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**Summary:**

# Perception of weather and travel mode choice – results from focus groups and surveys in Oslo and Stavanger

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*About 1/3 of the respondents both in Oslo and Stavanger say that the weather is important for choice of transport mode on their journey to work, not so many claims that weather influence the mode choice on shopping trips. Precipitation, rain and snow, influences more than temperature and wind. However, wind has stronger effect in Stavanger than in Oslo. Both for walking and cycling precipitation is more important than temperature, e.g while more than 60 percent accept to walk (2-3 km) in cold weather (<-10 °C) with no precipitation, this percentage is halved with showers at the same temperature. The respondents in Stavanger have a stronger "car identity" than those in Oslo. "Car-identity" has a very strong relationship with car use on shopping trips, and more significant than weather indicators and other background variables.*

This is results from a survey carried out in Oslo and Stavanger in October and November 2015 with about 1000 respondents from each city. Before the survey focus group interviews were done in both cities.

The aim of the study has been to analyse perceptions of different aspects of weather (preliminary precipitation, temperature and wind) and to find relationships in everyday travel. Different aspects of actual and perceived weather and the connection with everyday mobility have received little study to date.

Weather, however, is only one aspect, and in most cases not the most important one in travel mode choice or regarding other aspects of daily mobility. In studying the effect of weather, characteristics of where people live, their household, the individual variables as age and gender, transport resources, attitudes, norms and habits have to be examined. The spatial context is represented by the two cities chosen, namely Oslo and Stavanger.

Figure 1 illustrates the conceptual model with relationships between the variables.

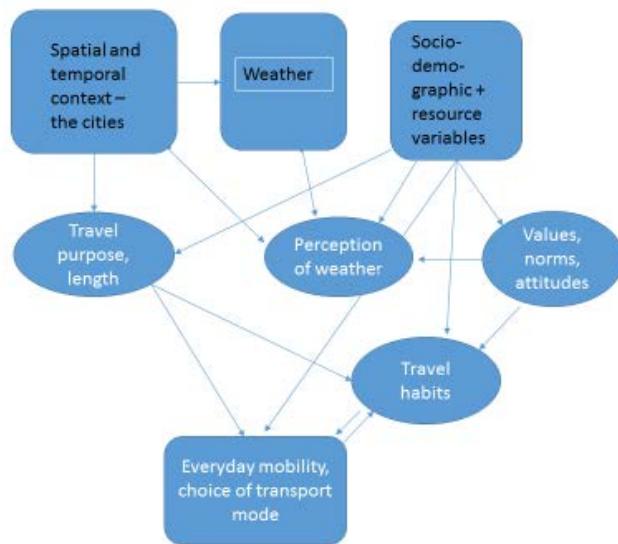


Figure 1 The relation between variables explaining choice of transport mode

## The two cities – Oslo and Stavanger

Oslo and Stavanger were selected as cases because they are cities different in both size and prevailing weather conditions.

Oslo, the capital of Norway, has a population of approx. 650 000 and this doubles when the greater urban area is included. Stavanger has about 130 000 inhabitants and 250 000 when the adjacent municipalities are included. The average temperatures of the two cities differ throughout the year – in Oslo the winter temperature is lower and the summer temperature higher than in Stavanger. In the winter months (December to March) the precipitation (mostly rain) in Stavanger is double that (more snow than rain) in Oslo.

The choice of transport mode in everyday mobility is different between the two cities. In Oslo, people walk and avail themselves of public transport much more than in Stavanger, where the car is the most used mode of transport. The quality of public transport is much better in Oslo than in Stavanger.

## What people think others do in different weather situations

The relationship between weather and cycling is perceived different between the two cities. In Stavanger, more so than in Oslo, the respondents more often disagree on the statement that people in their city cycle regardless of the weather. They also disagree more than people in Oslo that it is rarely so windy that they are prevented from cycling. Both these statements involve concepts about weather/wind with the possibility of a large degree of variation. The differences can be a result of how weather/wind is perceived (and actually is) in the two cities. There is more wind and “weather” in Stavanger than in Oslo, so respondents think about the weather as

more severe in Stavanger than in Oslo, and therefore mean that people are less likely to cycle. Or, it could be that people in Oslo are “hardier”, that they more often cycle in poor weather.

The statements about car-driving and use of public transport related to weather reflect even greater differences between the cities. People in Stavanger agree to a greater degree than in Oslo that people in the city take the car on most errands regardless of the weather, while, correspondingly, respondents in Oslo think that people in their city use public transport to a greater degree than the respondents from Stavanger.

## **Identity and habits are important for mode choice**

The respondents in Stavanger have a stronger “car identity” than those in Oslo. They like car-driving; they say that driving a car is “typical of me” and that some activities would otherwise be excluded if they were not to use the car more often than the people from Oslo. The respondents from Oslo identify themselves more as public transport users and walkers than those from Stavanger.

A multivariate analysis shows that transport identity (e.g. “It is typical me to drive a car”) has very strong relationship with car use on shopping trips, and more significant than weather indicators and other background variables.

When it comes to cycling there is no difference regarding how much they like it, but a higher percentage of the respondents from Stavanger strongly agree with the statement that *–cycling is typically me*. From the National Travel Survey from 2013/14 we know that people in Stavanger cycle on everyday travel more than people in Oslo.

Travel habits in the two cities seem very different, and correspond to the differences in transport identity. While the respondents in Stavanger are typical car-users, Oslo respondents are used to public transport to a much greater degree. This difference is probably a consequence of the difference in the quality of public transport, which is much better in Oslo than in Stavanger. It may also be a consequence of cultural mores in relation to use of modes of transport – but these are more anecdotal – in Stavanger as a city affected by American culture (as an international “oil-city”), and that only “losers” use public transport (cf. George W Bush, US President, campaign speech *What will I do for public transport? I will improve the economy so you can find good enough work to be able to afford a car*, and Margaret Thatcher, former British PM – *Any man who takes a bus to work after the age of 30 can count himself a failure in life*). Neither the focus groups nor the survey can support whether these “stories” also count for Stavanger.

## **Combination of weather indicators for accepting walking and cycling**

A majority of the respondents in both cities will cycle at any temperature so long as there is no precipitation, and the percentage varies little between the temperature intervals. When there is light rain/snow the percentages cycling are less, and more at lower than higher temperatures. Still, there are no differences between the cities. When the weather is characterized by showers, the respondents in Stavanger more often than in Oslo say that they will cycle at temperatures below 20°C. Even with persistent rain the Stavanger respondent will cycle more than his/her counterpart

from Oslo at most temperatures, but the percentage is lower than for the other combinations.

While there are hardly any differences between the respondents regarding walking when there is no precipitation, the result shows that people in Oslo walk more when there is light rain/snow or persistent precipitation than those in Stavanger. When it is showery they also walk more at all temperatures than respondents in Stavanger. These results might be indications of differences in how precipitation in the two cities is experienced. It could be that rain in Stavanger is more combined with wind than in Oslo and that the weather then seems worse. It could also be that accessibility and habitual use of a car among the respondents in Stavanger makes it easier to decide on the car when it rains than it is for the Oslo respondents, who take the car to a much lesser extent.

## **Concluding remarks**

The results show that even though the weather (of course) is embedded in people's daily lives, it is not so clear how everyday travel is influenced by it. People cycle less when it rains, and temperature and precipitation have an impact on mode choice, but there is also a range of other factors that influence choice. As this report indicates, access to alternative modes, the family situation, environmental consciousness and self-identity are all examples of variables that have a greater impact on transport mode than weather conditions in itself. However, this doesn't mean that weather will not influence daily mobility. This report shows that precipitation and wind – indicators that have a significant impact – will be more important for mode choice in the future, because the weather in most of the country will be wetter and wilder.