Mobility in Urban India – challenges for equity and innovation

Anvita Arora, PhD
CEO and Director, Innovative Transport Solutions, TBIU, IIT Delhi

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The Old and the New
No. Of Cities

<table>
<thead>
<tr>
<th>Town</th>
<th>&lt; 1</th>
<th>1-5 lakh</th>
<th>5-10 lakh</th>
<th>10-20 lakh</th>
<th>20-50 lakh</th>
<th>50-100 lakh</th>
<th>1 crore</th>
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<tbody>
<tr>
<td>A &amp; B</td>
<td>147</td>
<td>177</td>
<td>5-10</td>
<td>28</td>
<td>20</td>
<td>6</td>
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</table>
Modal shares in different city sizes (RITES, 1998)

City size

- walk
- Rick-shaw
- Cycle
- Public Transport
- Three
- MTW

Threat to sustainable scenario: Increasing car and MTW trips
Mobility patterns

Vehicle ownership

Bicycle = 35 - 60 %
2-wheeler = 32 - 55%
4-wheeler = 2 - 8 %
None = 25 - 35 %
Source: Census of India 2001

Modal Share

Medium and small cities – 20-25%
Large cities – 7-15%

Trends in cycle modal share

Sharp decline during 80’s-90’s
– Fast growth of motorized vehicles,
– Road infrastructure improvements
– High cycle fatalities

Cyclists are vulnerable
~40% road traffic crash victims
45% = no vehicle
17% cycle trips in Delhi
35% households own a bicycle

Vehicular trips Delhi 2007-08

Vehicle Ownership Delhi (2008)
Transport Modes of the Urban Poor

Modal Share for the poor - Delhi

- Walk: 77%
- Cycle: 4%
- Rickshaw: 6%
- Bus: 8%
- Others: 5%

Modal Share for the poor - Mumbai

- Walk: 61%
- Train: 16%
- Cycle: 6%
- Bus: 14%
- Others: 3%
Patna
Rickshaw policies?
Hyderabad Lucknow
Two wheelers/three wheelers?

Pedestrians, Cyclists
Cycle rickshaws
3W auto rickshaws
Public Transport

Rickshaws, cycles peds?
Patna
Rickshaw policies?
Hyderabad Lucknow
Two wheelers/three wheelers?

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Public Transport

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Patna
Rickshaw policies?
Hyderabad Lucknow
Two wheelers/three wheelers?
What are we doing with our cities

Problems — congestion, pollution, accidents

Solution — road widening, inc. road length, flyovers, parking

Result — increased pvt. MV, no space for NMV
Everybody walks... but where?
Who is cycling?
Public Transport - Cycle rickshaws
Public Transport - auto rickshaw
Where are they on the road?
Who are they in conflict with?
Designing for Indian Cities

Cycling Inclusive Planning and Design Manual for the Indian Sub continent

a : Total room for sideways movement while riding (from tyre edge)
b : Total room for fear of obstacles 0-5cm high (from tyre edge) width with rider
c : Total room for fear of obstacles regarding curbstone 5-15cm high (from tyre edge)
d : Total room for fear of obstacles regarding fixed objects like poles & bollards (from body)
e : Total room for fear of obstacles regarding closed walls (from body edge)
Arterial Road (ROW 24 to 80m)

d a b c e

Distributionary Road (ROW 12 to 30m)

d

a f b e

a: footpath (width: 1.7-5.5m; height: 0.1-0.2m)
b: cycle track (width: 2.0 - 4.0m; height: 0.05-0.09m)
c: tree belt/swaile (desirable width 1.5m; chamber to drain)
d: Hawkers Space (minimum width 1.5m)
e: carriage way (minimum 2 lanes in each direction)
f: Off-street Parallel Parking (minimum width 2.0m)
CASE STUDIES

• Equitable allocation of urban road space
• Traditional mobility modes – solutions for sustainability
Equitable reallocation of road space

Case Study: MCD Civic centre and Shahjahanabad – INTACH and iTrans
When MCD’s Civic Centre starts functioning, an estimated **11,000 person trips** * will be added to the existing numbers.

In view of the projected increase in traffic volumes, MCD proposes to retrofit the roads in the precinct to cater to the additional traffic volume.

The initial Traffic Circulation Plan was characterized by flyovers, roads with multi-MV lanes, subways & underground travelators. Once constructed, it would forever change the urbanscape of this area.
Existing Modal Split

<table>
<thead>
<tr>
<th>Road</th>
<th>Number of Passengers</th>
<th>Source</th>
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</thead>
<tbody>
<tr>
<td>JLN Marg</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>Asaf Ali Marg</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Tagore Road</td>
<td>42%</td>
<td></td>
</tr>
<tr>
<td>DDU Marg</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>Minto Road</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td>Bhavbhuti Marg</td>
<td>28%</td>
<td></td>
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As part of the **Study and Analysis** of the site, we commissioned extensive and detailed **ACTIVITY SURVEYS** to map all informal activities, users and functions on the existing ROWS.
As part of its Urban Design Proposal to Integrate the Walled City of Shahjahanabad with New Delhi, we aimed to create urban spaces that are inclusive and respect the right of all people, including women, to live, work and move around without fear or difficulty.

We collaborated with JAGORI
- Conducted a survey of approx 500 women using methodological tools of safety audits.
- Identified the areas that are have a high volume of women users.
- Identified the areas where women face sexual harassment
Sample Audit

Areas frequented by Women Users

1. GOVT. MATERNTITY HOSPITAL
2. POLICE STATION CRIME AGAINST WOMEN CELL
3. ZAKIR HUSSAIN COLLEGE
4. MATA SUNDARI COLLEGE
5. GB PANT HOSPITAL
6. PG WOMENS HOSTEL
7. NURSES HOSTEL
8. GIRLS SCHOOL
Sample Audit

Areas identified as unsafe for Women

1. GB PANT HOSPITAL
2. BUS STOP
3. ROAD TO ZAKIR HUSSAIN COLLEGE FROM DELHI GATE
4. METRO STATION
5. RAILWAY STATION
6. MINTO ROAD TERMINUS AND MARKET
7. TAGORE ROAD HOSTEL
Sample Analysis

I S S U E S to be addressed by planning and design

- Lack of signage, leading to confusion and feeling of insecurity
- In sensitive design of male urinals
- Lack of toilets for women
- Pavements encroached upon, lack of proper pavements
- Poor maintenance of public open spaces
- Lack of parking space for private vehicles and rickshaws
- Lack of police vigilance and sense of insecurity (Subway is not used by anyone)
- Lack of pause points/waiting spaces
Principles of re-allocation

Streets are valuable public spaces as well as movement corridors. The Design of Streets is therefore a function of the Street Hierarchy and Adjacent Landuses.

Proposed section of existing ROW is based on principles of equity... which provides for all users:

**Footpaths** - barrier free movement for pedestrians

**Activity Zone** - hawkers, kiosks, NMV

**On Grade segregation of traffic**
- Dedicated NMVs lanes
- Segregated Bus lanes
- Segregated MV lanes

**Traffic Management by:**
- Modern signal systems
- Better signage

**Additional Features**
- Efficient Lighting Design
- Landscaping
- Street Furniture
List of Stakeholders

1. CYCLERIK KSHAWS
2. AUTORIK KSHAWS
3. NMV
4. HAWKERS
5. PERMANENT KIOSKS
6. LMV
7. PEDESTRIANS

Steps to accommodate the functional requirements –

- Dedicated cyclerikshaw/ autorikshaw stands.
- Multiutility zone for kiosks.
- Defined activity zones along the nodes and stretch for hawkers.
- Dedicated LMV parking and cyclerikshaw service yard at the proposed bus terminus site.
- Dedicated car parking lots within the site.
- Clear pedestrian walkways along all stretches.
- Dedicated lanes for NMV.
Streets being retrofitted giving equal or higher priority for various stakeholders – Pedestrians, NMV, Hawkers.

For the purpose of Safety and Comfort, as per the sample gender safety audit, following norms should be followed.

**Toilet**
- Spacing – 500-800 m
- Location – Near Bus Stops/Metro Stations/Important Landuse Activities
- Design – Disable friendly, Separate Entry/Exit for Ladies/Gents

**Kiosk/Hawker**
- Location – Near Bus Stops/Metro Stations/Important Landuse Activities/Landmarks (offices, institutions)/street intersections
- Design – Mobile/Permanent in nature, Variable sizes - 6’x4’, 5’x7’, 10’x10’ sizes
Provide at grade crosswalks/ ramps aligned with the street/pedestrian walkways and signal crossings connecting land use activities.

By addressing issues such as:
• Natural storm water management
• Ground water infiltration
• Excessive heat reflection

With the help for provision of:
• Increased plantation
• Use of heat absorbent material for paving

use of trees to minimize solar gain

Permeable paving

Anti-reflective paving material

Filtration bed

Green belt
At Grade Separation – 36m ROW.
- Dedicated Bus lanes at centre.
- Two lane one way for MV.
- Two way separate lane for NMV on the side of civic centre, hospitals, institutions.
- Wide pedestrian paths on both sides.
- Activity zone - dedicated space allocated for Kiosks/Hawkers, parking, landscaping.
Proposed Pedestrian Walkway connecting NDRS to MCD Civic Centre

Ramp down for direct pedestrian access to Civic Centre

Side path for going towards the Minto Road

Pedestrian Walkway with platforms on the sides for Hawkers
Proposed Pedestrian Walkway connecting NDRS to MCD Civic Centre

Central Sitting Space/ Amphitheatre
Key Plan

Existing Character

Description
- 36m ROW
- Connects ITO (Tilak Bridge) to C P

Major markers
- New Delhi Railway line
- Residential Housing
- Institutional plots

Note: Underutilized ROW
Possibility of making it a secondary east-west corridor
At Grade Separation – 36m ROW.

- Dedicated Bus lanes at centre.
- Two way, Two lane for MV.
- One way in each direction Separate lanes for NMV.
- Wide pedestrian paths -both sides.
- Activity Zone for Kiosks/Hawkers.
Maharaja Ranjeet Singh Marg

- At Grade Separation
- 30 m ROW.
- Two way in each direction for M.V traffic
- Two way in each direction Separate lanes for NMV.
- Wide pedestrian paths on both sides.
- Space allocated for Kiosk/Hawkers
Key Plan

**Existing Character**

**Description**
- ROW 25 m -30 m

**Major markers**
- 3 Heritage Gates
- Kamla market
- Ramlila Ground
- MCD Office and parking
- Commercial buildings

**Character**
- Non Motorized Traffic

**Constraints/Features**
- Existing Trees on median
- Mosque
- Bird Feeding at Hamdard Chowk and Delhi Gate
At Grade Separation - 29.4 m ROW.
- Existing Trees and Services to be retained.
- Two way, Two lane each direction for MV.
- No NMVs plying on Asaf Ali Road.
- Adequate pedestrian paths on both sides.
- Dedicated Tram track.
- Activity Zone designed along with existing conditions.
Proposed Asaf Ali Road
Proposed Asaf Ali Road

Table Top Pedestrian Crossway

Temporary Hawkers
Off street car and auto rickshaw parking area along the road
Proposed Asaf Ali Road

Activity Zone
Asaf Ali Road

- At Grade Separation - 15m ROW.
- Two way, One and a half lane in each direction for MV.
- No NMVs
- Adequate pedestrian paths on both sides.
- Dedicated tram track.
Traditional mobility modes – solutions for sustainability

Case study – Eco Cabs in Fazilka
Fazilka!

Dial-a-rickshaw service with call centre and new designs of rickshaws, now being replicated in many cities of Punjab!
Benefits Ecocab- To Society

• Organized Intermediate Public Transport System at affordable price
• Saving of daily 900 litre of fuel from burning along saving of 14500kg fresh air required to burn that fuel
• Better law and order in the city-employment
• Quality Ecocab service with modern ergonomically designed Ecocabs.
• Another better option for residents as emergency healthcare facility like ambulance
• Facilitation for visitors and tourists of the city
Benefits Ecocab- to Traction Men

- Social Upliftment-Instant Livelihood
- Free Accidental Insurance upto Rs 50,000/-
- Free health checkup and consultation at leading private hospitals
- Additional revenue through increased latent demand in Ecocab ridership and advertisement
- Free education for family members of traction men.
- Micro Credit and finance schemes by the leading banks
Fazilka Ecocab

Graduates Welfare Association Fazilka, 2011
Patiala Green Cabs

The Patiala Foundation Initiative
Move to introduce eco-cabs in more districts

Express News Service

Posted: Sat Mar 26 2011,

Chandigarh

Having received a ‘good’ response from the public at large and from rickshaw pullers in Amritsar, Punjab Chief Secretary has written to all Deputy Commissioners (DC) of the state asking them to explore the possibility of introducing eco-rickshaw cabs in other districts as well. An affidavit to this effect was produced by Deputy Advocate General, Punjab Sudeepti Sharma. Filed by Hussan Lal, IAS, Secretary Tourism and Cultural Affairs, Punjab.

The affidavit reads: “The Department of Tourism is in agreement with the report on Eco rickshaw cabs by Deputy Commissioner, Amritsar and DC, Ferozepur and suggested that it shall be in public interest if these eco rickshaw cabs are introduced in other districts as well. In view of the report from DC, Amritsar, the Chief Secretary, Punjab has written to all the other DCs for exploring the possibility of implementing this project in other districts as well.”

THANK YOU

Credit: AMC, CEPT, ITDP