

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

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School traffic as major source for congestion in Lima

In 2019, traffic levels in Lima increased by 20% between February and March (TomTom Traffic Index, 2022), coinciding with school holidays and the resumption of classes, respectively. This increase suggests that traffic levels were influenced by school trips made by car.

While distance is a barrier to choose an active mode of travel to school (Mitra, 2013), recent studies (Westman et al., 2017) suggest that parents' safety perceptions may have a more determinant effect on the decision on the mode of travel to school (McMillan, 2005).

Mode choice of parents depends on perceived road and personal safety?

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 perceptions of personal safety in terms of fear of the occurrence of crime. Therefore, the objective of the study was to examine the role of parent's perceptions of road and personal safety for selecting the mode of transport for their children's trips to school.

Evaluating mode choice and safety perceptions in schools in Lima

Lima is divided into 43 districts. The study was applied in districts of Lima where (1) more children live and attend to school in the same district (INEI, 2021), and (2) the maximum distance within the district is 3 Km (Figure 1) given that longer distances tend to increase the number of motorized trips. Two districts were selected: Breña and La Victoria.

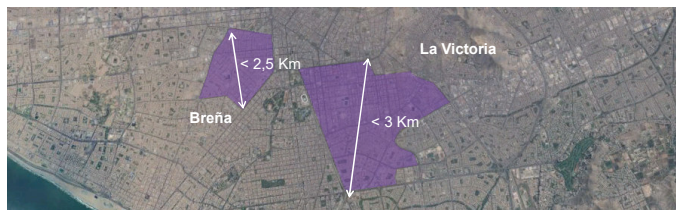


Figure 1: Breña and La Victoria districts in Lima. Source: Adapted Google Earth image.

The study analyzed the mode of transport chosen by parents for school trips of elementary school students in Breña and La Victoria based on a survey (178 respondents) and two focus groups (12 participants) in 2022. The survey aimed to identify factors influencing transport mode selection for children's school trips, while focus groups delved into parents' safety concerns during these journeys.

Parents' road safety perceptions were measured using a Likert scale in response to five statements reflecting safe traffic environments, derived from literature review. Results were categorized as "unsafe", "neither safe nor unsafe" and "safe" for the perceived road safety. "Unsafe" means that the route to school is perceived as risky, e.g. due to traffic and drivers' behavior, while "safe" indicates that parents assume that it is safe to walk or cycle to school or to the public transport stop. The perceived personal safety was captured in a similar way with aggregated statements. Here, "unsafe" means that a bus, walking or cycling trip to school is perceived as exposed to personal risks such as hostility, crime or harassment.

Household income determines the mode choice to schools in Lima

The main result of the study was that in Lima, household income plays a greater role in how children travel to school than parent's safety perceptions. Nearly half of children from low-income families use active modes, while over a third use public transport. In contrast, 70% of high-income parents drive their children to school (Figure 2).

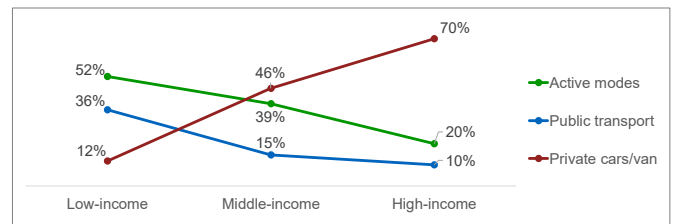


Figure 2: Mode choice by income level (n = 178)

Regarding the perceived road safety per income, none of the high- and only 7% of the middle-income parents rated road safety in their area as "safe" (Figure 3). In terms of perceived personal safety, only 10% of the high-income respondents rated the route to school as "safe" (Figure 4).

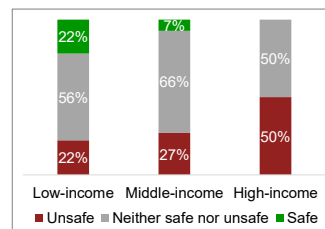


Figure 3: Perceived road safety per income level (n=178). Source: Own.

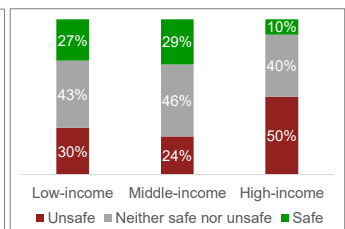


Figure 4: Perceived personal safety per income level (n=178). Source: Own.

To assess the effect of the perceived road safety on the commuting mode to school across income groups, correlations and Pearson's chi-square tests were applied (Table 1). The main finding was that, at the 90% confidence level and with a moderate correlation, when middle- and high-income respondents perceive the school route as "safe" in terms of traffic, they are less likely to opt for private motorized modes for their children's journey to school.

Perceived road safety	Actives modes		Private motorized modes	
	Correlation	p-value (chi2)	Correlation	p-value (chi2)
Low-income families	0.094	0.18	-0.2073	0.047**
Mid- & high-income families	0.2655	0.044**	-0.3092	0.069*

Table 1: Correlations and p-value outputs. Source: Own.

In summary, both types of safety perceptions show that, for mode choice to school, road safety and personal safety are perceived as "safer" by low-income parents than by high-income parents in Lima. This may be due to a higher rate of car traffic or due to less experience with walking and cycling for high-income parents. Thus, the study suggests that safety perceptions may determine the mode choice to school for high-income parents, while for low-income parents there may be no other option but to walk to school, regardless of their safety perceptions. Improving traffic safety may support a modal shift for all income levels as well as improve safety perceptions for those already using active modes.

References

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