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**Research Article**

# Getting Rides From Others As a Coping Mechanism in the Transition to Non-Driving

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## Abstract

**Objectives:** To characterize the effect of the actual and potential ability to get rides from others on older adults' driving reduction at 3-year follow-up in the United States.

**Methods:** We analyzed National Health and Aging Trends Study data from community-dwelling drivers in 2015 (unweighted $n = 5{,}102$). We used weighted logistic regression models to estimate whether getting rides from others in 2015 was associated with older adults increasing the number of driving behaviors they avoided, decreasing the frequency with which they drove, or not driving at 3-year follow-up after adjusting for biopsychosocial variables. We also measured presence of social network members living nearby including household and non-household members and estimated associated odds of driving reduction at 3-year follow-up.

**Results:** Older adults who got rides from others in 2015 had greater odds of reporting no longer driving at 3-year follow-up compared to those who did not get rides (adjusted odds ratio [aOR] = 1.53, 95% confidence interval [CI]: 1.11–2.11). We found no statistically significant association between older adults living with others or having more nearby confidantes outside their household and their odds of reducing driving at 3-year follow-up.

**Discussion:** These findings suggest that getting rides from others plays an important role in the transition to non-driving for older adults. Future research should examine whether other aspects of social networks (e.g., type, quality, and closer proximity) might also be key modifiable coping factors for older adults transitioning to non-driving.

**Keywords:** Driving, Social networks, Travel behavior

Driving self-regulation, ranging from avoiding risky driving conditions to complete cessation from driving, represents an important, yet complex, life transition. Aging is associated with increasing likelihood of chronic health conditions and medication use, which can subsequently decrease driving safety (Dickerson et al., 2007). Drivers ages 70 and older are more likely to make critical errors in driving that increase their risk for crashes (Cicchino & McCartt, 2015). However, for many older adults, the decision to limit or stop driving is complicated by factors including reliance on driving as a primary means of transportation (Shen et al., 2017). Moreover, driving cessation is associated with serious negative impacts on social participation, community engagement, and mental health (Chihuri et al., 2016; Qin et al., 2020) as well as physical function, cognitive decline, and risk of mortality (Choi et al., 2014; Hirai et al., 2020; Ratnapradipa et al., 2020).

Given the current epidemic of social isolation among older adults (Committee on the Health and Medical Dimensions of Social Isolation and Loneliness in Older Adults, 2020), reducing driving may exacerbate social isolation and unmet care needs. At least 1 in 3 older adults reports not being able to make needed or desired trips outside the home, and this unmet travel need is greater among adults who have stopped driving independently (Luiu et al., 2017). Coping factors, both internal and external, can support independence and mobility through the transition to non-driving and may ultimately moderate physical and psychosocial well-being outcomes after driving cessation (Choi, Adams, & Mezuk, 2012). In particular, access to alternative transportation options to driving is an external coping factor that has been associated with greater rates of social participation among older adults (Lamanna et al., 2020; Latham-Mintus et al., 2022). There is a critical need to understand the role of alternative transportation options as potentially modifiable coping factors that can facilitate driving behavior changes while maintaining mobility around their community.

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Older adults use a variety of travel modes to get around as they transition to non-driving including getting rides from family and friends, using ride share services, walking, taking public transit, or using paratransit services. Getting rides in a private vehicle is particularly important for older adults who live in car-dependent communities in the United States (Moody et al., 2021). Leveraging social networks to get rides from others provides important alternative transportation options, and thus may be particularly useful in helping older adults maintain community mobility through the transition to non-driving (Koumoutzis & Vivoda, 2023; Koumoutzis et al., 2022). Our study examines whether getting rides from others, as well as the potential to get rides from others as measured by a variety of social network characteristics, are associated with driving reduction over 3 years among community-dwelling older adults in the United States.

We conceptualize the actual and potential ability to get rides from others as external coping factors within a stress-coping framework of driving cessation (Choi, Adams, & Mezuk, 2012). This conceptual framework characterizes the potential for stressors—changes in health or functional status that may be gradual or abrupt and subsequent difficulty driving (Dugan & Lee, 2013)—to trigger transitions to non-driving (Musselwhite & Shergold, 2013). In instances where changes in health or functional status are gradual, many drivers engage in some form of driving self-regulation—such as limiting the distance or frequency of driving trips or avoiding driving in higher-risk situations—prior to stopping driving completely (Meng & Siren, 2015). In this study, we investigate the role of getting rides from others and social network characteristics as potential external coping factors that can facilitate the transition to non-driving while maintaining community mobility.

## Social Networks and Driving

In the United States, driving independently remains the primary mode of travel for older adults (Shen et al., 2017). For this reason, some drivers may not get rides from others to get to places outside their home until they are transitioning to non-driving. In addition to measuring the association between getting rides from others and the transition to non-driving, we also seek to measure the potential to get rides from one's social network as an external coping factor in this transition. Giving and receiving social support is an important function of social networks (Berkman et al., 2000). Previous research suggests inadequate social support may be associated with greater difficulties in completing instrumental activities of daily living, also referred to as instrumental activities of daily living (IADLs; McLaughlin et al., 2012). Social network characteristics associated with getting support in IADLs include marital status and living arrangement (Saito et al., 2017; Vlachantoni et al., 2015). Social networks can be characterized in a variety of ways such as the number of contacts with friends or family members and satisfaction with perceived or received social support (Goodger et al., 1999). The number of confidantes—people to talk to about important things—is a key characteristic of social networks that is associated with emotional and informational support (Gottlieb & Bergen, 2010).

For transportation, an IADL, family members, and friends play a role in providing alternative transportation options to driving. Many older adults get around by private vehicle as passengers after they have stopped driving independently (Luiu et al., 2017). In a study of older adults in Florida, people who received transportation support from someone outside their family were more likely to stop driving (Choi, Adams, & Kahana, 2012). Another study in Japan found that older adults were more likely to have progressed from considering driving cessation to actually stopping driving if they felt confident that they would be able to get rides from someone in their life (Ichikawa et al., 2016). Social network characteristics can influence both transportation options and transportation needs. For example, living with others may reduce the need to drive to get social needs met. Conversely, having social network members living in one's community may increase the importance of having reliable transportation to visit others. In one study of older adult women living in rural areas, women were more likely to resume driving again after having stopped for a variety of reasons including wanting to be able to provide transportation support to their friends who lived nearby (Johnson, 2008). Further study is needed to understand the interconnected relationships between transportation support (e.g., getting rides from others), social network characteristics, and the transition to non-driving.

## Research Questions and Hypotheses

Our study examines whether the actual and potential ability to get rides from others, as measured by a variety of social network characteristics, are associated with driving reduction at 3-year follow-up among community-dwelling older drivers in the United States. We use data from the National Health and Aging Trends Survey (NHATS) to characterize associations between getting rides from others, several social network characteristics, and the odds of driving reduction at 3-year follow-up. To our knowledge, this is the first nationally representative analysis of the actual and potential ability to get rides from others and the odds of driving reduction in the United States.

Research Question 1: Among community-dwelling older drivers in the United States, does the odds of reducing driving 3 years later vary by whether someone got rides from others to get to places outside their home in 2015?

Research Question 2: Among community-dwelling older drivers in the United States, does the odds of reducing driving 3 years later vary by the number and type of geographically proximate social network members in 2015?

## Method

### Data

We used data collected as part of the NHATS, a nationally representative sample of Medicare beneficiaries ages 65 and older. NHATS has conducted interviews annually with a cohort of Medicare beneficiaries who were ages 65 and older starting in 2011 ($n$ = 8,245). In 2015, the investigators replenished the sample due to attrition. In both the initial and replenishment samples, the investigators used a stratified three-stage sample design that oversampled the oldest age group—ages 90 years old and up—and Black non-Hispanic adults (Montaquila et al., 2012). At the 2015 replenishment interview, the weighted response rate was 72.1% (Freedman & Kasper, 2019).

Our analytic sample included NHATS participants in 2015 who were at risk for the outcome of interest—reduction in driving behavior. Starting with the 2015 cohort, we limited

our sample to community-dwelling participants ($n$ = 7,070). We further excluded participants who reported they had not driven in the month prior to the 2015 interview ($n$ = 1,930; including $n$ = 466 who had never driven). In some cases, participants had proxy respondents complete interviews for them (e.g., if the participant had dementia, had a speech or hearing impairment, had a language barrier, or was ill). Given the potential for a confounding association between being unable to complete the interview independently and the odds of driving reduction over time, we excluded these 38 participants for a final analytic sample of 5,102 community-dwelling drivers in 2015. By the 2018 follow-up interview, 159 participants were no longer community dwelling, 369 participants had died, and 1,011 participants had been lost to follow-up.

A local university's Institutional Review Board deemed this study exempt from review due to the minimal risks associated with using de-identified, publicly available data and geographic data consistent with the parent study's data use agreement.

## Outcomes

We evaluated whether participants reported reducing their driving between the 2015 and 2018 interviews by looking at three outcomes: increasing their number of driving avoidance behaviors, decreasing the number of days per week they drove, or not driving. We chose to examine outcomes after 3 years to minimize the potential for increased bias due to study attrition over longer follow-up periods, while also allowing enough time to capture both reduction and cessation behaviors. Previous investigation among a similar cohort of older adults in the NHATS parent study found more than 1 in 4 older adults reduced their driving over 2 years of follow-up (Pristavec, 2018).

We identified whether drivers reported they were avoiding more behaviors in 2018 than they had at the 2015 interview based on questions regarding the following four behaviors: avoiding driving at night, avoiding driving alone, avoiding driving in bad weather, or avoiding driving on highways. NHATS participants also report their driving frequency as every day, most days (5–6 days per week), some days (2–4 days per week), rarely (1 day per week or less), or never in the month prior to the interview. We identified drivers who had decreased their driving frequency as those who reported they were driving fewer days per week in 2018 compared to the 2015 interview. We identified participants as not driving in 2018 if they reported that they had not driven at all in the month prior to the 2018 interview.

## Getting Rides From Others and Social Network Characteristics

We identified the actual alternative transportation options participants had used at the 2015 interview based on whether they answered yes to ever getting rides from family members, friends, or someone paid to help to get places outside their home in 2015.

We identified three social network variables of interest based on the participants' living arrangements: living with any other household members versus living alone, living with a spouse or partner versus not, or living with one or more of their children versus not. In addition to living arrangement, at each annual interview, NHATS invites participants to name up to five people they "talked to about important things in the last month." We refer to these named people as "confidantes" and we refined this variable to reflect geographic proximity by only including those confidantes who lived in the same county as the participant, but not in the same household. We treated geographically proximate confidantes as a discrete variable ranging from 0 to 5.

## Covariates

We included demographic characteristics from the 2015 interview as time-invariant variables: age category (in 5-year increments from 65–60 up to 90+), gender (female, male = ref), race and ethnicity (non-Hispanic Black, Hispanic, Other race/ethnicity, non-Hispanic White = ref), highest educational attainment (less than high school, high school degree or equivalent, more than high school degree = ref), and total individual income quartile (ref = highest income quartile). We also included whether participants lived in metropolitan or nonmetropolitan areas based on their Rural Urban Continuum Code, with codes of 1–3 indicating metropolitan areas and 4–9 indicating nonmetropolitan.

We included self-reported and objective measures of health and functional status in 2015. Self-reported measures included self-rated health (poor, fair, good, very good, excellent = ref), number of limitations in instrumental activities of daily living including laundry, grocery shopping, preparing meals, banking, and taking medications (categorical: help with all, help with at least one but not all, help with none = ref). We also included self-reported measures of difficulty with vision even with correction (yes, no = ref), and depressive symptoms based on the Patient-Health Questionnaire-2 assessment (score ranges from 0 to 6, at risk for depression if score ≥3, not at risk for depression if score <3 = ref; Löwe et al., 2005). Cognitive status was determined from a combination of self-report of having received a diagnosis of dementia from a physician and objective cognitive testing (Kasper et al., 2013). Per NHATS methodology, we treated cognitive status as a categorical variable (probable dementia, possible dementia, no dementia = ref).

## Statistical Analysis

When participants were lost to follow-up before the 2018 follow-up interview, we used multiple imputation methods to make valid inferences from the available data for a final analytic sample of 4,574 participants (Reiter et al., 2006). We created five imputed data sets using a fully conditional specification method. This approach involves specifying univariate models for each variable with missing data using logistic regression for binary and ordinal variables and the discriminant function method for nominal categorical variables. In this approach, each variable is fully specified using all the other covariates we planned to use in our subsequent analyses (Liu & De, 2015). This approach mitigates the risk of bias created by simply excluding missing values in a large cohort study such as NHATS.

We first described sociodemographic, biomedical, and driving behavior characteristics for the full sample of drivers in 2015. In reporting the frequencies of each of these sample characteristics, we included 95% confidence intervals reflecting the standard errors associated with both the complex survey design of NHATS as well as the multiple imputation, we performed for missing data. By using NHATS sampling weights, sampling units, and strata in our analyses, we generated population estimates representing adults who were alive

and enrolled in Medicare during the round of data collection in 2015.

Next, we estimated the associations between getting rides from others in 2015 and the odds of the three driving reduction outcomes in 2018 using logistic regression. We adjusted for age, gender, race/ethnicity, education level, income quartile, living in a metropolitan versus nonmetropolitan area, self-rated health, help with IADLs, difficulty with vision, symptoms of depression, dementia status, and driving status in 2015.

Finally, we estimated adjusted logistic regression models to evaluate the associations between social network variables in 2015 (living alone, living with a child, living with a spouse or partner, having geographically proximate confidantes) and the odds of the three driving reduction outcomes in 2018. We estimated models with each social network variable alone as well as all social network variables in combination.

In the logistic regression models, we adjusted variance parameters necessitated by the NHATS complex sampling design using a modified balanced repeated replication approach (Freedman et al., 2022). The 95% confidence intervals (95% CI) reflect the standard errors calculated using this approach to account for complex survey design as well as our approach to multiple imputation to address missing values. We conducted all analyses using SAS software, Version 9.4.

## Results

### Sample Characteristics

Table 1 presents the weighted characteristics of the community-dwelling older adult drivers in the NHATS sample (unweighted $n$ = 5,102). In 2015, nearly one-third of the participants reported having gotten to places outside their home in the month prior by getting rides from others (33%). In most cases, participants lived with at least one other person (72%). Most participants reported living with their spouse or partner (63%). Less commonly, participants reported living with one or more of their children (14%). The average number of confidantes who lived in the same county but not in the same household, out of a maximum possible of five confidantes, was less than one (0.76).

### Getting Rides From Others and Driving Reduction

Table 2 presents the adjusted odds ratios (aOR) and 95% CI when regressing the odds of (a) increasing driving avoidance behaviors, (b) decreasing driving frequency, or (c) no longer driving at 3-year follow-up on whether participants had reported getting rides from others to get to places outside their home in 2015. In adjusted models, older adults who got rides from others had greater odds of all three driving reduction outcomes compared to older adults who did not get rides from others in 2015 (increasing driving avoidance aOR = 1.22, 95% CI: 1.00–1.48; decreased driving frequency aOR = 1.27, 95% CI: 1.03–1.58; not driving aOR = 1.53, 95% CI: 1.11–2.11).

Driving status in 2015 was associated with the odds of increasing driving avoidance behaviors and the odds of decreasing driving frequency. Older adults who drove less frequently in 2015 were more than twice as likely to have stopped driving at 3-year follow-up compared to older adults who drove every day (some days vs every day, aOR = 2.19, 95% CI: 1.38–3.46). However, the number of driving behaviors older adults were avoiding in 2015 was not associated with their odds of reporting not driving at 3-year follow-up (aOR = 1.05, 95% CI: 0.94–1.17).

### Social Network Characteristics and Driving Reduction

Table 3 presents the aOR and CI when regressing the odds of (a) increasing driving avoidance behaviors, (b) decreasing driving frequency, or (c) no longer driving at 3-year follow-up on participant's social network characteristics in 2015. We found no statistically significant association between living with anyone versus no one, living with a spouse or partner versus not, living with children versus not, or the number of non-household confidantes who lived nearby in 2015 and the odds of driving reduction at follow-up (Table 3). In models where we adjusted for each social network characteristic alone, we found that older adults who lived with one or more of their children in 2015 had greater odds of not driving at 3-year follow-up compared to those who did not (Supplementary Table 1; aOR = 1.72, 95% CI: 1.11–2.64).

## Discussion

We evaluated whether getting rides from others in 2015 and having the potential to get rides from others based on social network characteristics were associated with the odds of driving reduction at 3-year follow-up among a nationally representative cohort of community-dwelling older drivers in the United States. We found that adults who got rides from others in 2015 had greater odds of all 3 driving reduction outcomes at 3-year follow-up compared to those who did not get rides. The major contribution of this analysis is supporting evidence for the potential role of alternative transportation options as external coping factors facilitating the transition to non-driving, as described in the stress-coping model of driving cessation (Choi, Adams, & Mezuk, 2012). Notably, we found no significant association between social network characteristics—living arrangement characteristics and number of non-household confidantes living nearby—and the odds of driving reduction in 2018. We included these measures in our analyses to represent the potential ability to get rides as older drivers progressed through the transition to non-driving. These findings suggest that the potential ability to get rides, in contrast to already getting rides from others, is not an influential external coping factor that facilitates the transition to non-driving.

Few previous studies have looked at social network size or types of social network relationships as potential predictors of driving behavior change. More commonly, studies have looked at past use of alternative transportation options or perceptions of these options associated with driving cessation. Our findings support previous literature that getting rides from others is associated with the odds of driving cessation (Choi, Adams, & Kahana, 2012; Ichikawa et al., 2016). However, our findings did not support an association between living arrangement characteristics or number of non-household confidantes living nearby and the odds of reducing driving at 3-year follow-up.

The lack of association between living arrangement characteristics or number of non-household confidantes living nearby and the odds of driving reduction in our study suggests that other features of social networks that were not directly measured in previous research may be more strongly associated with realized access to alternative transportation options.

**Table 1.** Weighted Sample Characteristics of Community-Dwelling Older Adult Drivers in 2015 (Sample $n$ = 5,102; Population $n$ = 31,059,767)

| Characteristic | % (95% CI) | Mean (*SD*) |
|---|---|---|
| Alternative transportation | | |
| Got rides from someone else | 32.68 (31.02–34.35) | |
| Social networks | | |
| Lived with anyone | 72.40 (70.69–74.11) | |
| Lived with a spouse or partner | 62.69 (60.96–64.43) | |
| Lived with one or more children | 14.23 (12.93–15.53) | |
| Confidantes outside the household (range = 0–5) | | 0.76 (0.02) |
| Demographics | | |
| Age category group, years | | |
| 65–69 | 34.16 (32.91–35.40) | |
| 70–74 | 29.22 (27.98–30.47) | |
| 75–79 | 18.83 (17.85–19.82) | |
| 80–84 | 10.69 (9.98–11.39) | |
| 85–89 | 5.47 (4.96–5.98) | |
| 90+ | 1.63 (1.42–1.84) | |
| Female | 50.94 (49.38–52.50) | |
| Race, ethnicity | | |
| White, non-Hispanic | 84.73 (82.92–86.54) | |
| Black, non-Hispanic | 6.93 (6.07–7.80) | |
| Hispanic | 5.09 (3.93–6.26) | |
| Other | 3.24 (2.42–4.06) | |
| Socioeconomic | | |
| Highest education level | | |
| Less than high school degree | 12.12 (10.74–13.49) | |
| High school degree or equivalent | 24.80 (22.98–26.62) | |
| More than high school degree | 63.08 (60.61–65.55) | |
| Household income | | |
| Q1 | 24.64 (22.83–26.46) | |
| Q2 | 25.27 (23.42–27.12) | |
| Q3 | 23.91 (22.43–25.40) | |
| Q4 | 26.18 (23.52–28.83) | |
| Geographic | | |
| Lived in a nonmetropolitan area | 19.04 (11.64–26.44) | |
| Health/function | | |
| Self-rated health | | |
| Excellent | 17.33 (15.81–18.84) | |
| Very good | 34.86 (33.43–36.30) | |
| Good | 31.46 (29.82–33.10) | |
| Fair | 13.39 (12.22–14.55) | |
| Poor | 2.96 (2.37–3.56) | |
| Has help with IADLs (e.g., preparing meals, and so on) | | |
| No help with IADLs | 47.91 (46.50–49.33) | |
| Help with some IADLs | 50.57 (49.19–51.95) | |
| Help with all IADLs | 1.52 (1.13–1.91) | |
| Had difficulty with vision (even with correction) | 2.62 (2.09–3.15) | |
| At risk for depression | 8.83 (7.85–9.81) | |
| Dementia status | | |
| No dementia | 91.95 (91.23–92.67) | |
| Possible dementia | 6.25 (5.64–6.85) | |
| Probable dementia | 1.80 (1.49–2.11) | |
| Driving behavior | | |
| Driving frequency | | |
| Drove rarely | 4.43 (3.87–4.99) | |
| Drove some days | 14.69 (13.75–15.62) | |
| Drove most days | 30.65 (28.96–32.34) | |
| Drove every day | 50.24 (48.54–51.94) | |

*Note*: IADL = instrumental activities of daily living. We calculated 95% confidence intervals correcting for the National Health and Aging Trends Study complex survey design and multiple imputation.

For example, based on our findings, we would expect that the association Choi, Adams, and Kahana (2012) identified between getting rides from family and friends and the odds of stopping driving was not a reflection of the presence of those social network members, but their actual ability to give rides to the older adult study participants. For older adults transitioning to non-driving, the importance of already getting rides from others may be a function of the ability of their social network members to reliably offer transportation support. Alternatively, this experience of already getting rides from others may influence older adults' perceptions about relying on rides from others after they stop driving independently. Previous travel behavior may increase the comfort, familiarity, and habit of continuing to use alternative transportation options. Familiarity with alternative transportation options has been an important predictor of travel mode choice for older adults in previous studies (Caragata, 2021).

There may be a difference between the existence of social networks (which we measured) and their actual or perceived ability to provide transportation support to older adults. Ichikawa and colleagues (2016) found an association between social networks and driving cessation when the construct they measured was whether participants reported they had someone in their life who could provide transportation. Multiple factors influence older adults' perception of the ability to get rides beyond the size of their social network. Fear of being a burden to their family and friends may be a barrier to some older adults regardless of their social network size (Meuser et al., 2013; Murray & Musselwhite, 2019). Similarly, the availability of an older adult's social network to provide rides may be limited if family and friends already have other caregiving duties, other competing demands, or do not drive or have access to a vehicle.

Our study represents a nationally representative cohort of older adult drivers in the United States, where previous studies have focused on smaller cohorts of older adults from a limited geographic region (Choi, Adams, & Kahana, 2012; Johnson, 2008). Differences between our study and these prior studies may suggest that regional differences are important contextual variables in the association between social networks and driving cessation. These differences may include disparities in the availability of other alternative transportation options and distances to destinations in urban as opposed to rural

**Table 2.** Odds Ratios of Reducing Driving in 2018 Adjusted for Getting Rides From Others in 2015

| Model variables | Odds of increasing driving avoidance | Odds of decreasing driving frequency | Odds of driving cessation |
|---|---|---|---|
| Alternative transportation | | | |
| Got rides from others (ref = no) | **1.22 (1.00–1.48)** | **1.27 (1.03–1.58)** | **1.53 (1.11–2.11)** |
| Demographics | | | |
| Age category (ref = 65–69 years) | | | |
| 70–74 years | **1.51 (1.12–2.03)** | **1.01 (0.82–1.24)** | **1.93 (1.11–3.38)** |
| 75–79 years | **1.71 (1.27–2.29)** | **1.25 (1.01–1.55)** | **2.96 (1.83–4.78)** |
| 80–84 years | **2.68 (1.96–3.68)** | **1.68 (1.34–2.10)** | 4.02 (2.12–7.62) |
| 85–89 years | **3.61 (2.46–5.29)** | **2.46 (1.80–3.35)** | 6.56 (3.55–12.13) |
| 90+ years | 9.15 **(4.92–17.02)** | 5.79 **(3.50–9.58)** | 26.00 **(11.17–60.54)** |
| Gender (ref = male) | **1.86 (1.43–2.41)** | 1.80 (1.48–2.20) | **1.45 (1.01–2.08)** |
| Race (ref = White, non-Hispanic) | | | |
| Black, non-Hispanic | **1.25 (0.99–1.59)** | **1.03 (0.77–1.38)** | **1.69 (1.09–2.60)** |
| Hispanic | **2.29 (1.54–3.42)** | **1.04 (0.72–1.51)** | **1.53 (0.87–2.69)** |
| Other | **1.31 (0.78–2.20)** | **0.59 (0.32–1.10)** | **0.91 (0.34–2.44)** |
| Socioeconomic status | | | |
| Education (ref = more than high school) | | | |
| Less than high school | 0.87 (0.69–1.11) | 0.88 (0.65–1.20) | 0.74 (0.49–1.11) |
| High school degree or equivalent | 0.91 (0.67–1.22) | 0.78 (0.63–0.96) | **0.85 (0.58–1.24)** |
| Individual income (ref = Q4) | | | |
| Q1 | 1.52 (1.11–2.07) | 1.41 (1.06–1.88) | 1.72 (0.99–2.99) |
| Q2 | 1.26 (0.91–1.74) | 1.18 (0.90–1.53) | 1.14 (0.71–1.82) |
| Q3 | 0.97 (0.68–1.39) | 1.00 (0.76–1.32) | 0.88 (0.50–1.55) |
| Geographic | | | |
| Lived in a nonmetropolitan area (ref = no) | 0.96 (0.76–1.21) | 1.08 (0.86–1.34) | 1.13 (0.81–1.57) |
| Health | | | |
| Self-rated health (ref = excellent) | | | |
| Very good | **1.00 (0.73–1.37)** | **1.18 (0.91–1.54)** | 0.87 (0.52–1.46) |
| Good | 1.35 (1.04–1.77) | 1.90 (1.49–2.42) | 1.62 (1.05–2.51) |
| Fair | 1.74 (1.26–2.40) | 2.34 (1.70–3.23) | 2.50 (1.44–4.35) |
| Poor | 3.79 (2.17–6.62) | 4.55 (2.69–7.68) | 5.35 (2.01–14.29) |
| Help with IADLs (ref = none) | | | |
| Help with some IADLs | 1.38 (1.12–1.70) | 1.41 (1.16–1.71) | 1.90 (1.32–2.73) |
| Help with all IADLs | **2.57 (1.49–4.43)** | **2.41 (1.21–4.83)** | **2.48 (0.47–13.07)** |
| Difficulty with vision (ref = no) | **1.63 (1.00–2.66)** | **1.32 (0.84–2.06)** | **1.76 (0.89–3.51)** |
| At risk for depression (ref = no) | **1.39 (0.99–1.95)** | **1.20 (0.83–1.72)** | **1.21 (0.78–1.89)** |
| Dementia classification (ref = no dementia) | | | |
| Possible dementia | **1.56 (1.12–2.17)** | **1.46 (1.01–2.10)** | **2.15 (1.38–3.34)** |
| Probable dementia | **1.77 (0.87–3.58)** | **1.33 (0.67–2.64)** | 1.86 (0.84–4.12) |
| Driving status | | | |
| Driving frequency (ref = Every day) | | | |
| Rarely | 2.11 (1.44–3.08) | 0.23 (0.15–0.35) | 3.44 (2.03–5.84) |
| Some days | 1.62 **(1.26–2.09)** | 0.30 **(0.23–0.38)** | 2.19 **(1.38–3.46)** |
| Most days | **1.42 (1.12–1.80)** | **0.51 (0.42–0.62)** | **1.44 (0.97–2.16)** |
| Number of avoidance behaviors (range = 0–4) | 0.89 (0.81–0.98) | 1.14 (1.04–1.25) | 1.05 (0.94–1.17) |
| Intercept | 0.06 (0.04–0.10) | 0.18 (0.14–0.25) | 0.01 (0.00–0.01) |

*Note*: IADL = instrumental activities of daily living. We adjusted for characteristics above from the 2015 interview. We reported odds ratios with 95% confidence intervals accounting for the NHATS complex survey design and multiple imputation. We consider associations statistically significant if the 95% confidence intervals do not cross 1.00, which we identified in bold text in this table.

communities (Shirgaokar et al., 2020). Although we controlled for metropolitan/nonmetropolitan residence (finding no associations), we did not examine the interaction between rural/urban residence and social networks on our outcomes of interest. Regional differences may also depend on neighborhood-level factors such as neighborhood

**Table 3.** Odds Ratios of Reducing Driving in 2018 Adjusted for Social Network Characteristics in 2015

| Model variables | Odds of increasing driving avoidance | Odds of decreasing driving frequency | Odds of driving cessation |
|---|---|---|---|
| Social networks | | | |
| Lives with anyone (ref = no) | 0.89 (0.60–1.32) | 1.18 (0.86–1.62) | 1.22 (0.73–2.04) |
| Lives with spouse (ref = no) | 0.98 (0.69–1.41) | 0.82 (0.62–1.08) | 0.68 (0.44–1.07) |
| Lives with child (ref = no) | 1.08 (0.78–1.49) | 0.95 (0.69–1.32) | 1.54 (0.90–2.64) |
| Number of non-household confidantes (range = 0–5) | 1.01 (0.91–1.12) | 0.96 (0.88–1.05) | 0.98 (0.81–1.19) |
| Demographics | | | |
| Age category (ref = 65–69 years) | | | |
| 70–74 years | **1.51 (1.12–2.02)** | **1.01 (0.82–1.25)** | **1.94 (1.10–3.44)** |
| 75–79 years | **1.69 (1.27–2.26)** | **1.25 (1.02–1.54)** | **2.93 (1.81–4.74)** |
| 80–84 years | **2.69 (1.96–3.67)** | **1.70 (1.36–2.12)** | **4.15 (2.18–7.90)** |
| 85–89 years | **3.57 (2.43–5.24)** | **2.50 (1.80–3.47)** | 6.80 (3.63–12.77) |
| 90+ years | 9.17 (**4.94–17.02**) | 5.93 (**3.61–9.75**) | 26.76 (**11.58–61.83**) |
| Gender (ref = male) | **1.90 (1.46–2.47)** | 1.88 (1.54–2.29) | **1.48 (1.06–2.08)** |
| Race (ref = White, non-Hispanic) | | | |
| Black, non-Hispanic | **1.24 (0.97–1.58)** | **1.00 (0.74–1.34)** | **1.54 (1.00–2.40)** |
| Hispanic | **2.26 (1.50–3.40)** | **1.01 (0.70–1.48)** | **1.36 (0.78–2.39)** |
| Other | **1.29 (0.77–2.17)** | **0.57 (0.30–1.06)** | **0.84 (0.32–2.26)** |
| Socioeconomic status | | | |
| Education (ref = more than high school) | | | |
| Less than high school | 0.88 (0.70–1.11) | 0.88 (0.65–1.19) | 0.73 (0.49–1.10) |
| High school degree or equivalent | 0.91 (0.68–1.22) | 0.78 (0.64–0.96) | **0.86 (0.60–1.24)** |
| Individual income (ref = Q4) | | | |
| Q1 | 1.41 (0.99–2.00) | 1.32 (1.00–1.74) | 1.38 (0.82–2.31) |
| Q2 | 1.20 (0.86–1.68) | 1.13 (0.88–1.45) | 1.01 (0.63–1.61) |
| Q3 | 0.94 (0.65–1.35) | 0.97 (0.74–1.27) | 0.81 (0.47–1.39) |
| Geographic | | | |
| Lived in a nonmetropolitan area (ref = no) | 0.95 (0.75–1.21) | 1.06 (0.85–1.32) | 1.14 (0.82–1.59) |
| Health | | | |
| Self-rated health (ref = excellent) | | | |
| Very good | 1.00 (0.73–1.37) | **1.18 (0.91–1.55)** | 0.86 (0.52–1.45) |
| Good | 1.36 (1.04–1.77) | 1.91 (1.49–2.45) | 1.61 (1.03–2.52) |
| Fair | 1.73 (1.26–2.38) | 2.34 (1.69–3.26) | 2.43 (1.40–4.23) |
| Poor | 3.74 (2.18–6.43) | 4.59 (2.72–7.73) | 5.35 (2.02–14.16) |
| Help with IADLs (ref = none) | | | |
| Help with some IADLs | 1.45 (1.16–1.82) | 1.43 (1.16–1.77) | 1.95 (1.26–3.01) |
| Help with all IADLs | **2.78 (1.56–4.95)** | **2.54 (1.27–5.09)** | **2.85 (0.52–15.51)** |
| Difficulty with vision (ref = no) | **1.68 (1.02–2.76)** | **1.37 (0.87–2.14)** | **1.86 (0.91–3.81)** |
| At risk for depression (ref = no) | **1.38 (0.98–1.95)** | **1.20 (0.84–1.72)** | **1.19 (0.76–1.85)** |
| Dementia classification (ref = no dementia) | | | |
| Possible dementia | **1.55 (1.11–2.16)** | **1.44 (1.00–2.08)** | **2.11 (1.34–3.31)** |
| Probable dementia | **1.76 (0.87–3.56)** | **1.32 (0.66–2.61)** | 1.75 (0.78–3.95) |
| Driving status | | | |
| Driving frequency (ref = every day) | | | |
| Rarely | 2.30 (1.57–3.37) | 0.25 (0.16–0.39) | 4.07 (2.39–6.91) |
| Some days | 1.71 (**1.34–2.19**) | 0.32 (**0.25–0.41**) | 2.46 (**1.60–3.78**) |
| Most days | **1.46 (1.16–1.84)** | **0.53 (0.44–0.64)** | **1.55 (1.04–2.31)** |
| Number of avoidance behaviors (range = 0–4) | 0.90 (0.82–0.99) | 1.16 (1.06–1.26) | 1.08 (0.97–1.21) |
| Intercept | 0.07 (0.04–0.12) | 0.20 (0.15–0.28) | 0.01 (0.00–0.02) |

*Note*: We adjusted for characteristics above from the 2015 interview. We reported odds ratios with 95% confidence intervals accounting for the NHATS complex survey design and multiple imputation. We consider associations statistically significant if the 95% confidence intervals do not cross 1.00, which we identified in bold text in this table.

disadvantage (e.g., different financial burdens associated with transportation mode choice) and local attitudes toward driving influenced by the infrastructure and use of roadways and transportation services (e.g., congestion).

Living arrangements have been associated with other types of functional support (Vlachantoni et al., 2015), and yet our findings only demonstrated an association between living with adult children and greater odds of not driving at 3-year follow-up, and only when we did not adjust for other social network variables. Living with others, particularly adult children, may mean that older adults have access to adequate support to make a conscious decision to stop driving independently. However, a complex web of factors underlie whether older adults cohabitate with their children or not (Hays, 2002; Silverstein et al., 2006). Although we adjusted for functional and cognitive status in 2015, already living with one or more children might indicate further progress along a trajectory of receiving support with IADLs compared to older adults who do not live with their children (Mickus et al., 1997). On the other hand, the impact on driving behavior of living with a spouse or partner may depend on the driving ability of that partner. Evidence suggests that older adults overestimate the number of years they will be able to continue driving independently (Foley et al., 2002), but it remains unclear how older adults estimate the future driving ability of their partners.

This study has several limitations including discrepancies between the constructs in our conceptual model and the measurement of the independent and dependent variables. The social network characteristics we were able to include as independent variables largely reflect the size and proximity of participants' social networks without including any measure of their perceived ability to provide transportation support. Previous studies have found that perceived support has significant associations with actual support received where social network size does not (McLaughlin et al., 2012). Although the measure of geographically proximate confidantes we used in this study reflects emotional support from having people to talk to about important things, it may not capture perceived or actual instrumental support necessary to get rides from these proximate family members or friends. It could also be that older drivers marshal a broader set of social relationships, beyond "confidantes" and household members for driving support. Future research could use validated instruments such as the Duke Social Support Index (Goodger et al., 1999; Koenig et al., 1993) to assess adequacy of perceived social support to determine whether it is associated with receiving transportation support specifically and how this in turn affects older adults' decisions in the transition to non-driving.

The driving reduction outcome variables in our study were determined from participant self-report, which may be an additional limitation to interpreting associations between social network characteristics and the transition to non-driving. Previous research suggests that many drivers may reduce their driving based on their ability without conscious self-assessment (Molnar et al., 2013, 2014; Vivoda et al., 2022). We were also unable to assess to what extent participants were having difficulty driving and how the potential presence of this stressor influenced participants' decision-making about changing their driving behavior, which is a key mediator in other conceptual models of the transition to non-driving such as the transtheoretical, or stages of change, model (Kowalski et al., 2014). Further study is needed to investigate the extent to which the stressor of difficulty driving and coping factors, such as alternative transportation options, are associated with how older drivers prepare for and make changes to their driving behavior. Increasing availability of naturalistic driving data may provide even greater insight into the transition to non-driving and associated factors in future research (Babulal et al., 2020).

Our findings provide important additional evidence to support associations between alternative transportation options and the transition to non-driving, namely the significance of already getting rides from others. However, we call for further study to clarify what characteristics of social networks are associated with informal transportation support and to what extent such social characteristics serve as coping factors that might support both decisions about the transition to non-driving and maintenance of mobility after the transition to non-driving. This current study can help inform the development of interventions designed to help older adults prepare for and navigate the transition to non-driving by leveraging social connections to avoid risky driving behavior and maintain community mobility. Future studies should investigate objective and perceived alternative transportation options to inform the design and implementation of interventions and policies to support older adults as they navigate the transition to non-driving.

## Supplementary Material

Supplementary data are available at *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences* online.

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## Conflict of Interest

None.

## Author Contributions

K. J. Hansmann planned this secondary data analysis, performed all statistical analysis, and wrote the article. R. Gangnon helped to plan the study, supervised the data analysis, and contributed to revising the paper. C. McAndrews helped to plan the study, conceptualize the key study constructs, and contribute to revising the article. S. A. Robert helped to plan the study and contributed significantly to revising the article.

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