Evidence from Egypt, Jordan, and Lebanon

Middle East and North Africa

Ten-thousand Steps in Her Shoes: The Role of Public Transport in Women's Economic Empowerment

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

1818 H Street NW, Washington DC 20433
Telephone: 202-473-1000
Website: www.worldbank.org

Table of Contents

Boxes

Figures

Tables

Foreword

Women across the globe face numerous mobility challenges. Transport provides many benefits that should be enjoyed equally by all users, regardless of their gender and circumstance in life. However, this requires a paradigm shift in transport planning. By enabling women and men, and girls and boys from all walks of life to fulfill their mobility needs, transport planning can become an important instrument for not only promoting economic, political, and social equity, but also enabling people, cities, and countries to grow.

In the Middle East and North Africa (MENA) region, women's university enrollment surpasses men's, yet their labor force participation (LFP) rate remains low and stagnant. What is preventing the women of MENA from translating their educational achievements into economic productivity? Is it a matter of personal preference, structural barriers, or both? This report examines one of the structural barriers to women's participation in the labor force—the public transport system—in the context of the cities of Amman (Jordan), Beirut (Lebanon), and Cairo (Egypt).

The report finds that a large share of women expresses a "latent desire" to work but faces transport-related barriers, which once addressed, can lead to significant economic gains. While the report reveals that public transport affordability and accessibility are issues that are common to all three cities, it also identifies important tailored and concrete city-specific actions to enhance women's access to economic opportunities in urban MENA.

This work demonstrates that "one-size-fits-all-women"-type transport policies designed to benefit women may leave many of them behind. Tailored action is needed, both across cities and within cities, depending on the needs of different women public transport users.

Gender equity in transport usage can only be partially accomplished through policy interventions, regardless of how well intentioned and progressive they may be. Public awareness and endorsement of the benefits of greater gender equality—within households, workplaces, and society at large—are as crucial in advancing women's participation in the economy as policy reforms and state, civil society, and corporate actions that protect the interests of women and other disadvantaged groups and facilitate their agency.

The analysis and recommendations presented in this report should help policymakers in Jordan, Lebanon, and Egypt design concrete actions, improve women's mobility through public transport, and create an enabling environment to increase their economic participation.

Ferid Belhaj
Vice President
Middle East and North Africa

Acknowledgments

This report originated from a collaboration between the Middle East and North Africa (MENA) Transport Team and the MENA Chief Economists Office in 2020.

The report has been prepared by a core team led by Muneeza Mehmood Alam (Senior Transport Economist) and comprises Lisa Bagnoli (Consultant), Tamara Kerzhner (Consultant), and Mira Morad (Senior Transport Specialist) from the MENA Transport Unit of the World Bank.

The team is grateful to Paul Noumba Um (Regional Director for Infrastructure, MENA Region), Roberta Gatti (Chief Economist, MENA Region), Stefan G. Koeberle (Director, Strategy and Operations, MENA Region), Jean-Christophe Carret (Country Director for Iran, Iraq, Jordan, Lebanon and Syria, MENA Region), Marina Wes (Country Director for Egypt, Yemen and Djibouti, MENA Region), and Ibrahim Dajani (Practice Manager, MENA Transport Unit) for their support and guidance. The team also thanks Rabah Arezki (former Chief Economist, MENA Region) and Olivier Le Ber (former Practice Manager, MENA Transport Unit) for guiding this work in the earlier stages.

The core team thanks peer reviewers, Karla Dominguez Gonzalez, Matias Herrera Dappe, and Nato Kurshitashvili, for their comments. Melanie Jaya and Marian Arakelian are thanked for administrative support. The team also thanks May Ibrahim for reviewing the final report.

The extended team for the report includes Arturo Ardila Gomez, Alexis Madelain, Affouda Leon Biaou, Elisabeth Maier, Jonathan Davidar, Clotilde V. Minster, Nobuhiko Daito, Susan Lim, Hakim A. A. Al-Aghbari, Gaelle Samaha, Salma Abdel Fattah, Nabeel Darweesh, Ashraf Al-Saeed, Zeina El Khalil, Lina Abdelghaffar, Munyaradzi Chidakwa, and Nazmul Chaudhury from the World Bank.

Cover page photo credit: Adobe Stock

About the Authors

Muneeza Mehmood Alam is a Senior Transport Economist in the Middle East and North Africa transport unit of the World Bank. Muneeza joined the World Bank in 2015 and brings with her more than 15 years of experience working on development issues. During her time at the Bank, Muneeza has worked on diverse topics relating to transport and economic policy, particularly economic corridors and regional connectivity, urban transport, logistics, gender and spatial inclusion, and electric mobility. She has a keen interest in understanding the mechanisms through which the economic and social benefits of transport investments can be maximized and more equitably distributed. Muneeza has previously worked in the global as well as the South Asia transport units of the World Bank. Before joining the World Bank, she worked in economic consulting. She holds a PhD in economics from Yale University.

Lisa Bagnoli is a Consultant with the Middle East and North Africa transport unit of the World Bank, where she has primarily worked on transport policy and gender. Prior to joining the World Bank, Lisa focused her work and research on the social and distributional impacts of public policies in various sectors, including transport, energy, health, and labor markets. She has a strong interest in understanding the effects of policy reforms on the most vulnerable populations in different contexts. For instance, she has worked on the effectiveness of targeting subsidies to address energy poverty and has collaborated with a mentoring organization to explore the factors contributing to the successful labor market integration of young migrants. She holds a PhD in economics from the Université libre de Bruxelles and is an associate fellow at the European Center for Advanced Research in Economics and Statistics (ECARES).

Executive Summary

Today, in the Middle East and North Africa (MENA) region, women have a higher university enrollment rate than men, yet their labor force participation (LFP)[1] rate remains low and stagnant. What is preventing the women of MENA from translating their educational achievements into economic productivity? Is it a matter of personal preference, structural barriers, or both? While transport systems have been shown to play a significant role in women's participation in the labor force globally, this topic has been little explored in the MENA region.

This report examines the role of public transport in women's access to economic opportunities in urban MENA. It studies the links among mobility, gender, and access to economic opportunities. It focuses on three metropolitan areas—Amman, Jordan; Beirut, Lebanon; and Cairo, Egypt.[2] These cities were chosen for their contrasting size, context, and economic stability. All three cities have a low LFP rate for women and a significant disparity in the LFP rates of women and men.

The report focuses on five aspects of the public transport system and their implications for men's and women's mobility choices and barriers: (i) the **availability** of public transport close to people, (ii) the **accessibility** to opportunities (for example, employment) through the public transit network, (iii) the **affordability** of public transport, (iv) the **acceptability** of using public transport, given the social and cultural norms, and (v) the **safety** from crime and harassment when using public transport and its infrastructure.

The report reveals that a significant percentage of working-age women in Amman, Beirut and Cairo want to be economically active but are constrained due to deficiencies in the transport system. In each city, a large number of the interviewed non-working women state that the lack of affordable, comfortable, safe, time-efficient, and reliable transport options prevents them from looking for work. This corresponds to three in five women in Amman, one in two in Beirut, and two in five in Cairo.

Improving the public transport system can enable women to contribute significantly to the economy. Statistical analysis confirms that a well-functioning public transport system is crucial for enhancing women's LFP, but the most important constraints they face differ by city and income levels. For instance, in Amman, improving the safety of public transport by 5 percentage points (pp) may increase Amman's gross domestic product (GDP) by 2.3 percent (if the additional women looking for work find employment). In Cairo, a 5-pp improvement in accessibility may increase the GDP by 0.8 to 1.6 percent (if the additional women looking for work find employment).

The report builds on three types of data collected in each metropolitan area. All data were collected in 2022. The first is the transit network data for the complete public transport network in each metropolitan area. It is complemented by build environment (safety) audits to understand the characteristics of the public transport system. The second is (intercept) surveys of public transport users (3,027 men and 2,806 women across the three cities) to understand their system utilization. The third is a household survey (2,951 men and 2,961 women across the three cities between the ages of 18 and 50) to understand the overall mobility of the working-age population. It also includes many personal and community characteristics that influence the relationship between mobility and access to economic opportunities.

The findings of the report are summarized through a series of questions that build on each other. Together,

[1] Labor force participation rate is the proportion of the population aged 15–64 that is economically active. It includes both people working and actively looking for work.

[2] Throughout the Executive Summary and report, all references to "Amman," "Beirut," and "Cairo" cover the entire metropolitan areas (also known as Greater Amman, Greater Beirut, and Greater Cairo) for the sake of conciseness.

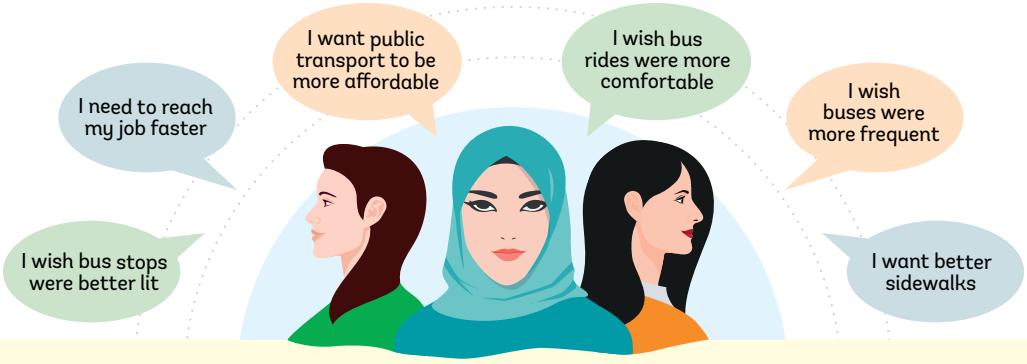
Did you know

Share of non-working women who say that transport barriers prevent them from looking for work is...

Amman 6/10

Beirut 5/10

Cairo 4/10



The Challenges

1 Percentage of women public transport users who face such problems

Amman		Beirut		Cairo	
Uncomfortable	60%	Road safety	58%	Length of trips	35%
Length of trips	42%	Too expensive	58%	Waiting time	26%
Waiting time	40%	Uncomfortable	49%	Too expensive	25%

2 Percentage of total jobs reachable within 60 minutes by using public transport or walking

Amman 18%

Beirut 30%

Cairo 13%

The Potential

Improving public transport in MENA can encourage more women to seek economic opportunities, potentially yielding **GDP gains.**

Amman

2.3% potential increase in Amman's GDP.
If safety at public transit stops improves by 5 percentage points - **59,000** more women will look for work.

Cairo

0.8% - 1.6% potential increase in Cairo's GDP.
If accessibility through public transport improves by 5 percentage points - **337,000** to **614,000** more women will look for work.

In Amman, Beirut, and Cairo, improving accessibility will increase the LFP among women hailing from low-income households.

The Road Ahead

A well-functioning public transport system is necessary to improve women's economic participation in MENA.

This requires interventions that:

Enhance the public transit network coverage, speed, affordability, and walkability of all cities.

Develop customized solutions to improve public transport as one size does not fit all scenarios.

Design complementary interventions in other sectors to create more opportunities for gainful employment of women.

these results demonstrate the importance of tailoring actions to context—a "one-size-fits-all-women" approach to improving the public transport system will leave many women behind, as it will not account for the unique circumstances and environments in which they operate. The results also highlight the importance of intersectionality when focusing on women; for example, women in low-income households face specific challenges that would not be identified if only the average effect for all women had been investigated. The study also emphasizes the need to go beyond transport and address other constraints that women may face, including gender norms, further underscoring the relevance of interinstitutional collaboration.

How do men's and women's mobility patterns differ overall?

In the three cities covered by this report, men are more mobile than women. The gap between men's and women's mobility is greater in Amman and Beirut than in Cairo, where the average mobility is higher for both men and women. In Amman, only 53 percent of working-age women made at least one trip the day before the survey (a 16-pp gap with men); in Beirut, it was 56 percent (a 16-pp gap with men); and in Cairo, it was 90 percent (3-pp gap with men).

Among the men and women who are mobile, the mode of transport used differs significantly by city. In Amman and Beirut, private motorized transport is the dominant mode of travel for both men and women, whereas in Cairo, public transport is the dominant mode of travel, with taxis and call cabs being a close second. This is reflected in the motorized vehicle ownership of households in the sample: 66 percent in Amman, 79 percent in Beirut, and 24 percent in Cairo.

In all three cities, men are much more reliant on private transport, and women on taxis and call cabs, to meet their mobility needs, as evidenced by the share of men and women who hold driver's licenses (DLs) in the studied sample. In all three cities, men are much more likely than women to have a DL. The share of men and women who have a DL is the lowest in Cairo.

These results demonstrate that women in all three cities are likely to be more dependent than men on others (male household members driving them, taxis, or equivalent) and on public transport to meet their mobility needs.

How does the usage of public transport vary between men and women?

Most men and women in Cairo use public transport, while only a minority do so in Amman and Beirut. Regardless, in all three cities, men are more likely than women to use public transport daily, even in Cairo, where women are more likely than men to use public transport overall.

Among public transport users, microbuses are the dominant means of transport used by both men and women in the three cities. Both demographics spend almost an hour completing a trip by public transport in Amman and Cairo, and three-quarters of an hour in Beirut. They also use multiple vehicles to complete a single trip, highlighting the importance of the feeder network and the network coverage by public transit. In Amman, women and men use 1.9 and 1.8 vehicles, respectively, on their trip. This is more than in Cairo (1.6 for women and 1.8 for men) and in Beirut (1.3 for women and 1.4 for men).

In all three cities, work is the main reason for using public transport among men, while personal and other activities[3] are the main reasons for women. This difference is reflective of the division of labor within households.

[3] Includes social, medical, and care visits, accompanying someone else on their trip, and worship.

Do men and women report facing the same or different barriers to using public transit? Are the barriers the same in each city?

When using public transit, women face different challenges in each of the three cities, but the challenges faced by men and women within each city are, on average, similar. This affirms the notion that fundamental deficiencies in the public transport system affect both men and women. In Amman, the three main challenges for women using public transport are uncomfortable riding environments, long trip times, and long wait times. In Beirut, the three main challenges are road safety concerns, the cost/affordability of public transport, and uncomfortable riding environments; and in Cairo, they are long trip times, long wait times, and the cost/affordability of using public transport.

Is transport a binding constraint that is preventing women from being economically active?

There are essential differences in the commuting patterns of workers across the three cities. In Amman and Beirut, private vehicles constitute the main mode of transport, while in Cairo, public transport is the main commuting mode. Among those who use public transport to commute to work, microbuses are most used in Amman and Cairo, while buses/minibuses are the most used in Beirut.

Non-working women in all three cities express openness to becoming gainfully employed if the conditions are favorable, indicating there is a "latent desire" to work. In all three cities, most non-working women say they would be willing to accept a job if it were available. This corresponds to 65 percent of non-working women in Amman, 59 percent in Beirut, and 67 percent in Cairo.

Among non-working women, many (62 percent of women in Amman, 52 percent in Beirut, 48 percent in Cairo) identify commuting as a barrier. When asked whether transport- or non–transport-related barriers constrain them, most women in all three cities indicate that transport-related barriers constrain them, and a significant share also cite non–transport-related barriers, especially in Cairo. In Amman, 97 percent of women identify at least one transport-related constraint while 14 percent identify at least one non–transport-related constraint; in Beirut, these shares are at 97 percent and 16 percent, respectively; and in Cairo, at 78 percent and 55 percent, respectively.

In terms of transport-related constraints, women in Amman report the cost of commuting as the leading barrier to work, followed by the length of the trip. This flips in Cairo, where the length of trips is the most reported barrier, followed by the cost of commuting. In Beirut, the cost of commuting is, by far, the dominant constraint. In terms of non–transport-related barriers, family preference is the main non-transport barrier to commuting in Amman, while domestic duties is the main constraint in Beirut and Cairo.

How much can improving the public transport system enhance women's economic participation?

Empirical measures of accessibility, availability, and safety of public transport were constructed to assess how the spatial accessibility of jobs in each city, the availability of public transport close to residential locations, and the safety at public transit stops affect the LFP of women as well as the likelihood of their employment.

All three cities have low accessibility levels to jobs by public transport and walking. On average, people in Amman can reach 18 percent of the total jobs in the metropolitan area in under 60 minutes using public transport and walking; in Beirut, it is 30 percent; and in Cairo (a larger city), 13 percent. All three cities also have unequal access to public transport. Inequality in accessibility to jobs via public transport or walking is the highest in Amman, followed by Cairo and Beirut.

This measure of accessibility relates closely to the type of transport used to commute to work. In all three cities, as spatial access to jobs through public transport and walking improves, the reliance on public transport, walking (and bicycling), and shared transport increases, whereas the reliance on private transport declines.

In terms of safety and the built environment at public transport stops, poor pavements and sidewalks are the most salient issues in Amman and Cairo, whereas in Beirut, the lack of lighting at public transit stops is the most prevalent problem. Both aspects affect the safety and security around public transit stops. Moreover, in Amman and Beirut, there is a lower presence of women at transit stations than in Cairo.

Statistical analysis reveals that in each of the three cities, women's LFP is differently influenced/constrained by the three spatial measures of public transport (accessibility, availability, and safety), and these constraints differ by income levels.

In Amman, safety appears to be the most critical constraint women face, whereas spatial accessibility to jobs is more important for women hailing from low-income households. A 5-pp increase in safety (from the composite safety index of 66 to 71 percent) is estimated to increase working-age women's LFP by 4.7 pp (from 13.6 to 18.3 percent). In practice, this corresponds to 59,000 additional women in the labor force in Amman.

In Beirut, there is no evidence that improving any of the three measures of availability, accessibility, or safety would significantly improve women's overall LFP. This may be due to the economic and financial crisis that Lebanon is facing that started in 2019 and was compounded by the Port of Beirut explosion in 2020. These crises have severely depressed the Lebanese economy and impacted available employment opportunities. However, there is evidence that spatial accessibility matters for women hailing from low-income households.

In Cairo, both accessibility and availability of public transport appear to play an important role in determining women's LFP. A 5-pp increase in accessibility (from 13 to 18 percent) is estimated to increase working-age women's LFP by 4.9-8.9 pp (from 19.1 to 23.9–27.9 percent). In practice, this corresponds to 337,000–614,000 additional women in the labor force in Cairo. On the other hand, improving availability by 5 pp may increase women's LFP by 0.7 pp (52,000 additional women in the labor market).

While accessibility, availability, and safety appear to affect women's likelihood of looking for a job to varying degrees, they seem to have little impact on their subsequent employment probability. This is consistent with the idea that while public transport is critical to improving women's access to employment opportunities, making them more likely to look for jobs actively, complementary actions are needed to translate this active participation into gainful employment. This, therefore, represents missed opportunities both for women and cities overall.

Following the previous scenario, if all 59,000 additional women looking for a job in Amman were to find employment, on average, there would be a total extra income of over JD 356 million per year (**a 2.3 percent increase in Amman's GDP**). Similarly, in Cairo, if all 337,000–614,000 women were to find employment, on average, it would lead to a total additional income of EGP 12.4 billion–EGP 22.7 billion per year (**a 0.8–1.6 percent increase in Cairo's GDP**).

What concrete actions are needed to improve the public transit system?

The report reveals that while some issues need to be addressed in all three cities, as there are common barriers and deficiencies, there are also certain areas of improvements specific to each city and context. In all three cities, affordability poses a major barrier to women commuting to work. There is a need to either lower the cost of public transport or offer targeted fare concessions. Besides, the overall low and unequal levels of accessibility of employment opportunities through public transport and walking highlight the need for:

- Prioritizing public transport through integrated corridor management or the creation/improvement of mass transit
- Improving existing land regulations to foster dense, diverse, and well-designed urban development
- Enhancing the walkability of the cities by improving sidewalks and walkways and developing pedestrian-first policies

Some of the targeted actions in each city could include:

- **Amman**: Providing a safe environment, such as well-lit and visible public transport stops and better walkways and bicycle paths. There is also a need for a code of conduct for public transport drivers and an easy mechanism to report gender-based violence as well as receive a swift response to these reports. To this end, Jordan adopted a code of conduct for public transport in January 2019 and has developed a mobile phone application for the code of conduct that enables bus service users to report misconduct in public transport systems.
- **Beirut**: Enhance first and last mile coverage of, and comfort in public transportation. There is also a need to enhance the lighting at public transit stops and improve accessibility to them.
- **Cairo**: Expanding the availability of public transport near residential locations. This requires a reassessment of the placement of public transit stops and increasing the frequency of public transport vehicles in addition to widening the network coverage of the public transport system.

What else is needed to enable women's active employment in the economy?

While a good public transport system improves women's LFP, converting this participation into actual employment depends on many other factors such as the labor market, environment, social, and household constraints, as well as gender norms and expectations about gender roles. For instance, there is a need to provide flexible work arrangements and support jobs that would allow women to balance their personal, family, and work lives, as well as protect them from gender-based discrimination[4], and provide childcare options, such as high-quality day-care centers at—or close to—places where people work or live. Thus, along with improving the accessibility, availability, and safety of public transport, policy measures that address work environment, social, and household constraints are also needed.

[4] Some firms may have a business culture that does not value the contribution of their female staff or favors male employees to avoid providing maternity-related benefits or risking the loss of a female employee after they get married.

CHAPTER 1

Introduction

Photo credit: World Bank Photo Collection

Section 1: Background

The saying goes: real change happens one step at a time, yet discovering new horizons requires daring to lose sight of the land one walks on. In the context of women's economic empowerment, progress toward gender equality in the workforce may be slow and incremental. Yet, it also requires a willingness to take risks and challenge existing norms and systems. Nonetheless, the potential impacts of such efforts are both profound and significant. In this context, the role of transport emerges as a catalyst for transforming women's lives, enabling them to access economic opportunities, education, health care, and social activities. Unfortunately, in many parts of the world, women face significant obstacles to mobility, limiting their access to the resources and services they need to thrive. Public transport has the potential to address these obstacles by providing safe, affordable, and reliable transport options that help women fully participate in their communities and realize their true potential.

Paradoxically, in the MENA region, although today more women than men enroll at university, the former's LFP rate remains low and stagnant. The region has made remarkable strides in terms of women's life expectancy, infant mortality, and tertiary education. In some cases, women's performance in education has even led to a "reverse gender gap," with women outnumbering men in tertiary education. However, despite their educational attainment, women's economic participation across MENA countries remains low. Currently, 43 percent of women attend university in MENA but only 21 percent participate in the labor force, compared to 77 percent of men (see figure 1.1-A). While women's university enrollment increased over the past decades, their LFP has remained low and stagnant over time (see figure 1.1-B). Compared with other regions, MENA exhibits the highest gender gaps in LFP and the lowest female LFP in absolute terms (see figure 1.2).

How costly is it for MENA to rely on the talents of only half their population to achieve economic growth? The International Monetary Fund (IMF) estimates that removing gender differences and equalizing LFP and hourly productivity between men and women would increase MENA's output by over 50 percent.[5] However, various social and economic factors determine women's LFP at both the household and societal levels.[6] Some of these include cultural barriers, including social unacceptability; prioritization of men, or mixed workplaces; and structural barriers, including a lack of childcare options, wage discrimination, and low wages.[7] Access to transport services is also emerging as a critical issue affecting women's decision to participate in the labor market.

[5] Ostry et al. (2018).

[6] Factors that affect women's decision and ability to engage in the labor market include the level of economic development of cities, institutional settings, individual educational attainment, and social dimensions such as norms regarding women's role within and outside the household.

[7] The Arab Barometer wave VII—2021–2022.

Figure 1.1-A Current University Enrollment and LFP among Men and Women in the MENA Region

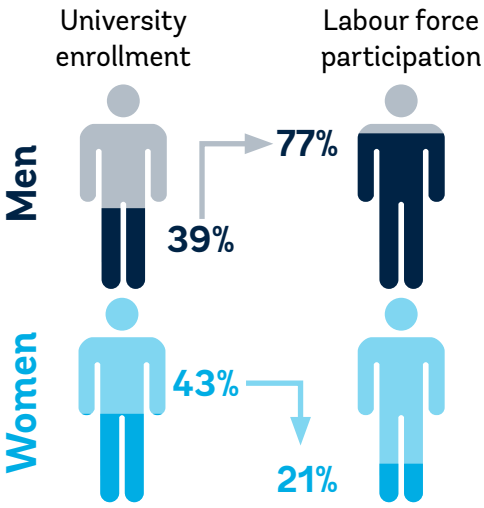
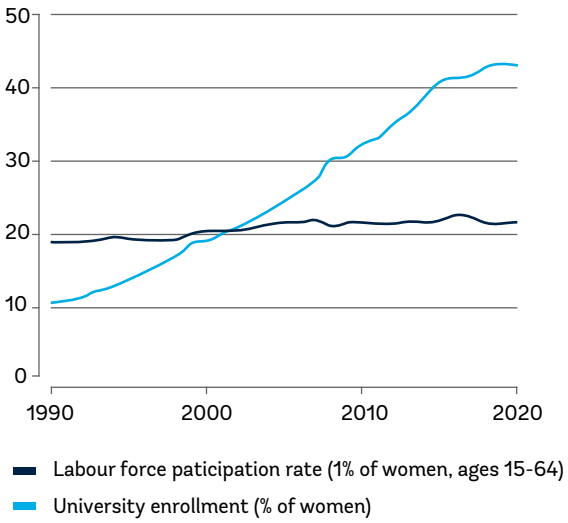


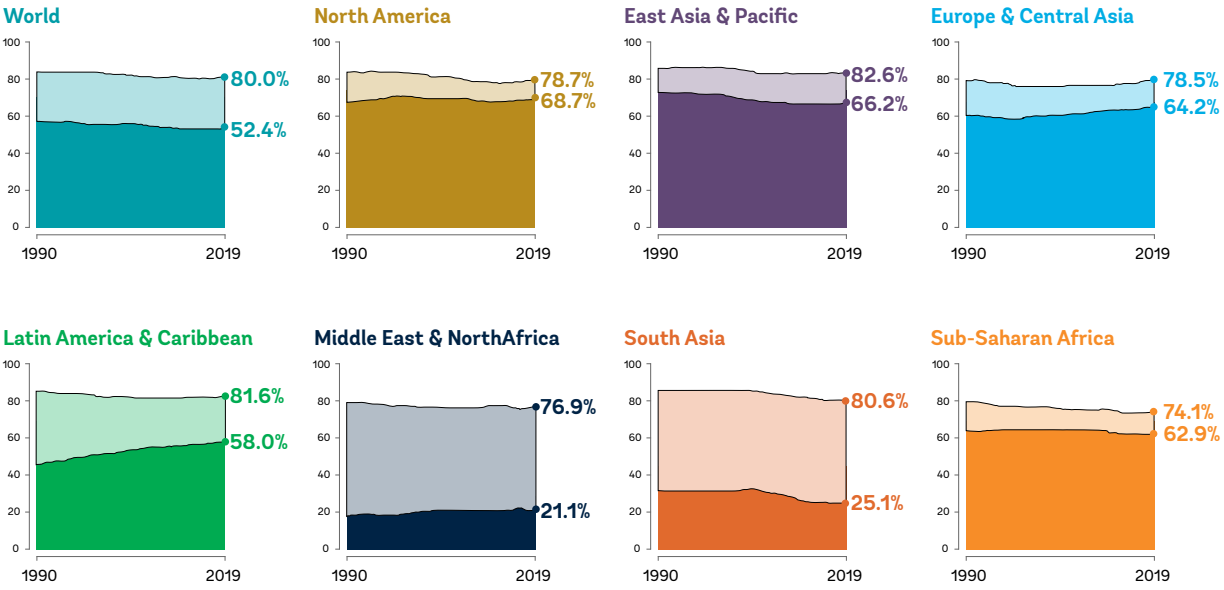
Figure 1.1-B University Enrollment and LFP of Women in the MENA Region over Time



Source: World development indicators.

Notes: LFP data is for 2019 and university enrollment data for 2020.

Figure 1.2 Gender Gaps in LFP over the Last Three Decades

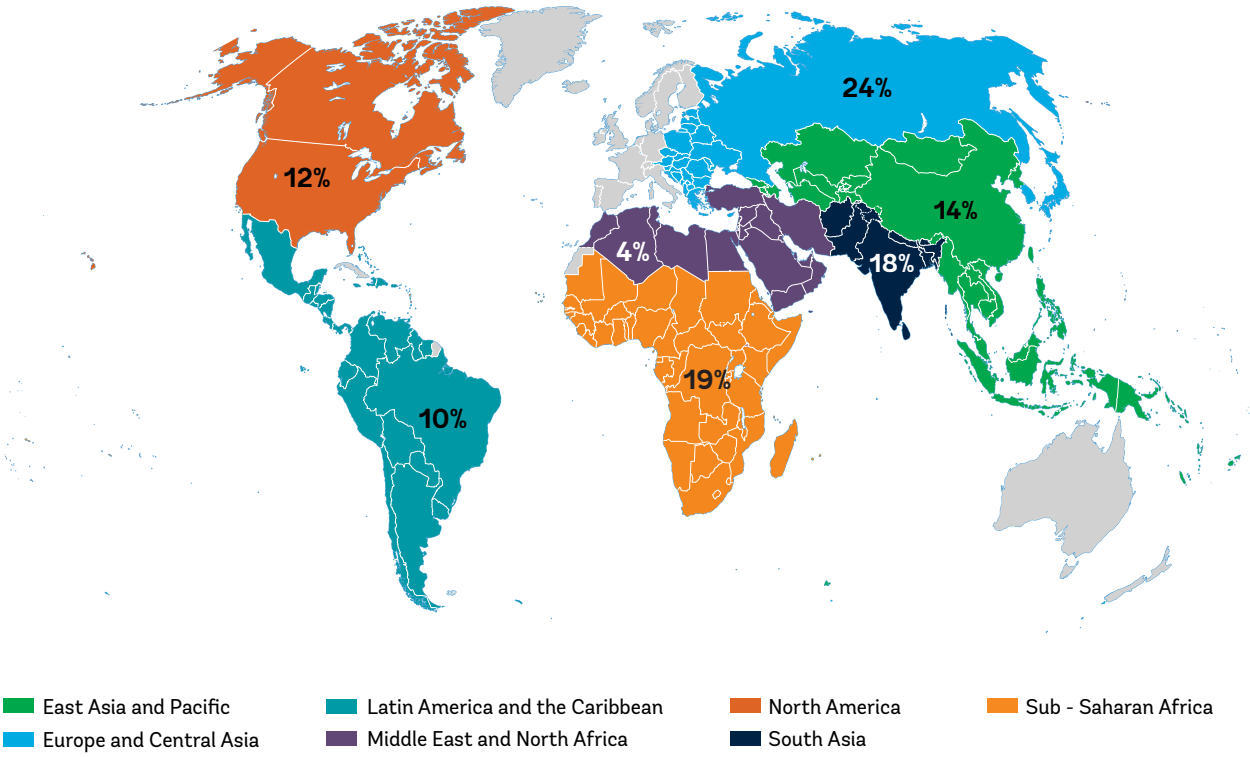


Source: World development indicators.

While transport systems have been shown to play a significant role in women's LFP globally, this topic has not been adequately explored in the MENA region.[8] Extensive scientific and practitioner literature on the role played by gender in enabling or preventing people from accessing transport solutions has been evolving for decades. Much evidence has been brought to bear in both developed and developing countries to demonstrate how gender inequities in transport access create worse employment outcomes for women than for men.[9] The International Labor Organization (2017) estimates that in developing countries, limited access to and the safety of transport is the single greatest obstacle to women's participation in the labor market—it reduces their participation probability by as much as 16.5 pp.

Women's and men's experiences with transport systems differ significantly across all aspects of the travel experience. The factors influencing experience in the transport system can be classified as availability, affordability, spatial accessibility, safety, and acceptability.[10] However, a recent systematic review of the global evidence on the topic has revealed that limited attention has been paid to gender differences in mobility in the MENA region (see figure 1.3).

Figure 1.3 Share of Scientific Literature on Gender and Mobility by Region



Source: Alam et al. (2022).

[8] Alam et al. (2022).

[9] Dobbs (2007); Ajibola, Komolafe, and Akangbe (2015); Seedhouse, Johnson, and Newbery (2016); Cook and Butz (2018).

[10] Dominguez Gonzalez et al. (2020)

Box 1.1: Existing Evidence on Gender, Mobility, and Access to Economic Opportunities

Women often face additional socio-cultural constraints that exacerbate the adverse effects of poor public transport. Women's low financial capacity makes them more dependent on public transport than men, and the fare structure of multistop journeys (used relatively more by women) makes transport more expensive. The lack of personal security on public transport and around its infrastructure also disproportionally affects women, who might adjust their travel behavior for security considerations. As women spend more time on household responsibilities and multistop journeys, time-consuming public transport imposes a disproportionate burden on them and worsens their time poverty (Dominguez Gonzalez et al. 2020). Overall, unreliable, infrequent, and expensive public transport systems disproportionately burden women more than men, affecting their access to economic opportunities and essential services (Borker 2022).

Public transport systems also do not address the specific mobility needs of women. Typically, women constitute a lower share of travelers in public transport systems, but when they travel, they are more dependent on public transport than men (Dominguez Gonzalez et al. 2020; Borker 2022). Women tend to do more trip chaining and off-peak travel since they are more often in charge of domestic tasks and are responsible for the mobility of care. Mobility can pose barriers to women's social and economic empowerment. The availability, affordability, accessibility, social acceptability, and safety of public and private transport often influence women's ability to access education, jobs, health, social services, and recreation and leisure (Alam et al. 2022).

The limited evidence from MENA countries confirms that women constitute a sizable share of public transport users, but as this choice is often constrained, they are considered *captive users.* Women have lower access to private transport modes since they—especially when poorer—have lower access to cars. They also bear the burden of indirect extra costs when using public transport caused by low accessibility and low affordability levels for women. These additional costs are akin to a *pink tax* on their mobility (Gatti et al. 2013; Alam et al. 2021; Minster et al. 2022).

There is a need to explore women's mobility needs and constraints and how they can be addressed in the design of public transport systems.

Can the lack of a well-functioning transport system explain the low levels of women's economic participation in MENA? Transport systems help ensure people reach their everyday destinations, such as jobs, schools, leisure, and health care facilities. Public transport services are the lifeline of transport networks as they are essential for people who are unable or do not want to drive, including those without access to personal vehicles—the youth and older people, individuals with special needs, and the middle- and lower-income individuals. Public transport is essential for the women of MENA (regardless of their economic strata), given the wide gender gap in DL possession. Thus, public transport availability, affordability, and accessibility shapes how, when, and where women travel.

This report sheds light on public transport's role in women's access to economic opportunities in urban MENA. It examines the links among mobility, gender, and access to economic opportunities. It provides evidence of gender differences in mobility patterns and travel behavior, as well as the barriers and challenges women face when using public transport. It also assesses whether public transport system deficiencies constrain women's economic participation.

This report focuses on three metropolitan areas: Amman, Jordan; Beirut, Lebanon; and Cairo, Egypt. These cities were chosen for their contrasting size, context, and economic stability. In doing so, the report:

- **Explores the links between mobility and gender and identifies women's barriers to using public transport.** This requires an understanding of the characteristics of the public transport system itself—including the means of public transport, the network coverage, and the service frequency. It also requires a deep understanding of the mobility patterns of public transport users and their challenges.
- **Examines the links among mobility, gender, and access to economic opportunities and identifies the barriers faced by working and non-working women.** This requires an understanding of the labor market aspirations and decisions of men and women. It includes the mobility patterns of workers on their commuting trips and the reasons and barriers faced by those not working.
- **Provides a model and estimation of the impact of various aspects of the public transport network on women's labor market outcomes.** This requires an examination of how the availability of public transport close to residential locations, the accessibility of jobs throughout each city, and the safety at public transit stops affect women's LFP and their likelihood of employment. By doing so, the report reveals whether improvements to public transport systems are necessary or a sufficient condition for enhancing women's economic empowerment.

Box 1.2: Transport and Economic Context in Amman, Beirut, and Cairo

The metropolitan area of the Greater Amman Municipality is a medium-sized city with a low population density and a relatively stable economic situation. Mass transit services are emerging, but Amman still relies heavily on private vehicles. Its population reached 4.2 million in 2020, and its population density of approximately 5,000 inhabitants/km² is significantly lower than other cities such as Beirut and Cairo. Amman houses most of Jordan's population as the governorate of Amman (larger than the metropolitan area of Greater Amman) accounts for 42 percent of the country's population. The modal share of public transport is low in Amman, but mass transit services are emerging (for example, Phase 1 of the bus rapid transit [BRT] is in soft operation).

The metropolitan area of Greater Beirut is a smaller city with multiple economic crises and with limited public transport infrastructure. The population of Greater Beirut was 2.2 million in 2016, with a density of around 11,000 inhabitants/km². Lebanon has weathered several crises for nearly three years. These crises have depressed the Lebanese economy and affected available employment opportunities. Lebanese mobility is dominated by private vehicles, as the public transport service provision is fragmented and unorganized, and the infrastructure and facilities are limited and scarce.[11]

The metropolitan area of Greater Cairo is a vast and dense city, with many modes of mass and public transit. Greater Cairo is the largest urban area in Africa and MENA, with a population of 21.75 million people and a density of around 12,000 inhabitants/km². It has numerous means of public transport.

Source: Jordan Public Transport Diagnostic, Lebanon Public Transport Diagnostic, and others

[11] World Bank (forthcoming).

Section 2: Conceptual Framework and Methodology

Women's participation in the labor market depends on numerous factors. Their aspirations and ability to make decisions, as well as other individual characteristics such as educational and technical qualifications, affect their choice of seeking employment opportunities. This choice can also be constrained by external factors such as the country's legal environment or social norms, infrastructure and social services, and ease of using the public transport system (and the trade-offs between using public and private transport).

The report focuses on the role that public transport systems play in enabling women to seek employment.[12] In doing so, it also covers aspects relating to the use of private transport modes. It adopts an ecological framework to conceptualize how the transport system interacts with country-, community-, and individual-level factors in determining women's and men's mobility needs, choices, and access to economic opportunities (see figure 1.4).[13] The transport system encompasses many components, including infrastructure design, operation, and transport services. This system interacts with country characteristics (such as region, income, normative, legal, and policy context), community characteristics (such as institutions, local, and community norms), and individual characteristics (such as gender, age, personal income, family structure, responsibilities, and physical ability). These interactions affect mobility needs and choices such as travel patterns and mode choices (including the choice between private vehicles and public transport). All these factors are internalized and shape women's aspirations and their decision regarding participating in the labor force, both under salaried employment or self-employment.[14] This decision to seek employment may turn into actual employment but it also depends on labor market factors such as the availability of jobs, flexibility of work, and absence of gender-based discrimination. While the demand side of the labor market is an important determinant of women's labor market outcome, it is not the primary focus of this report.

The report focuses on five main facets of the public transport system, which are defined as follows (Dominguez Gonzalez et al. 2020; Alam et al. 2022):

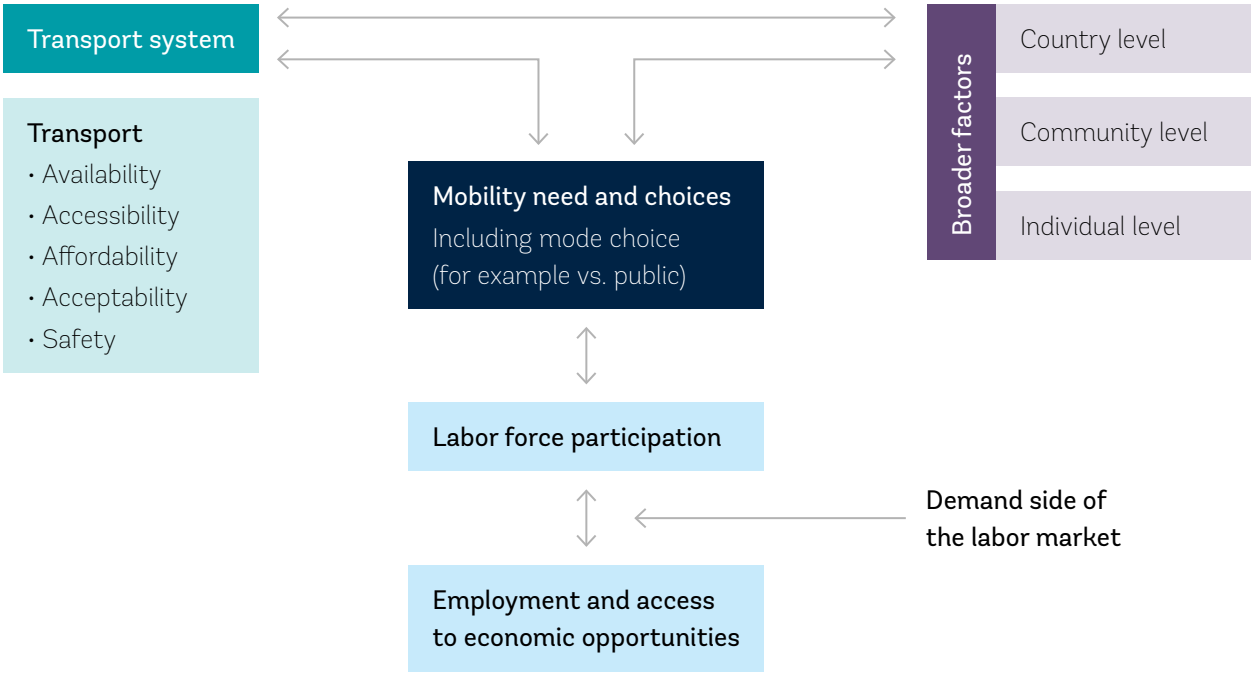
- **Availability** is the presence of public transport vehicles nearby. This includes both the availability of transport infrastructure and transport services, but in urban settings, the availability of transport services may be more salient than the infrastructure. Availability might also be more salient for people who do not own private vehicles and rely solely on public transport to move around.
- **Accessibility** is the ease with which an individual can access opportunities (for example, employment) within the city space, depending on available transport infrastructure and services, personal characteristics, the spatial distribution of economic opportunities, and other aspects.
- **Affordability** refers to the travel costs and the extent to which individuals can afford to travel to their destinations. It includes both the direct cost of the trip and the opportunity cost of other potential consumption that is foregone to be able to make the mandatory trips. The same trip might, therefore, be affordable to one individual but not to another.
- **Acceptability** refers to social and cultural acceptability, which includes the norms, judgments, attitudes, and behavioral reactions to women and men when they travel and use various means of transport.
- **Safety** refers to personal security from crime, freedom from harassment, and perception of security when using transport. For women, other factors can influence the security of public transport. For instance, issues related to comfort (such as the crowdedness of vehicles or the available lighting at a station) might be closely related to the risks of harassment and the overall perception of personal security.

[12] This includes both salaried employment and self-employment.

[13] This framework is adapted from Dominguez Gonzalez et al. (2020) and Alam et al. (2022).

[14] The report covers both salaried employment and self-employment. In this context, the term, "labor market," is used to include both.

Figure 1.4 Conceptual Framework for Women's Access to Economic Opportunities



Source: World Bank data.

Note: Men's access to economic opportunities can be similarly conceptualized; they typically face different broader factors and transport barriers than women.

Understanding how improving the public transport system can contribute to women's economic empowerment requires a three-pronged approach. There needs to be a thorough understanding of the characteristics of the public transport system itself. This includes the means of public transport and available vehicles, the network coverage, and the service frequency. It also requires a detailed understanding of the usage of the public transport system, the nature of trips made by public transport users, and the main challenges they experience. Finally, it requires an extensive understanding of how mobility through the public transport system fits within people's overall mobility choices and economic and social aspirations.

The three types of data collected for the report in each metropolitan area align with the three-pronged approach described above.

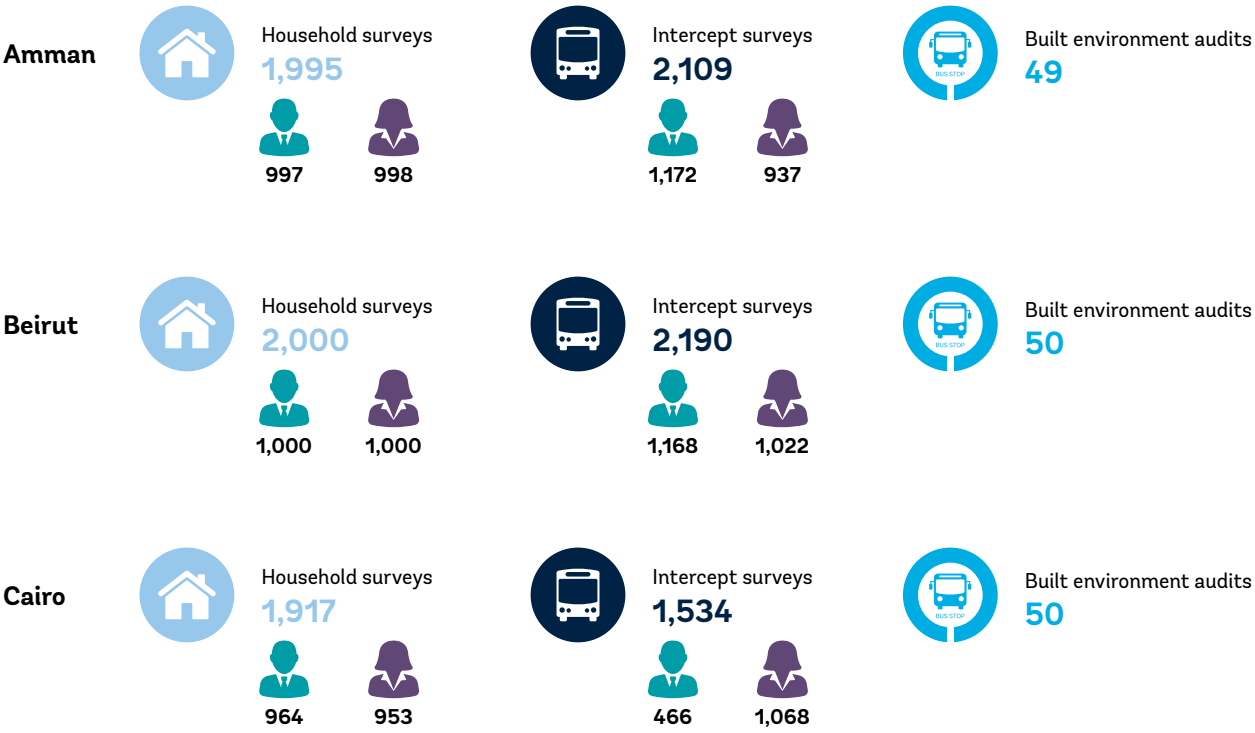
- The first data set collected is the transit network data for the complete public transport network in each metropolitan area and is complemented by build environment (safety) audits to understand the characteristics of the public transport system. These are audits conducted at public transport stops to assess the safety level.
- The second type of data set collected is (intercept) surveys of public transport users (3,027 men and 2,806 women) to understand their system utilization.
- The third data set collected is a household survey to understand the overall mobility of the working-age population (2,951 men and 2,961 women between the ages of 18 and 50) as well as many personal and community characteristics that influence the relationship between mobility and access to economic opportunities.[15]

[15] All data were collected between May and November 2022, except for the public transport user surveys in Cairo, conducted early 2021 as part of the Cairo Mobility Assessment and Public Transport Improvement Study (World Bank, 2022a). See Alam, Bagnoli, and Kerzhner (2023) for more details on the sampling methodology.

The final number of surveys collected in each city is summarized in figure 1.5.

The remaining chapters of this report are structured in the following manner. Chapter 2 focuses on the links between mobility and gender in Amman, Beirut, and Cairo. It provides a descriptive overview of the current transport systems, mobility patterns, and challenges identified by the population. Chapter 3 examines the interplay among mobility, gender, and access to economic opportunities. It adds to the previous discussion by including aspirations and labor market considerations to the interplay between mobility and gender. Chapter 4 provides concrete recommendations for improving women's mobility and economic participation.

Figure 1.5 Summary of Collected Data



Source: World Bank data.

CHAPTER 2

Mobility and Gender

Photo credit: World Bank Photo Collection

Gender, along with social, economic, and cultural factors, remains a strong determinant of mobility choices and constraints. Despite making immense gains in education and employment, women across socioeconomic strata experience a wage gap compared with men. This influences their choice of transport because of both affordability and safety. Besides, in spite of men's growing contributions to caregiving and social reproduction, women continue to bear disproportionate responsibilities for household and community maintenance and reproduction.

What are women's most significant constraints when using different public and semi-private transport modes? What are the critical areas of improvement? Are the constraints that women and men face and their identified areas of improvement similar or different? This chapter sheds light on these questions in the context of urban Egypt, Lebanon, and Jordan. The chapter explains the overall mobility patterns of the population using household surveys and then presents the characteristics of the public transit networks of their three metropolitan cities and their relative use in meeting the mobility needs of the population. It then uses the (intercept) surveys of public transport users to zoom in on the experience of public transport users to understand their travel patterns and behaviors[16] and identify the most important challenges they face and the areas of improvement. By doing so, it offers an understanding of how women's mobility can be improved.

Section 1: Overall Mobility Patterns

This section sheds light on the overall mobility patterns in Amman, Beirut, and Cairo.

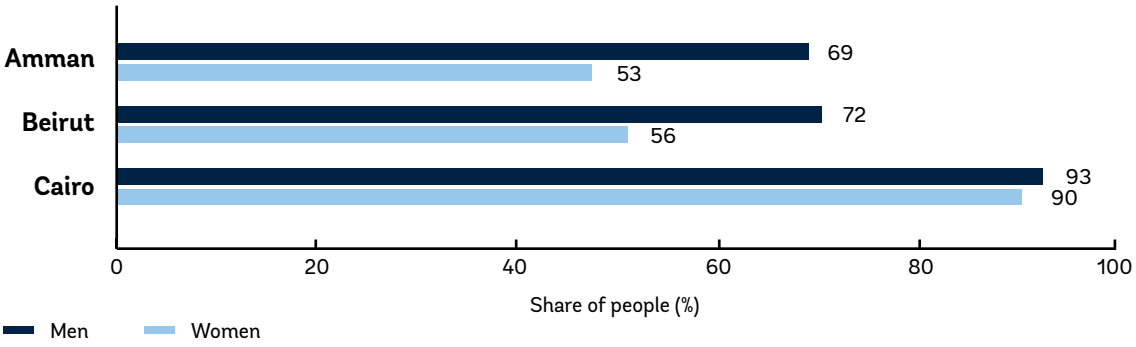
Overall Mobility

Rapid urbanization across the globe has increased the demand for mobility[17].

How mobile are people in their daily lives? Are men more mobile than women?

In each of the three cities, men are more likely than women to make at least one trip on a typical day. The gaps are wider in Amman and Beirut than in Cairo. In Amman, 69 percent of men and 53 percent of women made at least one trip on the day prior to the survey. These shares are similar in Beirut, at 72 percent of men and 56 percent of women. In Cairo, however, mobility is higher for both men and women, with 93 percent of men and 90 percent of women having made at least one trip (see figure 2.1).

Figure 2.1 Share of the Population Who Made at least One Trip on the Day before the Survey



Source: World Bank data: household surveys.

[16] The purpose of the trips, as well as their length, cost, and modal choices.

[17] Urban characteristics such as density; diverse economic, cultural, political, and social functions; and land scarcity in relation to the demand generate mobility demands but also constraints.

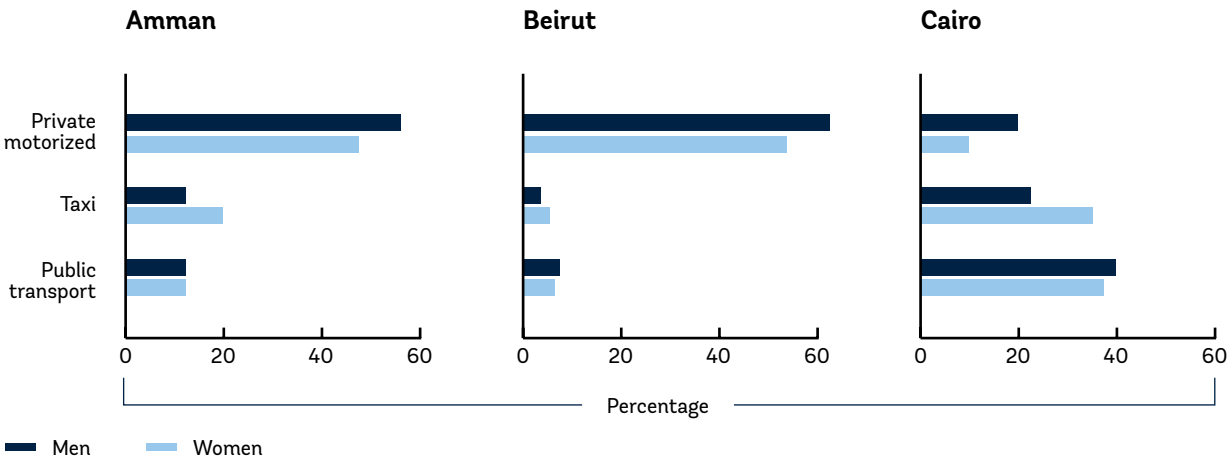
What modes are used by the people who travel?

The modes used differ across cities. In Amman and Beirut, private motorized transport is the dominant mode of travel for both men and women, while in Cairo, public transport is the dominant mode of travel (with taxis and call cabs being a close second).

Regardless of the city, men are more likely than women to use a private vehicle. In Amman and Beirut, the use of private vehicles is widespread, with more than half the population that traveled the day before reportedly using a private vehicle. In Cairo, however, only 21 percent of men and 9 percent of women relied on a private vehicle (see figure 2.2). Regardless of location, men are more likely than women to use private motorized modes, while women are more likely than men to rely on taxis (or equivalent modes such as call cabs).

The use of public transport also varies across cities, with lower shares in Amman and Beirut compared with Cairo. On a typical day in Beirut, only 7 percent of men and 6 percent of women who need to travel use public transport. These shares are twice as high in Amman, where 13 percent of both men and women who travel use public transport. However, these percentages are very low compared with Cairo, where 40 percent of men and 37 percent of women who travel use public transport on a typical day.

Figure 2.2 Share of Men and Women Using Each Mode of Transport on the Day Prior to the Survey



Source: World Bank data: household surveys.

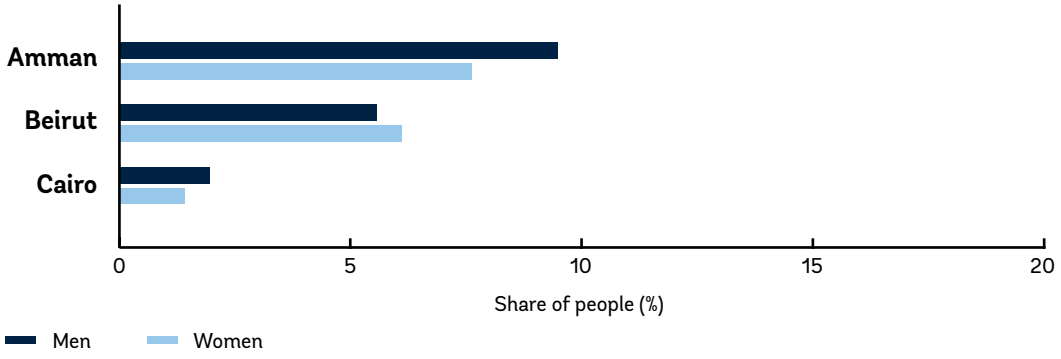
Notes: Figure is based on the percentages of men and women who used each mean transport on the previous day, provided they had made at least one trip on that day prior to being surveyed. Respondents may have employed multiple modes of transport, but if they utilized two modes within the same category (such as car and motorcycle, or metro and microbus), they were only counted once within that category.

Box 2.1: Has the COVID-19 Pandemic Affected Men's and Women's Mobility in Amman, Beirut, and Cairo?

How different were the mobility patterns of the individuals prior to the COVID-19 pandemic? People who answered the household survey were asked whether their mobility needs and patterns had changed due to the pandemic. For the majority of respondents, their travel needs did not change because of the pandemic. On average, individuals in Amman and Beirut report slightly more than in Cairo that their travel needs are different because of the pandemic (27 percent of both women and men in Amman; 34 percent and 31 percent of women and men, respectively, in Beirut; and 14 percent and 16 percent of women and men, respectively, in Cairo).

Only a small share of people report having changed the type of transport used because of the pandemic (see figure B2.1.1). This share is higher in Amman and Beirut (7 percent of women and 9 percent of men in Amman, and 6 percent of both women and men in Beirut) than in Cairo (2 percent of women and 3 percent of men).

Figure B2.1.1 Share of the Population that Increased their Use of a Type of Transport because of the Pandemic



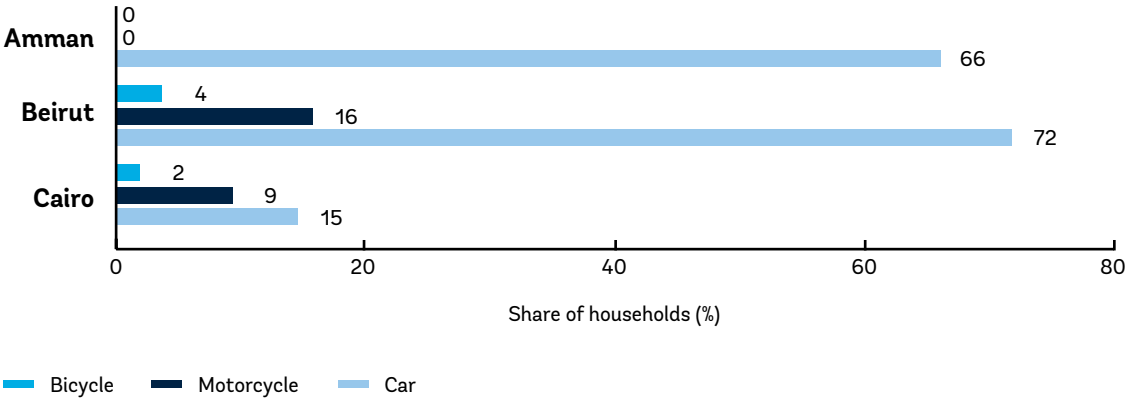
Source: World Bank data: Household surveys.

Photo credit: Adobe Stock

Private Vehicle Ownership and Driving Licenses

In the three cities, cars are the primary type of private vehicle owned by households, but the share of households that own a car is much higher in Amman and Beirut than in Cairo. There are significant differences across cities in terms of private vehicle ownership. In Amman, 66 percent of households own a car but do not own any other type of vehicle such as bicycles or motorcycles. In Beirut, more households own a car (72 percent), and a minority of households also own other vehicles (16 percent own a motorcycle and 4 percent, a bicycle). In Cairo, only a minority of households (15 percent) own a car. An even smaller number own bicycles (2 percent) or motorcycles (9 percent) (see figure 2.3).

Figure 2.3 Private Vehicle Ownership



Source: World Bank data: household surveys.

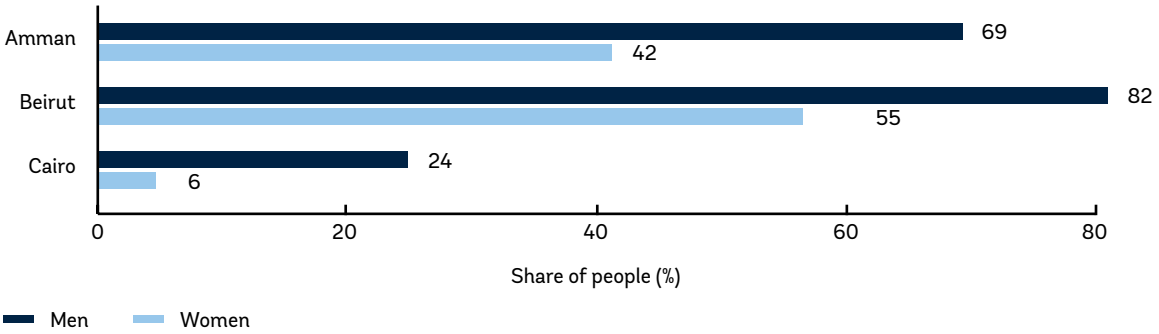
Who is driving the car?

Men are much more likely than women to have a DL. In Amman, almost 70 percent of men have a DL compared with 42 percent of women. Beirut has the highest share of people with a DL and is the only city where more than half the women sampled have a DL (82 percent of men and 55 percent of women). In Cairo, the share of people with a DL is much lower than in the other two cities. It is also the city with the biggest gender difference—men (24 percent) are four times more likely to have a DL than women (6 percent) (see figure 2.4).

Globally, the number of men with DLs far exceeds the number of women with DLs, and women tend to travel by car more often as passengers than as drivers (Elias, Benjamin, and Shiftan 2015). While the women in the sample are less likely than men to have a DL, the high share of women having a DL in absolute terms is indicative of the deficiencies in the public transport system.

In all three cities, women appear more likely than men to depend on others (men within the household and taxis) and public transport to meet their mobility needs.

Figure 2.4 DL Possession among Men and Women



Source: World Bank data: household surveys.

Note: DL = Driver's License

Photo credit: World Bank Photo Collection

Section 2: Transit Network and Use of Public Transport

Public Transport Available in Amman, Beirut, and Cairo

Of the three cities, Cairo has the most means of public transport available, followed by Amman, while Beirut has the fewest (see figure 2.5). In Cairo, the public network consists of the metro, buses/minibuses, and microbuses. In particular, buses are operated either by the Cairo Transit Authority (CTA) Bus [18] or other private bus companies.[19] The CTA also operates minibuses. Other minibuses include the CooP minibuses in Cairo. Finally, microbuses include privately owned 14-seaters and smaller Suzuki/vans (unregulated seven-seaters), which operate short express routes with high frequency (World Bank 2022a).

In Amman, public transport consists of buses, minibuses (coasters),[20] and services (owner-operated shared taxis running on fixed routes). The buses fall under three categories: (i) Amman BRT: modern buses currently running on the existing BRT corridor; (ii) Amman Bus: Amman Vision Transport created Amman Bus as a high-quality bus system. CMTC, in a joint venture with Turkish company Gürsel, won the tender to operate Amman Bus; (iii) Large buses: a heterogeneous category that accommodates multiple operators, including individual private operators. Minibuses, also called coasters, are owner-operated microbuses running on fixed routes and connecting the city center with main commercial and residential areas. Services are owner-operated shared taxis running on fixed routes, often serving as a last-mile solution between large transit hubs and peripheral regions (World Bank 2022b).

In Beirut, the public transport network consists of buses and minivans[21] (service and taxis are not included as these operate almost door-to-door).[22] There are only a few government-owned buses in the city (owned and operated by the Railway and Public Transport Authority, also called Office des Chemins de Fer et des Transports en Commun), while the rest of the buses and minivans are owned and operated by privately owned

[18] Some of the CTA services are operated by private companies under a concession to the CTA.

[19] Including companies with codes AGY, MSR, and GRN

[20] In the rest of the report, to have comparability across cities, coasters in Amman are referred to as microbuses.

[21] In the rest of the report, to have comparability across cities, minivans in Beirut are referred to as microbuses.

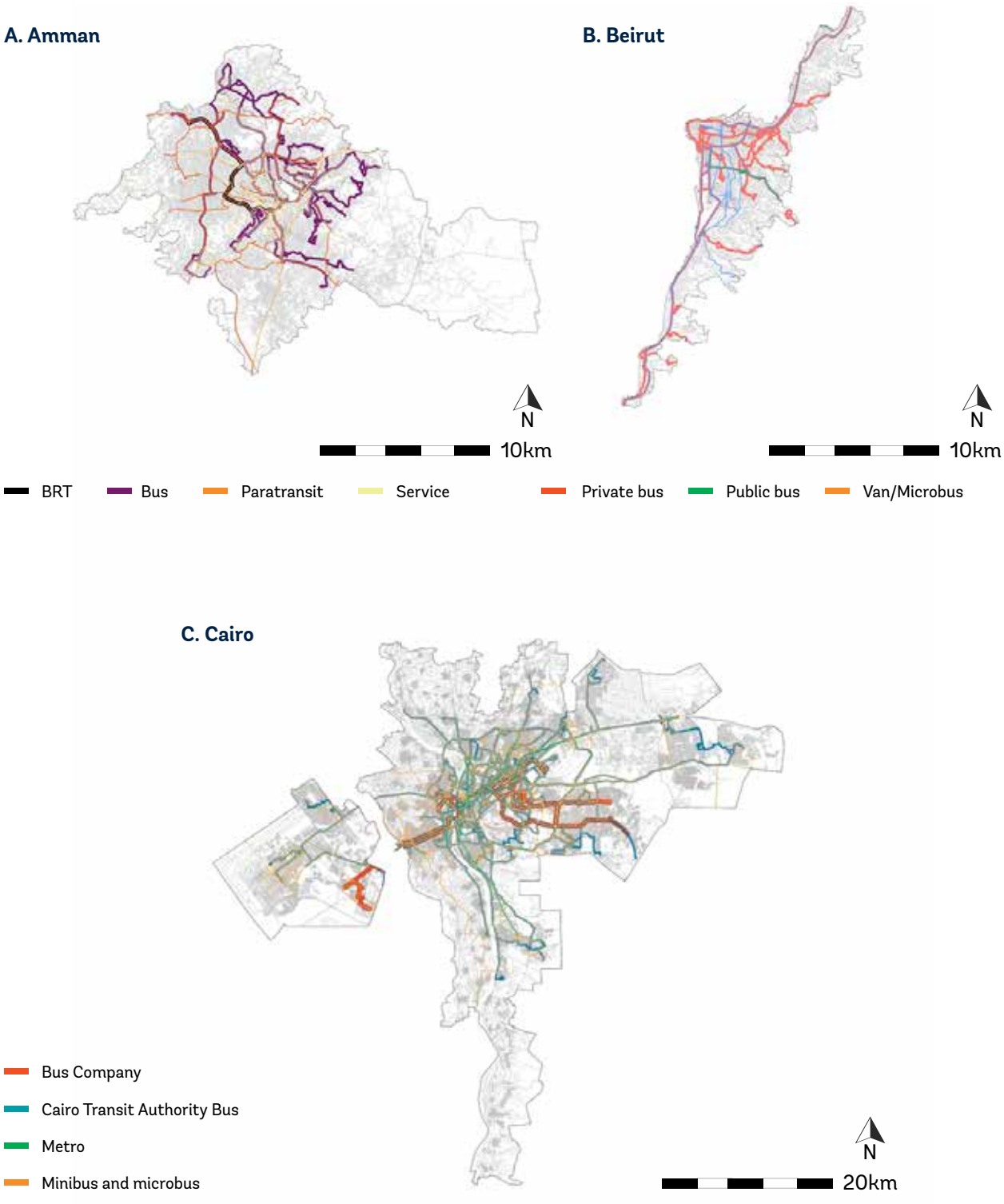
[22] Details relating to services and taxis can be found in the forthcoming Lebanon Public Transport Diagnostic.

Box 2.2: Methodology Used for Transit Network Mapping

The transit network mapping includes all route-based public transport in Amman, Beirut, and Cairo. In each city, all fixed route-based public transport means were surveyed for the transit network mapping.[23] The mapping of the public transit system started with the collection of official routes (and related) information from government entities. Known gaps within these official records were filled through desk research. Finally, a team of enumerators was deployed to map the actual routes (and capture other attributes like frequency and fares) using a mobile-based application. The building blocks of the fieldwork were public transit stations. Enumerators then conducted station surveys to identify all routes departing from a specific station. This resulted in a complete list of routes for the city for an assessment of the full extent of the transit network. The routes were then traveled in both directions to map them. If more stations were discovered through this method, they were also included in the mapping process using the above-mentioned process. These data not only contain the routes of the transit network but also provide information on frequencies and timetables that will be used in constructing various indicators (see Chapter 3). Frequency data were collected by interviewing passengers, drivers, and station managers. Figure 2.5 illustrates the public transport network for each city.

[23] Route-based public transport is defined as routes that have a fixed origin and destination, and travel through key defined landmarks along the route.

Figure 2.5 Public Transit Network in Amman, Beirut, and Cairo



Source: World Bank data: Transit network mapping.

Note: In Amman, the bus rapid transit (BRT) is a type of bus; paratransit is equal to microbuses or coasters. Cairo: "bus company" aggregates three categories while "minibus and microbus" aggregates five different categories (including minibuses operated by the Cairo Transit Authority [CTA]).

The Proximity of Public Transport Stops Close to Residential Locations

Bringing people and opportunities closer allows cities to prosper. Proximity to public transit stops is essential for people, especially the middle and lower class, to avail affordable transport options. The frequency of public transit at the stop, suitability of the route, and personal preferences also play a crucial role in determining a person's preferred mode of commuting.

Evidence suggests that, on average, people are willing to walk up to 400 meters to access local public transit stops; this translates to five minutes of walking time (van Soest et al. 2020; Tennøy et al. 2022). Thus, five minutes is the threshold of time that people are willing to walk to access local public transit (before they start wanting to substitute to private transport due to long walking time).[24]

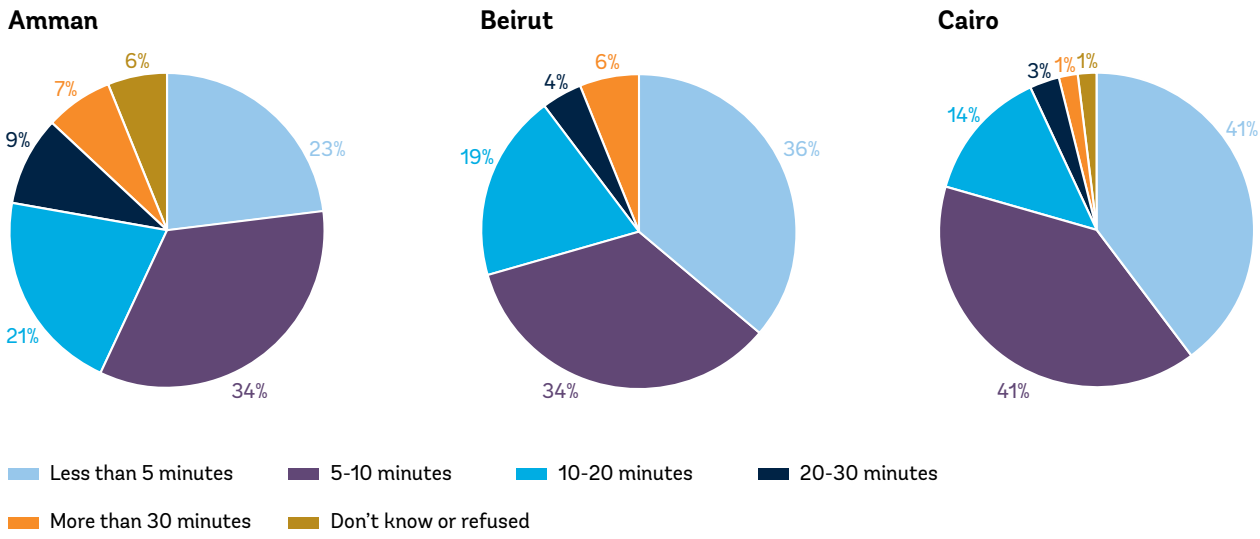
How far do people have to walk to reach a public transport stop?

The three cities differ by how long people walk to reach a public transit stop (see figure 2.6).

Public transport stops are closer to residential locations in Cairo than in Beirut and Amman. In Amman, only 23 percent of people have access to public transport in less than five minutes of walking, while it is 36 percent in Beirut and 41 percent in Cairo.

Considering a 10-minute threshold, the share of people who can reach a public transport stop is 57 percent in Amman, 70 percent in Beirut, and 82 percent in Cairo. This also means that the share of people walking for a long time (more than 20 minutes) to reach public transport can be as high as 16 percent in Amman, 10 percent in Beirut, but only 4 percent in Cairo.

Figure 2.6 Time Taken to Reach a Public Transport Stop by Walking from Home



Source: World Bank data: Household surveys.

Note: In Amman, public transport includes bus/minibus, microbus, and service; in Beirut, bus/minibus and microbus; and in Cairo, metro, bus/minibus, and microbus.

[24] For mass transit, people are willing to walk further/for longer as these tend to travel at higher speeds.

How does proximity to public transit stops vary by the means of transport?

The proximity of transit stops to residential locations varies greatly across transport means in Cairo, less in Amman, and almost none in Beirut (see figure 2.8).

In Amman, service stops tend to be closer to residential locations than buses, minibuses, or microbuses (31 percent of households can reach a service in less than five minutes, while for microbuses, this is at 14 percent). Amman also has a high share of people who do not know the location of transit stops. In Beirut, there is almost no difference in the proximity of stops across means. In Cairo, most households are located at least 30 minutes from a metro station, while 80 percent are less than 10 minutes from a microbus stop. For buses and minibuses, it takes 10 minutes or less for 56 percent of the population.

How often do men and women use public transport?

In Amman and Beirut, only a minority of the population uses public transport, whereas in Cairo, a large majority of the population relies on it. Men are more likely than women to use public transport daily, even in Cairo where women are more likely to use public transport overall.

The distribution of the frequency of use of public transport is different across cities (see figure 2.7).

In Amman, the majority of the population (59 percent men and 65 percent women) does not use public transport. Women (35 percent) are less likely than men (41 percent) to use public transport. Among those who do use public transport, women (7 percent uses it every day) are also less likely than men (15 percent uses it every day) to use it very frequently.

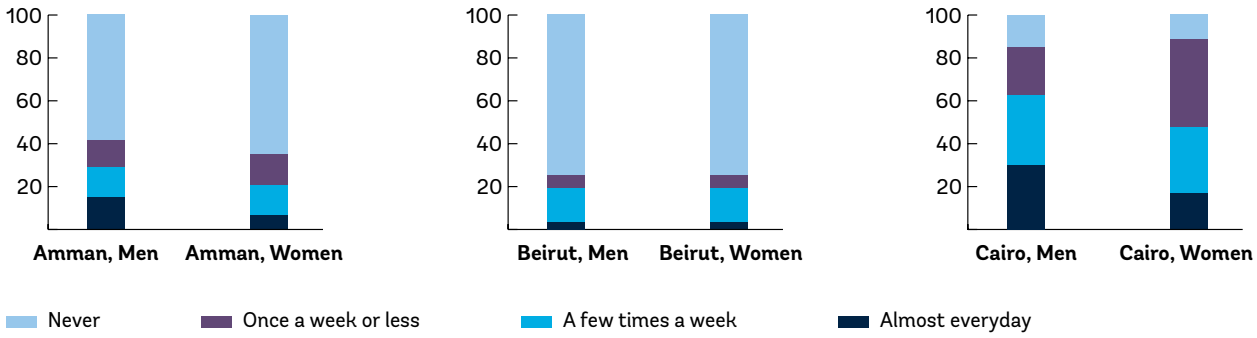
In Beirut, 75 percent of the population never uses public transport. There is almost no difference between men and women, and among those who use public transport, the frequency is very similar among men and women and very few use it every day.

In Cairo, a large majority of people use public transport. This share is even larger for women (89 percent) than men (85 percent) but they use it less frequently, with the share of women who use public transport daily being half of that of men.

Does the frequency of use vary by the means of public transit?

In Amman and Beirut, there is not much difference in the frequency of use of the different means of transport. In Cairo, however, the large majority of the population uses microbuses, more than 50 percent uses the metro, and less than 40 percent uses buses or minibuses (see figure 2.9).

Figure 2.7 Frequency of Use of Public Transport

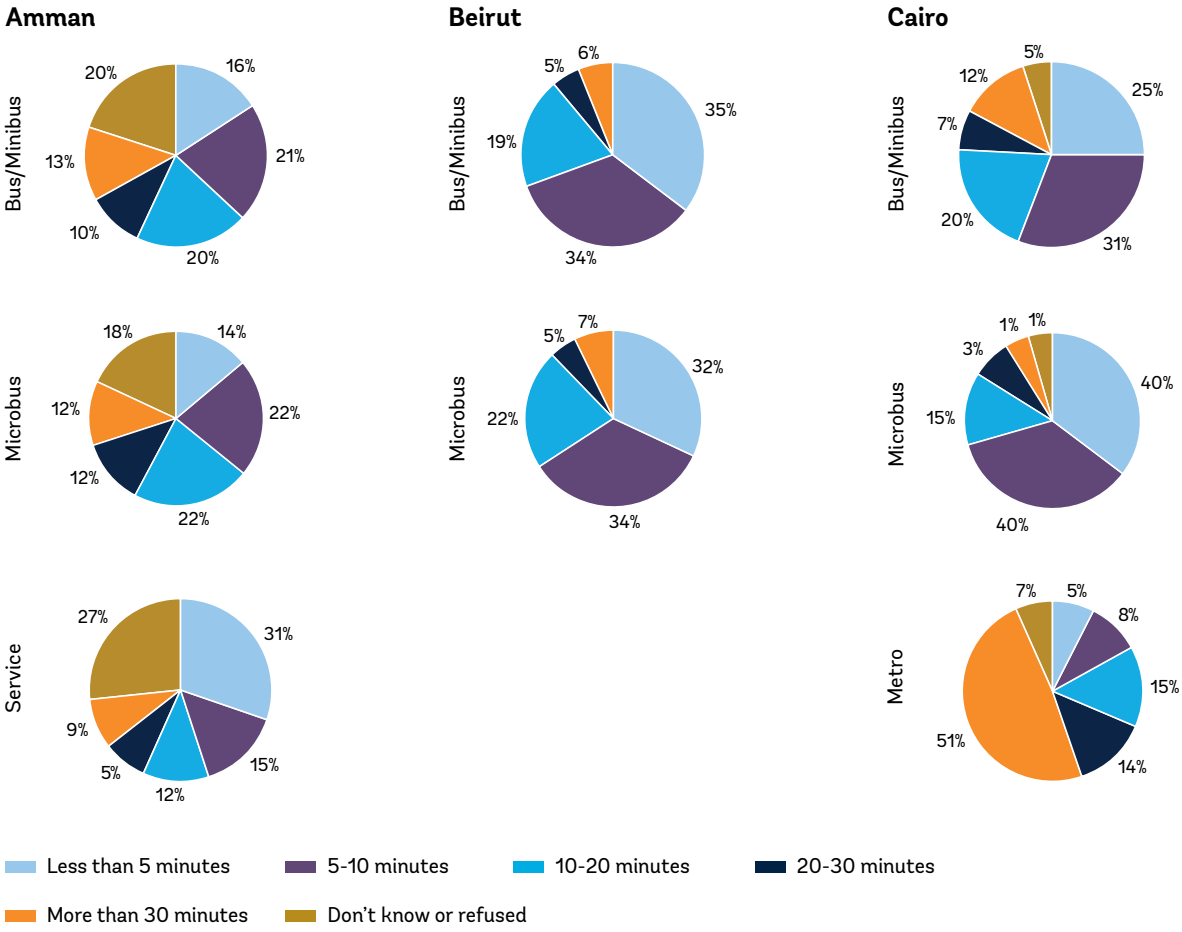


Source: World Bank data: Household surveys.

Note: In Amman, public transport includes bus/minibus, microbus, and service; in Beirut, bus/minibus and microbus; and in Cairo, metro, bus/minibus, and microbus.

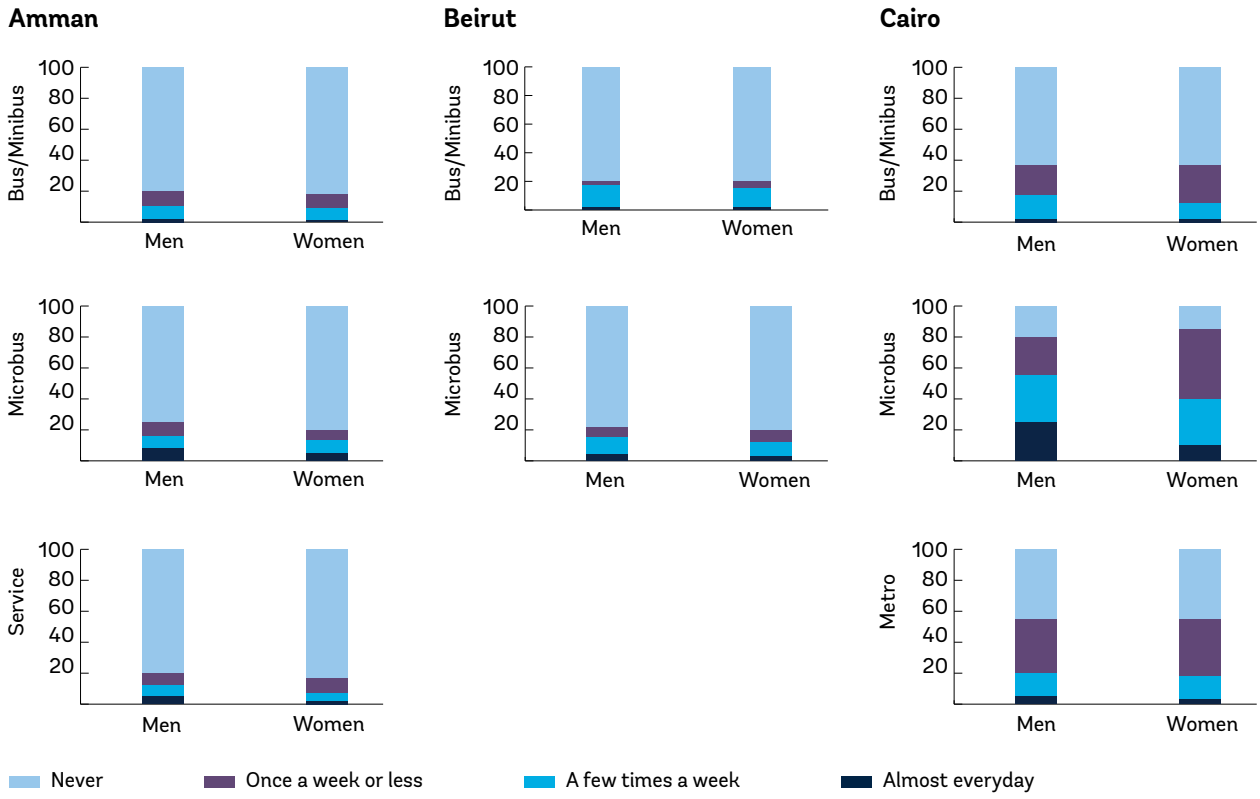
Frequency of Use of Public Transport by the Population

Figure 2.8 Time Taken to Walk from Home to a Public Transport Stop (by Means of Public Transport)



Source: World Bank data: Household surveys.

Figure 2.9 Frequency of Use of Public Transport (by Means of Public Transport)



Source: World Bank data: Household surveys.

Section 3: Public Transport Users

This section presents an in-depth analysis of the public transport user experience. It employs interviews/surveys of public transport users at select public transit stops and surrounding areas. It aims to describe the travel behavior of public transport users, the purpose of the trips, and their length, cost, and modal choices.

Purpose of the Trips

For what trip purposes do people use public transport? Do the trip purposes differ by men and women?

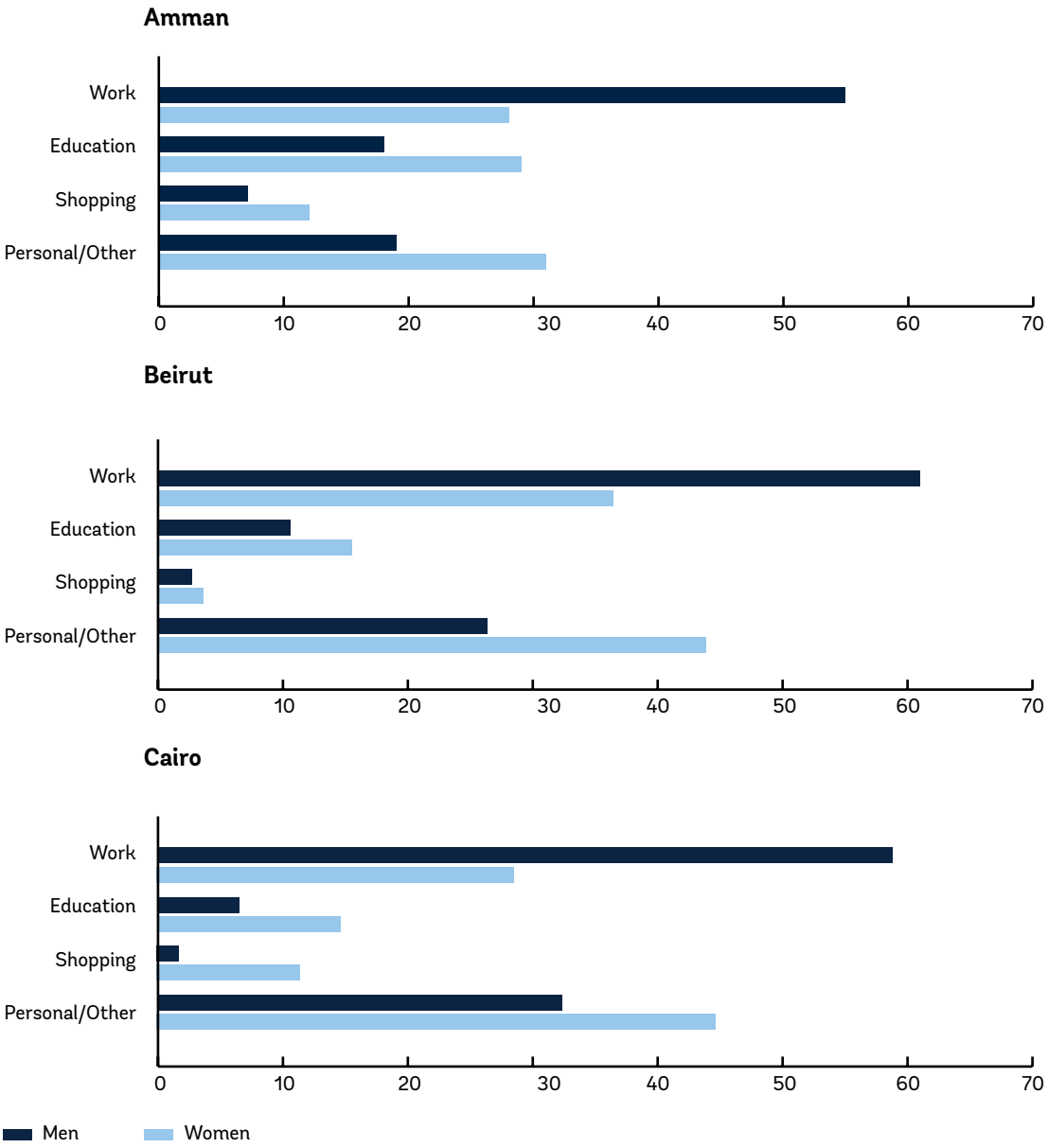
In the three cities, work is the main reason for using public transport among men. It is comparable across cities, with Amman having a lower share (55 percent), Cairo having a higher share (59 percent), and Beirut, the highest (61 percent). Among women, only 28 to 36 percent of trips are made for work-related reasons.

In the three cities, personal and social activities (including social, medical, and care visits, accompanying someone else on their trip, and worship) are the main reason women use public transport. Women are also more likely to use public transport for educational or shopping purposes (see figure 2.10). This is unsurprising, as most working-age women in these cities are not economically active.

Photo credit: World Bank Photo Collection

There are also a few variations by city. In Amman, a high share of women (29 percent) uses public transport for educational purposes compared with Beirut and Cairo (15 percent each). In Beirut, the share of people using public transport for shopping is much lower than in other cities. Finally, in Cairo, the share of women using public transport for shopping compared with men is very high.

Figure 2.10 Purpose of Trips among Public Transport Users



Source: World Bank data: Public transport users surveys.

Note: These figures represent the share of all trips made by men and women that have each purpose as an origin or a destination. In Amman and Beirut, the "Personal/Other" category covers social, doctor's visit, care visit, accompany, worship, and other. In Cairo, the original survey only includes these four categories, with "Personal/Other" being called "Personal."

Length of Trips

How much time do men and women spend on public transport trips?

While men and women spend a significant amount of time using public transport, on average, women tend to have slightly shorter trips than men.

Table 2.1 shows the median length of trips by city and gender, while figure 2.11 presents their distribution by city.

Overall, trips tend to be shorter in Beirut than in Amman and Cairo. Compared with men, women tend to have slightly shorter trips in Beirut and Cairo (in Beirut: 40 minutes for women and 45 minutes for men; in Cairo: 52 minutes for women and 60 minutes for men). In Beirut and Cairo, women are also more likely than men to have trips that take less than 30 minutes. On the other hand, in Amman, both men and women have a median length of a trip of one hour, and men are slightly more likely to have trips that take less than 30 minutes.

On average, both men and women use several vehicles to complete their trip. In Amman, women and men use 1.9 and 1.8 vehicles, which is more than in Cairo (1.6 for women and 1.8 for men) and in Beirut (1.3 for women and 1.4 for men). Moreover, in all cities, a considerable share of women was accompanied by another person on their trip: this is 24 percent, 27 percent, and 37 percent of women in Amman, Beirut, and Cairo, respectively; while the shares are lower for men, at 14 percent, 16 percent, and 9 percent, respectively.[25]

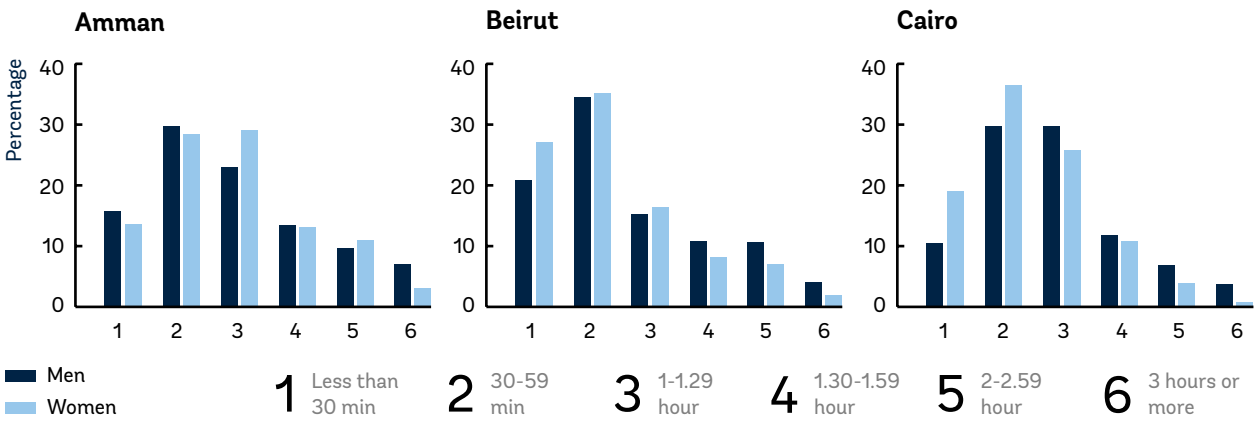
Table 2.1 Median Time Spent on Trips Using Public Transport

City	Men	Women
Amman	60 min	60 min
Beirut	45 min	40 min
Cairo	60 min	52 min

Source: World Bank data: Public transport users surveys.

Note: Time may include stops made during the trips.

Figure 2.11 Length of Trips Using Public Transport



Source: World Bank data: Public transport users surveys.

Note: Time may include stops made during the trips.

[25] In Amman and Beirut, women were accompanied by children in 6 percent and 5 percent, respectively, of all trips. These shares are at 1 percent and 2 percent, respectively, among men. Data on the identity of the accompanying persons is not available for Cairo.

Fare Paid for Trips

How much money do men and women spend on their public transport trips?

In Beirut and Cairo, women tend to pay slightly less than men for public transport trips. In Amman, fares paid by men and women are similar.

Table 2.2 shows the median fare of trips by city and gender, while figure 2.12 presents their distribution by city.

The distribution of trip fares is quite different in each city. In Amman, there is more variation in the price paid by public transport users than in the other cities. The median fare is at JD 1 for both men and women in Amman. In Beirut, most public transport users pay between LP 20,000 and LP 25,000 and the median fare paid by women is slightly lower than that of men (LP 25,000 for women and LP 30,000 for men). In Cairo, most transport users pay between EGP 5 and EGP 9.5, and the median fare for women (EGP 5) is also slightly lower than that of men (EGP 6). However, even if women tend to pay slightly less than men for public transport trips, the money spent on transport may represent a higher share of their income or available budget.

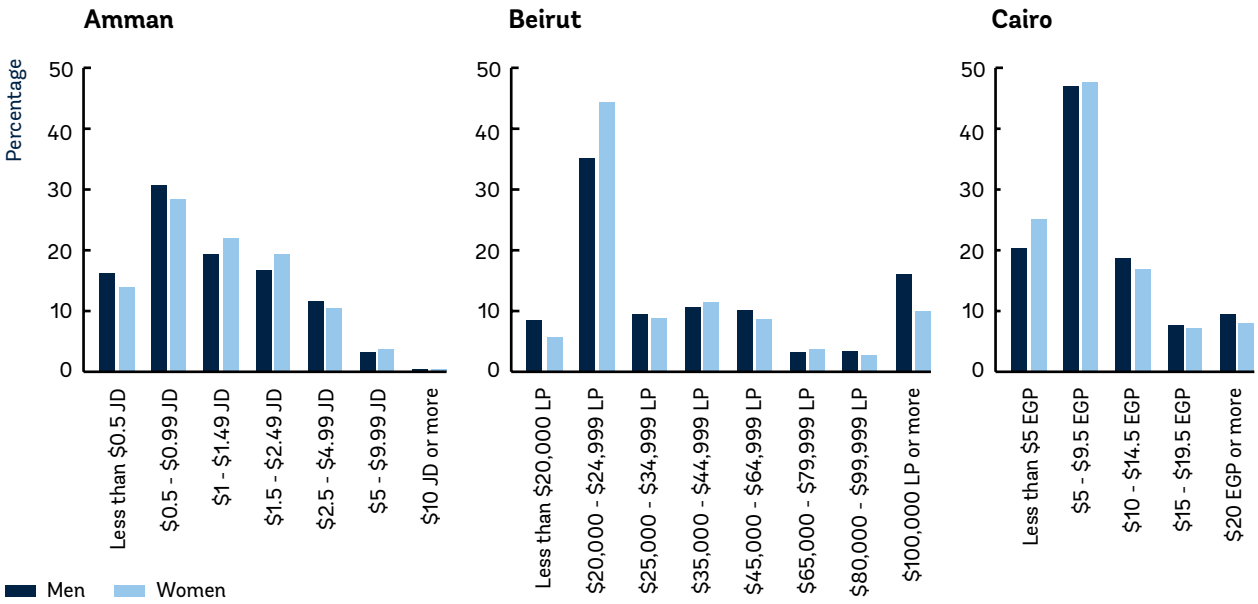
Table 2.2 Median Fare of Trips Using Public Transport

City	Men	Women
Amman (in JD)	1	1
Beirut (in LP)	30,000	25,000
Cairo (in EGP)	6	5

Source: World Bank data: Public transport users surveys.

Note: These fares account for the entire trip made by user, which may also include private vehicles and taxis. JD = Jordanian Dollar; LP = Lebanese Pound; EGP = Egyptian Pound.

Figure 2.12 Distribution of the Fare of Trips Using Public Transport



Source: World Bank data: Public transport users surveys.

Note: Note that these fares account for the entire trip made by user, which may also include private vehicles and taxis. JD = Jordanian Dollar; LP = Lebanese Pound; EGP = Egyptian Pound.

Means of Transport Used by Public Transport Users

What are the different means used by public transport users in each city?

Among public transport users, microbuses are the primary means of transport used by both men and women in each of the three cities.

Figure 2.13 presents different public transport means among public transport users in each city.

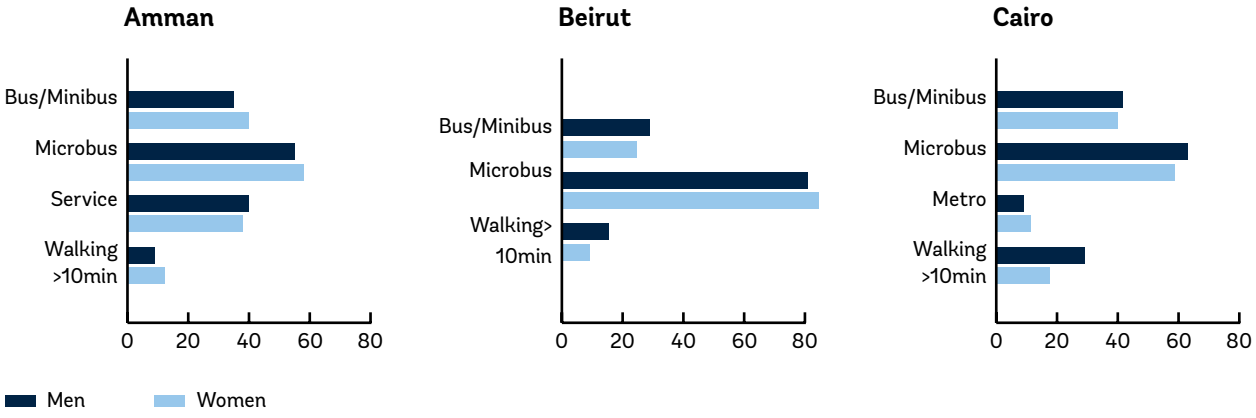
In Amman, public transport users widely use all means (buses/minibuses, microbuses, and services). Women are more likely than men to use buses/minibuses and slightly less likely to use services.

In Beirut, microbuses are used much more than buses/minibuses. More than 80 percent of public transport users use microbuses. Women are less likely to use buses/minibuses than men.

In Cairo, around 60 percent of public transport users use microbuses, 40 percent use buses/minibuses, and only around 10 percent use the metro. Men are more likely to use microbuses than women, but the share of men is similar to that of women for both buses/minibuses and the metro.

Regarding walking, there are significant differences among cities and between men and women. In Beirut and Cairo, more men than women walk 10 minutes or more on their trip using public transport, while more women do so than men in Amman. There are also differences in levels across cities. Only 10 percent of women walk 10 minutes or more in Amman and Beirut, while 18 percent do so in Cairo.

Figure 2.13 Means of Transport Used by Public Transport Users



Source: World Bank data: Public transport users surveys.

Note: These figures represent the shares of men and women among public transport users who use each means on their current trip. Note that public transport users may use multiple means.

Section 4: Challenges and Areas of Improvement Identified by Public Transport Users

This section sheds light on the challenges men and women face in public transport and the areas for improvement.

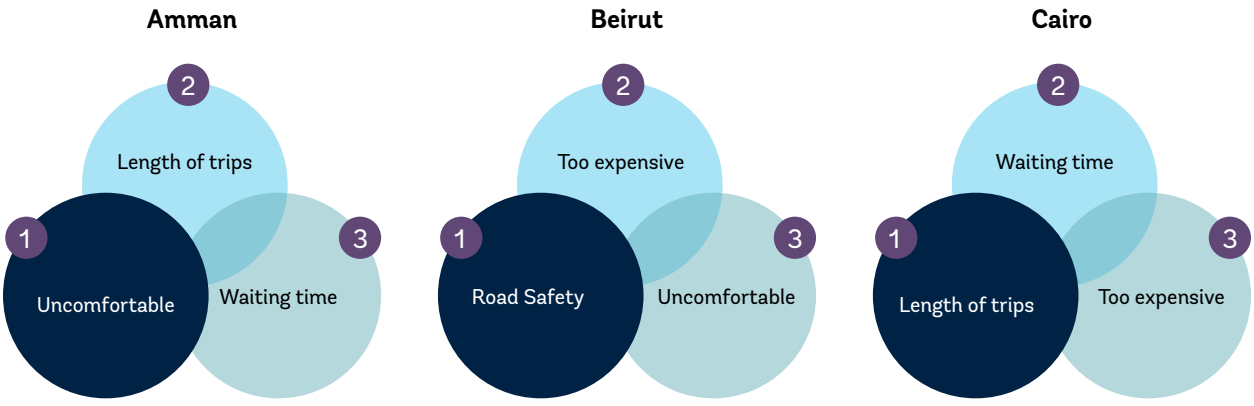
What are the top three challenges for women in each city?

Women face different challenges in each city. Public transport users were asked to rate their means of transport on a scale from 1 to 5 along several dimensions. Figure 2.14 presents the three main challenges for women in each city. In Amman, the main challenges relate to comfort (includes aspects like overcrowded vehicles) and the total length of trips (both the length of the trip and the waiting time). The full length of trips is also the main problem for women in Cairo. The third most salient challenge for women in Cairo relates to the costs of trips. In Beirut, on the other hand, the length of trip does not appear in the top three challenges, as women are more concerned about road safety, the cost of the trip, and the lack of comfort.

The top three challenges are relatively similar among men and women. In Beirut, men identify the same top three challenges as women. In Cairo, men identify the same top two challenges, but the issue ranked third by men related to the need to make transfers along the way rather than the cost of the trip. Finally, in Amman, men identify the same top issue as women but rank road safety as the second most important challenge and the length of trip as the third most important challenge.

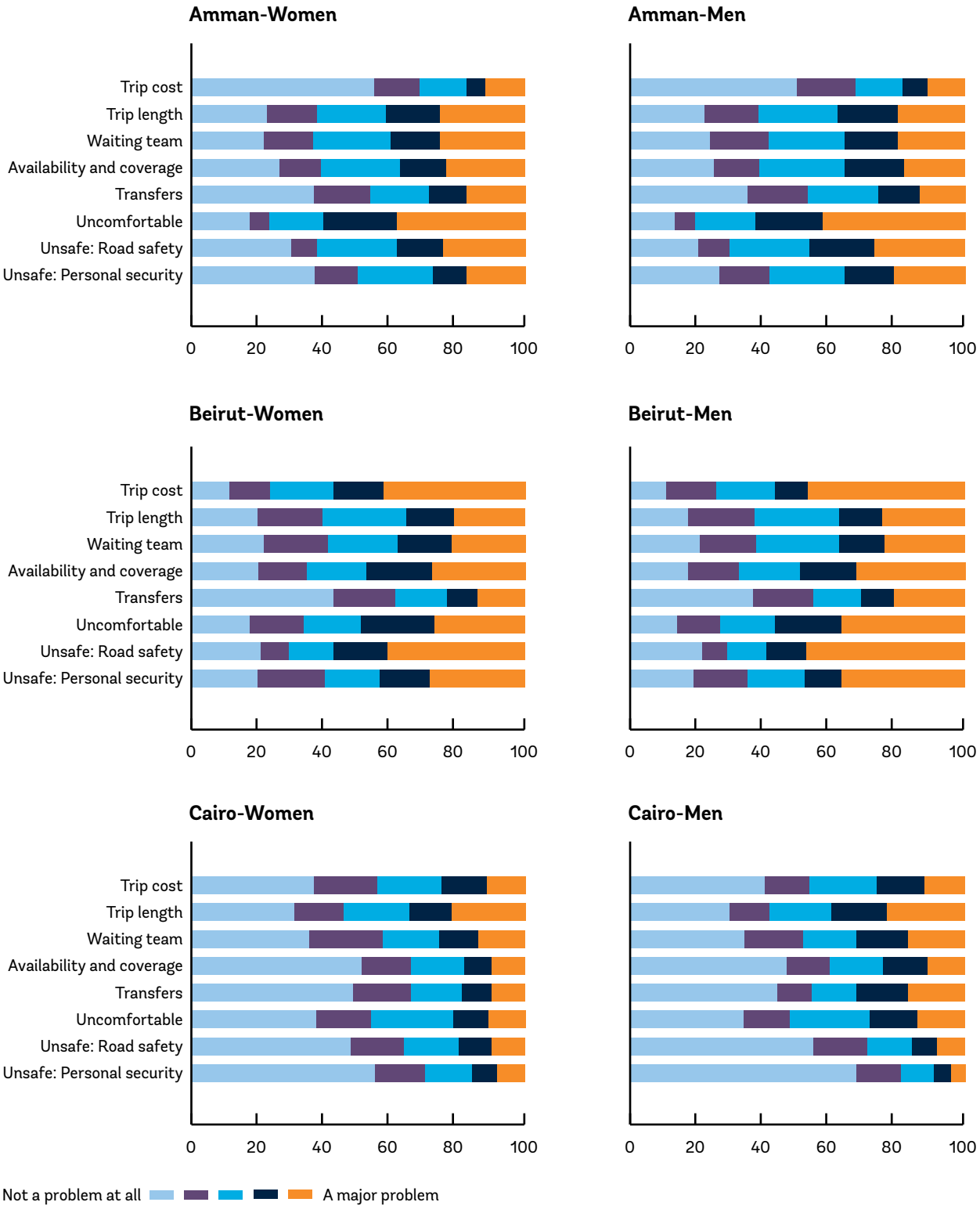
Figure 2.15 presents the distribution of the satisfaction levels for each issue among men and women using public transport. This figure further confirms the important differences by city, but men and women within each city tend to have relatively similar answers.

Figure 2.14 Top Three Challenges for Women in Public Transport



Source: World Bank data: Public transport users surveys.

Figure 2.15 Challenges among Public Transport Users



Source: World Bank data: Public transport users surveys.

Note: Challenges are ranked according to the total share of women who have provided a score of 4 or higher on a scale from 1 (not a problem at all) to 5 (a major problem) (see figure 2.15).

What are the top three areas that women would like to see improved?

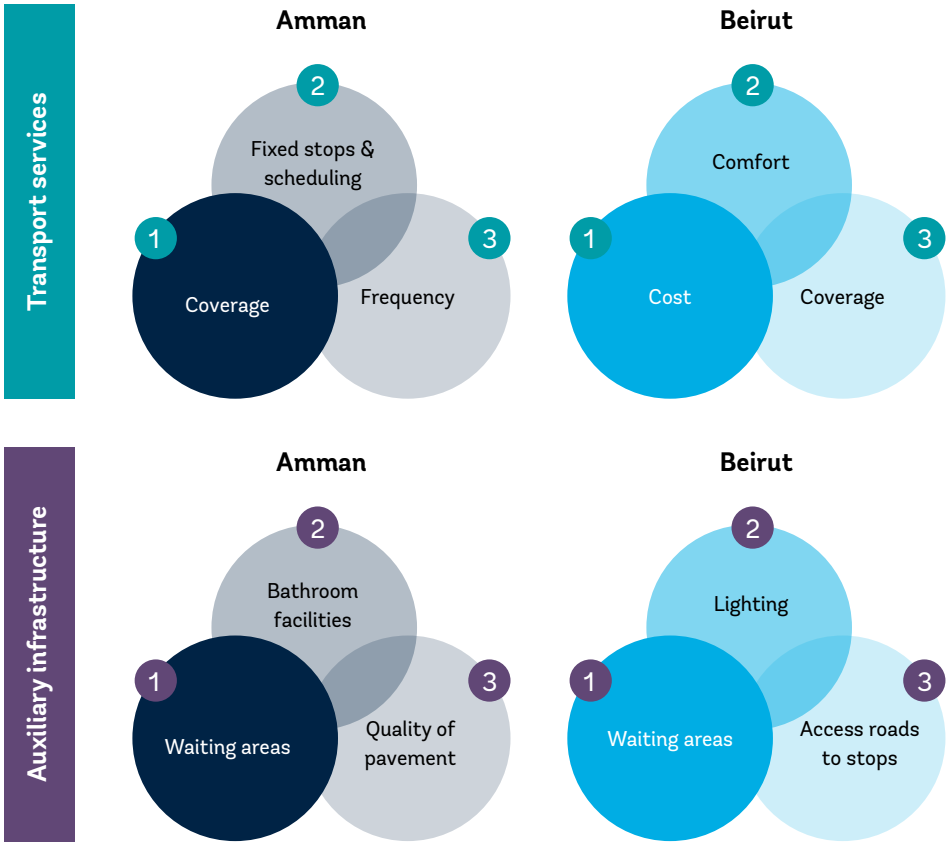
Public transport users in Amman and Beirut were asked to identify priority areas of improvement, both for the transport services and the auxiliary infrastructure at transit stops.

The top three areas of improvement for women regarding transport services are somewhat different in Amman and Beirut (see figure 2.16). In Amman, women's top areas of improvement related to the service coverage, the organization of service (both fixed stops and fixed scheduling), and then the frequency of service. In Beirut, the main areas of improvement identified by women relate to the cost of service, comfort, and coverage. Note that the top three areas of improvement for men are the same as for women, except in Amman, where men prioritize fixed stops and scheduling over coverage.

Regarding the top three areas of improvements in the auxiliary infrastructure around transit stops, women have similar answers in Amman and Beirut (see figure 2.16). In both cities, the main improvement area is the waiting areas at stops. In second place, women in Amman identify a need for bathroom facilities whereas women in Beirut identify lighting at stations. In both Amman and Beirut, the third improvement area was the quality of pavement and the general quality of access roads to stops.

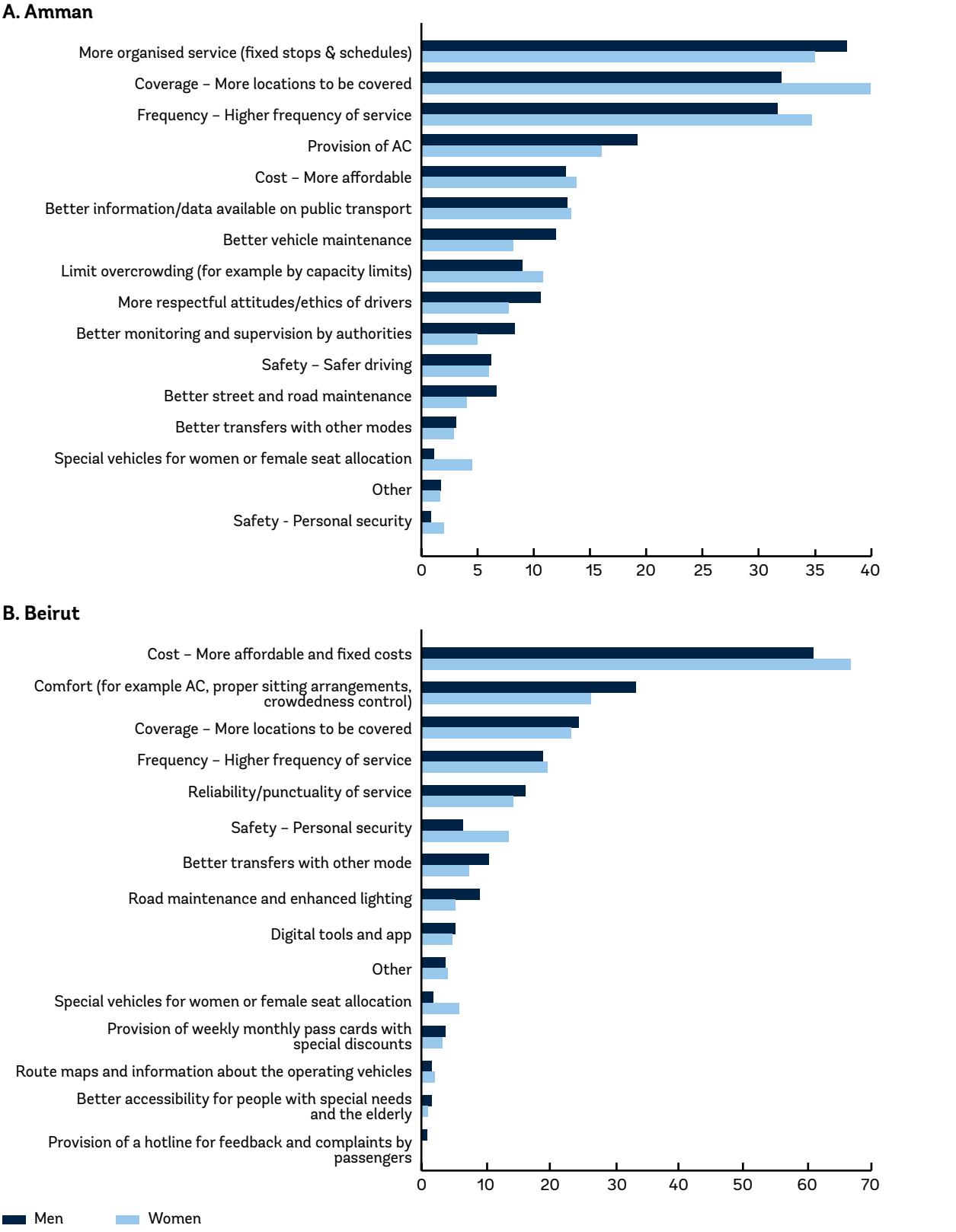
The overall results from these questions are presented in figures 2.17 and 2.18.

Figure 2.16 Top Three Areas for Improvements in Transport Services and Auxiliary Infrastructure, as Identified by Women



Source: World Bank data: Public transport users surveys.

Figure 2.17 Top Improvements Identified for Public Transport Services

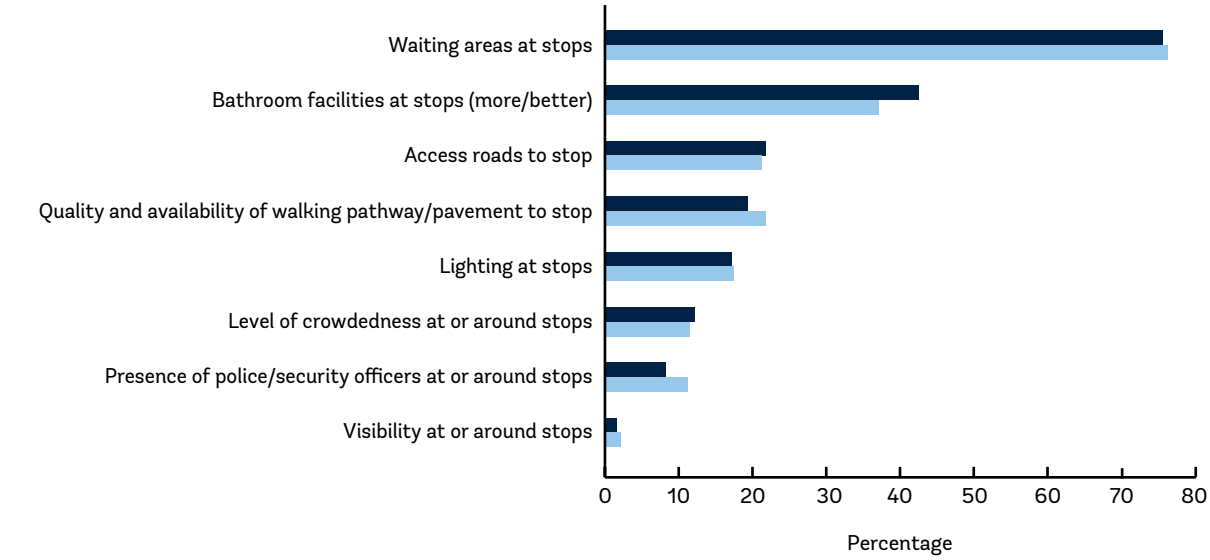


Source: World Bank data: Public transport users surveys.

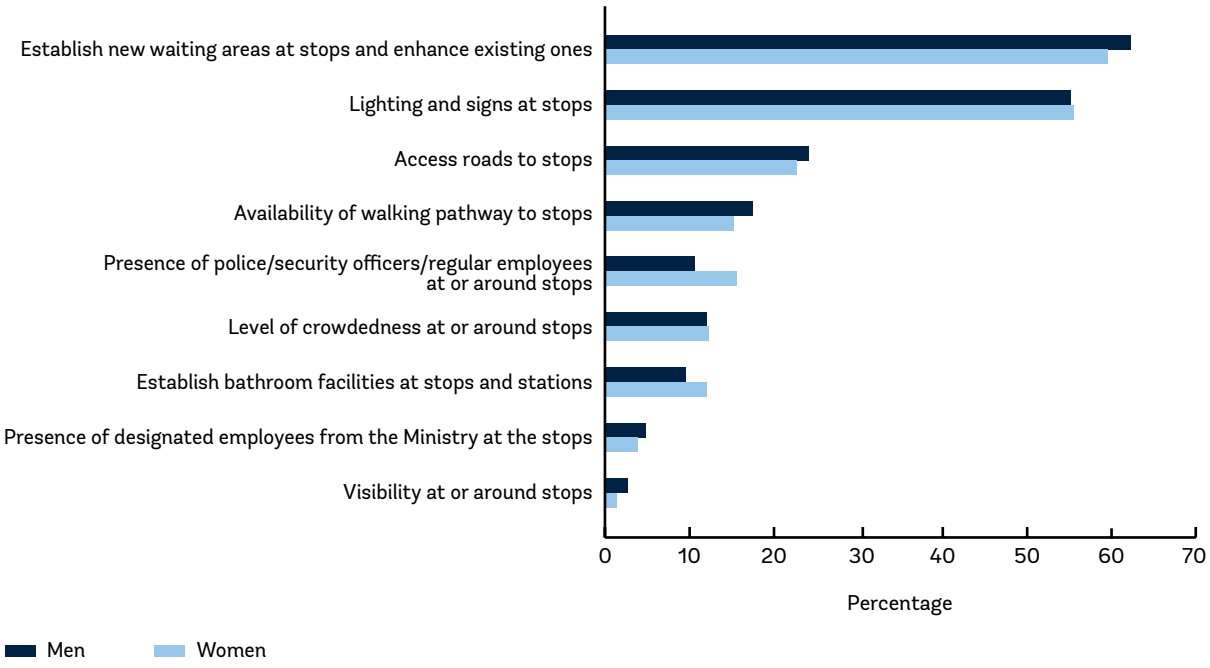
Note: Respondents were asked to identify the top two areas that would improve public transport. Here is the percentage of people, within each gender, who list each issue as one of the two top issues.

Figure 2.18 Top Improvements Identified for Auxiliary Infrastructure around Transit Stops

A. Amman



B. Beirut



Source: World Bank data: Public transport users surveys.

Note: Respondents were asked to identify the top two aspects of the access/area surrounding public transport stops that could be improved. Here is the percentage of people, within each gender, who list each issue as one of the two top issues.

Section 5: Conclusion

This chapter assesses the role of gender as a determinant of mobility choices and constraints. Three main conclusions emerge from the chapter.

First, women's and men's overall mobility patterns are different. Across Amman, Beirut, and Cairo, men are more mobile, rely more on private vehicles, and are more likely to hold DLs. In contrast, women in all three cities are likely to be more dependent than men on others (male household members driving them, taxis, or equivalent) and on public transport to meet their mobility needs.

Second, there are important gender-based and city-based variations in the usage of public transport. Private vehicles are the main mode of transport in Amman and Beirut for both women and men, whereas public transport is the primary choice for both women and men in Cairo. Regardless, in all three cities, men are more likely than women to use public transport daily. Among public transport users, microbuses are the primary means of public transport for men and women in each of the three cities. Completing a trip by public transport is time-consuming as it requires almost an hour, on average, in Amman and Cairo and 45 minutes in Beirut, as well as multiple vehicles. The main purpose of public transport use differs between men and women. In the three cities, work is the main reason for using public transport among men, whereas personal and other activities (including social, medical, and care visits, accompanying someone else on their trip, and worship) are the main reasons women use public transport.

Third, when using public transit, women face different barriers in each city, but the challenges faced by men and women within each city are relatively similar. This affirms that fundamental deficiencies in the public transport system affect both men and women. In Amman, the three main challenges for women using public transport are uncomfortable riding environments, long trip times, and long wait times. In Beirut, the three main challenges are road safety concerns, the cost/affordability of public transport, and uncomfortable riding environments. In Cairo, the three main challenges are long trip times, long wait times, and the cost/affordability of using public transport.

CHAPTER 3

Mobility, Gender, and Access to Economic Opportunities

Photo credit: World Bank Photo Collection

Many people from lower- and middle-income families rely on the public transport system as a lifeline to reach economic opportunities. In Amman, Beirut, and Cairo, many public transport users face high costs of commute, long commuting distances (and times), long wait times, uncomfortable commuting conditions, and unsafe roads; these deficiencies, in turn, inhibit their use of the public transport system, leading to unmet mobility needs. This situation hints at historically insufficient investments in public transport, prioritization of cars over other mass and shared modes of transport, and a lack of policies that promote mass and shared transport over private motorized modes of transport. As low- and middle-income workers are especially dependent on public transport, better access to public transport can help reduce inequality by improving labor market outcomes.

Do deficiencies in the public transport system inhibit women from being economically productive members of society? What facets of the public transport system matter for women? Do some aspects matter more than others? How much more could women contribute to the economic output if public transport constraints were alleviated? This chapter discusses these questions in the context of urban Egypt, Lebanon, and Jordan.

The chapter first reviews the obstacles encountered by individuals, which includes an examination of the mobility choices and barriers faced by workers commuting as well as the barriers faced by those who are not currently employed. The chapter then provides an analysis of the causal effects of the transport systems and their associated barriers to women's economic activity. Two measures of economic activity are used in the analysis:

i. The LFP rate, which measures the share of the working-age population working or actively seeking work
ii. The employment rate, which measures the share of the working-age population that is gainfully employed (in a job or self-employed)

Section 1: Why Mobility Matters for the Labor Market?

While enhancing transport connectivity—including better access to public transport and higher job accessibility—has been associated with improved employment probabilities for both men and women (Bastiaanssen, Johnson, and Lucas 2020), women's economic activity tends to be more sensitive to deficiencies in the transport system. Evidence from developed and developing countries demonstrates how gender inequities in transport access create worse employment outcomes for women than for men, sometimes even within the same household (Alam et al. 2022).

In formal and informal employment, women tend to work closer to home, often due to childrearing or household responsibilities. However, formally employed individuals, irrespective of gender, tend to travel longer distances by public transport or by car. Affordability constraints, mainly due to low incomes earned by women, significantly affect women's use of transport.[26] For some, the cost of travel and time taken in commuting may be so prohibitive that they prefer to remain in long-term unemployment rather than pursue well-paying employment options in farther away locations within the city. For others, security concerns in public spaces (including public transport) and the lack of a comfortable environment when using public transport systems may be critical inhibitors. For others still, the walking distance to the closest public transport stop and the time spent waiting for the next available public transport vehicle might inhibit the desire to seek gainful employment.

[26] Women are more likely than men to work in part-time, precarious, and flexible employment, and owing to accompanying lower wages, are more sensitive to the cost of travel.

Improving the availability, accessibility, affordability, acceptability, as well as safety and security of public transport can transform the economic lives of women (and men) and their families. The potential economic gains from improving public transport systems can be wide-ranging. Improving the public transport system means that more women can participate in the labor market, and those already participating can access a broader range of jobs, increasing the chances of finding employment that is a better match for their skills. It can also connect small business owners (self-employed) to potential suppliers (enabling access to better-quality and/or lower-cost inputs) and potential customers (enhancing the demand for their business). Thus, improving public transport connectivity can increase productivity and employment, leading to higher economic output.

Section 2: Mobility Patterns of People Who Currently Work

How do workers commute from home to work and back? Which modes are used in each city? Do women and men use the same modes? This section presents the travel patterns of workers on their commutes.

The Dominant Mode of Transport

Does a sizeable share of people work from home?

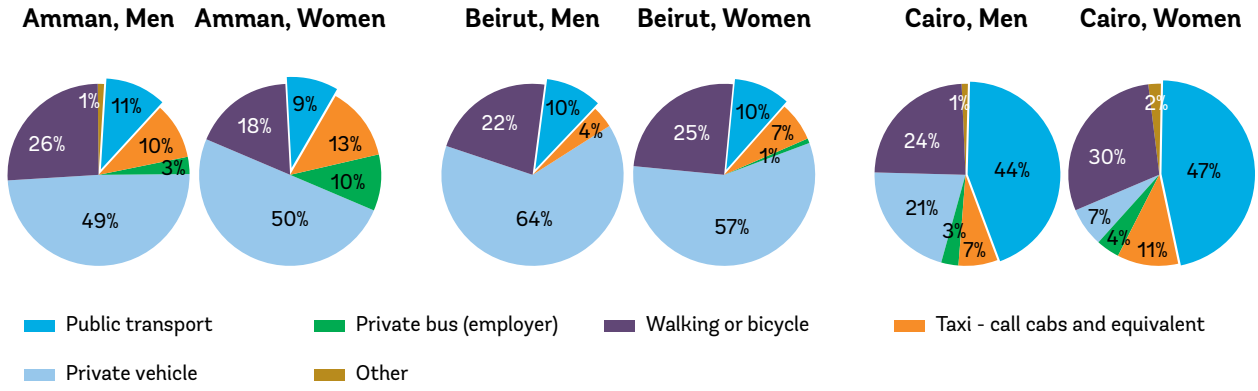
The vast majority of workers does not work from home. This is particularly true of men; in all three cities, between 97 percent and 98 percent of working men work outside the house. The large majority of working women also works outside of the home, but this trend is more prominent in Beirut (96 percent) and Amman (89 percent) than in Cairo (76 percent).

Among those who work, which mode of transport do they use for commuting?

There are important differences in the commuting patterns of workers both within and between cities. In Amman and Beirut, private vehicles constitute the main mode of transport for commuters, while in Cairo, public transport is the main mode. Only a small share of people who commute to work use public transport as their main mode of transport in both Amman and Beirut (around 10 percent of both women and men), whereas almost half the commuters use public transport in Cairo (47 percent of women and 44 percent of men) (see figure 3.1). This is in line with the overall mobility patterns of the population (for not only work-related trips) as presented in figure 2.2.

A standout trend in Amman is the reliance on private buses provided by employers. These account for 10 percent of the trips for women and 3 percent for men. In Beirut, they are almost negligible; in Cairo, their shares are at 4 percent for women and 3 percent for men.

Figure 3.1 Dominant Mode of Transport for Commuting from Home to Work



Source: World Bank data: Household surveys.

Note: In Amman, the services are included in the category "Taxi—call cabs and equivalent".

How do the differences in mode choice by men and women vary by city?

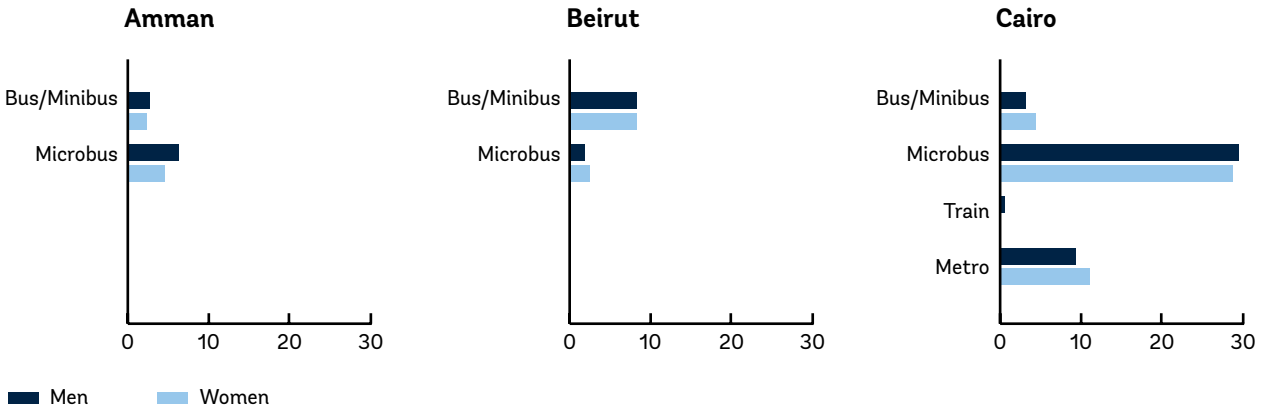
The share of women using public transport compared with men is lower in Amman, similar in Beirut, and higher in Cairo. The share of women relying on private vehicles is similar to that of men in Amman but in Beirut and Cairo, fewer women than men rely on private vehicles. On the other hand, the share of women using a taxi or equivalent as their main commuting mode is higher than that of men in each of the three cities (7 percent of women in Beirut, 11 percent in Cairo, and 13 percent in Amman).

Finally, a sizable share of people commutes in all three cities by only walking (bicycle is rarely used). This share is larger for women than men in both Beirut and Cairo, while there are fewer women who only walk than men in Amman.

Which are the most widely used means of public transport for commuting in each city?

The main means of public transport for commuters is the same for men and women within each of the three cities. It is microbus in Amman and Cairo and bus/minibus in Beirut. In Cairo, metro is the second most used means of public transport, it is used more frequently than buses and minibuses (see figure 3.2).

Figure 3.2 Dominant Means of Public Transport for Commuting from Home to Work



Source: World Bank data: Household surveys.

Section 3: The Latent Desire to Be Gainfully Employed

Is there a latent demand for economic opportunities? What are the factors constraining men and women from being gainfully employed? Is the lack of suitable transport options a key barrier that keeps women from exercising their right to work? This section identifies the barriers to gainful employment, as reported by individuals.

Box 3.1: Time Poverty Faced by Women

For women, and in particular those who have children, the scarcity of available time can be a significant challenge. This is known as *time poverty,* which arises from women's disproportionate burden from unpaid care activities and domestic work, including taking care of children, household maintenance, and other domestic tasks. This time poverty prevents women from accessing services and activities related to physical and mental health, education, professional development, and paid work. Overall, this points to the many distinct challenges and constraints in their final decision to seek employment (United Nations 2019; Alam et al. 2022).

In Egypt, women aged 15–64 spend, on average, 24 hours per week on unpaid direct and indirect care work,[27] whereas men spend, on average, only two hours per week on similar tasks. Importantly, even when employed, women spend a significant share of their time on care work. While unemployed women spend 24 hours per week on care work, it is 25 hours per week for employed women, which is added to their 38 average hours of paid work. On the other hand, both non-employed and employed men only spend two hours per week on care work (Selwaness and Helmy 2020).[28]

In Jordan, the results are similar to Egypt. Women aged 15–64 spend, on average, 19 hours per week on unpaid direct and indirect care, compared with only one hour for men. These weekly hours apply both to non-employed women (19 hours of care work per week) and employed women (20 weekly hours of care work on top of the 37 hours of paid work), while both non-employed and employed men only spend one hour on similar tasks (Alhawarin et al. 2020).[29] A more recent survey of time use among married couples with children reveals that mothers within a household spend, on average, five hours and 45 minutes more than their husband per weekday on direct and indirect care work (Redaelli et al. 2023).[30]

In Lebanon, while a strict comparison with the data of Jordan and Egypt is not available for total hours of unpaid direct and indirect care work per week among women and men in the overall population, the recent survey by Redaelli et al. (2023) shows that women bear a much larger burden of unpaid care work compared with men. Among married couples with children, mothers spend at least seven more hours per weekday of unpaid direct and indirect care work compared with the fathers within the same household.[31]

[27] Direct care work includes childcare, elderly care, and sick/disabled care. Indirect care includes all unpaid domestic chores.

[28] Data from 2012.

[29] Data from 2016.

[30] Data from 2021 but questions on care activities concern activities before the COVID-19 pandemic.

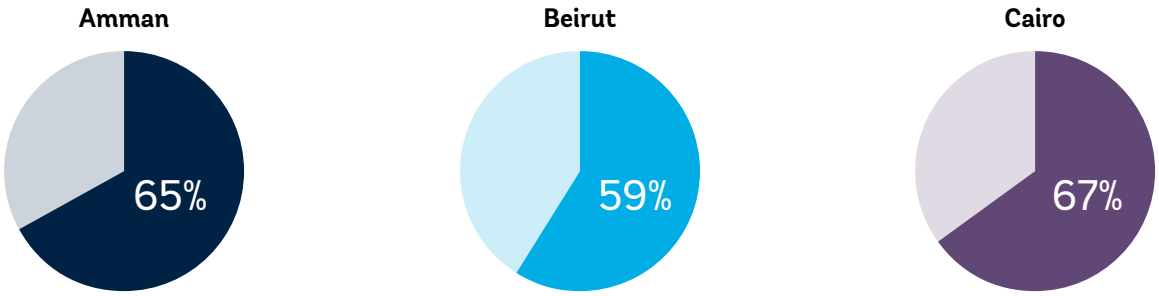
[31] Data from 2021 but questions on care activities concern activities before the COVID-19 pandemic

A large gap exists between the male and female LFP rates in all three countries. The share of female-to-male LFP rate is the lowest in Egypt (22 percent), followed closely by Jordan (24 percent), and then Lebanon (43 percent).[32]

Is transport a binding constraint for people who are not currently working?

In each city, people who were currently not working were asked if they aspire to be economically active. Most non-working women said they would be willing to accept a job if it were available (see figure 3.3). There is a high work latency among women in these three cities. This section aims to understand the main constraints faced by those who do not work and how much commuting is a barrier to work.

Figure 3.3 Share of Non-working Women Who Say They Would Be Willing to Accept a Job if It Were Available



Source: World Bank data: household surveys.

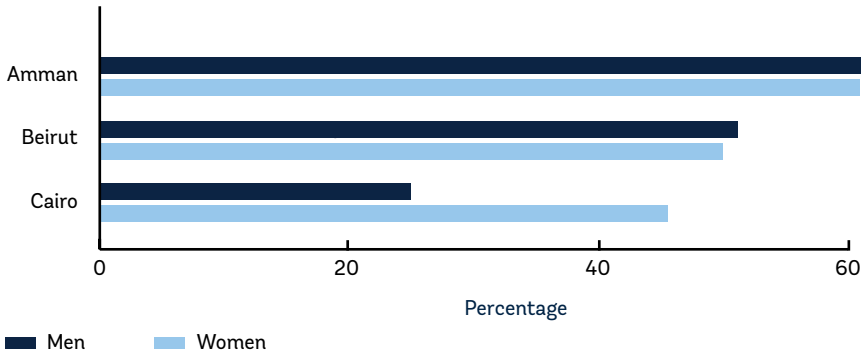
Commuting as a Barrier to Work

Is commuting a barrier to work?

In Amman and Beirut, most non-working women and men see commuting as a barrier to work. In Cairo, twice as many women as men consider commuting an obstacle to employment. There are important differences by city in the perception of commuting being a barrier to work for those who are not currently working (see figure 3.4). Amman has the strongest perception of commuting being an obstacle to employment, with over 60 percent of non-working men and women citing it as a barrier. Beirut showed similar results but with slightly lower shares (around 53 percent). In contrast, there are significant differences between the perception of women and men in Cairo, as nearly 50 percent of women view commuting as a barrier to work, while only 26 percent of men share the same perception.

[32] Based on data from 2022: World Bank, World Development Indicators database.

Figure 3.4 Percentage of Non-working People Who Think that Commuting is a Barrier to Work



Source: World Bank data: household surveys.

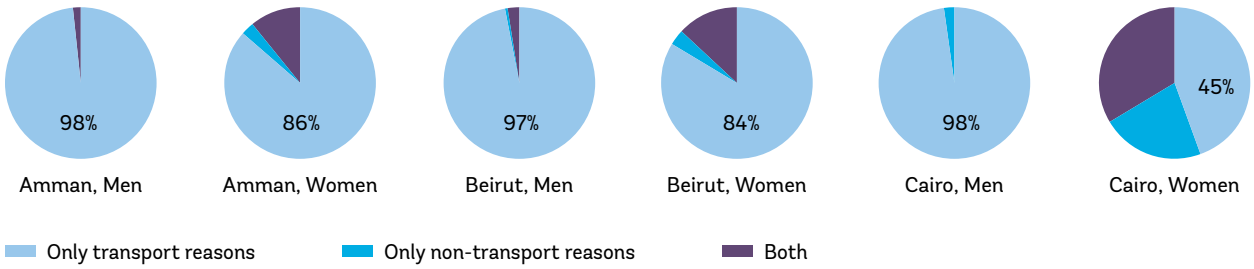
Why is commuting a barrier to work?

Do transport-related barriers (for instance, the length of the trip) or non-transport reasons (such as family preferences) pose a barrier to men and women? Figure 3.5 presents the reasons given by non-working individuals who consider commuting a barrier to work.

Men mainly cite transport-related reasons for commuting being a barrier to work, while women, especially in Cairo, report non-transport reasons more frequently. More than 97 percent of men in each of the three cities only report transport reasons, while this share is at 86 percent and 84 percent in Amman and Beirut (see figure 3.5). In Cairo, only 45 percent of women report transport-related reasons exclusively, while a sizable share (22 percent) reports exclusively non-transport reasons, and the remaining 33 percent report both types of issues. In Amman and Beirut, a sizable share of women reports that a combination of transport and non–transport-related reasons pose a barrier for them.

This suggests that while commuting barriers for men are strongly linked to the transport system, women also face important external barriers in addition to transport system–related constraints.

Figure 3.5 Reasons Cited by Non-working People Who Consider Commuting a Barrier to Work



Source: World Bank data: household surveys.

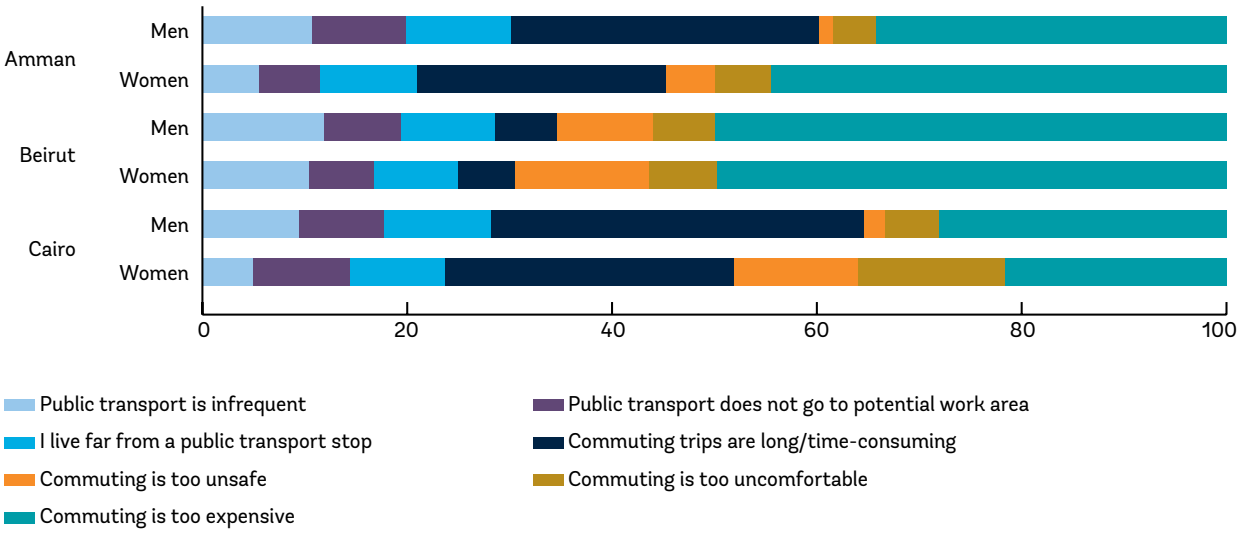
Which transport constraints are the most relevant for men and women?

Among transport barriers to commuting, the cost of the trips is the main barrier for both men and women in Amman and Beirut. In Cairo, the length of the trips for both men and women is the main barrier and the cost of trips comes second. However, the relative importance of this financial constraint for women and men differs by city. In Amman, the cost of trips is a larger concern for women, while in Cairo, it is more of an issue for men. In Beirut, the cost of trips is equally important for women and men, accounting for 50 percent of the total issues (see figure 3.6). In Cairo, the length of commuting trips is the main problem facing men and women, while in Amman, it is the second most reported issue. In both instances, it is more salient for men than women. In Beirut, however, this is not a main barrier for commuting to work.

Personal security and comfort are more salient barriers for women than men. For women, personal security is a salient barrier in Beirut and Cairo, where it represents 13 percent and 12 percent of the total issues (in Beirut, it is the second most important issue for women). In comparison, in Amman, it only represents 5 percent of issues among women and is the least frequently cited reason for commuting being a barrier to work. For men, in Amman and Cairo, personal security is almost never chosen, while in Beirut, 9 percent of men do report personal security to be a barrier. Comfort is particularly important for women in Cairo, who cite it three times more frequently than men.

On the other hand, public transport frequency is a relatively more important barrier among men than women in each of the three city. Public transport coverage (both close to residential locations or workplaces) has the same relative weight for both men and women.

Figure 3.6 Relative Importance of Transport-related Barriers to Commuting for Work



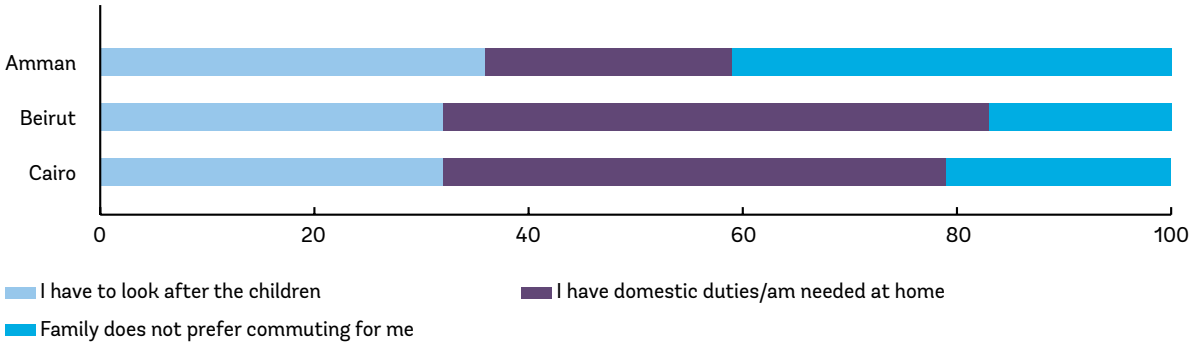
Source: World Bank data: Household surveys.

Note: Relative importance of each issue among all respondents who cited at least one transport barrier to commuting being a barrier to work.

Which non-transport constraints are the most important barriers?

Family preference is the main non-transport barrier to commuting in Amman, while domestic duties are the main constraint in Beirut and Cairo (see figure 3.7).

Figure 3.7 Relative Importance of Non–transport-related Barriers (Women Only) to Commuting for Work



Source: World Bank data: Household surveys.

Note: Relative importance of each issue among all women who cited at least one non-transport barrier to commuting being a barrier to work.

Photo credit: World Bank Photo Collection

Section 4: Spatial Measures of Mobility by Public and Active Means of Transport

The previous section relied on self-reported data to shed light on the latent desire to be economically active and the barriers to commuting for work. While this method has many advantages, it also has several shortcomings such as exaggerated or understated responses, responder's perceived embarrassment at revealing the actual reason behind a particular choice, underreporting by responders about specific types of constraints (for example, concerns for personal safety) due to social taboos, and systematic unreliability in measurement in specific types of questions.[33]

These issues are averted by first constructing objective (spatially granular) measures of three important facets of the public transport system for all three cities (in this section):

i. (Spatial) *accessibility* of jobs through public transport and walking

ii. *Availability* of public transport close to residential locations

iii. *Safety* of built environments to measure the level of security around public transport stops

Next, men's and women's employment choices are analyzed in relation to the constructed measures of public transport quality. While the affordability of public transport is also an important dimension that should be included, it was not possible due to data limitations. The rest of the section presents the methodology used to construct the spatial measures/indicators and the results for each city.[34]

Accessibility of Jobs through Public Transport in Amman, Beirut, and Cairo

The first spatial measure of mobility focuses on the accessibility of jobs using public transport and walking. Accessibility is a critical indicator of women's mobility and access to economic empowerment, as it directly affects their ability to access job opportunities. Further, at the city level, spatial accessibility to economic opportunities is a key enabler of efficient labor markets, leading to agglomeration economies, economic development, and social inclusion.

[33] For example, respondents have been found to systematically misreport commuting distances, especially in urban areas.

[34] Methodological details on the construction of each indicator can be found in Alam et al. (2023).

Three data sources were used to measure the accessibility of jobs throughout each city spatially. The first data source used was the public transit network, including the frequencies of departure and speeds by which the public transport vehicles travel on the mapped routes (see Chapter 2, section 2 for details and maps about these data). This is combined with a layer of the street composition for each city—street grid data is taken from OpenStreetMap[35] Finally, the developed public transport and road network map is combined with the relative density of employment across each metropolitan area (estimated using the distribution of employment in each city)[36] and population density. For each location, this accessibility measure provides an estimate of the total jobs in the city that are accessible within 60 minutes of travel time using only public transport and walking.[37] It is closely linked to one of the key challenges and areas of improvement identified by public transport users in Amman, Beirut, and Cairo (see figures 2.15 and 2.17). The length of trip was in the top three challenges identified in both Amman and Cairo.

Figure 3.8 presents the maps of the accessibility of jobs through public transport in Amman, Beirut, and Cairo. These maps present the spatial distribution of the share of total jobs accessible through public transport throughout each city. They show that the accessibility of jobs is uneven within cities.

On average, Amman, Beirut, and Cairo have low accessibility levels. Figure 3.9 further presents the average accessibility levels in each city. People in Amman can reach 18 percent of the total jobs in under 60 minutes using public transport and walking; in Beirut, it is 30 percent and in Cairo (a larger city)[38], 13 percent.[39] These low accessibility levels point to the need for several actions, including (a) prioritizing public transport through integrated corridor management or the creation of/improvements to mass transit like BRTs or metro; (b) improving existing land regulations to foster dense, diverse, and well-designed urban development; and (c) enhancing the walkability of the cities by improving sidewalks and walkways and developing pedestrian-first policies.

The accessibility of destinations depends on the time of departure from home. The accessibility levels for individuals depend on whether jobs are accessible in less than a fixed time (60 minutes in the analysis). However, depending on the departure time from home, a trip to the same location may take a different amount of time when a transport service runs every five minutes and when it runs every 15 minutes. For situations of relatively high frequency or for transport service that is not scheduled, people often wait at the station for the next available transport option. In practice, however, this will affect the average trip time, and the same job might be accessible or not, depending on the departure time. To account for this, the accessibility analysis was run multiple times over the course of the 8:00 am–9:00 am window, and a destination was considered reachable if it could be reached at least 50 percent of the time. While the main analysis fixes the total travel time at 60 minutes and the minimum reachability threshold at 50 percent, results for a threshold of 45 minutes as well as minimum reachability levels of 10 percent and 90 percent are also reported. The sensitivity of the results to these different parameters is presented in table 3.1. This confirms that the average accessibility levels within each city are higher for 60 minutes than 45 minutes and that they decrease if higher minimum reachability levels are imposed.

[35] Several assumptions needed to be made for using these data. For the three cities, there are no pedestrian restrictions, meaning all streets and links in the network are considered accessible to pedestrians. It was assumed that a pedestrian walks at the speed of 3.6 km/h. A threshold of 20 minutes was set as the maximum walking time per leg of the trip when public transport is used. This restriction was chosen to reflect particularly vulnerable and time-constrained mobility, which are often faced by women.

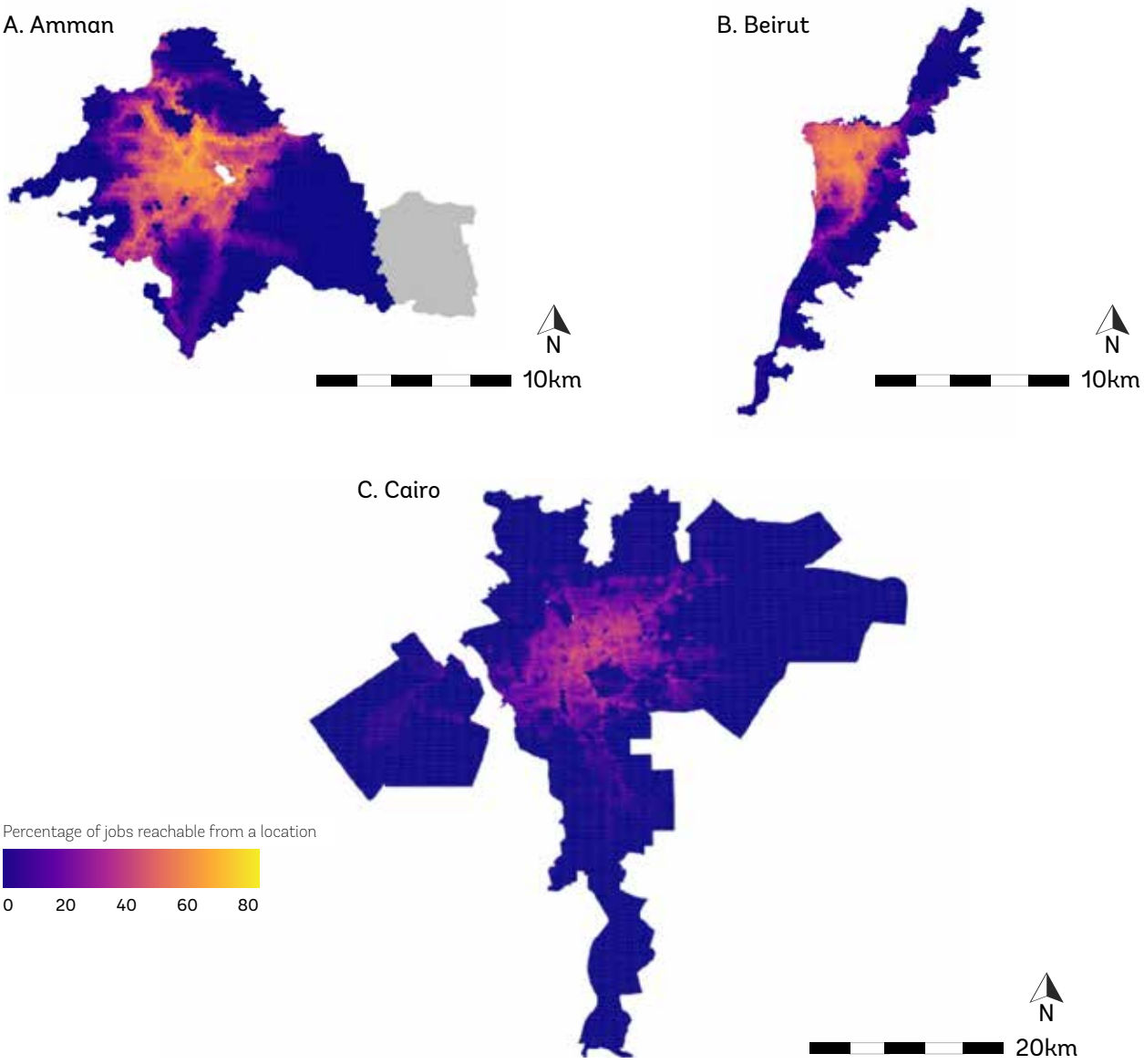
[36] This is based on a methodology developed by Barzin et al. (2022) using machine learning and remote sensing data.

[37] Measures computed for the 8 am–9 am window. A given destination will be considered to be reachable from a certain location if it can be reached in under 60 minutes during at least 50 percent of the departures within the 8 am–9 am window.

[38] By definition and because of data availability, this measure accounts for the share of total jobs, and not the number of actual jobs. Therefore, in larger cities such as Cairo, the share of jobs accessible from a certain location might be lower than in smaller cities even when the number of jobs that are actually reachable is the same.

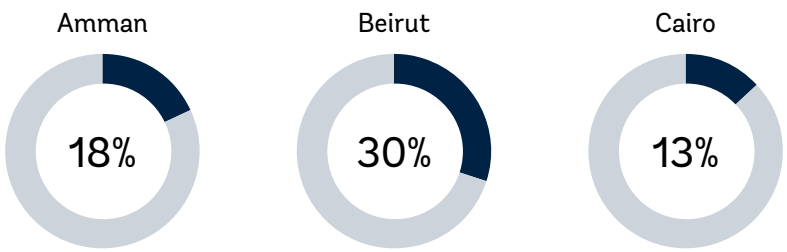
[39] These accessibility levels are lower than for many cities in developing countries where such analysis has been undertaken. Peralta-Quiros et al. (2019) perform a benchmarking of 11 cities in Africa. According to this benchmarking, all three cities can be classified as worst performers in connecting people with employment opportunities. Note that benchmarking data is only available for Africa.

Figure 3.8 Accessibility of Public Transport in Amman, Beirut, and Cairo



Source: Based on World Bank data: Transit network mapping; OpenStreetMap; WorldPop; and Barzin et al. (2022).

Figure 3.9 Average Accessibility Levels in Amman, Beirut, and Cairo



Source: Based on World Bank data: Transit network mapping; OpenStreetMap; WorldPop; and Barzin et al. (2022)

Note: The estimation uses population-weighted averages. A travel time of 60 minutes and a minimum reachability threshold of 50 percent is used.

Table 3.1 Average Accessibility Levels for Different Parameters

City		Low Minimum Reachability Threshold (10%)	Medium Minimum Reachability Threshold (50%)	High Minimum Reachability Threshold (90%)
Amman	60 min	24.8	18.3	13.2
	45 min	12.1	7.7	4.8
Beirut	60 min	34.4	29.8	24.7
	45 min	20.3	15.6	11.8
Cairo	60 min	15.3	12.6	10.4
	45 min	6.7	5.1	3.8

Source: Based on World Bank data: Transit network mapping; OpenStreetMap; WorldPop; and Barzin et al. (2022).

Note: Highlighted cells are the main parameters used in the analysis.

Besides the average accessibility levels within each city, it is interesting to look at how equal (or unequal) their distribution is. The equality of access is calculated by generating a Lorenz curve and Gini coefficients for the different thresholds and minimum reachability levels. The results for the Gini coefficients are presented in table 3.2. Higher Gini coefficients represent a more unequal distribution of accessibility to job opportunities across the population. For all three cities, the distribution of access is highly unequal.

Shorter and more reliable trips to employment sites are even more unequally distributed than longer and unreliable trips. When comparing the cities, Beirut has higher accessibility levels, on average, and lower inequality levels in access. On the other hand, while Amman has a higher average accessibility than Cairo, it also has higher inequality levels. The Lorenz curves are presented in figure 3.10.

Photo credit: World Bank Photo Collection

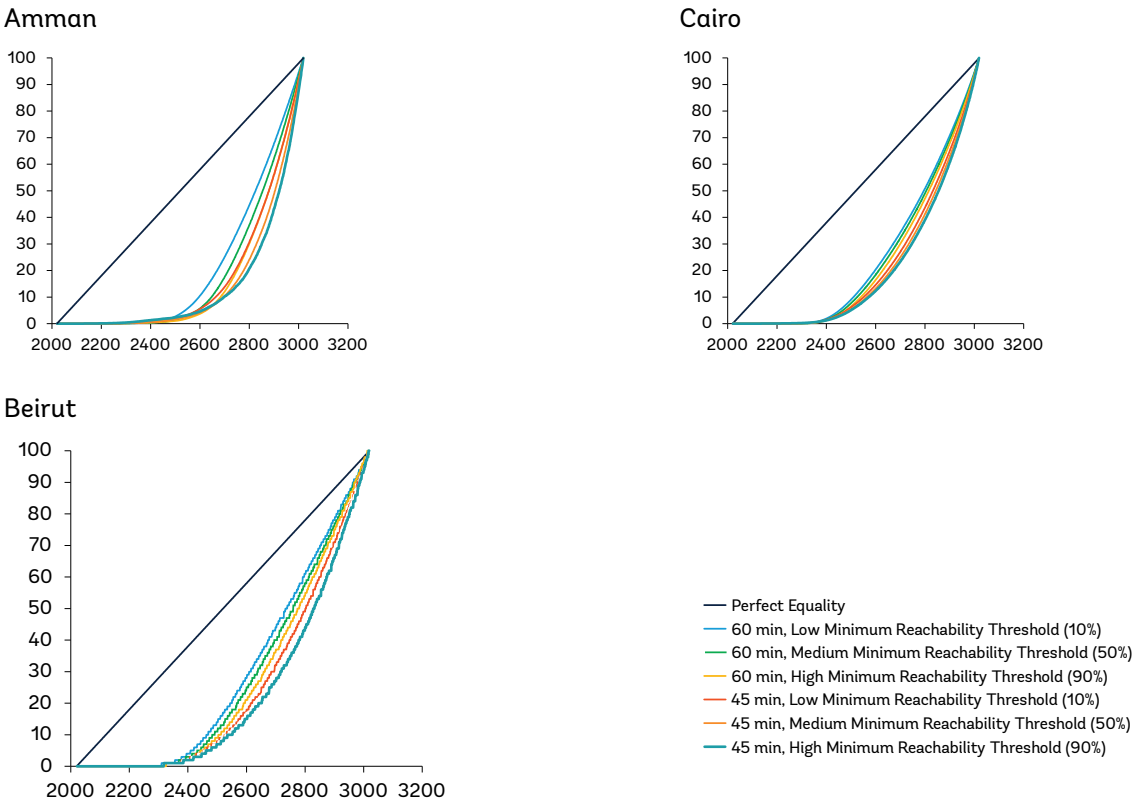
Table 3.2 Gini Index of Accessibility Levels for Different Parameters

City		Low Minimum Reachability Threshold (10%)	Medium Minimum Reachability Threshold (50%)	High Minimum Reachability Threshold (90%)
Amman	60 min	0.57	0.63	0.67
	45 min	0.66	0.70	0.72
Beirut	60 min	0.41	0.44	0.47
	45 min	0.51	0.53	0.55
Cairo	60 min	0.50	0.52	0.53
	45 min	0.56	0.58	0.59

Source: Based on World Bank data: Transit network mapping; OpenStreetMap; WorldPop; and Barzin et al. (2022).

Note: Highlighted cells are the main parameters used in the analysis.

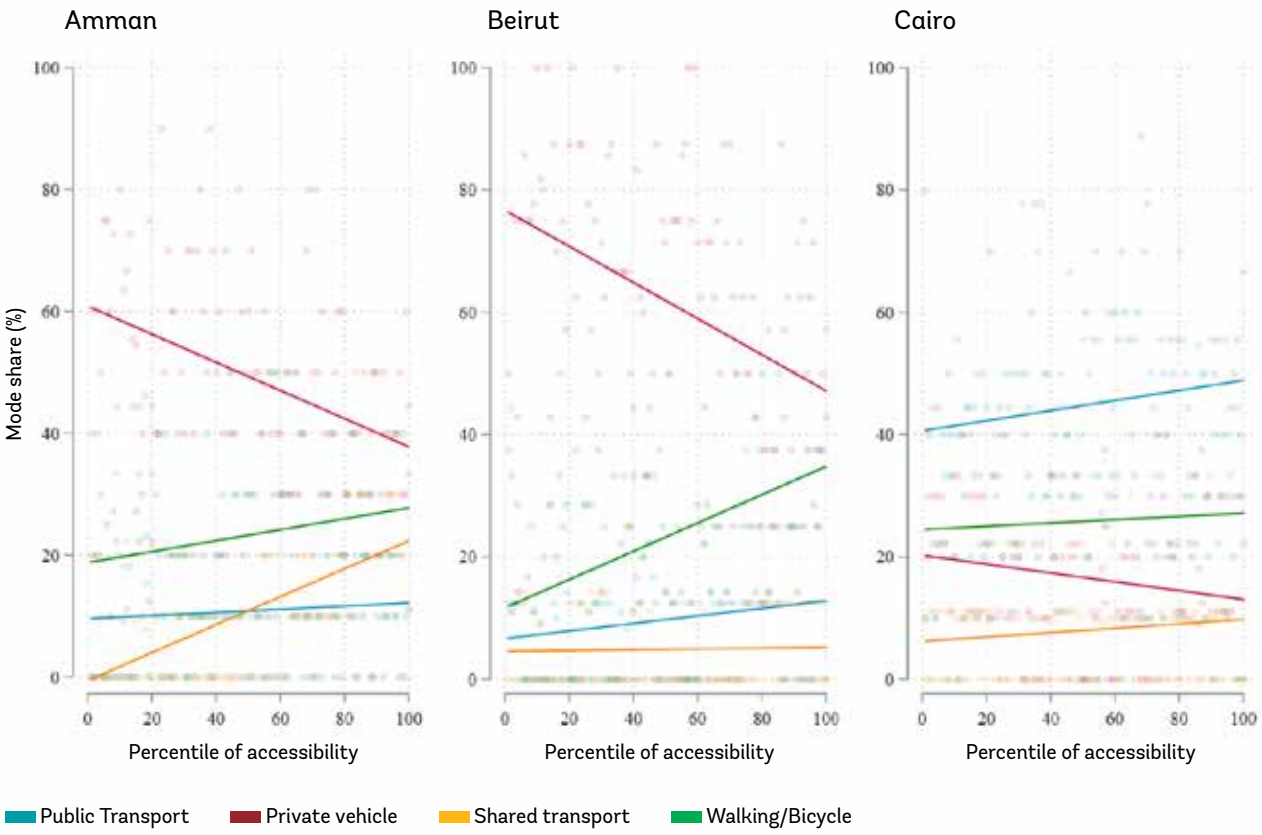
Figure 3.10 Lorenz Curves of Accessibility Levels for Different Parameters



Source: Based on World Bank data: Transit network mapping; OpenStreetMap; WorldPop; and Barzin et al. (2022).

In all three cities, workers who live in areas with better accessibility are less likely to commute to work using private vehicles and are more likely to use public transport and walking. Figure 3.11 presents the commuters' choice of mode for every percentile of accessibility level in each city. This illustrates how the mode share changes from the lowest level (percentile 0) of accessibility in the city to the highest (percentile 100). In the three cities, the prevalence of private vehicles for commuters visibly decreases with an increase in accessibility. On the other hand, walking and public transport become more widely used for commuting as the accessibility of jobs increases. In Amman, the decrease in private vehicles is mainly offset by a large increase in walking and shared transport (which, in Amman, also include services; services are a part of the route-based public transport network). In Beirut, the decrease in private vehicle when accessibility rises is mainly offset by walking to work. Public transport also increases from an average of 7 percent of commuters in the lowest quintile of accessibility to an average of 12 percent in the highest quintile. Finally, in Cairo, public transport is the main mode of transport for all levels of accessibility, but it increases with accessibility while the use of private modes decreases.

Figure 3.11 Commuter's Mode Choice and Accessibility Levels



Source: Based on World Bank data: Transit network mapping; OpenStreetMap; WorldPop; and Barzin et al. (2022).

Note: The dominant mode is defined as the motorized mode on which the respondent spends most of their usual work commute and as walking or bicycle, if no other motorized mode is used. Shared transport includes taxi and equivalent modes. In Amman, it also includes services.

Availability of Public Transport in Amman, Beirut, and Cairo

Availability, which is the second spatial measure of mobility, relates to the proximity of public transport to residential locations. In practice, this measure is based on the proximity to transit stops, factoring in the frequency of service. This indicator is used to assess the density of service within the immediate reach of the household, but without considering the destinations of the transit. This complements the measure of accessibility, which encompasses the full journey to employment opportunities through public transport. The availability of public transport close to residential locations (both the geographic proximity of public transport stops and the frequency of service) is an important consideration for women when using public transport. This is also highlighted in the challenges and areas of improvement identified by public transport users in Amman, Beirut, and Cairo (see figures 2.15 and 2.17). Wait time at public transport stops was a top three challenge identified in both Amman and Cairo.

Two sources of data were used to measure the availability throughout each city spatially. Like the measure of accessibility, measuring availability also relies on the transit network data and the street grid data from OpenStreetMap.[40] For each location, the number of public transport "runs" are computed; this is the number of vehicle departures at all stops available within a 10-minute walking time over the course of an hour.[41] The number of runs is normalized to create an index between 0 and 100 percent.[42] A value of 100 percent means that public transport is highly available within a 10-minute walking distance from the house. In contrast, a value of 0 means that no public transport is available within a 10-minute walking distance of a household.

Figure 3.12 presents the maps of the availability of public transport in Amman, Beirut, and Cairo. These maps present the spatial distribution of the availability of public transport throughout each city. They show that the availability of public transport is, on average, higher in the central areas of each metropolitan region and along the public transport routes.

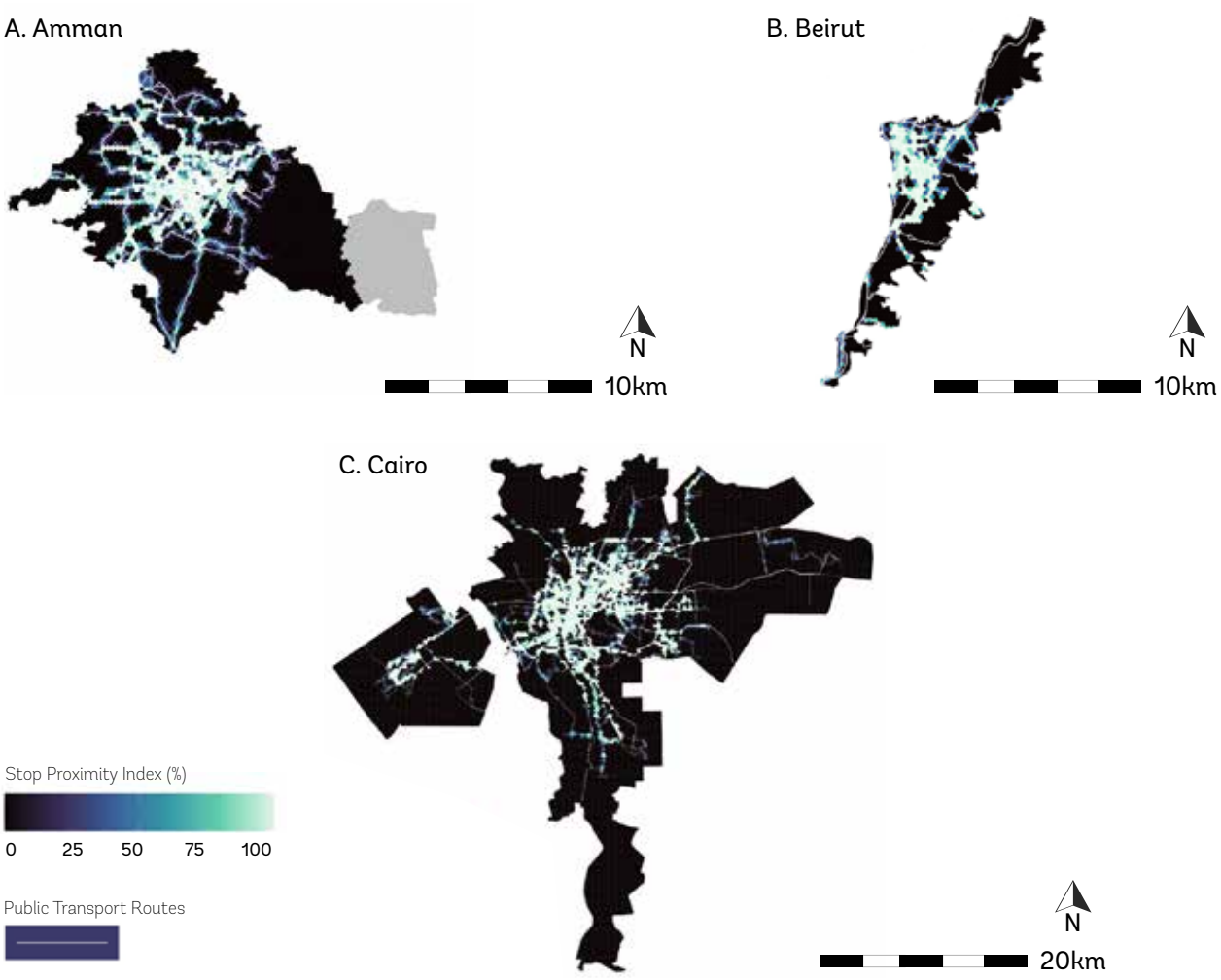
An average index of availability is also computed for each city. As some areas with low-density population might have low availability, the averages of availability are weighted by population density (see figure 3.13). This shows that, on average, people living in Beirut have a higher availability of public transport close to residential locations than those in Cairo and Amman, which has the lowest availability among the three cities.

[40] The same assumptions were made as for the construction of the accessibility measure (no pedestrian restrictions, meaning all streets and links in the network are considered accessible to pedestrians and a pedestrian walking speed of 3.6 km/h).

[41] This is computed between 8 am and 9 am in each city.

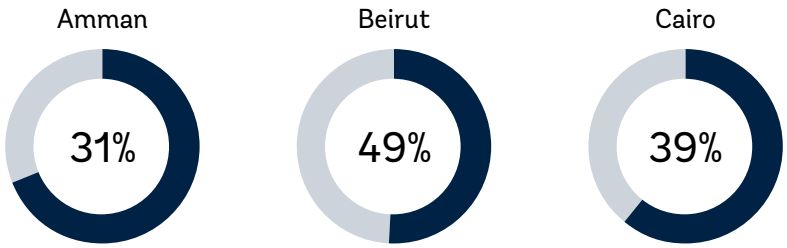
[42] To normalize, the number of runs was divided by 60 and the values equal to or more than one were truncated to be equal to 100 percent. This means the study presents an index of an average number of buses reachable each minute between 8 am and 9 am, at a maximum distance of 10-minute walk, with the maximum being one bus per minute. At one bus per minute, the availability index equals 100 percent.

Figure 3.12 Availability of Public Transport in Amman, Beirut, and Cairo



Source: Based on World Bank data: Transit network mapping and OpenStreetMap.

Figure 3.13 Average Availability Levels in Amman, Beirut, and Cairo



Source: Based on World Bank data: Transit network mapping; OpenStreetMap; and WorldPop.

Note: Population-weighted averages were used for the estimation.

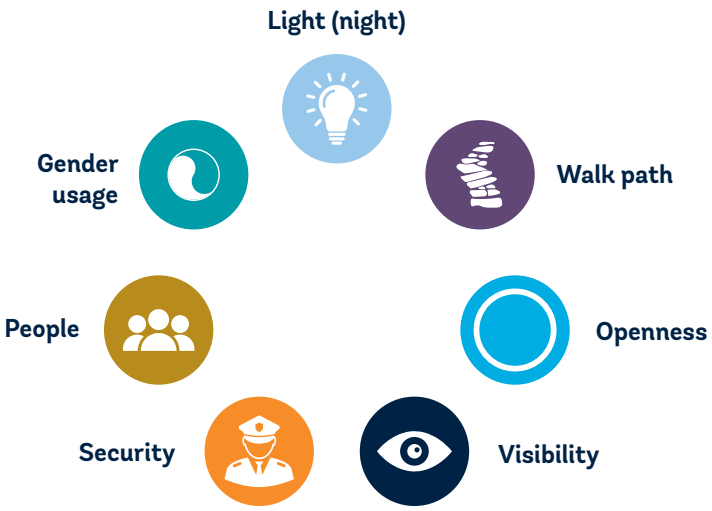
Safety of Transport in Amman, Beirut, and Cairo

Women's experience of public transport also differs from that of men when it comes to issues related to harassment and personal security. This is why the third spatial measure is the safety of public transport. It measures the level of personal security around public transport stops. Security includes both sexual harassment and the incidence of crimes.

The safety around public transport stops is one of the crucial aspects of personal security for women. In Jordan, for instance, 64 percent of women have been harassed for being a woman while using public transport. Most occurrences of harassment happen in the street, either while walking (24 percent) or waiting for transport (18 percent), or at a bus station (16 percent), or stop (15 percent). In comparison, harassment on public transport is slightly lower and depends on the means of transport (from 6 percent in services to 14 percent on buses) (Aloul, Naffa, and Mansour 2018).

Safety is measured using the built environment audits conducted in each city. In each metropolitan area, 50 public transit stops were audited.[43] Each public transit stop is assessed based on seven parameters (see figure 3.14) to objectively and comprehensively assess various dimensions associated with the perception of safety around public transport stops. These built environment audits first allow the provision of the disaggregated results for each parameter to demonstrate the relative importance of each aspect of personal security in Amman, Beirut, and Cairo, and second, to construct a spatial measure of safety to understand spatial heterogeneities within each city.

Figure 3.14 Parameters Used to Assess Safety at Public Transit Stops



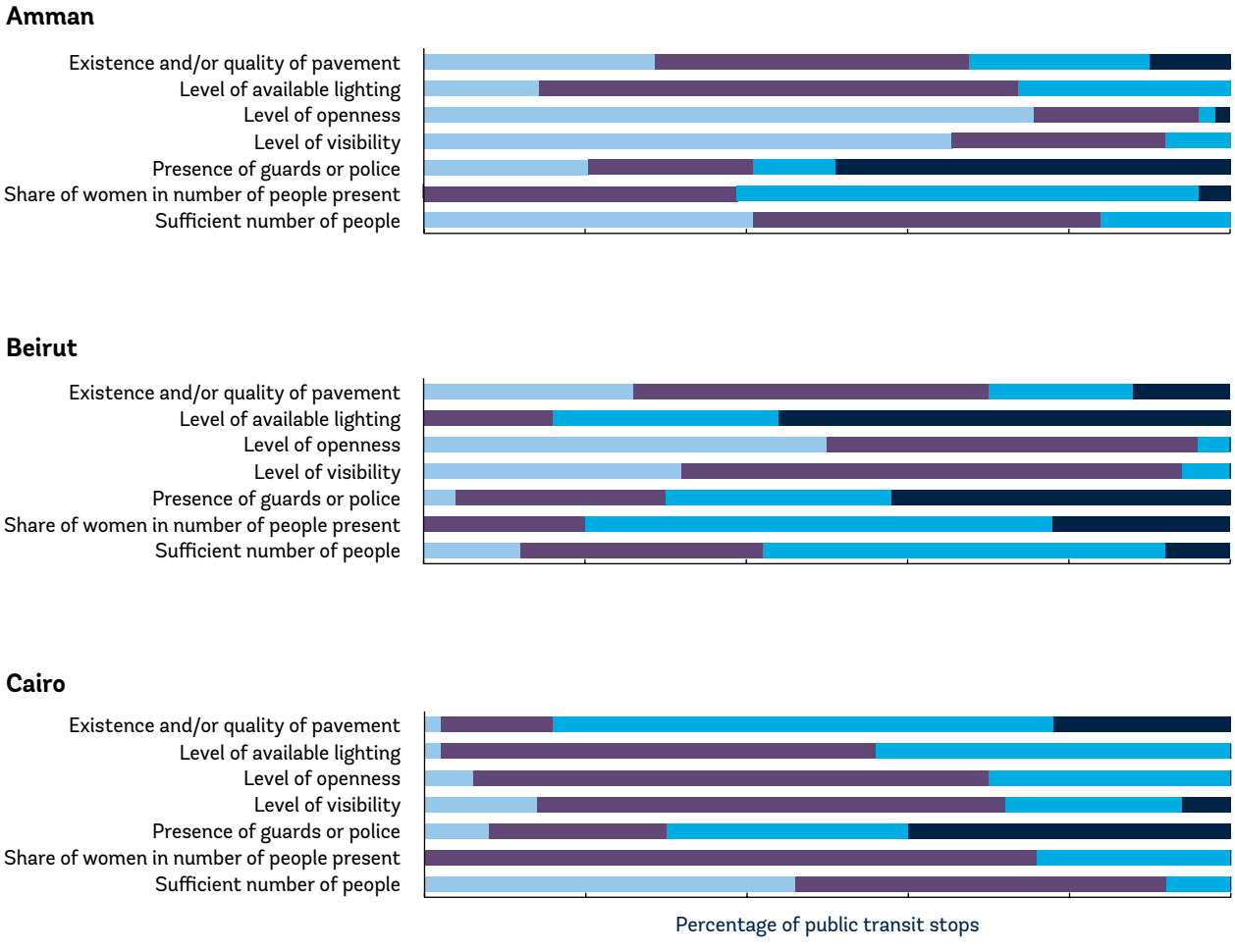
Source: Safetipin.

Note: Each of the parameters is defined as follows: (a) Light: Availability of lighting infrastructure: on a scale from none to bright; (b) Walk path: Presence of sidewalks: from none to good; (c) Openness: Ability to see and move in all directions: from not open to completely open; (d) Visibility: Presence of vendors, shops, building entrances, windows, and balconies from where one can be seen: from no eyes (out of sight of others) to highly visible; (e) Security: Presence of police or security guards: from none to high; (f) People: Number of people around the respondent: from deserted to crowded; (g) Gender usage: Presence of women near the respondent: from none to the majority being women

[43] One stop in Amman was removed from the analysis during the cleaning phase because of strong outlier values.

Important differences exist in the various aspects of the built environment in Amman, Beirut, and Cairo. Figure 3.15 presents the results of the built environment audits for each city. In Amman, the majority of the surveyed public transport stops lack the presence of guards or police and have a low number of women present. On the other hand, on average, transit stops have a substantial level of openness and visibility and a sufficient number of people present. There are more problems in Beirut than in the two other cities. The majority of transit stops lack good lighting at night.[44] There is also a low presence of guards or police (but comparable with the other cities), a low presence of people overall, and a low presence of women at public transit stops. All these factors might impose strong barriers to the use of public transport by women. There are fewer major concerns in Cairo than in Beirut, but most transit stops present at least some problems in all aspects except for the sufficient number of people present. In particular, compared with the other cities, only a minority of surveyed stops have good pavement quality and good levels of openness and visibility.

Figure 3.15 Safety at Public Transit Stops—Results from the Built Environment Audits

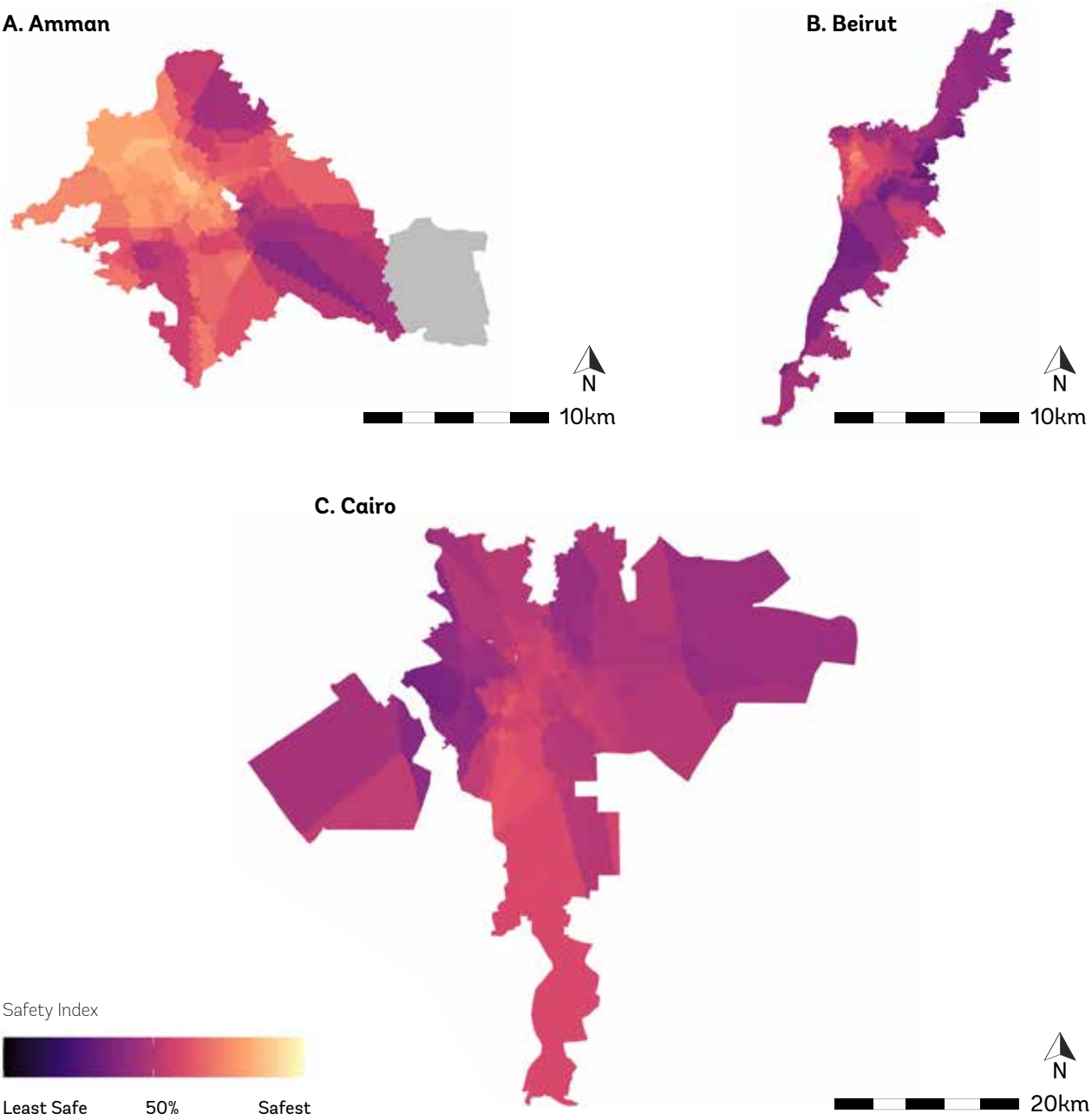


Source: World Bank data. Built environment audits.

[44] These low levels can be explained by the long-lasting electricity and economic crisis in Lebanon, which led the Government to provide only two hours of public electricity per day.

The behavior of other public transport users and bystanders is a key determinant of perceived and realized levels of safety. These could vary by city, which is not observed in the data. Thus, the safety index should be considered an internal measure for each of the cities, not a relative measure across cities. The results from the built environment surveys are combined to create a spatial index of safety based on the mean of the seven objective parameters with values from 0 (worse) to 100 percent (best)[45] (see figure 3.16). These maps show an important difference in safety levels across each city.

Figure 3.16 Safety of Public Transport in Amman, Beirut, and Cairo



Source: Based on World Bank data: Transit network mapping and Built environment audits.

[45] Each location is assigned the average index of the three nearest surveyed stations

Section 5: Effect of Public Transport on Labor Market Outcomes

Is a well-functioning[46] public transport system necessary for enhancing women's economic empowerment? On its own, is a well-functioning public transport system sufficient to significantly increase women's economic activity? This section examines the effect of three aspects of the public transport network on women's labor market outcomes in Amman, Beirut, and Cairo. In particular, it investigates how women's LFP and their likelihood of employment is affected by the accessibility of jobs throughout each city, the availability of public transport close to residential locations, and the safety around public transit stops.[47] By doing so, it sheds light on whether improving public transport systems is necessary or a sufficient condition for enhancing women's economic empowerment.

An empirical examination is performed to analyze whether spatial accessibility, availability, and safety of the public transport network affect women's labor market outcomes and whether there are differential effects of these transport measures by gender. The spatial measures of accessibility, availability, and safety of the public transport described in the previous section are matched with the residential locations of the household survey respondents to estimate their effect on the labor market outcomes of individuals, using a linear probability model. The technical details of the empirical model can be found in Alam et al. (2023).[48] This section presents the main results of the empirical investigation along with the interpretation of these results.

Box 3.2: Empirical Model Estimated

Two different models account for two types of labor market outcomes: LFP and the likelihood of having a job (employment probability).

The spatial accessibility, availability, and safety of the public transport network might affect the decision to participate in the labor market (having a job or being unemployed but looking for a job) versus not looking for a job. In this case, the analysis is restricted to women because much fewer working-age men are likely to be out of the labor force. Including them in the analysis to understand the likelihood of participating in the labor force would not be informative because most of them are participating in the labor force.

The spatial accessibility, availability, and safety of the public transport network might also affect the likelihood of being employed. In this case, the analysis covers both men and women to assess whether transport affects employment probabilities among women and whether the effects are different by gender. For both these outcomes, the impact is calculated using a linear probability model to control for many individual, household, and geographic characteristics. Several tests and restrictions are used to ensure the robustness of the results.

[46] Reliable, frequent, fast, comfortable, accessible, convenient, affordable, and safe

[47] Men are included for the employment probabilities to investigate whether there are heterogeneities by gender in the effect of various aspects of transport. For LFP, this is not possible due to the high participation rates of men.

[48] Also see Alam et al. (2023) for the limitations of the study both in terms of data collection and methodological approach.

The Empirical Relationship among Accessibility, Availability, Public Transport Safety, and Women's Labor Market Outcomes

The empirical analysis yields two broad findings (see figure 3.17).

The first finding relates to women's LFP. The results show that a well-functioning public transport system is necessary for enhancing women's LFP. However, in each of the three cities, women's LFP is differently influenced/constrained by the three spatial measures of public transport quality (accessibility, availability, and safety). This implies that a one-size-fits-all-women approach to transport solutions is not appropriate as women in each of the three cities face different binding constraints.

In addition to women facing different mobility barriers to their LFP in the three cities, the constraints also appear to differ by income levels. In Amman, safety appears to be the most important constraint that women face, while spatial accessibility to jobs is more important for women hailing from low-income households. In Beirut, there is some evidence that spatial accessibility matters for women hailing from low-income households. In Cairo, both accessibility and availability of public transport appear to play a strong role in determining women's LFP. The city-specific results and their implications are detailed below.

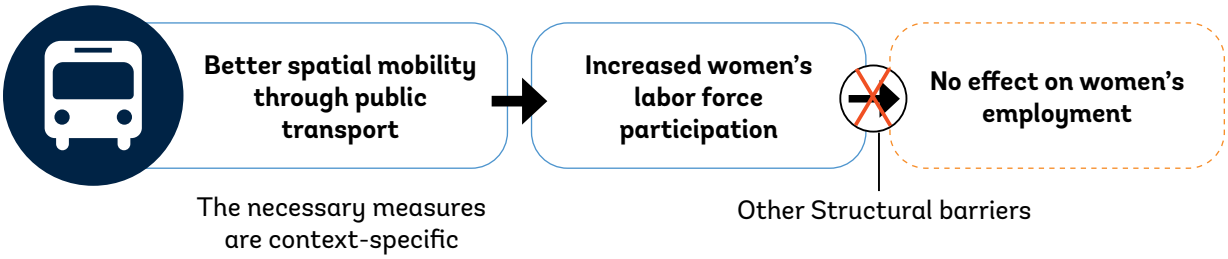
Box 3.3: Mobility, Access to Opportunities, and Intersectionality

The policies designed to benefit women may leave many of them behind if they are not viewed through an intersectional gender lens. Indeed, even within the same cultural or national context, some groups of women may enjoy more freedom of choice in making transport-related decisions than others. Intersecting gender with factors such as socioeconomic status, age, education, physical ability, or ethnicity can reveal many disparities among women within the same geographic area (Alam et al. 2022).

While many aspects of intersectionality are important to consider when designing transport policies, this report presents one aspect of intersectionality, namely the comparisons between women hailing from low-income households with women overall.

The second finding relates to men's and women's employment likelihood. While spatial accessibility, availability, and safety in public transport appear to affect women's likelihood of looking for a job, they have overall little impact on women's employment probability. In contrast, men's employment likelihood increases with improvements to the public transport system.

Figure 3.17 Main Results of the Empirical Analysis



Source: World Bank data.

The results imply that better spatial mobility through public transport is a necessary condition to increase women's LFP. However, only improving public transport is not sufficient on its own without addressing other structural, social, and family-related barriers. While a good public transport system improves women's participation in the labor force, it does not convert into actual employment, as that would depend on several supply- and demand-side factors such as demographic characteristics, education, and culture. They also include labor policy and labor market characteristics (such as the availability of jobs). Family-friendly workplace policies such as day-care centers at—or close to—places where people work or live or flexible work arrangements may also be beneficial. Lastly, a business culture that discriminates based on gender and/or segregates based on gender in the labor markets can also be a contributing factor.[49] Thus, along with improving the accessibility, availability, and safety of public transport, policy measures that address work environment, social, and household constraints may be needed.

[49] It may also arise from a business culture at firms that does not value contribution of female staff or favors male employees to avoid providing maternity-related benefits or risking the loss of female employees after they get married.

Photo credit: World Bank Photo Collection

Results in Amman

In Amman, safety appears to be the most important constraint to women's LFP. Improving the safety around public transport stops would significantly increase women's LFP. For instance, as illustrated in figure 3.18, in a scenario where safety was to be improved by 5 pp (on average, this corresponds to increasing from an average score of 66 to 71 percent), the LFP among women would increase by 4.7 pp, from 13.6 to 18.3 percent of working-age women. In practice, this corresponds to 59,000 additional women in the labor force in Amman. However, this does not translate to a significant improvement in employment probabilities and therefore, is a missed opportunity for both women and the entire economy. If all the additional women looking for work were to find employment, it could lead to a total additional income of over JD 356 million per year[50], equal to a 2.3 percent increase in Amman's GDP.

Figure 3.18 Impact of Increased Safety at Public Transport Stops on Women's LFP in Amman

Source: World Bank data.

Note: GDP = gross domestic product; JD = Jordanian Dollar.

However, while safety is the most important constraint among women overall, spatial accessibility appears to constrain women from lower-income households.[51] Among these women, spatial accessibility of jobs is the most important constraint to LFP. A 5-pp increase in the share of jobs accessible within 60 minutes using public transport and walking would increase the LFP of women from lower-income households by 6.1 pp.

Results in Beirut

In Beirut, on average, there is no evidence that improving either spatial mobility measures would significantly improve women's LFP. IThis is possibly due to the economic crisis that also gives rise to many other barriers to the labor market. However, there is evidence that spatial accessibility matters for women hailing from low-income households. Improving spatial mobility would not significantly improve women's LFP; however, among low-income women, an increase in the spatial accessibility of jobs through public transport by 5 pp would increase women's LFP by 3.7 pp.

[50] Assuming they are able to earn the same as the prevalent average yearly income in the city (JD 6,077.59) with an inflation rate of 1.7 percent between 2020 and 2022. Source: https://www.jordannews.jo/Section-109/News/Average-monthly-salary-of-Jordanian-workers-is-JD543-25687

[51] The lower-income group is defined for each city as the bottom-half of the income distribution within the household survey sample.

Results in Cairo

In Cairo, both accessibility and availability of public transport appear to play an important role in determining women's LFP.[52] and availability of public transport appear to play an important role in determining women's LFP. Improving accessibility or availability of public transport in Cairo would significantly increase women's LFP. For instance, as illustrated in figure 3.19, in a scenario where accessibility was to be improved by 5 pp (on average, this corresponds to an increase from 13 percent of jobs accessible in less than an hour using public transport to 18 percent), the LFP among women in Cairo would increase by 4.9 pp–8.9 pp, going from 19.1 percent to 23.9–27.9 percent of working-age women. In practice, this corresponds to 337,000–614,000 additional women in the labor force in Cairo. However, this does not translate to a significant improvement in employment probabilities and is a missed opportunity for both women and the entire economy. If all the additional women looking for work were to find employment, it would lead to a total additional income of EGP 12.4–22.7 billion per year[53], and a 0.8–1.6 percent increase in Cairo's GDP. Improving the availability by 5 pp would increase women's LFP by 0.7 (corresponding to 52,000 additional women in the labor market).

The effects of improved accessibility and availability would be even bigger for women hailing from low-income households. For instance, a 5-pp increase in accessibility would increase LFP among women in low-income households by 7.8–13.7 pp, and a 5-pp increase in availability would increase the LFP by 1 pp.

Figure 3.19 Impact of Increased Accessibility of Jobs through Public Transport on Women's LFP in Cairo

Source: World Bank data.

Note: EGP = Egyptian Pound; GDP = gross domestic product; LFP = labor force participation; pp = percentage points.

[52] Econometrically, only binding constraints could be assessed vis-à-vis labor market outcomes. This does not imply that non-binding constraints do not matter. For example, women could be braving or coping with unsafe conditions to access jobs in Cairo, which imposes a negative externality on them.

[53] Assuming they are able to earn the same as the prevalent average yearly income in the city (EGP 36,902.58) with an inflation rate of 10.5 percent between 2020 and 2022. Source: https://www.el-shai.com/equal-pay-day-in-egypt-gender-wage-gap-crisis/#:~:text=Women%20in%20Egypt%20earn%20significantly,gender%20wage%20gap%20of%2034.9%25

Section 6: Conclusion

The findings of this chapter demonstrate that a deficient public transport system plays an important role in inhibiting women from being economically productive members of society. These results underscore that there is no one-size-fits-all solution for women and stress the importance of assessing the most important constraints in each particular context. They also highlight the importance of intersectionality and the need to consider that all women, even within the same geographic context, might face different constraints. Finally, the results of this report indicate that merely focusing on transport is insufficient to improve women's access to economic empowerment. Other constraints, including gender norms, must be considered and interinstitutional collaboration encouraged. More precisely, the results of this chapter highlight many important messages.

There are important differences in the commuting patterns of workers across cities. In Amman and Beirut, private vehicles constitute the main transport mode for commuters, while in Cairo, public transport is the main mode. Among those who use public transport to commute for work, microbuses are the most used in Amman and Cairo, while buses/minibuses are the most used in Beirut.

There is a "latent desire" to work among non-working women, and commuting is perceived as a barrier to work. In all three cities, most non-working women indicate that commuting is a barrier to working. However, the reasons differ. Transport-related constraints dominate all three cities, but in Cairo, non–transport-related reasons play a larger role than in Amman or Beirut. In terms of transport-related constraints, women in Amman report the cost of commuting as the leading barrier to work, followed by the length of the trip. This flips in Cairo, where the length of trips is the most reported barrier, followed by the cost of commuting. In Beirut, the cost of commuting is the dominant constraint. In terms of non–transport-related barriers to working, family preferences, domestic duties, and child-rearing pose a barrier to working for women.

Photo credit: World Bank Photo Collection

Spatial analysis reveals that the three cities exhibit varying levels of spatial accessibility to jobs by public transport and walking. Moreover, the distribution of spatial access to jobs is also highly unequal. Access to jobs through public transport and walking is the most unequal in Amman, followed by Cairo and Beirut.

Concerns about the safety of the built environment at public transport stops also vary across cities. In Amman and Cairo, the most salient issues are the absence or quality of pavement and sidewalks, while in Beirut, the lack of lighting at public transit stops is the most prevalent problem. Both aspects affect the safety of public transit stops. Moreover, in Amman and Beirut, there is a lower presence of women at transit stations than in Cairo.

The empirical analysis confirms that a well-functioning public transport system is necessary for enhancing women's LFP, and the specific constraints differ by city and income levels. This statistical analysis confirms that women's economic empowerment, through their LFP, is constrained by the quality of public transport in terms of accessibility, availability, and safety. However, in each city, there are different constraints, which also differ by income levels. In Amman, safety appears to be the most important constraint that women face while spatial accessibility to jobs is more important for women hailing from low-income households. In Beirut, there is no evidence that improving either spatial mobility measure would significantly improve women's LFP. This is possibly due to the economic crisis that also gives rise to many other barriers to the labor market. However, there is evidence that spatial accessibility matters for women hailing from low-income households. In Cairo, both accessibility and availability of public transport appear to play a strong role in determining women's LFP, and their role is even larger for women hailing from low-income households.

However, while accessibility, availability, and safety appear to impact (to varying degrees) women's likelihood of looking for a job, they seem to have overall little effect on women's subsequent employment probability. This is consistent with the idea that while public transport plays a critical role in improving women's access to employment opportunities, making them more likely to actively look for jobs, complementary actions are needed to translate this active participation into gainful employment. This represents missed opportunities both for women and cities overall.

CHAPTER 4

Recommendations

Photo credit: World Bank Photo Collection

The evidence presented throughout this report demonstrates that a well-functioning public transport system is a necessary condition to improve women's economic participation in the labor market. Conversely, this also means that the costs of not improving public transport for women are high. Even in a scenario where all other constraints to women's access to employment were to be removed, the existing quality of public transport in urban MENA would not allow them to reach employment opportunities and would impede them from fully gaining employment.

The goal of this chapter is to provide concrete recommendations for improving women's mobility and economic participation. To do so, it will be divided into four sections. The first section highlights the concrete actions that are needed to improve the public transit system in all three cities (these are relevant to both women and men). Then, as the evidence in the report has highlighted that one size does not fit all women, the second section dwells on the most important and concrete actions that are needed in each specific city to improve women's mobility. The third section identifies the necessary improvements in the public transit system in each city that would result in the increased participation of women in the labor force. In some instances, certain actions may be recommended to address multiple issues. In such a case, the recommended action is repeated where needed in order to stress its importance. Finally, as this report also highlights that while improving public transport is a necessary condition to improve women's economic participation in the labor market, it is not a sufficient one, the fourth section presents the complementary actions that are needed in other sectors to transform a higher LFP among women into gainful employment.

What Concrete Actions Are Needed to Improve the Public Transit System in All Three Cities?

The report demonstrates that across all cities, there are low and unequal levels of accessibility of jobs through public transport and walking as well as low availability of public transport close to residential locations. This highlights the need for the following:

- **Actions that enhance the coverage of the public transit network.** These include actions such as improving the feeder network, prioritizing public transport through integrated corridor management or the creation of/improvements to mass transit (like BRTs or metro), increasing the frequency of service, rethinking the placement of existing public transit stops, and supporting a supply and demand analysis and a reroute based on demand.
- **Actions that enhance the walkability of the cities.** These include actions such as improving sidewalks and walkways and developing pedestrian-first policies.
- **Actions that improve existing land regulations** to foster dense, diverse, and well-designed urban development.

In all three cities, the cost of public transport poses a major barrier to women commuting to work. This emphasizes the need for concrete actions to address the affordability of the public transport system by:

- **Lowering the cost of using public transport or offering targeted fare concessions.** The targeting of fares could rely on a combination of socio-demographic factors (such as gender, age, and income level) to not jeopardize the financial sustainability of the public transport systems.
- **Developing other ways of reducing the total cost of travel.** This could be accomplished through integrated fares for trips requiring more than one means of transport, or day passes for those who need to travel many times during the day.

What Concrete and City-specific Actions Are Needed to Improve Women's Mobility?

Surveys of public transport users demonstrate that women face distinct challenges in each city when it comes to public transport usage. This section identifies various areas of improvement for public transport and the city (or cities) for which they constitute a major barrier to women. For each aspect, a set of concrete actions are recommended, which would enhance the experience of women who already use public transport. It would also potentially attract additional women to the public transport system, which is important as they still are an under-represented rider segment of the population. The main recommendations are as follows:

- **Actions that improve the comfort of trips.** These are particularly important in **Amman** and **Beirut.** The set of actions can be classified into two groups. It covers actions that can increase the overall comfort of riding environments. These could relate to the ease of use of public transport when traveling with children, heavy bags and belongings, or with reduced physical mobility, as well as addressing overcrowded vehicles to provide safer environments for women. It also covers actions such as creating or improving the waiting areas around stops, as well as providing bathroom facilities at select public transit stops to improve the comfort of areas surrounding public transit stops.[54]
- **Actions that decrease the total travel time by public transport.** These are particularly important in **Amman** and **Cairo.** Decreasing both total travel time and waiting time at bus stops are important for women in these two cities. Actions that increase the network coverage, frequency of service, and connectivity between means of transport—as presented in the previous section—can decrease the travel time and the waiting time between means of transport. Other actions cover enhancing certainty regarding the arrival and departure timings of public transit as well as strengthening confidence in the locations of public transit stops.
- **Actions that increase the affordability of public transport.** Even though this type of action could benefit women in the three cities, affordability is one of the most important constraints to women already using public transport in **Beirut** and **Cairo** (see the previous section for examples of concrete actions targeting affordability).
- **Actions that improve road safety.** This is particularly important in **Beirut.** These actions relate to many different aspects, including the quality of roads and infrastructure, quality and maintenance of public transport vehicles, and driving behaviors of public transport drivers and other drivers in general.
- **Actions that improve pavement and sidewalks.** These are particularly important in **Amman** and **Cairo.** These types of actions should address both the presence and the quality of walking pathways and pavements to transit stops.
- **Actions to improve the lighting at transit stops.** These are particularly important in **Beirut,** where the majority of audited public transit stops did not have adequate levels of lighting at night.

[54] Note that for gender-informed restrooms at transit stops, there is a need to have twice as many stalls for women than in men's restrooms.

What Concrete Actions Are Needed to Improve Women's Economic Participation through Better Public Transport?

In analyzing how several aspects—the *accessibility, availability,* and *safety*—of the public transport systems affect women's LFP, the report demonstrates that a well-functioning public transport system is necessary for enhancing women's economic empowerment. However, the specific constraints vary by city.

In **Amman**, safety appears to be the most important constraint to overall women's LFP, while spatial accessibility is the biggest barrier for women from lower-income households. Improving the safety around public transit stops would significantly increase women's LFP, which would lead to significant gains in GDP if all the additional women on the labor market were to find employment. Providing a safe environment for women to access public transport includes actions such as well-lit and visible public transport stops and better walkways and bicycle paths. It also requires a code of conduct for public transport drivers, and an easy mechanism to report gender-based violence as well as receive a swift response to these reports. For instance, Jordan adopted a code of conduct for public transport in January 2019 and has developed a mobile phone application for the code of conduct called "Muwasalati" that enables bus service users to report on misconduct in public transport systems. This is an important step towards improving safety and enhancing the perception of safety in the public transport systems.

In **Beirut**, there is evidence that spatial accessibility matters for women hailing from low-income households. In that sense, actions that would improve the accessibility to jobs in economically poorer areas would be beneficial (see the first section of the recommendations for examples of specific actions).

In **Cairo**, both accessibility and availability of public transport appear to play an important role in determining women's LFP. The effects would be even more significant for women hailing from low-income households. Hence, all types of actions that would result in an increase in the availability or accessibility of the public transport system (see the first section of the recommendations for examples of specific actions) would lead to a significant increase in women's LFP and important potential gains in GDP if all of the additional women were to find employment.

Across all cities, the results of the empirical analysis underscore the importance of looking at mobility and gender through an intersectional lens. Indeed, there are specific benefits to improving the accessibility and/or

Complementary Recommendations in Other Sectors

Along with improving the affordability, accessibility, availability, and safety of public transport, **policy measures that address work environment, social, and household constraints, as well as gender norms** and expectations about gender roles are needed to transform higher LFP among women into gainful employment.

In terms of **gender norms and cultural barriers** in general, actions that would change expectations of women shouldering the household's responsibilities and the division of unpaid care and domestic work could increase women's opportunities to find paid work outside of the household. Other cultural barriers include the low social acceptance of women in the workforce and challenges related to mixed work spaces (Arab Barometer 2023). Raising awareness and conveying messages that can contribute to changing attitudes and behaviors toward the role of women within society and their use of public transport is one way to help address cultural barriers.

In terms of actions related to the **labor markets and work environments,** there is a need to provide flexible work arrangements and support jobs that would allow women to balance their personal, family, and work lives. Moreover, a business culture that discriminates based on gender and prioritizes men over women in work environments can be a cause for low economic participation among women.

The **lack of childcare options** is also often cited as a significant barrier to workplace entry by women in MENA (Arab Barometer 2023). Therefore, family-friendly workplace policies such as high-quality day-care centers at–or close to—places where people work or live may be beneficial and could have a significant impact on women's ability to access employment.

Overall, this evidence supports the **need for intersectoral and interinstitutional collaboration** to address the multifaceted challenges and barriers faced by women on their path toward greater economic empowerment. In this context, multisectoral committees and advisory groups can play a pivotal role in addressing not only transport-related barriers but also other obstacles.

Bibliography

Photo credit: Adobe Stock

Bibliography

Ajibola, B. O., Komolafe, S. E., and Akangbe, J. A. 2015. "Constraints Faced by Women Vegetable Farmers in Kwara State, Nigeria and Its Agricultural Practices." *Jordan Journal of Agricultural Sciences* 11 (4): 995–1005.

Alam, M. M., Bagnoli, L., and Kerzhner, T. 2023. "The ABC of the Role That Public Transport Plays in Women's Economic Empowerment." Policy Research Working Paper 10404, World Bank, Washington, DC. http://hdl.handle.net/10986/39682.

Alam, M. M., Cropper, M., Herrera Dappe, M., and Suri, P. 2021. "Closing the Gap: Gender, Transport, and Employment in Mumbai." Policy Research Working Paper 9569, World Bank, Washington, DC. https://doi.org/10.1596/1813-9450-9569.

Alam, M. M., Kurshitashvili, N., Dominguez Gonzalez, K., Gonzalez Carvajal, K., and Baruah, B. 2022. *Is a Mile for One a Mile for All?: A Knowledge Synthesis Report on Gender and Mobility (2000–20).* Washington, DC: World Bank. https://doi.org/10.1596/37354.

Alhawarin, I., Berri, N., Selwaness, I., and Sieverding, M. 2020. "The Care Economy in Jordan: Towards Recognizing, Reducing and Redistributing Unpaid Care Work." Policy Brief No. 3, UN Women.

Aloul, S., Naffa, R., and Mansour, M. 2018. *Gender in Public Transportation: A Perspective of Women Users of Public Transportation.* SADAQA, Friedrich-Ebert-Stiftung.

Arab Barometer. 2023. *MENA Women in the Workforce 2022—Wave VII.* (2022 Arab Barometer Insight). https://www.arabbarometer.org/2023/02/mena-women-in-the-workforce/.

Barzin, S., Avner, P., Rentschler, J., and O'Clery, N. 2022. "Where Are All the Jobs ?: A Machine Learning Approach for High Resolution Urban Employment Prediction in Developing Countries." Policy Research Working Paper 9979, World Bank, Washington, DC. https://doi.org/10.1596/1813-9450-9979.

Bastiaanssen, J., Johnson, D., and Lucas, K. 2020. "Does Transport Help People to Gain Employment? A Systematic Review and Meta-analysis of the Empirical Evidence." *Transport Reviews* 40 (5): 607–28. https://doi.org/10.1080/01441647.2020.1747569.

Borker, G. 2022. "Constraints to Women's Use of Public Transport in Developing Countries, Part I: High Costs, Limited Access, and Lack of Comfort." Global Indicator Brief No. 9, World Bank, Washington, DC. http://hdl.handle.net/10986/37821.

Cook, N. and Butz, D. 2018. "Gendered Mobilities in the Making: Moving from a Pedestrian to Vehicular Mobility Landscape in Shimshal, Pakistan." *Social & Cultural Geography* 19 (5): 606–25. https://doi.org/10.1080/14649365.2017.1294702.

Dobbs, L. 2007. "Stuck in the Slow Lane: Reconceptualizing the Links between Gender, Transport and Employment." *Gender, Work & Organization* 14 (2): 85–108. https://doi.org/10.1111/j.1468-0432.2007.00334.x.

Dominguez Gonzalez, K., Machado, A. L., Bianchi Alves, B., Raffo, V., Guerrero, S., and Portabales, I. *2020. Why Does She Move? A Study of Women's Mobility in Latin American Cities.* Washington, DC: World Bank.

Elias, W., Benjamin, J., and Shiftan, Y. 2015. "Gender Differences in Activity and Travel Behavior in the Arab World." *Transport Policy* 44: 19–27. https://doi.org/10.1016/j.tranpol.2015.07.001.

Gatti, R., Morgandi, M., Grun, R., Brodmann, S., Angel-Urdinola, D., Moreno, J. M., Marotta, D., Schiffbauer, M., and Mata Lorenzo, E. 2013. *Jobs for Shared Prosperity: Time for Action in the Middle East and North Africa.* Washington, DC: World Bank. http://hdl.handle.net/10986/13284.

International Labor Organization. 2017. *World Employment and Social Outlook: Trends for Women 2017.* ILO. https://www.ilo.org/global/research/global-reports/weso/trends-for-women2017/lang--en/index.htm.

Minster, C., Ait Bihi Ouali, L., DiDomenico, L., and Alam, M. M. 2022. *Gendered Economic Impacts of Mobility in the MENA Region: A Literature Review.* Washington, DC: World Bank.

Ostry, J. D., Alvarez, J. A., Espinoza, R. A., and Papageorgiou, C. 2018. *Economic Gains from Gender Inclusion: New Mechanisms, New Evidence.* IMF Staff Discussion Note SDN/18/06. https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2018/10/09/Economic-Gains-From-Gender-Inclusion-New-Mechanisms-New-Evidence-45543.

Peralta Quiros, T., Kerzhner, T., and Avner, P. 2019. "Exploring Accessibility to Employment Opportunities in African Cities: A First Benchmark." Policy Research Working Paper 8971, World Bank, Washington, DC. https://papers.ssrn.com/abstract=3434753.

Redaelli, S., Lnu, A., Buitrago Hernandez, S. P., and Ismail, T. 2023. *State of the Mashreq Women Flagship: Who Cares?: Care Work and Women's Labor Market Outcomes in Iraq, Jordan, and Lebanon (English).* Washington, DC: World Bank Group.

Seedhouse, A., Johnson, R., and Newbery, R. 2016. "Potholes and Pitfalls: The Impact of Rural Transport on Female Entrepreneurs in Nigeria." *Journal of Transport Geography* 54: 140–47. https://doi.org/10.1016/j.jtrangeo.2016.04.013.

Selwaness, I. and Helmy, I. 2020. "The Care Economy in Egypt: The Road towards Recognizing, Reducing and Redistributing Unpaid Care Work." Policy Brief No. 2, UN Women.

United Nations. 2019. *Why Addressing Women's Income and Time Poverty Matters for Sustainable Development.* World Survey on the Role of Women in Development, UN Women.

World Bank. 2022a. *Cairo Mobility Assessment and Public Transport Improvement Study.* Washington, DC: World Bank Group.

World Bank. 2022b. *Jordan Public Transport Diagnostic and Recommendations.* Washington, DC: World Bank Group.

World Bank. Forthcoming. *Lebanon Public Transport Diagnostic and Recommendations.* Washington, DC: World Bank Group.

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP