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The role of perceived road and personal safety on the mode choice for school trips in Lima/ Peru

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This work addresses the following topic(s) from the Call for Contributions:
(Please check at least one box)

- Placemaking to integrate urban spaces and mobility
- Promoting sustainable mobility choices in metropolitan regions
- Governing responsible mobility innovations
- Shaping the transition towards mobility justice
- System analysis, design, and evaluation
- other: _____

Extended Abstract

Problem statement

In the metropolitan area of Lima¹, about 24.5 million trips are made daily (MTC, 2018). In 2019, car traffic levels in Lima increased by approximately 20% between February and March (TomTom Traffic Index, 2022), the first being a month of school vacation and the latter the month of the start of school classes, suggesting that traffic levels were considerably influenced by school trips made by car.

The mode of transport for school trips is determined by the parents' choice. While distance is a determinant barrier for parents to choose an active mode of travel to school (Mitra 2013), recent studies show that a walkable distance from home does not always deter parents from driving their children (Westman et al 2017). In contrast, parents' safety perceptions may have a determinant effect on the decision on school travel mode (McMillan 2005).

Research objective

The main objective of the research was to identify the key factors that influence parent's decision on mode choice to school in the city of Lima. Safety perceptions with respect to mobility in the context of Lima can be divided into perceived road safety in terms of concerns about traffic accidents and perceived personal safety in terms of fear of the occurrence of crime. Therefore, the objective of the study was to examine the role of road and personal safety perceptions for selecting the mode of transport for their children's trips to school.

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¹ The metropolitan area of Lima is composed of the province of Lima and the constitutional province of Callao, which form a single urban area (only delimited by administrative boundaries) and share millions of daily trips among each other.

Methodological approach

The study has analyzed the parent's mode choice for school trips based on a survey (178 respondents) and two focus group discussions with 12 participants in Winter (Peru) 2022.² The aim of the survey was to identify the variables influencing the mode choice for the children's trips to school, e.g. with questions on the socio-economic situation of the household, distance to the school or perceptions on road and personal safety. The qualitative part of the study is based on focus group discussions with parents as well as on semi-structured interviews with an urban planner and a road safety expert from the metropolitan authority of Lima.

The *perceived level of road safety* was captured by the respondents' answers to five statements which have been selected on basis of a literature review on the main characteristics of a safe traffic environment. The results were scored and classified as "low", "medium" and "high" levels of perceived road safety. Thus, a "low" level means that streets are perceived as risky, e.g. due to traffic and drivers' behaviors while medium and high road safety perceptions indicate that the parents assume that it is safe to walk or cycle to school or to the public transport station. The *perceived level of personal safety* was captured in a similar way with aggregated statements. Here, a "low" level means that the bus, walking or cycling trip to school is perceived as exposed to personal risks such as hostility, aggression, crime or harassment.

Results

The main result of the study was that road and personal safety are more relevant for the mode choice for school trips in high- and middle-income families than in low-income families. In low-income families, the income itself is more relevant for the mode choice which is mainly due to less access to cars than in higher income families. Overall, the majority of the children of parents who rated the road safety of their children school routes as high choose an active mode (69%) while a quarter uses public transport to go to school. Nonetheless, less than a third of the parents who rate the road safety as low bring their children to school by car (see **Figure 1**).

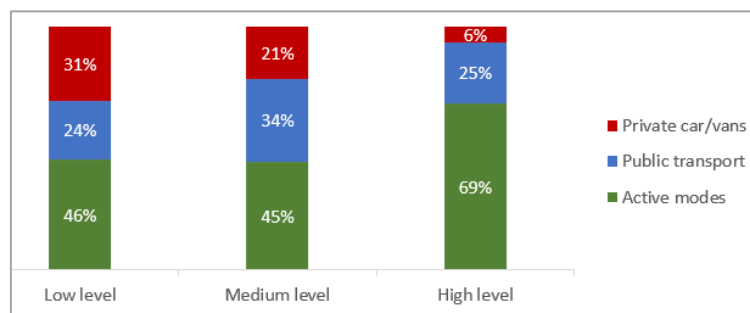


Figure 1: Mode choice per perceived road safety (n=178)

This means that nearly half of the respondents let their children walk or cycle to school, regardless of a low or medium perception of road safety. For the perceived level of personal safety, the overall tendency is similar, although even more children walk or cycle to school in an area perceived as unsafe while less children choose active modes in areas with a high level of perceived personal safety (see **Figure 2**).

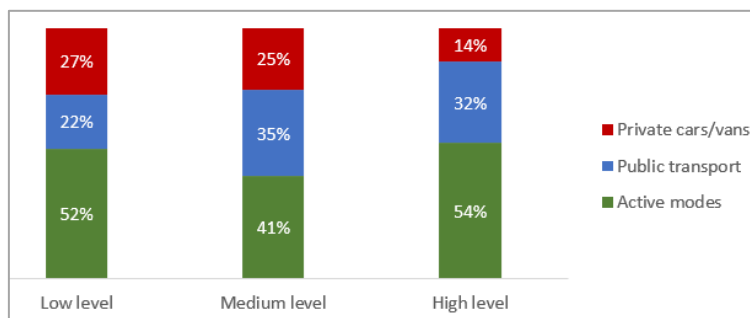


Figure 2: Mode choice per perceived personal safety (n = 178)

² The research study was presented to the school principals, who invited parents to participate in the survey and focus groups.

In comparison, the perceived level of road safety seems to have a stronger impact on the mode choice for school trips than the perception of personal safety.

As explained, the household income level is much more important for the mode choice for school trips in Lima than the safety perception. In fact, about half of the children from low-income families choose active modes and more than a third choose public transport. In contrast, 70 % of the parents with a high income bring their children to school by car (see **Figure 3**).

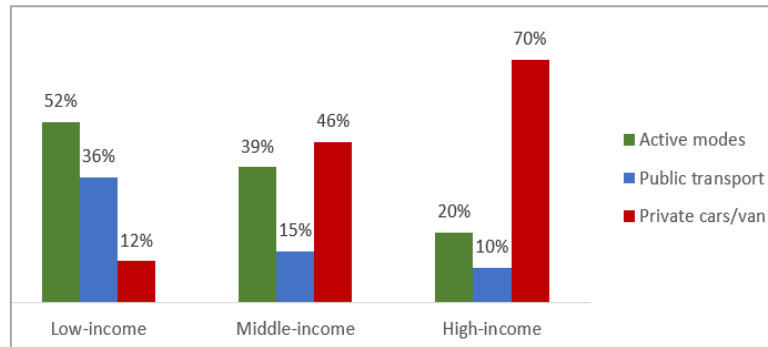


Figure 3: Travel mode per income level (n = 178)

With regards to the perceived level of *road safety* per income, none of the high- and only 7 % of the middle-income respondents perceived the road safety in their area as high (see **Figure 4**).

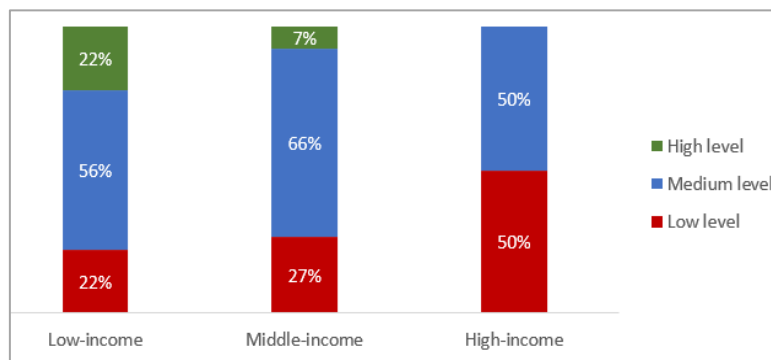


Figure 4: Perceived road safety per income level (n = 178)

In case of the perceived level of *personal safety*, only few respondents from the high-income group rate the personal safety in their area as high in contrast to a quarter of the low- and middle-income respondents (see **Figure 5**).

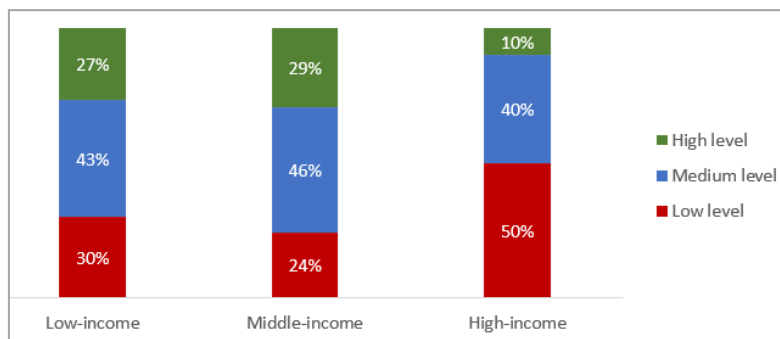


Figure 5: Perceived personal safety per income level (n = 178)

In summary, the comparison of both types of safety perceptions shows that road safety is rated much better by people with a low-income level in Lima. This may be due to a higher rate of car traffic or due to less experience with walking and cycling in medium- or high-income areas, which requires further investigation. In any case, improving traffic safety may still support a modal shift for school trips on all income levels. This is also reflected

in the focus group responses, in which parents emphasized the need for improvements in sidewalks, road safety and safety on the routes to school.

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