

Bridging Gendered Gaps in ***First and Last Mile Connectivity*** **Across Indian Cities**

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Cities function as engines of growth but their infrastructure systematically disadvantages women in accessing urban opportunities. Cities are projected to contribute up to 70% of India's GDP by 2030, creating massive employment and innovation hubs. However, city infrastructure and public transport systems are designed for a "neutral male user" rather than accommodating women's specific safety needs, travel patterns, and economic constraints.¹

Women's access to urban opportunities is constrained by transport systems that ignore their mobility needs. This infrastructure gap directly limits women's ability to participate in urban employment, education, healthcare, and mobility for care responsibilities. Women cannot fully benefit from the productivity gains that cities offer because transport systems fail to serve their distinct requirements for safety, affordability, and flexible scheduling.

Women depend heavily on public transport, but current systems are designed for male commuting patterns. Women constitute 22% of all work travelers in Indian cities, yet 84% of women's work trips depend on public, intermediate public, and non-motorized transport modes, compared to significantly lower percentages for men who have greater access to private vehicles.^{2,3} In addition, women's travel patterns are characterized by trip chaining patterns which combine multiple purposes including work, household errands, caregiving responsibilities, and social activities, requiring transport systems that accommodate flexibility in schedules and frequent stoppages throughout different times of the day rather than the traditional peak-hour, single-destination commuting model designed around male travel behaviors.

Women's transport journeys encompass four critical stages that must be considered for gender-responsive urban mobility planning. The access stage requires women to navigate first-mile connectivity through walking, cycling, or intermediate transport like auto-rickshaws to reach primary transit stations. During the waiting phase, women encounter heightened safety and security challenges at poorly lit or isolated stations with inadequate facilities. The traveling stage involves using main public transport services where women face issues ranging from overcrowding to harassment. Finally, the egress stage demands last-mile connectivity

¹ World Bank. (n.d.). *Urbanization and economic growth: The role of cities in India and South Asia*.

² Social and Political Research Foundation (SPRF). (2024, May 21). *Women's mobility and public transportation: How gendered mobility shapes access*. <https://sprf.in/womens-mobility-and-public-transportation/>

³ World Bank. (2023, February 9). *Designing public transport in India that works for all*. <https://www.worldbank.org/en/news/feature/2023/02/09/how-to-help-ensure-safe-and-inclusive-public-spaces-and-public-transport-for-women-in-india>

solutions as women travel from transit stations to their final destinations. Each stage presents unique barriers that can significantly impact women's ability to access opportunities and services.⁴

The access and egress stages in connectivity become a barrier because if women cannot safely and affordably reach transit stations and destinations, they cannot use public transport at all. This barrier is especially critical for women because of how they travel differently from men. Women typically make complex trips that combine multiple purposes in one journey. In major economic hubs like Bangalore, 43% of women walk to work while in tier-2 cities like Ranchi, 59% of women walk to work.⁵ While most women use public, intermediate public, and non-motorized transport modes for work trips,⁶ men usually make simple trips from home to work and back. Women face these connectivity challenges repeatedly throughout each trip, with trip distances 38% shorter on average than men's but requiring multiple connections making any gap in first and last mile services much more limiting.⁷

The critical importance of first and last mile connectivity is proven by its direct impact on women's employment in India's major economic centers. A study by GIZ showed that In Mumbai, a major economic hub, 31% of surveyed women reported commuting as a barrier to working.⁸ Even when cities invest heavily in metro systems or free bus services for women, many still cannot use public transport because they cannot safely or affordably reach stations. In Delhi, when residents were relocated farther from transport, female unemployment increased by 27% compared to only 5% for men, demonstrating how connectivity directly impacts women's economic participation and proving that fixing first and last mile barriers unlocks access to urban employment opportunities.⁹

First and last mile segments create disproportionate time and cost burdens that particularly disadvantage women, creating the major bottleneck for women's safe mobility. The World Bank toolkit for Enabling Gender Responsive Urban Mobility and Public Spaces in India notes that about 45% of women walk to work compared to 27% of men in Indian cities.¹⁰ Thus,

⁴ Gerald Ollivier, Mitali Nikore, and Sarah Natasha, Toolkit for Enabling Gender Responsive Urban Mobility and Public Spaces, World Bank Group, 2022.

⁵ Institute for Transportation and Development Policy. "Women and Transport in Indian Cities." December 2017.

⁶ Gerald Ollivier, Mitali Nikore, and Sarah Natasha, Toolkit for Enabling Gender Responsive Urban Mobility and Public Spaces, World Bank Group, 2022.

⁷ "India: Making public transport more women-friendly." World Bank Blogs, December 1, 2022.

⁸ Mobility Solutions in India from a Gender Perspective." GIZ Gender Works, 2022.

⁹ Institute for Transportation and Development Policy. "Women and Transport in Indian Cities." December 2017.

¹⁰ Gerald Ollivier, Mitali Nikore, and Sarah Natasha, Toolkit for Enabling Gender Responsive Urban Mobility and Public Spaces, World Bank Group, 2022.

women are more likely to navigate poorly lit streets, broken footpaths, and unregulated auto-rickshaw services during the two critical connectivity phases that fall outside the safety systems of formal public transport systems.¹¹ These segments consume 40% of total travel time and 48% of travel costs while representing only 18% of the distance travelled. More critically, women are most likely to face harassment in these segments- with nearly 79% of women in India reporting sexual harassment in public spaces and transport during transition points between different transport modes, precisely in these first and last mile areas.¹²

This white paper focuses specifically on identifying first and last-mile connectivity barriers for women within urban settings and transport networks. Drawing from the lived experiences of women, particularly from marginalized groups in Odisha and Uttar Pradesh, the white paper reveals how current infrastructure design, safety gaps, and unregulated pricing systematically exclude women from reliable urban mobility.

1. Challenges in First and Last Mile Connectivity

Urban transport systems in India face critical first-mile and last-mile connectivity challenges that disproportionately impact women's mobility, despite substantial government investments. Planned investments under the National Infrastructure Pipeline have allocated approximately USD 6.93 billion toward 50 urban transport projects, however, few of these are designed to be multimodal. Over 70% of metro passengers still rely on walking for their initial and final journey segments, with only 47% of the population living within a reasonable 1-kilometer walking distance of metro networks, thereby necessitating the development of multimodal transit facilities where buses or feeder services can integrate with metro lines, and intermediate public transport can also be made available.¹³ These transport planning gaps create a cascade of interconnected barriers—from inadequate multimodal integration and infrastructure design failures to persistent safety concerns and unpredictable costs—that systematically exclude women from accessing public transport efficiently and safely. The challenges are particularly acute for women, who largely depend on public transport for their trips and require seamless connections between multiple transport modes to accommodate

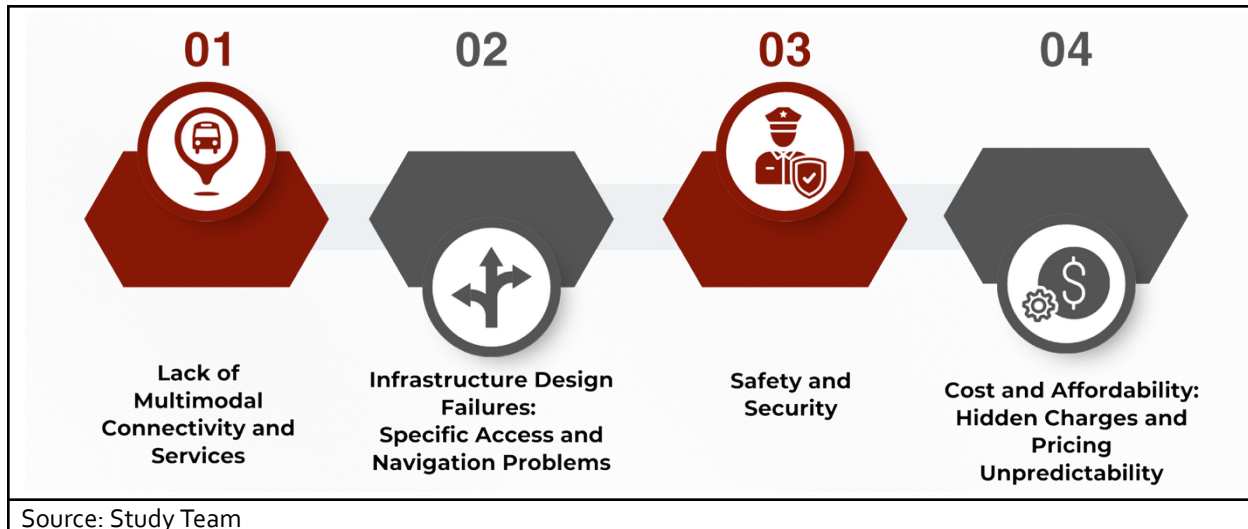
¹¹ Gerald Ollivier, Mitali Nikore, and Sarah Natasha, *Toolkit for Enabling Gender Responsive Urban Mobility and Public Spaces*, World Bank Group, 2022.

¹² Gerald Ollivier, Mitali Nikore, and Sarah Natasha, *Toolkit for Enabling Gender Responsive Urban Mobility and Public Spaces*, World Bank Group, 2022.

¹³ Mukherjee, A., Muruganantham, S., Balachandran, A., Maiti, S., & Ganesh, P. K. (2023). *Improving Metro Access in India: Evidence from Three Cities. Working Paper. World Resources Institute India and Toyota Mobility Foundation.*

their daily travel patterns involving trip chaining between paid work, mobility of care, and household responsibilities.¹⁴ We review each of these challenges in turn below.

Figure 1 Overview of Challenges in First and Last Mile Connectivity



1.1. Lack of Multimodal Connectivity and Services

Women's trip chaining needs are incompatible with transport systems that treat each mode as separate rather than connected services. Current transport planning treats metro, bus, auto-rickshaw, taxis, cycling and walking as isolated transport systems. With women relying on public transport for most of their trips, the current system's failure to accommodate their daily journeys has a significant impact on their mobility. This is due to the nature of their travel which includes multiple stops for work, childcare, and household errands, requiring seamless transitions between walking, cycling, and auto-rickshaw services.^{15, 16}

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"We cross the train line to go to the bus stop as there is no other way [connectivity]. We stand and look around and then cross. What else to do? Everyone has to go for work, go to the market [and so on]." - **Women Domestic Workers, Bhubaneswar**

¹⁴ India Investment Grid. Urban Public Transport Sector in India. National Infrastructure Pipeline project listings. Government of India.

¹⁵ Sharma, Geetanjali. 2021. 'Delhi Metro Rail System and the Need for An Inclusive Last-mile Connectivity System'. Social and Political Research Foundation.

¹⁶ Safetipin. Examining the Impact of Time Poverty on Women's Mobility. New Delhi: Safetipin, 2019.

Figure 2 Train Line crossed by Women Domestic Workers to access Bus Stops



Source: Study Team

Station designs force women out of secure areas into unsafe spaces to access first and last-mile services. Most metro stations and bus terminals require passengers to exit monitored premises to walk through unlit areas, cycle on dangerous roads, or access auto-rickshaws in unregulated zones. Women must leave well-lit, CCTV-monitored stations and navigate broken footpaths, absent cycling lanes, and unsafe auto-rickshaw pickup points.¹⁷

Poor timing coordination between transport modes leaves women stranded, especially during off-peak hours. This coordination failure disproportionately impacts women who rely heavily on public transport for their complex, multi-purpose trips that often occur outside traditional peak commuting times. When feeder services like auto-rickshaws fail to connect with public transport modes, women are forced to walk long distances through unsafe, poorly lit areas or resort to expensive private transport options. Women working non-standard hours in sectors such as healthcare, hospitality, or domestic work face the greatest mobility challenges, as their travel times coincide with reduced service frequency and heightened safety

¹⁷ Mitali Nikore and Brinda Juneja, "Reimagining Urban Mobility for Gender Inclusion in India Beyond Safety," in *New Approaches for Integrated Multimodal Urban Transport Systems*, 2024.

risks, effectively limiting their ability to access varied employment opportunities and economic participation.¹⁸

Figure 3 Focused group discussion with students in Lucknow



Source: Study Team

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In college, there are evening events. The main event starts at 6 pm. I skipped that because there's no transport to get from the college to the main bus station. It feels unsafe at night walking that distance to reach public transport. It gets dark and the area between college and the bus stop is very quiet which feels unsafe. I haven't gone anywhere for 3-4 years because I

¹⁸ Gerald Ollivier, Mitali Nikore, and Sarah Natasha, *Toolkit for Enabling Gender Responsive Urban Mobility and Public Spaces*, World Bank Group, 2022.

don't have a safe way to get from college to where I can catch proper transport."— **Female student, Lucknow**

1.2. Infrastructure Design Failures: Barriers to Safe and Accessible Mobility

Transit stations often lack basic infrastructure that particularly affects women's safety and accessibility, especially when traveling with dependents or luggage. Many busy terminals fail to provide safe pickup and drop-off areas for private vehicles or taxis near station entrances, forcing women traveling with dependents or heavy goods to walk considerable distances through parking lots or along busy roads to reach station entrances. As evidenced by a recent study conducted by Mumbai Metropolitan Region Development Authority, 76% of women reported having traveled with dependents and expressed strong demand for priority access at ticketing and security checkpoints, as well as reserved seating when traveling with dependents.¹⁹ Moreover, unlike the interior areas of transit stations, the surrounding areas generally do not fall under the jurisdiction of public transport corporations may lack lighting, or even a safe spot to stand and wait for last mile transport like auto-rickshaws or taxis.

Inaccessible pedestrian infrastructure forces women to walk on roads with vehicular traffic, exposing them to both accident risks and street harassment. The safety risks women face while walking to transit stations are underscored by concerning trends such as pedestrian fatalities in India rising sharply by 108% from 2016 to 2022 around transit hubs.²⁰ Issues such as obstruction by vendors, poorly maintained footpaths, broken streetlights and parked vehicles add to this problem by forcing pedestrians to walk on roads alongside moving traffic. Women face heightened safety concerns when poor infrastructure forces them into spaces where they become more visible targets for harassment with simultaneous isolation from availing any sort of help. Safety audits consistently find that routes considered functional during daylight hours become unsafe in the evening due to reduced visibility and sparse pedestrian traffic, particularly affecting women who often travel during off-peak hours for caregiving responsibilities or non-standard work schedules.²¹

¹⁹ Mumbai Metropolitan Region Development Authority (MMRDA) and World Resources Institute India (WRI India), *Gender Inclusive Future Transport (GIFT) Study: Gendered Ridership and Safety Perceptions on Mumbai Metro Line 1*, 2022.

²⁰ Consumer VOICE. *Pedestrian Fatalities in India | Road Safety Measures in India*.

²¹ Gerald Ollivier, Mitali Nikore, and Sarah Natasha, *Toolkit for Enabling Gender Responsive Urban Mobility and Public Spaces*, World Bank Group, 2022.

Figure 4 Survey in Bhubaneswar



Source: Study Team

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"We cross the railway line to reach the bus stop. From there, we go to the market and have to pay ₹15 in the bus. When we get off at the market, we have to walk almost 1 kilometer to go to the market and then come back home the same way. " – **Woman Domestic Worker, Bhubaneswar**

1.3. Safety and Security

Accessing transit stations often requires women to navigate poorly lit and isolated pathways that lack adequate safety features. Many metro stations and bus stops are only reachable through pedestrian underpasses, service roads alongside railway tracks, or desolate stretches that remain unmonitored. Some commuters report having to walk next to active train tracks or through unlit passages to reach station entrances.

High walls and poor design eliminate visibility in areas where women walk, cycle, or wait for auto-rickshaws, forcing them to avoid these routes entirely. A micro-mapping study documented in *Question of Cities* describes how high railings or compound walls along footpaths block street visibility and create unsafe, isolating environments for women. The study observed that railings covering the street view violated pedestrian design guidelines and made walking alone feel unsafe.²² A joint study in Lucknow found that 88% of respondents had experienced sexual comments while using public transport, indicating widespread safety concerns.²³

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"We feel a little scared but what to do? One has to go for work and go on the same road every day, feeling scared. I have to go in the evening too and I feel more scared in the evening. If we keep fearing, we will starve here." – **Domestic Workers, Bhubaneswar**

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"We feel so unsafe at that point of time we think this is the best option. Or we give our live location to our parents or to our friends who are close to us." — **Female student, Lucknow**

Security coverage stops at station boundaries, leaving women vulnerable while walking to destinations, parking areas, or IPT pickup spots. While CCTV surveillance and security personnel may be present inside stations or on buses, these safety measures often do not extend to surrounding areas where passengers wait for auto-rickshaws or walk to final destinations. Recent incidents, including attacks that occurred just 100 meters from police stations at busy transport hubs, highlight how even well-lit areas can become unsafe when formal security coverage ends at station boundaries.²⁴

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"But girls are not safe here because alcohol [consumption] is more here (slum area inhabited by families of workers who work in the adjoining Mancheswar Industrial Area). No, no, only boys

²² Jashvitha Dhagey, "Micro-mapping streets and footpaths in a neighbourhood, as a woman," *Question of Cities*, January 15, 2024.

²³ Tripathi, K., Borrion, H., & Belur, J. (2017). *Sexual harassment of students on public transport: An exploratory study in Lucknow, India. Crime Prevention and Community Safety*, 19, 240–250.

²⁴ Mitali Nikore, "Enough is enough — we need safer cities for women," *The Indian Express*, March 7, 2025.

walk here after dark. All the girls we've seen, they walk together on one side, but the boys change sides and start following." – **Women students in Mancheswar Industrial Area, Bhubaneswar**

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"As far as men are concerned, we really don't feel unsafe. To be really honest, we do make people feel uncomfortable. (Personally) As a person, I don't feel unsafe... but still, the majority of (harassment) cases are with girls." — **Male student, Lucknow**

Across Indian cities, fare subsidies and free bus schemes have been introduced to increase women's participation in public transport, leading to higher ridership and modest safety improvements within the formal transport network itself. The multi-state assessment by Sustainable Mobility Network and Nikore Associates found safety perceptions ranging from 31.5% feeling safe in cities without subsidies to 42-46% in cities with full fare subsidies—though these improvements remain disappointingly low overall.²⁵

However, these safety gains are largely confined to buses and do not extend to first and last-mile connectivity, where women continue facing significant challenges. Poor lighting, deserted stops, and lack of staff presence create exclusionary conditions around transit access points that force women to avoid certain routes despite subsidized services. The disconnect between subsidized transport and comprehensive safety is evident in women's continued spending on alternative modes. This reflects how women must still invest in safer first and last-mile options even when the main journey segment is subsidized, highlighting that fare policies alone cannot address the full spectrum of women's mobility barriers.^{26, 27}

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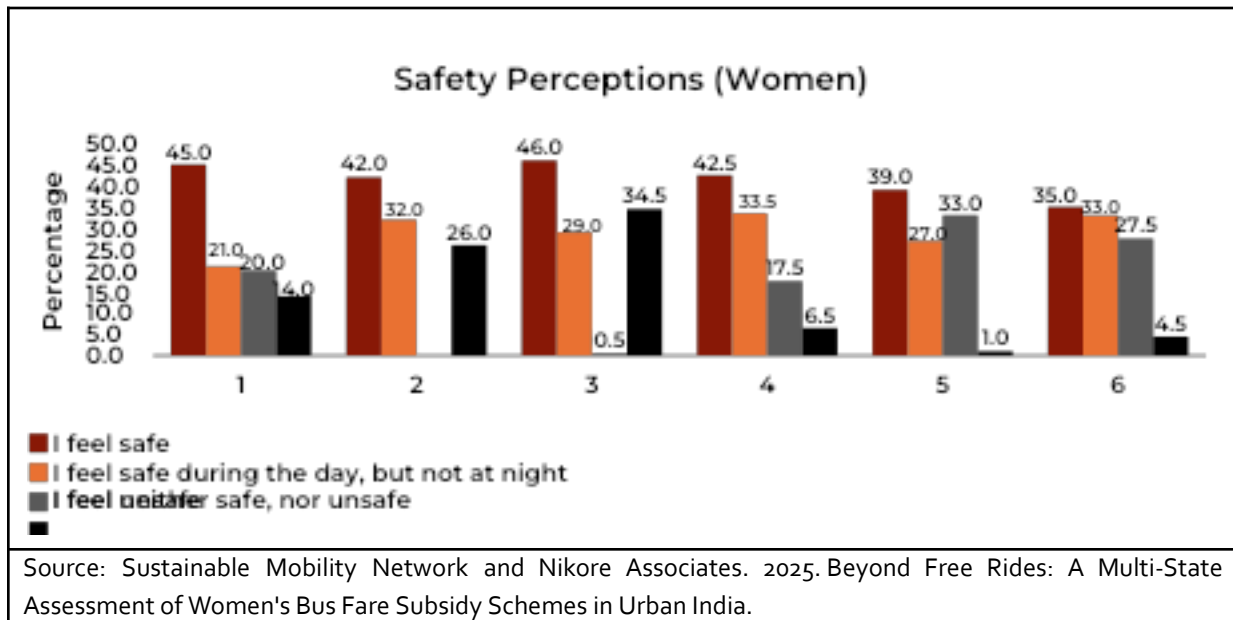
We feel afraid every day while coming back from the bus stop even if we are travelling on the same familiar route - the fear remains. I have to travel in the evening too and feel scared. But what choice do we have? For our livelihood, we must go, right?"– **Domestic Worker, Bhubaneshwar**

²⁵ Sustainable Mobility Network and Nikore Associates, 'Beyond Free Rides: A Multi-State Assessment of Women's Bus Fare Subsidy Schemes in Urban India', July 2025, 20-21

²⁶ Safetipin, Bengaluru: A Safety Analysis Report, 2017.

²⁷ Safetipin, Delhi: A Safety Analysis Report, 2016.

Figure 5 Safety Perceptions (Women) in cities with subsidies on public transport



Industrial employment opportunities remain out of reach for many women due to poor connectivity between residential neighborhoods and factory locations. Even when jobs are available in nearby industrial areas, inadequate first and last-mile transport links create significant barriers to women's participation in the formal workforce. Women living in settlements around industrial areas often face unsafe routes and conditions to reach factories, with limited public transport availability in residential areas and insufficient lighting or safety infrastructure along walking routes. This persistent fear affects women's decisions on seeking employment, as many choose to forgo jobs in closely located industrial areas even if these offer better wages and working conditions.²⁸

²⁸ Social and Political Research Foundation. "[Women's Mobility and Public Transportation: How Gendered Mobility Shapes Access](#)." May 21, 2024.

Figure 6 *Waiting area at a bus terminal in Bhubaneswar*



Source: Study Team

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"When I am going on the road, everyone is different, right? Who knows what will happen when? Yes, so a little fear will be there. Even when going for a short distance, I feel scared." – **Industrial workers, Mancheswar Industrial Area, Bhubaneswar**

Emergency systems often fail when women need them most, particularly during off-peak hours. Safety infrastructure that works during the day frequently becomes inadequate during evening and early morning hours when women face heightened challenges walking through isolated areas, cycling on unlit routes, or accessing auto-rickshaws at remote points. The Asia Foundation's multi-city study found that 95% of women surveyed identified public transport as unsafe, with 12% avoiding travel after dark entirely due to inadequate emergency response systems during off-peak hours. In Bhopal, the same study documented how working women in service industries preferred not to work late hours to avoid facing unsafe commuting conditions.²⁹

1.4. Cost and Affordability: Hidden Charges and Pricing Unpredictability

Lack of affordable and convenient first and last mile connectivity is a critical challenge limiting public transport usage and disproportionately affecting women commuters. A survey by the Bangalore Political Action Committee (B.PAC) involving over 1,100 respondents in 2019 found that 79% of women use shared mobility compared to 62% of men, indicating heavy dependence on intermediate public transport. Importantly, 23% of respondents cited lack of first and last mile connectivity as a reason for not using public transport, pointing to a systemic barrier that disproportionately affects women.³⁰

Despite investments in creating metro lines with gender inclusive infrastructure facilities and offering subsidised bus schemes to women, unsafe and expensive first and last mile segments limits women's mobility. While policy interventions like Delhi's Pink Ticket scheme and Karnataka's Shakti scheme have increased women's ridership of formal public transport services, the benefits are limited by unsafe and costly connectivity segments that women must navigate to reach these services.³¹ Recent studies show that expenditure on first and last-mile connectivity through intermediate public transport like auto-rickshaws and private transport to reach bus stops in cities like Bangalore and Hubballi can go as high as INR 1,500 monthly. This demonstrates that **first and last-mile costs can completely offset savings from subsidized public transport**, making the overall journey still unaffordable

Recent studies show that expenditure on first and last-mile connectivity through intermediate public transport like auto-rickshaws and private transport to reach bus stops in cities like Bangalore and Hubballi can go as high as INR 1,500 monthly. For women from low-income

²⁹ The Asia Foundation. "Women and Mobility: A Case Study of Bhopal, Gwalior & Jodhpur." *Safetipin and Centre for Social Research*, September 2020.

³⁰ Bangalore Political Action Committee (B.PAC). *First and Last Mile Connectivity to Public Transport in Bengaluru: Survey Report*. November-December 2019.

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households in cities which have full fare subsidies earning below ₹10,000 monthly, they spend one-tenth of their household income on transportation costs. For the lower-middle income group (₹10,000-₹25,000), 47.8% women already spend above ₹2,000 monthly on transportation. For women from middle income households (₹25,000-₹50,000) typically spend in the ₹501-₹1,000 range. First and last-mile connectivity costs create regressive financial impacts that particularly burden economically vulnerable families and force women to restrict mobility or walk distances to void additional ³²³³

Figure 7 First and last mile connectivity cost on women across household income groups

HIGH BURDEN; SIGNIFICANT SHARE OF INCOME GOES TO TRANSPORT Spends around 10% of household income	COSTS LIMIT DISPOSABLE INCOME; HEAVY RECURRING EXPENSE 47.8% spend above ₹2,000 monthly	RELATIVELY LIGHTER BURDEN, BUT STILL ADDS TO HOUSEHOLD EXPENSES Typically spend ₹501 – ₹1,000 monthly
		
Low-income (< ₹10,000)	Lower-middle income (₹10,000 – ₹25,000)	Middle income (₹25,000 – ₹50,000)

Source: Beyond Free Rides: A Multi-State Assessment of Women's Bus Fare Subsidy Schemes in Urban India

The unpredictable costs of first and last-mile connectivity options can make overall public transport journeys unaffordable for women, irrespective of fare subsidies. In Maharashtra, where a partial fare subsidy is levied only on intercity travel, daily commuting costs remain unaffected and force women to continue spending ₹409-538 monthly on transportation. ³⁴ While some cities have introduced digital fare systems for certain feeder services, most intermediate transport remains outside regulated pricing networks.

³³ Sustainable Mobility Network and Nikore Associates, "Beyond Free Rides: A Multi-State Assessment of Women's Bus Fare Subsidy Schemes in Urban India", July 2025

³⁴ Sustainable Mobility Network, Parisar, Waatavaran Foundation, and Nikore Associates. Gender-Responsive Fare Subsidies: Assessing Impact on Women's Mobility in Indian Cities. July 2025.

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Even after taking the metro, you still have to pay another 100 rupees for the last mile. The total cost exceeds 100 rupees for what should be a shorter, more direct journey than the metro itself."

- Woman student in Lucknow

Auto-rickshaw and e-rickshaw drivers frequently refuse standard meter fares, instead charging arbitrary prices based on perceived passenger urgency and ability to pay. Drivers often quote lump-sum prices rather than using official fare structures, particularly exploiting situations where women have limited transport alternatives. Women passengers tend to face more fare exploitation during off-peak hours, such as early mornings and late evenings, when fewer transport alternatives are available. Drivers know passengers have urgent travel needs (e.g., to reach metros or buses) and limited choices.³⁵ The absence of regulated payment systems in intermediate transport modes increases women's vulnerability to price manipulation and unsafe transaction conditions.

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"We have to bargain with auto drivers who often cheat us. When I needed to travel somewhere with a 20-rupee fare, the driver charged me double the actual fare." – **Woman Domestic Worker, Bhubaneswar**

Figure 9 Focused group discussion with women workers in Lucknow

³⁵ Shweta et al., *Exploring Public Auto-Rickshaw Fare Optimization and Challenges in Indian Cities*, *International Journal of Humanities, Education, and Social Sciences*, 2022.



Source: Study Team

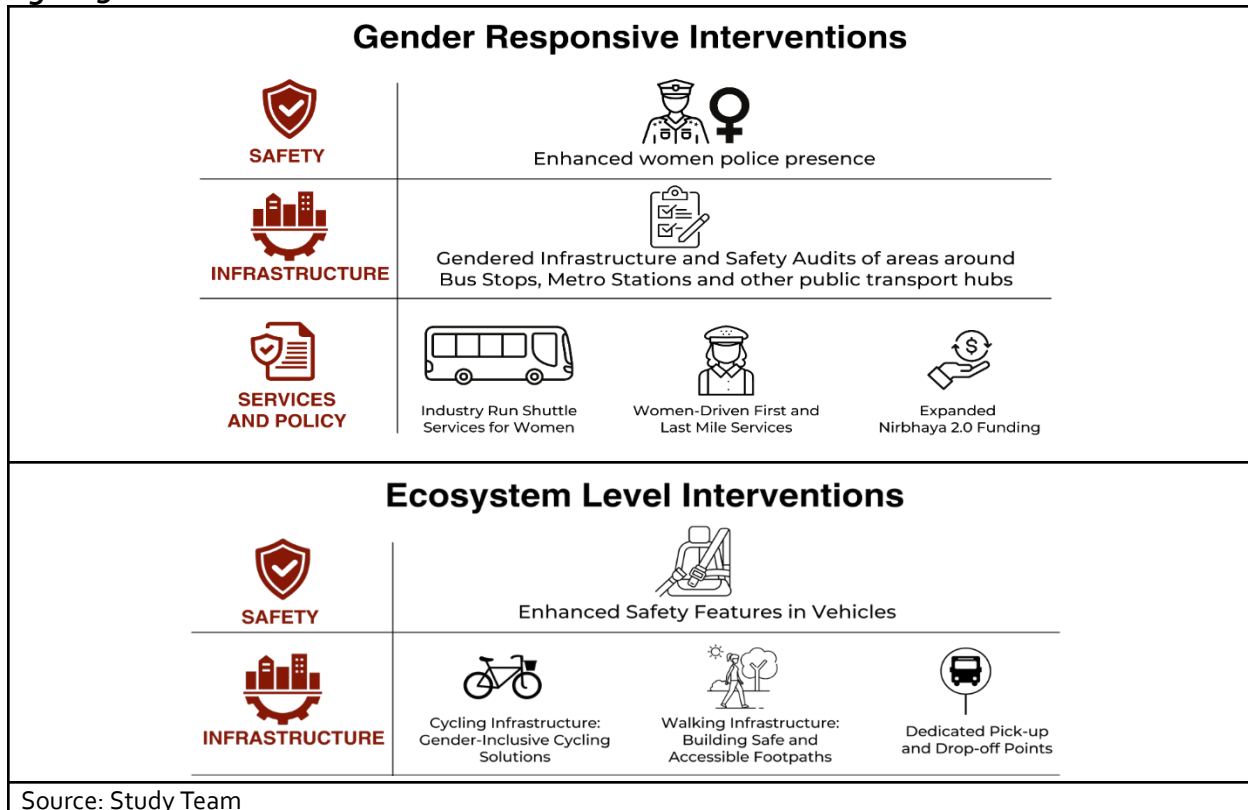
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“They suddenly take a long route, so they get the payment. Recently, I was going somewhere. The cab driver asked me how much it was. I told them it was 219. They heard it was 291. Then they took a long route. So the total was around 300. They told me to pay them. That's how it is” — **Female student, Lucknow**

2. Recommendations

To overcome barriers for women in first and last-mile connectivity, cities must implement integrated, multi-stakeholder approaches that ensure safe, accessible, and affordable journeys across all transport modes. The evidence from our field research in Odisha and Uttar Pradesh, combined with successful interventions from other cities, demonstrates that piecemeal solutions targeting individual transport modes are insufficient to address the systemic nature of women's mobility challenges. Expanding women's participation as drivers, security staff, and decision-makers across transport modes is crucial for fostering inclusive mobility, while safety infrastructure, affordable intermediate transport, and seamless multimodal integration must extend beyond main transit points to ensure that women's entire journeys—from doorstep to destination—are safe, affordable, and accessible.

Figure 5 Overview of Interventions



2.1. Gender Focused Policies

2.1.1. Safety

- Enhanced Women Police Presence

Visible women police presence during off-peak hours in first and last mile stretches can significantly improve safety perceptions and encourage women's use of public spaces. Cities could consider prioritizing increased deployment of women police officers for evening and night-time patrols, with a particular focus on transit corridors and high-traffic pedestrian areas. Initiatives such as mobile police presence through dedicated vehicles and foot patrols, exemplified by Kochi's Women Police Control Room vans and Hyderabad's SHE Teams, demonstrate the positive impact of gender-responsive policing approaches. Expanding proven models of women police deployment can enhance trust in public spaces and create more inclusive urban environments for all users.

Case Study 1: Kochi Women Police Control Room (PCR) Vans	
Country & Implementing Agency	India – Kerala Police (Kochi City)
Year	Ongoing
About the Model	Kochi's Women Police Control Room (PCR) vans patrol high-traffic and first/last mile areas, especially during off-peak hours such as evenings and nights. These mobile units are staffed by women officers and provide rapid response to incidents, offer assistance, and ensure a visible police presence in pedestrian zones and transit corridors. The PCR vans are a familiar sight on Princess Street and other busy areas, reassuring women and vulnerable groups and encouraging greater use of public spaces after dark.
Impact	The initiative has improved perceptions of safety among women and the public, with a survey showing a 30% increase in women reporting feeling safer in areas patrolled by women police vans. Increased visibility of women officers has contributed to a reported 20% reduction in street harassment incidents in some Kerala cities. The mobile nature of the PCR vans enables flexible deployment and rapid response, making public spaces more inclusive and secure.
Source : Kerala Police	

Case Study 2: Hyderabad SHE Teams	
Country & Implementing Agency	Telangana Police (Hyderabad City)
Year	Ongoing
About the Model	Hyderabad's SHE Teams consist of women police officers who patrol the city, especially in first/last mile zones, during both day and off-peak hours. The teams use dedicated vehicles and conduct foot patrols in transit corridors, markets, educational institutions, and high-traffic pedestrian areas. SHE Teams are trained to address gender-based crimes, provide immediate assistance, and raise awareness about women's safety.
Impact	SHE Teams have significantly improved the sense of security for women in public spaces, with official reports noting a 40% increase in women feeling safer in patrolled areas. The initiative has contributed to a 25% reduction in reported street harassment incidents across Hyderabad since its launch. These visible police presence has also led to a rise in crime reporting, especially by women, and has empowered more women to use public transport and urban spaces confidently, including during off-peak hours.
Source : Telangana Police	

2.1.2. Infrastructure

- Gendered Infrastructure and Safety Audits of Areas around Bus Stops, Metro Stations and other public transport hubs

Regular safety audits are essential for identifying and addressing infrastructure gaps that disproportionately affect women and persons with disabilities in transit environments.

Municipal corporations could consider institutionalizing regular safety audits of public spaces, particularly areas connecting residential and office zones to major transit points. These audits could extend beyond vehicle interiors to encompass pedestrian environments and prioritize maintenance of critical safety infrastructure such as lighting and visibility elements, ensuring functionality during both day and evening hours. Moreover, to effectively address "first and last

mile" concerns, audits could evaluate the safety conditions in areas immediately preceding a transit point and following disembarkation, ensuring that the entire transit journey, from the doorstep to the destination, is secure and accessible.

Systematic documentation through safety audits enables evidence-based interventions and ongoing monitoring to create more inclusive urban spaces. Drawing on lessons from the on-field consultations wherein women commuters reported persistent safety concerns due to non-functional streetlights and other infrastructure, a regularised safety audit could lead to prompt corrective actions and continuous monitoring. This approach can help foster safer, more accessible environments for all users, with particular attention to the needs of vulnerable groups.

2.1.3. Services and Policy

- ***Industry Run Shuttle Services for Women***

Integrating industry-run shuttles with broader public transport networks and shift schedules supports seamless multimodal connectivity, reducing travel time and cost burdens disproportionately borne by women. These shuttles create secure and monitored transit options aligned with industrial shift timings, significantly reducing women's exposure to harassment and safety risks that are prevalent in unregulated or informal transport modes. Research indicates that such services enhance women's perceived safety and economic participation by enabling access to employment centers that would otherwise be hard to reach.

Case Study 15: Bangalore IT Metro Line Feeder Service	
Country & Implementing Agency	India — Bangalore Metro Rail Corporation Limited (BMRCL) and Electronics City Industrial Township Authority (ELCITA)
Year	2025
About the Model	Free Metro Feeder Shuttle Services operating from Electronics City Metro stations (E-City Phase 1 and E-City Phase 2) covering key locations including tech parks, business hubs, and industrial areas in Electronics City. The initiative aims to provide convenient, eco-friendly, and time-efficient travel options for commuters working in E-City.

Outcome	Provides smooth last-mile connectivity from metro stations to workplaces, promotes sustainable transportation, reduces traffic congestion, and offers cost-free travel for all Electronics City commuters. The service covers major technology parks and business hubs across Electronics City, enhancing accessibility for the large workforce in the area.
Source: Electronics City Industrial Township Authority	

Increasing women's safety and mobility through industry-run shuttles supports their greater participation in industrial employment and economic empowerment. Evidence from Hyderabad's She Shuttle program shows daily ridership of up to 1,600 women commuting safely to IT and industrial hubs, substantially bridging safety gaps in the crucial first and last mile segments. Since its launch in 2015, cumulative usage has exceeded 400,000 rides, demonstrating its critical role in providing safe last-mile connectivity for working women.

Case Study 3: Hyderabad IT Corridor - She Shuttle Service	
Country & Implementing Agency	India – Society for Cyberabad Security Council (SCSC) in partnership with Cyberabad Police and Telangana State Industrial Infrastructure Corporation (TSIIC)
Year	2015–present
About the Model	The She Shuttle is a free, women-only shuttle bus service operating in Hyderabad's major IT hubs such as Madhapur, Gachibowli, and Hitech City. The service is funded via a public–private partnership with IT companies and state agencies, targeting last mile connectivity for women employees during their office hours and late evenings. Buses are equipped with CCTV, panic buttons linked to emergency apps, and staffed by female security personnel for enhanced safety. Operating from 8 a.m. to 11 p.m., it accommodates female workers adjusting to various shift schedules.
Impact	The service has cumulatively logged over 400,000 rides, with daily usage between 1,600 and 2,000 female commuters. It significantly improves perceived and real safety for women during the first and last mile, reducing reliance on unregulated, unsafe transport modes. The targeted timing and routing enable women to remain economically active and feel safe during off-peak hours, supporting workforce retention in the IT sector. The model illustrates how

	industry partnerships can effectively address gender-specific mobility constraints in peri-urban industrial corridors.
Source: Virtusa	

Industry shuttles can be scaled efficiently by reshaping regulatory frameworks, incentivizing industry participation, and mobilizing existing resources. Programs under schemes like Nirbhaya Fund demonstrate how focused safety investments and skill-building drive women's participation in transport sectors; a similar approach extended to industry shuttles can amplify benefits exponentially. The Indian bus market alone is projected to reach USD 3.22 billion by 2033 with a 3.8% CAGR, reflecting strong growth potential and infrastructure expansion that can absorb shuttle service scaling.³⁶ By facilitating partnerships between industry clusters, local governments, and transit authorities, the government can ensure shuttle services adhere to safety standards, coordinated scheduling, and affordable pricing.

- **Women-Driven First and Last Mile Services**

App-based mobility companies can significantly improve safety and inclusivity by increasing women driver participation through targeted recruitment and comprehensive safety protocols. Companies could consider implementing preferential onboarding processes, partnerships with women's organizations, and targeted recruitment campaigns to expand their female driver base. Robust safety protocols including real-time tracking, emergency response buttons, and verified driver profiles are essential for ensuring passenger security. Successful initiatives like Rapido's Pink Mobility program, which aims to create over 2 lakh women captains with potential monthly earnings up to Rs 25,000, and Sakha Consulting Wings, which has engaged over 1,000 women professional chauffeurs generating cumulative income of more than 17 crore INR, demonstrate the effectiveness of private sector leadership in creating safer, more inclusive transportation options.

Strategic partnerships with training organizations can provide comprehensive support systems for women drivers while addressing systemic barriers. Companies like Rapido have partnered with Azad Foundation and Sakha Consulting Wings to provide professional driving skills training, vehicle acquisition assistance, registration support, mentorship, and safety training for underprivileged women. These collaborations address multiple challenges women face in entering the transportation sector, from initial training to ongoing professional development.

³⁶ "India Bus Market Size, Share, Analysis and Forecast to 2033," IMARC Group, 2024.

Government investment in comprehensive training programs and regulatory frameworks can create enabling environments for women's participation in the mobility sector. Governments could consider expanding programs such as the National Capital Region Transport Corporation's driving training initiative, which provides 21-day comprehensive training programs for approximately 500 women aged 18-35, including classroom instruction, technical vehicle information, simulator practice, and controlled road training. Investment through schemes like Nirbhaya Fund, which allocated Rs. 56.06 crore for women's safety initiatives including training women for Heavy Passenger Vehicle and Light Motor Vehicle licenses, demonstrates the potential impact of targeted government support.

Case Study 4: Rapido's Pink Mobility Initiative	
Country & Implementing Agency	India, Rapido in partnership with Azad Foundation and Sakha Consulting Wings
Year	2023
About the Model	Comprehensive women driver recruitment and support program featuring the "Bike Pink" service allowing users to travel exclusively with female drivers. The initiative includes partnerships with NGOs for training underprivileged women, provision of electric bikes, and deployment at women's colleges including Ethiraj College for Women, Stella Maris College, and Queen Maris College in Chennai. The program offers flexible working hours, minimum guarantee pay, low commission rates, and insurance benefits.
Features	The Pink Mobility initiative demonstrates significant potential for women's economic empowerment and safer mobility options. Key features include expansion to 10 women's colleges in Chennai providing safer transportation options for female students, target to create a sustainable fleet of over 2 lakh women captains nationwide over three years with potential monthly earnings up to Rs 25,000, integration of environmental sustainability through provision of electric bikes to women drivers, reducing carbon footprint while creating employment opportunities.
Source: Azad Foundation Annual Report 2024-25	

Case Study 5: The "Stamp" initiative in Bengaluru, Hyderabad	
Country & Implementing Agency	India - Toyota Mobility Foundation (TMF) in partnership with World Resources Institute India (WRI India), and collaborating with city agencies (including Metro Rail Corporations in Bengaluru and Hyderabad) and local governments
Year	2017
About the Model	The STAMP Initiative is an open innovation challenge piloting scalable last-mile solutions near metro stations in cities like Bengaluru, Hyderabad, Pune, and Delhi. Led by the Toyota Mobility Foundation and WRI India, it brings together startups and public agencies to co-develop sustainable transport. Pilots include electric two- and three-wheelers, app-based rentals, and shared mobility, many equipped with GPS and panic buttons to meet city safety norms. Supported by metro and municipal authorities, STAMP shows how EV-based mobility can enhance safety and access in urban transit systems.
Impact	STAMP ran 14 pilots across six cities, led by 13 mobility startups. Over 60,000 last-mile trips were completed, saving 646,000 minutes and promoting clean, multimodal travel. Vehicle models ranged from e-scooters to shared cars, tailored to city needs. In Bengaluru, four pilots were refined via workshops with commuters and experts. Behavioral nudges were tested to boost transit use, and findings were shared with government agencies to aid policy and scaling.
Source : Toyota Mobility Foundation	

Increasing women's participation as drivers in first and last mile connectivity services shows potential for creating safer mobility options while generating employment opportunities.

Nepal's USAID Clean Air program successfully trained women from under-resourced communities to drive electric Safa tempos, with participants like Palmo Bulon reporting income comparable to overseas employment and increased financial independence.³⁷ Similarly, Dakar's electric BRT system achieved 43% women workforce participation, up from just 6% baseline, while maintaining low crime rates of 3.51 incidents per million passengers through integrated safety measures.³⁸ Evidence from Azad Foundation's Women with Wheels Program demonstrates measurable outcomes, with 511 women completing driving training and 311 (61%) entering the transport industry as professional drivers, earning average monthly

³⁷ "Meet the Women Driving Electric Public Transit Vehicles in Kathmandu." FHI 360, April 27, 2023.

³⁸ "She Drives Change: Empowering Women in Transport." World Bank, July 10, 2025.

incomes of ₹15,000.³⁹ These programs represent credible evidence for investing in women driver training, suggesting that such initiatives can deliver both employment generation and improved passenger safety when properly designed and supported.

Case Study 6: NRCTC Women's Training Programme	
Country & Implementing Agency	India , National Capital Region Transport Corporation (NCRTC), in collaboration with a the Maruti Motor Training Centre, under the aegis of the Ministry of Women & Child Development through the Nirbhaya Fund initiative.
Year	2024
About the Model	In 2024, the National Capital Region Transport Corporation (NCRTC) launched a driving training programme specifically for women in Ghaziabad, supported by the Nirbhaya Fund. The programme aimed to train women, particularly homemakers aged 18 to 35, in professional driving through a structured 21-day course. The training was divided into four key phases: classroom instruction on road safety and traffic rules, technical sessions on vehicle mechanics, simulator-based driving control, and hands-on on-road practice. The initiative also supported participants in applying for their learner's driving licenses, providing them with a stepping stone toward employment in the transport sector.
Impact	The programme successfully trained nearly 500 women, many of whom had never driven before. By equipping them with both the technical and legal tools to drive, the initiative created new pathways to employment, particularly in driving taxis, e-rickshaws, or other public transport vehicles. The programme also fostered a sense of independence and confidence among participants, contributing to women's mobility and empowerment in the region. Community engagement and awareness efforts helped ensure high participation and interest, making it a replicable model for gender-inclusive urban mobility.
Source : National Capital Region Transport Corporation	

Case Study 7: Bogotá's TransMilenio System initiative for women drivers	
Country & Implementing Agency	Colombia – Bogotá Secretaría Distrital de Movilidad (District Mobility Secretariat) and TransMilenio S.A.

³⁹ Azad Foundation. "It Takes All of Us: An Ecosystem Approach to Change - Annual Report 2024-25." August 2025.

Case Study 7: Bogotá's TransMilenio System initiative for women drivers	
Year	2018–present
About the Model	The program aims to increase the recruitment and training of female bus drivers and security personnel. Female drivers receive specialized training that includes defensive driving, passenger interaction, conflict de-escalation, and gender-sensitivity education. The program is paired with safety improvements such as enhanced lighting, CCTV coverage, and awareness campaigns against harassment in transit stations and buses. Additionally, TransMilenio has instituted women-only sections on buses and patrol groups to prevent harassment.
Features	By 2023, women comprised approximately 2.8% of TransMilenio driving staff, reflecting steady growth due to recruitment efforts, despite ongoing structural barriers. A 2021 passenger survey reported a 35% increase in perceived safety among women riding buses driven by female drivers, with many attributing reduced anxiety and greater comfort to their presence. This improvement in safety perception corresponded with a 22% rise in female evening ridership between 2019 and 2022. Security data from TransMilenio recorded an 18% decline in harassment incidents in corridors monitored as part of this initiative.
Source: TUMLE-Bus Mission	

Case Study 8: Delhi Government – Women's Auto Permit Allocation Program	
Country & Implementing Agency	India – Delhi Government (Transport Department)
Year	2010–present
About the Model	The Delhi government has reserved a significant number of auto-rickshaw permits exclusively for women drivers, aiming to increase their participation in the city's public transport sector. The initiative includes a cap on the total number of permits but guarantees a portion for women, ensuring priority and support for female applicants. This policy has led to a gradual but steady rise in the number of women auto drivers on Delhi's roads, challenging traditional gender roles and providing safer mobility options for women passengers.

Impact	The program has empowered women by granting them permits and the opportunity to become independent auto-rickshaw owners. Women drivers report greater confidence, financial independence, and the ability to set their own work schedules. The initiative also improves safety for women passengers, who feel more comfortable using services driven by women.
Source : NITI Aayog	

Case Study 9: MOWO – Women’s Driving Training for First and Last Mile Services	
Country & Implementing Agency	MOWO (Mobility for Women)
Year	2020 – present
About the Model	MOWO is a social enterprise that provides targeted driving training and skill development programs for women to become drivers for first and last mile connectivity services. The initiative focuses on empowering women with the skills, confidence, and support needed to enter the mobility sector, including training in auto-rickshaws, e-rickshaws, and other small vehicles. MOWO also offers mentorship, financial literacy, and ongoing support to ensure women drivers can sustain their livelihoods
Impact	MOWO has trained over 2,500 women in Hyderabad to drive two-wheelers and more than 200 to ride electric autorickshaws. Women trained by MOWO have secured jobs as drivers for logistics and ride-hailing platforms, earning consistent monthly incomes between ₹15,000 and ₹17,000—often providing first-time employment and a direct boost to family income. These efforts have increased safe, women-driven mobility options in urban and peri-urban areas while challenging traditional gender roles in the transport sector.
Source : MOWO	

Case Study 10: SheTaxi/E-Autopilot/Azad – Women-Driven Taxi and Auto Services	
Country & Implementing Agency	I India – SheTaxi (Kerala), E-Autopilot (Bengaluru), Azad Foundation (Delhi & other cities)
Year	2010s–present

About the Model	SheTaxi (Kerala), E-Autopilot (Bengaluru), and Azad Foundation (Delhi and other cities) provide women-driven taxi, auto-rickshaw, and ride-hailing services and training. These programs offer comprehensive training, mentorship, and ongoing support to women drivers, including vehicle ownership or leasing options. They focus on creating safe, flexible, and empowering employment opportunities for women in the transport sector
Impact	Initiatives like SheTaxi, E-Autopilot, and Azad Foundation have collectively trained thousands of women as drivers, with Azad Foundation alone supporting over 5,000 women to join the transport sector. These programs have led to safer mobility for women passengers—over 80% of whom report feeling more secure using women-driven vehicles. They have also created new employment, as many drivers earn between ₹15,000 and ₹20,000 monthly. Such efforts have increased women's economic independence and challenged traditional gender roles in urban mobility.
Source : SheTaxi , Azad Foundation	

- **Expanded Nirbhaya 2.0 Funding**

The Nirbhaya Fund's expansion to implement comprehensive mobility plans that address women's first and last-mile connectivity challenges is crucial for states. The government could consider broadening the fund's guidelines to encompass dedicated funding streams for footpath infrastructure, cycling lanes, safety audits, women driver training programs, and dedicated transport services. Current allocations primarily focus on forensic labs and emergency response services, with limited direct investment in the mobility infrastructure that women need for safe daily transportation.

Sustained funding through an expanded Nirbhaya Fund mandate can provide the financial framework necessary for implementing comprehensive first and last-mile connectivity solutions. The fund's non-lapsable corpus structure and established 60:40 funding pattern for states provides a robust mechanism for long-term investment in women's mobility infrastructure. By leveraging this proven funding framework and expanding its scope to include empowerment and mobility schemes, governments can ensure sustained support for the

safety, accessibility, and inclusivity initiatives essential for improving women's urban transportation experiences.

Case Study 11: “My Safe Bus” Pilot (Uttar Pradesh)	
Country & Implementing Agency	India – Uttar Pradesh State Road Transport Corporation (UPSRTC), supported by the Ministry of Women and Child Development under the Nirbhaya Fund scheme.
Year	2017
About the Model	The Uttar Pradesh State Road Transport Corporation (UPSRTC) implemented the “My Safe Bus” initiative using ₹83 crore from the Nirbhaya Fund to enhance the safety of women using intercity buses. The project introduced 50 air-conditioned “pink buses” with all-women staff, including drivers and conductors, on major routes. These buses were equipped with GPS tracking, three CCTV cameras per vehicle, panic buttons, onboard alarms, and automated alert systems linked to district control rooms. Additionally, a dedicated “Adi-Shakti” women’s helpline unit was set up to ensure round-the-clock emergency support.
Impact	Over 1.5 lakh women commuters benefited in the first year alone, with a marked increase in women traveling during off-peak and late hours. The project also employed over 100 women as drivers and conductor, many of whom received commercial driving training for the first time. CCTV surveillance and panic alert data led to a 40% increase in timely reporting of harassment incidents, while overall feedback from passengers showed a 60% rise in perceived safety. This pilot laid the groundwork for scaling gender-responsive public transport systems across other states.
Source : Nirbhaya Scheme	

2.2. Urban Ecosystem

2.2.1. Safety

- **Enhanced Safety Features in Vehicles**

Emergency buttons, police verification, and regular maintenance of safety equipment in first and last mile modes are crucial for passenger protection and trust in shared and informal transport. Cities could consider mandating the installation of emergency buttons and other essential safety equipment in all first and last mile vehicles, such as autos, e-rickshaws, and

shared mobility options. This could be coupled with police verification of drivers and regular monitoring to ensure that safety systems are functional and reliable.

Establishing clear inspection protocols and rapid response mechanisms can significantly enhance security and passenger confidence, especially for women and vulnerable users.

Inspection protocols could mandate monthly safety audits covering emergency button functionality, GPS tracking systems, and driver background verification, with results accessible to passengers via QR codes. Rapid response mechanisms require dedicated emergency centers with standard response times, mechanisms to contact nearest police stations, and real-time vehicle tracking to locate and assist distressed passengers immediately. Cities implementing such systems can create safer first and last mile transport options that encourage women's urban mobility.

2.2.2. Infrastructure

- **Walking Infrastructure: Building Safe and Accessible Footpaths**

Walking remains a primary means for women to access public transport stations, making safe walking infrastructure essential. Cities could consider prioritizing the development of safe, accessible footpaths to address gendered gaps in first and last-mile connectivity. Following established guidelines, such as Chennai's inclusive street design manual and replicating successful models like Bhubaneswar's Janpath Street, which allocates adequate space for both pedestrians and street vendors, can provide municipalities with practical frameworks for implementation.

Integrating inclusive design principles in footpath development can contribute to gender inclusivity while enhancing overall urban accessibility. Cities have historically been "designed to fit the needs of able-bodied men rather than that of women, girls, sexual and gender minorities, and people with disabilities constraining women's access to employment, education, and healthcare."⁴⁰ Given 45.4% women walk to work compared to 27.4% of men, footpath infrastructure must accommodate women's distinct mobility patterns characterized by trip chaining. This requires gender-responsive design elements including adequate lighting, safe crossings, and accessible infrastructure.

⁴⁰ Gerald Ollivier, Mitali Nikore, and Sarah Natasha, Toolkit for Enabling Gender Responsive Urban Mobility and Public Spaces, World Bank Group, 2022.

Case Study 12: Chennai Street Design	
Country & Implementing Agency	Corporation of Chennai
Year	2014
About the Model	Launched in 2014 by the Corporation of Chennai, this model established India's first Non-Motorized Transport (NMT) Policy, prioritizing walking and cycling. The "Complete Streets" approach focused on widening footpaths, building safe cycling lanes, and improving intersections, with at least 60% of the transport budget dedicated to non-motorized infrastructure. The model emphasized inclusivity and sustainability, aiming for continuous footpaths on 80% of streets and a 40% modal shift to walking and cycling, supported by public consultations and technical capacity-building.
Impact	The integration of gender-sensitive features in public spaces—such as safe, well-lit footpaths, public toilets designed for women's needs, and bus shelters with clear sightlines and lighting to reduce dead spaces—directly addressing women's safety concerns. These measures have contributed to 80% of women rating Chennai as a safe city, supporting greater mobility and affordability for female residents.
Source : Corporation of Chennai	

Case Study 13: Bhubaneswar Janpath Street	
Implementing Agency	Bhubaneswar Development Authority
Year	2017 (Ongoing)
About the Model	Bhubaneswar's Complete Streets approach, led by the BDA, balances road space for pedestrians, cyclists, public transport, and vehicles. The BDA has prepared Street Design Guidelines for 120 km of roads, with 40 km prioritized for phase one. Key corridors include Janpath (5.5 km), Sachivalaya Marg (9.5 km), and Bidyut Marg (5.5 km). The model features wider footpaths, cycle tracks, and improved bus services (200 new buses planned), with coordinated utility integration and a dedicated NMT network on priority road.

Case Study 13: Bhubaneswar Janpath Street

Impact	The initiative aims to reduce congestion and improve safety by redistributing road space and enhancing pedestrian and cyclist infrastructure. Implementation will create safer, more accessible environments and promote non-motorized transport, cutting pollution and improving urban mobility.
Source : Bhubaneswar Development Authority	

- **Cycling Infrastructure: Gender-Inclusive Cycling Solutions**

Cycling represents a common first and last mile mode for women which require dedicated infrastructure that addresses safety and infrastructural needs. Cities could consider implementing dedicated cycling lanes with gender-responsive design features to support women's mobility and independence. This approach can prioritize connecting key destinations such as schools, childcare centers, and commercial hubs while integrating safety enhancements including adequate lighting, clear signage, and secure end-of-trip facilities.

Engaging women's groups and community organizations in the design process can ensure cycling infrastructure meets diverse user needs and encourages greater participation. Drawing from successful examples, urban planners could incorporate community consultation throughout infrastructure development. This collaborative approach can help create cycling networks that are accessible, welcoming, and responsive to women's mobility patterns, ultimately supporting their confidence and participation in urban cycling.

Case Study 14: Bengaluru Gender-Inclusive Cycling Infrastructure

Implementing Agency	India – Directorate of Urban Land Transport (DULT), Government of Karnataka, with WRI India
Year	2021 (Ongoing)
About the Model	Bengaluru's Directorate of Urban Land Transport (DULT), with WRI India, launched city-wide initiatives like "Clean Air Street" and "Cycle Day" to promote safe, gender-inclusive cycling. The project developed dedicated, physically segregated cycle tracks with better lighting, clear signage, and secure parking. Routes connect key destinations such as schools, commercial hubs, and transit points. Women's groups and local communities were actively consulted to ensure the design addresses women's safety, comfort, and accessibility needs.

Case Study 14: Bengaluru Gender-Inclusive Cycling Infrastructure

Impact	The initiative has led to increased participation of women in cycling, particularly as a first and last mile mode. Surveys and feedback indicate that women feel safer and more confident using the new infrastructure, with a notable reduction in reported incidents of harassment and unsafe conditions. The project has also contributed to a modal shift towards non-motorized transport, reduced congestion, and improved air quality.
Source : WRI India	

- **Dedicated Pick-up and Drop-off Points**

Integrated design of transit points with dedicated safe connectivity zones significantly improves safety and accessibility for public transportation systems. The Institute for Transportation and Development Policy's TOD (Transit-Oriented Development) Standard framework, which evaluates transit connectivity using a 100-point scoring system across eight core principles including walkability and safety, demonstrates clear benefits of integrated design. Case studies show that sites with integrated design from initial planning scored 32 points higher than retrofitted sites and achieved 100% safe crosswalk coverage compared to 40-60% in conventional designs. High-performing examples like Pune's Yerwada and Ahmedabad's Gupta Nagar demonstrate that embedding pick-up and drop-off points within station premises from the planning stage, combined with dedicated pathways for pedestrians and cyclists, creates measurably safer and more accessible transit environments.⁴¹ Transit authorities could prioritize this integrated approach over retrofitting, as it delivers improved connectivity outcomes.

⁴¹ Mason, Jacob, Jonas Hagen, Iwona Alfred, Rutul Joshi, Sonal Shah, Pranjali Deshpande, Gashaw Aberra, et al. "Transit-Oriented Development Case Studies Report: An Assessment of Six Settlements and Interventions in East Africa and India." Institute for Transportation and Development Policy, December 2021.

3. Conclusion

First and last mile connectivity segments impose a disproportionate burden on women that systematically undermines investments in urban transport infrastructure and limits women's economic participation. Despite significant policy interventions, including fare-free schemes and gender-inclusive metro systems, women continue to face structural barriers that force them to navigate unsafe, expensive, and unreliable connectivity segments. The evidence from field consultations with women domestic workers, industrial workers, and students in Bhubaneswar confirms that connectivity challenges persist as the weakest link in women's mobility chains, undermining the effectiveness of broader transport investments.

Women bear a hidden "pink tax" across multiple dimensions of first and last mile travel while confronting persistent safety vulnerabilities that compound their mobility constraints. This tax manifests through systematic price discrimination in auto-rickshaw fares, premium pricing for perceived safer transport options, and opportunity costs when women restrict their travel patterns due to safety concerns. Simultaneously, poorly lit pathways, unmonitored transition zones between transport modes, and inadequate security presence create systematic safety risks that force women to alter their travel behavior, often choosing more expensive alternatives or avoiding travel entirely during vulnerable hours.

Coordinated, multi-stakeholder interventions that prioritize safety, gender inclusion, and comprehensive infrastructure are essential for creating equitable and sustainable urban mobility for all, especially women. To overcome these barriers, coordinated efforts must transform transit stations into secure, integrated mobility hubs, expand women's roles as drivers and security staff, and extend safety infrastructure beyond main transit points. Cities should establish multi-stakeholder coordination and mandate gender impact assessments for all transport projects. Successful examples like Bengaluru's multimodal integration, Delhi's women-centric amenities, and Kerala's She Taxi show that comprehensive, inclusive approaches make sustainable, accessible urban mobility achievable for all.