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Underemployment Among College Graduates with Blindness and Low Vision

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Abstract

Introduction: Underemployment of people with visual impairments has long been a concern among professionals in the blindness and low vision field, but limited research has been conducted on this topic. In this study, we assessed educational underemployment of employed college graduates with and without visual impairments to evaluate differences between them.

Method: To determine underemployment in our American Community Survey sample, we utilized Bureau of Labor Statistics data to identify the typical entry-level education requirement for the job each person held and compared their actual education level to this criterion. We used logistic regression to predict underemployment based on visual impairment and 11 independent variables including individual and job-related characteristics.

Results: Underemployment was more common among people with visual impairments (62.4%) compared to people without visual impairments (55.7%). Visual impairment predicted underemployment in the multivariate model, but it interacted with master's degree. People with visual impairments who held associate, bachelor's, Ph.D., or professional degrees were slightly more likely to be underemployed, while those who held a master's degree were not more likely to be underemployed than people without visual impairments.

Discussion: Overeducation is a substantial issue for the entire U.S. population of college graduates, and more so for people with visual impairments except for those with master's degrees. Although all people with master's degrees have high odds of being underemployed compared to people with bachelor's degrees, odds were slightly larger for people without visual impairments.

Implications for Practitioners: Our findings, combined with current trends in the labor market, highlight the importance of having a specific career goal and awareness of the skills necessary to qualify for that career. Rehabilitation professionals should be prepared to assist individuals with identifying skills needed for their selected careers, assessing their current skills, and creating a plan to obtain the necessary skills.

Underemployment Among College Graduates with Blindness and Low Vision

Employment rates for people who are blind or have low vision (those with visual impairments) steadily increased from 2012 to 2019 (McDonnall & Sui, 2019; U.S. Census Bureau, 2020a), and employment rates continued to rise to an all-time high of 48.2% in 2021 (U.S. Census Bureau, 2022). Unemployment rates for people with visual impairments also decreased substantially between 2011 and 2019 (McDonnall & Sui, 2019; U.S. Census Bureau, 2020a). However, in 2021, with the highest proportion of people with visual impairments ever recorded in the labor force (53.5%), unemployment rates increased to 11.3% (U.S. Census Bureau, 2022). This high unemployment rate suggests that some of the additional people with visual impairments now seeking employment are having difficulty finding it. More people with visual impairments are working, or pursuing work, than ever before, but information about the quality of jobs for those who are employed is limited. Although unemployment has received significant media and research attention, much less attention has been provided to underemployment. Professionals in the blindness and low vision field have long been concerned that underemployment is an issue for workers with visual impairments, yet only a few studies have provided a measure of underemployment for this population. In this study, we delve into the underemployment literature and provide new data regarding underemployment for people with and without visual impairments.

Definitions of Underemployment

There are multiple ways to define underemployment; a general definition is an inability to obtain adequate employment relative to a standard (Feldman, 1996). The federal government uses one indicator of underemployment – the one most often used by statistical agencies globally (Bell & Blanchflower, 2021) – part-time workers who want to work full-time, referred to as involuntary part-time work. Others proposed a broader definition of underemployment associated with part-time work: workers who prefer more work hours, even if not full-time hours (Golden & Gebreselassie, 2007; Golden & Kim, 2020). Experience underemployment occurs when a worker has a greater level of experience than required for the job, and job field underemployment refers to a worker who must accept employment in a field outside of their field of study or experience (Thompson et al., 2013). A similar measure is educational underemployment (also called overeducation), which occurs when a worker has a higher education level than required for their job (Green & Henseke, 2016; Thompson et al., 2013). Finally, subjective underemployment is the person's perception about the match of their job to their skills/abilities.

Underemployment Rates

The level of underemployment naturally depends on the definition utilized. The only nationally documented measure of underemployment is the involuntary part-time work rate. This rate varies with the economy (increases during recessions, decreases during recoveries) and has historically been lower than the unemployment rate (Kudlyak, 2019). Involuntary part-time underemployment increased significantly during the Great Recession and declined slowly afterward to pre-recession levels in 2019 (Kudlyak, 2019). Although underemployment rates increased again during the COVID-19 pandemic, in June 2022, the number of involuntary part-time workers in the United States fell to its lowest level in 21 years (Iacurci, 2022). Recent Bureau of Labor Statistics (BLS) data indicate that 2.4% of the labor force worked part-time involuntarily in February 2023 (U.S. Bureau of Labor Statistics, 2023).

Alternate measures of underemployment suggest a larger problem. In his seminal paper on the topic, Feldman (1996) proposed 25% as a reasonable estimate of overall underemployment based on a few data sources. Dooley (2003) reported underemployment rates, defined as involuntary part-time workers and low-income workers, ranging between 8% and 12.1% from 1968 to 1993. Golden and Gebresalassie (2007) reported that more than 27% of the population in 1985 and 2001 preferred to work more hours. Golden and Kim (2020) reported an underemployment rate of 8% to 11% in 2016, defined as part-time workers who preferred to work more hours. Green and Henseke (2016) reported a 32.5% educational underemployment rate among college graduates in the United States, while Clark and colleagues (2017) reported rates ranging from 37.5% to 71.3%, depending on level of degree. Overeducation appears to be a more common problem than other forms of underemployment.

Who is Underemployed?

Although the exact rate of underemployment using a broad definition is unknown, ample evidence indicates that underemployment is more common among certain groups of people. Many groups with high unemployment rates are also more likely to be underemployed; in general, marginalized groups are more likely to experience underemployment. Individual characteristics associated with underemployment include having a disability, minority status (except Asian/Pacific Islander), female gender, younger age, being unmarried, having a high school education or less, and being an immigrant (De Jong & Madamba, 2001; Golden & Kim, 2020; Milner et al., 2017; Valletta et al., 2018). Job characteristics associated with underemployment include self-employment, hourly positions, low-wage jobs, and jobs in certain industries, such as construction, retail trade, and leisure and hospitality (Golden & Kim, 2020; Valletta et al., 2018). Two studies also documented that location can affect underemployment: nonmetropolitan workers, particularly women, were more likely to be underemployed (Jensen et al., 1999), and underemployment varied by state (Newport & Muller, 2011).

Impact of Underemployment

Research on the impact of underemployment is limited, but the available research suggests that the impact is similar to the adverse effects of unemployment. Underemployment is associated with lower levels of well-being, mental health problems such as anxiety and depression, and lower life satisfaction (Bell & Blanchflower, 2019; Dooley et al., 2000; Wooden et al., 2009). One study documented that underemployed people with disabilities experienced greater mental health declines than underemployed people without disabilities (Milner et al., 2017). Some research has supported an association between underemployment and lower levels of physical health and well-being, but the association depended on the measure of health/well-being (Friedland & Price, 2003). Lower levels of job satisfaction have also been documented for the underemployed compared to adequately employed people (Golden & Kim, 2020; Wilkins, 2007; Wooden et al., 2009). Finally, several studies found educational underemployment in a first job hindered later obtaining a job matched to education level (Baert et al., 2013; Clark et al., 2017; Rubb, 2003). In other words, educational underemployment tends to be persistent.

Underemployment Among People with Visual Impairments

Few studies have measured underemployment among people with visual impairments. Kirchner and Peterson (1980) defined underemployment in three ways (working less than full-year, educational underemployment, and earnings) and found that people with visual impairments were more likely to be underemployed than people without visual impairments across all definitions. Several researchers investigated underemployment based on self-

assessment of a mismatch between one's abilities and job requirements, with reported rates of 17.2% (Leonard et al., 1999), 30% (La Grow, 2003), and 35% (Crudden & McBroom, 1999). Using the involuntary part-time work definition, researchers found that 19.6% of people with visual impairments were underemployed in Australia (McCarty et al., 1999) and 24% were underemployed in New Zealand (La Grow, 2003). One recent study that addressed underemployment found that 16.3% of part-time workers with visual impairments involuntarily worked part-time compared to 13.8% of people without visual impairments (non-significant difference) (McDonnall et al., 2022c). Two studies investigated predictors of underemployment, both utilizing small samples. One found that people who received encouragement for work from family and friends were less likely to report underemployment (Leonard et al., 1999), while the other did not identify significant predictors (La Grow, 2004).

Purpose of Study

The purpose of this study was to investigate underemployment as measured by a mismatch between education level and educational job requirements. We wanted to determine how common educational underemployment is for people with visual impairments compared to people without visual impairments. We also sought to evaluate differences in underemployment and its predictors for these two populations. Our research questions were:

1. How common is educational underemployment among workers with visual impairments and workers without visual impairments?
2. What characteristics are associated with educational underemployment for workers with and without visual impairments?
3. Do relationships between characteristics and educational underemployment vary by visual impairment?

Method

Data Source and Sample

The data source was the U.S. Census Bureau's American Community Survey (ACS), an annual survey of the demographic, social, housing, and economic characteristics of the U.S. population (U.S. Census Bureau, 2020b). Each year, the Census Bureau randomly selects about 3.5 million addresses for inclusion in the ACS sample and collects data from people living at each sampled address through an Internet survey, phone survey, paper questionnaire, or in-person interview (U.S. Census Bureau, 2020b). The Census Bureau distributes 1-year Public Use Microdata Sample (PUMS) files that contain de-identified data for a subset of respondents, representing approximately two-thirds of the ACS sample and 1% of the U.S. population (U.S. Census Bureau, 2021b).

For this study, we conducted a secondary analysis of data from the 2019 1-year PUMS person-level dataset, which includes about 250 variables with information about the characteristics of individuals from sampled households (U.S. Census Bureau, 2021b). We restricted the analysis sample to individuals who met the following criteria: (a) were 21–64 years old, (b) had an associate degree or higher, and (c) worked for pay within the past 12 months.

Applying these criteria resulted in an unweighted sample size of 695,899, weighted to represent 69,925,153 Americans. The sample included 6,038 people with visual impairments (weighted $n = 610,618$) and 689,861 people without visual impairments (weighted $n = 69,314,535$). Table 1 contains demographic information for people with and without visual impairments.

Measures

Dependent Variable

Underemployment was a dichotomous variable (0 = *not underemployed*, 1 = *underemployed*) based on discrepancies between individuals' educational attainment and job requirements. To identify the education requirements for specific occupations, we used data from the BLS Employment Projections program (U.S. Bureau of Labor Statistics, 2019). We matched the ACS Standard Occupational Classification (SOC) codes with the corresponding BLS National Employment Matrix codes and identified the typical education level for entry into each occupation from the BLS education and training classification system categories (U.S. Bureau of Labor Statistics, 2022). Then, we compared respondents' highest education level to the education level required for their job and coded them as "underemployed" if their education level exceeded the education requirements for their job.

Independent Variables

Visual impairment, our primary variable of interest, indicated whether the respondent self-reported being blind or having serious difficulty seeing even when wearing glasses (0 = *no*, 1 = *yes*). Gender was a dichotomous variable (0 = *male*, 1 = *female*). Race had three categories: White (reference group), Black or African American, and other. Ethnicity was a dichotomous variable that indicated whether the respondent was of Hispanic, Latino, or Spanish origin (0 = *no*, 1 = *yes*). Age had five categories: 21–29 (reference group), 30–39, 40–49, 50–59, and 60–64. Education had four levels: associate degree, bachelor's degree (reference group), master's degree, and Ph.D. or professional degree. Non-visual disability indicated whether the respondent reported any of the following functional disabilities: deaf or serious difficulty hearing; serious difficulty concentrating, remembering, or making decisions; serious difficulty walking or climbing stairs; difficulty dressing or bathing; or difficulty doing errands alone (0 = *no*, 1 = *yes*). Region had four categories that corresponded with U.S. Census Bureau definitions: Northeast, Midwest, South (reference group), and West. Immigrant status, a dichotomous variable, indicated whether the respondent was a U.S. citizen at birth (0 = *native born [U.S. citizen]*, 1 = *foreign born [not U.S. citizen]*).

The final three variables represented characteristics of the respondent's most recent job. Part-time work was a dichotomous variable based on the respondent's usual number of hours worked per week over the past year (0 = *35 or more hours*, 1 = *less than 35 hours*). Class of worker specified the type of ownership of the business or organization (U.S. Census Bureau, 2021a) and had four categories: private for-profit (reference group), private non-profit, government, and self-employment. Industry indicated the main activity, product, or service provided at the business or organization. The original PUMS variable contained 270 detailed industry categories based on the 2017 North American Industry Classification System (U.S. Office of Management and Budget, 2017). For this study, we aggregated the detailed categories into 14 major industry categories designated by the Census Bureau (listed in Table 1); manufacturing was the reference group.

Data Analysis

We analyzed existing data from the U.S. Census Bureau's ACS PUMS. To account for the ACS PUMS sample design, we used SAS 9.4 survey procedures for the analyses. We applied PUMS person weights to obtain representative estimates for the U.S. population and replicate weights to calculate adjusted standard errors. We generated frequencies and percentages with PROC SURVEYFREQ to describe personal and job-related characteristics and to examine underemployment by visual impairment. Using PROC SURVEYLOGISTIC, we conducted a multiple logistic regression analysis to investigate factors associated with underemployment for people with and without visual impairments. The initial model included personal and job-related characteristics as independent variables and underemployment as the dependent variable. To examine how relationships between characteristics and underemployment vary by visual impairment, we added two-way interactions between visual impairment and each independent variable to the model. Then, we removed non-significant interactions ($p > .05$) to establish the final model. Odds ratios were utilized as an effect size measure. An examination of variance inflation values revealed no evidence of multicollinearity among the independent variables.

Results

Underemployment was more common among people with visual impairments (62.4%, $n = 381,207$) than people without visual impairments (55.7%, $n = 38,632,119$). Results of the multiple logistic regression analysis predicting underemployment are provided in Table 2. The final model included all independent variables described previously and an interaction between visual impairment and master's degree. We did not retain any other interactions because they were not significant, which indicates that relationships between those variables and underemployment did not differ by visual impairment. All variables in the model except one industry category were significant predictors of underemployment for people with and without visual impairments. Effect sizes for most variables were small, although associate degree and three industry categories had medium effects, and master's degree and two industry categories had large effects. Compared to the Manufacturing industry, the odds of underemployment were lower for people in the Military and higher for those who worked in the Agriculture, Forestry, Fishing, and Hunting, & Mining; Retail Trade; Transportation and Warehousing, & Utilities; and Arts, Entertainment, and Recreation, & Accommodation and Food Services industries.

The significant interaction between visual impairment and master's degree signifies that relationships between these variables and underemployment depend on each other. Among master's degree holders, the odds of underemployment did not differ between people with and without visual impairments ($OR = 0.92$, 95% CI [0.72, 1.18]). Both people with and without visual impairments who had a master's degree were much more likely to be underemployed than those with a bachelor's degree. However, the magnitude of the relationship was larger for people *without* visual impairments: the odds of underemployment were 15.68 times higher (95% CI [12.07, 20.38]) for people with visual impairments who had a master's degree and 21.03 times higher (95% CI [20.55, 21.52]) for people without visual impairments who had a master's degree (compared to people with a bachelor's degree). Visual impairment was associated with 1.24 times higher odds of underemployment (95% CI [1.14, 1.34]) for people with other degrees (i.e., associate, bachelor's, Ph.D., or professional). To aid the reader in understanding these relationships, underemployment rates for people with and without visual impairments at each level of education are depicted in Figure 1.

Discussion

Underemployment is a labor market concern, given the negative factors associated with it (Bell & Blanchflower, 2019; Clark et al., 2017; Dooley et al., 2000; Wooden et al., 2009). Although underemployment among people with visual impairments has long been a concern of professionals in the blindness and low vision field, limited research has been conducted to explore underemployment in this population. Most of this research was conducted two decades ago or more. Thus, we undertook this study to evaluate educational underemployment among college graduates with and without visual impairments utilizing a nationally representative sample.

Using our measure of educational underemployment, we found that a high proportion of both groups were underemployed and that underemployment rates varied by education level, as found by Clark et al. (2017). A primary interest was whether differences existed in underemployment between people with and without visual impairments. Without controlling for other factors, we found that people with visual impairments had a higher underemployment rate: a difference of 6.7 percentage points. This finding adds to a recent body of evidence suggesting lower job quality for some employed people with visual impairments compared to the general population (McDonnall et al., 2022b, 2022a, 2022c).

When controlling for multiple factors known to be related to underemployment, we discovered that most people with visual impairments had higher odds of experiencing educational underemployment than people without visual impairments. For people with an associate, bachelor's, Ph.D., or professional degree, visual impairment had a small relationship with underemployment. However, people with visual impairments who have a master's degree were not more likely to be underemployed than people without visual impairments who have the same level of education. The underemployment rates for all people with master's degrees were extremely high, regardless of visual impairment, and the odds of being underemployed with a master's degree were higher for people without visual impairments. The odds are in comparison to people with bachelor's degrees; therefore, the higher relative underemployment rate for people with visual impairments who hold bachelor's degrees contributes to this difference in odds ratios.

The percentage of the population with a college degree has increased substantially over time, with 37.9% of U.S. adults aged 25 or older holding at least a bachelor's degree in 2021 (Schaeffer, 2022). That increase has resulted in an increase in educational underemployment in most occupations (Kamis & Habibi, 2022). Although employers previously increased college degree requirements for many jobs (Fuller & Raman, 2017), that trend has since reversed (Burning Glass Institute, 2022). Numerous private for-profit employers and state governments have eliminated the bachelor's degree requirements for many of their positions (Dodd, 2023). According to one report, 46% of middle-skill and 31% of high-skill occupations decreased their degree requirements between 2017 and 2019, and this trend is expected to continue (Burning Glass Institute, 2022). With more people obtaining college degrees and fewer jobs requiring them, the educational underemployment issue among the entire U.S. population will likely continue.

Our study confirms that other factors related to different measures of underemployment are also related to educational underemployment. In addition to education level and visual impairment, individual characteristics related to underemployment in this study were female gender, younger age, having a non-visual disability, location (region of the country), immigrant status, race, and Hispanic ethnicity. It is relevant to note that the size of the relationships between these factors and underemployment were very small or small, except for education level. Three

job-related characteristics were also associated with underemployment in this study: part-time work, industry, and class of worker. Several studies have documented relationships between underemployment and specific industries, and our results support these findings. Previous research documented an association between self-employment and underemployment (Golden & Kim, 2020), but this is the first study that documented an association between other classes of worker and underemployment, with people working for private for-profit companies significantly more likely to be underemployed than private non-profit and government workers.

Limitations

This study has several limitations, many of which are inherent issues associated with secondary analysis of existing survey data. The ACS, like other surveys, is subject to self-report bias. As secondary data users, we had no control over the content of the survey or the phrasing of its questions. The ACS dataset contains limited information regarding respondents' vision; therefore, we could not consider factors such as onset and severity of visual impairment in our analyses. Another limitation relates to our underemployment measure, which relied on the BLS education and training classification system categories. The BLS categories represent typical entry-level education requirements for occupations, but they may not capture the usual educational attainment of experienced employees in that field or reflect the actual requirements for specific jobs. Using targeted measures of educational underemployment in future studies would provide further insight into this issue. Furthermore, restricting our sample to people with postsecondary degrees may have resulted in overall higher underemployment rates compared to other studies. Additional underemployment research using other data sources is needed to confirm and extend our findings.

Implications for Practitioners

Educational underemployment is a common issue for college graduates with visual impairments, as professionals in the field have suspected. Perhaps a more unexpected finding is how common this issue is for all college graduates. Given the trend toward fewer jobs requiring college degrees and our findings of high educational underemployment rates, professionals may wonder if people with visual impairments need college degrees. This answer may largely depend on the person's career goal and the required skills for that career. Removing college degree requirements has resulted in employers being more specific about the skills candidates must possess for the jobs, including hard, technical, soft, and social skills (Burning Glass Institute, 2022). Accordingly, applicants must have a method to demonstrate that they have the required skills; obtaining a degree is essentially a simple way to document skills.

Our findings combined with current labor force trends emphasize the importance of having a specific career goal and awareness of the education level and skills required for that career when preparing for employment. This need for awareness applies to individuals with visual impairments and the rehabilitation professionals working with them to help them achieve their career goals. The professional and individual with a visual impairment must be educated about the job requirements; the two parties can work together to determine whether the individual already possesses the skills needed for the career. If the skills are already present, demonstrating them effectively in a resume, cover letter, and online application system is critical. If the person does not already have the needed skills, developing a plan to obtain those skills, whether via education or other experiences, will be essential.

Possessing a college degree when one is not required for a job will not typically be perceived as negative and can help convey skills in desired areas. Many employers prefer

candidates with a college degree for jobs that do not require one (Verhaest et al., 2018). Particularly for people with visual impairments, college graduates may have a competitive advantage over candidates without a degree, making them more likely to be considered for jobs. With each advancement in degree level, a higher proportion of people with visual impairments are employed: associate degree, 54%; bachelor's degree, 63.7%; master's degree, 69.7%; and Ph.D./professional degree, 74% (Author, 2023), and education level is the most consistent, and typically the strongest, predictor of employment for this population (Lund & Cmar, 2019b, 2019a). Another factor to consider is potential earnings – college graduates earn substantially more than people with lower levels of education (McDonnall et al., 2022b; Tamborini et al., 2015). Research indicates that overeducation is more common in higher-paying jobs (Kamis & Habibi, 2022). While a degree may not be required for a job, earnings and potential for promotion may be greater with the degree.

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Table 1
Descriptive Statistics by Visual Impairment (VI)

Variable	VI		No VI	
	<i>n</i>	%	<i>n</i>	%
Gender				
Male	278,880	45.7	32,800,449	47.3
Female	331,738	54.3	36,514,086	52.7
Race				
White	435,294	71.3	52,204,097	75.3
Black or African American	90,441	14.8	6,791,107	9.8
Other	84,883	13.9	10,319,331	14.9
Hispanic ethnicity	82,737	13.5	7,346,167	10.6
Age				
21–29	98,436	16.1	13,646,782	19.7
30–39	123,430	20.2	19,000,044	27.4
40–49	141,108	23.1	16,678,064	24.1
50–59	170,688	28.0	14,363,713	20.7
60–64	76,956	12.6	5,625,932	8.1
Education				
Associate degree	182,521	29.9	14,130,337	20.4
Bachelor's degree	273,576	44.8	35,375,130	51.0
Master's degree	111,608	18.3	14,307,388	20.6
Ph.D. or professional degree	42,913	7.0	5,501,680	7.9
Non-visual disability	188,272	30.8	2,259,612	3.3
Region				
Northeast	105,221	17.2	13,756,617	19.8
Midwest	116,897	19.1	14,658,294	21.1
South	258,317	42.3	24,350,436	35.1
West	130,183	21.3	16,549,188	23.9
Immigrant status	75,520	12.4	11,266,665	16.3
Part-time work	123,515	20.2	10,638,909	15.3
Class of worker				
Private for-profit	342,333	56.1	41,389,176	59.7
Private non-profit	73,972	12.1	8,079,892	11.7
Government	137,610	22.5	13,986,673	20.2
Self-employment	56,703	9.3	5,858,794	8.5
Industry				

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1. Agriculture, Forestry, Fishing, and Hunting, & Mining	5,970	1.0	690,666	1.0
2. Construction	21,542	3.5	2,231,318	3.2
3. Manufacturing	44,624	7.3	5,745,650	8.3
4. Wholesale Trade	11,989	2.0	1,536,527	2.2
5. Retail Trade	51,904	8.5	4,742,037	6.8
6. Transportation and Warehousing, & Utilities	26,616	4.4	2,570,532	3.7
7. Information	11,557	1.9	1,812,860	2.6
8. Finance and Insurance, & Real Estate and Rental and Leasing	43,171	7.1	5,887,006	8.5
9. Professional, Scientific, and Management, & Administrative and Waste Management Services	84,358	13.8	10,682,441	15.4
10. Educational Services, & Health Care and Social Assistance	204,036	33.4	22,564,765	32.6
11. Arts, Entertainment, and Recreation, & Accommodation and Food Services	35,218	5.8	3,808,400	5.5
12. Other Services, Except Public Administration	24,801	4.1	2,426,340	3.5
13. Public Administration	40,834	6.7	4,120,470	5.9
14. Military	3,998	0.7	495,523	0.7

Note. Weighted $N = 69,925,153$. Values reflect weighted estimates.

Table 2*Results of Multiple Logistic Regression Analysis Predicting Educational Underemployment*

Variable	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>OR</i> [95% CI]
Intercept	-0.56	0.02	-37.17	<.001	
Female gender	0.08	0.01	11.08	<.001	1.09 [1.07, 1.10]
Race (ref. = White)					
Black or African American	0.49	0.01	35.13	<.001	1.64 [1.59, 1.68]
Other	0.05	0.01	4.32	<.001	1.05 [1.03, 1.08]
Hispanic ethnicity	0.34	0.01	23.74	<.001	1.40 [1.36, 1.44]
Age (ref. = 21–29)					
30–39	-0.17	0.01	-16.79	<.001	0.84 [0.82, 0.86]
40–49	-0.21	0.01	-19.06	<.001	0.81 [0.79, 0.83]
50–59	-0.17	0.01	-16.31	<.001	0.85 [0.83, 0.87]
60–64	-0.21	0.01	-15.65	<.001	0.81 [0.79, 0.83]
Education (ref. = Bachelor's degree)					
Associate degree	1.01	0.01	109.08	<.001	2.74 [2.69, 2.79]
Master's degree	3.05	0.01	259.54	<.001	
Ph.D. or professional degree	0.68	0.01	53.66	<.001	1.98 [1.93, 2.03]
Visual impairment	0.21	0.04	5.26	<.001	
<i>Visual impairment x Master's degree</i>	-0.29	0.13	-2.18	.032	
Non-visual disability	0.25	0.02	14.81	<.001	1.29 [1.24, 1.33]
Region (ref. = South)					
Northeast	0.08	0.01	8.71	<.001	1.09 [1.07, 1.11]
Midwest	0.09	0.01	8.53	<.001	1.10 [1.07, 1.12]
West	0.03	0.01	3.10	.003	1.03 [1.01, 1.05]
Immigrant status	0.19	0.01	17.97	<.001	1.21 [1.19, 1.24]
Part-time work	0.41	0.01	35.91	<.001	1.50 [1.47, 1.54]

Class of worker (ref. = Private for-profit)					
Private non-profit	-0.38	0.01	-29.81	<.001	0.68 [0.67, 0.70]
Government	-0.16	0.01	-12.83	<.001	0.85 [0.83, 0.87]
Self-employment	0.13	0.01	10.42	<.001	1.13 [1.11, 1.16]
Industry (ref. = Manufacturing)					
Agriculture, Forestry, Fishing, and Hunting, & Mining	1.12	0.04	28.59	<.001	3.08 [2.85, 3.33]
Construction	0.48	0.02	20.79	<.001	1.61 [1.54, 1.68]
Wholesale Trade	0.03	0.02	1.30	.199	1.03 [0.99, 1.07]
Retail Trade	1.35	0.02	67.62	<.001	3.87 [3.72, 4.03]
Transportation and Warehousing, & Utilities	1.05	0.02	46.86	<.001	2.86 [2.73, 2.99]
Information	-0.22	0.03	-8.68	<.001	0.80 [0.76, 0.84]
Finance and Insurance, & Real Estate and Rental and Leasing	0.23	0.02	14.55	<.001	1.26 [1.22, 1.30]
Professional, Scientific, and Management, & Administrative and Waste Management Services	-0.37	0.01	-24.72	<.001	0.69 [0.67, 0.71]
Educational Services, & Health Care and Social Assistance	-0.75	0.01	-50.50	<.001	0.47 [0.46, 0.49]
Arts, Entertainment, and Recreation, & Accommodation and Food Services	1.48	0.02	67.34	<.001	4.40 [4.21, 4.59]
Other Services, Except Public Administration	0.79	0.02	41.22	<.001	2.20 [2.12, 2.29]
Public Administration	0.48	0.02	21.67	<.001	1.61 [1.54, 1.68]
Military	-1.57	0.05	-30.56	<.001	0.21 [0.19, 0.23]

Note. Weighted $N = 69,925,153$. CI = confidence interval. Values reflect weighted estimates with design-adjusted standard errors.

Max-rescaled $R^2 = 0.33$.

Figure 1

Underemployment Rates by Education Level and Visual Impairment (Weighted Estimates)

