



**What kind of school do parents choose  
when they have more options?**

**Effects of school transport subsidies**

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# What kind of school do parents choose when they have more options? Effects of school transport subsidies

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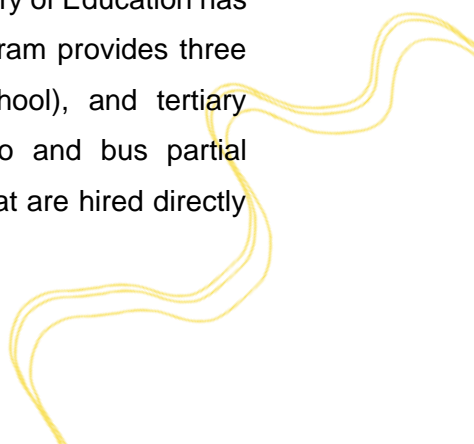
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Quality in education is a key factor for growth and development (Glewwe and Kremer, 2006; Banerjee et al. 2007; Hanushek and Wößmann, 2007; Carneiro et al., 2011; Hanushek, 2013). While the innate characteristics and skills of the students can explain a significant portion of academic achievement, the quality of the school is also a major determinant of students' long-term achievements (Dearden et al., 2002; Chetty et al., 2011). In this sense, policies have aimed at ensuring that students can access better quality schools. School choice policies have been subject to extensive research in developing and developed countries. The common inquiry is whether expanding the set of schooling options by means of lowering attendance costs can encourage students to select high-quality schools. In the United States, Hastings et al. (2009) documented the important roles of distance from home and school quality choice, while Hoxby and Avery (2013) highlighted that costs are also important, especially in higher education. In Latin America, Chumacero et al. (2011) analyzed the determinants of school choice in Chile. They found that parents consider quality, also measured by standardized tests, and location when choosing schools. In Mexico, Dustan and Ngo (2018) showed that when transport accessibility increases, demand for elite schools also increases.

We aim to provide new evidence on the effects of school transport subsidies targeting low-income students on school choice. In particular, the Medellín Secretary of Education has managed the school transport subsidy program since 2002. This program provides three different types of subsidies targeting primary, secondary (high school), and tertiary (vocational and university) students: hired transportation and metro and bus partial discounts. The first type of subsidy provides free transport on buses that are hired directly



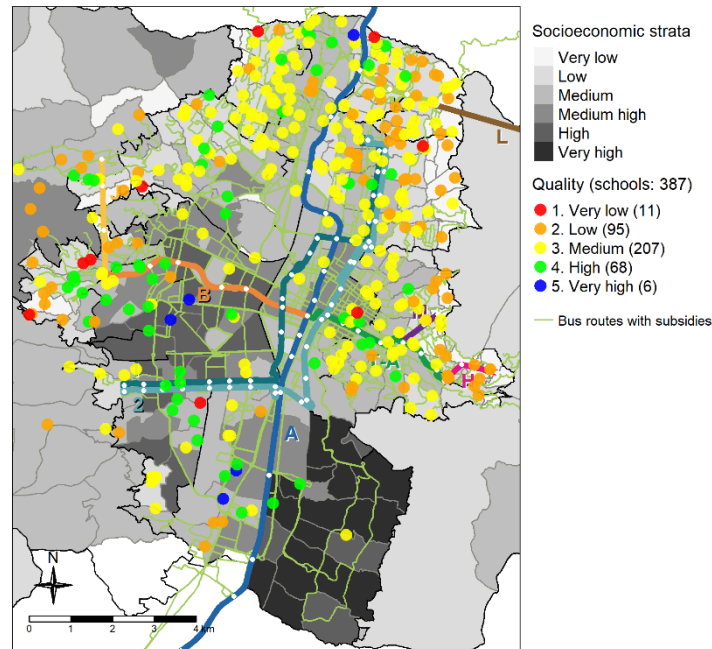
by the Medellín Secretary of Education covering home-to-school round trips. This program is paid for by the local government, and it targets primary and secondary students in rural areas where public transport is not good and there are supply restrictions regarding public schools. The main objective of this subsidy is to increase school accessibility.

The other two subsidies target students in urban areas with a 50% fare discount in 60 monthly tickets for the metro system, excluding private bus companies in SITVA. The same discount is offered for two daily tickets on business days by 25 bus companies that freely offer this subsidy as part of their corporate social responsibility. It is important to note that metro and bus ticket subsidies are free for the local government because they are based on donations from the metro system and bus companies, with which there are good benefits at low cost.

Our aim is to identify the causal effects of the Metro and bus subsidies on the school choice made by beneficiaries. We used a monthly panel dataset between 2016 and 2019 of administrative information of the population of students attending the free public schools in Medellín (Colombia), which includes approximately 15 million records. We georeferenced our dataset as follows: student's residence, school's address, bus routes and stops, and metro stations. We also controlled for socioeconomic household characteristics and school features.

Figure 1 shows the spatial distribution of the schools, their quality, and socioeconomic strata at the neighborhood level in 2018. This figure suggests a positive unconditional association between the quality of the schools and socioeconomic strata: very low- and low-quality schools are located in very low and low socioeconomic strata neighborhoods, whereas high- and very high-quality schools are located in high and very high socioeconomic neighborhoods.

Figure 1. Spatial distribution of public schools in Medellín: quality level and socioeconomic strata, 2018

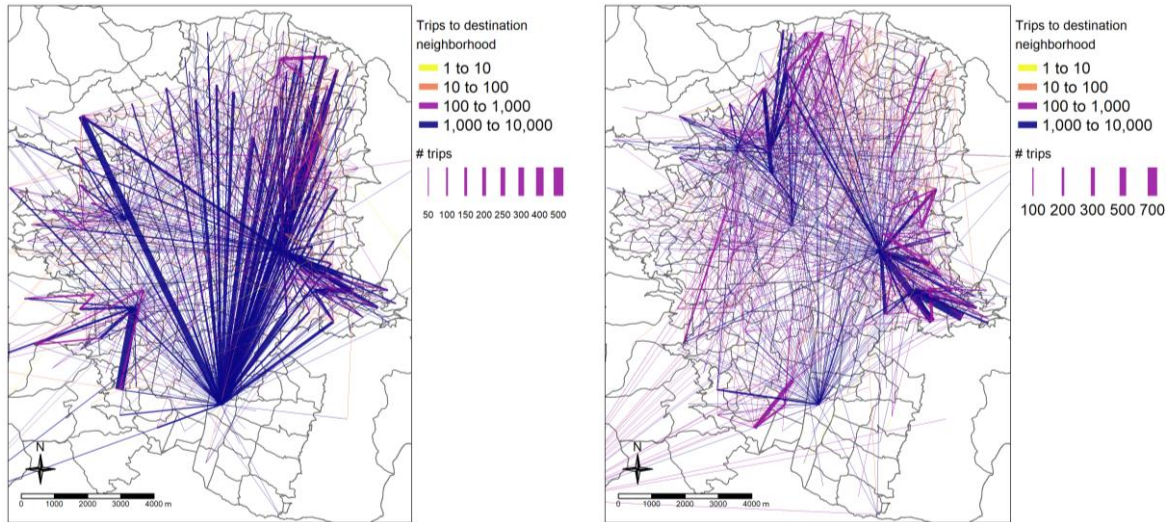


*Notes:* Location of public schools in Medellín by quality category and neighborhoods by socioeconomic strata. Figures in parenthesis are the total number of schools in each category. There appears to be an unconditional positive association between school quality and neighborhood socioeconomic strata.

Figure 2 shows commuting patterns by subsidy type in 2018. A remarkable feature of Panel A of this map is that there are a lot of metro ticket beneficiaries from very low and low neighborhoods in the central-west and northeast who commute to the central-southern schools of the city, which are high-quality schools near metro stations. This suggests that the metro subsidy is achieving its aim of facilitating access to better quality education. Bus subsidy has a narrower displacement effect by construction. Most of the bus routes in Medellín go from neighborhoods to the CBD. This can be seen in Panel B. Although this displacement is closer, it allows students living in the central-east and northwest to attend medium- and high-quality schools in the CBD. Figure 2 also shows that there are a few students who attend schools in Medellín but who do not live in the urban area. In particular, many students from the very south of the city attend high-quality schools in the central-south and the CBD of Medellín.

Figure 2. Commuting patterns of subsidy beneficiaries, 2018. Panel A: metro beneficiaries.

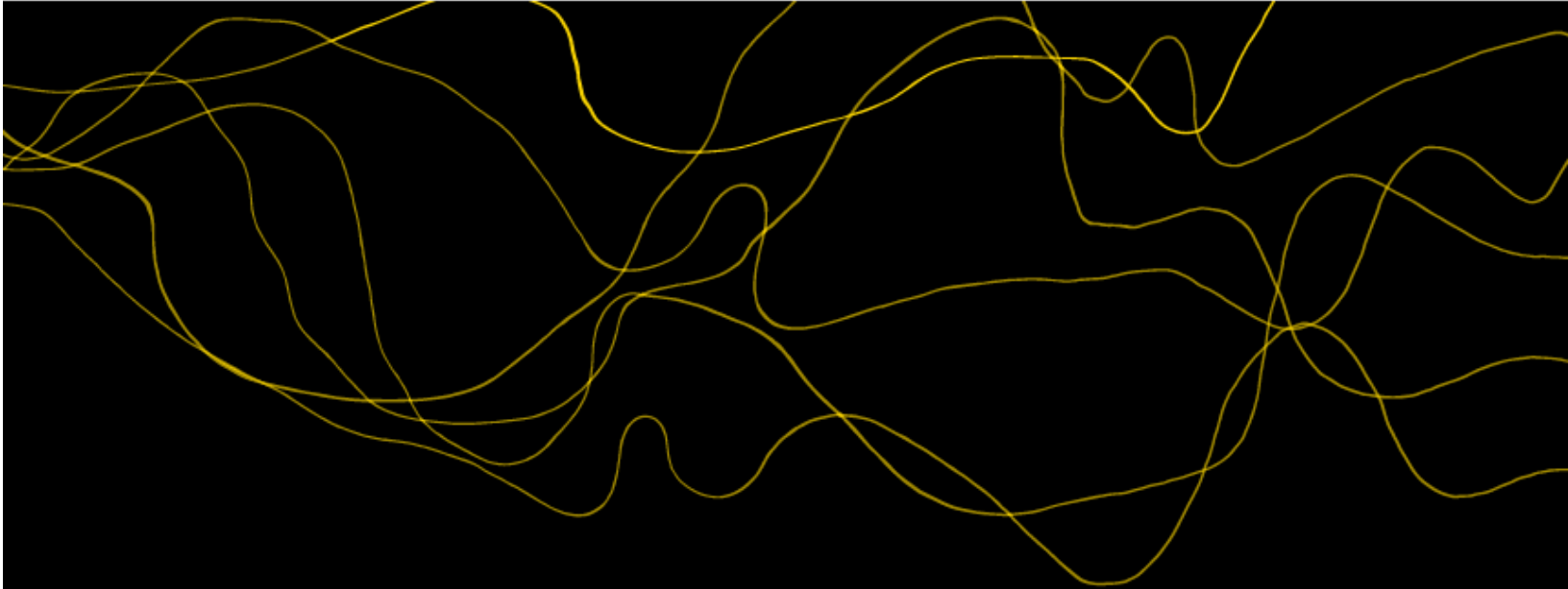
Panel B: bus beneficiaries



Notes: Desire lines maps for metro and bus subsidy beneficiaries. The origin and destination points are fixed at the neighborhood level.

We are able to draw some preliminary conclusions from Figures 1 and 2. First, it seems that the transport subsidy program allows students to attend better quality schools. In particular, the metro subsidy allows students to travel longer distances. This would suggest that metro subsidy should unconditionally have a higher impact on quality-school choice than bus subsidy. However, this effect depends on the availability of high-quality schools near metro stations compared to bus stops. Second, this program also allows students who do not live in the urban area to attend better schools because the metro system covers the metropolitan area of *Valle de Aburrá*, which includes Medellín and nine other municipalities, and some bus companies go from other municipalities or some rural areas to the CBD of Medellín.

We show using regression analysis designed to identify causal effects that because of partial transport subsidies to attend schools, low-income students are more likely to enroll in high-quality schools. In particular, metro and bus subsidy beneficiaries enrolled in schools with a 33% and 37% higher quality index, respectively.



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