



What factors influence older people in the decision to relinquish their driver's licence? A discrete choice experiment



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ABSTRACT

Purpose: To investigate the relative importance of a number of key factors that influence older people in the decision to relinquish their driver's licence.

Method: A discrete choice experiment (DCE) was administered as an online survey to Australian adults, 65 years plus ($N = 114$) who drive, recruited from an online panel. The survey was composed of three main sections. (A) The Adelaide Driving Self Efficacy Scale to assess confidence in driving. The scale is generated from individual's responses about confidence in their driving ability in various situations. (B) The DCE in which respondents were presented with a series of hypothetical binary choice situations and asked to indicate in which situation they would be more likely to relinquish their driving licence. (C) Socio-demographic and health status questions. A conditional logit regression model was adopted to analyse the DCE data.

Results: Older people would be more likely to relinquish their driver's licence due to advanced age, low confidence in driving ability and in situations where their local doctor advises them to cease driving. Other transport options availability and the cost of public transport were not found to be influential to this decision.

Conclusions: Factors pertaining to the individual themselves including advanced old age and low confidence in driving ability may be more influential than environmental factors such as availability of other transport options and the cost of public transport in an older person's decision to relinquish their driving licence.

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1. Introduction

1.1. What factors influence older people's decisions to relinquish their driver's licence?

The decision to relinquish one's driver's licence can be a difficult one (Adler and Rottunda, 2006). Driving is one of the most important tools to enhance activities of daily living and a driver's licence can symbolise independence, autonomy and competence (Persson, 1993). Previous studies have indicated that an individual's decision to cease driving may lead to a reduction in out of

home activities (Marottoli et al., 2000) and a consequent increased likelihood of depression (Ragland et al., 2005; Marottoli et al., 1997).

Deteriorating health and medical issues are often cited as reasons for relinquishing one's driver's licence. In a Southern Californian study conducted by Dellinger et al. (2001) 1950 participants aged 55 years and older who had ever been licensed drivers responded to a mailed out survey. Forty one percent stated their main reason for ceasing driving was due to a medical condition whilst just over nineteen percent cited age related issues. A Finnish study by Hakamies-Blomqvist and Wahlstrom (1998) surveyed a sample of current drivers aged 70 years and over and drivers 70 years and over who had recently not renewed their driver's licence. For those who had recently relinquished their licence, the main reasons were found to be different for men and women. Male drivers most frequently cited deteriorating health as the deciding issue to relinquish their licence whereas women most frequently cited a loss in driving confidence.

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A large scale Australian study of 752 community dwelling people aged 65 years and older by Unsworth et al. (2007) found that few drivers indicated that they had voluntarily relinquished their driver's licence. However, a majority indicated that they did limit their driving and avoided certain driving situations e.g. driving long distances, driving in bad weather, driving at night. Women were three times more likely than men to indicate that they had relinquished their driver's licence. It was found that, in general, self-reported driving cessation was more likely for respondents who were older, female, higher income, more dependent according to the instrumental activities of daily living (IADL) instrument (Fillenbaum, 1988) and who rated their own eyesight as poor.

The impact of relinquishing a driving licence and driving cessation can have devastating effects for an older person including reduced community interaction, isolation and depression (Marottoli et al., 1997). Hence the decision to relinquish driving needs to be carefully considered. Understanding the key factors that affect older driver's decisions about relinquishing their driver's licence has been previously identified as important to assist health care professionals in communicating with older people about their driving ability and to help older people to respond positively to the consequences of driving reduction or even cessation (Ragland et al., 2004). The findings from previous studies point to potentially significant differences between men and women, with older women being more likely to admit to their own declining driving abilities than older men. Men may be more likely to externalise the decision to relinquish their driving license as primarily due to medical reasons as opposed to their own innate declining driving abilities or an increased crash risk (Hakamies-Blomqvist and Wahlstrom, 1998; Hakamies-Blomqvist and Siren, 2003).

1.2. The application of discrete choice experiment (DCE) methodology to investigate older people's decisions to relinquish their driver's licence

DCE is a quantitative methodology which has been widely utilised to study how people make decisions (Lancsar and Louviere, 2008). DCE has its origins in mathematical psychology and has been widely applied in marketing, transport and environmental economics and more recently within health economics (Louviere et al., 2000).

DCE is based upon stated preferences and was designed to establish the relative importance or weight attached to salient characteristics (or attributes) in formulating a decision about a particular course of action e.g. to choose a particular product or service (Louviere et al., 2000). A number of DCE studies have recently been conducted specifically with samples of older people to understand their decision's relating to alternative service configurations in a health care setting and have demonstrated high levels of acceptability and understanding (Milte et al., 2012; Laver et al., 2011). For example, Laver et al. (2011) considered how stroke survivors make decisions about choosing between alternative service configurations for stroke rehabilitation and Milte et al. (2012) focused upon older patient's preferences for rehabilitation options post hip fracture.

The main objective of this study was to apply DCE methodology to investigate the relative importance of a number of key factors (relating to driving confidence, crash risk, age, general practitioners' recommendation to cease driving, and the cost and availability of other transport options) to an individual's decision to relinquish their driver's licence. Specifically we sought to investigate the extent to which the relative importance of key factors related to this decision varied according to the characteristics of the older person including age (youngest vs oldest old) and gender.

2. Material and methods

2.1. Establishing the attributes and their levels

Key factors that were likely to be important to older people when decision-making about relinquishing their driver's licence were identified through a literature search comprising Flinders University library databases, including PubMed and Scopus and through consultation with rehabilitation clinicians and occupational therapists involved in the care of older people. The research team then summarised these characteristics and developed them into five attributes with a range of three corresponding levels for presentation. The five attributes and their associated levels included within the DCE (Table A1).

2.1.1. Crash risk (%)

Previous research has indicated that an individual's concern about the likelihood of being involved in an accident is an important factor in driving cessation (Lafont et al., 2008). We included a low (5%), moderate (30%) and high (60%) level of crash risk to ascertain the extent to which the decision to relinquish a driving license was affected by differential rates of crash risk.

2.1.2. Age groups

Age was included to ascertain the extent to which age per se may or may not influence the decision to relinquish a driving license. Previous research has indicated that there may be a threshold level of age beyond which the decision to relinquish a driving license is more easily reached (Burkhard and McGarock, 1999).

2.1.3. Confidence in your own driving ability

This factor has been previously identified as important to the decision to relinquish a driver's licence in previous surveys of older people (Ross et al., 2012; Meng and Siren, 2012; Ackerman et al., 2010). We included a low, moderate and high level of confidence to ascertain the extent to which the decision to relinquish a driving license was affected by differential rates of confidence in driving ability.

2.1.4. Recommendation by others about fitness to drive

Previous research has indicated that the recommendations of general practitioners, family and friends may all be influential in an older persons' decision to relinquish their driver's licence (Stapleton et al., 2012; Hakamies-Blomqvist and Wahlstrom, 1998; Barnsley et al., 2012). We sought to investigate the relative importance of the source of this recommendation (general practitioners or family and friends or both sources) in influencing the decision to relinquish a driving licence.

2.1.5. Availability of other transport options

This factor has been identified as important in a number of studies (Couglin, 2001; Stacey and Kendig, 1997). If other transport options are more readily available then it is possible that the decision to relinquish a driving license is more easily reached.

2.1.6. Cost of public transport options for older people

Similarly the cost of public transport has been found to be influential previously in the decision to relinquish a driving license (Corpuz, 2007). We included levels for this attribute based upon varying cost options which are currently available for older people within Australia (www.Australian.gov.au).

A small pilot study was conducted in advance of the main study with a separate group of older adults ($N=10$) aged 65 years and above who were current drivers and who had not had a stroke. The main purpose of the pilot study was to ensure that the DCE

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