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URBAN TECHNOLOGY MANAGEMENT: DYNAMICS OF INTERNAL MIGRATION, MOBILITY, AND TRANSPORTATION AMONG UNIVERSITY STUDENTS

GESTÃO DA TECNOLOGIA URBANA: DINÂMICA DA MIGRAÇÃO INTERNA, MOBILIDADE E TRANSPORTE ENTRE ESTUDANTES UNIVERSITÁRIOS

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José Fernando Vasco-Leal*
*Universidad Autónoma de Querétaro, Querétaro, México
Orcid: https://orcid.org/0000-0003-2503-1332
jose.vasco@uaq.mx

José Nicandro Medina-Olvera*
*Universidad Autónoma de Querétaro, Querétaro, México
Orcid: https://orcid.org/0009-0002-9399-7438
nicandro.medina@uaq.mx

Alma Alejandra Velázquez-Alejos*
*Universidad Autónoma de Querétaro, Querétaro, México
Orcid: https://orcid.org/0000-0003-1423-9066
almavelazqueza@yahoo.com

Juan Camilo Cardona-Castaño*
*Universidad Autónoma de Querétaro, Querétaro, México
Orcid: https://orcid.org/0000-0002-9631-9870
juan.cardona@uaq.mx

Juan Alberto Solís-Lozano*
*Universidad Autónoma de Querétaro, Querétaro, México
Orcid: https://orcid.org/0000-0001-5429-9616
alberto.solis@uaq.mx

Gabriela Ortiz Nieto*
*Universidad Autónoma de Querétaro, Querétaro, México
Orcid: https://orcid.org/0009-0006-5181-492X
gabriela.ortiz@uaq.mx

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Abstract
The accelerated population growth in the Querétaro Metropolitan Area has saturated its road infrastructure, generating mobility challenges that particularly affect university students as key agents of urban transformation. This study analyzes the dynamics of migration, transportation, and mobility of this group to propose effective urban technology management guideline. A mixed-methods approach was employed and inductive qualitative phase to construct a conceptual semantic network, followed by a descriptive quantitative cross-sectional phase with a probabilistic sample of 483 students from the Facultad de Contaduría y Administración at the Universidad Autónoma de

Resumo
O rápido crescimento populacional na Área Metropolitana de Querétaro saturou sua infraestrutura rodoviária, exigindo estratégias de planejamento que integrem jovens estudantes universitários como agentes de mudança. O objetivo desta pesquisa foi analisar a dinâmica da migração, transporte e mobilidade dos estudantes universitários para gerar diretrizes para uma gestão eficaz da tecnologia urbana. Foi utilizada uma abordagem de métodos mistos, culminando em uma fase descritiva quantitativa transversal com uma amostra probabilística de 483 estudantes da Faculdade de Contabilidade e Administração da Universidade Autônoma de Querétaro. Os

Querétaro (UAQ), 2024-1 period. Results reveal a "feminization of mobility" (62% women, 52% dependent on public transportation due to perceived insecurity and residential proximity), a "technological paradox" (micro-mobility on bicycles/scooters only 2% despite being digital natives, due to infrastructure/economic barriers), and internal migration (30%) reconfiguring services demand. Technology management must prioritize safety and sustainability through three strategic guidelines: Digitization for safety and gender perspective, comprehensive housing and mobility platforms, technological incentives for micro-mobility. These drive a predictive, inclusive, and sustainable model of smart urban mobility.

Keywords: Public Policy. Smart Cities. Sustainable Urban Mobility. Technology Management. Technological Paradox.

resultados mostram uma "feminização da mobilidade" (62% mulheres), caracterizada por uma alta dependência do transporte público (52%) e pela busca de proximidade residencial por segurança. Foi detectado um "paradoxo tecnológico": apesar de serem nativos digitais, o uso da micro mobilidade (bicicletas/patinetes) é marginal (2%) devido à falta de infraestrutura segura e a questões econômicas, sociais e tecnológicas. Além disso, a migração interna (30%) está reconfigurando a demanda por serviços. Conclui-se que a gestão tecnológica deve priorizar a segurança e a sustentabilidade. Três diretrizes estratégicas são recomendadas: Digitalização para segurança e perspectiva de gênero, plataformas abrangentes de habitação e mobilidade, incentivos tecnológicos para micromobilidade. Essas ações buscam transformar a mobilidade em um modelo preditivo e inclusivo.

Palavras-chave: *Cidade Inteligentes. Gestão Tecnológica. Mobilidade Urbana Sustentável. Paradoxo Tecnológico. Políticas Públicas.*

1 INTRODUCTION

The internal migration of young university students is a social and demographic phenomenon of great relevance for understanding urban transformations in Mexico. This process is mainly driven by the search for educational and employment opportunities in cities with better development conditions, which has an impact on both the configuration of territories and social and economic dynamics (RINCÓN-BÁEZ, 2024). Migration should not be understood only as a geographic movement, but as a multidimensional process that involves changes in mobility, transportation patterns, and the social integration of students (LOVÉN *et al*., 2020).

For the university population, the transportation system defines the university experience and everyday urban dynamics. This reality has led to a change in preferences toward alternatives such as bicycles and scooters, walking, and other options that BAYART *et al*. (2020) identify as more accessible and sustainable compared to traditional motorized transportation.

In this regard, the International Transport Forum (ITF) points out that young people have dynamic travel patterns, conditioned by economic factors and limited resources (ITF, 2022b).Their living conditions, economic constraints, social preferences, and place of residence are elements that determine their mobility decisions. According to the Fondo de Población de las Naciones Unidas en México *et al*. (2021), three out of ten people in the country are young, which highlights their demographic importance and their active role in the processes of travel and social integration. In this context, Mexico is at a key moment to move towards effective technological management that narrows social gaps by promoting more equitable mobility and optimizing travel times for the benefit of quality of life.

The urban functioning of cities has been characterized by high levels of mobility, as is the case in the Querétaro Metropolitan Area (ZMQ), one of the fastest-growing areas in Mexico (HUACUZ-ELIAS & VÁZQUEZ-CRUZ, 2018). These movements are due to reasons such as study, employment, business, and security climate, among other factors. According to the 2020 Population and Housing Census by the Instituto Nacional de Estadística y Geografía (INEGI) the state of Querétaro has more than 2.3 million inhabitants. Of this total, 1.05 million reside in the municipality of Querétaro, the state capital (H. AYUNTAMIENTO DE QUERÉTARO, 2021; INEGI, 2022). Official data from the 2020 Population and Housing Census indicate that between 2010 and 2020, the population of the municipality of Querétaro increased from approximately 801,940 to 1,049,777 inhabitants. This demographic expansion of 23.6% underscores the urgency of developing urban planning strategies that effectively respond to the growing demands for mobility, infrastructure, and services in one of Mexico's fastest-growing metropolitan areas.

More and more young people are migrating to metropolitan areas to pursue university studies and seek employment in corporations, industries, and/or government entities, attracted by favorable conditions in terms of quality of life, safety, and an environment conducive to personal growth. The municipality of Querétaro, due to its economic and social dynamism, has become an attractive destination for students from different regions.

However, many cities that receive this young migrant population are not sufficiently prepared to meet their mobility needs. Factors such as public transport

saturation, traffic congestion, lack of infrastructure, and the perception of insecurity create obstacles that directly affect students´ academic, social, and personal lives. These conditions impact their overall well-being and limit their full integration into urban life.

Given this scenario, traditional planning is inefficient, and a transition to urban technology management models is required, where data analysis and understanding of digitized mobility patterns allow for the optimization of existing infrastructure. The objective of the research is to analyze the dynamics of migration, transportation, and mobility of university students to generate guidelines that contribute to effective urban technology management.

2 LITERATURE REVIEW

2.1 Internal migration of students

It is important to understand that there are internal and local migrations motivated by access to education. According to SIMONYAN (2021), university students experience migration and mobility processes that constitute an important area of research in the social sciences.

In this context, the present research seeks to broaden the horizon and establish a relationship between internal migration, mobility, and transportation, understood as a flow of people moving from one destination to another, coinciding with the university environment and context, as explained by RINCÓN-BÁEZ (2024). According to AVITIA (2023), these are movements of people within the same space and border. In general, these are challenges that must be understood, since internal migration for academic purposes must be linked to sustainable mobility processes. This can be understood from a structural perspective, since, as pointed out by LAARI *et al*. (2024), migration is often seen as a phenomenon that occurs outside the boundaries of a territory, and not within it, where territorial, social, and economic revitalization processes take place.

2.2 Public policies on transportation, internal migration, and urban mobility

Urban and territorial policies require an understanding derived from studies on daily mobility (Obregón-Biosca & Betanzo-Quezada, 2015). In this regard, it has been mentioned that mobility policy plays an important role as a driver of the economy and progress. According to the International Transport Forum (ITF), countries must monitor issues related to mobility and road safety in order to design strategies and policies that are appropriate for the environment (ITF, 2022a). According to data from the Secretariat of Agrarian, Territorial, and Urban Development, public policies in Mexico have favored the mobility of certain sectors of the population, who have the opportunity to choose between different means of transportation, which is considered an indicator of inequality in the country (SEDATU, 2018).

Likewise, according to the Environmental Policy and Legislation (POLEA), the mobility system is understood as the set of interconnected elements and resources that facilitate the movement of people, which includes factors directly or indirectly related to mobility. However, the balance between environmental and social costs and the right to mobility requires an innovative regulatory framework that promotes sustainable urban mobility (POLEA, 2019).

As pointed out by TURIENZO *et al*. (2022), the mobility industry is undergoing a significant transformation in search of greater efficiency, with notable impacts in the economic and social spheres. As cities grow, activities become more dispersed across the territory, increasing the frequency of travel.

Currently, mobility systems represent a challenge for the development of urban areas. The conflict of urban movement in cities has been condensed into the growth of vehicle use, prolonged travel times, and the lack of safety in public transportation (SEDATU, 2018) . That is why the relationship between urban distribution and transportation has been reflected in travel times and distances. Factors such as high population density, land costs, housing availability, and the balance between jobs and residences influence this relationship.

The active participation of the community, especially young people who are most likely to adopt new technologies and sustainable practices, is crucial to achieving good planning that adapts to the needs of the population.

According to Jolonch (2013), planning is crucial because of its ability to structure urban growth, anticipate future challenges, and create scenarios to improve mobility. It is therefore essential to address projected population growth. For Litman (2017), these public policies and urban strategies make it possible to respond to the needs of the population, contributing to their well-being and to a more inclusive and sustainable city model.

2.3 Transportation and mobility among young people

The spread of Information and Communication Technologies (ICTs), as well as the availability of transportation options, gender, and safety are important aspects that have influenced mobility choices. These factors have an effect on each other and act in concert (ITF, 2022b). According to CHATTERJEE *et al*. (2018), youth mobility varies from year to year, suggesting that their behavior is influenced by life circumstances, demographic factors, and socioeconomic situations, which may be influenced by stagnant wages, rising housing prices, and changing values. In addition, the use of new information and communication technologies (New ICTs) influences mobility systems. However, it is difficult to determine the relevance of each factor, establish a chronological order, and accurately identify their impact.

Therefore, these should be analyzed as interconnected phenomena that interact in the context of youth mobility. Thus, the aforementioned studies have suggested that changes in mobility behavior can be explained by factors such as life cycle, income level, changing attitudes, and the growing use of virtuality (Blumenberg *et al*., 2017).

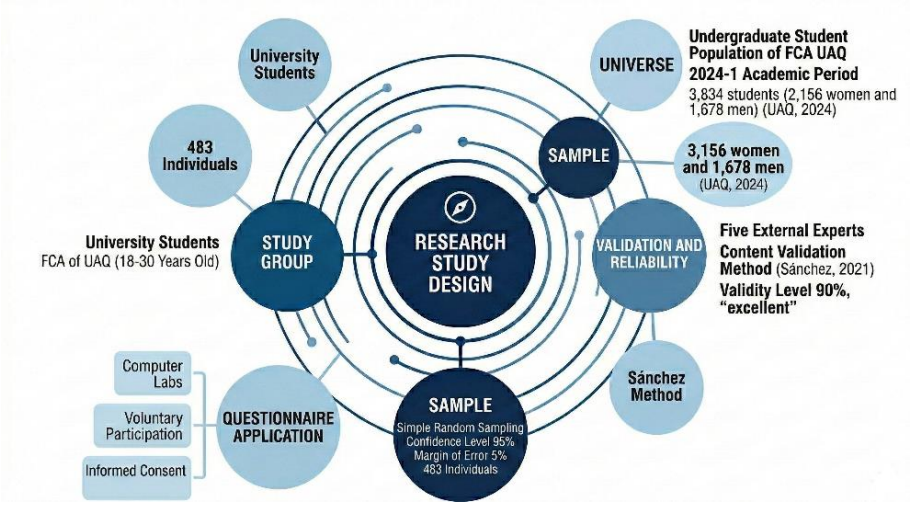
According to the International Youth Foundation (IYF), mobility challenges have been one of the most significant obstacles for young people. Young people in low- and middle-income countries mainly travel on foot and/or by bicycle, and use formal and informal shared transport. However, they ultimately aspire to own private motorized transport (IYF, 2014; ITF, 2022).

3 MATERIALS AND METHODS

The study was conducted using a mixed-method approach. In the first phase (qualitative), an inductive documentary technique was used to construct the semantic network, which allowed the identification of the theoretical categories of internal migration, mobility, and transportation. These findings served as the basis for the second phase (quantitative), which was descriptive and cross-sectional in scope, with the objective of measuring and analyzing the behavior patterns of the variables at a single point in time. Figure 1 below shows the study design for the research:

Figure 1

Research study design



Source: Own elaboration

The variables from the quantitative phase considered for this research are presented below (table 1):

Table 1

Operationalization of quantitative research variables

Dimension	Variable	Conceptual definition	Indicator	Measurement scale
Sociodemographic profile	**Gender**	Biological and social condition with which the person identifies.	Male / Female / Prefers not to answer	Nominal

	Age	The student´s age at the time of the survey.	Number of years of age	Discrete numerical/ratio
	Place of birth	State or municipality of origin of the student.	State/municipality	Nominal
Attachment and residency	**Length of residence**	Length of time the student has been residing in the current city	Years	Ordinal
Mobility Dynamics	**Means of transportation**	Main form of transportation used by the student to get to campus.	Public transportation, car, walking, bicycle, etc.	Nominal
	Travel time	Average time it takes students to get from their residence to campus.	Commute time ranges	Ordinal

Source: Own elaboration

The study was conducted at the Centro Universitario UAQ (Figure 2), whose strategic location acts as a multimodal transportation hub.

Figure 2

Multimodal mobility infrastructure and equipment in the vicinity of the Centro Universitario de la Universidad Autónoma de Querétaro.

Source: Photographs taken by Julián Alfaro Reynoso

4 RESULTS AND DISCUSSION

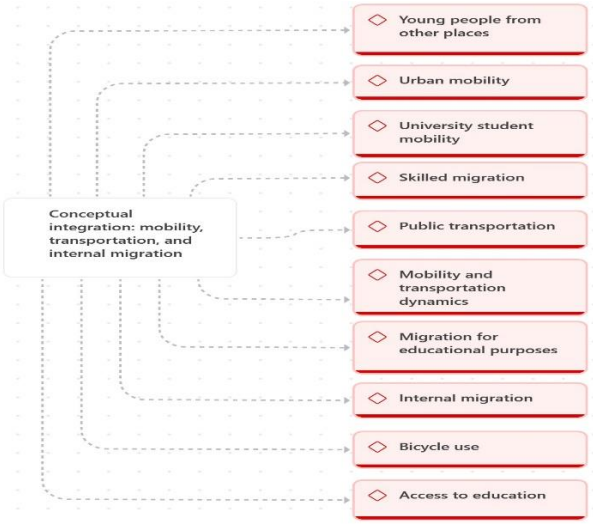
Mobility has been essential for the productive functioning of the economy, which is why understanding the nature of transportation and how it works has required knowledge of its daily demand, taking into account its impact on other activities (ARMOOGUM *et al*., 2022). Under this premise, the study identified internal migration, mobility dynamics, and means of transportation through a conceptual exploration and analysis of 483 participants.

4.1 Conceptual exploration

As a first finding derived from the qualitative phase of the study, a semantic network (Figure 3) was generated that structures the theoretical interpretation of the data. This inductive analysis shows that university mobility does not operate as an isolated variable, but as a multidimensional construct where three inseparable axes converge (internal migration, transportation infrastructure, and access to education). This result shows that student´s decisions to relocate are linked to phenomena of structural inequality and the search for opportunities. Therefore, this semantic network validates the premise that the analysis of university transportation requires a holistic view that integrates the student´s geographical origin (migration) with their material possibilities for relocation (mobility), serving as an interpretive framework for the quantitative results.

Figure 3

Semantic network of conceptual integration



Source: own elaboration

The qualitative phase identified five core nodes that define the university student experience: bicycle use, public transportation, city-wide mobility, student-specific mobility, and migration for educational purposes. These nodes validate the holistic approach required for effective technology management, as they represent the inseparable axes where internal migration and transportation infrastructure converge to determine access to education.

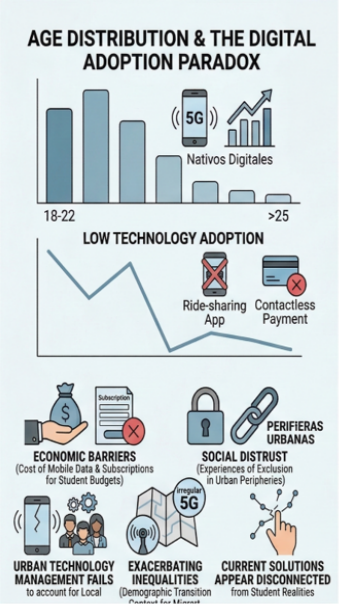
4.2 Sociodemographic profile

4.2.1 Age

Figure 4 illustrates the distribution of results for the “age” variable among the surveyed population.

Figure 4

Age



The age distribution reveals a strong representation in the 18- to 22-year range, with the following percentages: 18 years (19%), 19 years (16%), 20 years (17%), 21 years (21%), 22 years (13%), 23 years (6%), 24 years (4%), and >25 years (4%). These university students emerge as a generation of "digital natives" (PRENSKY, 2001), a segment theoretically ideal for smart city ecosystems. However, the results reveal a technology adoption paradox: despite their adequate digital literacy, their integration with smart mobility tools such as ride sharing apps or contactless payment systems is low (only 28% report frequent use).

This gap highlights a structural problem in urban technology management. The paradox arises from multifaceted barriers: economic (mobile data and subscription costs, constrained by student budgets reliant on remittances or precarious jobs amid internal migration); social (distrust in digital platforms due to exclusion experiences in urban peripheries); and physical infrastructure-related (irregular 5G coverage and micro mobility stations in high student-density areas). As noted by BATTY (2013) and SHELTON et al. (2015), smart cities falter when prioritizing "top-down" technologies without accounting for local youth mobility dynamics, exacerbating inequalities in demographic transition contexts like those of migrant students. Consequently, current solutions appear disconnected from students´ realities, calling for more inclusive urban management approaches.

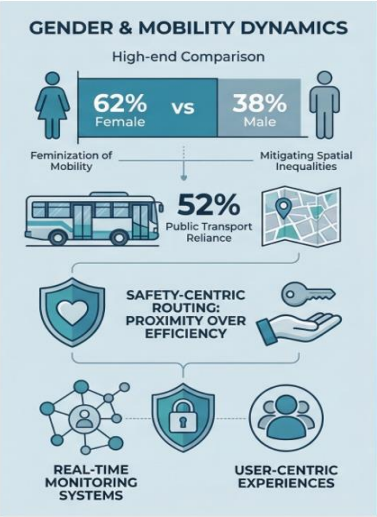
Source: own elaboration based on study data; visual design assisted by Google Gemini AI (2026)

4.2.2 Gender

The gender distribution of the surveyed population is detailed in figure 5.

Figure 5

Gender



The demographic segmentation of the study sample, revealing a predominantly female participation rate of 62% compared to 38% for males. This distribution reflects the "feminization of university mobility," a trend increasingly documented in urban higher education context (UNITED NATIONS, 2020). Such gender imbalance carries significant implications for urban technology management, particularly in smart city frameworks where mobility patterns intersect with internal migration dynamics.

Gender-disaggregated analyses indicate distinct behavioral patterns: female students exhibit greater reliance on public transportation (52% vs. 41% for males) and preferentially select shorter routes, signaling a strategic emphasis on safety and proximity over efficiency or cost minimization. These choices align with broader evidence of risk-averse mobility strategies among young women in urban settings (CECCATO & LOUKAITOU-SIDERIS, 2015), exacerbated by perceptions of vulnerability in public spaces-a critical factor for migrant students navigating unfamiliar city infrastructure.

Consequently, the efficacy of urban planning hinges on integrating a gender perspective into technological management. Beyond mere operational efficiency, smart city interventions must prioritize safety enhancements, seamless connectivity, and user-centric experiences via real-time monitoring systems. As BATTY (2013), argues, inclusive technology design is essential to mitigate spatial inequalities; failure to address these gendered dimensions risks perpetuating exclusionary mobility ecosystems, particularly for the female-majority student demographic.

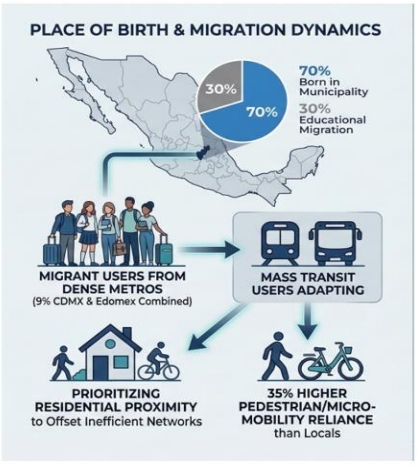
Source: own elaboration based on study data; visual design assisted by Google Gemini AI (2026)

4.2.3 Place of birth

Figure 6 highlights internal migration as a dynamic factor in local mobility.

Figure 6

Place of birth



The respondents' place birth positions internal migration as a dynamic factor in local mobility. Seventy percent were born in the municipality of Querétaro, while the remaining 30% reflects educational migration from other Mexican states.

Notably, inflows from dense metropolitan areas such as Mexico City and State of Mexico (9% combined) introduce users accustomed to mass transit systems. Upon local integration, however, this group exerts specific urban use pressures, prioritizing residential proximity to offset inefficient transport networks. Complementary data indicate that these educational migrants report 35% higher reliance on pedestrian routes and micro mobility compared to locals, reflecting adaptations to infrastructural constraints.

For urban technology management, this dynamic is pivotal, strategies must extend beyond route optimization to encompass holistic housing-mobility solutions, such as integrated smart housing and multimodal transport platforms (ALLWINKLE & CRUICKSHANK, 2011). Particularly salient in Querétaro, where student migration has surged over the past decade (INEGI, 2023).

Source: own elaboration based on study data; visual design assisted by Google Gemini AI (2026)

4.3 Attachment and residency

4.3.1 Preference for means of transport

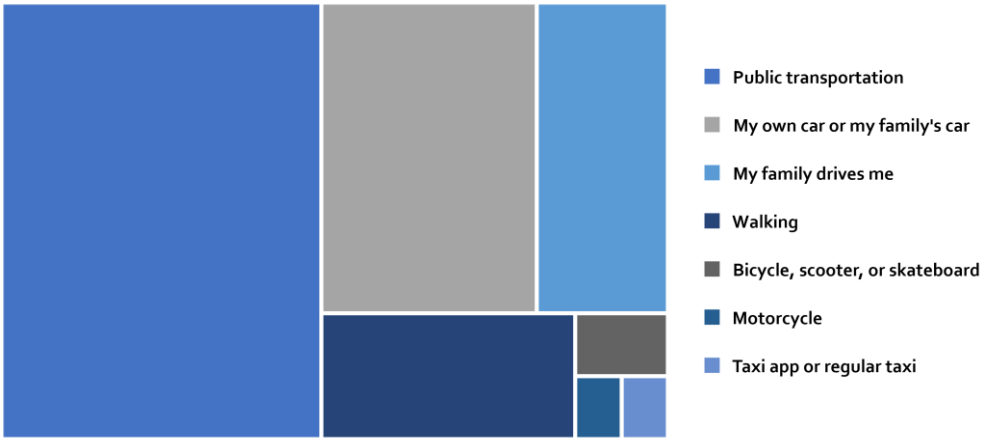
The modal configuration of journeys (Figure 7) shows a polarized and economically conditioned mobility structure. Public transport is consolidated as the backbone, transporting 52% of students. This results validates the findings of BAYART *et al*., (2020), who identify financial constraints as the main factor slowing down early motorization among university students. Fourteen percent of students depend on family transportation, in addition to the 23% who use private cars. This phenomenon of family dependence hides deficiencies in connectivity, mobility, and safety, generating a doubled vehicle load (accompanying trips) to make up for the shortcomings of the collective system.

For its part, the adoption of micro-mobility (bicycles, scooters) remains low, reaching only 2%. Although the generational profile has an affinity for these technological alternatives, the current urban infrastructure acts as a deterrent. These

findings coincide with CHATTERJEE *et al*. (2019), who point out that the perception of risk conditions the functionality of transportation. In this context, the results suggest that road safety nullifies any incentive for sustainability, forcing students to rule out options. This behavior responds to current barriers that include financial constraints, but also mistrust of services, insecurity, hostile treatment by other users, deficiencies in cleanliness and comfort, among others.

Figure 7

¿What means of transportation do you use to get to the university campus?



Source: Own elaboration

4.4 Mobility dynamics

4.4.1 Choice of means of transportation

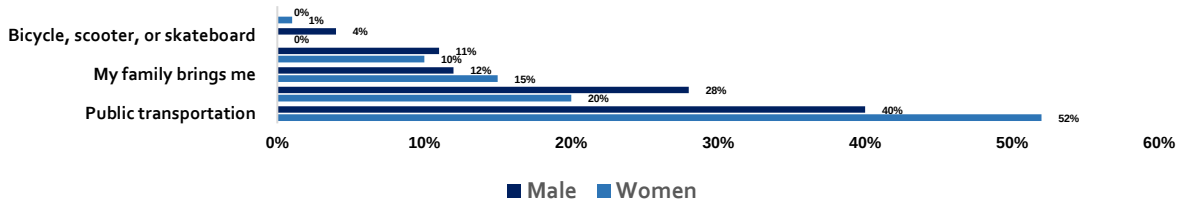
A cross-analysis of variables shows gender-based disparities in transport mode selection (Figure 8). Female respondents exhibit a higher reliance on public transportation than males (52% vs. 41%), indicating greater dependence on collective systems-potentially drive not by preference but by constrained access to private vehicles. Conversely, males demonstrate elevated use of private vehicles (29% vs. 21% for females), likely linked to entrenched gender roles and stereotypes surrounding driven. Likewise, women are slightly more dependent on being driven by family members (16% vs. 13%), a behavior that is often linked to concerns about safety in urban environments. In terms of mobility, the proportion of those who walk is similar (12% men vs 10%

women). However, there is a clear gap in micro-mobility, with men more inclined to use bicycles, scooters, or skateboards (5%), while in this study, women's use was zero. This is concerning and suggests that the current infrastructure is perceived as hostile. Women's use of public transportation and exclusion from micro-mobility are mediated by perceptions of risk, harassment, and service quality, limiting their equitable access to the city.

From an urban technology management perspective, these findings show that current mobility technology is not meeting the safety needs of young university students, forcing them to rely on inefficient mass transit systems or mobility assistance from family members. These services must be redesigned to offer operational flexibility and load capacity, integrating real-time information systems that offer traceability to the user. Effective technology management must transform the service, using digital certainty about times and routes to compensate for the shortcomings of the physical infrastructure, thus adapting to the demands of functionality and safety required by today's reality.

Figure 8

Analysis of mobility patterns. ¿How do men and women travel to get to the university campus?



Source: own elaboration

4.4.2 Travel time from residence to university campus

Travel time is a decisive indicator of quality of life and the effectiveness of student mobility. Figure 9 shows travel times from home to the university campus, revealing considerable variations and notable differences according to gender.

The data indicate that women generally undertake shorter commutes. Specifically, 13.9% of women travel for 0-14 minutes, compared to 10.4% of men.

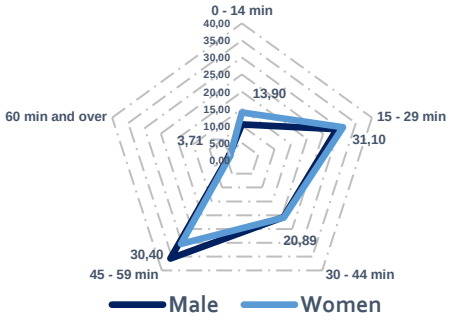
This trend continues in the 15 to 29-minute range (31.1% women vs. 29.2% men). These findings suggest that the female population prioritize residential proximity strategies, choosing to live in areas close to campus to minimize exposure and travel time.

Conversely, longer commutes mainly affect the male population. In the 45 to 59-minute range, men (35.7%) significantly outnumber women (30.4%). This implies that they live further away or use modes of transportation with lower operational efficiency. Finally, there is a small but critical proportion of students (3.98%) who spend more than 60 minutes per trip, facing mobility challenges that negatively impact their academic performance and well-being.

These findings coincide with recent Latin American studies, such as that by ARÉVALO, PÉREZ & VILLOUTA (2023), who point out that urban configuration strongly conditions mobility opportunities and that the simply availability of transportation does not guarantee the reduction of urban inequalities. In the case of the Querétaro Metropolitan Area, this reflection is particularly relevant give that territorial expansion and public transport saturation show that access to the service does not solve temporal inequalities, requiring planning that goes beyond route management to focus on effectively reducing travel times.

Figure 9

Travel time from home to university campus



Source: Own elaboration

5 CONCLUSIONS

This research analyzed internal migration, transportation, and mobility among young university students and found that the current infrastructure does not meet their

needs. The study identified the "feminization of mobility," with women as the majority group, experiencing more challenges, restrictions, and greater reliance on public transportation for safety. To enhance safety, women often choose to live near their place of study or work. The research also highlighted a technological paradox: despite being "digital natives," students make limited use of smart mobility tools, there by restricting the adoption of micro-mobility and maintaining dependence on private or family transportation.

To achieve urban technology management, the following guidelines are proposed:

- ✓ Digitization for safety and gender perspective: The perception of insecurity that restricts women's mobility patterns leads to the conclusion that the implementation of transportation systems with real-time monitoring and digital traceability is imperative for urban management. The technological strategy should prioritize the deployment of interfaces that allow users to manage their geolocation and obtain certainty about travel times. This operational optimization not only reduces exposure times on public roads but also acts as an effective mechanism to mitigate the perceived vulnerability of this demographic group.
- ✓ Comprehensive housing and mobility platforms: Student migration, which accounts for 30% of foreign students, is reshaping urban demand in the city. Therefore, the development of university digital platforms is proposed to not only offer places to live, but also integrate connectivity data and transportation routes.
- ✓ Technological incentives for micro-mobility: Urban management must go hand in hand with the digital affinity of young people. It is suggested to implement the use of bicycles and/or scooters through gamification systems and rewards for the use of sustainable transport, promoting a progressive cultural change towards decarbonization through the adoption of technology.

REFERENCES

ALLWINKLE, S.; & CRUICKSHANK, P. Creating smart-er cities: An overview. Creating Smart-er Cities, *Journal of Urban Technology.* 1-16, 2011. DOI: https://doi.org/10.1080/10630732.2011.601103

ARÉVALO MOLINA, Y; PÉREZ BUSTAMANTE, L; & VILLOUTA GUTIERREZ, D. Everyday mobility practices and urban structure in the peri-urban environment:

Lomas Coloradas and San Pedro gateway, San Pedro de la Paz (Chile). *Urbano*, 26(47), p. 34-45, 2023. DOI: https://doi.org/10.22320/07183607.2023.26.47.03

ARMOOGUM, J; CÉDRIC, G; GOPAL, Y; BORGATO, S; DAVIDE, F; MAFFII, S; MARS, K. J; POPOVSKA, T; SCHLEMMER, L; GAYDA, S; BOGAERT, M; & VINCENT, V. Study on new mobility patterns in European cities. Task A: EU-wide passenger mobility survey, final report. 2022. DOI: https://doi.org/10.2832/728583

AVITIA, M. A. E. Qualified migration and International Students in the University of Alberta: Expectative and motivations to study in Canada. *South Florida Journal of Development*, *4*(3), p. 1274-1281, 2023. DOI: https://doi.org/10.46932/sfjdv4n3-019

BATTY, M. The new science of cities. MIT press. 2013 Available at: https://books.google.com.mx/books?hl=es&lr=&id=yX-YAQAAQBAJ&oi=fnd&pg=PR7&dq=Batty,+M.+(2013).+The+New+Science+of+Cities.+MIT+Press.&ots=2mPj-VFfmt&sig=UbfAVergxvZcYJ69NAe5DhcCAWU

BAYART, C; HAVET, N; BONNEL, P; & BOUZOUINA, L. Young people and the private car: A love-hate relationship. *Transportation Research Part D: Transport and Environment*, v.80, p.1–15, 2020. DOI: https://doi.org/10.1016/j.trd.2020.102235

BLUMENBERG, E; BROWN, A; RALPH, K; TAYLOR, BRIAN, D; & VOULGARIS, C. Typecasting Neighborhoods and Travelers. In *United States. Federal Highway Administration. Office of Policy & Governmental Affairs*. 2017. Available at: https://rosap.ntl.bts.gov/view/dot/50517

CECCATO, V; & LOUKAITOU-SIDERIS, A. Fear of sexual harassment and its impact on safety perceptions in transit en.vironments: a global perspective. *Violence against women*, 28(1), 26-48, 2022. DOI: https://doi.org/10.1177/1077801221992874

CHATTERJEE, K; GOODWIN, P; SCHWANEN, T; CLARK, B; JAIN, J; MELIA, S; MIDDLETON, J; PLYUSHTEVA, A; RICCI, M; SANTOS, G; & STOKES, G. Young people's travel: What's changed and why? In *Department for Transport*. 2018. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/673176/young-peoples-travel-whats-changed.pdf

CHATTERJEE, K; RICCI, M; COPE, A; & CORNER, D. The Role of Transport in Supporting a Healthy Future for Young People. 2019. Available at: https://www.sustrans.org.uk/media/5057/the-role-of-transport-in-supporting-a-healthy-future-for-young-people.pdf

FONDO DE POBLACIÓN DE LAS NACIONES UNIDAS EN MEXICO, INSTITUTO MEXICANO DE LA JUVENTUD & CONSEJO NACIONAL DE POBLACIÓN. Situation of adolescents and young people in Mexico. 2021. Available at: https://transparencia.imjuventud.gob.mx/public/situacion_de_las_personas_adolescentes_y_jovenes_de_mexico.pdf

H. AYUNTAMIENTO DE QUERÉTARO. Municipal Development Plan 2021-2024. 2021. Available at: https://pmd.municipiodequeretaro.gob.mx/

HUACUZ ELIAS, R. D. J; & VÁZQUEZ CRUZ, R. D. R. El proceso de metropolización en Querétaro 1990-2010. *CONTEXTO. Revista De La Facultad De Arquitectura De La Universidad Autónoma De Nuevo León*, v. 12(16), p. 79–91, 2018. DOI: https://doi.org/10.29105/contexto12.16-6

INEGI. Monographs on Querétaro. Number of inhabitants. Information by entity. 2022. Available at: https://cuentame.inegi.org.mx/monografias/informacion/queret/poblacion/default.aspx?tema

INEGI. ENCUESTA NACIONAL DE LA DINÁMICA DEMOGRÁFICA (ENADID), 2023. Available at: https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2024/ENADID/ENADID2023.pdf

INTERNATIONAL YOUTH FOUNDATION (IYF). Transport Services and their Impact on Youth Employment and Development in Jordan. Available at: 2014. http://www.iyfnet.org/sites/default/files/library/Y4F-transportStudy-EN.pdf

ITF. Road Safety Annual Report 2022. 2022a, DOI: https://doi.org/https://doi.org/10.1787/badaa1a4-en.

ITF. Youth on the Move: Young People and Transport in the 21st Century. In International Transport Forum Policy Papers. OECD Publishing. 2022b. DOI: https://doi.org/10.1093/oso/9780197631942.001.0001

JOLONCH, J. Analysis of mass transportation and mobility in Bogotá. *Universidad & Empresa*, v.*15* (24), p.15–23, 2013. Available at: https://revistas.urosario.edu.co/index.php/empresa/article/view/2039

LAARI, C. K; SAPAK, J; WUMBEI, D; & SALIFU, I. Migration intentions among nursing students in a low-middle-income country. *BMC Nursing*, v. 23 (1), p. 492, 2024. DOI: https://doi.org/10.1186/s12912-024-02180-9

LITMAN, T. S.m.a.r.t. Pathways to sustainability. 2017. Available at: https://librosostenibilidad.wordpress.com/wp-content/uploads/2017/12/smart_acciona_es.pdf

LOVÉN, I; HAMMARLUND, C; & NORDIN, M. Staying or leaving? The effects of university availability on educational choices and rural depopulation. *Papers in Regional Science*, v. *99*(5), p. 1339-1366, 2020. DOI: https://doi.org/10.1111/pirs.12530

OBREGÓN-BIOSCA, S; & BETANZO-QUEZADA, E. Analysis of urban mobility in a medium-sized Mexican city, case study: Santiago de Querétaro. *Economy, Society and Territory*, *xv*, 61, 2015. DOI: https://doi.org/10.22136/est002015554

POLEA. Sustainable urban mobility in Mexico; regulatory and programmatic proposal. 2019. Available at: http://comisiones.senado.gob.mx/desarrollo_urbano/docs/climatico/p2_5_131119.pdf

PRENSKY, M. Digital natives, digital immigrants part 2: Do they really think differently?. *On the horizon*, *9*(6), 1-6, 2001. DOI: https://doi.org/10.1108/10748120110424843

RINCÓN BÁEZ, W. Estudios sobre migración interna educativa universitaria en Latinoamérica y Colombia. *Panorama*, 18(34), p. 51-76, 2024. Available at: https://dialnet.unirioja.es/servlet/articulo?codigo=9710983

SÁNCHEZ, S. R. The issue of content validity in education and Hernández-Nieto's proposal. *Latin-American Journal of Physics Education*, v.15(3), 3309 (1) - 3309 (5), 2021. Available at: https://dialnet.unirioja.es/descarga/articulo/8358273.pdf

SEDATU. Anatomy of Mobility in Mexico. 2018. Available at: https://www.gob.mx/cms/uploads/attachment/file/411314/Anatom_a_de_la_movili

dad_en_M_xico.pdf
SIMONYAN, R. Comparative Analysis of Students' Attitudes Towards Migration in Russian Borderlands. *Filosofija Sociologija*, v. *32*(2), p. 150-158. 2021. Available at: https://www.ceeol.com/search/article-detail?id=997487
SHELTON, T; ZOOK, M; & WIIG, A. The 'actually existing smart city'. *Cambridge journal of regions, economy and society*, *8*(1), 13-25, 2015. DOI: https://doi.org/10.1093/cjres/rsu026
TURIENZO, J; CABANELAS, P; & LAMPÓN, J. F. The Mobility Industry Trends Through the Lens of the Social Analysis: A Multi-Level Perspective Approach. *SAGE Open*, v. *12*(1), 2022. DOI: https://doi.org/10.1177/21582440211069145
UNITED NATIONS. World Urbanization Prospects: The 2018 Revision. Department of Economic and Social Affairs, Population Division. 2020. Available at: https://population.un.org/wup/assets/WUP2018-Report.pdf

Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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