Health occupations salary outcomes: intersections of student race, gender, and first-generation status

Peggy Gesing1 · Mohan D. Pant2 · Amanda K. Burbage1

Received: 6 October 2021 / Accepted: 7 August 2022 / Published online: 18 August 2022 © The Author(s) 2022

Abstract
Greater diversity in the healthcare workforce has been identified as a critical need in serving an increasingly diverse population. Higher education institutions have been tasked with increasing the number of underrepresented students in the health occupations pipeline to better align with the demographics of the general population and meet the need for a diverse health occupations workforce. This study used the National Science Foundation’s National Survey of College Graduates dataset to capture data across time, examining the intersectionality of race, gender, and first-generation status on the salary outcomes of students who earn degrees related to health occupations. Results indicate that the intersecting identities of students who earn a bachelor’s degree or higher in the health professions impact salary outcomes. Results of this study have implications for higher education policies that can impact increased diversity in the health occupations workforce pipeline.

Keywords Intersectionality · Critquant · Healthcare professionals · Healthcare education · First-generation students · NSCG

Introduction
Disparities in healthcare and related health outcomes are known to exist in the population with lower-income racial minority groups lacking access to food, housing, jobs, health services, and education (Centers for Disease Control, n.d.; Jackson & Gracia, 2014; Manuel, 2018; World Health Organization [WHO], n.d.). These social determinants of health (SDH) are non-medical factors including conditions in which people are born and live, and the policies and systems that shape living conditions (WHO, n.d.). The SDH exist within and between countries with those in lower socioeconomic positions experiencing worse health and more illness. Understanding these, and other SDH, is imperative for health occupations educators working with an increasingly diverse provider population to deliver culturally competent care unconstrained by language and other barriers (Gilchrist & Rector, 2007;
WHO, 2008). One strategy for reducing disparity and improving health outcomes for all populations is to increase diversity in the health occupations workforce to better align with the demographics of the general population (Bouye et al., 2016; Jackson & Gracia, 2014; Roberts et al., 2014).

Higher education institutions have made recruitment and retention of diverse student populations a priority in an effort to improve access to education for underrepresented students and to increase diversity in the STEM workforce (Gumport, 2016; Letizia, 2017). These diverse student populations include underrepresented students or students who are low-income racial and ethnic populations underrepresented in the medical professions relative to their numbers in the general population (Association of American Medical Colleges, 2004), and/or first-generation students whose parents or guardians never completed a four-year post-secondary degree (Ishitani, 2006; Spradlin et al., 2010). First-generation and underrepresented students face multiple barriers to higher education including financial and cultural barriers (Brigman, 2016; Demetriou, 2014; Dennis et al., 2005). These barriers are compounded for students pursuing careers in health occupations, with many health-related degrees requiring graduate-level credentials (Funk et al., 2018).

While studies have been conducted to gain an understanding of diverse student recruitment and retention trends, little research exists exploring the intersectionality of race, gender, and first-generation status on the salary outcomes of students graduating with degrees in health occupations. Intersectionality considers how an individual’s different identities (e.g., gender, race, socioeconomic status, sexual orientation) accumulate to impact their lived experiences (Bi et al., 2020; Crenshaw, 1989) and highlights how the multiple components of identity must be considered when exploring social constructs (Crenshaw, 1991). The lack of insight into the impacts of intersectionality on salary outcomes has implications for attempts to increase and retain diversity in the health occupations workforce. This study explores salary outcomes of students who studied in health occupations in the U.S., analyzing data from the National Survey of College Graduates (NSCG) (U.S. Census Bureau, n.d.). Exploring NSCG data through an intersectional lens provides an opportunity to use a large, dataset to identify salary outcomes that go beyond one dimension of identity such as gender, race, or nationality.

The NSCG is a biennial survey that provides data on U.S. college graduates with a focus on students who go into the science and engineering workforce. This study examined the salary outcomes of students who graduated with health-related degrees who are working in health occupations and examined the intersectionality of outcomes by race, gender, and first-generation status. By examining intersectionality, we considered how students’ identities intersect with social structures to impact salary outcomes (American Psychological Association, 2017).

**Background**

Intersectionality acknowledges that individuals’ multiple identities can multiply the impacts of discrimination (Crenshaw, 1989). Discrimination is often thought of as unidirectional, using single categories with considerations of gender focusing on discrimination of White women while considerations of race focus on Black men. The tendency to treat race and gender as mutually exclusive categories is problematic because this single-dimension view fails to consider the multiplied impacts of discrimination. Structural intersectionality acknowledges that multiple forms of structural oppression including racism,
classism, and sexism impact those with intersecting identities within legal, financial, and healthcare systems (Crenshaw, 1991); however, the impact of this oppression is diffused when considered through a unidirectional lens (Haynes et al., 2020). Using an intersectional lens to explore human experiences at a societal and a healthcare system level can lead to greater visibility of marginalized groups in healthcare and health education (Muntinga et al., 2016).

**Intersectionality of students in health professions**

Health professions educators have been called upon to use an intersectional approach to understand their students’ context, goals, and needs (Karani et al., 2017). Investigation of student outcomes through intersectional lenses have revealed differences in career pursuit (Charleston et al., 2014), awareness of microaggressions (Proctor et al., 2018), and ability to address complex intersectional clinical issues (Brinkman & Donohue, 2020). Espousing intersectionality in health professions education enables graduates and practitioners to embrace responsibilities, rectify imbalances, celebrate visibility, and engage diverse stakeholders in patient care environments (Eckstrand et al., 2016). Ultimately, understanding intersectional patterns among health professionals provides a basis upon which the reduction of health disparity improves public health through securing representation within the health system (Keshet et al., 2015).

**First-generation status**

The intersection of race and socioeconomic status (SES) often impacts first-generation college students or those who are the first in their families to graduate from a post-secondary institution (Ishitani, 2006; Spradlin et al., 2010) making investigation of their intersectional experiences complex (Engle & Tinto, 2008; Haynes et al., 2020). First-generation students are more likely to be Black or Hispanic and therefore are often connected in research examining SES and underrepresentation (Chen, 2005, 2013). They share multiple characteristics including a lack of access to the income and college-going knowledge that non-first-generation students have (Chen, 2005; Lohfink & Paulsen, 2005; Luzeckyj et al., 2011). This leads to similar performance patterns that often negatively impact degree completion (Cahalan & Perna, 2015; Chen, 2005).

First-generation students tend to begin enrollment in community colleges and explore career options in vocational or technical fields where they can complete a degree or credential and join the workforce. This is compared to students whose parents have a bachelor’s degree or higher who are more likely to choose STEM or social sciences degrees that require a minimum of a four-year degree (Chen, 2005). However, first-generation students who explore career options in science at the bachelor’s degree level often focus primarily on medical-related careers and are influenced by potential compensation, alignment of career choice with personal interest, and ability to return home and contribute to their community (Dewsbury et al., 2019). First-generation students who do earn a bachelor’s degree have a harder time getting jobs, and when they do, they are often underemployed and earn lower wages than non-first-generation graduates (NASPA, 2019). In addition, they are less likely to pursue graduate education which is of particular concern in the health occupations where higher salary career options require post-baccalaureate education (Carlton, 2015;
First-generation students who do pursue medical school report financial concerns, lack of health professionals in their network, lower levels of self-care, and environmental quality of life as barriers to education attainment (Brosnan et al., 2016; Mason et al., 2018).

This study examines salary outcomes of students who graduated with a health-related degree and were working in a health occupation at the time of the NSCG survey exploring how their intersectional identities impact salary outcomes. Salary was explored because it has been linked to health occupations staff retention but is known to vary based on job type (Gilles et al., 2014; Lu et al., 2019; Nemmaniwar & Deshpande, 2016). While various marginalized groups are differently impacted with inequity identification and outcomes, there is little research addressing these concerns for health care providers with intersectional identities (Silver et al., 2019).

Framework

This study combines human capital theory framework and a critical quantitative intersectional approach to gain an understanding of how demographic variables intersect to impact career outcomes (Fig. 1). Human capital theory relates earnings to education and experience and suggests that individuals become more productive by investing in education, which improves career outcomes (Becker, 1992; Paulsen, 2001). Critical scholars centralize the experiences of marginalized groups; however, much of critical research uses qualitative methods to explore meaning and connection (Haynes et al., 2020; Jang, 2018). Scholars have begun to apply critical epistemologies to quantitative methods to focus on the systemic impact of marginalizing groups and challenging the assumed neutrality of numbers (Garcia et al., 2018; Gilborn et al., 2018). By combining human capital theory framework with a critical quantitative intersectional approach, researchers embrace the premise that diverse social categorizations mutually construct and intersect with systems of power (Jang, 2018).
This study contributes to research on higher education recruitment and retention and health occupations workforce development by exploring the impacts of the intersections of race, gender, and first-generation status on the salary outcomes of students with health-related degrees. The study’s outcomes have potential impacts on efforts to increase diversity in the health occupations workforce and has implications for higher education admissions and enrollment management policy.

Methodology

Using NSCG data, this study examined the intersectionality of race, gender, and first-generation status on salary outcomes of students who studied in health occupations. The NSCG is a biennial survey providing data on U.S. college graduates and includes individuals living in the U.S. during the survey period who have at least a bachelor’s degree and are under the age of 76. This study used data collected via the 2015, 2017, and 2019 NSCG (U.S. Census Bureau, n.d.) to examine the salary outcomes of participants who graduated with health occupations degrees and were working in health occupations, comparing outcomes over time while examining the intersectionality of outcomes by race, gender, and first-generation status. Because this study utilized public-use NSCG data, demographic variables are limited by the instrument items. Terms used to refer to gender, race, and first-generation status are derived from the survey variables (Table 1).

Research questions

RQ1: How do salary outcomes of students who graduate and work in health occupations vary by race, gender, and first-generation status?
RQ2: What is the interaction of race, gender, first-generation status, and job type on the salary outcomes of students who graduate and work in health occupations?

Data set

The sample for this study included 5375 participants \((n = 2039 \text{ NSCG15}, n = 1578 \text{ NSCG17}, \text{ and } n = 1758 \text{ NSCG19})\) who received a bachelor’s or higher degree in biological/life sciences or health and related sciences fields in the ten years before the survey and who indicated that their job category was health occupations or managers. Participants reported working at least 35 h per week while earning an annual salary of more than $10,000. Variable descriptions are based on the public-use NSCG15, NSCG17, and NSCG19 datasets (Table 1). Frequency distribution of the participants by intersectionality of the demographic categorical variables: race, gender, and first-generation status can be found in Table 2, and descriptive statistics are provided in Table 3. The variable that denotes first-generation status was derived using the condition: First-generation if both parents’ education level was below a bachelor’s degree.
| Variable group                      | Variable Code   | Item Responses                                                                 |
|------------------------------------|-----------------|--------------------------------------------------------------------------------|
| Annual salary                      | SALARY          | Numeric entry                                                                  |
| Hours worked per week              | HRSWK           | <35 h/wk<br> > 35 h/wk                                                         |
| Job Category                       | N20CPR (N30CPR for 2019 data) | Biological/Life Scientists: Medical scientistsHealth Occupations: Diagnosing/treating practitioners, registered nurses, pharmacists, dieticians, therapists, physician assistants, nurse practitioners, psychologists, health technologists and technicians, other health occupations Managers, Other: Medical and health services manager |
| Most Recent Degree-Type            | MRDG            | 1 Bachelor’s degree<br> 2 Master’s degree<br> 3 Doctorate<br> 4 Other professional degree (e.g. JD, LLB, MD, DDS, DVM) |
| Most Recent Degree-Year            | MRYR            | Numeric entry *2005–2015                                                       |
| Most Recent Degree-Field of Study  | NMRMED (N2MRMED for 2019 Data) | Coded entry list                                                                 |
| First-Generation: Parent or Guardian Education | EDMOM EDDAD | 1 Less than high school completed<br> 2 High school diploma or equivalent<br> 3 Some college, vocational, or trade school (including 2-year degrees)<br> 4 Bachelor’s degree<br> 5 Master’s degree<br> 6 Professional degree (e.g. JD, LLB, MD, DDS, DVM)<br> 7 Doctorate (e.g. PhD, DSc, EdD)<br> 8 Not applicable |
| Race Hispanic                      | HISPANIC        | 0 No, not of Hispanic, Latino, or Spanish origin<br> 1 Yes, Mexican, Mexican American, or Chicano<br> 2 Yes, Puerto Rican<br> 3 Yes, Cuban<br> 4 Yes, another Hispanic, Latino or Spanish origin |
| Race                               | NATIVE          | American Indian or Alaska Native                                               |
| Race                               | PACIFIC         | Native Hawaiian or other Pacific Islander                                       |
| Race                               | ASIAN           | Asian                                                                          |
| Race                               | BLACK           | Black or African American                                                      |
| Variable group | Variable Code | Item Responses |
|----------------|---------------|----------------|
| Race           | WHITE         | White          |
| Gender         | GENDER        | 1 Male, 2 Female|
|                  | NSCG2015 First-Generation | NSCG2017 First-Generation | NSCG2019 First-Generation |
|------------------|--------------------------|--------------------------|--------------------------|
|                  | Race Gender              | Chi-sq(p-value)          | Race Gender              | Chi-sq(p-value)          | Race Gender              | Chi-sq(p-value)          |
|                  | Asian                    |                          |                          |                          |                          |                          |
|                  | F                        | No                       | Yes                      | 2.00(0.1577)             | No                       | Yes                      | 1.90(0.1678)             | No                       | Yes                      | 8.17(0.0043)             |
|                  | M                        | 81                       | 28                       |                          | 65                       | 27                       |                          | 76                       | 22                       |                          |
|                  | ColumnTotal              | 227                      | 101                      | 34.04(< 0.0001)          | 184                      | 99                       | 10.14(0.0015)            | 220                      | 113                      | 22.50(< 0.0001)          |
| Non-Asian        | F                        | 727                      | 589                      |                          | 575                      | 411                      |                          | 646                      | 458                      |                          |
|                  | M                        | 278                      | 109                      |                          | 207                      | 95                       |                          | 228                      | 83                       |                          |
|                  | ColumnTotal              | 1005                     | 698                      | 0.03(0.8728)             | 782                      | 506                      | 0.96(0.3267)             | 874                      | 541                      | 0.001(0.9752)            |
| Black            | F                        | 76                       | 82                       |                          | 51                       | 42                       |                          | 61                       | 42                       |                          |
|                  | M                        | 10                       | 10                       |                          | 9                        | 4                        |                          | 10                       | 7                        |                          |
|                  | ColumnTotal              | 86                       | 92                       | 35.74(< 0.0001)          | 60                       | 46                       | 11.27(0.0008)            | 71                       | 49                       | 32.71(< 0.0001)          |
| Non-Black        | F                        | 797                      | 580                      |                          | 643                      | 441                      |                          | 729                      | 507                      |                          |
|                  | M                        | 349                      | 127                      |                          | 263                      | 118                      |                          | 294                      | 98                       |                          |
|                  | ColumnTotal              | 1146                     | 707                      | 4.03(0.0447)             | 906                      | 559                      | 0.37(0.5451)             | 1023                     | 605                      | 8.16(0.0043)             |
| Hispanic         | F                        | 75                       | 76                       |                          | 48                       | 50                       |                          | 55                       | 58                       |                          |
|                  | M                        | 33                       | 17                       |                          | 15                       | 12                       |                          | 26                       | 8                        |                          |
|                  | ColumnTotal              | 108                      | 93                       | 33.91(< 0.0001)          | 63                       | 62                       | 12.05(0.0005)            | 81                       | 66                       | 24.86(< 0.0001)          |
| Non-Hispanic     | F                        | 798                      | 586                      |                          | 646                      | 433                      |                          | 735                      | 491                      |                          |
|                  | M                        | 326                      | 120                      |                          | 257                      | 110                      |                          | 278                      | 97                       |                          |
|                  | ColumnTotal              | 1124                     | 706                      | 25.66(< 0.0001)          | 903                      | 543                      | 9.61(0.0019)             | 1013                     | 588                      | 17.24(< 0.0001)          |
| White            | F                        | 533                      | 399                      |                          | 438                      | 296                      |                          | 491                      | 333                      |                          |
|                  | M                        | 214                      | 76                       |                          | 174                      | 72                       |                          | 179                      | 62                       |                          |
|                  | ColumnTotal              | 747                      | 475                      | 12.54(0.0004)            | 612                      | 368                      | 3.28(0.0701)             | 670                      | 395                      | 14.38(0.0001)            |
| Non-White        | F                        | 340                      | 263                      |                          | 256                      | 187                      |                          | 299                      | 216                      |                          |
|                  | M                        | 145                      | 61                       |                          | 98                       | 50                       |                          | 125                      | 43                       |                          |
### Table 2 (continued)

|                | NSCG2015 |                | NSCG2017 |                | NSCG2019 |                |
|----------------|----------|----------------|----------|----------------|----------|----------------|
|                | First-Generation | Chi-sq(p-value) | First-Generation | Chi-sq(p-value) | First-Generation | Chi-sq(p-value) |
| ColumnTotal    | 485      | 324            | 3.55(0.0596) | 354            | 237      | 0.19(0.6590)  |
| AINHMR         | 43       | 32             | 38       | 23             | 39       | 25            |
|                | 21       | 6              | 9        | 7              | 13       | 6             |
| ColumnTotal    | 64       | 38             | 34.42(<0.0001) | 47       | 30       | 13.90(<0.0002) |
| Non-AINHMR     | 830      | 630            | 656      | 460            | 751      | 524           |
|                | 338      | 131            | 263      | 115            | 291      | 99            |
| ColumnTotal    | 1168     | 761            | 919      | 575            | 1042     | 623           |

Significance of $p < 0.05$ is indicated in bold.

AINHM = American Indian/Alaska Native, Native Hawaiian/Other Pacific Islander, Multiple Race was created by combining "2: American Indian/Alaska Native, non-Hispanic ONLY", "6: Non-Hispanic Native Hawaiian/Other Pacific Islander ONLY", and "7: Multiple Race, non-Hispanic" of RACETHM.
Analysis and findings

Because salary data are usually non-normal, the log-transformation of annual salary was performed before answering research questions about salary outcomes. Data transformation was preferred over non-parametric statistical procedures centralized on the median because the null hypothesis for both research questions investigates differences of salary centralized on the mean. Multiple linear regression was used to answer RQ1, using white, non-first-generation, females as the comparison group. Full factorial design was used to answer RQ2.

Descriptive statistics (Table 3) indicate differences in salary outcomes based on the intersectionality of participants’ backgrounds. Overall, female participants reported lower salaries than male participants in all race and first-generation categories with Asian first-generation female participants earning the highest salary of all females and AINHMR\(^1\) non-first-generation female participants earning the lowest salary of all females. Among male participants, Hispanic non-first-generation male participants earned the highest salary, and AINHMR first-generation participants earned the lowest salary. First-generation

---

\(^1\) The variable AINHMR was created due to the small number of participants in the American Indian/Alaska Native, Native Hawaiian/Other Pacific Islander, Multiple Race categories.

---

Table 3  Descriptive Statistics of Salary by Intersectionality of Race, Gender, and First-Generation

| Race    | Gender | FirstGen | NSCG2015 M | NSCG2015 SD | NSCG2015 n | NSCG2017 M | NSCG2017 SD | NSCG2017 n | NSCG2019 M | NSCG2019 SD | NSCG2019 n |
|---------|--------|----------|------------|-------------|-----------|------------|-------------|-----------|------------|-------------|-----------|
| Asian   | Female | No       | 79,295     | 39,301      | 146       | 88,658     | 96,671      | 119       | 86,573     | 40,944      | 144       |
|         |        | Yes      | 88,688     | 46,691      | 73        | 102,433    | 117,704     | 72        | 100,451    | 73,427      | 91        |
| Male    | No     |          | 84,189     | 111,682     | 81        | 112,970    | 98,577      | 65        | 119,037    | 101,181     | 76        |
|         | Yes    |          | 91,160     | 59,584      | 28        | 110,328    | 87,961      | 27        | 100,490    | 54,016      | 22        |
| Black   | Female | No       | 75,653     | 27,352      | 76        | 74,160     | 40,731      | 51        | 72,054     | 22,134      | 61        |
|         |        | Yes      | 78,048     | 30,141      | 82        | 79,933     | 28,446      | 42        | 77,566     | 28,113      | 42        |
| Male    | No     |          | 77,520     | 30,009      | 10        | 82,889     | 31,446      | 9         | 69,030     | 33,780      | 10        |
|         | Yes    |          | 95,000     | 40,565      | 10        | 93,250     | 76,583      | 4         | 93,714     | 49,715      | 7         |
| Hispanic| Female | No       | 77,487     | 33,828      | 75        | 88,667     | 70,237      | 48        | 87,878     | 52,268      | 55        |
|         |        | Yes      | 68,890     | 27,925      | 76        | 79,376     | 34,005      | 50        | 85,071     | 49,731      | 58        |
| Male    | No     |          | 152,684    | 214,094     | 33        | 79,300     | 38,460      | 15        | 95,358     | 45,462      | 26        |
|         | Yes    |          | 84,442     | 69,486      | 17        | 71,829     | 23,327      | 12        | 77,625     | 29,154      | 8         |
| White   | Female | No       | 76,405     | 34,109      | 533       | 87,828     | 74,360      | 438       | 86,127     | 37,321      | 491       |
|         |        | Yes      | 83,788     | 87,823      | 399       | 85,859     | 42,184      | 296       | 88,080     | 50,830      | 333       |
| Male    | No     |          | 109,350    | 141,448     | 214       | 128,556    | 156,168     | 174       | 126,753    | 124,662     | 179       |
|         | Yes    |          | 93,310     | 51,983      | 76        | 112,821    | 122,041     | 72        | 98,961     | 57,120      | 62        |
| AINHMR  | Female | No       | 66,475     | 22,391      | 43        | 69,463     | 29,889      | 38        | 69,543     | 21,947      | 39        |
|         |        | Yes      | 78,820     | 28,155      | 32        | 81,151     | 23,955      | 23        | 83,680     | 31,805      | 25        |
| Male    | No     |          | 98,281     | 51,903      | 21        | 105,556    | 72,075      | 9         | 97,644     | 41,531      | 13        |
|         | Yes    |          | 74,167     | 11,232      | 6         | 68,286     | 30,170      | 7         | 67,676     | 12,255      | 6         |
Asian female, Black male, Black female, and AINHMR female participants in all samples (2015, 2017, & 2019) had higher mean salaries than non-first-generation participants of the same gender and race; while non-first-generation Hispanic female and Hispanic male, White male and AINHMR male participants had higher mean salaries in all samples. First-generation Asian male participants had higher mean salaries than non-first-generation Asian male participants in the 2015 sample and non-first-generation White female participants had higher mean salaries than first-generation White female participants in the 2017 sample.

RQ1: Do salary outcomes of students who graduate and work in health occupations vary by race, gender, and first-generation status? Multiple linear regression (Table 4) of the 2015 data revealed that no racial groups had a statistically lower salary outcome than the comparison group; however, gender was found to be a significant predictor, with male participants earning higher salary than female participants. There were differences in the 2017 and 2019 data with Black, Hispanic, and AINHMR, participants of both genders earning statistically lower salaries than White participants (\(p < 0.0001\) to 0.0625). Male participants earned higher salaries than female participants (\(p = < 0.0001\)). First-generation status was not a predictor of salary outcome in any group.

RQ2: What is the interaction of race, gender, first-generation status, and job type on the salary outcomes of students who graduate and work in health occupations? Full factorial design was used with log-transformed (base 10) salary as the dependent variable and race, gender, first-generation status, and job type as factors. Based on the model shown in Table 5, there was a significant main effect of job type on salary outcomes in all data samples (2015, 2017, and 2019); however, interaction effects varied. There was a significant interaction of race and job type \((p=0.0007)\) in the 2015 data sample, and a significant interaction of gender and job type \((p=0.0101)\) in the 2019 data sample. There were significant interactions of race and job type \((p=0.0495)\); race, gender and job type \((p=0.0375)\); and gender and first-generation status \((p=0.0309)\) in the 2017 data sample.

**Discussion**

The results of this study indicate differences in salary outcomes of students who graduate and work in health occupations by race, gender, and first-generation status. However, the differences vary between intersectional factors, illustrating the impact of multidimensional identities and affirming the use of human capital theory framework and a critical quantitative intersectional approach.

Empirical evidence shows that in many developed countries salaries of racial and ethnic minorities are on average, less than the White native majority (Longhi, 2020). This difference is also true of gender with international salary data showing that men out-earn women in each racial group (Kane et al., 2021; Organisation for Economic Co-operation and Development, n.d.; U.S. Bureau of Labor Statistics [USBLS] 2016, 2018, 2020). Female participants in this study in all racial groups reported lower salaries than males which aligns with international salary statistics. Although this study limited the sample to those working 35 or more hours per week, there are important reasons salary may vary which exacerbate the gender salary gap. Health professionals likely receive pay differentials up to 10% of overall pay under federal systems for working night shifts (OPM, n.d.) and time-and-a-half pay for overtime (U. S. Department of Labor, 2009); however, female
Table 4  Multiple Linear Regression Results for Research Question 1

| Variable  | NSCG 2015 | NSCG 2017 | NSCG 2019 |
|-----------|-----------|-----------|-----------|
|           | $\beta$  | SE        | $t$       | $P$       | $\beta$  | SE        | $T$       | $p$       | $\beta$  | SE        | $T$       | $p$       |
| Intercept | 4.85      | 0.01      | 652.57    | <0.0001   | 4.89      | 0.01      | 547.38    | <0.0001   | 4.90      | 0.01      | 628.30    | <0.0001   |
| Asian     | −0.01     | 0.01      | −1.04     | 0.2980    | −0.01     | 0.01      | −0.61     | 0.5444    | 0.01      | 0.01      | 0.58      | 0.5599    |
| Black     | 0.00      | 0.02      | −0.00     | 0.9983    | −0.05     | 0.02      | −2.19     | 0.0290    | −0.07     | 0.02      | −3.48     | 0.0005    |
| Hispanic  | −0.02     | 0.02      | −1.20     | 0.2312    | −0.04     | 0.02      | −2.08     | 0.0378    | −0.03     | 0.02      | −1.86     | 0.0625    |
| AINHMR    | −0.02     | 0.02      | −0.78     | 0.4349    | −0.06     | 0.03      | −2.15     | 0.0319    | −0.06     | 0.02      | −2.45     | 0.0143    |
| Male      | 0.05      | 0.01      | 5.12      | <0.0001   | 0.07      | 0.01      | 5.07      | <0.0001   | 0.06      | 0.01      | 5.49      | <0.0001   |
| First-Gen | 0.01      | 0.01      | 0.96      | 0.3358    | 0.01      | 0.01      | 0.86      | 0.3897    | 0.00      | 0.01      | 0.21      | 0.8354    |

Significance of $p < 0.05$ is indicated in bold.

$R^2 = 0.0137$ (2015), $R^2 = 0.0248$ (2017), and $R^2 = 0.0304$ (2019). Dependent (response) variable = $\log_{10}(\text{Salary})$, the logarithm of Salary with base 10. For the variable race, the category White was used as a reference category. Thus, each of the four categories: Asian, Black, Hispanic, and AINHMR would be compared with White. The Male and First-Gen (abbreviated for First-Generation) were based on Gender (Male = 1, Female = 0) and First-Generation (Yes = 1, No = 0), respectively.
Health occupations salary outcomes: intersections of student…

Table 5  Full Factorial Design with Log10Salary as Dependent Variable and Race, Gender, First-generation, and Job Type as Factors

| Source                        | NSCG 2015 | NSCG 2017 | NSCG 2019 |
|-------------------------------|-----------|-----------|-----------|
|                               | df | SS | MS | F   | p     | df | SS | MS | F   | p     | df | SS | MS | F   | p     |
| Race                          | 4  | 0.19 | 0.05 | 1.22 | 0.2982 | 4  | 0.22 | 0.05 | 1.17 | 0.3218 | 4  | 0.22 | 0.06 | 1.50 | 0.1990 |
| Gender                        | 1  | 0.02 | 0.02 | 0.41 | 0.5202 | 1  | 0.00 | 0.00 | 0.00 | 0.9441 | 1  | 0.00 | 0.00 | 0.00 | 0.9768 |
| Race*Gender                   | 4  | 0.32 | 0.08 | 2.06 | 0.0839 | 4  | 0.04 | 0.01 | 0.23 | 0.9238 | 4  | 0.04 | 0.01 | 0.25 | 0.9077 |
| First-Gen                     | 1  | 0.02 | 0.02 | 0.63 | 0.4259 | 1  | 0.01 | 0.01 | 0.28 | 0.5955 | 1  | 0.05 | 0.05 | 1.37 | 0.2420 |
| Race*First-Gen                | 4  | 0.23 | 0.06 | 1.46 | 0.2105 | 4  | 0.13 | 0.03 | 0.69 | 0.5955 | 4  | 0.08 | 0.02 | 0.52 | 0.7210 |
| Gender*First-Gen              | 1  | 0.08 | 0.08 | 2.03 | 0.1547 | 1  | 0.21 | 0.21 | 4.67 | 0.0309 | 1  | 0.10 | 0.10 | 2.77 | 0.0962 |
| Race*Gender*First-Gen         | 4  | 0.03 | 0.01 | 0.18 | 0.9498 | 4  | 0.14 | 0.04 | 0.78 | 0.5382 | 4  | 0.06 | 0.01 | 0.37 | 0.8290 |
| Job-Type                      | 3  | 1.30 | 0.43 | 11.29 | <0.0001 | 3  | 0.88 | 0.29 | 6.35 | 0.0003 | 3  | 0.68 | 0.23 | 6.07 | 0.0004 |
| Race*Job-Type                 | 12 | 1.32 | 0.11 | 2.85 | 0.0007 | 12 | 0.97 | 0.08 | 1.76 | 0.0495 | 12 | 0.44 | 0.04 | 0.98 | 0.4613 |
| Gender*Job-Type               | 3  | 0.06 | 0.02 | 0.54 | 0.6566 | 3  | 0.31 | 0.10 | 2.21 | 0.0852 | 3  | 0.42 | 0.14 | 3.79 | 0.0101 |
| Race*Gender*Job-Type          | 11 | 0.35 | 0.03 | 0.82 | 0.6248 | 10 | 0.89 | 0.09 | 1.93 | 0.0375 | 10 | 0.61 | 0.06 | 1.64 | 0.0895 |
| First-Gen*Job-Type            | 3  | 0.14 | 0.05 | 1.24 | 0.2932 | 3  | 0.08 | 0.03 | 0.55 | 0.6467 | 3  | 0.07 | 0.02 | 0.64 | 0.5908 |
| Race*First-Gen*Job-Type       | 12 | 0.44 | 0.04 | 0.95 | 0.4913 | 10 | 0.12 | 0.01 | 0.26 | 0.9896 | 12 | 0.21 | 0.02 | 0.47 | 0.9333 |
| Gender*First-Gen*Job-Type     | 3  | 0.03 | 0.01 | 0.22 | 0.8799 | 3  | 0.06 | 0.02 | 0.45 | 0.7198 | 3  | 0.15 | 0.05 | 1.36 | 0.2534 |
| Race*Gender*First-Gen*Job-Type| 8  | 0.50 | 0.06 | 1.62 | 0.1141 | 7  | 0.20 | 0.03 | 0.63 | 0.7311 | 5  | 0.01 | 0.00 | 0.03 | 0.9996 |

Significance of $p < 0.05$ is indicated in bold.

$R^2 = 0.105$ (2015), $R^2 = 0.098$ (2017), and $R^2 = 0.135$ (2019) implying that 10.5%, 9.8% and 13.5% of variance in log(salary) is accounted for by the factors (Race, Gender, First-Gen, and Job-Type) and their interactions in the model.
health professionals report preferring day shifts (Stimpfel et al., 2019) and are less likely to work overtime (Anxo & Karlsson, 2019).

Quantitative investigations of intersectional identities are under-explored and not uniformly approached (Guan et al., 2021). Nevertheless, intersectionality has been linked with economic insecurity and perceived job insecurity where individuals with multiple marginalized identities experience hierarchies of disadvantage (Lavaysse et al., 2018; Maroto et al., 2019). In this study, the complexity of intersectional identities was not universally observed. Mean salary data compared by race indicated that Asian and White female participants earned more on average than female participants in other race groups, while Hispanic and White male participants earned more on average than male participants in other race groups. This finding is counter to U.S. Bureau of Labor Statistics data which indicate that although Hispanic males have the highest employment-population ratio, or proportion of the population that is employed, Black and Hispanic males working full-time earned less than White and Asian males (USBLS, 2016, 2018, 2020). This finding requires follow up when reviewing future NSCG data sets.

In the United States it is illegal to discriminate against an employee or job applicant on the basis of race, color, religion, sex, national origin, age, disability, or genetic information (U.S. Equal Employment Opportunity Commission, 2022), leading researchers to focus on these identities when studying intersectionality. While other identities may be considered in intersectional research, few studies include first-generation status. This study provides an additional perspective for how first-generation status interacts with students’ other identities to impact their salary outcomes. Because first-generation students are more likely to be Black or Hispanic their intersecting identities may impact monetary and non-monetary career outcomes. First-generation status may have an indirect impact on salary outcomes because first-generation college graduates are more likely than non-first-generation graduates to be under-employed, work for a non-profit, or work in government roles where salary is often lower (NASPA, 2019). These economic outcomes do not take into consideration the non-monetary benefits of a college degree or value that is placed on jobs committed to service and social justice (Pérez Huber et al., 2018). Educational attainment is known to impact salary outcomes with college graduates with advanced degree out earning those holding a bachelor’s degree or less (Longhi, 2020; USBLS, 2021); however, first-generation students are less likely to earn the advanced degrees required for increased health occupation salaries (Funk et al., 2018), therefore the misalignment of the findings of this study with labor data warrant further exploration.

Although first-generation status was not found to be a statistically significant predictor of salary outcome in this study, mean salary differences were identified with first-generation participants in several minority racial groups out earning non-first-generation participants. Asian, Black, and AINHMR female and Black male first-generation participants reported higher salaries than non-first-generation participants in the same racial and gender groups. This supports Manzoni and Streib’s (2019) findings that first-generation status does not contribute to the wage gap for female students in health majors, and instead, geographic location and labor market sector are the biggest contributors to the wage gap. Results exploring the intersection of race, gender, and first-generation status on salary by job type indicated a significant main effect of job type on salary outcomes in all data samples with varied interaction effects. Although the interactions of race and job type; gender and job type; race, gender, and job type; and gender and first-generation status were not consistent from sample to sample, the presence of these significant interactions should be examined in future datasets to identify possible trends. The impact of job type supports data which indicate that health care practitioner roles
requiring an advanced degree like physician, and physician assistant are held primarily by White employees, while roles requiring less than a bachelor’s degree are held by a larger percentage of Black and Hispanic employees (National Center for Health Workforce Analysis, 2017; USBL, 2016, 2018, 2020). As Dhamoon (2011) stated “there are no universal grounds on how to know which interactions should be studied” (p. 239); however, choice of interaction effect in the context of this study should be made explicit (Choo et al., 2010). Considering social justice related to diversity in health professions student populations while working within the boundaries of the NSCG secondary dataset, we utilized AAMC defined parameters for underrepresented students leading to the identification of race, gender, and first-generation status to explore interactions related to job type and salary outcomes.

Ultimately there are important distinctions between race, SES, and first-generation status, further nuanced by intersectional identities which may involve any, all, or other predefined categories. For instance, Nguyen and Nguyen (2018) suggested investigations in first-generation experiences are best operationalized within their relationships to other identities. However, the predefined nature of the secondary dataset and fixed social categories of variables limited the opportunity to parse out these potentially important distinctions (Gillbourn et al., 2018). Other limitations to consider include the timeframe in which the data were collected. Because data in each sample included participants who graduated ten years prior to the survey year, impacts of the great recession that occurred from 2007–2009 must be taken into consideration. In addition, comparison of these data sets to the 2021 and 2023 NSCG data sets will require consideration of the financial crisis, focus on racial disparities, and impacts on healthcare professions brought on by the Coronavirus pandemic. The NSCG data is collected from U.S. college graduates who were residing in the U.S. at the time of the survey. Results should be considered within the U.S. context while considering implications for international health professions workforce trends.

This study identifies areas requiring further research related to the salary outcomes of students entering the health occupations workforce. Although the analysis indicated significant differences by job type, there is a need to disaggregate the data by healthcare degree earned, and healthcare job category. There is also a need to decentralize White males as the normative quantitative measure, and although this study used White females as the comparison group, another race category may be better suited as the central comparison through an intersectional lens. The disparities in income by race, gender, and first-generation status are factors that can impact students’ investment in graduate education and career decisions as they explore potential degree and career fields. Continuing to analyze NSCG biennial data can provide additional insights into trends in salary outcomes; however, including comparisons to international datasets will allow researchers to examine intersecting identities in a global context. Finally, qualitative research could provide a deeper understanding of the stories behind the data, illustrating how intersecting identities impact career outcomes by giving voice to the intersecting identities studied.

This study begins to address questions about the impact of students’ intersecting identities on their career outcomes with a focus on healthcare occupations. In doing so, we extend the research related to increasing diversity in the health occupations pipeline. Higher education and healthcare institutions committed to building a diverse health occupations workforce can benefit from these findings by considering the intersecting identities of health care professionals, striving for salary parity in the health occupations workforce.
Declarations

Conflict of interest  We have no known conflict of interest to disclose.

Open Access  This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article’s Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article’s Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0/.

References

American Psychological Association. (2017). Multicultural guidelines: An ecological approach to context, identity, and intersectionality. http://www.apa.org/about/policy/multicultural-guidelines.pdf

Anxo, D., & Karlsson, M. (2019). Overtime work: A review of literature and initial empirical analysis. International Labour Office, Inclusive Labour Markets, Labour Relations and Working Conditions Branch.

Association of American Medical Colleges. (2004). Underrepresented in medicine definition. https://www.aamc.org/what-we-do/mission-areas/diversity-inclusion/underrepresented-in-medicine

Becker, G. S. (1992). Human capital: A theoretical and empirical analysis, with special reference to education. University of Chicago Press.

Bi, S., Vela, M., Nathan, A., Gunter, K., Cook, S., López, F., Nocon, R., & Chin, M. (2020). Teaching intersectionality of sexual orientation, gender identity, and race/ethnicity in a health disparities course. MedEdPORTAL., 16, 10970. https://doi.org/10.15766/mep_2374-8265.10970

Bouye, K. E., McCleary, K. J., & Williams, K. B. (2016). Increasing diversity in the health professions: Reflections on student pipeline programs. Journal of Healthcare, Science and the Humanities, 6(1), 67–79.

Brigman, M. C. (2016). Predicting first-year retention of first-generation college students at a regional state university in Missouri. ProQuest Dissertations and Theses. Northcentral University. http://ezproxy.dur.ac.uk/login?url=https://search.proquest.com/docview/1816216886?accountid=14533

Brinkman, B., & Donohue, P. (2020). Doing intersectionality in social justice oriented clinical training. Training and Education in Professional Psychology, 14(2), 109–115.

Brosnan, C., Southgate, E., Outram, S., Lempp, H., Wright, S., Saxby, T., Harris, G., Bennett, A., & Kelly, B. (2016). Experiences of medical students who are first in family to attend university. Medical Education, 50(8), 842–851.

Cahalan, M., & Perna, L. (2015). Indicators of higher education equity in the United States: 45 year trend report. Pell Institute for the Study of Opportunity in Higher Education.

Carlton, M. T. (2015). First generation students and post-undergraduate aspirations. SAGE Open. https://doi.org/10.1177/2158244015618433

Centers for Disease Control (n.d.). Social determinants of health. Retrieved March 8, 2020, from https://www.cdc.gov/socialdeterminants/index.htm

Charleston, L. J., Adserias, R. P., Lang, N. M., & Jackson, J. F. (2014). Intersectionality and STEM: The role of race and gender in the academic pursuits of African American women in STEM. Journal of Progressive Policy & Practice, 2(3), 273–293.

Chen, X. (2005). First-generation students in postsecondary education: A look at their college transcripts. https://nces.ed.gov/pubs2005/2005171.pdf

Chen, X. (2013). STEM Attrition: College Students' Paths into and out of STEM Fields. Statistical Analysis Report. NCES 2014-001. National Center for Education Statistics.

Choo, H. Y., & Ferree, M. M. (2010). Practicing intersectionality in sociological research: A critical analysis of inclusions, interactions, and institutions in the study of inequalities. Sociological Theory, 28(2), 129–149.

Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. University of Chicago Legal Forum, 1989(1), 138–167.
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

Demetriou, C. P. (2014). Reflections at the finish line: The activities, roles, and relationships of successful first-generation college students. *ProQuest Dissertations and Theses*. The University of North Carolina at Chapel Hill. http://ezphost.dur.ac.uk/login?url=https://search.proquest.com/docview/1612598354?accountid=14533

Dennis, J. M., Phinney, J. S., & Chuateco, L. I. (2005). The role of motivation, parental support, and peer support in the academic success of ethnic minority first-generation college students. *Journal of College Student Development, 46*(3), 223–236. https://doi.org/10.1353/csd.2005.0023

Dewsbury, B., Taylor, C., Reid, A., & Viamonte, C. (2019). Career choice among first-generation, minority STEM college students. *Journal of Microbiology & Biology Education*. https://doi.org/10.1128/jmbe.v20i3.1775

Dhamoon, R. K. (2011). Considerations on mainstreaming intersectionality. *Political Research Quarterly, 64*(1), 230–243. https://doi.org/10.1177/1065912910379227

Eckstrand, K., Eliason, J., St Cloud, T., & Potter, J. (2016). The priority of intersectionality in academic medicine. *Academic Medicine, 91*(7), 904–907.

Engle, J., & Tinto, V. (2008). Moving beyond access: College success for low-income, first-generation students. *Pell Institute for the Study of Opportunity in Higher Education.*

Funk, P., Knott, P., Burdick, L., & Roberts, M. (2018). Development of a novel pathways program for pre-health students by a private four-year university and a private health professions university. *The Journal of Physician Assistant Education: The Official Journal of the Physician Assistant Education Association, 29*(3), 150–153. https://doi.org/10.1097/JPA.0000000000000218

Garcia, N., López, N., & Velez, V. (2018). QuantCrit: Rectifying quantitative methods through critical race theory. *Race Ethnicity and Education, 21*(2), 149–157.

Gilchrist, K. L., & Rector, C. (2007). Can you keep them? Strategies to attract and retain nursing students from diverse populations: Best practices in nursing education. *Journal of Transcultural Nursing, 18*(3), 277–285.

Gillborn, D., Warrington, P., & Demack, S. (2018). QuantCrit: Education, policy, ‘big data’ and principles for a critical race theory of statistics. *Race Ethnicity and Education, 21*(2), 158–179. https://doi.org/10.1080.13613324.2017.1377417

Gilles, I., Burnand, B., & Peytreman-Bridevaux, I. (2014). Factors associated with healthcare professionals’ intent to stay in hospital: A comparison across five occupational categories. *International Journal for Quality in Health Care, 26*(2), 158–166. https://doi.org/10.1093/infqhc/mzu006

Guan, A., Thomas, M., Vittinghoff, E., Bowleg, L., Mangurian, C., & Wesson, P. (2021). An investigation of quantitative methods for assessing intersectionality in health research: A systematic review. *SSM-Population Health, 16*, 100977. https://doi.org/10.1016/j.ssmph.2021.100977

Gumport, P. J. (2016). Graduate education and research: Interdependence and strain. In M. N. Bastedo, P. G. Altbach, & P. J. Gumport (Eds.), *American higher education in the 21st century: Social, political, and economic challenges*. 4th ed., pp. 110–154. Johns Hopkins University Press.

Haynes, C., Joseph, N., Patton, L., Stewart, S., & Allen, E. (2020). Toward an understanding of intersectionality methodology: A 30-year literature synthesis of black women’s experiences in higher education. *Review of Educational Research, 90*(6), 751–787. https://doi.org/10.3102/0034654320946822

Ishitani, T. T. (2006). Studying attrition and degree completion behavior among first-generation college students in the United States. *Journal of Higher Education, 77*(5), 861–885. https://doi.org/10.1533/jhe.2006.0042

Jackson, C. S., & Gracia, J. N. (2014). Addressing health and health-care disparities: The role of a diverse workforce and the social determinants of health. *Public Health Reports, 129*(SUPPL. 2), 57–61. https://doi.org/10.1177/00333549141291s211

Jang, S. T. (2018). The implications of intersectionality on Southeast Asian female students’ educational outcomes in the United States: A critical quantitative intersectionality analysis. *American Educational Research Journal, 55*(6), 1268–1306.

Kane, L., Schubsky, B., Locke, T., Duqueroy, V., Gottschling, C., Lopez-Mejia, M., Schwartz, L., Ovadia, D., & Cotelo, J. (2021). International physician compensation report 2021: Do US doctors have it better? *Medscape*. https://www.medscape.com/slideshow/2021-international-compensation-report-601423981

Karani, R., Varpio, L., May, W., Horsley, T., Chenault, J., Miller, K., & O’Brien, B. (2017). Racism and bias in health professions education: How educators, faculty developers, and researchers can make a difference. *Academic Medicine, 92*(11S), S1–S6.
Keshet, Y., Popper-Giveon, A., & Liberman, I. (2015). Intersectionality and underrepresentation among health care workforce: The case of Arab physicians in Israel. *Israel Journal of Health Policy Research, 4*(1), 1–13.

Lavaysse, L. M., Probst, T. M., & Arena, D. F. Jr. (2018). Is more always merrier? Intersectionality as an antecedent of job insecurity. *International Journal of Environmental Research and Public Health, 15*(11), 2559.

Letizia, A. (2017). Using strategic planning to create the public good for higher education in volatile times. *International Journal of Progressive Education, 13*(2), 144–164.

Lohfink, M. M., & Paulsen, M. B. (2005). Comparing the determinants of persistence for first-generation and continuing-generation students. *Journal of College Student Development, 46*(4), 409–428. https://doi.org/10.1353/csd.2005.0040

Longhi, S. (2020). Racial wage differentials in developed countries. *IZA World of Labor*. https://doi.org/10.15185/izawol.365.v2

Lu, H., Zhao, Y., & While, A. (2019). Job satisfaction among hospital nurses: A literature review. *International Journal of Nursing Studies, 94*, 21–31. https://doi.org/10.1016/j.ijnurstu.2019.01.011

Luzeczyk, A., Scutter, S., King, S., & Brinkworth, R. (2011). The significance of being first: A consideration of cultural capital in relation to “first in family” student’s choices of university and program. A Practice Report. *The International Journal of the First Year in Higher Education, 2*(2), 91–96. https://doi.org/10.5204/intjfyhe.v2i2.89

Manuel, J. I. (2018). Racial/ethnic and gender disparities in health care use and access. *Health Services Research, 53*(3), 1407–1429. https://doi.org/10.1111/1475-6773.12705

Manzoni, A., & Streib, J. (2019). The equalizing power of a college degree for first-generation college students: Disparities across institutions, majors, and achievement levels. *Research in Higher Education, 60*(5), 577–605. https://doi.org/10.1007/s11162-018-9523-1

Maroto, M., Pettinichio, D., & Patterson, A. C. (2019). Hierarchies of categorical disadvantage: Economic insecurity at the intersection of disability, gender, and race. *Gender & Society, 33*(1), 64–93. https://doi.org/10.1177/0891243218794648

Mason, H., Winseman, J., Marcellon, R., Huamantl, M., Ruiz, C., & Ayala, E. (2018). First-generation medical student wellness in the United States. *Journal of Best Practices in Health Professions Diversity, 11*(2), 96–106.

Muntinga, M., Krajenbrink, V., Peerdeman, S., Croiset, G., & Verdonk, P. (2016). Toward diversity-responsive medical education: Taking an intersectionality-based approach to a curriculum evaluation. *Advances in Health Sciences Education, 21*(3), 541–559.

NASPA. (2019). *First-generation college graduates' employment and finances*. NASPA: Student Affairs Administrators in Higher Education. https://firstgen.naspa.org/files/dmfile/FactSheet04.pdf

National Center for Health Workforce Analysis. (2017). *Sex, race, and ethnic diversity of U.S. health occupations (2011–2015)*. U.S. Department of Health and Human Services, Health Resources and Services Administration. https://bhwh.hrsa.gov/sites/default/files/bureau-health-workforce/data-research/diversity-us-health-occupations.pdf

Nemmaniwar, A., & Deshpande, M. (2016). Job satisfaction among hospital employees: A review of literature. *IOSR Journal of Business Management, 18*(6), 27–31.

Nguyen, T. H., & Nguyen, B. M. D. (2018). Is the “first-generation student” term useful for understanding inequality? The role of intersectionality in illuminating the implications of an accepted—yet unchallenged—term. *Review of Research in Education, 42*(1), 146–176.

Office of Personnel Management. (n.d.). *Policy, data, oversight: Pay & leave*. Retrieved April 6, 2022 from https://www.opm.gov/policy-data-oversight/pay-leave/pay-administration/fact-sheets/night-shift-differential-for-federal-wage-system-employees/#:~:text=An%20employee%20will%20either%20receive,for%20a%20night%20shift%20differential.

Organisation for Economic Co-operation and Development (n.d.). *Gender wage gap*. Retrieved January 7, 2022, from https://data.oecd.org/earnwage/gender-wage-gap.htm

Paulsen, M. B. (2001). The economics of human capital and investment in higher education. In M. B. Paulsen & J. C. Smart (Eds.), *The finance of higher education: Theory, research, policy, and practice* (pp. 55–94). Agathon Press.

Pérez Huber, L., Vélez, V. N., & Solórzano, D. (2018). More than ‘papelitos’: a QuantCrit counterstory to critique Latina/o degree value and occupational prestige. *Race Ethnicity and Education, 21*(2), 208–230. https://doi.org/10.1080/13613324.2017.1377416

Proctor, S., Kyle, J., Fefer, K., & Lau, Q. (2018). Examining racial microaggressions, race/ethnicity, gender, and bilingual status with school psychology students: The role of intersectionality. *Contemporary School Psychology, 22*(3), 355–368.
Roberts, L., Maldonado, Y., Coverdale, J., Balon, R., Louie, A., & Beresin, E. (2014). The critical need to diversify the clinical and academic workforce. *Academic Psychiatry*. https://doi.org/10.1007/s40596-014-0175-y

Silver, J., Bean, A., Slocum, C., Poorman, J., Tenforde, A., Blauwet, C., Kirch, R., Parekh, R., Amonoo, H., Zafonte, R., & Osterbur, D. (2019). Physician workforce disparities and patient care: A narrative review. *Health Equity*, 3(1), 360–377.

Spradlin, T., Rutkowski, D., Burroughs, N., & Lang, J. (2010). Effective college access, persistence and completion programs, and strategies for underrepresented student populations: Opportunities for scaling up. *Center for Evaluation & Education Policy Indiana University Bloomington, Indiana*.

Stimpfel, A. W., Fletcher, J., & Kovner, C. T. (2019). A comparison of scheduling, work hours, overtime, and work preferences across four cohorts of newly licensed registered nurses. *Journal of Advanced Nursing*, 75(9), 1902–1910.

U.S. Equal Employment Opportunity Commission. (2022, April 7). *Overview*. https://www.eeoc.gov/overview

United States Bureau of Labor Statistics. (2016). *Labor force characteristics by race and ethnicity, 2015*. https://www.bls.gov/opub/reports/race-and-ethnicity/2015/pdf/home.pdf

United States Bureau of Labor Statistics. (2018). *Labor force characteristics by race and ethnicity, 2017*. https://www.bls.gov/opub/reports/race-and-ethnicity/2017/pdf/home.pdf

United States Bureau of Labor Statistics. (2020). *Labor force characteristics by race and ethnicity, 2019*. https://www.bls.gov/opub/reports/race-and-ethnicity/2019/pdf/home.pdf

United States Bureau of Labor Statistics. (2021). *Usual weekly earnings of wage and salary workers, second quarter 2021* [Press release]. https://www.bls.gov/news.release/pdf/wkyeng.pdf

United States Census Bureau. (n.d.). *National Survey of College Graduates (NSCG)*. Retrieved February 27, 2020, from https://www.census.gov/programs-surveys/nscg.html

United States Department of Labor. (2009). *Fact sheet #54: The health care industry and calculating overtime pay*. Retrieved April 6, 2022, from https://www.dol.gov/agencies/whd/fact-sheets/54-healthcare-overtime#:~:text=When%20they%20work%20the%20evening,basic%20hourly%20rate%20of%20%20%202422.

World Health Organization (n.d.). *Social determinants of health*. Retrieved January 7, 2022, from https://www.who.int/health-topics/social-determinants-of-health

World Health Organization (2008) *Commission on Social Determinants of Health, 2005–2008*. https://www.who.int/teams/social-determinants-of-health/equity-and-health/commission-on-social-determinants-of-health

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.