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Inconsistencies Between Stated and Revealed Preferences: An Analysis of Mobility Patterns in the Metropolitan Area of Pachuca

Inconsistencias entre preferencias declaradas y reveladas: Un Análisis de los Patrones de Movilidad en la Zona Metropolitana de Pachuca

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Abstract:

Los patrones de movilidad y el uso del transporte público en las zonas metropolitanas se han convertido en elementos clave en el debate sobre el desarrollo urbano en México. Factores como el crecimiento poblacional y la expansión de las ciudades resaltan su relevancia en la agenda gubernamental y la economía local. Este artículo explora las preferencias de movilidad de los estudiantes de educación superior en la zona metropolitana de Pachuca, México, considerando las inconsistencias en el comportamiento del consumidor en mercados con múltiples atributos, como el transporte. Para ello, se adoptó un enfoque cualitativo basado en grupos focales, que permitió analizar la relación entre las preferencias declaradas y reveladas. Los resultados ofrecen un panorama de la dinámica de la movilidad en este sector.

Keywords:

Bienes públicos, transporte urbano, preferencias del consumidor, movilidad

Summary:

Mobility patterns and the use of public transport in metropolitan areas have become key elements in the debate on urban development in Mexico. Factors such as population growth and the expansion of cities highlight its relevance in the government agenda and the local economy. This article explores the mobility preferences of higher education students in the metropolitan area of Pachuca, Mexico, considering the inconsistencies in consumer behavior in markets with multiple attributes, such as transportation. To this end, a qualitative approach based on focus groups was adopted, which allowed the relationship between stated and revealed preferences to be analyzed. The results offer an overview of the dynamics of mobility in this sector.

Keywords*:*

Public goods, urban transport, consumer preferences, movilidad

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Introduction

Decision-making is a process inherent to daily life and societies, as it is made up of both personal and group elements. Concerning mobility, these decisions (both by suppliers and demanders) show social and economic patterns that directly impact people's quality of life. In this scenario, public transport plays a crucial role. It not only meets essential mobility needs but also reflects important aspects like equity and the exercise of freedoms within a community.

This study focuses on the metropolitan area of Pachuca, Hidalgo, Mexico, seeking to examine the discrepancies between the stated and revealed preferences regarding mobility patterns of university students. The analysis is based, for example, on various theories, such as rational choice theory and behavioral economics, which provide complementary approaches that allow us to understand how users analyze costs, benefits, and particular contexts when choosing their means of transportation. In the same way, it is considered important to consider subjective aspects, such as the feeling of security, comfort, and attention, due to how essential they can be in the decision-making process.

Through a qualitative methodology, which integrates surveys and focus groups, it was sought not only to recognize the preferences and priorities of the study participants but also to understand the elements that feed their decisions. The study aims to understand the reasons behind inconsistencies between stated preferences and the actual mobility patterns of higher education students in the metropolitan area of Pachuca. The results obtained not only provide a high understanding of the dynamics of mobility in this population group but also provide valuable inputs for future research on what is socially declared and what is done effectively in specific contexts.

Theoretical Framework

Rational Choice

This work is based on different approaches to analyze the same phenomenon, that is, the decision-making and choices of users. One of the approaches that the study is based on is rational choice, which, from the perspective of Anthony Downs (1), relates politics to economics and presents the government as an economic agent that makes decisions to maximize its benefits. Although this approach has analyzed the election from the side of the public sector, phenomena such as the one addressed here also need to be addressed from demand. In the case of choices around public services, it is essential to consider the role of users as demand-side actors. Although rational choice theory analyses how individuals (in general) make decisions based on cost-benefit calculation, considering aspects such as limited information and strategic behavior (1), choices from both the supply and demand sides are relevant.

Gary Becker (2), for example, applied the principles of rational choice in people's actions, following the economic logic of maximizing profits and minimizing costs and not precisely focusing on specialized or specific areas of knowledge but on all kinds of situations. Based on this, it was shown that economic analysis could be applied to decisions of a social and moral nature, such as criminality and other daily events, based on the consideration of individual preferences and predictions that depend on external variables (2).

Continuing with Becker's contributions (2) concerning the use of public transport, the importance of the concept of opportunity cost stands out. Users, as economic individuals, not only consider the price of a service but also assess the time that could be used for other activities. Such an assessment, of course, represents a complexity that is difficult for people to control since the calculation that would require the optimization of their decision is subject to its limited rationality (3).

Another aspect to consider, according to the theory, is that rational choice theory is not a single approach but rather encompasses various currents with common interests, such as the analysis of rationality and mechanisms in the decision-making process (4). Some limitations in this theory to explain preferences are atemporality, individualism, and ignorance of

social structures since variables such as historical context, culture, and group interactions are also implicit in the decision making process (4).

However, other approaches mention the importance of rational choice theory precisely because of its contemporaneity and interdisciplinary condition since it is considered in various fields, for example sociology and psychology, for its ability to explain phenomena focusing on selfishness and self-interest (5). It is in this sense that the choice of individuals, seen as users of a service offered in whatever their market, should not be analyzed as an exclusive matter from a single epistemic current but from a multidisciplinary perspective.

Behavioral Economics

Over time, the decision process has been studied as a substantial basis of human behavior, while it is recognized as an erratic and inaccurate process per se. Herbert A. Simon (3), recognized for using the concept of bounded rationality, highlights in his work the relevance of the selection of means and ends. In other words, making decisions involves choosing the appropriate means to achieve proposed ends both individually and socially, being essential for the achievement of objectives. This perspective has been taken as a premise for explaining why users choose certain products or services based on what they want in the future. In addition, the decision-making approach has become a pillar for both the social sciences and the artificial sciences (6).

Behavioral economics has found some contemporary foundations in approaches such as that of Daniel Kahneman and Amos Tversky (7, 8). They have proposed the existence of two systems of thought, one fast and intuitive and the other slow and deliberate (7). They have also addressed how people make real and non-ideal choices under the thought of expected utility (8). In general, its contribution to behavioral economics lies in the approach that certain models fundamentally influence decision-making. For example, emphasis is placed on the role of incentives where individuals choose based on maximizing utility or benefit, this being the greatest measure of satisfaction or value derived.

In general, behavioral economics expands on traditional economic analysis by considering that decisions are not always rational and that consumers are influenced by cognitive biases and subjective perceptions (8). Kahneman and Tversky (7) argue that individuals can make decisions due to factors such as "loss aversion bias" or "preference for the status quo".

They also highlight that in addition to the cognitive, emotional, and social biases that may intervene in the process, conditions such as supply and demand, inflation, and interest rates influence in their own way (9).

Stated and Disclosed Preferences

In particular, based on the theories mentioned above, this text addresses the potential inconsistencies between users' stated preferences and revealed preferences. To do this, it becomes necessary to define them.

Stated preferences are understood as the choices expressed by individuals in hypothetical scenarios, providing a measure of their subjective valuations and priorities (10). In this regard, Daniel McFadden (11) introduced, for example, discrete choice models to analyze decisions in contexts with quantifiable attributes, facilitating the study of consumption behaviors and decisions. This can be associated with the characteristics of a public service, such as transportation, because it lends itself to the assessment of the specific attributes it has.

On the other hand, revealed preferences refer to the decisions that individuals make in real consumption situations, which allows inferring their valuations and priorities from their observed behavior (12). This approach was developed to analyze consumers' choices without relying on their subjective statements or hypothetical answers. This model represented an advance in the economy since it facilitated the study of consumer behavior using real consumption data, providing a solid basis for building empirical economic models. In the case of the analysis of public services, it is significant due to the observation of the behavior of users in their specific options and contexts. From the latter, it is possible to infer data of interest on the priorities and important aspects that are considered, for example, in the design of efficient public policies (13).

There are criticisms of preference theory, as they are more complex than the field of economics traditionally assumes due to issues such as that stated preferences may be influenced by social norms (14). Likewise, it should be considered that sometimes preferences are adaptive, that is, they adjust to the availability of alternatives and that, in general, there is a personality conflict in users regarding the long and short term (14).

According to Ben-Akiva (15), public transport decisions not only include the search for savings, the reduction of travel times, and the optimization of resources but also perceptual issues such as comfort. These choices relate to consumer preferences in complex ways. Other studies indicate that perceived quality, which encompasses factors such as safety, comfort, and accessibility, plays a considerable role in transportation decision-making and, in many cases, can trump the savings factor (16). Therefore, as Alonso and Fernández (17) point out, success in promoting the use of public transport depends on the ability of public policies to address these perceptions, integrating incentives that not only reduce costs but also improve the perceived quality of the service.

Deciding is nothing more than a tool that provides autonomy and seeks to maximize well-being and self-realization through both rational and automatic processes (18).

Introduction to the case of the Public Transport service

Starting from the premise that elections can be analyzed and justified from different perspectives and to achieve a greater understanding of the influence of different theories on decision-making, it has been chosen to conduct an analysis of an ordinary situation such as the use of public transport. In general, public services are characterized by being accessible to the entire population simultaneously, without the use by one person limiting their availability to others, which makes them essential goods to satisfy collective needs (19). Therefore, public services are indispensable goods for people that, beyond mobility, offer development opportunities.

It is also since basic services are essential to guarantee freedom, but by restricting their access, obstacles are generated that reduce the options and opportunities of users, forcing them to seek other alternatives outside the traditional ones (20). Therefore, this study seeks to analyze the situation of the election, taking as an example the case of the public transport service, which, although it is intended to facilitate the daily activities of the population, on many occasions, some limitations restrict its use or alter its accessibility, which generates the need to consider other alternatives.

In addition, it is important to highlight the functions of public transport, that is, to understand its importance. It fulfills three main types of purposes: instrumental, symbolic, and emotional. Collectively, they encompass issues such as cost, physical characteristics, social status, identity, well-being, and social interaction, which means that not only tangible attributes are considered at the time of choice (21).

Some studies have shown that the choice of public transport service is closely related to habits and attitudes beyond structural variables; however, the context determined by distances and efficiency plays a relevant role in preferences (22).

The concept of nudge (or "nudge") introduced by Thaler and Sunstein (23) suggests that small modifications in the decision environment can incentivize consumers to make certain decisions. In the case of public transport, improving information on routes and waiting times or increasing perceived safety at stations can influence consumers' decision-making, even if their initial perceptions were negative.

It is then that a range of factors that allow a decision to be made based on the models and theories mentioned above begin to act. Part of the interest in this study is to understand which processes predominate during the use of transportation in the university population of the metropolitan area of Pachuca, and what factors influence the evaluation of alternatives.

Methodology

To explore the possible inconsistency between stated and revealed preferences, we chose to analyze the latter from a qualitative and inductive design, trying to provide a more general theory through new hypotheses. The study consisted of conducting focus groups, considered as an essential tool to investigate the perception of the public transport service due to its ability to provide a deep understanding of users' opinions

and experiences. Unlike traditional surveys, focus groups allow open-ended responses to be explored through dynamic interaction between participants. This method gives researchers the power to listen to and observe users, as well as the interaction between them within the group, which allows them to generate valuable data that could not emerge in other types of interviews (24). This interaction can contribute ideas, opinions, and testimonies, offering a richer and more detailed view of the problems and suggestions related to the service. The main objective of using focus groups is to evaluate user satisfaction with public transportation, addressing aspects such as punctuality, comfort, safety, accessibility, and cost. In addition, this tool is critical for identifying specific areas for improvement, allowing service providers to implement targeted and effective changes. As Krueger (25) points out, focus groups are particularly useful for exploring complex problems and gaining detailed insights into perceptions and motivations.

It has been decided to investigate the perception of the university community about the transport service since this group presents characteristics that enrich the analysis. Among them, the diversity of areas of origin stands out, which allows for a broader and more varied perspective, as well as the differences between the areas of study, which provide complementary and specific approaches to the subject. To achieve a broad (but not representative) vision, five focus groups were conducted in universities with different attributes, including public and private institutions, as well as those located in central and peripheral areas of the Metropolitan Area of Pachuca. The selection of universities to conduct the focus groups was made for convenience and considered the Monterrey Institute of Technology for Higher Education (ITESM), the Polytechnic University of Pachuca (UPP), and the Institute of Social Sciences and Humanities (ICHSU) belonging to the Autonomous University of the State of Hidalgo (UAEH). The focus groups took approximately one month, between February and March 2024, allowing the five focus groups to be held and distributed as follows: two at ITESM, two at the ICSHU of the UAEH, and one more at the UPP.

To this end, in the first phase, before each of the focus groups, a survey was applied through a form that included questions aimed at understanding the availability, use, known transportation alternatives, preferences of each option, as well as the attributes that participants consider most important when choosing a means of transportation for their transfers.

Once the application of the survey was completed, the focus group was organized. During this stage, the moderator asked triggering questions to encourage student participation. Through their testimonies, participants shared subjective experiences about their forms of travel, as well as the aspects they consider relevant when evaluating and selecting transport options. This combination of approaches allowed us to obtain an insight into student perception and delve into the factors that influence their mobility decisions.

After concluding the data collection phase, the analysis focused on the coding of the transcripts obtained in the focus group and their subsequent processing and interpretation using Atlas.ti software. This process allowed the students' responses to be organized and classified, facilitating the identification of recurring patterns and themes in their testimonies. At the same time, a detailed contrast was made between the results obtained from the focus groups and the data obtained from the initial surveys.

It is important to clarify that this research followed a mixed methodological approach, where the structured surveys provided descriptive quantitative data and the focus groups offered qualitative insights that enriched the interpretation of the findings. In this way, the study avoids classifying the questionnaires with scales as purely “qualitative,” recognizing instead their contribution to generating systematic information that, when complemented with participants’ testimonies, strengthens the validity and depth of the analysis.

Results

Survey

The findings of this project about transport preferences and choice provide a comprehensive perspective on the elements that affect people’s decisions about their mobility. By analyzing distinct factors such as price, convenience, availability, and time, trends stand out that make it easier to understand the reasons

users have for choosing a type of transportation. These findings not only underscore the inclination of the population but also provide valuable data for the development of public policies and the strengthening of mobility alternatives.

As a result of the surveys conducted, various results were obtained. These results are presented and commented on below, highlighting the most important aspects and trends observed in the participants' responses.

Preferences, Availability, and Usage

First, the students were asked about their preferred transportation option, which denoted a clear inclination towards the use of private cars, which is positioned as the most chosen option (see Table 1). In the second place, there is taxi, while in the third place, students have a similar preference for using combi (public vans) or walking. These results reflect the preferences of the students, influenced by factors such as comfort and accessibility, attributes which will be analyzed later.

	MINI VAN	TAXI	PARTICULAR	WALK	BICYCLE	TUZOBÚS (BRT)
ICSHU 1	3.2	3.0	1.5	4.1	4.3	4.0
ICSHU 2	3.0	3.0	1.7	3.5	4.4	4.3
ITESM 1	4.9	2.7	1.5	2.9	3.4	4.4
ITESM 2	4.8	3.1	1.8	2.8	4.4	3.9
UPP	2.5	3.0	1.7	4.0	5.0	4.4
Total	3.5	3.0	1.7	3.5	4.4	4.2

Table 1. Average values on the preference between mobility alternatives

Note: Each figure represents the average value of a scale of 1 to 6 that was obtained for each transport alternative in each of the focus groups. The total represents the total average of the preference of the universe of participants in all focus groups. Lower scores project greater preference.

In terms of availability, i.e., the most accessible options for participants, there is consistency with the preferences expressed. The participating university students have access to taxis as a means of transport, followed by combi and, in third place, the use of private cars. Although the order of these has a variation concerning what was mentioned in the first part, the choice remains the same.

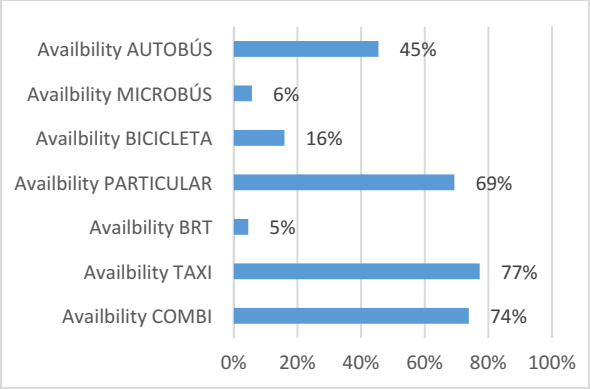

Figure 1. Perception of the availability of means of transport between participants.

Note: The percentages presented are relative to the total number of participants in the focus groups. BRT=Bus Rapid Transit.

When asked which of these options they used most frequently, it was again observed that both own vehicle and combi are the most frequent. However, taxi presents a different case since it is not the first choice for most students, despite previously expressing their preference and availability.

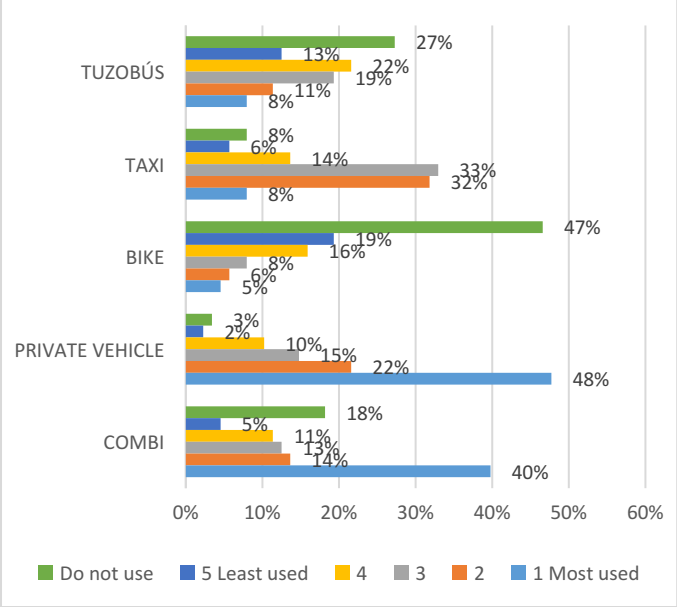

Figure 2. Percentage of frequency of use of means of transport among participants.

Note: The percentages presented are relative to the total number of participants in the focus groups.

Attributes

Regarding the analysis of the most appreciated factors when making transfers, which help to understand the user's decisions and preferences, price, comfort, time, safety, and attention were considered. When questioning about the perception of price, the case of the private car stands out since it is not considered expensive, but it is considered between accessible and cheap. In this area, *Tuzobús* (a Bus Rapid Transit system) stands out for being called very cheap by most of the students, as well as combi.

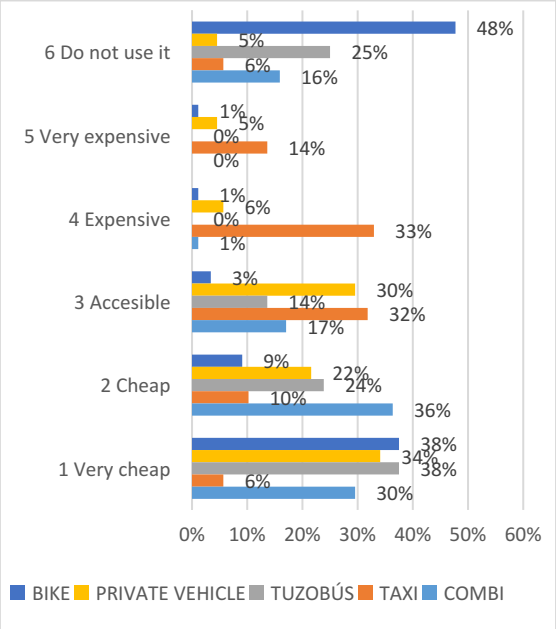

Figure 3. Perception of the cost of means of transport among participants.

Note: The percentages presented are relative to the total number of participants in the focus groups.

Another aspect considered is comfort, since, when asking "what means of transport do you find most comfortable?" once again, there is a clear congruence with what was previously expressed by the students because the private vehicle is considered by far as the most comfortable. Other options, such as combi, despite being widely used, are considered with a comfort tending to regulate, while taxi has an advantage over this as it is between regular and comfortable.

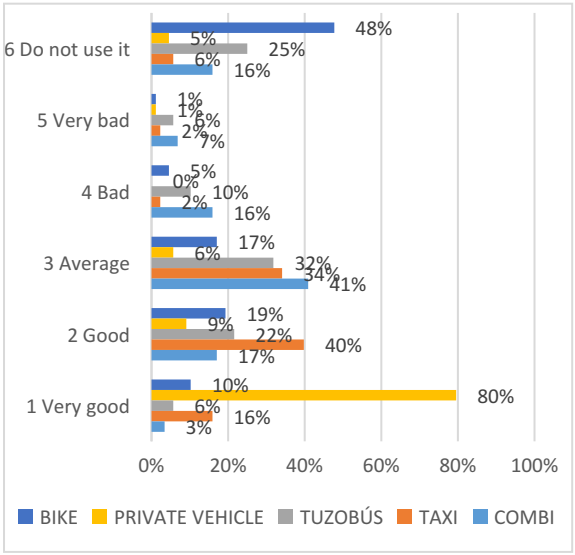

Figure 4. Perception of the comfort of means of transport between participants.

Note: The percentages presented are relative to the total number of participants in the focus groups.

When considering transportation alternatives, time becomes one of the key elements, as the user's decision is based on finding the most effective way to reach the desired destination more quickly. When asked: Which means of transport do you think makes you make the best use of your time? The preference for the private car was reinforced, as it was seen as the alternative that allows considerable time savings. This is another aspect in which taxi stands out from the other options, as it is perceived as an alternative that allows better time savings compared to combi.

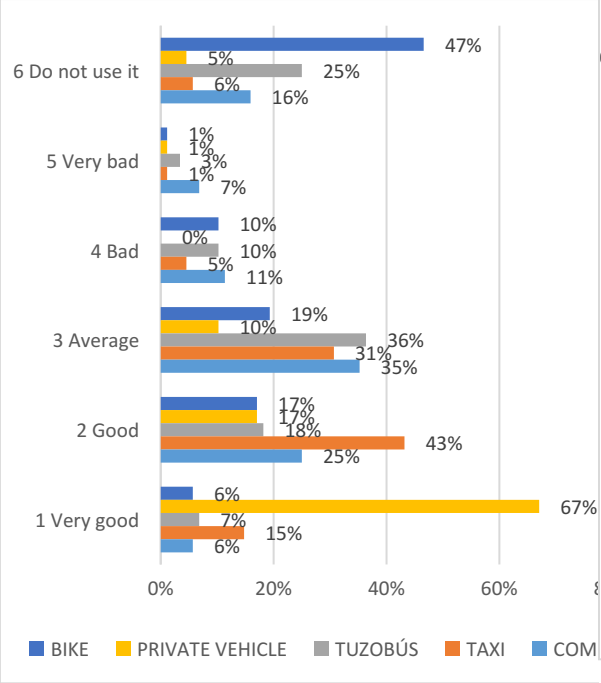

Figure 5. Perception of the time of means of transport between participants.

Note: The percentages presented are relative to the total number of participants in the focus groups.

Another important attribute to consider is safety. Once again, the private vehicle stood out among the attributes of the means of transport, being widely considered as the safest alternative, followed by alternatives such as Tuzobús and combi. On the other hand, taxi presents an intermediate evaluation in this aspect without achieving the same level of preference that it had, for example, about time.

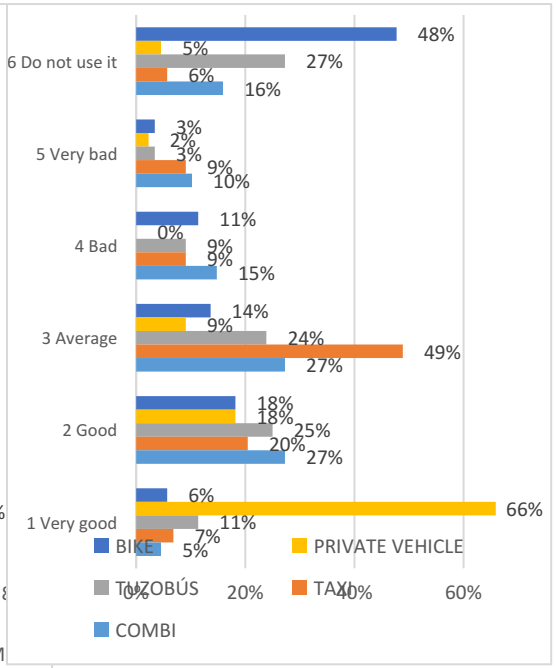

Figure 6. Perception of the safety of means of transport among participants.

Note: The percentages presented are relative to the total number of participants in the focus groups.

Finally, the last question was about how good or bad the attention was perceived, an attribute that focuses on conventional public transport options. In this case, a similar trend is observed among the alternatives since, in general, they are all perceived as regular. This suggests that this factor does not make a significant difference in the choice of transportation.

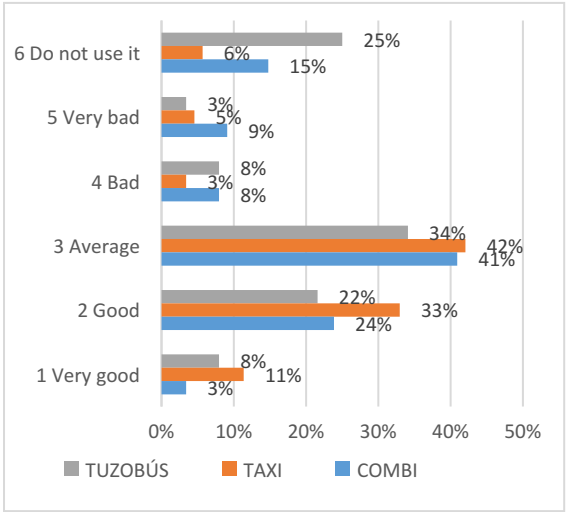

Figure 7. Perception of the attention of means of transport among participants.

Note: The percentages presented are relative to the total number of participants in the focus groups.

Testimonials in the focus groups

Below, we discuss what was discussed in the focus groups, whose essential purpose was to explore in depth the points pointed out in the survey. This exercise facilitated the comparison and validation of the information collected previously, integrating qualitative data with authentic experiences and perceptions of the participants. The testimonies collected offer important nuances that facilitate a better understanding of the reasons that motivate transport decisions, the situations that influence them, and the specific needs of users, enriching the analysis a little more.

The focus groups focused on collecting the experiences and opinions of university students about their daily commuting. Among the key issues and after the processing of information, the idea of walking stands out as a positive alternative for short journeys, although its use is restricted by insecurity and the absence of adequate infrastructure, which causes concern among users. For its part, public transport, mainly combis and buses, has been the subject of harsh criticism for its inefficiency, discomfort, poor treatment of drivers, and, in general, a feeling of insecurity and precariousness in the service.

The bicycle also emerged as an appreciated option; however, its use is limited for the same reason as walking, i.e., the lack of safe infrastructure for cyclists, restricting it to recreational activities. However, the possibility of using a bicycle while sharing roads with other modes of transport implies greater risks than having exclusive infrastructure. That is why all the attributes discussed in the focus groups are not aspects to be treated in isolation but are combined, defining the total quality of transport.

Regarding the private car, the university community perceives it as an effective and comfortable alternative due to the control over time, the ability to avoid transfers, and because it offers greater flexibility to adapt to specific schedules, particularly in work or extracurricular activities. However, despite its benefits, several limitations were also pointed out, such as cost, as the associated expenses, such as fuel, maintenance, and parking, make it a less accessible option for most students. In addition, users emphasized that although the car may be perceived as a safer option compared to other means of transportation, this does not guarantee total safety. Factors such as road culture, poor road quality, and risks associated with certain schedules, especially at night, represent significant risks.

Taxi, while appreciated for its time-saving ability, received heavy criticism, especially when it came to safety. This means of transport was considered dangerous, particularly for women, who expressed concern about abuses and dangerous circumstances during the routes. Likewise, the participants pointed out the lack of formality in service times, which impacts punctuality and produces an impression of unreliability. Faced with these restrictions, the implementation of options such as Uber was proposed, which was viewed positively for its flexibility, more control over schedules, and, on many occasions, a sense of greater security about conventional taxis. It should be noted that the experience of services such as Uber is given by visiting other cities outside the state since, at the time of this study, transport network companies are excluded from the local market in Hidalgo.

Tuzobús received mixed evaluations among the participants of the focus groups. On the one hand, it was recognized as an accessible option in terms of cost, which makes it a feasible alternative. Likewise, their sense of security in relation to other types of public transport was highlighted, particularly on specific routes. However, this favorable view is overshadowed by various unfavorable factors, such as the insufficiency of appropriate roads and the lack of vehicles, which causes congestion problems, delays, and complications in moving efficiently. Likewise, its comfort was another aspect criticized since the design and infrastructure of Tuzobús do not seem to be adjusted to offer a pleasant service, especially in the hours of greatest influx.

In general, the participants projected a negative perception towards public transport, identifying it as a necessity rather than a preferred option due to its multiple deficiencies, such as poor service, lack of punctuality, and crowding. The lack of accessible and safe options was also highlighted, as well as the lack of a road culture that protects both pedestrians and users of other means.

Contrast Survey vs Focus Groups

Once the results obtained through the two tools used in this study (surveys and focus groups) have been analyzed, it is possible to identify common points and significant differences between what was expressed in both. The surveys provided a more systematized perspective of the information (approximate to the quantitative, but on qualitative aspects), allowing the collection of structured data on transport preferences and the attributes that are valued. On the other hand, the focus groups showed an approach with a qualitative dimension, offering more detailed and in-depth testimonies that revealed aspects not captured in the numbers.

First, notable discrepancies were shown between what was revealed through the surveys and what was declared in focus groups. An obvious example of this is the private car. While in surveys this means of transport stands out with a high preference in all the aspects analyzed, a notable difference appears in relation to cost. According to quantitative data, there is a favorable perception that places it as an accessible or cheap alternative; However, the testimonies in the focus groups refute this belief. On several occasions, participants mentioned that owning a car involves multiple related expenses, such as gas, which are often underestimated. This shows that, although the private vehicle is appreciated for its comfort and control over schedules, the actual costs perceived by users make it a significantly more expensive alternative than preliminary data indicate.

Another example of this discrepancy is found in the perception of security. In surveys, the private car stands out with a wide advantage as the safest means of transport. However, this perception is contradicted in the testimonies of the students, who pointed out that their own car does not completely guarantee safety. As expressed in the focus groups, factors such as the lack of road safety education and the deterioration of traffic roads represent significant risks to the safety of drivers.

A third example that shows the obvious differences between what is expressed and what is chosen in a real situation is found in the perception of the attention provided by public transport services. Although in the surveys, the attention of the three means of transport (taxi, combi, and Tuzobús) is considered "regular", in the focus groups, a negative evaluation was highlighted, qualifying the attention of the carriers as deficient. Participants indicated multiple drawbacks, such as the exposure of users to risky situations, lack of consideration on the part of drivers, and other elements that impact the quality of service. This difference indicates that, even though the surveys reflect adequate attention, the authentic experience of users, especially in aspects of treatment and security, is far from satisfactory.

Broadly speaking, these examples show the divergence between perception and experience (which can be associated with stated and revealed preferences). Alluding to rational choice theory, the study contributes to the fact that a cost-benefit analysis is not always conducted when making decisions. Such an idea can only prevail as a theoretical reference, especially when it comes to individual human behavior. This can be justified for several reasons. As Paramio (26) indicates, to improve the results of a personal choice, it is essential to foresee the decisions of others, which entails a collective dimension to actions. An obvious case of this is found when choosing between alternative means of transport; people usually think about how many others could have chosen the same option, or they select schedules to avoid the busiest hours. This denotes that aspects such as habit and routine prevent continuous and permanent analysis of the best alternative, as Kahneman says (8), sometimes decisions are made under a fast and intuitive system of thought.

Similarly, we can return to what Train (13) mentions since, in the case of public services, it is relevant to consider contexts and priorities, which is exemplified through the diversity of needs of the same group, such as students. This could be observed through the focus groups since the university students expressed different tasks in their day-to-day. That is, most collective choices are as unlikely as the personalities of individuals are diverse.

A crucial point to consider is the concept of opportunity cost, mentioned by Becker (2), since through quantitative and qualitative analysis it can be concluded that this calculation is not

constant. This is because, depending on the momentary needs, one issue may be valued more than another, such as time over comfort when going late to a place, or safety over cost in circumstances where danger is perceived.

It is important to note that, rather than being mutually exclusive, our theoretical references are complementary. Some arguments and reasons coincide on points where choices are difficult to analyze due to factors such as context or the particularities of human reasoning, which does not manifest itself uniformly in all people.

After conducting this study, we can affirm that preferences, both stated and revealed, are influenced by subjective factors such as personal experience. However, on many occasions, what people declare comes from a lack of information. This became evident during the focus groups when asking what other transportation alternatives students would like to have available. In a real decision situation, you cannot choose what you do not know; options are defined by the individual and not by the person conducting the survey. Therefore, the discrepancy between what is manifested and what is executed may be due to this element.

In light of the reviewed theoretical perspectives, the findings of this study reinforce the idea that individual decisions about transport are not exclusively explained by rational choice models, since the revealed preferences of students are strongly mediated by subjective perceptions such as security, trust, and social norms. At the same time, the evidence complements behavioral economics approaches by showing concrete cases in which cognitive biases and contextual restrictions modify decisions in practice. This contrast contributes academically by offering empirical support to the theoretical debate on the coexistence of rational and behavioral logics in mobility choices, highlighting the need for integrated models that acknowledge the complexity of urban transport decisions.

Conclusions

This analysis has evidenced the differences between the stated and revealed preferences in the patterns and behaviors around the mobility of university students in the metropolitan area of Pachuca, Hidalgo. Based on the methodology used, which included surveys for the collection of qualitative data and focus groups for obtaining qualitative data, it was possible to identify that the preferences expressed in hypothetical situations vary considerably from the decisions made in real contexts as a result of a complex interaction between perceptions, needs, and limitations of the environment.

About the stated preferences, it was noted that students tend to emphasize factors such as comfort, speed, and safety, highlighting the private car as their optimal choice. However, when examining the testimonies of real experiences, the information indicates that the use of public transport, in particular vans and *Tuzobús*, prevails for economic and accessibility reasons. This discrepancy shows that while students appreciate ideal features such as time management and car flexibility, these are overcome by specific obstacles such as relative expenses (fuel, maintenance, parking) and access limitations.

A significant finding is that these inconsistencies are not only due to economic factors but also to subjective perceptions. For example, although in the survey, taxis were seen as an agile and accessible option, the focus groups reflected a negative opinion about safety, particularly among women. This fear directly affects elections, restricting its application to specific or urgent cases.

Likewise, stated preferences are affected by idealized aspirations and perceptions, while revealed preferences are shaped by specific day-to-day situations. In this sense, the priority of university students depends on the circumstances of the context, which shows that transport decisions are not fixed or universal but are highly dynamic and dependent on circumstances. For example, in the focus groups, it was mentioned that although walking is a practical option for short distances, its use is affected by the perception of insecurity and the lack of adequate infrastructure.

The discrepancy between what is declared and what is disclosed can also be explained by the limited information available to users. Many of the desired options, such as services from transport network companies such as Uber or certain improvements in public transport, are not available or are not sufficiently recognized by users. This shows that, when confronted with

concrete decisions, users tend to rely on a limited set of alternatives, which do not always represent optimal preferences (and choices).

The study of these differences reinforces the limitations of conventional theories of rational choice, which consider decisions based solely on cost-benefit calculations. The results indicate that transport choices are affected by both cognitive biases and external constraints and emotions, according to theories of behavioral economics.

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