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ABSTRACT

Problem, research strategy, and findings: Most Americans live in communities in which automobiles are central to participation in economic, social, and cultural activities. Outside of dense central cities, the ability to continue driving as one ages is fundamental to the quality of life among older adults. Driving rates decline significantly with age. Researchers have studied the myriad reasons former drivers stop driving, but few have examined associations between these transitions and characteristics of the neighborhoods in which older adults live or to which they move. We used longitudinal data from a national sample of 20,000 observations from the University of Michigan Health and Retirement Study (HRS) to examine relationships between residential location, driving reduction, and driving cessation. Longitudinal data allow analysis of changes in behavior, a major advantage over cross-sectional data; however, the timing and sequencing of behavioral changes remain difficult to isolate. Cities provide opportunities for older adults to travel by automobile and other modes that are less available outside cities. Older adults are more likely to reduce or give up driving if they reside in dense, urban, transit-oriented neighborhoods than other neighborhood types. Very few older adults move from suburban to urban neighborhoods; when they do, they are rarely more likely to reduce or stop driving.

Takeaway for practice: The findings underscore the importance of planning to accommodate aging in place. To do this in urban neighborhoods, policies must foster high-quality urban neighborhoods that not only attract younger adults (as is currently the trend) but also retain them as they age through the life cycle.

Keywords: driving cessation, older adults, residential location

Automobiles are central to participation in economic, social, and cultural activities in most American communities outside of dense, transit-oriented urban cores. The population of the United States is aging rapidly and by 2060 almost a quarter of the U.S. population is predicted to be older than 65, the chronological age most often used to identify older adults. The ability to continue driving as one ages is, as a result, a fundamental determinant of the quality of life among most older adults (Coughlin, 2009). Data from the 2017 National Household Travel Survey reveal that most people over the age of 65 (82%) drive. Older adults made 86% of their trips by automobile, 66% as drivers and 20% as passengers (Federal Highway Administration, 2018).

However, driving rates decline significantly with age as health, cognitive ability, and other factors necessitate that some older adults give up driving. Driving cessation is a complex process. As they age, many older adults gradually limit their driving to daylight hours, familiar routes, and essential trip purposes. With the involvement of family members, friends, doctors, and licensing authorities, eventually some stop driving entirely (Chipman et al., 1998).

A growing body of research has addressed the causes and consequences of driving cessation among older Americans, a literature that we review in the next section. Although a great deal is known about the reasons former drivers give up their car keys, far less is known about these transitions in relation to the characteristics of the neighborhoods in which people live or to which they move. Many studies show that most older Americans "age in place," remaining at the same address they occupied when they were younger. Although some relocate in their later years, the association among residential location, aging in place, and access to automobiles is not well understood. Further, the relationship is changing over time in part because of the rise of the internet and increasing connections

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between physical mobility and electronic connectivity (Pangbourne, 2018; Peek et al., 2014).

In this study, we examined the relationship between residential location and driving status (driving reduction and cessation). Our analysis relied on longitudinal panel data from the University of Michigan Health and Retirement Study (2020), which we complemented with national data on the types of neighborhoods in which respondents lived. We used these data in two sets of discrete-time logistic regression models. The first set of models assessed associations between driving outcomes and residential neighborhood types; the second set explored driving status among those who had relocated during the 2 years between panel survey waves, evaluating associations between driving status and *changes* in neighborhood types. Following the literature review, we describe the study data and methodology in detail, providing some basic descriptive statistics.

We then report findings from both sets of models. Given a rapidly aging population, understanding life transitions related to driving is increasingly important. As expected, health and chronological age are important predictors of driving cessation, but there also were statistically significant associations with residential environments. With regard to residential location, the models showed that, all else equal, older adults were more likely to reduce or give up driving if they resided in denser, urban, transit-oriented neighborhoods. The results of the models with only those who had relocated between panel waves are surprising. Older adults who moved to denser and more urban neighborhoods showed an increased likelihood of stopping driving only when moving to neighborhoods with extremely high levels of job access by transit; moves into other types of urban neighborhoods were not associated with an increased propensity to stop or limit driving.

We close with a discussion of the implications of our findings for planning practice. Older people prefer to age in place rather than to move as they grow older. Therefore, to better meet the needs of both movers and stayers, planners must foster not only neighborhoods that attract younger households but also neighborhoods that meet the diverse needs of residents as they age.

Understanding the Determinants of Driving Reduction and Cessation

Older adults primarily travel by car both as passengers and drivers (Buehler & Nobis, 2010; Collia et al., 2003; Rosenbloom, 2009, 2012; Rosenbloom & Herbel, 2009; Yang et al., 2018). Over time, the percentage of older drivers has grown due to improved health and growing life expectancies among older adults, increasing disposable income, the continuation of patterns established in their younger years, and, related to all of these factors, the increase in the proportion of older adults who are licensed to drive (Coughlin, 2009). Many Americans are growing older in car-dependent suburban communities in which driving is the primary form of mobility (Joint Center for Housing Studies, 2018).

Despite the prevalence and growth of automobile travel among older adults, driving rates decline with age. Figure 1 shows that travel by automobile remains high for all older age groups, but the percentage that travel as passengers increases in parallel with the percentage of older adults who are nondrivers.

Many studies address the determinants of self-regulation or limitation of driving leading eventually to driving cessation, pointing to five sets of factors that help to explain this process: individual characteristics, household characteristics, social networks, environmental conditions, and characteristics of the residential area in which someone lives. With respect to individual characteristics, driving limitation is strongly associated with declining vision (Edwards et al., 2009; Ragland et al., 2004) and also strongly and positively associated with stroke, dementia, heart failure, cognitive decline, and the medications used to treat these conditions (Dickerson et al., 2019; Edwards et al., 2010; Ray et al., 1993). Sex and race also influence the likelihood of giving up driving; women and non-White older adults have higher rates of driving cessation at every age, controlling for other factors (Babulal et al., 2018; Bauer et al., 2003; Choi, Mezuk, & Rebok, 2012; Rosenbloom, 2001). Finally, driving cessation is influenced by previous driving experience—the length and level of driving activity (Hakamies-Blomqvist & Siren, 2003)—a characteristic shaped by many other factors.

The household context in which a person lives also plays a role in driving behavior. Transitions away from driving may be easier if the household includes other drivers who are available to provide rides (Choi, Adams, & Kahana, 2012). Income is negatively associated with the decision to give up driving among older drivers just as it is for working-age adults. Many older adults live on fixed incomes and therefore may not have the resources to own and maintain private vehicles (Choi, Mezuk, & Rebok, 2012; Vivoda et al., 2020).

Social relationships beyond the household influence driving decisions. For example, pressure from friends and/or doctors can persuade older adults to reduce and eventually give up driving (Adler & Rottunda, 2006). So, too, can receiving at least some transportation support from friends, neighbors, organizations, and agencies (Choi, Adams, & Kahana, 2012).

Environmental conditions can prompt drivers to reduce their travel. The most common conditions

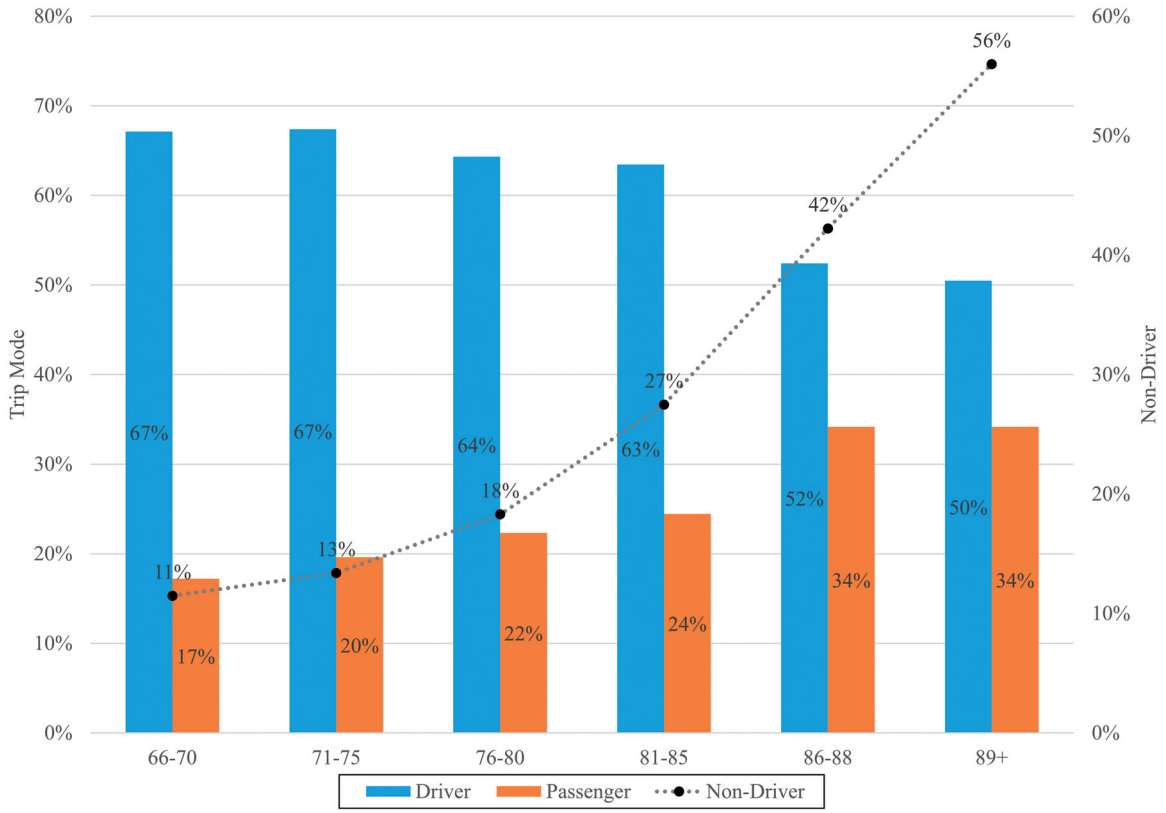

Figure 1. Trips by mode and age.

include driving in bad weather, at night, or on high-speed roads and highways (Naumann et al., 2011). The geographic concentration of these conditions help to explain the relationship between driving status and neighborhood characteristics. For example, Vivoda et al. (2017) found a positive relationship between both driving cessation and driving reduction and roadway density and congestion. These findings are consistent with those of other studies showing that older adults experience increased anxiety when driving in heavy or speeding traffic (Hakamies-Blomqvist & Wahlström, 1998).

Congestion tends to be highest in dense urban areas where activities are geographically concentrated. These same neighborhoods are ones in which alternative transportation services (e.g., public transit, taxis, paratransit, ride-hail) are most available and access to destinations by foot is greatest, potentially influencing the willingness of older adults to give up driving. Hwang and Hong (2018) found that living in an urban area has the strongest association with driving cessation in Korea.

Older adults who live in urban areas and areas where destinations are in walking distance are more likely than other older adults to use transit and to walk, controlling for other factors including health status (Kim, 2011; Lynott et al., 2009; Moniruzzaman et al., 2013). Older adults who use transit or walk may self-select into high-access neighborhoods. Some age in place in urban neighborhoods, whereas others move into them from outlying suburban neighborhoods (Nordbakke, 2013). In any given year about 6% of older adult movers relocate from outlying areas into central cities (U.S. Census Bureau, 2019). Despite this modest percentage, stated interest in moving to neighborhoods with better public transit is high. A survey of older adults in Michigan found that more than a third of respondents who anticipated losing their licenses in the next 5 years reported that they had contemplated moving somewhere with better public transportation services (Kostyniuk et al., 2000). Finally, driving cessation for some older adults is associated with moves into senior apartments or residential facilities that provide transportation (Adler & Rottunda, 2006).

Yet reliance on automobiles remains important; almost three-quarters of older Americans live in low-density suburban or rural areas (Kostyniuk et al., 2000) where alternative transportation options are limited (Glasgow & Blakely, 2000). Between 2000 and 2016 the population older than 65 grew by 39% in suburban America, compared with only 22% in rural areas and 26% in urban areas (Parker et al., 2018). The number of people older than 65 grew from 35.0 million in 2000 to 46.1 million in 2016. Half of this growth—just under 6 million people—occurred in lower density metropolitan

area census tracts, whereas an additional 13% occurred outside of metro areas (Hermann, 2019). Gradually in recent years, the availability of ride-hailing services, better known to many by the trade names of Uber and Lyft, is increasingly influencing driving and locational decisions by older Americans who have access to smartphones and the internet. The proportion of older adults who use these services is climbing rapidly as cohorts who grew older with internet access enter the post-retirement years (Shirgaokar et al., 2021).

Driving means retaining functional independence and personal autonomy, but that must be balanced against the fact that older drivers incur increased risk of injury and mortality from vehicular crashes compared with other age groups (Dickerson et al., 2007). Cessation, though it reduces crash risk, has been associated with a host of negative consequences for psychosocial and physical wellbeing, including increased depressive symptoms (Fonda et al., 2001; Marottoli et al., 1997), decreased out-of-home activity levels (Marottoli et al., 2000), reduced networks of friends (Mezuk & Rebok, 2008), and accelerated health decline (Edwards et al., 2009).

Many studies have explored the travel of older adults. Most of these used cross-sectional data sets, such as national travel surveys, which allow comparisons across different age groups and different places at one point in time (Rosenbloom, 2012; Siren & Haustein, 2016). However, cross-sectional data do not permit exploration of changes in the situations of individuals as they age and their circumstances change, such as the association between aging, changes in residential location, and driving cessation. Although there is a substantial body of research on the relationship between the built environment and the unmet travel needs of older adults (Luiu et al., 2017), very few of these studies center on driving cessation.

Measuring Relationships Between Residential Location and Driving Status

We explored relationships between the characteristics of neighborhoods in which older adults reside and their decisions to limit or stop driving. In addition, we examined whether *changes* in residential location were associated with changes in older adults' driving status. In particular, we asked whether moves by older adults into dense, urban neighborhoods that are presumably more walkable and transit accessible than other neighborhood types coincided with higher rates of driving limitation and/or cessation.

Data

We used data from the national Health and Retirement Study (HRS, 2020), a longitudinal panel study that surveys a representative sample of approximately 20,000 Americans. The HRS includes information on household characteristics, health, income, and activity participation. The data also include a number of questions about driving, including the respondent's ability to drive, whether the respondent had driven in the past month, whether a car was available when the respondent needed one, and whether the respondent limited his or her driving.

The HRS data, though rich in information about personal and household characteristics, include little information about the physical characteristics of neighborhoods in which respondents reside and the mobility options available in those neighborhoods. To overcome these limitations, we combined data from the HRS with information from other sources to explore relationships between driving cessation, driving reduction, and neighborhood characteristics. The confidential version of the HRS data includes a census tract identifier, which allowed us to match respondents to U.S. census data about the characteristics of the neighborhoods in which they live. Based on their locations we also identified respondents' transit accessibility to jobs using a metric developed by the Accessibility Observatory at the University of Minnesota (Owen & Murphy, 2018). The number of jobs that can be reached via transit from a given census tract within 30 min was used as a proxy for access to a range of activities. Most older adults are retired, but employment in a census tract indicates the scale of nonresidential commercial, cultural, and social activity because people are employed where activities take place. We used jobs as a proxy for the location of activities to which a person might travel.

To examine associations between driving status and residential location, we specified a series of discrete-time logistic regression models, a common approach for evaluating event histories (Allison, 1982). The models included two outcomes: the likelihood that an HRS panel member either limited or stopped driving between time t (the year of an HRS wave) and time $t+2$ (the next HRS wave, 2 years later). The HRS waves ranged from 1993 to 2016. The independent variables included characteristics associated with driving limitation and cessation such as age, sex, race, family structure, household wealth, and health.[1] Figure 2 presents a schematic of these characteristics, and Table A1 in the Technical Appendix includes descriptive statistics for the model variables.

Each model also included measures characterizing the built environment of the census tracts in which respondents resided. These variables were used to evaluate associations among residential location, changes in residential location, and driving behavior.

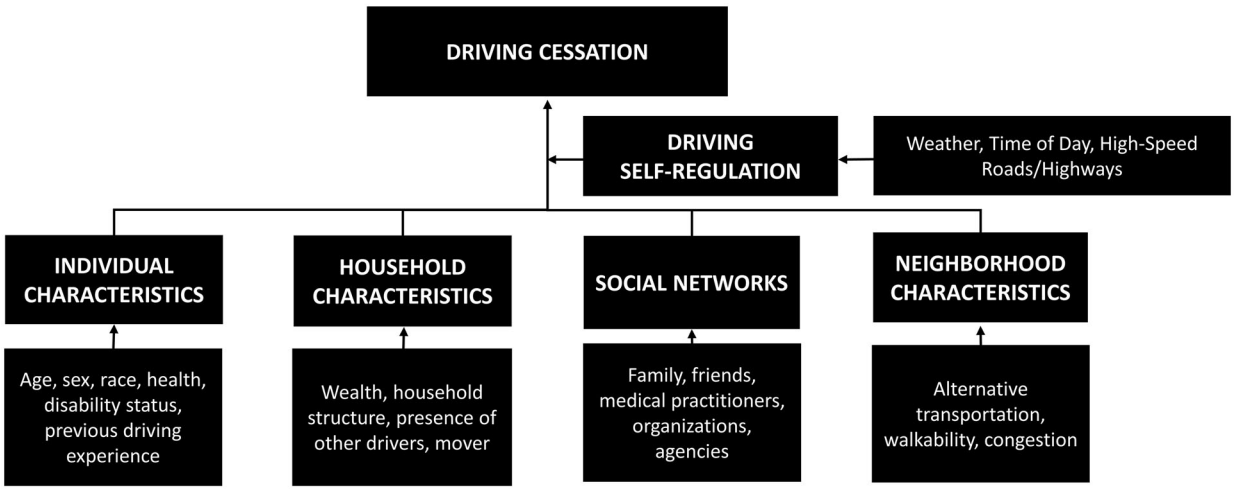

Figure 2. Determinants of driving cessation and self-regulation.

We tested three distinct measures of the built environment. The first was a categorical measure of population density, identifying individuals who lived in extremely dense census tracts (the 95th percentile or above) relative to those who did not. Transit and walking rates are highest in the densest urban communities, where 2.8% of our sample lived. The second measure used the job accessibility metric, which is the number of jobs that can be reached via transit from a given census tract in 30 min. We used this measure to classify individuals in the sample into two groups: those who lived in census tracts with extremely high levels of accessibility by transit (the 95th percentile or above) and those who did not. About 3.1% of our sample lived in these neighborhoods. We used a 95% threshold for both measures because nonautomotive modes are competitive with cars only in the most transit-rich neighborhoods (Smart & Klein, 2020).[2] We tested alternative thresholds and found similar results when we varied the built environment parameters over reasonable ranges.

The third measure of the built environment was the "neighborhood type" in which panel members resided or to which they had moved. Neighborhood types reflect differences in density plus other factors such as diversity of land uses, the transience and stability of the population, accessibility to other areas, and local accessibility to opportunities. Neighborhood types are defined and explained briefly in Table A2 in the Technical Appendix. We used neighborhood types developed in previous studies by applying cluster analysis to a wide range of variables describing the sociodemographic and physical environments in which people live. The data and the cluster analysis methodology used to develop the typology are explained elsewhere (Blumenberg et al., 2015).

We included models for two distinct samples to address the two research questions. The first set of models examined the relationship between an individual's residential location—in particular, the built environment at this residential location—and changes in his or her driving status. This analysis included all individuals in the panel who were drivers at time t, whose driver status was known at time $t+2$, and for whom a full complement of independent variables was available. The models include a total of 13,803 unique respondents and 53,273 person-year observations.

The second set of models examined whether *changes* in residential relocation were associated with changes in driving status. For this analysis, we used the 3,877 individuals in the HRS panel who moved at some point during the study period, comprising 28.1% of the total sample. Because we were particularly interested in associations between residential relocation and changes in driving status, we focused on moves that, at least theoretically, are most likely to significantly influence travel behavior. Therefore, we measured associations between driving status and moves into the following neighborhoods: extremely high density (95th percentile or above), extremely high levels of job access by transit (95th percentile or above), and the old urban neighborhood type. Roughly 1% of all relocations involved an individual moving into one of these clearly urban areas (either extremely high density, extremely high job access, or old urban) from another type of neighborhood.

Table 1 provides descriptive statistics showing relationships between residential location variables and changes in driving status. It includes data for the entire sample as well as for individuals who made at least one household move during the study period. In total, 24.3% of individuals in the sample stopped driving during the study period, whereas 46.8% of those who were able to drive started to limit their driving at some point. In a given 2-year period (i.e., between two consecutive survey

Table 1. Changes in driving status among older adults (age 65+) between time *t* and *t* + 2.

	All respondents		Movers only[a]	
Built Environment Characteristics	**% stopped driving**	**% limited driving[b]**	**% stopped driving**	**% limited driving[b]**
Total (individual)	24.3	46.8	20.4	22.4
Total (pooled)	5.8	16.5	11.0	16.7
Residential Density				
Density ≥ 95th percentile	9.5	21.2	11.1	24.6
Density < 95th percentile	5.7	16.4	11.0	16.5
Job Access				
Job access ≥ 95th percentile	11.2	21.1	19.3	20.3
Job access < 95th percentile	5.6	16.4	10.8	16.6
Neighborhood type				
Rural	5.0	16.2	9.3	16.1
New development	5.3	13.8	10.3	13.0
Patchwork	5.8	17.2	11.5	19.0
Established suburb	6.0	18.2	11.8	20.2
Urban residential	6.8	19.3	11.9	20.6
Mixed use	7.6	16.6	16.7	21.3
Old urban	9.7	20.4	9.1	20.0
N (individuals)	13,803	9,991	3,877	2,244
N (person-years)	53,237	31,746	5,538	3,054

[a]Values are for movers' post-move residential location.
[b]Calculations include only individuals who were able to drive at time *t* and time *t* +2, and is, therefore, smaller than the "stopped driving" sample.

waves) just under 6% of drivers stopped driving, whereas 16.5% of those in the sample limited their driving.

Among all respondents, there was a clear relationship between residential location and driving behavior. Respondents who lived in very dense neighborhoods and neighborhoods with high levels of job access via transit were much more likely to limit or stop driving than those residing in less dense areas and areas having less transit access to activities as indicated by jobs. The relationships between driving status and the seven-category neighborhood types were similar. With a few exceptions, respondents generally limited or stopped driving at higher rates as the neighborhoods in which they lived became more urban.

For movers, however, the association between changes in residential location and changes in driving status was less straightforward. In some cases, the behavior of movers mirrored the full sample, with moves to highly urban areas associated with a greater likelihood of limiting or stopping driving. For example, driving cessation appears to be associated with moves to neighborhoods with high access by public transit and to mixed-use development neighborhoods. However, it was not associated with moves to neighborhoods with high residential densities alone.

Of course, these descriptive findings do not reflect the range of characteristics that may be correlated with both residential location and changes in driving status, such as age, family structure, sex, race, financial status, and health. To obtain a more refined understanding of the relationship between built environment characteristics and the driving behavior of older adults, we turn to the model results.

Built Environment and Changes in Driving Status

The first set of multivariate models examined whether or not built environment characteristics were associated with changes in driving status. Figure 3 presents the percentage change in the likelihood of limiting or stopping driving for all of the significant variables in our models including the residential location measures. The complete model results (including base categories for Figure 3) are provided in Table A3 in the Technical Appendix.

In all three models, coefficients of the control variables largely conformed to the literature review findings. Age was strongly associated with driving cessation and limitation, with individuals being more likely to curtail

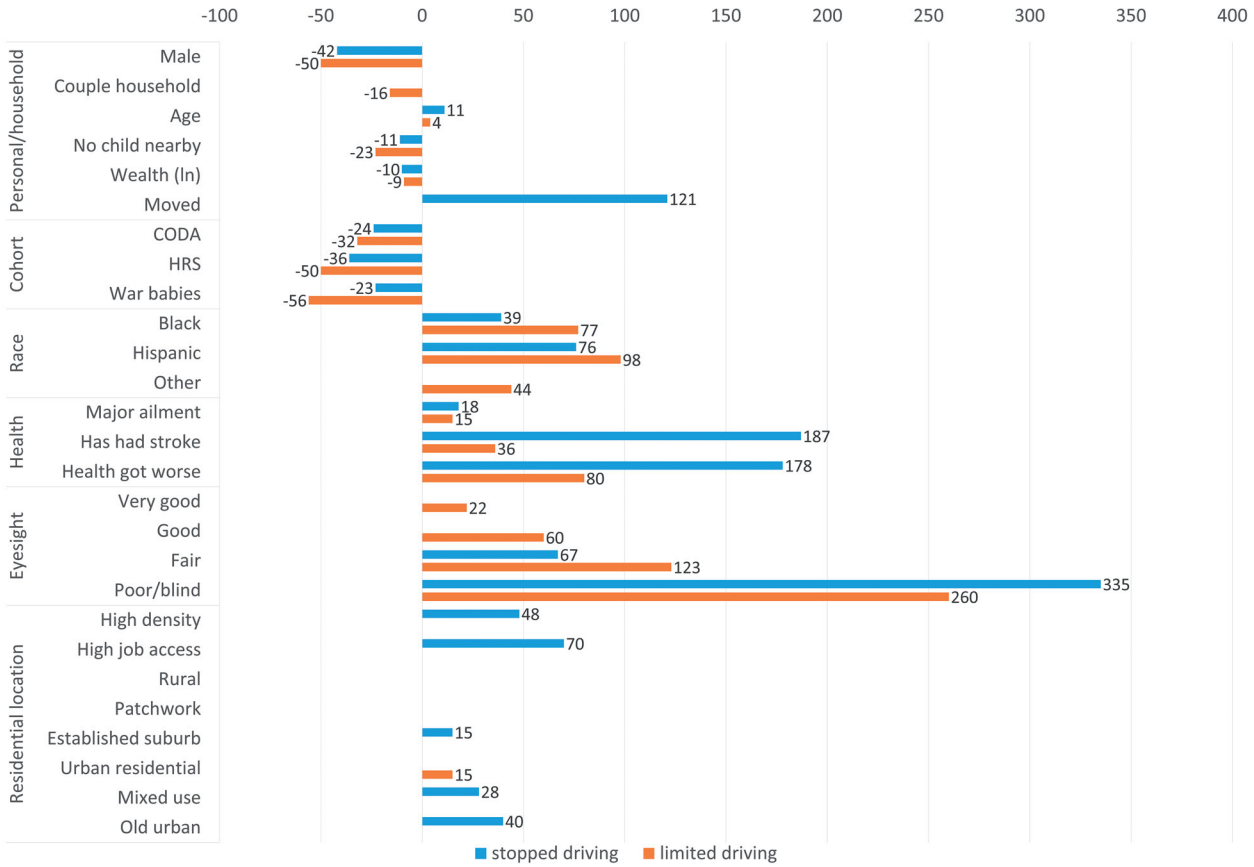

Figure 3. Percentage change in the likelihood of stopping or limiting driving (full sample).

and then stop driving as they grew older. Some 58% of panel members who eventually stopped driving reported that they limited their driving during the survey period prior to the one in which their driving ceased. Holding all other variables in the model constant, men were less likely to limit and stop driving than women, as were those who lived near a child and those with more household wealth. Race and cohort also played roles in driving decisions. All else equal, non-Whites were far more likely to limit or stop driving than Whites, and younger cohorts had a lower propensity to reduce or stop driving than older cohorts.

Health-related variables were strongly correlated with driving behavior. Having at least one major ailment (arthritis, cancer, diabetes, a heart problem, or a lung problem) was associated with limiting or stopping driving, as was having had a stroke at some point in the past. Eyesight was, not surprising, a powerful predictor of driving cessation, with an increase in the propensity to stop or limit driving as one's self-rated eyesight worsened.

Several of the residential location indicators—the primary variables of interest in this analysis—were also statistically significant predictors of driving behavior. The residential density and job access models show that those living in both extremely dense neighborhoods and in neighborhoods having very high levels of access to opportunities (as measured by employment concentrations) via transit had a high propensity to stop driving. All else equal, residents of census tracts with residential densities in the 95th percentile or higher were 48% more likely to stop driving than those who lived in neighborhoods below this threshold; similarly, those residing in census tracts in which job access by transit was in the 95th percentile or higher were 70% more likely to stop driving than those living in areas with less transit accessibility. The built environment measures, however, were not associated with the decision to limit driving: Residents of high-density and high-transit-access neighborhoods were equally likely to limit their driving as residents of other census tracts.

The neighborhood typology model produced results similar to the findings from the density and job access models. Holding all other variables in the model constant, residents of old urban neighborhoods—the neighborhood type with by far the highest levels of residential density and transit supply—were 40% more likely to stop driving than those living in sprawling new development neighborhoods. Those in mixed-use neighborhoods—another urban neighborhood type—

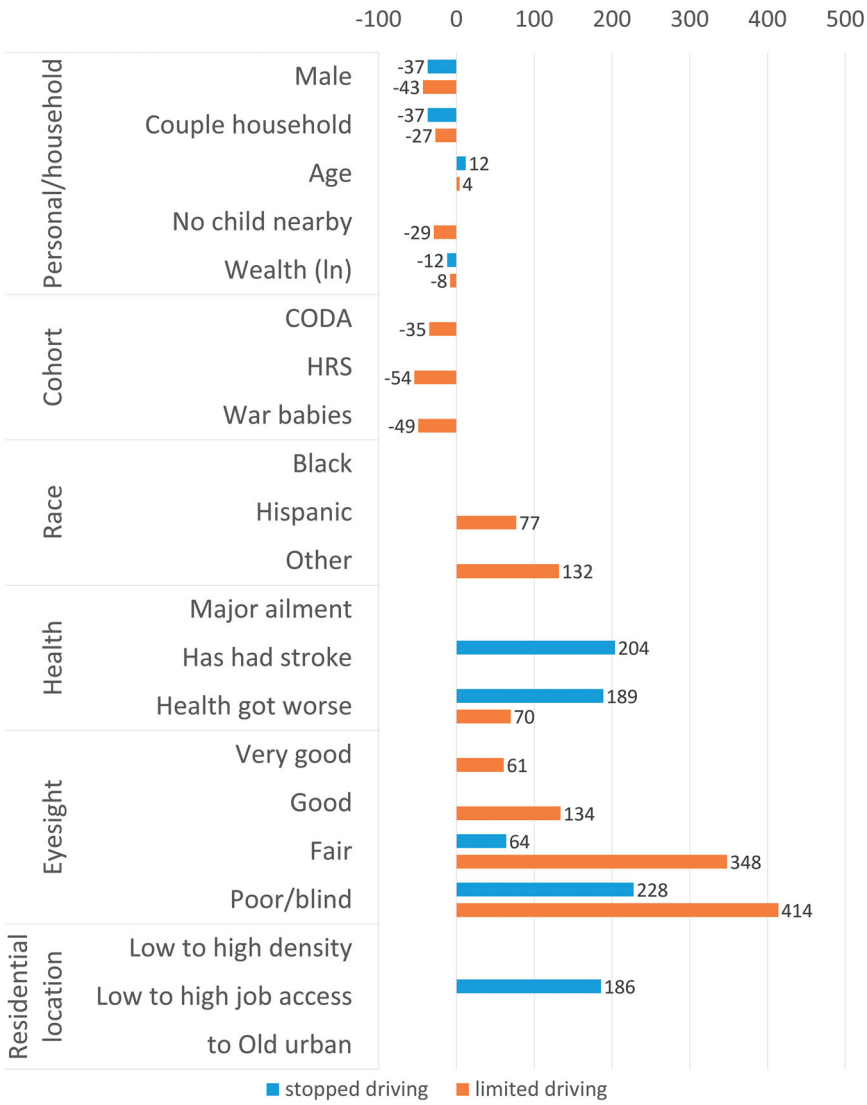

Figure 4. Percentage change in the likelihood of stopping or limiting driving (movers only).

also showed a high propensity to stop driving relative to new development residents (28%). Residents of established suburbs—older, moderately dense suburban neighborhoods with modest levels of transit supply—were 15% more likely to stop driving than new development residents. Finally, the urban residential neighborhood type was the only residential location type to show an association with limiting driving. Those living in these neighborhoods were 15% more likely to limit their driving than their new development counterparts.

The foregoing analysis reveals that people living in densely populated, transit-rich, urban locations, all else equal, were more likely to stop driving during a given time period than those residing in other types of neighborhoods. The second question is whether a change in driving status was associated with a move into these types of communities. For example, it is possible that someone who wishes to (or must) stop or limit their driving may choose to relocate to a central-city neighborhood where alternative modes of transportation are more widely available. Similarly, an individual may relocate to an area with ample nonautomotive transportation options and then decide to stop or limit their driving, out of either convenience or necessity.

To address the relationship between residential relocations and changes in driving status, the second set of models examined only those respondents who made household moves between time t and time $t+2$. Although we do not know whether a move preceded a change in driving behavior or vice versa, we were able to examine correlations between the two occurrences. The statistically significant findings are included in Figure 4 and the complete model results (including base categories for Figure 4) are provided in Table A4 in the Technical Appendix.

In these models, several of the control variables had effects similar to those from the full model. Increasing age was strongly associated with a higher likelihood of limiting and stopping driving, as was having had a stroke and the presence of vision problems. Men were less likely than women to stop and limit driving, and higher household wealth was associated with a decreased propensity to reduce or stop driving.

There were, however, some notable differences between the models that include all panel members and those with movers only. Race was far less predictive of driving status among movers than in the larger sample, and cohort effects were also somewhat smaller among movers. The influence of one's children living nearby on driving status also differed by residential mobility. The models including all respondents showed that individuals were more likely to continue driving if they did not live close to their children. For the models of movers only, the absence of nearby children in one's post-move neighborhood was not associated with driving cessation among movers, although it was associated with limiting driving.

The most notable differences between the models of all panelists and the movers-only models related to residential location characteristics. Whereas the models including movers and nonmovers showed strong associations between living in a dense, transit-rich neighborhood and driving cessation, the evidence was less convincing that residential *relocations* to such neighborhoods were correlated with driving cessation. Those moving into high-density census tracts, for example, were not more likely to stop driving than those moving between less dense census tracts. Similarly, individuals moving into old urban neighborhoods did not give up driving more readily than those moving between non-old urban neighborhoods. Only moving into a census tract with high access via transit was associated with an increase in driving cessation. These movers were almost twice as likely to give up driving than those moving between tracts with lower levels of transit access to jobs.

Discussion and Conclusion

Findings from the models with all HRS panel members are consistent with expectations based on previous research involving people of all ages. Density and other urban built environment features are associated with less driving and lower levels of vehicle ownership (Bhat & Guo, 2007; Cao et al., 2007; Chen et al., 2008). Furthermore, individuals who prefer to rely on nonautomotive modes of transportation are more likely than others to self-select into walkable and transit-rich areas. Schwanen and Mokhtarian (2005) suggested that people's travel behaviors are based on their attitudes toward urban environments. People with "urban attitudes" drive less in both urban and suburban environments than those having "suburban attitudes." Perhaps the people who move later are more likely to have suburban attitudes or do not consider the built environment of the place they live as self-consciously as those preferring urban lifestyles. Individuals and couples who plan ahead for aging may move earlier than those who only do so when they have few other choices. Earlier movers may consciously choose places in which they know they can get around after they stop driving. We did not explore these attitudes in this study, but it is not surprising that older adults show a greater propensity to reduce or give up driving if they reside in these types of neighborhoods. This raises quality-of-life questions about older adults who give up driving in dense urban neighborhoods versus those who give up driving in suburban and rural locations: Are the negative effects associated with driving cessation less acute for those who stop driving in areas where desired destinations are more accessible? Do those who cease driving in less dense environments depend more on friends and relatives for their mobility? These are topics for further study.

Given the difficulty and potential risks associated with driving as people age, it is tempting to think that older adults might find opportunity and satisfaction in neighborhoods where they are less vehicle dependent or where they can walk and potentially take transit to destinations. However, the results presented above, combined with prior research on the residential location choices of older adults, suggest that this is rather rare. Despite stated interest in moving to walkable and transit-rich neighborhoods among older adults, most age in place. When older adults *did* move to densely populated neighborhoods with high levels of transit supply, their new residential location did not have a clear and consistent influence on their driving behavior. Although moving into a neighborhood with very high levels of job access by transit was, all else equal, associated with a higher likelihood of stopping driving, moves into very densely populated census tracts or into old urban neighborhoods showed no correlation with either stopping or limiting driving. This absence of association may be due to the fact that urban neighborhoods are sometimes not conducive to walking and transit use by older Americans if they are characterized by high crime rates, littered streets, and heavy traffic flows (Loukaitou-Sideris et al., 2019). It is tempting to presume that older people become increasingly less able to drive and thus more transit dependent as health declines, but it is equally plausible that for many driving an automobile is less physically challenging than walking to and from transit stops and mounting buses or rail cars. This is another possible explanation for the observation that auto use

does not decline with some moves to walkable and transit-oriented neighborhoods (Hakamies-Blomqvist & Wahlström, 1998).

These findings highlight the complexity of older adults' driving decisions. Our models showed a clear relationship between residential location and the likelihood of reducing or stopping driving, but more research is necessary to fully understand how neighborhoods affect the driving habits of older adults. In particular, qualitative analyses may be well suited to untangling issues that we are unable to address in this analysis. Surveys, interviews, and focus groups would likely yield further insight into the role of neighborhood self-selection in driving-related outcomes; qualitative research could also address relationships between residential location and quality of life for those who give up driving. Similarly, reasons for changing one's driving status and changing one's residential location are both personal and diverse and may require a qualitative approach to understand the chronology of these choices and the motivations behind them. Researchers frequently state that most older Americans prefer to "age in place," but that term could mean different things to different people. For some, but not others, aging in place could include moving to a new dwelling in a community in which they have long resided. Qualitative research also could clarify the meaning of aging in place.

Driving is important to many older adults as a means of mobility that enables them to maintain independence, social connections, and peace of mind. Nevertheless, the risks associated with driving increase with age, and many older adults face difficult decisions about when to limit or stop driving. This analysis shows that, in addition to well-established predictors of driving cessation such as health status, eyesight, age, and gender, older adults are also more likely to give up driving if they live in densely populated urban areas with high levels of transit access to destinations. However, only a small percentage of older adults live in these types of neighborhoods, a percentage that, according to other sources, has declined over time (Hermann, 2019). In addition, though reducing one's automobile dependence by relocating to a walkable, transit-rich urban neighborhood may be an appealing notion, our results suggest that this is not a widespread phenomenon. Moves into the densest, most intensely urban census tracts are quite rare among older adults, and those who do make such moves show no clear propensity to give up or limit their driving. Because the HRS data do not include trip diaries, we could not observe whether those living in dense, accessible urban neighborhoods made fewer daily trips or drove fewer miles than those in other neighborhood types. We relied only on self-reports of driving cessation or limitation.

Cities may have qualities that make them ideal places for growing old, including the ability to travel by modes other than the automobile. Our findings suggest that for older adults to take advantage of these characteristics, they need to age in place in urban neighborhoods. With respect to driving reduction and cessation, older adults would therefore benefit from policies to foster high-quality urban neighborhoods that not only attract younger adults (as is currently the trend) but also retain them as they age through the life cycle.

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SUPPLEMENTAL MATERIAL

Supplemental data for this article can be found on the publisher's website.

NOTES

1. The HRS data do not include information on travel behavior (e.g., trips by time of day) or the specific environmental conditions in which older adults travel (e.g., weather). Therefore, we are unable to control for these characteristics in our models.

2. Research suggests that only the densest, most transit-rich neighborhoods offer competitive non-auto transportation options. However, focusing solely on census tracts with densities or job access by transit in the 95th percentile or above means that only a very small percentage of our sample live in these neighborhoods or relocate to them. Therefore, we also tested lower thresholds, specifically the 90th percentile and above as well as the 85th percentile and above. Results were consistent with the findings presented here.

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