

WORKING PAPER N° IDB-WP-01750

Determinants of the Willingness to Use Microtransit Services:

Case Studies from Mexico and Colombia

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August 2025



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August 2025

**Cataloging-in-Publication data provided by the
Inter-American Development Bank**

Felipe Herrera Library

Determinants of the willingness to use microtransit services: case studies from Mexico and Colombia / Lynn Scholl, Julián Arellana, Víctor Cantillo, Alfredo J. Ojeda-Díaz, Daniel Oviedo, Orlando Sabogal-Cardona.

p. cm. — (IDB Working Paper Series; 1750)

1. Urban transportation-Colombia. 2. Urban transportation-Mexico. 3. Local transit-Effect of technological innovations-Colombia. 4. Local transit-Effect of technological innovations-Mexico. 5. Ridesharing-Effect of technological innovations-Colombia. 6. Ridesharing-Effect of technological innovations-Mexico. 7. Willingness to pay-Colombia. 8. Willingness to pay-Mexico. I. Scholl, Lynn. II. Arellana, Julián. III. Cantillo, Víctor. IV. Ojeda-Díaz, Alfredo J. V. Oviedo, Daniel. VI. Sabogal-Cardona, Orlando. VII. Inter-American Development Bank. Transport Division. VIII. Series.

IDB-WP-1750

<http://www.iadb.org>

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Acronyms

ABM	App-based mobility
CFA	Confirmatory factor analysis
DRT	Demand Responsive Transit
ICLV	Integrated Choice and Latent Variable
ICT	Information and communication technology
LAC	Latin American and The Caribbean
SEM	Structural equation models
TNC	Transportation Network Company
TPB	Theory of planned behavior
WTP	Willingness to pay

Table of contents

1. Introduction	7
2. Literature review	9
3. Methodology and Research Design	11
3.1 Data and Descriptive Results	11
3.2 Modelling approach	14
4. Results	17
5. Discussion	21
6. Conclusions and future research	22
References	24

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Abstract

Microtransit, or app-based collective transport, is a passenger transport service typically offered in medium-capacity vehicles using mobile phone apps. These services are argued to provide several advantages of public transport, by allowing for more efficient use of vehicles, offering new opportunities to improve informal transit systems, while reducing urban inequalities in Latin America and the Caribbean. This research examines how the level of service attributes, socioeconomic characteristics, and latent constructs (technological affinity, environmental attitudes, and security concerns in public transport) influence the willingness to use these services through two case studies in Mexico City, Mexico, and Barranquilla, Colombia. Data for this study comes from stated preference and perception surveys, which are commonly used in a psychometric and econometric approach to estimate integrated choice and latent variable models. The results indicate a high sensitivity to the price of the service. Attributes such as walking distance to access the service, travel time, service frequency, and schedule adherence reliability were also significant. There are substantial income differences in willingness to use microtransit services. Fare sensitivity is much higher among poorer segments of the population, affecting the potential of microtransit to address equity and inclusion issues in the cities studied. Of the latent constructs, only safety concerns about public transport were significant in the willingness to use microtransit services in both cities. When compared to men, women reported higher safety concerns and, as result, women have higher preference for microtransit services. Considering the results obtained from the modelling, several policy considerations and actions are suggested to encourage the use of microtransit in the region and take advantage of its potential as a sustainable transport mode.

Keywords: Microtransit, Demand-responsive transit, App-based transport services, Psychometrics and econometric models, Willingness to pay

JEL Classifications: 014, R42, R58, Z18

1. Introduction

The concept of App-Based Mobility (ABM) encompasses a diverse set of urban mobility alternatives (Shaheen et al., 2020) that, under different business models and consumer targets, place smartphones at the core of their operation (Cervero, 2017) to offer (supply side) and access (demand side) transport services. The ABM industry has been growing steadily during the last 15 years. Transport Network Companies (TNCs), gave birth to ABM services and have revolutionized urban mobility across the globe. Such firms have rapidly expanded their operations globally, including significant investments in Global South urban markets. Furthermore, fertile ecosystems for start-up development supported by the private, public, and development sectors have given rise to homegrown companies in cities in Africa, Asia, and Latin America. These ecosystems seek to fill gaps in the urban mobility market through digital innovations and adaptations to local conditions (Holland-Letz et al., 2019).

Although ride-hailing remains the leading form of ABM in the Latin America and the Caribbean (LAC) region, with a sizeable proportion of users, other forms of ABM that address the needs of broader demand segments are constantly appearing (and disappearing) from cities. These contribute not only to a rapidly changing urban mobility landscape but are also increasingly adding complexity to rising debates about climate change and social inequalities associated with transport. One such disruption is on-demand collective services known as microtransit.

Microtransit is the most common name for the app-based collective transport service typically offered in medium-capacity vehicles (e.g., minivans and small buses). A hybrid between ride-hailing and public transit services in which shared shuttles or vans, operating on flexible or semi-fixed routes, the service can be reserved on-demand (Shaheen et al., 2016; Oviedo et al., 2023). This system not only increases the number of available public transport options but has a higher potential than ride-hailing and other car-based shared mobility services to be integrated with mass transit systems. While other names for microtransit are vanpooling or Demand Responsive Transit (DRT), the user must connect to a smartphone application to request, accept, and access the service. The smartphone application also provides access to route information, service schedules, fare payment information, and basic passenger and driver information.

Microtransit services can offer the advantages of public transportation, while through optimization of routing and technology also provide more efficient use of vehicles and higher service quality. Depending upon several technological and operational characteristics (such as average passenger load, energy efficiency, or vehicle kilometers travelled per passenger), microtransit could be considered more sustainable than private cars and ride-hailing while providing improved comfort, convenience, and safety. Like other ABM services in the Latin American and Caribbean LAC region, microtransit services, depending upon pricing and regulatory environments, can potentially improve the ability of specific population groups (e.g., women and the elderly) to mitigate mobility barriers such as fear of crime. The presence of features in microtransit like the ability to share details of the trip with others in real-time, obtain information about the driver, and report security incidents through panic buttons, are expected to improve perceptions of personal security (Oviedo et al., 2022b). For example, microtransit could potentially improve access to opportunities by making it easier for people, especially those living in peripheral areas with limited transport supply, to reach different economic, educational, leisure, or health destinations.

The likelihood that the potential benefits of microtransit services will be realized depends on their acceptance by users, the operational characteristics of the systems, and the policy environment in which they operate. Therefore, a relevant topic when planning microtransit services is to assess factors influencing demand, the weighting that potential users give to the attributes of the service, and the willingness to pay for them to adjust supply.

In addition, it is relevant to identify differences according to the socio-demographic characteristics of individuals.

Considering that individual preferences and attitudes could influence the choice of public transport and app-based, demand-responsive, and shared services, these psychometric factors may also affect the demand for microtransit services. Previous research found that interest in microtransit services is driven primarily by their safety perception and affordability (Rossetti et al., 2024). Using the Theory of Planned Behavior (TPB) as background, Xing et al. (2022) measured the subjective norms and perceived behavior control for the microtransit service, and they also found the influence of attitudes toward travel in the microtransit choice. In addition, other psychometric variables, represented as latent factors, had been assessed in the choice of microtransit services, such as COVID comfort (Soria et al., 2023), perception of public transport services and online services (Alsaleh et al., 2023).

In Mexico City, since 2017, two private companies¹, Jetty and Urbvan, started to offer microtransit services using small vehicles, such as commuter or minivans. Despite the decrease in demand due to the COVID-19 pandemic, they continue to be transport alternatives for many users. In Barranquilla, Colombia, the Venezuelan venture "La Wawa" started operations recently (November 2022), are primarily oriented towards the business sector. Studying these pioneering services in the region provides relevant information on success factors and challenges for microtransit in the region. These two cities, Mexico City, and Barranquilla, are the subject of this study.

This study aims to explore the factors influencing demand for microtransit services and the willingness to pay for their characteristics in two contexts: a city where the service had been widely used (Mexico City, Mexico) and a new potential market (Barranquilla, Colombia). Considering that the individual's choices of public transport are influenced by the attributes of the services and their perceptions and attitudes, this research also aims to use psychometrics to understand how constructs are related to the individuals' preferences. The information comes from a stated preference and perceptual survey issued at the end of 2022. The survey included a choice experiment and a set of socio-demographic questions. In addition, the participants expressed their level of agreement with some items that allow the inclusion of indicators to measure three latent constructs: the attitudinal affinity of technology, the pro-environmental behavior in transport, and the perception of security concerns in public transport. The main hypotheses (H) that were tested include:

H1: Individuals with high-security concerns about public transport services are more likely to use microtransit services.

H2: Microtransit services are the most likely choice for individuals with pro-environmental attitudes in transport and individuals with high levels of technological affinity.

H3: Both mature business models and new potential markets value the main attributes of the service (such as the cost, time, short walking distance, frequency, reliability, and the option to book a seat).

For this purpose, integrated choice and latent variable models were estimated to evaluate users' behavior considering the attributes of transport services (actual modal choice or the use of microtransit service) in each market. This paper includes a literature review section discussing the previous research on microtransit services. The methodology and research design section presents the data and descriptive results for case studies and the proposed modelling approach. The results and discussion summarize how the findings support or not our hypothesis, and the last section presents the conclusion and future research.

¹ Jetty: <https://www.jetty.mx> and Urbvan: <https://urbvan.com>

2. Literature review

Microtransit is defined as "a privately owned and operated shared transportation system that can offer fixed routes and schedules, as well as flexible routes and on-demand scheduling. The vehicles most often include vans and buses" (Shaheen et al., 2016). As an on-demand technological service, microtransit shares many similarities with other services such as ride-hailing and paratransit. One similarity is the presence of smartphone applications that collect service requests and can dynamically dispatch available vehicles to fulfil the requests.

Microtransit services offer several potential benefits. For example, Bills et al. (2022) explored the potential equity impacts of a microtransit service in Metropolitan Detroit that was oriented to improve the accessibility of disadvantaged sectors (low-income without a car) in urban areas. They concluded that microtransit might help to reduce gaps in accessibility between higher and lower-income communities with a more flexible and reliable option than the traditional public transport service. Microtransit could also provide a primary reliable transportation service for older adults or persons with disabilities; however, scarce research exists on barriers and opportunities to adopt on-demand microtransit services as an alternative mobility option for this population. One of the few studies on this topic was conducted in Arlington, Texas, and identified lack of spatial coverage and lack of walking access as potential barriers to adopting microtransit (Miah et al., 2020). The study also concluded that riders who are not disabled, without an assistive device, and older (age>54) with frequent healthcare and discretionary trips are willing to adopt such services.

Microtransit services might also fill the gaps left by mass transit systems and by inefficiently scheduled bus routes. The incorporation of microtransit into planning processes could allow cities and transit agencies to improve public transit (Mayaud et al., 2021). For example, a prospective advantage of microtransit is its integration with mass public transportation systems as a first and last-mile service (Zhou et al., 2021). Rossetti et al. (2023) studied commuter preferences for a first or last mile microtransit service in four US cities. Using discrete choice modelling, they found that the access value of time, defined as walking plus waiting time, was four times the in-vehicle value of time for microtransit. The authors suggest that the system has the potential to attract riders, mainly if the system is designed with low waiting and walking times. They also found that men, younger and highly educated populations, as well as transit users are the most frequent users of such services. For the same case study cities, Rossetti et al. (2024) evaluated how the perceptions of safety and affordability relate to the interest in choosing microtransit. They supported their results with a qualitative analysis of open-ended questions about the service.

Despite the multiple values of microtransit services, they could also create additional urban problems and eventually siphon ridership from other sustainable transport alternatives. An analysis of a survey conducted in Salt Lake County among transit riders in the microtransit service area before and immediately after the service was launched shows no clear relationship between the current transit mode and expressed willingness to use microtransit. However, the results suggest that such services compete most directly with traditional transit operators. Also, younger passengers are more willing to use microtransit than elderly passengers. Socio-demographic variables such as household size and transit use frequency are also influential. User characteristics like income or car availability were not statistically significant (Macfarlane et al., 2021). Another problem associated with microtransit services is that success is not always guaranteed. Factors such as delays, detours, travel time reliability, cost, safety and security concerns, and regulatory environments may limit routes and pricing schemes. These factors affect the service perception and, consequently, the potential demand and competitiveness of the service. Therefore, it is essential to study the factors influencing the use of microtransit services in different contexts when planning operations and designing policies to encourage ridesharing services (Abouelela et al., 2022).

Whether microtransit services complement or compete with public transportation system is expected to be influenced by several factors including the context of the trip, individual perceptions, specific local conditions, and regulatory frameworks, among others. For example, in the city of Barranquilla, the perception of public transport services is influenced by the individuals' concerns about security in the nearby urban environment, which in turn affects the use of these transport investments and may encourage individuals to start using new formal or informal transport alternatives (Ojeda Diaz et al., 2023). Therefore, microtransit services would be more likely to compete with public transit in underserved areas. In Medellín, Colombia, Bedoya-Maya et al. (2022) studied the factors affecting the adoption of on-demand services (ride-hailing). They concluded that wealthy, younger and highly educated families with low vehicle availability are more likely to use such services. Evidence also points to gender effects, noting that the frequency of use is higher in females. This evidence suggests that microtransit services in Medellín could target specific segments.

Even though debates regarding the outcomes and the impacts of microtransit services are still open, this form of mobility is increasingly becoming popular in LAC. Emerging research from Mexico, where the LAC microtransit boom started, suggests that microtransit services could contribute to a more diverse set of alternatives for collective transport and that have the potential to promote sustainable mode shifts (Flores-Dewey 2019; Tirachini et al. 2020). More interestingly, microtransit technology in Mexico might be an avenue to improve the quality of semi-informal services. In Mexico, Abouelela et al. (2020) modelled the Jetty (a microtransit service in Mexico City) adoption process as a function of the users' socio-demographic characteristics, latent variables, accessibility to public transport, trip characteristics, motivations to use the service, and users' activities during the trips. Using hybrid choice models, they concluded that travel attitudes are the main factors impacting the shift from different modes to Jetty. Service-related characteristics such as the need for multi-tasking, trip fare, and avoiding parking issues also affect the modal shift decision. On the other hand, trip characteristics such as total trip distance and the headway at the user's home location nearest Metro stations also impact the willingness to use the service. The authors also found that users' socio-demographic characteristics (i.e. income, employment status, car ownership) affect use frequency.

Other countries in the region with microtransit projects include Chile (where microtransit services have been operating since 2018), Argentina (where most services have focused on corporate trips), and Brazil, which has two successful examples, City 2.0 in Goiania (WRI Brasil, 2019) and TopBus in Fortaleza (Diario Do Nordeste, 2024). Key factors behind the market consolidation of microtransit in the LAC region are the perceived quality and security problems in traditional public transport systems among people with higher purchasing power (Flores-Dewey 2019). Indirectly, this is supported by recent research revealing how the adoption of on-demand transport in the LAC region is following a different trajectory from the one observed in developed countries. For example, research in Mexico City showed that women are 34.9% more likely to adopt ride-hailing services than men (Sabogal-Cardona et al., 2021), contradicting earlier works in Europe and the United States. This suggests that ride-hailing is providing women with a safer transport alternative than traditional services. Also, in México City, Scholl et al. (2021) concluded that different perceptions of fear of crime in public transport systems and public spaces are pushing people towards ride-hailing services. Women, compared to men, have a 2.14 times higher probability of sharing the details of their ride-hailing trips to feel safer. Evidence from Bogota, Colombia, suggests that although ride-hailing does not address the needs of socially disadvantaged people, its users may be dealing with varied levels of transport disadvantage (Oviedo, Scortia, and Scholl, 2021). Despite the potential of ABM, many challenges remain when it comes to integrating ABM services into larger transit systems at an affordable fare (Scholl et al., 2022).

Current research is limited by the lack of evidence in the contexts of Latin American cities, and there is no research on microtransit services at various stages of development in the region or other cities in the Global South. To date, no studies have examined the main

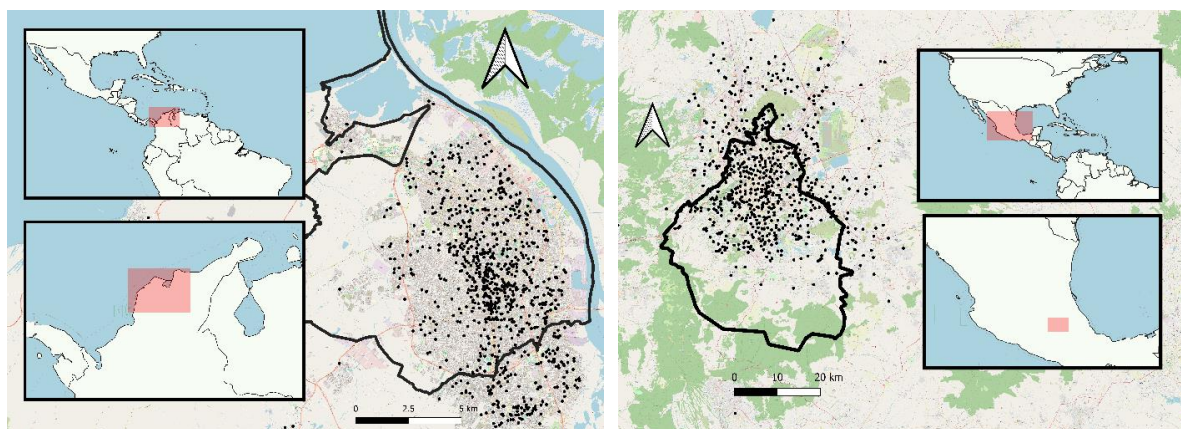
drivers affecting microtransit adoption, travel patterns and its associated impacts on urban mobility and accessibility. The review shows that, although research has been conducted to assess the usage factors of ABM services, few have modelled the demand for microtransit services in the Latin American context. Moreover, previous studies did not consider latent constructs, which are expected to influence the willingness to use public transport and on-demand app services. In addition, no clear determinants of the willingness to use or pay for the features of these services were found. This research contributes to closing these gaps, particularly in the Colombian and Mexican contexts as potential new and mature business markets, respectively.

3. Methodology and Research Design

3.1 Data and Descriptive Results

A survey was disseminated in the last quarter of 2022 in both cities. The distribution process included an online survey, which was promoted on different social networks. To ensure a good sample representation, face-to-face surveys were also collected in hotspots of microtransit activity (for the case of Mexico) and in areas where microtransit is expected to start operation in Barranquilla. The whole instrument was presented in Spanish, the official language in both countries, and the wording and tone of the questions were adjusted according to the local culture. The design process of the first draft version of the survey was based on our literature review and interviews with groups of experts in each country. Afterwards, two pilot tests were conducted to verify the validity and clarity of the questions and situations. Different attributes and levels were also defined based on information shared by microtransit companies in Barranquilla (La Wawa) and Mexico (Jetty).

Figure 1. Distribution of the survey sample in Barranquilla (left) and Mexico (right)



Source: This study.

The final version of the survey instrument contains three main sections, as follows: sociodemographic and travel patterns of the respondents (i.e., age, sex, occupation, education level, modal preferences, current use of the on-demand ride services and the attributes of the recent trip to go for their main activity), a choice experiment with six choice situations per individual, and a set of attitudinal and perception questions. After depuration, we had 1,075 individuals in Barranquilla and 1,273 in Mexico City. Table 1 summarizes the socioeconomic characteristics of the samples in Barranquilla and Mexico City. The following subsections describe the second and third parts of the questionnaire.

In the second part of the survey, we include stated preference questions with different choice situations to evaluate the behavior of microtransit service users using discrete choice models based on random utility theory (Ortúzar & Willumsen, 2011). The experimental design included six variables, five at three levels and one at six, as shown in Table 2. A fractional

orthogonal design with twelve choice situations in two blocks was used. This means that respondents faced six choice situations. In each scenario, distinct levels of each attribute were presented, with a brief description of the key features of the microtransit service. Considering their usual trip, the respondent should indicate whether they would use the microtransit service or prefer to remain in their current transport mode. The individual was asked about travel times and costs of the alternative they currently use.

Table 1. Description of the samples

Attribute	Barranquilla Colombia	CDMX México
Gender (%)		
Female	59%	45%
Male	41%	55%
Age (%)		
Young adult (>18 and <31)	29%	44%
Adult (31-50)	52%	49%
Elderly (>50)	19%	7%
Household Income (%)		
Low Income	36%	75%
Medium Income	53%	11%
High Income	10%	14%
Main transportation mode (%)		
Private transport	26%	13%
Public transport	55%	73%
Special services ²	17%	-
Taxi	1%	1%
Jetty - Urbvan	-	1%
Ride-hailing	7%	8%
Active transport	2%	3%

Source: This study.

Table 2. Experimental Design

Attributes	Units	Levels	Barranquilla	Mexico
Walking distance	Blocks	3	2, 4, 6	2, 4, 6
Seat reservation	Minutes	3	30, 60, 120	30, 60, 120
Service frequency	Vehicle/minutes	3	1/15, 1/30, 1/60	1/15, 1/30, 1/60
On-time pick-ups	Out of ten trips	3	5, 7, 9	5, 7, 9
Cost	COP-MXN/trip	3	4500, 5500, 6500	50, 65, 80
Travel time	Minutes (regarding current travel time)	6	15, 10, 5, -5, -10, -15	30, 20, 10, -10, -20, -30

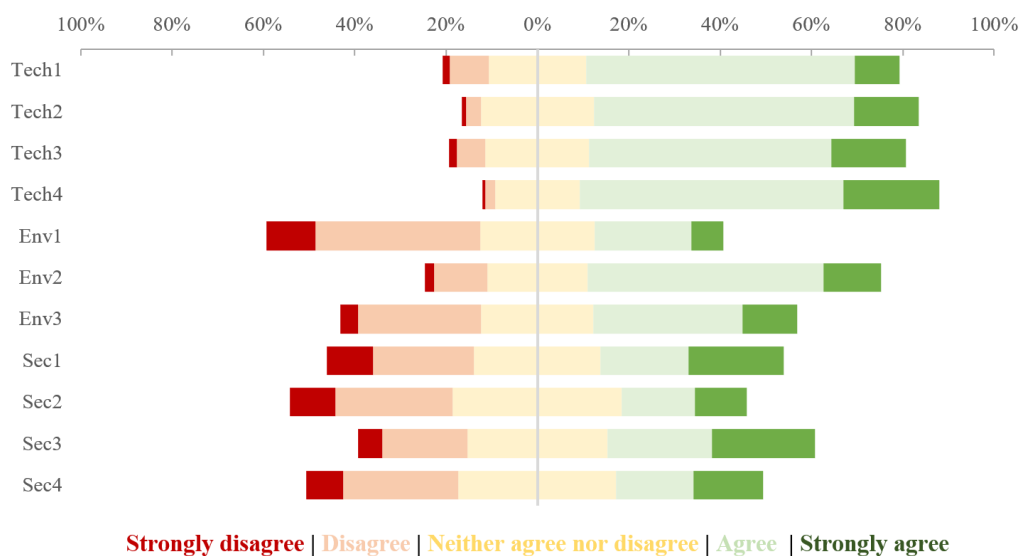
Source: This study.

² Special services refer to transportation services provided by companies to employees.

In the last part of the survey, individuals were presented with attitudinal and perception questions. These questions allowed us to understand the influence of psychometric data on choices based on the modelling approach described above. Three items were used in the domain of **environmental attitudes** (Soto et al., 2018): "I prefer to use low-emission transportation (e.g., active transport modes and micromobility)", "When possible, I try to share my vehicle with other people", "I prefer more space to public or green spaces than for parking or roads", and they were abbreviated as Env1, Env2, and Env3, respectively. For **technology affinity** (Franke et al., 2019), four items were used with the following wording: "I enjoy engaging in virtual activities (e.g., online shopping)", "Technology makes transportation systems more efficient and safer", "I am a regular user of electronic services (e.g., Spotify, Netflix, or Dropbox)", and "Mobile apps are important in my daily life" and were abbreviated as Tech1, Tech2, Tech3, and Tech4, respectively. The items for environmental attitudes and technology affinity used a Likert five-point level agreement scale with the options of strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree. Finally, for the **security concerns** (Soto et al., 2022) in public transport service we asked respondents to rate their level of worrisome for several situations: "Being robbed while travelling", "Being harassed while travelling", "Being robbed while waiting for or walking to public transit", and "Being harassed waiting for or walking to public transit", denominated one-to-one as Sec1, Sec2, Sec3, and Sec4. Figure 1 and Figure 2 present the sample attitudinal responses for Barranquilla and Mexico City, respectively. The scale used for the analysis of the latent constructs was appropriately adapted.

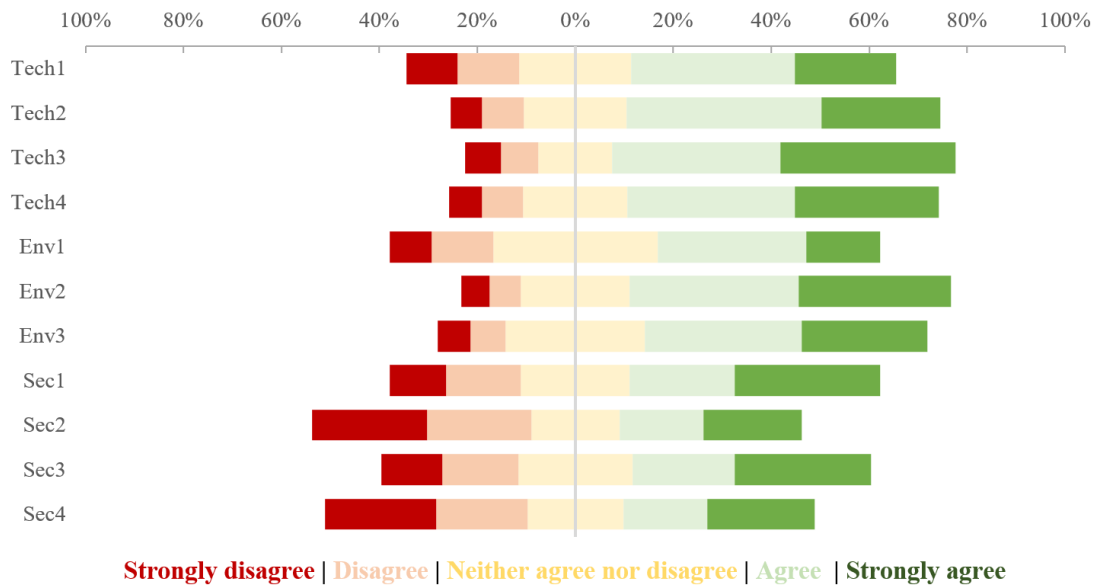
Responses to indicators show similar behavior in the technology affinity indicators in both cities, with a marked trend towards a positive view of the impact and use of technology. Where there are more differences is in environmental attitudes, noting that they are more positive in Mexico City than in Barranquilla. This may be explained by the fact that air pollution is a more severe problem in Mexico than in Barranquilla (Molina et al., 2009; Agudelo-Castañeda et al., 2023). Finally, both cities show similar trends in concerns about security in public transport systems, noting that in both cases, the indicator that shows the most significant concern is related to the possibility of being harassed.

Figure 2. Items assessed in the Barranquilla survey.



Source: This study.

Figure 3. Items assessed in the Mexico City survey.



Source: This study.

3.2 Modelling approach

This research used psychometrics and econometrics modelling approaches to evaluate the hypotheses defined. The first part was a confirmatory definition and formulation of the expected latent constructs. The methodology first included: (i) the validation of the three measured scales (technology affinity, environmental attitudes, and security concerns about public transport) using a Confirmatory Factor Analysis (CFA); (ii) the identification of how these three constructs vary among individuals' socio-demographic attributes with a Structural Equation Model (SEM); and finally (iii) the conjoint estimation of an Integrated Choice and Latent Variable (ICLV) model.

In this approach, the perception items for the individual (q) are included in the *measurement model*. In the following equations (1) and (2), the items (C_{pq}) were specified as ordinal variables using ordered logit models to capture the ordered nature of the Likert scale data. The observed discrete response (k) in each item indicator is expected to be explained by the inclusion of a latent variable (η_l) and an error term (ζ). This model estimated both the set of thresholds (τ) that define response categories and the parameters (γ) that capture the influence of each latent construct on the item indicator.

$$C_{pq} = \begin{cases} 1 & \text{if } (-\infty) < C_{pq}^* \leq \tau_{p1} \\ 2 & \text{if } \tau_{p1} < C_{pq}^* \leq \tau_{p2} \\ \dots & \dots \\ K & \text{if } \tau_{p(K-1)} < C_{pq}^* \leq \infty \end{cases} \quad (1)$$

$$C_{pq}^* = \sum_l \gamma_{lp} \cdot \eta_{lq} + \zeta_{pq} \quad (2)$$

Furthermore, the *structural regression model* includes equations to define each latent variable as a function of observable individual characteristics (S_q). In equation (3), the influences of the explanatory variables (r) are captured by a set of estimated parameters (α)

and the inclusion of an error term (v_{lq}) with mean zero. This part of the model allowed the identification of how gender, age, employment status, education level, income level, and transport habits (regular use of private modes, on-demand apps, and Jetty services –only for the Mexico City sample) influenced the formulation of three defined latent constructs for both contexts.

$$\eta_{lq} = \sum_r \alpha_{rl} S_{rq} + v_{lq} \quad (3)$$

After the validation, using econometric techniques, the identified relationships were simultaneously estimated with the choice mode probability. An *ICLV* model was estimated for each context. The discrete choice model component was based on the random utility theory (Ortúzar & Willumsen, 2011). The approach assumes that individuals choose the alternative with the higher utility. Utility for alternative i in choice situation t (U_{iqt}) is expressed as (4), where V_{iqt} is the systematic component, and ε_{iqt} is a random error component, which was assumed to be independent and identically distributed (IID) Extreme Value Type I, yielding the Logit model. The individual chooses between microtransit ($i = 1$) or the most frequently used mode ($i = 2$).

$$U_{iqt} = V_{iqt} + \varepsilon_{iqt} + \sigma_{panel} \cdot \vartheta_{iq} \quad (4)$$

As shown in equation 5, the systematic utility functions for microtransit were specified with linear-in-parameters (θ and β), to include the relation between the experimental alternative attributes (X) and the latent variables (η), respectively. Furthermore, some interactions between the attributes and observable individual characteristics (S_q) and an Alternative Specific Constant (ASC) parameter were included in the utility function. As we have a set of observations (t) of the same individual, the correlation among them (pseudo-panel effect) was considered by adding the random parameter ($\sigma_{panel} \cdot \vartheta_{iq}$) (Cantillo et al., 2008). Moreover, and following Hess et al. (2008), we added *iid* (across respondents but not observations) error components ($\vartheta_{iq} \sim N(0,1)$) to all the alternatives to capture correlation across choices for the same respondent (σ_{panel}).

$$V_{1qt} = ASC + \sum_k (\theta_k + \theta_{ks} S_q) X_{k1qt} + \sum_l \beta_l \eta_{lq} + \sigma_{panel} \cdot \vartheta_{iq} \quad (5)$$

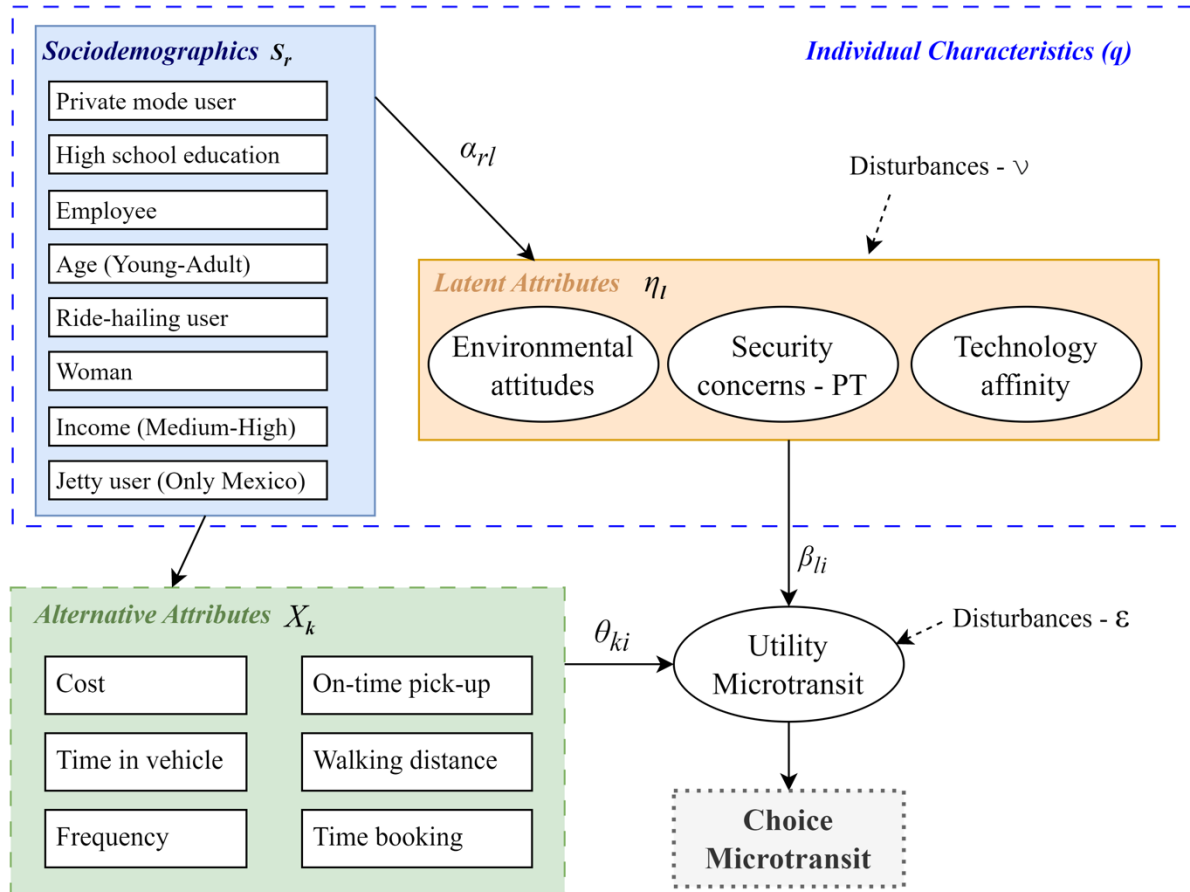
The individual choices were expressed as a function according to (6). The systematic utility of not using microtransit was set to zero ($V_{2qt} = 0$).

$$y_{iqt} = \begin{cases} 1 & \text{if } U_{iqt} \geq U_{jqt}, \forall j \in A_q \\ 0 & \text{otherwise} \end{cases} \quad (6)$$

The joint probability of observing choice and responses to perception indicators was built as seen in (7), where $P(\cdot)$ is the choice probability of selecting alternative i , $f(\cdot)$ is the density function of the indicators, and $g(\cdot)$ is the density function of the latent variables. Figure 4 presents the overall modelling approach used. The proposed models were estimated using the R package Apollo V0.3.1 (Hess & Palma, 2019).

$$\bar{P}(y_{iqt}, C_q | X, S, \theta, \beta, \tau, \gamma, \alpha, \Sigma_\varepsilon, \Sigma_\zeta, \Sigma_\nu) = \int_{\eta} P(y_{iqt} | X, S, \eta, \theta, \beta, \Sigma_\varepsilon) f(C_q | \eta, \gamma, \tau, \Sigma_\zeta) g(\eta | S, \alpha, \Sigma_\nu) d\eta \quad (7)$$

Figure 4. Modelling approach for the choice of microtransit services.



Source: This study.

The formulation of utility functions for using microtransit service in both contexts (Mexico City and Barranquilla) were intended to be as similar as possible. Both included the six attributes (cost, travel time, headways, on-time pick-ups, walking distance and time required for booking a seat), the three latent constructs (technology affinity, environmental attitudes and security concerns) and socio-demographics (gender, age, income level, employment status, educational level, and some transport habits e.g., the use of private modes or ride-hailing services and their previous use of Jetty services). In addition, both included the same interactions between socio-demographics and alternative attributes (income level and cost, private transport users and frequency of the service, women and walking distance) and the interaction between the latent variable technology affinity and on-time pick-ups attribute. The only exceptions were that for Barranquilla's formulation, the socio-demographic attribute for users of Jetty was not included. For Mexico's specification, the income level was specified at two levels (high/low).

4. Results

This section describes the results for Barranquilla and Mexico City. For modelling purposes, costs were converted to United States Dollars (USD) using the exchange rates prevailing at the time of the survey in December 2022 (1 USD = 4800 COP; 1 USD = 20 MXN). Table 3 presents the estimated parameters θ and β for both cities. Signs of the experimental parameters are consistent with microeconomic theory. However, not all of them were significant for both cities.

Results show that a 10% increase in service reliability, expressed in one additional on-time pick-up, considering ten trips, will increase the probability of using the microtransit alternative by increasing the utility of this alternative by 0.05 for Barranquilla and 0.04 for Mexico. Meanwhile, higher fares, longer walking distances, travel times, and headways discourage their use, although the latter was not significant in Mexico City. The effect of booking time in Barranquilla was insignificant (probably due to lack of familiarity with microtransit services in this city); meanwhile, the shorter the booking time, the higher the probability of using the microtransit service in Mexico.

The models show lower sensitivity to the fare in higher-income sectors of both cities. For Barranquilla, the model suggests that the cost parameter is -2.47 for low-income users and -0.89 for high-income users. In the case of Mexico City, the cost parameter for low-income users is -0.19, and for high-income users it is -0.11. Also, app users (individuals who reported previous use of ride-hailing services) are more likely to use microtransit services in both cities. Interestingly, private transport users penalize the intervals between dispatches more than other users in México City. Moreover, an inertia effect is evident in this city, as having been a Jetty user positively influences the willingness to use microtransit.

Regarding socio-demographics, there are similarities and differences in both cities concerning the willingness to use microtransit services. In both cities, the direct effect of gender was non-significant, although the model suggests a lower preference for women. Age is not a determining factor in Mexico City, while in Barranquilla, there is a greater propensity to use microtransit among adults (aged 31-50) and a lower propensity among young people (under 30). In Barranquilla, the middle-income segment of the population is the least willing to use microtransit, while in Mexico City, there is no substantial difference by income level. The interaction of sex with walking distance to access the service was not significant in either city, indicating no gender differences in this respect.

The α parameters in the regression model (see Table 4) show that technology affinity is lower among adults and higher among young people. In Mexico City, this latent variable is higher among high-income individuals and app users. Regarding environmental attitudes, the effect of age contrasts between Barranquilla, which is higher among young people, and Mexico City, which is lower in this age range. The same trend is observed for employees. For both cities, security concerns regarding public transport are more pronounced among women. In Barranquilla, young people, and those with at least a high school education report higher security concerns. In Mexico City, app users are more concerned about security on public transport than travelers using other transport modes.

Analysis of the effect of latent constructs on willingness to use microtransit shows that concerns about personal security in public transport have an upward effect on demand. The model forecasts that the probability of using the microtransit alternative in Barranquilla increases by 0.9% from the probability obtained using the original sample if the entire sample comprises those with the highest perception of security (i.e., young women with at least high school education). This is because microtransit is perceived as safer than regular transit

services. Meanwhile, the direct impacts of technological affinity and environmental attitudes were not significant in either of the two cities studied. However, as presented in Table 3, technological affinity interacts positively with reliability, which suggests that people with higher technological affinity give more importance to on-time pick-ups.

Table 3. Estimated parameters for the utility of microtransit choice

	Barranquilla (BAQ)			Mexico City (MEX)		
	Value	Test t	rob. ¹	Value	Test t	rob. ¹
Alternative Specific Constant Microtransit	0.33	0.55		-2.06	-6.08	***
Walking distance	-0.12	-3.20	***	-0.04	-1.48	
Time booking	0.02	0.37		-0.12	-2.57	***
Headway	-0.04	-14.03	***	-0.001	-0.56	
On-time pick-up	0.05	1.78	**	0.04	2.15	***
Cost	-2.47	-9.27	***	-0.19	-5.74	***
Time in vehicle	-0.03	-2.72	***	-0.03	-6.42	***
App user (ride-hailing)	1.18	2.87	***	1.24	5.53	***
Jetty user				2.12	5.95	***
Woman	-0.08	-0.22		-0.43	-1.56	
Age Young	-1.14	-3.38	***	0.15	0.76	
Age Adult	1.31	3.79	***	0.19	0.64	
Middle-income	-0.85	-2.34	***			
High income	-0.53	-1.24		-0.27	-0.92	
Employee	0.41	1.57		-0.60	-3.05	***
Middle-income*Cost	0.93	2.06	***			
High Income*Cost	1.58	6.40	***	0.08	2.48	***
Technology affinity*On Time	0.07	2.10	***	0.02	1.13	
Private User*Headway				-0.01	-2.00	***
Woman*Walking distance	0.01	0.14		0.02	0.51	
Technology affinity	0.16	0.46		-0.17	-1.02	
Environmental attitudes	0.23	0.89		-0.01	-0.41	
Security concerns public transport	0.69	4.42	***	0.36	2.91	***
SD Panel	2.62	16.35	***	1.57	21.20	***
Model parameters						
Individuals		1,075			1,273	
Number of choice situations		6,450			7,638	
Draws		1,000			1,000	
Loglikelihood choice (0)		-4470.8			-5294.3	
Loglikelihood choice (final)		-3046.9			-4100.8	
AIC		34646.5			43822.0	

¹ ***p-value < 0.05, **p-value < 0.1

Source: This study.

Table 4. Regression model for latent variables

Socio-demographic variables	Technology Affinity		Environmental Attitudes		Security concerns about public transport	
	BAQ	MEX	BAQ	MEX	BAQ	MEX
	Woman	-0.13 (-1.61)				0.32 (4.00)
Age young	0.37 (4.00)		0.45 (3.82)	-0.16 (-2.09)	0.29 (3.70)	-0.12 (-1.43)
Age adult	-0.35 (-3.01)	-0.32 (-2.32)				
Employee			0.23 (2.22)	-0.21 (-2.42)		
High income	0.39 (2.90)					
Private mode user			-0.24 (-1.89)	-0.11 (-0.99)		
Jetty user	0.60 (3.90)					
App user (ride-hailing)	0.46 (4.04)				0.44 (5.02)	
High school Educ.					0.43 (3.07)	

Std. Coeff. (Robust t-value)

Source: This study.

Table 5 shows the willingness to pay for marginal improvements in service characteristics. The willingness to pay (WTP) for a marginal improvement in an attribute was estimated as the marginal rates of substitution; that is, the ratio of the marginal utility of the attribute to the marginal utility of the cost. To express the walking distance in units of time, a typical block was considered to be 80 meters long, and the average walking speed was 1.2 m/s, using as reference previous results from a Colombian context (Zuluaga et al., 2018). The table differentiates WTP according to income levels (low, middle, high). Several conclusions are relevant. One is, as expected, WTP increases with income. Another is that individuals penalize access times more heavily than vehicle travel time.

Additionally, there are substantial differences in the value of time. In the case of Barranquilla, the subjective value of time for low-income users is \$0.012 USD/min, while in Mexico City, this value is \$0.158 USD/min. This reflects the income differences between the two cities and the high valuation Mexicans are willing to pay to reduce travel time in their city, which is characterized by high congestion levels. The willingness to pay to decrease walking time is \$0.044 USD/min for low-income Barranquillians and \$0.189 USD/min for Mexico City. These values are around 3.6 times and 1.2 times higher than the willingness to pay to reduce in-vehicle travel time in Barranquilla and Mexico City, respectively, consistent with previous research showing greater disutility of access times (Cantillo et al., 2010).

Table 5. Willingness to pay for microtransit attributes in Barranquilla and México City

	WTP (USD/min)				
	Barranquilla			México City	
	Low income	Middle income	High income	Low and Middle income	High income
Travel time	0.012	0.019	0.034	0.158	0.273
Walking time	0.044	0.070	0.121	0.189	0.327

Source: This study.

Table 6 shows the direct elasticity of willingness to use microtransit services regarding the experimental attributes. In Barranquilla, the variables with the highest sensitivity are, in this order, cost, headway and time in the vehicle. In Mexico, the in-vehicle time is the one with the highest sensitivity, followed by cost, and being picked up on time. In all cases, the elasticity values are in the inelastic range, representing that a change in the attributes will have a negligible impact on the demand for microtransit services. For instance, a 1% increase in the cost of the microtransit service will decrease the probability of using this service by 0.39% in Barranquilla and 0.18% in Mexico City. As noticed in Table 6, the booking time attribute was not reported due to the value of direct elasticity being almost zero, which supports the weak influence of this attribute in both models.

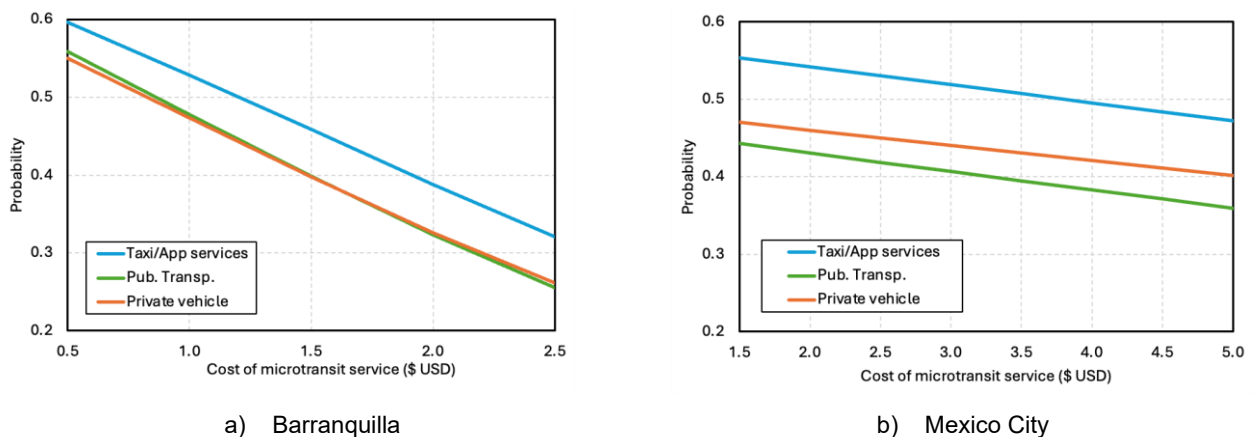
Table 6. Direct elasticities for microtransit attributes

Attribute	Barranquilla	México City
Cost	-0.39	-0.18
Time in vehicle	-0.14	-0.39
Walking distance	-0.09	-0.06
On-time pick-up	0.06	0.12
Headway	-0.24	-0.004

Source: This study.

Figure 5 presents the probability of making a modal shift towards microtransit, considering a change in the cost of the microtransit service, *ceteris paribus*. In Barranquilla's case, the current users of taxi services or online platforms are more likely to use microtransit than public and private (car or motorcycle) transport users. For Mexico City's results, the public transport users, who paid on average a fare of 1.8 USD, are the least likely to change to a microtransit option.

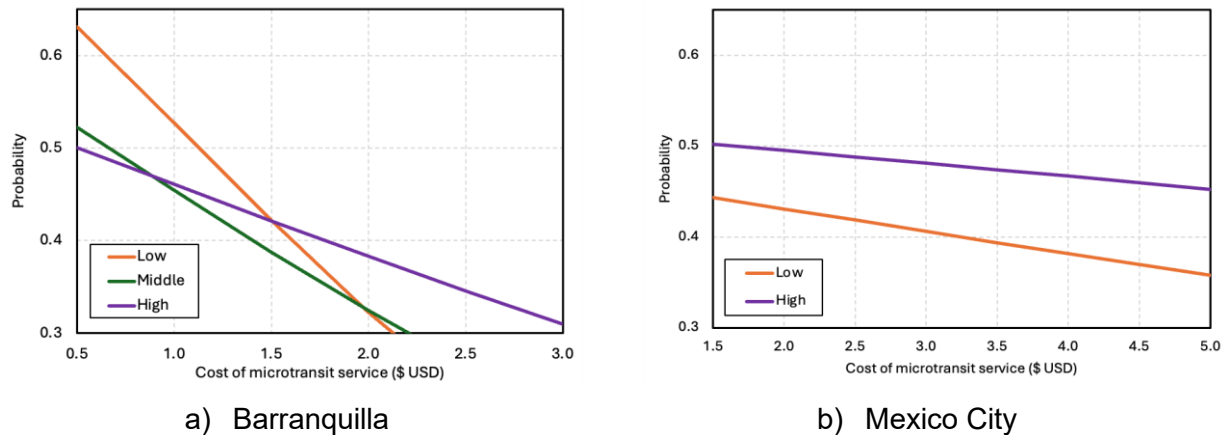
Figure 5. Probability of choosing microtransit for varying costs, by current main mode of transport.



Source: This study.

Figure 6 shows the willingness to shift to microtransit considering the income level of the individual. Barranquilla's results suggest that lower-income individuals are more sensitive to an increase in the cost of microtransit service, *ceteris paribus*. Notably, in Barranquilla, a fare below \$1.5 substantially increases the modal share of microtransit among low-income people. In Mexico City, the rate of change is similar for the two income levels considered, though values are always higher for the high-income group.

Figure 6. Probability of choosing microtransit over the current transport modes for varying costs, by income category.



Source: This study.

5. Discussion

Several findings from the model results are notable. First, the higher the security concerns, the higher the willingness to use microtransit services, which confirms our first hypothesis that individuals with high-security concerns about public transport services are more likely to use microtransit services. Meanwhile, no significant influence was found for our second hypothesis that microtransit services are the most likely choice for individuals with pro-environmental attitudes in transport and individuals with high levels of technology affinity. Nevertheless, service level attributes (such as the cost, time, short walking distance, headway, reliability, and the option to book a seat) are highly valued both in more mature markets, such as Mexico, and in emerging markets, such as Barranquilla. This confirms hypothesis our third hypotheses that both mature business models and new potential markets value the main attributes of the service (such as the cost, time, short walking distance, frequency, reliability, and the option to book a seat). However, those who have been users of Jetty in Mexico City reflect an inertia effect as they are more willing to use the service than those who have not yet used it.

The results also indicate that cost and time-related service level attributes highly determine the willingness to use microtransit in Mexico City and Barranquilla; however, there are some notable differences between the two cities. In both contexts, security concerns in public transport systems are highly determinant of potential microtransit demand, reflecting the impact of urban violence on travel decisions. A comparison of the results for both countries shows that the willingness to pay in Mexico City is higher than in Barranquilla. Among different complementary explanations, this could be partly related to the higher per capita income of Mexicans (when compared to Barranquilla). Another explanation for these results is that the level of violence in Mexico City is higher than in Barranquilla, so there is a greater willingness to use safer transport modes. The quality of public transport could also be a factor, given Mexico's heavy reliance on 'combis', a semi-informal service, and the generalized low-quality perception of public transport services among Barranquilla inhabitants.

It is interesting to note the higher fare sensitivity of low-income populations. The cost of the service is a solid barrier for microtransit services, affecting access for the poorest sectors. In Barranquilla, fares below \$1.5 incentivize a higher share of microtransit for low-income people than for middle- and high-income people. For all fare ranges in Mexico City, the microtransit market share is higher for high-income individuals. This finding highlights a potential obstacle to harnessing the potential of microtransit services to favor accessibility and

inclusion of sectors of the population, particularly in marginalized areas with scarce transport services and for people with disabilities.

The potential technology gap deserves particular attention. Users familiar with apps are more likely to use microtransit services. This result is not surprising but suggests the need to design strategies targeting the app-unfamiliar population, older people. The results do not show significant gender differences in the willingness to use microtransit. However, there is an indirect impact of gender, as women have greater security concerns surrounding the use of public transport, making them more willing to use a microtransit service that offers better safety conditions. A similar analysis is suggested for user type, noting that private transport users are more sensitive to attributes such as headway in México City.

Although Jetty's service in Mexico City was heavily affected by the pandemic, according to the model, its former users are more willing to use microtransit. This indicates that there is a strong appreciation of the service and the benefits it offers. Companies planning to offer microtransit could offer low-cost promotional plans, in the initial stages, as a strategy to showcase the benefits of the service.

While, as mentioned previously, microtransit has the potential to facilitate inclusion and access to essential services for sectors of the population that in the studied cities have been affected by social exclusion, such as poor inhabitants in peripheral areas or people with disabilities, a barrier to realizing this potential is the high sensitivity of potential users to service cost. An alternative to overcoming such barriers is the allocation of targeted subsidies to these sectors or considering microtransit as a feeder of the conventional public transport system. In the context of high auto dependence rates-particularly in middle- and high-income sectors, and paralyzing levels of congestion in many medium and large size Latin American cities microtransit can offer a more sustainable mode choice. The results indicate that a modal shift in this direction is possible under supportive regulatory frameworks. For example, restrictions on the supply of parking spaces in companies can help to reduce the demand for single occupancy vehicle trips, as can demand side subsidies for microtransit transport, and promotional rates for first time users of microtransit.

6. Conclusions and future research

This research studied the factors that affect willingness to use microtransit services in Barranquilla and Mexico City. The results indicate high sensitivity to the price, travel time, walking distance and service reliability. Security concerns about public transport positively influence the willingness to use microtransit. No evidence was found that environmental attitudes or technological affinity significantly affected potential demand. Meanwhile, service attributes such as trip cost, travel time, walk time, reliability, headway, were found to be significant determinants of demand for microtransit in both mature (Mexico City) and emerging (Barranquilla) markets. The model results suggest that the possibility of booking the service in advance in Barranquilla was not significant, possibly because Barranquilla is an emerging market, and users have yet to experience the benefits of booking a seat on a bus. Meanwhile, in Mexico, which is a more mature market than Barranquilla, the shorter the booking time, the higher the probability of using the microtransit service.

The results of the structural equation model analysis shows that women are more concerned about safety in public transport, which indirectly increases their willingness to use microtransit. The results also suggest the existence of income gaps in the willingness to use microtransit, meaning that low-income groups are more likely to avoid using the service if the fare increases. This is because service price sensitivity is significantly higher in poorer

compared to wealthier segments of the population. This indicates a need to consider fare subsidies targeted toward low-income groups to address equity and inclusion issues.

Several new research questions arise from this analysis. One is whether governments should start investing in subsidized microtransit services to ensure that low-income populations have greater access. Another policy question that arises pertains to how regulations should be designed to reduce risks related to social exclusion, and establish safety and environmental standards, while maintaining the viability and benefits of the services, considering that companies will prioritize those that have the highest willingness to pay for the service. Future research is needed to understand the impacts of microtransit in varying contexts in Latin America in order to generate further evidence on the potential of microtransit services and to shape public policies that most effectively harness their potential social and environmental benefits.

References

Abouelega, M., Tirachini, A., Chaniotakis, E., & Antoniou, C. (2022). Characterising the adoption and frequency of use of a pooled rides service. *Transportation Research Part C: Emerging Technologies*, 138, 103632.

Agudelo-Castañeda, D., Arellana, J., Morgado-Gamero, W. B., De Paoli, F., & Portz, L. C. (2023). Linking of built environment inequalities with air quality: A case study. *Transportation Research Part D: Transport and Environment*, 117, 103668.

Alsaleh, N., Farooq, B., Zhang, Y., & Farber, S. (2023). On-demand transit user preference analysis using hybrid choice models. *Journal of Choice Modelling*, 49, 100451. <https://doi.org/10.1016/j.jocm.2023.100451>

Bedoya-Maya, F., Scholl, L., Sabogal-Cardona, O., & Oviedo, D. (2022). Interactions of Transport Network Companies (TNCs) and Public Transit in Medellín. *Case Studies on Transport Policy*, 10(4), 1965-1979.

Bills, T. S., Twumasi-Boakye, R., Broaddus, A., & Fishelson, J. (2022). Towards transit equity in Detroit: An assessment of microtransit and its impact on employment accessibility. *Transportation Research Part D: Transport and Environment*, 109, 103341.

Brown, A. (2019). Redefining car access: Ride-hail travel and use in Los Angeles. *Journal of the American Planning Association*, 85(2), 83-95. <https://doi.org/10.1080/01944363.2019.1603761>

Cantillo, V., Ortuzar, J. D. D., & Williams, H. C. (2007). Modelling discrete choices in the presence of inertia and serial correlation. *Transportation Science*, 41(2), 195-205. <https://doi.org/10.1287/trsc.1060.0178>

Cantillo, V., Amaya, J., & Ortúzar, JdD. (2010). Thresholds and indifference in stated choice surveys. *Transportation Research Part B: Methodological*, 44(6), 753-763. <https://doi.org/10.1016/j.trb.2009.12.003>

Cervero, R. (2017) Mobility Niches: Jitneys to Robo-Taxis, *Journal of the American Planning Association*, 83:4, 404-412, <https://doi.org/10.1080/01944363.2017.1353433>

Flores- Dewey, O. (2019). App-based collective transport service in Mexico City: A start-up case study. *International Transport Forum*. Discussion Paper.

Franke, T., Attig, C., & Wessel, D. (2019). A personal resource for technology interaction: development and validation of the affinity for technology interaction (ATI) scale. *International Journal of Human-Computer Interaction*, 35(6), 456-467. <https://doi.org/10.1080/10447318.2018.1456150>

Hess, S., Rose, J.M., Hensher, D.A., 2008. Asymmetric preference formation in willingness to pay estimates in discrete choice models. *Transportation Research Part E* 44, 847–863.

Hess, S. & Palma, D. (2019), Apollo: a flexible, powerful, and customizable freeware package for choice model estimation and application, *Journal of Choice Modelling*, Volume 32, September 2019, 100170

Holland-Letz, D., Kässer, M., Kloss, B., & Müller, T. (2021). Mobility's future: An investment reality check. *McKinsey Insights*.

Macfarlane, G. S., Hunter, C., Martinez, A., & Smith, E. (2021). Rider perceptions of an on-demand microtransit service in Salt Lake County, Utah. *Smart Cities*, 4(2), 717-727.

Mayaud, J., Ward, F., & Andrews, J. (2021). Microtransit Has the Potential to Flip Transit on Its Head. *Transportation Research Record*, 2675(11), 77-88.

Miah, M. M., Naz, F., Hyun, K. K., Mattingly, S. P., Cronley, C., & Fields, N. (2020). Barriers and opportunities for paratransit users to adopt on-demand micro transit. *Research in transportation economics*, 84, 101001.

Molina, L. T., de Foy, B., Martínez, O. V., & Paramo Figueroa, V. H. (2009). Air quality, weather, and climate in Mexico City. *World Meteorological Organization (WMO) Bulletin*, 58(1), 48.

Ojeda Diaz, A. J., Cantillo, V., & Arellana, J. (2023). Understanding how individuals perceive changes in the built environment and the transport system after implementing a BRT system. The case of Barranquilla, Colombia. *Journal of Transport Geography*, 110, 103623. <https://doi.org/10.1016/j.jtrangeo.2023.103623>

Ortúzar, JdD and Willumsen, LG (2011). *Modelling Transport*, 4ed. John Wiley and Sons, Chichester.

Oviedo, D., Sabogal-Cardona, O., Scholl, L and Bertucci, JP. (2022a). The Potential for Shared Mobility Services to Promote Equity and Social Inclusion in Latin America and the Caribbean. In Scholl L., Fook A., and Barahona, JD. (Eds.) *Transport for inclusive development: defining a path for Latin America and the Caribbean* (pp. 472-528), Washington DC., Inter-American Development Bank.

Oviedo, D., Scordia, Y., & Scholl, L. (2021). Ride-hailing and (dis) Advantage: Perspectives from Users and Non-Users. Technical Note No IDB-TN-02265. Inter-American Development Bank

Oviedo, D., Sabogal Cardona, O., Scholl, L., & Bertucci, J. P. (2022a). The Potential for Shared Mobility Services to Promote Equity and Social Inclusion in Latin America and the Caribbean. Inter-American Development Bank.

Oviedo, D., Sabogal-Cardona, O., & Scholl, L. (2022b). Ready to ride security and transit-related determinants of ride-hailing adoption in Latin America.

Oviedo, D., San Gil, A., Sabogal-Cardona, O., & Scholl, L. (2023). Microtransit in Latin America and the Caribbean: Governance, operations, and regulation for socially inclusive and sustainable urban mobility.

Rossetti, T., Broaddus, A., Ruhl, M., & Daziano, R. (2023). Commuter preferences for a first mile/last mile microtransit service in the United States. *Transportation research part A: policy and practice*, 167, 103549.

Rossetti, T., Ruhl, M., Broaddus, A., & Daziano, R. A. (2024). How do attitudes and impacts of Covid-19 affect demand for microtransit? *Travel Behavior and Society*, 34, 100658. <https://doi.org/10.1016/j.tbs.2023.100658>

Sabogal-Cardona, O., Oviedo, D., Scholl, L., Crotte, A., & Bedoya-Maya, F. (2021). Not my usual trip: Ride-hailing characterization in Mexico City. *Travel Behaviour and Society*, 25, 233-245. <https://doi.org/10.1016/j.tbs.2021.07.010>

Scholl, L., Oviedo, D., & Sabogal, O. (2021). Disrupting personal (in) security? The role of ride-hailing service features, commute strategies, and gender in Mexico City. The Role of Ride-Hailing Service Features, Commute Strategies, and Gender in Mexico City. Technical Note No IDB-TN-02361. Inter-American Development Bank

Shaheen, S., Cohen, A., & Zohdy, I. (2016). Shared mobility: current practices and guiding principles (No. FHWA-HOP-16-022). United States. Federal Highway Administration.

Shaheen, S., Cohen, A., Chan, N., & Bansal, A. (2020). Sharing strategies: carsharing, shared micromobility (bikesharing and scooter sharing), transportation network companies, microtransit, and other innovative mobility modes. In *Transportation, land use, and environmental planning* (pp. 237-262). Elsevier.

Soria, J., Etzioni, S., Shiftan, Y., Ben-Elia, E., & Stathopoulos, A. (2023). Microtransit adoption in the wake of the COVID-19 pandemic: Evidence from a choice experiment with transit and car commuters. *Transportation Research Part C: Emerging Technologies*, 157, 104395. <https://doi.org/10.1016/j.trc.2023.104395>

Soto, J., Orozco-Fontalvo, M., & Useche, S. A. (2022). Public transportation and fear of crime at BRT Systems: Approaching to the case of Barranquilla (Colombia) through integrated choice and latent variable models. *Transportation Research Part A: Policy and Practice*, 155, 142-160. <https://doi.org/10.1016/j.tra.2021.11.001>

Soto, J. J., Cantillo, V., & Arellana, J. (2018). Incentivizing alternative fuel vehicles: the influence of transport policies, attitudes, and perceptions. *Transportation*, 45(6), 1721-1753. <https://doi.org/10.1007/s11116-018-9869-4>

Tirachini, A., Chaniotakis, E., Abouelela, M., & Antoniou, C. (2020). The sustainability of shared mobility: Can a platform for shared rides reduce motorized traffic in cities? *Transportation Research Part C: Emerging Technologies*, 117, 102707. <https://doi.org/10.1016/j.trc.2020.102707>.

Xing, Y., Pike, S., Pourrahmani, E., Handy, S., & Wang, Y. (2022). Exploring the Consumer Market of Microtransit Services in the Sacramento Area, California. <https://doi.org/10.7922/G2HX1B0S>

Zhou, Y., Liu, X. C., & Grubestic, T. (2021). Unravel the impact of COVID-19 on the spatio-temporal mobility patterns of microtransit. *Journal of Transport Geography*, 97, 103226.

Zuluaga, J.D., Escobar, D.A. and Younes, C., A GIS approach based on user location to evaluate a bike-sharing program. *DYNA*, 85(204), pp. 257-263, March 2018

Appendix

Measurement model for the latent variables

	Technology		Environmental		Security Concerns	
	Affinity		Attitudes		in PT	
	BAQ	MEX	BAQ	MEX	BAQ	MEX
Measurements for latent variables						
Tech1	1.41 (10.14)	2.11 (14.55)				
Tech2	1.32 (9.12)	2.86 (12.33)				
Tech3	1.90 (9.96)	3.46 (12.49)				
Tech4	1.33 (9.32)	2.93 (12.59)				
Env1			1.03 (7.49)	1.89 (13.02)		
Env2			0.69 (5.91)	2.00 (11.60)		
Env3			0.88 (6.94)	1.93 (11.75)		
Sec1					2.51 (6.11)	2.01 (12.67)
Sec2					3.06 (6.16)	4.80 (13.71)
Sec3					3.37 (4.78)	2.22 (13.31)
Sec4					3.36 (5.82)	6.08 (10.10)

Std. Coeff. (t-value rob.)