SAFER STREETS, SAFER CITIES IN BIHAR

Street design guidelines to mainstream women’s mobility and access

#2020WTACONFERENCE
Aim

To identify the transportation issues faced by women in urban areas of Bihar and how they effect women’s choices regarding economic and social opportunities.

Bihar has the lowest female LFPR in the country
(F: 6.9%; M: 69%, 2017-18)
What does the primary survey indicate?

Sample size

1,974
(50% women)
Travel Behavior

- Women make 37% fewer trips than men
- No gender difference for education trip distances
- Women workers travel 45% shorter distances (3.45km) than men
- Time on household work: F: M students: 2:1
- Time on household work: F: M workers: 4:1

Reasons for foregone opportunities due to transportation

[Bar chart showing reasons for foregone opportunities due to transportation]

Travel modes (L) and travel modes by sex (R)

[Pie chart showing travel modes by sex]

[Bar chart showing travel modes and their percentages by sex]
Key issues

• Women’s mobility is invisible in mobility plans, as they do not report travel behaviour by sex, do not include household/care trips, sexual harassment faced or perception of unsafety; undercount walking trips

• 1/4\textsuperscript{th} women have faced sexual harassment while commuting: staring, lewd comments and stalking. More than 3/4\textsuperscript{th} incidents are on streets

• **Walking** is 40\% of all trips, yet <15\% of the ROW is allocated for footpaths. Rash driving, waterlogging, absent/ insufficient and discontinuous footpaths, lighting are major concerns

• **Safer streets in the night** are a cause for concern: deserted/ secluded streets, street lighting, fear of thefts, groups of men standing at corners are a concern for women
Street Design Guidelines
Principles

Safety and Security

Universal Accessibility

Mobility & proximity of care

Environmental Sustainability

Informal Economy

Behavior Change

Efficiency
**Street network**

- **Major Streets**: Serve a mobility function and cater to city-level travel, provide high frequency public transport services and mass rapid transit.

- **Intermediate Streets**: Connect multiple neighborhoods and acts as feeder roads to the major roads, provide frequent public transport services.

- **Local Streets**: Provide property access; designed for traffic calmed streets with pedestrian priority.

- **Non-motorized transport Streets**: Pedestrian only, pedestrian and cycling-priority streets.
Land use and transport integration

Amenities within 5 minutes walking distance

- Anganwadi
- Secondary school
- Community hall/library
- Local market
- Dispensary
- Neighborhood park
- Public transport
- Integrated school
- Nursing home/poly clinic
- Community park
- Recreation club
- College
- University
- Convention center
- Religious center
- Hospital
- District park
- Working women's hostel
Street elements:
- Compound wall
- IPT stands
- Bollards
- Bus shelter
- Seating
- Utility box
- Parking
- Street Light
- Footpath
- Dustbins
- Cycle track
- Crossing
- Median
- Vending space
- Trees
- Property access
Footpaths

Zones within a footpath

- **Frontage zone**
- **Walking zone**
- **Multi-utility zone**

- **Residential area**
- **Commercial area**
- **High intensity area**
Footpaths

Unobstructed

Utilities, furniture & street vending space in MUZ

Continuous and accessible

Pedestrian ramp- 1:15

Vehicular ramp- 1:8

Safety and thermal comfort

Street light & shade
Cycle tracks

2m: Single lane
2.5m: Two lanes, same direction
3.0m: Two lanes, two way

Dedicated space and demarcation
Continuous at intersection
Buffer between cycle track & carriageway
To increase women and girls’ mode share in cycling, the following initiatives are recommended:

- Enable access to bicycles in urban areas by expanding schemes such as Mukhyamantri Balika Cycle Yojana to urban areas.
- In public bicycling schemes, reduce registration fee, enable text message-based registration and usage, locate stands in areas visited by women and girls. Cycle stands and surrounding areas must be safe and well lit.
- Training for women and girls to learn bicycling, maintenance and repair of bicycles.
- Redesign bicycles so that bags and other carry-ons can be kept.
Street lighting

Streetlights can be staggered with trees to avoid dark spots.

Streetlights must be spaced to prevent dark spots or over illumination.

<table>
<thead>
<tr>
<th>Street type</th>
<th>Pole height</th>
<th>Pole spacing</th>
<th>Street Element</th>
<th>Lux levels</th>
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</thead>
<tbody>
<tr>
<td>Footpath or cycle track</td>
<td>4-6</td>
<td>11-16</td>
<td>Footpath or cycle track</td>
<td>30-40</td>
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<tr>
<td>Access streets</td>
<td>8-10</td>
<td>22-28</td>
<td>Carriageway</td>
<td>30-40</td>
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<tr>
<td>Major, intermediate streets</td>
<td>10-12</td>
<td>28-33</td>
<td>Intersection</td>
<td>50</td>
</tr>
</tbody>
</table>
Bus stops

1. Transparent panel
2. Lighting
3. Priority seating
4. Signage
   4A: Bus stop name and schedule
   4B: PIS board
   4C: Map of surrounding area
   4D: Helpline numbers and gender positive images, space for advertisements.
5. Vendors
6. Dustbins
7. Low compound wall
8. Additional seating
9. Guard rail
IPT Stands

1. Transparency
2. Lighting
3. Vendors
4. Signage
   4A: IPT routes and stops
   4B: Route maps
   4C: Helpline numbers
   4D: Gender positive images along with space for advertisements
5. Dustbins
6. Curb
Street Vendors

Located within MUZ
Provision of infrastructure
Designated space for female vendors
Liminal spaces

Street vending permitted on footpaths, except “No vending areas”. NVAs be created after the approval of the Town Vending Committee.
Compound walls
Public toilets & Nursing rooms

- 5-minute-walk from public and intermediate public transport stops
- Designed to reduce operating costs e.g. use of solar panels, water recycling, advertisement, minimal user fee etc.
- Safe and well lit access
- Mobile toilets from old buses
Blind corners and dead spaces

Clear sightlines  Surveillance  Visibility  Gender violence map
Behavior change

Zero tolerance to sexual harassment

Posters used in Edmonton Transit's Safe Ride campaign

Gender etiquette

Sticker used by Madrid Transportation Authority to stop manspreading
Encourage women to report

Behaviour change

Gender positive advertisements
Role of police

- Gender sensitization training to police
- Female police patrols in the night
- Train Nirbhaya volunteers
- Community Police initiatives to build a relationship between the community and the police
- Mahila police volunteers to raise awareness among of the existing schemes available for women and children
- Street vendors as Street Marshals
Study area
- Defined as area within 50m on either side of an intersection

Total station survey

Reconnaissance survey
- Photo documentation
- Overall understanding of the study area

Secondary data review
- Future proposals
- Mapping organizations

Activity mapping
- Transportation counts
- Parking survey
- Participatory assessments

Identification of issues

Street Design Process
Street Design Process

Concept Plan → Pilot Testing → Final Design → Detailed design and construction drawings → Implementation and monitoring

Feedback and constructions:
- Gender, transport and urban design experts
- NGOs and CSOs
- Unions and associations

Review by experts
Street Design Cell

Core Team

- Urban Designer
  Experience: 7-8 years
- Traffic Engineer
  Experience: 5-7 years
- Utilities Engineer
  Experience: 5-7 years
- Transportation Engineer
  Experience: 5-7 years

Experts

- Gender and Street Design expert
  Experience: 10-12 years
- Universal Accessibility Expert
  Experience: 10-12 years
- Landscape Architect
  Experience: 10-12 years

Communications Associate
Experience: 2-3 years
Draftspersons (2)
Experience: 2-3 years

At least 1/3rd female staff
THANK YOU

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