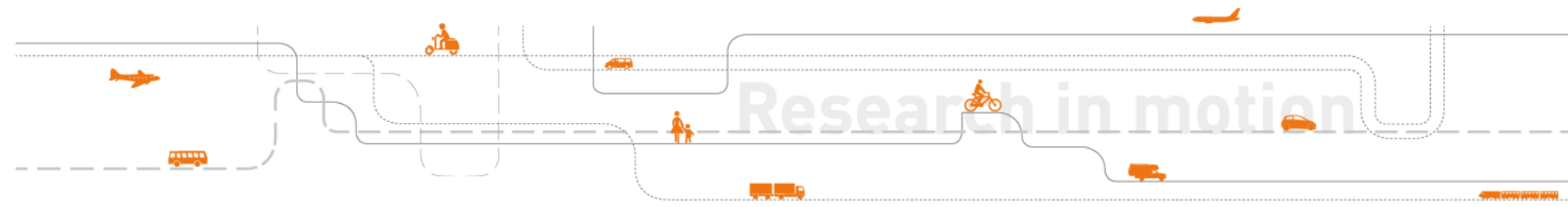


Who are most likely to adapt their travel behaviour to changes in weather conditions?

A study on weather tolerance and travel behaviour in Norway

Presentation by Susanne T. Dale Nordbakke



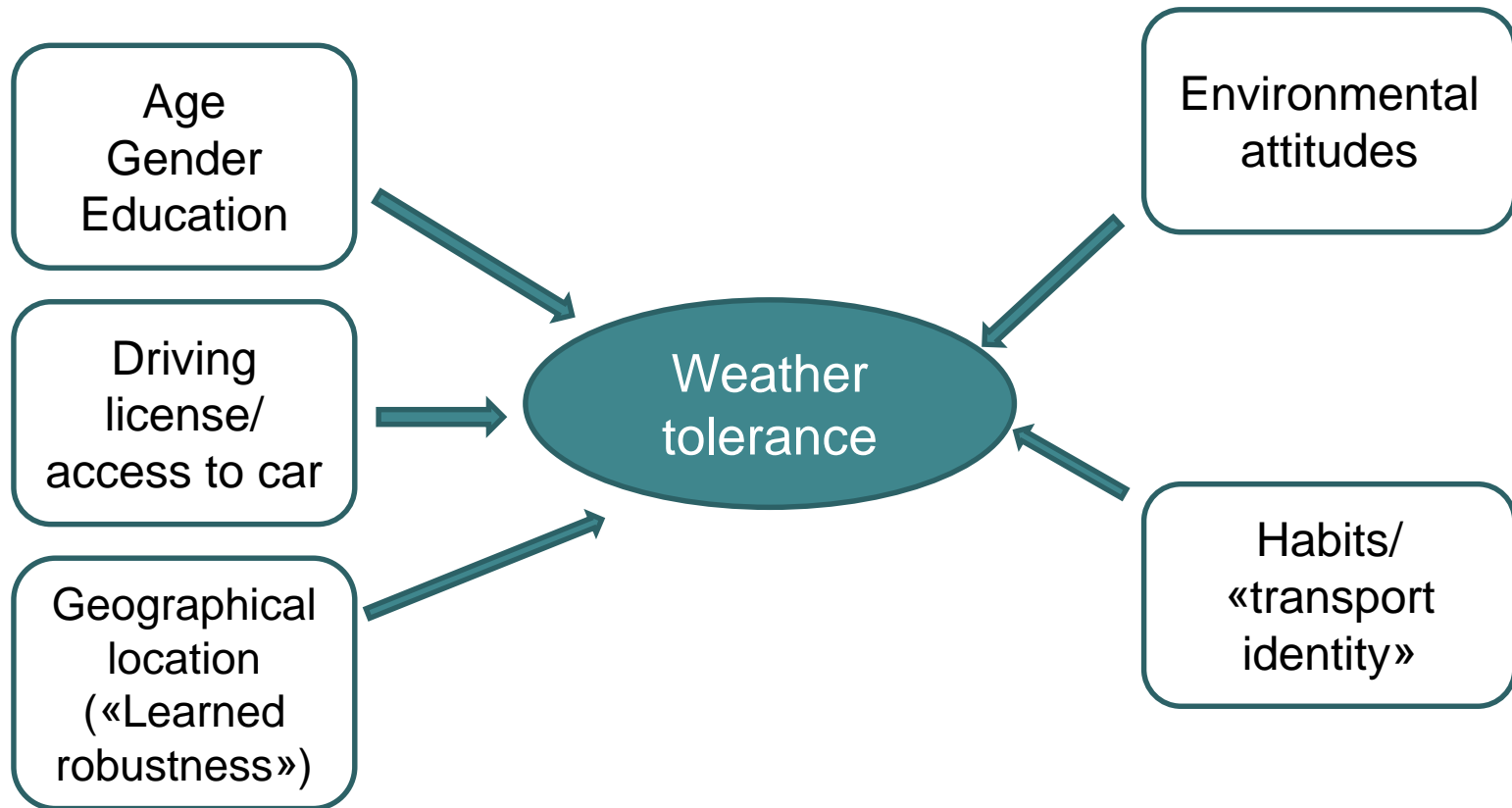
Research question

- Who are the **most tolerant** in terms of travel behaviour to weather conditions?
- Purpose: To gain knowledge on **what characterizes** those who are most likely to defy poor weather conditions and **use active transport or public transport** instead of a car.

Research Gap

- Less knowledge on what characterizes those who are most **tolerant to weather changes:**
 - **Socio-demographic characteristics**
 - **Values, attitudes and habits**

Expectations



Data

- A representative questionnaire survey in Oslo and Stavanger in 2015 (november)
- Internet panel
- Response rate: 57,3 percent

City	N
Oslo	1060
Stavanger	1037
Total	2097

- This study is limited to those who are either working or attending school: N=1663 (Oslo N= 855; Stavanger N=808)
- Data is weighted by gender, age and education according to public statistics from Statistics Norway

The questionnaire

- **Perceptions** of weather and seasons
- **Values and attitudes** related to transport and weather
- **Habits** (travel mode, «typical me»)
- **Opinions on climate change** and its effects
- **Socio-demographic** characteristics
- Access to **Transport resources**

How can we explain the relation between environmental friendly attitudes, (habits/»transportation identity») and weather tolerance (response to weather in terms of transport modes)?

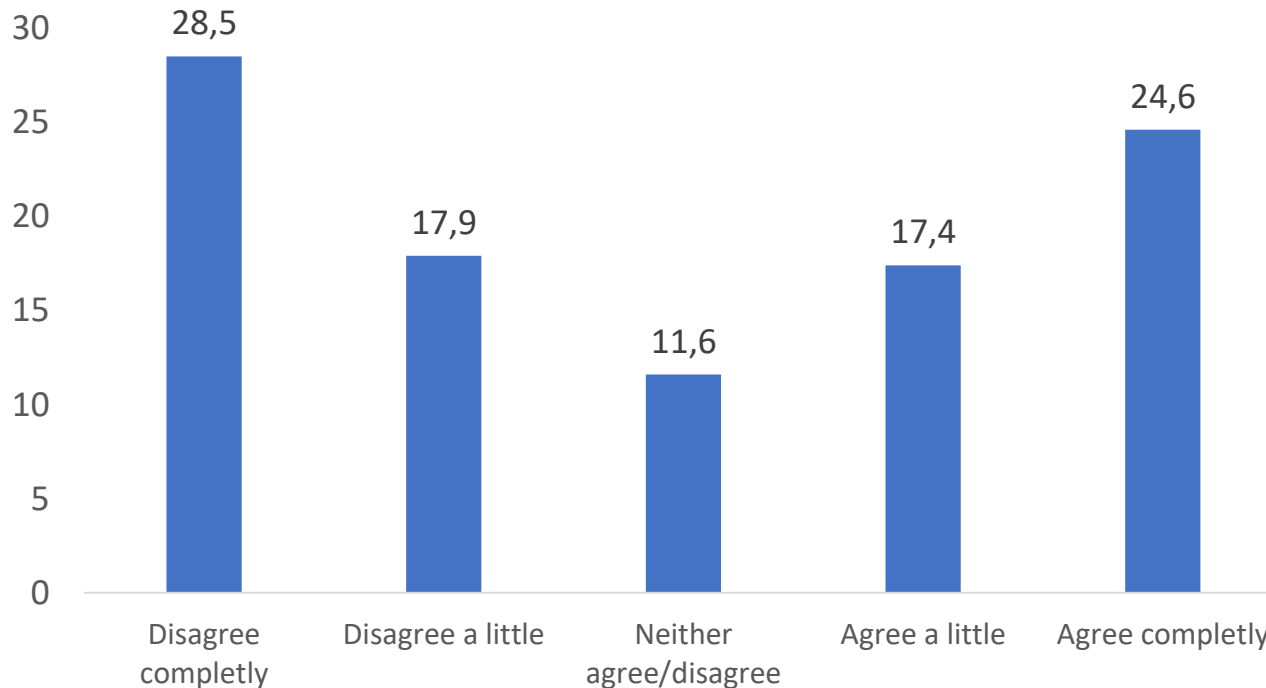
- Do environmental friendly attitudes make people choose more active, exposed and environmental friendly transport modes despite poor weather?
- Or does being a **regular user of active transport** modes (and being physical active) make a person more environmental friendly?
- Is the association between **environmental friendly attitudes** and weather tolerance spurious?
- A spiral effect going back to **young age? Socialisation** and habits of parents? Used to being outdoors - become more fond of nature - which again influence attitudes towards the environment?

Indicators

- Example:
 - «*I always drive when it rains*» (disagree – agree)
 - «*In which of the following combinations of temperature and precipitation are you willing to walk (2-3 km. N=1663.)?*»
 - From no precipitation to steady rainfall/snowfall
 - From low temperatures to high temperatures

Indicator

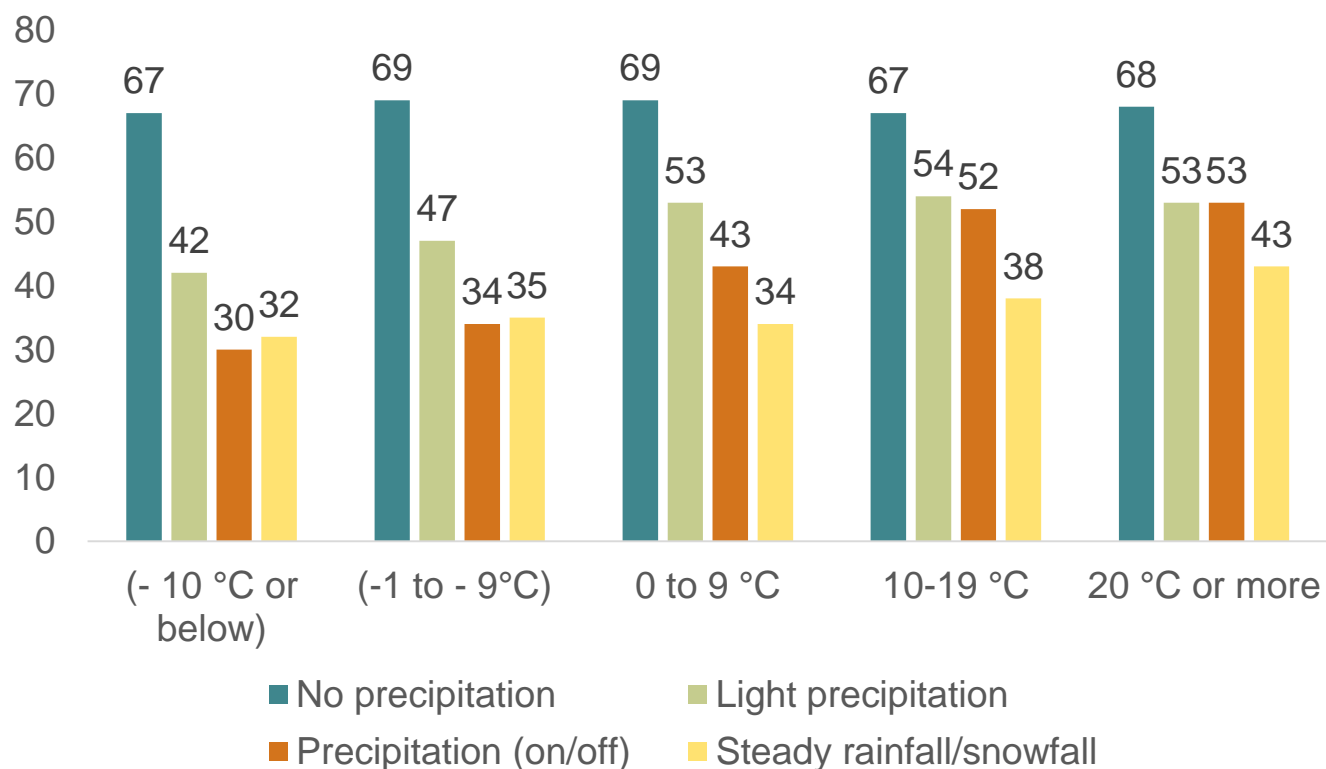
«I always take the car when it rains»



«I always take the car when it rains». Percent. N=1221

Indicator

«In which of the following combinations of temperature and precipitation are you willing to walk (2-3 km. N=1663.)?»



Those who have reported «yes» on each combination. In percent. N=1663

Multivariate analysis of «I always take the car when it rains»

- Logistic regression
- Only those who reported that they had a car in the household received this question
- Dependent variable: «Agree»/»Not agree»
- N=Those report that they usually travel to work/school by cycle, foot or public transport during spring and aged 18 years or older (N=642)
- Model: Background factors + environmental attitudes+ habites/»transport identity»

Multivariate analyses of willingness to walk 2-3 km in different combinations of temperature/precipitation

- All respondents (including car drivers) aged 18 + years
- Purpose:
 - *To explore whether the same factors are important when car drivers are included*
- Two models:
 - *Model I – Dependent variable: Willingness to walk 2-3 km in -10 °C (or less) and steady snowfall/rainfall*
 - *Model II – Dependent variable: Willingness to walk 2-3 km in 20 °C (or more) and steady snowfall/rainfall*
 - *Both models include:*
 - Same background variables (age, gender, education, city)
 - Same variables about attitudes and habits/»transportation identity»

Summary

	Disagree «I always drive when it rains»	Willingness to walk 2-3 km: -10 °C (or less)/steady snowfall	Willingness to walk 2-3 km: 20 °C (or more)/steady rainfall
N=	Those who do <i>not</i> drive regularly to work/school	All respondents	All respondents
Gender (female – male)		(+) **	
Age (low – high)			(-) *
Education (low – high)		(+) **	(+) **
Driving license (yes – no)		-----	-----
City (Oslo – Stavanger)	(-) *		
Environmental friendly attitudes	(+) **	(+) **	(+) **
Cycling – typical of me	(+) **	(+) **	(+) **
Public transport – typical of me			
Walking – typical of me	(+) **	(+) **	(+) **
Car driving – typical of me	-----	(-) *	(-) **

**p<0.010, *p<0.05, empty cells=not significant

Conclusions

- Many of the expectations are met:
 - **Environmental attitudes / Values** - associated with weather tolerance
 - **Habits/transportation identity** - associated with weather tolerance
 - **Education** – associated with willingness to walk
 - **Gender** – associated with willingness to walk in cold weather
- Additionally:
 - **Geographical location** – living in Stavanger positively associated with always driving when it rains.
 - **Age** – no effect on weather tolerance except for walking in warm weather

Main finding

- **Environmental attitudes, values and (daily) travel habits** are associated with weather tolerance
- **Attitudes** and **habits** are important for how people react to changes in weather conditions, when other factors such as age, gender, education and city/residential location are controlled for.

Thank you!