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Is the impact of transport modes on health an individual determinant of transport mode choice?

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Introduction

Increased risks of morbidity & mortality
Extended use of the car
Sedentariness & lack of physical activity
Source of air pollution

→ Modal choice generates individual and public health issues.
→ Modal shift to active and less polluting modes is a valid strategy to reduce:
  • Individual health risk related to (a lack of) physical activity (Tainio et al., 2016).
  • Public health risk related to air pollution (Bouscasse et al., 2022).

Objectives

• Assess the way introducing these two health dimensions in the individual choice process could influence modal shift intentions.
• Account for the perception of health risks in the study of mobility behavior

Results

• Individual risk reduction: More significant effect in encouraging modal shift compared to public risk when there is a relatively small share of the population (50%) already using alternatives.
• Public risk reduction: Has a larger impact on the mobility preferences than the individual risk reduction with larger shares of the population (75% or 90%).
• Both types of information: The risk reduction is generally underestimated by the participants.

Method

• Original data: Online Discrete Choice Experiment (June to September 2019). 792 residents of Grenoble Metropolitan Area (France).
• 3 modes of transport: car, public transport and bicycle.
• 4 Attributes: Travel time, Cost, Individual (through physical activity) and Public (Through air pollution) health risk with framing (50%, 75%, 90% shares of the population).
• Illustrating the health risk of developing a cardiovascular disease
  → Use of smilies (Green = health gain risk).
• Discrete Choice Modelling accounting for the perception of risk reduction probabilities using a power transformation (Bouscasse and de Lapparent, 2020; Yaari, 1987).

Conclusion

• Our findings confirm that information on health risks related to air pollution or lack of physical activity both have a significant effect on the preferences of the participants in regards to modal choice.
• Today, in Grenoble, the modal share of people using an alternative mode to the car is rather around 50% or lower, our results indicate that decision makers could play on both the individual and public health impact of modal choices to incentivize citizens to reduce car usage.

References

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