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Educational Attainment and Employment for Individuals with Visual Impairments

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Higher educational attainment is known to be associated with lower unemployment rates and higher employment rates and lifetime earnings for the general population (Tamborini, Kim, & Sakamoto, 2015; U.S. Bureau of Labor Statistics, 2019b, 2019a). A substantial amount of research has also supported the importance of higher education for employment outcomes of people who are blind or have low vision (those with visual impairments; Capella-McDonnall, 2005; Cimarolli & Wang, 2006; Cmar, McDonnall, & Crudden, 2018; Giesen & Cavanaugh, 2013; Leonard, D’Allura, & Horowitz, 1999; McDonnall, 2016; Wolffe, Roessler, & Schriner, 1992). Recent systematic literature reviews have documented education’s significant association with employment for this population (Lund & Cmar, 2019a, 2019b). Education was the variable that was most consistently related to employment in analyses of survey data (Lund & Cmar, 2019a) and analyses of Rehabilitation Services Administration Case Service Report data of vocational rehabilitation consumers (Lund & Cmar, 2019b).

Despite our awareness that education level is associated with employment for people with visual impairments, no one has investigated differences in employment rates by educational attainment for this population. We do not know the relationship between higher levels of education and employment for people with visual impairments, or how this compares to the relationship between higher levels of education and employment for the general population. The purpose of this study was to address these unknowns utilizing national labor market data across a 10-year period. The following research questions guided our study.

1. What are the employment rates of people with visual impairments based on educational attainment?

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2. How do the employment rates of people with visual impairments compare to the employment rates of people without disabilities with similar educational attainment?
3. What percent of people with visual impairments obtain a college degree and how does this compare to people without disabilities?

Method

Data come from the American Community Survey (ACS), conducted by the U.S. Census Bureau, and were obtained from the Disability Statistics Calculator (Cornell University, 2018). Collected every year, the ACS provides information on a broad range of topics important to policymakers and practitioners, including employment, health insurance coverage, housing status, and demographic information. ACS data is the preferred data source to determine labor market status for small population groups, such as those with specific disabilities (U.S. Census Bureau, 2017a). We evaluated data for each year from 2008 to 2017, comparing employment rates for individuals with a visual impairment and individuals who reported no disabilities at four levels of educational attainment. Employment rates were calculated by dividing the number of employed individuals with visual impairments to the corresponding total population (including individuals who are employed, unemployed, and not in the labor force) at each education level, in accordance with the federal government definition of employment-population ratio (https://www.bls.gov/cps/cps_htgm.htm). We calculated the difference in employment rates for the two groups at each education level and labeled this the employment gap. Because our focus was on employment, we included respondents between the ages of 21 and 64 to represent the typical working ages in the U.S.

Individuals were considered employed if they worked at all during the previous week as a paid employee, which includes self-employment, or as an unpaid worker in a family business

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(for 15 hours or more), or had a job but temporarily did not work at that job during the previous week (U.S. Census Bureau, 2017b). We measured visual impairment by a positive response to the following item “Is this person blind or does he/she have serious difficulty seeing even when wearing glasses?” Individuals were classified as having no disability if they did not respond positively to any visual, hearing, ambulatory, cognitive, self-care, or independent living disability question. Educational attainment was measured with an ordinal scale and respondents were classified as having (a) less than a high school education, (b) a high school diploma or equivalent, (c) some college or associate’s degree, or (d) a bachelor’s degree or higher (referred to henceforth as a college degree).

Results

Employment rates by educational attainment for individuals with visual impairments and individuals without any disability are presented in Table 1 for years 2008 through 2017, along with the gap in employment rate for the two groups based on education level. Employment rates for people with visual impairments vary substantially by education level. On average across the 10-year period, individuals with a college degree had an employment rate of 62.5% compared to 46.2% for those with some college or an associate’s degree, 37% for individuals with a high school diploma, and 26.2% for those with less than a high school degree.

Individuals with visual impairments were much less likely to be employed compared to those without disabilities across all level of educational attainment throughout the 10-year period. Individuals with visual impairments who had less than a high school education were the least likely to be employed, with an average employment rate of 26.2% from 2008 to 2017, compared to a 63.5% average for similarly educated individuals without a disability. The disparity in employment rates was similar for individuals with a high school diploma or

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equivalent, with employment rates averaging 37% percent for individuals with a visual impairment compared to 74% percent of individuals without a disability. Individuals with visual impairments who had some college or an associate's degree had an average employment rate of 46.2%, compared to 78% of similarly educated individuals without a disability. Finally, individuals with visual impairments who had a college degree had a 62.5% average employment rate over the 10-year period, compared to 84.2% for non-disabled individuals with similar education.

Illustrating the considerable discrepancy in employment rates based on education level for those with visual impairment and those without disabilities, college-educated individuals with a visual impairment were employed at lower rates than non-disabled individuals with less than a high school diploma during a 5-year period (2008-2012). This period corresponds to the Great Recession and its aftermath. Furthermore, in the following 5-year period (2013-2017) in which college-educated individuals with visual impairment outperformed non-disabled individuals without a high school diploma, the largest gap in employment rates was less than 2%.

The data illustrate that higher levels of educational attainment are associated with a reduced gap in employment rates between those with visual impairments and those with no disability. At the level of less than a high school diploma, the 10-year average gap is 37.3%, while the average gap is 21.7% for those with a college degree. Also relevant is the association between educational attainment and employment rates *within* these different populations. Educational attainment is associated with an increased likelihood of employment for those with no disability, with the difference between employment rate 10-year averages for those with the lowest and highest educational attainment at 20.7%. The association between educational attainment and employment appears even more important for individuals with visual

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impairments, as the highest educational attainment is linked to average employment rates 36.3% higher than those at the lowest education level over the 10-year period.

Individuals with visual impairments are much less likely to obtain a college degree compared to people without a disability, as illustrated in Table 2. The rate of college degree obtainment has been increasing for the entire 10-year period for people without disabilities, while it has only been increasing for people with visual impairments since 2012. However, the growth in rate of college degree obtainment during the 10-year period of the study has been larger for those with visual impairments than those without a disability (33.6% compared to 12.7%).

Discussion

Previous research has documented the importance of education level as a predictor of employment for people with visual impairments (Lund & Cmar, 2019a, in 2019b). This variable is the most consistent predictor of employment across recent studies, yet we have not had a sense of the magnitude of the relationship prior to this study. This study documents substantial differences in employment rates by education level, with differences by education level wider for those with visual impairments than those without disabilities. For individuals without disabilities, the employment gap between people with less than a high school education and those with a college degree was 20% in 2017. This gap was almost double for individuals with visual impairments, at 38.7%. The employment disparity between those without disabilities and those with visual impairments gets smaller as education level increases. This indicates a stronger association between higher education and employment for individuals with visual impairments; education appears to be an important factor that is linked to employment access for those with visual impairments.

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Despite the unmistakably positive association between higher education levels and employment, a 19.4% disparity in employment rates currently exists for people with visual impairments who hold a college degree compared to those without disabilities who have a college degree. Although this gap has decreased somewhat over the past decade, it is still an unacceptably large difference. While education obviously affords a benefit, it is not an equalizer in terms of employment. We need to better understand reasons for this gap. One contributing factor may be the existing barrier of negative employer attitudes and discrimination (Bendick, 2018; Burke et al., 2013; Kruse, Schur, Rogers, & Ameri, 2018; McDonnall & Antonelli, 2018; U.S. Department of Labor, 2014). Research has documented that despite having the same qualifications, persons with disabilities are less likely to be selected for an interview than persons without disabilities (Ameri et al., 2018). People with visual impairments may have the desire to work, but may have removed themselves from the workforce due to challenges in finding employment or experiencing discrimination. Another possibility is that individuals who develop vision loss later in life, after receipt of a college degree, may not be aware that they could continue to work with the appropriate accommodations. In one study of such individuals, more than 60% of those who were not working attributed this to their vision loss (Popivker, Wang, & Boerner, 2010).

Another important factor to consider is that a far smaller percentage of the population with a visual impairment compared to the population of individuals without disabilities has a college education: less than half as many had obtained a degree in 2017. Although higher education is strongly associated with employment, relatively few people with visual impairments have obtained college degrees. A positive finding of this study is that rates of college degree obtainment are increasing for people with visual impairments. It is relevant to note that the

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employment rate gap between people with visual impairments who have a high school degree or less versus a college degree is demonstrating a trend of increasing over time, providing additional support for the importance of a college degree for those with visual impairments in today's labor force.

These results underscore the value of obtaining a college degree for individuals with visual impairments in terms of employment. Professionals who work with this population should urge youth with visual impairments to pursue postsecondary education. To achieve success in college, youth must have requisite academic achievement levels as well as assistive technology skills. Teachers of students with visual impairments play a key role in preparing youth with visual impairments for success in college. For adults who lose their vision later in life and do not have a college degree, postsecondary education may be a valuable pursuit that can increase their employment opportunities. Given the strong association between employment and a college degree, vocational rehabilitation agencies should support and encourage postsecondary educational attainment for all consumers with visual impairments.

This study elucidates the strong association between educational attainment and employment rates for people with visual impairments, and illustrates the differences in the benefits of educational attainment for this population versus those without disabilities. It did not, however, consider the association between educational attainment and other important factors such as earnings, hours worked, or benefits received. Future research should compare the financial benefits of higher education for people with visual impairments and those without disabilities. Future research should also take into consideration the type of college degree obtained by individuals in each group to determine whether differences in this area may explain some of the discrepancies noted in this study, as type of college degree is associated with

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unemployment rates and earnings (Garcia, 2019; National Center for Education Statistics, 2019).

In addition, future research on the association between education level and employment for those with visual impairments should consider the possible impact of other variables, such as additional disabilities and health status, on this relationship.

References

- Ameri, M., Schur, L., Adya, M., Bentley, F. S., McKay, P., & Kruse, D. (2018). The disability employment puzzle: A field experiment on employer hiring behavior. *ILR Review*, *71*(2), 329–364. doi:10.1177/0019793917717474
- Bendick, M. (2018). Employment discrimination against persons with disabilities: Evidence from matched pair testing. *The International Journal of Diversity in Organizations, Communities, and Nations: Annual Review*, *17*(1), 11–25.
- Burke, J., Bezyak, J., Fraser, R. T., Pete, J., Ditchman, N., & Chan, F. (2013). Employers' attitudes towards hiring and retaining people with disabilities: A review of the literature. *Australian Journal of Rehabilitation Counseling*, *19*(1), 21–38. doi:10.1017/jrc.2013.2
- Capella-McDonnall, M. E. (2005). Predictors of competitive employment for blind and visually impaired consumers of vocational rehabilitation services. *Journal of Visual Impairment & Blindness*, *99*(5), 303–315.
- Cimarolli, V. R., & Wang, S. W. (2006). Differences in social support among employed and unemployed adults who are visually impaired. *Journal of Visual Impairment & Blindness*, *100*(9), 545–556.
- Cmar, J. L., McDonnall, M. C., & Crudden, A. (2018). Transportation self-efficacy and employment among individuals with visual impairments. *Journal of Vocational Rehabilitation*, *48*(2), 257–268. doi:10.3233/JVR-180925
- Cornell University. (2018). Disability Statistics Calculator. Retrieved from <http://www.disabilitystatistics.org/>
- Garcia, A. D. (2019). Ranking the most and least valuable majors. Retrieved November 2, 2019, from <https://www.bankrate.com/career/most-valuable-college-majors/>

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- Giesen, J. M., & Cavanaugh, B. S. (2013). Disability insurance beneficiaries with visual impairments in vocational rehabilitation: Socio-demographic influences on employment. *Journal of Visual Impairment & Blindness*, *107*(6), 453–468.
- Kruse, D., Schur, L., Rogers, S., & Ameri, M. (2018). Why do workers with disabilities earn less? Occupational job requirements and disability discrimination. *British Journal of Industrial Relations*, *56*(4), 798–834. doi:10.1111/bjir.12257
- Leonard, R., D’Allura, T., & Horowitz, A. (1999). Factors associated with employment among persons who have a vision impairment: A follow-up of vocational placement referrals. *Journal of Vocational Rehabilitation*, *12*(1), 33–43.
- Lund, E.M., & Cmar, J. (2019a). A systematic review of factors related to employment outcomes in adults with visual impairments. *Journal of Visual Impairment & Blindness*, *116*(6), 493-517.
- Lund, E.M., & Cmar, J. (2019b). Factors related to employment outcomes in vocational rehabilitation consumers with visual impairments: A systematic review. *Journal of Visual Impairment & Blindness*, *116*(6), 518-537.
- McDonnall, M. C. (2016). The relationship between vocational rehabilitation professional’s interactions with businesses and employment outcomes for consumers who are blind or visually impaired. *Rehabilitation Counseling Bulletin*, *59*(4), 203–212.
doi:10.1177/0034355215586389
- McDonnall, M. C., & Antonelli, K. (2018). Employers’ implicit attitudes about the competence of people who are blind. *Rehabilitation Psychology*, *63*(4), 502–511.
doi:10.1037/rep0000235
- National Center for Education Statistics. (2019). Employment outcomes of bachelor’s degree

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holders. Retrieved November 2, 2019, from The Condition of Education website:

https://nces.ed.gov/programs/coe/indicator_sbc.asp

Popivker, L., Wang, S. W., & Boerner, K. (2010). Eyes on the prize: Life goals in the context of visual disability in midlife. *Clinical Rehabilitation*, 24(12), 1127–1135.

doi:10.1177/0269215510371421

Tamborini, C. R., Kim, C. H., & Sakamoto, A. (2015). Education and lifetime earnings in the United States. *Demography*, 52(4), 1383–1407. doi:10.1007/s13524-015-0407-0

U.S. Bureau of Labor Statistics. (2019a). Employment status of the civilian noninstitutional population 25 years and older by educational attainment, sex, race, and Hispanic or Latino ethnicity. Retrieved November 5, 2019, from Labor Force Statistics from the Current Population Survey website: <https://www.bls.gov/cps/cpsaat07.htm>

U.S. Bureau of Labor Statistics. (2019b). Unemployment rates and earnings by educational attainment. Retrieved November 5, 2019, from Employment Projections website: <https://www.bls.gov/emp/chart-unemployment-earnings-education.htm>

U.S. Census Bureau. (2017a). Guidance for labor force statistics data users. Retrieved October 25, 2019, from Labor Force Statistics website: <https://www.census.gov/topics/employment/labor-force/guidance.html%0D>

U.S. Census Bureau. (2017b). Labor Force Statistics Glossary. Retrieved October 30, 2019, from <https://www.census.gov/topics/employment/labor-force/about/glossary.html>

U.S. Department of Labor. (2014). *Employer Engagement Strategy : Workforce Inclusion*.

Retrieved from

<https://www.dol.gov/odep/pdf/20140604BusinessCaseEngagementWhitePaper.pdf>

Wolffe, K. E., Roessler, R. T., & Schriener, K. F. (1992). Employment concerns of people with

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blindness or visual impairments. *Journal of Visual Impairment & Blindness*, 86(4), 185–187.

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Table 1

Employment Rates for Individuals with Visual Impairment vs. No Disability by Educational Attainment, 2008 to 2017

Year	Less than high school			High school diploma			Some college			4-year degree or higher		
	VI	ND	Gap	VI	ND	Gap	VI	ND	Gap	VI	ND	Gap
2008	29.3	67.2	37.9	42.3	77.4	35.1	49.9	81.1	31.2	63.7	85.3	21.6
2009	26.6	62.8	36.2	36.7	73.4	36.7	45.2	77.7	32.5	59.7	83.6	23.9
2010	24.9	60.6	35.7	35.2	71.7	36.5	43.0	76.1	33.1	58.5	82.9	24.4
2011	25.2	61.1	35.9	33.2	72.1	38.9	43.0	75.9	32.9	58.1	83.1	25.0
2012	25.4	62.0	36.6	35.0	72.6	37.6	43.1	76.5	33.4	59.8	83.7	23.9
2013	25.8	62.5	36.7	36.2	73.2	37.0	45.4	77.1	31.7	63.1	84.0	20.9
2014	25.7	63.8	38.1	35.8	74.0	38.2	45.4	78.0	32.6	64.2	84.3	20.1
2015	25.4	64.5	39.1	37.8	74.5	36.7	47.8	78.8	31.0	64.7	84.8	20.1
2016	26.4	65.5	39.1	38.6	75.3	36.7	49.4	79.3	29.9	67.1	85.1	18.0
2017	27.3	65.4	38.1	39.1	75.7	36.6	50.2	79.8	29.6	66.0	85.4	19.4

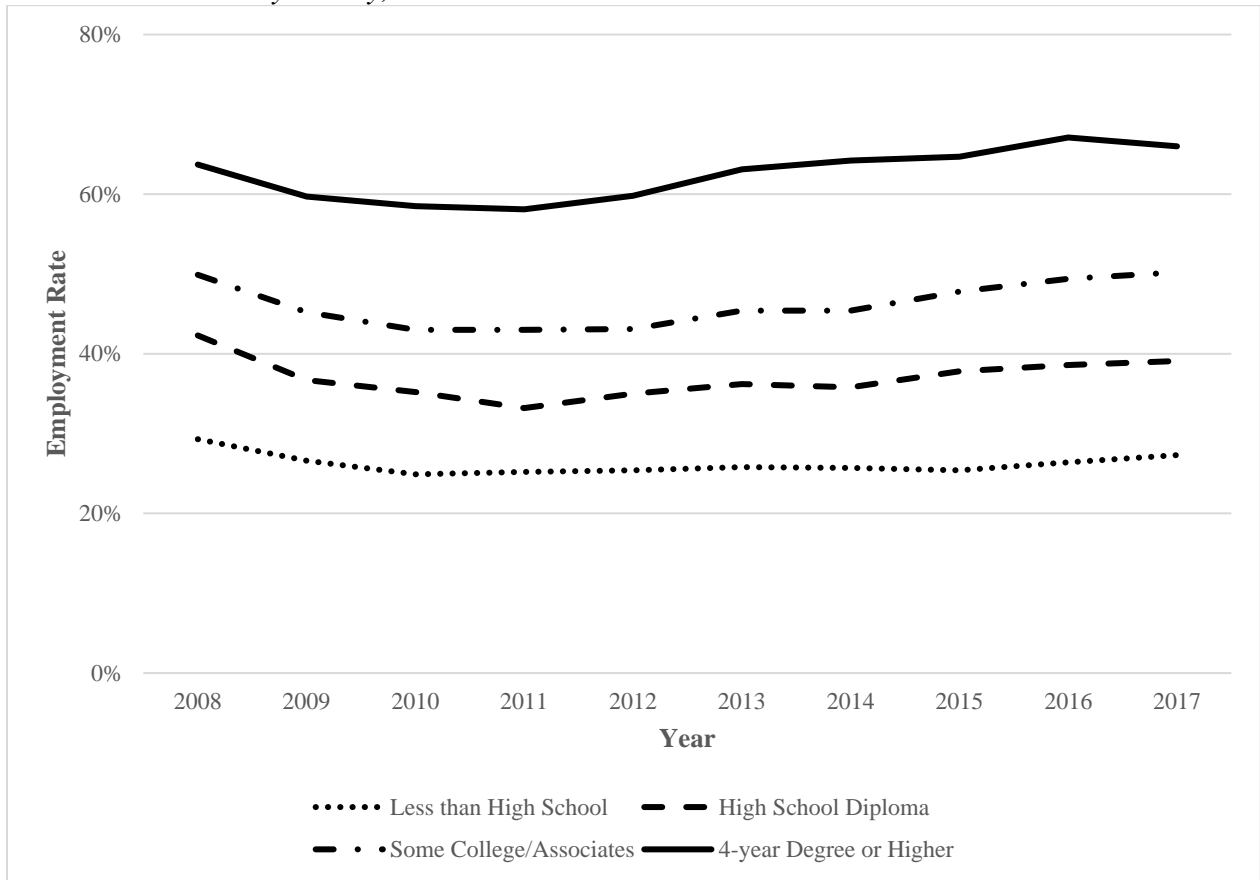
Note. All figures are percentages. Data source is the American Community Survey, sample age 21 to 64. VI=Individuals with a visual impairment. ND=Individuals with no disability.

Gap=Difference in employment rates between ND and VI.

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Figure 1

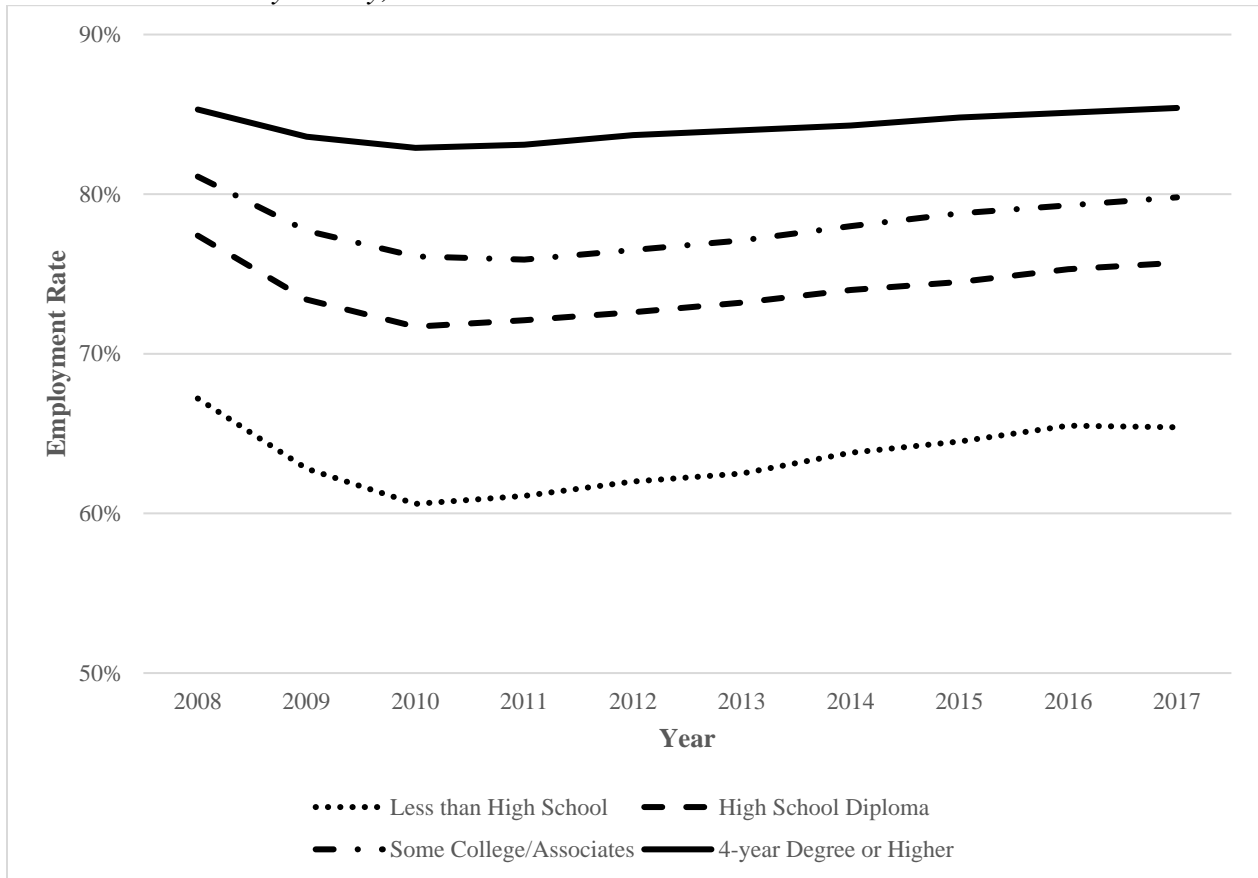
Employment Rates for Individuals with Visual Disabilities, Across Educational Attainment; American Community Survey, 2008 to 2017



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Figure 2

Employment Rates for Individuals Without Disabilities, Across Educational Attainment; American Community Survey, 2008 to 2017



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Table 2

Percent of Individuals with Four Year Degrees or Greater; Visual Impairment and No Disability, 2008 to 2017

Year	Visual Impairment (%)	No Disability (%)
2008	11.9	30.6
2009	11.2	30.8
2010	11.4	30.9
2011	11.6	31.2
2012	11.9	31.7
2013	13.7	32.1
2014	14.4	32.5
2015	14.9	33.0
2016	15.7	33.8
2017	15.9	34.5

Note. Data source is the American Community Survey, sample age 21 to 64.