CITIZENS IN THE SPOTLIGHT

Exploring Perceptions of Infrastructure Services in Latin American Megacities

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Executive Summary

Executive Summary

Several global factors, reflective of technological, socioeconomic, and environmental dynamics, have emerged as instrumental in shaping citizens' perceptions of essential infrastructure services.

As the megacities of Latin America and the Caribbean continue to expand at an unprecedented rate, it becomes increasingly critical—and challenging—to deliver infrastructure services to their growing populations. Such services include universally accessible, high-quality, and affordable water, sanitation, electricity, and transport.

As these cities have evolved, so have the expectations and attitudes of their residents. Several global factors, reflective of technological, socioeconomic, and environmental dynamics, have emerged as instrumental in shaping citizens' perceptions of essential infrastructure services. First, the widespread adoption of the internet and digital platforms has revolutionized public service provision in multiple ways. These technologies have not only helped public service providers become more productive, but also improved engagement among users and providers through the introduction of new services. For example, people can now easily access information about public transport routes and schedules or even hail taxis using mobile apps.

Second, the COVID-19 pandemic has had a tremendous impact on both the economic activities and daily routines of citizens, leading to shifts in their use of public services. Whether these changes were temporary reactions to the pandemic or signs of deeper, more structural shifts in behavior is yet to be seen.

Last, climate change emerges as one of the most pressing and long-term challenges confronting the region. In recent years, increasingly frequent and extreme weather events have disproportionately affected infrastructure services. Are rising temperatures, heavy rainfall, droughts, and landslides influencing citizens' perceived quality of services? And, if so, how?

In 2023, a survey was conducted in the five megacities of the region—Bogotá, Buenos Aires, Lima, Mexico City, and São Paulo (see **Figure ES.1**)—to measure citizens' perceptions of their living conditions and the quality of public services, including infrastructure services. The Inter-American Development Bank (IDB) conducted a similar survey in the same cities in 2013 (Serebrisky, 2014). These two surveys provide a unique opportunity to consider how perceptions changed across a decade. Are people receiving better infrastructure services?

Do city residents think service quality is getting better or worse? How have online tools changed the way people use public services? And are there still observable effects from the COVID-19 pandemic? The survey results offer a clear picture of key trends in the region's largest cities.

■ Figure ES.1

The Five Megacities of Latin America and the Caribbean

Note: This figure presents the scope of the study. The 2023 survey included all 20 localities of Bogotá and only neighborhoods in Ciudad Autónoma de Buenos Aires (CABA) for Buenos Aires, while the 2013 survey had included all neighborhoods in CABA and Gran Buenos Aires (GBA). The current sample included for Lima the districts of Metropolitan Lima and the districts of the Callao region (as well as in 2013), and for Mexico City, it included only neighborhoods in the Distrito Federal. The 2013 survey had included Mexico City's entire metropolitan area (the Distrito Federal and municipalities in the State of Mexico). For São Paulo, the 2023 survey included all subprefeituras in the São Paulo Municipality.

Insecurity has emerged as the predominant concern in megacities across Latin America. Moreover, in contrast to a decade ago, inadequate income

and employment feature among the top five concerns across all the cities surveyed (see **Figure ES.2**).

The 2023 survey provides a comprehensive picture of citizens' concerns in Latin American megacities. Foremost among these concerns are insecurity, inadequate income, and the perceived opacity of local authorities. These issues are consistently reported across all the cities surveyed, suggesting systemic challenges confronting their residents.

■ **Figure ES.2**

Top Five Challenges to City Residents' Quality of Life, By Degree of Importance, 2013 and 2023

Bogotá	
2013	2023
Insecurity	Insecurity
Lack of transparency	Lack of transparency
Transportation	Low income
Noise	Transportation
Climate change related issues	Air quality

Buenos Aires	
2013	2023
Insecurity	Insecurity
Low income	Low income
Transportation	Lack of transparency
Lack of transparency	Lack of participation in government decisions
Health services	Employment issues

Lima	
2013	2023
Insecurity	Insecurity
Lack of transparency	Lack of transparency
Transportation	Lack of participation in government decisions
Lack of participation in government decisions	Low income
Health services	Transportation

Mexico City	
2013	2023
Insecurity	Insecurity
Lack of transparency	Lack of transparency
Bureaucracy	Air quality
Lack of participation in government decisions	Climate change related issues
Climate change related issues	Low income

São Paulo	
2013	2023
Lack of transparency	Insecurity
Lack of participation in government decisions	Lack of transparency
Insecurity	Lack of inclusive infrastructure
Transportation	Lack of green areas
Bureaucracy	Low income

Categories

Economic and personal security
Environmental and health concerns
Local authorities
Public services and amenities

Note: This figure summarizes the main issues or priorities reported by respondents in the 2013 and 2023 surveys. Priorities are arranged in descending order for each year and city. Respondents were asked: "Considering the problems you currently face in terms of your quality of life, to what extent do the following issues affect you?" They were prompted to rate each issue on a scale from 0 to 10, where 0 meant "Currently not a problem for me" and 10 meant "Currently a very severe problem for me." The issues listed include concerns related to climate change, noise pollution, air quality, extreme weather events, waste collection, energy and gas availability, income sufficiency, water supply, drainage, sewer services, public space availability, health services, district government participation, infrastructure inclusivity (infrastructure for citizens with physical disabilities), employment, district administrative procedures, housing quality, telecommunication services, green spaces, security, district government transparency, educational services, and public transportation. The colors in the figure represent different categories of priorities, as detailed in the legend. For a comprehensive breakdown of scores, please refer to Appendix Table C.1 for 2023. The ranking for 2013 is available in IDB (2014).

While infrastructure services might not appear to have the same level of urgency, their significance cannot be understated. Infrastructure services underpin the operational fabric of urban centers and are pivotal to citizens' quality of life. The fact that infrastructure service issues do not rank at the top of the chart could suggest that these services are being provided satisfactorily to some extent, but also that infrastructure-related concerns are being overshadowed by more pressing challenges related to security and economic well-being. The COVID-19-induced economic slowdown, coupled with the global inflationary pressures of recent years, has had a pronounced impact on both security and economic well-being.

In certain urban hubs like Bogotá and Mexico City, environmental challenges, primarily those associated with air quality, are starting to appear among the top 10 concerns.

In certain urban hubs like Bogotá and Mexico City, environmental challenges, primarily those associated with air quality, are starting to appear among the top 10 concerns. This highlights a need for infrastructure policies that promote an energy transition to mitigate greenhouse gas emissions as well as the creation of healthier urban environments for citizens.

Most of the megacities surveyed are close to achieving universal access to water, sanitation, and electricity, expressed in percentages. However, urban growth continues to hinder access to these services for an increasing number of citizens (see Figure ES.3). Water access rates in the region have remained relatively stable over the past 10 years. In three of the five megacities, over 95 percent of the population has access to piped water. However, sanitation access consistently lags. The regional average rose only marginally, from 88.6 percent in 2013 to 89.3 percent in 2023, primarily due to improvements in Buenos Aires. Elsewhere, access rates have remained stagnant or even declined. This suggests that recent investments have failed to close the access gap, especially amid population growth. Regarding electricity, the coverage is nearly universal, with all five megacities reporting access rates above 99 percent.

■ Figure ES.3

Evolution of Access to Water, Sanitation, and Electricity Services, 2013–22
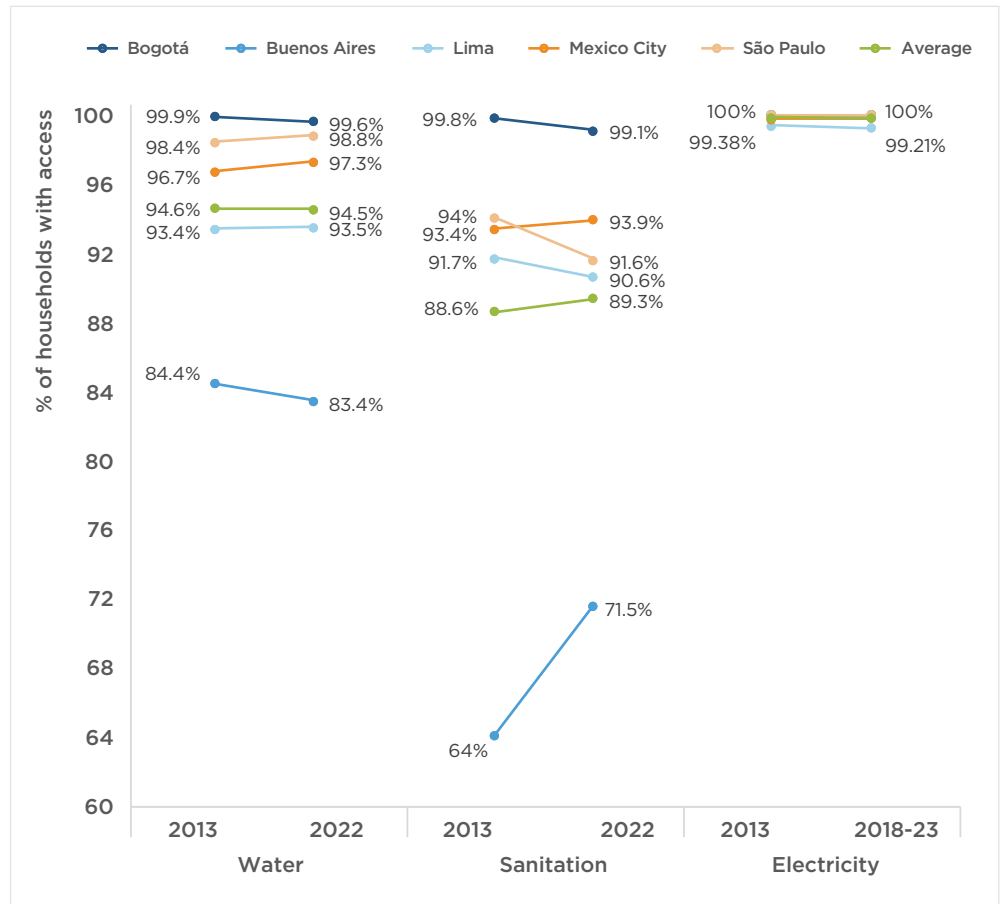
Note: This figure illustrates the evolution of access to water, sanitation, and electricity services, based on data from household surveys in several Latin American megacities. Access rates represent the percentage of households accessing each service, categorized by city and year. Water and sanitation figures correspond to access in 2013 and 2022, while access to the electricity service is computed for 2013 and 2018 in Buenos Aires, 2020 in Mexico City, 2021 in Bogotá and Lima, and 2023 in São Paulo. The lines in the figure serve merely as visual aids and should not be interpreted as indicating linear trends. Specific sources include Encuesta Nacional de Hogares (ENAHO, Peru), Encuesta Permanente de Hogares (EPH, Argentina), Encuesta Nacional de Calidad de Vida (ECV, Colombia), Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH, Mexico), and Pesquisa Nacional por Amostra de Domicílios (PNAD, Brazil).

The use of public transport has diminished amid pandemic repercussions and technological advances, shifting the balance toward private and active transport modes. A growing number of citizens are reducing their use of public transport services for daily commuting and instead opting for private alternatives (cars or motorcycles) and active modes (walking and cycling).

The percentage of individuals depending on private transport modes has risen. Citizens are also increasingly using taxis, a trend largely explained by

the introduction of ride-hailing services in the region. Many of these observed trends, depicted in **Figure ES.4**, can be attributed to the COVID-19 pandemic, during which governments encouraged remote work and sustainable transport alternatives to avoid overcrowding in public transit.

■ Figure ES.4
Evolution of Transport Means Usage, 2013 and 2023
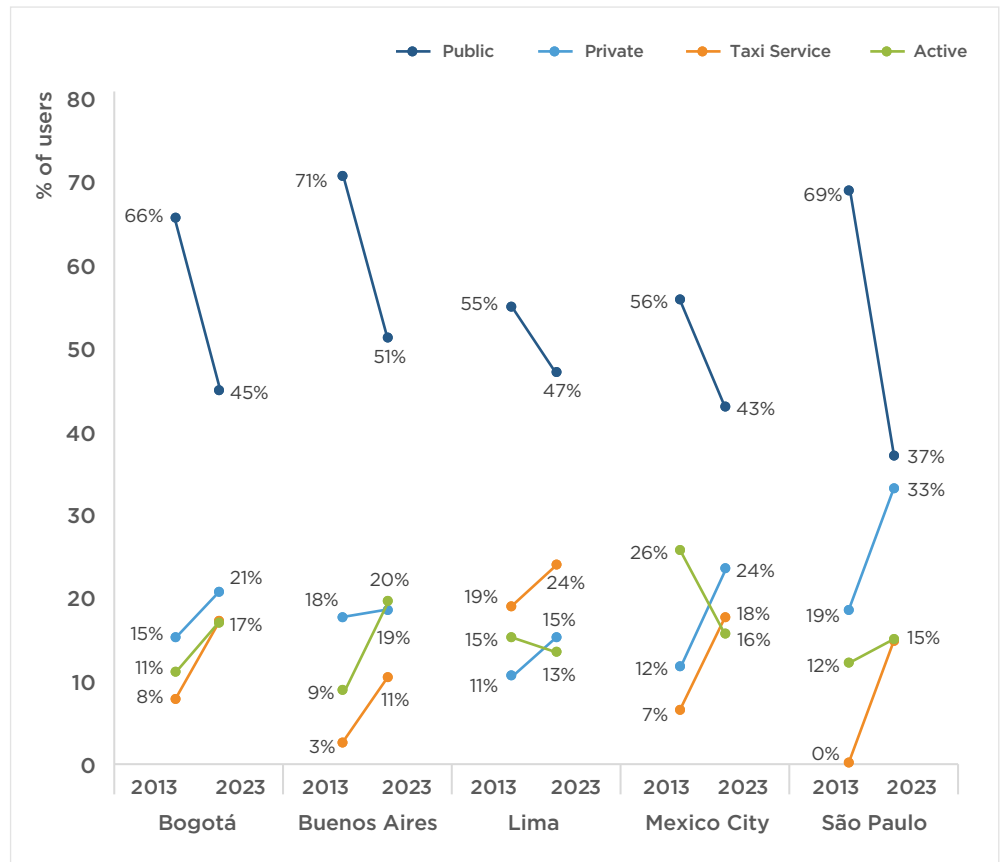
Note: This figure presents the distribution of transport modes used for commuting to work in the surveyed megacities, based on survey responses in 2013 and 2023. The lines in the figure serve merely as visual aids and should not be interpreted as indicating linear trends. The "private" category comprises cars and motorcycles. The "public" category represents buses, bus rapid transit (BRT) systems, metro, and trains. The "taxi service" category includes taxis for 2013, and taxis, mototaxis, and ride-hailing services for 2023.

Quality matters: citizens' perception of water quality is relatively stable, despite outliers. On the other hand, the perceived quality of electricity has improved but has declined for public transport. In the region's megacities, citizens are, on average, less satisfied with water services compared with other infrastructure services. Although public transport is used less, dissatisfaction levels have remained relatively constant over the past decade.

In the case of electricity, on average, there is a reduction in the percentage of citizens experiencing interruptions on a quarterly or greater basis (depicted in **Figure ES.5**).

Safety is also a common concern: 46 percent of respondents reported feeling unsafe when traveling from their homes to train stations, subway stations, or bus stops.

One issue requiring urgent attention is the quality of transport services: on average, 27 percent of users qualified the services as poor. City residents reported spending 15.7 days commuting to work every year; commuting by public transport takes 35 minutes longer than commuting by car. Indeed, people with work commutes of more than 90 minutes identified public transit as the third-highest urban priority. This highlights the impact of low-quality transport services, congestion, and traffic on city residents' quality of life. Safety is also a common concern: 46 percent of respondents reported feeling unsafe when traveling from their homes to train stations, subway stations, or bus stops.

■ **Figure ES.5**
Users' Perceptions of Poor Infrastructure Service Quality, by Service, 2013 and 2023
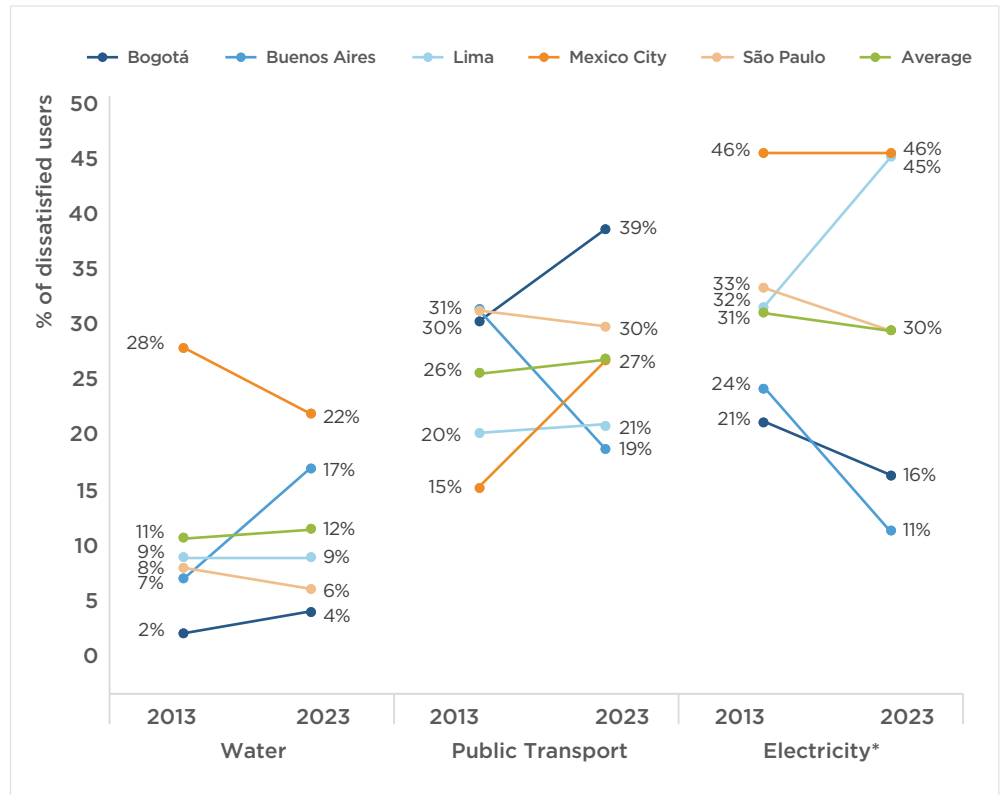
Note: This figure illustrates the proportion of citizens in regional megacities who identified the provision of water, public transport, and electricity services as poor in 2013 and 2023. The lines in the figure serve merely as visual aids and should not be interpreted as indicating linear trends. For water and public transport, the data capture users who rated these services as "poor" or "very poor." The perception of electricity service quality is inferred from users reporting quarterly, monthly, or weekly power outages.

Public transport was seen as the most affordable service, followed by water and electricity. However, most citizens thought these services were more expensive in 2023 than 10 years previous. Perceptions of the affordability of water and transport services vary considerably across cities (see **Figure ES.6**). In Lima, the perceived affordability of all services decreased over the 10 years, while in Mexico City, all services were considered more affordable. Over the last decade, fewer citizens in Buenos Aires, Lima, and São Paulo believed that water was affordable. Regarding public transportation, the majority of residents in Buenos Aires, Mexico City, and São Paulo perceived it as affordable. As of 2023, 25 percent of citizens believed that electricity is affordable, a percentage that had fallen in four of the five surveyed megacities over the past decade.

■ **Figure ES.6**

Evolution of the Perceived Affordability of Infrastructure Services, 2013 and 2023
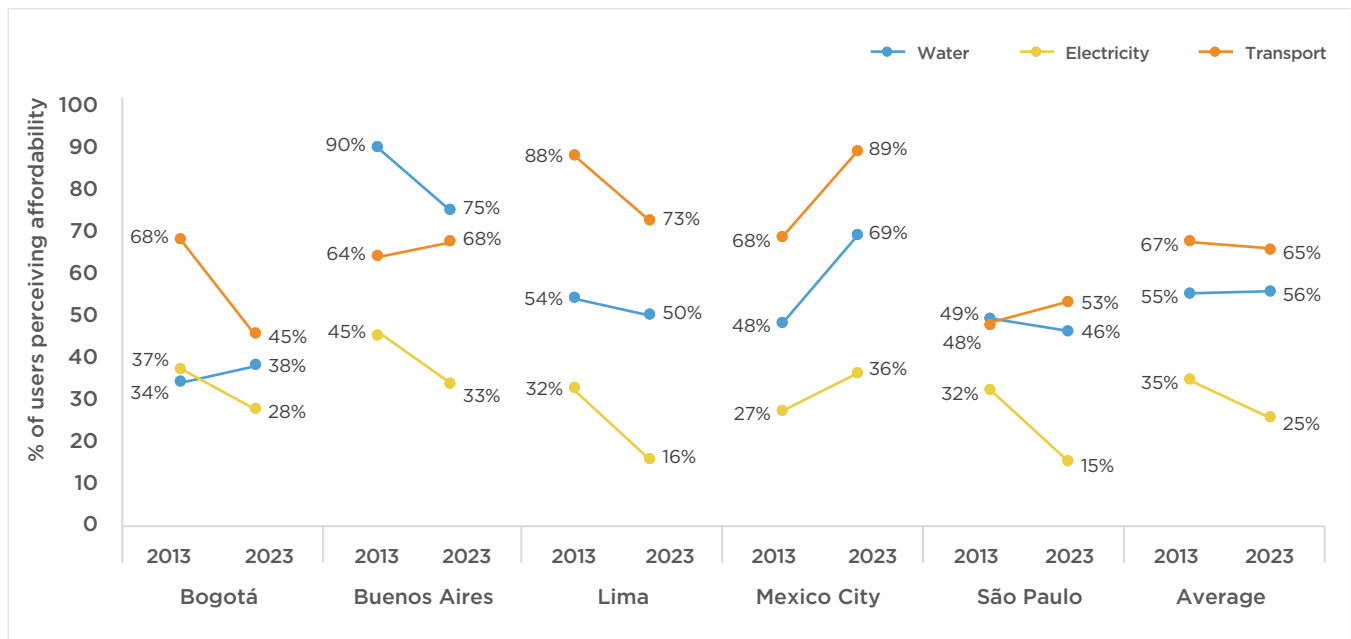
Note: The figure presents citizens' perceptions of the affordability of water, electricity, and public transport services, expressed as the share of users reporting these costs as non-expensive. The lines in the figure serve merely as visual aids and should not be interpreted as indicating linear trends. For water and electricity services, the data include those respondents who qualified service costs as very cheap, cheap, and neither expensive/nor cheap. For public transport services, the figure presents the share of users who rated public transport fares as good or very good. Responses to the 2013 and 2023 surveys are presented for all services.

Users of infrastructure services often benefit from subsidies to ensure affordable access; yet the residents of Latin American megacities do not always have accurate information about whether these services are subsidized. Although subsidies for various services are widespread in all the surveyed cities, public awareness of these subsidies is quite limited. Over half of the citizens believed their water and electricity services are not subsidized. For instance, as shown in **Figure ES.7**, only 19 percent of survey respondents in Bogotá believed their water service is subsidized, although official figures show that actually 75 percent of them are. Similarly, although all transport services are subsidized to some extent, only 23 percent of citizens were aware of this, on average. This disconnect calls for a reevaluation of subsidy communication strategies.

■ Figure ES.7

Awareness of Subsidies for Infrastructure Services, 2023
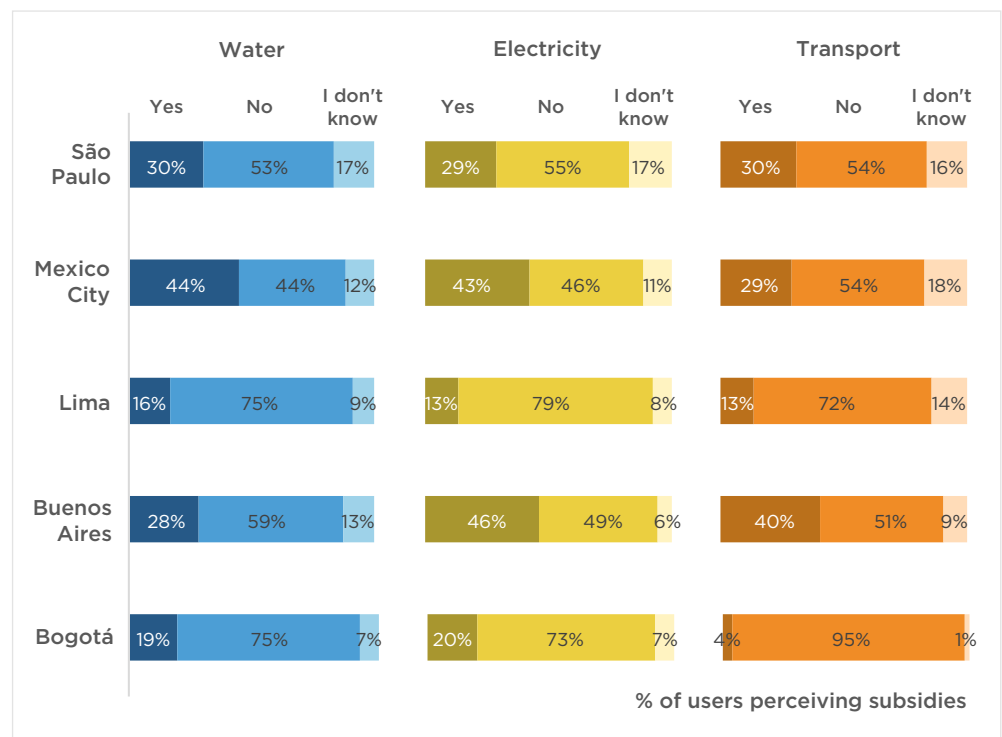
Note: This figure depicts the distribution of survey respondents' perceptions of water, electricity, and transport subsidies in 2023. Respondents were asked: "Do you receive a subsidy for the consumption of water/electricity? / Do you receive a subsidy on the fare of the metro/train/bus?"

1

Introduction

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1.1 Background
1.2. Methodology and sample

Introduction

1.1
Background

In 2013, the Inter-American Development Bank (IDB) conducted a public opinion survey in five major Latin American cities: Bogotá, Buenos Aires, Lima, Mexico City, and São Paulo (Serebrisky, 2014). The survey aimed to understand city residents' perceptions of quality of life, urban infrastructure needs, and public service standards in these megacities. A decade later, we aim to evaluate how these factors have changed. Our study addresses questions such as these: How has the coverage of infrastructure services improved? Do residents perceive any changes in quality? What impact has digital transformation had on the dynamics of public service use? Are there any lingering medium-term effects due to the COVID-19 pandemic?

To provide context for this analysis, it is worth recalling the results of the analysis conducted by Cavallo, Powell, and Serebrisky (2020), who examine the state of infrastructure services in Latin America and the Caribbean between 2008 and 2018. This study reveals that access to water and sanitation services remained essentially unchanged nationally over this period, although it dropped when stricter standards such as safely managed water and sanitation are considered. While the study found electricity access to be nearly universal in the region, it also identified ongoing issues with supply interruptions.

Megacities account for a significant percentage of national populations and serve as crucial hubs for the provision of universal, high-quality, and affordable public services.

Given their size, megacities account for a significant percentage of national populations and serve as crucial hubs for the provision of universal, high-quality, and affordable public services. They play a fundamental role in fostering innovation; supporting a specialized workforce; enabling dynamic economic activities; and providing educational, cultural, and recreational services (Serebrisky, 2014). However, it is worth noting that the progress observed in infrastructure services in the megacities surveyed should not be generalized as representative of the conditions in medium-sized urban areas, let alone rural regions.

Service quality remains a critical concern in many Latin American and Caribbean countries. In fact, several countries grapple with sporadic interruptions of essential services without prior notice (Cavallo, Powell, and Serebrisky, 2020).

For example, in some countries only a small percentage of the households that claimed to have access to water and sanitation enjoyed uninterrupted service. Regarding electricity services, countries in the region experienced an average of 16 nonprogrammed interruptions in 2018. These interruptions not only affect citizens' activities such as cleaning, studying, and leisure, they also hinder companies' commercial and industrial activities. When analyzing the results of the survey presented in this document, it should be noted that differences in the perception of service quality among megacities can be attributed to various reasons. Among these are heterogeneities among service providers, including ownership (public, private, mixed), and their jurisdictions (national, regional, municipal), among other factors.

Over the past decade, these cities have witnessed significant population growth. Each now boasts more than 10 million inhabitants. An examination of annual population growth rates (**Figure 1.1**) shows Bogotá leading, with a growth rate of 2.3 percent, followed by Lima (at 1.7 percent), São Paulo (1.0 percent), Mexico City (0.7 percent), and Buenos Aires (0.6 percent). These growth rates highlight the varying degrees of demographic expansion experienced by these cities, which inevitably exacerbates the challenges related to the provision of access to quality infrastructure services.

■ **Figure 1.1**

Population Growth in the Five Surveyed Megacities, 2013–23
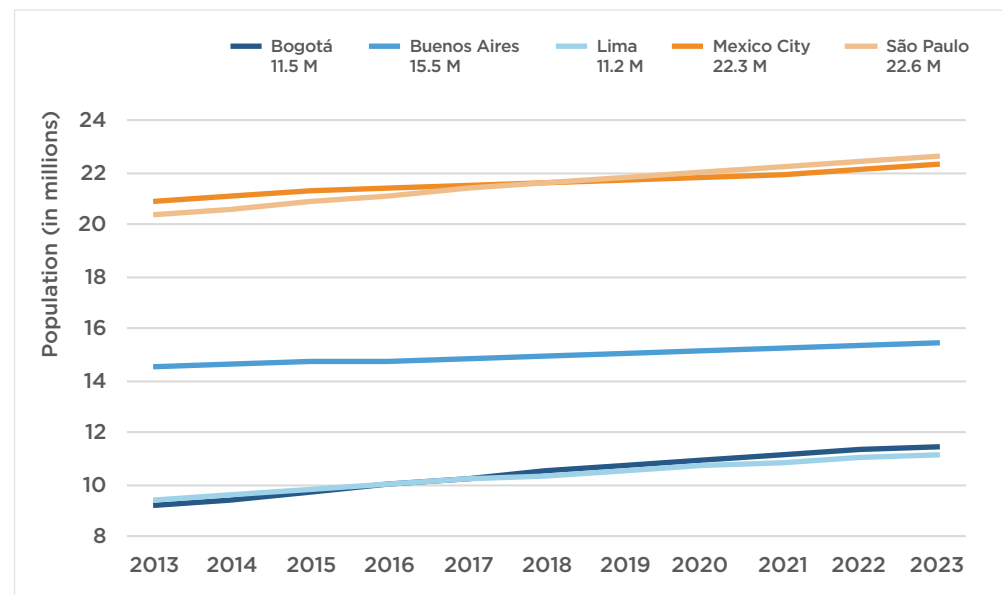
Note: This figure presents population estimates for 2013–23 using data from the World Population Review. M = millions.

Demographic shifts, such as changes in total population and household composition, make it more important to study how the perceptions of these megacities' residents have evolved over the past 10 years. A lot has happened during this period; we identify three specific phenomena that have significantly affected people's perceptions and use of infrastructure services:

i) Expansion of the internet and digital platforms. The past decade has witnessed a rapid acceleration of technological innovation, often referred to as the fourth Industrial Revolution (Basco et al., 2020). This transformation has had a profound impact on infrastructure services as well. According to Cavallo, Powell, and Serebrisky (2020), the percentage of the Latin American and Caribbean population covered by at least one 3G network increased significantly, from 40 percent in 2011 to 80 percent in 2016. Internet-enabled mobile phones are becoming increasingly prevalent in the region, though not yet universally so. This increase in connectivity has transformed transport services for both users and operators.

ii) The effects of COVID-19. The COVID-19 outbreak in March 2020 led countries to impose restrictions and lockdowns that temporarily reduced economic activity, affecting various sectors, including infrastructure services. In Latin America and the Caribbean, the demand for water and electricity services temporarily shifted toward residential consumption, while the transport sector has not yet fully recovered to its pre-pandemic levels (Yepez-Garcia et al., 2022). This is understandable since the pandemic accelerated trends like telework and remote education, modifying urban mobility needs.

iii) The importance of climate change. In recent years, residents of the surveyed megacities have become increasingly aware of the effects of climate change, which manifest through a range of extreme weather events, for example, heavy rainfall, landslides, droughts, and heatwaves. Such events pose challenges to the delivery of infrastructure services and often destroy the physical assets of service providers, causing disruptions and making operations costlier and more complex. Moreover, inhabitants have become increasingly environmentally conscious. This growing awareness is likely to encourage greener consumption patterns, including shifts toward more sustainable mobility alternatives.

1.2
Methodology and Sample

This study evaluates the state of infrastructure services in Latin American megacities by considering residents' perspectives. Understanding urban viewpoints is crucial for assessing how services are adapting to the evolving needs of people in densely populated and rapidly changing areas.

Over the past decade, megacities have undergone significant transformation due to digital expansion, the COVID-19 pandemic, and the escalating consequences of climate change. These factors have potentially altered the demand dynamics for infrastructure services. This study aims to compare citizens' perceptions of service standards between 2013 and 2023, with a primary objective of identifying changes over time in how well public services have been meeting citizens' needs. This will provide insights into shifts in public sentiment and urban development.

Online surveys were conducted in Bogotá, Buenos Aires, Lima, Mexico City, and São Paulo.[1] The surveys followed the structure and content of those conducted in 2013 by Serebrisky (2014) and incorporated new sections, including questions based on climate change and citizens' investment decisions. The surveys were accessible to citizens who met specific criteria based on gender, age, and income level. A total of 5,356 responses (see **Table 1.1** for more details) were collected across the five megacities between February 22 and May 15, 2023.

This study aims to compare citizens' perceptions of service standards between 2013 and 2023.

The surveys were adapted to the local language of each city; subsequently, panel providers were hired to distribute the surveys following the predetermined criteria. Each provider could share the surveys via emails, ads, app invitations, or with affiliated users via their websites. The providers had to comply with target quotas based on age, gender, and income level; this was to ensure a representative sample of the populations in the study area.[2] Respondents had to be aged 18 to 60 and report their income under one of

1 All 20 localities in the Bogotá Capital District were surveyed in 2023. For Buenos Aires, only neighborhoods from Ciudad Autónoma de Buenos Aires (CABA) were included in the 2023 survey, whereas the 2013 survey included all neighborhoods from CABA and Gran Buenos Aires (GBA). For Lima, the Callao region was included in both 2013 and 2023. For Mexico, only neighborhoods from the Distrito Federal were included in the current sample, whereas the 2013 survey had included the entire metropolitan area (the Distrito Federal and municipalities from the State of Mexico). For São Paulo, all *subprefeituras* in the São Paulo Municipality were covered in 2023.

2 Because all participants had access to a device (computer, tablet, or smartphone) and the internet to complete the survey, and economic compensations were delivered after completing the survey, a possible bias may have been introduced into the sample's representativeness. The established quotas help to control for the over- or underrepresentation of certain groups and ensure no selection bias is present.

the constructed categories based on household income distribution for each city.[3] Additional details on the survey collection stage and the questionnaire are available in Appendices A and B.

■ **Table 1.1**

Distribution of Targets and Final Sample by Megacity

	Bogotá		Buenos Aires		Lima		Mexico City		São Paulo	
	Target	Sample	Target	Sample	Target	Sample	Target	Sample	Target	Sample
AGE										
18–25	20%	250	25%	238	25%	305	20%	163	20%	212
26–35	30%	354	25%	288	25%	271	25%	336	30%	367
36–44	20%	211	20%	212	20%	202	20%	229	20%	213
45-60	30%	305	30%	317	30%	306	35%	282	30%	295
SEX										
Male	49%	535	48%	438	48%	517	46%	401	49%	500
Female	52%	585	52%	617	52%	567	54%	609	52%	587
INCOME LEVEL										
< Lower quartile	25%	294	25%	246	25%	281	25%	386	25%	259
Interquartile range	50%	562	50%	539	50%	555	50%	349	50%	551
> Upper quartile	25%	264	25%	270	25%	248	25%	275	25%	277
N		1,120		1,055		1,084		1,010		1,087

Note: This table displays the distribution of target quotas and the final sample for each surveyed megacity. For each city, target distributions based on age, sex, and income level were determined using national household surveys. Specific sources include Encuesta Permanente de Hogares Continua 2020 (EPHC, Argentina), Gran Encuesta Integrada de Hogares 2020 (GEIH, Colombia), Pesquisa Nacional por Amostra de Domicílios Contínua 2020 (PNADC, Brazil), Encuesta Nacional de Hogares 2020 (ENAHO, Peru), and Encuesta Nacional de Ingresos y Gastos de los Hogares 2020 (ENIGH, Mexico). For each city, data were filtered by the region code to which the city corresponded and further refined to include only respondents aged 18 to 60. The "Target" columns represent the desired percentage distribution for each category, while the "Sample" columns reflect the actual collected data. Additional details on the survey collection stage and the questionnaire are available in Appendices A and B.

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[3] Regarding data management, no personal data that could help determine the participants' identities were collected in the survey. The participants' answers were assigned to randomly generated identification numbers and processed for analysis.

2

Citizens' Priorities:
A Comparative Analysis
of Challenges
in Latin American Megacities

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Citizens' Priorities:
A Comparative Analysis of Challenges in Latin American Megacities

In this section, we present a comprehensive analysis of the quality-of-life issues faced by residents in the five megacities considered. We asked survey participants to rate various issues affecting their quality of life, on a scale from 0 to 10. The issues span five broad categories: (i) utilities, (ii) economic and personal security, (iii) environmental and health concerns, (iv) local authorities, and (v) public services and amenities.

As shown in **Figure 2.1**, the data obtained from the survey reveal significant variability across the above categories, indicating the diversity of residents' experiences and the challenges they face. While different concerns take precedence, depending on the city, consistent issues related to personal and economic security and local governance emerge.

■ **Figure 2.1**

Urban Challenges in Latin America: A Comparative Analysis of 2023 Perception Scores

Category	Problems	Bogotá	Buenos Aires	Lima	Mexico City	São Paulo	Average
UTILITIES	Drinking water	2.3	3.0	2.9	4.2	2.6	3.0
	Sanitation	2.5	2.9	2.6	3.5	3.0	2.9
	Solid waste management	2.8	2.7	3.4	3.3	2.5	2.9
	Gas and energy supply	2.0	3.4	2.6	2.8	2.5	2.6
ECONOMIC AND PERSONAL SECURITY	Insufficient income	6.0	6.5	5.5	5.7	5.5	5.8
	Housing quality	3.2	4.0	3.6	3.7	4.0	3.7
	Employment issues	5.1	5.2	5.0	5.0	5.1	5.1
	Insecurity	7.4	7.3	7.4	7.1	6.9	7.2
ENVIRONMENTAL AND HEALTH CONCERNS	Air quality	5.3	4.0	4.3	5.9	5.0	4.9
	Climate change related issues	5.3	5.1	5.0	5.8	4.8	5.2
	Noise pollution	4.1	4.1	4.8	4.7	4.4	4.4
	Heavy rainfall	4.1	3.1	3.6	4.1	4.7	3.9
	Drainage	2.4	2.5	2.6	3.4	3.0	2.8

Category	Problems	Bogotá	Buenos Aires	Lima	Mexico City	São Paulo	Average
LOCAL AUTHORITIES	Lack of participation in local authorities decisions	5.2	5.3	5.7	5.3	5.4	5.4
	Difficulties in dealing with local authorities	4.9	4.6	4.7	5.1	5.1	4.9
	Lack of local authorities transparency	6.5	6.4	6.4	6.2	6.2	6.3
PUBLIC SERVICES AND AMENITIES	Few public spaces	3.8	3.6	3.9	4.2	4.3	4.0
	Public transportation	5.6	4.7	5.3	5.4	4.8	5.2
	Telecommunications	3.7	4.4	4.1	3.3	3.7	3.8
	Educational services	3.4	4.1	4.2	3.9	4.5	4.0
	Health services	4.3	4.9	5.2	5.1	5.2	5.0
	Lack of inclusive infrastructure	4.5	4.7	5.2	4.9	5.5	4.9
	Lack of green spaces and recreational areas	4.3	4.1	5.1	5.0	5.5	4.8

Note: This figure shows the mean scores assigned by respondents to the urban challenges affecting their quality of life in 2023. Respondents were asked: "Considering the problems you currently face in terms of your quality of life, to what extent do the following issues affect you?" They were then prompted to rate each issue on a scale from 0 to 10, where 0 meant "Currently not a problem for me" and 10 meant "Currently a very severe problem for me." The issues listed include concerns related to climate change, noise pollution, air quality, extreme weather events, waste collection, energy and gas availability, income sufficiency, water supply, drainage, sewer services, public space availability, health services, district government participation, infrastructure inclusivity, employment, district administrative procedures, housing quality, telecommunication services, green spaces, security, district government transparency, educational services, and public transport. The issues have been grouped under five categories: (i) basic utilities, (ii) environmental and health concerns, (iii) public services and amenities, (iv) economic and personal security, and (v) local authorities. Additional details on these rankings are available in Appendix Table C.1.

An intriguing pattern that emerges from the categories is the comparatively lower priority given to utility-related challenges, for example, those related to water, sanitation, and electricity. One possible explanation, which will be explored in detail in subsequent sections, hinges on the relatively broad access to these services in urban settings, despite persistent quality issues. However, one must consider that other pressing concerns such as insecurity, unemployment rates, and inadequate income levels might exert more pronounced pressures on urban residents' daily well-being. This hierarchy of needs is why the importance of infrastructure services should not be overlooked or underestimated. City-specific data reveal notable trends. For example, in Mexico City, the mean score for issues related to potable water is

still significantly higher than the overall mean. This suggests that while broad patterns may hint at one narrative, city-specific data might offer nuanced perspectives that deserve attention.

In addition to citizen insecurity, the primary concern in all megacities, economic challenges—especially those related to inadequate levels of income and employment—are pronounced in the region's urban landscapes. This observation is congruent with the region's constant struggle to catalyze sustained economic growth and create quality employment opportunities. The economic setbacks experienced during the COVID-19 pandemic, coupled with subsequent inflationary pressures, have further compounded these challenges. Among the examined megacities, Buenos Aires emerges as especially affected by income inadequacy.[4]

In the category of environmental concerns, the metrics underscore the primacy of air quality and climate change considerations. Air quality is a particularly significant concern in Mexico City, which has a mean score of 5.9 for air quality issues, much higher than the overall mean of 4.9—reflecting the city's well-documented struggles with air pollution. By contrast, Buenos Aires has the lowest mean score for air quality issues. This suggests that air quality is less of a concern in Buenos Aires. Climate change is a significant concern across all urban centers. The mean scores related to climate change issues range from 4.8 in São Paulo to 5.8 in Mexico City.

In the category assessing citizens' relationship with their local authorities, the lack of transparency is a significant concern for citizens. It ranks second in the hierarchy of all the priorities they were asked about. The collective average score was 6.3 across the five surveyed cities, while the scores for individual cities ranged between 6.2 (for Mexico City and São Paulo) and 6.5 (Bogotá).

Concerns about public services and amenities, such as public transportation and the availability of public spaces, including green areas and inclusive infrastructure, occupy a significant space in the priorities of the five surveyed cities.[5] For public transport, the combined score is 5.2, with variations observed among the megacities. Bogotá has the highest mean score for transport-

Economic challenges, especially those related to inadequate income and employment levels, are pronounced in the region's urban landscapes.

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4 In August 2023, the annual inflation rate in Argentina spiked to 124 percent.

5 In the survey, "inclusive infrastructure" has been designed and implemented to cater to and accommodate the needs of all members of society, especially those who might have special needs. Respondents were asked about a "lack of inclusive infrastructure (for citizens with physical disabilities)," with a focus on whether infrastructure such as buildings, transport systems, and public spaces are designed in such a way that they can be accessed and used by people with physical disabilities. Nevertheless, the objectives of inclusive infrastructure are not limited to this and may also consider the elderly and other vulnerable populations.

related concerns, at 5.6. This finding is particularly striking given that the city's residents spend the most time commuting (18.3 days per year). By contrast, São Paulo has the lowest mean score for transport-related concerns, 4.8.

How have citizens' concerns evolved over the past decade? **Figure 2.2** illustrates that insecurity is the most pressing concern for residents of these megacities. In 2013, insecurity was the top concern in all five cities but São Paulo, where it ranked third. By 2023, insecurity had become the foremost issue, even in São Paulo.

■ **Figure 2.2**

Top Ten Concerns Reported by Citizens, 2013 and 2023

Bogotá	
2013	2023
Insecurity	Insecurity
Lack of transparency	Lack of transparency
Transportation	Low income
Noise	Transportation
Climate change related issues	Air quality
Lack of participation in government decisions	Climate change related issues
Health services	Lack of participation in government decisions
Bureaucracy	Employment issues
Heavy rainfall	Bureaucracy (dealing with paperwork)
Air Quality	Lack of inclusive infrastructure

Buenos Aires	
2013	2023
Insecurity	Insecurity
Low income	Low income
Transportation	Lack of transparency
Lack of transparency	Lack of participation in government decisions
Health services	Employment issues
Bureaucracy	Climate change related issues
Heavy rainfall	Health services
Noise	Lack of inclusive infrastructure
Lack of participation in government decisions	Transportation
Employment	Bureocracy (dealing with paperwork)

Lima	
2013	2023
Insecurity	Insecurity
Lack of transparency	Lack of transparency
Transportation	Lack of participation in government decisions
Lack of participation in government decisions	Low income
Health services	Transportation
Bureaucracy	Health services
Noise	Lack of inclusive infrastructure
Climate change related issues	Lack of green areas
Public Spaces	Employment issues
Air Quality	Climate change related issues

Mexico City	
2013	2023
Insecurity	Insecurity
Lack of transparency	Lack of transparency
Bureaucracy	Air quality
Lack of participation in government decisions	Climate change related issues
Climate change related issues	Low income
Heavy rainfall	Transportation
Low income	Lack of participation in government decisions
Air Quality	Health services
Health services	Bureaucracy (dealing with paperwork)
Drinking water	Employment issues

São Paulo	
2013	2023
Lack of transparency	Insecurity
Lack of participation in government decisions	Lack of transparency
Insecurity	Lack of inclusive infrastructure
Transportation	Lack of green areas
Bureaucracy	Low income
Health services	Lack of participation in government decisions
Public Spaces	Health services
Climate change related issues	Employment issues
Air Quality	Bureaucracy (dealing with paperwork)
Noise	Air quality

Categories

Utilities
Economic and personal security
Environmental and health concerns
Local authorities
Public services and amenities

Note: This figure summarizes the main problems or priorities reported by citizens in the 2013 and 2023 surveys. Priorities are arranged in descending order for each year and city. Respondents were asked: "Considering the problems you currently face in terms of your quality of life, to what extent do the following issues affect you?". They were prompted to rate each issue on a scale from 0 to 10, where 0 meant "Currently not a problem for me" and 10 meant "Currently a very severe problem for me." The issues listed include concerns related to climate change, noise pollution, air quality, extreme weather events, waste collection, energy and gas availability, income sufficiency, water supply, drainage, sewer services, public space availability, health services, district government participation, infrastructure inclusivity (infrastructure for citizens with physical disabilities), employment, district administrative procedures, housing quality, telecommunication services, green spaces, security, district government transparency, educational services, and public transportation. The colors in the figure represent different categories of priorities, as detailed in the legend. For a comprehensive breakdown of scores, please refer to Appendix **Table C.1** for 2023. The ranking for 2013 is available in IDB (2014).

Issues surrounding transparency and participation, as observed in 2013, continue to feature among the top ten concerns of surveyed megacities' residents. That they consistently featured among the top five concerns in 2023 underscores the urgent need for authorities and governing bodies to involve citizens more in decision-making processes and ensure that transparent information is consistently available for public scrutiny.

A noticeable shift is observed in the economic domain. Concerns surrounding income inadequacy and employment challenges have begun appearing among the top five concerns across all the surveyed megacities. Respondents' assessment of the current situation sharply contrasts with 2013, when these economies were booming. The 2023 data reflect the economic setbacks triggered by the COVID-19 pandemic and exacerbated by unparalleled inflationary pressures on countries in recent years.

Citizens are increasingly advocating for the creation of green spaces and more inclusive infrastructure for people with physical disabilities.

In 2023, transport ranked among the top ten concerns in four of the five megacities. The issues include, for example, dissatisfaction with traffic congestion and public transport services. Moreover, there are growing concerns about community livability. Citizens are increasingly advocating for the creation of green spaces and more inclusive infrastructure for people with physical disabilities. Megacities are also grappling with mounting environmental concerns. In 2023, climate-change-related issues have made their way among the top ten concerns of the citizens of four megacities. Air quality also made the list in three of these cities. This emergent trend underscores a need to implement transport-focused public policies that facilitate the energy transition—pivotal in mitigating greenhouse gas emissions—while also promoting breathable urban environments for the benefit of citizens.

3

Water and Sanitation:
A Decade of Persistent Gaps

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Water and Sanitation: A Decade of Persistent Gaps

3.1
Access to Service

In most Latin American megacities, the rate of access to water and sanitation services has remained relatively stable over the past decade (see **Figure 3.1**). For piped water,[6] all cities, except Buenos Aires, boast access rates exceeding 90 percent. An access gap has, however, persisted, despite slight variations. This highlights the need for additional efforts to reach the unconnected population. Access to network-connected sanitation services[7] is lower than for water and has also remained stable. These statistics suggest that while water operators have made efforts to expand water and sewerage networks, their efforts have fallen short of closing the access gap, especially given overall population growth.

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[6] The following criteria determine whether a household is considered to have piped water: in Lima and Callao (Lima), the criteria are that households have access to water from a public network either in or outside the dwelling, or access to public standpipes; in Bogotá D.C. (Bogotá), the criterion is access to an aqueduct; in the Metropolitan Area of the Valley of Mexico (Mexico City), it is the availability of piped water either in or outside the dwelling and on the premises; in CABA and Partidos del Gran Buenos Aires (Buenos Aires), it is access to water from a public network (running water); and in the Metropolitan Region of São Paulo, it is a connection to the general water distribution network.

[7] The following criteria determine whether a household is considered to have a sanitation network: in Lima, the criterion is access to network sanitation either inside or outside a dwelling; in Bogotá, a connection to sewerage; in the Metropolitan Area of the Valley of Mexico (Mexico City), a connection to network sanitation; in CABA and Partidos del GBA (Buenos Aires), toilets connected to a public network or *cloacas*; and in the Metropolitan Region of São Paulo, sanitation facilities connected to a sewage collection network.

**Access to Piped Water
and Network Sanitation,
2013–22**
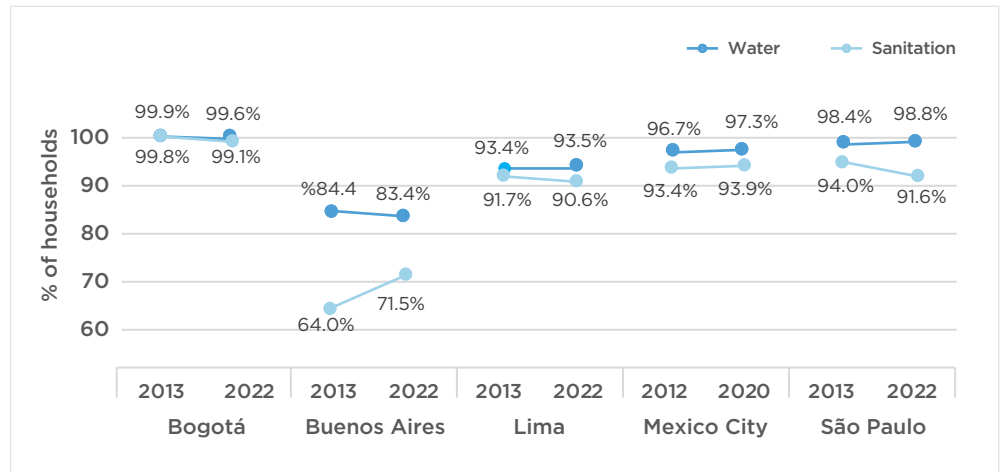
■ **Figure 3.1**

Note: This figure illustrates the changes in households' access to piped water and network sanitation services between 2013 and 2022 in the surveyed megacities. Data points for 2013 and 2022 are presented for all cities except Mexico City (where data for 2012 and 2020 were available). The lines in the figure serve merely as visual aids and should not be interpreted as indicating linear trends. Specific data sources include Encuesta Nacional de Hogares (ENAHO, Peru), Encuesta Permanente de Hogares (EPH, Argentina), Encuesta Nacional de Calidad de Vida (ECV, Colombia), Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH, Mexico), and Pesquisa Nacional por Amostra de Domicílios (PNAD, Brazil).

3.2
Quality of Service

After a decade, Mexico City still has the highest percentage of citizens who believe their drinking water services are of poor or very poor quality (22 percent in 2023). Buenos Aires also merits attention: the percentage of dissatisfied citizens increased from 7 percent to 17 percent over 2013–23 (see **Figure 3.2**).

Interestingly, the dissatisfaction with water services increases as income decreases (see **Figure 3.3**). This may be because low-income households often reside in relatively less developed areas, where water infrastructure is either underdeveloped or poorly maintained, resulting in subpar water services.

■ Figure 3.2

Respondents'
Dissatisfaction with Water
Services, 2013 and 2023
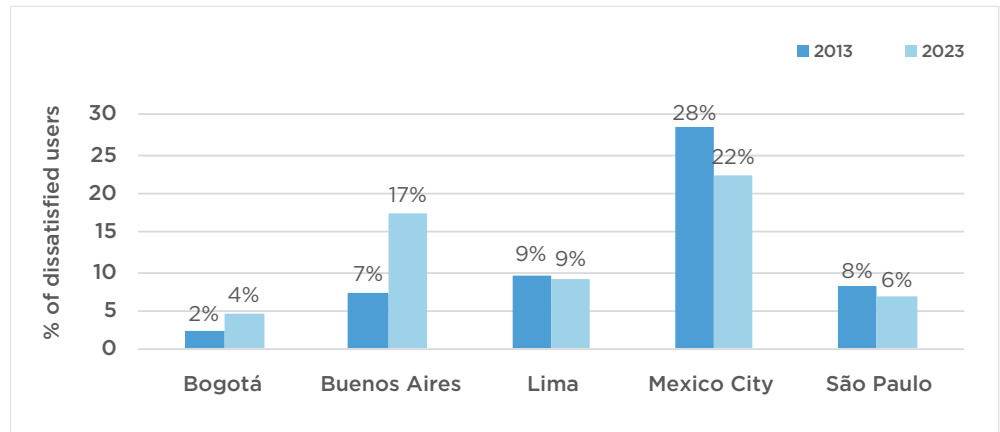
Note: This figure presents the percentage of respondents in Latin American megacities who rated their households' drinking water service as "very poor" or "poor" throughout the year. Respondents had an option to evaluate service quality using the following categories: "very poor," "poor," "neither good nor bad", "good," "very good," and "I don't know." The graph highlights only negative perceptions, while other ratings are not visually represented.

A detailed analysis of citizens' perceptions of various water quality attributes offers valuable insights (see **Figure 3.4**). On average, water pressure is the most common concern regionwide; 19 percent of respondents expressed their dissatisfaction with this attribute. This is followed by concerns about continuity of service (10 percent) and water color (9 percent).

■ Figure 3.3

Dissatisfaction with
Water Services,
by Income Level, 2023
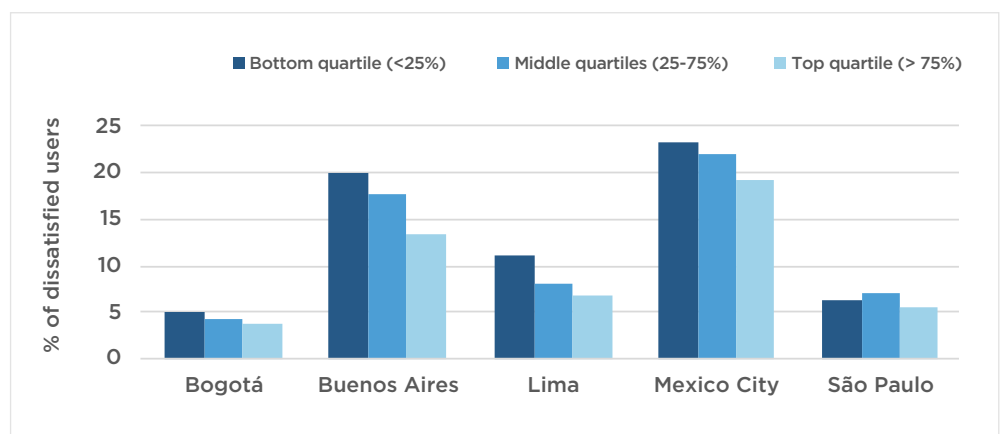
Note: This figure presents data on negative perceptions of drinking water quality in Latin American megacities in 2023, segmented by income level. Respondents were asked: "How would you rate the drinking water service your household receives throughout the year?" The available responses were "very poor," "poor," "neither good nor bad," "good," "very good," and "I don't know." The graph specifically highlights responses of "very poor" or "poor."

Comparing perceptions of water quality across different cities reinforces our earlier findings. Disapproval with all three water quality attributes is higher in Mexico City than the other four megacities. A significant share of its residents (31 percent) considers their water pressure to be of poor or very poor quality. Buenos Aires takes second place, with 27 percent of its residents expressing dissatisfaction with the pressure attribute of drinking water services.

■ Figure 3.4

Dissatisfaction with Water Service Quality, by Attribute, 2023
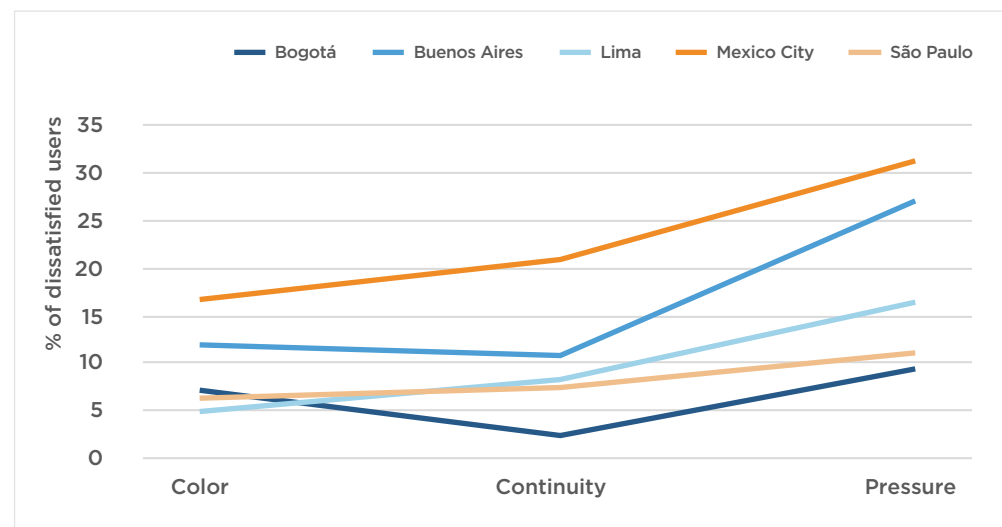
Note: This figure delineates respondents' perceptions of water service quality segmented by three distinct attributes: color, continuity, and pressure. The survey participants could select multiple ratings including "very good," "good," "regular," and "N/A." The visualization aims to emphasize areas of concern in water service quality by focusing on only the negative ratings of "bad" or "very bad."

As for sanitation services, data on sewerage system overflows provide valuable insights into the state of these services across cities (see **Figure 3.5**). The recorded percentages of sewerage system overflows are as follows: 9 percent in Lima, 8 percent in Bogotá, 10 percent in Buenos Aires, 11 percent in São Paulo, and 12 percent in Mexico City. While not a pressing issue, these numbers are worth noting since they pinpoint areas in need of improvement. Addressing these overflows is essential for making sewerage services more reliable and effective in these megacities, improving overall well-being and sanitation.

■ **Figure 3.5**

Incidence of Sewerage
System Overflows, 2023
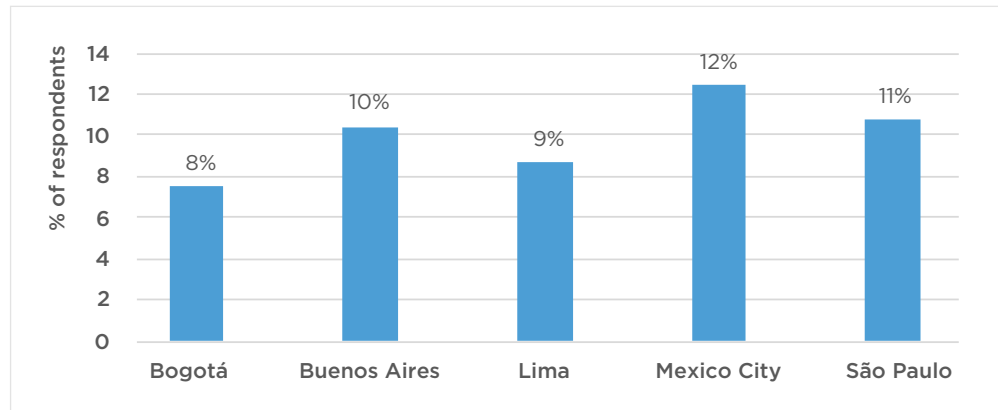
Note: This figure depicts the percentage of respondents who reported having experienced overflows from the wastewater network system or seen wastewater flowing in the streets over the past few months. The data were derived from a questionnaire asking about issues with the household wastewater network. Respondents could select from three options: "Yes," "No," and "I don't know."

Box 3.1.
Waste management: The gap between low- and high-income households

Perceptions of neighborhood cleanliness varied across the surveyed cities and often diverged based on income level (see **Figure 3.6**). For instance, in Bogotá, 15 percent of the residents in the bottom income quartile perceived their neighborhoods as unclean, compared with 8 percent in the top income quartile. Similarly, in Mexico City, 18 percent of the residents in the bottom income quartile perceived their neighborhoods as unclean, compared with 11 percent in the top income quartile. This trend is also observed for Buenos Aires. The largest disparity is observed in São Paulo, where 21 percent of residents in the bottom income quartile perceived their neighborhoods as unclean, compared with only 8 percent in the top income quartile. These disparities suggest that wealthier neighborhoods are likely to allocate more financial resources, whether through taxes or other means, to street cleaning and maintenance.

■ Figure 3.6

Perceptions of Neighborhood Uncleanliness, by Income Level, 2023

■ Bottom quartile (<25%) ■ Middle quartiles (25-75%) ■ Top quartile (> 75%) – — - Average
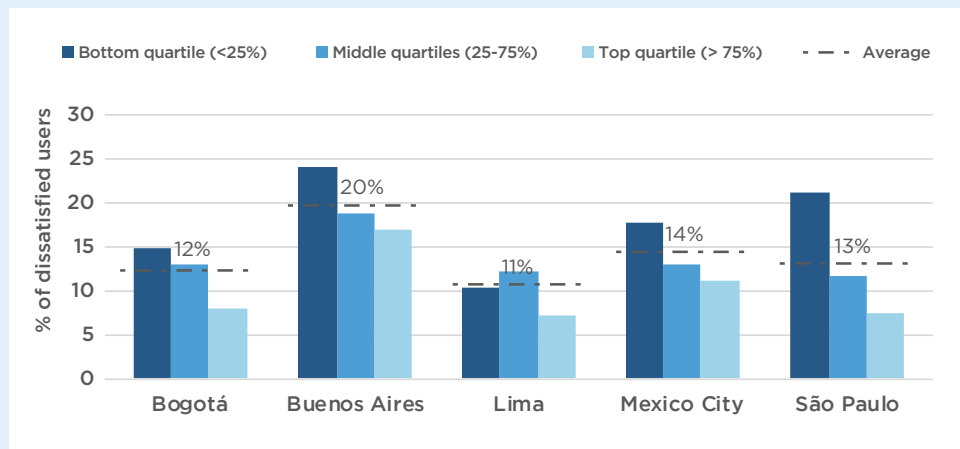
Note: This figure presents perceptions of neighborhood cleanliness across the Latin American megacities. Specifically, it displays the proportion of respondents who categorized their neighborhood as "dirty" or "very dirty," subdivided by income quartile. Survey respondents could respond with answers ranging from "very dirty," "dirty," "neither clean nor dirty," to "clean," "very clean," to "I don't know."

When residents who expressed dissatisfaction with the cleanliness of their neighborhoods were asked about the main contributing factors, their responses varied across cities (see **Figure 3.7**). In Lima, Mexico City, and São Paulo, a majority of citizens (55 percent, 58 percent, and 54 percent, respectively) believed that their neighbors' behavior was the main reason. In Buenos Aires, however, respondents predominantly held the municipal government responsible (43 percent).

Interestingly, the situation is more nuanced in Bogotá. While 45 percent of respondents held their neighbors responsible for neighborhood uncleanliness, a notable 37 percent pointed to recyclers or "cartoneros" as the main culprits. It is interesting to note that in Bogotá, 13 percent of the respondents held the municipal government primarily responsible.

■ **Figure 3.7**

Perceptions of Who Is Responsible for Neighborhood Uncleanliness, 2023

Legend: ■ Municipal government ■ Neighbors' behavior ■ Informal recyclers ■ Others / I don't know

Bogotá: 13%, 45%, 37%, 5%
Buenos Aires: 43%, 39%, 14%, 4%
Lima: 35%, 55%, 8%, 3%
Mexico City: 31%, 58%, 6%, 6%
São Paulo: 36%, 54%, 6%, 4%
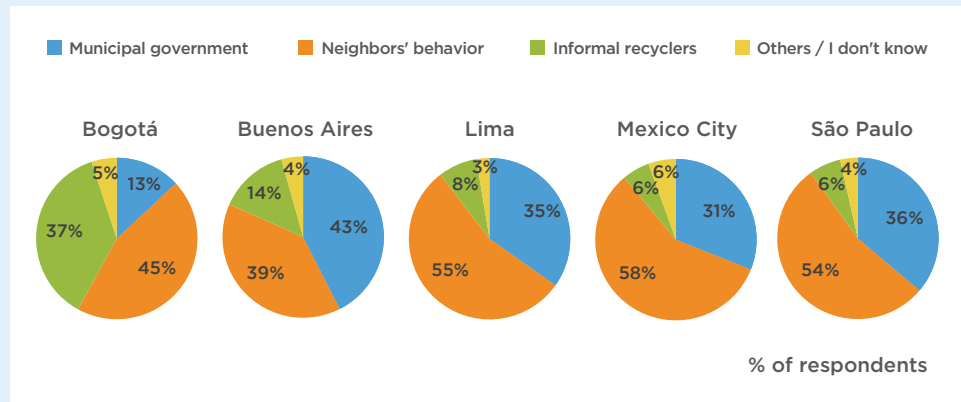
% of respondents

Note: This pie chart showcases the perceived responsibility for unclean streets based on survey responses in Latin American megacities. Respondents were asked: "Who is mainly responsible for the neighborhood being in these conditions?" Options included "Neighbors' behavior," "Recyclers," "District government," "Other," and "I don't know." Each segment of the chart represents the percentage of respondents who selected each option as the primary entity responsible for the uncleanliness of the streets.

3.3
Affordability of Service

When asked about their water service bills (see **Figure 3.8**), residents in Buenos Aires stand apart; a high percentage consider their bills to be not expensive (75 percent of respondents in 2023). Although this represents a decrease compared with 2013, the trend aligns with the evolution of water service prices in recent years in Argentina, where successive tariff increases have lost their real value due to the country's persistent inflation (see Brichetti et al., 2022). In cities such as Lima, Bogotá, and São Paulo, the percentage of citizens who believe their water service is not expensive remained relatively stable across the 10 years. However, in Mexico City, this percentage rose from 48 percent in 2013 to 69 percent in 2023.

■ Figure 3.8

Perceptions of Water Service Affordability, 2013 and 2023
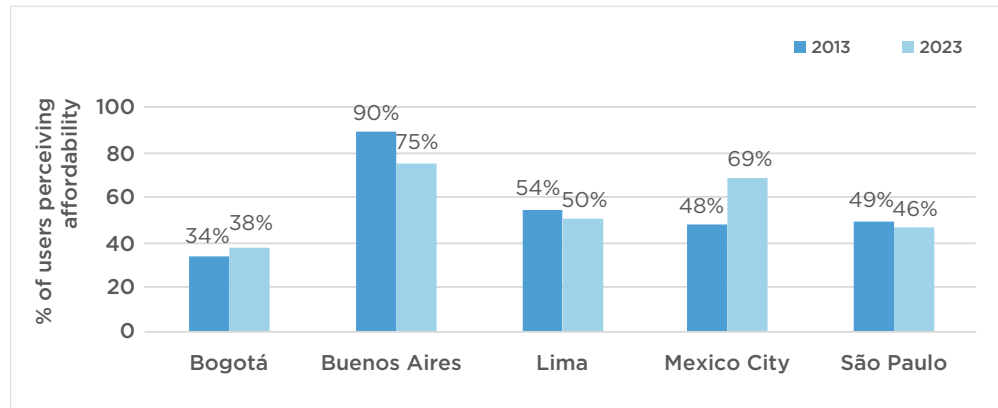
Note: This figure depicts perceptions of water service affordability across Latin American megacities in 2013 and 2023. The figure presents the combined percentage of the respondents who selected "Very cheap," "Cheap," "Neither expensive nor cheap," and "I don't know," reflecting those who did not perceive the water service as overtly costly.

The survey also inquired whether respondents believed the water service they received was subsidized. According to the survey results, Mexico City has the highest percentage of people reporting they believed this service was subsidized (44 percent), as shown in **Figure 3.9**. On the other hand, Lima has the lowest percentage (16 percent). But how accurate are these perceptions?

According to a recent IDB study (Gómez-Lobo et al., 2021), although Lima's water subsidy is targeted at low-income households, which represent 30 percent of city customers, official figures indicate that 97 percent of residential customers receive some form of a subsidy despite an on-going gradual subsidy withdrawal. A similar situation exists in Bogotá, where official figures from August 2022 indicate that 75 percent of residential customers fall within the first three tariff strata and are therefore subsidized to some extent. Surprisingly, only 19 percent of the respondents in Bogotá believed their water service was subsidized. These examples highlight a lack of consumers' awareness about the benefits they are receiving and emphasize the need for authorities to improve communication efforts.

■ Figure 3.9

Awareness of Water Consumption Subsidies, 2023
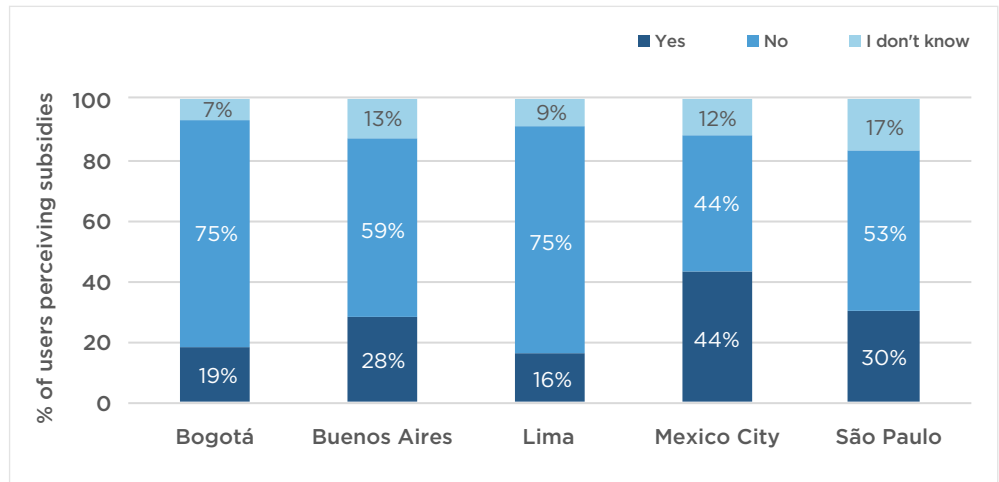
Note: This figure showcases perceptions of water consumption subsidies among Latin American megacities' residents. Respondents were asked: "Is your water consumption subsidized?" They could respond with "Yes," "No," and "I don't know."

3.4
Efficient Consumption

In 2013, 40 percent of respondents across the surveyed megacities believed they should reduce their water consumption. Specific numbers for each city show that 34 percent of the population in Mexico City, 38 percent in São Paulo, 37 percent in Buenos Aires, 65 percent in Bogotá, and 23 percent in Lima held this view (see **Figure 3.10**).

■ Figure 3.10

Perceived Need to Reduce Water Consumption, 2013
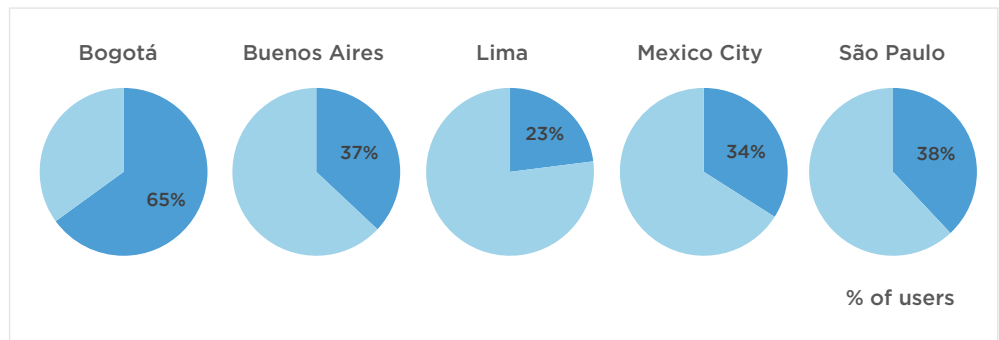
Note: Percentages represent the proportion of survey respondents who felt a need to reduce water consumption in 2013.

In 2023, 68 percent of the five megacities' citizens reported actively conserving water during daily hygiene activities like showering, hand washing, and brushing teeth. This finding likely reflects a growing awareness among urban populations about the need to conserve water and prioritize sustainability measures. The changes in consumer behavior can be attributed partly to water stress conditions experienced in certain cities, for example, prolonged droughts or water scarcity (São Paulo, Mexico City). The survey reveals varying levels at which water-saving habits are practiced across the cities: 67 percent in Lima, 70 percent in Bogotá, 74 percent in Mexico City, 53 percent in Buenos Aires, and 75 percent in São Paulo (see **Figure 3.11**).

■ **Figure 3.11:**

Efforts to Reduce Water Consumed for Daily Hygiene Practices, 2023

Bogotá · Buenos Aires · Lima · Mexico City · São Paulo

70% · 53% · 67% · 74% · 75%

% of users
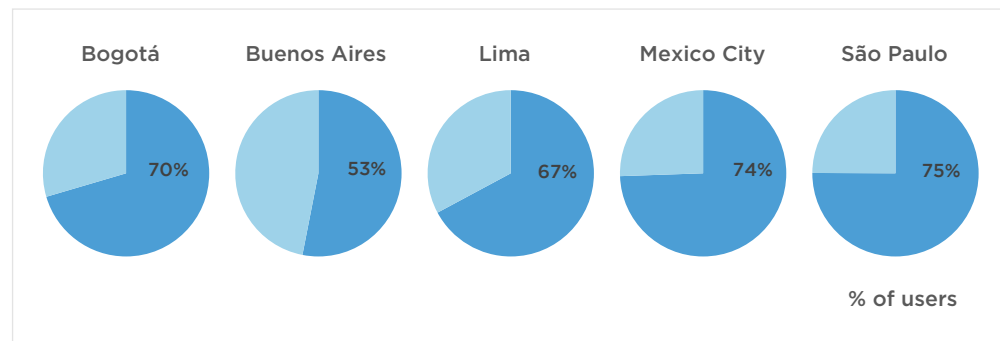
Note: Percentages represent survey respondents who had recently reduced their water consumption during daily hygiene activities such as showering, hand washing, and brushing teeth, as of 2023. Respondents were asked: "What activities or mechanisms do you use to reduce water consumption in your home?" They could respond "Reduce consumption while showering, washing hands, and/or brushing teeth," among other options.

4

Electricity:
A Complex Landscape
in Urban Settings

Electricity: A Complex Landscape in Urban Settings

4.1
Access to Service

An understanding of the past decade's electrification trends is key to setting effective infrastructure policies. Universal electricity access is indispensable for socioeconomic progress, and regional infrastructure leaves room for improvement. Our study reveals significant variations in the electrification profiles of the urban centers it considers.

Lima, Bogotá, Mexico City, Buenos Aires, and São Paulo have consistently reported electrification rates exceeding 99 percent since 2013, with Buenos Aires and São Paulo achieving complete electrification (IDB, 2021). Yet this is not the full picture. Despite the consistently high electrification rates, the absolute number of people without access to electricity is also growing, amid general population growth.

For instance, while the decrease in Lima's electrification rate from 99.38 percent in 2013 to 99.21 percent in 2021 seems minimal, it translates into an *increase* in the number of households without electricity when factoring in population growth.[8]

Similarly, despite a slight increase in Mexico City's electrification rate to 99.81 percent in 2020, the number of residents without electricity might still be growing. Hence, while these cities have made substantial progress, the challenge of providing universal electricity access persists due to their rapidly expanding populations.

Figure 4.1 provides valuable insights into the diversity of energy sources used by households in major Latin American cities and serves as a starting point for interpreting the 2023 survey results.

Despite the consistently high electrification rates, the absolute number of people without access to electricity is also growing, amid general population growth.

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[8] For example, in 2021 Lima's population was around 11 million. This means that close to 90,000 inhabitants might lack access. These estimates are based on population estimates and electrification rates from IDB (2021).

■ **Figure 4.1**

Types of Energy Sources Used by Households, 2023
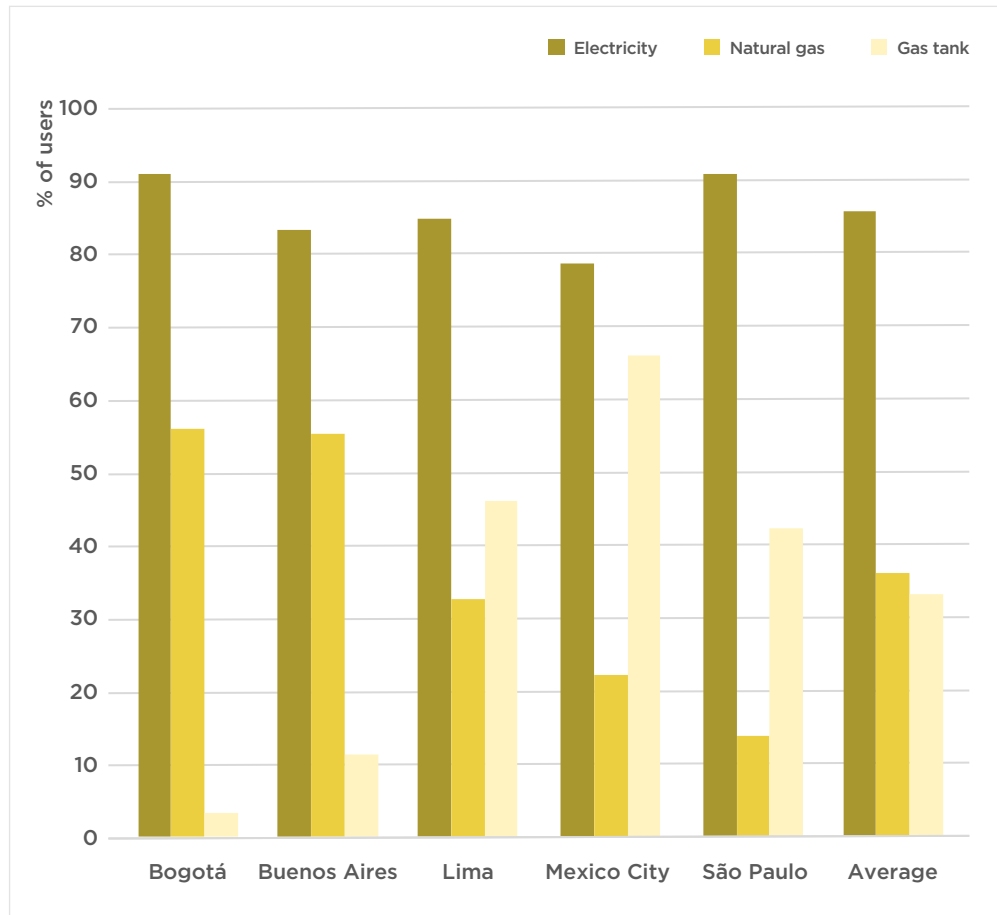
Note: This figure illustrates the distribution of energy sources utilized by individuals in surveyed megacities in 2023. The data from 2013 and 2023 are not directly comparable due to alterations in the survey question's phrasing. In 2013, the emphasis was on identifying the primary energy source, whereas in 2023, individuals could indicate multiple energy sources used in their homes, leading to the possibility of cumulative percentages exceeding 100 percent. The specific options available in 2023 included: "Connection to natural gas through underground pipelines," "Electrical connection," "Gas tank," "Other," "No connection to any energy source," and "I don't know."

In 2013, we asked respondents to identify their primary energy source, while in 2023, we inquired about all types used. The 2023 data indicate significant reliance on electricity across all surveyed cities. Lima (84.5 percent), Bogotá (90.8 percent), Mexico City (78.42 percent), Buenos Aires (83.13 percent), and São Paulo (90.8 percent) all demonstrate a high rate of electricity use, at an average of 85.68 percent. Natural gas consumption rates vary more. The share of natural gas use is over half in Bogotá (55.8 percent) and Buenos Aires (55.17 percent), yet far less in Lima (32.47 percent) and Mexico City (22.08 percent). São Paulo is an outlier, at 13.71 percent, and the multicity average of natural gas use is 36.05 percent. Gas tanks, meanwhile, are commonly used in

Mexico City at 65.84 percent, followed by Lima (45.85 percent) and São Paulo (42.13 percent). Their use is considerably lower in Buenos Aires (11.18 percent) and Bogotá (3.21 percent), resulting in an overall average of 33.12 percent.[9]

These differences in energy use could be attributed to multiple factors (Jimenez and Yepez-Garcia, 2020). First, the heterogeneity in households' access to different energy alternatives might play a role; some alternatives might not be available to the entire population. For example, natural gas is priced differently than electricity; it may not be affordable for all households. Further, geographic or infrastructural constraints may hinder some households from accessing natural gas. Finally, households' preferences may influence the choice of an energy source. For example, some households may prefer to use electricity for cooking because they believe it is safer or more convenient.

Another factor behind the differential energy use among households could be infrastructure quality. For example, an unreliable electricity grid may make it more likely for households to use gas tanks as a backup energy source. Further, inadequate maintenance of natural gas pipelines may make them more leak prone, raising safety concerns. Lastly, the climate conditions in a city could also affect energy sources. For example, cities with a colder climate may be more likely to use natural gas for heating, whereas cities with a warmer climate may opt for electricity.

4.2
Quality of Service

When examining the quality of the electricity service, the frequency of power outages and of voltage fluctuations emerge as critical parameters. Blackouts are less frequent and of shorter duration in Latin America and the Caribbean than in Sub-Saharan Africa, although they are as frequent or as prolonged as in Asia or Eastern Europe. The average annual duration of power interruptions in Latin America and the Caribbean is 17 hours per interruption, and 13 interruptions occur every year (Cavallo, Powell, and Serebrisky, 2020).[10] Although recent years have seen a significant improvement in the

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9 In our analysis, direct comparisons with national figures prove challenging primarily because standard metrics often focus on access rather than actual usage. While some data present outcomes as a percentage of final consumption, these do not align with the specific questions asked in our survey.

10 The statistics outlined above pertain to companies rather than households. As for the megacities in our study, the longest duration per power outage is the longest in Brazil and the shortest in Mexico. On the other hand, the number of power outages per year is the highest in Argentina and the least in Mexico.

quality of electricity supply, there remains scope for progress (Yepez-Garcia et al., 2022).

Among the surveyed megacities, Lima shows substantial improvement in service quality over the decade, with a marked reduction in weekly power outages from 1.79 percent in 2013 to 0.65 percent in 2023 (**Figure 4.2**). Buenos Aires saw an increase in weekly power outages from 8.24 percent to 11.92 percent over 2013. While Mexico City has made considerable progress, weekly power outage frequency here remained the highest in 2013, 7.09 percent. This was, although, a reduction from an alarming 12.89 percent in 2013.

■ **Figure 4.2**

Frequency of Power Outages and Voltage Fluctuations, 2013 and 2023
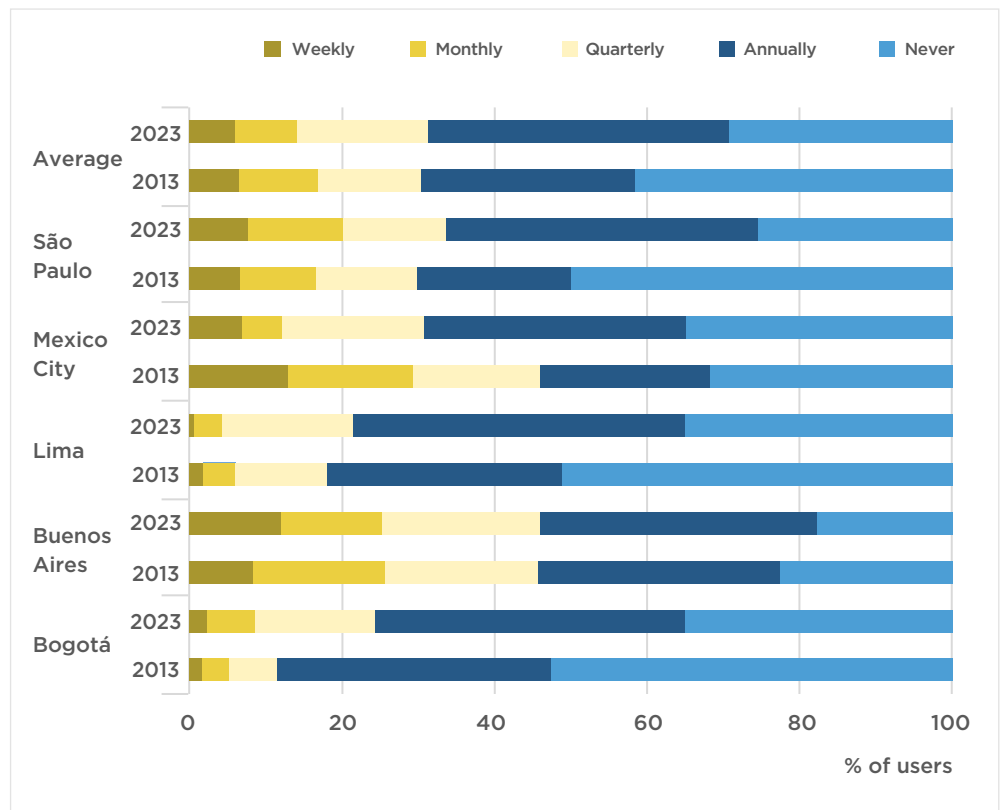
Note: This figure illustrates the frequency of power outages or voltage fluctuations in the surveyed megacities in 2013 and 2023. Respondents were asked: "In your home, how often do you experience power outages or voltage fluctuations (low or high)?" Available responses were "Every week," "Every month," "Every two or three months," "Once a year," "Once a year, but for an extended period (a consecutive week or more)," "Almost never or never," "No electrical connection," and "I don't know." The data for 2013 are based on unweighted pooled averages, whereas the data for 2023 remain unweighted. For instances where country-specific statistics were available, the statistics were weighted. This figure does not include "no response" and missing observations.

Energy choices in households diverge due to multiple factors, including accessibility, preferences, infrastructure quality, and climatic variations.

The data for 2023 reveal disparities in power stability among the surveyed cities: Lima experiences the fewest weekly disruptions, constituting 0.65 percent, whereas Buenos Aires lags, at 11.92 percent. The cities also exhibit significant variations in annual occurrences of power outages and voltage fluctuations. Buenos Aires and Mexico City reported a significant increase of both between 2013 and 2023. Another interesting observation is the frequency of long-duration power outages, which remains an issue for some users in the region.[11]

Moreover, the proportion of residents who rarely experience outages decreased from an average of 41.63 percent in 2013 to 29.39 percent in 2023. In this regard, Lima and Bogotá boast the highest reliability rates in 2023, 35.23 percent and 35.17 percent, respectively. The number of individuals receiving consistent electricity supply has, however, decreased significantly.

Our survey data also indicate a notable increase in the frequency of gas service interruptions across the five cities over the past decade (**Figure 4.3**). They show significant service interruption rates in Bogotá, Buenos Aires, and Mexico City in 2023. For Bogotá, the weekly, monthly, and annual interruption rates are 0.32 percent, 1.13 percent, and 19.77 percent, respectively. Quarterly or more frequent unexpected service cessation was the highest in São Paulo, at 9.61 percent. Across all cities, however, most respondents in 2023 reported experiencing no interruptions, ranging from 75.39 percent in Bogotá to 85.48 percent in Buenos Aires.

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[11] On average, 1.96 percent of the surveyed megacities. This share of individuals is added to the category "Annually" in **Figure 4.2**.

Figure 4.3

Frequency of Gas Service
Interruptions, 2023
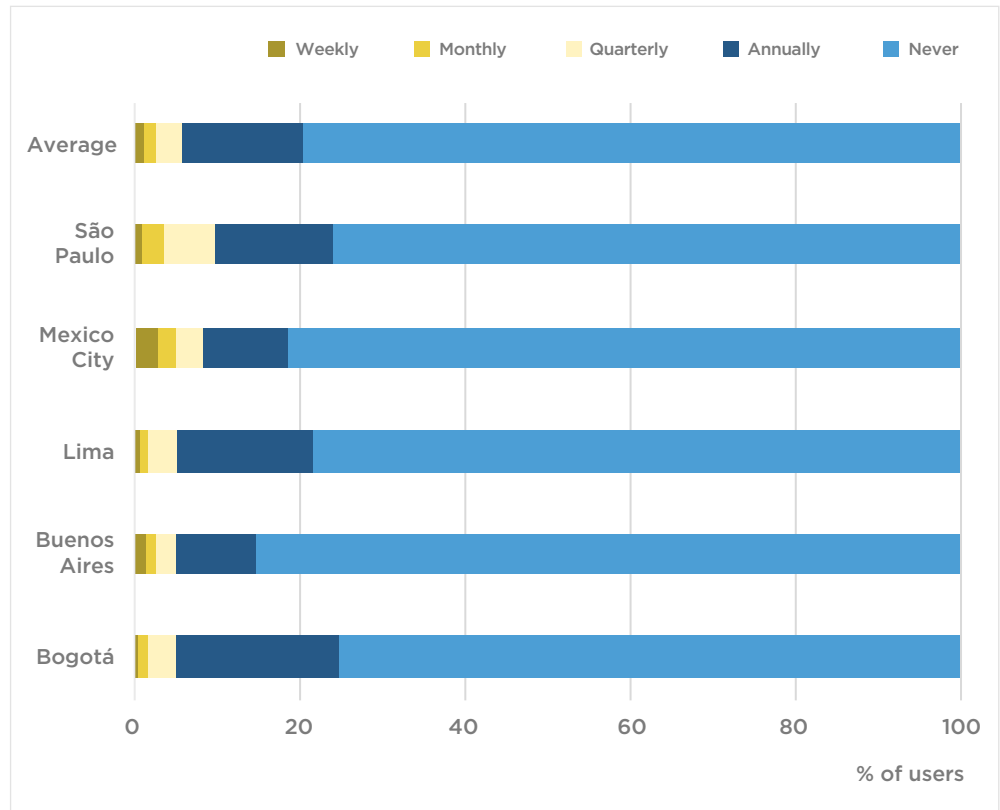
Note: This figure illustrates the frequency of piped gas service interruptions in the surveyed megacities in 2023. Interruption frequencies were captured based on the following survey question: "How often do you experience interruptions in the piped gas service due to a failure?" Available responses included: "Every week," "Every month," "Every two or three months," "Once a year," "Almost never or never," and "I don't know." The data for 2023 are unweighted. Observations categorized as "no response" or "missing" are not included in this figure.

A comparison between 2013 and 2023 is available only for Lima and São Paulo. While gas outages were virtually nonexistent in Lima, and in São Paulo, in 2013, there was an uptick by 2023. In Lima, this change manifests in a reported weekly interruption rate of 0.56 percent and an annual interruption rate of 16.67 percent. São Paulo exhibits the highest combined weekly and monthly interruption rates, 0.67 percent and 2.68 percent, respectively.

4.3
Affordability of Service

The affordability of electricity services has changed significantly over the past decade. The varying perception of energy costs can be attributed to a multitude of factors such as changes in local economic conditions, policy interventions, and global market dynamics (Brichetti, Serebrisky, and Solís, 2022). Moreover, a comparison of these figures could provide a deeper understanding of the consumption landscape.

As discussed by Cavallo, Powell, and Serebrisky (2020), the capability to afford electricity services is not merely an economic issue; it is a matter of well-being, with many resorting to less secure and costlier alternatives. The extent of the affordability challenge varies across cities and is influenced by factors such as location, appliance efficiency, and local policies. Many households, especially the less affluent, dedicate a significant portion of their income to these utilities. This focus on expenditure, however, does not present the entire scenario. Some households may reduce consumption to manage bills or even resort to unauthorized connections, leading to safety and quality issues. Addressing this complex issue requires balancing service quality, cost, and accessibility.

Over the past decade, perceptions of electricity affordability have changed significantly (**Figure 4.4**). In Lima, the percentage of people who found electricity "very expensive" increased from 16.24 percent to 31.87 percent. This percentage increased in São Paulo as well, from 26.21 percent to 38.84 percent. However, it declined in Mexico City, from 28.56 percent to 12.75 percent. In 2023, the perceived electricity expense varied between cities. São Paulo leads, with 38.84 percent of the respondents viewing electricity as very expensive, followed by Lima, at 31.87 percent. The variation is moderate in Buenos Aires and Mexico City, at 20.07 percent and 12.75 percent, respectively. The perception of electricity as expensive decreased marginally in all the surveyed cities over the decade. The shift was the most significant for Mexico City and Buenos Aires, declining from 44.37 percent to 32.48 percent, and from 42.18 percent to 39.68 percent, respectively, over 2013–23. Across the affordability spectrum, there were only minor changes in categories such as "neither expensive nor cheap," "cheap," and "very cheap." Such shifts in public perception align with broader regional trends, where real-term adjustments in electricity and gas prices have been observed over the decade (Brichetti, Serebrisky, and Solís, 2022).
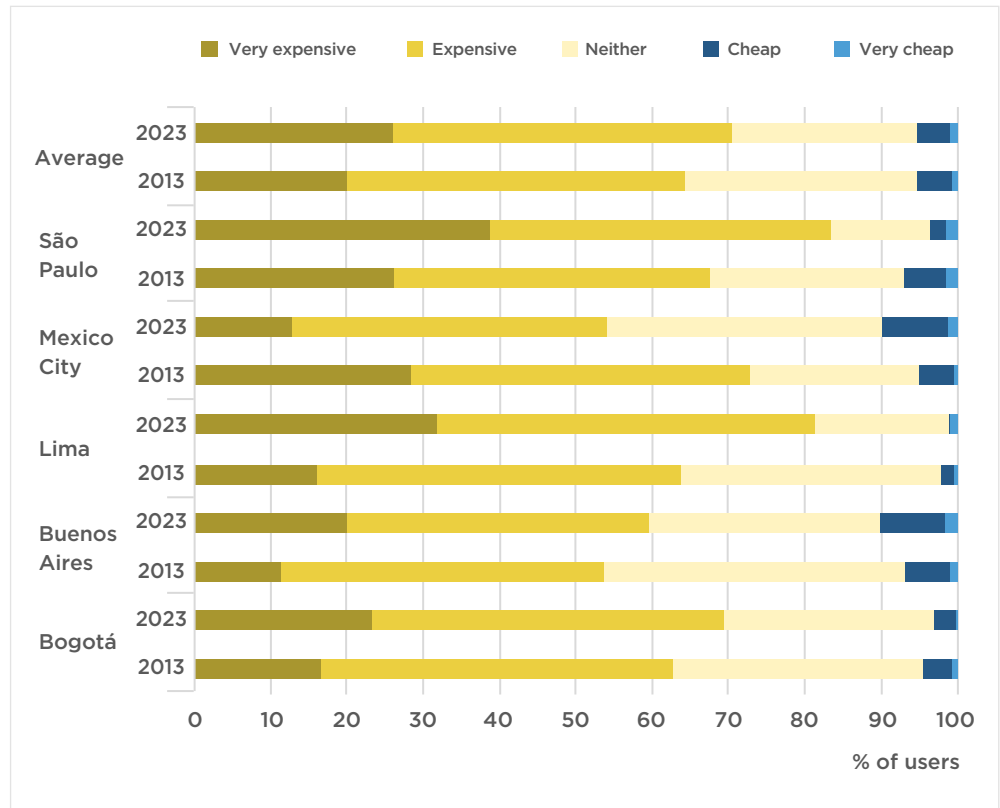
Electricity affordability over the last decade reflects diverse urban experiences, influenced by economic, policy, and market dynamics, impacting both household well-being and consumption behaviors.

■ Figure 4.4

Perceptions of Electricity Costs, 2013 and 2023

Note: This figure illustrates the perceptions of electricity costs the people in the surveyed megacities in the years 2013 and 2023. Respondents were asked: "How would you rate the cost of electricity?" and available responses were "Very cheap," "Cheap," "Neither expensive nor cheap," "Expensive," "Very expensive," and "I don't know." The data for 2013 are based on unweighted pooled averages. Country-specific data are weighted when available. The data for 2023 are unweighted. This figure does not include "no response" and missing observations.

Figure 4.5 shows that the perception of subsidized electricity was the highest in Buenos Aires (45.73 percent) and Mexico City (42.68 percent), but the lowest in Lima (12.99 percent). However, a significant proportion of the respondents in all the cities believed they do not receive subsidies. The perceived rate was the highest in Lima, 79.47 percent. Despite these perceived rates, actual subsidies may vary, indicating potential gaps in consumer awareness. The percentage of respondents unsure about their subsidy status is also noteworthy, peaking in São Paulo, at 16.82 percent. This varied perception highlights the need to educate consumers better about electricity subsidy policies.

Figure 4.5

Awareness of Electricity
Consumption Subsidies,
2023
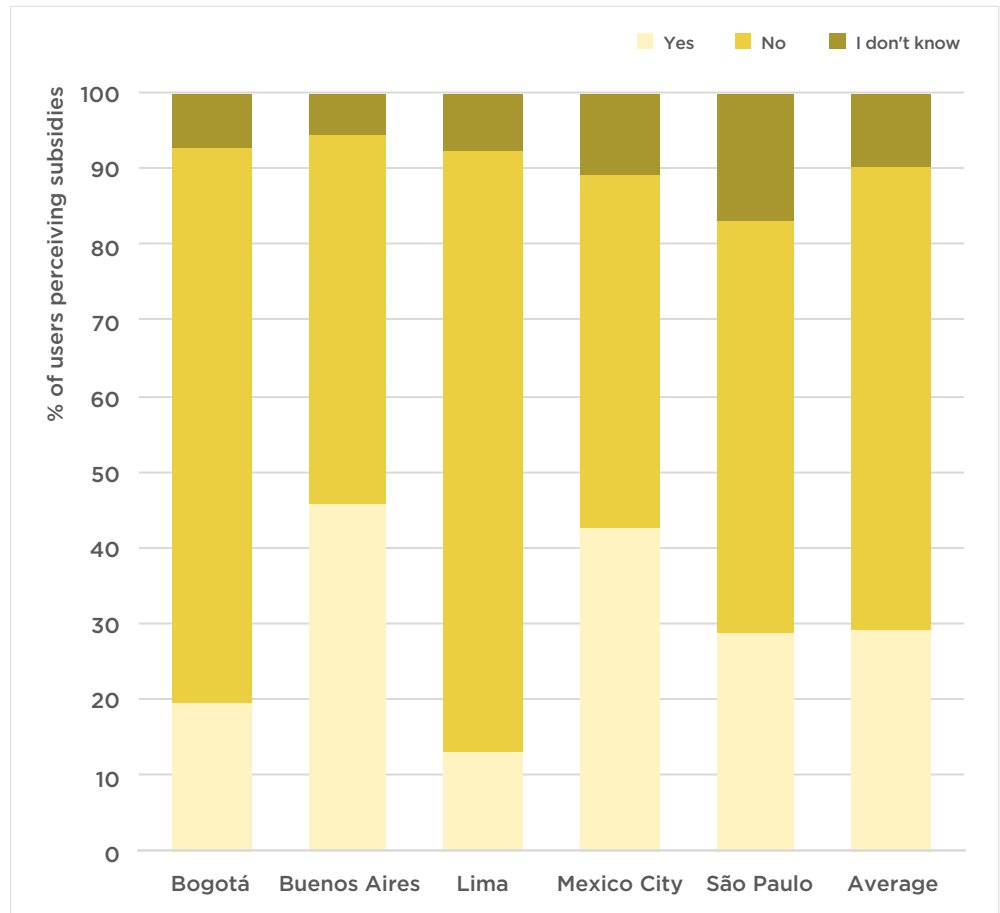
Note: This figure illustrates awareness of electricity consumption subsidies in the surveyed megacities in 2023. Specifically, it presents the percentages of the population who believed their electricity consumption is subsidized. Respondents were asked: "Is your electricity consumption subsidized?" Available answers were "Yes," "No," or "I don't know." It is worth highlighting that data on this topic are not available for 2013. Further, the statistics for 2023 are presented without weighting. Observations categorized as "no response" or missing are excluded from this representation.

This assessment of affordability, considering the perceived cost as well as subsidies, offers insights into the financial stress or relief experienced by households in consuming electricity. It also points to the economic and policy factors that might contribute to these dynamics, information that could also be valuable to gas service users.

In 2023, a sizable segment of respondents in all the surveyed cities perceived gas costs as neither cheap nor expensive. In Lima, this perception of gas cost rose significantly from a nearly negligible percentage in 2013 (**Figure 4.6**). Conversely, the perception of gas as expensive declined in Lima and

Buenos Aires over 2013–23 but showed a minor increase in Bogotá, where a rise in those deeming electricity as "very expensive" was reported over the same period. Data for 2013 were not available for São Paulo and Mexico City, although a majority of the responses fall in the categories "expensive" and "neither expensive nor cheap" in 2023. Notwithstanding these intricate variations, a pervasive trend of a heightened cost perception exists across these cities.

■ **Figure 4.6**

Perception of Gas Costs, 2013 and 2023
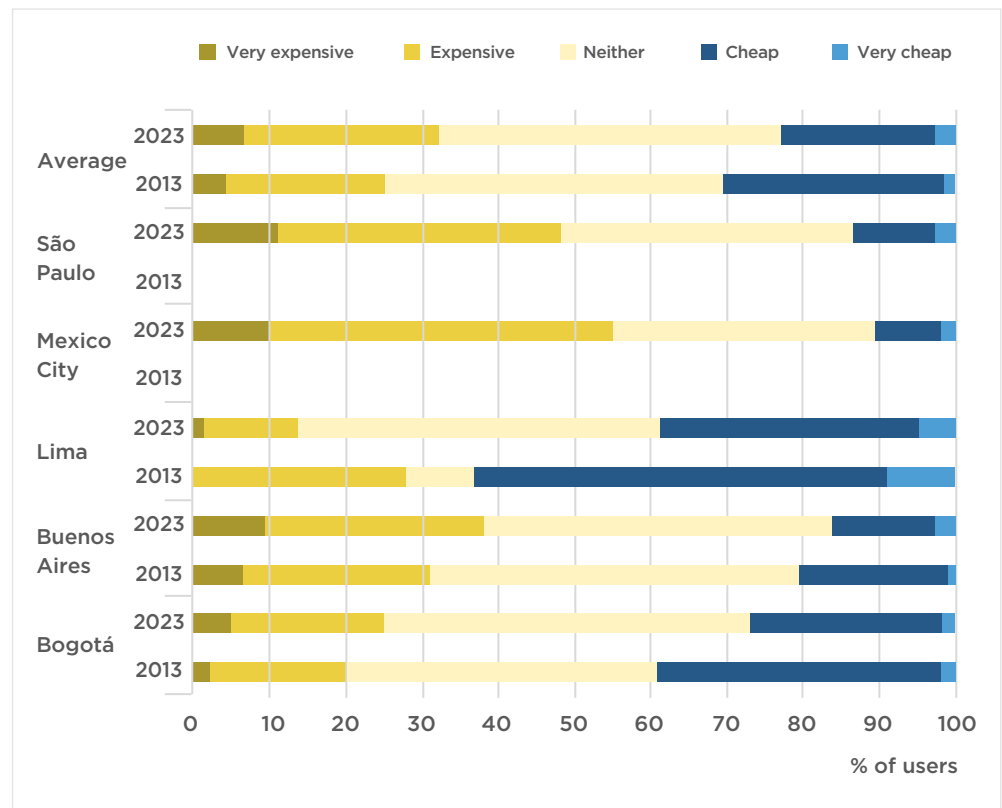
Note: This figure presents the varying perceptions of the cost of gas in the surveyed cities in 2013 and 2023. Respondents were asked: "How would you rate the cost of gas?" Available responses were "Very cheap," "Cheap," "Neither expensive nor cheap," "Expensive," "Very expensive," and "I don't know." The totals for 2013 refer to unweighted pooled averages, whereas country-specific statistics are weighted when available. The statistics for 2023 are unweighted. This figure excludes "no response" and missing observations.

4.4
Efficient Consumption

Whether consumption is efficient is best understood by examining how effectively households use energy-saving appliances and modify their routines for more sustainable living. This facet of consumption provides valuable economic insights into households' expenditure and savings, while also addressing crucial environmental concerns related to the use of energy. The percentage of households adopting energy-efficient bulbs or light-emitting diode (LED) lights can be seen as a benchmark for basic energy-conscious behavior, which is often prompted by financial incentives such as reduced electricity bills. Observing this metric can help discern a behavioral trend driven by economic reasoning. This will provide a foundational understanding, which could be further enriched by examining other metrics, for example, the adoption of energy-efficient appliances.

By contrast, data on air-conditioning units and refrigerators purchased after 2018 indicate more financially significant investments in energy efficiency. These appliances, typically with higher up-front costs but lower long-term energy consumption, reflect a more deliberate and committed choice toward efficient use of energy. Awareness of energy conservation is indicated by the use of double-glazed windows in households, a structurally intensive measure. By analyzing the variation in these three measures across the five cities, we delve deeper into the maturity of each city's energy market and the depth of its consumers' commitment to energy efficiency.

The past decade has seen a notable shift toward the use of energy-efficient bulbs across Latin American cities (**Table 4.1**). Buenos Aires recorded a minor decrease from 94.75 percent in 2013 to 92.66 percent in 2023, whereas other cities such as Lima, Mexico City, and São Paulo showed substantial improvements. However, ownership patterns for newer air-conditioning units (less than five years old) present a picture of disparity. While a striking increase was observed in Buenos Aires, where ownership surged from 25.57 percent to 38.35 percent over the decade, a relatively stagnant trend was observed in cities such as Bogotá, where ownership increased gradually, from 2.02 percent to 2.33 percent.

■ **Table 4.1**

Adoption of Energy-Saving Appliances and Fixtures, 2013 and 2023

	Bogotá		Buenos Aires		Lima		Mexico City		São Paulo		Average	
	2013	2023	2013	2023	2013	2023	2013	2023	2013	2023	2013	2023
PANEL A. ENERGY EFFICIENT BULBS												
Yes	89.73	96.05	94.75	92.66	85.27	92.39	82.67	95.74	84.13	94.92	87.35	94.36
No	10.27	3.95	5.25	7.34	14.73	7.61	17.33	4.26	15.87	5.08	12.65	5.64
PANEL B. AC UNITS (LESS THAN 5 YEARS OLD)												
Yes	2.02	2.33	25.57	38.35	2.12	6.02	4.08	9.13	2.98	18.7	7.37	14.73
No	97.98	97.67	74.43	61.65	97.88	93.98	95.92	90.87	97.02	81.3	92.63	85.27
PANEL C. REFRIGERATORS (LESS THAN 5 YEARS OLD)												
Yes	47.19	52.19	35.72	46.55	32.04	67.96	44.18	62.2	58.04	58.57	43.42	57.47
No	52.81	47.81	64.28	53.45	67.96	32.04	55.82	37.8	41.96	41.43	56.58	42.53
PANEL D. DOUBLE-GLAZED WINDOWS (LESS THAN 5 YEARS OLD)												
Yes	6.48	5.77	4.27	13.85	4.38	12.22	6.31	10.81	24.35	32.31	9.18	15.01
No	93.52	94.23	95.73	86.15	95.62	87.78	93.69	89.19	75.65	67.69	90.82	84.99

Note: This table presents the household ownership of various energy-efficient appliances and fixtures in surveyed megacities as measured in the 2023 and 2013 surveys. The data have been derived from respondents answering a question about the presence and use of specific energy-efficient appliances and fixtures in their homes. The listed items include energy-efficient or LED light bulbs, air conditioners, refrigerators, and windows with double-glazed panels.

The observed trends in the adoption of energy-efficient appliances may be influenced by a combination of factors including rising global temperatures and a heightened awareness of climate change.

As for refrigerators less than five years old, ownership in Lima leapt remarkably from 32.04 percent to 67.96 percent over 2013–23. This signaled a rapid turnover of outdated appliances. Interestingly, the adoption rate in Buenos Aires in 2023, that is, 46.55 percent, is almost half that in Lima. Finally, for double-glazed windows—a fixture known for its insulation capabilities—all cities made incremental but positive progress. São Paulo led with a 32.31 percent adoption rate in 2023, up from 24.35 percent a decade ago. These changes underline the varying pace at which different cities embrace energy-efficient technologies. They also provide essential insights for furthering sustainable consumption. The observed trends in the adoption of energy-efficient appliances may be influenced by a combination of factors including rising global temperatures and a heightened awareness of climate change. Advances in technology and its increasing affordability have made energy-efficient alternatives more accessible for households. Sustainability and climate-conscious decisions likely play a role in driving these consumer choices.

Similarly, Cavallo, Powell, and Serebrisky (2020) discuss the financial constraints preventing low-income households from purchasing modern energy-efficient appliances, and lead them to use older models, which often

consume more energy. In reality, less-affluent households might have to use more resources to derive benefits similar to their wealthier counterparts. These challenges further exacerbate the affordability dilemma in the region. The data further highlight a disparity in the adoption rates for energy-efficient appliances across different income quartiles (**Figure 4.7**). Those in the bottom income quartile—while still showing a significant adoption rate for energy-efficient bulbs—lag in adopting more significant investments such as air-conditioning units, refrigerators, and double-glazed windows.

■ **Figure 4.7**

Adoption of Energy-Saving Devices by Income Level, 2023
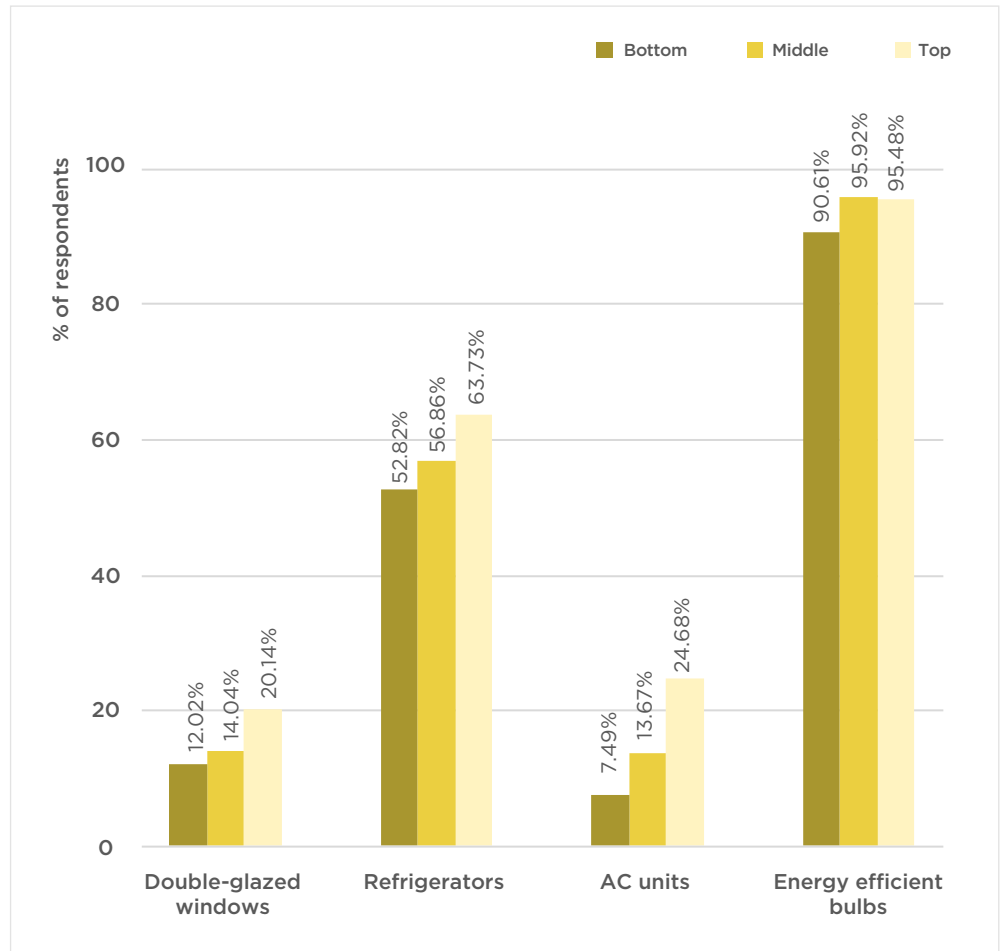
Note: This figure presents the household ownership of various energy-efficient appliances and fixtures in the surveyed megacities by income quartile as measured in the 2023 and 2013 surveys. The data have been derived from respondents answering a question about the presence and use of specific energy-efficient appliances and fixtures in their homes. The listed items include energy-efficient or LED light bulbs, air conditioners purchased after 2018, refrigerators purchased after 2018, and windows with double-glazed panels.

5

Transport:
Technology- and Pandemic-
Driven Transformations

Transport: Technology- and Pandemic-Driven Transformations

5.1
Transport Patterns

The rapid expansion of Latin America's megacities makes it ever more challenging to provide affordable and sustainable transport services for all citizens. As overall motorization rates increase, public services are stymied by struggles to fund the capital costs of expanding the geographical coverage of networks, fleets, and their maintenance. In short, the region's mobility needs have not been met in an efficient or a sustainable way. As megacities expand into once-rural territories, fewer people have access to transport infrastructure (Rivas, Suarez-Aleman, and Serebrisky, 2019).

Residents in the region take 22 percent more time to travel short distances, on average 0.6 kilometers (km) shorter, using public transit compared with those in advanced economies (based on Moovit [2022]). As the accessibility and quality of public transport deteriorate, private modes of transport become increasingly popular solutions to meet citizens' mobility needs. Unfortunately, this increased reliance on private transport contributes to increasing congestion and greenhouse gas (GHG) emissions, thereby amplifying the societal impacts of climate change. In this scenario, citizens who cannot afford private transport suffer from the decreasing accessibility, quality, and affordability of public transport services.

5.1.1 Trends in Transport Modes

Megacity residents report relying on multiple means of transport for their daily commutes.

Megacity residents report relying on multiple means of transport for their daily commutes, and sometimes just one for other types of trips. Across Latin America's megacities, people use an average of 2.1 modes of transport to commute to work, 1.8 to access health facilities, and 1.6 to get to school or another educational institution.

The variety of modes used for work-related commutes highlights the wide range of services available to meet citizens' mobility needs (see **Figure 5.1**). Buses are the preferred option for completing commutes in Bogotá, Buenos

Aires, and Lima, while a larger share of residents of Mexico City and São Paulo opt for private cars. Moreover, motorcycles are gaining importance in Bogotá and São Paulo, as is active transport (walking and bicycles) in Buenos Aires.

Figure 5.1

Transport Modes Used to Commute to Work, by Share, 2023

Legend:
- Bus
- BRT
- Metro
- Train
- Car
- Motorcycle
- Taxi
- Mototaxi
- Ride-hailing
- Walking
- Bicycle
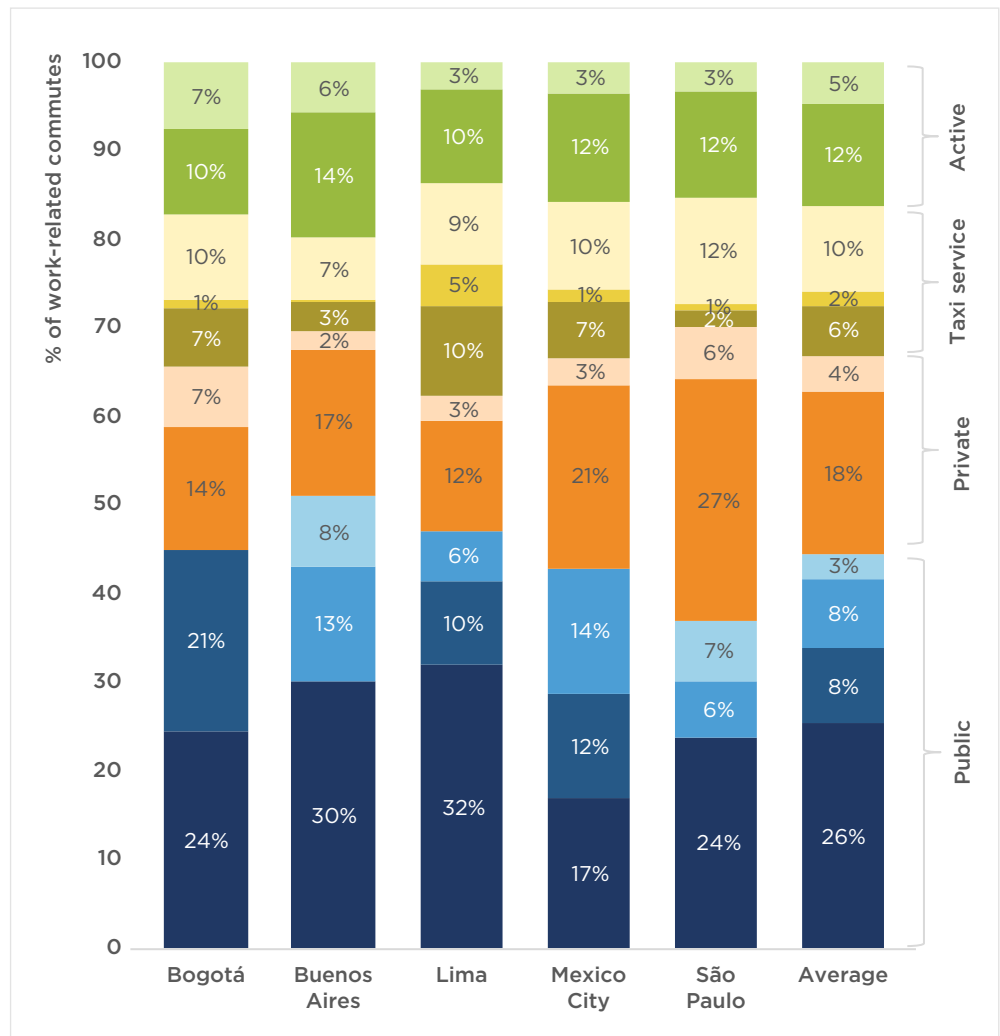
Note: This figure depicts the distribution of transport modes used for work-related commutes in various megacities in 2023. Only those citizens who reported being employed and commuting to a workplace were considered. Among public transport modes, buses, bus rapid transit (BRT), metro, and trains are represented. Buses include the SITP in Bogotá and the Corredores Complementarios in Lima. BRT includes systems like the TransMilenio in Bogotá, the Metropolitano in Lima, and the Metrobús in Mexico City. The metro mode accounts for suburban railways in most cities, with the exception of Bogotá. Trains are available only in Buenos Aires and São Paulo.

Overall, 45 percent of work-related commutes are completed using public transport, including buses, bus rapid transit (BRT), trains, and metro, while 22 percent use private alternatives. The remaining commutes are equally distributed between taxi services and active transport modes. Although public transport represents the largest share of total commutes, its use has steeply declined over the past decade, dropping by 19 percentage points since 2013 (see **Figure 5.2**). Meanwhile, commutes completed using private transport have increased by 7 percentage points. These shifts may differ among various groups, depending on factors such as gender, income, or the purpose of the trip.

■ **Figure 5.2**

**Transport Modes Used to
Commute to Work,
by Share, 2013**

- Bus
- BRT
- Metro
- Train
- Car
- Motorcycle
- Taxi
- Walking
- Bicycle

Note: This figure illustrates the distribution of transport modes used for commutes in megacities during 2013. Only those citizens who reported being employed were considered. Among public modes, BRT, metro, and trains are represented. BRT includes systems like the TransMilenio in Bogotá, the Metropolitano in Lima, and the Metrobús in Mexico City. Metro captures suburban railways prevalent in the represented cities, with Bogotá being an exception. Trains are available only in Buenos Aires and São Paulo.

Women often make more frequent but shorter trips than men due to their roles in both the household and the labor market (Curtis and Perkins, 2006; Granada, 2019). Therefore, transport systems need to meet differential needs. From **Figure 5.3**, two key observations can be made regarding women's transport choices: a larger proportion of men across all income categories use private transport, while women's use of public transport decreases across income

levels. This suggests that, as their income gets lower, women increasingly rely on the public transport system for their complex transport needs.

■ **Figure 5.3**

Transport Modes Used to Commute to Work, by Share and Users' Gender and Income Level, 2023

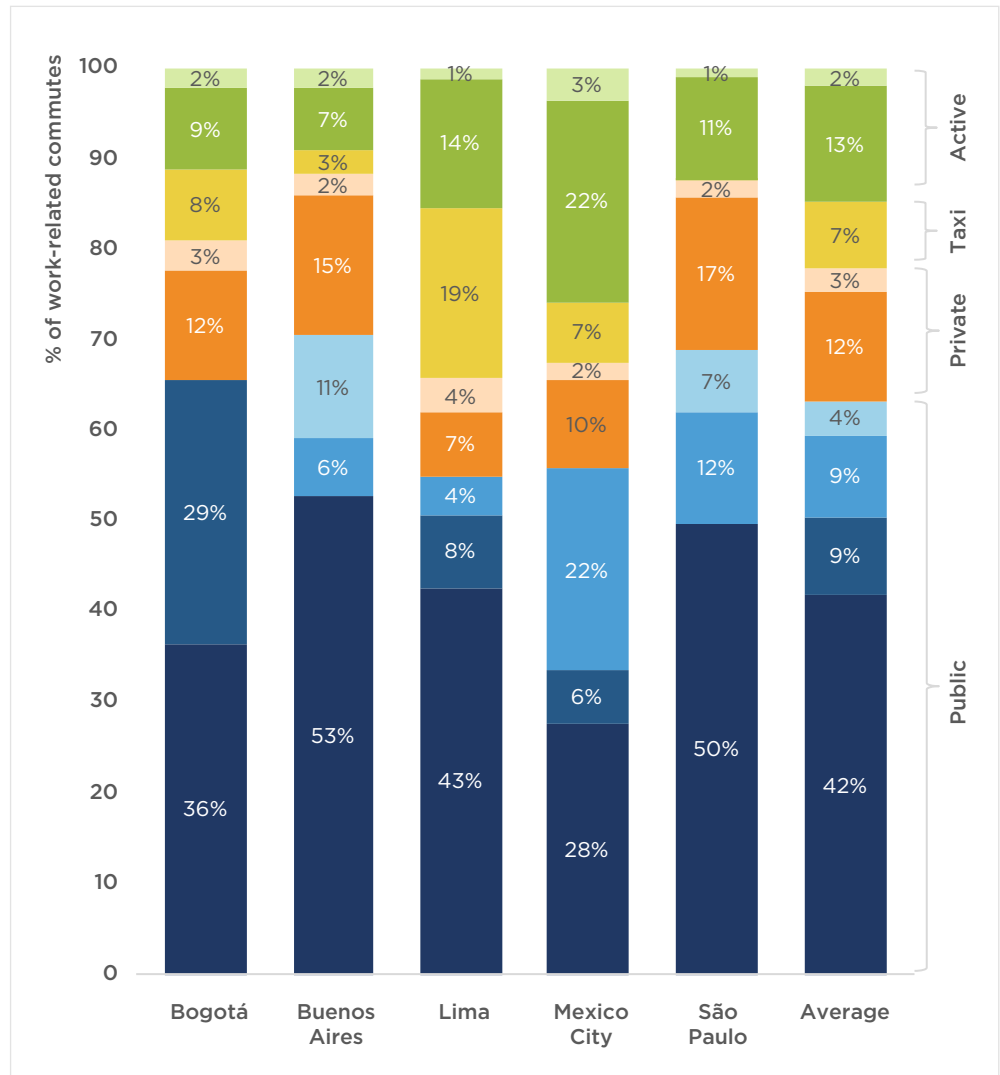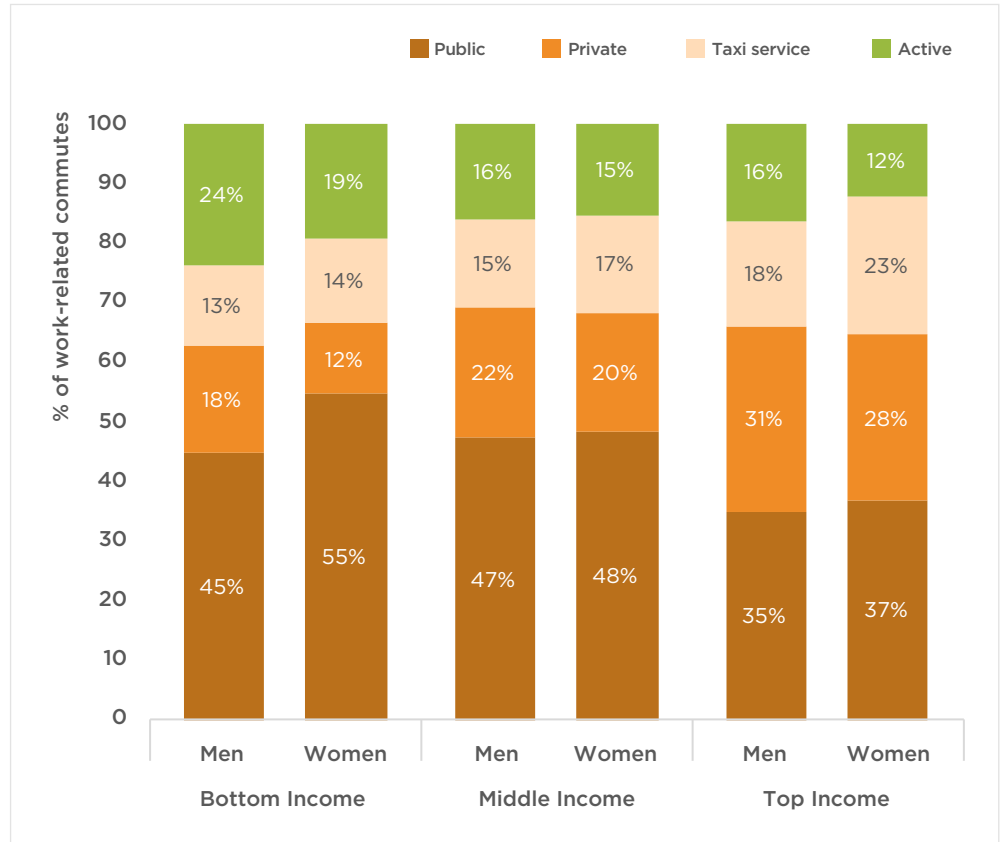

Note: This figure depicts the distribution of transport modes used for work-related commutes in the five megacities considered, differentiated by gender and income group (bottom, middle, and top quartile of the income distribution) in 2023. Only those citizens who reported being employed and commuting to a workplace were considered. The "public" category encompasses buses, BRT, metro, and trains. The "private" category includes cars and motorcycles, while the "taxi service" category captures taxis, mototaxis, and ride-hailing services. Additionally, "active transport" represents walking and bicycle use.

5.1.2 Commute Times

In 2023, citizens traveled longer distances to work than in 2013 (except in Lima), with the average citizen facing a 34 km commute (round trip). Buenos Aires and Bogotá show a larger increase in distance covered (from 20.6 to 30.3 km and 24.4 to 34.2 km, respectively), while for São Paulo, the distance traveled to work remained close to the average of 2013 (see **Figure 5.4**).

Lima's citizens traveled shorter distances but took more time to complete a trip. In contrast, in Bogotá, Buenos Aires, and Mexico City, the increase in commute time is significantly smaller than the rise in distance traveled. Lastly, in São Paulo the commute time declined.

■ **Figure 5.4**

Average Commute Distance and Time, 2013 and 2023
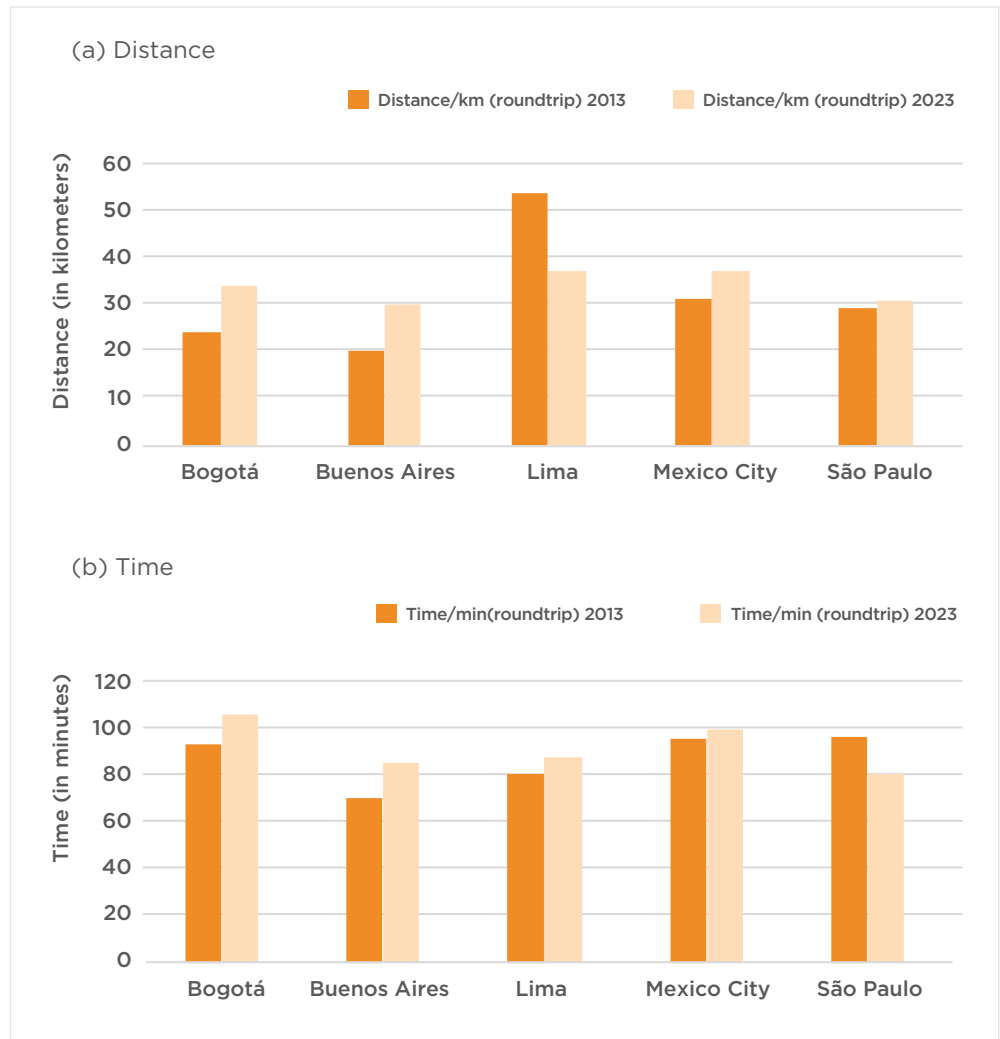
Note: This figure depicts the time (in minutes) and distance (in kilometers) of individuals' commutes to and from their workplaces in 2013 and 2023, using survey data from Latin America's five megacities. Only those citizens who reported being employed and commuting to a workplace were considered in 2023, while the responses for all citizens were considered in 2013. The data for 2013 are not weighted. The information is derived from specific survey questions: "Approximately how far, in kilometers, is it from your home to your workplace?" and "Approximately how long, in minutes, does it take you to get from your home to your workplace?"

Over the past decade, the average travel time to and from work increased by almost 4.6 minutes in the studied cities, from 1 hour and 28 minutes to 1 hour and 32 minutes. Except for São Paulo, the time people spent traveling to and from work increased. The variability among the regions is significant: Buenos Aires' residents traveled for 1 hour and 26 minutes, while Bogotá's residents spent almost 2 hours on their daily commute.

Interestingly, as total commuting distances increased, the portion of citizens commuting for more than 90 minutes decreased in São Paulo and Mexico City (see **Table 5.1**). In contrast, Buenos Aires experienced a significant increase in long commutes, while in Lima and Bogotá, commuting time remained relatively stable over the decade.

■ **Table 5.1**

Round-trip Commutes to Work of More than 90 Minutes, 2013 and 2023

City	2013	2023
Bogotá	42%	46%
Buenos Aires	24%	33%
Lima	32%	34%
Mexico City	41%	40%
São Paulo	38%	32%

Note: This figure depicts the proportion of individuals in surveyed megacities whose daily commutes to and from their workplaces exceed 90 minutes. The data for 2013 encompass all citizens, irrespective of their employment status. For 2023, only those citizens who reported being employed and commuting to a workplace were considered.

Even though the share of people who commute for more than 90 minutes has fallen in some cities, the total time spent on work commutes remains substantial. On average, citizens spend 15.7 days per year commuting. Bogotá leads with 18.2 days lost in traffic per year, followed by São Paulo with 13.7 days.[12]

On average, 37 percent of citizens spend more than 90 minutes on work-related commutes. It is worth analyzing the travel patterns of commuters and how they affect overall quality of life. "Long" commuters rely more on public transport, with 61 percent using it compared with 45 percent of all citizens. They also choose active transport less frequently and depend less on cars and motorcycles (see **Figures 5.1** and **5.5**). The modal share of this subgroup

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12 These calculations are based on the assumption that a year has 245 working days (52 weeks, 3 weeks for holidays).

can be explained by the high prevalence of low-income users (see **Table 5.2**). The COVID-19 pandemic had a significant impact on mobility , and may have affected commuting patterns across income groups. The transport choices of low-income users are limited, resulting in longer commutes that directly impact their quality of life. Residents who spend more than 90 minutes commuting to work identified public transport and transit as the third-highest urban priority.

■ **Figure 5.5**

Transport Modes Used for Long Commutes to Work, 2023

- ■ Bus
- ■ BRT
- ■ Metro
- ■ Train
- ■ Car
- ■ Motorcycle
- ■ Taxi
- ■ Mototaxi
- ■ Ride-hailing
- ■ Walking
- ■ Bicycle
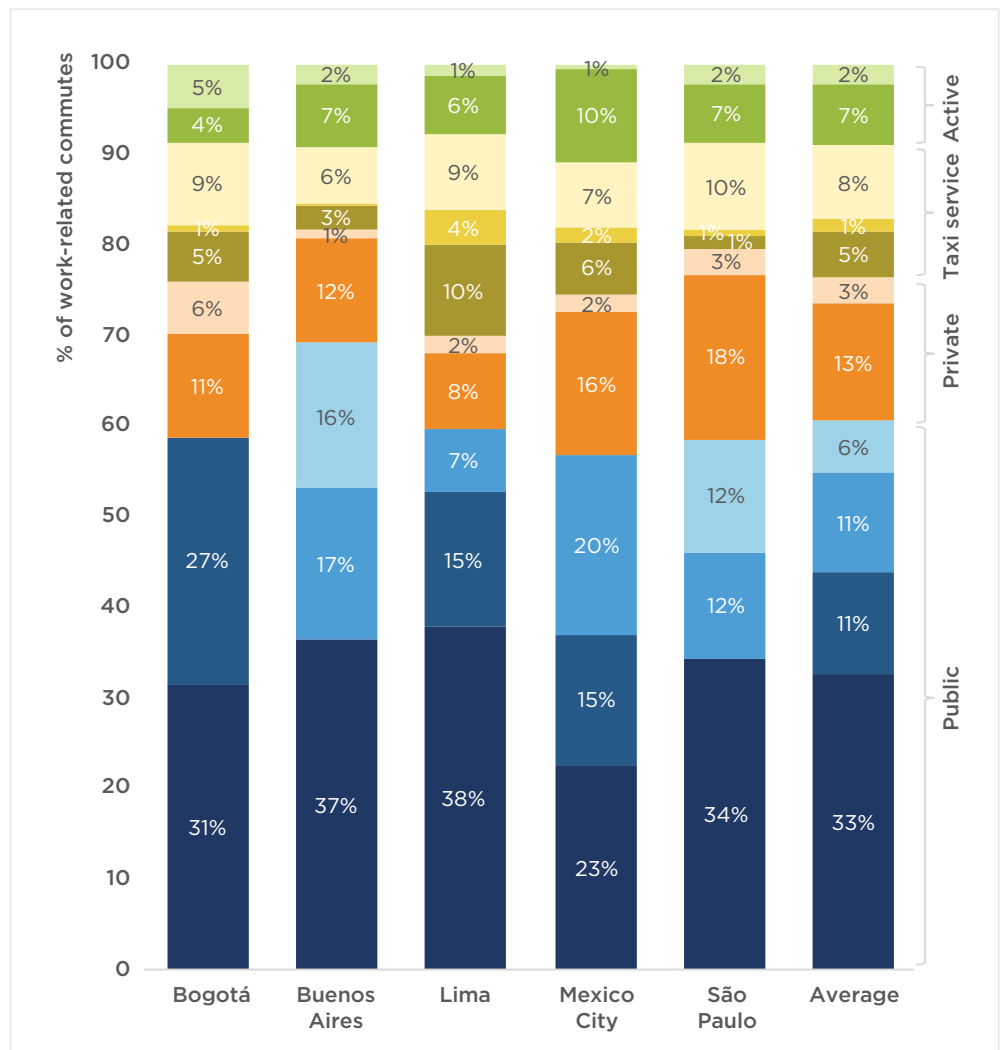
Note: The figure presents the modal share of work-related commutes that last more than 90 minutes across the megacities considered in 2023. Only those citizens who reported being employed and commuting to a workplace were considered. The bus category includes the SITP for Bogotá and the Corredores Complementarios for Lima. BRT represents the TransMilenio in Bogotá, the Metropolitano in Lima, and the Metrobús in Mexico City. The Metro category is composed of suburban railways across cities except Bogotá. Trains are available only in Buenos Aires and São Paulo.

City	Bottom Income	Middle Income	Top Income
Bogotá	42%	36%	25%
Buenos Aires	51%	45%	45%
Lima	45%	44%	29%
Mexico City	38%	37%	24%
São Paulo	32%	34%	28%

Note: This figure displays the proportion of individuals in surveyed megacities in 2023 who have daily commutes exceeding 90 minutes to and from their workplaces by income quartile. Only those citizens who reported being employed and commuting to a workplace were considered.

In line with reports from commuters who spend more than 90 minutes in traffic, private cars offer shorter work-related trips than public transport modes (see **Figure 5.6**). Although cars are preferred for shorter distances, the disparity in commute time is significant: commutes by car are 35 minutes shorter. This trend aligns with previous literature that shows that in the region, 9 of 10 commutes take less time to complete by car than by public transit. This preference for cars is reinforced by the disproportionate allocation of road infrastructure to vehicular traffic. For example, 70.75 percent of Bogotá's and 92.55 percent of Lima's transport infrastructure is dedicated to cars, motorcycles, and buses (Giraldez Zúñiga, Sánchez González, and Calatayud, 2022).

■ **Figure 5.6**

Commute Characteristics by Transport Mode, 2023

a) Distance   b) Time
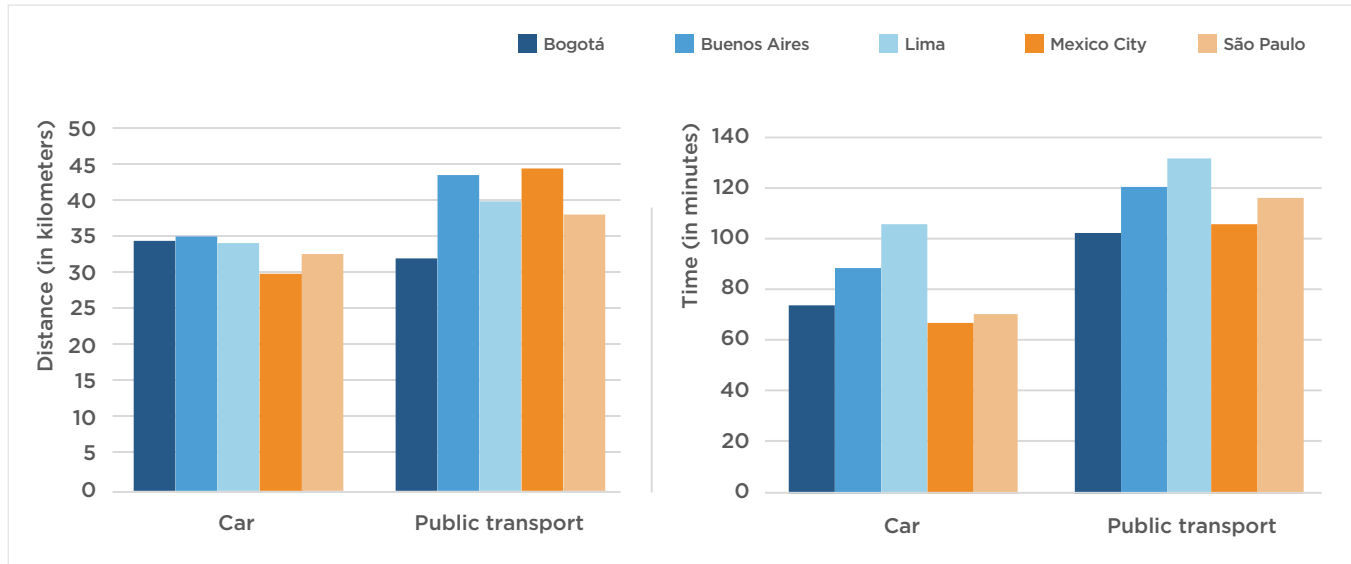
Note: This figure depicts roundtrip work commute durations (in minutes) and distances (in kilometers) in 2023, contrasting public transport with car commutes in the surveyed megacities. Only those citizens who reported being employed and commuting to a workplace were considered. The "public transport" category encompasses various modes: buses (including specific services such as the SITP for Bogotá and the Corredores Complementarios for Lima), trains (exclusive to Buenos Aires and São Paulo), metros (prevalent in most surveyed cities except Bogotá), and the BRT system (representing services like TransMilenio in Bogotá, Metropolitano in Lima, and Metrobús in Mexico City). Conversely, the "car" category covers respondents who either exclusively use cars or combine them with other modes, excluding motorcycles and taxi services.

Megacity residents' growing reliance on private transport modes contributes to increased congestion, longer times spent in traffic, and a concerning rise in GHG emissions. Across Latin America and the Caribbean, the transport sector accounts for 37 percent of total carbon dioxide emissions. Cars are the main contributors, while buses contribute only 10 percent of the sector's emissions, offering a more sustainable way of commuting (Rivas, Suárez-Alemán, and Serebrisky, 2019).

When breaking down commutes by purpose, **Figure 5.7** reveals that people travel, on average, 35.1 km to and from work, 21.1 km to and from health centers, and 12.3 km to and from educational institutions. Workers spend approximately 1 hour and 32 minutes commuting to and from work, those seeking health care travel for around 52 minutes, and students have an average commute of 33 minutes. Commute times are longest in Bogotá, while Lima's citizens travel longer distances.

Figure 5.7

Commute Characteristics by Trip Purpose, 2023
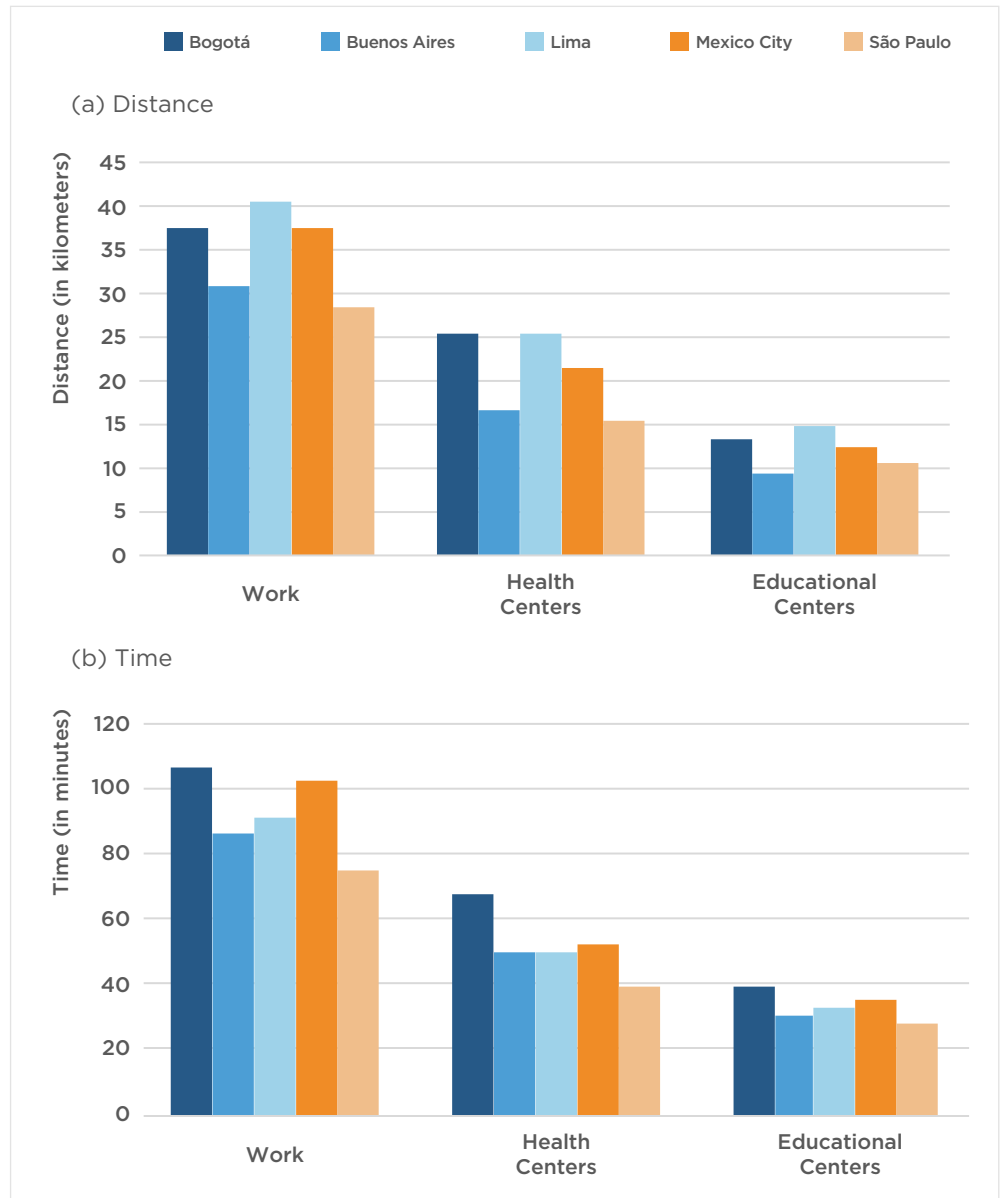
Note: This figure illustrates the average distance (in kilometers) and time (in minutes) of roundtrip commutes for work, health, and educational purposes in 2023, using data from the megacities considered.

5.2
Quality and Affordability of Public Transport Services

5.2.1 Quality

In comparison to private modes, public transport offers a sustainable alternative for commuting. To meet the Paris Agreement's climate goals, cities must promote sustainable transport options (Vera, Uribe, and Del Castillo, 2023) that are both affordable and of high quality. We assessed several aspects of public transport quality to gauge several modes' efficacy in meeting sustainable mobility needs (see **Figure 5.8**).

The quality of bus service was most often rated as poor or very poor; 35 percent of users expressed dissatisfaction. In contrast, the metro received the fewest negative ratings, at just 16 percent. Users were mainly concerned about fare prices, comfort, and safety during their commutes. Alarmingly, over 47 percent of bus commuters expressed concerns about safety. In Bogotá, more than half of all public transport users reported feeling unsafe, irrespective of the mode used. Moreover, a significant number of users rated the nighttime frequency of all public transport modes as unsatisfactory. Evidence from Moovit surveys supports these findings: 23 percent of residents from megacities reported they would use public transport more often if frequency was improved (Moovit, 2022).

■ **Figure 5.8**

Perception of Transport Quality, by Mode, 2023

(a) General
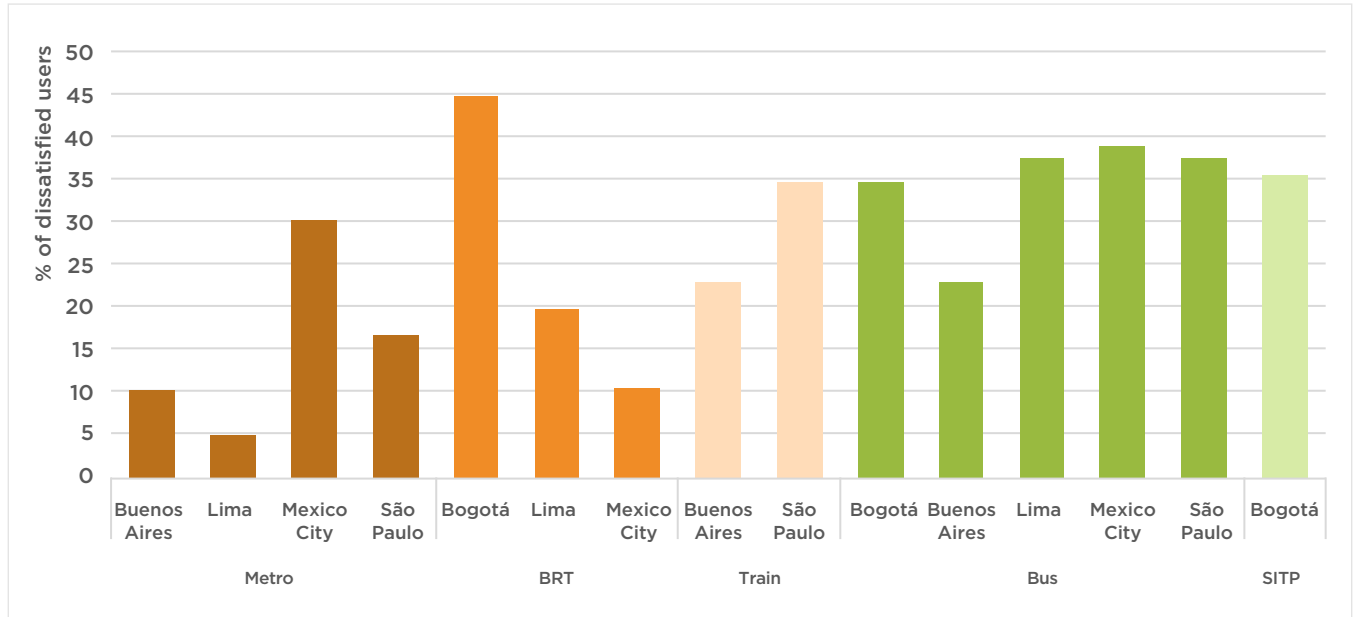
(b) Safety during rides and/or at the station
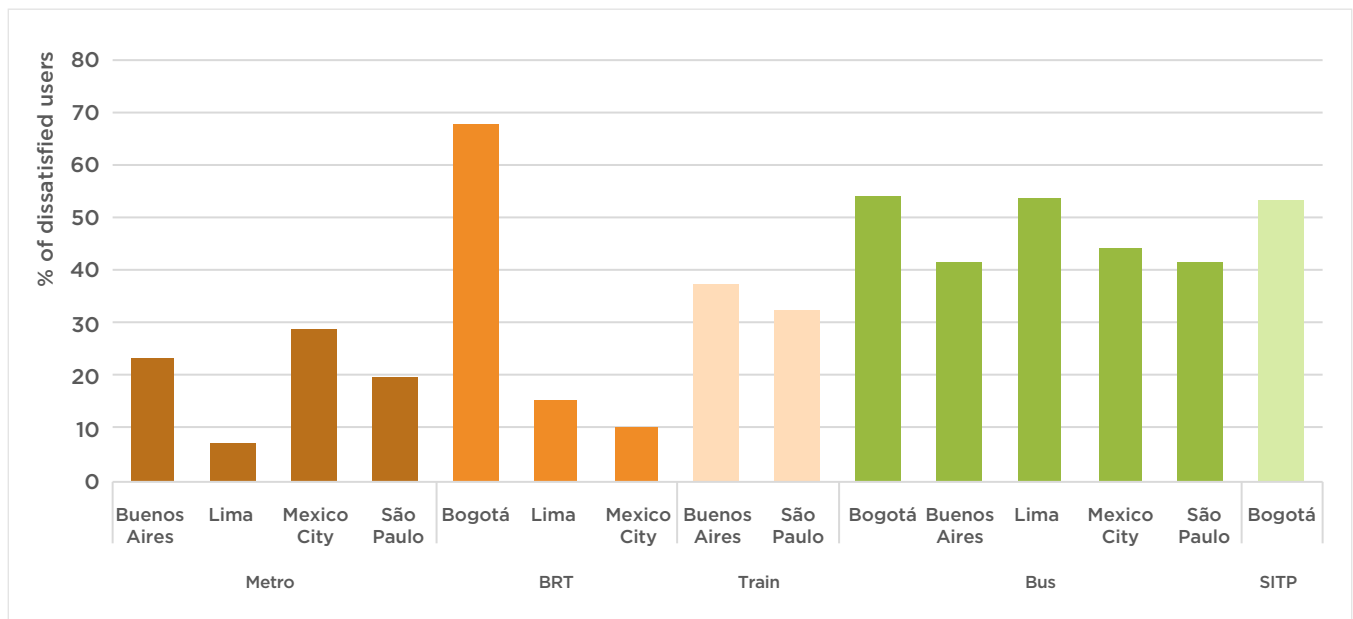
Note: This figure reflects the views of megacity residents who used the specified transport modes at least once a month in 2023. The figure reports the share of users who qualify the overall service and safety of public transport as bad or very bad. The bus category excludes Bogotá's SITP. BRT covers Bogotá's TransMilenio, Lima's Metropolitano, and Mexico City's Metrobús. Metro signifies suburban railways, excluding Bogotá. Train data are specific to Buenos Aires and São Paulo.

The distance from one's home to the nearest public transport station or stop can also significantly affect the overall commuting experience. In Lima and São Paulo, there has been an increased concern regarding insufficient public lighting en route to transit stations or stops. Mud on the route to the bus stop was a major issue for Mexico City in 2013, but since then its residents' concerns have shifted toward the dusty conditions they encounter while reaching a station or stop. In Buenos Aires, concerns about flooding, dust, and a lack of public lighting have substantially increased over the 2013--23 period. Bogotá has shown a dramatic trend: while in 2013 72 percent of residents reported no issues on their way to a station or stop, in 2023 81 percent of residents have reported to encounter at least one problem. Moreover, 46 percent of all public transportation users reported feeling unsafe when traveling from their home to a station or stop, especially in Buenos Aires, where 35 percent of men and 44 percent of women expressed concerns about safety on their way to a station or stop.

■ **Figure 5.9**

Problems at a Public Transport Station or Stop, 2013–23

City	Dusty		Flooding on rainy days		No public lighting		Mud on rainy days		Unsafe area	
	2013	2023	2013	2023	2013	2023	2013	2023	2013	2023
Bogotá	11%	42%	6%	34%	7%	28%	16%	37%	N/A	56%
Buenos Aires	8%	20%	13%	20%	8%	20%	20%	17%	N/A	42%
Lima	28%	50%	4%	14%	6%	21%	14%	24%	N/A	47%
Mexico City	40%	36%	30%	35%	32%	31%	32%	15%	N/A	41%
São Paulo	21%	24%	3%	26%	9%	21%	21%	18%	N/A	44%

Note: This figure displays the percentage of individuals in surveyed megacities who reported on the problems encountered while approaching stations or stops. In the 2013 survey, an "unsafe area" was not included in the list of problems. N/A: Not available.

5.2.2 Affordability

In addition to commute times and the accessibility of stations or stops, affordability remains a critical factor in determining city residents' transport options. According to IDB estimates, in four of the cities studied (Buenos Aires is the exception), a larger proportion of average household income goes to transport than to water and electricity. In São Paulo and Bogotá, public transport expenses account for up to 10 percent of household income. For residents in the lowest income quintile, this share increases to 30 percent in São Paulo and 40 percent in Bogotá, whereas it is about 20 percent in Lima

and Mexico City. The share of transport costs in total household expenditure decreases as income increases, highlighting disparities in public transport's affordability across income groups (Cavallo, Powell, and Serebrisky, 2020).

Among the workers surveyed, 40 percent reported concerns about the cost of BRT fare, 36 percent about bus fare, 35 percent about trains, and 23 percent about metro services (all shown in **Figure 5.10**). The share of respondents who rate public transport fares as "bad or very bad" declines as income increases, further emphasizing the inequalities in affordability across income groups.

■ **Figure 5.10**

Share of Respondents Who Consider Public Transport Prices to Be Bad, by Mode, 2023
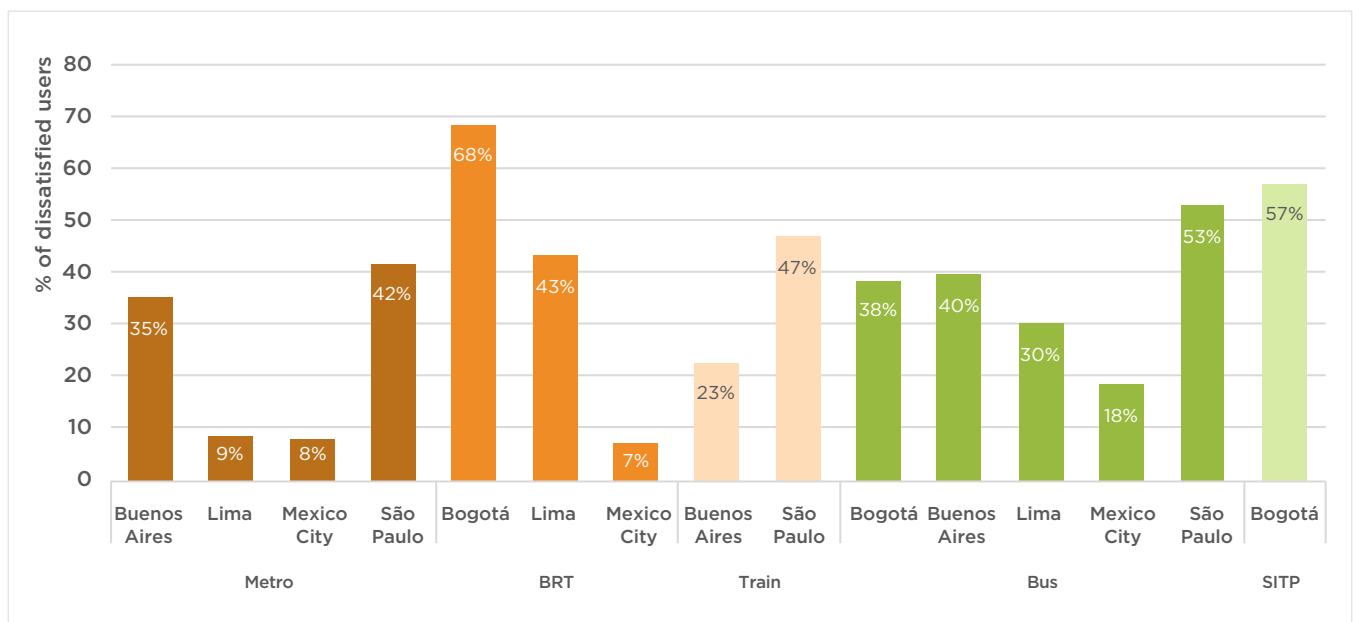
Note: This figure displays the percentage of individuals in surveyed megacities who used the specified transport modes at least once a month in 2023 and rated the fare prices as bad or very bad. BRT encompasses the TransMilenio in Bogotá, the Metropolitano in Lima, and the Metrobús in Mexico City. Metro refers to the suburban railway across cities, excluding Bogotá. Trains operate solely in Buenos Aires and São Paulo, while SITP is exclusive to Bogotá.

Compared with the survey reports from 2013, dissatisfaction with public transport fares rose by 6 percent, on average. Although fare rates increased (ranging from 5 percent up to 30 percent) over the past decade, real prices for public transport have declined since the onset of the pandemic. This may explain the slight difference between users' discomfort with public transport prices between 2013 and 2023 (Brichetti, Serebrisky, and Solís, 2022).

Only 23 percent of public transport users said they received subsidies, revealing widespread unawareness about the true costs of transport.

The operational costs of public transport in the region are at times higher than fare prices (Cavallo, Powell, and Serebrisky, 2020), and governments subsidize a portion of citizens' transport expenses. However, only 23 percent of citizens were aware of such subsidies (see **Figure 5.11**). For example, in Colombia, 95 percent of citizens believed that the government does not provide subsidies for public transport when in fact SITP's low-income users do receive them (Gómez-Lobo, Sánchez González, and González Mejia, 2022). In Buenos Aires in 2023 bus users paid 18.2 percent of the fare price, or less, on average (AAETA, 2023). Nevertheless, only 40 percent of public transport users said they received subsidies, revealing widespread unawareness about the true costs of transport.

While the public's knowledge of subsidies is significantly lacking, governments do provide subsidies for public transport across all the cities surveyed on either the supply or demand side. Programs such as Bilhete Unico in São Paulo, pro-poor subsidies in Bogotá, targeted subsidies for students and people with disabilities in Lima, and direct transfers to transport providers in Buenos Aires contribute to transport affordability. These subsidies aim to mitigate the financial strain of transport prices, particularly for low-income groups, potentially alleviating restricted mobility caused by the disproportionate burden of transportation expenses (Rivas, Serebrisky, and Suarez-Aleman, 2018).

■ Figure 5.11

Transport Users'
Awareness of Transport
Fare Subsidies, 2023
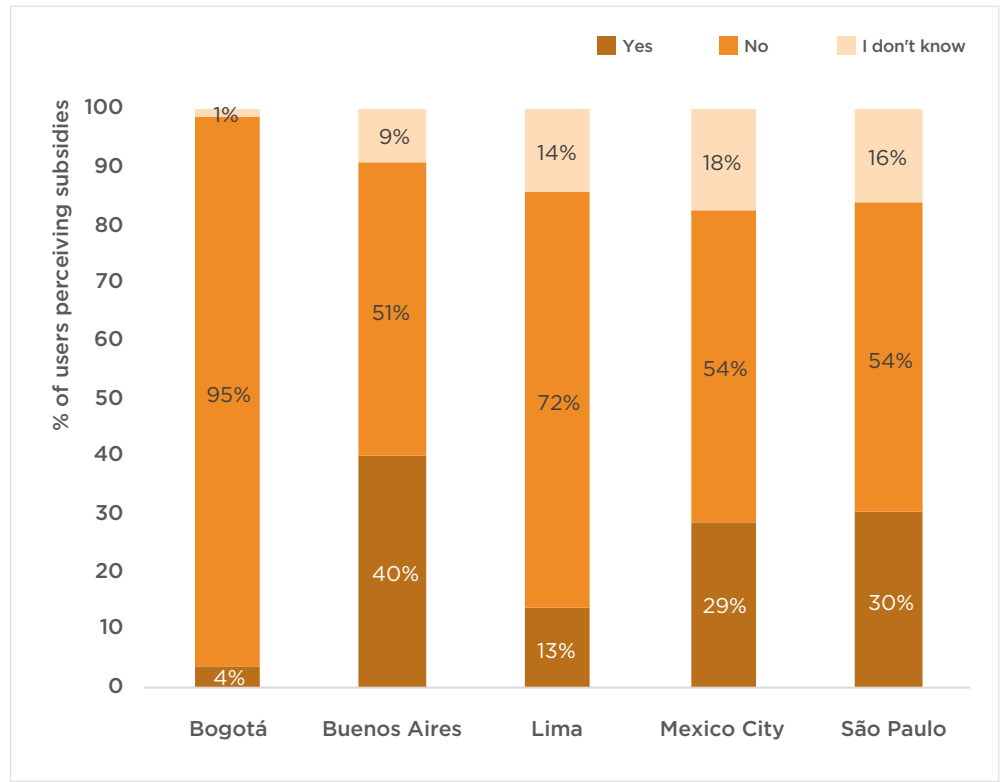
Note: This figure illustrates megacity residents' awareness of whether public transport fares were subsidized in 2023. The data are drawn from the responses of individuals who use public transport at least once a month, and answered the question, "Is the fare of any public transportation service that you use subsidized?"

5.3
Technological Progress and the COVID-19 Pandemic

Over the past decade, the transport sectors in the five megacities have diversified their mobility options. For example, Lima introduced Corredores Complementarios, urban bus services via avenues and streets. Additionally, ride-hailing services have become available in all five megacities, broadening the range of transport choices for residents.

Women constitute a significant portion of ride-hailing users across all five megacities (see **Figure 5.12**). This pattern can be partly attributed to the differing mobility needs of men and women. As primary caregivers, women typically make more (and shorter) trips in a day and engage in trip chaining for nonwork purposes, such as accompanying other family members to school or medical appointments (Scholl et al., 2022). Perceptions of ride-

hailing services' safety may be another factor driving their use among women. In 2014, more than 60 percent of women in Bogotá, Lima, and Mexico City reported that they had experienced sexual harassment at least once in their years using public transport (Montoya et al., 2021). In response, over the past decade, cities like Mexico City have implemented gender-segregated buses and wagons (Granada et al., 2018b), and studies have been conducted in Bogotá to identify contributing factors to the issue (Granada et al., 2018a). Ride-hailing services are particularly valued by women who report feeling insecure when using other transport modes, as these services provide features that enhance their sense of security (Scholl, Oviedo, and Sabogal, 2021).

■ **Figure 5.12**

Share of Work Commutes Made via Ride-Hailing Services, by Gender, 2023
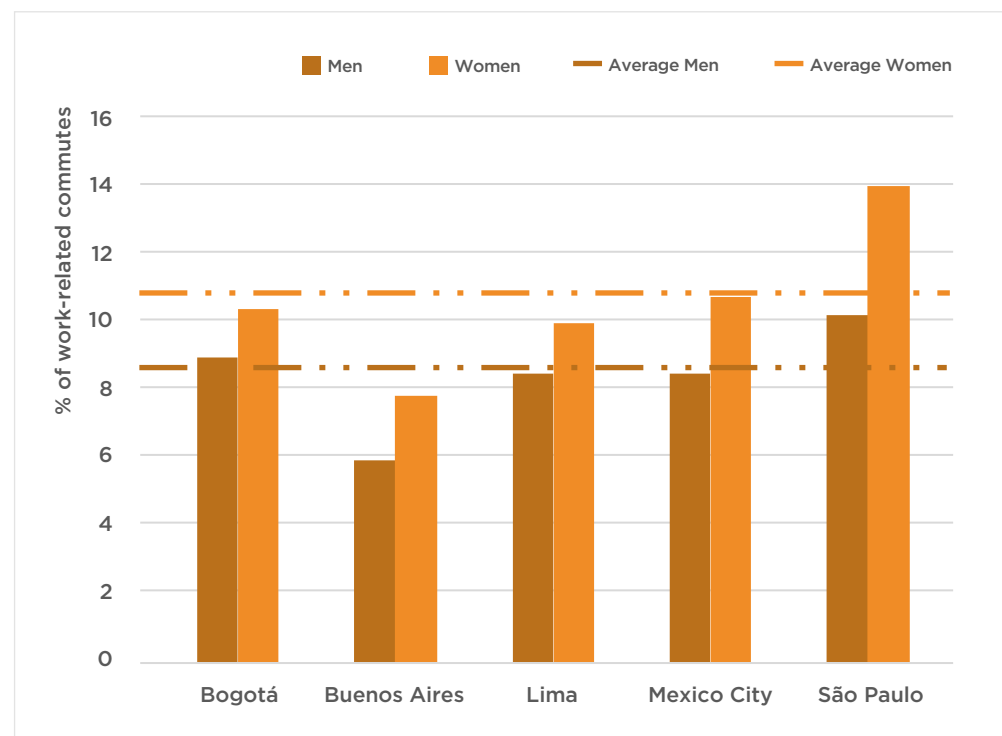
Note: This figure presents the proportion of work-related commutes completed using ride-hailing services in 2023, segmented by gender. The percentages represent the share of employed individuals who utilized these services for their work commutes. Data are derived from employed citizens across megacities who reported commuting to a workplace.

While ride-hailing services could be considered a relatively safe alternative to public transport, **Figure 5.13** highlights that fewer lower-income women report using such services. This suggests that affordability remains a barrier, potentially forcing this group to opt for less comfortable or less secure modes of transport and limiting their mobility options.

■ **Figure 5.13**

Share of Women's Work
Commutes Made via
Ride-Hailing Services,
across Income Levels,
2023
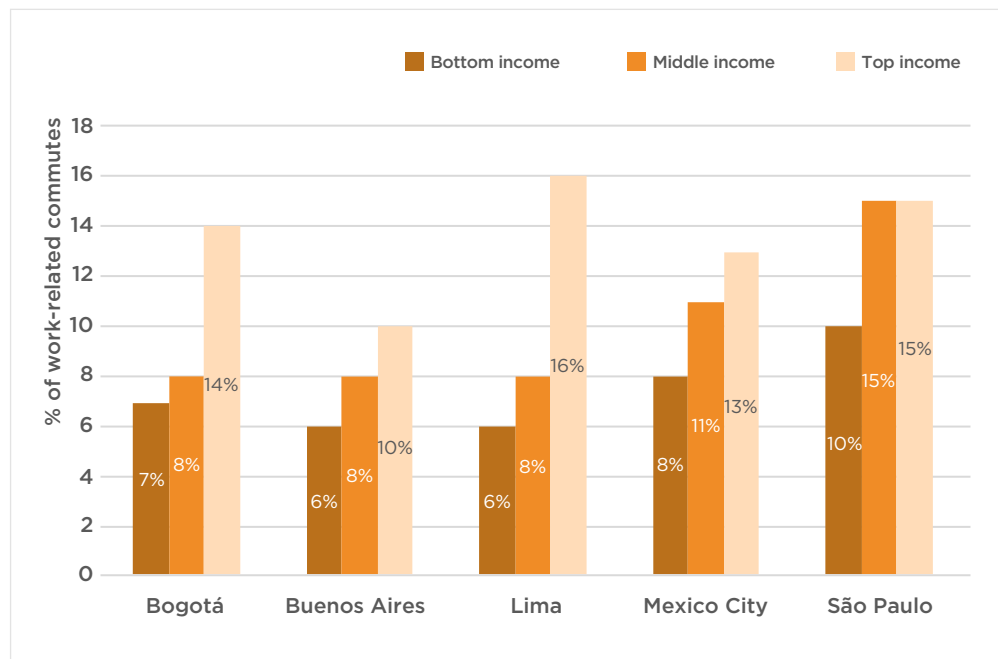
Note: This figure lists the share of women's work-related commutes made using ride-hailing services in 2023, segmented by income quartile (bottom, middle, and top). The data derive from employed female respondents across the five megacities who reported commuting to a workplace.

Among infrastructure services, the transport sector suffered the most during the COVID-19 pandemic. Extensive lockdowns brought public transport to a standstill in 2020 and 2021, amid a significant shift from public to private transport as individuals sought to minimize their risk of infection (Yepez-Garcia et al., 2022). This impact continues to be felt: between 2013 and 2023, the demand for public transport substantially declined in all five cities (see **Figure 5.14**).

■ Figure 5.14

Share of Work Commutes,
by Transport Category,
2013 and 2023

Note: This figure delineates the distribution of transportation categories utilized for work-related commutes in 2013 and 2023. In 2023, the data include only employed citizens who reported commuting to a workplace, whereas the 2013 data encompass all respondents. Private transport consists of cars and motorcycles; public transport consists of buses, BRT systems, metro, and trains. Taxi services for both years consist of taxis, with the addition of mototaxis and ride-hailing services in 2023. Active modes are walking and bicycling.

Commuters have increasingly turned to private transport options, such as taxis or ride-hailing services, or are opting for sustainable alternatives, such as walking or bike riding (except in Mexico City). Ride-hailing services have contributed to this trend. As **Figure 5.15** shows, ride-hailing services constituted around 60 percent of taxi commutes in 2023.

■ **Figure 5.15**

Share of Work Commutes
Made Using Taxi Services,
by Service Type,
2013 and 2023
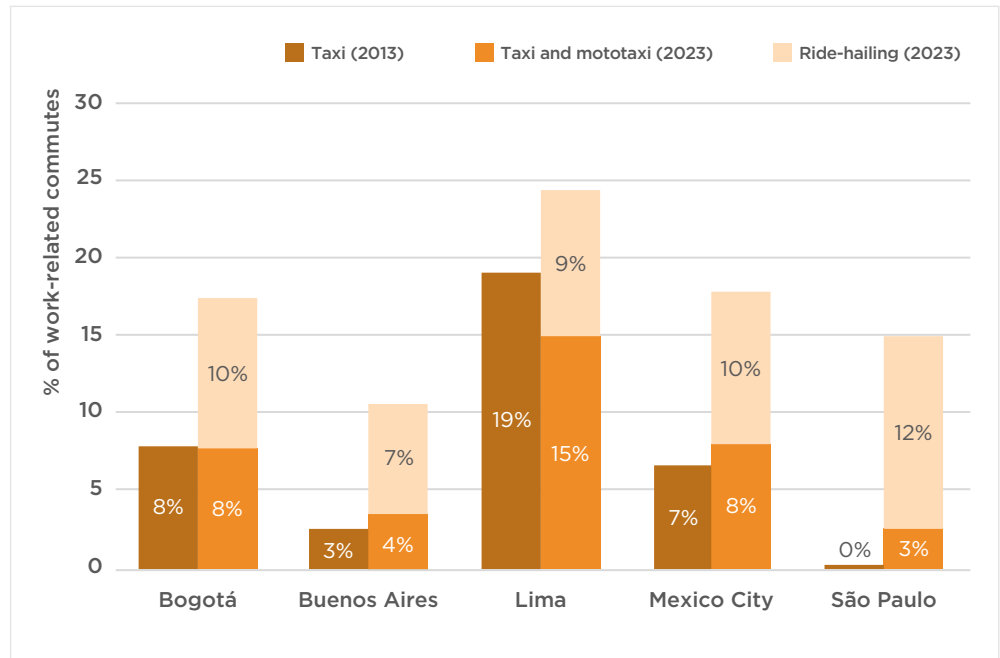
Note: This figure delineates the distribution of taxi services utilized for work-related commutes in 2013 and 2023, across the five megacities surveyed. In 2013, the taxi service category consists of only traditional taxis. In contrast, the 2023 data disaggregates the taxi service category into taxis, mototaxis, and ride-hailing services. For 2023, only responses from employed residents who reported commuting to a workplace are included.

6

Climate Change and Infrastructure Services

Climate Change and Infrastructure Services

The increased frequency and intensity of extreme weather events test the resilience of infrastructure operators.

Global temperatures have been rising steadily since the early 20th century. Notably, temperatures in South America are rising at a faster rate than those in the Caribbean (Cavallo, Hoffman, and Noy, 2023). This climatic shift poses challenges to the provision of infrastructure services. On the one hand, rising temperatures drive up demand for drinking water, and for electricity for air-conditioning. On the other hand, the increased frequency and intensity of extreme weather events test the resilience of infrastructure operators. To understand public perceptions, we surveyed a representative sample of citizens about their views on climate change and the roles both individuals and governments should play in mitigating its impacts.[13] The gathered insights are critical for shaping effective public policies, as they inform policy makers about citizens' perceptions concerning this pressing issue.

6.1
Public Perceptions

While climate change is acknowledged as a reality among Latin American citizens, its tangible impact on their daily lives is not universally perceived. Ninety-seven percent of the surveyed citizens affirmed the existence of climate change, with 83 percent acknowledging the increased occurrence of extreme weather events. Notably, São Paulo registers the lowest percentage at 71 percent, while Bogotá stands out with the highest percentage at 90 percent (see **Figure 6.1**).

Delving deeper, we asked citizens to share their perceptions of the impact of climate change on their local weather and on their families. Ninety-three percent of respondents believed their cities' weather has been altered by climate change, with levels ranging from 87 percent in São Paulo to 96 percent in Lima and Mexico City. Interestingly, fewer respondents—75 percent, on average—said that climate change has affected their families. This percentage ranges from 57 percent in São Paulo to 86 percent in Mexico City.

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13 The questions in this section follow the surveys conducted by Dechezleprêtre et al. (2022).

■ **Figure 6.1**

Perceptions of the Frequency of Extreme Weather Events, 2023
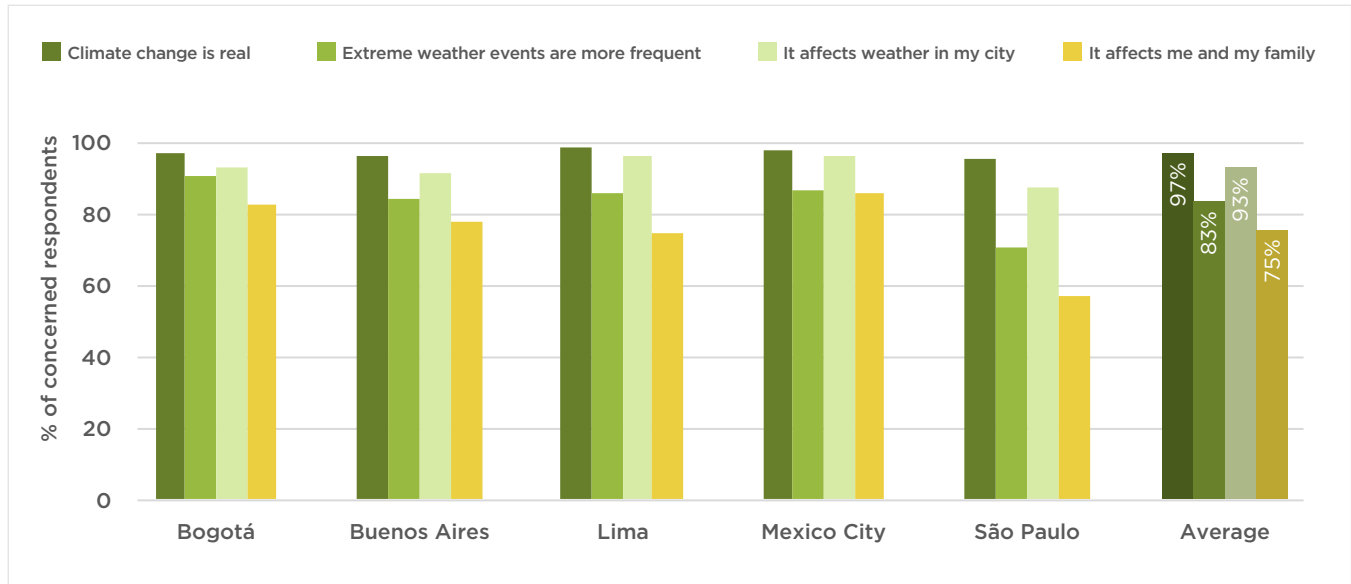
Note: This figure illustrates the perceptions of individuals from the megacities surveyed about the impact of climate change on the frequency of extreme weather events, the weather in their city, and its direct influence on them and their families. Percentages represent the share of surveyed citizens responding to each question. In addressing the weather's impact on the city in question and its effect on individuals and families, combined responses of "A lot" and "Quite a bit" are presented as a unified percentage. The data reflect the views of half of the total surveyed residents, as pointed out in Appendix A.

6.2
The Role of Human Activities

On average, across the region, citizens believed that the responsibility of climate change is shared among various stakeholders: companies (86 percent), industrialized countries (86 percent), citizens themselves (82 percent), and the government (81 percent). **Table 6.1** illustrates the differences between megacities. Respondents across all five cities agreed in attributing less responsibility for climate change to past generations (on average, 66 percent of respondents).

■ Table 6.1

Parties Perceived as Most Responsible for Climate Change, by Share, 2023

	Bogotá	Buenos Aires	Lima	Mexico City	São Paulo	Average
OURSELVES	82%	82%	78%	81%	86%	82%
THE WEALTHIEST	72%	70%	66%	74%	77%	72%
THE GOVERNEMT	80%	82%	75%	79%	87%	81%
THE COMPANIES	84%	89%	81%	84%	91%	86%
PREVIOUS GENERATIONS	64%	66%	61%	72%	65%	66%
THE INDUSTRIALIZED COUNTRIES	86%	88%	84%	84%	90%	86%

Note: This table showcases the percentages of respondents in the surveyed megacities who believe multiple actors bear a significant responsibility ("A lot" or "Quite a bit") for climate change in their country. The actors evaluated include "Ourselves," "Industrialized countries," "The wealthiest," "The government," "Past generations," and "Companies." The data reflect the views of half of the total surveyed residents, as pointed out in Appendix A.

Showing considerable optimism, 80 percent of respondents believed it is possible society can reverse climate change in the coming years, with percentages varying from 75 percent in Buenos Aires to 82 percent in Lima (**Figure 6.2**).

■ Figure 6.2

Society's Perceived Ability to Reduce or Contain the Effects of Climate Change, 2023
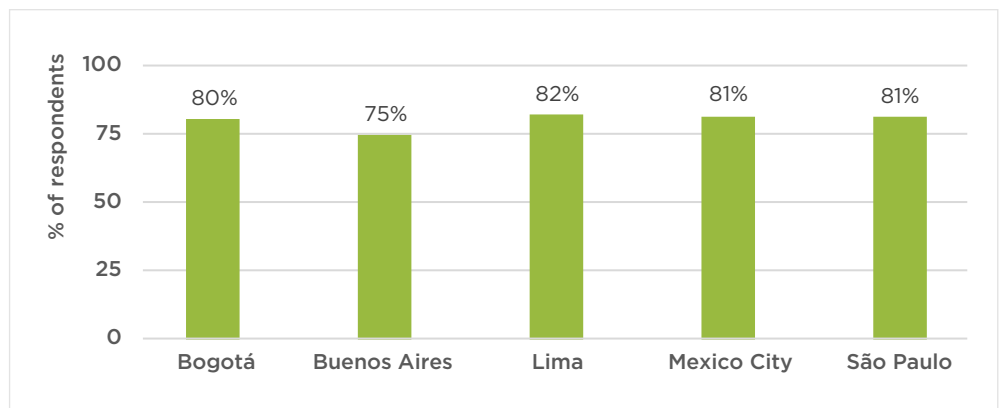
Note: This figure presents the distribution of beliefs among individuals in the surveyed megacities regarding humanity's ability to reduce or contain the effects of climate change. The data are derived from answers to the question: "Is it possible for humans to reduce or contain the effects of climate change?" The data reflect the views of half of the total surveyed residents, as pointed out in Appendix A.

6.3
Civic Responsibilities in Addressing Climate Change

Citizens can help combat climate change by making various changes in their daily lives. When asked about their willingness to adopt eco-friendly habits, the survey found that the most popular choice was to reduce car use, with 75 percent of respondents showing a willingness to do so. Fewer people (62 percent) preferred cutting down on red meat consumption (**Figure 6.3**).

While 73 percent of respondents said they would be willing to limit their electricity consumption, it is important to consider that as the effects of climate change become more pronounced and temperatures increase, more households are likely to start using air-conditioning as a way to adapt. This could lead to greater electricity consumption, especially among wealthier households, as shown by McRae (2023) for Colombian households.

A significant number of citizens reported that they would be willing to own (and use) an electric car (73 percent), which emits less greenhouse gases than other vehicles. This is a promising result since, according to the Latinobarometro 2018 survey, only 3 percent and 2 percent of surveyed residents in megacities claimed to own and use electric and hybrid vehicles, respectively. However, it is crucial to consider that a series of other factors influence the actual decision of a household to buy an electric vehicle, such as the cost of the vehicle, income level, and the availability of charging stations.

Citizens can help combat climate change by making various changes in their daily lives.

■ Figure 6.3

Willingness to Adopt
Sustainable Practices,
2023
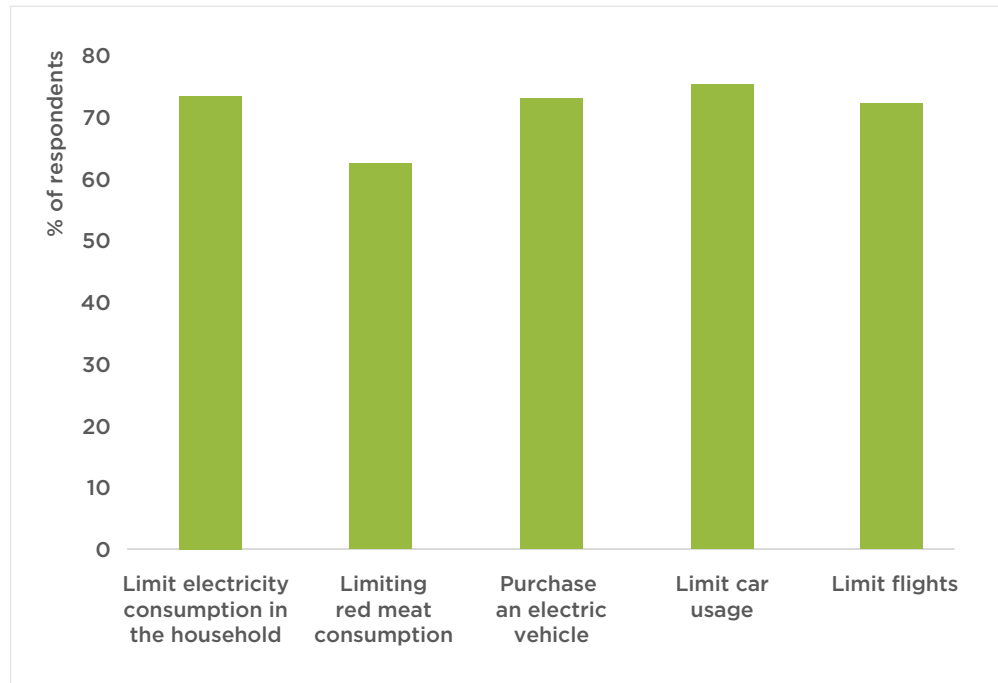
Note: This figure displays the share of respondents in megacities who expressed strong willingness ("Very willing" or "Somewhat willing") to adopt specific sustainable behaviors aimed at reducing environmental and ecological impacts. Behaviors include limiting the use of cars, air travel, and electricity at home; acquiring an electric car; and reducing consumption of red meat. The data reflect the views of half of the total surveyed residents, as pointed out in Appendix A.

6.4
Governmental Interventions and Climate Mitigation

The government plays a pivotal role in leading, supporting, and facilitating environmental resilience (Galindo, Hoffman, and Vogt-Schilb, 2022). Survey respondents expressed their position on several possible policies to address the challenge of climate change. A larger share of citizens in Lima and Mexico City, relative to the other three cities, supported such policies. On average, citizens were more supportive of policies that do not directly affect their lifestyles, such as public investment programs (85 percent) or subsidies for clean energy technologies (86 percent). However, increasing airfare or the cost of public services to fund infrastructure investment was opposed by 40 percent and 50 percent of residents, respectively. Notably, opposition to such measures increased by 11 percent among those who perceived water and energy services as already expensive.

7

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Appendix

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Appendix A.
Survey Design

The survey was conducted among adults aged 18 to 60 residing in five Latin American cities: Buenos Aires, Argentina; Bogotá, Colombia; São Paulo, Brazil; Lima, Peru; and Mexico City, Mexico. This study was conducted to understand the socioeconomic behaviors and preferences within these urban populations on subjects related to public infrastructure and climate change preferences for a total sample of 5,000 individuals (1,000 in each city). Using online surveys, data were collected between February 22, 2023, and May 15, 2023. The sample was enlisted through the Lucid Marketplace with a proportion of 5.5 percent, while Offerwise contributed to 94.5 percent of the sample. Detailed demographic data on the distribution of respondents in Lucid's and Offerwise's panels can be found in **Table A.1.** The exclusion criteria included individuals under 18 or over 60 years and residents outside city areas. The specific regions targeted were Buenos Aires and Gran Buenos Aires in Argentina, Bogotá D.C. in Colombia, São Paulo in Brazil, Lima or Callao in Peru, and Distrito Federal in Mexico.

■ **Table A.1**

Composition of the Panel Providers by Country

	Lucid					Offerwise				
	ARG	COL	BRA	PER	MEX	ARG	COL	BRA	PER	MEX
SAMPLE SIZE	287,839	340,902	1,956,787	182,831	1,099,145	342,510	554,923	1,715,753	400,511	829,756
AGE										
13-17						0.05	0.03	0.03	0.03	0.04
18-24	0.35	0.44	0.38	0.46	0.46	0.32	0.33	0.31	0.33	0.34
25-34	0.30	0.31	0.32	0.31	0.30	0.29	0.34	0.33	0.37	0.33
35-44	0.21	0.16	0.19	0.16	0.15	0.17	0.17	0.19	0.17	0.16
45-54	0.09	0.06	0.07	0.05	0.05	0.11	0.09	0.10	0.07	0.09
55+	0.06	0.04	0.04	0.03	0.03	0.06	0.04	0.04	0.03	0.04
SEX										
FEMALE	0.44	0.47	0.51	0.39	0.51	0.51	0.54	0.53	0.46	0.48
MALE	0.56	0.53	0.49	0.61	0.49	0.49	0.46	0.47	0.54	0.52

Note: This table presents the distribution of each panel provider by age and sex.

Piloting was conducted in Lima with 41 observations between January 26 and February 2, 2023, and Bogotá with 60 observations between February 3 and February 6, 2023. After checking the data and making necessary adjustments, a second pilot took place between February 27 and March 10, 2023, in various cities, recruiting 8 participants in Bogotá, 9 in Buenos Aires, 11 in Mexico City, 19 in Lima, and 34 in São Paulo. Minor corrections were made to the survey wording and logic as needed. Special attention was given to the survey in Portuguese, which underwent two revisions to correct spelling errors and ensuring correct translation from Spanish.

Participants had access to the survey if they were registered on a panel supplier website that connects to Predictiv's panel network during the data collection period. They could access the survey through the supplier's portal or be invited directly through a supplier notification, receiving broad, high-level information about the survey to determine their participation. For Offerwise, respondents accessed surveys through links in email invitations, the dashboard on the Web, or the app, with 25 percent through the app, 15 percent through email, and 60 percent through the web. For Lucid, the Behavioural Insights Team (BIT) worked with several panel providers sending the survey entry link to registered participants. Payment for participation varied, ranging from $2.77 to $4.26, managed by the panel provider used, in forms including currency or points convertible into currency or rewards. Financial compensation was equal to or higher than the average that individuals could earn in other online research platforms.

Predictiv documented dropout rates and which screen respondents abandoned. The survey was closed only after reaching the target number of participants. Intervention attrition was evaluated by comparing the proportion of respondents who completed the section about climate change relative to those who started and dropped out after exposure to the material.

Individual-level randomization was employed to define exposure to the climate change section. Upon entering the experiment, participants received a random number representing their group with equal probabilities, allowing evaluation of whether responding to a longer survey caused participants to drop out at an increased rate. The random number was stored in the data output for future analysis to assess the interventions' impact. Pairwise comparison tests were performed, and observed differences suggest that specific material influences respondents' decisions to exit.

However, different cities experienced differential attrition, with Lima observing an overall lower completion rate, while Mexico City noticed a decrease in dropouts after exposure to the climate change section. Lima's participants in the climate change group were 6.3 percent less likely to complete, whereas in Mexico City, they were 1.8 percent less likely to drop out. This difference was small and not replicated across cities.

Representative samples were assured using a quota system at the front end of the experiment, including age, gender, and income, allowing us to cap participants if the sample statistic for certain groups was reached. Quotas were set before recruitment, based on percentages provided by the IDB and included in the technical report. No additional selection or filter was applied beyond those indicated. Recruitment and quotas were monitored daily, and flexible management was adopted in the late stages when specific quotas were unlikely to be fulfilled, ensuring a minimum number of complete responses. Detailed quota data per city are shown in **Table 2.1**.

Limitations of the field survey include the sample only containing participants with internet and device access, affecting the representativeness of the sample. Difficulties were observed in reaching quota targets, particularly in Mexico City, with challenges in recruiting middle-income participants, individuals 18–25 and 45–60, and men. Gender quota targets were slightly missed across countries, with a trend of overrecruiting women and underrecruiting men. The total number of complete responses collected increased to 5,358 individuals in order to guarantee a minimum number of individuals in each of the quota target cells given the limitation during the field survey.

Survey procedures involved the use of Predictiv, an online platform by the Behavioural Insights Team (BIT), providing access to millions of individual participants in over 60 countries. Its main limitation is ensuring a representative sample only containing participants with internet and device access. Quality assurance included safeguards by Predictiv, such as security blocks against multiple entries by the same participant, excluding respondents from different experiments within the same project, and ensuring financial compensation. BIT staff members and IDB counterparts reviewed the initial surveys and subsequent iterations.

The participants were only identifiable by a randomly generated identification number; no personally identifiable or sensitive information was collected during the trial. All data collection and storage comply with existing General Data Protection Regulation regulations. The participation was entirely voluntary, and all information given to participants during the study was truthful.

Appendix B.
Questionnaire

Thank you for participating in this survey.

Objective: This survey will ask for your opinion regarding infrastructure services in your city and some related topics. We ask that you read carefully and answer consistently based on your experience and opinion on the matter.

Duration: The survey should take about 25 to 30 minutes to complete and requires your attention, so only participate if you can dedicate this time.

Consent: All the information you share will be anonymous and used for research purposes. For further information, please read this informed consent information and check this box if you are of legal age and agree to participate in this survey.

[X] I have read the information and agree to participate in this survey.

Please note that you cannot go back after moving on to the next page.

Nowadays, people are very busy and many don't have time to read questions attentively. To demonstrate that you will read the questions in this survey, answer this question by clicking on the following two options: "Very interested" and "Slightly interested".

☐ Extremely interested

☐ Very interested

☐ Moderately interested

☐ Slightly interested

☐ Not interested at all

What are the approximate total monthly expenses of your household? (Six options that change according to each city's income distribution)

In political matters, where terms like 'right' and 'left' are used, where would you place yourself on a scale from 1 to 7, where 1 is "far left" and 7 is "far right"?

On a scale of 1 to 10, where 1 means you prefer to avoid risks in your life and 10 means you enjoy taking risks, how do you see yourself in terms of risk preference?

How much do you trust in...? (Options are: Complete Trust; Slight Trust; Neither Trust nor Distrust; Slight Distrust; Complete Distrust)

▢ The national government

▢ Local and/or regional governments

▢ The international scientific community

▢ Public institutions (Ministries, Congress, police, among others)

Water, sanitation, and solid waste management

From this point on, we will ask you about your opinions regarding infrastructure services in your city and some related topics. We ask that you read carefully, and answer consistently based on your experience and opinion on the matter.

How would you rate the drinking water service your household receives throughout the year?

▢ Very poor

▢ Poor

▢ Neither good nor bad

▢ Good

▢ Very good

▢ I don't know

How would you rate the cost of the drinking water your household receives?

▢ Very cheap

▢ Cheap

▢ Neither expensive nor cheap

▢ Expensive

▢ Very expensive

▢ I don't know

Is your water consumption subsidized?

☐ Yes

☐ No

☐ I don't know

How would you rate the following aspects of the drinking water service? (Options: i. Very poor. ii. Poor. iii. Neither good nor bad. iv. Good. v. Very good. vi. I don't know.)

☐ Water color

☐ Water taste

☐ Water smell

☐ Water pressure throughout the year

☐ Consistency with which you receive the service

What activities or mechanisms do you use to reduce water consumption in your home? (Select all that apply)

☐ Reduce overall water consumption

☐ Collect rainwater

☐ Collect water from the washing machine

☐ Reduce consumption while showering, washing hands, and/or brushing teeth

☐ Other:

☐ None

☐ I don't know

What is the method or system for disposing of wastewater (drainage/sewage/sewers) in your home?

☐ Connected to the city's wastewater network

☐ Septic tank or pit or silo or latrine

☐ None

☐ Other:

☐ I don't know

How would you rate the drainage service in your home?

☐ Very poor

☐ Poor

☐ Neither good nor bad

☐ Good

☐ Very good

☐ I don't know

☐ Other:

In the past few months, have you had any of the following problems with the wastewater network in your home? (Options: i. Yes. ii. No. iii. I don't know)

☐ Overflow from the wastewater network system

☐ Wastewater running in the street

In general terms, would you say the neighborhood you live in is a place that is…?

☐ Very dirty

☐ Dirty

☐ Neither clean nor dirty

☐ Clean

☐ Very clean

☐ I don't know

Waste separation refers to disposing of different types of materials, such as plastic, metal, paper, and organic material, individually. Would you be willing to separate waste in your home if a recycling program were implemented?

☐ Yes

☐ No

☐ I don't know

Does the garbage collection truck pick up waste as scheduled?

☐ Yes

☐ No

☐ I don't know

When collecting the bags, do they do so without leaving any waste behind?

☐ Yes, they collect without leaving waste

☐ No

☐ I don't know

Energy

What type of energy source do you use in your home? (Select all that apply)

☐ Natural gas connection through underground pipelines

☐ Gas cylinder

☐ Electricity connection

☐ Other:

☐ No connection to any energy source

☐ I don't know

How often do you experience power outages or voltage fluctuations (low or high) in your home?

☐ Every week

☐ Every month

☐ Every two or three months

☐ Once a year

☐ Once a year, but for an extended period (a consecutive week or more)

☐ Almost never or never

☐ No electricity connection

☐ I don't know

How would you rate the cost of electricity?

☐ Very cheap

☐ Cheap

☐ Neither expensive nor cheap

☐ Expensive

☐ Very expensive

☐ I don't know

Is your electricity consumption subsidized?

☐ Yes

☐ No

☐ I don't know

How often do you experience interruptions in the piped gas service due to a failure?

☐ Every week

☐ Every month

☐ Every two or three months

☐ Once a year

☐ Almost never or never

☐ I don't know

How would you rate the cost of the underground piped gas service?

☐ Very cheap

☐ Cheap

☐ Neither expensive nor cheap

☐ Expensive

☐ Very expensive

☐ I don't know

Do you have any of the following equipment or devices in your home? (Options: i. Yes ii. No ii. I don't know)

☐ Energy-efficient or low-consumption or LED bulbs

☐ Air conditioners purchased after 2018

☐ Refrigerators purchased after 2018

☐ Windows with double-glazed panels

Air quality

In general, how would you rate the air quality you breathe when walking around your neighborhood?

☐ Very poor

☐ Poor

☐ Neither good nor bad

☐ Good

☐ Very good

☐ I don't know

In the past 12 months, has the air quality you breathe deteriorated due to any of the following situations? (Options: i. Yes ii. No ii. I don't know)

☐ Smell of industrial waste

☐ Garbage smell

☐ Wastewater smell

☐ Vehicle exhaust

☐ Burning of garbage or materials

☐ Dust from herbicides to eliminate weeds

Do you believe that respiratory diseases are related to the air quality in your city or due to other causes?

☐ Related to the air quality

☐ Related to another cause

☐ I don't know

Transportation

Approximately how far, in kilometers, is it from your home to your workplace?

Approximately how far, in kilometers, is it from your home to health facilities (health centers, hospitals, clinics, medical offices, etc.)?

Approximately how far, in kilometers, is it from your home to educational institutions (nurseries, primary schools, secondary schools, and others)?

Approximately how long, in minutes, does it take you to get from your home to your workplace?

Approximately how long, in minutes, does it take you to get from your home to health facilities (health centers, hospitals, clinics, medical offices, etc.)?

Approximately how long, in minutes, does it take you to get from your home to educational institutions (nurseries, primary schools, secondary schools, and others)?

Do you think the time it takes you to get to your workplace is reasonable or too much?

☐ It's reasonable

☐ It's too much

☐ I don't know

Do you think the time it takes you to get to health facilities (health centers, hospitals, clinics, medical offices, etc.) is reasonable or too much?

☐ It's reasonable

☐ It's too much

☐ I don't know

Do you think the time it takes you to get to educational institutions (nurseries, primary schools, secondary schools, and others) is reasonable or too much?

☐ It's reasonable

☐ It's too much

☐ I don't know

What means of transportation do you use to get to your workplace? (Select all that apply - options change according to each city's transportations modes)

What means of transportation do you use to get to health facilities (health centers, hospitals, clinics, medical offices, etc.)? (Select all that apply - options change according to each city's transportations modes)

What means of transportation do you use to get to educational institutions (nurseries, primary schools, secondary schools, and others)? (Select all that apply - options change according to each city's transportations modes)

How many minutes by walking from your home is the public transportation stop you usually use? If you don't use public transportation, please estimate the nearest stop you know and would use it if the situation arises.

How often do you use each of the following transportation services? (Options: i. Every day. ii. Several days per week (4 to 6). iii. A few days per week (1 to 3). iv. Once a month. v. Almost never or never vi. I don't know)

How would you rate, in general terms, the following transportation services in Bogotá? (Options: i. Very poor. ii. Poor. iii. Neither good nor bad. iv. Good. v. Very good. vi. I don't know)

How would you rate the following aspects of _____ in _____? (Options: i. Very poor. ii. Poor. iii. Neither good nor bad. iv. Good. v. Very good. vi. I don't know)

☐ Frequency of _____ during the day

☐ Frequency of _____ during the night

☐ Ticket price

☐ Comfort during the trip

☐ Cleanliness of _____

☐ Safety at the station or during the trip

☐ Condition of the _____ and the roads

Is the ticket for any of the services you frequently use subsidized?

☐ Yes

☐ No

☐ I don't know

On your way to that public transport stop, do you encounter any of the following problems? (Select all that apply)

☐ It's an unsafe area

☐ There is no public lighting

☐ There is mud on rainy days or afterwards

☐ The area gets flooded on rainy days or afterwards

☐ There's a lot of dust that gets stirred up by the wind

☐ No difficulties

☐ I don't know

Employment

Are you currently working or looking for a job?

☐ Working

☐ Looking for a job

☐ Studying

☐ None of the above

☐ I don't know

How concerned would you say you are about becoming unemployed or continuing to be unemployed in the next 12 months?

☐ Very concerned

☐ Concerned

☐ Slightly concerned

☐ Not concerned

☐ I don't know

How many hours a day do you spend on unpaid domestic tasks, such as caring for household members, cleaning the home, or preparing meals?

What type of health coverage do you have? (Options change according to each city's available options)

☐ _____

☐ Public

☐ Private

☐ No health insurance

☐ I don't know

☐ Other:

On a scale where 1 is very dissatisfied and 5 is very satisfied, how satisfied are you with the following dimensions? (Options: 1- Very Dissatisfied. 2- Dissatisfied. 3- Neither Satisfied nor Dissatisfied. 4- Satisfied. 5- Very Satisfied. 99- I don't know)

☐ Availability of doctors

☐ Infrastructure of the medical center where you receive care

☐ Quality of medical care

☐ Cost of the care service

Intersectoral weight

Thinking about the problems you face today in terms of your quality of life, to what extent are you currently affected by the following issues?

Using a scale from 0 to 10 where 0 is "currently not a problem for me" and 10 is "currently a very serious problem for me", you can also use the intermediate scales. (Select 0 1 2 3 4 5 6 7 8 9 10 for each)

☐ Issues related to climate change.

☐ Issues with the availability of electricity and gas.

☐ Issues during storms or heavy rainfall.

☐ Issues with the drainage/sewer service.

☐ Drainage issues.

☐ Issues with disturbing noises.

☐ Issues with waste collection services.

☐ Air quality issues.

☐ Issues with drinking water service.

☐ Scarcity of available public spaces.

☐ Insufficient income to cover expenses for food, housing, and transportation.

☐ Issues with public transportation and/or traffic-related problems.

☐ Issues with telephone and internet services.

☐ Lack of inclusive infrastructure (for citizens with physical disabilities).

☐ Issues with educational services.

☐ Scarcity of green spaces and recreation areas.

☐ Lack of participation in district government decisions.

☐ Issues with the quality of your housing.

☐ Lack of transparency from the district government.

☐ Security issues.

☐ Difficulties in dealing with district procedures.

☐ Employment issues.

☐ Health service issues.

From the mentioned problems, which would you say are the four that most affect your current quality of life?

Double-click or drag and drop items from the list on the left to move them to the right. The highest priority item should be at the top, while the least priority should be in the lowest position. (Please select 4 answers)

To show that you are still paying attention, please select "Blue" from the following list:

☐ Yellow

☐ Green

☐ Tile

☐ Red

☐ Blue

Climate change[14]

Over the past few decades, humans have been using more and more fossil fuels such as coal, gas, or oil. Burning these fuels releases carbon dioxide into the atmosphere. Currently, the concentration of carbon dioxide is at its highest point in the last 800,000 years. The concentration of these types of gases in the atmosphere contributes to the planet's temperature. In particular, scientists claim that the increase in gas concentrations due to human activity causes climate change. Climate change refers to long-term or permanent changes in temperature, water levels, and periods of drought and rainfall on the planet.

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[14] The questions in this section follow the surveys conducted by Dechezleprêtre et al. (2022).

To address climate change, we need to reduce our environmental and ecological impact. This is possible, but it requires a deep transformation in the sectors most responsible for emissions: energy, transportation, and industry.

Do you believe that in _____, current extreme weather events (floods, heatwaves, cold waves, storms) occur:

☐ More frequently than before

☐ About the same frequency as before

☐ I don't know

How much do you think global climate change affects the city's weather?

☐ A lot

☐ Quite a bit

☐ A little

☐ Not at all

☐ I don't know

And how much does global climate change affect you and your family?

☐ A lot

☐ Quite a bit

☐ A little

☐ Not at all

☐ I don't know

How prepared do you think each of the following groups is to deal with a natural disaster, for example, a very heavy rainstorm that could occur in the area where you live? (Options: i. Prepared. ii. Not prepared. iii. I don't know.)

☐ Firefighters

☐ Provincial government

☐ Police

☐ You and your family

☐ National government

☐ Municipal government

☐ Military

☐ Hospitals

In your opinion, is climate change real?

☐ Yes

☐ No

☐ I don't know

How much of climate change is due to human activity?

☐ A lot

☐ Quite a bit

☐ A little

☐ Not at all

☐ I don't know

How much would you say you know about climate change?

☐ A lot

☐ Quite a bit

☐ A little

☐ Not at all

☐ I don't know

How responsible are the following actors for climate change in your country?
(Options: i. A lot. ii. Quite a bit. iii. A little. iv. Not at all. v. I don't know.)

☐ Each one of us

☐ Industrialized countries

☐ The wealthiest

☐ The government

☐ Past generations

☐ Companies

Is it possible for humans to reduce or contain the effects of climate change?

☐ Yes

☐ No

☐ I don't know

According to experts, some possible behaviors you could incorporate into your life to reduce environmental and ecological impact are the following. How willing would you be to adopt these behaviors? (Options: i. Very willing. ii. Somewhat willing. iii. A little willing. iv. Not willing at all. v. I don't know.)

☐ Limit the use of cars.

☐ Limit air travel.

☐ Acquire an electric car.

☐ Limit the use of electricity at home.

☐ Limit the consumption of red meats.

How important are the factors listed below for you to adopt a lifestyle that reduces your environmental and ecological impact? (Options: i. Very important. ii. Somewhat important. iii. A little important. iv. Not important at all. v. I don't know)

☐ Observing a lifestyle change in the wealthiest people.

☐ Observing a lifestyle change in society in general.

☐ Receiving economic support to adopt this new lifestyle.

☐ Existence of public policies to combat climate change.

A green and sustainable infrastructure program refers to adopting and implementing goods and services in the economy that reduce environmental and ecological impact. How much do you agree with a public program that supports investment in green and sustainable infrastructure if the program...? (Options: i. Strongly agree. ii. Agree. iii. Neutral. iv. Disagree. v. Strongly disagree. vi. I don't know)

☐ Would make electricity production cleaner.

☐ Would be socially just and equitable.

☐ Would positively and significantly affect the country's economy and employment.

☐ Would be very costly to combat climate change compared to other public programs.

☐ Would reduce air pollution.

☐ Would increase the use of public transport.

In your opinion, if the government decides to implement a green and sustainable infrastructure program, how much would the following household groups lose or gain? (Options: i. Lose a lot. ii. Lose a little. iii. Indifferent. iii. Gain a little. iv. Gain a lot. v. I don't know)

☐ Households in urban areas

☐ Households in rural areas

☐ My household

☐ Middle-income households

☐ High-income households

☐ Low-income households

What is your position on the following programs to combat climate change? (Options: i. Strongly support. ii. Support. iii. Neutral. iv. Oppose. v. Strongly oppose. vi. I don't know)

☐ Public investment program in green and sustainable infrastructure.

☐ Taxes on airplane flights (a 20 percent price increase).

☐ Increase the cost of public services to finance investment, adaptation, and innovation in their infrastructure.

☐ Bans on polluting vehicles in high-traffic cities.

☐ Subsidies for clean technologies (renewable energies, for example).

☐ Taxes on all products that harm the environment.

Creating additional taxes to combat climate change generates additional income for the government that can be used in different ways. What is your position on the following proposals to redistribute these revenues? (Options: i. Strongly support ii. Support iii/ Neutral iv. Oppose v. Strongly oppose vi. I don't know)

☐ Use the money to reduce the government's public debt.

☐ Government money transfers to all households equally.

☐ Government money transfers to the poorest households.

☐ Government money transfers to households without alternatives to using fossil fuels.

☐ Reduce the cost of household public services.

☐ Invest funds in green and sustainable infrastructure projects.

☐ Subsidize the use of clean technologies, including renewable energies.

In which part of the city do you live? (List of neighbors in each city).

This is the end of the survey. Thank you for participating!

Please click the button at the bottom of the page to access the reward for your time.

You can use the following field to share any comments about the survey.

Appendix C.
Tables

■ **Table C.1.**

Urban Challenges in Latin America: A Comparative Perception Score Analysis, 2023

Problem	Average		Bogotá		Buenos Aires		Lima		México City		São Paulo	
	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.
UTILITIES												
Sewage/drainage	2.90	3.16	2.52	2.96	2.93	3.27	2.61	2.95	3.49	3.20	2.98	3.34
Drinking water	2.95	3.25	2.26	2.88	2.98	3.33	2.87	3.05	4.18	3.49	2.59	3.22
Electricity and gas	2.64	3.09	2.01	2.76	3.36	3.35	2.61	2.96	2.78	3.16	2.51	3.09
Waste collection	2.94	3.13	2.78	3.07	2.75	3.08	3.41	3.19	3.30	3.23	2.50	3.03
ECONOMIC AN PERSONAL SECURITY												
Insecurity	7.22	3.06	7.42	2.84	7.28	3.11	7.39	3.01	7.09	3.04	6.90	3.28
Insufficient income	5.83	3.44	5.99	3.37	6.48	3.32	5.46	3.31	5.72	3.38	5.49	3.70
Employment	5.11	3.74	5.13	3.71	5.24	3.82	5.03	3.57	5.03	3.66	5.13	3.94
Housing quality	3.70	3.42	3.19	3.22	4.00	3.51	3.62	3.22	3.73	3.36	3.98	3.70
ENVIRONMENTAL AND HELATH CONCERNS												
Air quality	4.88	3.24	5.34	3.08	3.96	3.19	4.30	3.13	5.90	3.10	4.96	3.33
Climate change	5.20	3.30	5.28	3.20	5.12	3.33	4.96	3.13	5.82	3.21	4.85	3.51
Severe weather or heavy rains	3.95	3.30	4.11	3.20	3.13	3.11	3.64	3.26	4.14	3.26	4.70	3.47
Noise pollution	4.42	3.34	4.15	3.23	4.06	3.41	4.79	3.19	4.72	3.27	4.38	3.55
Drainage	2.80	3.07	2.44	2.84	2.55	3.02	2.64	2.92	3.42	3.20	2.98	3.25
LOCAL AUTHORITIES												
Lack of local authorities' transparency	6.31	3.37	6.46	3.18	6.35	3.49	6.35	3.34	6.21	3.35	6.19	3.52
Lack of participation	5.37	3.43	5.18	3.37	5.29	3.55	5.71	3.31	5.26	3.36	5.40	3.54
Difficulties in dealing with district	4.86	3.46	4.88	3.40	4.60	3.51	4.67	3.32	5.06	3.36	5.09	3.64
PUBLIC SERVICIES AND AMENITIES												
Inclusive infrastructure	4.95	3.55	4.47	3.46	4.68	3.57	5.20	3.47	4.85	3.43	5.52	3.71
Green spaces and recreational areas	4.79	3.54	4.29	3.42	4.05	3.53	5.12	3.49	4.99	3.45	5.49	3.58
Health services	4.95	3.48	4.33	3.40	4.95	3.49	5.24	3.33	5.07	3.43	5.21	3.64
Transportation	5.16	3.39	5.61	3.33	4.65	3.39	5.28	3.27	5.39	3.37	4.84	3.50
Educational services	4.00	3.53	3.42	3.35	4.14	3.61	4.15	3.42	3.86	3.46	4.46	3.71
Available public spaces	3.96	3.24	3.77	3.14	3.58	3.29	3.92	3.10	4.21	3.19	4.34	3.43
Information and communication	3.82	3.34	3.67	3.37	4.36	3.37	4.06	3.28	3.33	3.15	3.66	3.41
N	**5356**		**1120**		**1055**		**1084**		**1010**		**1087**	

Note: This table shows the mean scores assigned by respondents to the urban challenges affecting their quality of life in 2023. Respondents were asked: "Considering the problems you currently face in terms of your quality of life, to what extent do the following issues affect you?" They were then prompted to rate each issue on a scale from 0 to 10, where 0 meant "Currently not a problem for me" and 10 meant "Currently a very severe problem for me." The issues listed include concerns related to climate change, noise pollution, air quality, extreme weather events, waste collection, energy and gas availability, income sufficiency, water supply, drainage, sewer services, public space availability, health services, district government participation, infrastructure inclusivity, employment, district administrative procedures, housing quality, telecommunication services, green spaces, security, district government transparency, educational services, and public transport. The issues have been grouped under five categories: (i) basic utilities, (ii) environmental and health concerns, (iii) public services and amenities, (iv) economic and personal security, and (v) local authorities.