

Moral considerations in individuals' willingness to share their transport during evacuations

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The sharing economy has recently emerged as a viable mechanism to increase the availability and quality of transportation resources during evacuations. In particular, the sharing of transportation could help underserved populations in evacuations and facilitate community-centered recovery. Two options currently exist for the sharing of resources: 1) business-to-peer (i.e., through a ridesourcing/carsharing company helping residents); or 2) peer-to-peer (i.e., through residents helping other residents).

In both cases, research has identified sufficient capacity of vehicles and a clear demand from underserved evacuees. However, in order to develop an implementable strategy to match sharers and evacuees, it is necessary to understand individual's willingness to share in different situations. For example, how long of a detour in a disaster area would an individual accept to pick up someone without a means to evacuate? How does this decision depend on the risks to the potential sharer and other people (e.g., family) under their care?

Clearly, decisions in evacuation context can involve both ordinary (e.g., necessary time and costs to evacuate other people) and moral aspects (e.g., potentially being the only person to save someone's life). While new behavioural models¹ have recently been developed to describe decision-making in such contexts, they have not yet been applied to the complex – but clearly very well-suited – context of decision-making during evacuations.

In this thesis, you will have the opportunity to apply the mentioned novel methods to sharing decisions during evacuations. More specifically, you will design a survey to collect stated preference (SP) sharing choices of disaster-prone individuals in British Columbia, Canada, as well as possibly ridesourcing/ridehailing drivers in the area. Having the data, you will estimate discrete choice models to obtain attribute weights and willingness (or aversion) to trade off ordinary and moral attributes (in what is known as a taboo trade-off) in a hypothetical evacuation scenario. Finally, you will conceptually analyse the impact of these sharing preferences on transport performance during evacuations and propose effective evacuation strategies that account for these preferences.

With your thesis, you will answer questions such as these:

- 1) What influences individuals' willingness to share during an evacuation?
- 2) What moral trade-offs do potential sharers make (or avoid) during an evacuation?
- 3) What strategies would be most implementable and effective to match sharers and evacuees, while considering also the impact on transport system performance?

Are you interested in understanding people's motivations and choices during an evacuation? Are you comfortable with basic statistical and discrete choice models (taught in SEN1221 Statistical Analysis of Choice Behaviour)? Are you a TIL Master student looking for a graduation project? Are you excited to interact with international scholars in Canada? Then contact Baiba Pudāne at b.pudane@tudelft.nl to arrange a meeting or ask for more information.

¹ E.g.: Chorus, C. G., Pudāne, B., Mouter, N., & Campbell, D. (2018). Taboo trade-off aversion: A discrete choice model and empirical analysis. *Journal of choice modelling*, 27, 37-49.