Driving Habits of Older Adults: A Look at Rural vs. Urban Drivers in Kansas

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Abstract

Background. The older adult population is the fastest growing cohort in Kansas, resulting in a growing number of older drivers. With age, changes in the ability to drive can compromise safety. Although it is challenging for health care providers to identify unsafe older drivers, it would be helpful to know what common driving habits they share. This exploratory study evaluated differences in the self-reported driving behaviors of older drivers in urban and rural settings of Kansas.

Methods. A one-page, 19-item survey was administered to patients over age 65 in the waiting rooms of two physician medical offices in urban Kansas City and rural Junction City, Kansas.

Results. A total of 105 surveys were completed. Rural drivers reported they were involved in approximately 9% more accidents than the urban drivers ($p = 0.166$). Rural drivers were more likely to drive in poor weather conditions, such as snow, ice, fog, and rain ($p = 0.032$). Eyeglasses were worn by 10% of the rural cohort compared to 37.8% of the urban cohort ($p = 0.0044$). More urban drivers reported they did not want to make changes to their current driving habits (71% vs 40%; $p = 0.004$). Urban drivers drove a longer distance to reach their destinations. Drivers from both environments avoided unfamiliar roads and did not use cell phones or global positioning system (GPS) devices while driving.

Conclusions. By understanding the habits of older drivers, healthcare providers can tailor safe driving messages to support safe driving and enhance patient safety. Physicians could benefit from knowing that older rural drivers wore their glasses less frequently, trended towards having more accidents, and were more prone to drive during inclement weather. Urban Kansas drivers drove further to get to their destinations than their rural Kansas counterparts. Understanding these driving habits and tailoring their prevention messages accordingly may help health care providers in Kansas improve older patient's safe driving behaviors.

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Introduction

The older adult population, those over 65 years of age, is the fastest growing cohort in Kansas and in the US. Further, Kansas is expected to show slightly more growth than the US in the 85 and older age group.[1] Safe driving amongst older adults has become a growing public health and road safety issue. The older adult population experiences the same accidents per mile driven as 20-24 year olds and the accident-related mortality rate of older drivers over 80 years old is second only to teen drivers.[2,3]

By the year 2030, 23% of the population will be over 65.[4] Drivers 65 years of age and older make up 15% of the total drivers on the road. The proportion of older drivers will increase since there are more young drivers than two to three decades ago.[5] From 2005 to 2025, the number of licensed drivers ages 65 and older is expected to double.[6]

Over three-fourths of all older adults live in suburban and rural areas.[7] Overall, older drivers (60 years and older) have among the highest rates of motor vehicle collisions per mile driven of all the age groups and are exceeded only by drivers in the under 24 age range.[11] In 2006, women over age 65 accounted for 13.6% of all women, but represented 20.8% of all female crash fatalities, the highest proportion of fatalities for any population group.[7]

Aging alone does not imply poor driving. However, as we age, many physical changes impact the ability to drive, such as reflexes[8-9], vision[9-11], memory[12], attention[12], and decision-making ability[12]. Many factors contribute to the driving behaviors of older adults. For example, they tend to avoid bad weather, drive with more people in the car to help with navigation, frequently drive to their pharmacy or grocery store, drive with glasses, have decreased ability to make left hand turns with oncoming traffic, and avoid high traffic and unfamiliar areas.[8-12] Yet, many older drivers do not feel the need to restrict their driving.[11] In fact, older drivers would like to prolong their independence, even after they perceive a potential driving hazard. With the increasing life expectancy and growth among this cohort, the promotion of safe driving behaviors and ensuring the availability of resources to provide adequate driving alternatives is a public health priority.

For physicians, addressing this issue and tailoring safe driving messages to older adults can be especially challenging. No specific guidelines exist for physicians to remove an unsafe older driver.[7] Tools to tailor a safe driving message based on urban or rural landscapes are not available. In addition to communicating safe driving habits to older drivers, reinforcing driving evaluations to health care providers, and encouraging transportation alternatives to older drivers and caregivers are essential to address this issue. With this in mind, this study compared differences in the driving habits of drivers over age 65 in urban Kansas City, Kansas and rural Junction City, Kansas. By examining these differences, accident prevention messages can be tailored in clinical settings based on urban or rural residence to improve patient safety and awareness.

Methods

Kansas City and Junction City were chosen as representative urban and rural sites where our institution maintains clinical activities. According to the 2008 census, Kansas City had a population of 597,572 with an area of 438 square miles.[13] Junction City had a population of 20,671 within 7.7 square miles and is 66.4 miles from the closest urban city. One outpatient clinic at each site was selected for the study. The office in Junction City was an internal medicine clinic affiliated with the local hospital and had a geriatric population (over age 65) of approximately 85%. The office in Kansas City was a geriatric clinic exclusively seeing patients over age 60, therefore, over 90% of the patients were over age 65. Both clinics were affiliated with the University of Kansas Medical Center.

The investigators developed a one-page, double-sided survey containing Likert scale, yes/no, and open-ended questions regarding driving habits and accident history (see Appendix). Questions included whether they held a driver's license, their typical driving distances, destinations, frequency, accident history, and accident type. In addition, self-reported psychosocial questions were asked including driving changes they felt they needed to make, driving limitations they have adopted, and types of community support they felt would enable them to be safer drivers.

To maintain anonymity, personal identifiers were not requested, except for age. It was communicated clearly that motor vehicle agencies would not be notified and their medical care would not be compromised in any way. After receiving Institutional Review Board approval, the survey was given to a convenience sample of patients walking into either clinic over a four-month period. The clinic staff distributed the survey at the check-in desk to anyone over age 65, with or without a current driver's license. The patients were asked to complete the voluntary survey while in either the waiting or examination room. The surveys were returned to the clinic staff at the end of the patient visit and ultimately to the investigators.

A two-tailed Student t-test was performed on continuous data. Since these were random, unrelated, convenience samples, the investigators assumed that these were two samples with unequal variance.

Results

Fifty-five surveys were collected from the urban site and 50 from the rural site. Statistically significant findings were found in three domains. Rural drivers were more likely to drive in poor weather conditions, such as snow, ice, fog, and rain ($p = 0.032$; see Table 1). Eyeglasses were worn by 10% of the rural cohort compared to 37.8% of the urban cohort ($p = 0.0044$). More urban drivers reported they did not want to make changes to their current driving habits (71% vs 40%; $p = 0.004$).

Although not statistically significant ($p = 0.166$), the rural cohort was involved in approximately 9% more accidents than the urban cohort, 15.4% vs. 5.6%. Interestingly, the average number of miles for a one-way trip was lower in the rural cohort (6.4 miles) than in the urban cohort (24.2 miles). Further, the range was larger for the urban cohort (1-50 miles) than the rural cohort (0.5-20 miles).

Table 1. Percent of older drivers avoiding certain weather conditions.

Weather Condition	**Rural Cohort N = 40**	**Urban Cohort N = 22**
Rain	0.0	9.0
Snow	7.5	13.6
Ice	7.5	18.0
Fog	2.5	18.0

Many similarities were noted between the driving habits of rural and urban participants in terms of valid driver's licenses, driving age, and driving frequency (Table 2). Use of global positioning systems (GPS) and cell phones while driving in this population was limited. Less than five percent of both cohorts had attended a driver's education course aimed specifically at older drivers, yet approximately 10% from each cohort expressed a desire to receive a driver's refresher course.

Table 2. Similarities between the rural and urban Kansas driver cohorts.

	Rural Cohort N = 50	**Urban Cohort N = 55**
Valid Driver's License	87%	85%
Average Age	76	75
Drove daily	50%	48.7%
Drove 3 times per week	37.5%	35.9%
Cell phone or GPS use while driving	1%	1%

The two groups reported several similarities when asked how the communities they lived in could help to improve their driving. Some reported recommendations included slowing down other drivers, avoiding tailgating, obeying traffic signals more diligently, and driving courteously. Participants also noted changes they wanted to make in the next year. Rural participants included slowing down while they drove (n = 1), reducing the number of trips they made weekly (n = 2), and limiting their driving to daytime only (n = 6). One urban participant expressed a desired change to not drive in snow and another planned to stop driving over the next year.

Discussion

Rural and urban drivers are frequent drivers. Urban drivers generally drive longer distances to get to their destinations than their rural counterparts. Fewer than five percent of both cohorts used GPS navigation devices. In recent driving safety research,[14] GPS systems can be an effective means to provide older driver education. In the study, they compared 54 participants, 70-89 years of age, with traditional instructor and dual-brake vehicle training versus a GPS feedback training system. They found that those with the GPS feedback training reduced their driving errors by 25% ($p < 0.05$).[14] Based on this study, instituting an automated voice system in the vehicle reminding older adult drivers that they are driving above or below the basic speed law and informing them of the distance to the next car may be helpful.

Due to the frequency of older adults driving, physicians should inquire about driving habits and changes as an important part of a visit with an older patient. During office visits, it may be helpful for the physician routinely to discuss if their older patients drive, if they need help driving, and how confident they feel when they drive. Considering their medical comorbidities, physicians should assess what driving limitations could or should be imposed. Based on this study, all patients over the age of 65 should be asked when their last eye exam was, if they consistently wear their glasses when driving, when their last accident was, and if they are driving in bad weather conditions where their visual acuity may be compromised.

A large percentage of older adults did not feel inclined to make any changes to their driving habits. With physician guidance, older Kansans may be more willing to make changes to improve their driving safety. Safe driving messages can be targeted to account for differences in older urban and rural drivers. Rural physicians should be aware that rural older drivers wear their glasses less frequently, have more accidents, and are more prone to drive during inclement weather than their urban neighbors. Rural drivers specifically can be given driving messages to wear their glasses and to avoid inclement weather. Both groups displayed an interest in a driver's refresher course, therefore, this strategy also can be discussed with patients.

This study had a number of limitations that might have biased the results. First, only English literate drivers could complete the survey. Older adults that could not read English could not participate in the study. Second, participants may not have wanted to disclose true information regarding the number of accidents, the types of accidents they were involved in, and past driving habits. Despite the reassurance that local authorities would not be notified, participants could have been afraid to disclose driving behaviors for fear of legal consequences. Third, this convenience sample only captured ambulatory, community dwelling older adults visiting their doctor's office. This did not capture drivers that were too ill to drive to their doctor's

office or who rarely saw a doctor. Fourth, the Junction City clinic was only 66.4 miles from the closest urban city. Therefore, the rural results may not have been as authentic when compared to a more isolated rural community. Fifth, this was a small sample size, therefore, the generalizability of this study to the main population was limited. Lastly, participants were able to leave any question unanswered. For example, only 40 of the rural and 22 of the urban cohort chose to answer the question about driving in dangerous weather conditions.

Driving is a symbol of independence for older adults. It should not be deprived from anyone unduly. Further studies are needed to determine the most appropriate physician strategies to improve older patient driving safety. Once more studies are completed, policy decisions can be made about sustaining the safety of older drivers in a fair and equitable manner. Maintaining an older adult's independence and quality of life is important and should be the responsibility of the whole community. This includes encouraging safe driving practices for older adults and providing transportation alternatives for those no longer able to drive. These decisions are difficult and often can start in the physician's office.

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Driving Habit Questionnaire

You are being invited to participate in a research study conducted by Dr. Shelley Bhattacharya and Dr. Kristina Diaz through the University of Kansas Medical Center. If you choose to participate you will be asked to complete a short 2-page survey. You are not required to complete this survey and it will not affect your medical care today. None of this information will be reported to any governmental agency, it is purely for a research study comparing driving habits of urban vs. rural older drivers in Kansas. If you choose to complete this study, please return it to the front desk or mail it to the address found at the end of the survey. Thank you for your time!

Date: _____ Age: _____ Year of Vehicle:_____

1. Do you have a valid driver's license? Yes_____ No_____
2. Do you drive? Yes_____ No_____
3. If you DON'T drive, why did you stop driving?

Didn't feel safe License Expired Don't have a car Family didn't want me to drive
Other: _____

Stop here if you do not drive.

- -

If you DO drive, please continue….

4. In an average **week,** how many days per week do you normally drive?
   Every day 3 days a week 1 day a week Less than 1 day a week Only for emergencies

5. How often is there a person who accompanies you when you drive your car?
   Always Quite often Sometimes Never

6. How often do you drive on unfamiliar routes?
   Quite often Sometimes When there is a helper (person or GPS) Never

7. How often do you wear a seatbelt?
   Always Quite often Sometimes Never

8. Do you drive in the…

a) Rain?	Quite often	Sometimes	When there is a helper (person)	Never
b) Snow?	Quite often	Sometimes	When there is a helper (person)	Never
c) Ice?	Quite often	Sometimes	When there is a helper (person)	Never
d) Fog?	Quite often	Sometimes	When there is a helper (person)	Never

9. How often do you use a cell phone while driving?
   Sometimes → how often?_____ Not at all

10. Do you wear glasses when you drive?
    Yes_____ No_____

11. What kinds of problems do you have when you drive (check those that apply)?
    __Other drivers __Traffic __Not knowing directions __Fear/Anxiety
    __Reflexes slower __Trouble seeing pedestrians __Difficulty seeing signs/signals

    Other (please comment):_____

12. How comfortable are you at making left hand turns with oncoming traffic?
    Very Comfortable Moderately Comfortable Slightly Comfortable Not Comfortable at All

13. Have your family members or anyone else suggested you limit your driving?
    Yes No What did they want you to do? _____

14. In the **past week**, where did you drive?

Place	How many times?	Approximately how many miles from home (1 way)?
Store		
Church		
Work		
Relative/Friend's house		
Restaurant		
Dr. appointments		
Pharmacy		
Other:		

15. In the **past 3 months**, have you driven at night - when it's dark?
    Quite often Sometimes When there is a helper (person or GPS) Never

16. Within the **last year** have you had any car accidents where you were the driver?
    Yes _____ How many?_____ No_____

    Types of accidents: a) Hit another car b) Got hit by another car
    c) Hit an object that wasn't moving (pole, tree, etc) d) Hit while making a turn
    e) Other: _____

17. Within the **last year** have you had any "close call" car accidents where you almost could have had an accident while you were the driver?
    Yes_____ How many?_____ No_____

    Can you describe the accidents?

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18. Within the past **two years** have you changed your driving habits?
    Yes Not that I'm aware of No

    If yes, what kind of changes (check those that apply):
    __Drive less frequently __Drive only during the day __Drive only when necessary
    __Drive only in familiar places __Drive only with someone to help me

    Other changes you've already made (please write)? _____

19. Are you thinking about making any changes to your driving habits in the **near future**?
    Yes I'm thinking I probably do Not really

    If yes, what kinds of changes (check those that apply)?
    __Stop driving __Reduce length of trips __Have someone else drive

    Other changes you are thinking of making (please write)? _____

20. Have you ever taken a driver's education class for older drivers?
    Yes No

21. What kinds of things would you like your doctor or community to provide that would help you be a safer driver?

    _____