

Authors

Name Anne Bastian 
Affiliation KTH
Country Sweden
Bio statement PhD student, Centre for Transport Studies, KTH
Principal contact for editorial correspondence.

Name Maria Börjesson 
Affiliation KTH
Country Sweden
Bio statement Researcher, Centre for Transport Studies, KTH

Title and Abstract

Title Have we reached Peak Car in Sweden? - Decomposing the underlying trends

Abstract **Objective and Method**

Over the last decade passenger car distances per capita have slowed down or declined in many advanced economies, despite growing GDPs. This is well documented in aggregate cross-national studies such as Goodwin (2011). But aggregate studies do not reveal the relative importance of more easily quantified demographic and economic changes versus lifestyle, attitude, technology and policy, and to what extent these different partly opposing trends interact. Better understanding of these issues is important for improving traffic forecasts, policy and planning but also in the context of climate goals, quality of life, taxation of car ownership and use and business opportunities.

This study explores the disaggregate trends underlying aggregate changes in passenger car travel in Sweden. Sweden is a relevant case study because of its fast urbanization, high net immigration, high university education rate, high labor force participation of women and gender equality ranking, early internet penetration and environmental awareness. We analyze cross-sectional data from the Swedish national travel survey, spanning the period from 1978 to 2012[i] . During these years the survey methodology has been stable, enabling comparison across years. We model the decision to drive a car on the interview day (selection) and the distance driven by car (outcome) via a 2-step tobit regression model. The modelling aims at distinguishing between changes in car use trends arising due to changes in lifestyle/attitudes and to socio-economic composition in the population.

Results

The national travel survey data suggests relatively stable car travel distance per capita over time. Car trip frequencies are declining while average trips are becoming longer.

According to the model, there are clear time-independent differences in car use across socio-economic groups. For instance having children is associated with higher car ownership and use. Part of this is because families with children are more likely to live in a single family house than in centrally located apartments. Swedish parents are thus not only car dependent directly because of child care but also because of the housing choice that is linked to their children. Moreover, employed people, middle aged, men and people living in sparsely populated areas have a higher car use than others in all years. Hence, demographic change implies that car use changes.

But demographic change alone does not explain the observed trends in car travel. The aggregate trend in car use is also a result of opposing trends within different socio-economic groups. Young men, who used to be among the heaviest drivers, have strongly reduced their car use. New life styles are contributing to this trend: Many more Swedes in their twenties get a university degree and move to cities, while full time employment, family forming and for some even acquiring a driver's license are delayed to later ages. Pensioners continue to increase their car use, though in absolute terms they still drive less than working age Swedes. Moreover, women's car use is becoming more similar to men's, even after controlling for employment status and education. These trends could be interpreted as a convergence to economically reasonable behavior. Judging by their income young men of the last century were driving above their means, while women, especially older women, should have driven more. This suggests that people are becoming more economically driven and flexible in their travel choices. The car as a status symbol is losing relevance among the young.

We conclude that opposing trends by cohort and life cycle group have resulted in the relatively stable car distances travelled per capita in Sweden. But since trends are so different in different segments of the population, aggregate trends cannot be extrapolated into the future. To improve car travel forecasts we need to reduce reliance on GDP, account for population distribution trends, changing patterns by life cycle group and widen the range of possible scenarios.

Selected references:

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[i] The cross-sectional Swedish national travel surveys address all trips conducted during a randomly selected interview day with a sample of ~ 8000 residents of Sweden per year. The surveys were conducted in 13 out of the 34 years spanning from 1978 to 2012.