# TRANSPORT SYSTEMS FOR SLUM DWELLERS

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SPA DELHI

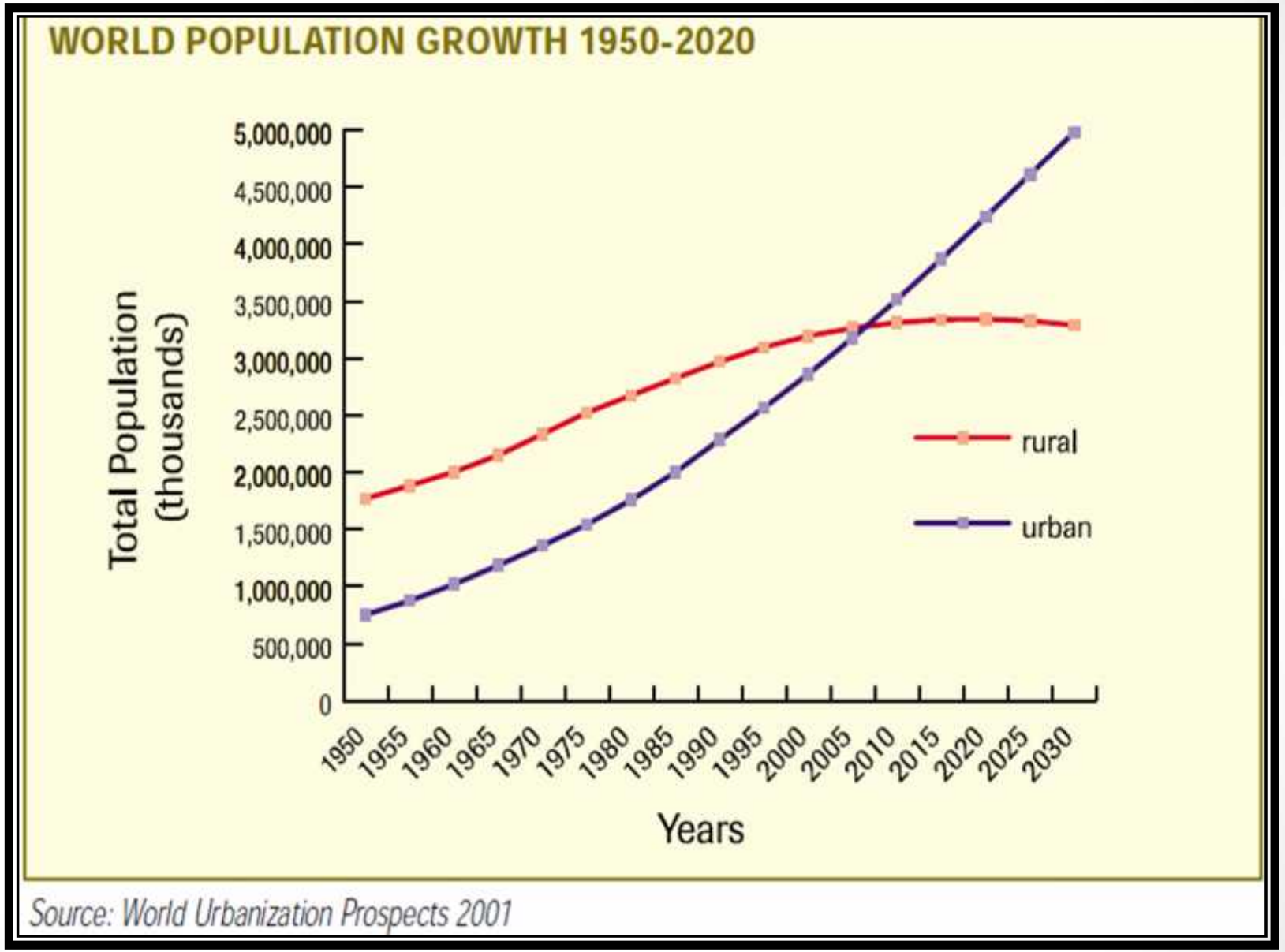
# INTRODUCTION

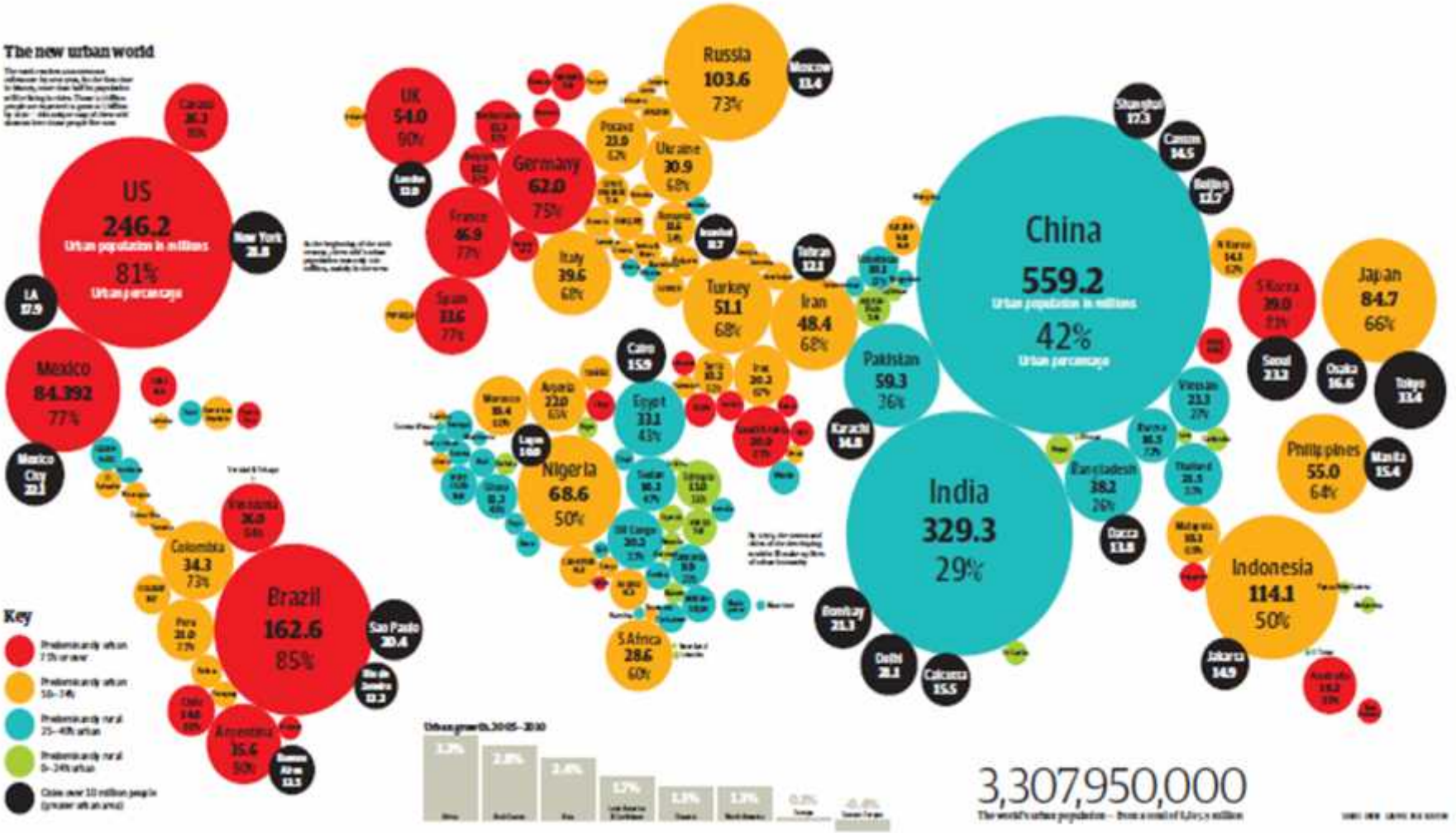
*"An estimated one-third of all urban residents live in informal settlements or slums—the vast majority in developing countries. Slum dwellers also often face more subtle disadvantages such as poor integration with the rest of the city and the social stigma attached to an inferior residential location."*

•This study attempts to find out whether this occupational mobility is also observed in case of an urban slum dweller who migrates from his native place in search of earning opportunity, with a hope to improve his livelihood condition, and earn more than that he is earning at his native place.

•Physical immobility to move from dwelling units for work is also examined in this research paper. The study is based on Household survey conducted in five appropriately selected slums in Delhi, which represent the slum population of Delhi.

# World Scenario

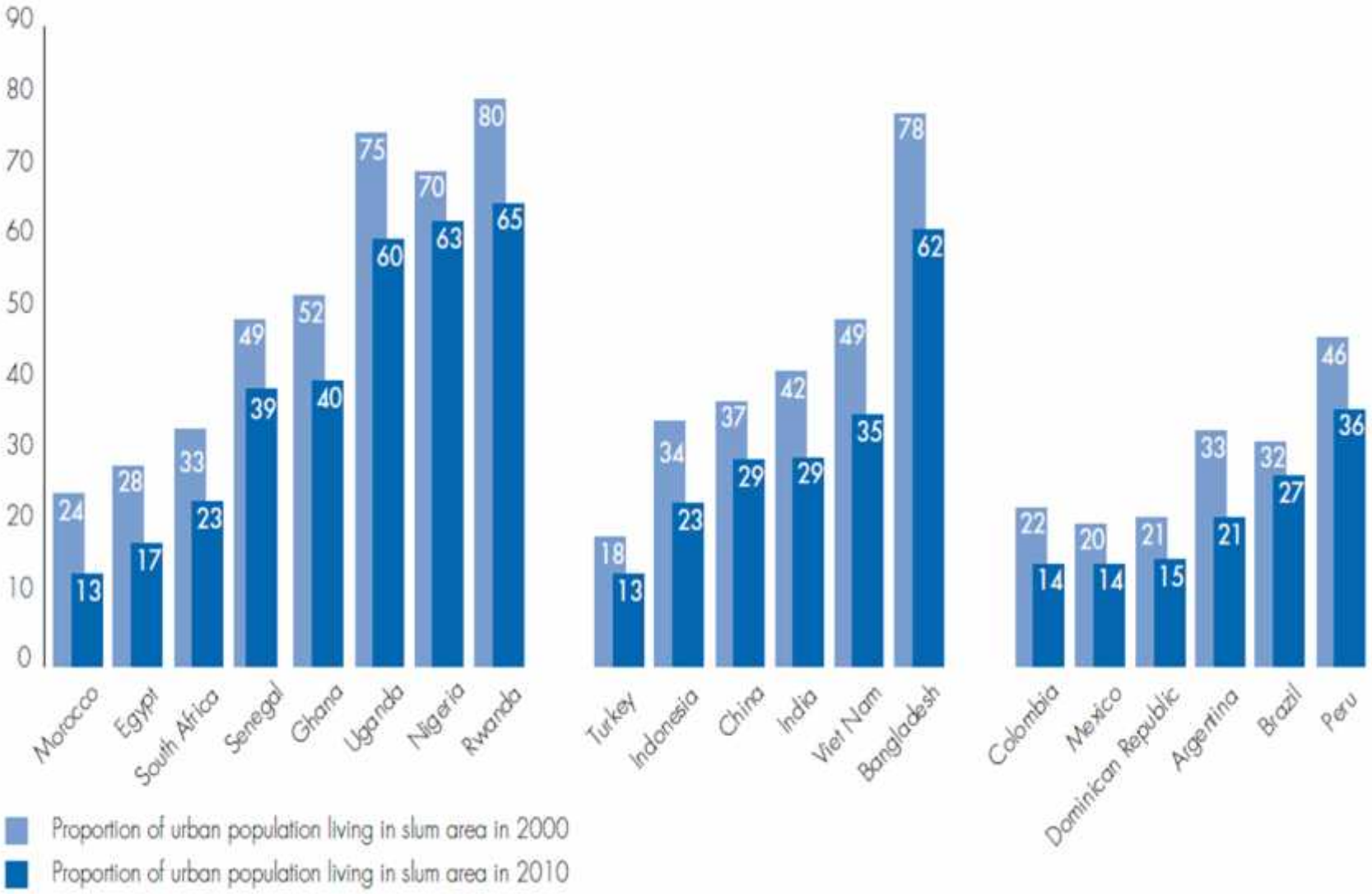

WORLD POPULATION GROWTH 1950-2020
Total Population (thousands)
5,000,000
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
Years
rural
urban
Source: World Urbanization Prospects 2001


The new urban world
US
246.2
Urban population in millions
81%
Urban percentage
Mexico
84.392
77%
Brazil
162.6
85%
Colombia
34.3
73%
Argentina
35.6
90%
Russia
103.6
73%
Moscow
13.4
UK
54.0
90%
Germany
62.0
75%
France
46.9
77%
Spain
33.6
77%
Italy
39.6
68%
Poland
23.9
62%
Ukraine
30.9
68%
Turkey
51.1
68%
Iran
48.4
68%
Tehran
12.1
Egypt
33.1
43%
Cairo
15.9
Algeria
22.0
65%
Nigeria
68.6
50%
Lagos
10.9
S.Africa
28.6
60%
Pakistan
59.3
36%
Karachi
14.8
China
559.2
Urban population in millions
42%
Urban percentage
Shanghai
17.3
Beijing
12.7
Japan
84.7
66%
Tokyo
33.4
Osaka
16.6
S.Korea
39.0
73%
Seoul
23.2
India
329.3
29%
Bombay
21.3
Delhi
21.1
Calcutta
15.5
Bangladesh
38.2
26%
Dacca
13.8
Indonesia
114.1
50%
Jakarta
14.9
Philippines
55.0
64%
Manila
15.4
Key
Predominantly urban 75% or more
Predominantly urban 50–74%
Predominantly rural 25–49% urban
Predominantly rural 0–24% urban
Cities over 10 million people (greater urban area)
3,307,950,000
The world's urban population – from a total of 6,915.5 million

# BASIC NEEDS FULFILLED (SLUM DWELLERS WORLDWIDE)

| Sub-region | Urban Population (%) | % of Urban Classified Slum | Population with Lack of Improved water (%) | Population with lack of improved water | Population with lack of improved sanitation (%) | Population with lack of improved sanitation |
|---|---|---|---|---|---|---|
| Northern Africa | 52 | 28.2 | 3.8 | 2,87,633 | 19.12 | 14,47,250 |
| Sub-Saharan Africa | 34.6 | 71.9 | 18.1 | 41,82,041 | 56.7 | 1,31,00,648 |
| Latin America and Caribbean | 75.8 | 31.9 | 7.2 | 28,75,572 | 19.7 | 78,67,884 |
| Eastern Asia | 39.1 | 36.4 | 5.6 | 1,59,263 | 32.7 | 1,74,35,051 |
| Eastern Asia (excluding China) | 77.1 | 25.4 | 2.6 | 31,22,139 | 23.8 | 14,57,869 |
| South-central Asia | 30 | 58 | 6.9 | 20,28,540 | 34.3 | 1,55,20,201 |
| South-eastern Asia | 38.3 | 28 | 10 | 11,36,981 | 14.6 | 29,61,688 |
| Western Asia | 64.9 | 33.1 | 9.1 | 37,296 | 18.2 | 22,73,962 |
| Oceania (excluding New Zealand and Australia) | 26.7 | 24.1 | 18 | 1,68,15,285 | 9.5 | 19,684 |
| Total | 40.9 | 43 | 8.3 | | | |
| World | 47.7 | 31.6 | | | | |

**Proportion of urban population living in slums in selected top-performing countries, 2000 and 2010 (Percentage)**



# Best Practices Worldwide

# VAN TRANSIT SYSTEM

**Place:** Bangkok, Thailand

**Organisation:** Bangkok Metropolitan Region (BMR) Authority

**Year of Establishment:** 2004

**Concept:**

- The Vans used to offer transportation service have a seating capacity of 12 persons.
- These vans operate on public streets as well as on mixed traffic expressways.

# CYCLE TAXI

**Place:** Malaba, Kenya ( Popular in Africa and Uganda)

**Year of Establishment:** 1960's

The bicyclet axis (boda-bodas) are enhancing mobility in the East African countries by providing a low-cost transportation option to People

- Boda-bodas are faster and environment friendly
- Bicycle taxis have helped in enhancing the socio-economic condition of the boda-boda drivers

# ALWAR VAHINI

**Place:** Alwar, Rajasthan, India

**Organisation:** Regional Transport Office (RTO), Punjab National Bank, Urban Improvement Trust (UIT) Alwar, UIT Bhiwadi, and Deputy Registrar Co-operatives

**Year of Establishment:** 3rd December 2011

- Public transport service in the form of minivans with a seating capacity of 8 Persons
- Zero direct investment by the government in establishing the public transport system
- Replacement of older polluting fleet by new Euro IV compliant vehicles

# METRO-CABLE PROJECT IN CARACAS

Providing physical connectivity to ranchos/slums and improving local socio-economic prospects Metro-cable Project in Caracas
Place: Caracas, Venezuela

- Provision of public transport connectivity to ranchos Community involvement.
- Minimum demolition and rehabilitation during construction of public transport infrastructure.
- Development of social infrastructure around the stations.

# METROCABLE

World's first modern urban aerial cable-car public transport system connecting the low income settlements in Medellin

**Location**: Medellin, Colombia

•Pro-poor planning of public transport system

•Up gradation of social infrastructure along the public transport Corridors

•Community participation

•Increase in the ridership of subway

# BRT-Lite

A formal transport system catering to the urban poor and low income groups in Lago

Place: Lagos, Nigeria

**Key Features:**

•Africa's first BRT system

•Cheaper to construct than conventional BRT system

•Cheaper fares than alternatives modes of travel

# CYCLING OUT OF POVERTY (COOP)

•An Africa-wide initiative to promote bicycling as a pro-poor mobility option

Location: Africa

•An Africa-wide initiative to promote bicycling as a pro-poor mobility option

Location: Africa

**Key Points:**

•Promoting bicycle as a tool to move out of poverty

•Improving access to basic socio-economic services & facilities- work, school, healthcare centres, etc.

•Bicycle design modifications customized to meet business needs and local conditions

# Indian Scenario

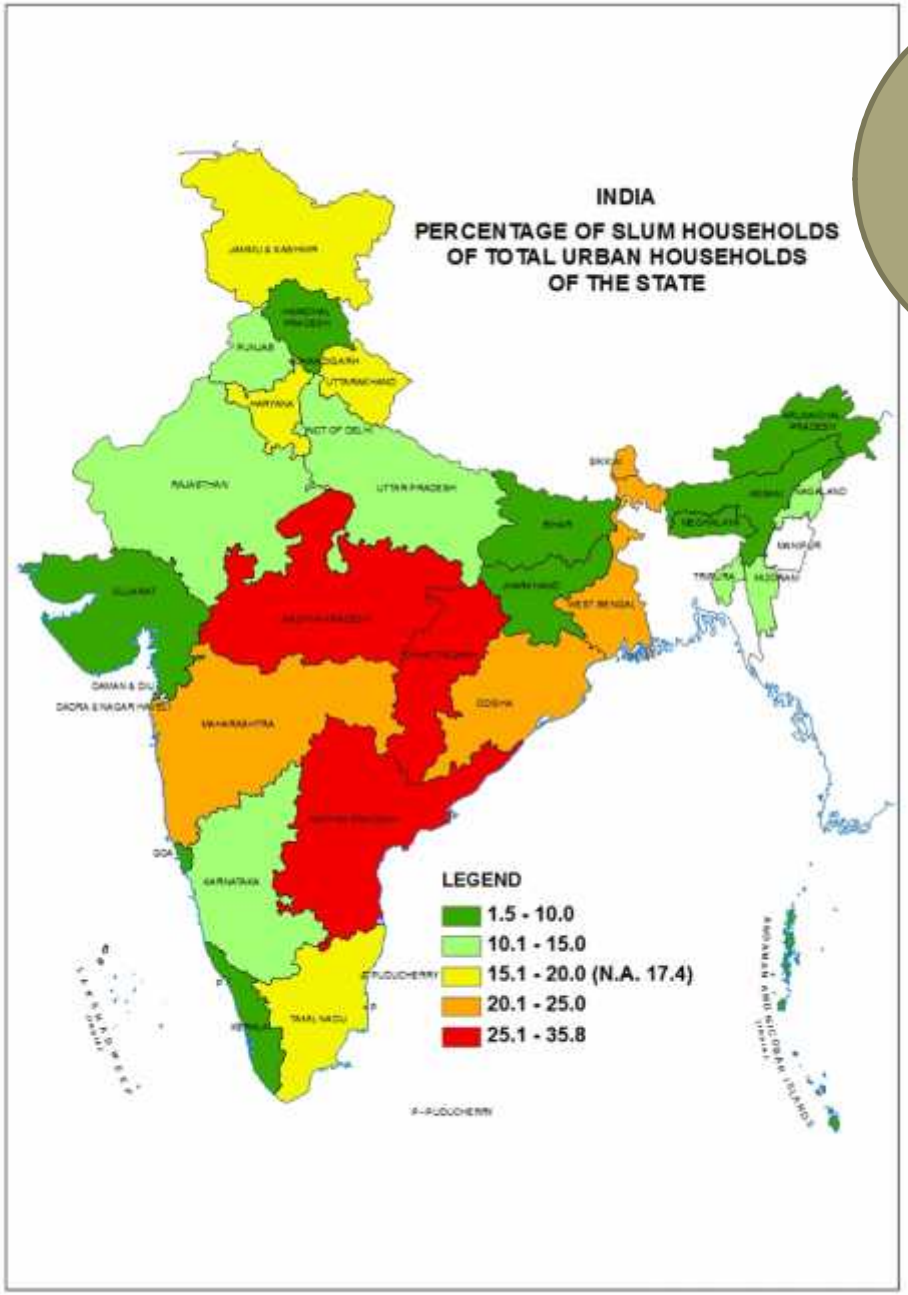
## Table D: State-wise projected slum population from 2011 to 2017 (in millions)

| State | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|
| Andaman & Nicobar Islands | 0.034 | 0.035 | 0.037 | 0.038 | 0.040 | 0.041 | 0.043 |
| Andhra Pradesh | 8.188 | 8.273 | 8.357 | 8.440 | 8.522 | 8.603 | 8.681 |
| Arunachal Pradesh | 0.098 | 0.103 | 0.109 | 0.114 | 0.120 | 0.126 | 0.131 |
| Assam | 1.071 | 1.100 | 1.130 | 1.160 | 1.191 | 1.222 | 1.254 |
| Bihar | 1.684 | 1.707 | 1.730 | 1.753 | 1.774 | 1.796 | 1.817 |
| Chandigarh | 0.332 | 0.349 | 0.365 | 0.382 | 0.397 | 0.411 | 0.430 |
| Chhattisgarh | 2.112 | 2.169 | 2.228 | 2.288 | 2.348 | 2.410 | 2.471 |
| Dadar & Nagar Haveli | 0.026 | 0.029 | 0.032 | 0.034 | 0.037 | 0.040 | 0.043 |
| Daman & Diu | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.010 | 0.010 |
| Delhi | 3.163 | 3.261 | 3.361 | 3.464 | 3.571 | 3.682 | 3.793 |
| Goa | 0.155 | 0.161 | 0.168 | 0.175 | 0.181 | 0.186 | 0.192 |
| Gujarat | 4.663 | 4.760 | 4.857 | 4.954 | 5.052 | 5.150 | 5.246 |
| Haryana | 3.288 | 3.391 | 3.495 | 3.600 | 3.707 | 3.815 | 3.924 |
| Himachal Pradesh | 0.087 | 0.089 | 0.091 | 0.093 | 0.095 | 0.097 | 0.099 |
| Jammu & Kashmir | 0.494 | 0.504 | 0.514 | 0.524 | 0.534 | 0.544 | 0.554 |

| State | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|
| Jharkhand | 0.932 | 0.949 | 0.966 | 0.984 | 1.001 | 1.019 | 1.037 |
| Karnataka | 3.631 | 3.700 | 3.770 | 3.840 | 3.910 | 3.981 | 4.049 |
| Kerala | 0.533 | 0.536 | 0.539 | 0.541 | 0.544 | 0.546 | 0.548 |
| Lakshadweep | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Madhya Pradesh | 6.393 | 6.523 | 6.654 | 6.786 | 6.918 | 7.051 | 7.181 |
| Maharashtra | 18.151 | 18.550 | 18.951 | 19.353 | 19.754 | 20.153 | 20.557 |
| Manipur | 0.075 | 0.076 | 0.077 | 0.077 | 0.078 | 0.078 | 0.079 |
| Meghalaya | 0.205 | 0.209 | 0.212 | 0.215 | 0.219 | 0.223 | 0.226 |
| Mizoram | 0.106 | 0.108 | 0.110 | 0.112 | 0.114 | 0.116 | 0.118 |
| Nagaland | 0.083 | 0.084 | 0.085 | 0.086 | 0.087 | 0.088 | 0.089 |
| Orissa | 1.736 | 1.771 | 1.805 | 1.841 | 1.876 | 1.912 | 1.948 |
| Puducherry | 0.137 | 0.143 | 0.150 | 0.156 | 0.162 | 0.167 | 0.174 |
| Punjab | 2.798 | 2.864 | 2.930 | 2.996 | 3.063 | 3.128 | 3.194 |
| Rajasthan | 3.826 | 3.895 | 3.962 | 4.030 | 4.095 | 4.160 | 4.225 |
| Sikkim | 0.013 | 0.014 | 0.014 | 0.015 | 0.015 | 0.015 | 0.016 |
| Tamil Nadu | 8.645 | 8.863 | 9.081 | 9.299 | 9.515 | 9.730 | 9.940 |
| Tripura | 0.131 | 0.134 | 0.137 | 0.140 | 0.143 | 0.146 | 0.149 |
| Uttar Pradesh | 10.878 | 11.127 | 11.379 | 11.631 | 11.885 | 12.140 | 12.394 |
| Uttarakhand | 0.826 | 0.846 | 0.866 | 0.887 | 0.907 | 0.927 | 0.948 |
| West Bengal | 8.547 | 8.641 | 8.733 | 8.825 | 8.919 | 9.014 | 9.106 |
| India | 93.056 | 94.978 | 96.908 | 98.845 | 100.787 | 102.729 | 104.668 |

**Source: Table 2C from GoI. Committee on slum statistics/census. 2011-12**

Percentage of Slum HHs to Total Urban HHs



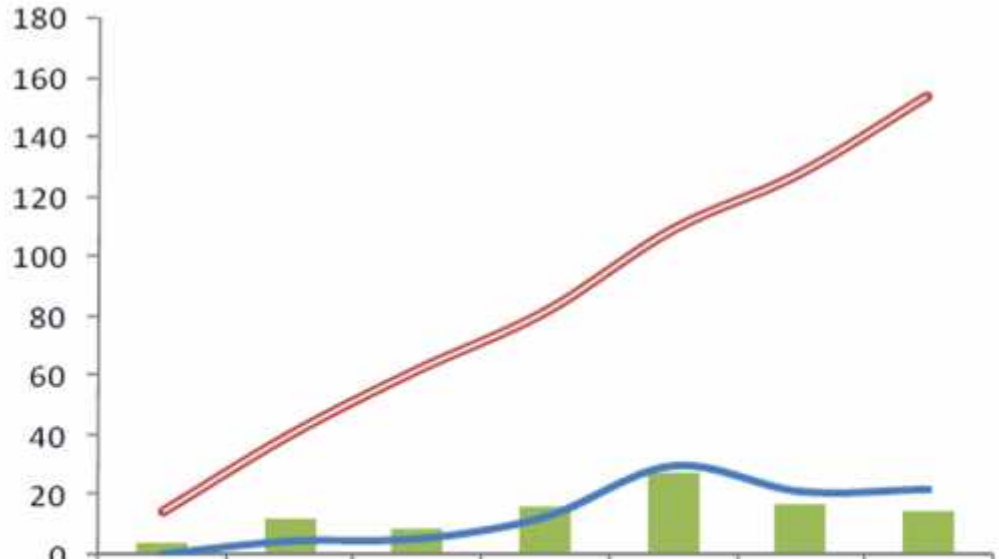
# Slum Dwellers Characteristics in Delhi

| Sl. No.1 | Year | Jhuggi HHS (Lakh) | Slum Population (Lakh) | Total Population (lakh) | Share of Delhi Population living in slums (per cent) | Jhuggi HHS (CAGR) | Growth in Population of Delhi (CAGR) |
|---|---|---|---|---|---|---|---|
| **1** | 1951 | 0.1 | 0.6 | 14.4 | 4.4 | | |
| **2** | 1973 | 1.0 | 4.9 | 40.1 | 12.3 | 11.0 | 10.0 |
| **3** | 1983 | 1.1 | 5.7 | 61.7 | 9.2 | 1.0 | 1.5 |
| **4** | 1990 | 2.6 | 13.0 | 81.1 | 16.0 | 13.1 | 12.5 |
| **5** | 1997 | 6.0 | 30.0 | 108.5 | 27.6 | 12.7 | 12.7 |
| **6** | 2001 | 4.3 | 21.5 | 127.4 | 16.9 | -8.0 | -8.0 |
| **7** | 2010 | 4.4 | 21.6 | 153.1 | 14.1 | 0.1 | 0.3 |

- Number of slums increased steadily from 0.13 lakh in 1951 to 6 lakh in 1997.
- The share of slum population to total population of Delhi in 1951 was 4.60 per cent the same increased to 15.57 per cent in 2001 and declined to 14.27 per cent in 2010.

**(Source:(1) Slum department, Municipal Corporation of Delhi (Figures from 1951 to 2001); (2) CGDR Survey 2010 & research)**

# GRAPH DENOTING THE INCREASE IN SHARE OF SLUM POPULATION FROM 1951-2010




| | 1951 | 1973 | 1983 | 1990 | 1997 | 2001 | 2010 |
|---|---|---|---|---|---|---|---|
| Share of Slum Population (per cent) | 4.17 | 12.22 | 9.24 | 16.03 | 27.65 | 16.88 | 14.46 |
| Slum Population (Lakhs) | 0.6 | 4.9 | 5.7 | 13 | 30 | 21.5 | 22.14 |
| Total Populataion (Lakh) | 14.4 | 40.1 | 61.7 | 81.1 | 108.5 | 127.4 | 153.1 |

# DISTRIBUTION OF SLUMS AND SLUM POPULATION IN DELHI (2011)

| Region | Slums | | Slum HHs | | Slum Population | | Rank | | |
|---|---|---|---|---|---|---|---|---|---|
| | Number | Share(per cent) | Number | Share(percent) | Number | Share (percent) | By Slums | By Slum HHs | By Slum Population |
| **Central** | 61 | 12.8 | 23662 | 5.5 | 126742 | 5.9 | 5 | 5 | 5 |
| **East** | 87 | 18.2 | 85408 | 19.7 | 410065 | 19.0 | 3 | 3 | 3 |
| **North** | 68 | 14.3 | 79128 | 18.2 | 361585 | 16.7 | 4 | 4 | 4 |
| **South** | 128 | 26.8 | 140164 | 32.3 | 713119 | 33.0 | 2 | 1 | 1 |
| **West** | 133 | 27.9 | 105376 | 24.3 | 551090 | 25.5 | 1 | 2 | 2 |
| **Total** | 477 | 100.0 | 433738 | 100.0 | 2162601 | 100.0 | | | |

Source: CGDR Research

- The distribution of 477 identified Slum clusters by Zone is presented in Table.
- From the ranking of the slums by numbers, it is found that maximum number of Slums numbering 133 (27.88 per cent) is located in the western Zone
- Southern Zone has 128 slum clusters (26.83 per cent), 87 in East (18.24 per cent), 68 (14.26 per cent) in North and 61 (12.79) in Central Delhi.

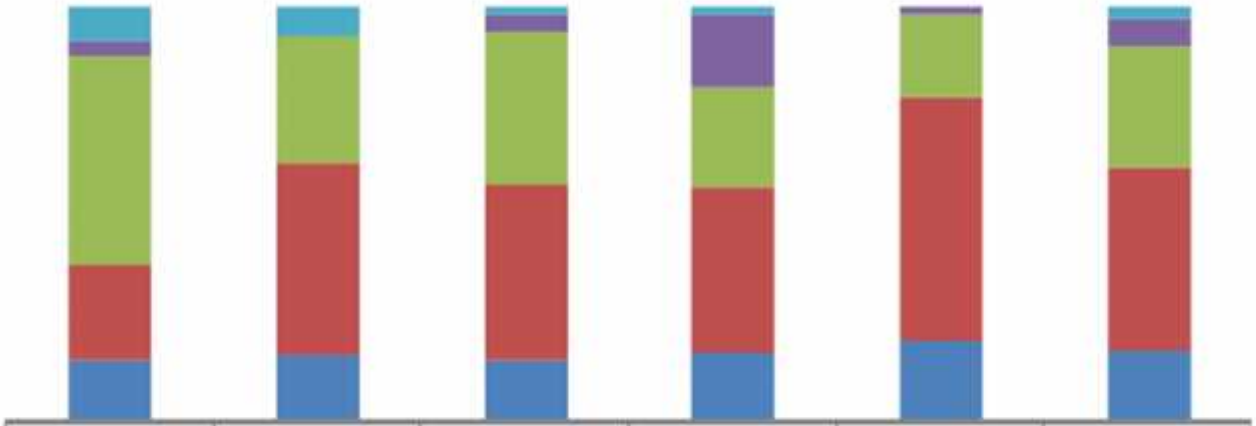
# TYPOLOGY OF ROAD IN SLUMS

| Zone | Metal | Cement concrete | Kutcha | Both metal and cemented | Mixed | All Total |
|---|---|---|---|---|---|---|
| **Central** | 21.31 | 19.67 | 6.56 | 4.92 | 47.54 | 100.00 |
| **East** | 14.94 | 66.67 | 3.45 | 0.00 | 14.94 | 100.00 |
| **North** | 7.35 | 25.00 | 1.47 | 1.47 | 64.71 | 100.00 |
| **South** | 21.09 | 40.63 | 3.13 | 0.00 | 35.16 | 100.00 |
| **West** | 3.01 | 7.52 | 2.26 | 2.26 | 84.96 | 100.00 |
| **Total** | 13.00 | 31.24 | 3.14 | 1.47 | 51.15 | 100.00 |

## PERCENTAGE OF HOUSEHOLDS BY DISTANCE IN KM OF THE PLACE OF WORK OF HH HEAD

| KM | Central | East | North | South | West | All |
|---|---|---|---|---|---|---|
| **0-1** | 8.1 | 11.4 | 14.7 | 8.1 | 12.7 | 11 |
| **1-5** | 61.7 | 42 | 48.7 | 45.1 | 44.3 | 45.8 |
| **6-10** | 1.1 | 2 | 3.8 | 2.4 | 2 | 2.4 |
| **11-15** | 0 | 3.1 | 0.9 | 1 | 0.2 | 1.2 |
| **16-20** | 0 | 1.4 | 0.3 | 0.7 | o.s | 0.7 |
| **21-25** | 0 | 0.3 | 0.4 | 0.4 | 0.5 | 0.4 |
| **30-35** | 0 | 0.3 | 0 | 0 | 0 | 0.1 |
| **36-40** | 0 | 0 | 0 | 0.1 | 0 | 0 |
| **Not Fixed (labour/driver)** | 29.1 | 39.5 | 31.2 | 42.2 | 39.9 | 38.5 |
| **All** | 100 | 100 | 100 | 100 | 100 | 100 |

# PRIMARY JOB MARKETS



| | Centeral | East | North | South | West | All |
|---|---|---|---|---|---|---|
| Other | 8.2 | 6.9 | 1.5 | 1.6 | 0.0 | 2.9 |
| Offices | 3.3 | 0.0 | 4.4 | 18.0 | 1.5 | 6.3 |
| Popular Markets & Mandi | 50.8 | 31.0 | 36.8 | 24.2 | 20.3 | 29.6 |
| Industrial Area | 23.0 | 46.0 | 42.6 | 39.8 | 58.6 | 44.4 |
| Residential Area | 14.8 | 16.1 | 14.7 | 16.4 | 19.5 | 16.8 |

Inference: In the northern part of Delhi industrial area and markets account to the larger percentage.

# DISTRIBUTION OF HOUSEHOLDS BY BROAD OCCUPATION GROUPS OF HOUSEHOLD HEAD

| Rank | Occupation | Central | East | North | South | West | All | Cumulative Total |
|---|---|---|---|---|---|---|---|---|
| 1 | Labour | 32.4 | 32.8 | 51.5 | 40.3 | 42.7 | 41.0 | 41.0 |
| 2 | Private service | 12.8 | 19.1 | 11.8 | 30.7 | 28.6 | 23.4 | 64.4 |
| 3 | House Wife | 17.9 | 10.4 | 5.2 | 3.0 | 3.2 | 5.9 | 70.3 |
| 4 | Shop keeper | 2.0 | 4.3 | 3.6 | 3.3 | 5.8 | 4.1 | 74.4 |
| 5 | Tailor | 1.9 | 4.1 | 1.9 | 2.3 | 1.2 | 2.3 | 76.7 |
| 6 | Driver | 1.5 | 2.5 | 2.6 | 2.7 | 1.3 | 2.2 | 78.9 |
| 7 | Pensioner | 4.1 | 2.5 | 2.8 | 1.1 | 1.5 | 2.0 | 80.9 |
| 8 | Domestic Servant | 5.2 | 2.9 | 2.1 | 0.8 | 1.1 | 1.8 | 82.6 |
| 9 | Hawker | 0.2 | 1.7 | 2.3 | 0.9 | 2.1 | 1.6 | 84.2 |
| 10 | Petty Shop | 0.6 | 0.8 | 0.9 | 1.6 | 2.3 | 1.4 | 85.6 |
| 11 | Mason | 0.4 | 0.8 | 4.4 | 0.5 | 0.8 | 1.3 | 86.9 |
| 12 | Government Service | 0.0 | 2.2 | 0.1 | 1.9 | 0.3 | 1.3 | 88.2 |
| 13 | Rickshaw Puller | 2.7 | 1.2 | 1.8 | 0.3 | 0.8 | 1.0 | 89.2 |
| 14 | Security Guard | 0.0 | 0.8 | 0.8 | 1.4 | 0.7 | 0.9 | 90.1 |
| 15 | Dhobi | 3.1 | 0.9 | 0.2 | 0.1 | 1.4 | 0.7 | 90.9 |
| 16 | Salesman | 0.0 | 2.8 | 0.1 | 0.5 | 0.0 | 0.7 | 91.6 |
| 17 | Carpenter | 0.5 | 0.4 | 0.5 | 1.0 | 0.7 | 0.7 | 92.3 |
| 18 | Painter | 0.9 | 0.6 | 0.8 | 0.5 | 0.5 | 0.6 | 92.9 |
| 19 | Tea Shop | 0.5 | 0.7 | 0.1 | 0.4 | 0.6 | 0.5 | 93.3 |
| 20 | Sweeper | 0.2 | 0.3 | 0.0 | 0.9 | 0.3 | 0.4 | 93.7 |
| 21 | Rafi picker | 0.0 | 0.2 | 0.1 | 1.0 | 0.1 | 0.4 | 94.1 |
| 22 | Barber | 0.2 | C.3 | 0.3 | 0.3 | 0.5 | 0.4 | 94.5 |
| 23 | Teacher | 0.0 | 1.1 | 0.1 | 0.3 | 0.0 | 0.3 | 94.8 |
| 24 | Electrician | 0.2 | 0.6 | 0.5 | 0.2 | 0.1 | 0.3 | 95.1 |
| 25 | Handicraft | 2.4 | 0.0 | 0.1 | o.c | 0.0 | 0.2 | 95.3 |
| | Other | 5.9 | 4.3 | 2.7 | 2.5 | 1.4 | 2.8 | 98.1 |
| | Unemployed | 4.3 | 1.8 | 2.3 | 1.6 | 1.5 | 1.9 | 100 |

Source: CGDR Research

## BACKGROUND

Indian cities are characterized by rapid growth of Urban population and almost equal growth of Urban Slums. Mobility patterns of poor are different because of certain constraints. The paper attempts to analyze the trip patterns of urban poor in general and slum dwellers in specific.

## ISSUES AND CHALLENGES

- Limited monetary resources
- Less inclination towards New modes of Transportation
- Illiterate population, difficulty in understanding the systems, e.g. Metro
- Considerable Share of Slum population in Delhi

# SLUM DWELLERS MOBILITY PATTERN

To understand the mobility patterns and variation in patterns with change in location of Slum Dwellers in Delhi ,

surveys were conducted at five  slum locations of Delhi.

All locations are within approx. 1 km from the metro stations. Given below is the list of the Slums covered:

- New Seelampur Colony
- Lal Bagh Colony, Azadpur
- Taimoor Nagar
- Indraprastha Colony
- Bhalaswa

**Data Collection Methodology**

- Household Survey for trip information

**Data Analysis: Data was analyzed under following heads**

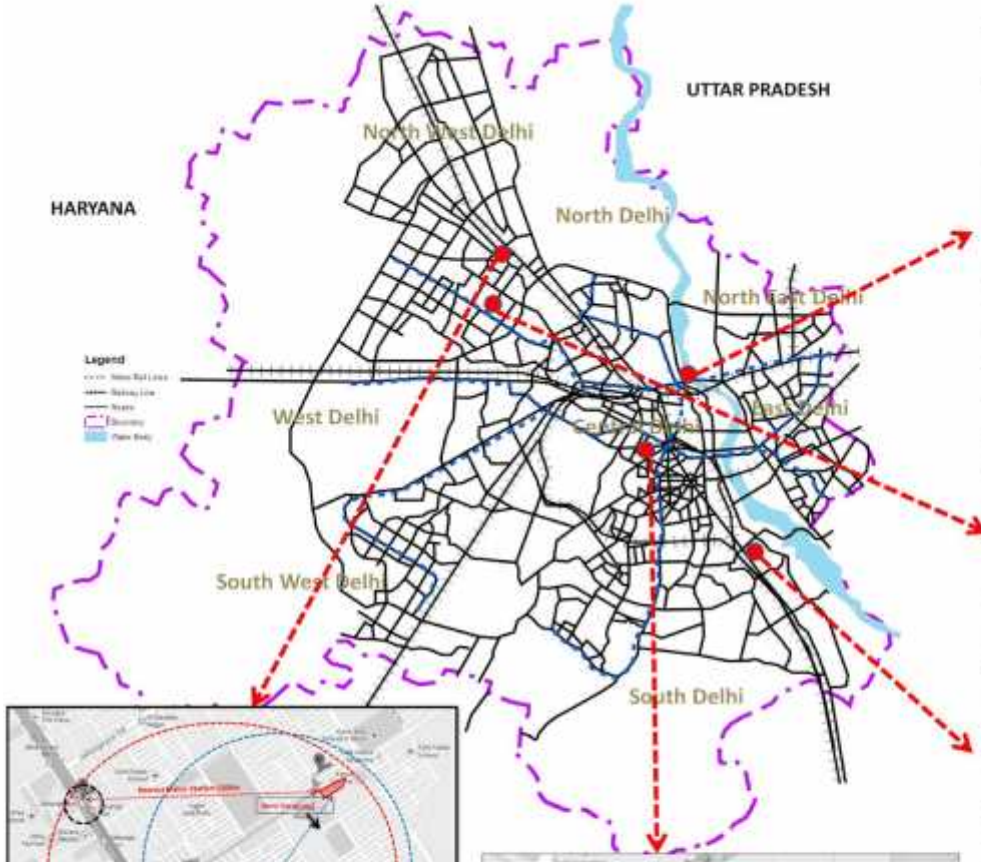
Trips Behavior  by Purpose
Percentage of trips for different purposes have been analyzed.

Trips by Modes of Travel
Analysis of different Modes used for trip making.

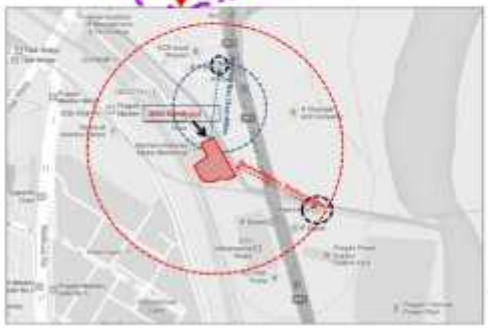
Distance by Modes of Travel
Distance travelled by different modes is analyzed.

Modes of Travel by Purpose
Under this, the modes used for different purposes is analyzed.

# SLUM LOCATIONS COVERED UNDER THE STUDY





## Map Showing Survey Locations

- Area Surveyed: Seelampur Colony
- Nearest Metro Station: Seelampur ( 700m)
- Nearest Bus Stop: 150m
- No. of Households Surveyed: 20

- Area Surveyed: Lal Bagh Colony
- Nearest Metro Station: Azadpur ( 800m)
- Nearest Bus Stop: 400m
- No. of Households Surveyed: 20

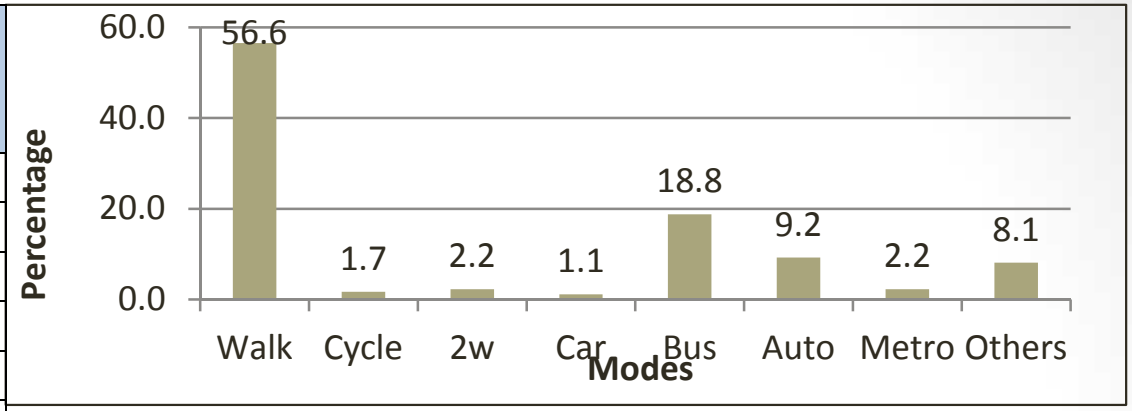
- Area Surveyed :Taimoor Nagar
- Nearest Metro Station: Kalkaji Mandir ( 2000m)
- Nearest Bus Stop: 500m
- No. of Households Surveyed: 20

- Area Surveyed: Bhalaswa (J J Colony)
- Nearest Metro Station: Jahangirpuri ( 1200 m)
- Nearest Bus Stop: 500m
- No. of Households Surveyed: 20

- Area Surveyed :Anna Nagar
- Nearest Metro Station: Indraprastha ( 600m)
- Nearest Bus Stop: 400m
- No. of Households Surveyed: 20

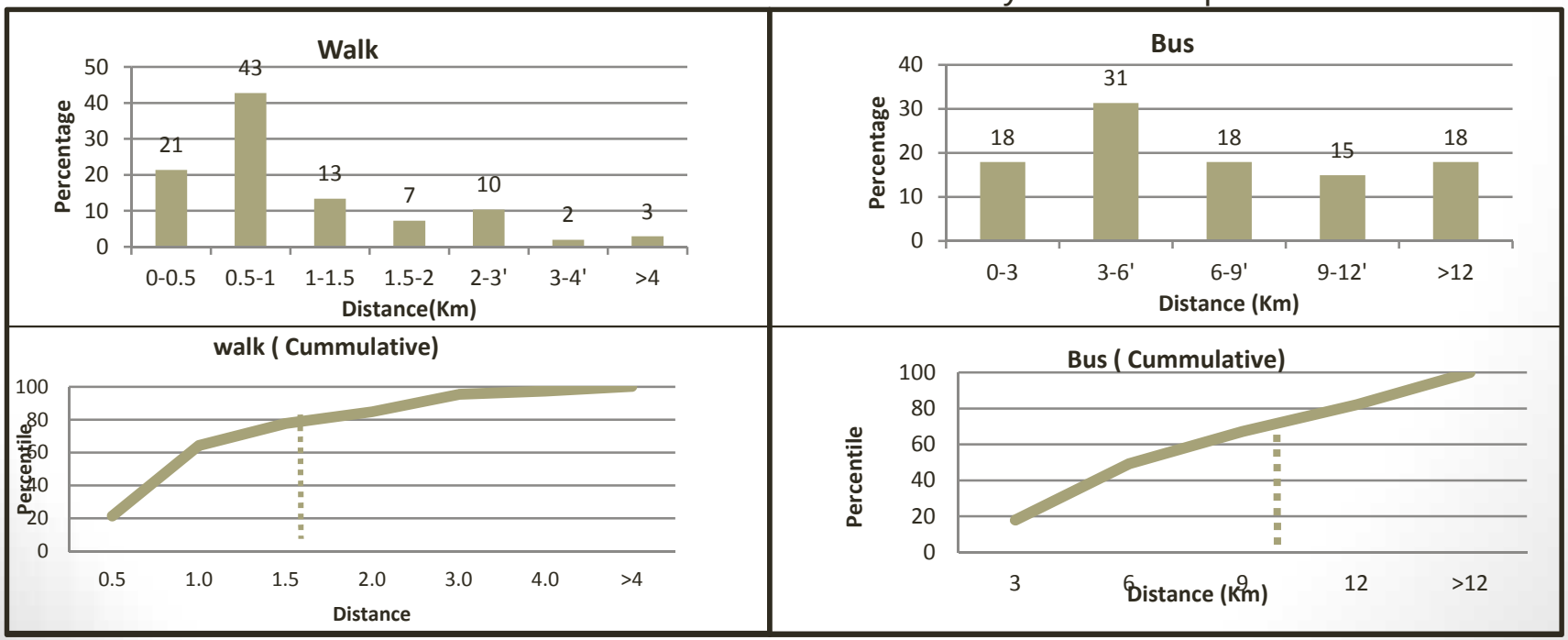
# TRIP CHARACTERISTICS BY MODES OF TRAVEL

| | No. of Trips | Percentage | Total surveyed population | PCTR |
|---|---|---|---|---|
| Walk | 202 | 56.58 | 231 | 0.87 |
| Cycle | 6 | 1.68 | 231 | 0.03 |
| 2w | 8 | 2.24 | 231 | 0.03 |
| Car | 4 | 1.12 | 231 | 0.02 |
| Bus | 67 | 18.77 | 231 | 0.29 |
| Auto | 33 | 9.24 | 231 | 0.14 |
| Metro | 8 | 2.24 | 231 | 0.03 |
| Others | 29 | 8.12 | 231 | 0.13 |
| | 357 | 100 | 231 | 1.55 |



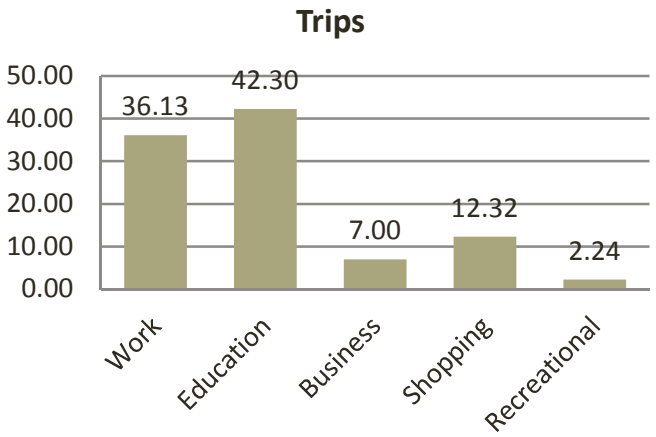

## Inferences:

-Of the total trips made, 57 % are walk trips & 19% are bus trips
-75 % walk trips are made within 1.2 km
- 75 % Bus Trips are made within 10 km
- Metro as mode is used only for 2.2 % trips



# TRIP CHARACTERISTICS BY PURPOSE OF TRAVEL

| Purpose | Trips | Percentage |
|---|---|---|
| Work | 129 | 36.13 |
| Education | 151 | 42.30 |
| Business | 25 | 7.00 |
| Shopping | 44 | 12.32 |
| Recreational | 8 | 2.24 |
| Total | 357 | 100.00 |

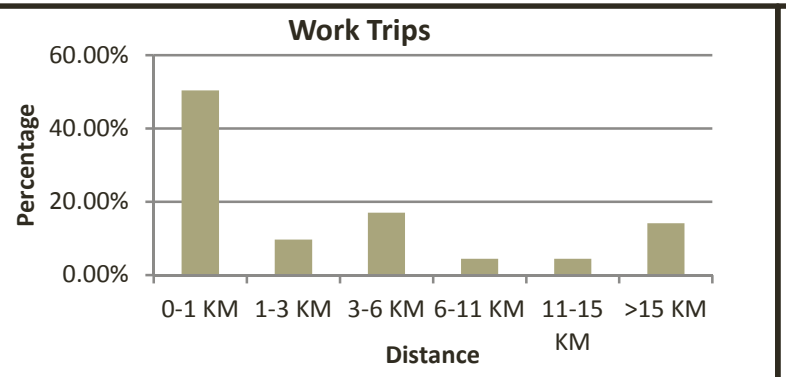


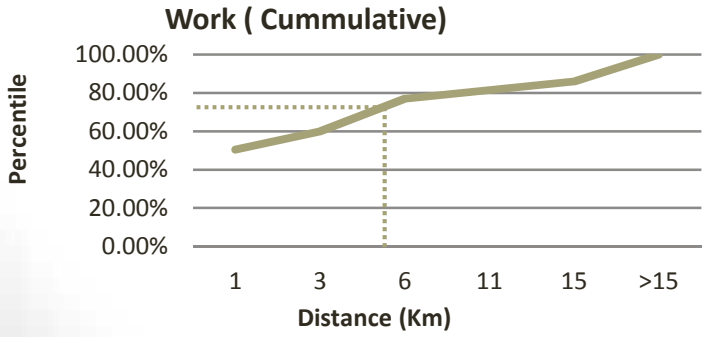

**Inferences:**

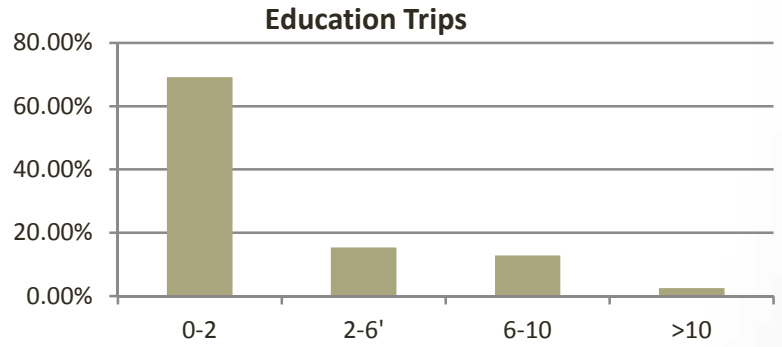
-Of the total trips made, Education trips have the highest share of 42% followed by work trips(36%)

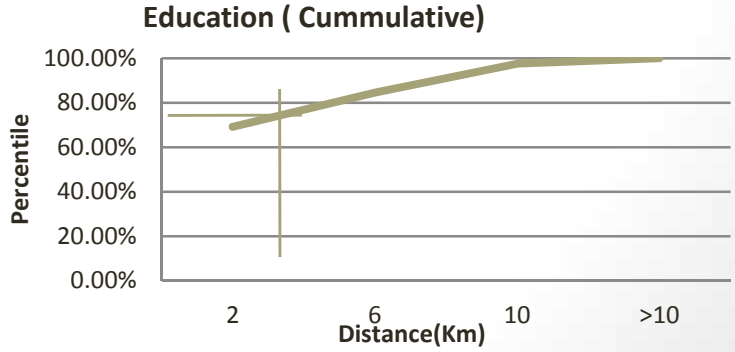
-75 % work trips are made within 5.5 km

- 75 % of education trips are made within 3km range



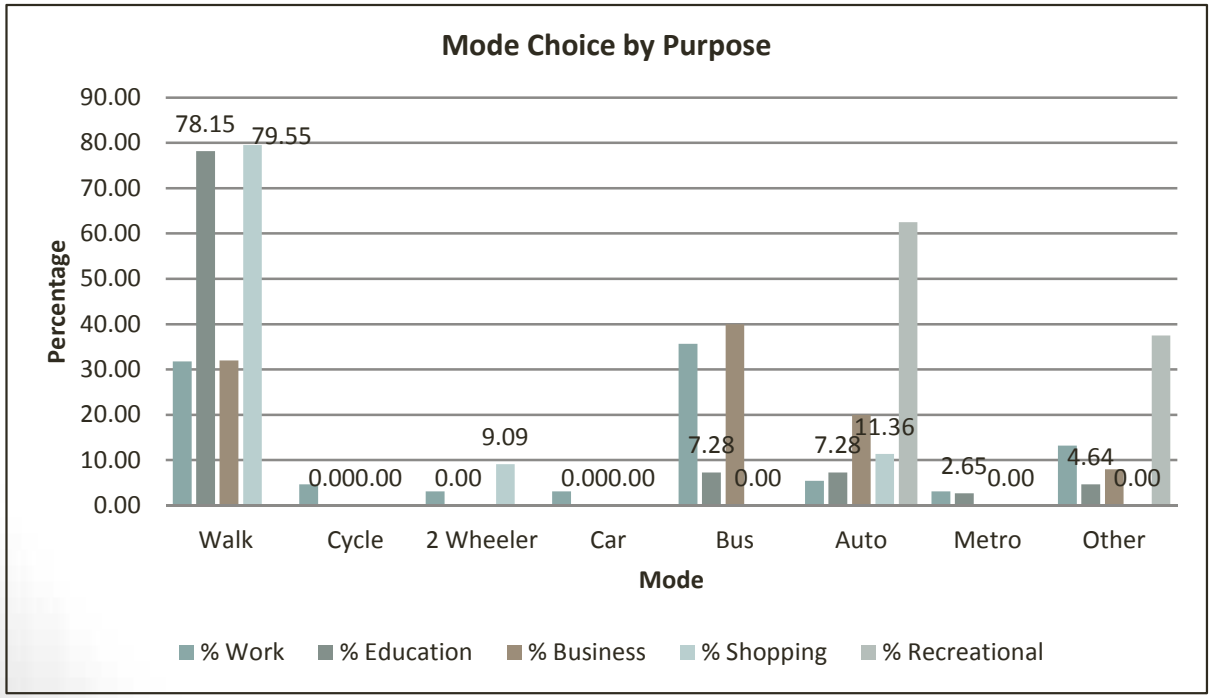



# TRIP CHARACTERISTICS (MODE CHOICE BY PURPOSE OF TRAVEL)

| | Walk | Cycle | 2 Wheeler | Car | Bus | Auto | Metro | Other | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Work** | 41 | 6 | 4 | 4 | 46 | 7 | 4 | 17 | 129 |
| **Percentage** | 31.78 | 4.65 | 3.10 | 3.10 | 35.66 | 5.43 | 3.10 | 13.18 | 100.00 |
| **Education** | 118 | 0 | 0 | 0 | 11 | 11 | 4 | 7 | 151 |
| **Percentage** | 78.15 | 0.00 | 0.00 | 0.00 | 7.28 | 7.28 | 2.65 | 4.64 | 100.00 |
| **Business** | 8 | 0 | 0 | 0 | 10 | 5 | 0 | 2 | 25 |
| **Percentage** | 32.00 | 0.00 | 0.00 | 0.00 | 40.00 | 20.00 | 0.00 | 8.00 | 100.00 |
| **Shopping** | 35 | 0 | 4 | 0 | 0 | 5 | 0 | 0 | 44 |
| **Percentage** | 79.55 | 0.00 | 9.09 | 0.00 | 0.00 | 11.36 | 0.00 | 0.00 | 100.00 |
| **Recreational** | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 3 | 8 |
| **Percentage** | 0 | 0 | 0 | 0 | 0 | 63 | 0 | 38 | 100.00 |
| **Total** | 202 | 6 | 8 | 4 | 67 | 33 | 8 | 29 | 357 |




## Inferences:

-As Analysed maximum no. of walk trips are made for Education(78%) and Shopping (80%)

- Bus as a mode is used for business and work trips

# TRIPS CHARACTERISTICS (BY GENDER)

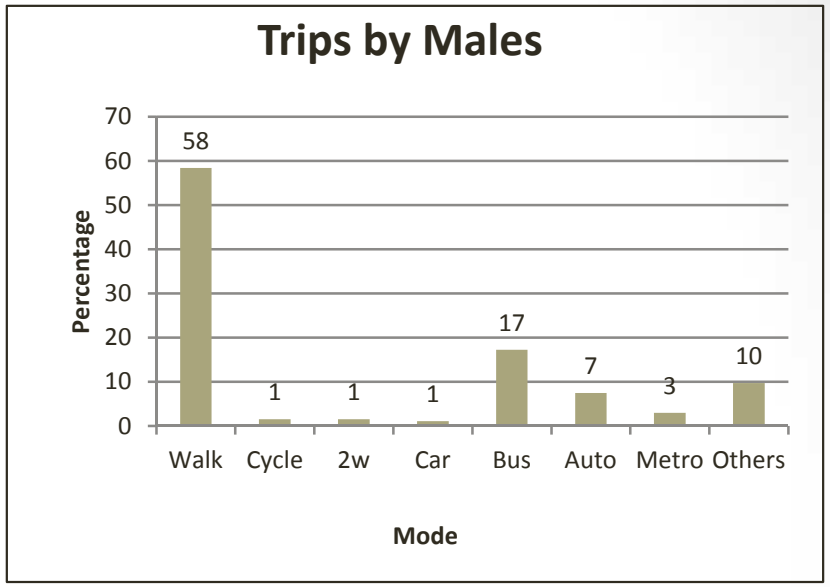
## Trips made by Males and Females by different modes

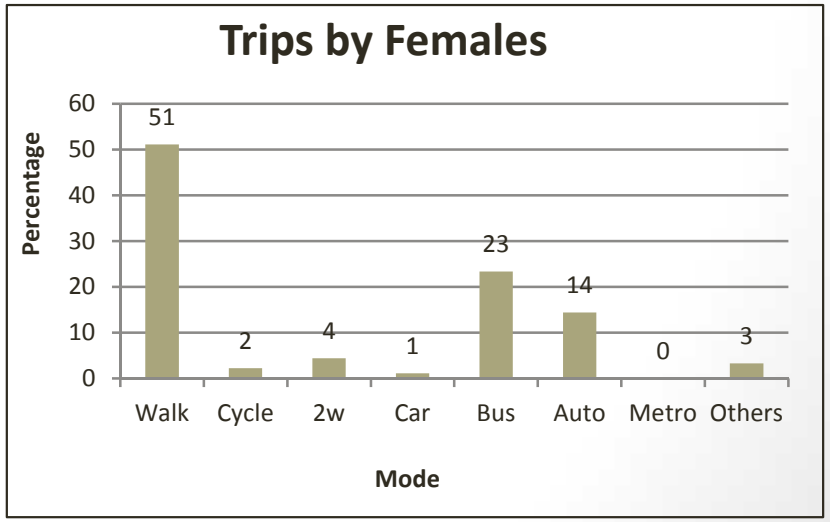
| Gender | No. of Trips | Percentage |
|---|---|---|
| Male | 267 | 74.79 |
| Female | 90 | 25.21 |
| Total | 357 | 100.00 |

- Of the total 357 Trips, 75 % are male trips and 25 % are female trips.

-Of the total trips made by male population, 58% are Walk Trips, 17% are Bus Trips and Metro as a mode constitutes for only 3 % of the trips.

- Of the total trips made by Female Population, 51% are Walk Trips, 23% are Bus Trips and Metro is not a preferred mode.



# SLUM DWELLERS TRANSPORT POLICY

# URBAN TRANSPORT AND POVERTY REDUCTION

•Poor people's inability to access jobs and services is an important element of the social exclusion that defines urban poverty.

•Urban transport policy can attenuate this poverty, both by contributing to economic growth and by introducing a conscious poverty reduction focus to infrastructure investment, to public transport service planning, and to fare-subsidy and financing strategies.

•A rich agenda of urban transport policies that are both pro-growth and pro-poor, yet which are consistent with the fiscal capabilities of even the poorest countries.

•Deteriorating urban transport conditions have a particularly severe impact on poor people. Growing reliance on private vehicles has resulted in a substantial fall in the share of, and in some cases an absolute decline in the number of, trips made by urban public transport in many cities.

**Moving towards a more poverty-focused transport policy would require the following:**

•Urban transport planning studies should take a more demand-oriented approach, recognizing the existence of distinct socio-economic communities already at the data collection, diagnostic and design stages;

•The importance of walking, other non-motorized transport activities and the special needs of the mobility impaired should be recognized both in infrastructure design and in traffic management;

•Design of public transport fare policies has to be based on more than the commonly used criterion of affordability; a nominally a pro-poor policy of charging low fares without an assured deficit finance mechanism has proved to leak benefits and lead to service deterioration;

- There should be increased use of targeting, whether group-oriented or location-oriented, both in service design and fare policies;

- Transport being only one of services essential for the welfare, fare policies in the transport sector have to be designed taking into consideration policies in other sectors;

- Uncontested monopoly in the supply of public transport services should be replaced by regulated competition; this is likely to decrease costs and increase supply to poor people;

- Policies for regulating the informal transport sector need to be framed with their impacts on poor people carefully taken into account, lest the poor be the losers in the anti-congestion drives;

- Efforts to secure modal integration need to be carefully managed to ensure that they do not increase the number of times poor people have to pay per trip, and that fares on the services on which they are particularly dependent do not increase.

## POVERTY-FOCUSED URBAN TRANSPORT INTERVENTIONS: ROAD INFRASTRUCTURE

| Specific Intervention | Nature Of Impact | Cost & fiscal Impact | Implementation ease |
|---|---|---|---|
| Maintaining public transport routes | Faster & less Expensive public transport | Moderate | Easy |
| Paving poor areas | Access for public transport | Moderate | Easy |
| Bicycle & Pedestrian tracks | Safer Trips ,encouraging NMT (non-motorized traffic) | Moderate | Moderate |
| Separation of NMT on existing roads | Safety; Speed for all modes | Low | Difficult |

## POVERTY-FOCUSED URBAN TRANSPORT INTERVENTIONS: RAIL INFRASTRUCTURE

| Specific Intervention | Nature Of Impact | Cost & fiscal Impact | Implementation ease |
|---|---|---|---|
| Concessioning | Improved service to user's : Fare effects uncertain | Cost saving | Moderate |
| Severance payments | Protects (poorer) Workers | Small | Moderate |
| Resettlement arrangements | Protects disturbed residents from consequence of developments | Medium | Difficult |
| Converting Sub-urban railways | Improves speed & frequency | Moderate | Moderate |

Source:-CITIES ON THE MOVE: A WORLD BANK URBAN TRANSPORT STRATEGY REVIEW

## A POVERTY-FOCUSED AGENDA: PUBLIC TRANSPORT SERVICE PLANNING

| Specific Intervention | Nature Of Impact | Possible Cost & fiscal Impact | Implementation ease |
|---|---|---|---|
| Introduce Competition in public transport | Cost reduction service growth | Cost saving | Moderate |
| Public transport interchange | Faster safer trips | Medium | Moderate |
| Bus priorities | Faster , less expensive trips | Low | Difficult |
| Develop Informal sector | Lower cost service | None | Moderate |

## POVERTY-FOCUSED URBAN TRANSPORT INTERVENTIONS: FINANCE STRATEGIES

| Specific Intervention | Nature Of Impact | Cost & fiscal Impact | Implementation ease |
|---|---|---|---|
| Subsidy Finance reform | Line agencies to finance exemptions , better focus of support | Uncertain | Moderate |
| Public transport fare integration | Enables use of faster Modes | Low | Moderate |
| Congestion pricing | Direct impact small, provides basis for public transport improvement | Generates revenue | Difficult |

Source:-CITIES ON THE MOVE: A WORLD BANK URBAN TRANSPORT STRATEGY REVIEW

# CONCLUSION AND RECOMMENDATIONS BASED ON THE STUDY

-While rehabilitating the slum population, their mobility characteristics should be considered otherwise, they would have more transport expenditure and also loose the job opportunities.

- As observed from the characteristics, the education trips are considerable which is a healthy sign.

- However, the education quality should be improved.

-Despite being closer to the metro, they are not using metro

i) Complex System

ii) More dispersal cost

iii) Job search confined within a limited radii.

-For rehabilitated population, transport incentives need to be given.

-Equitable Transport Supply is to be provided to link them with the mainstream.

# PLANNING FOR ALL