Generational Change in Travel Demand:
A Submission to the Commission on Travel Demand

After the turn of the millennium it is apparent that we have witnessed a generational change in travel demand. Young adults are driving much less than previous generations and it is not a temporary phenomenon associated with the economic crisis of 2008 but a longer term shift that started in the early 1990s. This had not been anticipated in Department for Transport forecasts of future travel demand but there is a need to plan and adapt to this new reality.

The generational change in travel behaviour is not unique to the UK and a similar phenomenon has occurred in most industrialised countries (ifmo, 2013). It has been the subject of global research interest in the last few years and I have been commissioned to undertake a review for the Department for Transport seeking to understand the causes and implications. The findings will be published later in 2017.

One thing that has become apparent is that existing forecasting models are not equipped to predict generational change of the kind that we have witnessed. They assume stable relationships between travel demand and demographic, socio-economic, geographic and transport factors. However, it has become clear that travel demand relationships can change over time (Sanko and Morikawa, 2014). They can also vary among the population (Vij et al., 2017).

In analysing social change it is important to recognise the existence of three types of time-related variation (Yang, 2007).

- Age effects: variations associated with age that remains more or less stable over time;
- Period effects: variations over time that affect everyone simultaneously, irrespective of their age; and
- Cohort effects: changes across groups of individuals who experience an initial event together, such as their birth year.

Considering the existence of these three effects has helped understand the generational change in young people's travel behaviour.

Age effects relate to the progression of travel demand over people's lives. Transport forecasting models already include relationships which recognise that travel demand varies with life circumstances (such as living situation and employment status). But a body of recent research (adopting what has become known as the mobility biographies approach – see Lanzendorf, 2010) has investigated, using longitudinal data, how events in the life course directly influence travel behaviour. This has demonstrated the sensitivity of travel behaviour to events such as starting employment, birth of a child and moving home (Chatterjee et al., 2013; Clark et al., 2016). We know that young people's lives in early adulthood are very different today than 30 years ago and much more volatile (with respect to education, employment and family). Hence to anticipate future travel demand we need to represent the life course development profiles of the population and how their travel demand responds to these.

Period effects relate to time-limited effects on travel demand that affect the whole population. Transport forecasting models can account for the effects of economic shocks but they struggle to account for cultural and technological 'disruptions'. For example, we have seen large reductions in trip rates across the population since the turn of the millennium which may be associated with the widespread adoption of information and communication technologies but it has proven impossible so far prove this.

Cohort effects relate to differences in travel demand between groups in the population, usually focused on birth-cohorts. We have seen that the current generation (Millennials) drive much less than the previous generation (Generation X). Incidentally, we became accustomed in the past to the idea that over time each generation would drive more than the previous generation and (simultaneous with the Millennials phenomenon) we are seeing older people today drive more than previous generations. In either case, transport forecasting models are not designed to represent cohort differences.

It is analytically challenging to identify the separate role of age, period and cohort effects when explaining past change in travel demand. A good attempt at doing this by McDonald (2015) for the change in car mileage of young Americans between 1995 and 2009 found that lifestyle-related socio-demographic changes (age effects) accounted for 10% to 25% of the reduction in car mileage, while changes over time specific to Millennials and younger members of Generation X accounted for 35% to 50% of the reduction (cohort effects) and general dampening of car mileage travel that applied across all age groups (period effects) accounted for the remaining 40% of the reduction. With regard to the cohort effects, McDonald suggests the existence of "Millennial-specific factors such as changing attitudes and use of virtual mobility (online shopping, social media)".

Research is urgently needed in a UK context to investigate and identify age, period and cohort effects and to explain and interpret them. This will be needed to provide the understanding with which to develop new forecasting models that are more sensitive to social change.

For new forecasting models (or for non-quantitative ways of looking at the future), it is first necessary to acknowledge uncertainty and to accept the need to explore the future with different scenarios instead of point projections. Second, projections of future travel demand should not assume temporal stability in travel behaviour relationships (such as sensitivities of car mileage to personal income). Differences in travel behaviour relationships between birth-cohort groups (as well as differences depending on age and gender) should be considered as well as changes in these over time. This points to replacing the 'steady-state' transport models currently used, which assume that we only require future population composition and economic and transport conditions to make forecasts, with models which project the population forward over time, updating their circumstances, and predicting their travel demand taking account of cohort differences that persist over time.

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<u>References</u>

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