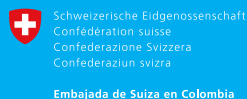




INFRASTRUCTURE FOR ACTIVE MOBILITY AND GENDER: A METHODOLOGICAL GUIDE



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INFRASTRUCTURE FOR ACTIVE MOBILITY AND GENDER: A METHODOLOGICAL GUIDE

Infrastructure for Active Mobility and Gender: A Methodological Guide

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International Finance Corporation

Camila Rodríguez

Úrsula Blotte

Felipe Montoya Pino

Office of the Mayor of Medellín

Daniel Quintero Calle – Alcalde de Medellín

Diana Osorio – Gestora Social de Medellín

Victor Hugo Piedrahita Robledo - Secretario de Movilidad de Medellín

Daniela Cardona Duque – Gerente de Movilidad Humana

Alejandra María Álvarez Orrego – Coordinadora del Componente

Social de Gerencia de Movilidad Humana

Jennifer Paola Henao Ramírez – Profesional del Componente

Social de Gerencia de Movilidad Humana

Laura Arias Galeano - Líder de Comunicaciones de la Secretaría de Movilidad de Medellín

Laura Cárdenas Posada - Coordinadora del Componente

Comunicaciones de Gerencia de Movilidad Humana

Medellin work team 2021

Carlos Cadena Gaitán

Lina López Montoya

Nathaly Estrada Benjumea

Work team

Despacio

Marina Moscoso

Sara Arboleda

Angie Ángel

Valeria Bernal Castillo

ITDP

Félix Vidal Masip

Sonia Medina Cardona

Adriana Berenice Pérez Campos

Medellín Mayor's Office fieldwork participants

Andrés Camilo Carmona Restrepo.

Berónica Builes Gómez.

Johan Camilo Rivera Pérez

Jonathan Fernando Salazar Usuga

Leidy Johana Jaramillo Ortega

Liz Yeraldine Palacio Pino

Sarah Melissa Arbeláez Quintero

Samara Lozano Delgado

Sebastián Muñoz Castrillón

Eafit university (Group of studies in Marketing, Mercalab)

Laura Isabel Rojas De Francisco PhD
María Claudia Mejía Gil PhD
María Susana Jaramillo Echeverri PhD
María José Gaviria Rincón
Paula Andrea Hinestroza
Anyi Liliana Rincón Benjumea
Daniela Gómez Tamayo
Alejandro Marín Tamayo

External reviewers

Irene Portabales, Transport Specialist, Banco Mundial
Adriana Hurtado-Tarazona, PhD

Editorial design: Bicivilizate, Claudio Olivares Medina, Javiera Donoso Romo

Photo credits appears on each photography..

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Medellín, Colombia – 2022

This document contains several quotes at the beginning of its chapters and subsections that are the result of the project's research work. For privacy reasons, their authors remain unnamed. When available, information on their demographic characteristics was added.

In many cases, these participants narrated the very negative experiences they endured while traveling in the city and, in others, it was clear that these experiences violated their right to the city and their autonomies.

This guide could not have been possible without their help, time invested, sincerity, and all the information and opinions they gave when consulted. For this reason, this guide seeks to support the overall goal that no woman should suffer in any way in their daily commute to work, school, or to take care of their families, and that mobility should become a way to improve their living conditions and guarantee their economic, physical and decision-making autonomy.

FOREWORD

In recent years, understanding the definition of the word gender has acquired relevance in government and academic institutions and in society at large; studies have shown the importance of this definition in the social context, as it is built on the characteristics of the difference between women and men that has given rise to inequalities, thus motivating the formulation of public policies and their management to address gender equity.

Likewise, gender approach is a tool with a social dimension that seeks a cultural transformation and recognizes the existence of other social-based discriminations and inequalities such as sexual orientation, ethnic groups and gender identity, prioritizing individuals as human beings.

In my experience as a Social Liaison, across the city, I have known firsthand the existing inequalities in the city that generate gaps between social strata, which motivated me to propose the creation and implementation of strategies and actions in the Development Plan 2020-2023 aimed at this perspective as a commitment to transform unbalanced relations between men and women, especially in the assigned roles, access to opportunities and the invitation to participate in scenarios through a cross-cutting institutional agenda to reduce the gaps of the Future Medellín.

Therefore, it was important to build and provide citizens with a user-friendly guide for these actors that will allow them to understand and improve their accessibility to Active Mobility with elements that will allow them to learn key concepts of gender perspective and details of mobility in the metropolitan area.

We want to invite decision makers, technical people in government, academia and civil society in Medellín to see mobility as an issue for everyone; we envision an inclusive and proactive city that promotes cultural and socioeconomic development and allows us to recognize our territory as a national and international benchmark; for this purpose, we need to recall the goals that this document focuses on:

- Gender approach and active mobility, aimed at describing the requirements to implement active transportation projects where tools are used as conceptual elements to understand this social situation
- Promotion of active and inclusive transport, identifying the mobility variables in Medellín, and proposing a methodology to improve gender inclusiveness in active transport projects
- Supporting information; delivery of bibliographical and conceptual resources and templates to further understand and implement the initiative.

We hope that this document will serve as a roadmap to strengthen the concept of inclusion and its application in different societies.

Diana Osorio *Medellín Social Liaison*



WOMEN IN MOTION

In terms of gender equality, we cannot afford to lower our guard. Not only because it is a social and moral imperative, but because it is an essential prerequisite for development. According to [Unrealized Potential: The High Cost of Gender Inequality in Earnings](#), a study by the World Bank Group, the world loses \$160 trillion in human capital wealth due to the difference in earnings between women and men. This is equivalent to an average of \$23,620 for each person in the 141 countries studied.

The International Finance Corporation (IFC), a member of the World Bank Group, fights against this inequality in multiple spheres, including women's access to financial markets, women's empowerment in organizations and support for women-led small and medium-sized businesses.

Cities constitute one of the main battlefronts. According to recent World Bank studies¹, more than 50% of the world's population currently live in cities, a number that is likely to increase to almost 70% by 2050. Mobility is a key factor. According to the "[Manual of urban planning and design with a gender perspective](#)", a document published in 2020, gender inequality is intrinsically related to the planning and design of the urban environment. The manual presents a range of easy-to-do practices for devising planning and design projects that help make cities more inclusive of all: men and women, people with disabilities and individuals who are often trapped in marginality and exclusion.

1. World Bank, Urban Development Homepage, Washington, DC: World Bank Group, 2019.

Access and mobility patterns are different for men and women; cities that recognize this can open the door to broader socio-economic development. Urban inclusion is not possible without processes that consider gender issues. Within the framework of the activities of the Sustainable Cities program, a project created by IFC with the support of the Embassy of Switzerland - Economic Cooperation and Development (SECO), Medellín was identified as a city that could greatly benefit from a better mobility framework that promotes the inclusion of women. Because of this, we have contributed to the development of this Mobility Guide, which applies a gender approach to the planning, design and operation of active mobility projects.

As stated in the Municipal Development Plan 2020-2023 “Medellín Futuro”, Medellín Mayor’s Office has made decisive progress in planning and executing human mobility projects with a gender and universal accessibility approach, placing special emphasis on promoting walking and the use of bicycles as the main modes of transport.

We hope that this Guide, which has the generous support of the Embassy of Switzerland - Economic Cooperation and Development (SECO) and the Government of Korea, will be a valuable source of guidance on active mobility in Medellín and will serve as inspiration for more Colombian and Latin American cities include the gender perspective in their transportation infrastructure projects.

Camila Rodríguez

*Infrastructure Pre-Investment Lead for
Latin America and the Caribbean
International Finance Corporation
World Bank Group*



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INTRODUCTION

This guide is the result of a project undertaken by EAFIT, Despacio and ITDP for the Secretariat for Mobility of Medellín and with support from IFC, implemented in partnership with the Korean government and the State Secretariat for Economic Affairs of Switzerland SECO. It briefly presents the problem we must face to improve active mobility conditions with a gender perspective, the key concepts that must be taken into account, and a methodology to understand and improve accessibility as well as road and personal safety conditions in active mobility of diverse women. It takes Medellín as an example and includes annexes with more detailed information.

In the process, the project provided support to the Secretariat of Mobility (SdM) of Medellín to generate improvements in the way infrastructure projects are implemented, so that they can prioritize a human-centered mobility approach, understanding and integrating the crossroads between gender and mobility. EAFIT, Despacio and ITDP conducted a marketing study, a literature and conceptual framework review, and a methodological proposal from which five pilots were implemented to test and define the methodology presented in this guide.

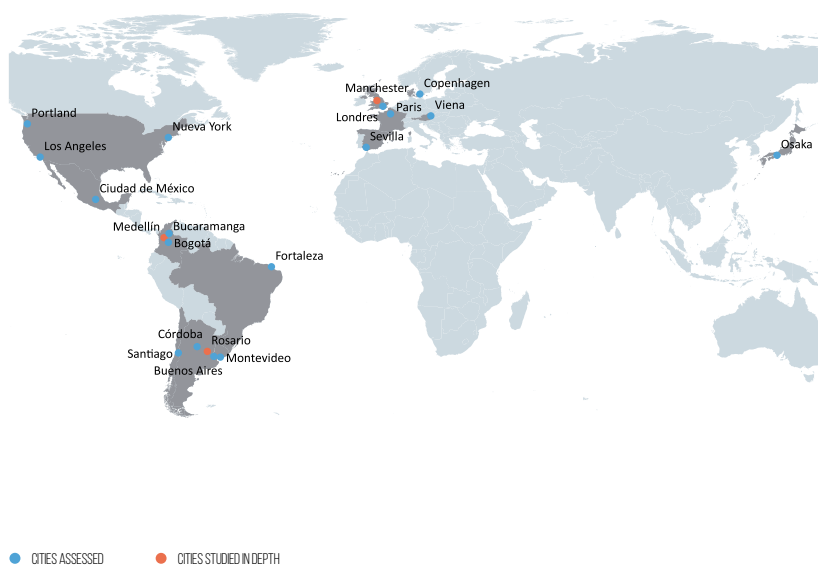


Figure 1. Map of cities assessed and studied in depth.
Prepared by Despacio

For this guide, the project team analyzed five case studies (and a particular infrastructure project or program in them) to analyze best practices, as well as to adapt and develop recommendations suitable for the local context (Figure 2). These specific recommendations are particularly related to planning processes, design considerations, and social co-creation of the project and its planning and operational strategies. These are integrated with the recommendations in the following subsections.

This guide seeks to complement other efforts undertaken by other organizations including the World Bank (World Bank, 2020; Domínguez Gonzalez et al., 2020), GIZ (Moscoso et al., 2021), CAF (Palacios, 2018).

HOW TO USE THIS GUIDE

The guide is structured as follows:

Chapters 1 and 2: describe the problem and the need to use a gender perspective in order to assess and implement active transport projects, and provide concepts to understand such issues.

Chapters 3, 4, and 5: provide further details on the mobility conditions of Medellín and develop a methodology to improve gender inclusiveness in active transport projects.

Digital annex: provides bibliographical and conceptual resources and templates to further understand and implement the initiative.

Anyone involved in mobility, urban planning and gender issues can use this guide in their work and according to their interest, and each section will have a degree of usefulness depending on who consults it (see Table 1 for suggested reading indications).

Table 1. Reading guide according reader profile

If you are / are part of:	You can take the most advantage of this section(s):
Any person	Review the whole content
Decision maker	Chapters 1 and 2
Civil society	Chapters 1 and 5
Person interested in learning about the specific case of Medellín	Chapters 3 and 4
Technical person in government in charge of implementation	Chapters 3 and Digital annex
Academic	Digital annex

DIGITAL ANNEX TO THIS GUIDE

Since the Guide is the result of extensive work developed over several months and contains a wealth of information, the project team has made available the reports of their work for complementary consultation to anyone who is interested. The digital annex is available at the link below and contains the work reports and the formats used in the research in editable format, so people in other cities can use them in their work.



ACCESS DIGITAL ANNEX

THE PROBLEM AND THE KEY CONCEPTS

“I always stay here waiting for the bus and when I see the bus coming, I go out to catch it. Sometimes they come right up to the curb and you can get on without any fuss. Other times, because of the number of cars passing by, we have to go down to the street and get on... There is no bay or bus stop where you can feel at ease when it’s time to get on the bus. You always think that you are going to be mugged or that a car is going to hit you, so you have to do everything quickly so that nothing happens to you.”¹

1. Quotes like this one will be found throughout this guide. They have been said by women who took part in the field work for the construction of this guide. They exemplify how they talk about these issues in a concrete way.



Figure 2. Photo credit: Sara Arboleda

Women must have better travel conditions. Not only has a gender perspective not been integrated into transportation policies at the global level (or has been done only recently), but mobility projects have been implemented with a neutral vision of mobility, without taking into account how different identities affect mobility decisions (Hanson, 2010; Levy, 2013). Although specific studies have been carried out to better understand travel conditions for different genders and how to improve them in Latin American cities (Montoya-Robledo et al., 2020; Moscoso et al., 2020; Quiñones, 2020), there is still more work to be done in this regard, mainly focusing on how to apply these concepts in projects.

Evidently, travel conditions improve for women when infrastructure measures, operations, and general conditions associated with sustainable transport are implemented, making it possible for women to move around more affordably, safely, and easily (World Bank, 2020). In addition, sustainable mobility is key to achieving local and national government commitments to reduce greenhouse gas (GHG) emissions as defined in the Paris Agreement (Quiñones et al., 2016).

Recently, the Covid-19 pandemic has intensified the mobility challenges faced by cities. Public transit systems in Latin America have lower occupancy rates, and the need to maintain supply is putting the financial situation of many public transport systems at risk (C. F. Pardo et al., 2021). Although it is a challenging situation, cities now have an unprecedented opportunity to implement measures embedded within a paradigm shift in mobility focused on equitable access for people to jobs, goods, and services. However, without a gender and universal access perspective, these measures will not be effective in reducing inequalities (Combs & Pardo, 2021).

Strategies that encourage modal shift towards active mobility must involve the travel decision-making process and the barriers people face, including the social, economic, and environmental aspects related to gender, ethnicity, income, age, household composition, and other aspects defining these trips. In particular, there is a need to understand the characteristics of women and their trips, figure out how those can be improved (and to learn about specific success cases), and to formulate a conceptual framework and concrete strategies to improve these conditions.



Figure 3. Photo credit: Sara Arboleda

KEY CONCEPTS

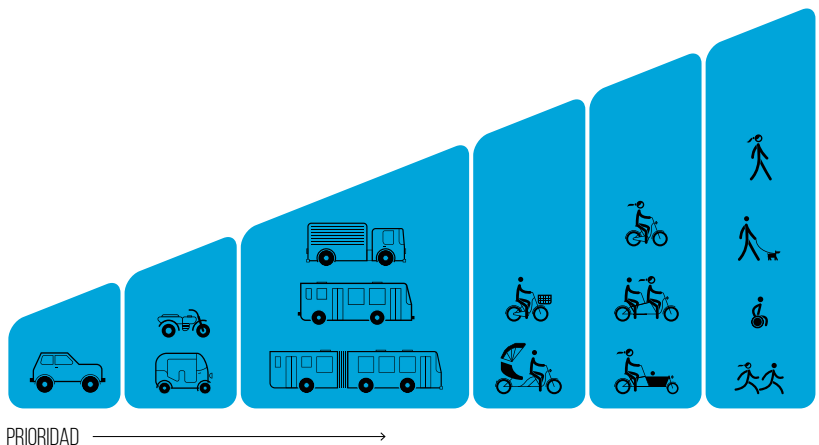
“... they come over to have a cup of coffee after 2 o'clock; first Gloria came because she works on the corner and then Cielito, who lives two blocks away... Now we are friends and we like to sit and talk. One stays here all afternoon and entertains oneself.... I used to be on the front sidewalk but when they started to organize this street the public space people made me move over here. I built this booth and little by little I brought chairs until they started to come... Many people already know me here and come here after lunch for coffee”

– 49-YEAR-OLD WOMAN.

Sustainability and prioritization of sustainable modes

The “Reverse mobility pyramid” (Figure 5) provides an order of priority placing people on foot at the top (especially people with disabilities, children, the elderly, etc.), followed by people riding bicycles, public transport users, and then freight transport, and private vehicles (automobiles and motorcycles). Cities should prioritize the construction of adequate infrastructure for walking, use of bicycles as a means of transportation, and improve the provision of public services to encourage use of these modes for more trips (ITDP, 2011; Robledo-Resrepo, 2017).

Figure 4. Reverse mobility pyramid. (Ministry of Transportation Colombia, 2016)



Mobility of care in active transport

“in order to be considered as a design unit we had to change the concept: it is no longer ‘wheelbarrow’; it is ‘cargo bicycle’ so that it can be taken into account as a design unit, which implies that we propose road sections that include them, we demonstrate with situations that we can take that path.”

– MEDELLÍN HUMAN MOBILITY MANAGEMENT TEAM

Figure 5. Photo credit: Office of the Mayor of Medellín



The term Mobility of Care was first coined by Spanish scholar Inés Sánchez de Madariaga (Sánchez de Madariaga, 2013), seeking to make visible and include care work in transportation planning. Care work is a crucial activity for the development of society and necessary for the basic maintenance of human beings.

Mobility of care represents one of the aspects that has only now started to be documented more visibly and whose absence from traditional mobility and transport planning literature needs to be corrected. The digital annex to the guide presents definitions of the relevant terms for understanding mobility of care with a gender perspective, which complements this section describing its relevance and the most important findings in this regard.

Research shows that the mobility choices of caregivers are impacted when they are providing care. A data analysis conducted with information from Sao Paulo found that women with children cycle less often than those without children, possibly due to the lack of time and additional physical needs (special equipment for the bicycle, physical separation from vehicles on streets, and bike racks) to cycle with children (Harkot, 2018). Another research study conducted in Bogotá on mobility of care and how gender stereotypes affect mobility of care (Montoya-Robledo et al., 2020) indicates that having children can be a barrier to cycling due to road safety concerns and, at the same time, an opportunity to use bicycles as a mode of transportation for care trips (possibility of recreation). In Mexico City (De la Paz Díaz, 2017) illustrates how barriers can vary according to context, individual cycling expertise, and travel distance.

With the appropriate infrastructure and equipment, cycling, being a flexible and efficient mode for short distances, is a good transport option for care trips. However, conditions in Latin America are not yet fully in place for mass use (C. Pardo et al., 2021).

There are two key elements to encourage more care trips to be carried out using active mobility. One is ensuring that bicycle lanes connect to more than just commute-focused destinations and allow care tasks to be carried out safely by cycling. Cities with a higher share of trips made by bicycle and with more women cyclists, show a high proportion of short, non-work-related trips (Goel et al., 2021). Enabling care trips to be made by bicycle or on foot improves the probability of work commutes being chained with active modes. With this in mind, Greater Manchester includes specific measures for neighborhood mobility and school settings in its Bee Network plan. The Safe Paths program has also started working on identifying care travel attractors to be included in its network.

The second element is road design, which should take into account the fact that people making care trips are often accompanying people with limited mobility and/or carrying goods. To this end, the Bee Network adopts design criteria adapted to these trips. Transport for Greater Manchester considers that the entire cycling network should be accessible to people aged 12 and over, and the entire pedestrian network should be suitable to accommodate people with a double stroller.

Women, active transportation, and public space

“...I would rather not go through those Parks after 6 p.m. It is too lonely, all shops are closed, and, even worse, you’re afraid of any thieves coming out. It is better to go around (by the Picacha creek) because you can walk more peacefully... nothing has happened to me there...”

– 25-YEAR-OLD WOMAN

Latin America has problems of inequality and access to economic and social opportunities (Oviedo & Urbano, 2019; van Laake & Quiñones, 2020), which give rise to mobility gaps that are filled with increased motorization, and the emergence of informal transportation systems. In this sense, different countries have developed inclusion agendas that include the design of mobility plans and policies with a gender perspective, based on studies that identified that men and women have different mobility patterns . To do so, these studies have analyzed the gaps and barriers for women according to economic, territorial, and cultural conditions, and the violence experienced by women as a result of mobility systems that have not acknowledged these differences and have not been transformed accordingly.

Figure 6. Photo credit: Sara Arboleda



Gender and mobility

The Economic Commission for Latin America and the Caribbean - ECLAC (2019) calls on Latin American countries to push forward inclusive and sustainable development processes, including the development of mobility policies focused on gender equity and social and environmental sustainability. Mobility systems in the region have not acknowledged the differences in the experience of men and women, thereby rendering invisible the variety of mobility characteristics that may be associated with gender including trip purpose, types of trips, and modes of transportation.

From a gender perspective integrated into mobility systems and policies, ECLAC and other experts on the subject recognize the importance of care mobility, a category that refers to movements made for the purpose of caring for others. Care mobility has been recognized as one of the main reasons why urban and rural women in the region move (beyond work or study), and should lead to the recognition of women as active agents in the production and improvement of the urban habitat and, more specifically, the transportation system. It also promotes the exercise of women's rights and the search for comprehensive conditions and solutions to women's mobility needs.

Countries such as Costa Rica (MTSS, 2019), Chile (Política de Equidad de Género en Transportes, 2018), Mexico (Secretaría de Movilidad Gobierno de la Ciudad de México, 2019) and the city of Montevideo have built their mobility and transportation policies and plans with a gender perspective seeking gender equity and engaging other diversities. Some of the issues they have explicitly addressed include promoting equality, gender justice and general accessibility, governance, strengthening capacities and opportunities, knowledge management, inclusive infrastructure design and violence-free mobility, gender mainstreaming in transport system planning, reducing sexual violence and aggression in transport, strengthening gender parity in the transport sector, and identifying women's needs and travel patterns.



Figure 7. Photo credit: Office of the Mayor of Medellín

Walking as the predominant form of mobility for women

“... It is very easy to go shopping around here; everything is close by. You leave the house and you can find the market, the hairdressers, the bakery, stationery stores, there is even a lady who sells porcelain in the garage of the house and there is always someone there talking to her...”

– 48-YEAR-OLD WOMAN.

In Latin America, women make a greater number of trips than men. The number of men who travel on foot is almost half the number of women who do so, while the ratio is inverse for trips made by private car. According to ECAF (a 2016 survey conducted in 11 Latin American cities), 21% of women reported that they walk to their workplace, compared to 13% of men (Palacios, 2018). Women use cars and motorcycles less than men, but use public transportation frequently or have to walk, even if they are exposed to physical violence (ECLAC, 2019).

Figure 8. Photo credit: Office of the Mayor of Medellín



According to a study conducted by Angie Palacios with data from the CAF Survey (ECAAF), the labor barriers experienced by women that keep them from working (even in the informal sector) show that the demand for mobility is concentrated in the vicinity of their homes, which would explain their trips on foot. The study concludes that women prefer to walk and is also a result of restrictions associated with the feminization of labor informality and mobility of care (Palacios, 2018).

In Latin America, emphasis needs to be placed on improving the walking experience, and not on increasing the number of walking trips. Improving conditions for walking will directly impact women's mobility because it is mostly women who walk as a form of transport. It is also important to foster an intermodal public transport network (and fares that facilitate interlinked trips) that favor women's mobility, as they experience changing transportation needs throughout the day due to their caretaking responsibilities (ECLAC, 2019).

Mobility and intersectionality

“We must rethink the various forms of social appropriation of space from the social perspective, especially for diverse people, including indigenous people. How does that information translate to physical aspects, to lighting...? When we get to the pre-project stage and the detailed development, we find ourselves stuck with cultural concepts. What is it that is really making me feel insecure? Safety is a matter of levels...”

– MEDELLÍN GOVERNMENT OFFICIAL

Mobility experiences start to show differential nuances when analyzed from an intersectional approach that recognizes how living in particular territories, ethnic and cultural diversity, disability conditions, and gender constructions have a direct impact on women's daily relation-

ships with their habitat. Therefore, it has a direct impact on the way they live their mobility.

Bicycles are considered democratic vehicles, as they are affordable and convenient for those who do not own a motorized vehicle (Garrard et al., 2006). However, in places such as São Paulo, higher-income areas have been prioritized in the construction of cycling infrastructure (Harkot, 2018). Furthermore, for low-income women in Sao Paulo (and in this study in Medellín), there is often no access to bicycles. When there is a bicycle in the household, it is used by the man (Lindenberg Lemos et al., 2017). Concerning public bicycles, economic factors also play a role, as high-income women are more likely to use them (Mateo-Babiano et al., 2017).

Research conducted by Wheels for Wellbeing (2019) stresses the need to acknowledge the needs of people with reduced mobility when it comes to cycling. For this group of people, the cost of riding is higher, and they are not recognized as users of cycling infrastructure because they are categorized as pedestrians or drivers..

Mainstreaming of the gender perspective

“...shopping here at the store is a good thing, you already know the people and you even meet your friends in the morning. Many of us also take our dogs for a walk and meet and greet each other. Walking around the neighborhood like this is very nice...”

– 52-YEAR-OLD WOMAN.



Figure 9. Photo credit: Office of the Mayor of Medellín.

The inclusion of the gender perspective only in specific phases of the design or implementation stages of mobility and infrastructure policies is a recurring point in the case studies analyzed. Thus, the cases in which the gender perspective is considered from the policy conception through evaluation stages are rare. This even made it difficult to find case studies in which the gender perspective and impact were explicit, intentional, and properly documented. In this regard, Rosario adopted remarkable data collection and evaluation tools for its gender-sensitive infrastructure. However, it is not clear how this analysis affects infrastructure planning or design.

Ensuring continuity in the gender guidelines adopted in each one of these phases is necessary. For example, Buenos Aires has adopted interesting tools to include the gender and care approach from planning to implementation.

Finally, there is an advantage in designing mobility programs with a gender perspective, addressing both mobility of care and road or personal safety issues, selecting strategic road segments that form a network. This strategy can allow focusing actions on the main hubs or points of urban fragmentation where there are the most consistent barriers to women's mobility. To meet this objective, it is necessary to promote coherence and continuity of actions with a gender perspective from diagnosis to implementation.

Figure 10. Photo credit: Office of the Mayor of Medellín.



Masculinities and violence in mobility

“Well, I used to go jogging behind my house and that is an area that is quite lonely, so after certain hours I found a lot of street harassment. So, I said no more. Somehow, I will have to exercise at home, but I don’t want to find myself exposed to this type of harassment.”

Evidence shows that men, particularly young men, are more inclined than women to take risks while driving a vehicle (Geldstein et al., 2011; Torres-Quintero et al., 2019). . OECD points out that vehicle crash rates involving drivers under 25 are nearly double that of older drivers. WHO data shows that globally, traffic crashes are the main cause of death in men ages 15 to 29. Overall, young men show high mortality rates, even three times those of young women (OECD, 2006). Driving behavior is also affected by sociocultural factors. . Young men are not only more inclined to take risks, but also to seek novel experiences, speed, engage in behavior that defies social norms, and are more susceptible to peer influence. Although young men drive more than young women, and could be considered more experienced drivers, young men experience many more fatal crashes per kilometer driven (OECD, 2006).



Figure 11. Photo credit: Office of the Mayor of Medellín.

BARRIERS FOR WOMEN'S ACTIVE MOBILITY

“... Motorcycles park on the sidewalk, on the street, you have to dodge motorcycles everywhere because drivers leave the motorcycles parked there and go about their business. Of course, they see the space is so big and don't think that there are a lot of adults here and that this is a problem. The situation is the same every day, it's horrible to go out and just see cars and motorcycles parked everywhere. Where can you walk?”

— 52-YEAR-OLD WOMAN.

City mobility systems create a series of barriers and inhibitors to women's mobility (Jirón, 2021). Barriers can be construed as those mobility obstacles faced on a daily basis that hinder access to the city (Jirón & Zunino Singh, 2017). This section discusses seven barriers that may limit women's mobility in cities, and their use of active transportation in particular.

Personal safety

“...In all the years that I have been living here, there have been very few times that I have passed down 65th Street. When I do, it’s because I have to. I don’t like to walk there, I prefer to go somewhere else, where there are more people, I go through the parks, during the day I can pass quietly but at night it is better not to go because there are many people who use drugs and no one sees you...”

– 45-YEAR-OLD WOMAN.

Since women are more prone to physical attacks than men, they tend to self-limit their mobility for safety reasons, especially at night. It is therefore important to ensure that bicycle lanes and pedestrian spaces include interventions that enhance the real and perceived personal safety of all users, particularly women. For instance, Mexico City has carried out interventions on the roads included in the program “Senderos Seguros: Camina Libre, Camina Segura (Safe paths: Walk Free, Walk Safe)” to improve the personal safety of people on foot. These measures include improving lighting, visibility, surveillance, signage, and the environment of these sections. In addition, it is important to create conditions that “activate the street” ensuring people on foot and on bicycles are occupying public space during the day and night. This can enhance the sense of security of women on bicycles by making them feel “seen” and making it easier to call for help in dangerous situations. It is also essential that the development of cycling infrastructure does not lead to a reduction in the space dedicated to people on foot.



Figure 12. Photo credit: Office of the Mayor of Medellín.

Physical-spatial barriers

“...Sidewalks should accompany the transitional green spaces in order to enhance gathering areas, areas supervised by residents of the sector themselves. Chicanes and raised crossings for pedestrian transit... Physical elements of the network that help to increase walkability and spaces that facilitate these relationships in the neighborhood”

– MEDELLÍN GOVERNMENT OFFICIAL

This refers to the physical characteristics of spaces (street conditions, sidewalks, bus stops, geographic characteristics) as well as infrastructure or furniture that have an impact on mobilization in the city. For example:

- The steep hills of the city.
- The poor condition of roads, sidewalks, and bike paths.
- Lack of lighting and maintenance.

Also, the presence of beggars or drug addicts makes people want to avoid traveling through those areas, or to do so with insecurity and distrust, in addition to the occupation of public space.

In their extensive review of global cases, Pucher and Buehler (Buehler & Pucher, 2012) indicate that bicycle infrastructure is just one component of an effective bicycle promotion policy. The first of ten recommendations they give to summarize the lessons of bicycle promotion is to “provide a comprehensive package of integrated measures.” Buehler and Dill (2016) did a detailed review of the impact of bicycle infrastructure and its (positive) relationship with usage and confirm that there have been several studies demonstrating such importance. The most desirable choice in terms of cycle infrastructure generally is being segregated, continuous, or on roads with low volume or fewer traffic lanes. The same could be said of pedestrian infrastructure which, although it does exist in many cities, is not fully present on all roads in Latin America.

Data from two Argentinian cities studied show that women have a preference for lanes physically segregated from vehicular traffic. In fact, Rosario is an extreme case of a city that, despite not having a gender and mobility strategy, managed to progressively close the gender gap in cycling as a mode of transport by creating road safety conditions for cyclists. In this regard, the design guidelines of the Pí-cacha bike path (in Medellín) or the Bee Network (see digital annex) can be good examples to replicate in Latin American cycling infrastructure. Indeed, in addition to favoring the installation of physical segregation of vehicular traffic, some examples include a wide range of road interventions, depending on their physical (location on the right side, for example) and use characteristics, at crossings and in the environment.



Figure 13. Photo credit: Sara Arboleda

Time-related barriers

“...when I used public transit, waiting times were like, you know, how much time can you invest in a commute, I think it’s too much, while it takes 20 minutes on a motorcycle and I can be downtown in that time...”

These are barriers related to the time of day or night, the days of the week, the transit schedules, and trip length, which affect mobility decisions. Women may be fearful of using certain means of transportation such as cabs and buses late at night due to episodes of harassment they have experienced, limiting women’s access to these modes to daylight hours . There is also fear of walking and cycling in certain neighborhoods at night due to public unrest and violence.

Technological barriers

This refers to the availability, possibility, and ability to use technology, as well as how it can facilitate or hinder travel. Although technology has improved access to information, women may not have as universal access to a cell phone to look up information, or the on-screen information is hard to understand due to route names or its brevity. Additionally, some entry devices to public transportation systems (e.g., turnstiles, payment systems) can make entry and exit difficult for people with disabilities of any gender.

Economic barriers

“... private transportation becomes indispensable, not only because transportation is very limited with limited schedules. For example, after 7:30 or 8:00 pm, finding public transportation to my village is very complicated... I felt that a motorcycle gave me more autonomy and savings, since saving in fares and all during this time is very important...”

There are multiple costs associated with different modes of transportation that either help or prevent women from accessing them. In terms of active mobility, more women might like to ride a bicycle to move around the city, but are not able to purchase one for themselves especially if it would imply buying several bicycles per family.

In the labor realm, transportation is a predominantly male sector, and a greater presence of female transport agency staff would encourage the creation of more policies and programs inclusive of women's needs and perspectives (Xie & Spinney, 2018). Technical requirements for public transport drivers, low availability of female specialists, and a male-dominated culture in organizations strengthen gender stereotypes and hinder changes for greater parity. As a consequence, women miss out on job opportunities, economic opportunities and bet-



Figure 14. Photo credit: Despacio

ter-quality jobs, perpetuating a transportation system that ignores the specificities of women by not including them in technical decisions and system planning. In Bogotá there are gaps in gender parity in the sector: women account for less than 45% of the managing staff and only 2% of bus drivers are women (Moscoso et al., 2020). Santiago de Chile has a slightly higher share of female bus drivers at nearly 5% (Granada et al., 2019).

Work-related barriers

“...there was always a concern: how to achieve institutional coordination to have space management and self-management tools? This is when the secretariats come and an inter-institutional actor mapping take the stage.”

– MEDELLÍN GOVERNMENT OFFICIAL

Women's mobilities are associated with multiple activities they perform to coordinate their daily lives, especially those tasks associated with their role as caregivers. Therefore, it is not possible to use some means of transportation such as bicycles in their daily routines. Some of the women who normally get around by bicycle cannot do all their daily activities on it, as is the case of mothers who must coordinate their trips by bus or private car to take other people with them.

Sociocultural factors and gender stereotypes

“Cabs are terrifying, they make me feel uneasy, they are out of line”.

Lack of confidence, lack of bicycling skills, the idea that bicycling is physically demanding, and the biases associated with cycling (cycling is a “male” activity) could be considered barriers to cycling for women (Xie & Spinney, 2018).

Studies on the Global South have found that the higher perception of risk among women is a social construct, not something inherently biological (Harkot, 2018). This is a result of being taught during childhood that, for example, “girls should not engage in intense sports, they cannot expose themselves to harm”, and, thus, they learn not to trust their bodies. Diaz and Rojas consider that the lack of basic skills to ride a bicycle or to relate safely with all road users are little studied factors that could limit the growth of female urban cycling (Diaz & Rojas, 2017). Also, Diaz and Rojas state in their publication on Latin America that many women do not ride bicycles because they believe cycling does not suit their wardrobe or because it may negatively affect their physical appearance.



Figure 15. Photo credit: Office of the Mayor of Medellín

MOTIVATIONS FOR ACTIVE TRANSPORTATION

“... coming home from work, I will get off on 33rd and it would be no more than 10 minutes to get home. Whenever I had to buy something, stores were on the way or I didn’t need to take a large detour, so that was cool...”

– 45 YEAR OLD WOMAN.

While the barriers described above tend to limit women's mobility, this section explores different motivations for using active transportation. Understanding these motivations could help inform policies that maximize these, and minimize barriers:

Enjoying public space

Despite feelings of insecurity, walking is enjoyable and some of the key drivers include enjoying nature in neighborhood parks and the city's ecological parks. Another driver is enjoying certain urban planning works, since they have changed dynamics in places that have been considered dangerous. Finally, walking is also associated with health and wellbeing.

Sense of security / self-care

This is one of the main reasons for preferring means that require the use of applications that allow the verification of drivers' data, featuring geo-referencing and panic or security buttons for users. Safety also counts when it comes to switching to other means of transportation; in that regard, since it is an individual means of transportation that somehow prevents direct contact with other users, it is considered as a means to avoid potential sexual harassment and unsafe situations.

Efficiency

Time and cost efficiency are major motivations for women when making travel decisions. The need for trips to be agile, short travel times between distant places, and also for reduced costs, is one of the main reasons to use public transit. Similarly, efficiency also motivates the use of private motorcycles or as a passenger (particularly with male partners); it is believed to avoid congestion, in addition to reducing travel costs².

Concerns for sustainability and environment

These are two main aspects identified as main motivators of active mobility. There is a concern about pollution levels in the city, the increase in the vehicle fleet, and an interest in environmentally sustainable mobility alternatives. Therefore, there is a great motivation to walk and use the bicycle beyond the difficulties that have been mentioned, which is recognized in women who live either on slopes or in flat areas of the city. This identifies a sense of opportunity to promote women's use of active mobility modes in the city.

2. Although this is a guide on active transportation, it is worth mentioning that some women find advantages in riding motorcycles, as shown in women's mobility research. However, it is clear that motorcycles are high-risk vehicles, and using public transit or active mobility is preferable. (Rodríguez et al., 2015)..



Figure 16. Photo credit: Office of the Mayor of Medellín.

“Knowing how to travel”

Knowing the routes they typically travel, including road and infrastructure conditions; knowing how to drive or operate means of transportation such as cars and bicycles; and knowing the dynamics of the city’s neighborhoods including their physical, infrastructure and social characteristics; collectively become part of the expertise women gather when traveling. This feeling of “knowing how to travel” (where to walk, what means of transportation to use or learn to use, what clothes to wear according to the means of transportation, what strategies promote feelings of safety) is directly related to women’s comfort and perception of safety during daily trips.

CASE AND LITERATURE-BASED RECOMMENDATIONS

Table 2 presents recommendations based on the selected good practices and scenario reviews in government gender plans.

Table 2. Recommendations based on the selected good practices and scenario reviews in government gender plans. Authors' own compilation.

Infrastructure and road safety	
Good practice recommendations	Literature and case study review
Physical segregation from vehicle traffic; Generating road safety conditions for cyclists; Carrying out road interventions according to their physical and usage characteristics, at intersections and surrounding areas	Developing proposals with a gender perspective that impact the design of transit system infrastructure (Chile); Inclusive infrastructure and mobility patterns for climate action (Costa Rica); Infrastructure, urban planning and landscaping interventions (Bogotá); Emphasis on reducing road accident rates (Bogotá)
Personal safety	
Good practice recommendations	Literature and case study review
Implementing cycling infrastructure that includes interventions to improve the environment and enhance the real and perceived personal safety of all road users, particularly women. For example: improve lighting, visibility, surveillance, signage, and environment.	Reducing sexual violence and aggressions against women in transit (CDMX); Implementing mechanisms to raise awareness on gender violence in transit systems (Chile); Training and awareness-raising on gender perspective (Buenos Aires); Violence-free mobility (Costa Rica); Setting a violence free transportation goal (Bogotá)

Mobility of care

Good practice recommendations

Planning cycling mobility considering care trips on several scales, from infrastructure network planning to road design considerations; Including specific neighborhood and school vicinity mobility measures during planning; Adopting design criteria adapted to trips for persons with limited mobility and/or carrying goods

Literature and case study review

Addressing the travel needs and patterns of women in an effective manner. (CDMX); Drafting gender perspective proposals with an impact on the operating design of the transit system (Chile); Data and studies of everyday mobility and safety with a gender perspective (Buenos Aires)

Mainstreaming of the gender perspective

Good practice recommendations

Including gender perspective in diagnosis, planning, design, and implementation of cycling infrastructure projects; Fostering coherence and continuity to gender perspective actions from diagnosis to implementation; Designing mobility programs with a gender perspective, addressing both mobility of care issues and road or personal safety issues, selecting strategic road segments.

Literature and case study review

Gender parity and institutional culture in the transportation sector are strengthened (CDMX); Institutionalizing the gender perspective in the Ministry of Transport and Telecommunications (Chile); Promoting measures aimed at de-masculinizing the labor market in the transportation sector (Chile); Planning, design, and management with a gender perspective (Buenos Aires); Labor insertion for women in the Transportation and Mobility Sector (Buenos Aires); Strengthening capacities and opportunities for equity (Costa Rica); Transformation of discrimination practices at the institutional level (Bogotá)

THREE AUTONOMIES APPLIED TO THE MOBILITY PROJECT CYCLE

“...there is a narrow schedule, say, you could consider 11:30 an acceptable time, but you have to think about those who work early in the morning, or in shifts; those are more complicated, as part of night and dawn, I guess you have to think about them, too...”



Figure 17. Photo credit: Sara Arboleda.

THE THREE AUTONOMIES IN URBAN MOBILITY

“The Bridge (Mother Laura Bridge) has a pedestrian lane, but it tends to have very dark parts. I would rather walk on the bridge and not on the pedestrian path, I’m afraid to walk there alone.”

ECLAC’s Gender Equality Observatory has formulated three autonomies for women that are useful for this project (Gender Equality Observatory, n.d.). According to ECLAC, “Autonomy means for women to have the capacity and conditions to freely make decisions impacting their lives. To achieve greater autonomy, different issues must be addressed, including freeing women from the exclusive responsibility of reproductive tasks and care, which implies ensuring the exercise of reproductive rights; ending gender violence and taking all necessary actions for women to participate in decision-making in equal conditions.”

These are the following (along with their definitions by ECLAC):

- **Economic autonomy:** “women’s capacity to generate income and personal financial resources, based on access to paid work under conditions of equality with men. This parameter takes account of time use, and of women’s contribution to the economy”.
- **Physical autonomy:** “Physical autonomy is measured through two dimensions that reflect major social problems in the region: women’s reproductive rights and gender-related violence.”
- **Autonomy in decision-making:** “Decision-making autonomy refers to women’s involvement in decision-making at various levels of the different branches of government, and as reflected in measures designed to promote women’s full participation under conditions of equality.”

These three autonomies provide a useful way to achieve a gender perspective that addresses barriers and inequalities faced by women, and improves conditions for care mobility.

This approach seeks to consolidate three views of the conceptual literature on feminism , gender perspectives, and mobility that can be used to formulate a methodology of analysis and action around active mobility infrastructure projects with a gender-specific view.

The three **autonomies** (economic, physical, and decision-making) must be viewed as the desired results of a mobility policy with a gender and differential perspective. To do so, action must be taken at different stages of the project cycle. Following the conceptualization of a project (Moscoso et al., 2020), autonomies become evident in mobility in this way:

- **Economic autonomy** is evident in mobility patterns. This considers the analysis of women's travel patterns according to their needs, which are related to their socially defined gender roles, and their access to the city, according to typical destinations, travel times, modes of transportation, travel motives, and road safety. It mainly analyzes accessibility, road safety, infrastructure, and bicycle use.
- **Physical autonomy** is evident in personal safety. This considers women's experiences related to the types of gender-based violence they face in public spaces and in different modes of transportation, as well as the impact and reporting processes.
- **Decision-making autonomy** is evident in employment and in policies and norms. Regarding jobs, it considers the presence of women and gender parity (equal gender distribution in staff and in managerial positions) in public institutions involved in planning and operating transportation systems, and in private companies that offer transportation services. Policies and regulations assess local government initiatives to improve women's mobility experience -policies, programs, actions, as well as the regulatory framework on sexual harassment in public spaces and transit systems.

Gender stereotypes is a cross cutting topic that affects all autonomies equally. It refers to characteristics and barriers related to socio-cultural constructions on role, place, and capabilities of women in their mobility and access to the city.

HOW CAN ACTIVE MOBILITY PROJECTS BE IMPROVED WITH GENDER EQUITY CONCEPTS?

“Public space is a place of urban life forces, a gathering place that allows the consolidation of the social fabric and not only as a space where infrastructure is projected”

– MEDELLIN GOVERNMENT OFFICIAL

Applicability to the specific context of Latin American cities is the main goal of this guide. The literature, cases, and theoretical frameworks all agree that women are not being provided adequate conditions to satisfy their mobility needs, a fact that restricts their autonomy, mainly in decision-making. However, this situation must and can be improved. There are concrete ways to improve such conditions, but there are few cases in which policies or projects explicitly include a gender perspective. Furthermore, the real effects of a gender equity approach on women's travel conditions are hard to identify because data are not collected comprehensively.

In short, a good way to apply the findings of this work to the Latin American context and its infrastructure and active mobility projects can be placed in the following categories:

- In general, urban projects should strive for women to have **physical, economic as well as decision-making autonomy** in their daily lives, and this includes urban development projects, furnishings, road infrastructure, and operations.
- All city mobility policies should integrate specific concepts of care mobility, gender, and trip chaining and answer the question “How am I improving conditions for women and caregivers , in addition to responding to pendular trips mostly taken by men ?”
- Data collected on city travel and living conditions should always be collected in a way that allows for disaggregation , with sufficient and representative information to analyze trips made by women and people in vulnerable conditions.
- Projects must actively integrate diverse women (of all ages, professions, sexual preferences, etc.) and increase their participation (and thus their autonomy) from the moment the project is conceived and the work team is created, and throughout all phases of the project. This not only helps to make the results more equitable for women, but for other minority or marginalized groups. .
- Well implemented infrastructure (that generates more safety, better space allocation, etc.) is a key element to increase gender equity in transport project. The infrastructure itself must also be complemented by supporting project activities that include a gender equity perspective (integrating participatory activities, adequate monitoring, operation, fares, etc.).

The following chapters of this guide analyze the case of Medellín and suggest a methodology to improve the travel conditions of women in Latin America and, with this, help guarantee their autonomy.



"FOR WOMEN, AUTONOMY MEANS
HAVING THE CAPACITY AND CONCRETE
CONDITIONS TO FREELY MAKE THE DECISIONS
THAT WILL ARISE IN THEIR LIVES."

Claudio Olivares Medina

ACTIVE MOBILITY AND GENDER IN MEDELLÍN



Figure 18. Photo credit: Office of the Mayor of Medellín.

PUBLIC POLICY AND WOMEN IN MEDELLÍN

“... I used to walk or ride my bicycle to the university, it was close by, and when I had to go downtown, I had to go out to the main street and there are buses that can take you everywhere”.

– 52-YEAR-OLD WOMAN.

Medellín has increasingly robust policies that explicitly include gender and have actions to be taken. For example, in its Development Plan, “*Medellín Futuro 2020-2023*” (Alcaldía-de-Medellín, 2020), the program “*Medellín Caminable y Pedaleable y con tecnologías más limpias* (A walkable and rideable Medellín with cleaner technologies)” mentions giving preference to walking, cycling, and public transit with clean technologies within the Eco-Ciudad strategic guideline, aimed at improving air quality, moving towards sustainable mobility and abiding by the Land Management Plan -POT (Agreement 48 of 2014 “Whereby the long-term review and adjustment of the Land Management Plan of the Municipality of Medellín is adopted and other complementary provisions are issued”, 2014), which provides for the prioritization of non-motorized means of transportation, an integrated and multimodal public transit system and regulation of the appropriate use of private vehicles.

In addition, the city has made efforts to reduce gender equality gaps in the Strategic Plan for Gender Equality (Alcaldía de Medellín, 2018), which analyzes the origins of inequalities, proposes procedural methodologies, and assigns responsibilities within the local government and civil society. There is also a mainstreaming of the gender perspective in the mobility sector in key city documents such as the Municipal Development Plan 2020-2023 (Alcaldía de Medellín, 2020). Under the Sustainable Future framework, these documents plan the construction of “bicycle infrastructure and ride-walkability”, integrating street parks, bike parking, and improvement of public space; they also encourage the expansion of EnCicla - the public bicycle system, to cover all territories with public bicycles and cycle lanes, targeting 80 kilometers of segregated cycle infrastructure.

THE CONDITIONS OF MEDELLÍN IN THE CONTEXT OF INCLUSIVE AND CARE MOBILITY

“... none of the cars that you see parked here on the street even belong to the people of the neighborhood, many of them don’t pay for parking because neither the traffic police nor anyone else does anything here. This is always full of motorcycles and cars...”

– 25-YEAR-OLD WOMAN.

Medellín profile

Medellín is a Colombian city located at the center of a narrow valley surrounded by high mountain ranges where over two and a half million people live and is the home of major Colombian industries. It shares territory with Barbosa, Girardota, Copacabana, Bello, Envigado, Itagüí, Sabaneta, La Estrella and Caldas. Over the last 50 years, it has experienced accelerated population growth that led to peripheral expansion, a conurbation with nearby municipalities, and densification extending into rural areas, coupled with natural constraints that lead it to be compact and with a profile of residential buildings (Cárdenas & Escobar, 2020). Given the city’s accelerated growth, the vehicle fleet grew, causing increased travel times, congestion (Henao et al., 2011), worsening air quality due to vehicle emissions (Gaviria et al., 2011), road traffic crashes, inefficient use of space (Durán et al., 2019), and transportation costs, with repercussions on the quality of life of the inhabitants (Revista Semana, 2017).

Mobility conditions of women in Medellín

“...especially when one decides how to go up late at night and it is, for example, the road to my house is too dark, too lonely, very gloomy, so one always thinks that it can be like the perfect place for anything to happen, although nothing has ever happened to me, but yes, you never get rid of the feeling that going in later can be more dangerous.”

The characteristics of women’s trips in Medellín are very relevant to study in-depth, as they help to understand how, why and where they move. This section presents some of the most relevant aspects.

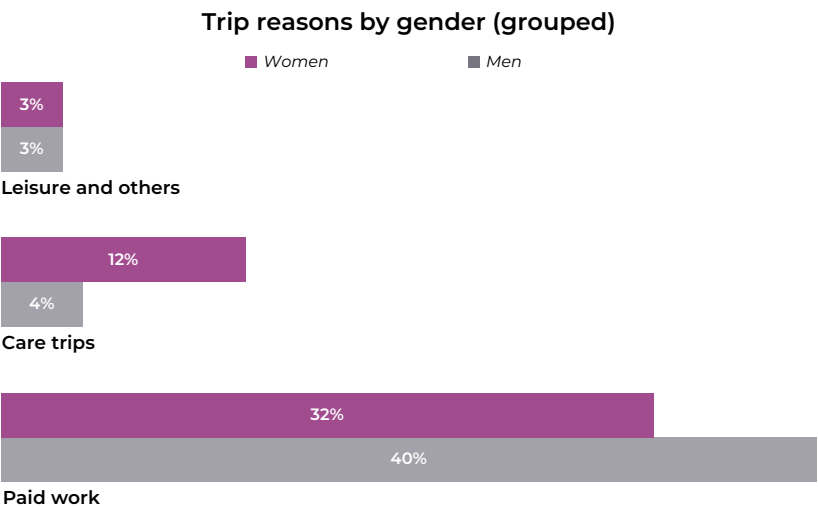


Figure 19. Trip motives by groups and gender in Medellín.
Source: Mobility survey, Valle de Aburrá Metropolitan Area, 2017.

Women account for the largest amount of care trips in Medellín. Most of these trips are done on foot (it is not clear if women in Medellín walk due to a lack of alternatives or by preference) ; cycling is used less often - with the exception of the EnCicla system, where women's share of trips is higher than men. Most women who do not take trips report that they do not need to go out (72%), however some women (9%) do not take trips because they claim to be "sick".

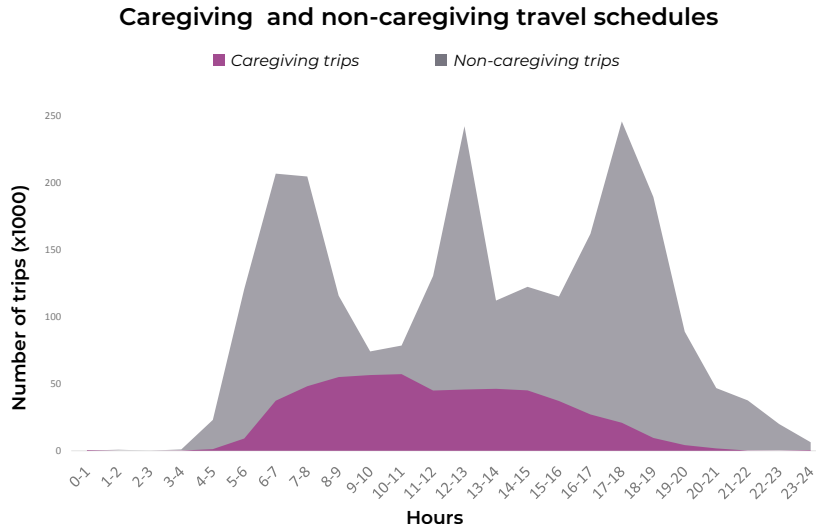


Figure 20. Care trips (company, health, purchases, collect or deliver, errands) and for other purposes. Source: Mobility survey, Valle de Aburrá Metropolitan Area, 2017.

Women in Medellín (and, to some extent, in the Aburrá Valley metropolitan area) travel differently from men; they use active modes of transportation (predominantly walking) but to some extent, it seems that they do so out of obligation rather than choice (particularly for those who do not work). There is a general predominance of mobility of care trips, particularly when their trips are on foot - or, rather, the most frequent mode of those who make caregiving trips is on foot – women with mobility of care are a predominantly walking population (35% of walking trips are housewives) and with a significant proportion of walking trips (31%), of which 36% are less than 300 meters; a relatively high proportion (22%) of their trips are in motor vehicles.

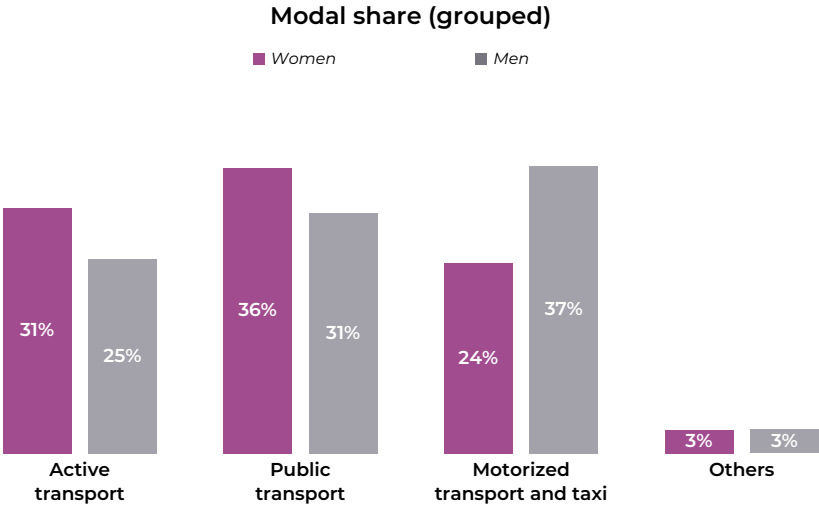


Figure 21. Modal share by groups and gender (2017) in Medellín.
Source: Mobility survey, Valle de Aburrá Metropolitan Area, 2017

It appears that bicycles are available to those women who study or have a job (which is generally informal/self-employed). In terms of vehicles and modes, we still need to better understand why women choose each mode and whether having access to more planned services for caregiving trips could generate a modal shift towards one or the other.

On the other hand, trip duration is similar between men and women, but distances are different (women travel distances of less than 3 km more predominantly, while men travel more than 5 km in a higher proportion). This may be a result of their working conditions, access to motorized modes, but it may also be a result of women's difficulty or discomfort in traveling and their resulting difficulty in accessing job opportunities.

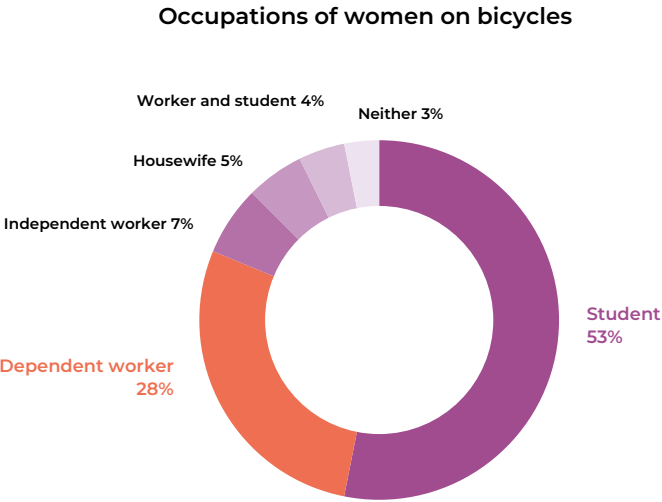


Figure 22. Occupations of women on bicycles.
Source: EOD (Valle de Aburrá Metropolitan Area, 2017)



MARKET STUDY FINDINGS AND METHODOLOGY



Figure 23. Location of the studied projects. Own elaboration

The work carried out comprised two main components: a market study conducted by EAFIT (with three instruments) and a methodology application to the project cycle carried out by Despacio and ITDP for four projects. The market study and findings of EAFIT's work are presented in this chapter (the following chapter presents the methodology developed by Despacio and ITDP based on their research and pilot work).

MARKET STUDY METHODOLOGY

The digital annex presents the details of the market study developed by EAFIT in Medellín, along with the methodological decisions and formats used. In general terms, this included the development of three instruments:

- **Survey:** a total of 766 surveys on general mobility were completed by women in Medellín.
- **Focus groups:** conducted with women of 11 demographic profiles.
- **Subject monitoring with eye tracker and galvanic bracelet technology:** 24 women using different modes of transportation were given devices that monitored and recorded their eye movements and galvanic responses¹.

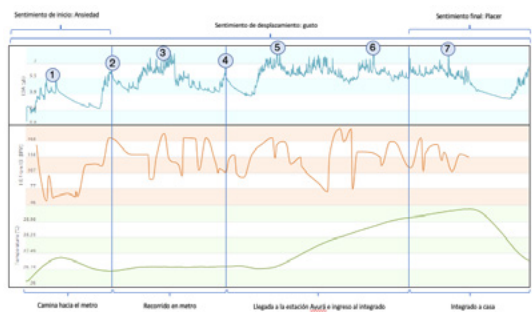


Figure 24. Example of results from galvanic response. EAFIT 2021.

1. This refers to “the measure of the continuous variations in the electrical characteristics of the skin caused by the variation of the human body sweating” <https://www.brainsigns.com/es/science/s2/technologies/gsr>

MARKET STUDY FINDINGS

“... in order to ride a bike or skates you have to go to a court, because the Street is too dangerous, you don’t see people going out cycling.”

The complete findings of the market study are presented in detail in the digital annex. The following are highlights of the most relevant findings.

Survey main findings

“I would rather move around with my husband on a motorcycle, because the rail is a drag...”

Care conditions

The survey asked about caregiving responsibilities , to which more than half of the respondents did not have any person in their care. A total of 23% responded that they have minors under their care, followed by elderly people, people with disabilities, or are pregnant. All of these conditions can affect women’s mobility.

The means of transportation considered to be the most comfortable by survey respondents are motorcycles (as drivers or companions) and cabs. The most economical is the bus followed by walking. Cycling, skateboarding, and rollerskating are mostly unknown by the respondents. The metro is perceived as the cleanest means of transportation, followed by private bicycles. The most punctual are cabs and metro. Overall, motorcycles are considered the fastest means of transportation, followed by the bus and the rail. Regarding safety, private cars and the metro are at the top.

For respondents, walking is the most ecological means of transportation, followed by bicycles and the metro. The metro and cabs are considered to be the easiest to access. The most likely to have accidents are motorcycles and automobiles. People believe that there is a greater probability of harassment when riding a bicycle, followed by mass transit and cabs. The healthiest ones are those involving active mobility. Electric vehicles, when they are known, are deemed as environmentally friendly, clean, and especially, healthy.

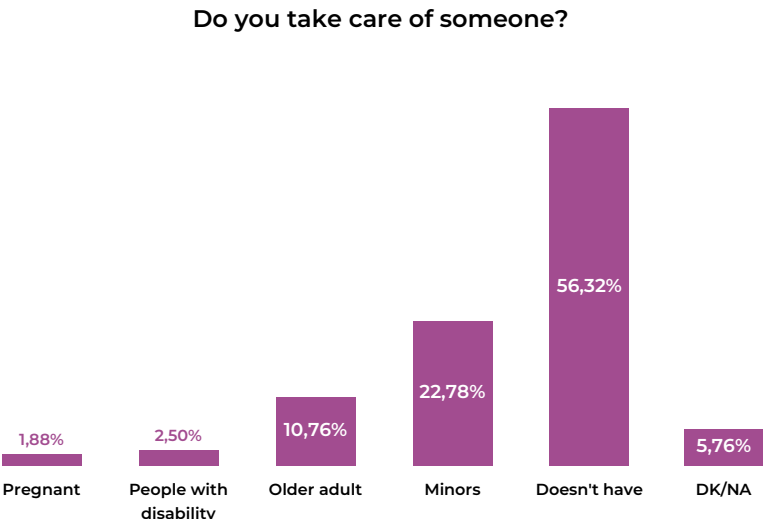


Figure 25. People in charge of people survey. EAFIT, 2021.

Intention to shift means of transportation

“In the cab, you feel mistrust when men look in the rearview mirror in a nasty way; you need to pretend to be talking on the phone so that they will think that someone else is aware of where you are...”

Survey respondents reported a desire to shift from their current mode towards a private car or motorcycle, and an intention to have their own electric car or electric bicycle. Lack of resources is the first factor in reducing the probability to purchase a vehicle. Fares are also mentioned (which could be related to income level or circumstances where multiple trips are required). Likewise, travel time is an aspect that stands out as a reason for not switching to sustainable modes of transportation such as active mobility..

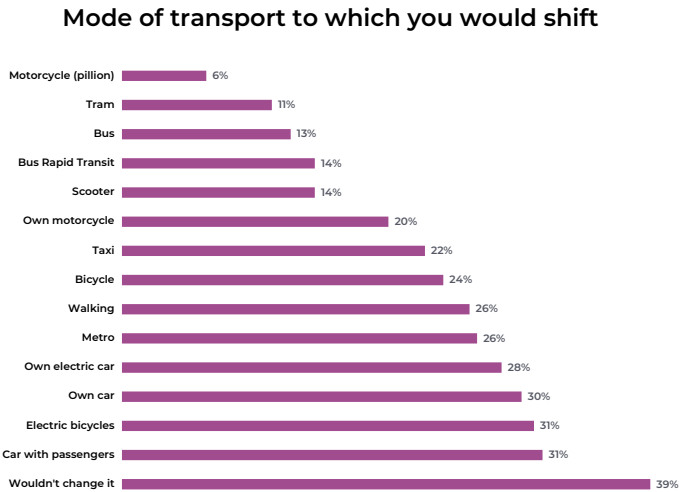


Figure 26. Intention to shift means of transportation. EAFIT, 2021

Affordability is the main driver in terms of what mode or vehicle to use, followed by the habit of using it to run errands close to home, as well as for pleasure. In a smaller proportion, they indicate that bicycles are for short distances and that it is not used as a means of transportation by high-income people.

Survey respondents reported barriers that inhibit the use of active mobility, including : that their physical appearance is affected by sweating, the high effort to climb hillsides, and harsh weather conditions, among others. Regarding skates and skateboards, some say they do not know how to handle them. In general, women report that there is no space to carry things while using active mobility. They also highlight the short time to reach the destination when walking, as well as the effort to walk or cycle on hillsides or high mountains on bicycles.

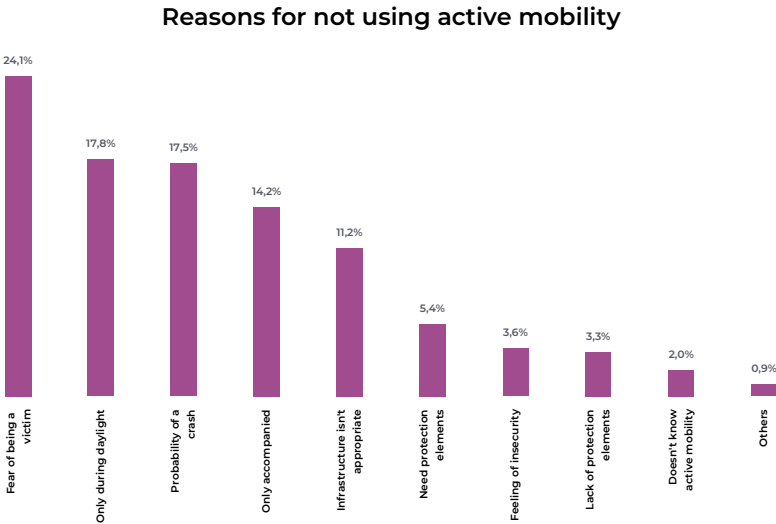


Figure 27. Barriers and inhibitors to active transportation. EAFIT, 2021

Respondents feel that it is not safe to use bicycles because they fear being victims of criminal actions, and traffic incidents, especially at night. There is also the perception that cycling is only for exercising and for certain types of people . Less than 1% have never felt unsafe while traveling by bicycle.

Survey responses indicate that certain actions could encourage more women to shift to sustainable transport and cycling in particular. Using well-lit streets, familiar routes, routes where public officials are stationed, and traveling during the day are the most commonly-cited actions taken by survey respondents . Respondents also report their desire to be accompanied or to have other people present along their route in order to feel safe while cycling. People with disabilities note feeling safer when information is readily available and where spaces facilitate access to transportation and thus their safety.

Gender-based violence experiences

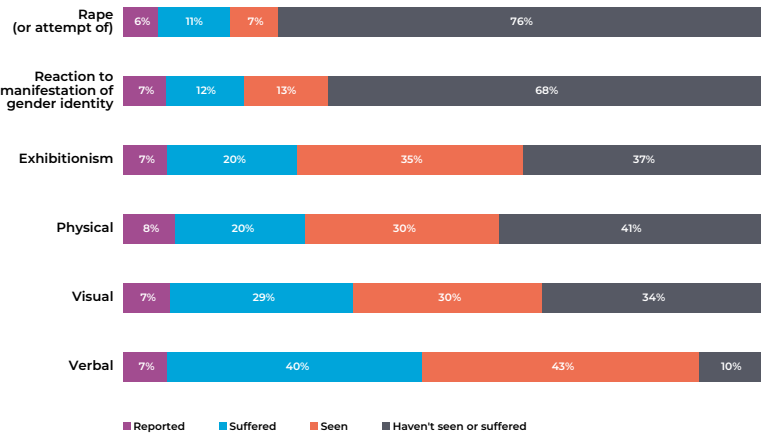
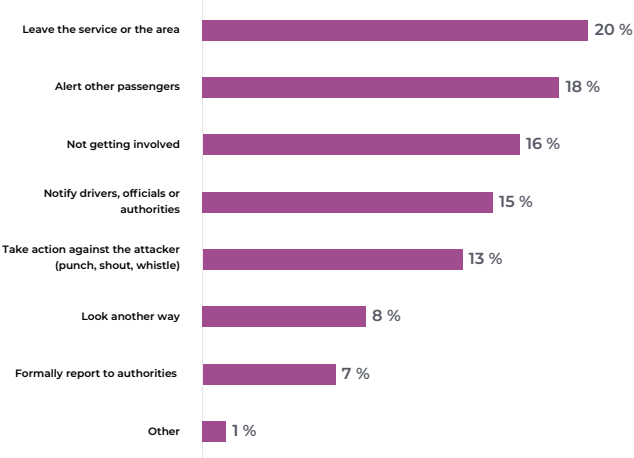


Figure 28. Report of harassment in commutes EAFIT, 2021

Reported reaction upon harassment



Reaction of those who don't report

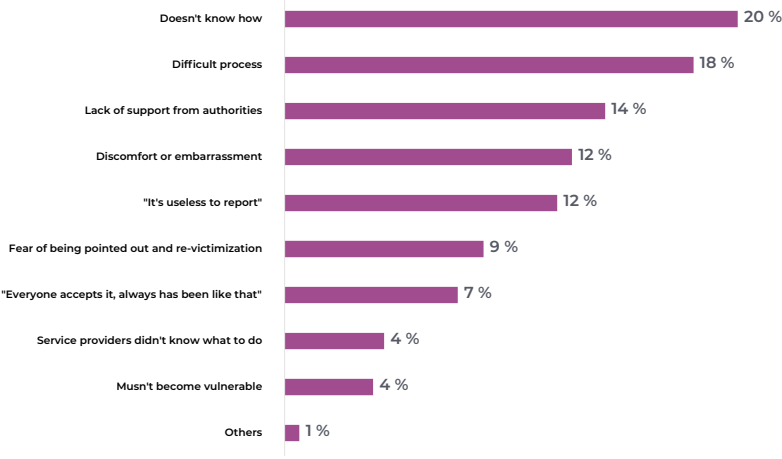


Figure 29. Reported reactions to harassment (from those who complain and those who do not). EAFIT, 2021

Actions against harassment

The most frequent reaction to harassment indicated on the survey is to leave the means of transport, followed by alerting users, although there is an intention not to react individually, which may be associated with keeping themselves safe. Survey respondents indicated that all types of actions to reduce harassment are necessary, with pedagogic campaigns on the forms of harassment, sanctioning , and protection laws standing out. Respondents also stressed the need for lighting.

On the other hand, the participants in the eye tracker exercise also reported similar responses: 79% of the participants had suffered some type of harassment. Regarding their reaction, only 4% of them reported having received assistance from someone. People's reported reaction was usually to ignore them. However, in some cases a response by insulting or staring, the aggression leads to crying.

Focus group findings

“In the subway I feel annoyed to be with so many people, to feel that they rub against you or that the men have bad intentions... besides, I can tell they get erections).”

According to the information gathered in the focus groups with women, there is a predominance of “chained” trips , defined as trips that do not have a sole destination, but rather involve several destinations and/or use of different means of transportation . The main reason has to do with their responsibilities as mothers and caregivers , which might include taking their children to school , then commuting to work (informal or formal), then stopping at a market before traveling back to pick up their children from school.

In addition, women who live on hillsides and rural areas have to take two or more services to reach their destination. The most frequently mentioned means of transportation is public transit. On some occasions, they mention cabs or individual transportation applications, and some participants use bicycles and walk.

Women in the focus groups reported walking frequently, usually to access bus stops, metro stations, or to make short trips to nearby places. These women walk as part of their caregiver dynamics or for recreation and sports.

The familiarity/ closeness that women feel when traveling through public spaces is associated with positive emotions such as tranquility, confidence, and serenity. Having facilities and urban developments positively influences their mobility experiences; the presence of infrastructure such as segregated bicycle lanes or landmark buildings that have transformed the environment of their neighborhoods makes them feel safe.

Their trips around the streets can spur negative emotions due to insecurity and, when they have had their own experiences or have seen violence and aggressions unto others, these go beyond the general insecurity of the city (which affects both men and women) and rather relate to their condition as women. On the other hand, transgender population participants also report situations of discrimination and transphobia.

Experiences using public transit

The city's Metro System was constantly mentioned from a double perspective: on one hand, the women emphasized its importance for the mobility of passengers around the city, as it is considered a very practical and necessary public form of transportation, particularly when long distances are involved since it allows reaching destinations quickly and punctually. On the other hand, focus group participants identified experiences of insecurity and harassment that they have experienced when using the metro .

Buses are also mentioned as one of the most used transport services because they can reach more places in the city and facilitate mobility in and out of the city. Regarding the experiences riding buses, the women reported situations that are widespread in the general population, but also very specific to their condition as women, when the aggression is directly related to their condition. The main dissatisfaction is with the drivers' attitude and the way they drive.

As for cabs, on one hand, they are considered a safe method that provides peace of mind as passengers do not have to deal with the typical crowds of other means of transportation nor interact with other users. On the other hand, they may feel insecure and distrustful because of the risk of being victims of harassment, leering and inappropriate conversations.

Active mobility experiences

Overall, walking is an everyday means of transportation. Women stated that they usually walk, either as part of their commuting stages to and from bus stops and metro stations, and to go to nearby places.

Walking is generally viewed as enjoyable; however, there is a constant state of awareness, vigilance and insecurity resulting from a perception of vulnerability that leads them to a state of anticipation and tension that contributes to (not) recognizing the city as a safe place, an aspect that still demands solutions.

For the women participants, the interest and enjoyment of walking would make them consider it as the only way to get around, but several reasons inhibit this decision, such as the topography of the city and the infrastructure of some public spaces.

In terms of safety, the participants reported that their feelings of safety while traveling are restricted to certain times of the day and subject to the company of men. When they do walk -especially for recreational and health reasons- they try to do so during the morning because they consider nights to be dangerous and do not feel safe. If they go out at night, they prefer to do so with friends and/or a male partner, with whom they feel a greater sense of security.

Bicycles are the desired mode of transportation for many women, and cycling is considered a beneficial practice for sustainability and health reasons. Some participants have shifted to cycling, but acknowledge that they feel fear and insecurity in their daily commute. Barriers to cycling include geographic barriers such as hills, lack of safety, lack of tolerance and respect from drivers and motorcyclists, occupation of the roads by people on foot, presence of street dwellers, and garbage on the road. The lack of protected or otherwise safe cycle lanes is an additional barrier.

Findings in the commutes using “eye tracker”

The following are highlights of relevant findings. Eye trackers were worn by participants using different modes of transport including metro, the EnCicla bikeshare system, personal bicycles and walking.

Registered trips by mode of transport during fieldwork in Medellín

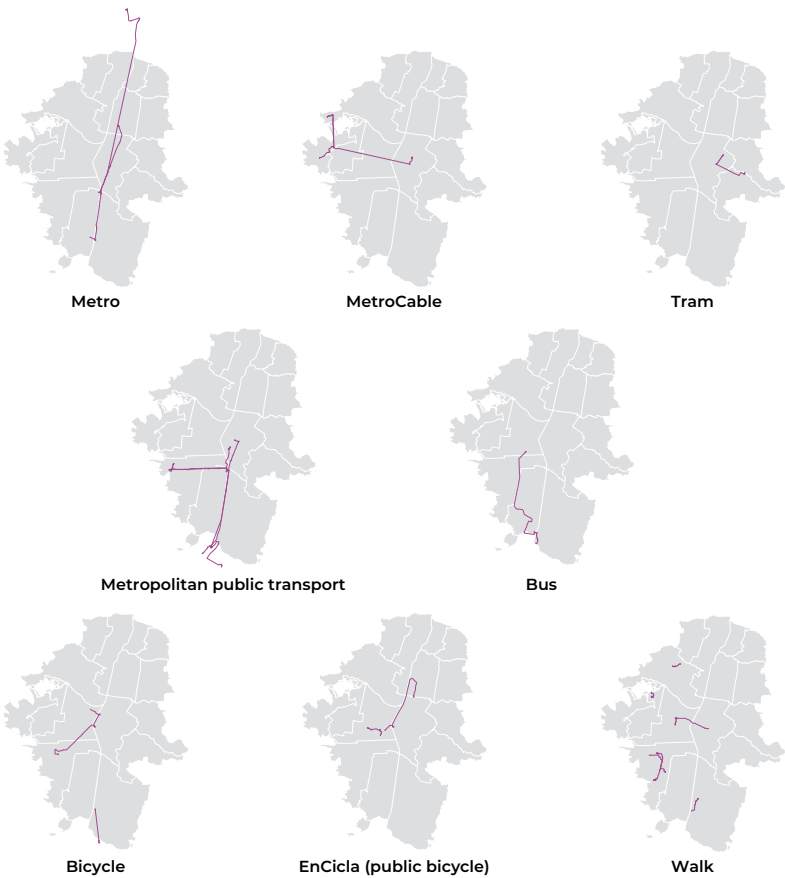


Figure 30. Compiled layout of the monitored routes.
Own elaboration based on EAFIT data



Figure 30 shows a map with all the routes by mode used, and Figure 31 shows images of the participants ready to start their trip.

Findings from these routes are very diverse, out of which we can highlight the following:

- The mode of transportation used has a direct effect on the travel experience;
- The physical conditions of the infrastructure, the surroundings, and time of day are also an influencing factor, mainly on fatigue (e.g. topography) and perception of safety (e.g. lighting);
- Seeing someone, an animal, or something out of the ordinary generated noticeable physiological reactions;
- Interaction with other road actors (mainly cars) triggered strong reactions;
- Passing through intersections would mark milestones in different physiological parameters;



Figure 31. Images of some of the “journey map” component participants. EAFIT, 2021

- There may be situations, places, people, or sound and audiovisual experiences on the route that make the experience either positive or negative, and in this case, they claimed to have more positive than negative experiences.

We also found several barriers and inhibitors to mobility, which include some related to infrastructure, such as:

- Metro stairs
- Garbage
- Crossings without traffic lights
- No turnstiles for bicycles
- Road works
- Sidewalk in poor condition
- Cars parked in the pedestrian zone
- Lack of sidewalks

- Cyclists riding against traffic
- Sidewalks obstructing the way
- Need to lift bicycles to board the Metro

Other barriers were due to personal and temporary safety:

- Lonely places
- Darkness and people lying down on the way
- Bridge
- Arrival and stay at Parque Berrío station
- Viaduct to San Antonio
- Insecurity on the highway
- Robberies downtown
- Insecurity due to drug dealing
- Channeling at night
- Arrival at downtown

Technological barriers included:

- Issues with transit farecard and mobile application failing to work
- The EnCicla station was closed, thus having to continue to the next station.

Still, there were also motivators and positive responses reported by participants, such as:

- “The view”
- “The reflection of the Metro”
- “The dogs, squirrels, the University”.
- “The trees”
- “The bike path and its landscape”.
- “The route has nice buildings”
- “I went by a church I visited when I was a child”
- “I was riding a bike”
- “Sound of the birds and places like bakeries”
- “That I was riding the Metro”

Participants also reported personal safety actions they experienced:

- “Finding other cyclists or any known person”
- “Someone on the Metroplús reprimanded another one who was not wearing a mask”
- “The bike lane, it’s an easier ride, I feel safer.”
- “I use the metro for safety”

Other findings

“I also prefer the Metro. Not during rush hour, I hate it with all my heart. When I go to college it’s a complete nightmare. I prefer to stay at the university waiting for an hour so I don’t have to go during rush hour.”

The following subsections show additional relevant findings from the survey and focus groups related to women’s access to mobility in townships, and the specific experiences of transgender women, women with disabilities, and black and indigenous women.

Mobility findings in townships

“... To find a sidewalk in San Cristobal (township) is a unique event and the sidewalks are bad, they are destroyed because they haven’t had any work done on them for centuries; once I was dragged by one of those giant cars, well it didn’t drag me but I felt the pull of that car in a very busy zone where there are no sidewalks, so you walk alongside the cars....”

Township locations (both in their urban and rural components) create barriers and inhibitors for women, especially because of their physical distance from downtown Medellín, the conditions of the infrastructure, and socio-cultural and political issues.

One issue participants in focus groups underscored was how the distances they have to travel to reach certain places in the city (such as the downtown area, or the National and Antioquia Universities) imply making multimodal trips that are limited by the schedules available on the routes in their townships. Given their status as women, there are certain dangers or additional situations that may be magnified, particularly in rural areas where they have to walk along lonely roads to take buses or shuttles that connect them to other means of transportation.

The proximity/remote nature of the townships is differential, but a common issue is the need to resort to multimodal travel. This leads to long commutes and the need to invest much of their time on these trips. Multimodal mobility was recognized by some women as an inhibitor to use public transportation, so they have resorted to their own means of transportation such as motorcycles and cars, and even attempted to use bicycles, even if townships lack the required road safety and infrastructure conditions to have positive travel experiences.

Another issue highlighted as a barrier was the location of the bus stops in downtown Medellín; they consider these stops to be “very far away” and in dangerous places, which makes them feel unsafe when they need to access these stops, especially at night.

Findings with transgender women

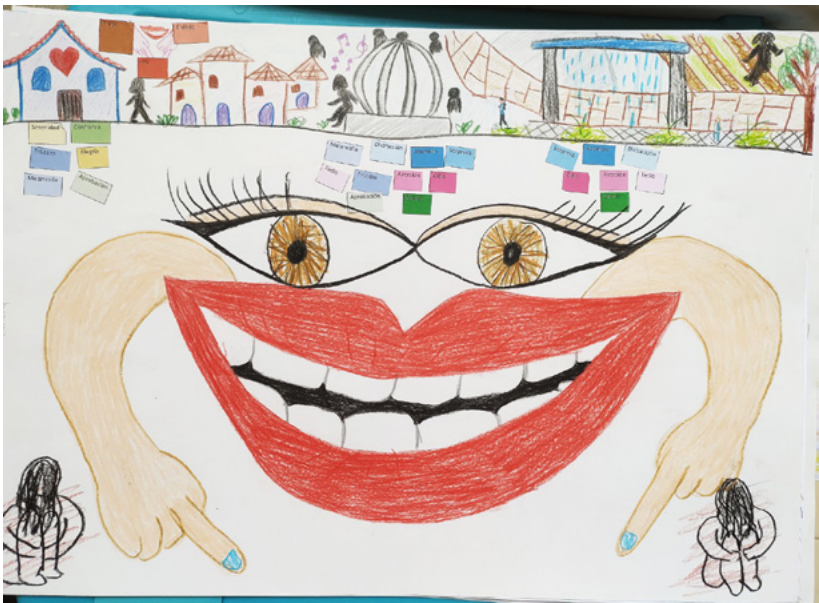
A focus group discussion with transgender women highlighted that they feel constantly exposed to discrimination when using means of transportation. They fear becoming victims of violence and being vulnerable in certain parts of the city. The trans women focus group showed evidence of greater mobility challenges and limited mobility access compared to cis women, resulting from harassment, discrimination, and violence more so than from infrastructure or physical facility barriers. Transgender women reported feeling discriminated against when moving around the city; from the moment they leave their homes, they feel violated and feel fear and exclusion.

There is a constant fear and apprehension when traveling by any means of transportation, beyond infrastructure or facility problems, in addition to feeling rejection and mistreatment by public transportation operators. The ideal means of transportation reported by the transgender women who participated in the focus group is to have a motorcycle or vehicle of their own as a way to feel safer when moving around the city.

The most common way for transgender women to move around the city is on foot because it is affordable and direct . They consider walking around the city as a way of reflecting. Cycling is one of the desired means because it is quick and because of its tranquility, but due to economic limitations, they cannot afford to use the bikeshare system.

Transgender women feel that they are mainly vulnerable to discrimination in terms of mobility; they consider that there is misinformation and that their identity and personhood is not taken into account. They point out the need for mechanisms like educational training with a gender perspective that lead to the attention and prevention of the discrimination and violence they suffer in the city's mobility systems : “the solution is not to improve routes or infrastructure, but to improve people”.

Figure 32. Cartography fragments for trans women. EAFIT, 2021.



Findings with women with disabilities

“Access to the metro system is difficult for me; there are too many stairs, and I have knee problems”.

The women with disabilities interviewed in the project experience mobility and visual problems that limit their ability to use certain infrastructures and public space adaptations, which are not found in every part of the Metropolitan Area and the city of Medellin. Thus, according to their testimonies, two important issues affect their mobility experiences: physical infrastructure adapted and arranged for people with disabilities , and their daily interactions with other transport users.

Overall, some physical spaces do not meet conditions that guarantee safe and rapid transit for people with disabilities. Just as in the previous accounts, poor quality sidewalks are a barrier to mobility for all women . However, people with motor and visual disabilities are even further limited by poor sidewalk conditions such as lack of continuity, ramps that are blocked or nonexistent ; and the lack of tactile signs or embossed pavers for people with visual disabilities.

Clearly, the city's infrastructure and means of transportation become an additional barrier for women with disabilities. Beyond fear and concern for personal safety expressed by able-bodied women , women with disabilities also feel the frustration of not having infrastructure that is designed to accommodate all types of users, and feeling like they must depend on someone else to get around. Almost invariably, those others on whom they depend for transportation (for instance, public transport drivers) do not have the best attitude to provide their service and make the journey for women with disabilities more enjoyable.



Figure 33. Photo credit: Office of the Mayor of Medellín.

Findings with indigenous women and women from black communities

“... well, there is an issue that one must take into account, which is that indigenous women who come to the city to study, those of us who have some kind of education can read traffic signals; but let’s say, for other people, especially the Emberá indigenous population that flows a lot here in the city, they come and go and do not have any knowledge or have not been to school, it is very hard to read traffic signals... So I think that signaling is very important.”

The indigenous women who participated, highlight the difficulties of walking on cement and in places lacking green areas and trees; in their words “walking on cement is very tiring”; therefore this activity, although it is a daily and habitual activity in their places of origin, is gradually being abandoned and they resort to other means of transportation such as bus, metro, or cab.

Traveling around the city is difficult for indigenous people in general, although with a particular added problem for women. The Emberá (Chamí, Eyabida, and Dóbida) are not familiar with the Spanish language, which makes understanding traffic signs and other directional information difficult. Cabs are another problematic means of transportation: according to the indigenous women's testimonies, they have been subjected to difficult situations both as passengers and as pedestrians. These situations are influenced by stereotypes about the indigenous population that reflect discriminatory relationships.

For afro-descendant women, the experience was different in terms of discomfort, but especially they highlight the aggressiveness of bus drivers who drive off before they have finished boarding the bus, often putting them at risk. They also reiterate the difficulty of getting on a bus when they are traveling with young children or other people under their care, or when carrying things. Afro-descendant women reported a strong fear of being sexually assaulted by men, including being exposed to fondling and masturbating, on the bus. In this sense, they report altering their clothing choices and otherwise not dressing as they would like because there is always the possibility of being harassed and they do not want to call unwanted attention to themselves. From this perspective, afro-descendant women are sacrificing part of their self-identity when using public transportation. They also report covering up certain ethnic identity traits, such as their natural hair, after experiencing staring and other unwanted attention when these traits have been visible. Some afro-descendant women mentioned that they do not use bicycles for fear of being judged.

ACTIVE TRANSPORTATION PROJECT ANALYSIS METHODOLOGY

“I would rather do it in the daytime, even though I live in the Poblado and Las Vegas area, it is very busy, but the one from Monterrey to Ciudad del Rio is very solitary. So, after 7:30, I leave it at campus. I rather go by bus or call an Uber, or another means of transportation that will take me home more safely and avoid the risk of something happening to me.”

The methodology presented herein seeks to strengthen the current process of developing active mobility infrastructure projects by including instruments and elements of analysis to mainstream a gender and universal accessibility perspective. To this end, it includes tools for quantitative analysis (the review of mobility data with a gender perspective), qualitative analysis (new tools for mapping the use of public space and perceptions), and geographic analysis (spatial and accident rate analysis). It also provides design concepts that combine best practices in design for road safety, personal safety, and universal accessibility. The digital annex includes recommended formats according to the indications at each stage of the process, and a more thorough description of how this work can complement the overall project cycle.

INTEGRATING GENDER EQUITY INTO THE PROJECT CYCLE STAGES

“... I used to walk or ride my bicycle to college; it was close by and when I had to go downtown, I had to go out to the main street and there are buses going everywhere.”

– 25-YEAR-OLD WOMAN.

When implementing projects, action can be taken at each stage to integrate a gender perspective into project development. In general terms, a mobility project has the following stages (each of these identifies those specific to infrastructure projects identified in the case of Medellín):

Prefeasibility and Feasibility: This is the stage where projects are appraised and their relevance and location are determined. In the methodology, an earlier stage was added (gender approach information). In the case of infrastructure projects in Medellín, we identified a stage 0 for “**project identification**” and a stage 1 for “**route or corridor definition**” equivalent.

Contracting model planning and definition: In this stage, we define the work team, plan the project and define the type of development, either in-house or outsourced contracting process. This stage also defines the methods by which the project will be monitored and the data that will be collected and analyzed throughout the project (and before its development).

Design and (design) auditing: Consists of the detailed design of the intervention or infrastructure to be implemented. In the case of the Medellín projects, this includes stages **3 “basic idea proposal”, 4 “preliminary project formulation”, and 5 “detailed design”**.

Management and implementation (and construction auditing): This stage refers to project management: tendering and implementation, up to its commissioning. In the case of the Medellín projects, this includes stages **6 “tender” and 7 “implementation”**.

Operation and monitoring: These stages involve project commissioning and operation, as well as monitoring and analysis of relevant data. In the case of the Medellín projects, this includes stage **8 “monitoring”**.

Integrating a gender perspective not only considers including women in each stage of the project cycle (as people who have a role in decision making, management, supervision, and execution), but also in operations (project implementation and operation) and as end-users or final clients of the intervention.



The digital annex presents the proposed adaptation to the project cycle currently used in Medellín.

PRELIMINARY STAGE: LEARNING ABOUT GENDER PERSPECTIVE AND UNIVERSAL ACCESSIBILITY

Ensuring that those involved in the design process of active mobility infrastructure apply concepts of equity and universal accessibility requires them to understand the meaning of the gender perspective and its main concepts. This is knowledge that planners and decision makers may not possess naturally or that has not been taught at universities, so it is necessary to build capacity of these groups around the concept of gender equity.

The goal of this stage is to raise awareness regarding gender perspective and its application to active mobility projects among designers. To this end, it is advisable to include reviews of individual readings, videos, and training indicated for the conceptual framework and basic criteria into the existing processes of the entities involved, such as orientation processes, among others. If possible, we suggest additional mandatory training for technicians responsible for the active mobility infrastructure design.

The technical team may lack the motivation to review the content due to their workload and may not “relate” the direct relevance of this knowledge to the success of a project. We suggest allocating time for this activity and having it recognized as a legitimate component in project development, as well as establishing a recognition scheme to reward greater knowledge of concepts and application of gen-

der-based mobility, or awards for projects where these concepts are applied more appropriately. Alternatively, this could be made mandatory, but it may be difficult for the mere mandatory nature to increase compliance if time is not allocated for this work, or for it to be done with intrinsic motivation.

As for results, it is expected that as a result of these readings, the technicians of the secretariats involved will achieve a basic knowledge of the meaning of gender perspective in mobility, and will know how to apply it to the project they are about to start.



There are three useful instruments to complement this section:

Resource suggestions
References used throughout the guide
Documents consulted in depth during the study carried out by Despacio and ITDP.

STAGE 0: PROJECT IDENTIFICATION

To identify projects that promote inclusion and consider the specific needs of diverse populations, it is necessary to perform a data analysis that considers those variables that highlight the diversity of profiles of cyclists and pedestrians. Ensuring an equitable team from start to finish is also key. To this end, it is recommended to add activities to improve the identification of projects with the integration of the gender perspective.

First, data analysis activities for project identification should consult the most recent mobility data, such as the “Origin Destination Survey”, available accident data (comprising at least 3 years), personal safety data (theft and sexual harassment), and other available qualitative data on road and personal safety perceptions, and the overall mobility experience. All data should be disaggregated by gender, ideally

geo-referenced, and cross-referenced with other socio-demographic indicators that help in understanding diversity, such as:

- **Gender:** female, male and non-binary. In addition, transgender (or “trans”) people are those who do not self-identify with the gender assigned to them at birth. Due to norms and stereotypes culturally associated with women, men, and trans population, women and trans people display different travel patterns and experiences of violence in public spaces.
- **Sexual orientation:** it is crucial to identify the barriers that LGBTQ people face in their mobility experience. Studies indicate that homosexual people tend to suffer more violence in public spaces (Transport for London, 2019).
- **Age:** children and adolescents, as well as older citizens, have specific needs in terms of mobility, since in many cases they depend on third parties to move around and access the opportunities of the city, or are more likely to be victims of gender-based violence (in the case of girls and adolescents), theft or traffic accidents (in the case of young men).
- **Income level:** indicates the income differences of the population that affect their purchasing power, their access to the transportation system, and finally to labor, social, and cultural opportunities in the city. In Colombia, stratification can be used for the same purpose.
- **Occupation:** in case of data scarcity, occupation can be used as a proxy to identify population groups with specific barriers, such as homemakers or domestic workers.
- **Ethnic identity:** these are populations with different cultural constructions, worldviews, customs, and traditions. According to DANE, three ethnic groups are legally recognized in Colombia: (i) Indigenous Peoples, (ii) Black, Afro-Colombian, Raizal and Palenquera Population (NARP), and (iii) Roma or gypsy population (National Administrative Department of Statistics, 2019).

- **Disabilities:** this refers to people who have physical, visual, hearing, intellectual, or psychosocial disabilities whether temporary or permanent, or long-term health issues that restrict their daily activities, their ability to work, or their capacity to move around.



There are three useful instruments to complement this section:

Mobility pattern analysis activity
Geographical Analysis methodology
How to ensure an equitable and gender-sensitive team.

STAGE 1: ROUTE OR CORRIDOR DEFINITION

Medellin's current methodology identifies the following main variables to prioritize areas or corridors for intervention:

- **Population analysis:** population density, demographic data, and socioeconomic characteristics of targeted neighborhoods are reviewed.
- **Sector dynamics analysis:** identifying the commercial, institutional, and service dynamics of the sector
- **Analysis of public order and public safety:** analysis of the public order situation in the sector.
- **Analysis with a gender approach:** data disaggregated by gender, evaluation of perceptions and identification of needs.

Variable analysis must be carried out with maps and images, and drawing a stakeholder map and community validation is also indicated.

In addition to the above steps, we also recommend adding activities for the analysis of inclusion variables when defining the layout or corridor and virtual participatory mapping to integrate the vision of pedestrians and cyclists. We also suggest prioritizing the involvement of a diverse population.

When defining the route or corridor, we recommend defining criteria to select routes that promote inclusion and equity, for which geographical, quantitative and qualitative analyses should be used as inputs (not only quantitative, as is traditionally done).



There are two useful instruments to complement this section:

Inclusiveness variable analysis
Virtual participatory mapping.

STAGE 2: DIAGNOSIS

Once the route or corridor of intervention has been defined, the diagnosis activities begin. This diagnosis serves to understand, for example, what the urban space is like for women, and whether it has features that enable mobility for care (from good ramps to adequate lighting or the presence of police). It also includes, for example, whether the place is used for street harassment, and whether there are drug outlets. Depending on the instruments used (see list below), this can be very detailed and can provide a very clear picture of the conditions women face in their daily commute.

The current methodology involves an in-depth analysis of multiple variables, by gathering secondary and primary information, focusing mainly on social, urban, and mobility analysis.

Secondary information gathering involves the following variables:

- Population information
- Sectoral dynamics
- Heritage and cultural information
- Information on the perception of public safety
- Information on projected social projects and programs
- Information from journalistic and other media
- Regulatory information

Primary information gathering involves the variables detailed in Table 3.

Table 3. GMH methodology: Step #3 Primary information gathering

Category	Information to be collected (yes/no)
Persons	• Presence of transient homeless population • Presence of permanent homeless population • Perception of public safety – they can point to a place or trace an area • Street harassment • Female-only transit service • Concentration of people • Perception of confinement • Police presence • Public transit route programmers, dispatchers, and controllers • Street artists/performers • Persons with Reduced Mobility • Pedestrians (age groups) • Tourists
Activities	• Drug use • Drug dealing • Location and characterization of informal trade • Supply of institutional services in the sector • Supply of private services • Informal transportation

Category	Information to be collected (yes/no)
Places	• Blind spots • Informal parking ("Franeleros" – people who guard cars parked on the street, for a tip) • Invisible barriers • Delivery / Courier gatherings • Billboards • LED screens at bus stops • Bus stops • Mobility LED screens • CAI (Police Immediate Attention Centers) location • Emergency bodies • JAC/JAL facility location • Transportation companies • Car garages/shops • Car dealerships • Financial companies/cooperatives • Technology companies • Manufacturing companies • Service / utilities companies • Hostels, hotels • Residential areas • Temporary residence center (Daily pay rooms) • Academia • Day centers for homeless persons • Heritage centers

In regards to the gathering of mobility-focused primary information, there are 3 steps that should be analyzed in field visits and geographic analysis:

1. Situation survey
2. Vehicle capacity count
3. Conflict analysis

To complement this stage and add aspects related to feminist urbanism, and road and personal safety, we recommend the following additional activities.

The main aspects of feminist urbanism herein recommended are mainly based on the studies carried out by the organization Col·lectiu Punt 6. The bibliography of this guide provides references to publications “Criterios del urbanismo feminista a través de las variables urbanas” (2019), “Urbanismo feminista” (2019) y “Movilidad Cotidiana con Perspectiva de Género: Guía Metodológica para la Planificación y el Diseño del Sistema de Movilidad y Transporte” (2021). In addition “Manual para la planificación y el diseño urbano con perspectiva de género” (World Bank, 2020) and “Ciudad Feminista” (Kern, 2019) will also be considered.



There are five useful instruments to complement this section:

Indicators of feminist urbanism
Participatory personal safety audit
Lighting audit
Road safety audit along the route.
Stay assessment



Figure 34. Example of requirement compliance.
Despacio

STAGE 3: BASIC IDEA PROPOSAL

The step-by-step process of this stage includes the approach to the spatial distribution and proposed intervention typologies per section, the definition of the challenges in terms of accessibility, safety, and other variables to ensure a comprehensive development based on functional attributes: traffic micro-simulation, consolidation of typologies, and reporting.

The 5 requirements of cycling infrastructure must be recognized (Ministry of Transportation of Colombia, 2016) and on the basis of the CROW (2007) principles: Directness, Attractiveness, Safety, Comfort, and Coherency.

In addition , we suggest defining design principles for gender equity and universal accessibility as well as including participatory processes for the inclusion of the public's opinion in the basic idea proposal stage.



There are three useful instruments to complement this section:

"Design principles" activity
"Participatory design" activity
"Socialization and awareness-raising on sexual street harassment" activity.

STAGE 4: PRELIMINARY PROJECT FORMULATION AND REVIEW

During the preliminary project formulation stage, it is necessary to ensure that the results of the assessment (stage 2), the principles of design with a gender perspective and universal accessibility (stage 3), and the community feedback were incorporated into the design. To this end, we suggest that the Women's Secretariat (part of the government in Medellín) or its equivalent should accompany and conduct a technical review of the preliminary project. The team should include people with technical expertise in urban planning and sustainable mobility, as well as gender issues. The purpose of this activity is to ensure that the preliminary project incorporates design recommendations with a gender perspective and universal accessibility.

STAGE 5: DETAILED DESIGN

In addition to ensuring that the principles of gender-responsive design and universal accessibility are incorporated into the detailed design, we recommend conducting an additional road safety audit of the designs so as to ensure the best road safety standard, bearing in mind that road safety is one of the main barriers to bicycle use among women, girls, and older women (Moscoso et al., 2021). The goal of this stage is to carry out a road safety audit on the detailed design to ensure the inclusion of the best road safety standards, such as protected cycle lanes, safe intersections, slow vehicle speeds, and other traffic-calming measures, in the design.

The outcome would be an audit performed by a certified auditor resulting in a report containing general remarks and recommendations on key design aspects and specific remarks and recommendations directly on the designs with annotations provided.

STAGE 6: TENDERING

Once the detailed designs are complete, the project will likely move to the tendering stage wherein firms submit bids to implement the project. This is an opportunity to design tenders that require or reward firms that hire women and otherwise incorporate a gender perspective in their approach. According to (World Bank, 2020), there should be strategies to allow diverse women to have access to multiple economic development opportunities, strengthening their economic autonomy. The construction sector is one of them, and the following are contracting procedures that help ensure greater diversity in the sector. We recommend including the following diversity requirements in contracting procedures to support women and minority groups, according to (World Bank, 2020; Castillo et al., 2021):

- Hire women and sexual and gender minorities in research, planning, and design consulting firms;
- Hire diverse women in all construction project processes.
- Train and pay women and sexual and gender minorities to participate in the maintenance and/or monitoring aspects of a project;
- Stipulate a quota of 50% or more women hired for a project, or add scoring points when women are included in senior positions;
- Hire women and sexual and gender minorities to fill highly visible jobs, such as jobs in public transportation or as security guards, to foster safety, comfort, and access for others;
- Include requirements to consider care activities in social management plans: flexible schedules, nursing rooms, care services (daycare, canteens, laundry service).

STAGE 7: IMPLEMENTATION

To accompany the physical works, we suggest reviewing and/or including in the civil construction codes of conduct some criteria to guarantee the physical autonomy of women; penalties should be imposed on those who harass women and girls. Furthermore, we suggest conducting awareness campaigns in the area of influence of the construction site for the prevention of gender-based violence.

This aims at guaranteeing a violence-free space during construction activities and, as a result, a revised code of conduct and communication campaigns.

STAGE 8: MONITORING

In monitoring the project's impact following implementation, gender and universal accessibility indicators must be included to ensure that the perspective is mainstreamed. The list of indicators presented below relates to the activities suggested in this guide, to verify the inclusion of the gender perspective in all stages of the project. In addition, quantitative and qualitative data gathering is also suggested, for example, by replicating the Participatory Personal Safety Audit Activity, to assess the project's impact, especially on women.



There is one useful instrument to complement this section:

Checklist to ensure a gender perspective.

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