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Peak Car in Europe?

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Abstract

It is often argued that car travel demand has already reached a peak in developed economies. The interpretation of current trends in demographics and user preferences, as well as the increasing availability of alternative transport modes may give the impression that we have reached the age of lowering the dependence on the automobile. The factors that affect travel demand are, however, numerous and often affect car travel demand in opposing directions. The work presented here analyses the underlying factors that affect user choices and attempts to extrapolate their importance for the future across Europe. The methodology is based on the results of a recent EU-wide travel survey that maps user preferences and on the application of a Random Forest classification model that explains the interaction of the main variables that affect these choices.

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Introduction

In 2011 Adam Millard-Ball and Lee Shipper suggested that a dramatic change had been happening in people's mobility in eight developed nations. Car travel has been persistently falling or stalled in much of Europe and North America for the past 10 years. In the USA the amount of car travel is back to what it was in the early 1990s. In many Western European countries such as Great Britain, France and Germany the trends are similar. What had also been noticed, was that it was young adults that displayed the greatest tendencies to shift away from the car including a marked reduction in the number of new driving licenses issued, especially so for young men.

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^x The opinions expressed are those of the authors only and should not be considered as representative of the European Commission's official position.

There is a growing literature on the theme of levelling off or declining car use. The research is nearly always based on countries that display such trends. However, it is quite unclear how widespread this phenomenon is and whether it is a general trend that will eventually become visible in other countries as well. This paper aims to partly fill in that gap through an analysis of the level of car use in each European Union country and its correlation with various demographic and socio-economic factors. In order to do so, it analyses the data from a unique household travel survey undertaken in every European Union country and attempts to identify the major factors that may explain the changing levels of car use. The driving factors influencing car use were analysed using a Random Forest classification algorithm. This approach allows the interactions between the variables to be captured and provides a framework for the decomposition of the trend in car use into a combination of trends in the underlying variables. As a result, the analysis of the underlying trends provides useful input to the discussion on whether car use is undergoing a paradigm shift or whether the observed trends are simply circumstantial.

The paper first reviews the literature on the 'peak car' effect concentrating on young people, whose mobility patterns show the greatest change over time and the causes of this change. The second part of this paper outlines the latest trends in car use throughout all European Union countries based on the latest Eurostat figures. Based on this analysis, groupings of countries that display similar characteristics have been created. The final part of the paper, introduces the results of a unique European Union wide travel survey and relates these through a random forest to driving licence holding, urbanisation and journey mode.

1. Literature review of the peak car effect

That car-driving rates have stopped growing and in many cases are declining in most economically developed nations is unquestionable. The debate is as to (i) how permanent this reversal of past trends is, (ii) how far is it related to purely economic factors, and (iii) what may be other underlying causes. Furthermore, it is accepted that the greatest change in driving rates is amongst the young, especially young men, who also are increasingly not learning how to drive.

1.1. Evidence from the United Kingdom

Most of the research on peak car has focused on single country data analysis. Of those, the United Kingdom has seen the most research undertaken and this research paper reflects that. The peak car phenomenon in the United Kingdom had been well documented and continues to be updated by Gordon Stokes (2015) who analyses the annual National Travel Survey (NTS). Some other studies, such as those by Scott Le Vine and Peter Jones (2012) have argued that while the 'peak car' phenomenon can be confirmed at aggregate level in the United Kingdom, it is not universal for all groups in society. They highlight that car driving among women has been indeed increasing consistently outside London.

The groups that have shown the greatest decline in car driving are the young, the urban dwellers and those of higher incomes (Department of Transport 2015). A 30-year cohort analysis by Transport for London has shown a decline in car use both as drivers and passengers for younger males and females (Transport for London 2014). Studies on the take up of car driving licenses by young people also show significant declines in a number of countries. For instance a comparative study by Michael Sivak and Brandon Schoettle (2011) shows that driving license holding for young adults has declined in Great Britain, Norway and Sweden. Yet the opposite can be seen for Finland and Spain.

1.2. Young people

Gordon Stokes' (2013) analysis highlights the importance that changes in the mobility behaviour of young people are having in the overall level of car use. Similar results have been seen in a number of countries. An example of this is in Holland, where Jan Van der Waard shows that car mobility for young adults has decreased sharply since 1995 and demonstrates that the changing mobility of the young plays a "substantial contribution" to the 'peak car' phenomenon. Tobias Kuhnimhof, Dirk Zumkeller, and Bastian Chlond (2013) and (2014) reporting on a six-country

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