity: Parallels, intersections, braiding the strands. *Medical Care*, *52*(10), S71-S75. https://doi.org/10.1097/MLR.0000000000000216

Kalweit, A., Herrick, R. F., Flynn, M. A., Spengler, J. D., Berko, J. K., Levy, J. I., & Ceballos, D. M. (2020). Eliminating take-home exposures: Recognizing the role of occupational health and safety in broader community health. *Annals of work exposures and health*, *64*(3), 236-249. https://doi.org/10.1093/annweh/wxaa006

King, D. K. (1988). Multiple jeopardy, multiple consciousness: The context of a Black feminist ideology. *Signs: Journal of Women in Culture and Society*, *14*(1), 42-72. https://doi.org/10.1086/494491

Kirmanoglu, H., & Baslevent, C. (2014). Life satisfaction of ethnic minority members: An examiniation of interactions with immigration, discrimination, and citizenship. *Social Indicators Research*, *116*(1), 173-184. https://doi.org/10.1007/s11205-013-0276-0

Kolmar, W. K., & Bartkowski, F. (2010). *Feminist theory: A reader*. McGraw-Hill Higher Education.

Krieger, N. (2001). Theories for social epidemiology in the 21st century: An ecosocial perspective. *International Journal of Epidemiology*, *30*(4), 668-677. https://doi.org/10.1093/ije/30.4.668

Krieger, N. (2010). Workers are people too: societal aspects of occupational health disparities--an ecosocial perspective. *Am J Ind Med*, *53*(2), 104-115. https://doi.org/10.1002/ajim.20759

Krieger, N., Barbeau, E. M., & Soobader, M. J. (2005). Class matters: U.S. versus U.K. measures of occupational disparities in access to health services and health status in the 2000 U.S.

National Health Interview Survey. *Int J Health Serv*, *35*(2), 213-236. https://doi.org/10.2190/jkre-ah92-edv8-vhyc

Krieger, N., Chen, J. T., Waterman, P. D., Hartman, C., Stoddard, A. M., Quinn, M. M., Sorensen, G., & Barbeau, E. M. (2008). The inverse hazard law: Blood pressure, sexual harassment, racial discrimination, workplace abuse and occupational exposures in US low-income black, white and Latino workers. *Social Science & Medicine*, *67*(12), 1970-1981. https://doi.org/10.1016/j.socscimed.2008.09.039

Krieger, N., Waterman, P. D., Hartman, C., Bates, L. M., Stoddard, A. M., Quinn, M. M., Sorensen, G., & Barbeau, E. M. (2006). Social hazards on the job: Workplace abuse, sexual harassment, and racial discrimination—A study of Black, Latino, and White Low-Income women and men workers in the United States. *International Journal of Health Services*, *36*(1), 51-85. https://doi.org/10.2190/3emb-ykrh-edj2-0h19

Landsbergis, P. A., Grzywacz, J. G., & LaMontagne, A. D. (2014). Work organization, job insecurity, and occupational health disparities: Work Organization and Occupational Health Disparities. *American Journal of Industrial Medicine*, *57*(5), 495-515. https://doi.org/10.1002/ajim.22126

Larner, W. (1995). Theorising ‘difference' in Aotearoa/New Zealand. *Gender, Place & Culture*, *2*(2), 177-190. https://doi.org/10.1080/09663699550022008

Lee, A. A., Ingram, M., Quijada, C., Yubeta, A., Cortez, I., Lothrop, N., & Beamer, P. (2021). Responsibility for chemical exposures: Perspectives from small beauty salons and auto shops in southern metropolitan Tucson. *BMC Public Health*, *21*(1), 271. https://doi.org/10.1186/s12889-021-10336-4

Lee, E. K., Donley, G., Ciesielski, T. H., Gill, I., Yamoah, O., Roche, A., Martinez, R., & Freedman, D. A. (2022). Health outcomes in redlined versus non-redlined neighborhoods: A systematic review and meta-analysis. *Social science & medicine (1982)*, *294*, 114696-114696. https://doi.org/10.1016/j.socscimed.2021.114696

Lenderink, A. F., Zoer, I., van der Molen, H. F., Spreeuwers, D., Frings-Dresen, M. H. W., & van Dijk, F. J. H. (2012). Review on the validity of self-report to assess work-related diseases. *International Archives of Occupational and Environmental Health*, *85*(3), 229-251. https://doi.org/10.1007/s00420-011-0662-3

Lewis, H., Dwyer, P., Hodkinson, S., & Waite, L. (2015). Hyper-precarious lives: Migrants, work and forced labour in the Global North. *Progress in human geography*, *39*(5), 580-600. https://doi.org/10.1177/0309132514548303

Lippert, J., Rosing, H., & Tendick-Matesanz, F. (2020). The health of restaurant work: A historical and social context to the occupational health of food service. *American Journal of Industrial Medicine*, *63*(7), 563-576. https://doi.org/10.1002/ajim.23112

Marmot, M., & Allen, J. J. (2014). Social determinants of health equity. *American Journal of Public Health*, *104 Suppl 4*(Suppl 4), S517-519. https://doi.org/10.2105/ajph.2014.302200

Marmot, M. G., Bosma, H., Hemingway, H., Brunner, E., & Stansfeld, S. (1997). Contribution of job control and other risk factors to social variations in coronary heart disease incidence. *The Lancet (British edition)*, *350*(9073), 235-239. https://doi.org/10.1016/S0140-6736(97)04244-X

McCabe, B. E., Mitchell, E. M., Gonzalez-Guarda, R. M., Peragallo, N., & Mitrani, V. B. (2017). Transnational motherhood: Health of Hispanic mothers in the United States who are

separated from children. *Journal of transcultural nursing : official journal of the Transcultural Nursing Society*, *28*(3), 243-250. https://doi.org/10.1177/1043659616644960

McClure, E. S., Vasudevan, P., Bailey, Z., Patel, S., & Robinson, W. R. (2020). Racial capitalism within public health—How occupational settings drive COVID-19 disparities. *American journal of epidemiology*, *189*(11), 1244-1253. https://doi.org/10.1093/aje/kwaa126

Melamed, J. (2015). Racial capitalism. *Critical ethnic studies*, *1*(1), 76-85. https://doi.org/10.5749/jcritethnstud.1.1.0076

Mintz, B., & Krymkowski, D. H. (2010). The intersection of race/ethnicity and gender in occupational segregation: Changes over time in the contemporary United States. *International journal of sociology*, *40*(4), 31-58. https://doi.org/10.2753/IJS0020-7659400402

Motakef, M. (2019). Recognition and precarity of life arrangement: Towards an enlarged understanding of precarious working and living conditions. *Distinktion: Journal of Social Theory*, *20*(2), 156-172. https://doi.org/10.1080/1600910X.2019.1610019

Muntaner, C., Borrell, C., Vanroelen, C., Chung, H., Benach, J., Kim, I. H., & Ng, E. (2010). Employment relations, social class and health: A review and analysis of conceptual and measurement alternatives. *Social Science & Medicine*, *71*(12), 2130-2140. https://doi.org/10.1016/j.socscimed.2010.09.038

Murray, L. R. (2003). Sick and tired of being sick and tired: Scientific evidence, methods, and research implications for racial and ethnic disparities in occupational health. *American Journal of Public Health*, *93*(2), 221-226. https://doi.org/10.2105/AJPH.93.2.221

Murray, L. R. (2012). Health disparities or inequality? *New Solutions*, *22*(2), 227-232. https://doi.org/10.2190/NS.22.2.i

Nagar, R., & Geiger, S. (2007). Reflexivity and positionality in feminist fieldwork revisited. In T. Barnes, A. Tickell, J. Peck, & E. Sheppard (Eds.), *Politics and Practice in Economic Geography* (pp. 229-279). London: SAGE Publications Ltd. https://doi.org/10.4135/9781446212240.n23

Nash, J. C. (2008). Re-thinking intersectionality. *Feminist review*, *89*(1), 1-15. https://doi.org/10.1057/fr.2008.4

National Center for Health Statistics. (2015). *Reliability of estimates*. https://www.cdc.gov/nchs/ahcd/ahcd_estimation_reliability.htm

National Center for Health Statistics. (2016). *Survey description, National Health Interview Survey, 2015*. https://nhis.ipums.org/nhis/resources/srvydesc2015.pdf

National Institute for Occupational Safety and Health. (2019). *Occupational health equity*. Retrieved February 25 from https://www.cdc.gov/niosh/programs/ohe/default.html

Norwood, C. R. (2018). Mapping the intersections of violence on Black women's wexual health within the Jim Crow geographies of Cincinnati neighborhoods. *Frontiers (Boulder)*, *39*(2), 97-135. https://doi.org/10.5250/fronjwomestud.39.2.0097

O'Farrell, B. (1999). Women in blue collar and related occupations at the end of the millennium. *The Quarterly Review of Economics and Finance*, *39*(5), 699-722. https://doi.org/https://doi.org/10.1016/S1062-9769(99)00024-1

Palley, H. A. (2021). The White working class and the politics of race in the United States. *Open Political Science*, *4*(1), 174-179. https://doi.org/doi:10.1515/openps-2021-0016

Peckham, T. T., Fujishiro, K. K., Hajat, A. A., Flaherty, B. P. B. P., & Seixas, N. N. (2019). Evaluating employment quality as a determinant of health in a changing labor market. *RSF : Russell Sage Foundation journal of the social sciences*, *5*(4), 258-281. https://doi.org/10.7758/rsf.2019.5.4.09

Philbin, M. M., Flake, M., Hatzenbuehler, M. L., & Hirsch, J. S. (2018). State-level immigration and immigrant-focused policies as drivers of Latino health disparities in the United States. *Social science & medicine (1982)*, *199*, 29-38. https://doi.org/10.1016/j.socscimed.2017.04.007

Quesada, J., Hart, L. K., & Bourgois, P. (2011). Structural vulnerability and health: Latino migrant laborers in the United States. *Medical anthropology*, *30*(4), 339-362. https://doi.org/10.1080/01459740.2011.576725

Reilly, R., Spalding, S., Walsh, B., Wainer, J., Pickens, S., Royster, M., Villanacci, J., & Little, B. B. (2018). Chronic environmental and occupational lead exposure and kidney function among African Americans: Dallas Lead Project II. *International Journal of Environmental Research and Public Health*, *15*(12), 2875. https://doi.org/10.3390/ijerph15122875

Roberts, J. D., Dickinson, K. L., Koebele, E., Neuberger, L., Banacos, N., Blanch-Hartigan, D., Welton-Mitchell, C., & Birkland, T. A. (2020). Clinicians, cooks, and cashiers: Examining health equity and the COVID-19 risks to essential workers. *Toxicology and Industrial Health*, *36*(9), 689-702. https://doi.org/10.1177/0748233720970439

Robinson, C. J. (2000). *Black marxism: The making of the Black radical tradition*. Chapel Hill, N.C. : University of North Carolina Press.

Rodriguez, J. K., Holvino, E., Fletcher, J. K., & Nkomo, S. M. (2016). The theory and praxis of intersectionality in work and organisations: Where do we go from here? *Gender, work, and organization*, *23*(3), 201-222. https://doi.org/10.1111/gwao.12131

Schulte, P. A., Guerin, R. J., Schill, A. L., Bhattacharya, A., Cunningham, T. R., Pandalai, S. P., Eggerth, D., & Stephenson, C. M. (2015). Considerations for incorporating "well-being" in public policy for workers and workplaces. *American journal of public health (1971)*, *105*(8), E31-E44. https://doi.org/10.2105/AJPH.2015.302616

Schütte, S., Chastang, J.-F., Parent-Thirion, A., Vermeylen, G., & Niedhammer, I. (2014). Association between socio-demographic, psychosocial, material and occupational factors and self-reported health among workers in Europe. *Journal of public health (Oxford, England)*, *36*(2), 194-204. https://doi.org/10.1093/pubmed/fdt050

Schwalbe, M. L., & Staples, C. L. (1986). Class position, work experience, and health. *International Journal of Health Services*, *16*(4), 583-602. https://doi.org/10.2190/K7JH-ELVC-6QMG-H64N

Sherman, B. W., Kelly, R. K., & Payne-Foster, P. (2021). Integrating workforce health into employer diversity, equity and inclusion efforts. *American Journal of Health Promotion*, *35*(5), 609-612. https://doi.org/10.1177/0890117120983288

Showers, F. (2015). Being Black, foreign and woman: African immigrant identities in the United States. *Ethnic and racial studies*, *38*(10), 1815-1830. https://doi.org/10.1080/01419870.2015.1036763

Siordia, C., & Galley, F. (2020). Participation of workers of Asian ancestry in high-risk occupations in the United States: 2009 to 2017. *Journal of Immigrant and Minority Health*, *22*(5), 1010-1016. https://doi.org/10.1007/s10903-020-01006-5

Smith, L. T. (2012). *Decolonizing methodologies: Research and indigenous peoples*. London: Bloomsbury Academic & Professional.

Solar O, I. A. (2010). *A conceptual framework for action on the social determinants of health. Social determinants of health discussion paper 2 (policy and practice).* W. Press.

Srinivasan, S., & Williams, S. D. (2014). Transitioning from health disparities to a health equity research agenda: The time is now. *Public Health Reports*, *129 Suppl 2*(Suppl 2), 71-76. https://doi.org/10.1177/00333549141291s213

strmic-pawl, h. v., Gonlin, V., & Garner, S. (2021). Color in context: Three angles on contemporary colorism. *Sociology of Race and Ethnicity*, *7*(3), 289-303. https://doi.org/10.1177/23326492211012532

The New York Committee for Occupational Safety and Health. (2011). https://dol.ny.gov/system/files/documents/2021/02/triangle-nycosh-booklet.pdf

Van Natta, M., Burke, N. J., Yen, I. H., Fleming, M. D., Hanssmann, C. L., Rasidjan, M. P., & Shim, J. K. (2019). Stratified citizenship, stratified health: Examining Latinx legal status in the U.S. healthcare safety net. *Social Science & Medicine*, *220*, 49-55. https://doi.org/https://doi.org/10.1016/j.socscimed.2018.10.024

Vargas, E. D., Sanchez, G. R., & Juárez, M. D. (2017). The impact of punitive immigrant laws on the health of Latina/o populations. *Politics & Policy*, *45*(3), 312-337. https://doi.org/https://doi.org/10.1111/polp.12203

Vega, W. A., Rodriguez, M. A., & Gruskin, E. (2009). Health disparities in the Latino population. *Epidemiologic reviews*, *31*, 99-112. https://doi.org/10.1093/epirev/mxp008

Velasco-Mondragon, E., Jimenez, A., Palladino-Davis, A. G., Davis, D., & Escamilla-Cejudo, J. A. (2016). Hispanic health in the USA: A scoping review of the literature. *Public Health Reviews*, *37*(1), 31. https://doi.org/10.1186/s40985-016-0043-2

Vickerman, M. (2007). Recent immigration and race: Continuity and change. *Du Bois Review*, *4*(1), 141-165. https://doi.org/10.1017/S1742058X07070087

Ward, B. W., Dahlhamer, J. M., Galinsky, A. M., & Joestl, S. S. (2014). Sexual orientation and health among U.S. adults: National Health Interview Survey, 2013. *National health statistics reports*(77), 1-10.

West, B. T., Berglund, P., & Heeringa, S. G. (2008). A closer examination of subpopulation analysis of complex-sample survey data. *The Stata Journal*, *8*(4), 520-531. https://doi.org/10.1177/1536867X0800800404

Whitehead, M. (1992). The concepts and principles of equity and health. *International Journal of Health Services*, *22*(3), 429-445. https://doi.org/10.2190/986l-lhq6-2vte-yrrn

Whittle, H. J., Leddy, A. M., Shieh, J., Tien, P. C., Ofotokun, I., Adimora, A. A., Turan, J. M., Frongillo, E. A., Turan, B., & Weiser, S. D. (2020). Precarity and health: Theorizing the intersection of multiple material-need insecurities, stigma, and illness among women in the United States. *Social science & medicine (1982)*, *245*, 112683-112683. https://doi.org/10.1016/j.socscimed.2019.112683

Wodtke, G. T. (2016). Social class and income inequality in the United States: Ownership, authority, and personal income distribution from 1980 to 2010. *The American journal of sociology*, *121*(5), 1375-1415. https://doi.org/10.1086/684273

World Health Organization. (2018). *Health inequities and their causes*. Retrieved April 19 from https://www.who.int/news-room/facts-in-pictures/detail/health-inequities-and-their-causes

Wright, E. O. (1979). *Class structure and income determination*. New York : Academic Press.

Wright, E. O. (1980). Class and occupation. *Theory and society*, *9*(1), 177-214. https://doi.org/10.1007/BF00158896

Wright, E. O. (2005). *Approaches to class analysis*. Cambridge University Press.

Yao, Q., Li, X., Luo, F., Yang, L., Liu, C., & Sun, J. (2019). The historical roots and seminal research on health equity: A referenced publication year spectroscopy (RPYS) analysis. *International Journal for Equity in Health*, *18*(1), 152. https://doi.org/10.1186/s12939-019-1058-3

Zanoni, J. P. (2013). Confronting inequity: Participatory education impacting health at work. *Journal of Critical Thought and Praxis*, *2*(1), 18-39. https://www.iastatedigitalpress.com/jctp/article/id/520/

Appendix A

Industry and Occupation Categories

	Industry Categories
1	Agriculture, Forestry, Fishing, and Hunting
2	Mining
3	Utilities
4	Construction
5	Manufacturing
6	Wholesale trade
7	Retail trade
8	Transportation and warehousing
9	Information
10	Finance and insurance
11	Real estate and rental and leasing
12	Professional, scientific, and technical services
13	Management of companies and enterprises
14	Administrative and support and waste management and remediation services
15	Education services
16	Health care and social assistance
17	Arts, entertainment, and recreation
18	Accommodation and food services
19	Other services (except Public Administration)
20	Public Administration
21	Armed forces

Table A1. Industry categories based on 2012 NAICS codes.

See National Center for Health Statistics (2016) for further information.

	Occupation Categories
1	Management
2	Business and financial operations
3	Computer and mathematical
4	Architecture and engineering
5	Life, physical, and social science
6	Community and social services
7	Legal
8	Education, training, and library
9	Arts, design, entertainment, sports, and media
10	Healthcare practitioners and technical
11	Healthcare support
12	Protective service
13	Food preparation and serving related
14	Building and grounds cleaning and maintenance
15	Personal care and service
16	Sales and related
17	Office and administrative support
18	Farming, fishing, and forestry
19	Construction and extraction
20	Installation, maintenance, and repair
21	Production
22	Transportation and material moving
23	Military specific

Table A2. Occupation categories based on 2010 SOC codes.

See National Center for Health Statistics (2016) for further information.

Appendix B

Working-Classed Population Distributions, By Female and Male White Born-outside-U.S. and U.S.-born Intersectional Groupings

Worker characteristics	Study Sample[a]	Est.[b] Population	%[c]	Female White born-outside-U.S. (n^a = 130)		Female White U.S.-born (n^a = 3,665)		Male White born-outside-U.S. (n^a = 111)		Male White U.S.-born (n^a = 3,128)	
				n^a	%	n^a	%	n^a	%	n^a	%
Sex											
Female	6,411	45,549	50.4								
Male	5,473	44,835	49.6								
Race											
White	7,035	56,148	62.1								
Nativity											
Born outside the U.S.	2,420	17,493	19.4								
U.S.-born	9,459	72,850	80.6								
Industry[d]											
Manufacturing	1,199	10,354	11.6	6	†	230	7.6	23	27.9	459	16.7
Health care and social assistance	1,770	12,253	13.8	36	26.2	813	21.6	8	†	148	4.2
Occupation[d]											
Computer and mathematical	458	3,867	4.3	4	†	71	2.3	19	20.6	183	6.4
Sales and related											
Office and administrative support	1,739	12,681	14.2	23	16.8	806	21.6	6	†	233	6.9
Citizenship											
No	1,231	8,270	9.2	24	18.7			34	32.7		
Yes	10,635	81,968	90.8	106	81.3	3,665		77	67.3	3,128	

Worker characteristics	Study Sample[a]	Est. Population[b]	%[c]	Female White born-outside-U.S. (n^a = 130)		Female White U.S.-born (n^a = 3,665)		Male White born-outside-U.S. (n^a = 111)		Male White U.S.-born (n^a = 3,128)	
				n^a	%	n^a	%	n^a	%	n^a	%
Education level											
0-12 grades	1,250	8,854	9.8	1	†	138	3.6	1	†	169	6.1
12 grades (high school diploma) or GED certificate	2,713	20,407	22.7	14	†	716	19	24	20.5	771	23.6
Associate degree or some college	3,969	30,338	33.7	433	31.9	1,337	36.1	25	19.0	1,121	37.1
≥ 4-year College degree	3,918	30,370	33.8	72	59.2	1,470	41.3	60	60.3	1,063	33.2
Multiple jobs											
No	10,842	83,057	92.0	116	91.4	3,294	91.4	104	96.0	2,848	91.2
Annual income											
< $20,000	2,778	20,141	27.7	28	23.6	929	29.7	13	†	506	19.6
$20,000 - $44,999	3,773	27,107	37.3	41	45.4	1,192	37.5	31	29.7	919	32.2
$45,000 - $64,999	1,608	12,203	16.8	19	†	530	18.1	14	†	553	20.2
≥ $65,000	1,571	13,242	18.2	15	†	410	14.8	42	44.8	684	28.0
Family income to poverty threshold ratio											
< 100% of poverty	1,371	7,813	9.2	8	†	315	6.4	6	†	205	5.3
100-199% of poverty	2,172	14,549	17.1	24	17	540	13.0	15	†	395	12.0
200-399% of poverty	3,610	26,805	31.5	43	38.8	1,123	29.9	25	20.0	997	31.0
≥ 400% of poverty	4,112	36,029	42.3	48	39.6	1,524	50.7	64	66.5	1,367	51.7

Table B1. Working-classed population distributions of worker characteristics, by female and male White born-outside-U.S. and U.S.-born intersectional groupings.

Note. Data source: NCHS, National Health Interview Survey, 2015. Est. = estimated. GED = graduate education development. All estimates are weighted unless otherwise specified.

[a] Unweighted study sample size. [b] Rounded number in thousands. [c] Estimated population percentage. [d] Top industry or occupation reported by the working-classed population or intersectional groupings.

[†] Estimate was not published due to the small number of unweighted observations and/or had a high relative standard error.

Health status and work and nonwork factors				Female White born-outside-U.S.		Female White U.S.-born		Male White born-outside-U.S.		Male White U.S.-born	
	Study Sample[a]	Est.[b] Population	%[c]	*n*[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
General health											
Good	3,162	23,390	25.8	32	21.7	876	23.0	29	31.5	764	24.1
Very good or Excellent	7,880	61,485	68.0	90	73.3	2,575	71.5	77	64.7	2,160	70.4
		Population *M*	95% CI	*M*	95% CI	*M*	95% CI	*M*	95% CI	*M*	95% CI
Psychosocial health	11,414	21.76	21.7 - 21.9	21.82	21.1-22.5	21.36	21.2-21.5	22.36	22.0-22.8	22.05	21.9-22.2
		Est.[b] Population	%[c]	*n*[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
Work arrangement											
Standard	10,360	78,870	87.4	106	80.1	3,274	81.3	96	91.9	2,707	86.8
Work schedule											
Regular daytime shift	8,810	66,200	73.4	99	78.1	2,820	76.9	84	72.0	2,279	72.5
Job insecurity											
No	10,464	79,647	88.4	108	84.4	3,297	89.7	96	80.2	2,813	90.0
Low job demands											
Agree or strongly agree	10,461	79,791	88.6	112	83.7	3,138	85.1	100	91.6	2,803	90.6

Health status and work and nonwork factors				Female Latinx born-outside-U.S.		Female Latinx U.S.-born		Male Latinx born-outside-U.S.		Male Latinx U.S.-born	
	Study Sample[a]	Est.[b] Population	%[c]	*n*[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
Workplace harassment											
No	11,024	84,090	93.2	122	95.7	3,319	90.7	101	91.8	2,922	93.4
Healthcare access											
Yes	9,786	74,625	83.3	110	93.0	3,288	90.1	81	75.6	2,496	81.6
Food insecurity											
Never true	10,274	79,003	87.4	115	91.8	3,298	90.4	103	93.4	2,864	91.9

Table B2. Working-classed population distributions of health status and employment, working, and nonwork conditions, by female and male White born-outside-U.S. and U.S.-born intersectional groupings.

Note. Data source: NCHS, National Health Interview Survey, 2015. Est. = estimated. *M* = mean. CI = confidence interval. All estimates are weighted unless otherwise specified.

[a] Unweighted study sample size. [b] Rounded number in thousands. [c] Estimated population percentage.

Work and nonwork factors				Female White born-outside-U.S.		Female White U.S.-born		Male White born-outside-U.S.		Male White U.S.-born	
	Study Sample[a]	Est.[b] Population	%[c]	*n*[a]	%	*n*[a]	%	*n*[a]	%	*n*[a]	%
Paid sick leave											
No	5,078	38,591	43.2	55	43.0	1,450	39.2	40	29.5	1,256	42.4
Health insurance											
No	3,932	30,299	34.0	41	33.9	1,195	33.9	30	26.6	835	28.2
Workplace safety											
Less safe	4,872	37,006	41.0	42	32.1	1,260	34.3	39	34.7	1,216	39.2
Job-related physical exertion											
Often or always	4,903	37,450	41.5	37	29.5	1,250	33.8	37	23.9	1,481	47.5
Sometimes or seldom	4,085	31,049	34.4	37	22.0	1,407	38.4	39	42.9	998	31.5
Homeownership											
Not own	5,387	34,878	38.7	49	35.6	1,273	29.3	45	42.4	1,139	30.6
Housing Unaffordability											
Moderately or very worried	2,849	20,251	23.2	41	30.3	724	19.5	17	†	436	13.9

Table B3. Working-classed population distributions of employment, working, and nonwork exposures, by female and male White born-outside-U.S. and U.S.-born intersectional groupings

Note. Data source: NCHS, National Health Interview Survey, 2015. Est. = estimated. All estimates are weighted unless otherwise specified.

[a] Unweighted study sample size. [b] Rounded number in thousands. [c] Estimated population percentage.

† Estimate was not published due to the small number of unweighted observations and/or had a high relative standard error.