



The effect of fuel prices on the driving patterns of older adults

Paweena Sukhawathanakul^{a,*}, Michelle M. Porter^a, Gary Naglie^b,
Shawn Marshall^c, Mark J. Rapoport^d, Holly Tuokko^e, Brenda Vrkljan^f,
Isabelle Gélinas^g, Barbara Mazer^g, Michel Bédard^h

^a Faculty of Kinesiology and Recreation Management and Centre on Aging, University of Manitoba, Winnipeg, MB, Canada

^b Baycrest Health Sciences and University of Toronto, Toronto, ON, Canada

^c Ottawa Hospital Research Institute, University of Ottawa, Ottawa, ON, Canada

^d Department of Psychiatry, University of Toronto, Toronto, ON, Canada

^e Institute on Aging and Lifelong Health, University of Victoria, Victoria, BC, Canada

^f School of Rehabilitation Science, McMaster University, Hamilton, ON, Canada

^g School of Physical & Occupational Therapy, McGill University, Centre de Recherche Interdisciplinaire en Réadaptation du Montréal Métropolitain, Montreal, QC, Canada

^h Centre for Research on Safe Driving, Lakehead University, Thunder Bay, ON, Canada

ARTICLE INFO

Article history:

Received 3 February 2018

Received in revised form 6 April 2018

Accepted 9 April 2018

Keywords:

Older adults
Driving
Gas prices
Candrive

ABSTRACT

Examining environmental factors that influence older adults' driving patterns has important implications for understanding factors that can lead to self-regulation and cessation. The current study explored the effect of fuel prices on older adults' driving patterns using objective data from the nationwide Candrive longitudinal study ($N = 807$). Fuel prices were negatively associated with driving distance and positively associated with speeding and acceleration pattern. Specifically, on occasions when fuel prices were high, older adults drove less often but were speeding and accelerating more. However, the magnitudes of the effects were small, suggesting that older adults continue to rely on their vehicles for community mobility, despite variations in fuel prices.

© 2018 Elsevier Ltd. All rights reserved.

1. Introduction

Older adults represent the fastest growing segment of the driving population and the number of older drivers is projected to increase at a rapid pace. The majority of older adults use personal vehicles as their primary form of transportation, similar to that of other age groups (Turcotte, 2012). For many older adults, driving provides them with freedom of mobility that promotes their sense of personal identity, control, and belonging to a larger community (Gardezi et al., 2006). These strong emotional ties to driving likely motivate many older adults to continue driving as long as possible (Rudman, Friedland, Chipman, & Sciortino, 2006). Another reason why older adults continue to drive may be that alternative forms of transportation such as public transit services are less available or accessible in their community, particularly for those residing in rural regions. However, declines in physical health and cognitive functioning associated with age-related diseases may put older adults at increased risk of crashes and other unsafe driving behaviors (Anstey, Wood, Lord, & Walker, 2005; Dawson, Uc, Anderson, Johnson, & Rizzo, 2010; Green, McGwin, & Owsley, 2013).

* Corresponding author.

E-mail address: Paweena.Sukhawathanakul@umanitoba.ca (P. Sukhawathanakul).

Past research has demonstrated that some older adults voluntarily regulate their driving to fit with their functional abilities in order to remain comfortable on the road (Betz & Lowenstein, 2010; Donorfio, D'Ambrosio, Coughlin, & Mohyde, 2008; Myers, Paradis, & Blanchard, 2008). Driving self-regulation refers to restrictions while driving which is often a part of the process leading to driving cessation. Much of the existing research on factors that influence older adults' driving practices has mainly focused on individual and interpersonal predictors. Cognitive function and physical health (Marshall & Manson-Hing, 2011; Rapoport et al., 2016; Tuokko et al., 2016), as well as psychosocial factors including attitudes (Sukhawathanakul et al., 2015; Wong, Smith, & Sullivan, 2017), comfort level (Molnar et al., 2014; Myers et al., 2008), and confidence (Conlon, Rahaley, & Davis, 2017) have all been shown to predict self-reported driving self-regulation.

However, emerging evidence suggests that environmental factors can also impact older adult's driving patterns. Vivoda and colleagues (2016) found that factors within the transportation environment (e.g., roadway density, increased congestion) increase the odds of self-reported driving reduction and cessation among older adults. Weather conditions can also influence older adults' decisions to drive. While older adults are more likely to make trips for social and/or entertainment purposes on days with good weather (Myers, Trang, & Crizzle, 2011), their driving distance declines over the winter, as snow or other precipitation may discourage driving (Smith et al., 2016).

These relationships are consistent with ecological models of development and health that acknowledge individual behaviors are embedded within the context of broader physical and social environments (Bronfenbrenner, 2009; Schulz & Northridge, 2004). Theoretical models specifically pertaining to driving, such as the Driving as an Everyday Competence model (Lindstrom-Forneri, Tuokko, Garrett, & Molnar, 2010), the Comprehensive Framework for Mobility in Older Adults (Webber, Porter, & Menec, 2010), and the Multilevel Older Persons Transportation and Road Safety model (Wong, Smith, Sullivan, & Allan, 2014) also calls for consideration of environmental factors in relation to older adults' driving competence, performance, and self-regulation. Such macro-level factors can include the availability of community resources, alternative transportation options, infrastructural accessibility, proximity to amenities, and public policy. The current study builds on previous research by examining the impact of fuel prices on changes in driving patterns using objective tracking measures from a national sample of older drivers in Canada. Fuel price is an important environmental factor often expected to play a crucial role in driving decisions.

Most of the evidence about the impact of the financial burden of fuel prices on discouraging driving comes from large-scale nationally representative datasets. For example, in a nationally representative German sample, Frondel and Vance (2010) found that higher fuel prices led to less car usage in general (e.g., number of trips, distance). There is evidence to suggest fuel prices can impact the behaviors among younger samples. In a study involving young adults (18–30 year olds), Hou and colleagues (2011) found that higher gasoline prices were associated with an increase in leisure physical activity. The authors argued that high gas prices may influence an individual's decisions to drive to a particular location for physical activity, and instead they may choose to use other forms of transportation that can have an indirect impact on physical activity (e.g., walking or cycling to their destination). However, we know very little about the direct impact of fluctuating fuel prices specifically on older adult driving behaviors. High fuel prices may be a particular deterrent among older drivers who may already be increasingly uncomfortable with driving and who may be on fixed incomes. They may opt to avoid driving for recreational or social purposes but still have to drive out of necessity, such as attending medical appointments. However, since driving is the main form of transportation for older adults in Canada (Statistics Canada, 2011), they might be less likely to change their driving patterns in response to gas prices in order to maintain their mobility.

Much of the research on older adult driving has relied on self-report data. As well, to our knowledge, there have yet been studies that have examined the effect of fuel prices in a group of older drivers whose driving distances have been objectively measured longitudinally using an in-vehicle global positioning system (GPS). Objective measures of driving provide an advantage over self-report measures, as older drivers tend to inaccurately estimate driving distance compared to objectively measured mileage (Blanchard, Myers, & Porter, 2010; Porter et al., 2015).

The purpose of this study was to model the fluctuations in fuel prices and to determine whether changes in fuel prices had any effect on the longitudinal driving patterns of older adults. Driving patterns were derived from monthly records of driving distance, speeding, and acceleration patterns captured by in-vehicle GPS devices. It was hypothesized that higher fuel prices would lead to shorter distances travelled and more fuel-efficient driving (e.g., less speeding and lower acceleration profiles).

2. Methods

2.1. Participants

Participants were part of the Canadian Driving Research Initiative for Vehicular Safety in the Elderly (Candrive), a longitudinal study of older drivers in seven Canadian cities (Victoria, Winnipeg, Thunder Bay, Hamilton, Toronto, Ottawa and Montreal; Marshall et al., 2013). Participants had to drive regularly (4 times per week or more) and be 70 years of age or older in order to be eligible for the study. At baseline, participants ranged in age from 70 to 94 years ($M = 76.21$, $SD = 4.85$); 62% ($n = 577$) were male. Most participants completed some post-secondary education (45%), 19% had obtained a diploma or a trade/technical certificate beyond high school, 26% completed high school, and 10% did not continue beyond grade school. The Candrive sample has been shown to be comparable to a representative sample of Canadian older drivers on a range sociodemographic and health variables (Gagnon et al., 2016).

Download English Version:

<https://daneshyari.com/en/article/7257538>

Download Persian Version:

<https://daneshyari.com/article/7257538>

[Daneshyari.com](https://daneshyari.com)