**Unable to Work? Characteristics of People with Blindness and
Low Vision who are out of the Labor Force**

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Keywords: blind, low vision, disability, labor force participation, employment

Word count: Abstract = 249, manuscript = 3,999, number of figures/tables = 2

Number of references: = 40

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## Abstract

### Background

Approximately half of people who are blind or have low vision in the U.S. are not in the labor force, yet we know little about their characteristics or reasons for being out of the labor force.

### Objective/Hypothesis

The objective of this study was to compare people with blindness or low vision who reported being unable to work to those out of the labor force for other reasons, unemployed, and employed, and investigate characteristics that differentiate these groups.

### Methods

Our sample of people with blindness or low vision was selected from the Behavioral Risk Factor Surveillance System to compare people who reported being unable to work to those in other employment groups utilizing multinomial logistic regression.

### Results

The majority of people out of the labor force reported they were unable to work. People unable to work were likely to have low income, more chronic health conditions, days with poor physical health, and functional disabilities than all other groups. They were also more likely to have access to health care than other groups and were more likely to be male and uncoupled compared to those out of the labor force for other reasons.

### Conclusions

People who reported being unable to work had more chronic health and functional disability issues. Because being out of the labor force puts one at economic risk, further research is indicated to assess policy issues and strategies that might identify employment options that accommodate people with blindness or low vision and additional health issues and disabilities.

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A large percentage of the population with blindness or low vision (i.e., visual impairments) are out of the labor force.[1] People are considered out of the labor force if they are not working and have not looked for work in the past four weeks.[2] Because work provides opportunities for economic security and meets many psychosocial needs,[3] educators and rehabilitation providers encourage this population to pursue employment. We need to learn more about the reasons that so many people with visual impairments are not in the workforce with the expectation that increased understanding will lead to more effective policies and services to facilitate workforce participation. This study uses data from a national U.S. survey to explore factors associated with being out of the labor force due to a reported inability to work among people with visual impairments.

**Labor Force Participation**

Recent research[1] found that approximately half (50.9%) of working-age people with visual impairments were not in the labor force, a figure well above the 18.1% rate for those without disabilities.[4] Although we know many people with visual impairments currently are and have historically been out of the labor force, we do not know why such a large portion of the population are neither employed nor actively looking for work.

Many people work longer to improve retirement incomes.[5,6] Yet, people with disabilities tend to leave the labor force earlier than people without disabilities.[7] Premature exit from the labor force puts people with disabilities at high risk for financial instability.[7] Working longer was associated with surviving longer for retirees regardless of health status, and early retirement was associated with higher mortality risk[8] and poor mental health.[9] Government programs promoting employment for people with health issues tend to focus on low-income workers and provide minimal support for middle-class earners over 50 years, who consequently may opt to retire early.[10] Those who leave the labor force, particularly those with lower educational levels, racial minorities, or women, appear at high risk of not returning to work.[11]

People out of the labor force may be "discouraged workers," or believe they cannot find a job because they have previously been unsuccessful, lack the qualifications, no jobs are available, or employers discriminate against them.[2] Other common reasons for being out of the labor force include poor health or disability, or participation in school, training, or

caregiving.[2,12] Research with the general population has investigated reasons for being out of the labor force by gender and age. Men typically left the labor force due to illness or disability, and these men tended to have fewer skills, were more economically disadvantaged, or had criminal records.[13] Women ages 25 to 54 out of the labor force were most likely to report fulfilling home responsibilities and were relatively contented with this decision, while women out of the labor force for other reasons had lower life satisfaction and high emotional distress.[6] Older workers out of the labor force were more likely to be retired or have acquired disabilities, while younger workers were more likely to exit the labor force due to childcare responsibilities, education, or training.[12,14] Among younger people, both men and women out of the labor force reported higher subjective well-being than those employed or unemployed; many of these young people were in school.[6]

People with visual impairments may be out of the labor force for many of the same reasons as people without disabilities, but may also experience employer discrimination or negative attitudes associated with visual impairments.[15–17] Difficulty finding employment may cause people with visual impairments to be more likely to leave or never enter the labor force.[18] Receiving government benefits was also associated with reduced labor force participation for people with visual impairments.[17,19,20]

**Health and Employment**

In a "best evidence synthesis" of research concerning employment and health issues, Waddell & Burton[3] concluded that employment has physical and mental health benefits for most people, including those with common health issues or disabilities; employment that accommodates employees' physical status can promote positive mental and physical health; and further research is needed concerning how to balance the amount of work that maximizes benefits and prevents mental or physical harm. The authors note the therapeutic value of work but advocate for an individualized perspective that considers the "social context, the nature and quality of work".[3(p38)]

Changes in health may influence but are generally not regarded as the primary factor in retirement decisions among those over 50.[21] However, health status has been linked with labor force participation, particularly for men.[6] Among people with visual impairments, poor health has been associated with lack of employment and decreased workforce participation in several studies.[15,17,22,23] More recent research found that poor health was not associated with labor force

participation[20,24], though people with visual impairments were less likely to participate in the labor force and more likely to report poor health.[24] Having multiple disabilities was also associated with reduced employment rates among people with visual impairments.[20,25]

**Purpose of Study**

The purpose of this study was to identify differences among people who reported being unable to work compared to those (a) out of the labor force for other reasons, (b) unemployed, and (c) employed. The Behavioral Risk Factor Surveillance System (BRFSS)[26] allows people to identify their employment status among various categories, including being unable to work. Although we cannot discern why people chose their employment status, the "unable to work" category is unique. It allows us to differentiate people out of the labor force because they perceive themselves as unable to work to those out of the labor force for other reasons. It also allows us to explore whether people who report this option have different characteristics than those in the other categories. People with visual impairments may consider themselves unable to work because of their visual disability. There is a general societal belief that people with visual impairments are dependent and incompetent.[27–31] Even people with visual impairments may hold this societal belief, particularly those who lose vision later in life. However, having a disability or chronic health issue need not result in a work limitation.[32] Determining whether people who report being unable to work are different from people who identify with other employment categories provides data to help ascertain whether people report being unable to work due to their vision impairment. To address this issue, we posed the following research question: What are the characteristics of people with visual impairments who identify themselves as unable to work compared to those out of the labor force for other reasons, those who are unemployed, and those who are employed?

## Method

### Data Source & Sample

The 2019 BRFSS includes behavioral health-related data from 50 states, the District of Columbia, and U.S. territories. With assistance from the Centers for Disease Control (CDC), each state health department oversees random telephone surveys using cell and landlines.[26] Data is collected from over 400,000 adults each year. The present study includes weighted data only from respondents who reported being blind or having serious difficulty seeing, even when wearing glasses. We limited the sample to individuals ages 18 to 65, given our focus on employment outcomes. Listwise deletion was used to handle missing data, resulting in a sample of 6,125 (weighted $N$=4,312,420) used for all analyses. Demographic information about the sample is provided in Table 1.

### Dependent Variable

To determine employment status, we utilized an item in which respondents indicated their current status from a list of options; categories were (a) employed for wages, (b) self-employed, (c) out of work for one year or more, (d) out of work for less than one year, (e) homemaker, (f) student, (g) retired, or (h) unable to work. Given our research question, supplemental analyses, and previous literature, we classified individuals into four categories: (a) employed (employed or self-employed; weighted $n$=2,014,117), (b) out of the labor force (out of the labor force for one year or more, homemakers, and retired; weighted $n$=819,867), (c) unemployed (out of work for less than one year; weighted $n$=177,877), and (d) unable to work (weighted $n$=1,300,558). People who identified as students were not included in the analyses.

### Independent Variables

We included several demographic indicators as independent variables. Educational attainment was classified into four categories: less than high school degree, high school degree (the reference category), some college, and a bachelor's degree or higher. Income was measured as annual household income from all sources, and reported as an income range rather than an exact value. We constructed a 3-category income variable: low income (<$20,000, reference group), moderate income ($20,000 to <$75,000), and high income ($75,000+). We also included an indicator classifying individuals as residing in urban or rural areas, with rural the reference category. We recoded the original BRFSS race/ethnicity measure to include categories

for White, Black, Hispanic, and other (which consisted of American Indian or Alaskan Native, Asian, Native Hawaiian or other Pacific Islander, other race, and multiracial). We used a dichotomous indicator for marital status, with individuals classified as married or coupled (member of an unmarried couple) or not (which included divorced, widowed, separated, or never married respondents). Male served as the reference category for gender.

We also included a series of health-related composite measures. We used a modified index from McKnight-Eily et al.[33] to assess *chronic conditions*, summing the number of conditions individuals reported they had, including hypertension, high cholesterol, angina or coronary heart disease, asthma, diabetes, and stroke, and obesity (based on a Body Mass Index greater than 30; range 0 to 7). We also included measures to assess *healthy lifestyle* choices, informed by a study from Adams.[34] Our healthy lifestyles scale included indicators for non-smoking, moderate drinking (or abstention), having a good diet, and being physically active (range 0 to 4). Individuals were classified as nonsmokers if they reported smoking less than 100 cigarettes during their lifetime or if they had a history of smoking but were not currently smoking. Individuals were considered moderate drinkers based on responses to items about binge and heavy drinking; individuals who were neither binge nor heavy drinkers were considered moderate drinkers, which included abstainers. Individuals were identified as having a good diet if they consumed a combination of five or more fruits and vegetables daily (excluding potatoes). Individuals were considered physically active if they had participated in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise in the past month. These dummy coded variables were summed together, with higher scores indicative of healthier lifestyle choices.

To assess the impact of *additional disabilities* on employment outcomes, we summed the affirmative responses to the five commonly used functional disability indicators representing hearing, ambulatory, cognitive, self-care, and independent living difficulties (range 0 to 5), excluding visual impairment, given our study population. *Healthcare access* was measured with a scale used by Rizzo and Kintner,[35] including having health insurance, having a personal physician, recent checkup, and non-restricted medical costs (range 0 to 4). Healthcare access scores increased with each affirmative answer for having any healthcare coverage, having one or more people they thought of as their personal doctor or healthcare provider, having been to the doctor for a routine checkup within the past year, and reporting no times in the past 12 months

when they needed to see a doctor but could not because of cost. To measure physical and mental health more generally, we used separate continuous variables asking individuals about their number of poor physical and mental health days during the past 30 days.

**Data Analysis**

All analyses were conducted in SAS 9.4. To account for the complex survey design of BRFSS, we used PROC SURVEYMEANS and PROC SURVEYFREQ to generate descriptive statistics for the full sample as well as across the four employment status groups. We used PROC SURVEYLOGISTIC to conduct our multinomial logistic regression model, with employment status as the dependent variable. Unable to work served as the reference category, thus each other employment category (employed, unemployed, out of the labor force) was compared to the unable to work category in three unique analyses, all conducted simultaneously in one multinomial model. Each independent variable was included in each model to assess whether it significantly differentiated people unable to work and people in other employment categories. Weights were applied for all descriptive and multivariate analyses in accordance with BRFSS documentation. We used an alpha level of .01 to determine significance.

## Results

Weighted descriptive statistics for each variable in the model, by employment status group, are in Table 1. The largest employment category was currently employed (46.7%, SE=1.24), followed by unable to work (30.2%, SE=1.02), out of the labor force for other reasons (19.0%, SE=1.21), and unemployed (4.1%, SE=0.44). Descriptive data indicate individuals out of the labor force and unable to work were older than employed or unemployed respondents. The percentage of Hispanic individuals unable to work is lower than for other employment groups. Most respondents were not married or coupled, and unmarried respondents were more likely to be unemployed or unable to work. Individuals with a college degree or more were more likely to be employed, while those with a high school education or less were least likely to be employed. Individuals unable to work were much more likely to have a low household income than respondents from other employment groups and had greater representation in rural areas. Respondents unable to work generally reported worse health outcomes, more chronic conditions, additional disabilities, and a significantly higher number of poor physical and mental health days.

The overall multinomial logistic regression model was significant, based on the likelihood ratio test with Rao-Scott design correction ($F(53.2, 269,383)=72.21$, $p < .0001$), and explained half of the variance in employment group status (max rescaled $R^2 = .51$). The following variables were associated with employment group in our overall model: sex ($F(3, 5066)=6.47$, $p < .001$), marital status ($F(3, 5066)=5.48$, $p < .001$), age ($F(3, 5066)=20.77$, $p < .001$), income ($F(6, 5063)=23.05$, $p < .001$), number of chronic conditions ($F(3, 5066)=6.61$, $p < .001$), number of additional disabilities ($F(3, 5066)=25.24$, $p < .001$), access to healthcare ($F(3, 5066)=14.44$, $p < .001$), and number of poor physical health days ($F(3, 5066)=25.33$, $p < .001$). Variables that did not differentiate the unable to work group from the other three groups overall were: race/ethnicity ($F(9, 5060)=1.76$, $p = .07$), education level ($F(9, 5060)=2.20$, $p = .02$), urban location ($F(3, 5066)=0.82$, $p = .48$), healthy lifestyle ($F(3, 5066)=1.65$, $p = .18$), and number of poor mental health days ($F(3, 5066)=1.27$, $p = .28$).

The full results for the multinomial logistic regression model for each labor force participation group, compared to the unable to work group, are in Table 2. Several health-related factors significantly differentiated people who reported being unable to work and the other employment groups. The unable to work group were more likely to have a greater number of

chronic conditions, poor physical health days, and functional disabilities than those out of the labor force for other reasons, employed, or unemployed. However, people unable to work had significantly higher odds than the other groups of having access to healthcare, and lower odds of having a high income. In regard to demographics, older age was associated with greater odds of being unable to work compared to being employed and unemployed but did not distinguish between being unable to work and being out of the labor force. The employed group also differed from the unable to work group in terms of greater odds of having higher education levels and a moderate or high income. Relationship status and respondent sex significantly differentiated between being out of the labor force compared to unable to work: women and married/coupled people had greater odds of being classified as out of the labor force as opposed to unable to work. Effect sizes were small for significant differences except for several income comparisons.

**Discussion**

To address the lack of information concerning people with visual impairments who are not in the labor force, we investigated those who regard themselves as unable to work compared to those out of the workforce for other reasons, employed, and unemployed. Just under half of the sample – 49.2% – were out of the labor force. Because a large portion of the population has removed themselves from the labor force, it is important to investigate strategies to facilitate their participation. A first step was to evaluate national data to determine the characteristics of these groups.

Of the sample out of the labor force, 61.3% characterized themselves as unable to work; the remaining 38.7% were out of the labor force for other reasons. Those unable to work were significantly more likely than other groups to have additional disabilities and indicators of poor health, i.e., more chronic health conditions and more days of poor physical health. These findings are consistent with other research that documented a negative association between health and employment for people with visual impairments[15,17,22,23] and a negative association between having additional disabilities and employment for people with visual impairments.[20,25]

The presence of multiple health conditions and functional disabilities may result in someone feeling unable to consistently participate in work each day, thus leading people with these characteristics to determine they are unable to work. These findings suggest that many people with visual impairments attributed being unable to work to physical difficulties due to health conditions or additional disabilities rather than their visual impairment. Still, some people with visual impairments who characterized themselves as unable to work did not experience poor health or have functional disabilities. They may not yet have the adaptive skills needed to accommodate their visual impairments, contributing to their belief that they are unable to work.

It seems reasonable to expect people to be distressed by their inability to work and potential economic hardship, particularly if they have multiple health concerns or additional disabilities. Respondents unable to work did have a higher average number of poor mental health days, as reported in Table 1, yet this factor was not associated with employment in the multivariate model. Additionally, respondents unable to work were not different from other groups in terms of living a healthy lifestyle. The association between lifestyle factors and psychological and physical health is well established.[36] People who identified as unable to work

were more likely than other groups to have access to health care. This may be due to this group having access to government health benefits as well as more experience with the health care system, thus learning how to navigate access to services, including treatment or prevention of mental health concerns and addressing lifestyle choices.

Health tends to decline and disability increases with age.[37] We found no age differences between people unable to work and people out of the labor force for other reasons. Women were more likely to report being out of the labor force than unable to work. Some women may find it more socially acceptable than men to choose not to work. Employed respondents were more likely to have an education beyond high school compared to those who reported being unable to work. People with higher education levels may be in jobs more easily accommodated for visual impairments than those with a high school degree or less. Research has consistently documented a strong link between higher education levels and employment among people with visual impairments.[25,38]

Not surprisingly, employed respondents were significantly more likely than people unable to work to have moderate or high annual household incomes. People with high annual incomes were also more likely to be unemployed or out of the labor force for other reasons than to report being unable to work. The median annual household income for the overall sample was between $20,000 and $25,000, compared to the U.S. median household income of $68,703 in 2019.[39] Regardless of employment status, people with visual impairments had incomes far below the general population. A portion of each employment group had a total household income below $20,000 – including more than one-fifth of those employed and most who reported being unable to work. Most people with visual impairments who reported being unable to work appear to be experiencing dire economic insufficiency and may wish to work if able to. Historically, household incomes for men and women with visual impairments are substantially lower than for people without visual impairments.[40]

Although we identified an association between health-related factors and functional disability and a greater likelihood of being unable to work, our analyses only allow speculation on the causal processes linking those factors to labor force nonparticipation. This study relied on cross-sectional data; participants' labor force status may change. Data are also by self-report. Consequently, responses about the severity of one's health or visual status are subjective and behavioral responses may be influenced by social desirability bias. Another limitation is the use

of a summative measure for health conditions and for disabilities. This practice and the data do not provide a full picture of the extent of the illness or disability, the functional abilities associated with each, or how each influences the daily lives of respondents.

Other factors not included in this dataset may influence labor force participation. For example, access to rehabilitation services and learning adaptive skills to accommodate vision impairment may be more challenging for those managing other health conditions or needing accommodations for additional disabilities, further limiting the ability to be employed. Additionally, it is difficult to experience negative employer attitudes and to navigate the various state, federal, and private policies associated with illness or disability and employment. People unable to work may be justifiably concerned that if unable to sustain employment at a level that increases their economic stability it may be difficult or impossible to have their benefits reinstated.

An additional potential limitation was the timing of our analyses to the COVID-19 pandemic. Given the impact of the pandemic on employment, additional research is necessary to determine the consistency of these results. Future studies might employ longitudinal approaches to address issues related to causality. Variables not included in this data set, including age at onset of visual impairment, impact of additional health concerns or disabilities, and the influence of disability policies are important avenues for future research. Qualitative methods may further explore potential links between these predictor variables and how they might influence participation in the labor force. Given these limitations, caution should be used in generalizing the results. However, the dataset provides unique information that provides insight into factors influencing labor force participation among people with visual impairments.

## Conclusion

Our analysis finds that most people with visual impairments out of the labor force report being unable to work. Respondents unable to work are different in multiple ways from people with visual impairments who are employed, unemployed, or out of the labor force for other reasons. A key difference is that unable to work respondents were in poorer health and had more functional disabilities than other groups of people with visual impairments. However, people unable to work were more likely to have access to health care and were not significantly more likely to report worse lifestyle habits or poor mental health days than people in other employment categories.

Additional research is needed to determine if there are services that support people who believe they are unable to work to assist them in returning to the workforce. The data do not allow us to determine whether the respondents possess the adaptive skills needed to live independently and work with visual impairments. For many respondents in this sample who reported being unable to work, poor health was chronic (i.e., experienced frequently or daily), making regular employment challenging, regardless of vision. Employment goals for people who report being unable to work must accommodate chronic conditions or additional disabilities, and jobs must generate sufficient incomes for employment to be worthwhile. While we agree with Waddell & Burton[3] that an individual approach is necessary to support employment, we also suggest that disability policies be examined and structured to meet the employment needs of people with visual impairments and other health or disability concerns.

# References

1. McDonnall MC, Sui Z. Employment and unemployment rates of people who are blind or visually impaired: Estimates from multiple sources. *J Vis Impair Blind*. 2019;113(6):481-492. doi:10.1177/0145482X19887620

2. U.S. Bureau of Labor Statistics. Labor force statistics from the Current Population Survey; Concepts and definitions (CPS). Published 2021. Accessed December 1, 2021. https://www.bls.gov/cps/definitions.htm#nilf

3. Waddell G, Burton AK. *Is Work Good for Your Health and Well-Being?* The Stationery Office Limited; 2006. https://cardinal-management.co.uk/wp-content/uploads/2016/04/Burton-Waddell-is-work-good-for-you.pdf

4. U.S. Census Bureau. 2019 American Community Survey 1-year estimates: Employment status by disability status and type, Table B18120. Published 2020. Accessed May 14, 2021. https://data.census.gov/cedsci/table?q=B18120&tid=ACSDT1Y2019.B18120

5. Aaronson D, Hu L, Seifoddini A, Sullivan DG. Declining labor force participation and its implications for unemployment and employment growth. *Econ Perspetives*. Published online 2014:100-138.

6. Krueger AB. Where have all the workers gone? An inquiry into the decline of the U.S. labor force participation rate. *Brookings Pap Econ Act*. 2017;2017(Fall):1-87. doi:10.1353/eca.2017.0012

7. Wu AY, Schimmel Hyde J. The postretirement well-being of workers with disabilities. *J Disabil Policy Stud*. 2019;30(1):46-55.

8. Wu C, Odden MC, Fisher GG, Stawski RS. The association of retirement age with mortality: A population-based longitudinal study among older adults in the United States. *J Epidemiol Community Health*. 2016;70(9):917-923. doi:10.1136/jech-2015-207097

9. Voss MW, Wadsworth LL, Birmingham W, et al. Health effects of late-career unemployment. *J Aging Health*. 2020;32(1-2):106-116. doi:10.1177/0898264318806792

10. Roehrig C, Klayman D. Aging into disability beyond 50: The impact on labor force participation and earnings. In: *Research in Social Science and Disability*. Vol 7. ; 2013:189-204. doi:10.1108/S1479-3547(2013)0000007009

11. Shierholz H. Nearly 11% of the workforce is out of work with no reasonable chance of getting called back to a prior job. Working Economics Blog. Published 2020. Accessed

September 6, 2021. https://www.epi.org/blog/nearly-11-of-the-workforce-is-out-of-work-with-zero-chance-of-getting-called-back-to-a-prior-job/

12. Hipple BSF. *People Who Are Not in the Labor Force: Why Aren't They Working?* Vol 4.; 2015.

13. Jones T. Labor force participation rate mystery: Why have so many Americans stopped working? Published 2020. Accessed January 15, 2021. https://www.investors.com/news/labor-force-participation-rate-low/

14. Frazis H. Employed workers leaving the labor force: An analysis of recent trends. Monthly Labor Review, U.S. Bureau of Labor Statistics. Published 2017. Accessed December 1, 2021. https://www.bls.gov/opub/mlr/2017/article/employed-workers-leaving-the-labor-force-an-analysis-of-recent-trends.htm

15. Leonard R. Predictors of job-seeking behavior among persons with visual impairments. *J Vis Impair Blind*. 2002;96(9):635-644. doi:10.1177/0145482x0209600904

16. McDonnall MC, Crudden A, O'Mally J. Predictors of employer attitudes toward people who are blind or visually impaired as employees. *J Vocat Rehabil*. 2015;42(1):41-50. doi:10.3233/JVR-140722

17. O'Day B. Employment barriers for people with visual impairments. *J Vis Impair Blind*. 1999;93(10):627-642. doi:10.1177/0145482x9909301002

18. Kirchner, C., & Peterson R. Statistical Brief #5 Employment: Selected Characteristics. *J Vis Impair Blind*. 1979:239-242.

19. Kirchner C, Peterson R. Employment: Selected characteristics. In: Kirchner C, ed. *Data on Blindness and Visual Impairment in the U.S: A Resource Manual on Characteristics, Education, Employment, and Service Delivery*. American Foundation for the Blind; 1985:161-169.

20. McKnight ZS, Crudden A, Mcdonnall MC. Personal characteristics associated with working after disability onset for people with visual impairments. *J Vis Impair Blind*. 2021;115(2):95-105. doi:10.1177/0145482x211000960

21. Fan X, Seshadri A, Taber C. Understanding earnings, labor supply, and retirement decisions. *SSRN Electron J*. Published online 2018. doi:10.2139/ssrn.3107764

22. Kirchner C, Schmeidler E, Todorov A. *Looking at Employment through a Lifespan Telescope: Age, Health, and Employment Status of People with Serious Visual*

*Impairment*.; 1999.

23.   McDonnall MC. Factors predicting post-high school employment for young adults with visual impairments. *Rehabil Couns Bull*. 2010;54(1):36-45. doi:10.1177/0034355210373806

24.   McDonnall MC, McKnight ZS. The association between presenting visual impairment, health, and employment status. *J Vis Impair Blind*. 2021;115(3):204-214.

25.   Lund EM, Cmar JL. Factors related to employment outcomes in vocational rehabilitation consumers with visual impairments: A systematic review. *J Vis Impair Blind*. 2019;113(6):518-537. doi:10.1177/0145482X19885277

26.   Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System. Published 2022. Accessed March 5, 2022. https://www.cdc.gov/brfss/

27.   Allen M, Bellstedt J. Attitudes toward blindness and blind people: What do we believe? *ABNF J*. 1996;7(3):72-77.

28.   Fiske ST, Cuddy AJC, Glick P, Xu J. A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *J Pers Soc Psychol*. 2002;82(6):878-902. doi:10.1037/0022-3514.82.6.878

29.   Koestler FA. *The Unseen Minority: A Social History of Blindness in the United States*. AFB Press; 1976.

30.   McDonnall MC, Antonelli K. Employers' implicit attitudes about the competence of people who are blind. *Rehabil Psychol*. 2018;63(4):502-511. doi:10.1037/rep0000235

31.   Monbeck M. *The Meaning of Blindness: Attitudes toward Blindness and Blind People*. Indiana University Press; 1973.

32.   Webber DA, Bjelland MJ. The impact of work-limiting disability on labor force participation. *Health Econ*. 2015;24(3):333-352. doi:10.1002/hec

33.   Mcknight-Eily LR, Elam-Evans LD, Strine TW, et al. Activity limitation, chronic disease, and comorbid serious psychological distress in U.S. adults – BRFSS 2007. *Int J Public Health*. 2009;54:111-119. doi:10.1007/s00038-009-0015-0

34.   Adams ML, Katz DL, Shenson D. A healthy lifestyle composite measure: Significance and potential uses. *Prev Med (Baltim)*. 2016;84(2016):41-47. doi:10.1016/j.ypmed.2015.12.005

35.   Rizzo VM, Kintner E. The utility of the Behavioral Risk Factor Surveillance System

(BRFSS) in testing quality of life theory: An evaluation using structural equation modeling. *Qual Life Res*. 2013;22(5):987-995. doi:10.1007/s11136-012-0228-1

36. Walsh R. Lifestyle and mental health. *Am Psychol*. 2011;66(7):579.

37. Mitchell JM, Adkins RH, Kemp BJ. The effects of aging on employment of people with and without disabilities. *Rehabil Couns Bull*. 2006;49(3):157-165. doi:10.1177/00343552060490030301

38. McDonnall MC, Tatch A. Educational attainment and employment for individuals with visual impairments. *J Vis Impair Blind*. 2021;115(2):152-159. doi:10.1177/0145482X211000963

39. Semega J, Kollar M, Shrider EA, Creamer J. *Income and Poverty in the United States: 2019.*; 2020. https://www.census.gov/library/publications/2020/demo/p60-270.html

40. Houtenville AJ. Employment and economic consequences of visual impairment. In: Lennie P, Van Hemel SB, eds. *Visual Impairments: Determining Eligibility for Social Security Benefits*. National Academies Press; 2002.

Table 1: Weighted Descriptive Statistics for Individuals aged 18-65 with BVI

| Variable | Total Sample | Employed | Unemployed | Out of the Labor Force | Unable to Work |
|---|---|---|---|---|---|
| N | 6,125 | 2,478 | 216 | 1,213 | 2,218 |
| | | | | | *Sample means (SE)* |
| **Age** | 47.2 (0.4) | 42.4 (0.5) | 44.7 (1.5) | 51.1 (0.9) | 52.7 (0.4) |
| **Chronic conditions** | 2.4 (0.1) | 1.7 (0.1) | 1.9 (0.2) | 2.5 (0.2) | 3.4 (0.1) |
| **Healthy lifestyles** | 2.2 (0.02) | 2.3 (0.04) | 2.2 (0.1) | 2.3 (0.1) | 2.1 (0.03) |
| **Disabilities** | 1.5 (0.04) | 0.8 (0.04) | 1.2 (0.1) | 1.6 (0.1) | 2.4 (0.1) |
| **Healthcare access** | 3.0 (0.03) | 2.9 (0.1) | 2.6 (0.1) | 3.0 (0.1) | 3.3 (0.04) |
| **Physical health days** | 10.5 (0.3) | 4.9 (0.3) | 8.9 (1.3) | 12.2 (1.1) | 18.3 (0.5) |
| **Mental health days** | 10.2 (0.4) | 7.2 (0.4) | 11.4 (1.4) | 10.6 (1.2) | 14.5 (0.5) |
| | | | | | *Sample percentages (SE)* |
| **Sex** | | | | | |
| Male | 43.1 (1.3) | 47.7 (1.9) | 42.3 (5.3) | 31.0 (2.8) | 43.6 (2.0) |
| Female | 56.9 (1.3) | 52.3 (1.9) | 57.7 (5.3) | 69.0 (2.8) | 56.4 (2.0) |
| **Race** | | | | | |
| White | 50.5 (1.2) | 48.5 (1.8) | 39.7 (5.0) | 49.5 (3.7) | 55.7 (1.9) |
| Black | 17.5 (0.9) | 16.4 (1.5) | 28.1 (5.6) | 14.3 (2.0) | 19.9 (1.4) |
| Hispanic | 25.0 (1.3) | 28.5 (1.8) | 25.6 (4.9) | 28.3 (4.5) | 17.4 (2.0) |
| Other | 7.00 (0.6) | 6.6 (0.8) | 6.6 (2.0) | 8.0 (2.0) | 7.0 (1.2) |
| **Marital status** | | | | | |
| Married/Coupled | 46.8 (1.3) | 49.6 (1.9) | 39.1 (5.2) | 57.1 (3.4) | 37.0 (1.8) |
| Not coupled | 53.2 (1.3) | 50.4 (1.9) | 60.9 (5.2) | 42.9 (3.4) | 63.0 (1.8) |
| **Educational attainment** | | | | | |
| Less than high school | 24.7 (1.3) | 17.3 (1.4) | 25.9 (4.8) | 33.4 (4.3) | 30.6 (1.9) |
| High school | 31.8 (1.1) | 31.0 (1.8) | 37.0 (5.5) | 27.1 (2.4) | 35.4 (1.8) |
| Some college | 30.2 (1.1) | 33.2 (1.8) | 26.7 (4.7) | 30.4 (3.0) | 26.0 (1.5) |
| College or more | 13.2 (0.7) | 18.6 (1.2) | 10.4 (2.8) | 9.1 (1.5) | 8.0 (0.9) |
| **Household income** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Low (< $20K) | 38.2 (1.2) | 20.9 (1.7) | 43.7 (5.3) | 44.7 (3.5) | 60.0 (1.9) |
| Mod. ($20K to < $75K) | 46.2 (1.3) | 52.8 (1.9) | 41.0 (5.4) | 45.5 (3.8) | 37.2 (1.9) |
| High ($75K+) | 15.6 (0.9) | 26.3 (1.7) | 15.2 (4.9) | 9.9 (1.3) | 2.8 (0.5) |
| **Urban/ rural status** | | | | | |
| Rural | 7.9 (0.4) | 6.3 (0.6) | 4.4 (1.6) | 9.5 (1.2) | 9.8 (0.8) |
| Urban | 92.1 (0.4) | 93.7 (0.6) | 95.6 (1.6) | 90.5 (1.2) | 90.2 (0.8) |

Note: Weighted $N$=4,312,420; Data from Behavioral Risk Factor Surveillance System, 2019.

Table 2

*Results of Multinomial Logistic Regression Analysis Predicting Employment Status*

| Variable | *b* | SE | *t* | *p* | OR | 99% CI |
|---|---|---|---|---|---|---|
| **Employed (reference = Unable to work)** | | | | | | |
| Female | 0.08 | 0.15 | 0.56 | .57 | 1.09 | [0.75, 1.58] |
| Black | 0.06 | 0.18 | 0.35 | .73 | 1.06 | [0.67, 1.69] |
| Other race | 0.10 | 0.32 | 0.31 | .75 | 1.10 | [0.49, 2.48] |
| Hispanic | 0.63 | 0.22 | 2.83 | <.01 | 1.89 | [1.06, 3.36] |
| Married/Coupled | -0.05 | 0.15 | -0.32 | .75 | 0.95 | [0.64, 1.41] |
| Age | -0.04 | 0.01 | -5.89 | <.01 | 0.96 | [0.94, 0.98] |
| Less than high school | -0.22 | 0.21 | -1.05 | .30 | 0.80 | [0.47, 1.38] |
| Some postsecondary | 0.42 | 0.17 | 2.49 | .01 | 1.53 | [0.99, 2.37] |
| Postsecondary graduate | 0.31 | 0.21 | 1.48 | .14 | 1.36 | [0.80, 2.34] |
| Moderate income | 1.31 | 0.17 | 7.71 | <.01 | 3.70 | [2.39, 5.74] |
| High income | 3.08 | 0.28 | 10.97 | <.01 | 21.76 | [10.51, 45.03] |
| Urban-rural | 0.03 | 0.21 | 0.16 | .87 | 1.04 | [0.61, 1.76] |
| Chronic conditions | -0.17 | 0.04 | -3.77 | <.01 | 0.85 | [0.75, 0.95] |
| Healthy lifestyles | -0.11 | 0.08 | -1.34 | .18 | 0.89 | [0.72, 1.11] |
| Number of disabilities | -0.57 | 0.07 | -8.57 | <.01 | 0.57 | [0.48, 0.67] |
| Healthcare access | -0.46 | 0.07 | -6.17 | <.01 | 0.63 | [0.52, 0.77] |
| Poor physical health days | -0.06 | 0.01 | -8.62 | <.01 | 0.95 | [0.93, 0.96] |
| Poor mental health days | -0.004 | 0.01 | -0.54 | .59 | 1.00 | [0.98, 1.02] |
| **Unemployed (reference = Unable to work)** | | | | | | |
| Female | 0.16 | 0.26 | 0.59 | .56 | 1.17 | [0.59, 2.31] |
| Black | 0.75 | 0.33 | 2.26 | .02 | 2.12 | [0.90, 4.97] |
| Other race | 0.34 | 0.43 | 0.79 | .43 | 1.40 | [0.47, 4.22] |
| Hispanic | 0.48 | 0.34 | 1.39 | .17 | 1.61 | [0.66, 3.91] |
| Married/Coupled | -0.14 | 0.29 | -0.50 | .62 | 0.87 | [0.42, 1.81] |
| Age | -0.03 | 0.01 | -2.45 | .01 | 0.97 | [0.95, 1.00] |
| Less than high school | -0.20 | 0.34 | -0.60 | .55 | 0.82 | [0.34, 1.95] |
| Some postsecondary | 0.08 | 0.33 | 0.25 | .80 | 1.09 | [0.46, 2.57] |

| | | | | | | |
|---|---|---|---|---|---|---|
| Postsecondary graduate | -0.23 | 0.44 | -0.54 | .60 | 0.79 | [0.26, 2.44] |
| Moderate income | 0.47 | 0.30 | 1.56 | .12 | 1.59 | [0.74, 3.43] |
| High income | 2.22 | 0.59 | 3.79 | <.01 | 9.23 | [2.04, 41.80] |
| Urban-rural | 0.42 | 0.40 | 1.06 | .29 | 1.52 | [0.55, 4.26] |
| Chronic conditions | -0.22 | 0.09 | -2.40 | .02 | 0.80 | [0.63, 1.02] |
| Healthy lifestyles | 0.02 | 0.16 | 0.10 | .92 | 1.02 | [0.67, 1.55] |
| Number of disabilities | -0.49 | 0.12 | -4.14 | <.01 | 0.61 | [0.45, 0.83] |
| Healthcare access | -0.55 | 0.11 | -4.91 | <.01 | 0.58 | [0.43, 0.77] |
| Poor physical health days | -0.03 | 0.01 | -2.46 | .01 | 0.97 | [0.94, 1.00] |
| Poor mental health days | 0.02 | 0.01 | 1.51 | .13 | 1.02 | [0.99, 1.05] |
| **Out of the Labor Force (reference = Unable to work)** | | | | | | |
| Female | 0.70 | 0.17 | 4.03 | <.01 | 2.01 | [1.29, 3.13] |
| Black | -0.11 | 0.20 | -0.56 | .58 | 0.89 | [0.53, 1.50] |
| Other race | 0.25 | 0.34 | 0.73 | .46 | 1.28 | [0.54, 3.05] |
| Hispanic | 0.43 | 0.26 | 1.61 | .11 | 1.53 | [0.78, 3.02] |
| Married/Coupled | 0.56 | 0.17 | 3.33 | <.01 | 1.74 | [1.14, 2.68] |
| Age | 0.004 | 0.01 | 0.46 | .64 | 1.00 | [0.98, 1.03] |
| Less than high school | 0.21 | 0.20 | 1.04 | .30 | 1.23 | [0.74, 2.05] |
| Some postsecondary | 0.38 | 0.17 | 2.17 | .03 | 1.46 | [0.93, 2.27] |
| Postsecondary graduate | -0.06 | 0.25 | -0.26 | .79 | 0.94 | [0.49, 1.78] |
| Moderate income | 0.24 | 0.18 | 1.30 | .19 | 1.27 | [0.79, 2.02] |
| High income | 1.24 | 0.30 | 4.17 | <.01 | 3.46 | [1.61, 7.43] |
| Urban-rural | -0.17 | 0.18 | -0.92 | .36 | 0.85 | [0.53, 1.35] |
| Chronic conditions | -0.18 | 0.05 | -3.48 | <.01 | 0.83 | [0.73, 0.95] |
| Healthy lifestyles | 0.10 | 0.09 | 1.11 | .27 | 1.11 | [0.88, 1.40] |
| Number of disabilities | -0.26 | 0.07 | -3.85 | <.01 | 0.77 | [0.65, 0.92] |
| Healthcare access | -0.33 | 0.09 | -3.55 | <.01 | 0.72 | [0.56, 0.91] |
| Poor physical health days | -0.02 | 0.01 | -3.17 | <.01 | 0.98 | [0.96, 1.00] |
| Poor mental health days | -0.002 | 0.01 | -0.28 | .78 | 1.00 | [0.98, 1.02] |

Note: *N*=6,125. Reference categories: sex (ref=male), race (ref=white), marital status (ref=not married), educational attainment (ref=high school degree), income (ref=low), urban-rural (ref=rural).