WORK, *79*, Michele C. McDonnall, Jennifer L. Cmar, Employment and retirement among workers who develop vision loss in midlife. 819-830, 2024, with permission from IOS press, www.iospress.nl. The publication is also available at IOS Press through http://doi.org/10.3233/WOR-230669

Employment and Retirement Among Workers Who Develop Vision Loss in Midlife

Michele C. McDonnall, Ph.D., CRC*

Jennifer L. Cmar, Ph.D., COMS

The National Research & Training Center on Blindness & Low Vision

Mississippi State University, Starkville, MS

Author Note

Funding statement: The contents of this manuscript were developed under a grant from the U.S. Department of Health and Human Services, NIDILRR grant 90RTEM0007. However, these contents do not necessarily represent the policy of the Department of Health and Human Services and should not indicate endorsement by the Federal Government.

Acknowledgments: The authors would like to thank Lynn Mitchell for her assistance with managing the data for this project and creating coding to identify the vision loss sample.

*Corresponding author information:

P.O. Box 1689

Mississippi State, MS 39762

m.mcdonnall@msstate.edu

Abstract

Background: Vision loss increases with age and is thus more likely to happen later in one's career. With more individuals working beyond typical retirement age, the possibility of experiencing vision loss while working has increased.

Objective: The purpose of this study was to investigate how developing vision loss during midlife affects employment and retirement.

Method: Using longitudinal Health and Retirement Study data, we identified a sample of 167 workers, 44 to 64 years old, who developed vision loss and a matched comparison sample of 800 workers who did not. We explored job retention and retirement differences between the groups and differences between people with vision loss who retained jobs versus those who did not.

Results: Vision loss was associated with leaving the labor force, although there was a clear trend over time of increasing likelihood of job retention. Occupational category was associated with job retention and people who continued working had more favorable financial situations. Retirees with vision loss were more likely to report involuntary retirement and dissatisfaction with retirement.

Conclusions: The decreasing likelihood of leaving the labor market after vision loss is an encouraging finding of this study. Workers who left the labor force after vision loss were more likely to be in precarious financial positions, and retirees did not have positive experiences with retirement. Assisting workers with vision loss to remain in the labor force is of vital importance, and increasing awareness and usage of free services for this population may reduce involuntary retirement and its negative consequences.

Keywords: low vision, reduced vision, visual impairment, employment, employment termination, retirement

Employment and Retirement Among Workers Who Develop Vision Loss in Midlife

I. Introduction

Employment is valuable to individuals for a multitude of reasons, including financial security, social connections, and offering a sense of worth or purpose. Employment has been associated with greater well-being, less psychological distress, and lower levels of depression, and some research has supported its relationship with better physical health (1,2). A lifetime of work also ideally provides the opportunity for a comfortable retirement. Multiple data sources support the fact that the typical retirement age in the United States is increasing (3–5). The expected retirement age for people currently working has also increased (4). A greater proportion of people who are 75 or older are working, and this proportion is expected to continue increasing through 2030 (5). Many people who are of retirement age continue to work in some capacity besides their full-time career job, referred to as gradual retirement – 48% transitioned to a bridge job (with a different employer), 10% reduced hours at their career job, and 15% returned to the labor force after retiring for several years (6). This is so prevalent now that most consider retirement a process rather than a one-time event.

With many people working beyond the typical retirement age, the chance of developing a disability while working increases. Given the benefits of employment and its contribution to a successful retirement, it is important that all people have the opportunity to work. We know that compared to the general population, labor force participation and employment rates are lower for people who report blindness or low vision, henceforth referred to as vision loss or visual impairment (7–9), but we know little about how developing vision loss while working impacts future employment and decisions about retirement. The overall prevalence of visual impairment in the working-age population is 2.1% (10), but it increases with age and begins increasing

substantially around age 60 (11). Common chronic conditions that can cause permanent vision loss among adults include diabetic retinopathy, glaucoma, and age-related macular degeneration (12). Because visual impairment increases with age , the likelihood of experiencing vision loss while working (mid or late career) is much higher than before beginning a career or early in one's career.

The onset of a disability in adulthood has been associated with several negative effects, such as lower life satisfaction (13) as well as lower satisfaction levels across multiple domains (14), higher symptoms of depression (15), decreased well-being (16), and greater financial concerns and restrictions in social participation (17). Several studies have investigated the impact of experiencing vision loss in late life (18–21), when it is most likely to occur, but few studies have investigated the impact of developing a vision loss during midlife when people are typically working.

Boerner and colleagues conducted three studies about the impact of developing vision loss as an adult on various outcomes. One study found that development of vision loss in middle adulthood presented a greater risk for poor mental health than development in late adulthood (22). Another study compared life changes related to vision loss for middle-aged and older adults and found that middle-aged people reported more changes, and their changes were more pronounced (23). Common vision-loss changes reported by the middle-aged group were career change, loss of independence, and diminished self-worth. The third study investigated the impact of vision loss on goal pursuit among middle-aged adults and found that 44% of the participants identified career as one of their three most important life goals, and most of them believed their vision loss presented a difficulty in being able to work (24).

A limited amount of research has investigated the impact of developing vision loss on

working. Only two published studies focused on employment among adults who were working when they experienced vision loss (25,26). In a qualitative study of 10 people who experienced vision loss while working and were currently employed, financial need was identified as a motivator for most of them to continue working (25). A survey study that included 84 people who lost their vision while working found that two-thirds of them did not retain their jobs; many reported that personal adjustment to the vision loss made it difficult to continue working (26). One other study investigated predictors of continuing to work after visual impairment, although the length of time since visual impairment varied greatly in the sample (27). Factors associated with working among this sample were receiving encouragement to work, not receiving government benefits, and the interaction between age at onset and years since disability onset. As age at onset increased, the odds of working increased but only if the person had their disability for at least 4 years, suggesting that people may need a break from work to adjust to disability prior to returning to the workforce.

Only a few studies have investigated retirement among people with visual impairments. A recent study that utilized longitudinal Health and Retirement Study (HRS) data found that people who reported visual impairment (fair or poor vision) in 2004 were more likely to leave the labor force at a later time due to disability than retirement (28). In a study conducted in Europe, researchers found that people with fair eyesight were more likely to report that their health may limit their ability to work until retirement age and more often indicated that they were seeking early retirement, but people with poor eyesight were less likely to report these issues (29). The authors hypothesized that perhaps people with poor eyesight had jobs that were accommodated for the vision loss, whereas those with worsening vision may not have. Two other studies that defined visual impairment more broadly (i.e., as 20/40 vision (30) or used presenting

visual acuity rather than best corrected acuity, and included people with uncorrected refractive errors as almost half of their sample (31)) did not find a relationship between visual impairment and later retirement.

No studies have evaluated the impact of developing a vision loss while working on retirement decisions. Research suggests the need for an adjustment period to prepare for employment after experiencing vision loss (27,32), possibly prompting people who experience vision loss in midlife or late in their careers to retire earlier than planned. However, early retirement may be a risk factor for mortality, and working longer has been associated with decreased risk of death among both healthy and unhealthy retirees in the United States (33). Studies in other countries have also documented an association between increased mortality risk and early retirement among healthy retirees (34,35). One study evaluated the impact of disability onset while working on the post-retirement financial well-being of people who received Social Security benefits (Social Security Disability Insurance or early retirement) and found that people who claimed benefits had poorer financial outcomes that persisted into the post-retirement years (36). All of these findings suggest that early retirement due to vision loss may not be the best option.

The purpose of this study was to investigate the effect of experiencing vision loss during midlife on employment and retirement. This topic is relevant given the increased likelihood of working past typical retirement age and the higher prevalence of vision loss among adults later in life. We explored the labor force status, financial and job characteristics for people who retained jobs versus those who did not, reasons for retirement, and enjoyment of retirement. In addition, we compared people who did not develop vision loss to those who did on labor force status and retirement variables. We investigated the following five research questions.

1. What is the labor force status of previously employed people who developed vision loss in midlife, and how does this compare to a matched sample of people who did not develop vision loss?
2. Are birth year cohort or year when vision loss was reported associated with continued employment?
3. Do the financial and job characteristics of people with vision loss who continue working differ from those who do not continue working?
4. How do the reasons for retirement for people who developed vision loss compare to the reasons for people without vision loss?
5. Does enjoyment of retirement differ for people who developed vision loss compared to people without vision loss?

II. Method

a. Research Design and Data Source

This investigation employed a retrospective casual comparative research design utilizing publicly available HRS data from 1994 to 2020 (Waves 2-15). The HRS is an ongoing, nationally representative longitudinal panel study of older adults in the United States, with each wave representing a 2-year period. Because HRS data is publicly available, this study was exempt from Institutional Review Board approval. The HRS began in 1992 and is supported by the National Institute on Aging and the Social Security Administration. It includes a representative sample of approximately 20,000 older adults and is a primary data source on the aging American population. Participants are between the ages of 51 and 61 when invited to participate and are followed until their death. Participants' spouses are also invited to participate; therefore, some participants are younger than 51. Respondents participate in interviews every 2

years, and new cohorts are added every 6 years to ensure continued adequate representation of older adults. HRS includes an extensive collection of items about employment and labor force status, health, income, wealth, and retirement. Data used for this study are publicly available on the HRS website (https://hrs.isr.umich.edu/data-products). RAND develops and provides a user-friendly longitudinal data file that includes data from all waves of the HRS (37). We utilized the RAND HRS longitudinal file for variables of interest available in it and the HRS data for other variables.

b. Samples

We defined vision loss as reporting poor vision or legal blindness (in response to the question "Is your eyesight excellent, very good, good, fair, or poor using glasses or corrective lenses as usual?") at one wave, reporting fair or better vision at all preceding waves, and not reporting fair or better vision at a later wave. Thus, we utilized the longitudinal nature of the data to identify a sample of people with persistent vision loss. Our definition of visual impairment (i.e., self-reported poor vision) is more stringent than previous research, which has typically considered fair or poor vision to indicate visual impairment (28,38,39). Other criteria for inclusion in the vision loss sample were working for pay at the wave prior to reporting vision loss and being age 64 or younger, as we were interested in the impact of vision loss on employees of typical working age. In addition, we excluded people from the AHEAD cohort. Our sample consisted of 167 people who experienced vision loss while employed. They were in the following birth cohorts: original HRS, War Babies, Early Baby Boomers, Mid Baby Boomers, Late Baby Boomers, and not in a cohort (participant spouses born after 1965). Because sampling weights were unavailable for some sample members and several strata only had one cluster, we did not assign weights to our data.

We identified a comparison sample that matched the vision loss sample on age, cohort, wave, employment status (i.e., working), race, and ethnicity, and who had good or better vision at the wave preceding the wave when their matched sample member reported vision loss. We randomly selected five people to match each of the 167 people who experienced vision loss. If five matches were not possible based on these criteria, we expanded age to an age range (within 2 years of exact age); if enough matches were still not available, we eliminated the ethnicity match (required for six people) or the ethnicity and race match (required for one person). Some observations were removed due to being repeats (same participant identified as a match for two sample members at different waves), reporting poor vision at a later wave, or having missing vision data, resulting in a comparison sample of 800 people.

c. Variables

i. Labor Force Status

We determined *labor force status* at the wave vision loss was reported and the wave after with a RAND labor force summary variable, with the categories "works full-time" and "works part-time" combined to "working." For analyses comparing the working and not working groups, people who reported being "partly retired" were also classified as working, per the HRS definition of working.

ii. Financial Characteristics

We evaluated participants' financial status at the wave of first report of vision loss with three variables. We utilized *net worth*, defined as the sum of all wealth components (e.g., value of primary and secondary residences, vehicles, businesses, investments, savings) minus all debts. *Household income* was the sum of respondent and spouse earnings, pensions and annuities, Social Security benefits, unemployment and workers' compensation, and other income. *Personal*

income was the sum of the factors listed for household income for the respondent only. All financial variables were adjusted for inflation to 2018 dollars.

iii. Job and Job Tenure Characteristics

We evaluated participants' job and job tenure factors at the wave before reporting vision loss. *Earnings*, adjusted for inflation to 2016 dollars, was the sum of the respondents' salary or wages from all jobs, including any bonuses, overtime pay, tips, or commissions. *Current job tenure* was the number of years the respondent had worked at their current job. *Job years* was the total number of self-reported years working for pay in their lifetime. *Occupational category* was the broad category in which the participants' job was classified, based on the U.S. Census Occupation Codes. Occupational category consisted of six categories; the five that applied to our sample are listed in Table 5.

iv. Retirement

HRS participants who reported being retired were asked multiple questions about their retirement reasons and experiences. *Retirement choice* was their response to the question, "Thinking back to the time you retired, was that something you wanted to do or something you felt you were forced into?" HRS provided respondents with four potential reasons why people retire and asked how important each reason was to the respondent on a 4-point scale. The potential reasons for retirement were *poor health*, *wanted to do other things*, *didn't like the work*, and *wanted to spend more time with family*. *Retirement satisfaction* was measured with the question, "All in all, would you say that your retirement has turned out to be very satisfying, moderately satisfying, or not at all satisfying?" *Retirement enjoyment* was measured with the question: "Thinking about your retirement years compared to the years just before you retired, would you say the retirement years have been better, about the same, or not as good?" We

utilized data from the wave when vision loss was reported or the following wave, depending on when the participant reported that they retired.

d. Data Analysis

We utilized descriptive statistics to examine and summarize (a) the labor force and retirement variables for the vision loss and comparison groups and (b) year of vision loss, birth year cohort, financial characteristics, and job characteristics by employment status for the vision loss group. Chi-square tests of independence or Fisher's exact test were used to compare the vision loss and comparison groups on labor force status (Research Question 1) and retirement variables (Research Questions 4 and 5). Chi-square tests of independence and Cochran-Armitage trend tests were used to examine associations between (a) continued employment and year of vision loss and (b) continued employment and birth year cohort (Research Question 2). Independent samples t-tests were used to evaluate differences in the financial characteristics, job tenure, job years, and earnings of people who experienced vision loss and continued working versus those who stopped working, and a chi-square test of independence was used to examine the relationship between occupational category and continued employment for people with vision loss (Research Question 3). An alpha level of .05 was used to determine statistical significance. SAS 9.4 was utilized for all analyses.

III. Results

Demographic characteristics of the vision loss group and comparison (no vision loss) group are presented in Table 1. Table 2 provides the labor force status of each group at the first wave of vision loss and the subsequent wave (2 years later). There was a significant association between labor force status and vision loss at the first wave of vision loss, χ^2 (5, N = 967) = 88.67, $p < .001$, and at the subsequent wave (Fisher's exact test, $p < .001$). People who

developed vision loss were less likely to be working and more likely to be retired or disabled than people who did not develop vision loss, with slightly larger differences at the second time point.

Table 3 displays descriptive statistics and Chi-square test results for year vision loss was reported and birth year cohort by employment status at the first wave of vision loss. There was a significant relationship between these variables and employment status, and the numbers indicate a significant trend of increasing continued employment based on both vision loss year (Cochran-Armitage $Z = -4.74$, $p < .001$) and birth year cohort (Cochran-Armitage $Z = -4.99$, $p < .001$).

Tables 4 and 5 present the financial and job characteristics of people with vision loss by employment status at the first wave of vision loss. As shown in Table 4, people with vision loss who continued working had significantly higher net worth, household income, and personal income than people with vision loss who did not continue working. The differences in pre-vision loss earnings did not reach statistical significance ($p = .06$). There was a significant association between pre-vision loss occupational category and employment status at the first wave of vision loss, χ^2 (4, $N = 163$) = 11.28, $p = .02$. People in Management, Business, Science, & Arts and Sales & Office occupations were more likely to continue working after experiencing vision loss, whereas people in Natural Resources, Construction, & Maintenance and Production, Transportation, & Material Moving occupations were less likely to continue working (Table 5).

Tables 6 and 7 provide descriptive statistics and chi-square or Fisher's exact test results for reasons for retirement and retirement experiences, respectively. Compared to retired people without vision loss, retired people with vision loss were significantly more likely to rate poor health as a very important reason for retirement and wanting to do other things and wanting to spend time with family as unimportant reasons for retirement (Table 6). As shown in Table 7,

there was a significant association between vision loss and retirement choice, satisfaction, and enjoyment. People with vision loss were more likely to feel forced into retirement and to report lower satisfaction and enjoyment with retirement than people without vision loss.

IV. Discussion

In this study, we conducted a secondary analysis of HRS data to explore the impact of experiencing vision loss later in life on employment and retirement. We identified a sample of employed respondents who developed vision loss and a matched comparison sample of employed respondents who did not develop vision loss. Our results indicated that labor force status differed significantly between the two samples. About 60% of people who developed vision loss continued working in the wave in which they first reported vision loss compared to 87% of people who did not develop vision loss, including individuals in both samples who considered themselves partly retired but still worked for pay. Approximately 2 years later, 49% of people with vision loss were working compared to 80% of people without vision loss. These findings are consistent with previous research that documented earlier departures from the labor force for people with vision loss than for people without vision loss (28); however, findings differed regarding the type of departure. Garcia Morales et al. (28) found that people with visual impairment who left the labor force early did so due to disability but not retirement, compared to both retirement and disability in our study. Differences in inclusion criteria and identification of people with visual impairments, which in our study only included workers who recently developed vison loss, may explain this discrepant finding.

Our findings revealed clear job retention differences by year of vision loss: workers who reported vision loss between 1996 and 2006 were unlikely to continue working but the odds of continuing to work increased substantially over the next 12 years. This increase may be

associated with changes within the job market, such as the increase in automation and technology, which resulted in significant decreases in manufacturing jobs, and the rise of a service-oriented and knowledge-based economy (40). In addition, substantial advances in assistive technologies (ATs) for people with visual impairments have occurred since 2006. The particularly high rate of job retention between 2014 and 2018 suggests the importance of these AT advances, as they coincide with a period of exponential growth in AT for people with visual impairments (41). This period also saw a substantial increase in built-in accessibility options in mainstream technology, such as built-in screen readers and screen magnification on all major computer operating systems and smartphones. It is also important to consider the potential effect of the workers' birth cohort on job retention. A clear progression in terms of the likelihood of job retention based on birth year cohort was evident, with people born in earlier periods less likely to continue working, and those born after 1965 very likely to continue working after vision loss. This finding could be associated with the fact that people in more recent birth year cohorts were likely younger when they experienced vision loss than those in earlier cohorts. However, it is relevant to note that a previous study utilizing HRS data did not find age at vision loss to be associated with job retention when considering other factors (42). The finding of generational differences in job retention may also be associated with changing societal views about disability over time (43).

We identified several differences in financial and job characteristics between people with vision loss who did and did not continue working. People who continued working tended to be better off financially, with significantly higher net worth, household income, and personal income than people who stopped working. Their pre-vision loss earnings were higher, although this difference was not statistically significant. These factors may be indicative of higher job

quality among people who continued working (44). Although one might expect people in a better financial situation to retire at the onset of vision loss, various factors may influence their decisions. For example, they may choose to continue working for the social benefits or to minimize risk associated with enrollment in a defined-contribution retirement plan (6).

Employment after vision loss was significantly associated with the broad occupational category of respondents' pre-vision loss jobs. People who held Management, Business, Science, & Arts and Sales & Office jobs were more likely to continue working. Jobs in these categories vary widely, but many involve completing clerical tasks, using computers and office equipment, or interacting with people, and they typically take place in indoor settings such as retail stores, schools, and offices. The occupational categories in which people with vision loss were less likely to continue working (i.e., Production, Transportation, & Material Moving; Natural Resources, Construction, & Maintenance) include jobs with very different work environments, tasks, and requirements. For example, many jobs in these categories involve the operation of heavy machinery; are physically demanding; and take place in factories, warehouses, repair shops, or outdoor settings in adverse weather conditions. Although having a visual impairment does not preclude people from performing most of these jobs, workers and employers may not be aware of the specialized techniques and accommodations that people with vision loss can use to perform the essential job tasks. Some jobs, particularly in the Transportation and Material Moving category, require a driver's license or have vision requirements and may be difficult to accommodate. Furthermore, because Production, Transportation, Material Moving, Natural Resources, Construction, and Maintenance jobs are predominantly held by men (45), these occupational category differences may explain the finding from another study that women had higher odds of continuing to work after experiencing vision loss than men (42).

Retirement decisions and experiences differed significantly between the vision loss and comparison samples. People who developed vision loss were much more likely to report being forced to retire than people without vision loss, and their reasons for retirement differed. People who developed vision loss were also more likely to report poor health and less likely to report wanting to do other things and spending time with family as very important reasons for retiring. We do not know whether they viewed their vision loss, other health conditions or disabilities, or employer pressure to be what forced their retirement, but for a large majority the decision was involuntary. These findings coincide with a study of Canadians with disabilities in which onset of disability at age 55 to 64 years and retiring due to a disability or health condition were strongly associated with involuntary retirement (46). In our study, people who retired from the workforce after developing vision loss were much less satisfied with their retirement and found their retirement years less enjoyable compared to people who did not develop vision loss. Taken together, our findings paint a grim picture of the early retirement years of people who develop vision loss later in life and coincide with Bruce and Baker's finding that most people who retired after vision loss regretted the decision (32).

If vision loss interrupts one's work life before retirement age, the person is unable to properly go through the temporal process of retirement, which includes retirement planning, retirement decision making, and retirement transition and adjustment (47). People who stop working unexpectedly due to vision loss have not had time to plan for retirement and may not be financially secure enough to retire. Research has documented the importance of properly preparing for retirement in terms of both financial and psychological aspects (48,49). Clearly, most people in our vision loss sample did not feel they had a choice in retirement decision making. In addition, newly acquired vision loss may negatively impact one's transition and

adjustment to being a retiree. This adjustment process primarily involves changes in daily activity, with typical new retirees having multiple options for how to spend their recently-found free time (47). For people with newly acquired vision loss, their ability to participate in other activities may be significantly limited (unless they have learned adaptive skills), thus restricting their options for how to fill their free time. These limitations, in addition to the loss of work, that can accompany vision loss may contribute to the dissatisfaction with retirement reported by much of our sample. Inability to adequately plan for, independently decide, and transition into retirement (i.e., complete the temporal process) may explain the poor retirement outcomes for our sample of people who experienced vision loss.

Many people with vision loss who stopped working may have been able to continue working with proper accommodations and training. As documented in research on job retention for people with visual impairments, some people have difficulty retaining employment while adjusting to vision loss (26). These individuals may want to return to the labor force in the future after having time to adapt to their vision loss. However, people with vision loss may be unlikely to return to work, considering that labor force reentry rates are relatively low (i.e., 15% or lower) among retired Americans in the general population (6,50).

a. Limitations

Several limitations of this study should be considered when interpreting the findings. Our strict criteria for identifying HRS respondents who first experienced vision loss while employed resulted in a small sample. The retirement variables, in particular, had a small number of observations because those items were only relevant for individuals who considered themselves retired. The HRS is a national survey and is therefore inherently subject to self-report bias and measurement error. In particular, identification of our vision loss sample relied on self-reported

eyesight, which may not exactly coincide with objective vision assessment but has been shown to be an accurate and stable indicator of vision loss (51). Furthermore, we used data from multiple HRS cohorts, and the number of waves of available data varied by cohort. Some sample members did not have additional waves of data after their first report of vision loss, which limited our ability to investigate their labor force status in the wave after vision loss. Finally, we did not match on education, as we previously determined that education level was not associated with continued employment for workers who developed vision loss (42). Although the vision loss and comparison samples were similar on key demographic variables, differences in education level and other unmeasured variables may have influenced the results in unknown ways. Despite these limitations, this study adds to the literature on employment and retirement for people with later-onset vision loss. Our findings indicate the need for additional research focusing on retirement decisions and experiences of this population. It would be useful to conduct longitudinal research with a larger sample to examine how vision loss may influence retirement transitions over time.

b. Practical Implications

Poverty is more common among people with visual impairments than the general population (52), and our results suggest that many workers who develop vision loss later in life and stop working are the people who most need to continue working to avoid insufficient resources and financial distress. In addition, most people in our study who developed vision loss and retired were unhappy with being out of the labor force. People who develop vision loss at any age need services to help them learn alternative techniques to function with limited or no vision. Services to help people adjust to vision loss, acquire alternative skills and assistive technology, and retain (or obtain) employment are available through state-federal vocational

rehabilitation agencies in every state and nonprofit organizations in many states. While these services are important for people who experience vision loss at any life (or career) stage, they are indispensable for working-age people who likely could continue working if they possessed the necessary skills and received the needed work accommodations. Unfortunately, many people who could benefit from these services are not aware of their availability. Doctors and other health care professionals who work with people who develop vision loss should be knowledgeable about these services and provide information to their patients. Agencies and organizations that provide services to people with visual impairments regularly work with doctors to encourage sharing of their information with patients who could benefit from it, yet many people who experience vision loss do not receive the message.

c. Conclusion

This study adds to the limited literature on the effects of developing a vision loss in midlife. It is the first study to investigate the proximate influence of vision loss on employment and retirement. As expected, developing vision loss in midlife was associated with withdrawal from the labor force, with retirement the most common reason for this withdrawal. However, people who experienced vision loss in more recent years were much more likely to continue working. This was a positive finding of the study, given that the decision to retire was not a positive one for most retirees, potentially related to the involuntariness of the decision and the inability to adequately complete the temporal retirement planning process. Services are available to help people who experience vision loss learn alternative techniques and skills to live successfully with limited vision, but too few people are aware of these free services. Increasing the number of people who are aware of and receive the services may reduce the occurrence of involuntary retirement among workers who develop vision loss and the negative consequences

associated with it.

V. Acknowledgements

The authors would like to thank Lynn Mitchell for her assistance with managing the data for this project and creating coding to identify the vision loss sample.

VI. Funding

The contents of this manuscript were developed under a grant from the U.S. Department of Health and Human Services, NIDILRR grant 90RTEM0007. However, these contents do not necessarily represent the policy of the Department of Health and Human Services and should not indicate endorsement by the Federal Government.

VII. Conflict of Interest

The authors declare they have no conflict of interest.

VIII. References

1. Modini M, Joyce S, Mykletun A, Christensen H, Bryant RA, Mitchell PB, et al. The mental health benefits of employment: Results of a systematic meta-review. Australas Psychiatry. 2016 Aug 1;24(4):331–6.

2. Noordt M van der, IJzelenberg H, Droomers M, Proper KI. Health effects of employment: a systematic review of prospective studies. Occup Environ Med. 2014 Oct 1;71(10):730–6.

3. Congressional Research Service. Retirement trends in the United States, 2000-2022 [Internet]. 2022. Available from: https://crsreports.congress.gov/product/pdf/IN/IN11959

4. Jones JM. Gallup.com. 2022 [cited 2023 Aug 23]. More in u.s. retiring, or planning to retire, later. Available from: https://news.gallup.com/poll/394943/retiring-planning-retire-later.aspx

5. U.S. Bureau of Labor Statistics. Number of people 75 and older in the labor force is expected to grow 96.5 percent by 2030. The Economics Daily [Internet]. 2021 Nov 4 [cited 2023 Aug 23]; Available from: https://www.bls.gov/opub/ted/2021/number-of-people-75-and-older-in-the-labor-force-is-expected-to-grow-96-5-percent-by-2030.htm

6. Cahill KE, Quinn JF. The importance of gradual retirement in america today. Public Policy Aging Rep. 2020 Aug 10;30(3):107–12.

7. Crudden A, McDonnall M, Tatch A. Unable to work? Characteristics of people with blindness and low vision who are out of the labor force. Disabil Health J. 2023;16(3):Article e101438.

8. McDonnall MC, McKnight ZS. The association between presenting visual impairment, health, and employment status. J Vis Impair Blind. 2021;115(3):204–14.

9. 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):481–92.

10. U.S. Census Bureau. 2022 American Community Survey 1-year estimates: Sex by age by vision difficulty, Table C18103 [Internet]. 2023 [cited 2023 Oct 10]. Available from: https://data.census.gov/table/ACSDT1Y2022.C18103?q=prevalence+vision+difficulty

11. Flaxman AD, Wittenborn JS, Robalik T, Gulia R, Gerzoff RB, Lundeen EA, et al. Prevalence of visual acuity loss or blindness in the US: A Bayesian meta-analysis. JAMA Ophthalmol. 2021;139(7):717–23.

12. Centers for Disease Control and Prevention. Common Eye Disorders and Diseases [Internet]. 2023 [cited 2024 Feb 21]. Available from: https://www.cdc.gov/visionhealth/basics/ced/index.html

13. Infurna FJ, Wiest M. The effect of disability onset across the adult life span. J Gerontol Ser B. 2018 Jun 14;73(5):755–66.

14. Pagán-Rodríguez R. Longitudinal Analysis of the Domains of Satisfaction Before and After Disability: Evidence from the German Socio-Economic Panel. Soc Indic Res. 2012 Sep 1;108(3):365–85.

15. Chang M, Phillips C, Coppin AK, van der Linden M, Ferrucci L, Fried L, et al. An association between incident disability and depressive symptoms over 3 years of follow-up among older women: the Women's Health and Aging Study. Aging Clin Exp Res. 2009 Apr;21(2):191–7.

16. Freedman VA, Cornman JC, Carr D, Lucas RE. Late life disability and experienced wellbeing: Are economic resources a buffer? Disabil Health J. 2019 Jul 1;12(3):481–8.

17. Choi S. Midlife adults with functional limitations: Comparison of adults with early- and late-onset arthritis-related disability. Disabil Health J. 2018 Jul 1;11(3):374–81.

18. Alma MA, van der Mei SF, Melis-Dankers BJM, van Tilburg TG, Groothoff JW, Suurmeijer TPBM. Participation of the elderly after vision loss. Disabil Rehabil. 2011 Jan 1;33(1):63–72.

19. Brown RL, Barrett AE. Visual impairment and quality of life among older adults: an examination of explanations for the relationship. J Gerontol Ser B. 2011 May 1;66B(3):364–73.

20. Cimarolli VR, Boerner K, Brennan-Ing M, Reinhardt JP, Horowitz A. Challenges faced by older adults with vision loss: a qualitative study with implications for rehabilitation. Clin Rehabil. 2012 Aug 1;26(8):748–57.

21. Reed-Jones RJ, Solis GR, Lawson KA, Loya AM, Cude-Islas D, Berger CS. Vision and falls: A multidisciplinary review of the contributions of visual impairment to falls among older adults. Maturitas. 2013 May 1;75(1):22–8.

22. Boerner K. Adaptation to disability among middle-aged and older adults: the role of assimilative and accommodative coping. J Gerontol Ser B. 2004 Jan 1;59(1):P35–42.

23. Boerner K, Wang SW. How it matters when it happens: life changes related to functional loss in younger and older adults. Int J Aging Hum Dev. 2010 Mar 1;70(2):163–79.

24. Popivker L, Wang S wen, Boerner K. Eyes on the prize: life goals in the context of visual disability in midlife. Clin Rehabil. 2010 Dec 1;24(12):1127–35.

25. Crudden A. Employment after vision loss: Results of a collective case study. J Vis Impair Blind. 2002;96(9):615–21.

26. Crudden A, Steverson AC. Job retention and career advancement: A survey of persons who are blind or have low vision. J Rehabil. 2021;87(2):28–35.

27. 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.

28. Garcia Morales EE, Powel DS, Gray A, Assi L, Reed NS. Sensory loss and its association with different types of departures from the labor force among older adults in the US. Wang M, editor. Work Aging Retire [Internet]. 2023 Apr; Available from: https://academic.oup.com/workar/advance-article/doi/10.1093/workar/waad010/7111182

29. Mojon-Azzi SM, Sousa-Poza A, Mojon DS. Impact of low vision on employment. Ophthalmologica. 2010;224(6):381–8.

30. Gopinath B, Liew G, Burlutsky G, McMahon CM, Mitchell P. Visual and hearing impairment and retirement in older adults: A population-based cohort study. Maturitas. 2017 Jun 1;100:77–81.

31. Chai YX, Gan ATL, Fenwick EK, Sui AY, Tan BKJ, Quek DQY, et al. Relationship between vision impairment and employment. Br J Ophthalmol. 2023 Mar 1;107(3):361–6.

32. Bruce I, Baker M. Segmenting and targeting employed and unemployed people with sight problems. Int Congr Ser. 2005 Sep;1282:1125–9.

33. 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 Sep;70(9):917–23.

34. Bamia C, Trichopoulou A, Trichopoulos D. Age at retirement and mortality in a general population sample: The Greek EPIC study. Am J Epidemiol. 2008 Mar 1;167(5):561–9.

35. Carlsson S, Andersson T, Michaëlsson K, Vågerö D, Ahlbom A. Late retirement is not associated with increased mortality, results based on all Swedish retirements 1991–2007. Eur J Epidemiol. 2012 Jun 1;27(6):483–6.

36. Wu AY, Hyde JS. The postretirement well-being of workers with disabilities. J Disabil Policy Stud. 2019 Jun 1;30(1):46–55.

37. Bugliari D, Carroll J, Hayden O, Hayes J, Hurd MD, Karabatakis A, et al. RAND HRS Longitudinal File 2018 (V2) Documentation [Internet]. RAND Corporation; 2022 [cited 2023 Oct 25]. Available from: https://www.rand.org/pubs/tools/TLA2097-1.html

38. Sloan FA, Ostermann J, Brown DS, Lee PP. Effects of changes in self-reported vision on cognitive, affective, and functional status and living arrangements among the elderly. Am J Ophthalmol. 2005 Oct 1;140(4):618.e1-618.e12.

39. Shakarchi A, Morales EG, Reed N, Swenor B, Hopkins 1 Johns, Varadaraj V, et al. The association of sensory impairment with incident disability-related cessation of employment in older adults. In: Innovation in Aging [Internet]. Oxford Academic; 2020 [cited 2022 Sep

14]. p. 216–216. Available from: https://academic.oup.com/innovateage/article/4/Supplement_1/216/6036044

40. Parker K, Rainie L, Kochhar R, Rohal M. The state of American jobs [Internet]. 2016. Available from: https://www.pewresearch.org/social-trends/2016/10/06/1-changes-in-the-american-workplace/

41. Bhowmick A, Hazarika SM. An insight into assistive technology for the visually impaired and blind people: State-of-the-art and future trends. J Multimodal User Interfaces. 2017 Jun 1;11(2):149–72.

42. Cmar JL, McDonnall MC, Mitchell GL. Predictors of job retention after onset of visual impairment in late middle age [Internet]. 2024 [cited 2024 Apr 5]. Available from: https://journals.sagepub.com/doi/epdf/10.1177/08982643241244963

43. Marini I. The history of treatment toward people with disabilities. In: Psychosocial Aspects of Disability [Internet]. 2nd ed. Springer Publishing Company; 2017 [cited 2023 Nov 20]. Available from: https://connect.springerpub.com/content/book/978-0-8261-8063-6/part/part01/chapter/ch01

44. Andrea SB, Eisenberg-Guyot J, Oddo VM, Peckham T, Jacoby D, Hajat A. Beyond hours worked and dollars earned: Multidimensional EQ, retirement trajectories and health in later life. Work Aging Retire. 2022;8(1):51–73.

45. U.S. Bureau of Labor Statistics. Labor force statistics from the Current Population Survey: Employed persons by detailed occupation, sex, race, and Hispanic or Latino ethnicity [Internet]. Washington, DC; 2022. Available from: https://www.bls.gov/cps/cpsaat11.htm

46. Denton M, Plenderleith J, Chowhan J. Health and disability as determinants for involuntary retirement of people with disabilities. Can J Aging Rev Can Vieil. 2013 Jun;32(2):159–72.

47. Wang M, Shi J. Psychological research on retirement. Annu Rev Psychol. 2014;65(1):209–33.

48. Hershey DA, Jacobs-Lawson JM, Austin JT. Effective Financial Planning for Retirement. In: Wang M, editor. The Oxford Handbook of Retirement [Internet]. Oxford University Press; 2012 [cited 2023 Oct 12]. p. 0. Available from: https://doi.org/10.1093/oxfordhb/9780199746521.013.0133

49. Noone JH, Stephens C, Alpass FM. Preretirement planning and well-being in later life: a prospective study. Res Aging. 2009 May 1;31(3):295–317.

50. Cahill KE, Giandrea MD, Quinn JF. Retirement patterns and the macroeconomy, 1992–2010: The prevalence and determinants of bridge jobs, phased retirement, and reentry among three recent cohorts of older Americans. The Gerontologist. 2015 Jun;55(3):384–403.

51. Wittenborn J, Lee A, Lundeen EA, Lamuda P, Saaddine J, Su GL, et al. Comparing telephone survey responses to best-corrected visual acuity to estimate the accuracy of identifying vision loss: Validation study. JMIR Public Health Surveill. 2023 Mar 7;9:e44552.

52. Ko F, Vitale S, Chou CF, Cotch MF, Saaddine J, Friedman DS. Prevalence of nonrefractive visual impairment in us adults and associated risk factors, 1999-2002 and 2005-2008. JAMA. 2012 Dec 12;308(22):2361–8.

Table 1

Demographic Characteristics of the Samples

Variable	Vision loss (N = 167)		No vision loss (N = 800)	
	n	%	*n*	%
Age (*M*, *SD*)	57.32[a]	3.98	57.26[b]	4.04
Gender				
Male	80	47.9	383	47.9
Female	87	52.1	417	52.1
Race				
White/Caucasian	99	59.3	491	61.4
Black/African American	37	22.2	163	20.4
Other	30	18.0	142	17.8
Not reported	1	0.6	4	0.5
Ethnicity				
Not Hispanic	122	73.1	582	72.8
Hispanic	45	27.0	217	27.1
Not reported	0	0.0	1	0.1
Education level				
Less than high school	48	28.7	112	14.0
High school graduate or GED	64	38.3	250	31.3
Some college	36	21.6	220	27.5
College and above	19	11.4	218	27.3

Birth year cohort				
Original HRS cohort	34	20.4	159	19.9
War Babies	16	9.6	87	10.9
Early Baby Boomers	28	16.8	135	16.9
Mid Baby Boomers	45	27.0	211	26.4
Late Baby Boomers	37	22.2	178	22.3
Born after 1965	7	4.2	30	3.8

Note. HRS = Health and Retirement Study.

[a] At first report of vision loss; range 44–64 years. [b] At comparison time; range 41–66 years.

Table 2

Labor Force Status by Vision Loss at Two Time Points

Category	Vision loss		No vision loss	
	n	%	*n*	%
At first report of vision loss[a]				
Working	94	56.3	650	81.3
Unemployed	6	3.6	31	3.9
Partly retired[b]	7	4.2	49	6.1
Retired	41	24.6	50	6.3
Disabled	10	6.0	9	1.1
Not in the labor force	9	5.4	11	1.4
At wave after first report of vision loss (2 years later)[c]				
Working	42	43.8	411	74.2
Unemployed	7	7.3	14	2.5
Partly retired	5	5.2	33	6.0
Retired	32	33.3	86	15.5
Disabled	8	8.3	2	0.4
Not in the labor force	2	2.1	8	1.4

[a] $N = 967$. [b] Included in "working" category for subsequent analyses. [c] $N = 650$.

Table 3

Post-Vision Loss Employment Status by Year of Vision Loss and Birth Year Cohort

Variable	Working (n = 101)		Not working (n = 66)		$\chi^2(3)$	p
	n	%	n	%		
Year vision loss reported					26.47	<.001
1996–2000	14	38.9	22	61.1		
2002–2006	8	38.1	13	61.9		
2008–2012	14	48.3	15	51.7		
2014–2018	65	80.3	16	19.8		
Birth year cohort					26.14	<.001
Original HRS	9	26.5	25	73.5		
War Babies	8	50.0	8	50.0		
Early Baby Boomers	17	60.7	11	39.3		
Mid Baby Boomers	32	71.1	13	28.9		
Late Baby Boomers	29	78.4	8	21.6		
Born after 1965	6	85.7	1	14.3		

Note. HRS = Health and Retirement Study.

Table 4

Financial and Job Characteristics by Post-Vision Loss Employment Status

Variable	Working (*n* = 101)			Not working (*n* = 66)			Difference		
	M	*SD*	*Mdn*	*M*	*SD*	*Mdn*	df	*t*	*p*
Net worth[a]	217,459	662,053	48,479	65,254	248,164	13,015	138	-2.1	.038
Household income[a]	63,220	57,530	53,580	34,770	33,531	25,880	163	-4.03	<.001
Personal income[a]	31,916	31,094	24,239	17,279	23,645	10,005	161	-3.45	.001
Current job tenure[bc]	8.86	8.37	7	7.30	9.29	4	160	-1.11	.267
Job years[b]	21.89	12.31	20	25.29	13.59	24	165	1.67	.096
Earnings[b]	29,776	27,270	25,203	21,894	23,737	15,270	165	-1.92	.057

[a] Measured at first report of vision loss and adjusted to 2018 dollars. [b] Measured at wave before first report of vision loss; earnings adjusted to 2016 dollars. [c] Missing data for five respondents.

Table 5

Pre-Vision Loss Occupational Categories by Post-Vision Loss Employment Status

Category	Working (n = 99)		Not working (n = 64)	
	n	%	*n*	%
1. Management, Business, Science, & Arts	18	64.3	10	35.7
2. Service	32	60.4	21	39.6
3. Sales & Office	25	83.3	5	16.7
4. Natural Resources, Construction, & Maintenance	12	48.0	13	52.0
5. Production, Transportation, & Material Moving	12	44.4	15	55.6

Table 6

Reasons for Retirement by Vision Loss

Reason	Vision loss (n = 40)		No vision loss (n = 83)		$\chi^2(3)$	p
	n	%	n	%		
Poor health					N/A[a]	<.001
Very important	33	82.5	22	26.5		
Moderately important	2	5.0	7	8.4		
Somewhat important	3	7.5	9	10.8		
Not at all important	2	5.0	45	54.2		
Wanted to do other things[b]					10.92	.012
Very important	5	12.5	28	34.2		
Moderately important	3	7.5	14	17.1		
Somewhat important	5	12.5	7	8.5		
Not at all important	27	67.5	33	40.2		
Didn’t like the work					N/A[a]	.824
Very important	2	5.0	6	7.2		
Moderately important	2	5.0	8	9.6		
Somewhat important	5	12.5	11	13.3		
Not at all important	31	77.5	58	69.9		
Wanted to spend more time with family					N/A[a]	.001
Very important	6	15.0	38	45.8		
Moderately important	3	7.5	10	12.1		

Somewhat important	6	15.0	4	4.8
Not at all important	25	62.5	31	37.4

[a] Used Fisher's exact test due to expected frequencies of less than 5 in more than 20% of cells.

[b] $n = 82$ for no vision loss group.

Table 7

Retirement Experiences by Vision Loss

Variable	Vision loss		No vision loss		$\chi^2(2)$	*p*
	n	%	*n*	%		
Retirement choice[a]					N/A[b]	<.001
Wanted to do	9	17.0	61	62.2		
Forced into	42	79.3	35	35.7		
Part wanted, part forced	2	3.8	2	2.0		
Retirement satisfaction[c]					37.38	<.001
Very satisfying	10	21.7	53	52.0		
Moderately satisfying	12	26.1	41	40.2		
Not at all satisfying	24	52.2	8	7.8		
Retirement enjoyment[d]					34.32	<.001
Better	9	22.0	59	62.1		
About the same	8	19.5	25	26.3		
Not as good	24	58.5	11	11.6		

[a] $n = 151$. [b] Used Fisher's exact test due to expected frequencies of less than 5 in more than 20% of cells. [c] $n = 148$. [d] $n = 136$.