

# Health Care Provider Mobility Counseling Provision to Older Adults: A Rural/Urban Comparison

Andrea L. Huseth-Zosel<sup>1</sup> · Gregory Sanders<sup>2</sup> · Melissa O'Connor<sup>3</sup> · Heather Fuller-Iglesias<sup>3</sup> · Linda Langley<sup>4</sup>

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**Abstract** The current study examined rural–urban differences in health care provider (HCP) perceptions, attitudes, and practices related to driving safety/cessation-related anticipatory guidance provision to older adults. A cross-sectional survey was conducted with HCPs in several north central states. Exploratory factor analysis was used to examine dimensions of HCP perceptions and attitudes related to mobility counseling. Binary logistic regression analyses were conducted to determine if HCP rurality was significantly predictive of HCP provision of mobility counseling by age. Rural HCPs were less likely than urban HCPs to provide mobility counseling to their patients aged 75 or older. Rural HCPs were less likely to refer patients to

a driving fitness evaluation resource if they had questions related to driving issues, and were less likely to perceive there were adequate resources to help with driving issues. Rural–urban differences in HCP mobility counseling provision may contribute to potential health disparities between urban and rural patients. Both rural and urban HCPs need training about older driver issues, so they may educate their patients about driving safety/cessation. Future research should examine the association between rural–urban differences in HCP mobility counseling provision and rural older adult overrepresentation in motor vehicle injuries and fatalities statistics.

**Keywords** Older drivers · Driving cessation · Mobility counseling · Rural

✉ Andrea L. Huseth-Zosel  
andrea.huseth-zosel@ndsu.edu

Gregory Sanders  
greg.sanders@ndsu.edu

Melissa O'Connor  
melissa.oconnor@ndsu.edu

Heather Fuller-Iglesias  
heather.fuller-iglesias@ndsu.edu

Linda Langley  
linda.langley@ndsu.edu

<sup>1</sup> Department of Public Health, College of Health Professions, Dept. 2662, North Dakota State University, PO Box 6050, Fargo, ND 58108-6050, USA

<sup>2</sup> College of Human Development and Education, Dept. 2600, North Dakota State University, PO Box 6050, Fargo, ND 58108-6050, USA

<sup>3</sup> Human Development and Family Science, Dept. 2615, North Dakota State University, PO Box 6050, Fargo, ND 58108-6050, USA

<sup>4</sup> Department of Psychology, Dept. 2765, North Dakota State University, PO Box 6050, Fargo, ND 58108-6050, USA

## Introduction

Driving remains a primary means of transportation for Americans aged 65 and older, providing independence, convenience, and security [1, 2]. A majority of trips by older adults are taken in private automobiles [3]. Indeed, the proportion of trips taken by older adults in the US by public transportation may be declining [4].

As the US population continues to rapidly age [5], the number of older drivers will also increase, with nearly one-quarter of licensed drivers being age 65+ by 2030 [6]. While older adults drive shorter distances and less frequently than other populations, an increasing number choose to remain licensed drivers longer and are starting to drive more miles annually [7]. This increasing trend of older drivers gives reason to pause because aging is correlated with an increase in the frequency of chronic and acute diseases and conditions that affect driving abilities

[8]. Additionally, the aging process itself produces changes in sensory, cognitive, and motor functions that can affect driving [8–11]. Finally, older adults make up a disproportionately larger percent of traffic fatalities [12, 13], meaning that older adults, and their passengers, are more likely to die in a crash than younger drivers [14].

### Anticipatory Guidance by Health Care Providers

While aging-related changes may affect older adult driving abilities, individuals often experience decreases in functioning with increasing age. For example, aging results in increases in vision impairments which may directly affect driving ability, as nearly 90 % of information needed to drive effectively is visual [15, 16]. Additionally, rates of arthritis also increase with age, with adults aged 80 or older seeing the largest rates [17]. Driving-related limitations for person with arthritis can include difficulties in making shoulder checks, holding the steering wheel with the appropriate amount of tension, and making turns [18]. Finally, while dementia is prevalent in about 6.5 % of the overall population in North America, the risk almost doubles with each 5.5 years increase in age after age 65 [19].

Due to aging-related changes and the increasing risk to themselves and others as they continue to drive, older adults may need to start planning for when they need to modify or discontinue their driving. Because of annual check-ups and a focus on prevention, health care providers (HCPs), such as primary care providers, are uniquely placed to monitor aging-related changes and medical issues that may affect an older individual's driving ability, and to provide information to their patients in the form of anticipatory guidance or mobility counseling defined as providing driving-related information to patients prior to the development of physical or cognitive changes which may affect driving ability [20, 21].

Studies have shown that older adults are more likely to trust physicians and to follow physician driving recommendations [20–23]. Betz et al. [20] found that drivers were open to physician questioning regarding driving-related issues and saw their doctors as “fair-minded” (p. 1575). Additionally, Betz et al. [21] found that older drivers would follow their physician's advice as related to driving cessation, and almost all of the study participants stated they would “consider a driving evaluation” if recommended by their physician (p. 152).

However, Betz et al. [20] also found that older adults were not sure if their physician knew their driving status. While previous studies have found that a majority of physicians reported discussing driving issues with patients and had provided advice to patients to stop driving in the past year, it is unknown how many patients they had counseled [23]. Less than one-third of physicians surveyed

by Lipski [24] regularly asked their patients about driving habits. In addition, relatively few physicians keep records of their patients' driving status [25]. While HCPs are not required to discuss driving issues with their patients, the American Medical Association recommends the practice, and has provided a guide to assist HCPs in assessing and counseling their patients on driving issues [26].

### Rurality

With regard to community, no studies have focused on rural–urban differences in mobility counseling provision. A higher proportion of older adults live in rural areas versus urban areas, and rural older adults must drive more frequently to access services and be involved in community activities [3]. Additionally, compared to their urban counterparts, rural older adults are older and in poorer health [3] putting them at greater risk for mobility disparities. Older rural adults are more than four times as likely as urban older adults to be involved in motor vehicle crashes resulting in injury or death [27]. Providing education to older drivers related to driving safety issues may result in modified driving or driving cessation, possibly reducing the risk of the older driver to harm themselves or others. Moreover, rurality is a significant predictor of practice patterns, including counseling provision, with rural HCPs less likely to provide counseling [28, 29].

The goal of the current study was to examine rural–urban differences in HCP provision of driving safety/cessation-related anticipatory guidance to older drivers by patient age. It was hypothesized that rural HCPs provide this counseling to their patients less frequently than urban HCPs, and that significant rural–urban differences exist in regards to attitudes and perceptions related to provision of driving safety/driving cessation-related counseling, as well as perceived barriers to providing this information, knowledge of reporting drivers, and referral processes/sources related to driving issues for older adults.

### Design and Methods

The survey used in this study was developed based on a review of the relevant literature [25, 30], as well as feedback from five internal medicine providers who were not participants in the study.

### Participants

HCP contact information was purchased from an online database company. For this study, HCPs included physicians (MDs/DOs) and midlevel providers (nurse practitioners and physician assistants). HCPs with a specialty of

ophthalmology/optometry, family medicine, internal medicine, or geriatrics were selected for inclusion in this survey due to the increased proportion of older adults in these practices [31, 32].

A list of 7557 HCPs was acquired for the following states: North Dakota, South Dakota, Utah, Colorado, and Wyoming, which are part of the National Highway Traffic Safety Administration's Region 8 [33]. Following IRB approval, surveys were mailed to 2600 randomly selected HCPs. The surveys were mailed January–March 2013. Participation was voluntary, with no incentives provided to respondents. A response rate of 10.2 % was obtained, with 265 returned surveys. Survey responses were entered manually into SPSS Version 20.

## Measures

### *Rurality*

Respondents were asked to identify the size of the community in which they currently practice to define the rurality of the population to which they were providing services. In this study, based on the Census Bureau definition of urban versus rural areas [5] rurality is measured dichotomously with rural communities being defined as having 49,999 or fewer people and urban communities being defined as having 50,000 or more people.

### *Attitudes About Older Drivers*

HCPs rated their agreement to statements measuring their attitudes and perceptions of providing mobility counseling related to driving safety issues for older adults in their practice, as well as perceived barriers related to providing this information, knowledge of reporting drivers within their state, and referral processes/sources related to driving issues for older adults on a scale from one to five with one being “Strongly Disagree” and five being “Strongly Agree”.

### *Mobility Counseling Provision*

In addition, HCPs were asked the frequency (“Seldom or Never”, “Occasionally”, “Frequently”, or “Always”) with which they discuss safe driving habits or driving fitness with their patients in specific age groups: <65, 65–74, 75–84, and >84. Due to extremely low response counts in the outermost categories for patient age groups, these variables were dichotomized, with “Seldom or Never” and “Occasionally” collapsed into one category, and “Frequently” and “Always” as the other category. HCPs were also asked to list any barriers they perceived in providing counseling to older adults regarding driving issues.

## *HCP Characteristics*

Additionally, HCPs were asked if they have ever told an older driver that they should limit their driving or discontinue driving (yes/no), if they ever had a family member or friend involved in a vehicle crash (yes/no), or if they have ever been in a vehicle crash (yes/no). General demographic information collected include age (open-ended), gender (male/female), specialty (“Family Medicine”, “All Other Specialties”), degree (“MD/DO”, “PA/NP”), percent of practice comprised of patients aged 65 or older (open-ended), and years practicing in their current specialty (open-ended).

## Statistical Analyses

Prior to analysis, data were screened for violations of assumptions associated with univariate and multivariate models [34]. One outlier was discovered and deleted prior to analysis based on a test of the presence of multivariate outliers using Mahalanobis distance, with a criterion of  $p < 0.001$ . Descriptive statistics were performed for all items and divided by rurality. Chi square tests and *t* tests were run as appropriate for basic comparisons between rural and urban for demographic variables.

Exploratory factor analysis via the principal component extraction method was used to explore the dimensions of the factor structure of HCP perceptions related to driving safety/cessation anticipatory guidance and to reduce data for subsequent analyses. The cutoff eigenvalue for each item was set at 1.0. Factors were extracted based on minimum loadings of 0.50, as done in Hair et al. [35], examination of scree plots, and simplicity of factor structure (i.e., loading on only one factor). Averaging across attitude/perception items for each factor generated factor scores for each respondent. Internal consistency was assessed with Cronbach's alpha. Factors were compared by rurality using a one-way ANOVA.

Binary logistic regression analyses were conducted to determine if HCP rurality was significantly predictive of HCP provision of mobility counseling by patient age, after adjusting for variables for which a significant difference by rurality was indicated, including gender, specialty, percent of practice aged 65 or older, years practicing in current specialty, and ever having been involved in a vehicle crash. Prior to conducting logistic regression analyses, tests were performed to examine the data for assumptions related to this regression test. The Box-Tidwell test revealed that the variable measuring percent of practice aged 65 or older violated the assumption of linearity in the logit when it was included in the logistic regression model with the frequency of mobility counseling provided to patients aged 85 or older as the outcome variable. This variable was transformed using its square. None of the other assumptions

related to logistic regression were violated, including absence of multicollinearity, which was tested using tolerance statistics, independence of errors, and ratio of cases to independent variables (at least 10 cases per independent variable). Odds ratios (ORs) were deemed to be significant when the confidence intervals did not include the value of 1.00. IBM SPSS Statistics v.21 was used for all analyses.

## Results

### Demographic Characteristics of Respondents

Nearly 60 % of respondents stated they practice in a community of <50,000 (rural), with 40.5 % stating they practice in a community of 50,000 or more people (urban) (Table 1). There were no statistically significant rural–urban differences for HCP age, gender, degree, years practicing in current specialty, having ever told an older driver they should limit/discontinue driving, or having a family member ever involved in a vehicle crash.

Significant differences existed by specialty, with a much higher percent of rural HCPs indicating a specialty of family medicine than urban HCPs ( $\chi^2 = 25.119$ ,  $df = 4$ ,  $p < 0.001$ ). Rural HCPs also had significantly more patients aged 65 or older in their practice ( $t = 2.075$ ,  $df = 262$ ,  $p = 0.039$ ). Rural HCPs were also significantly less likely to have ever been involved personally in a vehicle crash ( $\chi^2 = 5.861$ ,  $df = 1$ ,  $p = 0.015$ ).

### Differences in Frequency of HCP Mobility Counseling Provision by Rurality

After controlling for the effects of gender, ever having personally been involved in a vehicle crash, HCP specialty, percent of practice age 65 or older, and years practicing in current specialty, logistic regression analyses revealed that rural HCPs were significantly less likely than urban HCPs to discuss safe driving habits or driving fitness with patients aged 75–84 (OR 0.452, 95 % CI 0.255–0.801,  $p = 0.006$ ) or 85 or older (OR 0.496, 95 % CI 0.277–0.889,  $p = 0.018$ ) (Table 2).

### Differences in HCP Attitudes/Perceptions Related to Mobility Counseling by Rurality

Table 3 shows the responses to the individual attitude/perception items. Rural HCPs were less likely than urban HCPs to agree or strongly agree to the statements related to knowledge of and behaviors related to referring patients for fitness to drive assessments. Additionally, urban HCPs were nearly twice as likely as rural HCPs to agree or strongly agree with the statement regarding the adequacy

of resources for older adults to get assistance with assessing their fitness to drive. Rural HCPs were more likely to feel it is the responsibility of HCPs to counsel patients on fitness to drive, and that HCPs should be advising older patients on fitness to drive. Rural HCPs were also more likely than urban HCPs to be concerned with the emotional status of their patients if they were to broach the topic of driving cessation or safety.

Using a factor loading of 0.50 or greater as the cut-off, four factors were identified accounting for nearly 58 % of the variance (Table 3). Two questions (“I am aware of whether my older patients are active drivers”, “I am confident in my ability to provide counseling to my older patients on their ability to drive”) did not meet the 0.50 loading cut-off and were excluded from analysis. However, HCP confidence is integral to actual provision of counseling provision, and because of this, individual analysis was conducted on the confidence-related variable [44]. Results from a one-way ANOVA show that rural HCPs (mean = 3.02, SD = 0.89) are more confident than urban HCPs (mean = 2.94, SD = 0.984) in their ability to provide counseling to their older patients on their ability to drive.

Table 4 shows the difference in mean attitude/perception factor scores by rurality. Attitudes/perceptions related to resources and referral differed significantly by rurality, with rural HCPs less likely (mean = 2.81 on a 5-point scale, SD = 0.91) than urban HCPs (mean = 3.10, SD = 0.96) to agree they had adequate resources and knew where to refer patients for fitness to drive assessments ( $p = 0.012$ ).

### Differences in Perceived HCP Barriers to Mobility Counseling by Rurality

Of the 86 rural and 71 urban respondents who listed at least one barrier to providing counseling to older adults regarding driving issues, both rural and urban HCPs most often listed time constraints during office visits as a barrier, followed by family/patient resistance to discussing driving issues or outright denial (Table 5). Three times as many rural HCPs as urban HCPs listed not wanting to contribute to a patient’s loss of independence as a barrier. Rural HCPs were also more likely than urban HCPs to list distance to the nearest driving testing facility as a barrier to providing counseling. Urban HCPs were more likely than rural HCPs to list lack of knowledge on how to test driving ability as a barrier to providing counseling related to driving issues.

## Discussion

HCPs are ideally placed in society to provide mobility counseling to older drivers, and often are regarded as experts in this area. Using a sample of HCPs located in

**Table 1** Respondent demographics

	Rural n (%)	Urban n (%)	<i>p</i> value <sup>a</sup>
Population of community in which you currently practice			
<50,000	157 (100.0)	0 (0.0)	na
50,000 or more	0 (0.0)	107 (100.0)	
Age, mean (SD)	55.08 (9.74)	53.74 (9.11)	NS
Gender			
Male	111 (71.2)	78 (72.9)	NS
Female	45 (28.8)	29 (27.1)	
Specialty			
Family medicine	109 (69.4)	44 (37.4)	<0.001
Internal medicine	20 (12.7)	19 (17.8)	
Geriatrics	0 (0.0)	3 (2.8)	
Ophthalmology	10 (6.4)	11 (10.3)	
Other	18 (11.5)	30 (28.0)	
Degree			
MD/DO	147 (94.2)	106 (99.1)	NS
PA/NP	7 (4.5)	1 (0.9)	
Other	2 (1.3)	0 (0.0)	
Percent of practice comprised of patients 65 or older, mean percent (SD)	47.64 (21.77)	42.07 (20.92)	0.039
Years practicing in current specialty, mean years (SD)	24.15 (9.82)	21.95 (9.17)	NS
Ever told an older driver they should limit or discontinue their driving			
Yes	155 (99.4)	103 (96.3)	NS
No	1 (0.6)	4 (3.7)	
Ever had family member or friend involved in vehicle crash			
Yes	124 (81.0)	83 (79.8)	NS
No	29 (19.0)	21 (20.2)	
Ever personally been involved in vehicle crash			
Yes	91 (58.3)	78 (72.9)	0.015
No	65 (41.7)	29 (27.1)	

Overall totals: rural = 157; urban = 108. Column totals may not equal overall totals due to missing values

*MD* doctor of medicine, *DO* doctor of osteopathic medicine, *PA* physician's assistant, *NP* nurse practitioner

<sup>a</sup> Chi square *p* values for rurality for gender, specialty, degree, ever told an older driver they should limit or discontinue driving, ever had family member/friend involved in vehicle crash, ever personally been involved in vehicle crash. *t* test *p* values for age, percent of practice comprised of patients 65 or older, years practicing in current specialty. Significance at  $p \leq 0.05$ . *NS* not significant, *na* not applicable

several north central states, the goal of this study was to determine rural–urban differences in HCP perceptions, attitudes, and practices related to mobility counseling provision to older adults. Rural HCPs were significantly less likely to provide this information to their patients aged 75–84 and 85 or older than HCPs practicing in urban areas. In addition, rural HCPs were less likely than urban HCPs to refer patients if they had questions related to driving issues and were less likely to feel there are adequate resources related to testing fitness to drive. This research is unique in that it is the first known study to focus on rural–urban differences in the frequency of HCP mobility counseling

provision to older drivers, and in HCP attitudes and perceptions related to this topic.

Rural and urban HCP practice patterns related to mobility counseling provision diverge at a critical juncture in an older adult's life, when aging-related physical and mental changes may be more likely to occur, possibly affecting driving ability. It is at this point in life that HCP mobility counseling would be most needed by older drivers. Rural and urban HCPs were both as likely to provide mobility counseling to patients aged 74 or younger. However, for patients aged 75 or older, compared with urban HCPs, rural HCPs were significantly less likely to provide

**Table 2** Logistic regression of HCP patient discussions related to safe driving habits or driving fitness by patient age

Variable	64 or younger			65–74			75–84			85 or older		
	OR <sup>a</sup>	95 % CI		OR	95 % CI		OR	95 % CI		OR	95 % CI	
		Lower	Upper		Lower	Upper		Lower	Upper		Lower	Upper
Rurality (reference: rural)	0.618	0.158	2.422	0.823	0.373	1.818	0.452**	0.255	0.801	0.496*	0.277	0.889
Gender (reference: male)	1.070	0.251	4.566	0.559	0.247	1.265	0.795	0.433	1.458	0.589	0.321	1.079
Personally involved in motor vehicle crash	5.237	0.643	42.659	0.664	0.315	1.398	0.773	0.451	1.324	0.938	0.545	1.613
HCP specialty (reference: family medicine)	0.311	0.070	1.389	0.491	0.206	1.167	1.176	0.641	2.159	1.768	0.947	3.301
Percent of practice 65 or older	1.000	0.970	1.031	1.004	0.985	1.023	1.010	0.997	1.024	1.019**	1.005	1.033
Years practicing in current specialty	0.995	0.927	1.067	0.999	0.960	1.039	1.028	0.999	1.058	1.049*	1.018	1.080

<sup>a</sup> All odds ratios (ORs) reported for each variable are the result of being adjusted for all variables listed as predictors of patient discussions related to safe driving habits or driving fitness by patient age group

\*  $p < 0.05$ ; \*\*  $p < 0.01$

this information to their older patients. Other studies have shown that rural HCP practice patterns differ from that of their urban counterparts, with reduced counseling/services being provided by rural HCPs as compared to their urban counterparts, potentially creating health disparities between urban and rural patients [36, 37]. This study builds on this compendium of research, adding mobility counseling as an area in which rural HCPs are less likely than urban HCPs to provide counseling to their patients. Future research should focus on the possible connection between rural–urban differences in HCP provision of mobility counseling to older drivers and rural older adult overrepresentation in motor vehicle injuries and fatalities statistics.

Rural HCPs were less likely than urban HCPs to agree that there were adequate resources related to older driver assessment, and were less likely to know where to refer older adults to assess fitness to drive. HCPs have long acknowledged the lack of resources as a barrier to care in rural areas [38–41], and HCPs affirm a lack of access to driving safety/cessation resources in the current study. A previous study of HCP adaptations to health care barriers found that successful rural providers “broadened their expertise” [41] (p. 537) in areas in which they had limited knowledge. This is related to a limited option for specialization in rural areas, and the requirement for HCPs to have a broader base of skills and knowledge to be effective in their practice setting. In regards to older drivers, one area in which rural HCPs could add to their base of expertise is driving safety/driving cessation-related counseling techniques. One of the challenges faced by rural HCPs is access to few continuing education opportunities [42]. Obtaining training and education related to mobility counseling will allow rural HCPs to become more effective at identifying

red-flag issues related to older drivers, in addition to planting the seeds early in older adults to think about their future driving ability and to plan for the time when they might have to discontinue driving.

While rural HCPs were less likely to provide mobility counseling to their older patients, they were more likely to agree with the statements related to HCP responsibility to counsel patients on fitness to drive, and were more likely to agree that they are confident in their ability to provide counseling to older patients on their ability to drive. This is a paradox. One would expect that HCPs who were more confident in their ability to provide mobility counseling and were more likely to agree that it is a HCP’s responsibility to counsel patient on fitness to drive would be more likely to provide mobility counseling to their older patients, and not the other way around. This is an instance where social desirability bias may be causing respondents to answer certain questions in a manner in which they feel the researcher would like. Additionally, rural HCPs might be more confident in providing mobility counseling to certain age groups, and believe it is the responsibility of HCPs to provide mobility counseling, again only to certain age groups, and a general question related to confidence in this area does not capture these differences. Finally, it is possible that rural HCPs are more confident in providing mobility counseling and believe that HCPs are the most qualified to provide this information but they simply do not have enough time within their practice setting to provide this information within the confines of a regular visit.

Regarding patient emotional status, rural HCPs were more sensitive to their patient’s reaction to discussing driving safety/cessation-related issues, and were more likely than urban HCPs to believe their patients would

**Table 3** Factor analysis of attitudes/perceptions and HCP agreement with items

Factor name	% Var	Perception/attitude item	Loadings				Distribution of responses			
							Rural		Urban	
			1	2	3	4	% Disagree	% Agree	% Disagree	% Agree
Resources/referral	18.3	I know where to refer older patients if they have questions regarding their fitness to drive	<b>0.82</b>	0.05	0.02	-0.08	40.1	49.0	28.0	62.6
		I refer patients to a driving fitness evaluation resource in my community when I am uncertain of a patients' ability to drive safely	<b>0.80</b>	-0.08	0.18	-0.09	42.7	40.0	27.4	56.6
		I know the procedure in my state for reporting a patient who is a potentially dangerous driver	<b>0.72</b>	0.20	0.13	0.08	49.4	44.9	50.0	44.3
		There are adequate resources for older adults to get assistance with assessing their fitness to drive	<b>0.64</b>	0.29	-0.25	-0.09	67.7	18.1	48.5	33.0
HCP practice time/advice	14.0	In my practice setting, there is adequate time during regular visits to provide counseling regarding a patient's fitness to drive	0.80	<b>0.72</b>	0.03	-0.18	45.2	23.6	42.1	14.0
		Older drivers get consistent advice on their fitness to drive from health care professionals	0.13	<b>0.69</b>	0.06	0.03	81.5	1.9	77.4	3.8
		Health care providers are the most qualified professionals to discuss driving fitness with older drivers	-0.11	<b>0.54</b>	0.36	0.01	25.0	30.1	26.7	20.0
HCP responsibility	13.7	As a health care provider, it is my responsibility to counsel older drivers on their fitness to drive	0.15	0.28	<b>0.74</b>	-0.13	7.7	71.2	10.3	66.4
		Health care providers should advise older patients on their fitness to drive	-0.01	0.29	<b>0.69</b>	-0.06	3.8	85.4	1.9	80.4
		It is the responsibility of health care providers to report patients who may be a danger to others on the road	0.38	0.05	<b>0.56</b>	0.12	17.8	56.1	23.6	45.3
		I would benefit from further education about assessing driving fitness	-0.30	-0.35	<b>0.56</b>	0.07	12.2	72.4	8.6	73.3
Emotional State	11.8	I am concerned that patients will become angry if I bring up the subject of driving cessation	-0.06	-0.07	0.03	<b>0.91</b>	23.6	49.0	30.8	38.9
		I am concerned that patients will become angry if I bring up the subject of driving safety	-0.05	-0.06	-0.05	<b>0.91</b>	42.2	29.2	55.1	20.6

Bolded numbers represent factor loadings for each identified component

**Table 4** Differences in attitude/perception factor scores by rurality

Factor	Sig. <sup>a</sup>	Mean score (SD)	
		Rural	Urban
Resources/referral	0.012	2.81 (.91)	3.10 (.96)
HCP practice time/advice	0.504	2.58 (.61)	2.53 (.61)
HCP responsibility	0.754	3.73 (.56)	3.71 (.56)
Emotional state	0.071	3.10 (.93)	2.89 (.96)

SD standard deviation

<sup>a</sup> Significance at  $p \leq 0.05$

become angry at them if these topics were to be broached during a clinic visit. This is consistent with previous research suggesting HCPs have a fear that their patients will become defensive and angry [30]. Redelmeier et al. [43] found that provision of driving warnings to patients who may be unfit to drive negatively affected the doctor-patient relationship, causing patients to decrease the number of successive visits to their physician. This is especially problematic in rural areas and highlights the emotional barriers that exist in providing mobility counseling. Brems et al. [39] found that rural physicians were more likely than

**Table 5** Barriers to providing counseling to older adults regarding driving issues<sup>a</sup>

	Rural n (%)	Urban n (%)
Time constraints during office visit	26 (30.2)	22 (31.0)
Family/patient resistance to discussion/denial	13 (15.1)	17 (23.9)
HCP does not want to contribute to loss of independence for patient	12 (14.0)	4 (5.6)
Lack of resources	11 (12.8)	7 (9.9)
Distance to nearest facility	8 (9.3)	– (0.0)
Unsure of person's ability to drive safely/lack of awareness	7 (8.1)	8 (11.3)
Unsure of where to send patients	6 (7.0)	4 (5.6)
Lack of family support	6 (7.0)	7 (9.9)
Lack of alternative transportation options	5 (5.8)	3 (4.2)
Cost of testing	4 (4.7)	4 (5.6)
Affects patient–physician relationship	3 (3.5)	5 (7.0)
Unsure of laws regarding testing	2 (2.3)	1 (1.4)
Not qualified	1 (1.2)	– (0.0)
Unsure of how to test driving ability	1 (1.2)	7 (9.9)
Consistency of information	– (0.0)	1 (1.4)
Total respondents who listed at least one barrier	86	71

Percentages based on total respondents who responded to this question on the survey

Responses sorted descending by Rural

<sup>a</sup> Percentages do not total 100 due to multiple responses from individual respondents

their urban counterparts to acknowledge that patients become defensive, and will avoid or prematurely terminate care.

Respondents listed several barriers to providing counseling to older patients regarding driving issues, including, but not limited to time constraints during office visits and family/patient resistance to discussing this topic, or denial related to the topic. Both rural and urban HCPs were most likely to list time constraints as a barrier. However, rural HCPs were three times as likely as urban HCPs to list not wanting to contribute to the loss of patient independence as a barrier. The barriers listed by HCPs in this study were similar to barriers provided in previous studies of physician barriers to mobility counseling [20, 44]. What is unique in this study is the differentiation of barriers perceived by rural and urban HCPs. Rural–urban differences in HCP perceptions that they are impeding on older adult independence by providing mobility counseling is concerning and may be contributing to differences in motor vehicle injuries and fatalities for rural older adults. If rural HCPs are less likely to provide mobility counseling due to reservations toward limited older adult independence, this issue needs to be addressed. Results of this study indicate rural HCPs were not as likely to be aware of mobility/driving safety-related resources that might be available in their community. It is possible that this is due to the lack of rural mobility resources, in which case the provision of these resources would be a necessity in rural areas.

Additionally, if resources are available, a possible remedy would be to make certain that HCPs are aware of all community resources, family resources, and transportation options to ensure they are able to provide their patients with adequate mobility options or modifications to prevent potential future limitation of patient independence.

### Future Directions and Limitations

The results of this research provide a foundation on which future policy and practice research should focus. This study found rural–urban differences in the HCP provision of mobility counseling to older drivers. A valuable next step would be to examine the connection between these differences in mobility counseling and rural older adult overrepresentation in motor vehicle injuries and fatalities statistics. Researchers should study the presence of a rural culture as a potential reason for the differences in the HCP provision of mobility counseling seen by rurality. Additionally, future research should elucidate the extent of training provided to urban HCPs as compared to their rural counterparts as related to confidence of mobility counseling provision. HCPs may not counsel on driving cessation or safety issues due to a lack of confidence, potentially resulting from being unfamiliar with the American Medical Association (AMA) guidelines [23, 25, 45]. Adler and Rottunda [23] found that a majority of HCPs who did not discuss driving issues with their older patients were not



familiar with the AMA guidelines, and that HCPs who were familiar with the guidelines were approximately 2.5 times as likely to address these topics with their patients as HCPs who were not familiar with the guidelines.

This study was limited by a number of factors. The first limitation is related to the representativeness of the sample. These results reflect the responses of HCPs whose names and contact information were made available through a data clearinghouse. Persons whose contact information was not available through this source were excluded from participating in the surveys. Second, the overall response rate was low, decreasing the generalizability of the data. Mail surveys of physicians usually have low response rates, and the response rate in the current study is not atypical [46]. However, while the response rate was low potentially reducing the generalizability of the results, the results did mirror those found in other studies of rural–urban differences in HCP practice patterns as previously stated [36, 37], perhaps providing more confidence in the generalizability of the results than would otherwise be seen with a low response rate.

Future research should focus on increasing response rates for the HCP population. Third, results could have been affected by social desirability bias. This is specifically in regards to the high percent of HCPs indicating they provide mobility counseling to their older patients. HCPs may be aware of the behaviors that are expected of them, they may over-report providing these types of services to their patients.

## Conclusion

Logistic regression analyses indicated that rural HCPs were significantly less likely than urban HCPs to discuss safe driving habits or driving fitness with patients aged 75–84 and 85 or older, even after controlling for the effects of gender, ever having personally been involved in a vehicle rash, HCP specialty, percent of practice age 65 or older, and years practicing in current specialty. This research is an important first step toward determining the vital role HCPs play in reducing motor vehicle injuries and fatalities for both rural and urban older adults. With older adults disproportionately involved in fatal motor vehicle crashes in rural areas, the extent to which rural–urban disparities in HCP provision of mobility counseling to older drivers contribute to the increased motor vehicle injuries and fatalities in rural areas needs to be determined. Future research should focus on explaining the rural–urban differences in HCP mobility counseling provision and how this may contribute to increased motor vehicle injuries and fatalities for rural older drivers.

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