

Gender and Urban Transport: Fashionable and Affordable

Module 7a

Sustainable Transport: A Sourcebook for Policy-makers in Developing Cities



What is the Sourcebook?

This *Sourcebook* on Sustainable Urban Transport addresses the key areas of a sustainable transport policy framework for a developing city. The *Sourcebook* consists of more than 20 modules.

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Further modules and resources

Further modules are anticipated in the areas of *Financing Urban Transport* and *Benchmarking*. Additional resources are being developed, and an Urban Transport Photo CD-ROM is available.

Modules and contributors

- (i) *Sourcebook Overview and Cross-cutting Issues of Urban Transport* (GTZ)

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- 1a. *The Role of Transport in Urban Development Policy* (Enrique Peñalosa)
- 1b. *Urban Transport Institutions* (Richard Meakin)
- 1c. *Private Sector Participation in Urban Transport Infrastructure Provision* (Christopher Zegras, MIT)
- 1d. *Economic Instruments* (Manfred Breithaupt, GTZ)
- 1e. *Raising Public Awareness about Sustainable Urban Transport* (Carlos F. Pardo, GTZ)

Land use planning and demand management

- 2a. *Land Use Planning and Urban Transport* (Rudolf Petersen, Wuppertal Institute)
- 2b. *Mobility Management* (Todd Litman, VTPI)

Transit, walking, and cycling

- 3a. *Mass Transit Options* (Lloyd Wright, University College London; Karl Fjellstrom, GTZ)
- 3b. *Bus Rapid Transit* (Lloyd Wright, University College London)
- 3c. *Bus Regulation & Planning* (Richard Meakin)
- 3d. *Preserving and Expanding the Role of Non-motorised Transport* (Walter Hook, ITDP)
- 3e. *Car-Free Development* (Lloyd Wright, University College London)

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- 4a. *Cleaner Fuels and Vehicle Technologies* (Michael Walsh; Reinhard Kolke, UBA)
- 4b. *Inspection & Maintenance and Roadworthiness* (Reinhard Kolke, UBA)
- 4c. *Two- and Three-Wheelers* (Jitendra Shah, World Bank; N.V. Iyer, Bajaj Auto)
- 4d. *Natural Gas Vehicles* (MVV InnoTec)
- 4e. *Intelligent Transport Systems* (Phil Sayeg, TRA; Phil Charles, University of Queensland)
- 4f. *EcoDriving* (VTL; Manfred Breithaupt, Oliver Eberz, GTZ)

Environmental and health impacts

- 5a. *Air Quality Management* (Dietrich Schwela, World Health Organization)
- 5b. *Urban Road Safety* (Jacqueline Lacroix, DVR; David Silcock, GRSP)
- 5c. *Noise and its Abatement* (Civic Exchange Hong Kong; GTZ; UBA)

Resources

6. *Resources for Policy-makers* (GTZ)

Social and cross-cutting issues on transport

- 7a. *Gender and Urban Transport: Fashionable and Affordable* (Mika Kunieda; Aimée Gauthier)

Gender and Urban Transport: Fashionable and Affordable

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Preface

This module examines transport systems around the world to establish what is important for transport users in general and how gender affects the ways users view transport. Ultimately, these are universal concerns. When gender-based needs are not taken into consideration, transport is inefficient and unsustainable. Urban transport systems are frequently overlooked in discussions of quality of life issues for city dwellers. Moreover, transport is often seen as gender neutral—a road or bus system benefits all equally. However, this isn't a given. Urban transport systems are dynamic, influenced by society and influencing the choices members of that society can make. The objective of this module is to provoke thinking about the concept of gender in urban transport through two concepts—fashion and affordability.

Fashionable

For transport to be competitive, it needs to be more than just safe, convenient, clean, and of high quality—it needs to be fashionable. Fashionable transport isn't expensive or frivolous. It is transport that, *at a minimum*, heeds consumer needs and then offers good quality alternatives to achieve transport for all. Transport is demand driven. Safety, reliability, and convenience are important fundamental considerations in meeting that demand. But to be fashionable, public transport, cycling, and walking need to be attractive to the consumer by offering personally satisfying advantages that can compete with the perceived safety, cleanliness, and convenience of private cars. If public transport, cycling, and walking fail to be fashionable, demand will move on to other modes as soon as it can.

“A fashion that does not reach the streets is not fashion.”

Coco Chanel

For too long, transport has ignored the needs of women in planning and design—assuming a purported neutral stance of benefits to all. By attaching fashionable to transport, the authors aim to highlight the feminine side of transportation demands, while recognizing that the success of any transport solution is that it is competitive.

Poor women and men do not travel less; they just travel under more duress and in worse conditions. They lack real options and the ones available are usually under-resourced, under-capitalized, and over-utilized. Women are usually the last to have access to the most modern and expensive (higher status) forms of transport. Men have to rely on dangerous and unreliable mass transit or paratransit. It is imperative that transport seriously addresses concerns for them—satisfying their consumer mobility needs with fashionable options that help them gain access.

Women are most concerned with the safety and personal security aspect of transport - a fundamental and critical component to decision-making about transport. They may forego trips and seek less efficient and/or more costly alternatives when there is a perceived threat. Women, who are unequally affected by violence, are often prime targets of violent crime, and have different and greater safety needs than men. Men are more often the victims of road fatalities and injuries because they are more likely than women to be sitting at the driving wheel and more likely than women to be traveling.

Convenience is another motivator in the transport decision-making process. All users want transport that offers punctuality, predictability, shortened travel time, proximity, flexibility, etc. Men tend to prefer speed, punctuality, and predictability and usually have greater access to the types of modes that deliver that type of service, whether it is public transport, private vehicles, motorcycles, or bicycles. Women have less access and tend to have multiple purposes in their trips, since they balance multiple roles of work, household and childcare. Because of this, they favor more flexible services that bring them closer to their varied destinations.

Finally, fashionableness in transport includes integrating activities more closely with transport so that it becomes more than just a service; it becomes a place where the busy urban citizen can, for example, get the latest news or access needed services. Streets become more than thoroughfares, they become prime public space that people enjoy and have pride in using.

Affordable

Affordability is a matter of time and money. More affordable transportation systems need to be developed to give both women and men real and affordable choices. No matter how fashionable or attractive a transport choice is, the first consideration for both men and women when making a decision about transport is whether or not they can afford it. Women often choose to walk rather than to pay for transport—a sign of their reduced mobility. This restriction has ramifications with a corresponding reduction of opportunities in revenues and services.

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1. Introduction

Transportation systems make cities function. They are the critical link between activities, productive or reproductive, of a thriving metropolis. They are both a cause and effect of urban development. Cities are engines of growth in many countries. Transportation systems are what make these engines work. Transport contributes to quality of life and personal well-being by enabling individuals to access health care, education, and employment, which ultimately leads to greater productivity and economic growth.

“Policy makers have a responsibility to deliver a [transportation] system that is efficient, responsive to user requirements, and sensitive to nonuser concerns. The objective is clear and straightforward. Developing the game plan for achieving the goal, however, is an extraordinarily challenging endeavor.”

(Jeff and McElroy, 81)

95% of all urbanization is expected to occur in cities in developing countries. These are cities that are already facing crisis in urban transportation, manifested in poor accessibility for the majority and increasing congestion. The result: cities do not function well and people are faced with higher transport costs and a lower quality of life. While the impacts of urban growth are well-documented, the impacts of this growth on different genders are not.

This module has been developed to look at where gender and urban transport intersect, specifically in developing countries. The focus of gender and transportation studies and projects in developing countries has been mostly rural. While there is a growing literature base on the subject in more developed countries, there is a lack of analysis of transport planning and projects by gender in developing countries. This module aims to bridge that void by bringing together existing studies and current best practices to offer policymakers ways to address gender and

urban transport from the perspective of men, women, the elderly, the youth and the disabled.

1.1 Why gender?

Just as transportation systems define the structure of the city, gender defines the structure of society. Gender, based on the biological construct of male and female, differentiates economic and social roles and responsibilities. Gender is an integral part of the broader social context interacting with class, race, ethnicity, income, education, religion, and geographic location. Gender defines how men and women are expected to act, dress, and behave; this includes travel behavior and patterns. In fact, travel patterns are argued to be one of the most clearly gendered aspects of life (Wachs, 1996).

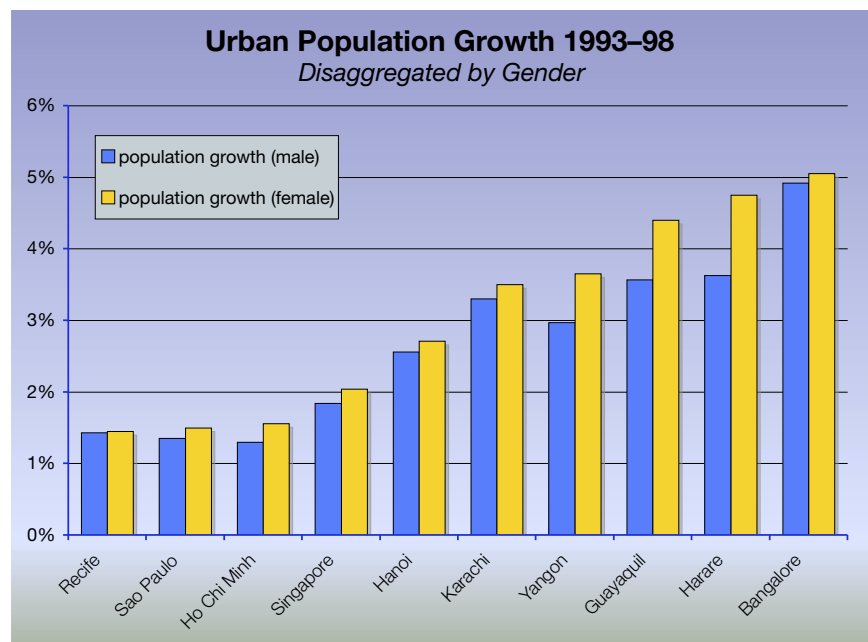


Fig. 1
Women are a faster growing population in the above cities.
(UN Habitat Global Indicators)

The definition of gender roles and responsibilities varies from place to place¹ and changes over time and between generations. This makes it difficult to assume an overriding general definition of roles and responsibilities. However, the main point is that in each specific location or cultural context, gendered behavior, patterns and definitions need to be understood and accounted for in designing and planning urban transportation systems. Women and men have different transport needs, different travel behaviors, and dif-

¹ See EC glossary of gender and development terms at: http://ec.europa.eu/comm/europeaid/projects/gender/documents/toolkit_section_3.pdf

ferent levels of access. To that end it is necessary to look at planning from these roles and responsibilities. If this does not occur, transportation planning and projects will not adequately meet demand and there will be inefficiencies in the system. Men and women will face higher costs in time and money. They will have a harder time accessing services and economic opportunity. With limited transport options, people will have to forego trips, such as to school or for health care, will have a higher incidence of absenteeism or tardiness, and will forego employment because the costs of transport are greater than the benefit of employment. Poor transportation systems give people no choice other than to inefficiently allocate their time and money.

Addressing gender in urban transportation projects has the following benefits:

1. It increases economic rates of return on investment in infrastructure and increasing the profitability of mass transport systems;
2. It meets demand for transportation services through a better understanding of the divergent needs, preferences and constraints of end users, both women and men;
3. It lowers transaction costs by optimizing the transport system for all users;
4. It increases access to employment, education, and services that ultimately raise productivity; and
5. It enables women to better meet the needs of the household, for which they have primary responsibility and ultimately strengthens the base economic unit of the household.

While gender is much more nuanced, for the sake of simplicity we will be referring to men and women as the pervasive gender typologies of masculine and feminine, respectively. For the sake of clarity and to express the authors' point of view in this module, gender terms are defined below:

- **Gender equality** permits women and men equal enjoyment of human rights, socially valued goods, opportunities, resources, and the benefits from development results.
- **Gender equity** is the process of being fair to women and men. To ensure fairness, measures, such as affirmative action, must be available to compensate for historical and social disadvantages that prevent women and men from operating on a level playing field. Gender equity strategies are used to eventually

attain gender equality. Equity is the means; equality is the result.

- **Gender mainstreaming** is the process of assessing the implications for women and men of any planned action, including legislation, policies or programs, in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programs in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated². There is also a significant capacity building aspect involved in gender mainstreaming as this process entails the transformation of the institutional procedures as well as the organizational culture.
- **Gender integration** means taking into account both the differences and the inequalities between women and men in program planning, implementation, and evaluation. The roles of women and men and their relative power affect who does what in carrying out an activity, and who benefits. Taking into account the inequalities and designing programs to reduce them should contribute not only to more effective development programs but also to greater social equity/equality. Experience has shown that sustainable changes are not realized through activities focused on either women or men alone.

The goals are gender equality and mainstreaming. To reach those goals, gender equity and integration become the main means and will be the focus of this module.

1.2 Urban transportation systems in developing countries

Cities in most developing countries account for at least 50% of the gross national product (GNP) (World Bank, 2002). When cities do not function well, there are huge economic ramifications for the country. Urban economic growth tends to accelerate urban transport problems (Fjellstrom, 2002). Thus, this growth begets transportation problems (congestion, road fatalities, etc.) that slow down economic growth. In

² The Report of the Economic and Social Council for 1997. United Nations, 1997.

other words, efficient urban transport systems are an imperative for economic growth.

“An efficient and effective urban transport system is a powerful tool for improving the efficiency and accessibility of the labor market, and providing better access to education and health services. A key challenge is, therefore, to develop a reliable and affordable urban transport system with satisfactory conditions of safety. At this time, no city in SSA [Sub-Saharan Africa] meets all these criteria fully.”

Setty Pendakur, 2005

As mentioned earlier, cities in developing countries are growing at a much faster rate (approximately 6%) than in more developed countries. Only 7% of the top 200 fastest growing cities are located in more developed countries (<http://www.citymayors.org>). Most of these fastest growing cities face poorer and younger populations than in more developed countries. This growth is leading to increased transport problems and costs. For example, it is estimated that road fatalities are costing South Africa an estimated 43 billion Rand (US\$5.73 billion) per year and that toll is rising. Congestion slows down efficiency and economic growth. In Dakar, it is estimated that 1 million working hours are lost per day due to congestion (Pendakur, 2005). In Lima, Peru, the World Bank estimated that US\$500 million in man-hours and operational costs are lost every year due to congestion and to the inefficiencies of the system (Gomez, 2000). However, congestion is a mark of urban transport's inefficiency and not that the private car is the predominant mode choice.

Urban transport is concerned with moving people and goods to achieve operational efficiency, economic viability, environmental sustainability, safety and comfort. While difficult and possibly unfair to generalize urban transport systems within regions, let alone across them, there are commonalities that cities have with each other, as well as shared concerns.

Box 1: Transport planning decisions have significant and diverse equity impacts

Litman (2006) writes that equity (also called justice and fairness) is the distribution of impacts (benefits and costs). The quality of transportation available affects people's opportunities and quality of life.

- Transport facilities, activities and services impose many indirect and external costs, such as congestion delay and accident risk imposed on other road users, infrastructure costs not funded through user fees, pollution, and undesirable land use impacts.
- Transport expenditures represent a major share of most household, business and government expenditures. Price structures can significantly affect financial burdens.
- Transport planning decisions affect the location and type of development that occurs in an area, and therefore accessibility, land values and developer profits.
- A significant amount of valuable land is devoted to transport facilities. This land is generally exempt from rent and taxes, representing an additional but hidden subsidy of transport activity.
- Transport investments are often used to stimulate economic development and support other strategic objectives. The location and nature of these investments have distributional impacts.
- Transportation equity analysis can be difficult because there are several types of equity, various ways to categorize people for equity analysis, numerous impacts to consider, and various ways of measuring these impacts.

While affordability of transport for the urban poor, time-saving accessibility and economic and social equity have recently become concerns in urban transport, the reality is that the travel of the urban poor is often neglected. Women account for two-thirds of the 1.2 billion people living in extreme poverty³. Ten years ago Gannon and Liu found that only a third of World Bank transport projects had poverty alleviation as an objective. The most common intervention in urban transport has been to build roads that have only served to exacerbate the situation and serves only the few private car owners at the expense of the

³ <http://www.dfid.gov.uk/pubs/files/gender-factsheet.pdf>

majority of the population. 73% of World Bank transport funding is for roads and highways, mainly rural and interurban in focus. Urban transport projects represent less than 10% of the total World Bank transport portfolio. The Bank is making concerted efforts to rectify this with its new transport strategy focusing on urban transport and poverty alleviation. Urban projects now are focused on dedicated bus lanes for improved public transport, space for pedestrians and bicycles but there have only been a select few projects that have mainstreamed gender, despite half of the urban population (the beneficiaries) being women⁴. However, one of the sectors of focus for the World Bank's new Gender Action Plan is transport.

This is partly due to the focus of poverty alleviation from the Millennium Development Goals. In 2000, at the UN Millennium Summit, governments committed to reducing the number of people living in poverty in half by 2015 through agreeing to eight goals that have specific and measurable targets. None of these goals include any specific goals or targets related to transportation, although transport sector interventions are critical to meeting many of them. But it has given focus to governments and donors for transport projects. Now with the Millennium Development Goals (MDGs), more and more transport projects aim to alleviate poverty and

are trying to understand the relationship between urban poverty and transport.

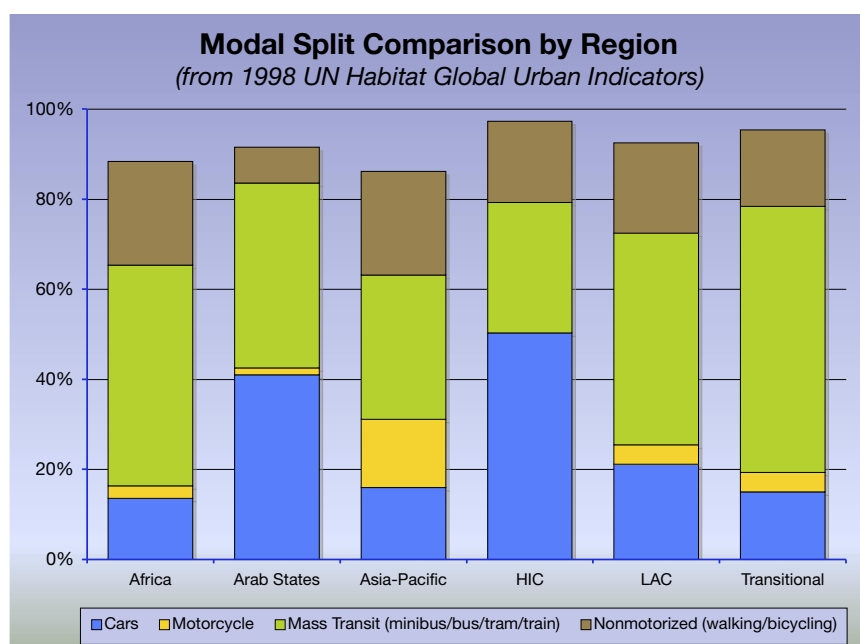
“Now with the Millennium Development Goals (MDGs), more and more transport projects aim to alleviate poverty.”

There is a strong correlation between poverty and urban mobility, but its extent is not sufficiently well known or quantified. The time and money that the poor must spend meeting basic mobility needs keeps low-income families from accumulating the assets that would lift them out of poverty. Transport service and transport-related construction also are frequently critical sources of employment for the urban poor. Goods and services are sometimes more expensive in low-income communities due to poor transport infrastructure and services (Hook, 2006). Poverty complicates mobility and lack of transport options complicates poverty. The poor do not travel less, they just travel under worse conditions. Lack of transport options hamper access to employment, as well as contribute to weakened social networks. Moreover, transport costs put a lot of financial pressure on households where financial pressures already exist (SSATP Report No 09/04/Dla).

Walking and non-motorized transport is the most common mode of travel for both men and women in developing cities, especially for the poor. Mass transit is the main means of transport for most people in developing cities. Car ownership is not a realistic option for most people living in developing cities.

In many cities, buses and paratransit systems are owned and operated by private companies or individuals and, in many cases, are a part of the informal sector. However, the competition for passengers among privately owned and managed mass transport makes for an inefficient and chaotic. This creates an environment where drivers constantly speed, weave in and out of traffic, picking up and letting off passengers in non-designated spots, bribing traffic police officials and rarely maintaining their vehicles. Nevertheless, these paratransit operators manage to run with no subsidy from the government.

Fig. 2
Modal split comparison by region from 1998 UN Habitat Global Urban Indicators.



⁴ Williams, Brian, "xxx," Habitat Debate, March 2005, p. 10

In Asian cities, despite heavy public subsidies for the road-based and rail-based public transit systems, the urban poor who usually cannot afford the fares, travel by walking, riding bicycles, taking non-motorized tricycles or rickshaws, riding paratransit vehicles like *tuktuks*, *becaks*, or *jeepneys*, or traveling in packed, overcrowded, polluting and poorly maintained buses.

In Africa, especially Sub-Saharan Africa, most people walk. For example, in Dakar, Senegal, based on the 2002 household survey, about 73% of all trips were done on foot. Publicly provided transport has failed in many cases, with the majority being provided by small-scale private sector transport operators which are inefficient, provide fragmented services, and are under-capitalized (Pendakur, 2005). The government control and regulation of the remaining public transport and of paratransit is inadequate and ineffective, there is paltry enforcement of traffic laws, and roads are in poor condition with little or no concessions made to walking or cycling. This results in people walking on the streets (including vendors) that on average occupy 25 to 35% of road space (Pendakur, 2005). This chaotic environment lends itself to a high rate of traffic accidents and fatalities.

“In Dakar, Senegal, based on the 2002 household survey, about 73% of all trips were done on foot.”

In Latin America, the majority of urban trips are walking, with public transit following second. Bus and minibus transport is in every city (greater than 20,000), with rail-based transport in 20 Latin American cities. The situation of privately provided transport is similar to other regions and the extent of cycling is low.

Table 2: Mode share in Latin American cities on average

Mode	Percent
Walking	43%
Public	33%
Auto	16%
Bicycle/Motorcycle	8%

Source: Vasconcellos, Eduardo, presentation to WRI, January 2005

Table 1: Modal split of urban transport trips in Asian cities and Sub-Saharan African cities (%)

City	Walking	Non-motorized Vehicles	Mass Transit (Public/Para)	Private Motorized Vehicles (Motorcycles/Cars)
Addis Ababa	60		26	4
Bamako	42	2	17	21
Bangkok	1	5	45	49
Beijing	12	48	26	14
Calcutta	15	7	46	30
Dakar	81	1	17	1
Dar Es Salaam	47	3	43	7
Delhi	20	12	61	7
Dhaka	40	20	28	12
Eldoret	70	12	24	16
Harare	60	1	16	20
Jakarta	23	2	28	47
Kinshasa	70		20	10
Metro Manila	12	3	42	43
Morogoro	67	23	12	4
Mumbai	15	3	37	45
Nairobi	48	1	42	7
Niamey	60	2	9	32
Osaka	24	11	38	28
Ouagadougou	63	10	3	45
Seoul	5		75	20
Shanghai	31	33	25	11
Tinjin	14	64	12	10
Tokyo	8		53	39

Source: Laquian, Aprodicio. Who are the Poor and How Are They Being Served in Asian Cities? Pp. 14-22 in Public Transport in Asia and Pendakur, p. 10



Fig. 3
Two school children cross a chaotic street in Accra, as cars park on the sidewalk.

Photo by Aimée Gauthier

2. Gender and urban transport

2.1 Travel behavior and patterns

Generally, when compared to men, women in urban areas tend to take more and shorter trips at more varied times. These trips are more expensive in terms of in time and money. Women tend to make more off-peak trips, traveling to more disperse locations. Since women are more likely to be employed as informal workers, their destinations are not necessarily concentrated in the Central Business District (CBD) or in one or two main areas. As more women than men work as domestic servants, their travel times can be much earlier or later than the typical work day around which most transit is planned.

Women tend to make more trips associated with their reproductive work in maintaining the household. Women are more likely to *trip chain*, meaning that when they travel, they tend to have multiple purposes and multiple destinations within one “trip”. For example, they might be going to the market, but on the way there they might stop at day care, a pharmacy, etc. For that reason, women tend to value flexibility over time savings in their travel choices. This type of combined trip making is irregular from most urban transport system designs. Women require low-cost, reliable, and consumer-friendly, flexible, door-to-door service with many route options to meet their needs.

Men tend to have much more linear origin destinations centered on employment. Men tend to value speed, reliability, and road safety in public transport. Since income-generating (*productive*) trips are more valued than domestic (*reproductive*) trips, vehicle use (both individual as in car, motorcycle or bicycle, as well as paid transit) is higher for those trips, and thus, men usually benefit first. Low-income men in particular are hostage to poor transport systems which also barely meet their needs. Overcrowding and unreliability frequently mean that men have long travel times and cannot rely on the transport network to efficiently take them to their destinations as well.

Naturally, there is no such thing as a universal definition of man or woman. Within the categorization of men and women, characteristics differ because of age, income, race, ethnicity,

Box 2: Flexible transport and women in Dhaka

Rickshaws are popular in Dhaka as they provided door-to-door transport, enabling women and girls as well as the disabled to travel to the workplace, schools, and other areas without being harassed or feeling uncomfortable in overcrowded buses and inadequate sidewalks. When the Dhaka, Bangladesh Urban Transport Project revealed women’s exclusion from public transport to be the result of overcrowded buses and inadequate sidewalks which hinder their access to the workplace, the project was redesigned to contain provisions to increase the number and the quality of sidewalks, as well as building in an intervention component with bus operators to address gender specific concerns. Premium service buses and women-only bus services were tested but many women found that premium services were unaffordable to women and women only bus services had limited use as Bangladeshi women do not travel alone.

or household. A woman or man who is single, married with no children, or married with children, etc. will all have different transport needs. As the household composition changes, so do the travel requirements. For example, female-headed households have different travel needs, as the woman is now both responsible for productive and reproductive activities for the household, and the children also bear more responsibility within the household.

Socio-economic differences and race also create different travel patterns. A woman of low income will not have a lot in common with one of high income in terms of trips needs and patterns. However, what they will have in common is that there will be less of a difference between men and women’s travel behavior in the very rich (as all can afford to travel as they wish) and the very poor (where no one can afford to follow gender stereotypes), but that may also vary from place to place. In Ibadan, Nigeria, there was only a significant relationship between socio-economic status (including stages in the life cycle) and travel behavior of women but not men (Abidemi, 2002).

The situation in Johannesburg illustrates the importance that socio-economic factors play in

transport choice. The graphs below from 2002 Census data show how mode choice differs between gender and race.

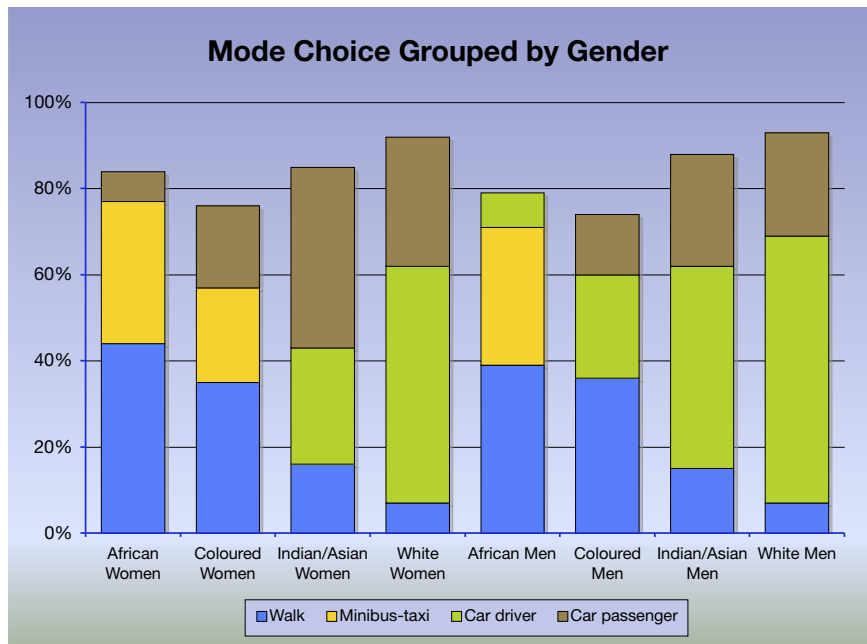
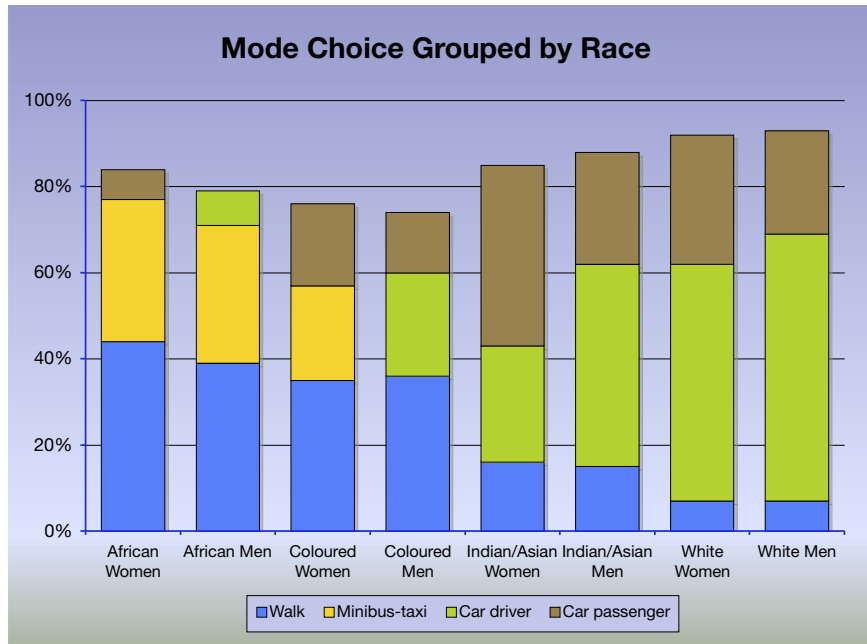
2.2 Mobility versus accessibility

Delving a little bit deeper translates into different levels of mobility. Gender differences show very different travel behaviors and different levels of mobility and accessibility. **Mobility** refers to the movement of people and goods and is usually measured as the number of trips per day per person (person-trips), but can also include person-miles, ton-miles, average trip speeds, and cost per person- or ton-mile. **Accessibility** is the ease with which people can travel and the ability to reach desired goods, services, or activities. It is usually measured by using generalized costs in time, money, and comfort. Accessibility should be the ultimate goal for transport systems, not the level of service for the vehicles (traffic), which should be considered as one means to the end (Vasconcellos, 2001; Litman, 2003).

There are three main ways in which transport planners analyze travel behavior and the impact and quality of transport projects:

1. Traffic: involves addressing levels of service, which measures traffic performance related to speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience. It can also include wait time for public transport as well as frequency of service. The higher level of service usually, though, corresponds to speed, or what is referred to as free flow.
2. Mobility: builds on the analysis of efficiency and flow (levels of service) and looks at how one utilizes transit, ridesharing and cycling options.
3. Accessibility: considers mobility, building on how people utilize transport services to incorporate how they access these different services, including land use strategies and activities.

The lack of comprehensive, accurate, disaggregated data for urban transport is the first constraint of analysis. The first step in achieving gendered urban transport is to disaggregate (or collect disaggregated) data by gender to enable analysis of accessibility and understand how



access differs by gender. One reason planning decisions favor automobile-oriented improvements over non-motorized modes or mass transit is that the problems and impacts are more easily identified, based on the existing measurable data. Conventional transportation surveys also are to blame since they tend to undercount non-motorized trips because they are shorter, leisure trips, travel by children, and the walking links of motorized trips. Recent personal transportation surveys have found that walking is about twice as common than what previous travel surveys have indicated. (Litman, 2003).

Fig. 4 and Fig. 5
Johannesburg mode choice grouped by race and gender.

Table 3: Comparing transportation measurements

	Traffic	Mobility	Access
Definition of Transportation	Vehicle travel	Person and goods movement	Ability to obtain goods, services, and activities
Unit of measure	Vehicle-miles and vehicle-trips	Person-miles, person-trips, and ton-miles.	Trips
Modes considered	Automobile and truck	Automobile, truck and public transit	All modes, including mobility substitutes such as telecommuting
Common performance indicators	Vehicle traffic volumes and speeds, roadway. Level of service, costs per vehicle-mile, parking convenience	Person-trip volumes and speeds, road and transit. Level of Service, cost per person-trip, travel convenience	Multi-modal level of service, land use accessibility, generalized cost to reach activities
Assumptions concerning what benefits consumers	Maximum vehicle mileage and speed, convenient parking, low vehicle costs	Maximum personal travel and goods movement	Maximum transport options, convenience, land use accessibility, cost efficiency
Consideration of land use	Favors low-density, urban fringe development patterns	Favors some land use clustering, to accommodate transit	Favors land use clustering, mix and connectivity
Favored transport improvement strategies	Increased road and parking capacity, speed and safety	Increased transport system capacity, speeds and safety	Improved mobility, mobility substitutes and land use accessibility

Source: Taken from Litman, 2005

Generally, women have a lower incidence of vehicle use, and a higher incidence of walking. This is partly a reflection of lack of money to afford to buy vehicles or pay for services. This reinforces women's time poverty. Typically, men have greater mobility when looking only at motorized modes. When considering all trips (motorized and non-motorized), women make more trips per day (more mobility), but the costs in both time and money are higher (less accessibility).

A study on the urban travel behavior characteristics of 13 cities across different regions shows that, on average, women make more trips than men. Net trip generation by gender was highest in Tokyo and Kuala Lumpur with roughly 3 trips per day (3.5 in the case of Tokyo). In Cairo, it was the lowest with fewer than 2 trips per day. Men traveled more than women in certain stages of life (usually older) and in mainly in cities in Islamic countries. This suggests that cultural factors, including religion, influence travel behavior.

In transport-user surveys in the Turkmenistan, Ashgabat Urban Transport Project found that the use of various modes of transport services is highly differentiated by gender. For example,

28% of women walk to work compared to 14% of men; 7% of women commute by car as compared to 20% of men; and 10% of women use transport provided by the workplace as compared to 20% of men. Women's waiting times are longer than men's and their average total journey time is 10 to 15% greater. Women were also found to have lower incomes. Therefore, improvements in public transportation, and particularly, in bus and trolley services were seen to directly serve the needs of women.

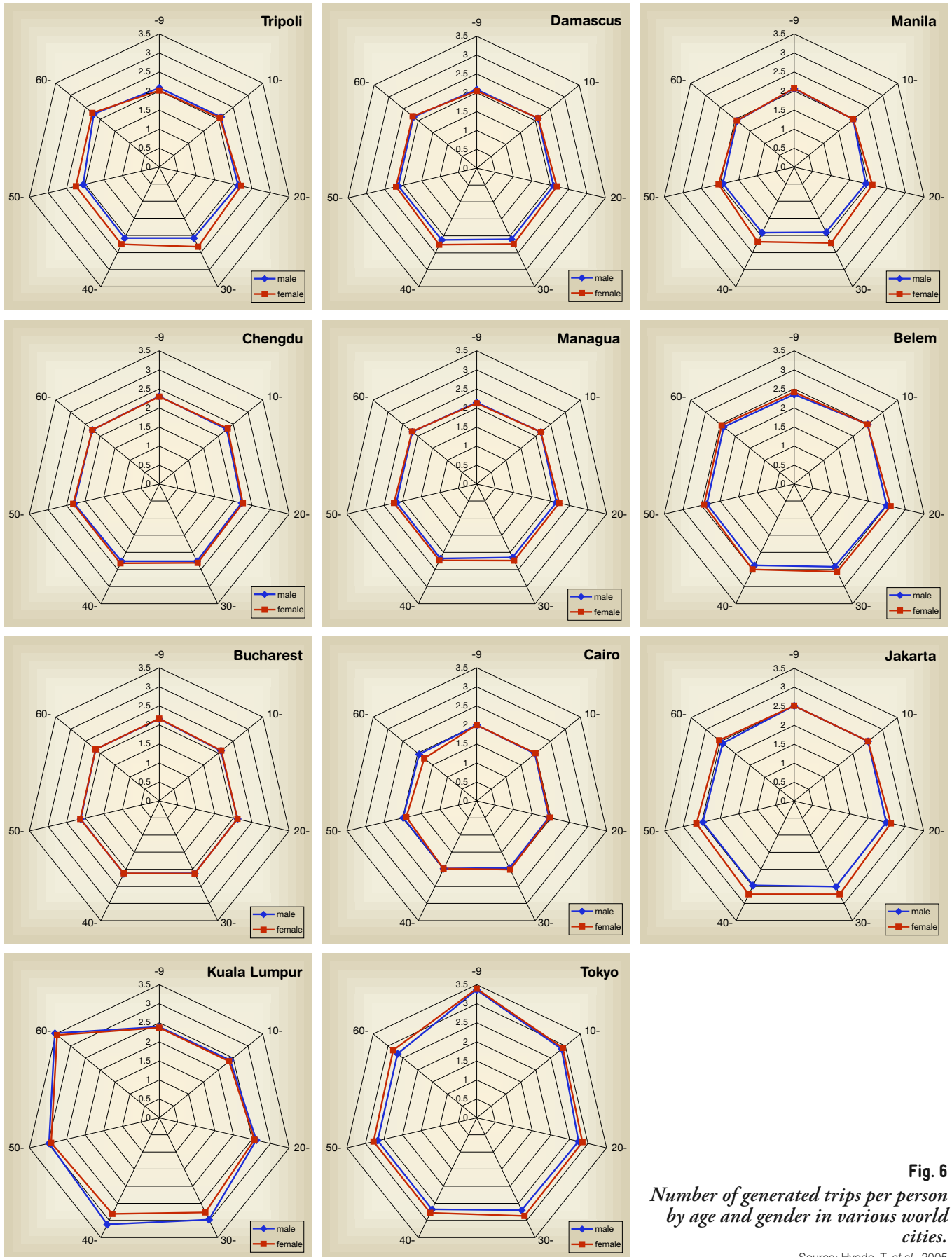


Fig. 6
Number of generated trips per person by age and gender in various cities.

Source: Hyodo, T. et al., 2005

2.3 Passenger transport services / mass transit

After walking, mass transit is the most common form of transport for both men and women. For the urban poor in developing countries, urban mass transit means buses, minibuses, and various forms of shared taxis. In Latin America, large buses predominate, but minibuses have a growing share of the market. In African cities, buses represent a marginal share of the public transport market, where minibuses or combi-taxis heavily dominate. In Senegal, for example, some 58% of total passenger trips are made by 10 to 15-seat paratransit vehicles called Car Rapides or Ndiaga Ndiayes, and large buses account for only 2.7% of total motorized trips.

Women and men have different expectations of and experiences with public transport and passenger services. The differences in travel behaviour listed previously come most into play here. Women and men tend to use public transit at different times, with women more likely to travel at off-peak hours. In Lima, women tend to travel more consistently across the day while men concentrate their trips during peak hours. Women prefer more flexible service and have a harder time boarding and alighting, whether it is because they are travelling with children and

Fig. 7
Crowding in buses is common in many mass transit systems. However, it is an uncomfortable situation, especially for women.

Photo by Carlos F. Pardo



Box 3: Public transport services NOT religion the deterrent for Karachi women

Women in Karachi seem to have some liberty to travel as only 8% of the 200 female transport users surveyed in 2005 gave “resistance by male members of the house to travel”. Almost a quarter of the women surveyed listed the limited amount of seats, and a fifth of them listed the lack of accessibility and affordability of transportation as barriers for them in accessing transportation. 17% of them answered that bus frequencies and low level of services, bus staff behavior were also deterrents to public transportation use.

Source: Qureshi, I.A. et al., 2006

packages or because the steps are too steep. Men have less aversion to overcrowding, although it affects them too. Overcrowding becomes a security issue for women as that facilitates groping and inappropriate behaviour. Women more often than men meet with discrimination in transport services. Women will also not travel in insecure environments, such as take a taxi alone.

Finally, men are often the operators of the paratransit. The conductors often stand above the tailpipe outside the vehicle calling for customers. They breathe in the exhaust of what are usually 15-year-old, poorly maintained vehicles. They bear the unhealthy consequences of the system the most.



Fig. 8
A typical situation in paratransit in Delhi: men are exposed to fumes and unsafe travel.

Photo by Carlos F. Pardo

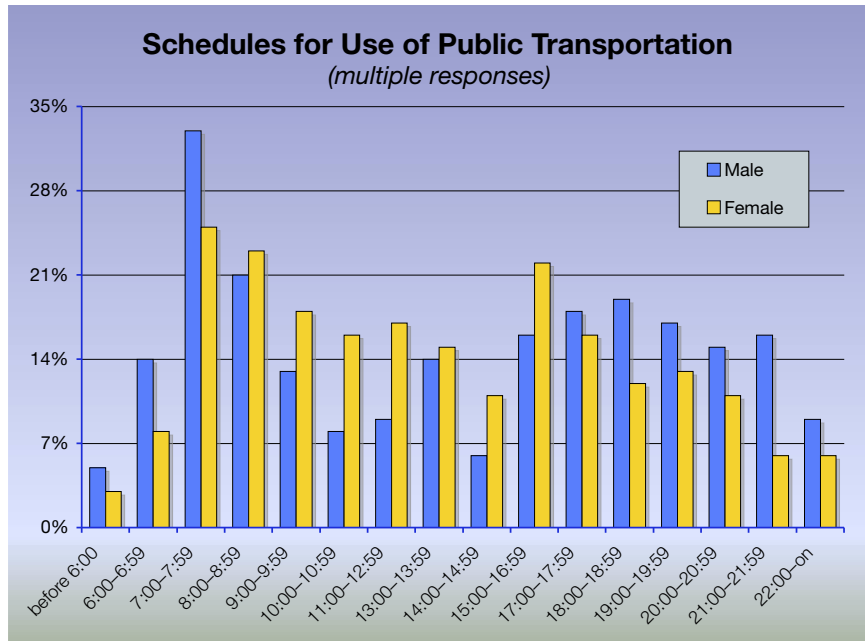
2.4 Private vehicle ownership and use

Because private four-wheel motor vehicle ownership is likely to be out of reach for most of the poorest in Africa and Asia, the vehicles most suited to enhancing the personal movement of the poor must be, by definition, of comparatively low capital value (Hook, 2006). Within this constraint, women face an additional constraint since men are more likely to get access to private vehicles in the household.

Vehicles are an important asset that families use to lift themselves out of poverty. A bicycle can reduce daily commuting costs by saving bus fare, reducing travel time otherwise spent walking, allowing the owner to run a small informal business, and allowing vendors to by-pass middlemen. In rapidly urbanizing and developing countries such as Vietnam and China, motorcycles signify success in breaking out of the poverty cycle, freedom of poverty and movement and independence. Some bicycle and motorbike owners have become bicycle taxi operators in parts of Uganda and Kenya, for example. In Indonesia, the owner of a used motorcycle can become anojek (motorcycle taxi) driver. In India, Bangladesh, and Indonesia, a cycle rickshaw or pedicab is often the first job obtained by recent migrants to urban areas, and owning the vehicle itself an important first step out of poverty. Thus, bicycles and other low-cost vehicles are assets that the poor can afford to own, which can permanently reduce their daily transport costs. Even the poorest families, once given access to a bike, can usually cover the costs of its maintenance (Hook, 2006).

Automobile ownership rates are very low in much of the world. For every 1,000 people, less than 5 are car owners in Haiti, Pakistan, India, and Indonesia, less than 7 in Bolivia, Zaire, and Honduras, and less than 14 in Liberia and Thailand. The rate of car ownership in Brazil and Mexico is 60 per 1,000, in Europe 300, and in the USA 500 (that is, one car for every two people). In the richer countries, even poor people own a used car, whereas in a majority of developing countries, only a handful of the wealthiest can afford to own and maintain a car.

When it comes to female vehicle ownership rates, the rates become even lower. About 75% of women in the United Kingdom have no or



restricted access to a car, while with men it is only 15% with no or restricted access to a car. In Nairobi, 9% of women heads of households used a private car, compared to 24% of men. In Belo Horizonte, Brazil, 6% of women used a car to get to work, compared to 23% of men. This can also be seen in the degree to which women get a driver's license. In the UK, the proportion of men with driver's licenses increased from 63% to 68% from 1972 to 1980. The proportion of women increased from 21% to 31% during that same time period. While this is a significant increase of licensed female drivers, it is still less than half of licensed male drivers (Hamilton, Jenkins, Gregory, 1991).

Fig. 9
Schedules for use of public transportation in Lima.

Source: Gomez, Lara, 1997

Fig. 10
Men are the first to use a vehicle in a household, and when possible to motorize. Women will use the vehicle that is left behind.

Photo by Karin Roßmark/
Torsten Derstroff



Men are typically the first to motorize – co-opting new technologies first in the household. However, there is a trickle down effect, as women gain access to older vehicles, such as bicycles when men move to motorcycles, motorcycles when men move to cars, etc. In 1990, only 35% of households had access to some form of motorized vehicles in Ho-Chi Minh City. Four years later, that percentage rose to 63%, mainly due to motorcycles. In Hanoi, the share of trips made by motorcycles rose by 5 to 10% annually and now accounts for 37% of all trips. Meanwhile the share of bicycles has fallen from 65% to 45%. Previously, women made up half of all bicyclists. Now, they are the majority as men move to motorized means of travel (Godard and Cusset, 1996).

“Men are typically the first to motorize – co-opting new technologies first in the household.”

2.5 Land use and transport

Typically, transportation and land use policies are considered separately and results in inefficient use of resources, including time and money, and greater environmental damage. The outcome tends to be one that leads to automobile dependence and sprawl. The structure and location of the household influences women’s travel patterns or the mode choice of transportation (Fouracre and Turner, 1992). By integrating land use and transportation planning, efficiency improves, negative environmental effects are reduced, the costs of infrastructure investments reduced, and access to jobs and services is ensured.

Integrating land use and transport includes integrating different types of transport and reducing car use through traffic demand management. Multimodal transportation systems reduce demand on any single mode of transport, giving options for people in terms of mobility, and improve air quality by including non-motorized transport options. Multi-modal transportation systems can provide much needed options for people who typically lack options, like women, children, the disabled and the poor. Most importantly, most urban poor

walk—a fact that needs to be linked to land use plans and strategies.

The reality is, though, most cities in developing countries may not have land use plans and if they do, may not be able to enforce the plans and/or do not integrate land use and transport. People will make choices that address this problem. For example, sick of the extremely long commuting distances and the poor transport system, residents in Johannesburg began moving into the inner city (Beavon, 1997). Often though, people do not have that option. For more information, this topic is extensively discussed in the *Sourcebook* Module 2a: *Land use planning and urban transport*.

In Latin America’s sprawling cities, unequal access to urban services and public facilities is connected to other issues such as security of tenure, poverty and social exclusion. The current situation is exacerbated for the poor who have limited or no access to credit, cannot afford the overvalued, expensive housing in the city, and are forced to move to informal settlements on the peripheries due to gentrification. Because of limited transportation alternatives, they must spend many hours a day and pay a large share of their incomes to reach jobs in the city. In addition to this, transport planners in Latin America have focused on motorization at the expense of the poor and elderly.

Although in a developed country, Boulder, Colorado illustrates the power of political leadership and the effectiveness of budget mandates as a tool to provide multimodal transportation systems integrated with land use. Strong local government leadership led to a mandate that directed nearly 20% of the city’s annual transportation department budget from car-related expenditures such as road widening, double turn lanes, more car parking, and more stop lights, to alternative mode functions, such as smaller buses with bicycle racks, improved pedestrian crossings and footpaths, and an expanded network of off-roadway bike paths for commuters. Programs are in place to reduce traffic and speeding in neighborhoods with roundabouts, speed bumps, photo radar, new small buses and private shuttle services using main transit corridors. Specific car disincentive programs have been implemented such as

doubling rates for car parking to more closely reflect car park land values, doubling parking fines, creating neighborhood parking permits for residents only, and reducing the number of car spaces required in new residential and commercial development. The encouragement of cycling through a citywide bicycle network, 300 free bicycles in the Central Business District (Spokes for Folks), Bike to Work weeks, and bicycle mounted police officers are part of the demand management strategy that encourages non-car mobility. Development does not have to lead linearly to more and more private car use. A city can progress more and offer a better quality of life for its citizens by ensuring modal choice. This again is very important for women who walk and use intermediate modes of transport in greater numbers.

2.6 Safety

Safety incorporates two main components: road safety and perceptions of personal security. Although safety is a concern for both sexes, men tend to be more concerned about road safety and women more concerned about personal security.

Road safety

Box 4: Road safety facts (from the World Health Organization)

- About 1,200,000 people died from road traffic injuries worldwide in 1998;
- Of those deaths, 88% were in developing countries;
- Worldwide, up to two-thirds to traffic accident injuries are suffered by pedestrians and cyclists;
- Of those, one-third are children ;
- In developing countries, the injury rates of pedestrians and cyclists are much higher;
- In developing countries, traffic accidents are the second leading cause of death.

Injuries and deaths from traffic accidents are a major public health and socio-economic problem around the world. The World Health Organization made traffic safety the topic for World Health Day 2004 because the rise in traffic-related injuries and deaths was quickly out-

pace other health problems to the extent that it was threatening to become a pandemic. Road traffic injuries are the leading cause of death by injury and the ninth leading contributor to the burden of disease worldwide.

In terms of road safety, more men than women are involved in road crashes. Since more men own, drive, and use motorized transport, they are the most affected by crashes, whether they be fatalities or injuries. This has ramifications on women as caretakers who now must take care for the injured and on the economic status of the household after losing one of its main income generators.

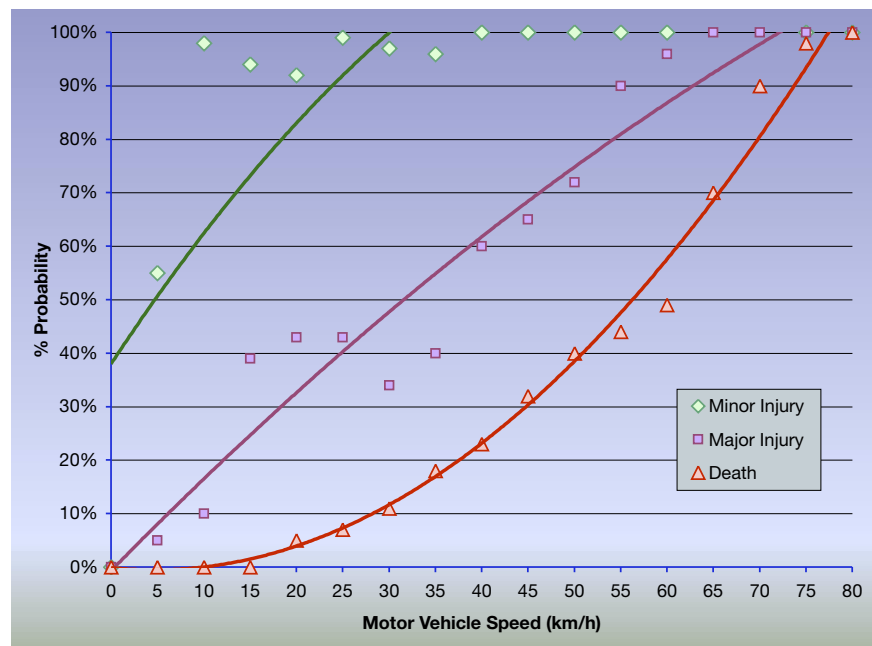


Fig. 11
Probability of Injury and Death as compared to Motor Vehicle Speeds

Source: Gute Argumente, Verkehr, 1991

Statistics show that the probability of injury or death from road traffic accidents increases dramatically as speeds increase. Thus, one of the best ways to increase road safety is to reduce speed. A 5-kilometer per hour drop in speed results in:

- 15% fewer collisions,
- 10% fewer pedestrian fatalities, and
- 20% less severe pedestrian injuries.

Death and injury due to traffic crashes are four to five times more likely for men than women. In Latin America, male fatality rates are always higher than female fatality rates, about a proportion of 3 or 4 to 1. For example, in São Paulo, men average 2 trips per day and women take 1.7. However, men account for 76% of pedestrian fatalities and 86% of vehicle fatalities,

revealing a disproportionate exposure to danger (Vasconcellos, 2001).

“In Latin America, male fatality rates are always higher than female fatality rates, about a proportion of 3 or 4 to 1.”

2.7 Security

Women are more vulnerable users of public space in general and this affects how they use public space, including transport. Women who tend to carry packages or children and have their hands full, are targeted and are easy prey for petty theft. Because they can be overpowered by men, physical safety is threatened as well. Women will change their transport behavior and have their transport options constrained

if they perceive them to be unsafe. Thus, women will make the decision not to travel at night, not to get out at a particular spot, to take a longer route home if it is safer. Women in Johannesburg have men escort them to the taxi ranks in the morning when it is dark. Women will avoid using public space if there is a chance of danger or violation. Further, if they have the opportunity to use a car for most trips under these circumstances, they will use it.

Links to public transport are important considerations for safety in urban areas—the journey from the door of the home to public

Box 5: A sense of security in women-only train carriages

The Tokyo Metro System, although being one of the largest and most efficient urban rail systems, is sometimes 200% over capacity with people being transported to work in very crowded conditions. These crowded conditions become a place where women can be harassed or touched by men, which has led to the introduction of women-only carriages in the Kanto (the Tokyo metropolitan) and Kansai (Osaka and Kobe) areas. Women-only carriages were advocated for, by a former opposition party known for its welfare approach. The Prime Minister set up a committee to discuss the issue of female sexual harassment in the trains and the Ministry of Land, Infrastructure and Transport and then issued an avis requesting private companies to introduce women-only carriages in their trains.



Fig. 12
Lighting in a Mass Transit system such as Metrovía in Guayaquil are an efficient means to increase safety during operating hours.

Photo by Guayaquil Municipality

Table 4: Personal security issues for women and their behaviour change strategies

	Issue	Strategy
Dress	<ul style="list-style-type: none"> Exposed to verbal harassment is wearing short skirts, shorts, or tight clothes 	<ul style="list-style-type: none"> Wear only "appropriate" clothing when using public transportation
Physical Strength	<ul style="list-style-type: none"> Perceived as less able to defend themselves against aggressors 	<ul style="list-style-type: none"> Travel in groups Only board units that are not full
Verbal Harassment	<ul style="list-style-type: none"> Aggressors's feeling of impunity: driver / collector / passengers passive 	<ul style="list-style-type: none"> Ignore, look away
Physical Harassment	<ul style="list-style-type: none"> Fondling and touching by men Collector rubs himself against women as they exit the combi Rape 	<ul style="list-style-type: none"> Say "something" loudly Carry pins / needles Stand against a window or on the back of the bus Avoid riding taxis alone Avoid riding vehicles where only men are riding

Source: Gomez, 2000

transport, public transport itself and the journey from public transport to the destination and back. This includes lighting both internally for stations and vehicles, and the approach to the station. For pedestrians, land use and landscaping is important to the perception of safety on the streets.

Safety also affects non-motorized transport. Women are less likely to use a bicycle without the provision of cycle lanes or safe areas for cycling. 24% of women surveyed in San Francisco, CA indicated that they felt unsafe on the road with cars, and that other traffic was a significant impediment to them using a bicycle. In Lima, the existence of bike paths

Box 6: Integrating a gender perspective into public transit, Montreal, Canada

In Montreal, fear of violence reduces night use of public transportation by women. Since 1992, the Comité d'Action Femmes et Sécurité Urbaine (CAFSU) has been actively promoting ways to increase women's sense of security in and access to the urban environment – specifically by instituting in 1996 the “Between Two Stops” service, which allows women to get off the bus at night in between scheduled bus stops at a location closer to their destination. Because women are the principal users of public transportation, this program generates an increase in ridership as well as more security for all other users. Partnership of CAFSU with public authorities was key to the project's success. The program managed to establish strategic partnerships between local authorities, women's organizations and girls and women utilizing public transportation. Success was achieved by recognizing the specific needs of women in the overall allocation of public resources and creating a low-cost strategic policy that transformed the economic and social lives of women. The networks of women's groups involved in local and regional development help to publicize the service as well. On an international scale, the service has also been promoted through the "Women in City" program by UN Habitat.

Adapted from:
<http://www.bestpractices.org/bpbriefs/women.html>



Fig. 13
Woman with stroller trying to enter bus.
 Photo by Carlos F. Pardo

were a necessary but not sufficient condition for the use of bicycles. Bike paths protected bikers from traffic, but they do not provide security against theft or—in the case of women—sexual harassment.

2.8 Affordability

Poverty is one of the largest challenges to urban transport and to providing public transport. A cross-cutting issue in all developing cities is expense. Transport accounts for an estimated 10 to 30% of a household's total expenditures. In Mexico City and the Krgyz Republic, household surveys revealed that households

Fig. 14
Cycleways promote greater safety to all population, such as this one in Bogotá.
 Photo by Carlos F. Pardo



were spending up to 25% of daily earnings on transport; in Nairobi 14 to 30% of income; and in Delhi 20 to 25%.

Everyone has to make choices about whether to pay. As a higher value is attached to income generating trips, more often than not, men pay for transport, since it is usually work related. This might be one explanation (within the power dynamic of the household) for men's higher access to motorized means of transport. It is an economic decision based on limited resources. For reproductive work, or the non-remunerative work that mainly women and children undertake, the decision is usually to forego the trip or to walk. That is why women trip-chain more than men, as they combine their reproductive trips together to make them more affordable or link them to a work-related, productive trip. The following are general characteristics associated with price and affordability:

- Peak passengers are the least price sensitive, since their freedom to choose their trip timing is limited by school and work requirements. They have limited freedom of choice between transport modes because of congestion, availability of parking, and (for students) age limits to obtaining a driving licence;
- Leisure trips are more price sensitive because they are more flexible as to whether to travel or not, where, when and why, and with which mode;

- Children and youths are more price sensitive than adults;
- Private vehicle (bicycle, motorcycle, car) ownership increases demand elasticity because it offers an alternative;
- Low-income groups are least price sensitive. Although the fare level is particularly important for them, they tend not to have a real choice;
- Price elasticity is higher on very long trips (when the car becomes a more feasible alternative for those can afford it) and very short trips (where walking and cycling are alternatives to short public transport trips).

Women are known to forgo an opportunity to work outside their neighborhoods if they perceive transport fares and services to be expensive and unreliable. A social assessment in Ashgabat, Turkmenistan found that job turnover rates were high because to avoid long commutes, people tried to find work near their homes. When 700,000 squatters resettled on the periphery of Delhi, female employment fell 27% because travel time increase three-fold. Male employment only decreased by 5%.

“Women are known to forgo an opportunity to work outside their neighborhoods if they perceive transport fares and services to be expensive and unreliable.”

Fig. 15
Paratransit in most developing countries uses old vehicles that are unsafe.
Photo by Aimée Gauthier



2.9 Fashionable

As stated before, the poor do not travel less, they just have to travel under greater duress. Poor people lack real options and the ones available are usually under-resourced, under-capitalized, and over-utilized. Women are usually the last to have access to the most modern and expensive (higher status) forms of transport. Men have to rely on dangerous and unreliable mass transit or paratransit. Women have to walk because they cannot afford other options. Girls cannot attend school because they are required to help with household duties since the transport burden of reproductive work is too great for their mothers to shoulder alone. All these groups, who make up the majority in most developing cities, will

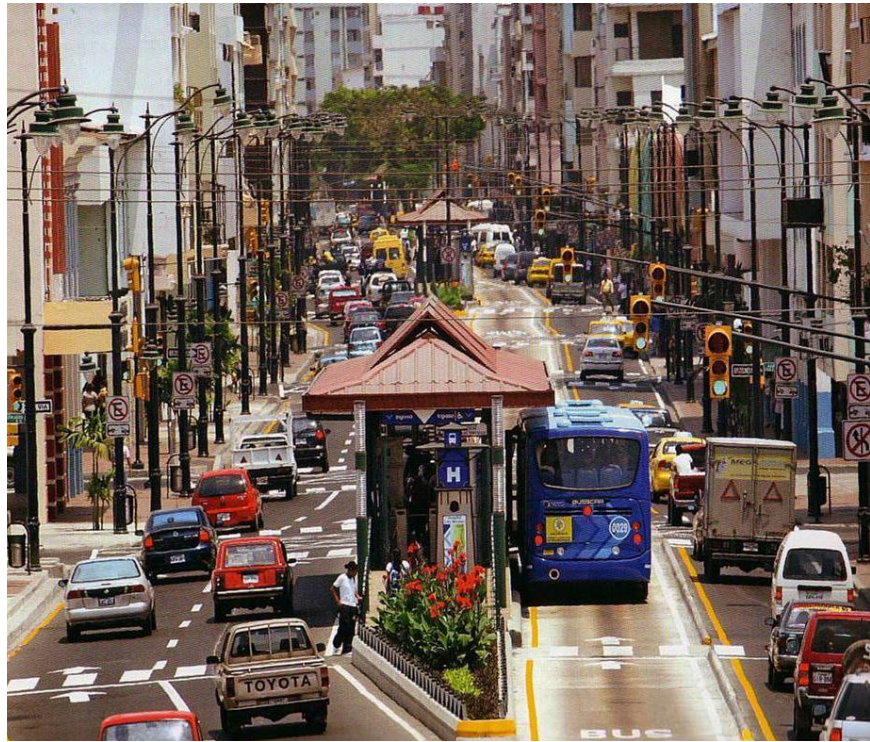
continue to be disadvantaged and fail to reach their potential. This means the city and ultimately the country as a whole is failing to reach its full socio-economic potential.

If transport is to be fashionable or demand driven, it ultimately needs to be responsive to those consumer needs. But most mass transit fails to provide good services and does not meet consumer needs. For many, once they can afford private vehicles, they switch modes as quickly as they can. This is seen in the explosive growth of motorcycles in cities. Moreover, the rise in taxi services is an indicator of how poorly mass transit meets the needs of the population—from shared taxis to motorcycle taxis that provide a better, more fashionable service. This will lead to continued increase in congestion and the environmental and economic costs faced by a growing city.

Unless a city provides a mass transit system that provides a competitive service, unless mass transit recognizes that to be competitive it needs to retain the existing trips and attract trips from other modes, unless mass transit is fashionable, it will always lose out to other forms of transport, resulting in lost revenue and failure to serve the people. As many cities have demonstrated, transportation systems can be fashionable—offering reliable, clean, safe, affordable transit that attracts users and gives the city a good image.

In Portland, Oregon, it has become fashionable to use the light-rail system called MAX. MAX was built in the 70s when plans for a freeway were scrapped. At first, the system was ridiculed as the “Streetcar named Expire.” However, now patronage of the MAX light rail line is double that of the bus system it replaced and it has a large off-peak usage by families, proving it to be more a streetcar named “desire.” Many other corridors want the MAX, which have the revitalization through good urban design and greening along the MAX routes.

TransMilenio, the bus rapid transit system in Bogotá, Colombia, was fashionable enough to attract private car users to use the system. 15% of the system are former car drivers. This is due in part to a traffic management strategy that restricts driving, but it is also because a viable, reliable transit system exists for people to use.



This bus rapid transit system also costs a fraction of the cost of rail-based solutions—offering an affordable transit system for the end user that requires no operational subsidy from the government.

In Guayaquil, Ecuador, a city where 84% of its 2.3 million residents made trips by private cars or a 20-year-old fleet of buses, Metrovia, its bus rapid transit system, opened 15 kilometers in 2006 and now provides cleaner, higher quality service that reduces travel time in key corridors. Previously deteriorated public spaces, including Guayaquil's waterfront and Santa Ana district, were refurbished to encourage pedestrian use and form an important part of the city's resurgence.

Just a few years ago, Seoul, a city of over 10 million, was seemingly spiraling into ever-worsening congestion, declining public transport and generally deteriorating livability. But in the course of a few years, Seoul's leaders have shown that political will and imagination can turn around even a mega-city. This transformation was executed largely through improvements to transportation and public space. The restoration of the Cheonggyecheon River is the most spectacular symbol of Seoul's ongoing paradigm change from a car-oriented city to one favoring transit, walking, and cycling.

Fig. 16
Guayaquil BRT system is more attractive (and fashionable) than other options.

Photo by Guayaquil Municipality



In the 1960s, as Korea embarked on rapid modernization, the Cheonggyecheon was entombed beneath a drab, concrete elevated expressway running through the heart of the city. The stunning success of the dismantling of this six-kilometer highway, and its replacement with the reclaimed river, high quality walkways and public space, holds many lessons for other cities about what it really means to “modernize”. The grand opening of the restored Cheonggyecheon took place on Oct. 1, 2005, accompanied by the World Mayor’s Forum and street festivals around each of its 22 bridges—five of which are for the exclusive use of pedestrians and bicycles. The dismantling of the elevated expressway has been so popular that 84 other elevated roadways have been short-listed for demolition in coming years.



Seoul’s revitalization extends beyond the Cheonggyecheon restoration. Among the most striking urban transportation improvements are the five median busway corridors that became operational in July 2004. More than 80 kilometers of congested streets have been retrofitted with exclusive median bus lanes, providing faster transit services that are safe and comfortable (Fjellstrom, 2005).

Fig. 17a, b
Seoul’s Cheonggyecheon river restoration (before and after).

Photo by SDIK

3. Moving forward

Providing fashionable and affordable transport solutions can be done, but need to be based on the differences faced by men and women living in urban areas. Policymakers should seek improvements in transport that *benefit* the urban poor increasing social equity while also improving men and women's mobility and the urban environment. Transport policy should emphasize access and equity and aim to reduce air and noise pollution through a modal shift to clean mass transit and non-motorized transport, as this improvement in the urban environment ultimately benefits the urban poor, of which at a disproportionate number are women.

This section is broken down into three sections: Planning, Design, and Implementation—to help policymakers move toward more affordable and fashionable solutions which meet the needs of both men and women. At the end of this module is a resource section directing users to further information.

3.1 Planning

Ultimately, design solutions exist for any problem; the key is to identify the problem. Following are frameworks for conducting analysis and obtaining the right data to design appropriate solutions.

3.1.1 Planning: Gender analysis

Gender analysis begins with by recognizing that we live in societies full of gender differences and inequalities and that each intervention has gender implications. A gender analysis seeks to reveal the differences and inequalities by examining the situations and relationships between women and men in a particular context and provide informed understanding of the potential differential affects proposed programs or projects have on women and men. Such information facilitates identifying effective strategies. This process is what makes the gender analysis a powerful and essential gender-mainstreaming tool. There are a number of different frameworks and approaches to gender analysis—each suited to a particular context and/or situation (for example the Harvard Analytical Framework, the Gender Analysis Matrix and the Social Relations Framework amongst others)

and different kinds of statistics which can be generated (*e.g.*, sex-disaggregated statistics which simply provide numbers of women and men in a given population and gender statistics which can reveal the relationships between women and men that underlie the numbers).

3.1.2 Planning: Economic analysis

Economic analyses generally consider two objectives: efficiency and equity. Efficiency assumes that policies should strive to maximize social welfare—total benefits to everybody in society. Equity assumes that policies should insure that benefits and costs are distributed in some way that is considered most fair. The examples and experience of women and other transportation disadvantaged populations show that economic analysis within transport has tended to focus more on efficiency than horizontal or vertical equity. Horizontal equity assumes that everybody should be treated equally. Vertical equity assumes that physically, economically or socially disadvantaged people should be favored compared with relatively advantaged people. An equitable policy or program would have the following characteristics:

- Treats everybody equally;
- User-Pays Principle: individuals bear the costs they impose unless a subsidy is specifically justified;
- Progressive with respect to income. Lower-income households benefit relative to higher-income households;
- Benefits the transportation disadvantaged. Benefits people with disabilities, non-drivers, people who cannot afford a car, etc.
- Improves basic mobility. Helps satisfy basic mobility (travel that society considers valuable).

Economic analysis and evaluation can be arrived at by studying the distribution of costs and benefits (such as by income and need), and by learning the degree to which options tend to achieve or contradict equity objectives. This requires an explicit statement of who pays and who benefits, from both transport infrastructure and services.

Multiple accounts evaluation and cost effectiveness analysis may also be valid for gendered urban transport projects. Multiple accounts evaluation uses various rating and ranking

Table 5: Strategies for achieving equity objectives

Strategy	Treats Everybody Equally	People Bear the Costs They Impose	Progressive With Respect To Income	Benefits Transport Disadvantaged	Improves Basic Access
Pricing reforms (higher fuel taxes, road and parking pricing, distance based fees)					
Increased transport system diversity (improvements to modes used by disadvantaged people).					
More accessible land use and location-efficient development					
More affordable automobile options (PAYD insurance, carsharing, need-based discounts etc.)					
Correct policies that favor automobile travel over other modes (planning and investment reforms)					
Improve public involvement in transport planning					
Improve data collection (more information on disadvantaged people and alternative modes)					
Monitoring					

Source: Litman, T., 2006. p. 34

systems. The most accurate way of evaluating effectiveness for an urban transport system for gender considerations is by using an evaluation matrix with weighted points (see Litman 2006 for more details). Cost effectiveness analysis measures the cost of achieving a special objective without trying to quantify the benefits. However, one must be careful when using the cost-benefit analysis, net benefit analysis and lifecycle cost analysis since it is difficult to measure the benefits by sex, age or disability disaggregated populations.

3.1.3 Planning: Data collection

The first step in providing an equitable urban transport system is to collect data on all users and to know how they use existing services and what they need – in other words, understanding the disaggregated demand. There are a variety of ways of getting this data that include, but are not limited to the ones stated below (some of them are described in greater detail in the GTZ Training document on Public awareness and behavior change in sustainable transport):

- Household surveys: Through a random or stratified sample of urban households including the slum areas as much as possible, compile gender specific household statistics on size, structure, assets, education, employment, income, and health, travel needs and patterns. Johannesburg, in its recent census collection, included a subcomponent that had more questions about travel behavior and needs. The survey focuses on the transport elements of day-to-day activities in and around the urban area and on travel patterns and trip purposes; utilization and availability of transportation means and costs incurred. One note on household surveys is that it treats the household as a singular unit with similar needs and does not recognize the differences within the household. Thus, the male head of household, answers from his perspective, sublimating the needs of the women and children of the household. In addition, it is important to collect household information across different social groups to ensure representation of data.

- Time use diaries. These provide information on how women and men structure their everyday lives as well as to calculate the time spent to access activities, the amount of time spent on activities and the type of activity, whether paid or unpaid.
- On board passenger surveys, boarding and alighting surveys. These surveys are a targeted way to understand existing demand and usage of transit services. Again, it is important to disaggregate the data and ensure equal representation in who is being surveyed.
- Socio-economic surveys. Socio-economic surveys can be administered to collect baseline and gender-specific information on the target or beneficiary population. These surveys help to construct a set of indicators aimed at measuring the socio-economic impacts of urban transport projects so that the socio-economic benefits of urban roads and urban access can be assessed.
- Semi-structured interviews. An interview questionnaire gauges households' perceptions regarding access to resources, services, opportunities, transport constraints and needs, priority problems; and the importance they assign to improving their transport conditions, willingness to participate in the maintenance of the road network. Through the questionnaire, existing transport options and services available to user groups, frequency of use, costs of services and impact on household income, and preferences for transport options are revealed. The questionnaire also assesses bottlenecks in using available transport options and services as well as the needs of beneficiaries and other user groups for services, such as low-cost non-motorized means of transport, which may complement urban transport investments.
- Focus group discussions. These discussions are held with varied urban stakeholders to obtain background data on the population and an overview of travel patterns, transport constraints and problems. Focus group discussions are held separately with each stakeholder group (by sex, income, age, occupation) to draw their experience and knowledge of the issues involved in project selection, preparation and implementation.



Fig. 18
On-street survey during carfree day.
 Photo by Carlos F. Pardo

- Willingness to pay surveys. These surveys are administered among a select and representative group of beneficiaries and user groups to determine the willingness to pay for and/or maintain urban road improvements and urban transport services.
- Survey questionnaires. These questionnaires are distributed to key service providers and transport operators and distributors to understand the nature of their constraints in service delivery and to establish an estimation of the level, frequency and quality of service resulting from urban road improvements.
- Participatory stakeholder workshops. These workshops are conducted with beneficiaries and key stakeholders to present findings of the surveys, focus group discussions and interviews; to establish and agree on priorities in a transparent manner, and to achieve consensus around project objectives. An output of this workshop is to recommend how to incorporate stakeholders' priorities and perceived constraints into project design.

When developing a transport project, there should be terms of References (TOR) to collect this data which in turn should clearly specify the need for a gender sensitive, multi-disciplinary team that works with policy makers to build their capacity to monitor and use the disaggregated data. In addition to the TOR, prequalification, bidding and contract documents can also address equity issues, as long as

gender analysis and other sociological analytical and implementation have been budgeted for.

Defining the "Trip"

Within data collection, defining the “trip” is the next critical parameter in ensuring the collected data is capturing the travel behavior of both women and men. Typically, a trip is defined as a discreet origin and destination that focuses on economic trips—the work trip. How the trip is defined will structure the information going into the traffic model and the main output of traffic modeling—the transport plan.

The traditional approach to understanding travel behavior is through the household survey—using the household as the appropriate unit of analysis. However, as stated previously, the household survey assumes that a man and a woman in a household have access to the same resources, have similar needs for transport, and will make the same travel decisions. The main problem with this is that it ignores the division of labor within a household and the different impact that has on the individual in a household’s transport needs.

A trip is typically thought of as having an origin, a destination, a specific mode of travel, a specific purpose (Bamberger and Peters, 1998). This obscures the complex patterns of linked multi-purposed trips (trip chaining), which are typical to what many women use. Trip chaining is the recognition that “trips” are often more than just origin and destinations, but a chain of related trips. They are defined by anchors (home, work) and look at what happens between those anchors. Also, trips are usually prescribed and prioritized as “wage-earning” trips. Thus, (equally important) unpaid trips are not accounted for as highly.

3.1.4 Planning: Measuring gender equity in urban transport

A measurement of gender equity in urban transport should assess the differential impacts on men and women; the extent to which women have been able to take full advantage of support mechanisms and opportunities offered; and how appropriate the project assistance has been for the socially disadvantaged (women included). Issues to be addressed in a project include training opportunities, credit, and other support

mechanisms. The project indicators should assess the different role and nature of consultations and participation among women and men, and suggest what the best organizational forms would be for enhancing women’s roles and benefits through the project. Care must be given to the weighting of the multiply disadvantaged such as women with disabilities so that they also benefit from the project and ultimately the benefits of transport through increased mobility and accessibility.

Some indicators which would help measure the degree of gender integration in urban transport are:

- *Passenger-mile by sex and age* units reflect a *mobility* perspective that values automobile and transit travel, but gives less value to non-motorized modes because they tend to be used for short trips;
- *Per-trip by sex and age* units reflect an *access* perspective which gives equal value to automobile, transit, cycling, walking and telecommuting;
- *Transport related expenses by sex and age*—lower-income households should pay a smaller share of their income, or gain a larger share of benefits, than higher income households and transportation modes should be affordable;
- *Travel time by gender and age* units reflect an access perspective that gives higher priority to walking, cycling and transit travel, because they tend to represent a relatively large portion of travel time;
- Existence and mechanisms of *special discounts for transport services* based on income and economic need regardless of sex.

Policies that aim to achieve gender equity include, but are not limited to:

- Ensuring *geographical disbursement* so that transport investments and service improvements favor lower-income areas and groups including women;
- Creating a more *diverse, less automobile-dependent society and transport* which effectively serves non-drivers of which a majority are women;
- Improving *non-motorized accessibility*, of which women may use for short or chained trips;

- Incorporating *universal design* (design accommodating the needs of not only people with disabilities but also the special needs of women with loads (transporting goods) to the market, the elderly or mothers using strollers) in transportation services and facilities;
- Providing required *special mobility services* for people with special mobility needs; and
- *Combining urban travel centers with other services*, such as medical services, schools, employment opportunities and other basic activities.

The table below lists various types of equity, categories of people, impacts and measurement units.

Table 6: Transportation equity indicators and categories

Types of Equity	Categories of People	Impacts	Measurement
<p>Horizontal</p> <ul style="list-style-type: none"> ■ Equal treatment ■ Equal allocation of funds and other resources ■ Equal use of public facilities ■ Cost recovery <p>Vertical With-Respect-To Income and Social Class</p> <ul style="list-style-type: none"> ■ Transport affordability ■ Housing affordability ■ Discounts for low-income travelers ■ Impacts on low-income communities ■ Employment opportunities ■ Quality of services of low-income travelers <p>Vertical With-Respect-To Need and Ability</p> <ul style="list-style-type: none"> ■ Universal design ■ Special mobility services ■ Disabled parking policies ■ Quality of services of non-drivers 	<p>Demographics</p> <ul style="list-style-type: none"> ■ Age ■ Gender ■ Race ■ Ethnic group ■ Family status ■ Lifecycle stage <p>Income Class</p> <ul style="list-style-type: none"> ■ Quintiles ■ Below poverty line ■ Lower-income community residents <p>Geographic location</p> <ul style="list-style-type: none"> ■ Jurisdictions ■ Residents of impacted neighborhoods/streets ■ Urban/suburban/rural <p>Ability</p> <ul style="list-style-type: none"> ■ People with disabilities ■ Licensed drivers <p>Mode</p> <ul style="list-style-type: none"> ■ Walkers ■ Cyclists ■ Motorists ■ Public transit users <p>Vehicle Type</p> <ul style="list-style-type: none"> ■ Cars/SUVs/motorcycles ■ Trucks (light and heavy) ■ Bus ■ Rail <p>Industry</p> <ul style="list-style-type: none"> ■ Freight (trucks, rail, etc.) ■ Personal transport ■ Vehicle manufacturers <p>Trip Type and Value</p> <ul style="list-style-type: none"> ■ Emergency ■ Commute ■ Commercial/freight ■ Recreational/tourist 	<p>Public Facilities and Services</p> <ul style="list-style-type: none"> ■ Funding for facilities and services ■ Parking requirements ■ Subsidies and tax exemptions ■ Planning and design of facilities ■ Public involvement <p>User Costs and Benefits</p> <ul style="list-style-type: none"> ■ Mobility and accessibility ■ Vehicle expenses ■ Taxes and government fees ■ Road tolls and parking fees ■ Public transportation fares ■ Fitness (use of active modes) <p>Service Quality</p> <ul style="list-style-type: none"> ■ Number of modes available ■ Road and parking facility quality ■ Public transport service quality ■ Land use accessibility ■ Universal design <p>External Impacts</p> <ul style="list-style-type: none"> ■ Traffic congestion and crash risk ■ Pollution emissions ■ Barrier effect ■ Hazardous material and waste ■ Aesthetic impacts ■ Land use impacts ■ Community cohesion <p>Economic Impacts</p> <ul style="list-style-type: none"> ■ Access to economic opportunities ■ Impacts on economic development ■ Expenditures and employment <p>Regulation and Enforcement</p> <ul style="list-style-type: none"> ■ Regulation or transport industries ■ Traffic and parking regulation ■ Regulation of special risks 	<p>Per capita</p> <ul style="list-style-type: none"> ■ Per man, per woman ■ Per commuter male, female/child ■ Per male/female/young student ■ Per disabled person <p>Per vehicle-mile or kilometer Per trip</p> <ul style="list-style-type: none"> ■ Per commute trip ■ Per “basic mobility” trip ■ Per peak-period trip <p>Per dollar</p> <ul style="list-style-type: none"> ■ Per dollar of user fees paid ■ Per dollar of total taxes paid ■ Per dollar of subsidy

Source: Litman, T., 2006

3.1.5 Planning: Safety

When planning a project, safety audits are one way to incorporate safety issues into the project, but they can be done in any phase from planning, to design, to implementation. Safety audits not only help prevent accidents but are also a crime prevention initiative that aims to reduce opportunities for crime, particularly violent crime, in public places. Safety audits allow local people to provide accurate and useful information to planners, designers and service providers and to participate in bettering the environment through consultations. Safety audits are about improving the physical environment in ways that will reduce the opportunities for crime, making public places like parks, bus stops and streets safer for everyone. Ultimately, a safety audit allows for recommendations to be made to policymakers and planners directed at removing or reducing opportunities for crime and allows for monitoring. UN Habitat offers some tools for conducting a women's safety audit, neighborhood watch groups, and other tools which can be accessed from their website, under the Safer Cities Programme: <http://www.unhabitat.org/list.asp?typeid=16&catid=375>.

3.1.6 Planning: Participation

The analysis methodology is important but the participation of the transport users, male and female, may be the most important element to ensure through involvement and monitoring of gender integration in urban transport. The fact that the urban population is concentrated compared to rural areas, and that there are better communication facilities is a sign that participatory urban transport planning may be the best way in achieving gender equity and inclusive transport for all. In addition, participatory planning raises the awareness of both urban residents and the municipality or local urban government, which leads to better transparency at different stages of decision making and appropriate urban transport governance.

3.2 Design

3.2.1 Design: Complete streets

The best way to think about infrastructure design for transport is complete streets—roads designed for all: pedestrians, cyclists, mass

transit users, as well as private vehicle users. These bring benefits to all, especially the poor, of which women make up the majority.

As stated previously, design solutions exist for most problems. The critical issue is identifying the problem and understanding the different expectations and experiences faced by women and men and making them known to decision-makers. Below are some suggestions towards addressing these issues and all have been detailed more extensively in other modules of the *GTZ Sourcebook*.

3.2.2 Design: Considering safety

Road safety

As stated previously, the best way to increase road safety is to slow traffic down. One way to help reduce speeds and increase safety is by using traffic calming measures such as traffic humps and bumps, raised crosswalks, reducing sight lines, medians and forced turns to name a few. They are low-cost, self-enforcing design-based solutions, using physical design to enforce driver compliance. The way a street is designed gives physical and visual clues to the users—how fast to drive, where to walk, and where to ride. This is especially critical in resource constrained environments where typically enforcement has been lax. Appropriate road design is self-enforcing.

Appropriate pedestrian and bicycle infrastructure is also necessary for road safety. Pedestrians are forced to cross the street in darkness in non-designated areas, are forced to walk the main road with vehicles coming on from behind due to the lack of marked crossings, lighting and traffic signals. Non-motorized transport such as bicycles also have to compete in already constrained road ways. Road safety would be greatly improved with a better non-motorized infrastructure. For more information on both traffic calming and non-motorized infrastructure, please see Modules 3d: *Expanding the role of non-motorized transport* and 3e: *Car-free development* and the GTZ NMT training document.

Safety can be increased by changing the paradigm in which mass transit is provided. Most private paratransit operators are paid per passenger and the incentive is to pick up

Box 7: Case study – An activity based survey reveals details on women’s travel

Surveys were taken of women who live in Pudahuel, Santiago de Chile at bus stops from 7:30 am to 8:30 am and between 6:45 pm to 8:00 pm during peak travel time and at the medical centers and municipality centers during the day. Almost 30% of the women’s income went into traveling to and from work every week despite not using the more

expensive METRO. The modal split for commuting was 65% bus, 9% walking, 3% biking, and 0% METRO. 53.1% walked, 37.7% took the bus, 4.6% drove, and no women reported using the METRO to access medical facilities. Time wise- 22.1% spent one hour; 33.8% spent 1-2 hours, and 25% spent more than two hours traveling to work.



Women who had younger children were more in need of child-friendly public transportation systems, such as the METRO. This includes stroller accessibility modes of transportation and policy that favors seating room for mothers with young children. The majority of women living in Pudahuel took the bus more than the METRO to access work and medical centers. This mode of transport made it difficult to bring and carry young children while traveling, especially during peak hours when the

bus was crowded and the majority of people had to stand. While some kind of “unofficial” bus policy existed for people to give up their seats to women who had young children, this usually did not happen. Therefore, many women were forced to carry their children and groceries; be aware of others and “pick-pocketing”; and steady their balance while traveling for long periods of time.

Source: Ballas, 2006 – Photo by Manfred Breithaupt

Photo and case study are not directly related.

as many passengers as possible. Bus operators essentially fight in the streets, competing to get the passengers, quickly pulling over to get one more cent, cutting each other off in order to get that passenger. Drivers work 12–16 hours day and operate unsafe, polluting, old vehicles. By

building a competitive industry instead of an industry that competes within itself, the incentive then becomes providing a good service. After TransMilenio, the bus rapid transit system in Bogotá (Colombia) was built, fatalities along the corridor decreased by 93% after one year of

Fig. 19
Pedestrian path that leads to bike path and pedestrian way along the waterfront in Dakar, Senegal (now destroyed).
 Photo by Aimée Gauthier



operation. TransMilenio paid the bus operators per kilometer and by operating in segregated median busways, the operators are able to have profitable business with better operating conditions. This is explained in greater detail in the Bus Rapid Transit Planning Guide from ITDP/UNEP/Hewlett Foundation/GTZ.

Education is also another means towards reducing injuries and fatalities—both in raising awareness and teaching safe driving. One campaign has painted over 1,500 black stars on the streets of Bogotá, Colombia, as a stark reminder of each pedestrian death caused by car crashes over the last five years. The educational campaign promoted by the government asked Bogotá, “We are getting used to this; what's the matter with us?” The campaign aimed to reduce the death rate by 10%. Driver education on road safety is also other form of increasing safety on the streets. This can be accomplished with formal training and education classes offered or through public awareness campaigns, such as seat belt use. These and other strategies are discussed in detail in the GTZ Training document on Public awareness and Behavior change in sustainable transport.

Personal security

Personal security encompasses physical and verbal harassment, assault, mugging, theft, rape

and murder. Harassment of women in public spaces and on public transport is a real and serious problem that impacts women’s travel behavior and patterns.

Some ways to solve this issue in transit are greater security personnel presence on buses and cars and at stations, a greater and gender-mixed staff presence from transport officials, a concerted effort to not have overcrowding in cars and buses, and having women-only carriages. Segregation of buses and carriages is complex. For example, in Pune, India, women rejected women-only buses, but approved women-only carriages on the train. This might be due to earlier experiences where sections of the buses were caged for female security. The preference of women in Pune was for more buses, as a higher service frequency would create a less crowded, safer environment with less potential for harassment (Astrop, 1996).

It is equally important to think about door-to-door security. Potentially dangerous areas are dark streets, recessed doorways and dark spaces, deserted or abandoned buildings. Good lighting and good landscaping is extremely important on streets and around public transit stations and terminals. By strongly aligning mixed land use policies with transport, active spaces are created where women will not feel isolated and more vulnerable to attack. By having commercial

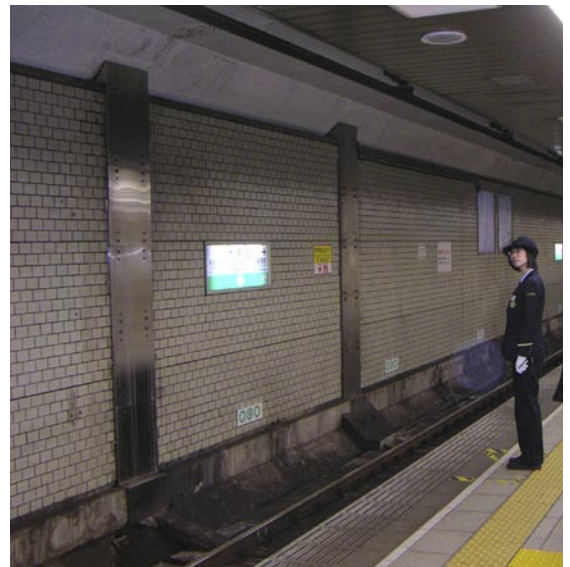


Fig. 20
Woman staff in Tokyo subway supervises train arrival.

Photo by Mika Kunieda



Fig. 21
Mumbai women-only train wagon.

Photo by Manfred Breithaupt

spaces open and near to transit, there is a constant public presence that helps reduce possibilities for crime. As Jane Jacobs called it, “eyes on the street” is one of the best deterrents to crime. When spaces are dead (such as abandoned buildings and boarded-up store fronts), there is more likelihood that the activities that do occur will be of a violent or criminal nature.

“There must be eyes on the street, eyes belonging to those we might call the natural proprietors of the street... they cannot turn their backs or blank sides on it and leave it blind.”

Jane Jacobs

Given the limited resources that governments have these days, private sector social ventures are also providing a more secure environment. In Nairobi, Kenya, “Adopt a Light Limited” is a company incorporated to steer advertising revenues into community development. The company was inspired by the need to achieve safer cities through the provision of adequate street lighting. Under the motto ‘Advertising with a purpose’, this company has erected over 185 streetlights along the major highways, and in slums in Nairobi. This rehabilitation has been undertaken by inviting businesses to adopt and rehabilitate a streetlight. In return, the business can place advertisements on the streetlight. A



Fig. 22
Khao San road in Bangkok is a good example of how eyes on the street generate greater safety.

Photo by Carlos F. Pardo

further social benefit is that all these projects employ former street children—at the time of writing, one hundred have been employed through this venture.

Another resource is business improvement districts, partnership in which property and business owners of a defined area elect to make a collective contribution to the maintenance, development and marketing/promotion of their commercial district, BIDs (“business improvement districts”).

typically provide services such as street and sidewalk maintenance, public safety officers, park and open space maintenance, marketing, capital improvements, and various development projects. The services provided by BIDs are a supplement to the services already provided by the municipality. In Johannesburg, the Central Business District private partnership has been installing cameras and hiring private security in an effort to make the downtown a safer and thus more attractive place for people to come and businesses to invest in.

3.2.3 Design: Considering infrastructure

Road design again should focus on the modes that will most clearly benefit women and men: walking, bicycles and mass transit. As women are the least likely to benefit from roads, congestion charging, increasing parking fees for



Fig. 23
Inappropriate pedestrian infrastructure near Petronas towers in Kuala Lumpur, despite the great space dedicated to automobiles.

Photo by Carlos F. Pardo

on-street parking, and other demand management measures are potentially progressive forms of taxation that could be used to finance measures that directly benefit the poor (Hook, 2006). These are also described in GTZ's *Sourcebook* Module 2b: *Mobility management*.

Most people have no choice but to walk to school, to market, to work. However, there is

very little pedestrian infrastructure to protect these walkers. Where there are sidewalks, they are often occupied by parked cars and obstructed by vendors. This means many walkers are walking on the roads, crossing the roads wherever convenient but putting themselves at risk of being run over by a speeding car. The first consideration is actually providing sidewalks with sufficient width to accommodate the demand. Raised crosswalks, guardrails, crossings and street signals are all part of improving the environment for pedestrians. Bollards work well to protect sidewalks from cars. Sidewalks need to be accessible for all users, such as women with strollers and the physically challenged.

There is a greater extent of non-motorized transport, from handcarts to three-wheeled cycles, in use in cities in developing countries. These tend to operate in the roadway at much lower speeds than motorized vehicles, causing inherent conflicts leading to accidents. These, too, need to be incorporated into plans and designs, such as cycle lanes that can accommodate three wheeler widths.

In addition, a large majority of the urban population lives in slum areas where there are not many roads, those roads are not paved, and most access is through dirt walking paths. In Bogotá, recognizing the limited access from roads and that the majority of slum dwellers do not own cars, the government decided to focus its infrastructure investments on cycleways, pedestrian paths, open space and parks, schools, and libraries. The paved greenways called *alamedas* run adjacent to unpaved roads and lead to TransMilenio stations.

Mass transit is the other main mode that women and men use in most cities. A growing body of evidence indicates that public investment in the transit sector in developing countries should be focused on infrastructure that allows for the profitable private operation of bus-based mass transit systems called bus rapid transit (BRT), rather than on bus procurement by public agencies. BRT systems are spreading rapidly through the larger cities of developing countries, primarily because they can provide transit capacity and speeds equivalent to fixed-rail systems but with 1/20 to 1/50 of the capital costs. BRT



Fig. 24
When space for pedestrians isn't provided, pedestrians are forced to make their own.

Photo by Aimée Gauthier



Fig. 25
In Johannesburg, a woman with stroller doesn't use the safety median in street because there are no ramps to access it. She remains in the street, competing with big trucks.

Photo by Aimée Gauthier

capital costs of US\$1-5 million per kilometer are typical. BRT systems can generally yield an operating profit if properly designed. By contrast, subways and elevated light rail systems are extremely expensive to construct, maintain, and operate. The Hong Kong metro is the only system in the world which fully recovers its operating costs. Rail-based transit systems tend to cost more than US\$50 million per kilometer, and in some specific situations may cost as much as US\$1 billion per kilometer (Hook, 2006). This is also discussed in GTZ's *Sourcebook* Module 3a: *Mass transit options*.

More often than men, women are usually carrying children or packages when utilizing



mass transit. Deep steps make it difficult to easily board and alight buses. A gender audit in the United Kingdom found that step height prevented easy boarding, the lack of leg room caused stiff knees and preventing shopping trolleys from being brought on, and that there was insufficient storage space for shopping bags and buggies.

Good, conscientious design can improve all of these issues, including pre-paid, on-level

Fig. 26
Alamedas in Bogotá were built on the side of dusty roads, showing that pedestrians were more important than automobiles.

Photo by Oscar E. Diaz



Fig. 27
Women carrying babies in transport are a frequent sight.

Photo by Carlos F. Pardo

boarding at stations. Terminals and stations are critical to the experience of the consumer, both women and men, including integrating other services into them. Public toilets are an often overlooked but are a much needed transportation infrastructure facility. Other services that can be found at transit stops include grocery and convenience stores, as well as child care facilities, such as Kid Stops, child daycare centers located at commuter rail stations in Maryland where parents can easily drop off and pick up their children on their way to work.

Tokyo's underground subway is integrated with many small, fashionable and convenient shops, which stock many essentials, as well as a range of options on the platforms. Remaining space in the ticket gate area is converted to commercial space. Recognizing the need of time-conscious clients, especially women, to combine their trips with other tasks and responsibilities, these shops cater to busy commuters with coffee and bread shops, gift shops, convenience stores, and aromatherapy salons.

3.2.4 Design: Considering vehicles Intermediate Means of Transport (IMTs)

Intermediate Means of Transport (IMTs), which range from wheelbarrows and handcarts, to bicycles, three wheelers, animal-drawn carts, to mopeds and motorcycles, tend to be overlooked as an efficient means of transport. But there is some evidence that IMTs provide economic benefits for women. A World Bank report describes a situation in Ghana. Women transport oranges on their heads to villages 15 kilometers outside the capital city of Accra. In Accra, the supply of oranges is low and the prices are high. A distance like this can easily be covered by bicycle. If these women had bicycles, they could increase their income considerably. Furthermore, they would then have more time and energy to cultivate their land and then increase their production. The bicycle would increase both their sphere of activity and their transport capacity. A bicycle can transport up to approximately 50 kg of goods at a speed of 8 to 10 kilometers per hour (km/h) with less effort, while with walking, it is possible to transport around 25 kg at a speed of 3 to 4 km/h (half the load at less than half speed). The transport

capacity of the bicycle is therefore around 5 times greater than on foot, apart from the physical energy and time saved.

There are over 460 million bicycles in China, and the urban bicycle ownership rate is about 0.5 per person. In India, there are about 30 million bicycles, with about 25 times as many bicycles as motor vehicles per capita and urban bicycle ownership growing rapidly. In medium-sized Indian cities, about 80% of trips are made by foot or bicycle. Increasingly more women are taking to bicycles as they prove to be the means to earning an income as they provide access to the market, as seen in the case of Vietnam and Uganda, where small bicycle taxis (a padded seat on the back of a regular bicycle) are being used to transport women to and from the market. The use of the bicycle by women in Tamil Nadu (India) has increased, due to a literacy drive, better mobility, earning potential, ability to access goods and services including education and health care for themselves and their children. In one district, 50,000 women learned to cycle in one year. The large number of women cycling meant that men no longer opposed the idea of women cycling—probably because women's economic productivity had also increased.

Further, bicycles should be designed for both genders and differing contexts. Women tend to have shorter torsos and narrower shoulder widths which affect the frame design. Bicycles can also be designed for the typical activities that men and women do. In Japan for example, the bicycles used mostly by mothers and housewives are called "mamachari" or "mama bicycles". These bicycles are lightweight, have baskets in the front and sometimes the back to transport groceries, or child seats attached to them and have a stable bicycle stand. In a different context, women seem to prefer men's bikes over women's bikes as they perceive them to be stiffer. The bicycle market has developed to a great extent in designing different kinds of bicycles for all uses, but most of these specialized bicycles are too expensive for low-income people.

If the car industry has taught us anything, it is that marketing is powerful in inducing demand. Cars have positioned themselves as the

Box 8: Feminine car design

The 1950s was the golden age of feminine car design. In 1955 Daimler introduced the 104 “Ladies Model” which came with a cosmetics pack, fitted luggage, an umbrella and a shooting stick. However, only 50 were ever made, but the company persisted with the theme: Daimler CEO Lord Docker’s wife designed extravagant show cars; the Docker Daimlers, featured gold plating, zebra-skin upholstery, and ivory dashboards. At about the same time, Dodge introduced a pink car known as “La Femme” with cosmetics cabinets built into the seats. However these also did not succeed and led Detroit to steer clear of cars that played on gender stereotypes. More recently, Volvo came out with a car designed by women for women. However, the car’s “feminine” features—an inaccessible engine, teflon bumpers, computer-assisted parking, seat-covers that can be changed to match your outfit—proved controversial with some critics calling the prototype, “sexist”.

most attractive and fashionable choice. Thus, all transport providers and operators should learn that to be competitive and ultimately sustainable, it needs to be fashionable and attractive. However, it must also learn from the car industry has also excelled in passenger comfort and reliability of vehicles.

3.2.5 Design: Considering operations

It is recommended that the government manages and regulates mass transit but contract the actual operations to the private sector. Within this structure, the government can encourage certain practices, such as hiring women drivers and demanding a gender mix of personnel at stations, on buses, and even in management.

Fare structure

The fare structure is the most obvious way that the government determines who pays and who benefits. The first consideration is that the fare covers the costs of operation (the technical fare) while remaining affordable to the population (the public fare). This is a very sensitive issue and can undermine the viability of a system if the fare doesn’t cover operational costs requiring government subsidies in resource



Fig. 28
Transjakarta BRT hires women drivers, giving them higher income than their typical jobs.
Photo by Carlos F. Pardo

constrained settings or drive people away from using the system because the public fare is too high. Thus, the fare structure has to balance profitability from a private operator point of view with customer convenience and willingness to pay.

When transport is subsidized, most governments have policies that give fare discounts to special groups, such as students or the elderly. These subsidies aim to achieve social equity. Tokyo offers silver passes for elderly users of the transit system. However, it is recommended that



Fig. 29.
Free bicycle parking at TransMilenio Americas portal increases accessibility and the system’s catchment area.
Photo by Carlos F. Pardo

indirect or cross subsidies are used instead of direct subsidies. In Bogotá, the flat fare acts as a cross subsidy. The rich typically live in the inner city and take shorter trips but pay the same as a poorer person who lives on the periphery and travels much farther (thus a more expensive in operational costs trip). Feeder services are also at no cost to the user (included in the user fare), and bicycle parking facilities are provided at terminal stations for free. This extends the catchment area of the system to more users in the periphery.

As these discounts affect the operational viability of the system, it is important that the government pays the cost of the subsidy and not the private operators. In Dar es Salaam, by law, students travel for free. What this means is that students are frequently not picked up and are left standing on the street or walking. Discounts and subsidies are often the source of fraud within a system. Once a discounted pass is issued, it is difficult to verify correct usage. In Brazil, private bus operators are not compensated for the provision of this service, and the cost burden related to this service and its fraudulent abuse is a continuing cause of operator claims that they need fare increases. This also has implications on the technology, and its associated costs, on the entire system.

When Paris's RATP offered a loyalty youth program as part of its targeting strategy in its shift towards personal mobility, it attracted 700,000 members. The modal split for the youth increased 10%. The youth group was offered a pass with associated benefits oriented to their needs and lifestyles, such as loss and theft insurance, targeted publications, discounts with retailers, special offers for movies, museums, concerts, sports, and other special events.

There are several types of fare that can be considered:

1. Flat fare: is when the same fare is charged regardless of distance or time. This helps cross subsidize poorer groups if they tend to live in periphery and the richer live more in the center of the city, like the case of Bogotá. However, it does not discourage continued sprawl nor motivate mixed land use;
2. Distance-based fare: is where the fare is based on the length of the trip and most closely mirrors



Fig. 30

Smartcards have lowered their cost, which makes it easier to have more flexible fare systems.

Photo by Carlos F. Pardo

the actual operating costs of the system. If the poor live at the periphery, then they would end up paying the highest transport costs;

3. Time-based fare: is usually for systems that have transfers between the different parts. Time based fares incorporate trip-chaining more easily, allowing people to leave the system for a short period (to drop children off at school) and re-enter without paying again to continue the trip; and

4. Peak versus non-peak pricing: creates incentives to use the transit system during non-peak times and spread demand more consistently. This also allows the system to charge the least price sensitive commuters a higher price.

It is possible to have a mix of the different structures, but that will increase the complexity of the system for the consumer, as well the technology requirements for the fare collection system. For example, the busways in São Paulo (Brazil) charge a flat fare in central areas but revert to a distance-based scheme for continuing onto satellite destinations. Regardless, other than flat fare, all other fare structures require a more sophisticated fare collection technology. However, fare collection technologies' costs have lowered in recent years. This information is found in greater detail inside the BRT Planning Guide (for more detailed information about setting a tariff policy, please see Chapter 14 of such Planning Guide).

3.3 Implementation: Leadership and governance

Ultimately, when the government decides gender is important to address in transport, steps can be taken to address it easily. It takes political will and vision.

Labor-based road construction is one of the best ways for roads to have a positive impact on the poor—both men and women. Working with the existing industry to formalize has great impacts both within the industry and the quality of jobs it has, as well as the kind of service it gives.

By explicitly requiring women to be part of the transport system and encouraging their economic and political representation, the government sets a clear mandate of its social equity objectives. Women can be incorporated into jobs from construction (like in Addis Ababa), to enforcement, to street cleaners, to meter maids.

In Peru, women police officers were found to be more effective in enforcing the law and traffic management, as they had a reputation amongst drivers as being incorruptible. About a fourth of Lima's traffic officers are women. Women are playing an increasingly large role in South Africa which has a female Director General equivalent to a Minister for the Department of Transport and increasingly growing cadre of female transport planners at all levels in government.

In 2005, the London Underground won the Equality Award. Latest employment figures show that between 2000 and January 2005 female train operators increased from 2.6% to 6.9%, female signal operators from 4% to 7.4%, women in first line management from 15.6% to 17.9%, women in middle management from 17.2% to 22.6% and women in senior management from 13% to 20.1%.

The main operator of public transport in the Paris urban area is the Régie Autonome des Transports Parisiens (RATP). Although there are only 8,000 women to 45,000 male workers in this traditionally male-dominated industry, the RATP has planned an exhibition⁵ on women working within the RATP. Sex disaggregated statistics have been collected since 1995.

⁵ <http://www.imagesdelles.org/expo3.html>



Fig. 31
Female police officer in Lima, Peru.

Photo by Manfred Breithaupt

Women are often discouraged or unable to get into the industry—due to various reasons ranging from a lack of capital to a lack of acceptance. There are however, promising examples, such as in Jakarta, where women are being trained and hired as bus drivers for TransJakarta—the first in the country. Because the industry is formalized and regulated, women now have space to enter into these jobs and greater income earning opportunities. Employing women in transport will lead to not only a gender perspective being naturally integrated into the sector, but also contributes to reducing urban poverty as these employed women will be bringing home an income.

3.4 Governance

In the end, it is up to the central government and local municipalities, road authorities whether women's urban travel needs and behaviors will be adequately considered in the planning and implementation of gender-sensitive urban transport policies and programs and whether women will benefit from transport infrastructure and services. Transport governance should be transparent, approachable so that women will interest and perhaps involve themselves in improving transport infrastructure

and services. Good transport governance will be especially important where public transport systems are in a state of crisis as a result of accelerate urbanization, economic and financial crisis (which may have led to the disappearance of national corporations and haphazard development of small, unstructured private operators) or the lack of a regulatory authority in charge of organizing and coordinating transport modes (Insted, 2005) may impact urban women's lives and in particular low-income women and single mother households.

3.5 Monitoring: Gender audits

The UK Department of Environment, Transport and the Regions (DETR) commissioned gender audit checklist or similar checklist is useful as a gender in transport monitoring tool.

The UK gender audit checklist was designed to be utilized as a management tool or a community tool. As a management tool, the gender audit checklist

- assesses how well the organization meets women's needs,
- identifies priorities for improvement,
- measures progress towards gender-based targets.

As a community tool, the gender audit checklist

- assesses how well a local transport provider or local authority meets women's transport needs,
- identifies priorities for campaigning, lobbying and negotiations,
- measures the progress of operators and local authorities towards gender-based targets.

(Hamilton, K. *et al.*, 1999)

Box 9: Basic gender and urban transport checklist

1. Has the urban transport program or project identified male and female participants, clients and stakeholders?
2. Has baseline data been collected and analyzed on gender relations, roles and identities within the urban environment and the use of transport?
3. Has the urban transport program or project taken into consideration the analysis of gender relations, roles and identities and introduced a component or transport measure to address a gender issue?
4. Has the urban transport program or project developed an indicator that measures gender specific outcomes and evaluate the effectiveness of the component or measure designed to address the above-mentioned gender issue?
5. Has transportation planning been based on local conditions and specific and local needs of men, women, youth, elderly and the disabled? Have statistics and situations in developed countries been referenced and adapted to reflect the needs and resources in developing countries?
6. Have jobs and social services been brought closer to men and women by developing accessible land use patterns
7. Has the issue of personal mobility and access of non-drivers, of which a majority are women and the elderly, been thought through? Have policy, planning or investment practices that favor automobile travel over other modes or lead to automobile dependency been avoided?
8. Have the implications of policies and projects that degrade pedestrian and cycling conditions, such as new highways that divide existing communities or eliminate walkways been considered. Have measures been implemented to control vehicle traffic volumes and speeds, particularly in urban neighborhoods?
9. Has the participation of various stakeholders in the transportation planning and decision making been facilitated?
10. Has comparative advantage been given to traditionally socially and transport disadvantaged by applying full-cost pricing to automobile travel, road pricing, parking pricing and fuel taxes and distance-based charges?
11. Provide transportation consultation and information on transportation choices available.
12. Have you looked at the supply of females into the transportation field? Has gender been integrated in engineering education and measures put in place to groom women's leadership in transport planning?

4. In conclusion

Integrating gender into urban transport does not require extra effort; it is just a matter of extra perspective. Transport is not gender neutral and it is time for transport policymakers and experts to stop assuming it is. It is time to think of how to make urban transport fashionable and affordable, giving people real choices and real access to opportunity and a better quality of life. The benefits will not only be the people of the city—both women and men, but the city as a whole as it becomes more competitive in the global market place and more efficient in providing services.

“The point of cities is multiplicity of choice.”

Jane Jacobs

When planning and setting indicators for an urban transport project or program, don't think about just access abstractly, but access for whom—who wins and who loses. The solutions are out there; it is up to you to ask the right questions to identify the problems affecting the public—both the women and the men and then to provide fashionable and affordable options for them.

- Think who will be affected by a particular policy or project, such as reduction in traffic congestion delay, an increase in transit trip speeds, or a reduction in barriers to non-motorized travel.
- Imagine and define the “public” you are thinking about.
- Ask how this will impact the different intended beneficiaries—the poor, the disabled, the elderly.
- Imagine using the services from your public's perspective—as a woman carrying a baby with another child in tow, as a man who lives in the periphery who needs to get to work in the morning, as a girl trying to get to school, elderly pushing their shopping trolleys.
- Is there a way to provide integrated and inclusive transport facilities and services?

Retrofitting existing urban facilities to become gender, age or disability considerate can be very expensive and may discourage some municipalities or companies in investing more on making their transport infrastructure and services more accessible. Time and cost savings can be achieved just by having the vision of making urban transport more accessible to all before implementing the project.

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- Brazil National Association of Public Transport <http://portal.antp.org.br/default.aspx>

Gender

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- GENDERSTATS: The World Bank Database of Gender Statistics <http://genderstats.worldbank.org/home.asp> gives basic statistics about gender by country
- International Research and Training Institute for the Advancement of Women (INSTRAW) – Gender Mainstreaming Site <http://www.un-instraw.org/en/index.php?option=content&task=category...lists>

Road safety

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- <http://www.ite.org/traffic>
- <http://www.trafficcalming.net>
- <http://www.fhwa.dot.gov/environment/tcalm/index.htm>
- <http://www.estrellasnegras.com/2005/index.htm>
- <http://www.grsproadsafety.org>

Personal security

- <http://www.adopt-a-light.com/aboutus.php>

Safety audits

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