

MOBILITY AND TRANSPORT CONNECTIVITY SERIES

# IS A MILE FOR ONE A MILE FOR ALL?

A Knowledge Synthesis Report on Gender and Mobility (2000–20)

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# Foreword

Women in low-, middle- and high-income countries face many mobility challenges. Transport provides many benefits that should be enjoyed equally by all users regardless of their gender and circumstance in life. But this requires a paradigm shift in transport planning. By enabling women and men, girls and boys, transgender, and non-binary persons from all walks of life to fulfill their mobility needs, transport planning can become an important instrument for promoting economic, political, and social equity.

This review of scientific literature on gender and mobility published between 2000 and 2020 synthesizes the evidence base on how availability, affordability and physical accessibility of transport options and concerns about safety and security shape mobility choices. It finds that these choices are simultaneously mediated by other factors such as personal attributes (age, income, caregiving status, for example) and social and cultural acceptability concerns. It reveals continuities, contradictions, and disruptions in how gender identity influences mobility choices and constraints.

This work demonstrates that “one-size-fits-all-women”-type transport policies designed to benefit women may leave many of them behind. Adopting an intersectional gender lens that considers factors such as age, disability and sexual orientation/identity is important. The findings also suggest that even though the formal realm of law and policy can and does play a significant role in optimizing human mobility and agency, policy and legislation cannot be the sole vehicle for gender equality. Gender equity in transport 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 and society at large may be as crucial in advancing gender equality as policy reforms and state, civil society and corporate actions that protect the interests of women and other disadvantaged groups and facilitates their agency.

We hope that the state-of-the-art knowledge synthesized in this report will provide the foundational base on which future research and policy on gender and mobility will be advanced.

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# 1. INTRODUCTION





As the saying goes: slow or fast, a mile is a mile; and yet, a mile can be traversed in 45 seconds or an hour depending on one's mode of travel. Walking a mile may present an insurmountable physical challenge for an elderly person with limited mobility, or no challenge whatsoever for an able-bodied young woman or man. Let's consider a 35-year-old man and a 35-year-old woman driving to the same workplace. If the woman must drop off a five-year-old at school and a two-year-old at a daycare setting en route to work, would they make it to their destination at the same time? Or would the mother have to leave home earlier to make it to work at the same time as the father who is not expected to drop off his kids? Is a mile still a mile if one's gender, age, caregiving status, physical ability, and income play a critical role in the mode and manner one can traverse it? Owing to decades of research and documentation from various disciplinary and interdisciplinary perspectives, it is now well understood that mobility is influenced significantly by biological, social, and cultural factors. In particular, the fact that mobility is not gender neutral has been supported by a large body of systematic empirical evidence generated from around the world in both developed and developing countries.

One's gender identity as a woman, man, or non-binary person alongside the other intersecting identities of age, education, class, race, ethnicity, sexuality, ability and caregiving status as well as geographic location (in a rural, urban, suburban, or periurban community, for example) may significantly affect one's ability to access and afford reliable and safe public or private transportation. Being able to move about freely and safely is a fundamental human right and necessity. Yet, the ability to exercise this right is influenced strongly by social and economic standing, geographic location, perceptions of safety and reliability, and one's sociocultural norms within the family and community.

Much is already known about the ways in which mobility may pose barriers and opportunities for individual self-actualization, and social and economic empowerment. We know, for example, that women are globally disproportionately affected by mobility barriers related to availability, affordability, accessibility, social acceptability, and safety and security of public and private transport. Women's mobility choices, their ability to access education, jobs, health, social services, and recreation and leisure are influenced by the characteristics of transport infrastructure and services and familial and societal gender norms. We also know that women do not constitute a homogenous social group.

Women's and girls' abilities to make decisions about their lives, including their mobility options and choices, may differ dramatically depending on their socioeconomic standing, age, education, physical ability, ethnicity, and geographic location. Analyzing mobility issues from an intersectional lens may reveal that some groups of women may enjoy more freedom and choice in making decisions about transport than other groups, even within the same cultural or national context. A young university-educated urban professional woman may enjoy many more public and private transport options than a less well-educated lower-income man in the same country, but unlike her, he is unlikely to contend with sexual harassment on public transit. An elderly woman may also experience less sexual harassment on public transit than a young woman, but she may be constrained in other ways related to income or physical ability. Intersectional analysis of mobility allows us to understand not just how the experiences of people are shaped by their multiple intersecting social identities, but also how the same individual may be empowered or disempowered in different ways in making transport decisions. Box 1.1 discusses the emerging trend of women as change agents in the transport sector.

## Box 1.1. Women as “Change Agents”

Alongside the growing focus on decarbonizing the transport sector through promoting a modal shift towards public transport and active mobility, a growing trend in the literature describes women as “change agents” in encouraging sustainable travel behavior (see, for example, Kronsell Rosqvist, and Hiselius 2016; Miralles-Guasche et al. 2016; Polk 2003). Proponents of this approach emphasize that since women as a constituency generally make more sustainable mobility decisions (by walking more, driving less, and taking public transit more often) they should become more active as change agents to challenge dominant masculine norms. Not only does such an approach homogenize and oversimplify the diverse mobility needs and behaviors of different groups of women, but it also places additional responsibility on women to change people’s behaviors and to shape sustainability outcomes. Policy responses that valorize women as models of good travel behavior tend to reinforce rather than challenge existing social inequalities and hierarchies. Assumptions that women make more sustainable mobility choices simply by being women ignore the fact that women often make these choices because of historical and current socioeconomic inequalities (of income and resources, for example) and not because they are biologically female or because they have higher moral standards. Women and girls should be able to choose to use non-motorized and other sustainable modes of transport, not resort to them due to a lack of choice.

An extensive scientific peer-reviewed and practitioner literature on the role played by gender in enabling and preventing people from accessing transport solutions has been evolving for decades. Hence, there is a distinct need today for a systematic review, assessment and synthesis of recent scientific evidence generated on this topic within the past 20 years (2000–20). One major reason for such a review is that much of the existing literature on gender and transport tends to be highly variable in terms of the scientific rigor of its methodology and analysis. Reports based on casual observations, assumptions and anecdotal evidence are often published, especially in blogs, op-eds, and other non-peer-reviewed journalistic and public forums. Although some of these forums draw on scientific evidence, many do not, and the proliferation of public media sources in recent years has meant that a lot of data and information that do not meet standards for publication in peer-reviewed

scientific settings may end up masquerading as, or being misconstrued as, systematic evidence-based research on which policy needs may be articulated and policy decisions may be made. Although not all research published in peer-reviewed journals meets the uniformly high standards of methodological and analytical rigor, a systematic review and knowledge synthesis based solely on scientific literature published in peer-reviewed settings promises to meet the highest evidence-based standard possible for understanding mobility issues and identifying research and policy needs and priorities. Another justification is that recent and emerging research (conducted within the past 10 to 15 years) in various global contexts has revealed additional barriers and challenges faced by, among others, those with non-binary gender identities, sexual minorities such as transgender people, persons with disabilities, low-income and precariously employed workers, and retirees and seniors.

Such findings are particularly prevalent in studies that engage with gender not just in binary terms of being a woman or man, but rather as an identity that intersects with other biological and social identities such as age, sexuality, race, ethnicity, education, and class. A systematic exploration and analysis of this recent and emerging literature may bring to light issues that have not been documented methodically, and for which limited policy responses have been identified or formulated.

Finally, recent years have witnessed the emergence of new modes of transport (ridesharing, ride-hailing, demand-responsive public transit, for example) and new technological advancements associated with transport (e-mobility and artificial intelligence, for example), that may have differential impacts on individuals and communities depending on: gender, race, class, ability and geography. Additionally, existing systems of public and private transport are being adapted and modified around the world, often in response to national infrastructure needs as well as economic or environmental priorities. Cities in both the developing and developed regions have acquired new subway systems (Noida, India; Jinan and Wenzhou, China; Taoyuan, Taiwan, China; Riyadh, Saudi Arabia, for example) or tramlines (Newcastle, Australia; Utrecht, the Netherlands; Casablanca, Morocco; for example), some have expanded subway systems to new locations (Toronto, Canada) or transitioned from a public bus system to a metro (Belfast, Northern Ireland). New forms of indigenous or informal transportation, last-mile solutions, and demand-responsive public and private mobility services have also proliferated around the world, often enabled by access to the internet and mobile phone technologies. Such innovations and advancements have not been studied and evaluated systematically for their positive and negative effects on women and other groups known to be disadvantaged by transport

services and systems. Taken together, these factors motivated this literature review and knowledge synthesis project of peer-reviewed scientific literature on gender and mobility published within the past 20 years (2000–20).

The broad objectives of this study were to identify the following: (1) mobility differences globally between women and men (and by non-binary individuals, more broadly, where possible). This objective includes identifying and explaining heterogeneity in mobility needs and patterns in developed and developing countries (and intersectionality across gender, age, geographic location, ethnicity, disability, class and income, sexual identity, where possible), and documenting how these dimensions influence mobility choices and needs; (2) outcomes for women and men (and intersectionality across other gender identity, socioeconomic and demographic criteria, where possible) of mobility barriers and opportunities to access education, employment, health, social services, and leisure and recreation services. This objective includes identifying the differing effects and outcomes for women and men (and intersectionality across other gender identity, socioeconomic and demographic criteria, where possible) of transport investments and innovations; (3) policy lessons and future research needs for optimizing access to transport for women and other transport-disadvantaged groups.



## 2. METHODOLOGY AND CONCEPTUAL FRAMEWORK

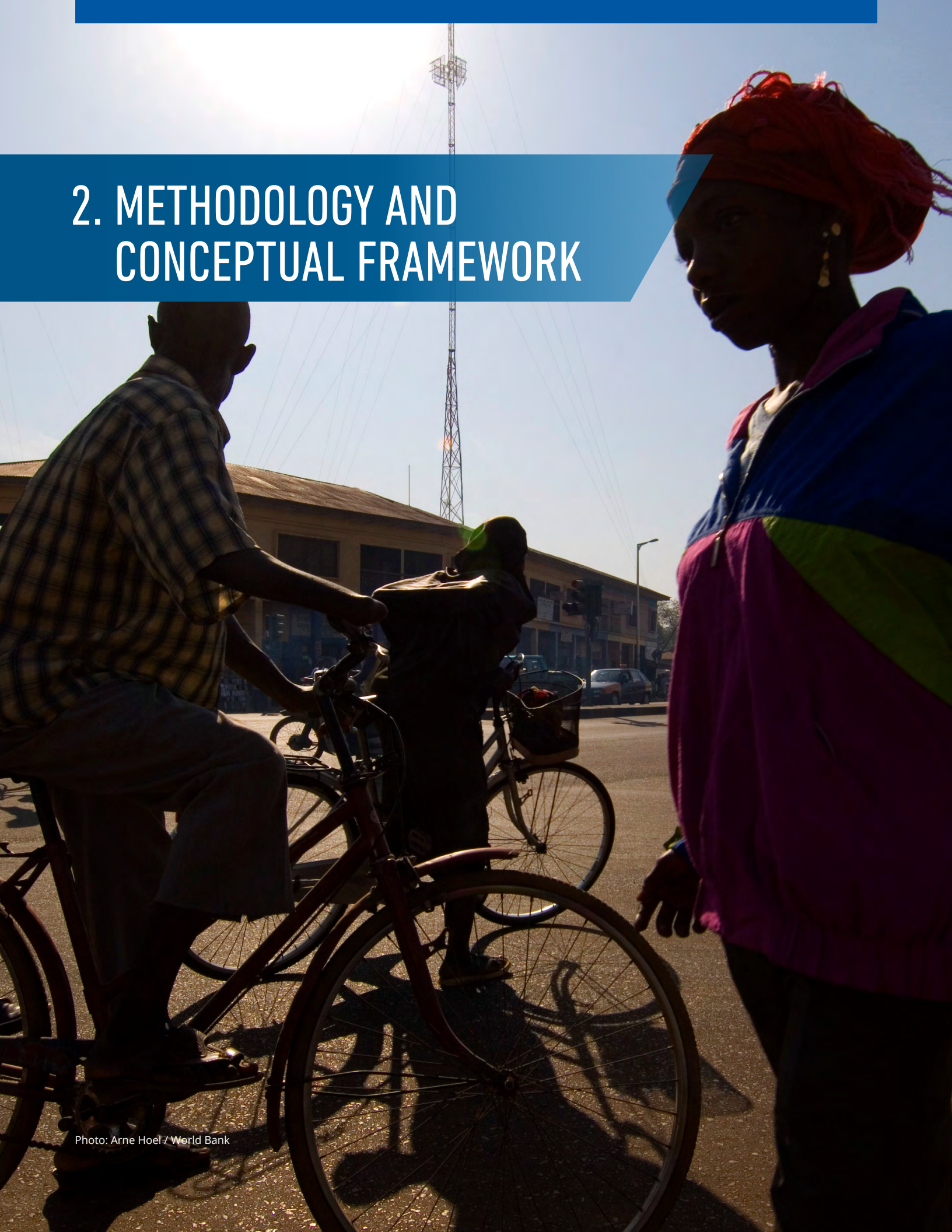


Photo: Arne Hoel / World Bank

Our systematic review and knowledge synthesis on gender and transport differs from a traditional literature review in that it relies on a rigorous and explicit methodology for literature selection and for data analysis. The scientific literature on methods for

synthesizing qualitative and quantitative evidence (see, for example, Dixon-Woods et al. 2005; Lynch et al. 2018) identify these criteria as essential for conducting a study such as this.

## 2.1. Literature Selection

The literature selection for this study was limited to English-language peer-reviewed journal articles and peer-reviewed working papers. Using selected keywords and specified inclusion criteria, we conducted a systematic search of standard academic databases to identify relevant literature published between January 2000 and December 2020. We excluded editorials, book reviews, books, and non-refereed literature.

We carried out searches on four databases, as follows:

1. **EBSCOhost:** an aggregator library database that collates content from 375 full-text publisher databases across most academic disciplines.
2. **JSTOR:** provides access to more than 12 million academic journal articles, books, and primary sources in 75 disciplines.
3. **Transportation Research International Documentation (TRID):** a specialized database with access to over 1.25 million records of transportation research worldwide.
4. **Google Scholar:** a freely accessible web search engine that indexes the full text or metadata of

scholarly literature across an array of publishing formats and disciplines.

Each database offers an advanced search functionality, which we used to conduct the search. We first tested different combinations of keywords and Boolean operators (AND, OR) corresponding to the study objectives, as follows: (1) Transport AND gender; (2) Transport AND women; (3) Mobility AND women; (4) Transport AND solutions AND women; and (5) Mobility AND transport AND gender OR women OR female.

The first four combinations rendered many articles from areas unrelated to our scope of interest. The fifth combination produced the most relevant findings and was therefore retained across the four databases for the period 2000–20. Using the fifth combination of keywords and specified inclusion criteria, we searched the listed databases to identify publications dated between January 2000 and December 2020. Articles found on more than one database were only included once. If the same data and study were discovered as both a peer-reviewed working paper and a journal article, we included only the latter. An initial list of **2,506** articles (titles and abstracts) was compiled. Abstracts of these articles were reviewed against inclusion criteria (see below), and the list was reduced to **543** articles. A full document screening of

these 543 articles was performed against standards of evidence (SoE) criteria articulated in *Codebook for Standards of Evidence for Empirical Research* (Heck and Minner 2009), and another **187** articles were rejected to arrive at the final list of **356** publications included for review in this study. The SoE and their application result in a careful review of the claims of individual studies based on six categories: adequate documentation, internal validity, analytic precision, generalizability/external validity determination, overall fit and warrants for claims.

### Inclusion criteria<sup>1</sup>

Peer-reviewed articles

- a. Addresses mobility AND women/female/gender AND transport
- b. Land-based transport
- c. Period: 2000–20
- d. Global (developed and developing economies)
- e. English only

## 2.2. Data Analysis

The following details of each of the 356 articles were recorded uniformly in an Excel file: title, journal reference, year research was conducted (if available), keywords, country, location (rural, urban, periurban, suburban),<sup>2</sup> methods (qualitative, quantitative, mixed methods), research questions or objectives, abstract, and additional key findings not included in abstract. The Excel file included in this study was treated as the “data” for this study. This was based on the aforementioned literature on conducting knowledge synthesis of quantitative and qualitative evidence

(Dixon-Woods et al. 2005). The keywords identified allowed us to cross-validate findings and explanations between the articles included in this study.

The Excel file is a companion document to this report and available publicly. Iteratively searching the Excel document using keywords enabled us both to confirm established knowledge about gender and transport and to identify new and emerging issues and trends. Since the objective of this study was not just to verify or confirm well-known facts about women’s

1 As a result, the following were excluded: (1) Format: books, book reviews, unpublished conference papers, most reports; (2) Topics that were not relevant: epidemiology, road accidents and injuries, vehicle technology, telecommuting, for example; (3) Modes of transport (air, sea, inland waterways); (4) Language: Non-English.

2 It is important to make a distinction between the terms “suburban” and “periurban.” Suburban communities typically refer to planned settlements on the outskirts of (or within the metropolitan limits) of large cities in developed countries. Suburban communities are typically home to white-collar professionals who work in cities but live in suburbs, taking advantage of lower home prices and the availability of larger homes suitable for growing families. In the decades after the end of World War II, suburbs grew in many developed settings. Today, the growth of suburban communities is also increasingly common in developing countries. Suburbs in upper-middle-income and lower-middle-income countries are also typically home to middle-class professionals and their families. Periurban communities or periurbanization refers to urbanization at the edges of rural areas. Periurbanization is mostly occurring in emerging economies such as China, India, Mexico and Indonesia. Periurban communities are typically home to rural migrants who want to live in or commute to city-like areas within traveling distance of their rural farmlands. Over time, periurban communities may also become home bases for industries such as automobile manufacturing, information technology, and business process outsourcing, and to the white-collar professionals that work in such industries.



and men's travel patterns and preferences, but also to document and understand emerging gender issues and needs in transportation, we also used the keywords generated from the articles to identify topics and issues that were less prevalent or barely documented in the literature. For example, of 356 publications, only four explored mobility issues faced by Indigenous peoples and only two focused on mobility challenges faced by sexual minorities. Research for two of the articles on Indigenous peoples' mobility was conducted in Australia; for one of the articles research was conducted in Brazil, while the remaining article focused on the grey literature on the topic in lower- and middle-income countries. The only two articles about sexual minorities in our universe of articles focused on the North American context. We recorded such observations from the data as knowledge gaps and important topics for future research.

Figures 2.1a to 2.1e present various observations of the articles reviewed in this report using World Bank classification of countries where needed.<sup>3</sup> Notably: (1) the majority of the articles relate to urban areas, with limited attention given to suburban and periurban areas (see figure 2.1a); (2) most of the literature is focused on high-income countries and there is an especially limited evidence base for low-income countries (see figure 2.1b); (3) in terms of regional composition, limited attention has been paid to gender differences in mobility in the Middle East and North Africa (see figure 2.1c); both qualitative and quantitative methods have been extensively used in the literature (see figure 2.1d); and there has been a growing

level of scholarship on the topic over time (see figure 2.1e). Box 2.1 discusses the limitations of the study.

#### Box 2.1. Limitations of the Study

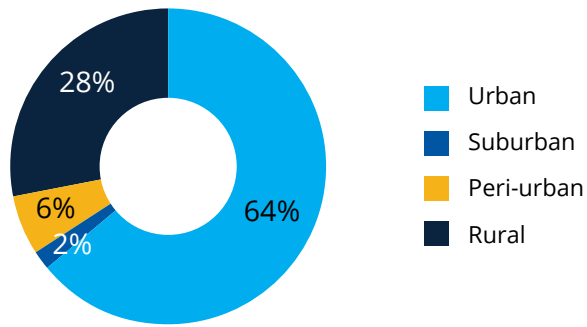
The major limitation of this study is that our search was limited to English-language publications. Our exclusion of unpublished research reports, doctoral dissertations and other graduate theses may also have meant that we omitted some important and relevant information. Nevertheless, since peer-reviewed articles and working papers (from established working paper series) tend to enjoy wider circulation than unpublished reports and graduate theses, we are confident that the findings from this review capture the status of current scholarship on gender and transport.

Another limitation of this study is that it reflects the existing biases in published articles. Peer-reviewed articles focus on statistically significant results and usually do not report non-results.

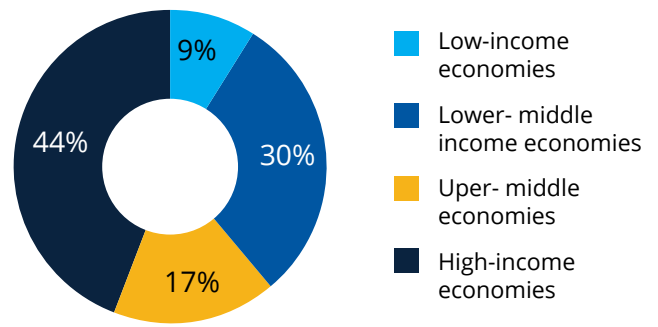
Interestingly, despite extensive journalistic coverage on topics such as mobility as a service and the use of artificial intelligence in transport, we found very little peer-reviewed research on the gender equality and social justice implications of the growing use of such services and technologies. We identify them in this report as knowledge gaps and important areas for future research.

<sup>3</sup> The World Bank Group classification of region and income groups is used. The income classification is as follows: high-income economies (with annual per capita gross national income (GNI) of US\$12,695 or more); upper-middle-income economies (with annual per capita GNI of US\$4,096 to US\$12,695); lower-middle-income economies (with annual per capita GNI of US\$1,046 to US\$4,095); and low-income economies (US\$1,045 or less).

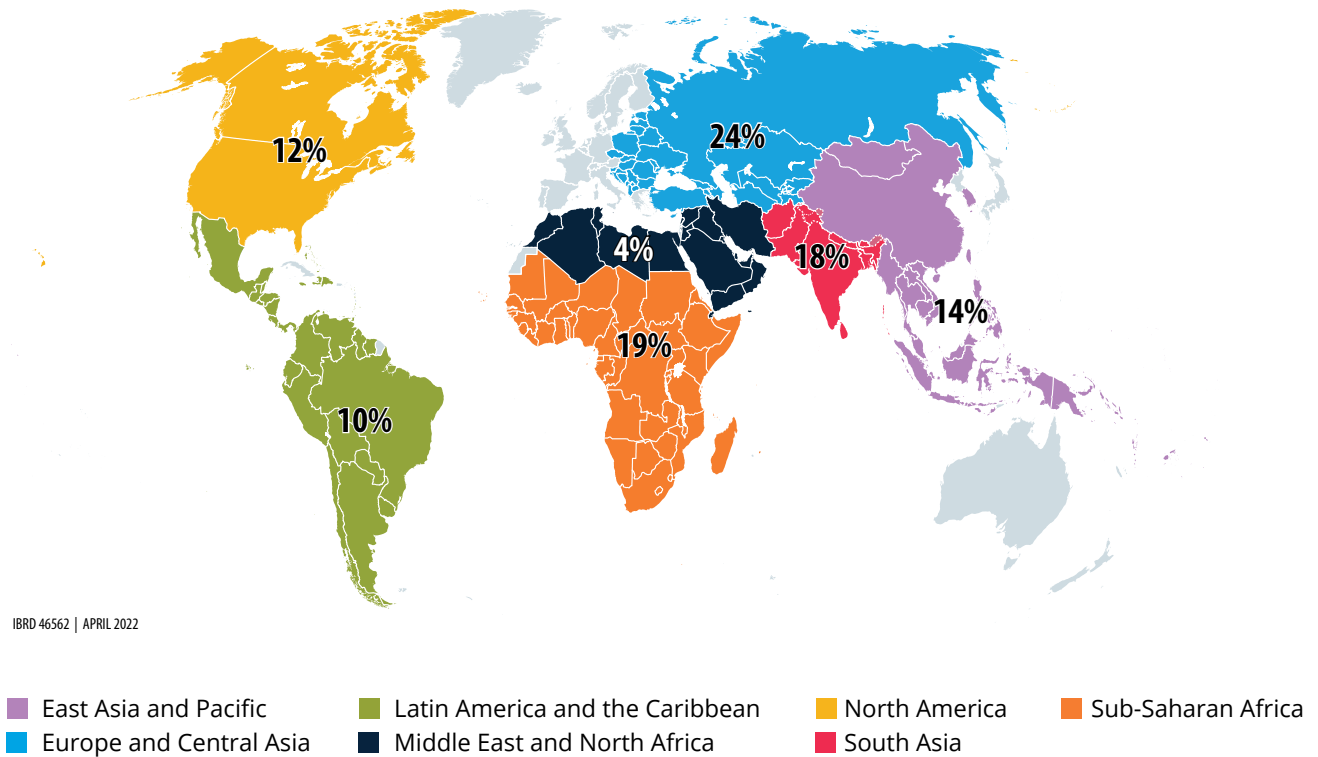
**Figure 2.1a.** Share of Articles by Location

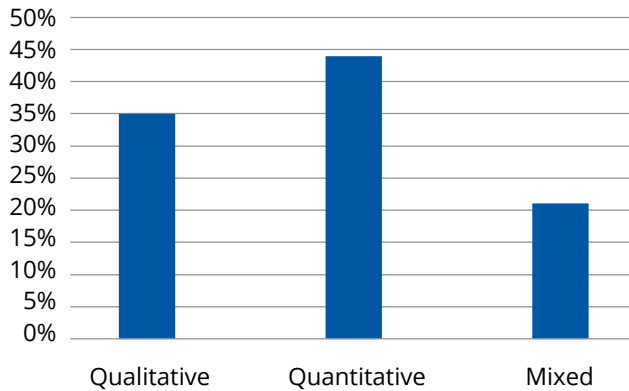
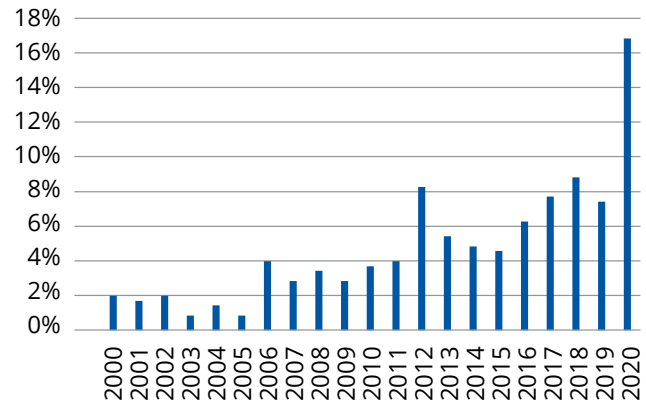


**Figure 2.1b.** Share of Articles by Income Group



**Figure 2.1c.** Share of Articles by Region



**Figure 2.1d.** Share of Articles by Qualitative and Quantitative Methods**Figure 2.1e.** Share of Articles by Level of Scholarship

Source: Original figures produced for this publication.

## 2.3. Conceptual Framework

The study adopts an ecological framework to conceptualize how transportation systems interact with macro, meso and micro level factors in explaining women's and men's mobility needs, barriers and choices which in turn influence their access to economic opportunities and basic services (education and health) (see figure 2.2). Several environmental factors shape women's and men's desires and need to access opportunities. They can be divided into macro, meso and micro level characteristics:

1. The **macro**, or national, enabling environment (country level) encompasses country context (income level and region), and the normative, policy, and legal context that can impose constraints
2. The **meso**, or local, enabling environment (community level) encompasses institutions<sup>4</sup> and local or community-level factors. It includes the community context (urban/rural, local conditions) that can impose constraints or facilitate women's access to economic opportunities and basic services.
3. The **micro**, or individual-level factors encompass personal characteristics (such as gender, age, race/ethnicity, personal income, disability, education, family structure, and sexuality) and power

on or facilitate women's access to economic opportunities and basic services.

4 Institutions include workplaces, cooperatives, cross-border trade organizations, occupational networks, and business associations that have formal rules and regulations as well as informal culture and norms that influence women's positioning and role within these organizations.



and agency (capabilities, aspirations, self-confidence, and decision-making).

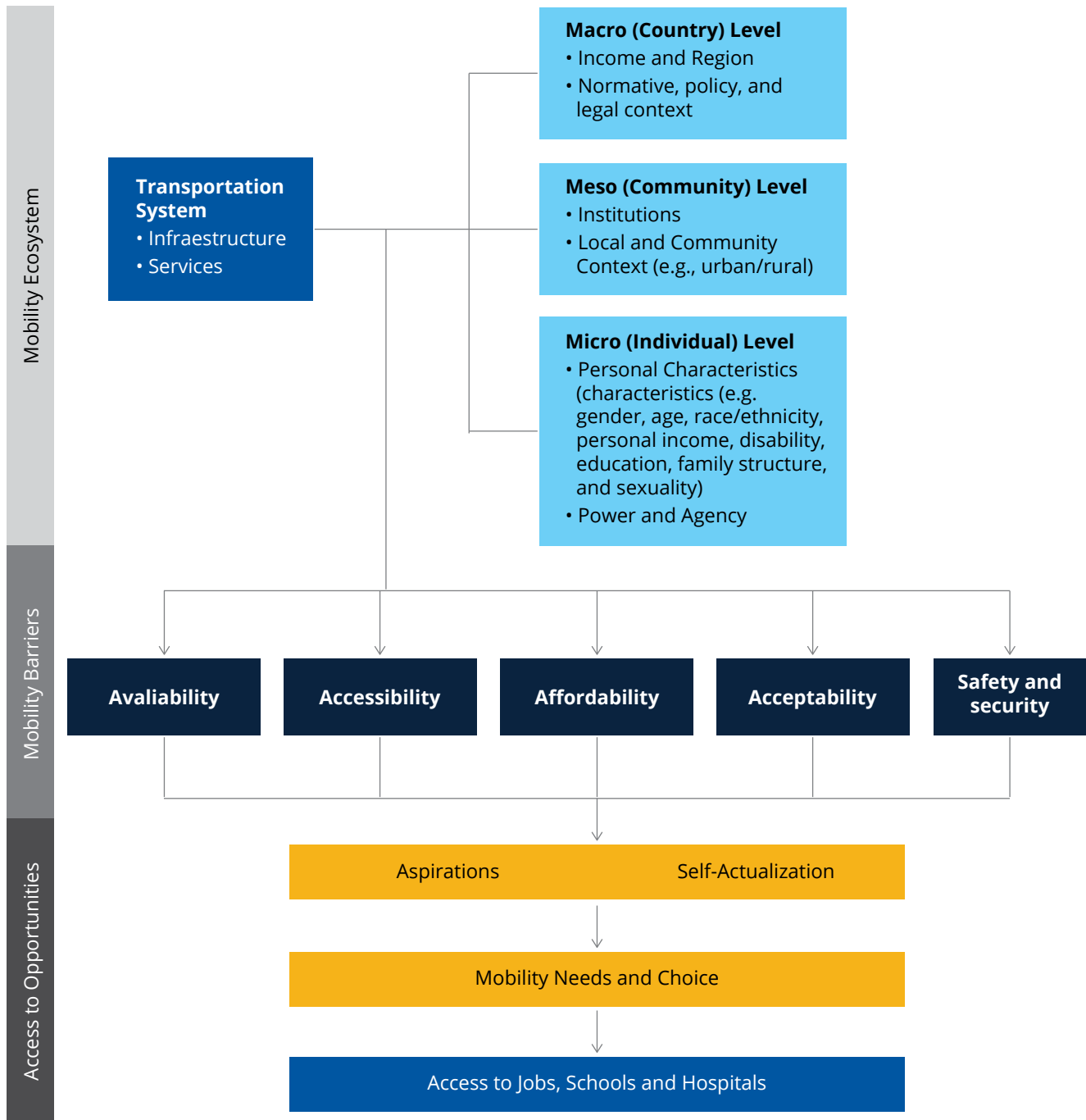
The transportation system (infrastructure design and operation, and transport services) interacts with environmental factors to determine women's and men's usage of transport systems and determine their economic and social aspirations.

The mobility barriers that women and men face, based on their circumstance, needs and choices determine how women and men experience the transportation system. These barriers broadly fall into five categories regardless of the mode of transport or nature of the trip:<sup>5</sup>

1. **Availability:** the connectivity and coverage of the transport system. In rural areas the availability of transport infrastructure (for example, roads and walkways) may be more salient than the availability of transport services, while in urban areas transport services (for example, public transportation, semi formal transportation and so on) may be more salient. For people who own vehicles, availability of public transport may be less salient than people who don't own vehicles and rely on public transport to move around.
2. **Affordability:** travel costs and the extent to which people can afford to travel when and where they want to. It includes both the direct (financial) cost, as well as the opportunity cost of potential consumption that is foregone in exchange for mandatory trips. The same travel cost may be affordable for some people but not others.
3. **(Physical) Accessibility:** the ease with which an individual can use the transport system. Able-bodied lone travelers, parents traveling with young children, pregnant women, the elderly and the young, people with special needs may view the accessibility of the same transportation system differently.
4. **(Social and Cultural) Acceptability:** the quality of transportation infrastructure and user comfort and reliability. It also includes differing judgments, attitudes and behavioral reactions to women and men traveling and using various modes of transport.
5. **Safety and Security:** safety from crime, freedom from harassment, and perception of security when using transportation systems.

<sup>5</sup> For example, they can be applied to private, shared or public transport, truck or first- and last-mile connectivity, and the like.

**Figure 2.2.** Conceptual Framework for Women’s and Men’s Access to Economic and Social Opportunities



Source: Original figure produced for this publication.



# 3. FINDINGS AND DISCUSSION



Photo: Hendri Lombard / World Bank



Here we document the major findings we have gleaned from the literature selected for review. It is worth noting that most of the existing global research engages with gender in binary terms of being a woman or man. Studies that engage with gender identity as a continuum and document the needs or experiences of sexual minorities and other non-binary persons are extremely rare and were found only in the context of developed countries.

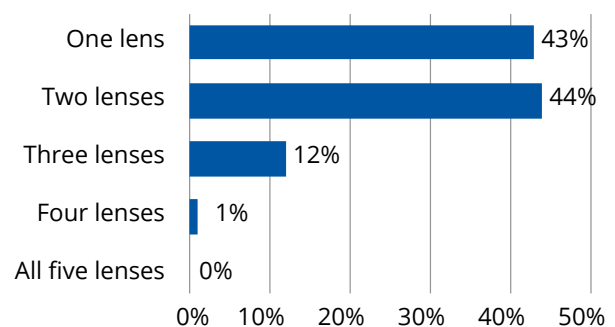
Findings relating to urban mobility<sup>6</sup> and rural mobility are presented separately. Within urban and rural mobility, to the extent possible, we have organized our findings to document established and emerging patterns of mobility by gender, followed by issues and topics that represent challenges and opportunities for achieving gender equality in transport. Of course, some challenges are common to all countries, whereas others are more relevant for developing or developed countries. It is also important to be aware that the line between challenges and opportunities can sometimes be blurred. Therefore, we ask that the reader approach the themes and issues presented in this report with their interrelatedness and mutual inclusivity in mind.

We also include a section with the existing evidence on outcomes for women and men (and intersectionality across other gender identity, socioeconomic and demographic criteria, where possible) of mobility barriers and opportunities to access education, employment, health, social services, and leisure and recreation services.

Wherever possible, as per the conceptual framework, we have tried to reflect on gender issues in

transport via the lens of: (1) availability; (2) affordability; (3) (physical) accessibility; (4) (social and cultural) acceptability; (5) safety and security. Of course, not all criteria will be of equal relevance in all settings. Within the universe of 356 papers, 57 percent studied mobility through more than one of the five lenses. No paper studied all five lenses. One percent of the papers studied four of the five lenses. Twelve percent of the papers studied three of the five lenses. And 44 percent of the papers studied two of the five lenses<sup>7</sup> (see figure 3.1). Important differences also exist in the topics studied between urban and rural areas: 35 percent of the papers that were geographically focused on urban areas studied safety and security barriers, while only 14 percent of papers that were geographically focused on rural areas did so. In contrast, 73 percent of the papers that were geographically focused on rural areas studied availability issues, while 54 percent of the papers that were geographically focused on urban areas studied availability issues.

Figure 3.1. Typology of Papers



Source: Original figure produced for this publication.

Note: This typology is based on the five lenses used to present the findings, namely, (1) availability; (2) affordability; (3) (physical) accessibility; (4) (social and cultural) acceptability; (5) safety and security.

<sup>6</sup> Including periurban and suburban areas.

<sup>7</sup> Three percent of the papers assessed none of the five lenses. Examples of papers in this category include papers that limit their analysis to differences between men and women's mobility patterns only, or papers that stress the importance of gender-inclusive design without additional granularity in terms of primary analysis.



## 3.1. Urban Mobility

### ESTABLISHED AND EMERGING MOBILITY PATTERNS

Gender is a strong determinant of mobility choice and constraint in both developing and developed countries. Women and men have demonstrably different transport and travel patterns. Despite making immense gains in education and employment, women across socioeconomic strata experience a wage gap when compared with men and this influences their choice of transport. Despite men's growing contributions to caregiving and social reproduction, women continue to bear disproportionate responsibilities for household and community maintenance and reproduction. To manage their multiple assigned roles and responsibilities, women are more likely to need to make shorter, less well-resourced but more complicated trip-chaining trips, often involving a combination of public and private transit, whereas men are more likely to make single-purpose trips, more often on private and more expensive public modes of transport, such as during peak hours and in business class cabins (Dargay and Clark 2012). Because women tend to have a different pattern of trip making compared with men, undertaking multi-purpose trips, such as taking children to school, shopping, health-related trips and going to work, they tend to use public transport at off-peak times when there are fewer services available.

Employment status is also significantly related to travel distance by car or public transport. In both formal and informal employment, women tend to work closer to home; however, formally employed individuals, irrespective of gender, traveled longer distances by public transport or by car, compared with unemployed individuals (Dédélé et al. 2020). Women were

more likely than men to accept the trade-off of a less well-paid job closer to home (ibid).

Women's mobility patterns differ significantly from those of men, especially in developing country contexts. While women may make more trips than men in some situations with a greater variety of routes, these are typically within a more restricted geographical area (Kwan and Kotsev 2014). Women generally use less expensive modes of transport than men (Duchène 2011) although they may also under certain circumstances be forced to travel by more expensive means in the interests of safety. With a few exceptions—see, for example, Adeel, Yeh, and Zheng (2016) for **Pakistan**—walking is the most used mode of mobility for women in cities and in periurban areas of developing countries, although women may often walk shorter distances compared with men, especially as they get older—see Guzman, Peña, and Carrasco 2020, for findings from Bogota, **Colombia**, where women reported shorter trip lengths in all modes of transport and walking trip length for women decreases significantly after the age of 46. Therefore, the existence of footpaths, sidewalks, pedestrian crossings and working streetlights is very important for safety and comfort (Nayak and Benazeer 2017). Research conducted in urban settings in **Pakistan, Sri Lanka and Tanzania** revealed that streetlights are often intentionally broken by thieves and sexual predators to render women and girls more susceptible to attacks (Sohail, Maunder, and Cavill 2006).

Gender appears to be an important determinant of mode choice in developed countries too. Comparative research on travel patterns conducted in capital cities of eight relatively developed economies, namely **New Zealand, Ireland, Vietnam, Finland, Indonesia, Malaysia, Portugal**, and the **Philippines** deemed gender to be a more robust determinant of mode choice than age or income. Across these cities,

compared with men, women appeared to travel shorter distances and prefer public transport and taxi services to cars. Given that women tend to have more complicated travel patterns and concerns about safety, they tended to in some situations prefer flexible modes, such as taxis (Ng and Acker 2018).

Emerging evidence also suggests that established gender patterns in mobility may be shifting in some contexts (especially in developed countries). For example, in urban settings in the European Union, younger women are traveling more than younger men (Cottrill et al. 2020). In some developed country settings, such as in the urban **United States**, these changes may have been influenced by the fact that the proportion of women in white-collar professions has doubled since the 1970s, and the gender gap in college enrollments has reversed, but higher-income groups continue to prefer to live in car-dependent suburban settings (Crane 2007). Research on dual-earner heterosexual households in **Germany** reveal that although men commute longer than women, the pattern may reverse when the woman has better economic prospects. Growing gender equity in car ownership and access also reduces the gender gap in commuting distances, as does an increase in time spent on unpaid work by men that live in a partnership (Chidambaram and Scheiner 2020). However, concerns about safety and security, the need for multipurpose trips and trip-chaining remain relevant to women's travel behaviors in all developed country settings and may influence their mode of travel (Cottrill et al. 2020).

The independent and interactive influence of other demographic factors, such as age and race, on travel behavior is also an important consideration. For example, in the United States, the gender gap in commute length of older workers appears to be growing, while that of younger workers is steadily closing

(Crane and Takahashi 2009). At the same time, racial differences in mode choice and commuting times are becoming less pronounced—both by race and by gender. White and Hispanic men reported similar commute times by car, Black and Hispanic women commuted longer than Black and Hispanic men by bus, and across ethnicities, women in childrearing years tended to have much shorter commutes than men in the same age groups (ibid.).

These analyses by race/ethnicity and age suggest a more varied and complex contemporary portrait of travel and, by extension, of labor market participation. Thus, gendered elements of travel demand are indeed evolving, and not always predictably (ibid). However, gender continues to play an important role in explaining travel, housing, and labor market dynamics, with major implications for policy and planning (Crane 2007; Cristóbal-Pinto and González 2002).

## AVAILABILITY

**In urban areas, the availability of transport services plays a key role in enabling women's mobility.** The literature has looked at the availability of the formal public transit network, bicycle usage, bicycle sharing, car sharing, informal transportation, and the interplay of the entire network.

### *Formal public transit network*

In the past 20 years, many cities across the globe have acquired new subway systems, others have expanded metros to new locations, or switched from a public bus system to a metro. Such changes can have positive and negative implications for transport-disadvantaged groups including women, youth, those on low-incomes, and elderly people.

**Ridership depends on a multitude of factors including the availability of alternative options.** A study in Delhi, **India** found that 95 percent of working women and 80 percent of students used public transport on a daily basis (Nayak and Benazeer 2017). In a study conducted in West Bengal, **India**, the participants (older women in this case) reported that they wanted to avoid public transport due to various reasons but had no other alternatives available to them (Bhattacharya 2018):

**Public transit network adjustments can leave some households vulnerable.** In **India**, women suffered greater livelihood erosion due to loss of access to public transport after resettlement to areas on the fringes of the cities of Chennai and New Delhi (Alberts, Pfeffer, and Baud 2016; Anand and Tiwari 2006). Similarly, a study conducted in Belfast to understand the effects on disadvantaged populations of the transformation of the public bus network to a metro service in 2005 found that given their greater financial constraints and restricted access to alternatives, low-income households were particularly vulnerable to public transport network adjustments (Blair, Hine, and Bukhari 2013). Active engagement with disadvantaged stakeholders and proactive policy planning at early stages of network change or transformation were identified as necessary to avoid reproducing and entrenching existing transport inequities (ibid.).

**Shifting from public to private provision of transport services may influence patterns of usage by gender, age, and income.** For example, in the **Slovak Republic** passenger ridership increased by 156 percent in three years when operation of a commuter line to and from the capital city, Bratislava, switched from a public to private operator. The speed, comfort,

and reliability of the privatized rail service were identified as the major reasons for the increase in ridership. These factors were found to appeal especially to women, students, and car owners who were newly attracted to rail commuting. The increase in ridership was primarily driven by an improvement in the quality of the rail service, which public operators can also aspire to provide (Jurikovič and Tomeš 2017).

As larger cohorts of people experience economic mobility in developing economies, transportation preferences and patterns may change more rapidly than they are expected to in more mature developed economies. Box 3.1 discusses the multiple layers of transport disadvantage and social exclusion.

Box 3.1. Transport Disadvantage and Social Exclusion Can Be Multilayered

Palestinian women in Jerusalem present an illustrative example of the multifaceted barriers to travel that women face when using public transit systems. Ethnic segregation and conflict, restrictive social, cultural and religious norms, poor infrastructure, and low levels of public transportation inhibit the mobility of Palestinian women. A study found that driving or being driven were important components of navigating work and education, and many Palestinian women said they could not have attended university or arrive at work without cars or taxis. Older women rarely drove or had drivers' licenses. By contrast, almost all younger women either already had one, or were planning to study for a driver's license (Kerzhner, Kaplan, and Silverman 2018).

### *Bicycle usage*

**Men are more likely to cycle than women.** Women in Kaunas, **Lithuania**, were 63 percent less likely to travel by bike compared with men (Dédelé et al. 2020). In **Australia**, men were more likely than women to cycle for recreation and for transport in urban, rural, and suburban contexts, and men cycled for longer than women (Heesch, Sahlqvist, and Garrard 2012). In Montreal, **Canada**, women were found to be less likely to cycle to work than men, but more likely to cycle for other non-work and recreational trips (Damant-Sirois and El-Geneidy 2015). An evaluation of **New York City's** Citi Bike Share system in the

United States also revealed that bike share ridership is strongly skewed by gender, with two-thirds of trips being made by men.

**Important differences exist not only in usage of bikes between women and men but also nature of usage:** Analysis of bike sharing data from Nanjing, China, reveals that men are more likely than women to make unidirectional trips during the week and weekends, but women are more likely than men to make multiple-destination bike sharing trip chains, especially on weekdays (Zhao, Wang, and Deng 2015). Box 3.2 presents a specific example for bike sharing.

#### Box 3.2. Bike Sharing in Norway

A study conducted in Oslo, Norway, to understand the effectiveness of bike sharing as a sustainable transport intervention also provided important insights about access and equity (Böcker et al. 2020). While controlling for other factors, such as route distance, elevation, urban form, time of day and bike dock capacities, bike sharing ridership was found to be substantially higher on routes that either start or end with metro or rail connectivity. The findings revealed that despite recent incremental increases in use among women (ibid), the bike sharing system mostly benefits men—men represented 58 percent of users and completed 68 percent of trips. Bike sharing offers poorer access to female- compared with male-dominated employment centers in Oslo and is used less often by women to access or exit public transit.

**In general, studies on bicycle use in cities of developing countries are rare.** Existing research has shown that although most residents of cities in **Sub-Saharan Africa** cannot afford the cost of motorized private or public transport, if and where it is available (Tembe et al. 2020), cycling is also not popular as a mode of transport (Rwebangira 2001). Poor urban planning and traffic safety may discourage individuals who can afford bicycles from using them as a means of conveyance. Women are significantly less likely than men to ride bicycles in cities

in many regions such as Sub-Saharan Africa, South Asia, and the Middle East. For example, in **Tanzania** and **Kenya**, 33 percent of all trips made by men are by bicycle compared with 2 percent of all trips for women (ibid).

**The expansion of bicycle infrastructure can encourage women and low-income individuals to start cycling.** For example, as in the case of Sao Paulo, **Brazil** (Benedini, Lavieri, and Strambi 2020). Travel time was found to be an important predictor



of cycling frequency for both work and non-work purposes, suggesting that cycling can be a feasible alternative to cars and transit in large, dense, and congested cities. Bicycle sharing systems were found to play an important role in introducing new users to the mode. Findings from this study also suggest that low-income individuals would benefit from higher connectivity and more dense bicycle networks in peripheral urban neighborhoods (ibid).

**In Sub-Saharan Africa, the existing evidence underscores the benefits of investing in cost-effective interventions such as bicycle lanes and pedestrian facilities that better target low-income populations** (Sietchiping, Permezel, and Ngomsi 2012). This is especially important in the African context since investment in mass-transportation schemes such as metro, subway and rail systems is often rare and not always affordable for local and national governments.

**Interventions at workplaces, such as providing childcare services, installing showers and changing rooms, were identified as suggestions for encouraging more women to cycle** because respondents emphasized that cycling to work was not compatible with their complicated daily routines, which required them to combine multiple work and care responsibilities. Societal norms around suitable work attire for women are in many instances incompatible with mobility through cycling. As a result, some women who might otherwise have cycled to work found it challenging to do so while also dressing and presenting in a way deemed appropriate for work (Damant-Sirois and El-Geneidy 2015). **Australian** women reported the same reasons for being less likely to commute to work by bike than Australian men (Heesch, Sahlqvist, and Garrard 2012).

**Caregiving responsibilities are a major determinant of women's usage of bicycles.** In **New Zealand**, women without caregiving responsibilities were found to cycle for work more often than women with caregiving responsibilities (Shaw et al. 2020). Findings consistent with this pattern are reported from **Vancouver, Canada** where most respondents were aware of the negative environmental consequences of using automobiles and spoke of a tension between wanting to use active travel modes while relying on their cars to fulfill caregiving responsibilities (Sersli et al. 2020). Relatively few women drove children to school or daycare, but children's extracurricular activities were often too far or too late in the evening to consider cycling a feasible travel mode. However, not all participants regarded cars as necessary to successfully parent. Mothers without easy access to cars—mainly immigrant women—organized their lives around walking, transit, or what they could reasonably cycle to. These findings suggest that addressing social norms are necessary but insufficient on their own when isolated from material conditions needed to shift practices (ibid). The findings from these studies also reinforce that mobility of care should be considered a vital aspect of transport and urban planning.

Findings from Melbourne, **Australia**, suggest that efforts to increase transport cycling that focus solely on commuter cycling may, in fact, be contributing to the gender inequities in cycling for transport (Bourke, Craike, and Hilland 2019). To increase cycling rates among women, there may be a greater need to invest in infrastructure to develop local cycling networks that connect to key residential shopping centers, service precincts, and schools that make cycling a more appealing and convenient choice for multiple purposes (ibid). It is also important that cycling networks respond to the need for many women to move with children, both young and old.

### *Car sharing and informal transport*

**Literature on car sharing again seems to be more focused on developed countries; users appear to be middle-income or higher, more educated, and most likely to be women.** Car sharing schemes have emerged in many cities in developed settings and a limited amount of research has been conducted to understand who is most likely to join them. A study conducted to identify the demographic markets attracted to car sharing services in selected cities in the **United States** and **Canada** revealed a mean age of 38 years for car share subscribers with half the respondents reporting a household income of US\$60,000 a year or more (Burkhardt and Millard-Ball 2006). Most respondents were highly educated, with 35 percent holding a bachelor's degree and 48 percent reporting some postgraduate work or an advanced degree. Slightly more women (55 percent) than men (45 percent) were car sharing members. The study concluded that in middle- and high-income professional community settings, car sharing can increase mobility, reduce vehicle travel, and complement other transportation modes (ibid).

The role of indigenous or informal public transport in providing an alternative mode of mobility has been researched quite extensively in various contexts in developing countries. However, research on gender equity in the use and patronage of indigenous transport has received little attention. One study in the **Philippines** sought to identify the issues and challenges of one form of indigenous transport use, the public utility jeepney, as perceived by women who used it (Abuzo et al. 2017). These women expressed slightly higher concerns about accessibility, health, and safety issues. They also expressed concern that jeepney drivers may be partial to getting customers that are men, as well as to customers from class and ethnic backgrounds deemed to be of higher status

in the Philippines, regardless of whether they are women or men (ibid).

**A network approach is needed to truly increase women's ridership.** This can be done through increasing the formal public transit network or by connecting it to other modes of transport whether formal or informal, or shared.

*Larger subway network:* Research conducted in the Gwangju metropolitan area in the **Republic of Korea** revealed that although women and young people in their late teens and 20s are more likely to benefit from subway networks, when only a linear subway line was added to the bus network, transit-dependent groups did not appear to benefit from the increased transit supply (Song et al. 2018). However, with the addition of another circular subway line, women and young people were found to have a significant and positive association with the increased transit supply, indicating a vertically fairer distribution of resources (ibid). In the **Republic of Korea**, men aged between their 30s and 60s dominated private vehicle ownership (70.8 percent). Young people, and those in their 70s and above, accounted for only 8 percent of car ownership. The addition of the linear subway line did not optimally benefit transit-dependent groups because it did not reach areas of lower car ownership. However, the additional circular line improved access for transit-dependent demographics (ibid).

*New and innovative transport modes:* In Medellín, **Colombia**, the installation in 2004 of the Metrocable, a gondola lift system, was expected to complement the Medellín Metro to facilitate better mobility and connectivity for all residents but particularly for low-income residents of informal settlements who previously lacked an affordable and efficient means of navigating the steep hills of the city. An evaluation of the socioeconomic outcomes of the system

revealed that Metrocable commuters were saving time and money. Women from low-income communities who lived near a Metrocable station and worked in districts with a train station were using it regularly for commuting to work. However, residents of Medellín with the lowest levels of income and education were found to rarely use the Metrocable for commuting because most worked in the informal sector at or near their homes (Matsuyuki et al. 2020).

*First- and last-mile connectivity is important:* Research on first- and last-mile trip options is rare in all contexts; gender analysis of such options is even more rare. Research conducted in the historic urban area of Manila in the **Philippines** revealed that women, as well as those who were accompanied by children, preferred riding pedicabs over walking as first- and last-mile trip options. Making pedicab routes more regular and responsive to the needs of residents of urban areas and regulating fares would benefit women and other transport-disadvantaged groups. A pedicab can offer a vital source of livelihood for many urban residents while also offering a mobility option for vulnerable groups such as women, children, people with disabilities and the elderly. Improving pedicab service provision would also lead to increased incomes for pedicab drivers (Fillone and Mateo-Babiano 2018).

**Other studies of non-motorized transport have highlighted the potential to improve environmental sustainability through their increased use—** see, for example, Gamble (2020), for a discussion of the role increased bicycle use by women and children could play in Quito, amid **Ecuador's** transition to a low-carbon city.

Similar to the experience in developed countries, women tend to have a very different pattern of trip making compared with men, undertaking

multipurpose trips, such as taking children to school, shopping, health-related trips and going to work. They tend to use public transport at off-peak times when there are fewer services available. Transport arrangements in peripheral urban areas do not suit women's needs since they may have to visit scattered facilities with less frequent public transport services.

## AFFORDABILITY

Affordability constraints, mainly due to low incomes earned by women, have a huge impact on women's use of transport. 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. With some exceptions, women are likely to work closer to home and commute shorter distances than men (Ng and Acker 2018).

Transport disadvantage is especially linked to the poverty women experience in developing economies. First, because it is often an outcome of poverty, in terms of both time and resources. Second, transport disadvantage manifests as weaker workforce participation and the precarious and poorly paid types of work they can access. Finally, transport disadvantage causes poverty by restricting women's access to livelihood opportunities. That women are more likely than men, owing to their greater caregiving responsibilities and corresponding time poverty, to factor in costs in terms of time and money for traveling while assessing livelihood decisions is borne out by studies of low-income communities that have been resettled from central areas in cities of developing countries to their outskirts (Alberts, Pfeffer, and Baud 2016; Anand and Tiwari 2006; Lorenzo 2008).

### *Transport subsidies*

**As more women enter the labor force, their desire to use off-peak fares will reduce. In other words, it is non-working people who are amenable to traveling off peak (at the right subsidy), not women inherently.**

Subsidies are often used to increase public transit ridership during off-peak hours or to target low-income individuals. Compared with women, men typically have longer commutes, use personal vehicles more often, travel more often for paid work, and have more straightforward work-to-home travel patterns during peak hours. Therefore, women appear more likely to take advantage of lower fares or subsidies to travel during off-peak hours. Research conducted in **Singapore** to analyze peak and off-peak pricing

strategies as a policy tool to spread peak demand in public transportation systems discovered that women were more responsive to off-peak discounts than men, but a difference was only noted when off-peak discounts were greater than 50 percent. This may be due to the greater flexibility of women's work schedules (Adnan et al. 2020). The only group of men that appeared to respond well to off-peak discounts were retired men over the age of 70. To attract women and non-workers for off-peak ridership, it appears that discounts work but they must be substantial (ibid). Similarly, a study conducted in Halifax, **Canada**, to understand mobility patterns of the non-worker segment of the population (most of whom are women and/or older adults) found that men that do not work take equal advantage of reduced fares (Daisy, Millward, and Liu 2018). Box 3.3 discusses the relationship between mobility and mental health.

#### Box 3.3. Mobility and Mental Health

Public transport may have unintended positive consequences for mental health. Research on outcomes of access to free public transit for specific disadvantaged groups such as youth and the elderly has also been conducted in several urban developed country settings. In London, United Kingdom, where older citizens have free access to a relatively extensive public transport network through a Freedom Pass, one study explored from a public health perspective the mechanisms that link this travel benefit to determinants of well-being (Green, Jones, and Roberts 2014). Traveling by bus provided opportunities for meaningful social interaction; traveling as part of the "general public" provided a sense of belonging and visibility in the public arena—a socially acceptable way of tackling chronic loneliness. Findings suggest that mechanisms linking mobility and well-being are culturally, materially, and politically specific. In contexts where good public transport is available as a right, and bus travel is not stigmatized, the existing evidence suggests that it is a major contributor to well-being, rather than a transport choice of last resort. This has implications for other jurisdictions working on accessible transport for older citizens and, more broadly, improving the sustainability of cities. The freedom to take a bus to get out and about was widely reported as a major and non-stigmatizing defense against isolation, particularly for older people who live alone (ibid).



### *Transit pass*

Data from household surveys (see, for example, Vance and Peistrup 2011, for findings from **Germany**) indicate that women are more likely to own a transit pass than men. The probability of women owning transit passes also increases with age, except for low-income elderly women, who were found to be the demographic least likely to own a transit pass in **Germany** (Giesel and Köhler 2015). Both fuel and fare prices were found to have the expected positive and negative impacts on the likelihood of owning a transit pass. A one euro increase in the fuel price was associated with a 0.09 increase in the likelihood of women owning a pass, while the negative effect of the fare price is considerably weaker at 0.001 for both women and men (Vance and Peistrup 2011). These findings suggest that policy makers have direct leverage over equity in transit pass patronage, including via fares, fuel prices, the location of transit stops, and the density of transit service (ibid).

A study of home-to-campus transport choices of university students at four universities (seven campuses) in Toronto, **Canada**, revealed that irrespective of gender, post-secondary students were highly sensitive to changes in travel times on public transit. This study also revealed that mobility tool ownership (that is, transit pass, car, and bike ownership) and age groups have distinct influences on students' chosen travel mode. Students of ages 23 to 25 were more inclined to drive and less inclined to choose auto-passenger, car-pooling or transit with walk access (Hasnine et al. 2018).

### *Social exclusion*

To date, most studies which consider transport from a social exclusion perspective have been conducted in the context of developed countries where both income poverty and lack of transport are relative

rather than absolute states. Only a few studies in recent years explore the relationship between transport and social disadvantage in the context of developing countries, where income poverty can be absolute and where there is generally much lower access to both private and public transportation. One study in the urban and periurban areas of the Tshwane region of **South Africa** tried to understand whether the concept of social exclusion remains valid, when it is most of the population that is experiencing transport and income poverty compared with a minority who do so in advanced economies (Lucas 2011). Findings revealed that for many urban low-income residents of the Tshwane region, formal public transport is often not an option because of where they live or the times when they need to travel. As such, many people must rely on the services of privately operated and largely unregulated kombis. The cost of this transport is extremely high in relation to people's incomes and can usually only be regularly afforded by those with formal full-time employment, a minority in this context (ibid).

### *Public transit and evolving travel demands in periurban or suburban settings*

As cities evolve and periurban and suburban areas emerge, there are often increases in travel demands that are not met by the existing public transit network. This lag impacts women and men differently.

The fact that women are more sensitive than men to commute cost and time was found to be true of workers commuting to and from peripheral new towns and major cities in **China** (Chen and Zhu 2012) and in Jakarta, **Indonesia**, where the existence of the suburban rail system and the reduced travel time it enabled was identified by some women as the only way that they were able to take up employment or engage in a range of activities across the city (Turner 2012).

These findings suggest that the process of suburbanization and periurbanization in developing economies such as **China** and **Indonesia** create conflicts between existing public transit services and new travel demands, with women absorbing more of the economic and labor costs. Other studies of periurbanization in East and Southeast Asia have revealed that a public participation process established in the early stages can be a valuable complement to the technical planning process in generating transport interventions with wider distributional benefits. If properly designed, participation processes offer an opportunity to incorporate the interests of nonauto users, women, and other vulnerable citizens into the planning process (Chen and Mehndiratta 2007; Gajewski, Ihara, and Tornieri 2007).

Low-income groups in other periurban settings reported that street connectivity, the level of bus services and neighborhood safety were all particularly significant for determining spatial variations in the daily trips that were undertaken, with more trips being initiated where there was a greater density of street nodes, bus stops and where people felt safer at night (Lucas et al. 2018). These findings highlight the need for transport planners and policy makers to carefully consider and target micro-scale factors while attempting to introduce transport interventions to reduce social exclusion among low-income urban and periurban populations.

Findings from another study in **China** and **Vietnam** further suggest that both urbanization and periurbanization encourage rapid motorization, which appears to reinforce class and gender disparities. The study found that the differences in travel patterns between women and men were similar to those found between the residents of poor and affluent urban areas: women walk more, men are more motorized. Despite women's high rates of

participation in the labor market in both Xian (China) and Hanoi (Vietnam), men traveled more often for work while women did so for household maintenance (Tran and Schlyter 2010).

Transport arrangements in peripheral urban areas do not suit women's needs since they may have to visit scattered facilities with less frequent public transport services. Fare structures can also make multiple stops more expensive, making it difficult to combine household errands (Booth, Hanmer, and Lovell 2000). Turner and Grieco (2000) argued that because of their more complex multipurpose trips women are "time poor" and face many more constraints than men in fitting their busy schedules into the day.

**Such findings highlight the importance of transport planners understanding the mobility needs of low-income urban residents in general, and women in particular, in designing responsive systems of transportation access.**

## ACCESSIBILITY

Elderly people, people with disabilities, caregivers (of children, seniors, and special needs adults) and Indigenous people face additional mobility challenges. While the size of the exclusion gap of those with special mobility needs is difficult to measure, there is a preponderance of evidence that special mobility needs lead to different mobility choices.

### *Elderly mobility*

As demographic transitions lead to a steady rise in the number of older persons in the urban areas of developing countries, some studies have attempted to understand barriers and opportunities for elderly mobility. The literature consistently finds that **older**

**urban women in developing economies make the shortest and least number of trips of all age demographics.**

In **Pakistan**, trip making was found to differ significantly by gender, age, income, and vehicle possession. Elderly women were far less mobile than elderly men. Fewer than one percent of elderly women in Pakistan reported self-driving. The preferred modes of travel for the elderly were car, motorcycle, and walking. Older women were concerned about safety issues in public transport, including theft and the behavior of transport crews, older men who drove were worried about the behavior of other drivers (Ahmad, Batool, and Starkey 2019).

Middle-class and upper middle-class older women (between the ages of 60 and 70) living in semi-urban communities in West Bengal, **India**, also reported using public transportation rarely. Most women reported using private transport on a regular basis for activities such as going to work, shopping, or picking up grandchildren from school (Bhattacharya 2018). Since none of the respondents owned private vehicles or had driver's licenses, they relied on men in the family for their transport needs. Although all respondents had heard of ride-hailing and ridesharing services such as Uber and Ola, and most owned mobile phones, none had the technical skills necessary to access the software application on their phones. Respondents who used public transport did so as an option of last resort: because private transport was not available or affordable. As in **Pakistan**, elderly women in West Bengal, **India** reported minimizing travel of any kind to the extent possible (ibid).

**Even in developed economies, transport disadvantage among seniors appears to be exacerbated by poor health and low incomes, particularly for women.**

Research conducted in **Scotland** confirms patterns of travel in the **United Kingdom** and other urban developed country settings where older people are heavily dependent on car use, in the form of more frequent but shorter journeys than younger people. This is especially so for women aged 70 and older who, as passengers, are very reliant on men to drive them. Existing evidence suggests that, especially in urban settings, there are few obstacles to public transport use, and most agree that bus travel is good, but convenience motivates car preference (Li et al. 2012). In a study of community-dwelling seniors over the age of 75 residing in an urban setting in **Canada**, 88 percent of respondents who reported having problems with transportation were women. They were also in poorer health and had lower incomes than men. Even among those for whom transportation was not a problem, there existed an inequality between women and men in terms of access to what was considered the "optimal" form of transport, the car. Most of the men who reported not having problems with transportation also reported driving a car as their primary mode of transport (80 percent), and those who experienced transportation problems were usually in worse health. Due to the small sample size of women, such an inference could not be made for them (Dupuis, Weiss, and Wolfson 2007; see also, Fristedt et al. 2014 and Giesel and Köhler 2015 for similar findings from **Sweden** and **Germany** respectively). In addition to socioeconomic and health barriers, elderly people face significant mobility challenges because of deteriorated built environments, heavy traffic, and concerns about safety and crime (Loukaitou-Sideris, Wachs, and Pinski 2019).

### *Mobility needs of caregivers*

The existing body of research from urban developed country settings affirm that the transport needs of caregivers (of children, seniors, and special needs adults) are poorly catered for, and the implications of this oversight can be particularly onerous for women since they bear significantly more caring responsibilities than men (Dobbs 2005; Fritze 2007). Research on “escorting economies” in urban European Union contexts reveal that by the time women reach their 20s, “escort education” trips (taking children to school) become more frequent, and together with general escort trips, these account for over a quarter of all trips for women in their 30s. The age of the

youngest child was found to have a strong influence on women’s mobility behavior in the **United Kingdom** (McQuaid and Chen 2012). The care of elders and adults with special needs also appears to serve as a greater spatiotemporal constrictor for women than for men in European cities—see Delclòs-Alió and Miralles-Guasch (2018), for findings from Barcelona, **Spain**. However, there is some evidence of the reversal in roles of women and men for escorted trips with age, with women making more escorted trips than men up to their 40s, while men make more escorted trips than women in the older age groups. (Hodgson 2012). Box 3.4 discusses the relationship between equity in car use and greater equality in household responsibilities.

#### Box 3.4. Equity in Car Use Does Not Mean Greater Equity in Household Responsibilities

In comparative research conducted in cities in Australia, the United Kingdom, Spain and Finland, the United Kingdom and Australia were found to have the widest gender gap in travel purpose. Mothers in the United Kingdom and Australia were found to be much more likely than in Spain and Finland to accompany their children to and from school and to fit their work hours within the temporal bounds of their children’s daily schedules (Craig and van Tienoven 2019). It is also worth noting that despite research participants having the widest gender gap in travel purpose, the gender gap in travel mode was the smallest in the United Kingdom and absent in Australia. Australia also has high overall car usage and car ownership, which is likely due to infrastructure and transport policies that generate greater reliance on private vehicles compared with European countries. These findings imply both that improving public opportunities for women is insufficient to ensure equity in the private sphere, and that to eradicate gender mobility differences, transport policies would need to be supplemented with measures addressing roles and status in the family (ibid).

Feminist researchers such as Law (1999) observed in the late 1990s that in the previous two decades (that is, since the late 1970s), critiques of “gender-blind” transportation research and planning had generated a spate of research on “women and transport,” which focused on a relatively limited range of issues related

to journey-to-work travel at the expense of other relevant issues related to social reproduction. They suggested an alternative approach which redefines the topic as “gender and daily mobility” and incorporates it within a larger conceptual framework investigating social and cultural geographies of mobility.



**More recently, feminist researchers (see, for example, Sánchez de Madariaga 2013) have argued for a full acknowledgment in the transport sector of the idea of a “mobility of care.” This would contribute to a much-needed rebalancing of the topics of care and employment as being equally important for transport policy.**

Since the balancing of work and family responsibilities is emerging as being of concern in urban areas for all workers (particularly those below the age of

35) irrespective of gender identity, understanding the drivers of the mobility of care is essential when designing transport systems—see Baruah and Biskupski-Mujanovic (2021), for findings from **Canada**. Unfortunately, only one of the articles in our survey focused on the mobility of care in urban settings for developing economies, highlighting the need for public transport services to respond to the needs of women with child strollers and children (Kranrattana-suit 2017). Box 3.5 presents an example of commuting with children.

#### Box 3.5. Commuting with Children: The Story of Anita Flowers

An illustrative example of the challenges faced by commuting mothers and their children is the story of Anita Flowers, a resident of an inner-city suburb of Brisbane, Australia. Flowers' story, reported in the Courier-Mail newspaper, shared her experience of being turned away from two buses and a train on her way to work at 7 a.m. one Monday (reported in Grant-Smith, Osborne, and Johnson 2017). She claimed that two bus drivers refused her entry unless she folded up the pram carrying her sleeping five-month-old daughter. When Flowers lodged an online petition to the state government calling for a pram-friendly carriage on suburban trains, signatories to her petition claimed that they had experienced similar discrimination. In addition to experiencing service- and infrastructure-related problems, Flowers' supporters emphasized that many passengers were not tolerant of children in their (often crowded and crush loaded) space, particularly on commuter services, suggesting that mothers and their children have less right to occupy space on public transport than “legitimate” commuters.

In addition, understanding children's mobility needs and patterns can shed light on the intergenerational transmission of gender norms or the lack thereof. For example, a study conducted in slum communities in Nairobi, **Kenya**, revealed that characteristics of women's travel are systematically distinct from those of men, even when controlling for poverty level. However, among school-going children, the gender difference disappears. Although poverty remains a key explanatory variable in determining decisions regarding trips to school, there are no systematic

differences between boys and girls (Salon and Gulyani 2010). This points to the possible changes in norms that disadvantage girls and women in accessing opportunities.

#### *Mobility needs of people with disabilities*

A wide range of issues confront people with disabilities especially when traveling in urban areas in developing countries, including: high curb heights, a lack of warning barriers in front of obstacles such as

open manholes, pavements occupied by traders and kiosks, a lack of access for wheelchairs, open gutters, poor street lighting, insufficient assistance with crossings at intersections, inadequate timing of green lights for pedestrians, interactions with rude public transit staff, drivers not announcing stops (especially for the visually impaired), buses not stopping at minor stops, buses unable to take wheelchairs, buses with high steps, handrails too high for the physically disabled, prohibitions on the use of specialized vehicles for people with disabilities in some urban settings, and unscrupulous taxi and bus staff who overcharge or cheat when returning change (Zhong et al. 2003). Many of the physical measures needed to help people with disabilities traveling in urban areas are now widely understood, and in the last decade there have been substantial improvements particularly in developed countries. However, because of scarce funds, and perhaps a lack of priority, these improvements still need to be implemented more widely in developing countries.

While transport is widely acknowledged to be a barrier to equity and inclusion, the size of the exclusion gap remains difficult to measure, and what will work to close it remains difficult to know, particularly in low-income countries. This may be because of an overall lack of understanding about transport needs, especially from the perspective of those who need it most and are heavily affected by these gaps. The voices of adults and children with disabilities themselves are rarely heard in the literature (Kett, Cole, and Turner 2020). Even when governments are committed to complying with national and international legal norms to provide accessible public transport, they tend to prioritize the needs of persons with moderate physical disabilities who can travel independently. **Thailand** is a good example of a country where even with compliance with legal norms, the needs of other transport-disadvantaged passengers

such as children, elders, pregnant women, people carrying heavy loads, people with intellectual disabilities, and people with slow mobility preferences remain unmet (Kranrattanasuit 2017). Some researchers have suggested that the solutions and interventions used to improve access and mobility in developed countries could be adapted to developing countries. They advocate the need to mainstream good examples of inclusive transport infrastructure for women, children, the elderly and the disabled, including footbridges, street lighting, sidewalks, curbs, road shoulders, bus rapid transit stations and train stations. Their findings suggest that when such access features are included from the beginning of a construction project, they cost less than one percent of the total cost of construction and provide enormous benefits to all (Kunieda and Roberts 2006).

Prevention and reduction of disability among community-dwelling older adults has become an important health policy concern in many developed countries. It has also become a gendered issue due to the larger numbers, compared with men, of older women with disabilities living in their own homes. Findings from **Japan** suggest that there is a gender difference in the use of community rehabilitation programs (CRPs) in Tokyo, and that the lower uptake of CRPs by women is related to the unavailability of transportation services and accompanying persons to the nearest transportation site (Tamiya et al. 2009). Prospective CRP participants may not be able to attend the program without family members accompanying them from home to the bus stop or without the provision of comprehensive transportation services by the CRPs. Removing these barriers may decrease the gender difference in use of CRPs (ibid).

Trajectories of mobility disadvantage and disability become steeper for older age groups. Through social selection processes over a lifetime, individuals

at greater risk of disability and physical impairments (for example, women, minorities, lower educated and older adults, and those with multiple health problems) may be more likely to live in neighborhoods characterized by less accessible built environments. The presence of just one chronic health condition doubled the odds of mobility disability in the **United States**. Among adults over the age of 75, living in neighborhoods characterized by more motorized travel was associated with an odds ratio for mobility disability that was one and a half times higher in any given year than for older adults living in environments that were more pedestrian friendly. These findings from the United States suggest that the built environment can exacerbate mobility difficulties for older adults.

**When considering ways to minimize disability as the population ages, simple improvements to the built environment may be easier to implement than efforts to change risk factors at the individual level (Clarke, Ailshire, and Lantz 2009).**

## ACCEPTABILITY

The acceptability constraint includes the social and cultural barriers women encounter when traveling. Our findings from this study broadly suggest that although women's and men's travel patterns and choices are a function of gender division of labor within households and communities, cultural and religious norms and restrictions appear to pose bigger barriers to women's mobility in some countries. Such barriers not only limit women's usage of public modes of transport but also influence their ability to use private modes of transport. Mobility options such as riding a bicycle, driving, or using formal or

informal public transport are foreclosed to large groups of women due to restrictive cultural or religious norms in some contexts.

### *Public transit use*

The outcomes of combined influences on women of the poor quality of public transport and of religious and cultural norms of women's seclusion are evident from some studies. While research conducted in Rawalpindi and Islamabad in **Pakistan**, for example, identified the affordability of transportation as the biggest mobility challenge for urban residents, for most women, public transport was deemed the least acceptable option because of its poor quality and accessibility, as well as the norms of women's seclusion some (particularly middle- and upper-class) women were expected to comply with (Adeel, Yeh, and Zheng 2016). As a result, women severely limit their activity spaces, traveling only when necessary, and often not pursuing discretionary activities (Iqbal 2019). Restrictive cultural or religious norms increase women's dependence on men for their mobility. Living in suburban and periurban areas further exacerbate transportation disadvantage for women and the poor because of the limited availability of public transport in these areas and a general lack of affordability for private motorized transport among the urban poor (Adeel, Yeh, and Zheng 2016). On average, women made 50 percent fewer trips and have 46 percent shorter travel time than men (Adeel, Yeh, and Zheng 2017). Further, men's mobility levels kept increasing with age and marriage, while women's mobility was found to decrease accordingly. Personal income increased mobility across gender, while household income decreased women's mobility levels (ibid).

### Women drivers

Globally, the numbers of men with driver's licenses far exceed the number of women with driver's licenses, and women tend to travel by car more often as passengers than as drivers (Elias, Benjamin, and Shiftan 2015). Although more women now own or otherwise have access to a car or other private vehicle than ever before, levels of car and other private vehicle ownership and access (including bikes and motorcycles) among men continue to be significantly higher. For example, of the 65 percent of people in 44 countries planning to purchase a car in 2014, just 42 percent were women. The gaps were largest in the Middle East and Africa (29 percent women) and Asia Pacific (40 percent women) (Masikini and Baruah 2020). In Sweden, 70 percent of cars on the road are owned by men. In France, 60 percent of men living outside the city of Paris travel only by car (Duchène 2011).

In both developed and developing countries, women drivers are far less likely to become victims of road crashes than men drivers (ibid). Women have been found globally to follow speed limits and traffic rules more diligently than men. Women are also reported to have safer pedestrian behavior than men: for example, 80 percent of women reported using crossings in London, United Kingdom, versus only 64 percent of men (Schmucki 2012).

That social and cultural restrictions limit women's ability to access and operate transport is well known. **Saudi Arabia** is perhaps the best-known example of a country in which women have traditionally been dependent on men relatives, hired drivers, or private transportation since they were not permitted to drive until June 2018. A study was conducted to determine whether accessibility (cost and time) for different types of transport has a relationship to women's opportunity to work. The unemployment rate for Saudi women in 2016 was

nearly six times that of Saudi men (Williams et al. 2019). There is a relationship between Saudi women's job accessibility and their participation in the labor market. While other variables are held constant, the employment rate of Saudi women is one percent higher in neighborhoods where people can reach 10 more jobs on the same budget than other neighborhoods. Therefore, one might assume cheaper or shorter commute options would give Saudi women greater access to job opportunities. To maintain commute costs within 20 percent of monthly income requires affordable and convenient services other than metro systems; the trade-off between cost and time only working for trips close by (ibid).

Alongside higher levels of education and access to employment, access to private vehicles and to driving lessons and licenses have been shown to play a role in shifting intrahousehold gender norms and social and cultural restrictions placed on women. Baruah (2021, 180) describes the changes learning to drive and gaining employment as professional drivers initiated in the lives of low-income urban women employed by Sakha Cabs in New Delhi, **India**:

**“The higher incomes, job security, and social status derived from commercial driving have enabled women to make empowering decisions in their personal lives including, leaving abusive marriages; reporting domestic and other abuse to police; filing for separation or divorce; assuming primary financial responsibility for children; enrolling or reenrolling (where they had previously been forced to leave due to financial reasons) themselves, their children and younger siblings in school; providing financial support to aging parents; and building new homes or upgrading old ones.”**



These findings also demonstrate cultural norms, much like other social institutions, are dynamic and evolve due to changing circumstances.

## SAFETY AND SECURITY

The final concern of safety and security permeates throughout developed and developing countries. Whether women are traveling on overcrowded metros or local buses, underreporting of harassment and other crimes is rife.

### *Sexual harassment*

Mobility is not gender neutral and neither are the safety and security concerns associated with it. Women's experiences of sexual harassment on public transit, for example, have been documented in urban developed country settings since the 1940s (Freedman 2002; Hickey 2014; Horii and Burgess 2012), even as women continue to experience sexual harassment on public transit more than 20 years into the 21st century. This is borne out by research in different developed country urban settings in North America, Europe, Asia, and Oceania.

**In recent decades, safety and security, both from physical harm and sexual harassment, has been documented as a strong concern for women in all modes of land-based mobility in developing economies as well.**

Women's experiences of sexual harassment on public transit have been documented since the early 20th century when women first began riding trains and buses in large numbers—see, for example, Singh (2017), for a genealogy of sexual harassment on public transit in Buenos Aires, **Argentina**. Especially as large cohorts of women in developing countries

make the transition from living their lives mostly in the domestic sphere to the public sphere, their very spatial mobility might be perceived to be a form of defiance and deviance (Neupane and Chesney-Lind 2013). A national survey on violence against women carried out in **Bangladesh** in 2015 revealed that one in five women perceive vehicles, roads, and streets as spaces where sexual violence occurs (Mazumder and Pokharel 2018). In Chennai, **India**, 66 percent of survey respondents reported being sexually harassed while commuting; more than 40 percent rated their worst harassment experiences to be on buses and trains with no separate sections for women, and 28 percent carry knives or other weapons for protection (Mitra-Sarkar and Partheeban 2011). Sexual harassment on public transit in **Pakistan** was so widespread that women had become accustomed to “routine groping” and worried mostly about the possibility of its escalation to sexual assault (Mansoor and Hasan 2016). It appears that public transport offers perpetrators both proximity and anonymity, with very little risk of consequence (Neupane and Chesney-Lind 2013). Women also feel vulnerable when walking or waiting for transport at night in poorly lit areas. Younger women faced more harassment: on the street, in transit, and at stations and terminals (Malik et al. 2020).

**Perception of safety appears to vary by public transit mode and time of day with specific segments of the population acting as perpetrators.**

For example, more than 25 percent of women who use public transport in **Tokyo/Kanagawa** have experienced groping in the past three years, more often on trains than on buses, and middle-aged “salarymen” were identified as the most frequent perpetrators (Shibata 2020). Existing multi-country research also suggests a significant gender gap in the perception of safety on public transit based on mode of travel: women are 10 percent more likely than men to feel unsafe in metros and six percent more likely to

feel unsafe in buses (Ouali et al. 2020). Similar findings are reported in **Iran** where the transportation in cities is characterized by some peculiar conditions: very cheap fuel prices and very high road fatalities. In choosing to travel by train, which is more expensive, instead of bus, both women and men prioritized safety as the primary concern, followed by comfort, punctuality, speed and cost, but women ranked safety more highly than men over the other four considerations (Sameni and Tilenoie 2020). Similarly, in cities in Latin America young women prefer minivans over trains for long-distance commutes, despite long queues, higher fares, and traffic delays. An added benefit is that, unlike trains, minivans have pre-fixed seats for passengers, which act as a disincentive to harassment (Dominguez Gonzalez et al. 2020).

**Passenger density during peak hours and anonymity are factors that are strongly related to the possibility of women and girls experiencing sexual harassment on public transit** (see, for example, Ball and Wesson 2017, for findings from the **United Kingdom**), often exacerbated by the lack of supervision by transport staff or via closed-circuit televisions (see Chui and Ong 2008, for findings from **Hong Kong**). Most incidents of unwanted sexual behavior occur during the rush hour period, when victims are also least likely to report harassment and bystanders are least likely to intervene (Tara 2011). That most unwanted sexual behaviors occur during peak times may be contrary to women's expectations in terms of their personal safety. Women may already tailor their movements to avoid traveling at quiet times, especially at night (Carver and Veitch 2020; d'Arbois de Jubainville and Vanier 2017). However, since the most serious offences (rape, for example) are more likely to occur at such times, it would be imprudent to state that night travel poses no risk to women. Despite these contradictions, women should not be made to feel that their movements need further restricting. Box 3.6 discusses women's only transport spaces.

#### Box 3.6. Women's Only Transport Spaces

Although some countries, ranging from Mexico to Japan to Bangladesh, have introduced women-only carriages in an attempt to address the problem of sexual harassment, it stands to reason that such interventions only provide short-term solutions since they put the onus on women rather than perpetrators to change their behaviors. Moreover, segregated transport does not always stop harassment, as the latter could happen anywhere in a public space, such as while walking, transiting, or waiting for transport. A study conducted of the SuperVia in Rio de Janeiro, a railway passenger service with a special car allocated for women (Kondylis et al. 2020), showcased that women face a cost related to sexual harassment when using public transport and that they are willing to pay for safer options. It also presented evidence of the unintended effects of this kind of policy as women who decided not to use the safer option were further stigmatized, showing that segregated transport is not addressing the root cause of the problem related to pervasive gender norms. Therefore, women-only carriages should be complemented with preventive measures such as standard interventions and gender sensitization. The practice in Japan of reserving the last carriage in a train as a women's-only space is symbolic of a problem being marginalized rather than confronted (Horii and Burgess 2012). Some Japanese women support and use women-only carriages because they perceive them to be an expression of subversion against patriarchy in Japanese society.

On the other hand, a significant proportion of Japanese women on commuter trains refuse to be segregated. In their view maintaining a physical presence in the mixed environment drives the momentum to make the patriarchal public realm in Japan more equal (ibid). Similarly, in Mexico City, 66 percent of the 116 women surveyed reported feeling safe in the women-only transport, and of the 44 percent who did not, almost half only disagreed because they thought women-only transport was not well secured, with men not respecting it (Dunckel-Graglia 2013a). The same study in Mexico City asserted that women-only transportation created a platform to trigger changes to the root causes of violence against women in public transportation by giving women “safe places” to confront these issues and spurring a growing feminist movement among women commuters for their right to travel free of harassment. Nonetheless, recent development discourse seems to agree that segregated transport, if in operation, would need to be complemented by more sustainable measures, such as capacity building of relevant stakeholders and raising awareness to address social norms that condone harassment with a goal to phase it out over time as—and when—these complementary interventions yield results.

### *Making transfers*

Several studies have also attempted to understand women’s and men’s perceptions of safety while walking to access public transit, making transfers on public transit, and waiting in bus, metro or other public

transit terminals while traveling. They have confirmed that harassers take advantage of public places, including spaces within and near mass transit, due to the anonymous, crowded, and busy nature of such spaces (Hutson and Krueger 2018). The transient nature of public transit creates a situation in which women often barely fully register harassment before it passes, providing perpetrators with the opportunity to disappear into the network (Lewis, Saukko, and Lumsden 2020). There is consensus in the literature that these characteristics of sexual harassment in public transport account for its endemic and underreported nature.

Findings from cities in **New Zealand** suggest that gender plays an important role in people’s decision to make transfers and to wait at transit terminals (Chowdhury 2019). The study also identified waiting time as the most influential factor in determining women’s decisions to make transfers. A transfer waiting time of 10 minutes or less was strongly preferred only by women both for reasons of safety as well as time management (ibid). Since actual bus arrival times often deviate from the posted schedules due to a variety of factors, providing real-time bus information may improve service quality and alleviate security concerns.

Women with children below the age of five years were identified in London, **United Kingdom**, as being most sensitive to walking distances to access public transit (Dixit and Sivakumar 2020). Public transit options that require a long wait to transfer or that require transfers in isolated locations were also found to be unattractive for women and unlikely to encourage use in various urban European contexts (Cottrill et al. 2020; d’Arbois de Jubainville and Vanier 2017). Results from Auckland, **New Zealand**, additionally suggest that women of color feel less safe while waiting at public transit terminals at all hours

of day and night whereas Caucasian women were mostly anxious about safety at night (Chowdhury and van Wee 2020). Women of color were more frequent users of mobile apps to determine the duration of waiting time compared with Caucasian women (ibid). Other studies confirm that sexual harassment on or near public transit also affects people who do not identify as heterosexual or cis-gender. Harassment and violence aimed at such groups may occur at greater frequency or entail more hateful rhetoric and physical assault (Hutson and Krueger 2018).

### *Underreporting*

**Differences in women’s mobility are shaped in intricate ways by the specific intersections of ethnicity, life stage, and class** (Mandel 2004). For example, among university students in Kathmandu, **Nepal**, unmarried women encountered sexual and verbal harassment more frequently than married women. Married women who wore traditional markers of their marital status (vermilion and gold bangles, for example) are targeted less often for sexual harassment, presumably because from a patriarchal perspective, they are considered the “property” of their husbands. Young women wearing Western garb experienced the highest levels of sexual harassment (Neupane and Chesney-Lind 2013). Middle-aged men were identified as the most frequent perpetrators of sexual harassment on public transit in **Nepal**. Young women found it especially difficult to confront middle-aged perpetrators because they were often the same age as their fathers and uncles, whom they had been taught to respect and defer to (World Bank 2013).

Sexual harassment on public transit is also widely underreported. There is a general perception that reporting is useless, which is supported by accounts of women in various urban settings who have tried

to report an incident and have faced several difficulties, including not being believed or having their experiences trivialized by police and transit authorities (Quinones 2020). These limitations notwithstanding, women may opt for formal or “official” modes of transport even if informal alternatives are present because even the possibility of making a complaint offers women an added layer of assurance and security—see, Dominguez Gonzalez et al. (2020), for findings from six low-income areas of urban Latin America.

### *Paying more for private transport*

Being forced to pay for taxis and other private transport due to the lack of reliable or safe public transport options, a phenomenon known as the “pink transport tax,” is also reported in many contexts and imposes additional costs on women and other transport-disadvantaged groups such as seniors and people with disabilities (Dandapat and Maitra 2020; Mejía-Dorantes and Villagrán 2020). By way of example, in Nepal (study mentioned above in the “underreporting” section) women university students in **Nepal** reported pooling money to take taxis, which are significantly more expensive, to avoid the harassment they faced on public buses (World Bank 2013). Other studies have revealed significant diversity in women’s transport needs, depending on their income and place of residence (see, for example, Mejía-Dorantes 2018; Mejía-Dorantes and Villagrán 2020, for findings from **Mexico City**).

### *Intersectional gender lens*

The public transit experiences of transgender people and other sexual minorities have remained almost entirely unresearched and undocumented. A study conducted in Portland, **Oregon**, to understand transgender and gender-nonconforming public transit



users' experiences revealed that sexual minorities experience significant challenges to their routine mobility on public transit (Lubitow, Abelson, and Carpenter 2020). Notably, the sources of harassment and discrimination include other passengers, transit employees and staff, as well as members of the public passing by bus stops and train platforms. The consistency with which participants experienced harassment, discrimination, and violence while attempting to use public transit confirms the need for research and policy on gender and transport to move toward a more comprehensive understanding of the spectrum of gendered experiences that impact mobility and accessibility.

Although antiharassment campaigns have been undertaken in many countries, researchers emphasize a continued failure to recognize the systemic causes and societal-level implications of gender-based harassment on public transit, and in public spaces more generally. Campaigns against gender-based harassment on mass transit could be improved by approaching riders as a community, rather than as individuals. The existing research and evidence on this topic suggest that harassment must be defined as a social or community problem, requiring a response at that level. The continued involvement of civil society organizations is also necessary to enable the reframing on sexual harassment in public as a societal issue (Hickey 2014).

**To create more equitable public transit services, it is important for planners and policy makers not to homogenize sexual harassment as “women’s experience” (ibid) and to consider the safety needs of riders through an intersectional gender lens.**

## 3.2. Rural Mobility

### ESTABLISHED AND EMERGING MOBILITY PATTERNS

Rural regions of developing countries have witnessed fewer changes and innovations in transport systems and services than their counterparts in developed countries, where the expansion of high-speed internet, for example, has enabled demand-responsive services, including ride-hailing and ridesharing to make inroads into rural areas.

Although ride-hailing, ridesharing and other innovations such as auto-aggregator auto-rickshaw, motorcycle and scooter services are now widely available in the cities of developing countries, commensurate changes do not appear evident in rural areas. In the past two decades, the changes most evident in the latter areas are increased road development and bus services to nearby cities and towns, and less frequently, the availability of indigenous transport services such as motorcycle taxis. In rural areas, existing paved or unpaved roads are designed to ensure links to nearby cities or towns; in contrast, often limited attention is paid to road connectivity *within* rural areas. In general, similar to their urban counterparts, men in rural areas tend to benefit more from improved roads and transport. Women on the other hand, continue to rely on walking as their primary mode of mobility.

The transport burden for household needs remains a key constraint for many women in rural areas of developing countries where basic services are not easily accessible. A study of women’s transport burden in rural **Ethiopia** showed that 73 percent of trips, 61 percent of the travel time, and 93 percent of the transport effort were related to meeting household

needs: the collection of fuel, water (excluding waiting time at the source), and food. This labor was almost exclusively carried out by women and takes up between 20 to 25 percent of adult women's working time (Riverson et al. 2006).

Increasing rural women's access to livelihood opportunities is a vital step in overcoming poverty, and access to markets and transport is a necessary means to achieve those ends. Yet, local level research from 15 countries across Asia and Africa reveal that transport policy makers and providers have paid almost no attention to gender equity in rural transport (Fernando and Porter 2002). **The provision of new roads does not necessarily reduce poverty for everyone, and care needs to be exercised when rural roads projects are designed. Rural women need to be consulted more when road and transport projects are announced, and development programs should work alongside transport investments.**

Other studies have emphasized the interlinkages between prevailing gender constructs, women's mobility, and transport development in rural **Sub-Saharan Africa**. Masculine identities and their connection to "motormobility" is a potent factor in current gendered patterns of transport use. By contrast, headloading and child carrying are embodied skills widely expected of poorer women, in particular, and imbued with social meanings such that a woman may carry 63 kilograms of fuelwood (with a baby on her back!) but find no contradiction in the fact that she is considered—and may consider herself—too weak to operate a push-truck (Porter 2008).

The literature on rural transport largely focuses on the impacts of improving road connectivity but there is emerging evidence on the impacts of informal or intermediate transport services.

## AVAILABILITY

### *Rural roads*

The literature lends empirical support for the idea that improvements to transport infrastructure lead to economic development. However, the more complex question around gender differences is less clear. Investment in rural roads can undoubtedly benefit impoverished communities and poor households, but it does not necessarily alter structural poverty.

Some researchers suggest that improved access to transport raises living standards across social classes. Others have pointed out that the benefits are unequally distributed as the more affluent typically benefit most from the opportunities provided by road investments. An impact evaluation of a large-scale rural roads project in **Vietnam** revealed that roads improve economic opportunities for agricultural production and trade. Yet only households headed by men capitalize on these opportunities, experiencing an increase in agricultural output and income. Production and income do not increase in households headed by women. The result seems to be driven by a lower access to capital in households headed by women, which constrains their ability to make up-front investments to increase production and income.

The understanding that major rural transport challenges stemmed from the very poor condition of roads was strong in many contexts in rural **Sub-Saharan Africa**—see, for example, Seedhouse, Johnson, and Newbery (2016) for findings from northern **Nigeria**. Research in rural **Tanzania** reveals that women derive benefits from road improvement, even if only as pedestrians or wheelchair users taking advantage of a smoother surface, or better travel security when

vegetation is cut back. For women with the funds and independence to access the expanded transport services that tend to follow road improvements, there can be significant benefits—faster travel, improved access to farms and markets and sometimes lower transport costs. Nevertheless, women’s constrained resources and prevailing cultural mores continue to militate against them directly operating motorized or non-motorized transport, whether for personal or business use (Mulongo, Porter, and Tewodros 2020). Despite their growing use, bicycles, scooters and motorcycles, for example, remain almost exclusively assets owned by men in rural settings in Asia and Africa—see Rao (2001) for findings from Jharkhand, India.

**Coordinating transport investments with complementary development programs addressing these constraints can improve the benefits of better transport for such households (Mannava, Petrova, and Tran 2020).**

That women’s needs and priorities for rural transport may differ from men, including those in their families, has been borne out by much research in developing countries. For example, a study was conducted in **Ethiopia** to investigate the engagement of men, women spouses (WS) and women heads-of-households (WHH) in the planning and construction of rural roads in two districts of Tigray and Amhara, and the differential impacts of rural roads on the mobility and transport of men, WS and WHH. Findings revealed a strong demand among women for both road use and employment opportunities in road construction. Women identified different priorities than men for rural road development, including access to ambulance services; flat, wide, and leveled roads; and improved access to means of transport (Abhishek et al. 2020). The findings also revealed that women can only participate in road development when enabling

conditions and employment opportunities are created for them. Early active engagement of women in the rural planning process is key to creating enabling conditions. When the decisions taken are not informed by women’s concerns and interests, the employment opportunities created tend to be biased towards men (ibid). Similar findings are reported from rural **Nepal**, where heavy domestic duties constrain women’s potential to participate optimally in road/bridge construction despite the availability of work and enforcement of equal pay for women and men (Hada 2020).

**Without efforts to change patriarchal sociocultural norms, women are unlikely to benefit from such employment initiatives on a par with men.**

In some settings, women’s needs and concerns have been gaining visibility in rural transport planning agendas in recent years, but implementation remains erratic due to inadequate political commitment, institutional capacity gaps, the inadequacy of disaggregated data, lack of dedicated budgets for mainstreaming, and gender being treated rhetorically or as separate women-only projects (Tanzarn 2020). Such findings are corroborated by other studies that have attempted to understand the perceived benefits of rural transport investments derived by women and men (see, for example, Bradbury and Porter 2020).

#### *Informal/intermediate rural transport*

Often, women traveling with children are less inclined to use overcrowded multipurpose trucks or buses, which predominate the rural public transport system in many low-income countries, but were forced to do so due to a lack of options (Tanzarn 2020). In other situations, informal rural transport is often the only type of transport available for urban-rural connectivity in many developing countries. The expansion

of formal public transport services to rural areas has been slow and erratic in these areas. Therefore, in addition to prioritizing the provision of formal services, it is important to understand how to improve informal rural transport services.

One study tried to understand user satisfaction with informal transport services in rural areas of northeast **Brazil**. Rural Brazilians were generally found to be less satisfied with transport services than their urban counterparts. Women represented more than 70 percent of users of informal rural transport in Brazil, with food shopping for their families being the primary reason for traveling. Motorcycle taxis were evaluated more positively for meeting travel needs of solo (typically men) passengers; however, they met the needs of only 15 percent of respondents. Most respondents (78 percent) did not travel alone. They relied on vans for their transport needs but evaluated the services poorly for frequency, timeliness, speed, and safety (Nascimento and de Andrade 2020).

Several studies have explored the potential of intermediate means of transport for improving mobility and alleviating mobility problems in off-road rural areas in **Sub-Saharan Africa**. Off-road rural populations are disadvantaged in more ways than other transport-disadvantaged groups. They are often poorer in income terms, in health and in life chances than those in comparable roadside locations in the same region, although not all who live off-road are disadvantaged to the same degree by their location: women and children in Sub-Saharan Africa appear to shoulder more of the burden of off-road transport (Porter 2002a). Interviews with women traders in off-road rural areas of **Ghana** also emphasized the costs of late arrival at market. Delays in getting to market occasioned by transport unreliability can have serious implications for off-road women, since dealers in the markets may have already purchased

sufficient produce from better located local women who arrived earlier. Delays resulting in failure to find a buyer at market, or total failure to get to market, can also result in major losses through spoilage (ibid).

Motorcycle taxis now provide improved mobility for millions of rural Africans, where previously people had no other alternative than to walk (often with headloads), and women have been major beneficiaries of this still new and expanding phenomenon (Jenkins et al. 2020). Having access to motorcycle taxis has helped rural women with their livelihoods, health, and other mobility needs. For example, in rural **Sierra Leone** and **Liberia** about half of motorcycle taxi passengers are women, with this proportion increasing on market days. However, all motorcycle taxi operators in rural areas are men. Although many women expressed the desire to become taxi operators themselves, they identified the lack of friends or businesspersons willing to rent motorcycles to women operators as a major barrier (ibid). That women are generally excluded from rural transport services operations of all types due to the high cost of entry, a culture of aggression, and the existence of cartels and other unorthodox means of operating transport businesses has been established in various areas within lower-middle-income and low-income contexts (Tanzarn 2020).

The effects of demographic change, car-dependent lifestyles, and the lack of acceptance of alternatives represents a major problem for the public transport infrastructure in rural areas of developed countries. Therefore, the development of new transport service options has become especially relevant for rural communities. Evidence from research at the OECD (Organisation for Economic Co-operation and Development) countries suggests that older women are significantly more likely to use Demand-Responsive Transport (DRT) services—see, for example, Ahern



and Hine (2012). A better understanding of the determinants influencing the overall satisfaction levels of public transport and specifically DRT systems can be useful to make future versions of rural transportation systems more viable and to eventually create more efficient, less expensive, and environmentally friendly public transport services (Avermann and Schlüter 2019; Miralles-Guasch, Melo, and Marquet 2015).

## AFFORDABILITY

Similar to their urban counterparts, women living in rural areas are disadvantaged when accessing transport services. Motorcycle taxis now provide improved access for millions of rural Africans, who previously had no other alternative than to walk (Jenkins 2020), and women have benefited tremendously from the adoption of such taxis in rural Africa and elsewhere. However, women typically have less access to funds for the use of semiprivate transport and less access to personal means of transport such as bicycles or motorcycles. As a result, they may be more inclined to walk than men, limiting their use of basic services such as health facilities. (Kabia et al. 2018; Kelly et al. 2014). The linkage between lack of affordable transport in rural areas and health outcomes is covered at length in section 3.3.

Lack of economic resources often prevent women from making use of intermediate modes of transport (rickshaws, bicycles, mopeds, and so on) and forces them to travel on foot, unlike men, often carrying very heavy loads (goods and/or children). For example, in some rural regions of developing countries, women's transport burden has been exacerbated by the steady decline in readily accessible firewood supplies, as well as the decrease in the availability of reliable sources of potable water because of recurring droughts (Mahapa and Mashiri 2010).

Women in rural areas have reported restricted access to car use, long travel distances to work locations in cases where they work outside the community, and travel times and travel expenses that are higher than those of men. To the extent that these higher travel costs impose a welfare loss on women, gender disparities can be said to exist (Venter Mashiri, and Buiten 2006; Venter, Vokolkova, and Michalek 2007). In some instances, women have reported not getting adequate financial support from their spouses as a key barrier to accessing basic services in rural areas (Musoke et al. 2015). Even in examples where no cultural barriers prevent rural women from riding bicycles, few women have been found to be able to afford the buying of bicycles. (Porter 2002b) Thus affordability appears to be a key barrier to women accessing faster modes of transport in rural areas.

## ACCESSIBILITY

In order to give women better access to earning a livelihood, transport policy makers and providers need to take gender equity into account when planning rural transport in developing countries. The amount of research on the mobility needs and patterns of people with disabilities in rural areas is scarce but the literature we found showed that the challenges are numerous, not the least being the impediments for women to access more work, or even education.

### *People with disabilities in rural contexts*

A limited amount of research has been conducted to understand the mobility needs, patterns, and constraints of people with disabilities in rural areas of developing countries. As in urban contexts, people with disabilities and their caregivers, including elderly

people with limited mobility, confront a wide array of challenges in accessing transport in rural areas of Asia, Latin America, and Africa. Findings from South Asian countries reveal different levels of availability and accessibility in rural transport in **India, Nepal, and Sri Lanka**. The difficulties associated with travel ensure that people with disabilities access transport systems only in case of health or other emergencies. People with disabilities constitute only around 2–3 percent of users of rural transport services in South Asian countries (De Silva 2010). Interviews in **Pakistan** with rural women and men with physical disabilities revealed that the overall level of access to transport was poor irrespective of gender. Meagre environmental conditions and transit facilities, unfriendly behavior of transport staff, and travel safety and security threats were the barriers that most affected access for people with disabilities. Major concerns about transit facilities included inadequate shelter from weather conditions; insufficient lighting; lack of availability of timetables; inappropriate entrance-exit infrastructure; uncomfortable seats; inadequate toilets, particularly for wheelchair users; and poor security arrangements, especially for women travelers. Fear of theft, sexual harassment and assault, and intimidation by men were the security threats reported most frequently by disabled women travelers, especially while waiting at bus terminals and/or traveling alone. Familial and societal perceptions that women with physical disabilities were incapable of performing the roles normally expected from women hampered women's ability to rise above their physical limitations. Perhaps consequently, women with physical disabilities reported not receiving adequate financial or physical support for travel from their family members or caregivers (Ahmad 2013).

**Women with disabilities tend to suffer** from double labor discrimination due to both their gender and their disability/ies. In rural areas, they also suffer

from a lack of specific services for people with disabilities, problems with transportation, and limited access to information about employment opportunities. Research conducted in rural areas of **Spain** (Mondéjar-Jiménez et al. 2009) reveals that women with disabilities are excluded from professional opportunities and recreational activities and generally restricted to their domestic settings and familial circles. Women with disabilities living in urban areas are three times more likely to be employed than those living in rural areas (ibid).

Better access to transport services will reduce some of the barriers faced by rural women with disabilities, but effort is also required to reduce other stigmas and social barriers to their optimal inclusion in society. This is corroborated by other research conducted in rural settings that have found that although women's mobility opportunities are improving, many rural women are not in a situation where they can widen their activity spaces.

### *Social exclusion*

Among the literature from the developed countries, several studies attempted to answer the following questions: How does social exclusion, as distinct from other related experiences such as poverty and unemployment, contribute to the preferred mode of transportation? What is the relationship between social exclusion and transport? (see, for example, Hamilton and Jenkins 2000). Church, Frost, and Sullivan (1999), Atkinson and Laurier (1998) and de Haan (1999) all caution that social exclusion should not be confused with either poverty or unemployment, for while they are related, being poor or unemployed does not necessarily mean that one is socially excluded or vice versa. Church, Frost, and Sullivan (1999, 3) argue that the term "poverty" implies an absolute or relative lack of access to material welfare, while "social exclusion"

refers more broadly to the loss of “ability [by people or households] to both literally and metaphorically connect with many of the jobs, services and facilities that they need to participate fully in society.” Thus, social exclusion is considered to be a cumulative process in which progressive detachment from jobs, services and to some extent social networks makes it increasingly harder for people to reconnect and problems spill over from one sphere into another (Church, Frost, and Sullivan 1999; McCormick and Leicester 1998). For de Haan (1999), many different processes cause and contribute to exclusion and it can occur at all levels of society. A study on rural accessibility in **Scotland** found that mobility deprivation affected mostly women due to their gender-specific roles. In heterosexual households with a car, the man would normally have use of it, while childcare and shopping were tasks carried out by the woman but often made very difficult by a lack of adequate bus services. Focusing on women’s health-related behaviors found that the gendered nature of transport mobility in some households could negatively affect a woman’s ability to access routine health care. Many women, especially those in low-income groups and without access to a car, also struggled in an emergency to obtain treatment for themselves and their children, particularly if other children were also at home and if local public transport services were infrequent and did not directly connect with health care facilities (Gaffron, Hine, and Mitchell 2001).

### *Age, gender and race*

While there is limited research on the mobility needs of the elderly in rural areas of developing countries, one common finding from developed countries is that after the age of 64, travel demand shifts from car driving (partly linked to loss of driving licenses, but partly through choice), to car passenger and then to public transport in complex trip chains, especially

for single persons and for women—see, for example, Golob and Hensher (2007), for findings from Sydney, **Australia**; and Hamilton and Jenkins (2000), for findings from the **United Kingdom**.

It is essential to study relative desired mobility: how much a person wants to travel compared with the amount of travel they are doing now. In **North Dakota, United States**, rural women with low incomes were found to travel less compared with men on low incomes (Hough, Cao, and Handy 2008). It was also found that individual factors, social environment factors, and geographical factors significantly affect the mobility of elderly women in North Dakota. That lack of adequate transport options reduces quality of life for elderly populations was also reported in **Norway**, where the desire to visit friends and relatives more than they do currently was found to increase with age—see also Luiiu, Tight, and Burrow (2018), for higher interest in social and leisure activities among senior women in the United Kingdom—along with the desire to attend meetings and join organizations. When women have equally as good access to transport resources as men, they appear to travel as much as men (Hjorthol 2012).

In discussing the mobility patterns of elderly people, it is very important to distinguish between age cohorts and health status. It is also crucial to understand how the interactions between age and gender influence mobility patterns. Studies conducted in urban and rural areas of **New Zealand** and in rural areas of the **Republic of Ireland** and **Northern Ireland** revealed that both older women and men experience a shrinking in activity spaces and activity participation when older (Ahern and Hine 2012; Davey 2007). Older women are less likely to drive and to own a car and so are more seriously impacted by loss of a spouse in terms of their unmet travel needs. Older women who live alone are also very

vulnerable to social isolation through lack of transport (Davey 2007). The car-dependent lifestyles of men throughout their adult lives seem to make them less prepared, when they do give up their cars (for example, due to ill-health or physical impairment), for life without a car. While older women and men can often figure out alternatives for travel deemed urgent or compulsory (for medical check-ups, for example), “discretionary” trips that contribute significantly to quality of life may be lost when private transport is unavailable.

Findings from urban, periurban, and rural low-income communities in **South Africa** (Venter, Vokolkova, and Michalek 2007) and **China** (Zhao and Yu 2020) suggest that the gender gap in transport grows with increasing distance from a city center. Socially disadvantaged groups in rural areas of China, such as those over the age of 60, women, and people from low-income households, had particularly low mobility compared with other demographics. Mobility inequity even exists in rural areas in China between township residents and villagers. The former have a higher level of mobility than rural villagers. Rural people’s mobility was significantly affected by car ownership and public bus services. Policies designed to improve the quality and equity of mobility in rural areas in China should focus not only on rural road constructions, but also on improvements in public transport services and car ownership (Zhao and Yu 2020).

A few studies have focused specifically on how age, gender, and race interact to influence transportation difficulty. In rural **Alabama, United States**, Black seniors reported having more transportation difficulty than white seniors (24.7 percent versus 11.6 percent) (Park et al. 2009). When other variables were introduced, race differences disappeared, but there was a persistence of race-by-income interaction with

transportation difficulty. White seniors with lower incomes were more likely to have transportation difficulty than white seniors with higher incomes. When data from Black and white seniors were analyzed separately, income was found to be the only variable associated with transportation difficulty for white seniors. These findings indicate that low-income rural seniors are most at risk for transportation difficulty and that particular attention also needs to be paid to the needs of older Black women and to persons with cognitive limitations and depression (ibid).

#### *Mobility needs of children and young adults*

In many rural contexts in developing countries (especially in Africa), load-carrying is common among children, often as a coping strategy to compensate for the lack of adequate transportation, but its impacts on the lives and well-being of the young people concerned are less well known. One study aimed at understanding how the necessity of load-carrying affected young people in **Ghana, Malawi** and **South Africa** found that many girls and boys experience considerable disadvantage because of the part they are expected to play in filling Africa’s transport gap, regardless of whether their load-carrying work is for domestic or commercial purposes (Porter et al. 2012). Domestic load-carrying may have a particularly strong impact on education because many tasks such as water collection are required to commence early in the morning before school, affecting punctuality and concentration, among other things. Commercial carrying in many sites is dominated by boys (since girls’ time is commonly taken up by domestic demands). These findings shed some light on implications for the future of developing countries if current load-carrying patterns persist, including that many of today’s children may reach adulthood substantially disadvantaged in terms of their educational attainment and possibly also with long-term physical impairment



associated with load-carrying. Women and men with histories of load-carrying in **Ghana, Malawi** and **South Africa** presented with persistent headaches, waist and back pain, and restricted neck movement, as early as in their 20s (ibid).

A study in **Ghana** that assessed the interconnections between distance to school, workloads and education found that work burden (including load-carrying) had stronger negative implications for girls than for boys. This work frequently delays girls' arrival at school, especially when coupled with a long journey from home, resulting in punishments. Boys also suffer punishment if they are late, but boys' tasks before school tend to be fewer and less time-consuming than girls' tasks, so their likelihood of being late, even when living at a distance from school, is lower.

## 4. GENDERED EFFECTS AND OUTCOMES OF MOBILITY DIFFERENCES



Photo: Simone D McCourtie / World Bank



While differences in patterns of travel for women and men are more or less similar in developing and developed countries, the evidence shows that outcomes of inequity in mobility tend to be more severe for women in developing countries. Within the universe of 356 papers, 27 percent of the papers analyzed the impacts of women's mobility barrier on their economic empowerment, seven percent looked at differences in schooling outcomes, and 22 percent on health outcomes. The literature on health outcomes (especially neonatal health) was much larger in rural areas.

## 4.1. Economic Empowerment

Much evidence has been brought to bear in both developed and developing countries to demonstrate how gender inequities in transport access creates worse employment outcomes for women than for men, even within the same household. The International Labour Organization (2017) finds that in developing countries, poor transport is the greatest challenge to labor force participation, estimated to reduce the probability of women seeking employment by 16.5 percent and in emerging countries by about 5.7 percent. **To cope with socioeconomic constraints, women tend to pursue employment opportunities that are near their own neighborhood** (often due to childrearing or household responsibilities), taking cheaper, and slower transport modes. For some, the cost of travel was deemed so prohibitive that they preferred to remain in long-term unemployment rather than pursue employment options in more distant locations within the city (Lau 2008).

**Improving transport is key to the economic empowerment of women in rural areas.** Women in vegetable farming in rural **Nigeria** identified inadequacy of transport as one of nine constraints

(including: availability of water, lack of credit facility, insufficient capital, health issues, input supply, time, land availability and market for vegetables) that negatively influenced vegetable production and caused income erosion (Ajibola, Komolafe, and Akangbe 2015). Similarly, reducing the amount of time women in rural **Uganda** spend in transport activities has been identified as a critical factor in enabling a simultaneous expansion of non-traditional agricultural export and food production (Evers and Walters 2000). If trade is a central part of a livelihood strategy, the type of goods sold mediate the importance of mobility for the creation of profitable livelihood strategies (Mandel 2004). Rural women from the Tshitwe community in **South Africa** indicated that they would like to travel farther afield to market their products, services, and labor to a wider and more diverse clientele. They also wanted to acquire further education and training, but it was not always possible because of lack of access to transport. In rural northern **Nigeria**, women entrepreneurs emphasized that the poor condition of roads and consequent transport challenges had a negative impact on the success of their businesses, by affecting their ability to recruit employees, service customers and deliver goods (Seedhouse, Johnson, and Newbery 2016). There is a latent demand for transport in such communities, but because it is invisible to market forces, it remains unfulfilled, and "a vicious cycle is formed, founded on poverty and nurtured by inaccessibility (Mahapa and Mashiri 2010)."

With improved road connectivity in rural areas, evidence suggests that men may dominate new transport offerings at women's expense. Recent evidence comes from rural northern **Pakistan**, where vehicular mobilities have replaced pedestrian mobilities with the construction of new roads (Cook and Butz 2017). In recent years, road infrastructure development has dramatically enhanced the outbound travel of men wage earners and men students seeking

higher-quality educational opportunities. As privileged travelers, men and youth use vehicular transport to access social goods and networks, enrich their lives with new experiences and avenues for socioeconomic success, and realize social mobility. The road has had different implications for adult women. The intensified use of cars and buses by men and children have relationally restricted women's mobility—women are unable to access such transport means due to households' allocation of limited mobility resources to students and paid laborers (women engage in unpaid farming activities). Relational gendered mobilities spatially constrict many women in such a way that they are unable to access either (new) vehicular or (old) pedestrian mobilities, while neither gaining new social status nor advantages from their demobilization (ibid).

Most workers in urban areas routinely commute for work and any economic and personal well-being impacts of commuting will consequently affect a large proportion of the population. Findings from Antananarivo, **Madagascar**, suggest that the wages earned by commuters are systematically higher than the wages earned by those who decide not to commute and are self-employed or engaged with family businesses around their neighborhood. Proximity to formal or informal public transport (bush taxis in Madagascar) was crucial to promote people's access to jobs. The study also found substantial gender inequalities in wages. However, lack of access to public transport did not seem to be a contributing factor to the lower wages earned by women since women were more likely than men to use buses to commute. The gender wage gap may be more attributable to other factors such as lower education and experience among women, sexist attitudes of employers, as well as social norms and cultural expectations that motivate women to look for work closer to home (ibid.). A study in the **United Kingdom** found that long

commuting times had deleterious impacts on mental health. In addition, women's satisfaction with their jobs was more sensitive to longer commute times than men, likely due to their greater household and family responsibilities (Clark et al. 2019). Longer commute times are more strongly negatively associated with the job satisfaction of women compared with men in **Spain** (de Oña and de Oña 2013).

Research on commuting differences between working women and men that are a result of gender division of household labor and class (as signified by access to public or private transport) has been conducted in a few settings. A study conducted in Amman, **Jordan**, found that women bus and shared taxi commuters are likely to leave home as early as 6:30 a.m., whereas men commuters in these two groups leave home much later. Both women and men bus and shared taxi commuters tended to carry out household maintenance activities after work. In contrast both women and men private car commuters left for work much later in the morning and did not combine household maintenance trips with work commutes (Hamed and Olaywah 2000).

Primary research undertaken in the northeast of **England** explores the way in which inequalities in access to transport affect women's opportunities to enter paid work, and advances the idea of spatiality as a social construct. Findings suggest that although some women can achieve men's levels of transport resources, most women are stuck "in the slow lane" and their mobility deprivation often confines them to the private world of the family, or alternatively, to part-time, low paid work on the periphery of the labor market. This leads to the conclusion that there is an urgent need to provide women with a range of mobility choices which enhance their access to the labor market and to challenge the socially constructed processes which underpin the discrimination



women face when accessing the world of paid employment (Dobbs 2007).

Findings from Barcelona and Madrid, **Spain** also confirm that low job accessibility via public transport negatively affects women's employment probability, although the intensity of this effect tends to decrease with an individual's educational attainment, presumably because higher levels of education tend to warrant higher levels of remuneration hence permitting more private transport options (Matas, Raymond, and Roig 2010).

Evidence suggests that transport subsidies tend to benefit women and promote gender equality in employment. A study was conducted in Addis Ababa, **Ethiopia**, to identify the comparative effectiveness in improving employment outcomes for 18 to 29-year-old urban unemployed youth of two job-search support programs, namely: access to a transport subsidy and access to a job application workshop. Findings revealed that while the transport subsidy increased both the intensity and the efficacy of the job search, individuals who were offered the transport subsidy were 25 percent more likely to find formal employment. The outcomes were found to be stronger for women and for less educated workers, those with at most secondary education. (Abebe et al. 2016). Similar findings are reported from Lahore, **Pakistan**, where lower-income women are more likely to use bus rapid transit to access employment and to benefit from fare subsidies (Zolnik, Malik, and Irvin-Erickson 2018).

Researchers who have studied employers' use of company-provided transport in attracting and retaining women workers have also emphasized that the benefits of company-provided transport tend to be used almost exclusively by middle-class well-educated women working in full-time higher-income positions in the information technology (IT) sector. Lower-income blue-collar contract workers such as

food vendors, office cleaners, gardeners, and security personnel, including those who work full time for a particular IT company, do not benefit from company-provided transport. They continue to use public buses while contending with all the associated challenges public transport presents for women in cities in developing economies (Verma et al. 2017). Even when they do not have access to company-provided transport, women with higher levels of education, those employed in professional jobs, and older women report feeling safer traveling on public buses and waiting at bus stops (see Verma et al. 2020, for findings from Bangalore and Ahmedabad). These findings suggest a more pronounced barrier between access to transport and access to socioeconomic opportunity for lower-income and less well-educated women (Campbell 2014; Patel 2006).

Class analysis of gendered transport disadvantage from other settings also reveals important insights. Findings from New Delhi, **India**, revealed that although women generally had shorter work-home commutes than men, experienced limited access to private modes of transport, and used slower modes of travel, these gender differences were more pronounced in lower and middle-income households due to an array of interlocking factors such as time poverty, lower levels of education and professional opportunity, affordability, security and poor geographic locations. Women in higher-income professional categories in New Delhi had mobility patterns that were similar to men; they were better able to exert their rights to employment and mobility (Jain and Panima 2014).

Some studies have attempted to understand the employment outcomes of mobility constraints among transport-disadvantaged groups such as single mothers, the young, the elderly, the unemployed, low-income workers, and disabled people who are already

on some form of social assistance. In **South Africa**, low-income women with disabilities living in Khayelitsha, a township on the Cape Flats in the city of Cape Town, identified lack of accessible and affordable transport as one of the main barriers they faced in acquiring the skills to seek sustainable employment (Lorenzo 2008).

Lastly, women have much poorer access than men to transport-related occupations in both developed and developing countries. As an example, while women represent 60 percent of customers of the taxi and ride-hailing industry, they comprise only two percent of drivers (Guo et al. 2018).

## 4.2. Education

Girls' school attendance and educational attainment is impacted by a complex set of socioeconomic factors along with deficiencies in the transport system. Distance to school and safety when commuting to school are the two primary transport barriers that girls face when commuting for education.

**By reducing travel time to school, enhanced road access can potentially have a positive impact on schooling outcomes for both girls and boys.** For example, Khandker, Bakht, and Koolwal (2009) and Khandker and Koolwal (2011) found positive short and long run impacts on schooling—both for boys and girls—of a rural road construction program in **Bangladesh**. This is mainly because the resulting connections to new markets could increase schooling investment by boosting household income and improving returns to education. In rural Vietnam improved roads resulted in a 17 to 30 percent increase in primary school completion (Mu and van de Walle 2011). Mukherjee (2012) finds that in rural

**India** better roads increase school enrollment by 22 percent. Similarly, Adukia, Asher, and Novosad (2020) find a positive causal impact of connecting a village in India with a new all-weather road on both enrollment and educational performance of middle-school children—six percent more students take and pass exams in villages after new roads have been built.

Findings from studies in rural **Ghana**, **Malawi** and **Nigeria** report that girls living in less accessible areas often drop out of formal education not simply because the school is too far, the transport costly or inadequate, but because the work required of them before they leave for school is particularly onerous and time-consuming (in comparison with boys). This puts pressures on them which are compounded by a long and sometimes hazardous journey to school and fear of punishment if they arrive late (Porter 2011).

**Safety and security of mobility is a major barrier for girls, but simple mobility solutions can help alleviate these barriers.** Evidence suggest that providing girls with bicycles can be a transformative tool that can help them pursue education. A study conducted in rural **Mozambique** and **Namibia** to understand how the delivery of large numbers of bicycles impact communities, households, and individuals (Cunha 2006). It found that in terms of primary school enrollment in **Mozambique**, girls whose families own a bicycle and use it to collect water have a 32 percent higher probability of primary school enrollment than girls in rural areas whose families do not use a bicycle for chores (ibid). Similarly, a promotional bicycle sale in Morogoro, **Kenya**, which gave a 15 to 20 percent discount, proved to be very popular among secondary school girls, suggesting that cost may be a bigger barrier than cultural norms in preventing girls and women from riding bicycles in some settings. In the same vein, providing bicycles to girls in rural **India** improved their secondary school enrollment

significantly (reducing the gender gap in enrollment by 40 percent) and improved their test participation and scores (Muralidharan and Prakash 2017).

### 4.3. Health

Time poverty, when compounded by remoteness and the necessity of a long walk or journey to services, may similarly be a key factor preventing women's access to timely health care: this has serious implications for their health.

**A few studies have shed light on the role of formal public transit in the use of health services.** For example, we found a study that attempted to understand the effects of the introduction of a high-speed rail service (the Korean Train Express) on health care service utilization in Seoul, **Republic of Korea** by rural populations diagnosed with cancer over 2002–06 (Choi, Kim, and Park 2019). The study did not reveal significant differences in use by gender, but it did determine that the Korean Train Express had mostly facilitated the uptake of outpatient services for higher-income rural patients diagnosed with cancer, and recommended additional efforts to improve access to urban health care services for lower-income rural populations (ibid). Similarly, a study in **Japan** of independent older adults aged 65 years revealed that income inequalities in access to dental care were smaller among older daily users of public transportation (majority women) than in nondaily users and among higher-income households. These findings suggest that providing easy and affordable access to public transport is necessary for improving access to dental care, especially for older men with lower incomes (Kiuchi et al. 2019). Box 4.1 discusses the health impacts of long commuting times.

#### Box 4.1. Health Impacts of Long Commuting Times

Several studies have found a negative impact of commuting times on women's perceived level of well-being and health (see, for example, Künn-Nelen 2015; Clark et al. 2019; de Oña and de Oña 2013). The finding that women disproportionately exhibit a negative relation between commuting time and level of wellness is noteworthy and could be explained by their greater responsibility for housework and childcare compared with men (Roberts, Hodgson, and Dolan 2011). The disproportionate domestic responsibilities borne by women who commute longer could also explain their lower probability of regular exercise, an effect that is not found for men. This lower physical activity can, in turn, explain the more pronounced adverse health effects of a longer commuting time for women compared with men. Another explanation could be sleep, as commuting time is more strongly related to worsened sleep quality for women than for men, suggesting that commuting time results in more stress for women (Künn-Nelen 2015). The health effects of commuting appear to be heterogeneous across transportation modes and genders. Commuting time has a more negative effect on health (and is perceived as such) among car drivers than among commuters using public transportation. For car drivers, a longer commuting time was found to be related to lower health satisfaction, lower health status, and a higher body mass index (BMI). For commuters using public transportation, there was no significant relation between commuting time and any of these health measures (ibid).

**Studies have also been conducted in developed country settings to understand the effects and outcomes for different groups of women between mobility needs and other socioeconomic barriers that may affect their freedom of movement, health status and quality of life.** For example, older retired women and those who are caregivers for others were found to be most likely to experience social exclusion due to poor access to transport in Melbourne, **Australia**, and therefore most in need of positive discrimination in transport and social policy (Delbosc and Currie 2011). A study in six American cities found that most women have easy access to mammogram facilities, however it found that Hispanic and Black women were more likely to have poor access to such facilities and hence were transit

marginalized (Graham et al. 2015). Distance, time, and convenience of travel to a screening unit also emerged as important factors of consideration in a study of women's preferences for the delivery of the National Health Service Breast Screening Programme in the **United Kingdom** (Linsell et al. 2010). Only women in rural areas with no access to a car favored mobile units over permanent units. While most urban women did not care whether screening services were provided by hospitals, community health centers or mobile units, most agreed that having well-situated units with advance publicity about public transport links and parking facilities would encourage greater uptake (ibid). Box 4.2 discusses the mobility needs of indigenous women and their health outcomes.

#### Box 4.2. Mobility Needs of Indigenous Women and Health Outcomes

Only a small amount of peer-reviewed research exists on the mobility needs of Indigenous women. Akter, S. et al. (2018) carried out a systematic review of published and grey literature published between 2000 and 2017 on Indigenous women's access to maternal health care services in low- and middle-income countries. Globally, Indigenous people have lower health status compared with non-Indigenous people due to unequal access to health care. Barriers or enablers to accessing maternal health services by Indigenous women are generally not well researched. Findings from Akter, S. et al. provided insights into understanding the gaps in existing policies for Indigenous women and their access to maternal health services. The most prominent barrier to accessing maternal primary health-care services was the top-down nature of intervention programs, which rendered programs culturally unfriendly for Indigenous women. Inadequate access to transport was identified alongside distance, cost, accommodation, language barriers and lack of knowledge about existing services as significant barrier Indigenous women face in accessing maternal health care services (ibid). Similar barriers are reported for rural women from quilombola (African continental ancestry) communities in Brazil: in addition to lack of adequate access to transport and health information, experiences of racism in Brazilian society were identified as major barriers to health care access for Indigenous and Black Brazilian women (Kuntz Durand and Buss Heidemann 2019).

The lack of research on the needs of Indigenous women is especially surprising in developed economies considering the extensive media coverage in countries such as Australia and Canada of mobility and accessibility challenges faced by urban (and rural) Indigenous peoples. Despite widespread journalistic coverage in Canada that emphasizes the lack of transportation services from remote communities as a causal factor in the national tragedy of thousands of Indigenous women being murdered or declared missing since the 1980s, absolutely no peer-reviewed scholarship appears to have been published on the topic in the past 20 years. The only peer-reviewed article we found on Indigenous women's mobility needs was conducted in **Australia**. It identified providing transport, team home visits and employing Indigenous Australian staff as key elements for improving access to maternal care for urban Aboriginal and Torres Strait Islander women in Australia. Clients and staff consistently reported provision of transport as essential in assisting them to access antenatal services (Bertilone et al. 2017). Another study in Australia, one that lacked a specific focus on gender or women, found that for Aboriginal and Torres Strait Islander people living in rural and remote communities, transport to hospitals in cities was a major barrier for accessing planned, emergency, inpatient, outpatient, and diagnostic care services (Kelly et al. 2014).

**Lack of reliable transportation was reported as a significant barrier to accessing reproductive and maternal health services by rural women in developing countries.** Research from rural communities in **India** (Murthy and Barua 2004) and **Uganda** (Musoke et al. 2015) identify delay in care due to lack of transport facilities, alongside inappropriate referrals, or poor emergency preparedness of referral facilities, as important non-medical determinants of maternal deaths. Women in **Haiti** also reported significant barriers in accessing health care due to the distance from clinics and hospitals (Urrutia et al. 2012). Most rural women reported an average of 84 minutes travel time to the nearest health care facility. From more remote rural communities, women often had to travel two to three hours to get to a health outpost. Women were reported to die quite frequently during childbirth due to these reasons. (ibid).

Lack of literacy, transport availability, transport costs, and travel time correlated strongly with care-seeking

behavior in rural **Bangladesh** and **Burkina Faso** (Alam et al. 2016), and **Pakistan** (Mian et al. 2015). Transport problems have been a major cause of perinatal mortality in mountainous rural regions of **Nepal** (Hada 2020), where the cost of transport was deemed the second most significant factor after the cost of skilled attendance at delivery in preventing women from giving birth in a health facility. Most families could afford one or the other, but not both (Borghetti et al. 2006). Rural women in **Afghanistan** who had delivered none of their children in a health center also reported money to pay for services as the most significant barrier to accessing institutional delivery (56 percent). No transportation available was the second most widely cited reason among Afghan women (37 percent), followed by family restrictions, including women's lack of knowledge and control over family finances (30 percent) (Higgins-Steele et al. 2018). Poor availability of transport, financial constraints and the unavailability of men to chaperone were also identified as important barriers to seeking



care in rural **Pakistan** (Qureshi et al. 2016). Rural women in Sindh, Pakistan, specifically identified the need to seek permission from and be accompanied to health facilities by a man or older woman in the family as a major barrier to seeking care (ibid).

Transport accessibility and affordability is also increasingly understood in other contexts to be an important social determinant of maternal health, and health access more broadly, alongside other factors. As an example, **Namibia** faces the combination of ineffective delivery of social services and a staggering 23 percent prevalence of HIV/AIDS among the adult population. Problems are exacerbated within the rural setting where the lack of transport systems isolates communities from access to social services (Cunha 2006). In rural **Uganda**, 45 percent of women who tested HIV-positive during antenatal care between 2007 and 2010 were lost to follow-up; high transport costs were often mentioned as a major barrier to seeking continued care (Lubaga et al. 2013). In rural **Mozambique**, local unemployment and poverty caused by the civil war resulted in other downstream effects, including lack of funds for accessing medical care and transport as well as increased domestic violence, which compromised maternal health (Firoz et al. 2016). Similar findings are reported from other post-conflict and war-affected settings in **Sub-Saharan Africa**. In **South Sudan**, where over 50 percent of the population live below the poverty line, a combination of factors related to remoteness and long distances, lack of economic resources and transport services, lack of physical safety and security, and poor health care services contribute to high rates of home delivery attended by unskilled attendants and poor usage of health facilities. Findings from a study in **South Sudan** highlighted an urgent need for the government to implement security and safety measures to improve access to delivery services, particularly at night when robbers and bandits are most

active (Mugo et al. 2018). Box 4.3 discusses the use of health care services by women with disabilities.

#### **Box 4.3. Use of Health Care Services by Women with Disabilities**

Women with disabilities in rural **Nepal** face more acute challenges than women with no disabilities in using maternal health services. To improve care provision for women with disabilities, improvements are needed not just in distribution and management of resources, from transportation through to service delivery, but also in improved provider awareness and knowledge of a human rights approach to disability and health (Devkota et al. 2018). Women with disabilities living in poverty in **Kenya** often opted to forgo free health care services because they considered the cost of transport prohibitive. Due to limited mobility, they needed someone to accompany them to health facilities, leading to greater transport costs. The absence of a companion and the unaffordability of high transport costs made some women forgo seeking antenatal and skilled delivery services despite the existence of free maternity programs (Kabia et al. 2018).

Community-based transport strategies and emergency transport schemes have emerged as useful, cost-effective, and replicable solutions for underserved rural and periurban areas to improve women's access to health facilities in case of emergencies (Atuoye et al. 2015; Babinard and Roberts 2006). In rural **Sierra Leone**, a system of emergency referral relied on specially designed motorbike ambulances to transport pregnant women to health facilities. The

service was deemed accessible by local communities and was highly valued by those it serves (Bhopal, Halpin, and Gerein 2012). Sensitization campaigns played a crucial role in the success of these ambulances. A district-wide traditional birth attendant training and sensitization activities provided a foundation for the introduction of the motorbike ambulance service, creating a high level of awareness of the service and its importance, particularly for women in labor (ibid). In remote regions in **Kenya**, where the lack of reliable transport options was a major barrier to women giving birth in health facilities, the use of digital health transport vouchers to facilitate transport to health care facilities for delivery resulted in almost all mothers giving birth at a health facility (Ommeh et al. 2019). A combination of referral services, community-run ambulances, and transport vouchers also enabled the poorest families in remote regions of **Pakistan** to afford the cost of the ambulance for maternal and neonatal health (Babinard and Roberts 2006).

Digital payment/money transfer methods also present an effective method to improve access to health facilities. As an example, the transportMYpatient program was launched in **Tanzania** in 2009 to address transport costs, which are a major barrier to fistula patients accessing rehabilitation services. The initiative used mobile phone technology to transfer funds to cover the transport costs of taking fistula patients to and from hospitals.



# 5. CONCLUDING REMARKS AND POLICY LESSONS





Mobility choices and constraints are known to be influenced by a combination of availability, affordability, physical accessibility, and simultaneously mediated by other factors such as personal attributes (age, income, caregiving status, for example), social and cultural acceptability, and concerns about safety and security. A review of the literature on gender and mobility published within the past 20 years reveals some striking global similarities in how one's gender identity influences one's mobility choices and constraints. For example, despite immense differences based on class and geographic location, globally, women tend to travel less, and to make shorter more complicated multipurpose trips than men. With a few exceptions women are also more likely than men in both developing and developed countries to walk and to rely on public transport and are less likely to drive.

These differences in transport choices and travel patterns arise not just because women as a global constituency have lower incomes and fewer economic resources and assets than men, but also due to the different societal expectations placed on women and men. Although gender roles and responsibilities are shifting gradually, men continue to be associated more strongly with the public domain in which mobility for business and pleasure, and taking up space physically and figuratively, is considered a necessity and an entitlement whereas women continue to be associated more strongly with the private domain wherein homemaking and caring for others are assumed to be the priorities. Box 5.1 discusses the possible areas of future research.

#### Box 5.1. Areas of Future Research

Differences between women and men in mobility patterns and choices (including heterogeneity) have been researched extensively globally but significant gaps remain. Notably: (1) the mobility needs of children and young adults need additional research; (2) despite extensive journalistic coverage on topics such as demand responsive transport, mobility as a service, and the use of automation and artificial intelligence in transport, there is little peer-reviewed research on the gender equality and social justice implications of the growing use of such services and technologies; (3) the role of indigenous or informal public transport in providing an alternative mode of mobility has in general been researched quite extensively in various contexts in the developing countries regions, however, research on gender equity in the use and patronage of indigenous transport (including as first- and last-mile options) has received little attention; (4) gender equality and social justice implications and outcomes of public transport network addition and change (from bus service to metro, addition of new tramlines and connections to subway systems, for example) have not been researched adequately; (5) studies that engage with gender identity as a continuum and document the needs or experiences of sexual minorities and other non-binary persons are rare; (6) the impacts of interventions to improve affordability (for example, subsidies) on access to economic opportunities for low-income women warrants further inquiry; and (7) there is limited work on the role of race and ethnicity (including Indigenous identity) in determining mobility choices and constraints.

The timeframe covered in this report excludes the period in which COVID-19 altered the mobility of women and men in a fundamental way and robust evidence on the impacts of COVID-19 on women and men's mobility needs, patterns, and barriers, is only now emerging. COVID-19 has decimated public transport use at a time when global efforts must dramatically increase toward transport decarbonization. It has drawn both women and men away from public transport reflecting both public health directives and individual concerns about using public transport, and toward more carbon-intensive individual modes of transportation. However, due to their greater reliance on public transport, women transport users have been hit more than men by the deterioration of public transport service. Before the pandemic, women were already impacted by infrequent public transport at off-peak hours as they are more likely to travel for care-related activities. Due to the pandemic, this situation has worsened for working women who cannot telecommute, due to their concentration in low-wage essential services or having limited livelihood options, and who need to travel at peak hours with more infrequent transport services, resulting from measures to mitigate COVID risks and a reduced transport demand. It is also notable that COVID-19 shrank the global women's labor force in 2020 by 5 percent from the pre-pandemic level, compared with a reduction of 3.9 percent of men (ILO 2021). This disproportionate impact on women is due to many factors, including their significant domestic and care responsibilities during lockdowns, as well as lay-offs and business closures. For the revitalization of public transport and supporting women to re-integrate into the labor market, it is imperative that transport services respond to the specific mobility challenges of the largest passenger base—women—as this is a core aspect of a pandemic recovery that *builds back better*.

Women's participation in the formal and informal labor market has always been determined by a combination of physical and intellectual abilities, social norms, cultural attitudes, societal values, and economic necessity. In most of the world, women's roles and responsibilities were historically geared toward household duties and unpaid labor. At the same time, gender roles tend to be malleable, and social norms are changing worldwide, albeit slowly (Peterson and Runyan 2014). Women are economically active even when confined to the private or informal sphere, but they are also participating out of choice and necessity in the formal and informal labor force in unprecedented numbers all over the world. That being said, familial and societal expectations of women, and even women's expectations of themselves, have been slower to change. Thus, growing cohorts of women globally find themselves earning a living at (or almost at) par with men, while also bearing the bulk of responsibility for caregiving, household maintenance and social reproduction more broadly (Baruah 2017). This has resulted in higher levels of time poverty for women and fewer opportunities to access services and pursue activities related to education, professional development, and physical and mental health and well-being.

On the whole, the available peer-reviewed evidence on gender and transport presented in this report clearly establishes that transportation systems consistently undervalue and underprovide services and resources designed to meet the complex travel needs of multitasking individuals who are managing households, working in and engaging with their local communities, taking care of children and other relatives, while often simultaneously working one or more wage-earning formal or informal jobs. Most of these individuals are women, and many are further disadvantaged in the accomplishment of their complex tasks by patriarchal household and social structures



in which men typically appropriate the fastest and most expensive available transport technologies for themselves (Peters 2013).

**While transport policies are designed to work around social and cultural norms, gender identity and mobility are mutually constitutive social processes—both influence each other.** Transport policies need to account for this bidirectional relationship when addressing the mobility needs and barriers of women. Based on the evidence reviewed in this report, the following policy lessons can be drawn.

First, “one-size-fits-all-women” transport policies designed to benefit women may leave many women behind. Adopting an intersectional gender lens that considers factors such as age, disability and sexual orientation/identity is important. Policies should be designed with intersectionality considerations.

Low-cost transport interventions can have a huge impact on the lives of some groups of women. For example, a lack of affordable transportation has been shown to be a significant barrier to women in accessing reproductive and maternal health services in some rural contexts. Innovative approaches to financing maternal health services, such as subsidies for transport, digital transfer of resources for transport, care vouchers for private providers, community ambulances, and the like have been found to be cost effective and replicable ways for improving women’s access to and the usage of health services. Similarly, safety and security considerations are an important barrier for girls in attending schools. In certain contexts, providing subsidies for bicycles or free bicycles have improved their school attendance and education outcomes.

Second, the availability of both public transit and last-and first-mile connectivity appears to be a particular challenge for women and other marginalized groups. Policies and investments designed to improve the efficiency and density of public transit systems with good connectivity and mixed land use, fewer transfers, and shorter wait times can improve transport access for women and low-income individuals. People with disabilities also benefit from such interventions, especially with additional considerations for accessibility.

In both urban and rural settings, informal transport services appear to offer a viable mobility option for marginalized groups such as women, children, people with disabilities and the elderly.<sup>8</sup> Emerging trends such as shared mobility or mobility as a service, also attract women users. Regulating informal transport and mobility as a service—ensuring affordability of fares, safety, and regularity of services—would benefit women and other transport-disadvantaged groups. In addition, promoting non-motorized options for last-mile/first-mile transport options such as pedicabs can be environmentally sustainable while also beneficial for women and other marginalized users.

Third, affordability of transport (especially public transit) remains a major concern for women and other users. Public transit subsidies are a common tool used to address affordability constraints and policy makers can use it as a direct lever to improve equity of public transit usage. However, subsidies need to be designed to allow for the mobility needs of different types of women users. Notably, the literature suggests that: (1) subsidies and off-peak pricing do work but need to be substantial to attract women, low-income groups and non-workers; (2)

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8 Informal transport services can also offer a vital source of livelihood for many urban residents.

low-income and non-working people are amenable to travel off peak (at the right subsidy), but not women inherently; (3) when offering a subsidy for a particular public transport mode, the demographic that uses the mode should be taken into account; and (4) free or subsidized public transport may benefit all seniors (both women and men), but particularly low-income women.

Fourth, social and cultural acceptability of women's mobility is an important element when designing transport interventions to benefit women. For women to have equitable access and entitlement to mobility, initiatives that dispel misogynistic misconceptions about women and raise awareness among men about the benefits to families and society of women's greater mobility may also be crucial. Complementary interventions should be considered to enhance the social and cultural acceptability of women's mobility.

Fifth, the perceived (as well as realized) risk of sexual and physical harassment is perhaps the starkest constraint that women face compared with men. It is rampant on public transit in cities across the globe. The victims are overwhelmingly women and girls. Policies focused on crowding reduction, improved reporting, and bystander intervention are potential tools for ensuring that public transit is safe and welcoming for people of all genders.

Sixth, mobility barriers do not work in isolation, and there is an interaction between them that affects women's usage of public transport and related spaces. The impact of different transport related factors (availability, affordability, physical accessibility, acceptability, and safety and security) on women's mobility are not necessarily independent of each other and the extent to which they affect women depends on other socioeconomic characteristics.

For example, the link is clear between lack of safe and available transport options and affordability. In many urban settings, women and girls experience a "pink transport tax" that compels them to choose more expensive private transport options to ensure safety (Kaufman, Polack, and Campbell 2018). This is also common for low-income women in the last-mile, where the unsatisfied transport demand is covered by informal and unsafe transport options. While some women might be able to afford better options, there are others that cannot, introducing an entry point for discussion on intersectionality, equitable mobility and the need to provide affordable and safe transport options. It is also important to design and implement gender-responsive policies and approaches for public spaces for those for whom walking is their only travel mode.

Seventh, trends with seemingly no linkage with one's gender, may exacerbate mobility barriers for women without careful planning. Urbanization and periurbanization encourage rapid motorization and can reinforce class and gender disparities. Studies of periurbanization reveal that a public participation process established in the early stages of transport planning can be a valuable complement to the technical planning process in generating transport interventions with wider distributional benefits. If properly designed, participation processes offer an opportunity to incorporate the interests of nonauto users, women, and other vulnerable urban residents into the planning process.

Eighth, it is necessary to enable the integration of gender into transport policy. This requires institutional processes that allow better linkages between a country's transport policy and its gender equality policy. It also requires clearer and more transparent connections between a transport policy and the projects that arise from it—along with stronger links

between initial project plans and approved projects, as well as between their planning and implementation. Ultimately, this requires a monitoring and evaluation culture that fosters gender awareness.

Lastly, the findings of this report have important environmental, social and economic implications. Evidence shows that women are in general greener travelers (as on average they make a higher proportion of trips than men using public transport and/or walking) and have a lower carbon footprint. While more research is needed globally, a study for example in Sweden (Kronsell, Rosqvist, and Hiselius 2016) concluded that women's passenger transport contributes 30 percent fewer CO<sub>2</sub> emissions than men. However, while women are greener travelers, this

is because they have no other choice, for example, they are "captive" transit users, since their mobility patterns are often not a matter of preference but of necessity. Without interventions to make transportation more amenable for all, and especially for women, an increase of women in the paid workforce could see their use of cars converge with men's use over time. And while women's lower carbon footprint may be desirable environmentally, their current travel patterns are barriers to their economic independence and their full participation in public and economic life. In this context, addressing the myriad of mobility barriers for women is vital both for their individual self-actualization and their social and economic empowerment—and for a just transition to the decarbonization of transport.

## BIBLIOGRAPHY

- Abdelnour, Samer, and Akbar M. Saeed. 2014. "Technologizing Humanitarian Space: Darfur Advocacy and the Rape-Stove Panacea." *International Political Sociology* 8: 145–63.
- Abebe, Girum, Stefano Caria, Marcel Fafchamps, Paolo Falco, Simon Franklin, and Simon Quinn. 2016. "Curse of Anonymity or Tyranny of Distance? The Impacts of Job-Search Support in Urban Ethiopia." National Bureau of Economic Research Working Paper No. 22409. <https://doi.org/10.3386/w22409>.
- Abhishek, Abraham, Cecilia Borgia, Kebede Manjur, Frank van Steenberg, and Letty F. Vera. 2020. "Gender Mainstreaming in Rural Road Construction/Usage in Ethiopia: Impact and Implications." *Proceedings of the Institution of Civil Engineers—Transport* 173 (2): 122–31. <https://doi.org/10.1680/jtran.18.00154>.
- Abuzo, Anabel, Iderlina Mateo-Babiano, Louella D. Mabras, and Charlene Mae G. Tagam. 2017. "The Gender and Indigenous Transport Nexus: Issues and Challenges of Jeepney Drivers and Passengers in Relation to Travel Time and Delay." *Journal of the Eastern Asia Society for Transportation Studies* 12: 2321–32. <https://doi.org/https://doi.org/10.11175/easts.12.2321>.
- Adeel, Muhammad, Anthony G.O. Yeh, and Feng Zhang. 2016. "Transportation Disadvantage and Activity Participation in the Cities of Rawalpindi and Islamabad, Pakistan." *Transport Policy* 47: 1–12. <https://doi.org/10.1016/j.tranpol.2015.12.001>.
- . 2017. "Gender Inequality in Mobility and Mode Choice in Pakistan." *Transportation* 44 (6): 1519–34. <https://doi.org/10.1007/s11116-016-9712-8>.
- Adetunji, Musilimu A. 2013. "Gender Travel Behaviour and Women Mobility Constraints in Ilesa, Nigeria." *International Journal for Traffic and Transport Engineering* 3 (2): 220–29. [https://doi.org/10.7708/ijtte.2013.3\(2\).09](https://doi.org/10.7708/ijtte.2013.3(2).09).
- Adnan, Muhammad, Bat-hen Nahmias Biran, Vishnu Baburajan, Kakali Basak, and Moshe Ben-Akiva. 2020. "Examining Impacts of Time-Based Pricing Strategies in Public Transportation: A Study of Singapore." *Transportation Research Part A: Policy and Practice* 140: 127–41. <https://doi.org/10.1016/j.tra.2020.08.010>.
- Adom-Asamoah, Gifty, Clifford Amoako, and Kwasi K. Adarkwa. 2019. "Gender Disparities in Rural Accessibility and Mobility in Ghana." *Case Studies on Transport Policy* 8 (1): 49–58. <https://doi.org/10.1016/j.cstp.2019.12.006>.
- Adukia, Anjali, Sam Asher, and Paul Novosad. 2020. "Educational Investment Responses to Economic Opportunity: Evidence from Indian Road Construction." *American Economic Journal: Applied Economics* 12 (1): 348–76.
- Agarwal, Siddharth, Vani Sethi, Karishma Srivastava, Prabhat K. Jha, and Abdullah H. Baqui. 2010. "Birth Preparedness and Complication Readiness among Slum Women in Indore City, India." *Journal of Health, Population and Nutrition* 28 (4): 383–91. <https://doi.org/10.3329/jhpn.v28i4.6045>.
- Agrawal, Anuja, and Aarushi Sharma. 2015. "Gender Contests in the Delhi Metro: Implications of Reservation of a Coach for Women." *Indian Journal of Gender Studies* 22 (3): 421–36. <https://doi.org/10.1177/0971521515594279>.
- Ahern, Aoife, and Julian Hine. 2012. "Rural Transport—Valuing the Mobility of Older People." *Research in Transportation Economics* 34 (1): 27–34. <https://doi.org/10.1016/j.retrec.2011.12.004>.

- Ahluwalia, I. B., T. Schmid, M. Kouletio, and O. Kanenda. 2003. "An Evaluation of a Community-Based Approach to Safe Motherhood in Northwestern Tanzania." *International Journal of Gynecology & Obstetrics* 82 (2): 231–40. [https://doi.org/10.1016/s0020-7292\(03\)00081-x](https://doi.org/10.1016/s0020-7292(03)00081-x).
- Ahmad, Mahtab. 2013. "Independent-Mobility Rights and the State of Public Transport Accessibility for Disabled People." *Administration & Society* 47 (2): 197–213. <https://doi.org/10.1177/0095399713490691>.
- Ahmad, Zaheer, Zahara Batool, and Paul Starkey. 2019. "Understanding Mobility Characteristics and Needs of Older Persons in Urban Pakistan with Respect to Use of Public Transport and Self-Driving." *Journal of Transport Geography* 74: 181–90. <https://doi.org/10.1016/j.jtrangeo.2018.11.015>.
- Ajibola, Bidemi O., Sola E. Komolafe, and Jones A. Akangbe. 2015. "Constraints Faced by Women Vegetable Farmers in Kwara State, Nigeria and its Agricultural Practices." *Jordan Journal of Agricultural Sciences* 11 (4): 995–1005.
- Akar, Gulsah, Nicholas Fischer, and Mi Namgung. 2013. "Bicycling Choice and Gender Case Study: The Ohio State University." *International Journal of Sustainable Transportation* 7 (5): 347–65. <https://doi.org/10.1080/15568318.2012.673694>.
- Akowuah, Jones A., Peter Agyei-Baffour, and Benedict O. Asibey. 2018. "A Qualitative Study on the Pathways to Evidence-Based Antenatal Care in Periurban Ghana." *Obstetrics and Gynecology International* 2018: 1–9. <https://doi.org/10.1155/2018/4381708>.
- Akter, M. K., S. Yimyam, J. Chareonsanti, and S. Tiansawad. 2018. "The Challenges of Prenatal Care for Bangladeshi Women: A Qualitative Study." *International Nursing Review* 65 (4): 534–41. <https://doi.org/10.1111/inr.12466>.
- Akter, Shahinoor, Kate Davies, Jane L. Rich, and Kerry J. Inder. 2018. "Indigenous Women's Access to Maternal Healthcare Services in Lower- and Middle-Income Countries: A Systematic Integrative Review." *International Journal of Public Health* 64 (3): 343–53. <https://doi.org/10.1007/s00038-018-1177-4>.
- Akyelken, Nihan. 2013a. "Development and Gendered Mobilities: Narratives from the Women of Mardin, Turkey." *Mobilities* 8 (3): 424–39. <https://doi.org/10.1080/17450101.2013.769725>.
- . 2013b. "Infrastructure Development and Employment: The Case of Turkey." *Regional Studies* 49 (8): 1360–373. <https://doi.org/10.1080/00343404.2013.821571>.
- Alam, Nazmul, Mahbub E. Chowdhury, Seni Kouanda, Mathieu Seppey, Anadil Alam, Justin R. Savadogo, Drissa Sia, and Pierre Fournier. 2016. "The Role of Transportation to Access Maternal Care Services for Women in Rural Bangladesh and Burkina Faso: A Mixed Methods Study." *International Journal of Gynecology & Obstetrics* 135 (S1): S45–50. <https://doi.org/10.1016/j.ijgo.2016.09.003>.
- Alberts, Anna, Karin Pfeffer, and Isa Baud. 2016. "Rebuilding Women's Livelihoods Strategies at the City Fringe: Agency, Spatial Practices, and Access to Transportation from Semmencherry, Chennai." *Journal of Transport Geography* 55: 142–51. <https://doi.org/10.1016/j.jtrangeo.2015.11.004>.
- Anand, Anvita, and Geetam Tiwari. 2006. "A Gendered Perspective of the Shelter–Transport–Livelihood Link: The Case of Poor Women in Delhi." *Transport Reviews* 26 (1): 63–80. <https://doi.org/10.1080/01441640500175615>.



- Andersen, Marcia, Elaine Hockman, Geoffrey Smereck, Jannie Tinsley, Dollie Milfort, Robert Wilcox, Teresa Smith, Christopher Connelly, Latonia Adams, and Richard Thomas. 2007. "Retaining Women in HIV Medical Care." *Journal of the Association of Nurses in AIDS Care* 18 (3): 33–41. <https://doi.org/10.1016/j.jana.2007.03.007>.
- Atkinson, David, and Eric Laurier. 1998. "A Sanitised City? Social Exclusion at Bristol's 1996 International Festival of the Sea." *Geoforum* 29 (2): 199–206.
- Atuoye, Kilian N., Jenna Dixon, Andrea Rishworth, Sylvester Z. Galaa, Sheila A. Boamah, and Isaac Luginaah. 2015. "Can She Make It? Transportation Barriers to Accessing Maternal and Child Health Care Services in Rural Ghana." *BMC Health Services Research* 15 (1). <https://doi.org/10.1186/s12913-015-1005-y>.
- Avermann, Niklas, and Jan Schlüter. 2019. "Determinants of Customer Satisfaction with a True Door-to-Door DRT Service in Rural Germany." *Research in Transportation Business & Management* 32: 100420. <https://doi.org/10.1016/j.rtbm.2019.100420>.
- Babinard, Julie, and Peter Roberts. 2006. *Maternal and Child Mortality Development Goals: What Can the Transport Sector Do?* Washington, DC: World Bank, Transport Sector Board. <http://hdl.handle.net/10986/17413>.
- Ball, Krista S., and Caroline J. Wesson. 2017. "Perceptions of Unwanted Sexual Behaviour on Public Transport: Exploring Transport Density and Behaviour Severity." *Crime Prevention and Community Safety* 19 (3-4): 199–210. <https://doi.org/10.1057/s41300-017-0026-3>.
- Baruah, Bipasha .2017. "Renewable Inequity? Women's Employment in Clean Energy in Industrialized, Emerging and Developing Economies." *Natural Resources Forum* 41 (1): 18–29. <http://dx.doi.org/10.1111/1477-8947.12105>.
- Baruah, Bipasha. 2021. "Women on Wheels in New Delhi, India: Can Social Innovation Promote Gender Equality?" In *Social Economy in Asia: Realities and Perspectives*, edited by E. Kim and H. Miura, 173–96. Washington, DC: Lexington Books.
- Baruah, Bipasha and Sandra Biskupski-Mujanovic. 2021. "Navigating Sticky Floors and Glass Ceilings: Barriers and Opportunities for Women's Employment in Natural Resources Industries in Canada." *Natural Resources Forum* 45 (2): 183–205. <https://doi.org/10.1111/1477-8947.12216>.
- Basarić, Valentina, Ana Vujičić, Jelena M. Simić, Vuk Bogdanović, and Nenad Saulić. 2016. "Gender and Age Differences in the Travel Behavior—A Novi Sad Case Study." *Transportation Research Procedia* 14: 4324–33. <https://doi.org/10.1016/j.trpro.2016.05.354>.
- Beirão, Gabriela, and José S. Cabral. 2008. "Market Segmentation Analysis Using Attitudes toward Transportation." *Transportation Research Record: Journal of the Transportation Research Board* 2067 (1): 56–64. <https://doi.org/10.3141/2067-07>.
- Benedini, Debora J., Patricia S. Lavieri, and Orlando Strambi. 2020. "Understanding the Use of Private and Shared Bicycles in Large Emerging Cities: The Case of Sao Paulo, Brazil." *Case Studies on Transport Policy* 8 (2): 564–75. <https://doi.org/10.1016/j.cstp.2019.11.009>.
- Bertilone, Christina M., Suzanne P. McEvoy, Dena Gower, Nola Naylor, June Doyle, and Val Swift-Otero. 2017. "Elements of Cultural Competence in an Australian Aboriginal Maternity Program." *Women and Birth* 30 (2): 121–28. <https://doi.org/10.1016/j.wombi.2016.09.007>.

- Bhattacharya, T. 2018. "Use of Public Transport by Older Women in Semi-Urban West Bengal, India." *Indian Journal of Gerontology* 32 (4): 348–63.
- Bhopal, Sunil S., Stephen J., Halpin, and Nancy Gerein. 2012. "Emergency Obstetric Referral in Rural Sierra Leone: What Can Motorbike Ambulances Contribute? A Mixed-Methods Study." *Maternal and Child Health Journal* 17 (6): 1038–43. <https://doi.org/10.1007/s10995-012-1086-8>.
- Bjørkelund, Oline A., Hanna Degerud, and Elling Bere. 2016. "Socio-Demographic, Personal, Environmental and Behavioral Correlates of Different Modes of Transportation to Work among Norwegian Parents." *Archives of Public Health* 74 (43). <https://doi.org/10.1186/s13690-016-0155-7>.
- Blair, Neale, Julian Hine, and Syed M. A. Bukhari. 2013. "Analysing the Impact of Network Change on Transport Disadvantage: A GIS-Based Case Study of Belfast." *Journal of Transport Geography* 31: 192–200. <https://doi.org/10.1016/j.jtrangeo.2013.06.015>.
- Blumenberg, Evelyn. 2000. "Moving Welfare Participants to Work: Women, Transportation, and Welfare Reform." *Affilia* 15 (2): 259–76. <https://doi.org/10.1177/08861090022093976>.
- Blumenberg, Evelyn. 2004. "En-gendering Effective Planning: Spatial Mismatch, Low-Income Women, and Transportation Policy." *Journal of the American Planning Association* 70 (3): 269–81. <https://doi.org/10.1080/01944360408976378>.
- Böcker, Lars, Ellinor Anderson, Tanu P. Uteng, and Torstein Throndsen. 2020. "Bike Sharing Use in Conjunction to Public Transport: Exploring Spatiotemporal, Age and Gender Dimensions in Oslo, Norway." *Transportation Research Part A: Policy and Practice* 138: 389–401. <https://doi.org/10.1016/j.tra.2020.06.009>.
- Booth, David, Lucia Hanmer, and Elizabeth Lovell. 2000. "Poverty and Transport: Report Prepared for the World Bank, in Collaboration with DFID." London: Overseas Development Institute. <https://cdn.odi.org/media/documents/3554.pdf>.
- Borghia, Josephine, Tim Ensor, Basu D. Neupane, and Suresh Tiwari. 2006. "Financial Implications of Skilled Attendance at Delivery in Nepal." *Tropical Medicine and International Health* 11 (2): 228–37. <https://doi.org/10.1111/j.1365-3156.2005.01546.x>.
- Börjesson, Maria. 2012. "Valuing Perceived Insecurity Associated with Use of and Access to Public Transport." *Transport Policy* 22: 1–10. <https://doi.org/10.1016/j.tranpol.2012.04.004>.
- Börjesson, Maria, and Isak Rubensson. 2019. "Satisfaction with Crowding and other Attributes in Public Transport." *Transport Policy* 79: 213–22. <https://doi.org/10.1016/j.tranpol.2019.05.010>.
- Bösehans, Gustav, and Gustavo M. Massola. 2018. "Commuter Cyclists' Risk Perceptions and Behaviour in the City of São Paulo." *Transportation Research Part F: Traffic Psychology and Behaviour* 58: 414–30. <https://doi.org/10.1016/j.trf.2018.06.029>.
- Bostock, Lisa. 2001. "Pathways of Disadvantage? Walking as a Mode of Transport among Low-Income Mothers." *Health & Social Care in the Community* 9 (1): 11–18. <https://doi.org/10.1046/j.1365-2524.2001.00275.x>.
- Boubkr, Asmaa A. 2018. "Transportation Equity in Morocco: A Preliminary Analysis of Casablanca's Tram Line." *World Transport Policy & Practice* 24 (1): 69–77.

- Bourke, Matthew, Melinda Craike, and Toni A. Hilland. 2019. "Moderating Effect of Gender on the Associations of Perceived Attributes of the Neighbourhood Environment and Social Norms on Transport Cycling Behaviours." *Journal of Transport & Health* 13: 63–71. <https://doi.org/10.1016/j.jth.2019.03.010>.
- Bowstead, Janet C. 2020. "Private Violence/Private Transport: The Role of Means of Transport in Women's Mobility to Escape from Domestic Violence in England and Wales." *Mobilities* 15 (4): 559–74. <https://doi.org/10.1080/17450101.2020.1750289>.
- Bradbury, Annabel, and Gina Porter. 2020. "Editorial: Themed Issue on Gender Mainstreaming in Rural Transport." *Proceedings of the Institution of Civil Engineers—Transport* 173 (2): 61–3. <https://doi.org/10.1680/jtran.19.00145>.
- Bravo, Ana. 2002. "The Impact of Improved Rural Roads on Gender Relations in Peru." *Mountain Research and Development* 22 (3): 221–24. [https://doi.org/10.1659/0276-4741\(2002\)022\[0221:tioirr\]2.0.co;2](https://doi.org/10.1659/0276-4741(2002)022[0221:tioirr]2.0.co;2).
- Bryceson, D. F., T. C. Mbarra, and D. Maunder. 2003. "Livelihoods, Daily Mobility and Poverty in Sub-Saharan Africa." *Transport Reviews* 23 (2): 177–96. <https://doi.org/10.1080/01441640309891>.
- Burkhardt, Jon E., and Adam Millard-Ball. 2006. "Who Is Attracted to Carsharing?" *Transportation Research Record: Journal of the Transportation Research Board* 1986 (1): 98–105. <https://doi.org/10.1177/0361198106198600113>.
- Butt, Anam P., Leah Kenny, and Beniamino Cislaghi. 2019. "Integrating a Social Norms Perspective to Address Community Violence against Sri Lankan Women and Girls: A Call for Research and Practice." *Journal of Aggression, Maltreatment & Trauma* 29 (7): 826–34. <https://doi.org/10.1080/10926771.2019.1697777>.
- Campasso da Silva, Denise, Antonio N. R. da Silva. 2020. "Sustainable Modes and Violence: Perceived Safety and Exposure to Crimes on Trips to and from a Brazilian University Campus." *Journal of Transport & Health* 16: 100817. <https://doi.org/10.1016/j.jth.2019.100817>.
- Campbell, Morgan. 2014. "Gender, Income, and Transportation Mobility in Bangalore's IT Sector." Paper presented at "Women's Issues in Transportation: Bridging the Gap," 5th International Conference, Paris, April 14–16.
- Carver, Alison, and Jenny Veitch. 2020. "Perceptions and Patronage of Public Transport—Are Women Different from Men?" *Journal of Transport & Health* 19: 100955. <https://doi.org/10.1016/j.jth.2020.100955>.
- Chen, Chuan, and Chen Zhu. 2012. "Gender Difference Analysis in Commuter Trips in Public Transit Mode in Metropolitan, China: Taking Jinhe Residential Community in Peripheral New Town of Shanghai as an Example." Paper presented at The Twelfth COTA International Conference of Transportation Professionals, Beijing, August 3–6, 1449–60.
- Chen, Wenling, and Shomik R. Mehndiratta. 2007. "Planning for Laobaixing: Public Participation in Urban Transportation Project, Liaoning, China." *Transportation Research Record: Journal of the Transportation Research Board* 1994 (1): 128–37. <https://doi.org/10.3141/1994-17>.
- Chidambaram, Bhuvanachithra, and Joachim Scheiner. 2020. "Understanding Relative Commuting within Dual-Earner Couples in Germany." *Transportation Research Part A: Policy and Practice* 134: 113–29. <https://doi.org/10.1016/j.tra.2020.02.006>.
- Choi, Jung-Kyu, Se-Hyung Kim, and Myung-Bae Park. 2019. "Effects of High-Speed Rail on Health-Care Service Utilization." *Journal of Transport & Health* 12: 13–20. <https://doi.org/10.1016/j.jth.2018.11.004>.

- Chowdhury, Subeh. 2019. "Role of Gender in the Ridership of Public Transport Routes Involving Transfers." *Transportation Research Record: Journal of the Transportation Research Board* 2673 (4): 855–63. <https://doi.org/10.1177/0361198119837155>.
- Chowdhury, Subeh, and Bert van Wee. 2020. "Examining Women's Perception of Safety during Waiting Times at Public Transport Terminals." *Transport Policy* 94: 102–8. <https://doi.org/10.1016/j.tranpol.2020.05.009>.
- Chui, Wing H., and Rebecca Ong. 2008. "Indecent Assault on the Public Transport in Hong Kong." *International Journal of Law, Crime and Justice* 36 (1): 2–14. <https://doi.org/10.1016/j.ijls.2007.06.001>.
- Church, Andrew, Martin Frost, and Karen Sullivan. 1999. "Transport and Social Exclusion in London: Exploring Current and Potential Indicators." *Transport Policy* 7 (3): 195–205.
- Clark, Ben, Kiron Chatterjee, Adam Martin, and Adrian Davis. 2019. "How Commuting Affects Subjective Wellbeing." *Transportation* 47: 2777–805. <https://doi.org/10.1007/s11116-019-09983-9>.
- Clarke, Philippa, Jennifer A. Ailshire, and Paula Lantz. 2009. "Urban Built Environments and Trajectories of Mobility Disability: Findings from a National Sample of Community-Dwelling American Adults (1986–2001)." *Social Science & Medicine* 69 (6): 964–970. <https://doi.org/10.1016/j.socscimed.2009.06.041>.
- Cochrane, Thomas, Yan Yu, Rachel Davey, Ester Cerin, Kelli L. Cain, Terry L. Conway, Jacqueline Kerr, Lawrence D. Frank, James E. Chapman, Marc A. Adams, Duncan Macfarlane, Delfien Van Dyck, Poh-Chin Lai, Olga L. Sarmiento, Jens Troelsen, Deborah Salvo, Rodrigo Reis, Josef Mitas, Grant Schofield, Neville Owen, and James F. Sallis. 2019. "Associations of Built Environment and Proximity of Food Outlets with Weight Status: Analysis from 14 Cities in 10 Countries." *Preventive Medicine* 129: 105874. <https://doi.org/10.1016/j.ypmed.2019.105874>.
- Coleman, Willie. 2000. "Black Women and Segregated Public Transportation: Ninety Years of Resistance." *Negro History Bulletin* 63 (1/4): 17–22.
- Cook, Nancy, and David Butz. 2017. "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>.
- Cottrill, Caitlin D., Sarah Brooke, Corinne Mulley, John D. Nelson, and Steve Wright. 2020. "Can Multi-Modal Integration Provide Enhanced Public Transport Service Provision to Address the Needs of Vulnerable Populations?" *Research in Transportation Economics* 83: 100954. <https://doi.org/10.1016/j.retrec.2020.100954>.
- Craig, Lyn, and Theun P. van Tienoven. 2019. "Gender, Mobility and Parental Shares of Daily Travel with and for Children: A Cross-National Time Use Comparison." *Journal of Transport Geography* 76: 93–102. <https://doi.org/10.1016/j.jtrangeo.2019.03.006>.
- Crane, Randall. 2007. "Is There a Quiet Revolution in Women's Travel? Revisiting the Gender Gap in Commuting." *Journal of the American Planning Association* 73 (3): 298–316. <https://doi.org/10.1080/01944360708977979>.
- Crane, Randall, and Lois Takahashi. 2009. "Sex Changes Everything: The Recent Narrowing and Widening of Travel Differences by Gender." *Public Works Management & Policy* 13 (4): 328–37. <https://doi.org/10.1177/1087724x09335608>.



- Cristóbal-Pinto, C., and J.-D. González. 2002. "Madrid Public Transport Authority Bets on Sustainable Development." Paper presented at the Second International Conference on Urban Public Transportation Systems, Virginia, United States, April 14-18.
- Cui, Mengying, and David Levinson. 2020. "Multi-Activity Access: How Activity Choice Affects Opportunity." *Transportation Research Part D: Transport and Environment* 85: 102364. <https://doi.org/10.1016/j.trd.2020.102364>.
- Cunha, Clarisse. 2006. "Understanding the Community Impact: Bicycles in Sub-Saharan Africa." *Sustainable Transport* 18: 24-5.
- d'Arbois de Jubainville, Hugo, and Camille Vanier. 2017. "Women's Avoidance Behaviours in Public Transport in the Ile-de-France Region." *Crime Prevention and Community Safety* 19 (3-4): 183-98. <https://doi.org/10.1057/s41300-017-0023-6>.
- Daisy, Naznin S., Hugh Millward, and Lei Liu. 2018. "Trip Chaining and Tour Mode Choice of Non-Workers Grouped by Daily Activity Patterns." *Journal of Transport Geography* 69: 150-62. <https://doi.org/10.1016/j.jtrangeo.2018.04.016>.
- Damant-Sirois, Gabriel, and Ahmed M. El-Geneidy. 2015. "Who Cycles More? Determining Cycling Frequency through a Segmentation Approach in Montreal, Canada." *Transportation Research Part A: Policy and Practice* 77: 113-25. <https://doi.org/10.1016/j.tra.2015.03.028>.
- Dandapat, Saurabh, and Bhargab Maitra. 2020. "Preference Heterogeneity in Trip Makers' Perception and Policy Issues: A Study with Reference to Bus Services in Kolkata." *Case Studies on Transport Policy* 8 (4): 1504-17. <https://doi.org/10.1016/j.cstp.2020.11.001>.
- Dargay, Joyce M., and Stephen Clark. 2012. "The Determinants of Long Distance Travel in Great Britain." *Transportation Research Part A: Policy and Practice* 46 (3): 576-87. <https://doi.org/10.1016/j.tra.2011.11.016>.
- Davey, Judith A. 2007. "Older People and Transport: Coping without a Car." *Ageing & Society* 27 (1): 49-65. <https://doi.org/10.1017/s0144686x06005332>.
- de Haan, A.D. 1999. "Social Exclusion: Towards a Holistic Understanding of Deprivation." Villa Borsig Workshop Series. Berlin: Deutsche Stiftung für internationale Entwicklung (DSE).
- de Oña, Ranjith, and J. de Oña. 2013. "Analyzing Transit Service Quality Evolution Using Decision Trees and Gender Segmentation." *WIT Transactions on the Built Environment*: 130: 611-21.
- De Silva, R. 2010. "Accessible Transport and Health of Persons with Disabilities in Rural Contexts in South Asia." Paper presented at TRANSED 2010: 12th International Conference on Mobility and Transport for Elderly and Disabled Persons, Hong Kong, June 1-4.
- Dėdelė, Audrius, Aaukse Miškinytė, Sandra Andrušaitytė, and Jolanta Nemaniūtė-Gužienė. 2020. "Dependence between Travel Distance, Individual Socioeconomic and Health-Related Characteristics, and the Choice of the Travel Mode: A Cross-Sectional Study for Kaunas, Lithuania." *Journal of Transport Geography* 86: 102762. <https://doi.org/10.1016/j.jtrangeo.2020.102762>.
- DeGuzman, Pamela B., Elizabeth I. Merwin, and Cheryl Bourguignon. 2013. "Population Density, Distance to Public Transportation, and Health of Women in Low-Income Neighborhoods." *Public Health Nursing* 30 (6): 478-90. <https://doi.org/10.1111/phn.12051>.

- Delbosch, Alexa, and Graham Currie. 2011. "Transport Problems That Matter—Social and Psychological Links to Transport Disadvantage." *Journal of Transport Geography* 19 (1): 170–78. <https://doi.org/10.1016/j.jtrangeo.2010.01.003>.
- Delclòs-Alió, Xavier, and Carme Miralles-Guasch. 2018. "A Relational Perspective on Everyday Mobility in the Barcelona Metropolitan Region: Individual and Household-Related Differences in Daily Travel Time." *Tijdschrift Voor Economische En Sociale Geografie* 109 (4): 561–74. <https://doi.org/10.1111/tesg.12315>.
- dell'Olio, Luigi, Angel Ibeas, and Patricia Cecin. 2011. "The Quality of Service Desired by Public Transport Users." *Transport Policy* 18 (1): 217–27. <https://doi.org/10.1016/j.tranpol.2010.08.005>.
- Devkota, Hridaya R., Emily Murray, Maria Kett, and Nora Groce. 2018. "Are Maternal Healthcare Services Accessible to Vulnerable Group? A Study among Women with Disabilities in Rural Nepal." *PLOS ONE* 13 (7): e0200370. <https://doi.org/10.1371/journal.pone.0200370>.
- Dixit, Malvika, and Aruna Sivakumar. 2020. "Capturing the Impact of Individual Characteristics on Transport Accessibility and Equity Analysis." *Transportation Research Part D: Transport and Environment* 87: 102473. <https://doi.org/10.1016/j.trd.2020.102473>.
- Dixon-Woods, Mary, Shona Agarwal, David Jones, Bridget Young, and Alex Sutton. 2005. "Synthesising Qualitative and Quantitative Evidence: A Review of Possible Methods." *Journal of Health Services Research & Policy* 10 (1): 45–53. <https://doi.org/10.1177/135581960501000110>.
- Dobbs, Lynn. 2005. "Wedded to the Car: Women, Employment and the Importance of Private Transport." *Transport Policy* 12 (3): 266–78. <https://doi.org/10.1016/j.tranpol.2005.02.004>.
- Dobbs, Lynn. 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, Karla, Ana L. Machado, Bianca B. Alves, Veronica Raffo, Sofia Guerrero, and Irene Portabales. 2020. *Why Does She Move? A Study of Women's Mobility in Latin American Cities*. Washington, DC: World Bank.
- Duchène, Chantal. 2011. "Gender and Transport." International Transport Forum Discussion Paper 2011/11, OECD Publishing, Paris. <https://doi.org/10.1787/5kg9mq47w59w-en>.
- Dunckel Graglia, Amy. 2015. "Finding Mobility: Women Negotiating Fear and Violence in Mexico City's Public Transit System." *Gender, Place & Culture* 23 (5): 624–40. <https://doi.org/10.1080/0966369x.2015.1034240>.
- Dunckel-Graglia, Amy. 2013a. "'Pink Transportation' in Mexico City: Reclaiming Urban Space through Collective Action against Gender-Based Violence." *Gender & Development* 21 (2): 265–76. <https://doi.org/10.1080/13552074.2013.802131>.
- Dunckel-Graglia, Amy. 2013b. "Women-Only Transportation: How 'Pink' Public Transportation Changes Public Perception of Women's Mobility." *Journal of Public Transportation* 16 (2): 85–105. <https://doi.org/10.5038/2375-0901.16.2.5>.
- Dupuis, Josette, Deborah R. Weiss, and Christina Wolfson. 2007. "Gender and Transportation Access among Community-Dwelling Seniors." *Canadian Journal on Aging* 26 (2): 149–58. <https://doi.org/10.3138/cja.26.2.149>.
- Dziekán, Katrin. 2008. "What Do People Know about Their Public Transport Options? Investigating the Memory Representations of Public Transport through Telephone Interviews in a Residential Area of Stockholm, Sweden." *Transportation* 35 (4): 519–38. <https://doi.org/10.1007/s11116-008-9164-x>.

- Ekirapa-Kiracho, Elizabeth, Getrude Namazzi, Moses Tetui, Aloysius Mutebi, Peter Waiswa, Htet Oo, David H. Peters, and Asha S. George. 2016. "Unlocking Community Capabilities for Improving Maternal and Newborn Health: Participatory Action Research to Improve Birth Preparedness, Health Facility Access, and Newborn Care in Rural Uganda." *BMC Health Services Research* 16 (S7). <https://doi.org/10.1186/s12913-016-1864-x>.
- Elias, Wafa, and Yoram Shiftan. 2014. "Gender Differences in Travel Behavior in the Arab World, Comparison of Case Studies from Jordan and Israel." Paper presented at "Women's Issues in Transportation: Bridging the Gap," 5th International Conference, Paris, April 14–16.
- Elias, Wafa, Julian Benjamin, and Yoram Shiftan. 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>.
- Elias, Wafa, Gregory L. Newmark, and Yoram Shiftan. 2008. "Gender and Travel Behavior in Two Arab Communities in Israel." *Transportation Research Record: Journal of the Transportation Research Board* 2067 (1): 75–83. <https://doi.org/10.3141/2067-09>.
- Elson, Diane, ed. 1995. *Male Bias in the Development Process*. Manchester: Manchester University Press.
- Erik, Ellder, Ana G. Solá, and Anders Larsson. 2012. "Featured Graphic. Spatial Inequality and Workplace Accessibility: The Case of a Major Hospital in Göteborg, Sweden." *Environment and Planning A: Economy and Space* 44 (10): 2295–97. <https://doi.org/10.1068/a44627>.
- Escamilla, Veronica, Lisa Calhoun, Norbert Odero, and Ilene S. Speizer. 2019. "Access to Public Transportation and Health Facilities Offering Long-Acting Reversible Contraceptives among Residents of Formal and Informal Settlements in Two Cities in Kenya." *Reproductive Health* 16 (1). <https://doi.org/10.1186/s12978-019-0828-0>.
- Essendi, Hildah, Samuel Mills, and Jean-Christophe Fotso. 2010. "Barriers to Formal Emergency Obstetric Care Services' Utilization." *Journal of Urban Health* 88 (S2): 356–69. <https://doi.org/10.1007/s11524-010-9481-1>.
- Evers, Barbara, and Bernard Walters. 2000. "Extra-Household Factors and Women Farmers' Supply Response in Sub-Saharan Africa." *World Development* 28 (7): 1341–45. [https://doi.org/10.1016/s0305-750x\(00\)00022-x](https://doi.org/10.1016/s0305-750x(00)00022-x).
- Fearnley, Nils. 2006. "Public Transport Subsidies in the UK: Evidence of Distributional Effects." *World Transport Policy & Practice* 12 (1): 31–40.
- Fernandes, Edmond, Aabhay Nirgude, Poonam Naik, Neevan Dsouza, and Soumya Shetty. 2017. "Study of Commuter Problems and Opinions in a Fast-Developing Coastal City of Mangalore in India: A Gender Perspective Analysis." *International Journal of Health & Allied Sciences* 6 (2): 57–63.
- Fernando, P., and G. Porter, eds. 2002. *Balancing the Load: Women, Gender, and Transport*. London: Zed Books, in association with the International Forum for Rural Transport and Development (IFRTD).
- Fiander, Alison, Clement Ndahani, Kaspar Mmuya, and Tom Vanneste. 2012. "Results from 2011 for the TransportMYPatient Program for Overcoming Transport Costs among Women Seeking Treatment for Obstetric Fistula in Tanzania." *International Journal of Gynecology & Obstetrics* 120 (3): 292–95. <https://doi.org/10.1016/j.ijgo.2012.09.026>.
- Fillone, Alexis, and Iderlina Mateo-Babiano. 2018. "Do I Walk or Ride the Rickshaw? Examining the Factors Affecting First- and Last-Mile Trip Options in the Historic District of Manila (Philippines)." *Journal of Transport and Land Use* 11 (1). <https://doi.org/10.5198/jtlu.2018.1077>.

- Firoz, Tabassum, Marianne Vidler, Prestige T. Makanga, Helena Boene, Rogério Chiaú, Esperança Sevene, Laura A. Magee, Peter von Dadelszen, and Khátia Munguambe. 2016. "Community Perspectives on the Determinants of Maternal Health in Rural Southern Mozambique: A Qualitative Study." *Reproductive Health* 13 (S2). <https://doi.org/10.1186/s12978-016-0217-x>.
- Fishman, Elliot. 2015. "Bikeshare: A Review of Recent Literature." *Transport Reviews* 36 (1): 92–113. <https://doi.org/10.1080/1441647.2015.1033036>.
- Fournier, Pierre, Alexandre Dumont, Caroline Tourigny, Geoffrey Dunkley, and Sékou Dramé. 2009. "Improved Access to Comprehensive Emergency Obstetric Care and Its Effect on Institutional Maternal Mortality in Rural Mali." *Bulletin of the World Health Organization* 87 (1): 30–8. <https://doi.org/10.2471/blt.07.047076>.
- Freedman, Alisa. 2002. "Commuting Gazes: Schoolgirls, Salarymen and Electric Trains in Tokyo." *The Journal of Transport History* 23 (1): 23–36. <https://doi.org/10.7227/tjth.23.1.4>.
- Fristedt, Sofi, Anna K. Dahl, Anders Wretstrand, Anita Björklund, and Torbjörn Falkmer. 2014. "Changes in Community Mobility in Older Men and Women. A 13-Year Prospective Study." *PLOS ONE* 9 (2): e87827. <https://doi.org/10.1371/journal.pone.0087827>.
- Fritze, Jess. 2007. "You Might as Well Just Stay at Home: Young Mums and Transport in Victoria." Melbourne: Victorian Council of Social Services.
- Fu, Xuemai, and Zhicai Juan. 2017. "Exploring the Psychosocial Factors Associated with Public Transportation Usage and Examining the 'Gendered' Difference." *Transportation Research Part A: Policy and Practice* 103: 70–82. <https://doi.org/10.1016/j.tra.2017.05.017>.
- Gaffron, P., Julian Hine, and Fiona Mitchell. 2001. *The Role of Transport in Social Exclusion in Urban Scotland*. Edinburgh: Scottish Executive Central Research Unit.
- Gajewski, Gregory, Miho Ihara, and Francesco Tornieri. 2007. "Socially Inclusive and Gender-Responsive Transport Projects: A Case Study of the Timor-Leste Road Sector Improvement Project." Manila: Asian Development Bank.
- Gamble, Julie. 2020. "A Transit Manifesto for Quito: Citizen-Led, Low-Carbon Alternatives, from Cycling to Informal Transportation, Can Infuse Sustainable Transit Plans with Solutions That Already Meet Popular Sector Needs." *NACLA Report on the Americas* 52 (2): 199–205. <https://doi.org/10.1080/10714839.2020.1768744>.
- Gauvin, Laetitia, Michele Tizzoni, Simone Piaggese, Andrew Young, Natalia Adler, Stefaan Verhulst, Leo Ferres, and Ciro Cattuto. 2020. "Gender Gaps in Urban Mobility." *Humanities and Social Sciences Communications* 7 (1): 1–13. <https://doi.org/10.1057/s41599-020-0500-x>.
- Gething, Peter W., Fiifi A., Johnson, Faustina Frempong-Ainguah, Philomena Nyarko, Angela Baschieri, Patrick Aboagye, Jane Falkingham, Zoe Matthews, and Peter M. Atkinson. 2012. "Geographical Access to Care at Birth in Ghana: A Barrier to Safe Motherhood." *BMC Public Health* 12 (1). <https://doi.org/10.1186/1471-2458-12-991>.
- Ghani, Fatima, Jerome N. Rachele, Simon Washington, and Gavin Turrell. 2016. "Gender and Age Differences in Walking for Transport and Recreation: Are the Relationships the Same in All Neighborhoods?" *Preventive Medicine Reports* 4: 75–80. <https://doi.org/10.1016/j.pmedr.2016.05.001>.

- Ghosh, Biku, Fitsum Solomon, Aberra A. Gobeze, Robyn Phillips, and Melrose East. 2012. "Why Are Pregnant Women and Newborns Still Dying in Rural Ethiopia?" *African Journal of Midwifery and Women's Health* 6 (3): 115–19. <https://doi.org/10.12968/ajmw.2012.6.3.115>.
- Giesel, Flemming, and Katja Köhler. 2015. "How Poverty Restricts Elderly Germans' Everyday Travel." *European Transport Research Review* 7 (2). <https://doi.org/10.1007/s12544-015-0164-6>.
- Giuliano, Genevieve, and Lisa Schweitzer. 2009. "Her Money or Her Time: A Gendered View of Contemporary Transport Policy." In *Women's Issues in Transportation. Conference Proceedings 46. Volume 1: Conference Overview and Plenary Papers: 78–93*. Washington, DC: Transportation Research Board.
- Golob, Thomas F. and David A. Hensher. 2007. "The Trip Chaining Activity of Sydney Residents: A Cross-Section Assessment by Age Group with a Focus on Seniors." *Journal of Transport Geography* 15 (4): 298–312. <https://doi.org/10.1016/j.jtrangeo.2006.09.005>.
- Goodman, Anna, and James Cheshire. 2014. "Inequalities in the London Bicycle Sharing System Revisited: Impacts of Extending the Scheme to Poorer Areas but Then Doubling Prices." *Journal of Transport Geography* 41: 272–79. <https://doi.org/10.1016/j.jtrangeo.2014.04.004>.
- Graglia, Amy D. 2014. "Gendered Nature of Women's Mobility: A Gender Perspective for Analyzing Women's Issues in Public Transportation in Mexico City, Mexico." Paper presented at "Women's Issues in Transportation: Bridging the Gap," 5th International Conference., Paris, April 14–16, 393–402.
- Graham, S., B. Lewis, B. Flanagan, M. Watson, and L. Peipins, 2015. "Travel by Public Transit to Mammography Facilities in 6 U.S. Urban Areas." *Journal of Transport & Health* 2 (4): 602–9. <https://doi.org/10.1016/j.jth.2015.09.001>.
- Grant-Smith, Deanna, Natalie Osborne, and Laurel Johnson. 2017. "Managing the Challenges of Combining Mobilities of Care and Commuting: An Australian Perspective." *Community, Work & Family* 20 (2): 201–10. <https://doi.org/10.1080/13668803.2016.1202194>.
- Green, Cathy, Fatima Adamu, and Idris A. Rahman. 2013. "The Role of a Transport Union in Increasing Rural Women's Access to Emergency Maternal Care in Northern Nigeria." *World Transport Policy & Practice* 19 (2): 29–45.
- Green, Judith, Alasdair Jones, and Helen Roberts, 2014. "More Than A to B: The Role of Free Bus Travel for the Mobility and Wellbeing of Older Citizens in London." *Ageing and Society* 34 (3): 472–94. <https://doi.org/10.1017/s0144686x12001110>.
- Grover, Aarti. 2017. "Gender Perception of Safety in Urban Public Spaces: Case of New Delhi." *International Journal of Arts & Sciences Cumberland* 9 (4): 325–33.
- Guo, Pengfei, Christopher S. Tang, Yanli Tang, and Yulan Wang. 2018. "Gender-Based Operational Issues Arising from On-Demand Ride-Hailing Platforms: Safety Concerns and System Configuration." *SSRN Electronic Journal*. <http://dx.doi.org/10.2139/ssrn.3260427>.
- Guzman, Luis A., Javier Peña, and Juan A. Carrasco. 2020. "Assessing the Role of the Built Environment and Sociodemographic Characteristics on Walking Travel Distances in Bogotá." *Journal of Transport Geography* 88: 102844. <https://doi.org/10.1016/j.jtrangeo.2020.102844>.



- Hada, Jun D. 2020. "Gender Mainstreaming in the Nepalese Rural Transport Sector: Working Towards Transformative Change." *Proceedings of the Institution of Civil Engineers—Transport* 173 (2): 97–106. <https://doi.org/10.1680/jtran.18.00177>.
- Hailemariam, Maji, Julia W. Felton, Kent Key, DeOnica Greer, Bernadel L. Jefferson, Janice Muhammad, Raven Miller, Fallon Richie, DeWaun Robinson, Sharon Saddler, Bryan Spencer, Monica Summers, Jonne M. C. White, and Jennifer E. Johnson. 2020. "Intersectionality, Special Populations, Needs and Suggestions: The Flint Women's Study." *International Journal for Equity in Health* 19 (1). <https://doi.org/10.1186/s12939-020-1133-9>.
- Hamed, Mohammad M., and Hatem H. Olaywah. 2000. "Travel-Related Decisions by Bus, Servis Taxi, and Private Car Commuters in the City of Amman, Jordan." *Cities* 17 (1): 63–71. [https://doi.org/10.1016/s0264-2751\(99\)00052-9](https://doi.org/10.1016/s0264-2751(99)00052-9).
- Hamilton, Kerry, and Linda Jenkins. 2000. "A Gender Audit for Public Transport: A New Policy Tool in the Tackling of Social Exclusion." *Urban Studies* 37 (10): 1793–1800. <https://doi.org/10.1080/00420980020080411>.
- Hampshire, Kate, Gina Porter, Mac Mashiri, Goodhope Maponya, and Siphso Dube. 2011. "Proposing Love on the Way to School: Mobility, Sexuality and Youth Transitions in South Africa." *Culture, Health & Sexuality* 13(2): 217–31. <https://doi.org/10.1080/13691058.2010.522255>.
- Harbering, Marie, and Jan Schlüter. 2020. "Determinants of Transport Mode Choice in Metropolitan Areas the Case of the Metropolitan Area of the Valley of Mexico." *Journal of Transport Geography* 87: 102766. <https://doi.org/10.1016/j.jtrangeo.2020.102766>.
- Hasnine, Md S., TianYang Lin, Adam Weiss, and Khandker N. Habib. 2018. "Determinants of Travel Mode Choices of Post-Secondary Students in a Large Metropolitan Area: The Case of the City of Toronto." *Journal of Transport Geography* 70: 161–71. <https://doi.org/10.1016/j.jtrangeo.2018.06.003>.
- Haywood, Luke, Martin Koning, and Guillaume Monchambert. 2017. "Crowding in Public Transport: Who Cares and Why?" *Transportation Research Part A: Policy and Practice* 100: 215–27. <https://doi.org/10.1016/j.tra.2017.04.022>.
- Heck, Daniel J., and Daphne D. Minner. 2009. *Codebook for Standards of Evidence for Empirical Research*. Chapel Hill, North Carolina: Horizon Research.
- Heesch, Kristiann C., Shannon Sahlqvist, and Jan Garrard. 2012. "Gender Differences in Recreational and Transport Cycling: A Cross-Sectional Mixed-Methods Comparison of Cycling Patterns, Motivators, and Constraints." *International Journal of Behavioral Nutrition and Physical Activity* 9 (1): 106. <https://doi.org/10.1186/1479-5868-9-106>.
- Hickey, Georgina. 2014. "Anti-Harassment Campaigns for Mass Transit in the 21st Century U.S.: A Critique from History." Paper presented at "Women's Issues in Transportation: Bridging the Gap," 5th International Conference, Paris, April 14–16: 365–76.
- Hidayati, Isti, Wendy Tan, and Claudia Yamu. 2020. "How Gender Differences and Perceptions of Safety Shape Urban Mobility in Southeast Asia." *Transportation Research Part F: Traffic Psychology and Behaviour* 73: 155–73. <https://doi.org/10.1016/j.trf.2020.06.014>.
- Higgins-Steele, Ariel, Jane Burke, Abo I. Foshanji, Farhad Farewar, Malalai Naziri, Sediq Seddiqi, and Karen M. Edmond. 2018. "Barriers Associated with Care-Seeking for Institutional Delivery among Rural Women in Three Provinces in Afghanistan." *BMC Pregnancy and Childbirth* 18 (1). <https://doi.org/10.1186/s12884-018-1890-2>.

- Hjorthol, Randi. 2012. "Transport Resources, Mobility and Unmet Transport Needs in Old Age." *Ageing and Society* 33 (7): 1190–1211. <https://doi.org/10.1017/s0144686x12000517>.
- Hjorthol, Randi J. 2000. "Same City—Different Options: An Analysis of the Work Trips of Married Couples in the Metropolitan Area of Oslo." *Journal of Transport Geography* 8 (3): 213–20. [https://doi.org/10.1016/s0966-6923\(99\)00040-x](https://doi.org/10.1016/s0966-6923(99)00040-x).
- Hodgson, Frances. 2012. "Escorting Economies: Networked Journeys, Household Strategies and Resistance." *Research in Transportation Economics* 34 (1): 3–10. <https://doi.org/10.1016/j.retrec.2011.12.010>.
- Hoor-Ul-Ain, Syeda. 2019. "An Empirical Review of Karachi's Transportation Predicaments: A Paradox of Public Policy Ranging from Personal Attitudes to Public Opinion in the Megacity." *Journal of Transport & Health* 12: 164–82. <https://doi.org/10.1016/j.jth.2019.01.004>.
- Hoor-Ul-Ain, Syeda. 2020. "Public Sexual Harassment Mayhem on Public Transport in Megacities—Karachi and London: A Comparative Review." *Aggression and Violent Behavior* 52: 101420. <https://doi.org/10.1016/j.avb.2020.101420>.
- Horii, Mitsutoshi, and Adam Burgess. 2012. "Constructing Sexual Risk: 'Chikan,' Collapsing Male Authority and the Emergence of Women-Only Train Carriages in Japan." *Health, Risk & Society* 14 (1): 41–55. <https://doi.org/10.1080/13698575.2011.641523>.
- Hough, Jill A., Xinyu Cao, and Susan L. Handy. 2008. "Exploring Travel Behavior of Elderly Women in Rural and Small Urban North Dakota: An Ecological Modeling Approach." *Transportation Research Record: Journal of the Transportation Research Board* 2082 (1): 125–31. <https://doi.org/10.3141/2082-15>.
- Hutson, Ashley C. F., and Julie C. Krueger. 2018. "The Harasser's Toolbox: Investigating the Role of Mobility in Street Harassment." *Violence Against Women* 25 (7): 767–91. <https://doi.org/10.1177/1077801218804100>.
- IC Net (IC Net Limited). 2004. "Integrating Gender into World Bank Financed Transport Programs: Component 1. Case Study Summary and Final Report." World Bank, Washington, DC. <http://hdl.handle.net/10986/17703>.
- limi, Atsushi. 2019. "Job Accessibility and Urban Transport Connectivity: Evidence from Antananarivo, Madagascar." Policy Research Working Paper 895, World Bank, Washington, DC.
- International Finance Corporation, Accenture, and Uber. 2018. "Driving Toward Equality: Women, Ride-Hailing, and the Sharing Economy." IFC and Uber Technologies, Washington, DC.
- . 2020. "Gender-Segregated Transportation in Ride-Hailing: Navigating the Debate." World Bank Group's Umbrella Facility for Gender Equality, Washington, DC.
- International Labour Organization. 2017. "World Employment and Social Outlook: Trends for women 2017." International Labour Office, Geneva.
- . 2021. "WESO Trends 2021: Slow Jobs Recovery and Increased Inequality Risk Long-Term COVID-19 Scarring." Geneva: International Labour Office. [https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS\\_794834/lang-en/index.htm](https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_794834/lang-en/index.htm).
- Iqbal, Sana. 2019. "Mobility Justice, Phenomenology and Gender: A Case from Karachi." *Essays in Philosophy* 20 (2). <http://dx.doi.org/10.7710/1526-0569.1634>.

- Iqbal, Sana, Andree Woodcock, and Jane Osmond. 2020. "The Effects of Gender Transport Poverty in Karachi." *Journal of Transport Geography* 84: 102677.
- Jaff, Mootaz M., and Abdul A. K. Hamsa. 2018. "Estimating Commute-Travel Implications of Telecommuting by Female Employees in Kuala Lumpur, Malaysia." *Journal of Traffic and Transportation Engineering* 5 (2): 148–55. <http://dx.doi.org/10.1016/j.jtte.2018.03.001>.
- Jain, Juliet, Tilly Line, and Glenn Lyons. 2011. "A Troublesome Transport Challenge? Working Round the School Run." *Journal of Transport Geography* 19 (6): 1608–15. <https://doi.org/10.1016/j.jtrangeo.2011.04.007>.
- Jain, Taru, and Parida Panima. 2014. "Gender Appraisal of Mobility Patterns and Instances of Exclusion for Working Population in Delhi." Paper presented at "Women's Issues in Transportation: Bridging the Gap," 5th International Conference, Paris, April 14–16.
- Jenkins, Jack, Esther Y. Mokuwa, Krijn Peters, and Paul Richards. 2020. "Changing Women's Lives and Livelihoods: Motorcycle Taxis in Rural Liberia and Sierra Leone." *Proceedings of the Institution of Civil Engineers—Transport* 173 (2): 132–43. <https://doi.org/10.1680/jtran.18.00162>.
- Jirón, Paola, Juan-Antonio Carrasco, and Marcela Rebolledo. 2020. "Observing Gendered Interdependent Mobility Barriers Using an Ethnographic and Time Use Approach." *Transportation Research Part A: Policy and Practice* 140: 204–14. <https://doi.org/10.1016/j.tra.2020.08.018>.
- Johansson-Stenman, Olof. 2002. "Estimating Individual Driving Distance by Car and Public Transport Use in Sweden." *Applied Economics* 34 (8): 959–67. <https://doi.org/10.1080/00036840110068823>.
- Jurikovič, Martin, and Zdeněk Tomeš. 2017. "Public and Private Provision of Railway Services: A Case Study from Slovakia." *Review of Network Economics* 16 (2): 187–201. <https://doi.org/10.1515/rne-2017-0037>.
- Kabia, Evelyn, Rahab Mbau, Kelly W. Muraya, Rosemary Morgan, Sassy Molyneux, and Edwine Barasa. 2018. "How Do Gender and Disability Influence the Ability of the Poor to Benefit from Pro-Poor Health Financing Policies in Kenya? An Intersectional Analysis." *International Journal for Equity in Health* 17 (1): 149. <https://doi.org/10.1186/s12939-018-0853-6>.
- Kamada, Masamitsu, Jun Kitayuguchi, Shigeru Inoue, Hiroharu Kamioka, Yoshiteru Mutoh, and Kuninori Shiwaku. 2009. "Environmental Correlates of Physical Activity in Driving and Non-Driving Rural Japanese Women." *Preventive Medicine* 49 (6): 490–96. <https://doi.org/10.1016/j.ypmed.2009.09.014>.
- Kash, Gwen. 2019. "Always on the Defensive: The Effects of Transit Sexual Assault on Travel Behavior and Experience in Colombia and Bolivia." *Journal of Transport & Health* 13: 234–46. <https://doi.org/10.1016/j.jth.2019.04.004>.
- Kaufman, Sarah M., Christopher F. Polack, and Gloria A. Campbell. 2018. "The Pink Tax on Transportation: Women's Challenges in Mobility." New York: New York University, Rudin Center for Transportation.
- Kebede, Kindie M., and Keadnew M. Mihrete. 2020. "Factors Influencing Women's Access to the Maternity Waiting Home in Rural Southwest Ethiopia: A Qualitative Exploration." *BMC Pregnancy and Childbirth* 20 (1): 296. <https://doi.org/10.1186/s12884-020-02988-8>.
- Kelly, Janet, Judith Dwyer, Eileen Willis, and Brita Pekarsky. 2014. "Travelling to the City for Hospital Care: Access Factors in Country Aboriginal Patient Journeys." *Australian Journal of Rural Health* 22 (3): 109–13. <https://doi.org/10.1111/ajr.12094>.

- Kerzhner, Tamara, Sigal Kaplan, and Emily Silverman. 2018. "Physical Walls, Invisible Barriers: Palestinian Women's Mobility in Jerusalem." *Regional Science Policy & Practice* 10 (4): 299–314. <https://doi.org/10.1111/rsp3.12162>.
- Kett, Maria, Ellie Cole, and Jeff Turner. 2020. "Disability, Mobility and Transport in Low- and Middle-Income Countries: A Thematic Review." *Sustainability* 12 (2): 589. <https://doi.org/10.3390/su12020589>.
- Keya, Kaji Tamanna, Ubaidur Rob, Md. Moshir Rahman, Ashish Bajracharya, and Benjamin Bellows. 2014. "Distance, Transportation Cost, and Mode of Transport in the Utilization of Facility-Based Maternity Services: Evidence from Rural Bangladesh." *International Quarterly of Community Health Education* 35 (1): 37–51. <https://doi.org/10.2190/iq.35.1.d>.
- Khandker, Shahidur R., Zaid Bakht, and Gayatri B. Koolwal. 2009. "The Poverty Impact of Rural Roads: Evidence from Bangladesh." *Economic Development and Cultural Change* 57 (4): 685–722. <https://doi.org/10.1086/598765>.
- Khandker, Shahidur R., and Gayatri B. Koolwal. 2011. "Estimating the Long-Term Impacts of Rural Roads: A Dynamic Panel Approach." Policy Research Working Paper 5867, World Bank, Washington, DC. <http://documents.worldbank.org/curated/en/208521468326364832>.
- Kim, Christine, Hannah Tappis, Philip McDaniel, Mohammad S. Soroush, Bruce Fried, Morris Weinberger, Justin G. Trogdon, Kristen Hassmiller Lich, and Paul L. Delamater, 2020. "National and Subnational Estimates of Coverage and Travel Time to Emergency Obstetric Care in Afghanistan: Modeling of Spatial Accessibility." *Health & Place* 66: 102452. <https://doi.org/10.1016/j.healthplace.2020.102452>.
- Kiuchi, Sakura, Jun Aida, Taro Kusama, Takafumi Yamamoto, Manami Hoshi, Tatsuo Yamamoto, Katsunori Kondo, and Ken Osaka. 2019. "Does Public Transportation Reduce Inequalities in Access to Dental Care among Older Adults? Japan Gerontological Evaluation Study." *Community Dentistry and Oral Epidemiology* 48 (2): 109–18. <https://doi.org/10.1111/cdoe.12508>.
- Kondylis, Florence, Arianna Legovini, Kate Vyborny, Astrid Zwager, and Luiza Andrade. 2020. "Demand for 'Safe Spaces': Avoiding Harassment and Stigma." Policy Research Working Paper 9269, World Bank, Washington, DC.
- Kranrattanasuit, Naparat. 2017. "Inaccessible Public Bus Services in Thailand." *Asia-Pacific Journal on Human Rights and the Law* 18 (1): 1–27. <https://doi.org/10.1163/15718158-01801001>.
- Kronsell, Annica, Lena Smidfelt Rosqvist, and Lena Winslott Hiselius. 2016. "Achieving Climate Objectives in Transport Policy by Including Women and Challenging Gender Norms: The Swedish Case." *International Journal of Sustainable Transportation* 10 (8): 703–11. <https://doi.org/10.1080/15568318.2015.1129653>.
- Kruk, Margaret E., Godfrey Mbaruku, Peter C. Rockers, and Sandro Galea. 2008. "User Fee Exemptions Are Not Enough: Out-of-Pocket Payments for 'free' Delivery Services in Rural Tanzania." *Tropical Medicine & International Health* 13 (12): 1442–51. <https://doi.org/10.1111/j.1365-3156.2008.02173.x>.
- Kunieda, Mika, and Peter W. Roberts. 2006. "Inclusive Access and Mobility in Developing Countries." World Bank TRB Annual Meeting Report, World Bank, Washington, DC.
- Künn-Nelen, Annemarie. 2015. "Does Commuting Affect Health?" *Health Economics* 25 (8): 984–1004. <https://doi.org/10.1002/hec.3199>.



- Kuntz Durand, Michelle, and Ivonete T. Buss Heidemann. 2019. "Access in a Quilombola Community: Dimensions of Health Equity." *Revista de Pesquisa: Cuidado E Fundamental Online* 11 (4): 1017–24. <https://doi.org/10.9789/2175-5361.2019.v11i4.1017-1024>.
- Kusakabe, Kyoko. 2012. *Gender, Roads, and Mobility in Asia*. Rugby, United Kingdom: Practical Action Publishing.
- Kwan, Mei-Po, and Alexander Kotsev. 2014. "Gender Differences in Commute Time and Accessibility in Sofia, Bulgaria: A Study Using 3D Geovisualisation." *The Geographical Journal* 181 (1): 83–96. <https://doi.org/10.1111/geoj.12080>.
- Lau, Joseph C. Y. 2008. "A Sustainable Transport System and Travel Choice Adaptation of the Disadvantaged in Hong Kong." *The Open Transportation Journal* 2 (1), 80–7. <https://doi.org/10.2174/1874447800802010080>.
- Law, Robin. 1999. "Beyond 'Women and Transport': Towards New Geographies of Gender and Daily Mobility." *Progress in Human Geography* 23 (4): 567–88. <https://doi.org/10.1191/030913299666161864>.
- Lawler, Denise, Joan Lalor, and Cecily Begley. 2013. "Access to Maternity Services for Women with a Physical Disability: A Systematic Review of the Literature." *International Journal of Childbirth* 3 (4): 203–17. <https://doi.org/10.1891/2156-5287.3.4.203>.
- Lecompte, Maria C., and Bocarejo S. Juan Pablo. 2017. "Transport Systems and Their Impact on Gender Equity." *Transportation Research Procedia* 25: 4245–57. <https://doi.org/10.1016/j.trpro.2017.05.230>.
- Lee, A. 2017. "Gender, Everyday Mobility, and Mass Transit in Urban Asia." *Mobility in History* 8 (1). <https://doi.org/10.3167/mih.2017.080110>.
- Lee, Jieun, Igor Vojnovic, and Sue C. Grady. 2017. "The 'Transportation Disadvantaged': Urban Form, Gender and Automobile Versus Non-Automobile Travel in the Detroit Region." *Urban Studies* 55 (11): 2470–98. <https://doi.org/10.1177/0042098017730521>.
- Levy, Caren. 2013. "Travel Choice Reframed: 'Deep Distribution' and Gender in Urban Transport." *Environment and Urbanization* 25 (1): 47–63. <https://doi.org/10.1177/0956247813477810>.
- Lewis, Sian, Paula Saukko, and Karen Lumsden. 2020. "Rhythms, Sociabilities and Transience of Sexual Harassment in Transport: Mobilities Perspectives of the London Underground." *Gender, Place & Culture* 28 (2). <https://doi.org/10.1080/0966369x.2020.1734540>.
- Li, He, Robert Raeside, Tao Chen, and Ronald W. McQuaid. 2012. "Population Ageing, Gender and the Transportation System." *Research in Transportation Economics* 34 (1): 39–47. <https://doi.org/10.1016/j.retrec.2011.12.007>.
- Lichtenwalter, Sara, Gary Koeske, and Esther Sales. 2006. "Examining Transportation and Employment Outcomes: Evidence for Moving beyond the Bus Pass." *Journal of Poverty* 10 (1): 93–115. [https://doi.org/10.1300/j134v10n01\\_05](https://doi.org/10.1300/j134v10n01_05).
- Linsell, Louise, Lindsay J. L. Forbes, Julietta Patnick, Jane Wardle, Joan Austoker, and Amanda J. Ramirez. 2010. "Women's Preferences for the Delivery of the National Health Service Breast Screening Programme: A Cross-Sectional Survey." *Journal of Medical Screening* 17 (4): 176–80. <https://doi.org/10.1258/jms.2010.010037>.
- Lorenzo, Theresa. 2008. "We Are Also Travellers": An Action Story about Disabled Women Mobilising for an Accessible Public Transport System in Khayelitsha and Nyanga, Cape Metropole, South Africa. *South African Journal of Occupational Therapy* 38 (1): 32–40.

- Loukaitou-Sideris, Anastasia. 2016. "A Gendered View of Mobility and Transport: Next Steps and Future Directions." *Town Planning Review* 87 (5): 547–65. <https://doi.org/10.3828/tpr.2016.38>.
- Loukaitou-Sideris, Anastasia and Camille Fink. 2008. "Addressing Women's Fear of Victimization in Transportation Settings: A Survey of U.S. Transit Agencies." *Urban Affairs Review* 44 (4): 554–87. <https://doi.org/10.1177/1078087408322874>.
- Loukaitou-Sideris, Anastasia, Martin Wachs, and Miriam Pinski. 2019. "Toward a Richer Picture of the Mobility Needs of Older Americans." *Journal of the American Planning Association* 85 (4): 482–500. <https://doi.org/10.1080/01944363.2019.1630295>.
- Lubaga, Muhamadi, Gukiina Joshua, George Dhafa, I.A. Musenze, R. Badaza, C.J. Bakwesegha, and Steven J. Reynolds. 2013. "Sex Inequality, High Transport Costs, and Exposed Clinic Location: Reasons for Loss to Follow-up of Clients under Prevention of Mother-to-Child HIV Transmission in Eastern Uganda—A Qualitative Study." *Patient Preference and Adherence* 7: 447–54. <https://doi.org/10.2147/ppa.s19327>.
- Lubitow, Amy, Miriam J. Abelson, and Erika Carpenter. 2020. "Transforming Mobility Justice: Gendered Harassment and Violence on Transit." *Journal of Transport Geography* 82: 102601. <https://doi.org/10.1016/j.jtrangeo.2019.102601>.
- Lucas, Karen. 2011. "Making the Connections between Transport Disadvantage and the Social Exclusion of Low Income Populations in the Tshwane Region of South Africa." *Journal of Transport Geography* 19 (6): 1320–34. <https://doi.org/10.1016/j.jtrangeo.2011.02.007>.
- Lucas, Karen, Ian Philips, Corinne Mulley, and Liang Ma. 2018. "Is Transport Poverty Socially or Environmentally Driven? Comparing the Travel Behaviours of Two Low-Income Populations Living in Central and Peripheral Locations in the Same City." *Transportation Research Part A: Policy and Practice* 116: 622–34. <https://doi.org/10.1016/j.tra.2018.07.007>.
- Luiu, Carlo, Miles Tight, and Michael Burrow. 2016. "The Unmet Travel Needs of the Older Population: A Review of the Literature." *Transport Reviews* 37 (4): 488–506. <https://doi.org/10.1080/01441647.2016.1252447>.
- . 2018. "An Investigation into the Factors Influencing Travel Needs during Later Life." *Journal of Transport & Health* 11: 86–99. <https://doi.org/10.1016/j.jth.2018.10.005>.
- Lynch, Ingrid, Tracy Morison, Catriona I. Macleod, Magdalena Mijas, Ryan du Toit, and Simi Seemanthini. 2018. "From Deviant Choice to Feminist Issue: An Historical Analysis of Scholarship on Voluntary Childlessness (1920–2013)." In *Voluntary and Involuntary Childlessness: The Joys of Otherhood*, edited by Natalie Sappleton, 11–48. Bingley, UK: Emerald Publishing.
- Macedo, Mariana, Laura Lotero, Alessio Cardillo, Hugo Barbosa, and Ronaldo Menezes. 2020. "Gender Patterns of Human Mobility in Colombia: Reexamining Ravenstein's Laws of Migration." Proceedings of the Conference "Complex Networks XI," *Springer Proceedings in Complexity*: 269–81.
- MacKenzie, Donald, and Judy Wajcman, eds. 1999. *The Social Shaping of Technology*. Milton Keynes and Philadelphia: Open University Press.
- Mahadevia, Darshini, and Deepali Advani. 2016. "Gender Differentials in Travel Pattern—The Case of a Mid-Sized City, Rajkot, India." *Transportation Research Part D: Transport and Environment* 44: 292–302. <https://doi.org/10.1016/j.trd.2016.01.002>.

- Mahapa, Sabina, and Mac Mashiri. 2010. "Social Exclusion and Rural Transport: Gender Aspects of a Road Improvement Project in Tshitwe, Northern Province." *Development Southern Africa* 18 (3): 365–76. <https://doi.org/10.1080/03768350120070026>.
- Malik, Bilal Z., Zia ur Rehman, Ammad H. Khan, and Waseem Akram. 2020. "Women's Mobility via Bus Rapid Transit: Experiential Patterns and Challenges in Lahore." *Journal of Transport & Health* 17: 100834. <https://doi.org/10.1016/j.jth.2020.100834>.
- Mandel, Jennifer L. 2004. "Mobility Matters: Women's Livelihood Strategies in Porto Novo, Benin." *Gender, Place & Culture* 11 (2): 257–87. <https://doi.org/10.1080/0966369042000218482>.
- Mannava, Aneesh, Elizaveta Perova, and Phuong T. M. Tran. 2020. "Who Benefits from Better Roads and Why? Mixed Methods Analysis of the Gender-Disaggregated Impacts of a Rural Roads Project in Vietnam." Policy Research Working Paper 9216, World Bank, Washington, DC.
- Mansoor, Taskeen, and Rukhsana Hasan. 2016. "Gender Differences in the Fear of Crime Victimization and Precautionary Behaviours." *Pakistan Journal of Gender Studies* 12 (1): 165–78. <https://doi.org/10.46568/pjgs.v12i1.206>.
- Mark, Laura, and Dirk Heinrichs. 2019. "More Than Time and Money—Influences on Mobility of Low-Income Women in the Villa 20 in Buenos Aires, Argentina." *Journal of Transport & Health* 15: 100652. <https://doi.org/10.1016/j.jth.2019.100652>.
- Marquet, Oriol, and Carme Miralles-Guasch. 2014. "Walking Short Distances. The Socioeconomic Drivers for the Use of Proximity in Everyday Mobility in Barcelona." *Transportation Research Part A: Policy and Practice* 70: 210–22. <https://doi.org/10.1016/j.tra.2014.10.007>.
- Masikini, N., and B. Baruah. 2020. "Gender Equity in the 'Sharing' Economy: Possibilities and Limitations." In *Introduction to Women's, Gender & Sexuality Studies: Interdisciplinary and Intersectional Approaches*, edited by L. A. Saraswati, Barbara Shaw, and Heather Rellihan, 2nd edition, 484–88. New York and London: Oxford University Press.
- Masood, Ayesha. 2017. "Negotiating Mobility in Gendered Spaces: Case of Pakistani Women Doctors." *Gender, Place & Culture* 25 (2): 188–206. <https://doi.org/10.1080/0966369x.2017.1418736>.
- Matas, Anna, Josep-Lluís Raymond, and Josep-Lluís Roig. 2010. "Job Accessibility and Female Employment Probability: The Cases of Barcelona and Madrid." *Urban Studies* 47 (4): 769–87. <https://doi.org/10.1177/0042098009352364>.
- Matsuyuki, Mihoko, Sarika Okami, Fumihiko Nakamura, and Ivan Sarmiento-Ordosgoitia. 2020. "Impact of Aerial Cable Car in Low-Income Area in Medellín, Colombia." *Transportation Research Procedia* 48: 3264–82. <https://doi.org/10.1016/j.trpro.2020.08.150>.
- Mattson, Jeremy W. 2010. "Aging and Mobility in Rural and Small Urban Areas: A Survey of North Dakota." *Journal of Applied Gerontology* 30 (6): 700–18. <https://doi.org/10.1177/0733464810378107>.
- Mayora, Chrispus, Elizabeth Ekirapa-Kiracho, David Bishai, David H. Peters, Olico Okui, and Sebastian Baine. 2014. "Incremental Cost of Increasing Access to Maternal Health Care Services: Perspectives from a Demand and Supply Side Intervention in Eastern Uganda." *Cost Effectiveness and Resource Allocation* 12 (1): 14. <https://doi.org/10.1186/1478-7547-12-14>.

- Mazumder, Hoimonty, and Bishant Pokharel. 2018. "Sexual Violence on Public Transportation: A Threat to Women's Mobility in Bangladesh." *Journal of Aggression, Maltreatment & Trauma* 28 (8). <https://doi.org/10.1080/10926771.2018.1491487>.
- Mba, Chuks J., and Irene K. Aboh. 2010. "Upscaling Community-Arranged Preparedness for Preventing Maternal Mortality in Ghana: A Case Study of Keta and Akatsi Districts of Volta Region." *Journal of International Women's Studies* 11 (4).
- McCormick, James, and Graham Leicester. 1998. "Three Nations: Social Exclusion in Scotland." Edinburgh: Scottish Council Foundation.
- McCray, Talia. 2009. "Engaging Disadvantaged Populations in Transport Studies: Linking Modal Use and Perceptions of Safety to Activity Patterns." *Research in Transportation Economics* 25 (1): 3–7. <https://doi.org/10.1016/j.retrec.2009.08.002>.
- McCray, Talia, and Nicole Brais. 2007. "Exploring the Role of Transportation in Fostering Social Exclusion: The Use of GIS to Support Qualitative Data." *Networks and Spatial Economics* 7 (4): 397–412. <https://doi.org/10.1007/s11067-007-9031-x>.
- McQuaid, Ronald W., and Tao Chen. 2012. "Commuting Times—The Role of Gender, Children and Part-Time Work." *Research in Transportation Economics* 34 (1): 66–73. <https://doi.org/10.1016/j.retrec.2011.12.001>.
- Mejía-Dorantes, Lucia. 2018. "An Example of Working Women in Mexico City: How Can Their Vision Reshape Transport Policy?" *Transportation Research Part A: Policy and Practice* 116: 97–111. <https://doi.org/10.1016/j.tra.2018.05.022>.
- . 2019. "Discussing Measures to Reduce the Gender Gap in Transport Companies: A Qualitative Approach." *Research in Transportation Business & Management* 31: 100416. <https://doi.org/10.1016/j.rtbm.2019.100416>.
- Mejía-Dorantes, Lucia, and Paula Soto Villagrán. 2020. "A Review on the Influence of Barriers on Gender Equality to Access the City: A Synthesis Approach of Mexico City and Its Metropolitan Area." *Cities* 96: 102439. <https://doi.org/10.1016/j.cities.2019.102439>.
- Meloni, Italo, Massimiliano Bez, and Erika Spissu. 2009. "Activity-Based Model of Women's Activity–Travel Patterns." *Transportation Research Record: Journal of the Transportation Research Board* 2125 (1): 26–35. <https://doi.org/10.3141/2125-04>.
- Mercado, Ruben G., Antonio Paez, Steven Farber, Matthew J. Roorda, and Catherine Morency. 2012. "Explaining Transport Mode Use of Low-Income Persons for Journey to Work in Urban Areas: A Case Study of Ontario and Quebec." *Transportmetrica* 8 (3): 157–79. <https://doi.org/10.1080/18128602.2010.539413>.
- Meshram, Aditi, Pushpa Choudhary, and Nagendra R. Velaga. 2020. "Assessing and Modelling Perceived Safety and Comfort of Women during Ridesharing." *Transportation Research Procedia* 48: 2852–69. <https://doi.org/10.1016/j.trpro.2020.08.233>.
- Mian, Naeem uddin, Mariam Z. Malik, Sarosh Iqbal, Muhammad A. Alvi, Zahid Memon, Muhammad A. Chaudhry, Ashraf Majrooh, and Shehzad H. Awan. 2015. "Determining the potential scalability of transport interventions for improving maternal, child, and newborn health in Pakistan." *Health Research Policy and Systems* 13 (S57). <https://doi.org/10.1186/s12961-015-0044-5>
- Miralles-Guasch, Carme, Montserrat M. Melo, and Oriol Marquet. 2015. "A Gender Analysis of Everyday Mobility in Urban and Rural Territories: From Challenges to Sustainability." *Gender, Place & Culture* 23 (3): 398–417. <https://doi.org/10.1080/0966369x.2015.1013448>.



- Mitchell, Fiona, and Julian Hine. 2001. "Better for Everyone? Travel Experiences and Transport Exclusion." *Urban Studies* 38 (2): 319–32. <https://doi.org/10.1080/00420980124097>.
- Mitra-Sarkar, Sheila, and P. Partheeban. 2011. "Abandon All Hope, Ye Who Enter Here—Understanding the Problem of 'Eve Teasing' in Chennai, India." In *Women's Issues in Transportation: Summary of the 4th International Conference, 2: Technical Papers*. Washington, DC: The National Academies Press.
- Molyneux, Maxine. 1998. "Analyzing Women's Movements." In *Feminist Visions of Development: Gender Analysis and Policy*, edited by Cecile Jackson and Ruth Pearson, 65–88. London: Routledge.
- Monchambert, Guillaume, Luke Haywood, and Martin Koning. 2014. "Features of Crowding in Public Transport: An Empirical Analysis." Paper presented at the European Transport Conference, Frankfurt, Germany, September 29–October 1.
- Mondéjar-Jiménez, José, Manuel Vargas-Vargas, Maria-Leticia Meseguer-Santamaría, and Juan-Antonio Mondéjar-Jiménez. 2009. "Impact of Social Factors on Labour Discrimination of Disabled Women." *Research in Developmental Disabilities* 30 (6): 1115–23. <https://doi.org/10.1016/j.ridd.2009.07.013>.
- Montagu, Dominic, May Sudhinaraset, Nadia Diamond-Smith, Oona Campbell, Sabine Gabrysch, Lynne Freedman, Margaret E. Kruk, and France Donnay. 2017. "Where Women Go to Deliver: Understanding the Changing Landscape of Childbirth in Africa and Asia." *Health Policy and Planning* 32 (8): 1146–52. <https://doi.org/10.1093/heapol/czx060>.
- Montoya-Robledo, Valentina, Laureen Montes Calero, Valeria Bernal Carvajal, Diana C. Galarza Molina, Wilmer Pipicano, Andrés J. Peña, Christian Pipicano, Jose S. López Valderrama, Maria A., Fernández, Isabela Porras, Nestor Arias, and Leonel Miranda. 2020. "Gender Stereotypes Affecting Active Mobility of Care in Bogotá." *Transportation Research Part D: Transport and Environment* 86: 102470. <https://doi.org/10.1016/j.trd.2020.102470>.
- Morris, Jenny, Stephen Roddis, and Fotios Spiridonos. 2010. "Women's Changing Role: Implications for the Transport Task and for Modelling Personal Travel Patterns." Paper presented at the Australasian Transport Research Forum 2010, Canberra, Australia, September 29–October 1.
- Moser, Caroline. 1989. "Gender Planning in the Third World: Meeting Practical and Strategic Gender Needs." *World Development* 17 (11): 1799–1825.
- Mu, Ren, and Dominique van de Walle. 2011. "Rural Roads and Local Market Development in Vietnam." *The Journal of Development Studies*, 47 (5): 709–34.
- Mugo, Ngatho S., Michael J. Dibley, Eliaba Y. Damundu, and Ashraful Alam. 2018. "The System Here Isn't on Patients' Side: Perspectives of Women and Men on the Barriers to Accessing and Utilizing Maternal Healthcare Services in South Sudan." *BMC Health Services Research* 18 (1): <https://doi.org/10.1186/s12913-017-2788-9>.
- Mukherjee, Mukta. 2012. "Do Better Roads Increase School Enrollment? Evidence from a Unique Road Policy in India." Syracuse University, New York. <http://dx.doi.org/10.2139/ssrn.2207761>.
- Mulongo, Godfrey, Gina Porter, and Amleset Tewodros. 2020. "Gendered Politics in Rural Roads: Gender Mainstreaming in Tanzania's Transport Sector." *Proceedings of the Institution of Civil Engineers—Transport* 173 (2): 87–96. <https://doi.org/10.1680/jtran.18.00153>.

- Mungai, Mbugua wa, and David A. Samper. 2006. "‘No Mercy, No Remorse’: Personal Experience Narratives about Public Passenger Transportation in Nairobi, Kenya." *Africa Today* 52 (3): 50–81. <https://doi.org/10.2979/aft.2006.52.3.50>.
- Munira, Sirajum, and Djoen S. Santoso. 2017. "Examining Public Perception over Outcome Indicators of Sustainable Urban Transport in Dhaka City." *Case Studies on Transport Policy* 5 (2): 169–78. <https://doi.org/10.1016/j.cstp.2017.03.011>.
- Muralidharan, Karthik, and Nishith Prakash. 2017. "Cycling to School: Increasing Secondary School Enrollment for Girls in India." *American Economic Journal: Applied Economics* 9 (3): 321–50. <https://doi.org/10.1257/app.20160004>.
- Murthy, Nirmala, and Alka Barua. 2004. "Non-Medical Determinants of Maternal Death in India." *Journal of Health Management* 6 (1): 47–61. <https://doi.org/10.1177/097206340400600103>.
- Musoke, David, Elizabeth Ekirapa-Kiracho, Rawlance Ndejjo, and Asha George. 2015. "Using Photovoice to Examine Community Level Barriers Affecting Maternal Health in Rural Wakiso District, Uganda." *Reproductive Health Matters* 23 (45): 136–47. <https://doi.org/10.1016/j.rhm.2015.06.011>.
- Nakku, Juliet E. M., Elialilia S. Okello, Dorothy Kizza, Simone Honikman, Joshua Ssebunnya, Sheila Ndyabangi, Charlotte Hanlon, and Fred Kigozi. 2016. "Perinatal Mental Health Care in a Rural African District, Uganda: A Qualitative Study of Barriers, Facilitators and Needs." *BMC Health Services Research* 16 (1): 295. <https://doi.org/10.1186/s12913-016-1547-7>.
- Nascimento, Maria V. L. de Almeida, and Mauricio O. de Andrade. 2020. "Informal Rural Transport in a Typical Minor Municipality in Northeastern Brazil: Evaluation and Regulation Proposals." *Case Studies on Transport Policy* 8 (3): 878–86. <https://doi.org/10.1016/j.cstp.2020.05.014>.
- Nayak, Jogendra K., and Danish Benazeer. 2017. "Identifying and Addressing the Issue of Women’s Fear of Victimization in Public Transport: A Case of Delhi." *Journal of Eastern Asia Society for Transportation Studies* 12: 2392–2407. <https://doi.org/10.11175/easts.12.2392>.
- Neupane, Gita, and Meda Chesney-Lind. 2013. "Violence against Women on Public Transport in Nepal: Sexual Harassment and the Spatial Expression of Male Privilege." *International Journal of Comparative and Applied Criminal Justice* 38 (1): 23–38. <https://doi.org/10.1080/01924036.2013.794556>.
- Ng, Wei-Shiuen, and Ashley Acker. 2018. "Understanding Urban Travel Behaviour by Gender for Efficient and Equitable Transport Policies." International Transport Forum Discussion Paper 1, International Transport Forum, Paris, France.
- Ngowi, Agatha F., Switbert R. Kamazima, Steven Kibusi, Ainory Gesase, and Theodora Bali. 2017. "Women’s Determinant Factors for Preferred Place of Delivery in Dodoma Region Tanzania: A Cross Sectional Study." *Reproductive Health* 14 (1): 112. <https://doi.org/10.1186/s12978-017-0373-7>.
- Njenga, Peter, and Nite Tanzarn. 2020. "Scaling up Gender Mainstreaming in Transport: Policies, Practices and Monitoring Processes." *Proceedings of the Institution of Civil Engineers—Transport* 173 (2): 64–75. <https://doi.org/10.1680/jtran.18.00152>.
- Noack, Eva. 2010. "Are Rural Women Mobility Deprived?—A Case Study from Scotland." *Sociologia Ruralis* 51 (1): 79–97. <https://doi.org/10.1111/j.1467-9523.2010.00527.x>.
- Nyangueso, Samuel O., Samuel O. Orwa, Margaret Ombai, and Salma Sheba. 2020. "Effects of Gender Mainstreaming Efforts on Rural Transport Institutions in Kenya." *Proceedings of the Institution of Civil Engineers—Transport* 173 (2): 76–86. <https://doi.org/10.1680/jtran.18.00146>.

- Odufuwa, B. O. 2008. "Gender Differentials, Vulnerability and Mobility Stress Coping Strategies in Nigeria." *Journal of Geography and Regional Planning* 1 (7): 132–37.
- Ogilvie, F., and A. Goodman. 2012. "Inequalities in Usage of a Public Bicycle Sharing Scheme: Socio-Demographic Predictors of Uptake and Usage of the London (UK) Cycle Hire Scheme." *Preventive Medicine* 55 (1): 40–45. <https://doi.org/10.1016/j.ypmed.2012.05.002>.
- Ommeh, Marilyn, Christine Fenenga, Cees J. Hesp, Doriane Nzorubara, and Tobias F. Rinke de Wit. 2019. "Using Mobile Transport Vouchers to Improve Access to Skilled Delivery." *Rural and Remote Health* 19: 4577. <https://doi.org/10.22605/rrh4577>.
- Orozco-Fontalvoa, Mauricio, José Sotob, Andrea Arévalo, and Oscar Oviedo-Trespalcacios. 2019. "Women's Perceived Risk of Sexual Harassment in a Bus Rapid Transit (BRT) System: The Case of Barranquilla, Colombia." *Journal of Transport & Health* 14: 100598. <https://doi.org/10.1016/j.jth.2019.100598>.
- Ouali, Laila A. B., Daniel J. Graham, Alexander Barron, and Mark Trompet. 2020. "Gender Differences in the Perception of Safety in Public Transport." *Journal of the Royal Statistical Society: Series A (Statistics in Society)* 183 (3): 737–69. <https://doi.org/10.1111/rssa.12558>.
- Panday, Sarita, Paul Bissell, Edwin van Teijlingen, and Padam Simkhada. 2017. "The Contribution of Female Community Health Volunteers (FCHVs) to Maternity Care in Nepal: A Qualitative Study." *BMC Health Services Research* 17 (1). <https://doi.org/10.1186/s12913-017-2567-7>.
- Parikh, Aparna. 2017. "Politics of Presence: Women's Safety and Respectability at Night in Mumbai, India." *Gender, Place & Culture* 25 (5): 695–710. <https://doi.org/10.1080/0966369x.2017.1400951>.
- Park, Nan S., Lucina L. Roff, Fei Sun, Michael W. Parker, David L. Klemmack, Patricia Sawyer, and Richard M. Allman. 2009. "Transportation Difficulty of Black and White Rural Older Adults." *Journal of Applied Gerontology* 29 (1): 70–88. <https://doi.org/10.1177/0733464809335597>.
- Patel, Parisa, Mahua Das, and Utpal Das. 2018. "The Perceptions, Health-Seeking Behaviours and Access of Scheduled Caste Women to Maternal Health Services in Bihar, India." *Reproductive Health Matters* 26 (54): 114–25. <https://doi.org/10.1080/09688080.2018.1533361>.
- Patel, R. 2006. "Working the Night Shift: Gender and the Global Economy." *ACME: An International E-Journal for Critical Geographies* 5 (1): 9–27.
- Patterson, Zachary, Gordon Ewing, and Murtaza Haider. 2005. "Gender-Based Analysis of Work Trip Mode Choice of Commuters in Suburban Montreal, Canada, with Stated Preference Data." *Transportation Research Record: Journal of the Transportation Research Board* 1924 (1): 85–93. <https://doi.org/10.1177/0361198105192400111>.
- Peters, D. 2013. "Gender and Sustainable Urban Mobility." Official Thematic Study for the 2013 UN Habitat Global Report on Human Settlements.
- Runyan, A.S. and Peterson, V.S., 2018. Global gender issues in the new millennium. *Routledge*. <https://doi.org/10.4324/9780429493782>
- Pojani, Elona, Kobe Boussauw, and Dorina Pojani. 2017. "Reexamining Transport Poverty, Job Access, and Gender Issues in Central and Eastern Europe." *Gender, Place & Culture* 24 (9): 1323–45. <https://doi.org/10.1080/0966369x.2017.1372382>.

- Polk, Merritt. 2003. "Integration of Gender Equality into Transport Policy and Practice in Sweden." *Transportation Research Board Conference Proceedings* 35: 180–88.
- Porter, Gina. 2002a. "Improving Mobility and Access for the Off-Road Rural Poor through Intermediate Means of Transport." *World Transport Policy & Practice* 8 (4): 6–19.
- . 2002b. "Living in a Walking World: Rural Mobility and Social Equity Issues in Sub-Saharan Africa." *World Development* 30 (2): 285–300. [https://doi.org/10.1016/s0305-750x\(01\)00106-1](https://doi.org/10.1016/s0305-750x(01)00106-1).
- . 2008. "Transport Planning in Sub-Saharan Africa II: Putting Gender into Mobility and Transport Planning in Africa." *Progress in Development Studies* 8 (3): 281–89. <https://doi.org/10.1177/146499340800800306>.
- . 2010. "Transport Planning in Sub-Saharan Africa III: The Challenges of Meeting Children and Young People's Mobility and Transport Needs." *Progress in Development Studies* 10 (2): 169–80. <https://doi.org/10.1177/146499340901000206>.
- . 2011. "'I Think a Woman Who Travels a Lot Is Befriending Other Men and That's Why She Travels': Mobility Constraints and Their Implications for Rural Women and Girls in Sub-Saharan Africa." *Gender, Place & Culture* 18 (1): 65–81. <https://doi.org/10.1080/0966369x.2011.535304>.
- Porter, Gina, Kathrin Blaufuss, and Frank O. Acheampong. 2012. "Gendered Patterns of IMT Adoption and Use: Learning from Action Research." *Research in Transportation Economics* 34 (1): 11–15. <https://doi.org/10.1016/j.retrec.2011.12.005>.
- Porter, Gina, Kate Hampshire, Albert Abane, Alister Munthali, Elsbeth Robson, Mac Mashiri, Augustine Tanle, Goodhope Maponya, and Siphon Dube. 2012. "Child Porterage and Africa's Transport Gap: Evidence from Ghana, Malawi and South Africa." *World Development* 40 (10): 2136–54. <https://doi.org/10.1016/j.worlddev.2012.05.004>.
- Porter, Gina, Kate Hampshire, Albert Abane, Augustine Tanle, Kobina Esia-Donkoh, Regina Obilie Amoako-Sakyi, Samuel Agblorti, and Samuel Asiedu Owusu. 2011. "Mobility, Education and Livelihood Trajectories for Young People in Rural Ghana: A Gender Perspective." *Children's Geographies* 9 (3–4): 395–410. <https://doi.org/10.1080/14733285.2011.590705>.
- Premji, Stéphanie. 2017. "Precarious Employment and Difficult Daily Commutes." *Relations Industrielles* 72 (1): 77–98. <https://doi.org/10.7202/1039591ar>.
- Procher, Vivien, and Colin Vance. 2012. "Heterogeneity in Correlates of Motorized and Nonmotorized Travel in Germany: Intervening Role of Gender." *Transportation Research Record: Journal of the Transportation Research Board* 2320 (1): 72–9. <https://doi.org/10.3141/2320-09>.
- Quinones, Lina M. 2020. "Sexual Harassment in Public Transport in Bogotá." *Transportation Research Part A: Policy and Practice* 139: 54–69. <https://doi.org/10.1016/j.tra.2020.06.018>.
- Qureshi, Rahat N., Sana Sheikh, Asif R. Khowaja, Zahra Hoodbhoy, Shujaat Zaidi, Diane Sawchuck, Marianne Vidler, Zulfiqar A. Bhutta, and Peter von Dadeslzen. 2016. "Health Care Seeking Behaviours in Pregnancy in Rural Sindh, Pakistan: A Qualitative Study." *Reproductive Health* 13 (S1). <https://doi.org/10.1186/s12978-016-0140-1>.
- Rahman, Md. M., S. C. Wirasinghe, and L. Kattan. 2012. "Users' Views on Current and Future Real-Time Bus Information Systems." *Journal of Advanced Transportation* 47 (3): 336–54. <https://doi.org/10.1002/atr.1206>.
- Rai, Shirin. 2002. *Gender and the Political Economy of Development*. Malden, Massachusetts: Blackwell.

- Rao, Nitya. 2001. "Enhancing Women's Mobility in a Forest Economy: Transport and Gender Relations in the Santal Parganas, Jharkhand." *Indian Journal of Gender Studies* 8 (2): 271–90. <https://doi.org/10.1177/097152150100800208>.
- Rivadeneira, Aldo T., Abel L. Dodero, Shomik R. Mehndiratta, Bianca B. Alves, and Elizabeth Deakin. 2015. "Reducing Gender-Based Violence in Public Transportation: Strategy Design for Mexico City, Mexico." *Transportation Research Record: Journal of the Transportation Research Board* 2531 (1): 187–94. <https://doi.org/10.3141/2531-22>.
- Riverson, John, Mika Kunieda, Peter Roberts, Negede Lewi, and Wendy M. Walker. 2006. "Gender Dimensions of Transport in Developing Countries: Lessons from World Bank Projects." *Transportation Research Record: Journal of the Transportation Research Board* 1956 (1): 149–56. <https://doi.org/10.1177/0361198106195600119>.
- Roberts, Jennifer, Robert Hodgson, and Paul Dolan. 2011. "It's Driving Her Mad': Gender Differences in the Effects of Commuting on Psychological Health." *Journal of Health Economics* 30 (5): 1064–76. <https://doi.org/10.1016/j.jhealeco.2011.07.006>.
- Rogalsky, Jennifer. 2010. "The Working Poor and What GIS Reveals about the Possibilities of Public Transit." *Journal of Transport Geography* 18 (2): 226–37. <https://doi.org/10.1016/j.jtrangeo.2009.06.008>.
- Rojo, Marta, Hernan Gonzalo-Orden, Luigi dell'Olio, and Angel Ibeas. 2011. "Modelling Gender Perception of Quality in Interurban Bus Services." *Proceedings of the Institution of Civil Engineers—Transport* 164 (1): 43–53. <https://doi.org/10.1680/tran.9.00031>.
- Rwebangira, T. 2001. "Cycling in African Cities: Status & Prospects." *World Transport Policy & Practice* 7 (2): 7–10.
- Sacks, Emma, Daniel Vail, Katherine Austin-Evelyn, Dana Greeson, Lynn M. Atuyambe, Mubiana Macwan'gi, Margaret E. Kruk, and Karen A. Grépin. 2015. "Factors Influencing Modes of Transport and Travel Time for Obstetric Care: A Mixed Methods Study in Zambia and Uganda." *Health Policy and Planning* 31 (3): 293–301. <https://doi.org/10.1093/heapol/czv057>.
- Salon, Deborah, and Sumila Gulyani. 2010. "Mobility, Poverty, and Gender: Travel 'choices' of Slum Residents in Nairobi, Kenya." *Transport Reviews* 30 (5): 641–57. <https://doi.org/10.1080/01441640903298998>.
- Sameni, Melody K. and Amine B. Tilenoie. 2020. "How Priorities of Men and Women for Choosing Railway Transportation Differ?: A Case Study." *Transportation Research Procedia* 48: 3062–69. <https://doi.org/10.1016/j.trpro.2020.08.181>.
- Sánchez de Madariaga, Inés. 2013. "From Women in Transport to Gender in Transport: Challenging Conceptual Frameworks for Improved Policymaking." *Journal of International Affairs* 67 (1): 43–65.
- Sánchez, M. I. O., and Elvira M. González. 2016. "Gender Differences in Commuting Behavior: Women's Greater Sensitivity." *Transportation Research Procedia* 18: 66–72. <https://doi.org/10.1016/j.trpro.2016.12.009>.
- Schaffer, Axel, and Carola Schulz. 2008. "Women's and Men's Role in Passenger Transport: Employment and Mobility Patterns." *International Journal of Transport Economics* 35 (2): 231–50.
- Schmucki, Barbara. 2002. "On the Trams: Women, Men and Urban Public Transport in Germany." *Journal of Transport History* 23 (1): 60–72.
- . 2012. "'If I Walked on My Own at Night I Stuck to Well Lit Areas.' Gendered Spaces and Urban Transport in 20th Century Britain." *Research in Transportation Economics* 34 (1): 74–85. <https://doi.org/10.1016/j.retrec.2011.12.002>.



- Seedat, Mohamed, Sarah MacKenzie, and Dinesh Mohan. 2006. "The Phenomenology of Being a Female Pedestrian in an African and an Asian City: A Qualitative Investigation." *Transportation Research Part F: Traffic Psychology and Behaviour* 9 (2): 139–53. <https://doi.org/10.1016/j.trf.2005.09.005>.
- Seedhouse, Andrew, Rebecca Johnson, and Robert Newbery. 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>.
- Sersli, Stephanie, Maya Gislason, Nicholas Scott, and Meghan Winters. 2020. Riding Alone and Together: Is Mobility of Care at Odds with Mothers' Bicycling? *Journal of Transport Geography* 83: 102645. <https://doi.org/10.1016/j.jtrangeo.2020.102645>.
- Shaw, Caroline, Marie Russell, Michael Keall, Sara MacBride-Stewart, Kirsty Wild, Dory Reeves, Rebecca Bentley, and Alistair Woodward. 2020. "Beyond the Bicycle: Seeing the Context of the Gender Gap in Cycling." *Journal of Transport & Health* 18: 100871. <https://doi.org/10.1016/j.jth.2020.100871>.
- Shibata, Seiji. 2020. "Are Women-Only Cars (WOC) a Solution to Groping? A Survey among College Students in Tokyo/Kanagawa, Japan." *International Journal of Comparative and Applied Criminal Justice* 44 (4): 293–305. <https://doi.org/10.1080/01924036.2020.1719533>.
- Shirgaokar, Manish. 2019. "Operationalizing Gendered Transportation Preferences: A Psychological Framework Incorporating Time Constraints and Risk Aversion." *Transport Policy* 75: 10–18. <https://doi.org/10.1016/j.tranpol.2018.12.010>.
- Sialubanje, Cephas, Karlijn Massar, Davidson H. Hamer, and Robert A. C. Ruiter. 2014. "Understanding the Psychosocial and Environmental Factors and Barriers Affecting Utilization of Maternal Healthcare Services in Kalomo, Zambia: A Qualitative Study." *Health Education Research* 29 (3): 521–32. <https://doi.org/10.1093/her/cyu011>.
- Sietchiping, Remy, Melisa J., Permezel, and Claude Ngomsi. 2012. "Transport and Mobility in Sub-Saharan African Cities: An Overview of Practices, Lessons and Options for Improvements." *Cities* 29 (3): 183–89. <https://doi.org/10.1016/j.cities.2011.11.005>.
- Simón, Hipólito, José M. Casado-Díaz, and Adeliada Lillo-Bañuls. 2018. "Exploring the Effects of Commuting on Workers' Satisfaction: Evidence for Spain." *Regional Studies* 54 (4): 550–62. <https://doi.org/10.1080/00343404.2018.1542128>.
- Singh, Dhan Zunino. 2017. "A Genealogy of Sexual Harassment of Female Passengers in Buenos Aires Public Transport." *Transfers* 7 (2). <https://doi.org/10.3167/trans.2017.070206>.
- Singh, Yamini J. 2020. "Is Smart Mobility Also Gender-Smart?" *Journal of Gender Studies* 29 (7): 832–46. <https://doi.org/10.1080/09589236.2019.1650728>.
- Siren, Anu, and Liisa Hakamies-Blomqvist. 2004. "Private Car as the Grand Equaliser? Demographic Factors and Mobility in Finnish Men and Women aged 65+." *Transportation Research Part F: Traffic Psychology and Behaviour* 7 (2): 107–18. <https://doi.org/10.1016/j.trf.2004.02.003>.
- Skinner, Donald, Sakhumzi Mfecane, Tebogo Gumede, Nomvo Henda, and Adlai Davids. 2005. "Barriers to Accessing PMTCT Services in a Rural Area of South Africa." *African Journal of AIDS Research* 4 (2): 115–23. <https://doi.org/10.2989/16085900509490350>.

- Sohail, M., D. A. C. Maunder, and S. Cavill. 2006. "Effective Regulation for Sustainable Public Transport in Developing Countries." *Transport Policy* 13 (3): 177–90. <https://doi.org/10.1016/j.tranpol.2005.11.004>.
- Song, Lily, Mariel Kirschen, and John Taylor. 2018. "Women on Wheels: Gender and Cycling in Solo, Indonesia." *Singapore Journal of Tropical Geography* 40 (1): 140–57. <https://doi.org/10.1111/sjtg.12257>.
- Song, Yena, Hyun Kim, Keumsook Lee, and Kwangwon Ahn. 2018. "Subway Network Expansion and Transit Equity: A Case Study of Gwangju Metropolitan Area, South Korea." *Transport Policy* 72: 148–58. <https://doi.org/10.1016/j.tranpol.2018.08.007>.
- Soza-Parra, Jaime, Sebastián Raveau, Juan Carlos Muñoz, and Oded Cats. 2019. "The Underlying Effect of Public Transport Reliability on Users' Satisfaction." *Transportation Research Part A: Policy and Practice* 126: 83–93. <https://doi.org/10.1016/j.tra.2019.06.004>.
- Sperry, Benjamin R., Jeffery E. Warner, and Robert G. Pearson. 2014. "Examining the Characteristics of Intercity Bus Passengers in Michigan." *Transportation Research Record: Journal of the Transportation Research Board* 2418 (1): 116–22. <https://doi.org/10.3141/2418-14>.
- Stark, Juliane, and Michael Meschik. 2018. "Women's Everyday Mobility: Frightening Situations and Their Impacts on Travel Behaviour." *Transportation Research Part F: Traffic Psychology and Behaviour* 54: 311–23. <https://doi.org/10.1016/j.trf.2018.02.017>.
- Starkey, Paul, and John Hine, 2014. "Poverty and Sustainable Transport: How Transport Affects Poor People with Policy Implications for Poverty Reduction: A Literature Review." Working Paper for the UN-Habitat and the Overseas Development Institute (ODI), London, United Kingdom.
- Tamiya, Nanako, Li-Mei Chen, Yasuki Kobayashi, Mariko Kaneda, and Eiji Yano. 2009. "Gender Differences in the Use of Transportation Services to Community Rehabilitation Programs." *BMC Geriatrics* 9 (1). <https://doi.org/10.1186/1471-2318-9-24>.
- Tanzarn, Nite. 2020. "Transformative Impact of Mainstreaming Gender in Rural Transport: A Review of Seven Case Studies." *World Transport Policy & Practice* 26 (2): 52–68.
- Tara, Shelly. 2011. "Private Space in Public Transport: Locating Gender in the Delhi Metro." *Economic and Political Weekly* 46 (51): 71–4.
- Tarigan, Ari K. M., Yusak O. Susilo, and Tri B. Joewono. 2014. "Segmentation of Paratransit Users Based on Service Quality and Travel Behaviour in Bandung, Indonesia." *Transportation Planning and Technology* 37 (2): 200–18. <https://doi.org/10.1080/03081060.2013.870792>.
- Tembe, Atanasio, Fumihiko Nakamura, Shinji Tanaka, Ryo Arioshi, and Shino Miura. 2020. "Travel Behaviour of the Urban Poor: A Comparative Study between Maputo and Nairobi." *Transportation Research Procedia* 48: 1478–92. <https://doi.org/10.1016/j.trpro.2020.08.193>.
- Thakuriah, Piyushimita, and Paul Metaxatos. 2000. "Effect of Residential Location and Access to Transportation on Employment Opportunities." *Transportation Research Record: Journal of the Transportation Research Board* 1726 (1): 24–32. <https://doi.org/10.3141/1726-04>.

- Tillous, Marion. 2020. "Women, (Railway) Class and the State: An Analysis of Two Controversies Surrounding Women-Only Metro Carriages (Cairo–São Paulo)." *Gender, Place & Culture* 27 (8): 1155–75. <https://doi.org/10.1080/0966369X.2019.1654435>.
- Tlebere, Pulani, Debra Jackson, Marian Loveday, Lyness Matizirofa, Nomafrench Mbombo, Tanya Doherty, Alyssa Wigton, Latasha Treger, and Mickey Chopra. 2007. "Community-Based Situation Analysis of Maternal and Neonatal Care in South Africa to Explore Factors That Impact Utilization of Maternal Health Services." *Journal of Midwifery & Women's Health* 52 (4): 342–50. <https://doi.org/10.1016/j.jmwh.2007.03.016>.
- Tran, Hoai A., and Ann Schlyter. 2010. "Gender and Class in Urban Transport: The Cases of Xian and Hanoi." *Environment and Urbanization* 22 (1): 139–55. <https://doi.org/10.1177/0956247810363526>.
- Turdaliev, Cholpon, and Christopher Edling. 2017. "Women's Mobility and 'Transport-Related Social Exclusion' in Bishkek." *Mobilities* 13 (4): 535–50. <https://doi.org/10.1080/17450101.2017.1388348>.
- Turner, Jeff. 2012. "Urban Mass Transit, Gender Planning Protocols and Social Sustainability: The Case of Jakarta." *Research in Transportation Economics* 34 (1): 48–53. <https://doi.org/10.1016/j.retrec.2011.12.003>.
- Turner, Jeff, and Margaret Grieco. 2000. "Gender and Time Poverty: The Neglected Social Policy Implications of Gendered Time, Transport and Travel." *Time & Society* 9 (1): 129–36. <https://doi.org/10.1177/0961463x00009001007>.
- Urrutia, Rachel P., Delson Merisier, Maria Small, Eugene Urrutia, Nicole Tinfo, and David K. Walmer. 2012. "Unmet Health Needs Identified by Haitian Women as Priorities for Attention: A Qualitative Study." *Reproductive Health Matters* 20 (39): 93–103. [https://doi.org/10.1016/S0968-8080\(12\)39602-X](https://doi.org/10.1016/S0968-8080(12)39602-X).
- Uteng, Tanu P. 2012. "Gender and Mobility in the Developing World: Gendered Bargains of Daily Mobility—Citing Cases from Both Urban and Rural Settings." World Development Report: Gender Equality and Development, Background Paper, World Bank, Washington, DC.
- Vadrevu, Lalitha, and Barun Kanjilal. 2016. "Measuring Spatial Equity and Access to Maternal Health Services Using Enhanced Two Step Floating Catchment Area Method (E2SFCA)—A Case Study of the Indian Sundarbans." *International Journal for Equity in Health* 15 (1). <https://doi.org/10.1186/s12939-016-0376-y>.
- Vance, Colin, and Matthias Peistrup. 2011. "She's Got a Ticket to Ride: Gender and Public Transit Passes." *Transportation* 39 (6): 1105–19. <https://doi.org/10.1007/s11116-011-9381-6>.
- Venter, Christo, Mac Mashiri, and Denise Buiten. 2006. *Engendering Mobility: Towards Improved Gender Analysis in the Transport Sector*. Pretoria, South Africa: University of Pretoria Law Press.
- Venter, Christoffel, Vera Vokolkova, and Jaroslav Michalek. 2007. "Gender, Residential Location, and Household Travel: Empirical Findings from Low-Income Urban Settlements in Durban, South Africa." *Transport Reviews* 27 (6): 653–77. <https://doi.org/10.1080/01441640701450627>.
- Verma, Meghna, M. Manoj, Nikhita Rodeja, and Ashish Verma. 2017. "Service Gap Analysis of Public Buses in Bangalore with Respect to Women Safety." *Transportation Research Procedia* 25: 4322–29. <https://doi.org/10.1016/j.trpro.2017.05.283>.

- Verma, Meghna, Nikhita Rodeja, M. Manoj, and Ashish Verma. 2020. "Young Women's Perception of Safety in Public Buses: A Study of Two Indian Cities (Ahmedabad and Bangalore)." *Transportation Research Procedia* 48: 3254–63. <https://doi.org/10.1016/j.trpro.2020.08.151>.
- Wang, Kailai, and Gulsah Akar. 2019. "Gender Gap Generators for Bike Share Ridership: Evidence from Citi Bike System in New York City." *Journal of Transport Geography* 76: 1–9. <https://doi.org/10.1016/j.jtrangeo.2019.02.003>.
- Welsch, Janina, Kerstin Conrad, and Dirk Wittowsky. 2016. "Exploring Immigrants Travel Behaviour: Empirical Findings from Offenbach am Main, Germany." *Transportation* 45 (3): 733–50. <https://doi.org/10.1007/s11116-016-9748-9>.
- Williams, Sarah, Waishan Qiu, Zeyad Al-awwad, and Aljoharah Alfayez. 2019. "Commuting for Women in Saudi Arabia: Metro to Driving—Options to Support Women Employment." *Journal of Transport Geography* 77: 126–38. <https://doi.org/10.1016/j.jtrangeo.2019.05.002>.
- Wong, Sandy, Sara L. McLafferty, Arrianna M. Planey, and Valerie A. Preston. 2020. "Disability, Wages, and Commuting in New York." *Journal of Transport Geography* 87: 102818. <https://doi.org/10.1016/j.jtrangeo.2020.102818>.
- World Bank. 2013. "Gender and Public Transport: Kathmandu, Nepal." Washington, DC, World Bank. <https://openknowledge.worldbank.org/handle/10986/17872>. License: CC BY 3.0 IGO.
- Yang, Min, Dan Li, Wei Wang, Jingyao Zhao, and Xuewu Chen. 2013. "Modeling Gender-Based Differences in Mode Choice Considering Time-Use Pattern: Analysis of Bicycle, Public Transit, and Car Use in Suzhou, China." *Advances in Mechanical Engineering* 5: 706918. <https://doi.org/10.1155/2013/706918>.
- Yavuz, Nilay, and Eric W. Welch. 2010. "Addressing Fear of Crime in Public Space: Gender Differences in Reaction to Safety Measures in Train Transit." *Urban Studies* 47 (12): 2491–2515. <https://doi.org/10.1177/0042098009359033>.
- Zhao, Jinbao, Jian Wang, and Wei Deng. 2015. "Exploring Bikesharing Travel Time and Trip Chain by Gender and Day of the Week." *Transportation Research Part C: Emerging Technologies* 58: 251–64. <https://doi.org/10.1016/j.trc.2015.01.030>.
- Zhao, Pengjun, and Zhao Yu. 2020. "Investigating Mobility in Rural Areas of China: Features, Equity, and Factors." *Transport Policy*, 94: 66–77. <https://doi.org/10.1016/j.tranpol.2020.05.008>.
- Zheng, Zuduo, Simon Washington, Paul Hyland, Keith Sloan, and Yulin Liu. 2016. "Preference Heterogeneity in Mode Choice Based on a Nationwide Survey with a Focus on Urban Rail." *Transportation Research Part A: Policy and Practice* 91: 178–94. <https://doi.org/10.1016/j.tra.2016.06.032>.
- Zhong Shuiying, Wei Han, Hou Weili, and Cheng Dening. 2003. "A Lifetime of Walking: Poverty and Transportation in Wuhan." China: Wuhan University, Economic Research Institute.
- Zolnik, Edmund J., Ammar Malik, and Yasemin Irvin-Erickson. 2018. "Who Benefits from Bus Rapid Transit? Evidence from the Metro Bus System (MBS) in Lahore." *Journal of Transport Geography* 71: 139–49. <https://doi.org/10.1016/j.jtrangeo.2018.06.019>.





