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Delayed Mobility and Retirement:

Final Report

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16. Abstract This report examines whether being more mobile is associated with decisions by older people to remain in the active work force after normal retirement age. Mobility includes having access to and the capacity to drive cars and being transit accessible or being able to walk to work or work at home. The report presents findings in three sections and concludes, based on research conducted thus far, that there are indications of causal associations between mobility and delayed retirement. The report includes a review of the literature linking mobility, travel by the elderly, and retirement decision making. Following the review of the literature is quantitative analysis of data from the California Household Travel Survey, including mathematical models of relationships between mobility and the propensity of older Californians to remain in the active work force. The final component of the research findings is a summary of the results of qualitative research consisting of focus groups and interviews. While the findings are not conclusive they show relationships which indicate that further research, particularly using longitudinal rather than cross sectional data, are warranted. After presenting findings, the report concludes with recommendations for further research.			
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TABLE OF CONTENTS

Contents

Executive Summary	7
Background and Motivation	9
Overview of the Report	11
Review of the Literature	12
Introduction	12
History of Retirement in the U.S.....	12
Population Trends among Older Adults.....	13
Government Programs and Regulations.....	13
Pension Coverage.....	14
Health Insurance	14
Health Status.....	15
Employment Type and Educational Attainment.....	15
Gender	16
Relationship Status	18
Earnings and Wealth	18
Job Tenure.....	19
Unions	19
Personal Fulfillment	19
Retirement in Stages.....	20
Travel in Retirement	20
Driving, Work Trips, and Age	21
Licensure and Aging.....	22
Vehicle Availability and Wellbeing.....	23
Transit Travel and Walking	24
Use of Door-to-Door Services	25
Conclusion.....	25
Analysis of Older Adults, Employment, and Travel	27
Older Adults, Labor Force Participation, and Cars in California	27

Demographic Characteristics	29
Employment Characteristics	31
Reported Travel Behavior	32
Multivariate Statistical Analysis – Research Design	34
Findings	35
Cars, Transit, and Employment: Propensity Matching Results.....	36
Conclusion: Physical Accessibility and Employment Outcomes	41
Focus Groups and Interviews	42
Conclusions and Proposed Further Research	45
References	47

List of Figures

Figure 1 Workforce Participation Rates of Men Ages 55-64 and 65 and Over, 1880-2013	12
Figure 2 Share of Working Older Americans	16
Figure 3 Time of Day Pattern for Workers' Commutes	22
Figure 4 Older Adults (60+): Percent of Labor Force and Labor Force Participation Rate, California 1920-2017.....	28
Figure 5 Labor Force Participation Rate and Auto Ownership by Age, California 2017 (ACS)...	29
Figure 6 Sex Composition: Working Young Adults, Working Older Adults, Non-Working Older Adults.....	30
Figure 7 Racial and Ethnic Composition: Working Young Adults, Working Older Adults, Non-Working Older Adults	31
Figure 8 Disability Status	32
Figure 9 Top Five Occupations by Worker Group	33
Figure 10 Percentage of Trips by Mode	33
Figure 11 Average Miles – Trips, Personal Miles Traveled (PMT), Vehicle Miles Traveled (VMT)	34

List of Tables

Table 1 Descriptive Statistics by Employment Status	37
Table 2 Determinants of Employment -- Effects of Auto Ownership	39
Table 3 Determinants of Employment: Effect of Living in a Neighborhoods with High Job Access by Transit.....	40

Delayed Retirement and Mobility:

Final Report

Executive Summary

This study explored whether there is a relationship in California between mobility and the propensity of citizens to delay retirement by remaining in the paid labor force past the age of 60. We used as measures of mobility access to an automobile, the physical ability to drive, living in transit-accessible locations or proximate to business centers, and working from home. This is an important question because the workforce in California is aging faster than the population as a whole, an increasing proportion of elderly people are continuing to work beyond what in earlier decades were typical retirement ages, and there has been little prior research into the role of mobility in decisions to continue working later in life.

Controlling for known determinants of employment status such as education, gender, and income levels, we used the 2010-2012 California Household Travel Survey (CHTS) and propensity matching to estimate the statistical association between seniors' participation in the paid labor force and their ability to travel between home and work. To the extent permitted by the available data, we explored whether older adults who continue to work are those living closer to jobs and transit routes and thus are able to drive or travel by public transit to a greater extent than those who have retired. Changes over time were explored in a preliminary way by comparing the most recent CHTS with the previous survey.

The analysis showed that transportation access has a substantial and positive association with the employment rates of older adults, particularly those living in low-income households (those earning less than \$35,000 per year). Access to jobs by public transit was found to be especially influential among low-income older adults living in households without automobiles.

The statistical associations reported in this study are indicative of relationships between mobility and retirement, but they do not tell the whole story because it is difficult to disentangle cause from effect. Do people continue to drive or live near transit so that they can go to work or do they continue to go to work because they are able to drive or use public transit? To begin exploring subtle causal relationships, we also conducted a small number of focus groups and interviews of older workers and recent retirees. These complemented the statistical findings with insights from qualitative descriptions of personal decision making about work, residence, and commuting. Our findings from the focus groups and interviews underscore the multifaceted role that health plays in mediating transportation and work decisions. Policies that seek to improve transport options among older adults must therefore consider the distinct role that health plays in precluding older adults from working.

In combination, the results of the quantitative and qualitative analysis produced interesting results. However, the study was limited by reliance on cross-sectional travel survey data. Cross-sectional data allow comparisons among different people at one point in time but did not permit research into changes that take place over time in each person's circumstances. The small number of focus groups and interviews could only suggest the nature of such changes over time, but they did indicate that such changes are likely to influence choices about employment.

Further research is needed to more fully comprehend subtle relationships between work, retirement, and mobility. Our conclusions indicate that such analysis, particularly longitudinal studies, could be fruitful and are worthy of undertaking. A better understanding of the relationship between transportation and employment outcomes requires more detailed knowledge of individuals as well as changes in their behavior over longer periods of time. Further analysis on this topic should draw on longitudinal data that follows individuals over time, tracking the timing of events, in this case the specific timing of retirement decisions in relation to driving cessation, household moves, and in particular, whether older adults are able to prolong their work lives if they relocate to transit-rich neighborhoods.

Introduction

This study explores whether there is a relationship in California between mobility and the propensity of citizens to delay retirement by remaining in the paid labor force past the age of 60. We use as measures of mobility access to an automobile, the physical ability to drive, living in transit-accessible locations or proximate to business centers, and working from home.

The population of California is aging as life expectancy increases and birth rates decline. Projections from the California Department of Finance (2018) show that by 2030, the number of seniors in California will increase to 11.5 million, more than a quarter of the state population. The work force is aging even faster than the state population ages. Many older people delay retirement either because they enjoy working or depend upon earned income to meet their needs. The share of employed Americans who are older than age 55 has climbed to over 22 percent of the labor force and is projected to increase to almost 25 percent by 2026 (Employment Projections Program, 2017).

Controlling for known determinants of employment status such as education, gender, and income levels, we used the 2010-2012 California Household Travel Survey (CHTS) to estimate the statistical association between seniors' participation in the paid labor force and their ability to travel between home and work. To the extent permitted by the available data, we explored whether the elderly who continue to work are those living closer to jobs and transit routes and thus are able to drive or travel by public transit to a greater extent than those who have retired. Changes over time were explored in a preliminary way by comparing the most recent CHTS with the previous survey.

The statistical associations reported in this study are indicative of relationships between mobility and retirement, but they do not tell the whole story because it is difficult to disentangle cause from effect. Do people continue to drive or live near transit so that they can go to work or do they continue to go to work because they are able to drive or use public transit? To begin exploring subtle causal relationships, we also conducted a small number of interviews and focus groups of older workers and recent retirees. These complemented the statistical findings with insights from qualitative descriptions of personal decision making about work, residence, and commuting. In combination, the results of the quantitative and qualitative analysis produced interesting outcomes that we consider promising. Further research will be needed to more fully comprehend subtle relationships between work, retirement and mobility and our conclusions indicate that such analysis, particularly longitudinal studies, could be fruitful and are worthy of undertaking.

Background and Motivation

With the aging of the Baby Boomer generation, seniors—those 60 years and older—comprise the most rapidly growing population group. Projections from the U.S. Census Bureau show that by 2030, the number of seniors in California will increase to 10.6 million, almost a quarter of the state's population. There is also increasing evidence that older people are remaining in the

paid workforce longer than in previous decades. Labor force participation of seniors 60 years and older has increased significantly since 1983 for both men and women such that, as of 2013, the average retirement age was approximately 64 for men and 62 for women (Munnell, 2015). Survey research shows that Americans now expect to work longer than in previous years. The percentage of workers who expect to work until at least age 65 increased from 14 percent in 1991 to 33 percent in 2010 (Helman et al., 2010).

Increased participation in the labor force by the elderly is undoubtedly one of several factors explaining the dramatic recent increase in travel by the elderly, especially travel in automobiles. Daily person miles of travel (PMT) among seniors older than 65 increased by a remarkable 159 percent from 1983 to 2017, a growth rate significantly faster than for other age groups (Federal Highway Administration, 2018). Seniors also experienced similarly large percentage increases in vehicle miles traveled (VMT) over this same time period (Federal Highway Administration, 2018).

Delayed retirement is an increasingly studied topic, but the role of physical accessibility has not been studied as much as other aspects of delayed retirement. Researchers find that workforce decisions are influenced by increasing satisfaction with longer careers and by financial need in a structural environment in which work disincentives (e.g. mandatory retirement requirements and Social Security income disincentives) have eased over time (R. W. Johnson & Kaminski, 2010; Munnell, 2015; Toder, Johnson, Mermin, & Lei, 2008). Other contributing factors include improved health and greater longevity, increased educational attainment, and a shift toward less physically-demanding jobs.

In addition to these other important factors, we hypothesize that the ability to travel may significantly influence labor force participation by seniors, just as it does for other age groups. Put another way, holding other factors constant, physical accessibility to jobs may increase the likelihood of seniors remaining in the work force. We define transportation access to jobs in terms of having access to an automobile, the physical ability to drive, living in transit-accessible locations or proximate to business centers, and being employed at home. We are not aware that any evidence has been assembled prior to this study to explore the role of mobility in delayed retirement. The ability to travel and to access essential destinations, such as employment, may be compromised for seniors who, as they age, can experience increased physical and economic challenges that hinder their mobility. Studies show that seniors tend to age in place, often in suburban neighborhoods (Frey, 2007; Wachs, 1979) with limited transit options and longer driving distances. For these seniors, losing the ability to drive may jeopardize their ability to remain employed. Many seniors who do not drive depend on others for rides (Rosenbloom, 2009). Sharing rides with others may be difficult to arrange for the daily commute, which might explain why seniors who are drivers make almost 90 percent more trips by car than non-drivers (Rosenbloom, 2009).

While not addressing older workers specifically, a growing number of studies shows a positive relationship between access to transportation—automobiles and public transit—and labor force participation (Ong, 2002; Ong & Houston, 2002; Raphael & Rice, 2002; Sanchez, 1999).

Many of these studies focus on employment outcomes for low-income adults, those least likely to have the resources to purchase automobiles. It seems reasonable to assume that relationships among access and employment observed in younger cohorts would also be relevant to older workers.

While not considering mobility, the literature shows that, for seniors, working has a positive effect on physical and mental health and life satisfaction (Quinn, Cahill, & Glandrea, 2011). Delayed retirement also yields significant financial advantages such as additional earnings as well as higher Social Security benefits when claims are deferred (Quinn et al., 2011). The financial gains associated with continued work may be particularly important to low-income seniors. Income inequality is higher among seniors than the younger working-age population. Fifty-five percent of seniors are in the bottom two income quintiles compared to only 35 percent of younger working-age adults (Quinn et al., 2011). Seniors in the bottom two income quintiles are also more likely than higher-income households to rely almost exclusively on Social Security income.¹ We hypothesize that there may be a causal relationship between mobility and delayed retirement by combining insights drawn from research that links mobility to employment but not aging with insights drawn from research that links aging to employment but not mobility.

Overview of the Report

This report presents our findings in three sections and concludes, based on research conducted thus far, that there are promising indications of causal associations between mobility and delayed retirement. The next section presents a review of the literature linking mobility, travel by the elderly, and retirement decision making. Following the review of the literature, we present the quantitative analysis of the CHTS. The final component of the research findings is a summary of the results of the qualitative research consisting of focus groups and interviews. While the findings are not conclusive they show relationships which indicate that further research, particularly using longitudinal rather than cross sectional data, are warranted. After presenting our findings, the report concludes with recommendations for further research.

¹ On average, persons 65 year or older in the bottom two income quintiles receive between 79 and 85 percent of their income from Social Security. In contrast, Social Security comprises only 24 percent of the income for seniors in the top income quintile who are more likely to receive income streams from other sources including work (http://www.ssa.gov/policy/docs/statcomps/income_pop55/2010/sect09.html#table9.b6).

Review of the Literature

Introduction

Numerous factors explain the continued growth in delayed retirement. Structural changes, such as increased female participation in the workforce and higher levels of education among baby boomers, as well as longer life expectancy and higher incomes, explain a rise in delayed retirement among wealthier Americans. In addition to personal preference, retirement decisions are also influenced by income and wealth, access to health care, employment opportunities, and health status, each of which varies by gender, race and ethnicity, marital status, income bracket, and industrial sector.

History of Retirement in the U.S.

From the end of the 19th century through the 1980s, workforce activity among older adults declined due to periodic changes in both government and employer benefits. This long decline is illustrated in Figure 1. In the 1880s, the rate of retirement among older men increased due to old-age pensions accrued to Civil War veterans (Munnell, 2015). Following generations continued to leave the workforce earlier, as a result of higher incomes and discrimination against older workers by employers. The second major drop in workforce participation among older men occurred after the Second World War with the expansion of welfare programs for older adults. Specifically, Social Security benefits increased and employer-based pension funds became increasingly common. The last decline in workforce participation was due to the introduction of Medicare in 1965 and a significant increase in Social Security benefits in 1972 (Munnell, 2015). Figure 1 also shows the change in this long-term trend that occurred in the 1980s as older adults began to delay retirement for reasons outlined in the following sections.

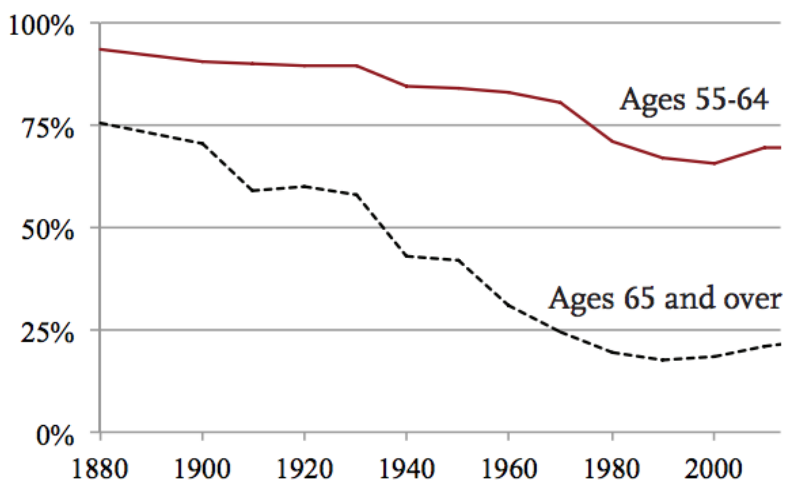


Figure 1 Workforce Participation Rates of Men Ages 55-64 and 65 and Over, 1880-2013 (Munnell, 2015)

Population Trends among Older Adults

The population of older adults increased dramatically at the end of the 20th century. Between 1990 and 2010, the population of people over 65 grew by 9.2 million people, constituting a 30 percent increase (Polzin, Pisarski, Spear, Long, & McGuckin, 2015). The proportion of the nation's population comprised of older adults over the age of 65 increased during those two decades from 11.2 percent to 15 percent.

The workforce also is getting older. In 2006, 18 percent of men and 10 percent of women older than 65 were working (S. McGuckin, McGuckin, & Murakami, 2006). As the Baby Boomer generation nears retirement age, it is predicted that they will continue to work later in life, just as they delayed other major life events (S. McGuckin, McGuckin, & Murakami, 2006). As of 2010, 6 million adults over the age of 65 were in the workforce, and it is projected that in 2030, that working population will swell to 15 million (Polzin et al., 2015). In part, the increase in working older adults results from the size of the Baby Boomer generation. However, many other factors also explain the increase in proportion of people who choose to delay retirement, such as changes in pension and social welfare, employment type, and health outcomes.

Government Programs and Regulations

Social Security reforms ended important disincentives to delay retirement. Until the 1980s, the present discounted value of expected Social Security benefits declined for older adults who delayed retirement (Quinn, 2010). While the benefits per year that people received were higher if they worked past the full-benefit age, the total benefits were greater for people who did not delay retirement. In deciding whether to retire, workers needed to calculate whether the size of their paycheck would compensate for the reduction in annual Social Security payments.

Three specific reforms to Social Security encouraged more people to delay retirement (Carnevale, Hanson, & Artem Gulish, 2013). First, in 1983 the full-benefit age increased from 65 to 67, effectively cutting Social Security benefits over a person's lifetime. Second, the disincentive to claiming full benefits after the full-benefit age was eliminated. Third, an "earnings test," which discouraged delaying retirement by placing a cap on the benefits after the full-benefit age, was eliminated.

Long-term changes in gender roles have also influenced people's decisions regarding when to claim Social Security benefits. Spouses are allowed to collect 50 percent of their partner's Social Security benefits after the death of their spouse. As it became more common for women to spend longer parts of their prime-age adult years in the workforce, fewer older women are now in a position where they must rely on their husband's Social Security benefits. Instead, it is economical for many women to delay retirement in order to increase the benefits associated with their own employment.

The end of mandatory retirement removed an important barrier to delayed retirement. Prior to 1986, employers could legally require employees to leave their position once they reached a certain age (usually 65). In the early 1970s, nearly half the workforce was subject to mandatory retirement rules (Quinn et al., 2011). While mandatory requirements did not preclude older adults from seeking other positions elsewhere, it was rare for an older adult to find similar employment. In the 1980s, as civil rights issues began to include age, gender and disability, Congress outlawed age-based discrimination and older adults could decide for themselves when to enter into retirement. Fewer older adults claim to face age discrimination today, and many older adults may be viewed particularly favorably by their employers (Uccello, 1998). However, while they may face less overt age discrimination, older adults do have fewer employment options compared to younger adults, in large part because they have fewer technological skills and may contend with physical limitations (Uccello, 1998).

Pension Coverage

With mandatory retirement outlawed, older adults face a different set of retirement incentives and disincentives from their employers. A shift from defined benefit plans to defined contribution plans has encouraged older adults to work longer. Defined benefits plans ensure that workers at a certain age receive a steady stream of pension payments for the duration of their lives. Defined contribution plans, such as a 401(k), are age-neutral; workers accumulate an amount of money that will fund their retirement. Whereas defined benefit plans discourage workers from working past retirement age, defined contribution plans encourage older adults who want to increase their retirement savings to delay retirement (Carnevale et al., 2013).

Health Insurance

A further disincentive to retiring early is a reduction in post-retirement health insurance benefits. Employer-based health insurance policies that offer coverage to retirees, such as mandated continuation coverage, encourage older adults to retire early (Uccello, 1998). Today, fewer employers offer health insurance for retirees. Between 1997 and 2004, workers in the private sector who enjoyed health insurance benefits in retirement dropped from 31 to 21 percent (Quinn et al., 2011). Retirees who do have employer-based health insurance often must pay more of the premiums themselves (Quinn, 2010). It is unsurprising, therefore, that retirees whose access to health insurance depends on their employment are much less likely to retire (Uccello, 1998). As older adults face higher risks of major health expenses, and given the increasing cost of health care, health insurance is often an important factor when deciding whether to retire (Munnell, 2015). McGuckin (2011) finds that 39 percent of adults over the age of 50 are very concerned that they cannot afford to pay for healthcare in retirement). Workers whose health insurance is tied to employment are more likely to delay retirement until they qualify for Medicare at age 65.

Disability insurance is another important consideration for older adults with health conditions who would like to retire. Social Security Disability Insurance provides older adults access to

health insurance before they reach 65 (the age at which Medicare is available). However, due to strict eligibility requirements, many older adults who struggle with declining health cannot access Social Security Disability Insurance (Uccello, 1998). The timing of disability also matters; older adults whose health recently worsened are more likely to retire than older adults who have faced health issues for an extended period of time (Uccello, 1998). Disability may not be a permanent condition, however, and older adults may transition between working and retirement based on their health status (S. McGuckin et al., 2006).

Health Status

Health and disability can be important influences on decisions about retirement. Older Americans are healthier and living longer than ever before. Between 1940 and 2010, life expectancy for women at age 65 increased from 15 years to 21 years, and for men it increased from 13 years to 19 years (Carnevale et al., 2013). Further, disability rates among older adults have been declining for decades, due to improved nutrition and health care and increased education and income (Rosenbloom, 2003). In a 1996 study, three-quarters of older adults claimed to be in “good to excellent” health (Rosenbloom, 2003). Today, older adults likely will remain healthy for a greater proportion of their lives than in previous generations.

The great majority of older adults are in good health, and have no medical condition that prevents them from working (Uccello, 1998). Health is certainly necessary for prolonged activity in the workforce. Dave et al. (2006, 2008) find that, all else equal, worsened physical and mental health is correlated with leaving the workforce. On average, retirees are in poorer health than working older adults (Uccello, 1998). However, health status varies among older adults by gender and by race. People of color and women are more likely than other groups to report having a disability or serious health condition (Rosenbloom, 2003). Whereas 26 percent of white older adults in 2000 reported having “fair to poor health,” 40 percent of black older adults and 34 percent of Hispanic older adults reported having health problems (Rosenbloom, 2003).

Employment Type and Educational Attainment

Older adults are increasingly better educated and more likely to work in fields that are not physically strenuous. The trend away from physically-demanding jobs allows older adults to delay retirement (Uccello, 1998). Older adults engaged in arduous employment are more likely to retire earlier than older adults in less physically-demanding work (Uccello, 1998). Uccello (1998) finds that a disproportionate share of retired older adults were employed in manufacturing, agriculture, mining, transportation industries, and construction.

Today, more educated older adults are able to extend their working lives not only because their jobs are less physically taxing, but also because they have a higher rate of job satisfaction and receive higher earnings (Carnevale et al., 2013). Educated adults have a higher life expectancy and better health outcomes, further enabling them to work longer. Relative to younger adults,

older adults in the workforce have comparatively higher earnings. This wage gap is in part a result of the educational opportunities afforded by the G.I. Bill, and the relative decline in higher educational attainment in the following decades (Carnevale et al., 2013). Further, employers are seeking higher skills, which older adults can provide (Burtless, 2013). Even during the Great Recession, Figure 2 shows that the proportion of older adults in the workforce increased despite an overall decrease in employment rates (DeSilver, 2016).

% of the population that is employed, Jan. 2000-May 2016

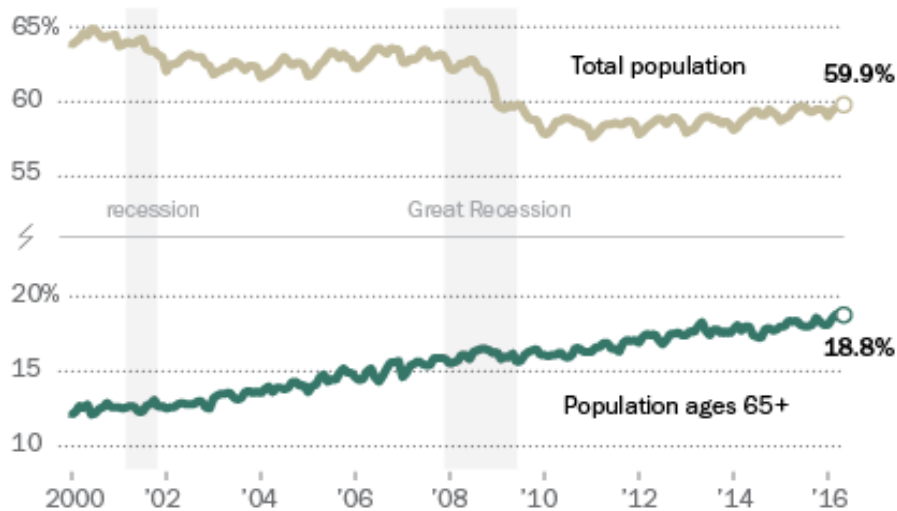


Figure 2 Share of Working Older Americans (DeSilver, 2016)

Higher-educated older adults are more likely to delay retirement compared to the less educated. Older adults with a college degree are twice as likely to remain in the workforce compared to their high-school educated counterparts (Carnevale et al., 2013). While unemployment is relatively uncommon among older adults, unemployment rates are highest among the least educated older adults (Burtless, 2013). Whereas unemployment among older adults with a high school diploma in 2009-2010 was over eight percent, a mere two percent of older adults with a professional or doctoral degree faced unemployment (Burtless, 2013).

Gender

The trend toward delaying retirement is largely driven by men, who make up less than 45 percent of all adults 65 and older, but constitute over 55 percent of older workers (DeSilver, 2016). Approximately 10 percent of women and 18 percent of men who are older than 65 are in the workforce (S. McGuckin et al., 2006). The factors associated with retirement vary by gender. Age is one factor: whereas men are most likely to retire at 64 years of age, women are most likely to retire at 62 (Munnell, 2015). Marital status also affects the retirement decisions of men and women differently. Working women are more likely than men to be unmarried at any age category, whereas working older men are far more likely to be married; fourteen

percent of men aged 62-64 are unmarried, compared to 45 percent of working women aged 62-64 (Uccello, 1998). Income is also relevant; men whose wives out earn them are significantly more likely to retire (Uccello, 1998).

Economic necessity may cause women to delay retirement. Women disproportionately face poverty in old age. Nearly three-fourths of older adults in poverty in the United States are women (Mayer, 1990). In 2003, the poverty rate of older women was twice as high as older men, with older women living alone exhibiting the highest rate of poverty (Rosenbloom, 2003). Race is another important factor. Over half of older Hispanic women living alone or with non-relatives were in poverty (Rosenbloom, 2003). The wage gap between men and women helps to explain the gendered difference in economic status later in life (Jefferson, 2009). Most retirement savings programs, such as Social Security and pension plans, are tied to paid employment. However, women often spend fewer years in the workforce (Quinn et al., 2011), thereby limiting the benefits they receive during retirement. In order to be fully ensured by Social Security, a person must make contributions to Social Security for at least 40 three-month quarters. Due to their more intermittent participation in the labor market, women experience unequal access to full coverage. According to a 1991 study, by age 31 nearly all men have met this coverage requirement (Jefferson, 2009). However, approximately 70 percent of married women and 78 percent of unmarried women have met the coverage requirement by the time they are close to retirement (Jefferson, 2009). Although this gap in coverage will narrow as the gender gap in workforce participation closes, women continue to enjoy fewer benefits once they do enter retirement. Defined contribution plans, an increasingly dominant form of pension plan in the U.S., exhibit a gendered gap in benefits. Contributions to defined contribution plans are made based on a proportion of a person's income, and a persistent gender pay gap helps to explain the lower contributions women make to defined contribution plans (Jefferson, 2009).

Caregiving is one important factor that explains the gendered difference in work years; women are more likely than men to be out of the workforce or to work part-time in order to act as caregivers (Jefferson, 2009). Caregivers provide approximately \$257 billion in unpaid services per year, and more than eight in ten caregivers provide some form of transportation assistance (AARP, 2005). Siren and Haustein (2016) find, for example, that a quarter of women of the baby boomer generation drove their grandchildren every week. Women in particular assumed the role of chauffeur, driving a range of passengers (such as friends and family) compared to men, who tended to drive only their spouse (Siren & Haustein, 2016). Women of the baby boomer generation are sometimes referred to as the "sandwich generation," as they often care for both their parents and their grandchildren (Siren & Haustein, 2016). Heaslip (2007) finds that households in which grandparents are the sole caretakers for their grandchildren are increasing.

Serious health concerns are particularly problematic for older women, as the majority will at some point live alone (either because they never married, were divorced, or are widowed). As families became smaller over the course of the 20th century, most older women now have no relatives that can take care of them as they age (Rosenbloom, 2003).

Relationship Status

The working status of an older adult's spouse affects his or her retirement decision. Older adults in the workforce are more likely to be married to someone who also is working, and retirees are more likely to be married to fellow retirees (Uccello, 1998). Women not only retire later, but also on average they are three years younger than their spouses (Quinn et al., 2011). Among couples that want to enter into retirement at the same time, husbands often end up delaying their retirement (Quinn et al., 2011). As women increasingly participate in the labor force, the trend toward delayed retirement among men will likely continue.

Earnings and Wealth

Older workers today have experienced wage growth compared to older workers of previous generations. In large part this results from their increased level of schooling, resulting in a shift from blue-collar work to higher-earning employment (Carnevale et al., 2013). Additionally, as more women work, households have been able to accumulate more retirement savings. The relative wages of older workers compared to prime age workers has also increased. While workers 65 and older earned 20 cents for every dollar earned by a younger-age worker in 1980, by 2013 older workers earned 60 cents for every dollar (Carnevale et al., 2013). The relative change in wages can be due to the higher educational attainment of older adults today. While certainly important, wages may not be the sole factor behind delaying retirement (Munnell, 2015).

Economic resources, which affect retirement decisions, vary by marital status and educational attainment. Marriage is associated with increased family income and wealth. Retired older adults who are unmarried have fewer economic resources in terms of family income and wealth compared to both married retirees and unmarried older workers (Uccello, 1998). Educational attainment is also associated with higher wages. Older adults who are highly educated and skilled and earn above-average incomes are the most likely to delay retirement (Carnevale et al., 2013). Carnevale and colleagues (2013) explain that the older adults that are delaying retirement are among those who have the least economic need to work.

Gender, race and ethnicity not only influence employment opportunities for younger and prime-age adults, but also can predict the economic wellbeing of older adults. In terms of race and ethnicity, older adults of all backgrounds participate in the workforce at similar rates (S. McGuckin et al., 2006). Whereas white Americans join the workforce the earliest and at higher rates in every age group (until 65) compared to black and Hispanic Americans, this gap narrows in old age (S. McGuckin et al., 2006). However, nonwhite retirees under the age of 65 are more likely to retire involuntarily. Hispanic women and black men are more likely to have withdrawn from the workforce involuntarily prior to retirement than whites with comparable socioeconomic and demographic backgrounds (Flippen & Tienda, 2000). Further, older black and Hispanic adults often have accumulated less wealth compared to white older adults. Black and Hispanic Americans are disproportionately represented in low-skilled and low-paid

employment that offer fewer retirement benefits (such as pensions) and are also more vulnerable to layoffs (Flippen & Tienda, 2000).

In addition to race, gender also affects a person's economic resources during retirement. Older working women are often employed in fields that do not offer pensions, and unmarried women are particularly at risk of poverty in old age (Flippen & Tienda, 2000). Older women are also at risk for involuntary job loss because their history of employment is frequently interrupted and they may also be constrained by caregiving responsibilities (Flippen & Tienda, 2000).

Employment prior to retirement can be an important indicator of a person's wellbeing later in life, and due to their increased job vulnerability, female and nonwhite Americans often have fewer economic resources later in life (Flippen & Tienda, 2000).

Job Tenure

Tenure is one factor that can influence an older person's retirement decision. Older adults who choose to delay retirement are more likely to be employed in a workplace in which they have had a long career (Carnevale et al., 2013). The majority of workers prior to retirement age have significant experience in their place of employment. More than half of all workers age 55-64 have worked in their current job for over ten years, and less than one third have been working at their current job for less than five years (Uccello, 1998). Workers with shorter tenure may be more vulnerable to job loss than those with more experience. However, it may also be that workers with short tenure have higher job mobility and are better able to switch to comparable jobs (Uccello, 1998).

Unions

Older adults who are union members enjoy both increased job security as they age as well as incentives to retire early. Union workers are less likely to lose their jobs compared to non-union workers, but are also more likely to have pension coverage (Uccello, 1998). Uccello (1998) finds that, regardless of age group, retirees are more likely than workers to have belonged to a union, suggesting that union workers are more likely to retire earlier. Unions, and the pension benefits associated with them, vary by industry. Employees in protective service occupations, for example, are more likely to be unionized, as are public-sector employees (Bureau of Labor Statistics, 2018). Older adults who worked in unions are more likely to have economic resources to retire early, both due to pensions and to their higher-than-average incomes. According to the Bureau of Labor Statistics, union workers have higher wages and access to more employer-sponsored benefits than non-union workers (Long, 2013).

Personal Fulfillment

Many older adults continue to work past 65 for personal, rather than pecuniary, reasons. Working older adults are disproportionately wealthy, educated, and healthy (Haider & Loughran, 2001). Despite their high level of skill and education, working older adults are also

more likely to have earnings in the bottom income quintile (Haider & Loughran, 2001). Further, older adults enjoy a high degree of flexibility with their work schedules. Haider and Loughran (2001) explain that many older adults choose to work in areas they find personally fulfilling, and which accommodate their personal schedules, rather than working out of an economic need. McGuckin et al. (2006) refer to this lifestyle as a “working retirement,” in which older adults can try a new career, volunteer in their community, engage in hobbies, or pass the time. Work offers adults psychological and physical benefits, as well as the chance for social engagement (N. McGuckin, 2011).

Retirement in Stages

Retirement is often a transition that takes place over time in stages, rather than a single event (Quinn & Kozy, 1996). Older Americans increasingly work full-time. In 2000, 46 percent of workers 65 and older worked fewer than 35 hours per week, and this share shrank to 36 percent in 2016 (DeSilver, 2016). This trend in full-time work is concurrent with the rising share of older adults in the workforce (DeSilver, 2016). However, many older adults continue to work relatively fewer hours. Older adults work fewer hours on average (5-6 hours per day) compared to younger workers (S. McGuckin et al., 2006). Some older adults may choose to remain at their current employment while working a reduced schedule. Often, however, when older adults transition into part-time work they change their employer and the characteristics of their job (S. McGuckin et al., 2006). Haider and Loughran (2001) find that once they are eligible to receive Social Security benefits, many older adults shift into service-oriented jobs. Baby boomers in particular are active in atypical work, including part-time work, volunteering, and informal work (Siren & Haustein, 2016).

Flexible work schedules can entice older adults to remain in the workforce. Adults are more likely to continue to work if their current employment offers them the option of reducing their hours or responsibilities (Hurd & McGarry, 1993). Working from home is another increasingly popular option, particularly relative to younger workers: ten percent of older adults work from home compared to three percent of all workers (S. McGuckin et al., 2006). The proportion of self-employed workers also increases with age (Uccello, 1998).

Travel in Retirement

The travel patterns of older adults have been well studied (Haustein & Siren, 2015; Rosenbloom, 2003; Wachs, 1979). Studies find that older adults primarily travel by car (as both passengers and drivers), and live in low-density suburban neighborhoods that are best served by automobile (Mohammadian, Frignani, & Auld, 2011; Rosenbloom, 2003). Though older adults walk more than their younger counterparts, they use public transportation less, and driving remains their primary mode of travel (Lynott & Figueiredo, 2011). Losing access to a car can therefore signal significant mobility impairment for older adults (Haustein & Siren, 2014). It is important to note that age per se can only explain older people’s mobility to a limited degree.

It is rather the variables associated with aging, such as health problems, disability, retirement, and living in a single-person household, that can predict mobility (Haustein & Siren, 2015).

While a body of literature on the mobility patterns and transportation needs of older adults is already well established, research on the link between employment and the travel of older adults is far more limited. Studies find that after controlling for variables such as income and vehicle access, employment does not have a significant effect on mode choice or frequency of leisure activity (Haustein & Siren, 2015). However, working older adults travel more miles and use cars more frequently compared to retirees (Haustein & Siren, 2015). As increasing numbers of older adults choose to delay retirement, it is increasingly important that policymakers understand the travel needs of older workers. The following sections describe in greater detail the travel patterns of older adults and the mobility barriers they face, as well as the commute patterns of older workers.

Driving, Work Trips, and Age

Like every age group in the United States, the majority of older workers drive to work alone (S. McGuckin et al., 2006; Polzin et al., 2015). Workers of all ages are more likely to have access to a vehicle than non-workers; whereas nine percent of all households are car-free, only four percent of households that include workers do not have a vehicle, a gap that Polzin et al. (2015) attributed largely to retired older adults who live alone. Further, older workers are less likely than younger workers to commute by carpool or public transportation (S. McGuckin et al., 2006; Polzin et al., 2015). McGuckin et al. (2006) attribute the decline in transit for commute purposes, in part, to the proclivity of older adults to commute during off-peak hours, when transit services are less frequent. As shown in Figure 3, they are more likely to leave home later in the morning and return in the early afternoon compared to other workers (N. McGuckin, 2011). Older workers are more likely to commute after 9:00 in the morning (26 percent) compared to workers age 55-64 (18 percent of whom commute after 9 a.m.) (S. McGuckin et al., 2006). It may be that older adults avoid driving during peak hours. McGuckin et al. (2006) explain that older adults show a greater aversion to congestion compared to younger drivers, and are more likely to restrict their driving to daytime hours.

Workers over the age of 65 are also more likely to have shorter commutes. Older adults travel nine miles to work, on average, compared to 12 miles for younger workers, and their commute is three minutes shorter (N. McGuckin, 2011). The travel patterns of older workers are consistent with their tendency to work flexible and fewer hours. Older workers are the most likely of all age groups to work at home; 6.5 percent of baby boomers compared to 4.3 percent of all workers work from home (Polzin et al., 2015). However, adults who work at home also generate work-related trips for purposes such as going to meetings or purchasing supplies (S. McGuckin et al., 2006). Even retirees take trips that they consider to be work-related, according to data from the National Household Travel Survey (S. McGuckin et al., 2006).

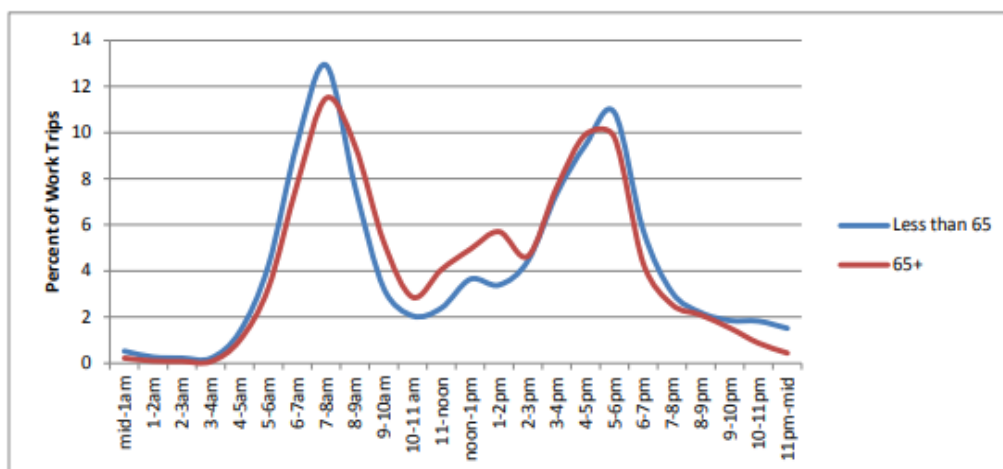


Figure 3 Time of Day Pattern for Workers' Commutes (N. McGuckin, 2011)

Licensure and Aging

Licensure rates are usually highest among Americans between the ages of 30 and 60, and exhibit a sharp decline after the age of 70 (Polzin et al., 2015). This pattern results from the presence in the population of older people who were never licensed to drive, including many women, as well as to people giving up licenses because of illnesses or disabilities. While licensure rates decline with age, a large proportion of older adults have driver's licenses; in 2009, 84 percent of adults 70 and older were licensed to drive (FHWA OHPI, 2011). Though older adults with licenses may choose never to drive, the high proportion of licensed older adults is an indication of the importance of having access to a driver's license (Harrison & Ragland, 2014). Licensed adults age 65-69 made 87 percent more trips compared to their non-licensed counterparts in 1995 (Rosenbloom, 2003). Adults over the age of 85 with licenses made twice as many trips as unlicensed adults in their age group (Rosenbloom, 2003). Access to a driver's license is, therefore, a key determinant of mobility.

Decreasing licensure rates can be attributed, in part, to generational differences rather than to older adults forgoing their driver's licenses. Among older cohorts, women are less likely to have ever been licensed (Polzin et al., 2015). The proportion of older women who drive continues to increase: by 2030, the gender gap in licensure rates will have greatly narrowed, given that 94 percent of women age 45-49 in 2003 had licenses (Rosenbloom, 2003). However, even among younger cohorts of older adults, women are less likely to have a license. Rosenbloom and Herbel (2009) explain that older female drivers are more likely to give up driving earlier than older male drivers. Racial differences also can account for the decrease in licensure among older adults. Among adults over the age of 55, there is a three percentage point gender disparity in licensure among whites, which rises to six percentage points among African Americans, eight points among Asian Americans, and twenty points among Hispanic Americans (Polzin et al., 2015).

Vehicle Availability and Wellbeing

Mobility in the United States, particularly for older adults, is largely determined by having access to a car. Data from the National Household Travel Survey show that older adults make a higher proportion of their trips by car than younger Americans (Rosenbloom, 2003). Personal vehicles are far more convenient and accessible than public transportation, which requires users to have a certain degree of physical ability to get to and from transit stops (Harrison & Ragland, 2014). Even older adults who no longer drive themselves travel by car as passengers of their relatives and friends, until they no longer have access to a car due to changes in their social networks or economic means (Goulias, Blain, Kilgren, Michalowski, & Murakami, 2007). Older adults are more likely to report being passengers: whereas 80 percent of older adults drive themselves, 93 percent of younger drivers report the same (Heaslip, 2007). Only older households that do not own vehicles make a substantial number of trips using public transportation (Goulias et al., 2007). As the AARP state in their 2005 report, “older adults identify mobility with driving” (AARP, 2005).

Older adults rely primarily on driving to satisfy their travel needs. The vast majority of trips (80 percent) among older adults are made by car, for both drivers and passengers (Harrison & Ragland, 2014). While older adults are more mobile today than were previous older adult cohorts, they continue to travel less than younger adults. While 90 percent of older adults predominantly drive, they are still less mobile compared to younger adults (Collia, Sharp, & Giesbrecht, 2003; Harrison & Ragland, 2014; Heaslip, 2007). Older adults take fewer trips, travel shorter distances, and have shorter travel times, compared to younger adults (Collia et al., 2003; Heaslip, 2007). However, older adults travel more frequently and travel greater distances than they did in the 1980s (Heaslip, 2007). The rise in mobility may be related to prolonged vehicle use. Older adults are extending their driving lives and continue to prefer the car to all other transportation modes (Heaslip, 2007).

Older adults disproportionately live in suburban areas that are best served by automobiles, not public transportation (Rosenbloom, 2003). The share of all older adults in dense urban areas declined from 2000 to 2016, whereas the share living in low-density metropolitan areas rose substantially (from 24 to 32 percent, encompassing over six million older adults) (Joint Center for Housing Studies, 2018). The trend toward low-density living later in life is largely due to the population’s propensity to age in place: 55 percent of households aged 65-79 (and 69 percent age 80 and over) currently live in the homes they have stayed in for over 20 years (Joint Center for Housing Studies, 2018). For people who prefer to “age in place,” residential location was likely a choice made long before driving or walking posed any physical problem (Mohammadian et al., 2011). Residential location, in addition to people’s tendency to continue to use their preferred travel mode when they retire, can help to explain older adults’ reliance on private vehicles (Mohammadian et al., 2011).

Vehicle access varies by gender and by marital status. Women are more likely than men to stop driving before they are unfit to drive (Haustein & Siren, 2015). Further, they are more likely to

be passengers in private vehicles, and to face more unmet travel needs when they lose their spouses compared to men (Haustein & Siren, 2015). Married couples tend to be disproportionately mobile; however, the relationship between single-status, income, and being female may explain the link between marital status and vehicle access (Haustein & Siren, 2015).

For many Americans, vehicle ownership and use is a large expense, and the high cost of driving can limit mobility for some older adults. Older adults with higher incomes take more trips, are more likely to drive, and are less likely to use transit (Haustein & Siren, 2015). Older adults with fewer economic resources and with poor social relations face significant mobility limitations (Haustein & Siren, 2015). Economic constraints are one reason that older people stop driving (Haustein & Siren, 2015). Older women's transportation problems are particularly likely to relate to income and financial concerns (Haustein & Siren, 2015).

Access to vehicles is associated with improved physical and mental health outcomes (Haustein & Siren, 2015). Car access and health status may be a bidirectional relationship. While driving requires a certain degree of physical ability, older adults who have access to vehicles are able to live more independently and carry out their daily activities (Haustein & Siren, 2015). Driving allows people to access more destinations as they age. Baby boomers rely on driving for their leisure travel (Haustein & Siren, 2016). For those without vehicles, however, mobility is limited. Over half of non-drivers age 65 and older report never leaving their homes on any given day (AARP, 2005). Driving reduction or cessation is linked with reduced participation in community activities, less social integration, and a lost sense of independence and control (Harrison & Ragland, 2014).

Transit Travel and Walking

Compared with the suburban majority, older adults who live in transit-rich neighborhoods are most likely to use public transportation (Hess, 2009). In total, public transit travel accounts for only three percent of trips made by those over the age of 65 (AARP, 2005). Less than half of all households in the suburbs are located within half a mile of a transit station or stop (AARP, 2005). Moreover, a trip on public transit can take more than twice as long as a trip via personal vehicle (Hess, 2009). Travel times are much longer for public transit than private vehicle, and older adults who prefer to avoid overcrowding on transit, face the problem of lower frequency service during off-peak hours (Hess, 2009). Despite even longer distances to transit stops and infrequent headways, 31 percent of all transit trips in rural areas are made by older adults, indicating a high degree of transit dependency among those who use transit in rural areas (AARP, 2005).

Walking also makes up a very small proportion of older adults' trips; five percent of trips taken by adults age 65 and older are made on foot (AARP, 2005). Walking, including walking to and from bus stops and rail stations, can be particularly burdensome for older adults, who must navigate steep grades, unshaded sidewalks, cross busy streets, and take stairs (Hess, 2009). Comfort is a prime consideration for older adults, and walking or waiting in inclement weather

can be a barrier to mobility (Hess, 2009). Further, walking can require much longer travel times than other modes.

Older adults who use public transit tend to do so during off-peak and daylight hours. Travel conditions during peak traffic hours can be especially uncomfortable for older adults, as buses are crowded and streets are more congested (Hess, 2009). To avoid these conditions, older adults who use transit concentrate their trips during midday and on weekends, times when transit services are less frequent (Hess, 2009).

Use of Door-to-Door Services

Paratransit services, special forms of transportation targeted to people with disabilities, are too limited and too expensive to be a viable option for meeting the daily mobility needs of older adults, and this is particularly true for travel to and from work. Organizations, such as churches and volunteer groups, that offer door-to-door services find the liability insurance and highly personalized service to be very costly (Giuliano, Hu, & Lee, 2003). A 2007 Institute of Medicine study found that, on average, a one-way paratransit trip provided by the 50 largest transit systems, cost \$29.28 (Rosenbloom & Herbel, 2009). The same study found that all alternative transportation systems combined, including paratransit and volunteer-based services, did not offer even three trips per year to every person who needed the services (Rosenbloom & Herbel, 2009). The great expense, inconvenience, and consequent infrequent use of paratransit services suggest that these services are not likely to affect decisions about retirement or remaining in the work force.

There is reason to believe that the evolution of ride-hailing services (e.g. Uber, Lyft) could influence employment decisions in the near future. However, this has not yet happened. Technological change may offer improvements to meeting older adults' travel needs, but current cohorts of older adults have not adopted these new services to a significant extent. Older adults are not familiar with, or comfortable with, such rideshare services. A recent study found that nearly three-quarters of the participants had no knowledge of rideshare services (Vivoda, Harmon, Babulal, & Zikmund-Fisher, 2018). Some older adults may order goods and services online to reduce their own travel needs, but a study by Goulias et al. (2007) finds that substituting the Internet for traveling remains limited among older adults.

Conclusion

The literature revealed few studies that directly addressed the role of physical mobility in the workforce-related decisions made by or travel patterns of the growing number of older Americans. It did reveal, however, a great deal about the changing nature of work and its influence on the employment of older workers. Further, existing research highlights the relationship between vehicle ownership and the travel patterns of older adults. This relationship certainly plays a role in retirement decisions. In the next section of this report we

use data from the California Household Travel Survey (CHTS) in attempting to better inform our understanding of the links between employment and travel among senior citizens.

Analysis of Older Adults, Employment, and Travel

In this section of the report, we compare the characteristics of older working and non-working adults to working-age adults 25 to 59. We focus on differences by demographic, employment, and travel characteristics. To do this, we rely on data from several sources including the 2012 CHTS, a survey conducted approximately every ten years by the California Department of Transportation (Caltrans). The most recent CHTS includes 42,431 households with information on household socioeconomic characteristics and travel behavior. The CHTS provides data about the travel of 76,701 adults ages 25 and older, of whom 28,545 (37 percent) are older adults. The survey also contains a census-tract identifier that allowed us to link individual respondents to the built environment characteristics of the neighborhoods in which they live. Our analysis focuses on adults aged 60 and older. In the following sections we first present descriptions of the population we studied and of their travel patterns. Subsequently, we present the results of multivariate statistical analyses of associations between the propensity to remain in the active workforce and the accessibility of older people to various transportation options.

There are many similarities between younger and older workers and a few salient differences. Older workers are more likely to be white and work in higher-skilled occupations than younger workers. Older workers travel slightly fewer miles than younger workers. However, the two groups tend to travel by similar modes, primarily by driving. As we expected, compared to older adult workers, non-working older adults are quite different. They are more likely to be female, non-white, and to have disabilities. Moreover, they travel far less than older adult workers and take a much higher percentage of their trips by carpool. We briefly describe these trends below.

Older Adults, Labor Force Participation, and Cars in California

As shown in Figure 4, labor force participation rates among older adults (60+) in California increased by 8 percentage points from 2000 and 2017.² Older adults in California now comprise approximately 12 percent of the labor force, a percentage that will increase since state population forecasts show continued population growth among older adults through 2060 (California Department of Finance, 2018).

² The rapid increase in the labor force participation of older adults appears to have slowed in recent years. Data from the Current Population Survey show that the labor force participation rates of adults 65 years and older has remained just under 20 percent since 2015 (California Employment Development Department, 2019).

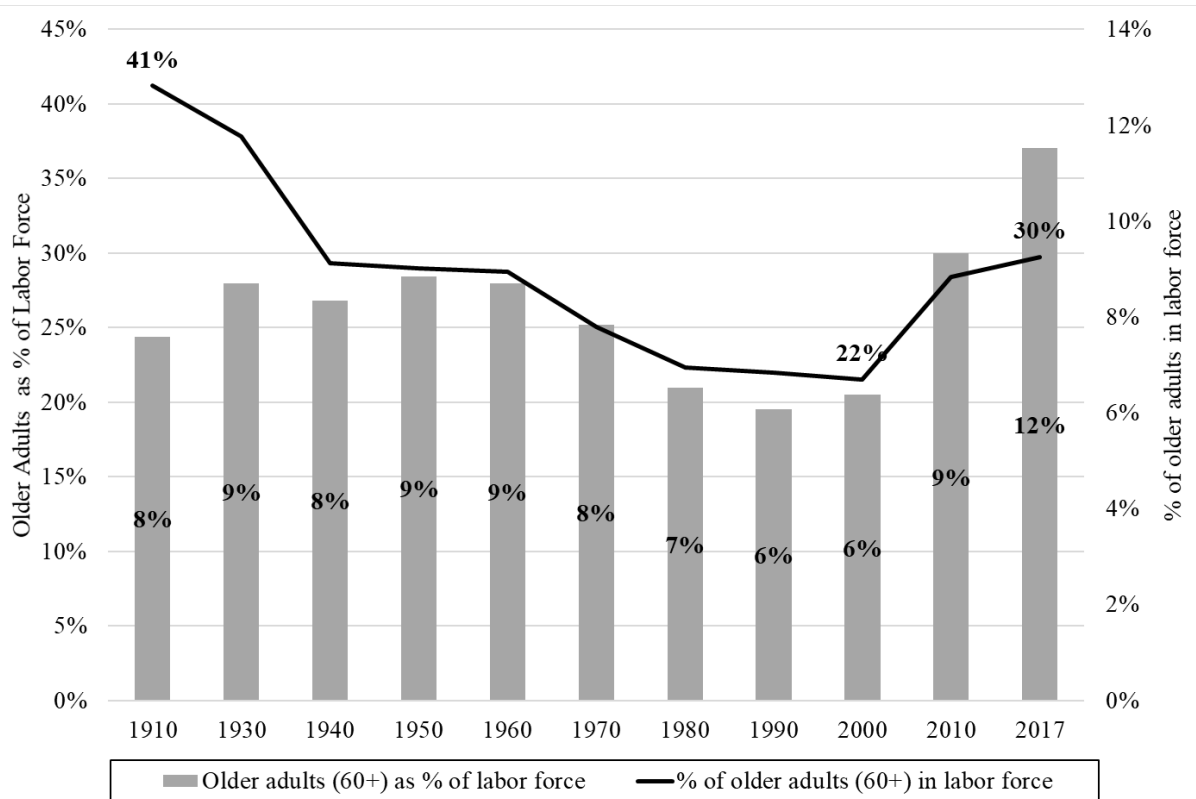


Figure 4 Older Adults (60+): Percent of Labor Force and Labor Force Participation Rate, California 1920-2017 (Ruggles et al., 2018)

As shown in Figure 5, the labor force participation of older adults declines sharply with age. The percentage of older adults that lives in households with at least one automobile also declines with age but at a far slower rate. Ninety-two percent of older adults (60+) live in households with cars (Ruggles et al., 2018). Many older Americans continue to drive, regulating their driving behavior (e.g. taking fewer trips, driving only during daylight) as they age (Donorfio, D'Ambrosio, Coughlin, & Mohyde, 2009). Automobile ownership rates also reflect older adults who give up driving, but live in households with other drivers. Research shows that older adults are more likely to stop driving if they live in larger households (Chipman, Payne, & McDonough, 1998), presumably because they can rely on other household drivers for transportation.

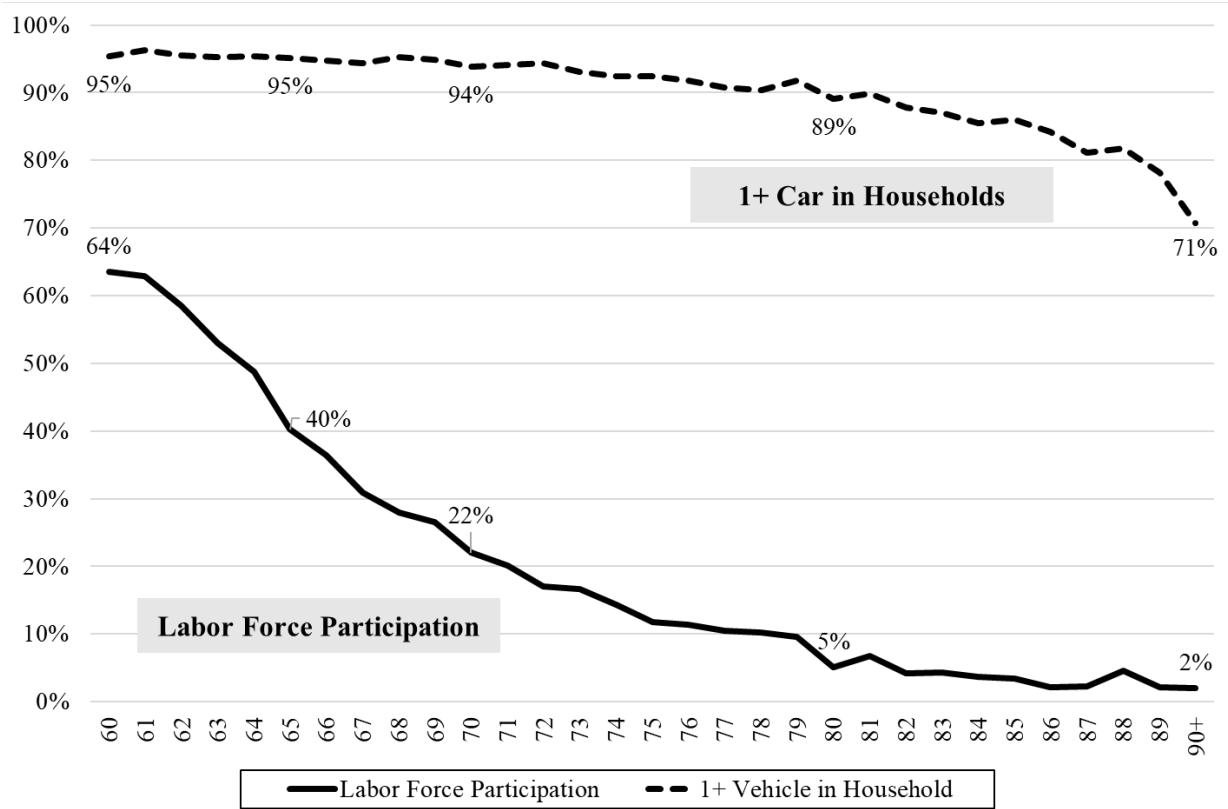


Figure 5 Labor Force Participation Rate and Auto Ownership by Age, California 2017 (ACS) (Ruggles et al., 2018)

Demographic Characteristics

As Figure 6 shows, regardless of age, a minority of workers are female (45-46 percent), suggesting that this sex disparity in labor force participation will persist as the current

workforce ages. In contrast, a majority of non-working older adults are female, likely the consequence of women's longer life expectancy.

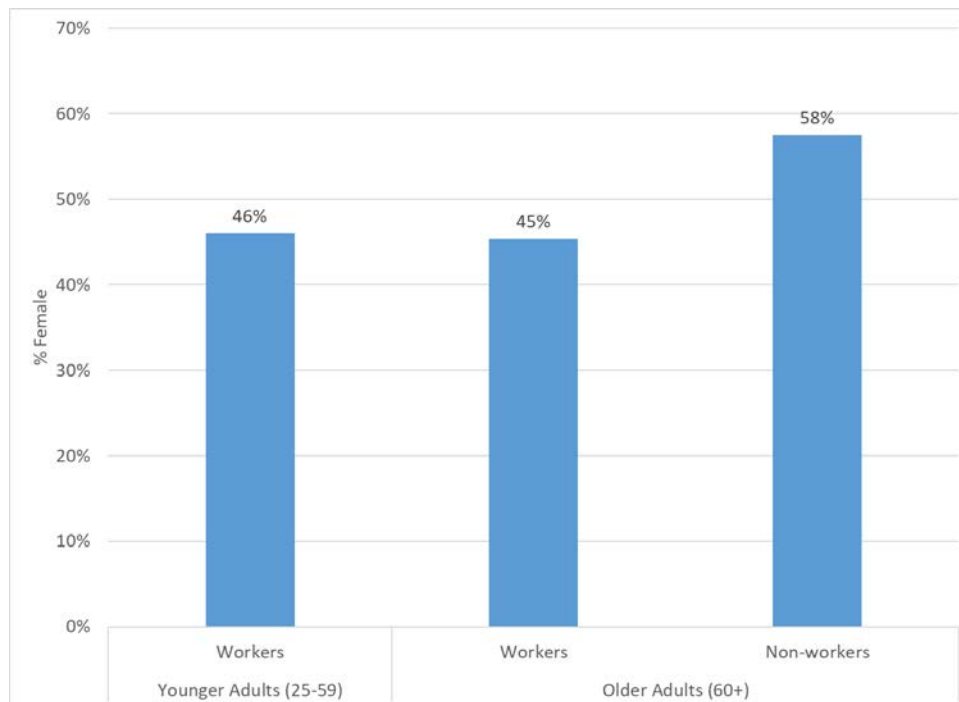


Figure 6 Sex Composition: Working Young Adults, Working Older Adults, Non-Working Older Adults (2012 CHTS)

As Figure 7 shows there are significant differences in the racial and ethnic composition of younger workers compared to both older adult workers and non-workers. The California population has become less white over time (H. Johnson, 2017) and, as a consequence, younger workers are much more likely to be non-white than older adults. However, among older adults, there also are significant racial and ethnic differences between workers and non-workers. The biggest difference is among Hispanics who are a much smaller percentage of older workers than non-workers. This finding may result from the types of jobs that Hispanic workers hold, mostly in the non-professional, service occupations (e.g. maids and housekeeping cleaners, construction workers, painters, construction and maintenance) that may be difficult to perform as workers age (Bureau of Labor Statistics, 2018).

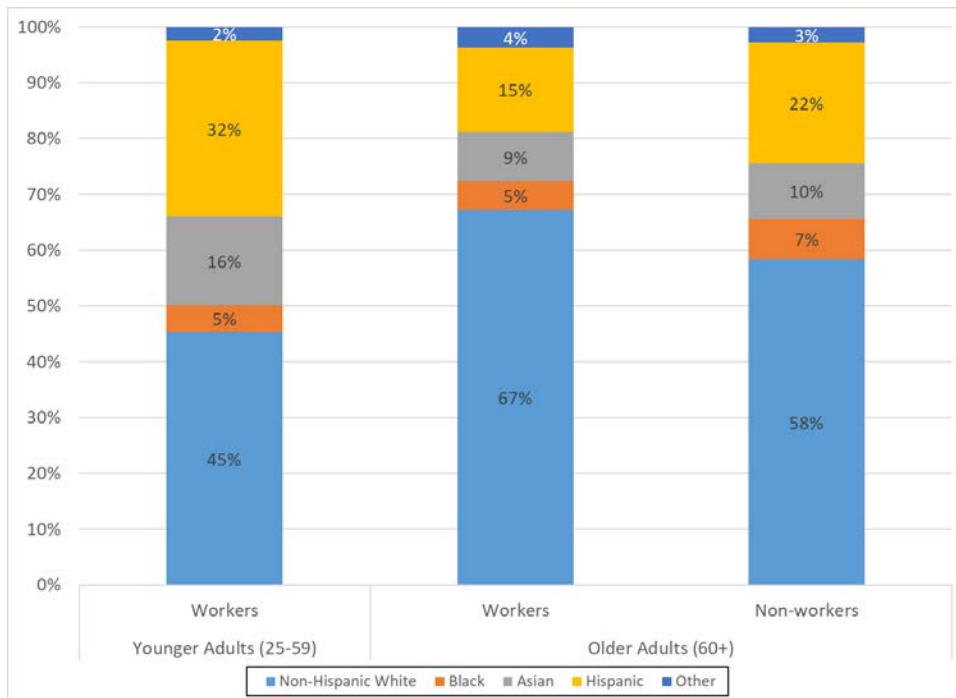


Figure 7 Racial and Ethnic Composition: Working Young Adults, Working Older Adults, Non-Working Older Adults (2012 CHTS)

Data from the CHTS demonstrate a clear relationship between disability, age, and employment. This is illustrated in Figure 8. A disability is a physical or mental condition that limits a person's movements, senses, or activities, and disabilities can be quite varied. The CHTS included as disabilities: hearing impairments and deafness; sight impairments and blindness; cognitive impairments such as serious difficulty concentrating, remembering, or making decisions; balance or respiratory impairments such as difficulty walking or climbing stairs; difficulty dressing or bathing; difficulty doing errands alone, such as visiting a doctor's office or shopping; and other unclassified conditions that respondents identified as disabilities. Four percent of younger workers have disabilities compared to 7 percent of older adults. However, more than a quarter of non-working older adults have a disability.

Employment Characteristics

Older adults are less likely to be employed than younger adults. Among adults ages 25 to 59, 71 percent are employed compared to 27 percent of older adults (60+). Older workers are also less likely to be employed full time. Eighty-three percent of younger adults work more than 30 hours per week compared to 68 percent of older adults. Figure 9 shows the top five occupations by age group. They include: management, education/training, office/administrative support, business/financial operations, and sales. These top five are the same for both groups; however, they comprise a larger percentage of older workers – some 53 percent compared to 47 percent.

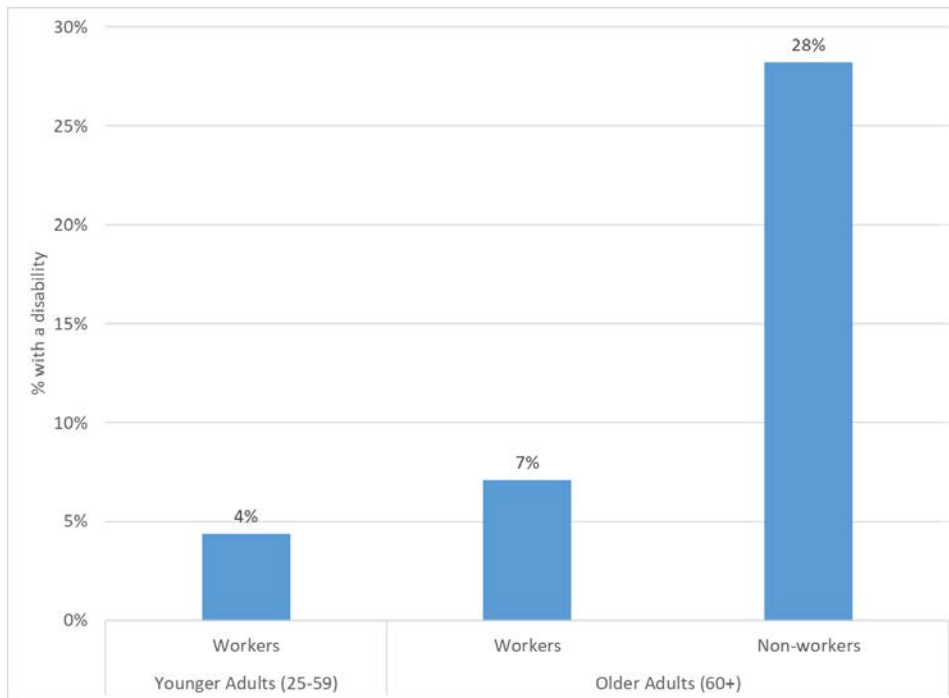


Figure 8 Disability Status (2012 CHTS)

Reported Travel Behavior

The distribution of trips reported in the CHTS by mode is similar for all workers regardless of age. As shown in Figure 10 both younger and older workers make about 88 percent of their trips by car and 75 percent as drivers. Over 95 percent of both groups of workers have driver's licenses compared to 79 percent of non-working older adults. Non-working adults make a much smaller percentage of their trips by driving (59 percent); however, they are more likely than working adults to be car passengers (25 percent) and, therefore, remain heavily reliant on automobiles for their travel. Non-working older adults, however, are more likely to walk (11 percent) compared to both groups of workers (7 percent). Finally, transit use is small across all three groups, only four percent of all trips.

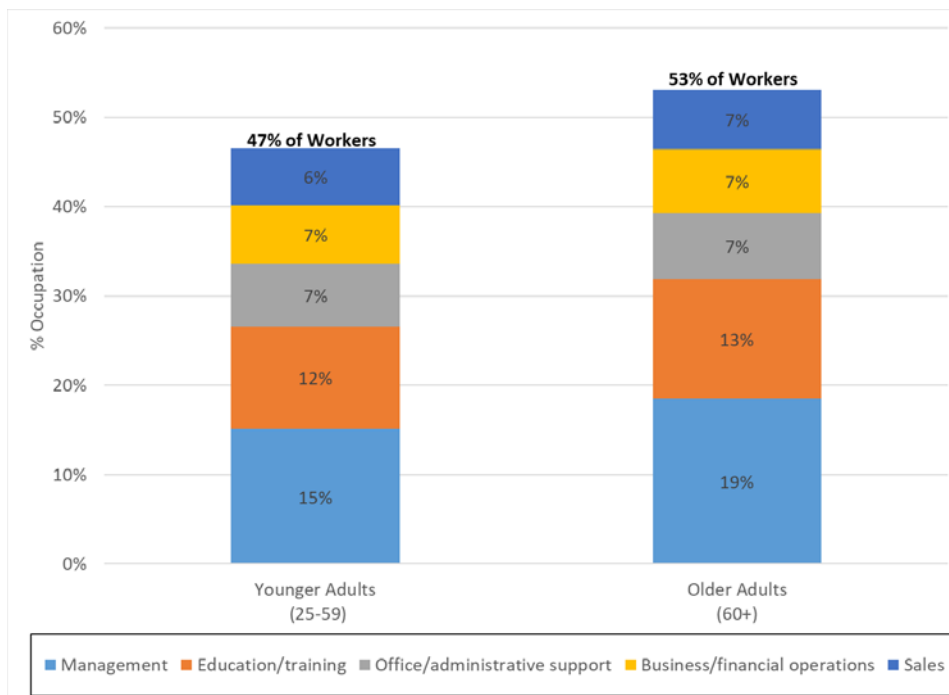


Figure 9 Top Five Occupations by Worker Group (2012 CHTS)

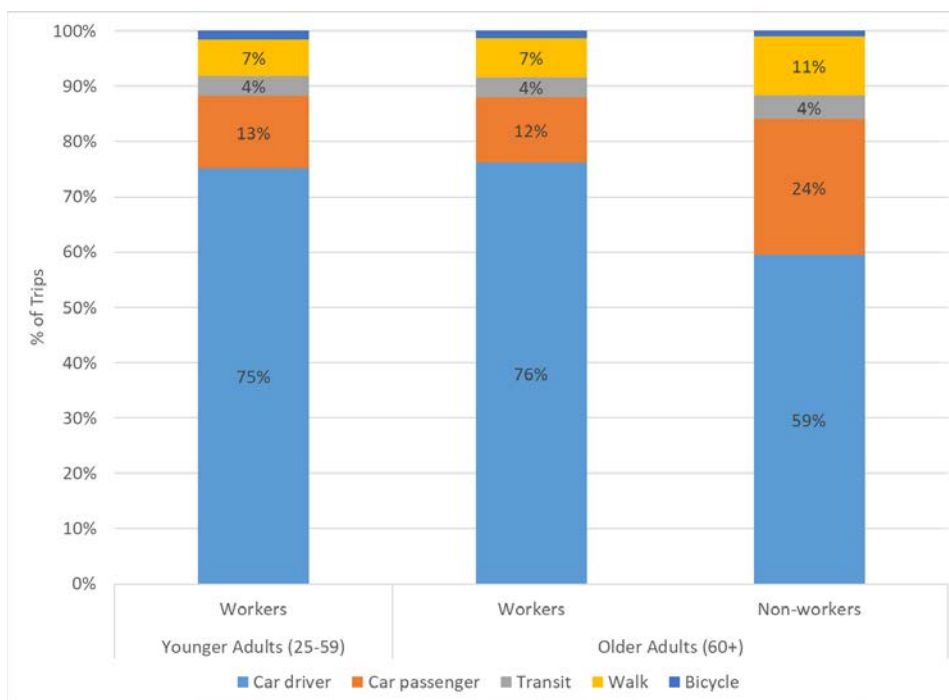


Figure 10 Percentage of Trips by Mode (2012 CHTS)

About 80 percent of both groups of workers—younger and older—made one or more trips on the survey day. Among non-working older adults, this figure drops to 57 percent, potentially raising concerns that some seniors may be isolated from opportunities. As Figure 11 shows,

when seniors travel, they travel slightly fewer miles than younger workers. Commute trips tend to be longer than other trip types. Therefore, compared to both groups of workers, non-working seniors travel the fewest miles (by trip, PMT, and VMT).

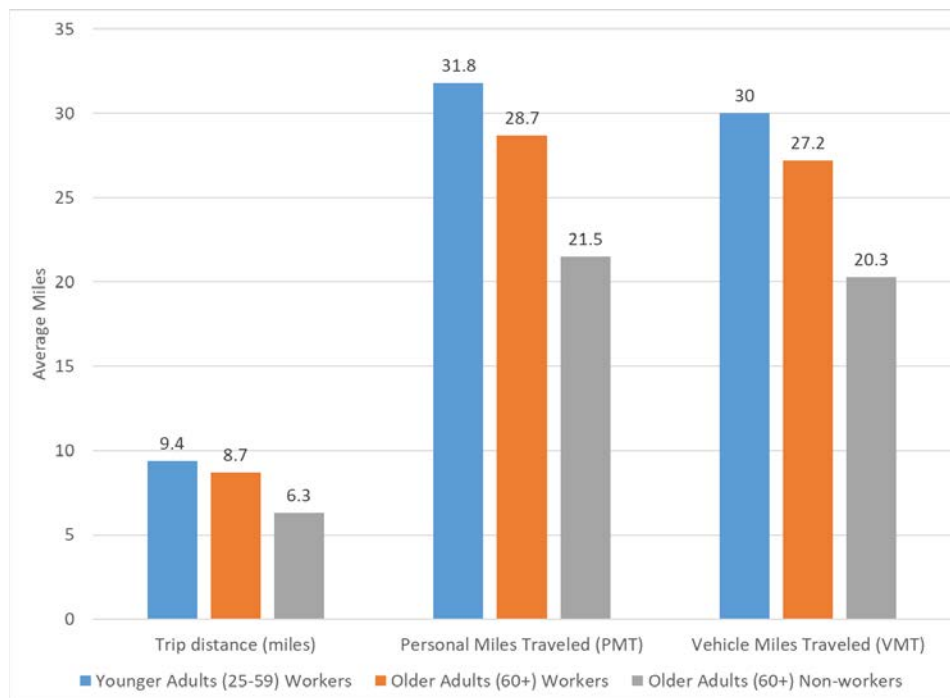


Figure 11 Average Miles – Trips, Personal Miles Traveled (PMT), Vehicle Miles Traveled (VMT) (2012 CHTS)

Multivariate Statistical Analysis – Research Design

To address the question of whether or not older Californians who have more transportation options remain in the workforce longer than those who have fewer mobility options, we used a multivariate statistical procedure. We matched the CHTS data to information on the number of jobs older adults can access by public transit within a 30-minute commute. These data are from the Accessibility Observatory at the University of Minnesota (Owen, Murphy, & Levinson, 2018) and are available for six metropolitan areas in California: Los Angeles, Sacramento, San Diego, San Francisco, San Jose, and Riverside/San Bernardino. To test the relationship between transportation and employment outcomes, we restricted the sample to older adults who are in the labor force (employed and looking for employment) and those who are retired. The sample available for this analysis includes 11,188 adults, 39 percent of the total older adult sample in the state.

We predicted a positive relationship between automobile ownership and employment outcomes for older adults. The major methodological challenge in testing this relationship is one of simultaneity. A positive relationship between automobiles and employment can result from the important role of automobiles in helping older adults find and retain jobs. However, a positive relationship between the two also can be explained by the role of employment in

generating the income that enables older adults to both buy and operate vehicles. Longitudinal data might allow us to assess the timing of these transitions to better isolate causality. Lacking longitudinal data, scholars have analyzed these relationships using structural equations models (SEM), simultaneous sets of equations that assess causal pathways and include both endogenous and exogenous variables. However, this modeling approach is less often used to predict dichotomous outcomes such as the likelihood of being employed, the focus of this study.

In this study we used propensity score matching (PSM) to minimize selection bias (Dehejia & Wahba, 2002). First, we specified two logistic regression models in order calculated the likelihood that a given household fell into our two “treatment” categories: a) owning a vehicle, and b) residence in a neighborhood that is in the top quartile of job access by transit. In these models, we controlled for a number of factors that have been shown to predict the respective treatments, for example, the age of household members, household income, race, household size, driver’s licensure, and the characteristics of the neighborhood of residence. Then, using these predicted values—or propensity scores—we matched treated households (i.e., households that own a vehicle or households that live in high-transit accessibility neighborhoods) with control households (i.e., households that are carless or households that do not live in high-transit accessibility neighborhoods). Pairs were matched using nearest-neighbor, one-to-one matching procedures, and the matching process was implemented using R’s “Match” package.

Because we controlled for a number of covariates in the calculation of the propensity scores, propensity matching resulted in pairs of households that are similar on all of the predictors of car ownership and neighborhood-level transit accessibility but different in one key aspect: their exposure to the two transportation variables of interest. In other words, with regard to automobile access, one member of each pair is a car owner while the other is carless; with regard to transit access, one member of each pair lives in a neighborhood with high levels of transit access while the other does not. Finally, by measuring the difference in employment rates between each matched pair, we were able to estimate the role that transportation access plays in employment outcomes—an estimate that is free of any simultaneity bias.

Findings

In the following sections, we first describe the sample population that was used in the modeling and, second, report the findings from statistical models isolating the effect of transportation on the employment of older adults. Table 1 presents the descriptive statistics for the CHTS sample by employment status—employed and retired. We included data for all older adults (60+) and then for low-income older adults, likely to have the greatest constraints on their mobility. Almost half of the older adults in our sample (48%) were employed compared to a third of low-income older adults. Both employed and retired low-income older adults were more likely to be non-white and female than all older adults.

With respect to their transportation characteristics, the data show that employed older adults were more likely to have driver's licenses, to drive, to take more trips, and travel more miles than retirees, regardless of income. The data also show that retired older adults used transit slightly *less* than employed older adults, and did not take many more trips as auto passengers. Finally, similar to younger adults, low-income older adults—both employed and retired—were significantly more likely to use transit than higher-income older adults.

Cars, Transit, and Employment: Propensity Matching Results

Tables 2 and 3 show the results of the propensity matching. Table 2 presents the covariates by the presence of an automobile in the household before and after the propensity matching. The estimate reflects the relationship between car ownership and employment rates. Access to an automobile, for example, was associated with an increase in the expected employment rate of all older adults by two percentage points (from an average 24 percent for those living in carless households to 26 percent for those that own a vehicle), and the expected employment rate of low-income older adults by 13 percentage points (from an average of 19 percent to 32 percent).

Table 3 presents similar information, isolating the employment effects of living in a neighborhood having high levels of jobs accessible by public transit. Once again, the table shows the covariates before and after the propensity matching. Living in a neighborhood with high levels of job access by transit also is correlated with employment. For older adults who did not own vehicles (i.e., individuals who are most likely to benefit from transit service), living in a neighborhood that is in the top quartile of job access by transit was found to be associated with a 6 percentage-point increase in expected employment rate (from an average of 14 percent for those who lived in low-access neighborhoods to 20 percent for those who lived in high-access neighborhoods). For low-income older adults without cars the association between good job access via transit and employment was found to be even greater: an expected employment rate increase of 13 percentage points (from an average 12 percent to 25 percent).

	All		Low-Income	
	Employed	Retired	Employed	Retired
<i>Individual Demographic Characteristics</i>				
% male	54.1	46.4	44.5	38.2
Age (mean)	65.6	72.4	66.7	73.7
% non-Hispanic white	64.1	58.4	46.4	48.7
% non-Hispanic black	6.6	8.6	10.3	10.3
% non-Hispanic Asian	11.1	11.9	10.1	9.1
% Hispanic	15.0	18.6	31.2	29.5
<i>Household Characteristics</i>				
Household size	2.4	2.4	2.1	2.1
% with car	96.4	93.5	88.5	83.0
<i>Individual Transportation Characteristics</i>				
% driver's licensed	96.5	86.8	88.9	79.4
<i>Trip Characteristics (survey day)</i>				
Average trip distance (mi)	8.7	6.2	6.6	5.5
Average # of trips	3.9	4.0	3.8	3.7
<i>Mode (all trips)</i>				
% trips as driver	75.0	64.6	67.5	58.9
% trips as auto passenger	11.7	20.5	10.4	18.9
% trips on transit	4.3	3.7	10.4	8.1
% trips on foot	7.5	9.9	10.8	12.8
% trips by bike	1.5	0.9	0.9	0.5
<i>Commute mode^a</i>				
% commute as driver	84.4		76.0	
% commute as auto passenger	4.0		5.8	
% commute on transit	7.0		12.6	
% commute on foot/by bike	3.6		5.2	
<i>Miles traveled</i>				
Vehicle miles traveled (VMT)	21.6	13.2	14.4	8.9
Personal miles traveled (PMT)	23.0	13.9	16.1	9.8
N	5,323	5,865	646	1,300

^aThe commute mode percentages in the table were calculated based on older adults with known commute modes. Commute mode is "unknown" for 23.9 percent of employed older adults and 28.7 percent of employed low-income older adults.

Table 1 Descriptive Statistics by Employment Status

Overall, the analysis shows that transportation access has a substantial and positive association with the employment rates of older adults, particularly those living in low-income households

(those earning less than \$35,000 per year). Access to jobs by public transit is especially influential among low-income older adults living in households without automobiles.³

There are a few statistical weaknesses in this analysis that are important to note and that lead us to view this analysis as promising but preliminary. These weaknesses lead us to propose further analysis be done in the future using of different data than were available in this study. Many of the covariates in the automobile models remained unbalanced, even after the propensity matching. The differences between the two groups narrowed after the propensity matching but, in most cases, remained statistically significant, particularly in the automobile ownership model. The actual magnitudes of these differences are modest with perhaps one exception, post-matching income for all older adults in the auto model (see Table 2, columns 4 and 5). Household income is positively associated with employment, since among older adults (65+ years), earnings make up a large and growing percentage of total income (Bosworth & Burke, 2012). Therefore, low household incomes in our control group likely inflated our estimate such that the employment gap would be narrower if household incomes in the control group were more similar to those in the treatment group.

There also are limits to the conclusions that can be drawn from cross-sectional data, meaning data collected from many subjects at one point in time. These data make it difficult to determine, for example, whether carless individuals have given up their automobiles because they no longer need them for work, or whether they have stopped working because they are unable to reach their jobs. Moreover, the data do not control for residential self-selection. For example, working older adults may be more likely to move to transit-rich neighborhoods, inflating the employment effect of living in a “transit-rich” neighborhood. However, evidence suggests that almost 90 percent of older adults prefer to age in place (Harrell, Lynott, & Guzman, 2014) and that residential self-selection is likely lower than among younger age groups. Finally, our analysis also was limited by the lack of comprehensive data on the health, wellbeing, and financial status of older adults, characteristics that are important to retirement decision-making and ones that change over time, making them difficult to capture with cross-sectional data.

³ In addition to the analysis presented in Tables 2 and 3, we also examined the relationship between transportation access and employment outcomes for individuals age 65 and over (as opposed to those age 60 and over). While results were similar to the original analysis, coefficients were somewhat larger when the sample was limited to individuals over the age of 65. This suggests that as workers age, transportation access (both vehicle ownership and living in a high-transit neighborhood) becomes an even stronger predictor one’s likelihood of remaining in the labor force.

VARIABLES	ALL OLDER ADULTS (60+ years)						LOW-INCOME OLDER ADULTS (60+ years)					
	Before Matching			After Matching			Before Matching			After Matching		
	Treated (Car)	Control (No car)	P < 0.01	Treated (Car)	Control (No car)	P < 0.01	Treated (Car)	Control (No car)	P < 0.01	Treated (Car)	Control (No car)	P < 0.01
	1	2	3	4	5	6	7	8	9	10	11	12
Age	67.8	69.8	*	67.8	67.7	ns	70.4	70.4	ns	70.4	72.8	*
% non-Hispanic white	75	55	*	75	68	*	61	44	*	61	50	*
% with driver's license	96	50	*	96	91	*	92	40	*	92	85	*
People in household	2.3	1.6	*	2.3	2.5	*	2.0	1.5	*	2.0	2.6	*
Household Income (\$)	\$94,574	\$40,701	*	\$94,592	\$77,551	*	\$22,480	\$17,104	*	\$22,483	\$20,855	*
Population density (residents/sq. mi)	4,264	10,818	*	4,264	3,647	*	4,984	10,551	*	4,984	6,547	*
Avg. insurance premium (zip code)	\$731	\$799	*	\$731	\$764	*	\$751	\$796	*	\$751	\$774	*
Job access by transit	7,252	39,261	*	7,252	7,978	*	8,283	35,172	*	8,283	17,017	*
Estimate	0.020						0.130					
SE	0.007						0.015					
T-stat	2.887						8.423					
p. value	0.004						< 0.001					
n (obs)	11,188						1,946					
n (treated obs)	10,789						1,693					

Table 2 Determinants of Employment -- Effects of Auto Ownership

Variables	CARLESS OLDER ADULTS (60+ years)						CARLESS LOW-INCOME OLDER ADULTS (60+ years)					
	Before Matching			After Matching			Before Matching			After Matching		
	Treated (High job access)	Control	P < 0.01	Treated (High job access)	Control	P < 0.01	Treated (High job access)	Control	P < 0.01	Treated (High job access)	Control	P < 0.01
	1	2	3	4	5	6	7	8	9	10	11	12
Household Income (\$)	\$43,670	\$35,721	*	\$43,670	\$44,667	ns	\$17,006	\$17,252	ns	\$17,006	\$15,416	ns
Household Size	1.5	1.7	*	1.5	1.5	ns	1.4	1.6	ns	1.4	1.5	ns
Age	68.4	72	*	68.4	67.9	ns	69.3	72.1	*	69.3	68.8	ns
% with license	53	46	ns	53	55	ns	42	37	*	42	44	ns
% non-Hispanic white	54	57	ns	54	59	ns	42	48	*	42	43	ns
Estimate	0.064						0.125					
SE	0.041						0.049					
T-stat	1.577						2.57					
p. value	0.115						0.01					
n (obs)	399						253					
n (treated obs)	250						152					

Table 3 Determinants of Employment: Effect of Living in a Neighborhoods with High Job Access by Transit (2012 CHTS)

Conclusion: Physical Accessibility and Employment Outcomes

The models showed a positive association between physical accessibility and the employment outcomes of older adults in California. Access to household cars and to jobs by public transit are even more strongly associated with the employment of low-income older adults, a finding that is consistent with the broader literature on the role of transportation in the employment outcomes of all low-income adults (Gurley & Bruce, 2005; Ong, 2002; Raphael & Rice, 2002; Raphael & Stoll, 2001). The models also showed positive but smaller associations between employment and automobile ownership among all older adults and access to jobs by public transit among all carless older adults.

Whether it improves life satisfaction or addresses ongoing financial needs, employment plays a growing role in the lives of older adults. However, some older adults might prefer or need to remain in the labor force but cannot because they do not have access to automobiles or they live in neighborhoods where they cannot easily reach jobs by transit. While it may be easy to ask family members or friends for occasional rides, regular commute trips likely require more independent travel compared to travel for other trip purposes.

As we noted above, this analysis is limited by the use of cross-sectional travel survey data. A better understanding of the relationship between transportation and employment outcomes requires more detailed knowledge of individuals as well as changes in their behavior. Further analysis on this topic ought to draw on longitudinal data that follows individuals over time and, importantly, can track the timing of events, in this case the specific timing of retirement decisions in relation to driving cessation. Longitudinal data would also be useful in analyzing household moves and, in particular, whether older adults are able to prolong their work lives if they relocate to transit-rich neighborhoods. Finally, the complexity of household decision making is difficult to capture using quantitative data. Therefore, statistical analyses should be complemented with data from interviews and focus groups.

Focus Groups and Interviews

Aging is often associated with changes in health that limit or prevent certain forms of travel, be it walking to the bus or driving in the dark. Prior to this study, we hypothesized that age-related mobility impairments could cause people to stop working. If a person is able to travel to work or has access to excellent transit service, their desire to work is not diminished by mobility.

Statistical analysis of the California Household Travel Survey (CHTS) provided interesting and useful information, but cannot provide a complete picture of the relationships among health, mobility options, and decisions by respondents to remain in the active work force past common retirement age which for most people is sometime during their sixties. To complement the statistical analysis, we conducted focus groups and interviews of a small sample of people who had retired over the past several years. In addition to gathering basic demographic information, the focus groups and individual interviews asked people about their access to and use of automobiles, public transit, and ride-hailing services. Participants were also asked about their work histories and engagement in paid or volunteer work since their formal retirement. We explored their motivations for traveling and preferences for the use of particular travel modes. Respondents were asked whether they had experienced temporary or long-term mobility limitations because of medical conditions and how those affected both their mobility and their work or volunteer activities. What we found was that health plays a multifaceted role in the relationship between travel and retirement.

We recruited focus groups and interview participants by advertising in the UCLA Emeriti and Retirees Association Newsletter and on its web page and by reaching out to retired employees of the City of Los Angeles through two different retirees' associations web sites and monthly print newspaper entitled *ALIVE!* A short advertisement invited interested people to contact us by e-mail, and promised a gift card as a reward or payment for participation. When we received messages from the volunteers, their availability and their distance from campus were factors determining whether they would come to campus, where the focus groups were conducted, or whether we would interview them by telephone. Similar questions were used in the focus groups and in the telephone interviews, but, of course, focus group participants could interact with one another and the informal setting of the focus groups, including food and drinks, led to longer conversations than the phone interviews. We conducted three focus groups in which 12 people participated and another nine interviews by telephone. UCLA and City retirees include blue collar and white collar employees, and we had hoped for a heterogeneous set of respondents, though highly-educated and active people accounted for most of the respondents. While the group of participants was small because of limited responses, scheduling difficulties, and limited budget, questioning was in depth and responses were similar to one another, giving us confidence that our findings are an accurate representation of the views and experiences of respondents. To protect the privacy of the participants, no names or identifying information is included except in general language in

order to elucidate the relationships among the respondents' characteristics that were relevant to this study.

The focus groups and interviews offered insight into how transportation does, and does not, play a role in deciding to retire among older adults. The older adults we spoke with all considered themselves to be retired, but most were active in volunteer or paid work on a part-time basis. This labor was largely a labor of joy; the participants had, for the most part, either worked for the City of Los Angeles or for the university, though in a range of capacities, and enjoyed "giving back" to the community in ways that reflected their expertise or as volunteers in other capacities. Continuing to work also kept them active as they aged; one participant noted that her friends who had stopped working became much less active. Semi-retirement offered seniors greater flexibility to choose when to travel, and nearly all the part-time workers we spoke with were pleased when they could avoid traffic. One participant had experienced chest pains due to the stress of commuting in traffic; once he had retired and had the flexibility to choose where and when to work, his chest pains disappeared. Some participants had switched careers, or were pursuing passion projects related to art or music, or were continuing their educations. Very few were working because of financial need, though they appreciated the additional income.

Illnesses or chronic medical conditions prevented some participants from finding employment distant from their homes. For others, health did not preclude them from being able to travel to work, but it made work itself burdensome. Most of the participants, however, were highly mobile, sociable, and educated, and their decisions whether or not to retire did not reflect mobility constraints. Many of these active seniors had cared for their own parents who could no longer drive, but in general they had not even considered how they themselves might cope with losing their own mobility in the future. This finding seems important and the analysis of CHTS data did not provide information about the extent to which respondents had caregiving responsibilities.

Driving was the primary mode of travel among participants, most of whom had been driving their entire adult lives. This finding was consistent with our expectations from the literature review and also consistent with findings from the analysis of the CHTS. For daily trips, respondents mostly relied on their personal vehicles. Transit was used less frequently. One participant asked, "do people want to use the bus in Los Angeles if they can avoid it?" Others explained that transit was far more inconvenient than the car in terms of time and scheduling (especially with trip chaining), was less safe to use at night, and that riders were "sketchy" and "crammed in like sardines."

There were a few examples of transit use in our sample. Some participants, who were relatively affluent and still working part-time, had switched to using transit because it allowed them to do things other than drive. One man likened the light rail vehicle to his private office, because he could continue working and communicating while commuting. He explained that he had far more time in retirement, which made transit a more feasible travel mode. Another

participant said that in addition to the stress of driving, finding parking was another deterrent to driving, and that he had switched to using the bus which ran directly from his home to his work. Some respondents used transit recreationally, for example, going on outings with MetroLink or using light rail to explore the city. These participants were outliers, however. For most older adults in our study, driving dominated. When it did not, the reasons centered on the convenience and cost of driving relative to alternatives, and were not related to health limitations or the absence of alternatives to driving.

None of the participants had seriously considered how they might cope with losing their driver's licenses. While many participants explained how difficult, yet necessary, it had been to "take dad's license" away, few had envisioned themselves in that position. When prompted, several participants said they would begin to use rideshare services or transit, despite never having ordered a rideshare service for themselves or never having relied on public transportation in their neighborhood before. One married couple in their late-seventies said they had spoken of eventually moving into an assisted-living facility, but were not actively planning for such a transition. In general, participants suggested that they would figure out how to cope with impaired mobility if or when the time came.

For many participants, retirement from work ebbed and flowed. In other words, retirement was not a one-time event. A disability or caregiving commitment might have ended their work for a time but this obligation might have been temporary, after which retirees returned to work. Several participants had experienced health challenges, such as knee surgery, which immobilized them temporarily. Others had dealt with illnesses such as cancer, which did not make them limit their driving but did force them to take time off work. Caregiving for aging parents was an important lifecycle event which also prompted participants to stop working for an extended period of time.

The interview and focus group participants were relatively affluent, highly-active and mobile people, for whom work was a source of pleasure rather than a necessity. We found that even in retirement, these older adults continued to work or volunteer on a flexible basis, and were able to travel wherever (and for the most part whenever) they wanted. The role of health was less direct than we initially thought it might be. There are many mechanisms through which health and mobility relate to retirement. For some, a disability might temporarily cause them to be unable to commute to work. It also might be that a medical condition might allow older adults to travel by car but make work untenable. Some health problems affect both a person's physical ability to travel and their ability to work. For most, retirement had nothing to do with mobility at all (other than the opportunity to travel for vacations). Retirement gave seniors a reprieve from traffic, as well as the time to try new activities.

Conclusions and Proposed Further Research

This report describes a preliminary exploration of an important question that has not previously been investigated. It addressed the extent to which physical accessibility may be a factor influencing those who become part of the growing proportion of older Americans who remain in the paid labor force as they age beyond what formerly were expected retirement ages. Whether it improves life satisfaction or addresses ongoing financial needs, employment plays a growing role in the lives of older adults. However, some older adults might prefer or need to remain in the labor force but cannot because they do not have access to automobiles or they live in neighborhoods where they cannot easily reach jobs by transit. While it may be easy to ask family members or friends for occasional rides, regular commute trips likely require more independent travel compared to travel for other trip purposes.

We explored the relationship between physical accessibility and delayed retirement to the extent that it was possible to do so using the CHTS, and complemented that analysis by conducting focus groups and interviews. The study led to preliminary indications that access to automobiles and good transit service might well be causally related to decisions to remain in the active work force as people age. The findings, however, were indicative but not conclusive and they suggest that future research into this is warranted.

The models showed a positive association between physical accessibility and the employment outcomes of older adults in California. Access to household cars and to jobs by public transit are even more strongly associated with the employment of low-income older adults, a finding that is consistent with the broader literature on the role of transportation in the employment outcomes of all low-income adults (Gurley & Bruce, 2005; Ong, 2002; Raphael & Rice, 2002; Raphael & Stoll, 2001). The models also show positive but smaller associations between employment and automobile ownership among all older adults and access to jobs by public transit among all carless older adults. The focus groups and interviews with a small number of participants, also suggest that relationships between extended working years and physical accessibility are worthy of further exploration.

As we note previously, this study was limited by reliance on the use of cross-sectional travel survey data. Cross sectional data allow comparisons among different people at one point in time but did not permit research into changes that take place over time in each person's circumstances. Moreover, the complexity of household decision making is difficult to capture using quantitative data. The small number of focus groups and interviews provides greater detail about retirement decision making but is only suggestive of changes over time.

A better understanding of the relationship between transportation and employment outcomes requires more detailed knowledge of individuals as well as changes in their behavior over longer periods of time. Further analysis on this topic ought to draw on longitudinal data that follows individuals over time, tracking the timing of events, in this case the specific timing of retirement decisions in relation to driving cessation and in relation to household moves and, in

particular, whether older adults are able to prolong their work lives if they relocate to transit-rich neighborhoods.

This type of analysis is possible using the Health and Retirement Survey (HRS) which contains three categories of variables that could be explored in order to extend the research on which we reported. These include: employment, factors associated with employment, particularly those related to health, outcomes, and travel. In addition to a rich variety of demographic information about each respondent the database provides detail about current employment among participants in the survey, including self-employment and part-time and volunteer work, earnings, hours worked per week and plans to work longer or fewer hours in the future. The data also include information about education, health conditions, receipt of pension income, and similar information for spouses of each respondent. The health status information is quite detailed and will enable us to examine relationships between disabilities, driving, and employment. While there is less detail in this database about trips made than in the travel survey data provided by the CHTS, it provides fairly detailed information about car ownership and access and by using geographic locations provided in the confidential dataset, we can identify transit service levels at the residences of the respondents.

Because the results of the preliminary studies are promising but inconclusive, we plan to pursue further analysis in the near future employing the HRS data base. In combination with the analysis already completed, this future work should shed more light on the associations between the times at which older Americans retire, their reasons for retiring, and their accessibility to employment opportunities.

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