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European mobility cultures: A survey-based cluster analysis across 28 European countries

Sonja Haustein [a,*], Thomas A. Sick Nielsen [b]

[a] Technical University of Denmark, Department of Management Engineering Diplomvej, 2800 Kgs. Lyngby, Denmark
[b] The Danish Road Directorate, Niels Juels Gade 13, 1022 København, Denmark

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ABSTRACT

More targeted European policies promoting green travel patterns require better knowledge on differing mobility cultures across European regions. As a basis for this, we clustered the EU population into eight mobility styles based on Eurobarometer data. The mobility styles – including, for example, "green cyclists" and "convenience drivers" – differed not only in their travel-related variables but also in their socio-economic background, IT-affinity, and life satisfaction, with green cyclist showing the highest life satisfaction and two car-oriented styles having the highest socio-economic resources. In a second step, the 28 EU member countries were clustered into six country clusters based on their representation of mobility styles. The country clusters indicate the existence of considerably different mobility cultures across the EU. Sub-regions can be identified that have highly different positions on the path towards sustainable mobility and therefore different requirements towards European platforms and support measures, e.g. for 'Sustainable Urban Mobility Plans'. The country clusters can provide a starting point for future communication and targeting of European efforts in sustainable mobility.

1. Introduction

Despite a relatively high proportion of people walking and cycling in some European countries, the car generally remains the dominant mode of transport in Europe (EEA, 2015). Related problems, such as air pollution, noise, congestion, and reduced quality of life are far from being solved. To decrease car use and increase the amount of walking and cycling, it is crucial to develop targeted efforts within Europe. Promoting walking and cycling by targeted policies requires an understanding of individual travellers' motives and barriers as well as an explicit recognition of the diversity of European regions and their associated infrastructure, planning policies, politics, and mobility patterns. Comparing the European countries, reliance on car or motorcycles for everyday activities ranges from 91% of the population in Cyprus to 29% in Latvia. The reliance upon public transport ranges from 37% of the population in the Czech Republic to 10–11% in the Netherlands and Slovenia. For walking and cycling there are also substantial differences. In Romania 30% of the population report relying on walking to access everyday activities compared to the very low level of 3% in Cyprus and Denmark. The Netherlands holds the European record with respect to cycling with 31% of the population reporting that they rely on it for everyday activities. At the other end of the cycling scale we find Malta with nearly 0% of the population relying on it for everyday activities (EC, 2011b, see Fig. 1). The implication of this diversity is that behavioural change and its promotion will have highly different starting points across different individual countries, or groups of countries, with comparable patterns. We argue that more knowledge of these differences and the associated European divides is required to develop European policies on sustainable urban mobility. Better knowledge may be especially helpful in structuring European resources to address the diversity of sustainable mobility challenges. EU policies in the field of mobility have included communication of best practices, campaigning and increasing awareness of sustainable mobility (CEC, 2009), as well as knowledge-support for the development of sustainable urban mobility plans, including 'The Urban Mobility Observatory' (EC, 2011a, 2013). These efforts should benefit from more in-depth knowledge and validation of the European differences in mobility behaviours. Additionally, European projects in other fields than mobility (e.g. Nilsson et al., 2013; Helming et al., 2008) frequently apply regional typologies for communication as well as an approach to secure that the main European differences are represented in the selection of case studies and similar.

1.1. Market segmentation in the transport sector

The target-group or target-area specific planning and design of interventions is a measure that is often requested to increase the efficiency of environmental interventions (e.g., Geller, 1989; McKenzie-Mohr, 2000; Schahn, 1995) as interventions that are spread across the whole population according to the "shotgun approach" have only limited chances to achieve behavioural change and thus may be seen as ineffective or wasteful from a policy perspective. In

* Corresponding author.
E-mail address: sonh@dtu.dk (S. Haustein).

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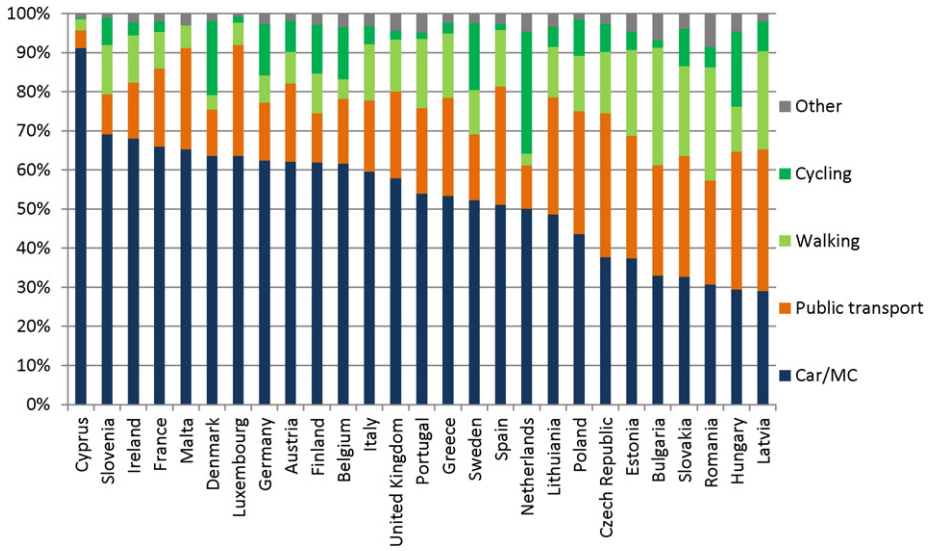

Fig. 1. Mode distribution by country based on Flash Eurobarometer 312, question D7: What is the main mode of transport that you use for your daily activities? (EC, 2011b).

market segmentation, target groups are identified by dividing the population into homogeneous segments with similar attributes that are considered *as* or related *to* the motivational basis for the targeted behaviour (e.g. age, attitude, place of residence), or by the behaviour itself. Several transport providers/associations and municipalities have used market segmentation as a basis for targeted interventions to increase the use of sustainable transport modes (e.g. Schubert & Kamphausen, 2006).

In the last decades, a variety of segmentation approaches have been suggested in transport research. These approaches can be divided by the factors that are used as a basis for segmentation: spatial factors (e.g., Hunecke et al., 2010; Scheiner, 2006), socio-economic factors (e.g., Ryley, 2006; Hildebrand, 2003), attitudinal factors (e.g., Anable, 2005; Pronello and Camusso, 2011) as well as the travel behaviour itself (e.g. Heinen et al., 2011; Prillwitz and Barr, 2011). All of these approaches have specific pros and cons depending on the area of application (cf. Haustein and Hunecke, 2013).

While the segments resulting from different studies may appear random on the first sight, it has been shown that segments identified based on different factors and regional samples can still include similar "core" segments, probably because of the interrelation of the different factors included (Haustein and Siren, 2015).

1.2. The mobility culture approach

"Mobility cultures" are defined as specific socio-cultural settings consisting of travel patterns, the built environment, and mobility-related discourses – i.e. they are defined by both the material and the socially-constructed dimensions of the transport system (cf. Deffner et al., 2006; Klinger et al., 2013). The concept of mobility cultures can be useful in trying to understand why specific mobility segments are well represented in one region but not in another. That we find more car dependent travellers in the US and less in Europe, may, for example, be explained by American settlement structures that provide fewer opportunities for the use of active transport modes and specific historically-embedded values and beliefs in relation to the private car, which can be regarded as key elements of the American car culture. In contrast, in the Netherlands cycling is not only facilitated by good cycling infrastructure (Pucher and Buehler, 2008), it is also linked to national Dutch identity, and both the material and the symbolic dimension are part of the Netherlands' cycling culture (Carstensen and Ebert, 2012; Pelzer, 2010). The EU project SEGMENT, in which eight attitude-based segments were identifies in seven European partner cities, provides another example: The segment of "practical travellers" were highly overrepresented in Utrecht and Munich, but (almost) non-existent in Athens and Sofia. The differences in the distribution were explained with differences in infrastructure provision and the existence or non-existence of a cycling culture and related social norms (Anable, 2013).

While mobility cultures are traditionally described qualitatively in a sociological and/or historical discourse (e.g. Carstensen and Ebert, 2012; Sheller and Urry, 2006), Klinger et al. (2013) have operationalized "urban mobility cultures" based on both subjective (e.g. cycling perceptions) and objective factors (e.g. transport infrastructure) and have assigned 44 German cities to six urban mobility cultures, e.g. "cycling cities" or "transit metropolises." In a subsequent study, they examined how moving from one mobility culture to another changes mode choice and found car and rail use more affected by local infrastructural attributes and cycling stronger influenced by the overall mobility culture of a city (Klinger and Lanzendorf, 2015). That it matters for cycling perception and uptake how cycling is linked to local or national culture was also demonstrated by Pelzer (2010) and Aldred and Jungnickel (2014) by contrasting different local/national cycling cultures. Differences in cycling frequency can be explained by differences in cycling or mobility cultures that go beyond infrastructure provision and include a wider set of norms, beliefs, meanings, etc.

1.3. The present study

In this study, we aim to exploit existing Eurobarometer data with European coverage to analyse the differences in mobility in the EU. Based on segmentation of mode choice and travel motives, we first distinguish between different mobility styles within Europe and then cluster all EU member countries into country clusters based on the representation of the different mobility styles in each country. The study thus provides an overview of EU mobilities that to our knowledge is the first of its kind. Taking the relevant background variables of the countries – such as the socio-economic structure, urbanisation, and mobility policies – into account, we interpret the country clusters as indicators of different mobility cultures within Europe. The country clusters map general differences across Europe that we think can be of value in the context of organising and targeting European support for sustainable mobility; and when it comes to securing that the main European differences in mobility are considered in, for instance, European research and innovation projects.