



Determinants of car ownership among young households in the Netherlands: The role of urbanisation and demographic and economic characteristics



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ABSTRACT

In the Netherlands, car ownership among young adults has slowly decreased in recent decades. The main causes of this trend are still unclear. Using a unique dataset in which vehicle registration data were combined with population and income register data for 2012/2013, this paper explores how car ownership among young Dutch households varies with household composition, urbanisation level (of household location), household income, employment status and ethnic background. Logistic regression analysis of this data revealed that urbanisation level and household composition are essential factors influencing car ownership. In addition, we found significant interaction effects between these two factors: the influence of urbanisation level on car ownership was much stronger for young couples than for young families or singles. Our results imply that increasing urbanisation and postponement of parenthood could reduce future car ownership among young adults in general. However, the increasing number of young families moving to more urbanised areas could increase future car ownership in cities.

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1. Introduction

In the past two decades, car travel by young adults has been declining in a number of developed nations (Blumenberg et al., 2012; Delbosc and Currie, 2014; Kuhnimhof et al., 2011; Kuhnimhof et al., 2012; Sivak and Schoettle, 2012). There is much debate on the causes of this trend (Goodwin and Van Dender, 2013); factors considered include increased urbanisation, increased singlehood, the upcoming of e-communication, higher car mobility costs, increased economic insecurity and changing life styles. Demographic trends seem to be more important than economic developments or technological change (Metz, 2013); in particular, the role of traditional factors (such as income) appears to have weakened over the years (Goodwin and Van Dender, 2013). Besides these doubts on the most important causes of decreased automobility among young adults in developed countries (Goodwin and Van Dender, 2013), there are also some remarkable differences between the countries studied (IFMO, 2013). In this paper, we focus on car ownership among young adults in the Netherlands.

Like in many other countries, car ownership also has declined among young Dutch adults. For the 20–25 age group, it declined from 30% in 2000 to 25% in 2013, and for those aged 25 to 30, the respective

decline was from 52% to 46%. Understanding trends in car ownership is important for policy-making and identifying future mobility scenarios, because car ownership is a major determinant of car use (Traa et al., 2014). Up until now, trends in car mobility among young adults in the Netherlands were explained mostly by aggregate demographic and economic trends (van der Waard et al., 2013). In contrast, our paper focuses on micro-level determinants (similar to Delbosc and Currie (2014)). Using a unique dataset in which Dutch vehicle registration data were combined with population and income register data for 2012/2013, we addressed the question of how urbanisation level (household location) influences car ownership among young households, and whether this effect differs between household compositions (young singles, young couples, young families).

First, we describe the background literature of this study and our specific research questions. Following a description of the data set and methods, we present the results of logistic regression analysis of car ownership among young singles, couples, and families in the Netherlands. We conclude with a discussion on how our results add to current insights into youth mobility, and the implications for future scenarios and policy-making.

2. Background literature and research questions

According to Goodwin and Van Dender (2013), the recent decline in car use in developed countries may be explained by many factors,

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including traditional economic factors (such as fuel prices, taxes and national income growth), changes in quality and reliability of different transport modes, land-use planning (such as inner-city redevelopment), and changes in individual demographic behaviour, car preferences and life styles (such as postponement of parenthood and increased migration to cities). These trends will probably also influence car ownership among young Dutch adults. For example, like in many other countries, young adults in the Netherlands increasingly move to cities and postpone having children. The number of singles and students has also increased (Manting, 2014; van der Waard et al., 2013).

Recent studies on youth mobility in various countries show that car mobility among young adults is lower in cities than in rural areas, increases with age, and is higher among young families than among young childless couples (Delbosc and Currie, 2014; IFMO, 2013; Kuhnimhof et al., 2011). Many factors may contribute to lower car ownership in Dutch cities. Here, public transport and bicycling are good alternatives to driving, while parking costs are higher than in rural areas. Furthermore, most cities have large populations of students, who have (almost) free access to public transport and generally cannot afford to have a car. Hence, many young adults living in cities will prefer to use public transport (or a bicycle) over driving a costly car. Other groups concentrated in cities include immigrants, who tend to use public transport more than private cars (Harms, 2007), and young singles, among whom car ownership is generally lower than among families or couples (Potoglou and Kanaroglou, 2008). All in all, there are enough reasons to assume that car ownership among young adults in the Netherlands will be lower in highly urbanised areas than in suburban and rural areas.

It is also a common finding that car ownership among singles is lower than for households with children (Potoglou and Kanaroglou, 2008). This could be the result of singles having lower household incomes than families, or singles being jobless more often than parents. Another reason might be that families have more complex daily travel patterns, including trips to work, school and leisure activities. Child-related travels and activities are also more constrained in time and place compared to other household activities (Kitamura, 1983). For instance, child-related travels and activities limit the possibility to avoid rush-hours (Oakil et al., 2015). This relative inflexibility may lead to higher car dependency and thus could explain the higher level of car ownership among families with children compared to singles and childless couples.

Transport research in various countries has already established the importance of demographic characteristics (such as household composition) and urbanisation level for understanding car mobility (and, in some studies, car ownership) (Bhat and Guo, 2007; Cervero and Kockelman, 1997; Dargay, 2002; Golob, 1990; Nolan, 2010; Oakil et al., 2014; Prevedouros and Schofer, 1992; Rosenbloom, 1993; Van Acker and Witlox, 2010). However, these studies do not explicitly address the determinants of car ownership among young adults in the Netherlands. Hence, the first objective of our paper is to explore the influence of urbanisation and household composition on car ownership among young Dutch adults, after controlling for demographic and economic differences. Our second objective is to assess possible interactive effects between household composition and urbanisation level. Young singles, couples and families may experience different travel constraints and opportunities depending on their residential location. For example, couples living in high density areas were found to share more out-of-home household tasks than couples living in low density areas (Schwanen et al., 2007). Moreover, travel mode preferences may vary per household type. The effect of urbanisation will be smaller for households that own a car because it is their preferred mode of travel, irrespective of where they live (Cao et al., 2009). Therefore, it is important to look at the interaction between household composition and urbanisation level. To the best of our knowledge, this has not yet been studied specifically for young adults in the Netherlands.

In summary, this paper aims to gain insight into micro-level determinants of car ownership among young Dutch households. In line with the above discussion, the paper addresses two specific questions:

1. To what extent does urbanisation level influence car ownership among young Dutch adults, after controlling for household composition, age, ethnic background, employment status and income?
2. To what extent does the effect of urbanisation level on car ownership among young Dutch adults vary with household composition?

3. Data and methods

3.1. Data sources

To perform our analyses we used a pooled data set with a limited number of variables, combining vehicle registration data with register data from the Social Statistical Database (SSD) of Statistics Netherlands (Bakker, 2002) (data on population and households, employment and income, and residential location). The SSD data refer to 31 December 2012 and the vehicle registration data to 1 January 2013. All the data sets were pooled using unique person identification numbers created by Statistics Netherlands; mismatches (about 5%) were excluded from the analyses. These large data sets facilitate the investigation of relatively small subgroups within the population, such as young families living at different locations. However, the data sets include only a limited number of variables, and hence do not allow us to analyse many different factors.

3.2. The selection of young households

From the pooled data set, we selected young households in which all adults were 18 to 29 years old. Hence, only young adults living alone, as a couple or as a single-parent or two-parent family were selected. Of the 2,487,000 young Dutch adults in 2012, excluded from the analysis were about 1,042,000 young adults living with their parents, 22,000 living in institutional households (e.g. mental institutions or prisons) and 74,000 in undefined circumstances (category 'other'). Furthermore, about 248,000 young adults were excluded due to mismatches between data sets, missing values and consideration of households in which all adults were 18–29 years old. As a result, about 1,101,000 young adults, which constitute 861,000 young households, were analysed.

3.3. Description of the variables

The dependent variable in our analysis was household car ownership, being either 'zero' or 'one or more' (private and/or company cars). No distinction was made between 'one car' and 'more than one car' because in the Netherlands only a minority of young households (8%) owns more than one car.

Several independent variables were included. Urbanisation level was defined by the number of addresses per km² in the 4-digit postcode area of the household's address. Following Statistics Netherlands, five urbanisation levels were distinguished: i) very high density areas with ≥ 2500 addresses per km²; ii) high density areas with 1500–2500 addresses per km²; iii) moderately high density areas with 1000–1500 addresses per km²; iv) low density areas with 500–1000 addresses per km²; and v) very low density areas with < 500 addresses per km². Household composition included four types: young singles, young couples, young two-parent families and young single-parent families. Employment status was either unemployed or employed; in the latter case at least one member of the household held a (full-time or part-time) job on 31 December 2012, excluding self-employment. Although studies on car ownership use different ways of measuring household income (Dargay, 2002; Nolan, 2010; Oakil et al., 2014; Potoglou and Kanaroglou, 2008), we preferred to use household disposable income instead of standardising household income by household type. This

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