

**Summary:**

# Everyday travel patterns

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*A cluster analysis of the Norwegian National Travel Survey (NTS) for 2009 reveals five major types of traveller: Car commuters, Busy drivers, Locally mobile seniors, Public transport users and cyclists and Active youth. While the travel patterns and socio-demographic characteristics of the people within the individual groups are similar, these characteristics differ from one group to the next. Three of the segments comprise mainly car drivers, while two are mainly users of public transport and non-motorized vehicles. The mobility typology can be used at a general level to adapt transport services to suit the public or in market communication. This report is an assessment of the challenges and opportunities facing people in the various segments in relation to the development of more sustainable everyday mobility.*

## Segmentation of transport users

Within international transportation research there has been growing interest in categorizing individuals in accordance with existing or anticipated travel behaviour. This type of segmentation usually identifies categories of users who display similar (travel-related) behaviour, needs or lifestyles based on survey data. While most studies so far have constructed groups according to general attitudes to travel-related questions, the approach in this study is to group individuals based on their actual travel behaviour. In doing this, National Travel Survey from 2009 is used, which includes detailed travel information from 29,000 Norwegians 13 years and older.

To construct the mobility types, a two-step cluster analysis is utilized on the basis of 33 variables describing demographic characteristics, mode of travel, purpose of travel, numbers of trips, access to transport resources, mode of transport to work and total length of travel during the day. Trips taken during the weekend are not included. A probability-based distance measure is applied to classify informants into clusters, and the Schwartz-Bayesian criterion (BIC) is used to determine the optimal number of clusters.

## Five mobility types

Cluster analysis generates five main clusters of traveller:

1. *Busy drivers.* People who go on a large number of trips as a car driver during the day – not just work trips, but also care-related trips and shopping trips. There is a majority of men and people aged 35–44 years in

this group, and most live in families with small children. The group comprises 27.5% of the respondents.

2. *Locally mobile seniors.* People of relatively high age who had completed little or no travel during the survey day. To the extent that travel was completed, this involved shopping or visits using the car. People in this cluster live mostly alone or in couples without children (living at home); their personal income is relatively low. This segment comprises 26.5% of all respondents.
3. *Car commuters.* People who go on a relatively large number of work trips, but otherwise have a low travel frequency during the day. No one in this cluster had more than three trips on the examination day and rarely conducted any errands. Demographically, this cluster has a predominance of males and people in the age range 45–54 years. 18.2% of the respondents are in this category.
4. *Public transport and bicycle users.* People who travel frequently by bus, tram, rail, bicycle or on foot. Travel in this group is work-related and for shopping. Total trip length is relatively high, indicating many long-distance commuters. Age-wise, this group is composed of many younger users (28–34 years) and people living in the larger cities. It comprises 19.3% of the respondents.
5. *Active youth.* Young people who live at home with their parent(s) and are not old enough to drive a car. They have almost no work trips, but many school trips. They are often passengers in a car, they are frequent users of public transport, and they are often pedestrians. 8.1% of the respondents are in this group.

*Activity profiles* have been developed for all mobility types to give a better understanding of travel patterns within each group, and of the social contexts within which the different types of traveler operate.

## Long travel and mobility types

There are significant differences between the groups in relation to long travel (i.e. 100 km or more) in the previous month. The Locally mobile seniors and the Active youth groups have fewest long trips, while the Busy drivers and Public transport and bicycle users have most.

The mode of transportation for everyday travel seems to affect the mode for longer journeys: The segments with a great deal of car use in everyday life also have many long journeys by car, while users in the Public transport and cycle segment have most long journeys by train and bus. However, when it comes to long journeys by air, it is the Public transport and bicycle users, along with Busy drivers and Car commuters that are dominant. Thus, choosing sustainable means of transportation during regular weekdays does not reduce the frequency of long trips by air.

There are also differences related to the type of long journey made. While the Busy drivers have a larger share of leisure and holiday travel, Public transport and bicycle users have more social visits, and Active youth have most long journeys

related to organized activities. The Locally mobile seniors have most of their long travel related to private visits.

## **Sustainable mobility and mobility types**

In recent years, an important political objective has been to develop more sustainable transport solutions in everyday life, and several initiatives have been taken to curb growth in the number of private cars and to stimulate further use of public transport, cycling and walking. The mobility typology presented here can be used as a point of departure when assessing the opportunities and challenges facing different societal groups shifting towards more sustainable mobility.

The analysis shows that people in the three car-based segments – Car commuters, Busy Drivers and Locally mobile seniors – are likely to have very different possibilities for changing their travel habits and also to face different challenges. The Car commuters are those that probably have the greatest opportunities to substitute travel through the use of ICT (Information- and communication technology), or to change from private car to public transport. Individuals in this group have relatively simple travel patterns – mainly commuting by car. Those in the largest group – Busy drivers – are bound up in complex trip chains that probably make a switch to public transport more difficult and substitution using ICT almost impossible. Substitution through ICT is not very relevant for the Locally mobile seniors either, but one could imagine several organizational solutions reducing individual car-use in this group.

The two segments where public transport, cycling and walking dominate – Public transport and bicycle users and Active youth – also display very different challenges and opportunities related to the development of more sustainable mobility patterns. For public transport and bicycle users in the large cities a key challenge is making *all* journeys environmentally friendly, including transportation to/from train stations and bus stops. Moreover, it is a challenge for these users to develop more sustainable habits related to holiday and leisure time, when many journeys are by air. The Active youth group does a great deal of travelling in the local community, often by bus, bicycle or on foot, and the challenge for them is in ensuring that these habits continue long after they are old enough to drive a car themselves. Many young people, however, are largely controlled by the choices that adults make in relation to place of living/working, access to transportation resources and leisure and holiday patterns.

## **Future opportunities**

The study demonstrates that it is possible to construct mobility types for the Norwegian population based on a cluster analysis of National Travel Survey data. The method allows for the construction of “natural groups” of travellers, which is likely to be useful in the planning and development of transport services or in strategic market communication. The study also contributes to research aimed at understanding social aspects of transportation and the development of sustainable patterns of mobility.

Further research in this area could include analysis of changes in the constellation of the mobility types over time, in-depth studies of the individual mobility types, development of supplementary attitude-based typologies or development of typologies within the particular areas of interest (i.e. micro-segmentation). The methodological possibilities and limitations associated with the application of cluster analysis on travel survey data, such as the NTS, should also be further explored.