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Aging Without Driving: Evidence from the Health and Retirement Study, 1993 to 2008

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Abstract

This study characterized older adults who do not drive (former and never drivers) and examined how this group of elders has changed over the past 15 years. Sample included community-living adults aged 70–85 who do not drive from the 1993 Asset and Health Dynamics Among the Oldest Old Study ($N = 1,979$) and 2008 Health and Retirement Study ($N = 1,119$). Chi-square and t-tests were used to assess differences between never and former drivers and between cohorts. Logistic regression was used to examine the predictors of having never driven. The driving status among older adults has improved over the past 15 years as the proportion of never drivers declined from 11% to 2%. However, non-driving has become more concentrated among ethnic minority women, and the gaps in education and net worth between former and never drivers widened over the 15 years.

Introduction

Research on older drivers has grown significantly in the past 30 years, contributing to the understanding of the consequences of driving cessation for social integration and health in later life (Choi, Adams, & Mezuk, 2011). For example, driving cessation is associated with reduced network of friends (Mezuk & Rebok, 2008), decreased out-of-home activity levels (Marottoli et al., 2000), increased depressive symptoms (Fonda, Wallace, & Herzog, 2001), accelerated health decline (Edwards, Lunsman, Perkins, Rebok, & Roth, 2009), and increased mortality risk (Edwards, Perkins, Ross, & Reynolds, 2009). A lack of driving among older adults is associated with less frequent health care utilization for regular check-up and chronic care (Arcury et al., 2005; Mattson, 2010) as well as participation in social activities (Marottoli et al., 2000). These findings suggest that aging without driving may be a challenging process for some older adults.

The majority of previous studies have focused on the transition to non-driving among older drivers. However, little is known about people who have *never driven* in their lives. It is

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unknown what proportion of older adults have never driven, or how the characteristics of this group have changed over time. Only a few studies have described the sociodemographic characteristics of elders who have never driven, reporting that these individuals are more likely to be ethnic minorities and socio-economically disadvantaged women, as compared to current drivers (Freeman, Gange, Munoz, & West, 2006; Kim & Richardson, 2006; Mann, McCarthy, Wu, & Tomita, 2005). Estimates of the proportion of adults who have never driven vary widely, from 42.5% reported by Marottoli et al. (1993), 18.6% reported by Forrest, Bunker, Songer, Coben, and Cauley (1997), 15.5% estimated by Mann et al. (2005), 5% reported by Freeman et al. (2006), and to 3.3% reported by Kim and Richardson (2006). Geographic differences (e.g., rural or urban areas) and variation in the availability of transportation alternatives may explain this wide range. The general pattern of declining prevalence of never drivers over time, however, implies the possibility of cohort differences in driving status of the aging population. However, to date, no study has explicitly evaluated what socioeconomic characteristics are associated with having never driven and how never drivers are different from former drivers.

Considering the high dependency on automobiles for transportation in the US (Ball & Rebok, 1994; Mattson, 2010), *never driving* may be an indicator of social marginalization in terms of mobility throughout the life course. Never driving an automobile may indicate either a lack of access to resources for driving (e.g., private vehicles) and/or exclusion from this form of mobility. Social exclusion refers to constraints to adequate participation in wider society (Litman, 2003), and many factors such as poverty, language barriers, sexism, racism, classism, and ageism can contribute to social exclusion. Kenyon, Lyons, and Rafferty (2002) defined mobility-related exclusion as the process by which people are prevented from participating in the community due in whole or in part to insufficient mobility in a society and environment built around the assumption of high mobility. Older adults who have been socially excluded from driving may thus be a vulnerable population who need special attentions from social and healthcare service providers.

This study aims to characterize the demographic and socioeconomic correlates, health status, and healthcare utilization of older adults who do not drive (former and never drivers), and examine how the characteristics of never drivers have changed over a 15-year period, from 1993 to 2008.

Methods

Data come from the 1993 wave of Asset and Health Dynamics Among the Oldest Old (AHEAD) Study and 2008 wave of Health and Retirement Study (HRS). Details of the study design have been described previously (St. Clair et al., 2009). Briefly, the AHEAD/HRS is a nationally-representative probability sample of the US and includes information on socioeconomic characteristics, driving status, physical functioning, health status, and healthcare utilization (Fonda & Herzog, 2004). We restricted our sample to those who reported not driving (that is, former and never drivers) to control for the driving status in later life and to focus on the disadvantage in driving throughout the life course. This study also aims to investigate how the characteristics of never drivers have changed over time. In order to compare two non-overlapping cohorts, we restricted our analysis to participants

aged 70 to 85 years old in the 1993 AHEAD and the 2008 HRS. This yielded the sample of 1,982 former and never drivers in 1993 and 1,332 former and never drivers in 2008. We applied respondent-level sample weights to make the analytic sample comparable to US community-living adults aged 70 to 85. The respondent-level weights excluded (that is, assigned a weight of zero) institutionalized individuals. Thus, the final analytic sample included 1,979 participants for 1993 and 1,119 participants for 2008 after excluding those in institutions. After weighting, the analytic sample became representative of community-living adults who do not drive in the age group of 70–85, which were estimated as 18,710,306 in 1993 and 22,555,418 in 2008.

Respondents were asked if they were able to drive, and never drivers were defined as those who stated that they had never driven an automobile. Former drivers were defined as those who reported they were not able to currently drive but had driven in the past. Demographic and socioeconomic characteristics included age, gender, race (White, Black, Hispanic, and other), immigration history (foreign-born vs. US-born), marital status (married vs. other), years of education, and net worth. Net worth was calculated as the sum of all assets less the sum of all debt, and categorized into quartiles (St. Clair et al., 2009). Health status was indicated by four broad aspects of general health: current depressive symptoms, medical comorbidity, being frequently bothered by pain, and self-rated health. Depressive symptoms were assessed using the 8-item Centers for Epidemiologic Studies – Depression (CESD) Scale (St. Clair et al., 2009). A comorbidity index was created by summing the number of presence of seven common conditions: hypertension, diabetes, arthritis, cancer, stroke, heart disease, and lung disease. Participants were asked if they were often bothered by pain, coded yes/no. Participants were also asked to rate their health, categorized as excellent, very good, good, fair, or poor. Healthcare utilization was indexed by five broad areas of healthcare: (a) visiting a medical doctor, (b) visiting a dentist, (c) inpatient hospitalization, (d) being a patient overnight in a long-term healthcare facility, and (e) having outpatient surgery. Although the wording of these items was consistent across the 1993 AHEAD and 2008 HRS surveys, the timeframe differed; items referred to the past 12 months in AHEAD and past 24 months in HRS. In addition, respondents were asked if they were currently covered by Medicare, Medicaid, or other health insurance (e.g., military healthcare plan, long-term care insurance, a supplement to Medicare, or private health insurance plan).

Chi-square and t-tests were used to determine the statistical significance of differences between never and former drivers at both time points (1993 and 2008), and between never drivers in 1993 and 2008. A series of logistic regression models were estimated to examine the socioeconomic and demographic predictors of never driving. RAND HRS Fat Files (Version J, released in March 2010) was analyzed with IBM SPSS (Version 19.0) statistical software. The alpha level was set equal to .01, and all p-values refer to two-tailed tests. The AHEAD/HRS is approved by the University of Michigan, and all participants provided informed consent.

Results

In 1993, 10.6% of community-living adults aged 70–85 years old had never driven an automobile (never drivers), and 17.6% reported that they had driven before but no longer

drove (former drivers). This means that approximately one out of four community-living older adults was unable to drive and depended on others for rides or used transportation alternatives. Fifteen years later, in 2008, the proportion of former drivers among community-living elders slightly declined to 14.2%, and the proportion of never drivers declined sharply to only 1.7%; that is, the number of never drivers in this age group declined from approximately 2 million to 0.4 million people.

Never drivers significantly differed from former drivers in terms of socioeconomic and demographic characteristics at both time points (Table 1). Never drivers were more likely to be younger, women, ethnic minorities, and immigrants than former drivers. The majority of elders who had never driven were women (95% in 1993; 91% in 2008). The racial/ethnic composition of never drivers changed substantially over the past 15 years. In 1993, the majority of never drivers were non-Hispanic White. However, 15 years later, in 2008, Black and Hispanic elders made up the majority of elders who had never driven. The proportion of Hispanics increased from 13% to 35% while the proportion of non-Hispanic White declined from 66% to 38% over this period. In addition, the proportion of immigrants among never drivers increased from 19% to 37%. Never drivers had less education and also reported lower net worth relative to former drivers at both time points. The gaps in education and net worth between former and never drivers widened over the 15 years. The education gap increased from 1.25 years to 2 years from 1993 to 2008, and the net worth gap increased about four times, from US\$ 38k to US\$ 153k.

Elders who had never driven also differed from former drivers in terms of health status and healthcare utilization. Former drivers reported more medical comorbidities than never drivers at both time points. Former drivers were more likely to have depressive symptoms, be bothered by pain, and report fair/poor self-rated health as compared to never drivers in 1993, but not 2008. Elders who had never driven were about twice as likely to have Medicaid as former drivers in both 1993 and 2008. Overall, never drivers were less likely to use healthcare services such as visiting dentist, hospitalization, and staying in a long-term care facility.

The predictors for having never driven changed over the past 15 years (Table 2). In 1993, the significant predictors of having never driven were female gender, less education, and younger age. Women were 7.89 times more likely to have never driven than their male counterparts. An additional year of education was associated with an 8% decrease in having never driven. An additional year of age was associated with a 4% decrease in having never driven. In 2008, the only significant predictors of having never driven were race/ethnicity and gender. Blacks and Hispanics were more likely to have never driven relative to Whites by 2.21 and 2.91 times, respectively. Education and age were no longer significantly associated with having never driven in the more recent cohort.

Discussion

Over the past 15 years, the driving status in elders aged 70–85 years old improved as the proportion of older adults who did not drive – both former and never drivers – declined from 28.2% in 1993 to 15.9% in 2008. In particular, the prevalence of having never driven

declined substantially from 10.6% to 1.7%. Increased access to the vehicles among White women may explain this decline. Walsh (2008) has argued that women, in particular White women, contributed to the rapid expansion in the usage of automobiles in the US for the late twenties century as they entered the paid labor force in increasing numbers and also needed to drive to efficiently manage their unpaid work in the home.

However, despite the decline in the number of never drivers among older adults, non-driving has become more concentrated among socially disadvantaged groups over the past 15 years. Education and wealth gaps between former and never drivers widened over this period. Moreover, by 2008, the majority of current never drivers were racial/ethnic minority women. Even after adjusting for years of education, net worth, and other sociodemographic characteristics, Hispanic and Black race/ethnicity were significant predictors of having never driven in 2008, a change from 1993. These findings imply that the gains in driving status among elders have benefited women disproportionately by their ethnicity.

This study also demonstrates that never drivers are a distinct group from former drivers. Never drivers are more likely to be women, racial/ethnic minorities, immigrants, and have less education and wealth than former drivers. However, former drivers have worse health status than never drivers, which is consistent with the previous reports (Forrest et al., 1997; Mann et al., 2005; Siren, Hakamies-Blomqvist, & Lindeman, 2004). The process of driving cessation is generally prompted by the accumulation of impairments in physical, cognitive, and sensory function (Ackerman, Edwards, Ross, Ball, & Lunsman, 2008; Ball & Rebok, 1994; Edwards et al., 2008), and thus it was not unexpected that overall former drivers reported worse health than never drivers. That is, being a former driver in and of itself is an indication of poor functional status, but that may not be true of never drivers.

In sum, this study contributes to the understanding of the determinants of non-driving in later life. The driving status among elderly women has improved over the past 15 years, but these improvements have primarily benefited non-Hispanic Whites. Non-driving has become more concentrated among racial/ethnic minority women over the past 15 years. Social service providers need to be aware of and work to accommodate this distinct population of elders given their dependency on transportation alternatives throughout the lifespan. Future studies should investigate how non-driving elders meet their mobility needs and how alternative transportation may influence their use of social and health services, thus the gerontological work force can more effectively provide social and health services to this vulnerable elderly population.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1
Socioeconomic and Health Characteristics of Never and Former Drivers: 1993 AHEAD and 2008 HRS

	1993			2008		
	Never drivers	Former drivers	P	Never drivers	Former drivers	P
<i>N</i>	732	1,247		133	986	
<i>Socioeconomic characteristics</i>						
Age, <i>M</i> (<i>SD</i>)	77.07 (4.40)	77.74 (4.48)	.001	76.94 (4.87)	77.93 (4.68)	.027
Women, %	94.7	73.5	< .001	91.0	76.6	< .001
<i>Race</i>						
Non-Hispanic White, %	66.0	75.1	< .001	38.0	69.1	< .001
Non-Hispanic Black, %	19.2	17.2		21.7	15.8	
Hispanic, %	12.5	5.4		34.7	12.5	
Other, %	2.2	2.3		5.6	2.6	
Foreign-born, %	19.1	12.0	< .001	36.6	15.4	< .001
Married, spouse present, %	31.7	36.7	.025	26.2	37.3	.015
Education years, <i>M</i> (<i>SD</i>)	8.64 (3.76)	9.89 (3.72)	< .001	8.60 (4.26)	10.60 (3.78)	< .001
Net worth, <i>M</i> (<i>SD</i>)	67016 (119044)	104818 (241469)	< .001	130010 (202278)	282679 (895596)	< .001
<i>Health status</i>						
CES-D ^a , <i>M</i> (<i>SD</i>)	2.22 (2.20)	2.53 (2.23)	.005	2.34 (2.27)	2.72 (2.22)	.090
Comorbidity, <i>M</i> (<i>SD</i>)	1.69 (1.18)	2.02 (1.31)	< .001	2.57 (1.38)	2.97 (1.43)	.003
Bothered by pain often, %	37.5	44.2	.004	41.5	44.9	.475
Self-rated health, fair/poor, %	45.3	59.9	< .001	53.8	62.3	.068
<i>Healthcare utilization, %</i>						
Covered by Medicare	95.1	96.6	.094	99.4	97.7	.505
Aging Without Driving						15
Covered by Medicaid	26.5	15.9	< .001	40.2	21.1	< .001
Covered by other health insurance	52.7	66.4	< .001	21.1	44.7	< .001
Visit doctor	87.4	91.3	.006	93.5	95.7	.275
Visit dentist	26.8	33.0	.004	32.5	42.8	.028

	1993			2008		
	Never drivers	Former drivers	P	Never drivers	Former drivers	P
Hospitalization	26.3	33.7	.001	34.5	45.4	.022
Long-term care facility	1.3	3.7	.002	5.7	11.2	.061
Outpatient surgery	10.8	11.6	.607	13.4	19.7	.093

Note. The respondent-level sample weights were applied for all the analyses; *P*-value from chi-squared tests for categorical variables and t-tests for continuous variables.

^a18.3% had missing values in 1993; 16.2% in 2008.

Table 2

Predictors for never driving among adults aged 70–85 years old in 1993 and 2008 (Ref. former drivers)

	1993		2008	
	OR	95% CI	OR	95% CI
Age (year)	0.96*	0.94–0.98	0.97	0.93–1.01
Woman (<i>ref. men</i>)	7.89*	5.48–11.36	2.59*	1.34–4.98
Race (<i>ref. White</i>)				
Black	0.97	0.74–1.26	2.21*	1.29–3.79
Hispanic	1.43	0.94–2.17	2.91*	1.51–5.60
Other	0.92	0.46–1.84	2.55	0.95–6.85
Foreign-born (<i>ref. US-born</i>)	1.48 ⁺	1.09–2.00	1.56	0.88–2.76
Married (<i>ref. unmarried</i>)	1.22	0.97–1.54	0.70	0.43–1.12
Education (years)	0.92*	0.90–0.95	0.95	0.90–1.01
Net worth (<i>ref. top 25%</i>)				
75–50%	1.20	0.90–1.60	0.89	0.48–1.65
50–25%	1.25	0.93–1.68	0.79	0.42–1.50
Bottom 25%	1.39 ⁺	1.02–1.90	0.71	0.37–1.39

Note. Respondent-level sample weights were applied for all the analyses ($N = 1,979$ in 1993; unweighted $N = 1,119$ in 2008).

OR = odds ratio; CI = confidence interval.

* $p < .01$;

⁺ $p < .05$