#IndiahasathingwithBikes

Bicycling and Smart Cities

National Institute of Urban Affairs

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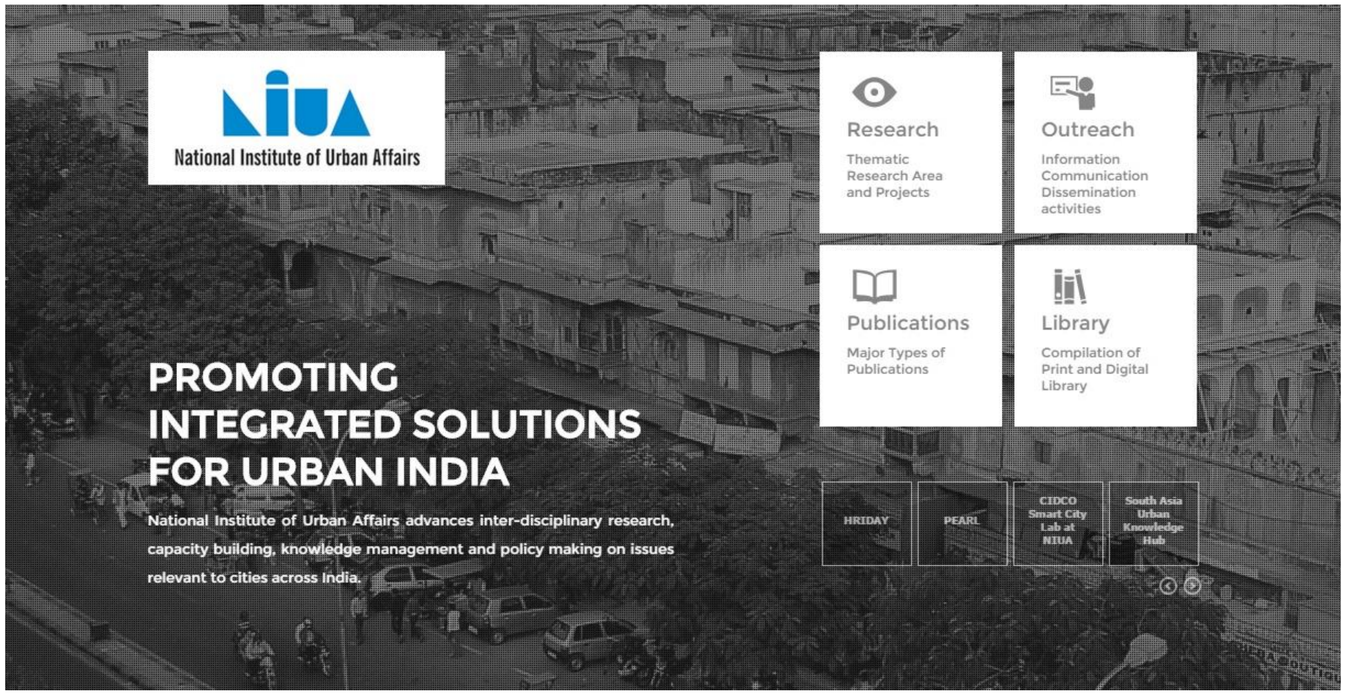
Image: indianexpress.com_imageby_CR Sasikumar

National Institute of Urban Affairs

- Established in 1976
- Based in New Delhi
- Apex research body for the Ministry of Urban Development, Government of India
- Core grant from the Ministry of Urban Development
- Research, capacity building and dissemination of knowledge in the urban sector



- HRIDAY
- PEARL
- CIDCO Smart City Lab
- South Asia Urban Knowledge Hub
- India Urban Portal

http://www.niua.org/
India Habitat Centre, New Delhi

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Business as Usual, West Bengal (1983)

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Image: Steve McCurry

Business as Usual, Varanasi (1983)

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Image: Steve McCurry

Breadwinner

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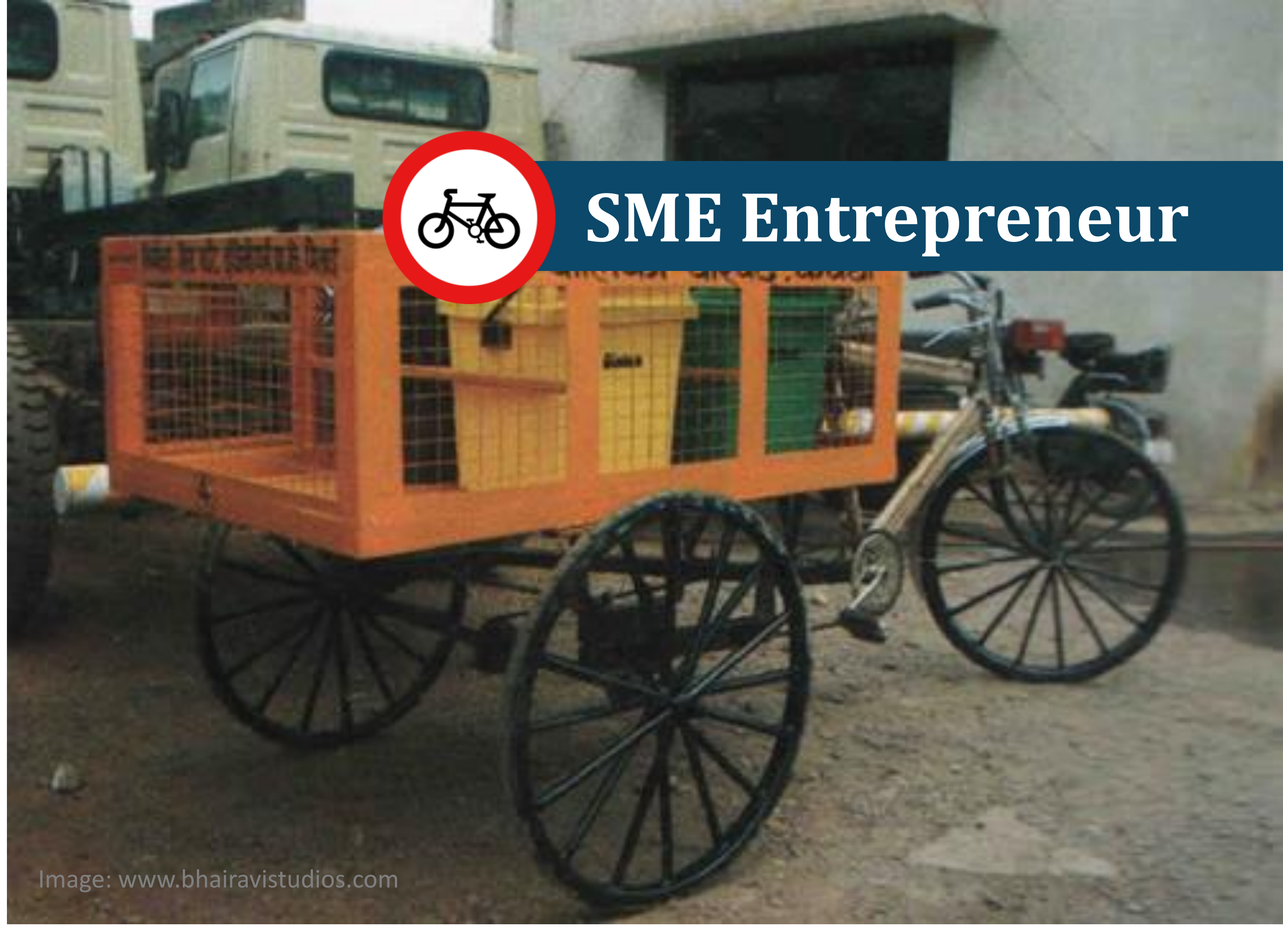
Image: www.downthroad.org

Image: downtheroad.org3



SME Entrepreneur

Image: www.bhairavistudios.com

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Image: curiousrandonneur.blogspot.com

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Image: www.downthroad.org

Wheels for two

Image: khattadaqa.wordpress.com

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Image: Theguardian.com

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IMAGE: MeenaKadir_Flickr

Bicycles bridging gaps

Mukhyamantri Bicycle Yojna

Bihar

Saraswati Bicycle Supply Scheme

Chhattisgarh

Free Bicycle Distribution Scheme

Karnataka

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Image: huffingtonpost.in

Bicycle parking outside IIT Coaching Classes

Kota, Rajasthan

Image: bansal_classes_20120625_save-iit-jee.blogspot.in

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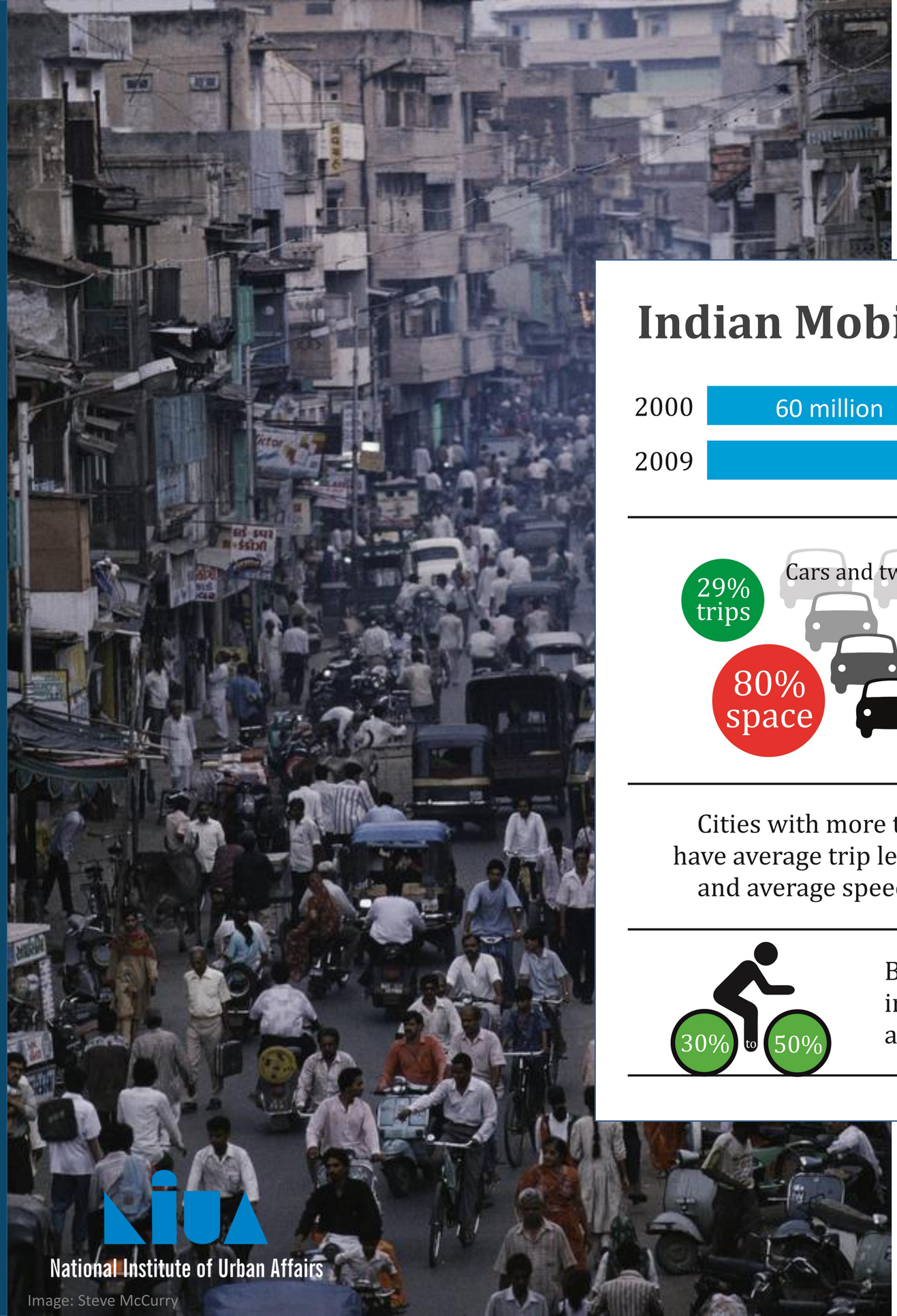
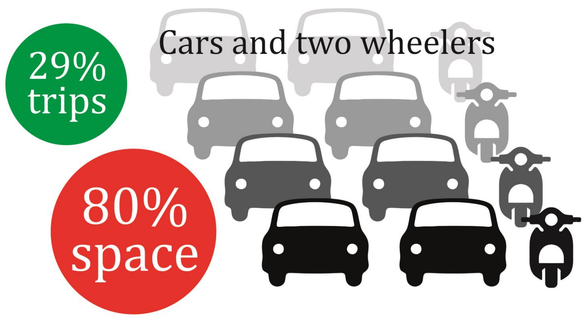


Some Numbers

Indian Mobility Scenario

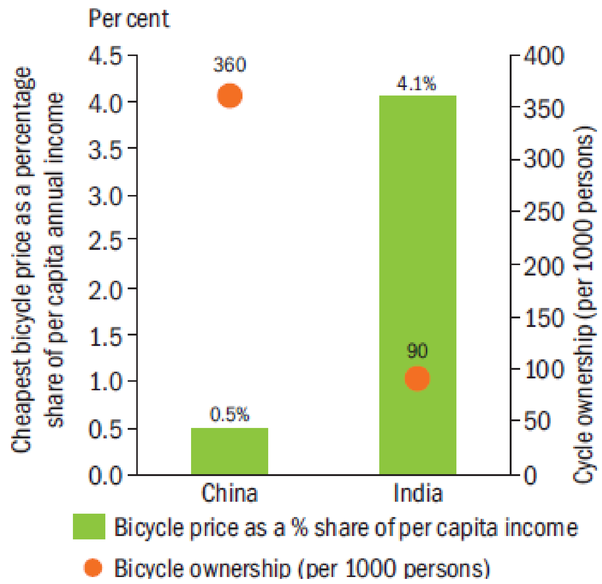
2000 — 60 million

2009 — 120 million



Cities with more than **8 million** have average trip length of **10.4 km** and average speed of **17 kmph**

Bicycle ownership in most medium and large cities



Source: TERI

Avg trip length (excluding walk)

2.5 – 4.8 km small city

4.2 – 6.9km medium & large city

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Image: Steve McCurry

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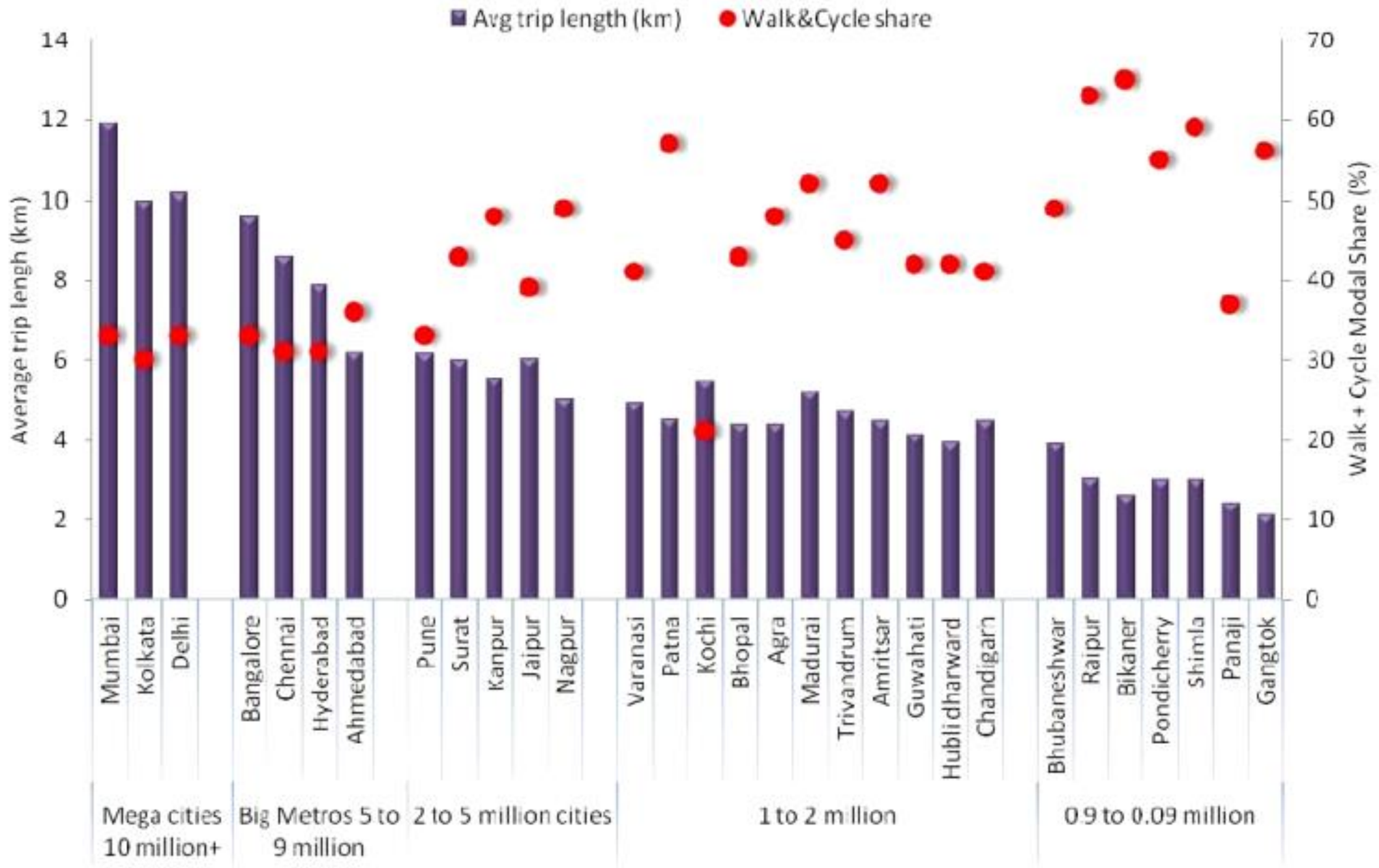
Trends in Bicycle Use, 2008



Source: Centre for Green Mobility

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Image: Steve McCurry

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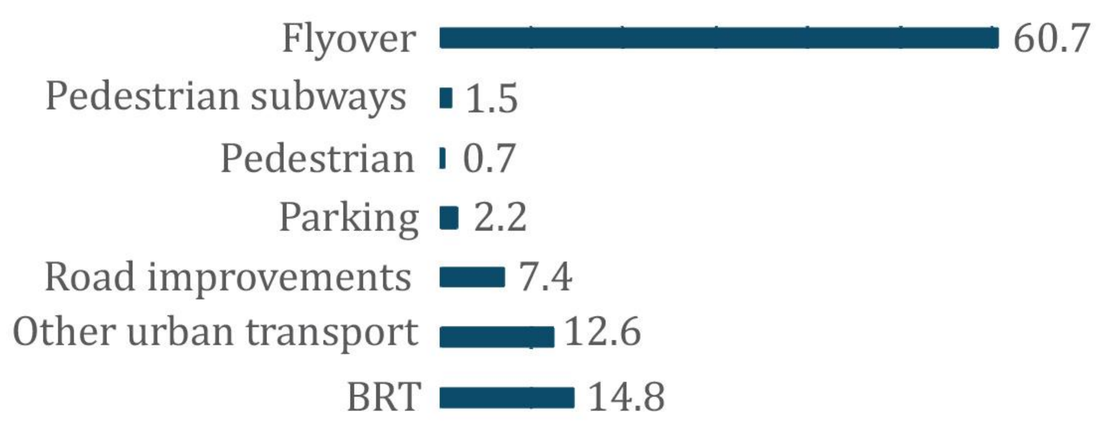
NMT under JnNURM

JnNURM

BRT with Bicycle track integration in 9 cities
NMT under JnNURM was limited to BRT

Data Source: Promoting Low Carbon Infrastructure - NMT Infrastructure in India: Investment Policy and Design. UNEP

Expenditure under JnNURM



Data Source: iihs

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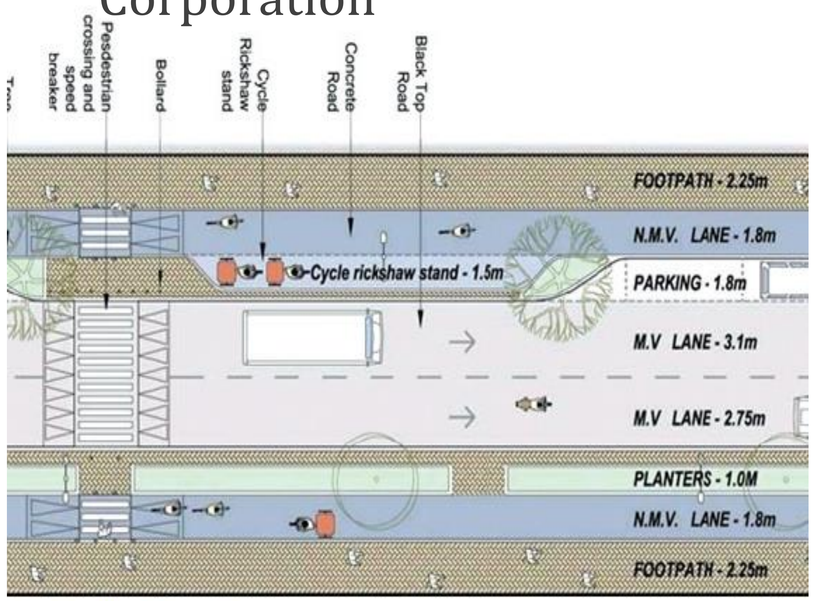
Limited NMT under JnNURM

Nanded

- $55.2 million
- 35 roads proposed for up-gradation
- 50 km of the street has been redesigned with separate NMT Lanes
- PPP model IL&FS and the Nanded Waghala Municipal Corporation



Pradeep Sachdeva Design Associates 2012

Data Source: Promoting Low Carbon Infrastructure - NMT Infrastructure in India: Investment Policy and Design. UNEP

Bangalore

- Up-gradation of sidewalks and road
- $3.05 million was sanctioned under the JnNURM in 2007
- Improve traffic management and reduce travel time
- Outcomes of the project have been with respect to reduced travel time, vehicle operation cost and accident rate

Data Source: Promoting Low Carbon Infrastructure - NMT Infrastructure in India: Investment Policy and Design. UNEP

Pune

- Pune Municipal Corporation prepared a Comprehensive Mobility Plan (CMP) in 2008 as a pre-condition for accessing funds under the JNNURM
- Comprehensive Bicycle Plan Draft for Pune was created in 2013

Data Source: Pune Municipal Corporation

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Best Practice Example – Diu, India

Diu

- Funded by Daman and Diu Union Territory Administration
- Current bicycle mode share – 9%
- 13 kms long island, 21 km of coast line*
- Proposed length - 26km (16 miles)
- Total Cost: ₹ 32 Crore
- 50% of the track is Coastal*
- Phase 1 Length - 4.2km (Executed) (2.6 Miles)
- Cost of Phase I: $437,028*
- Phase 2 Length – 7.1 km (4.4 Miles)
- Phase 3 length – 15 km (9.3 miles)
- 2014 Volvo Sustainable Mobility Award

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Data Source:
Centre for Green Mobility
*diu.gov.in/PressRelease/Pressnote-CycleTrack-2014-15.pdf

Image Source, Diu Tourism: http://visitdiu.in/cycling.html

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Smart Cities Mission

Drive economic growth and improve the quality of life of people by enabling local development and harnessing technology as a means to create smart outcomes for citizens

SALIENT FEATURES

- Area Based Approach
- Strategic planning
- Citizen Engagement
- Scenario Planning
- Replicability
- Competition
- Convergence

SPECIAL PURPOSE VEHICLE

- Plan, Appraise, Release Funds, Implement, Manage, Operate, Monitor and Evaluate Smart City Development Projects
- Limited company incorporated under Companies Act, 2013 at City Level

RETROFIT | REDEVELOPMENT | GREENFIELD | PAN CITY

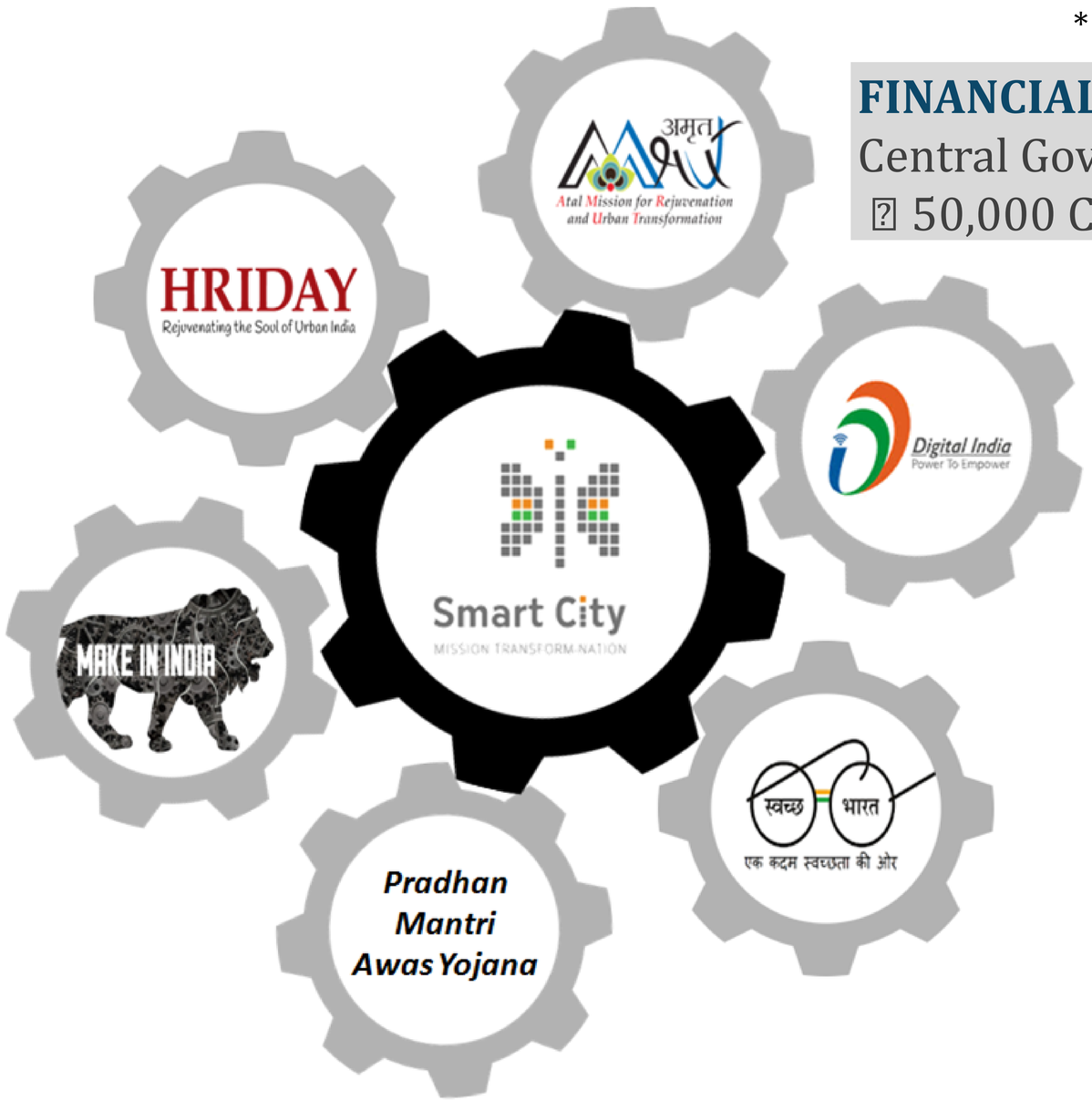
- 15% Affordable Housing*
- 80% of Buildings should be Energy Efficient*

* Greenfield Development

FINANCIAL OUTLAY

Central Government

₹ 50,000 Crores = $7 billion



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https://www.itdp.org/

Smart Cities Mission

Timeline for National Smart Cities Challenge

JUNE 2015

National Smart Cites Mission Launch

AUGUST 2015

98 Cities Nominated for the Competition

Cities undertake their Start-to-Smart journeys

AUGUST - NOVEMBER 2015

Smart City Proposal Preparation

Each city formulates its own unique vision, mission and plan for a 'smart city'. Their concepts are meant to reflect the city's local context, resources, and priorities of citizens. Each city develops a pan-city and area-based proposal based on the needs and aspiration identified in the citizen engagement process.

JANUARY 2016

20 Winners Announced for Round 1

Evaluation of the cities based on a pre-define criteria.
23 fast track cities identified from states and Union Territories not represented among the 20 winners to extend geographical spread of the mission and to convey the message of urban transformation across the country.

APRIL 2016

Revised Submition of Smart city proposal

23 fast track cities submit revised proposal

AUGUST 2016

Winners Announced for Round 2

Upto 40 cities from the remaning announced as winners.

Scoring Criteria

City Level Criteria 30%

- 5% Vision and goals
- 10% Citizen engagement
- 10% Strategic plan
- 5% Baseline, Key Performance Indicators (KPIs), self-assessment and potential for improvement

Area-based development 55%

- 7% 'Smartness' of proposal
- 3% Process followed
- 5% Citizen engagement
- 25% Implementation framework, including feasibility and cost-effectiveness
- 15% Results orientation

Pan-city solution 15%

- 3% "Smartness' of solution
- 1% Process followed
- 1% Citizen engagement
- 5% Implementation framework, including feasibility and cost-effectiveness
- 5% Results orientation

Total 100

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Prescribed Features

Creating Walkable Localities

- Reduce congestion, air pollution and resource depletion
- Boost local economy, promote interactions and ensure security
- The road network is created or refurbished not only for vehicles and public transport, but also for pedestrians and cyclists
- Necessary administrative services are offered within walking or cycling distance

Preserving and developing open spaces

- Parks, playgrounds, and recreational spaces in order to enhance the quality of life of citizens
- Reduce the urban heat effects in Areas and generally promote eco-balance

Promoting a variety of transport options

- Transit Oriented Development (TOD)
- Public transport
- Last mile para-transport connectivity

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Self Assessment

A Smart City has different kinds of land uses in the same places; such as offices, housing, and shops, clustered together. (Guidelines 3.1.2 and 3.1.2)
A Smart City encourages development to be compact and dense, where buildings are located close to one another and are ideally within a 10-minute walk of public transportation, forming concentrated neighborhoods. (Guidelines 2.3 and 5.2)
A Smart City does not require an automobile to get around; distances are short, buildings are accessible from the sidewalk, and transit options are plentiful and attractive to people of all income levels. (Guidelines 3.1.5 & 6.2)
A Smart City's roads are designed equally for pedestrians, cyclists and vehicles; and road safety and sidewalks are paramount to street design. Traffic signals are sufficient and traffic rules are enforced. Shops, restaurants, building entrances and trees line the sidewalk to encourage walking and there is ample lighting so the pedestrian feels safe day and night. (Guidelines 3.1.3 & 6.2)

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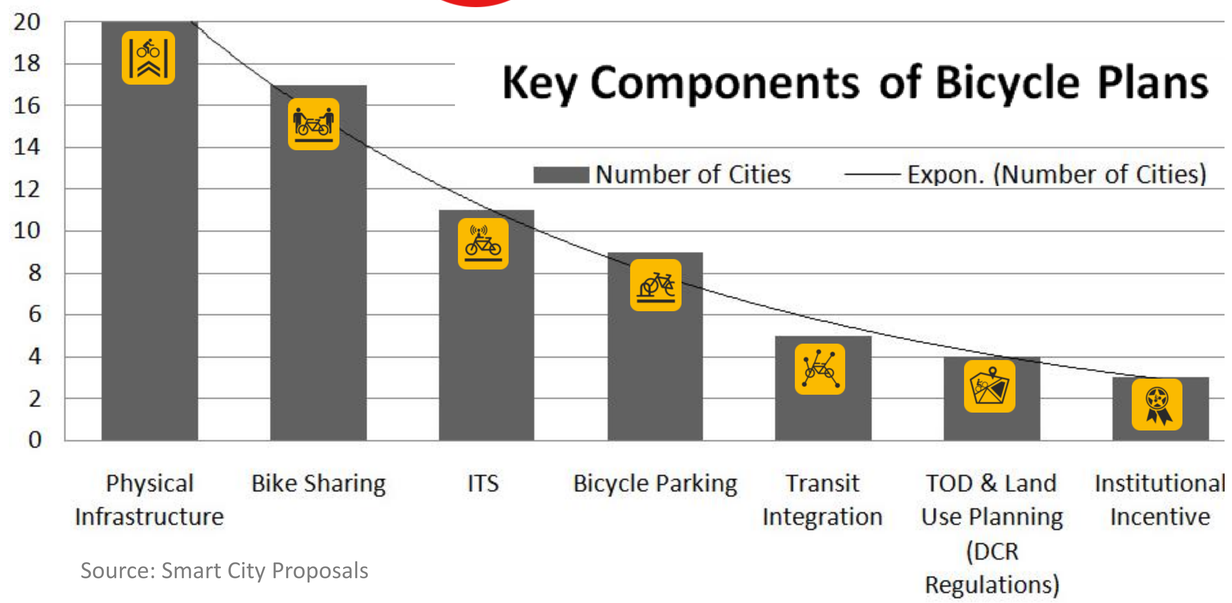
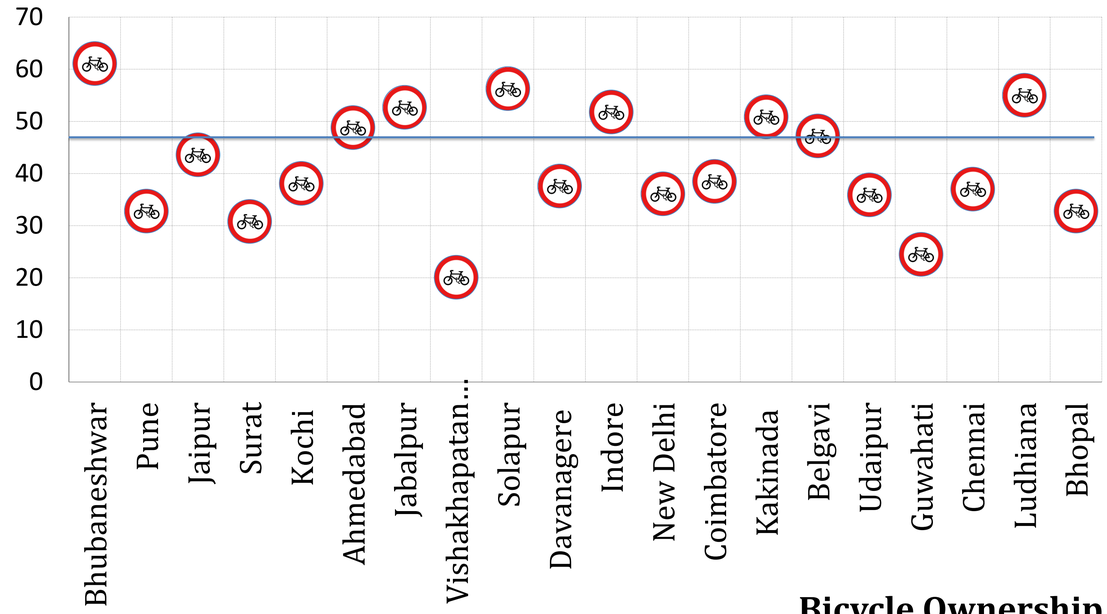
Smart Cities Plan Bicycle Infrastructure Components



Source: Smart City Proposals



Bicycle Ownership

Source: Census 2011

Key Component	Bhubaneswar	Pune	Jaipur	Surat	Kochi	Ahmedabad	Jabalpur	Visakhapatnam	Solapur	Davanagere	Indore	NDMC	Coimbatore	Kakinada	Belgavi	Udaipur	Guwahati	Chennai	Ludhiana	Bhopal	Total
Physical Infrastructure	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	20
Bicycle Parking			■					■	■		■				■	■		■	■	■	9
Transit Integration								■	■		■							■		■	5
Bike Sharing	■	■	■		■	■		■	■	■		■	■	■	■	■	■		■	■	17
TOD & Land Use Planning*	■			■							■							■			4
Institutional Incentive	■					■												■			3
ITS	■	■	■						■	■	■	■		■	■		■	■			11
		$56,165/mile				$157,014/mile			$78,391/mile					$65,938/mile	$49,254/mile				$73,007/mile		

*DCR Regulations

Source: Smart City Proposals

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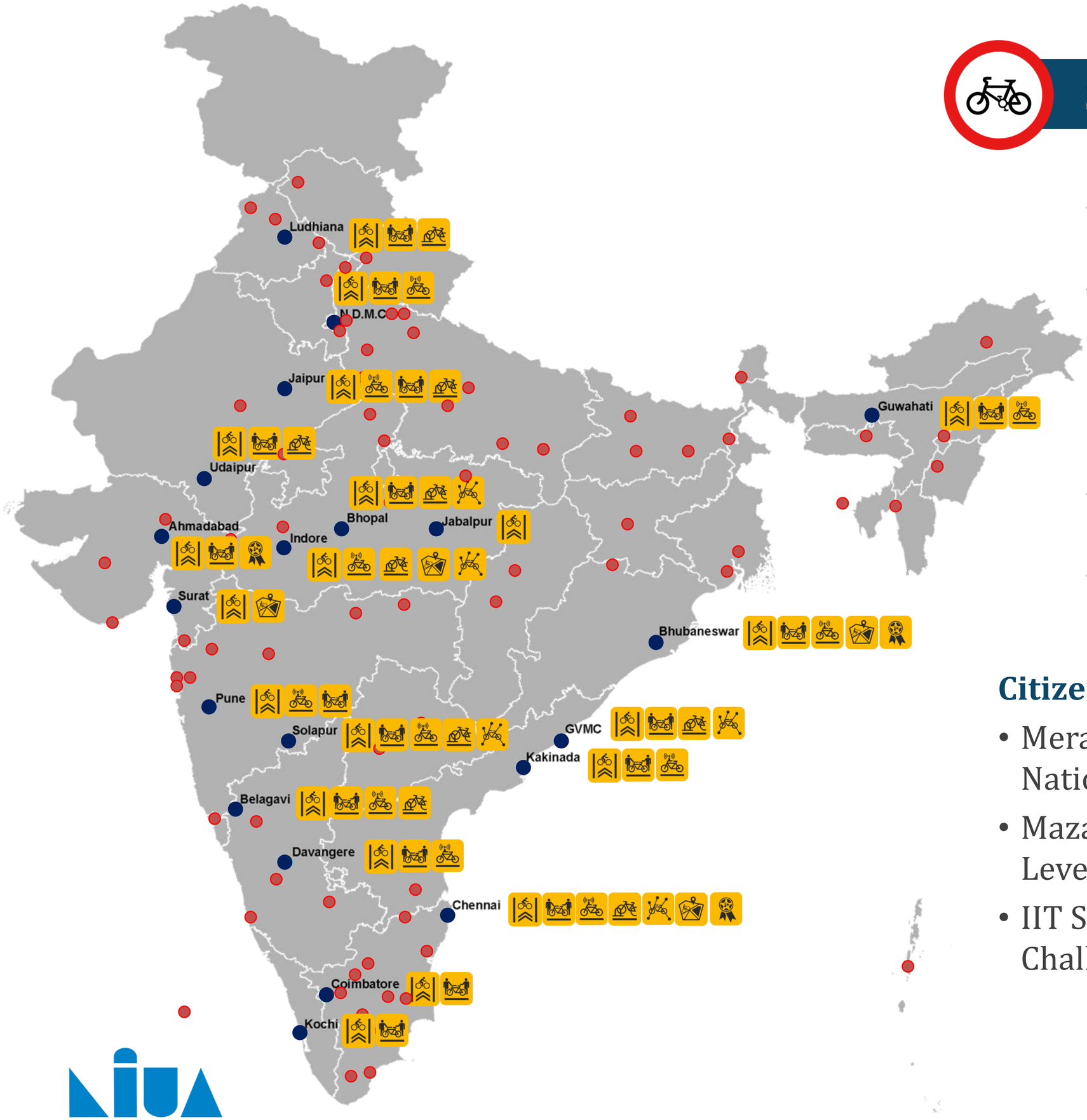

Smart Cities Mission

- Total Investment for 100 Smart Cities: $14 Billion
- Total Investment Identified for Bicycle Infrastructure in the 20 Lighthouse Smart Cities: ₹ 166.5 Crores ($25 Million)
- 0.83% of budget for 20 Lighthouse Smart Cities
- Investment Average $79,961.5/Mile

Citizen Engagement Exercises

- Mera Shehar Mera Sapna: National Level
- Maza Swapna Smart Pune: City Level
- IIT Shashtra 2016 Smart Cities Challenge: Academic Institute

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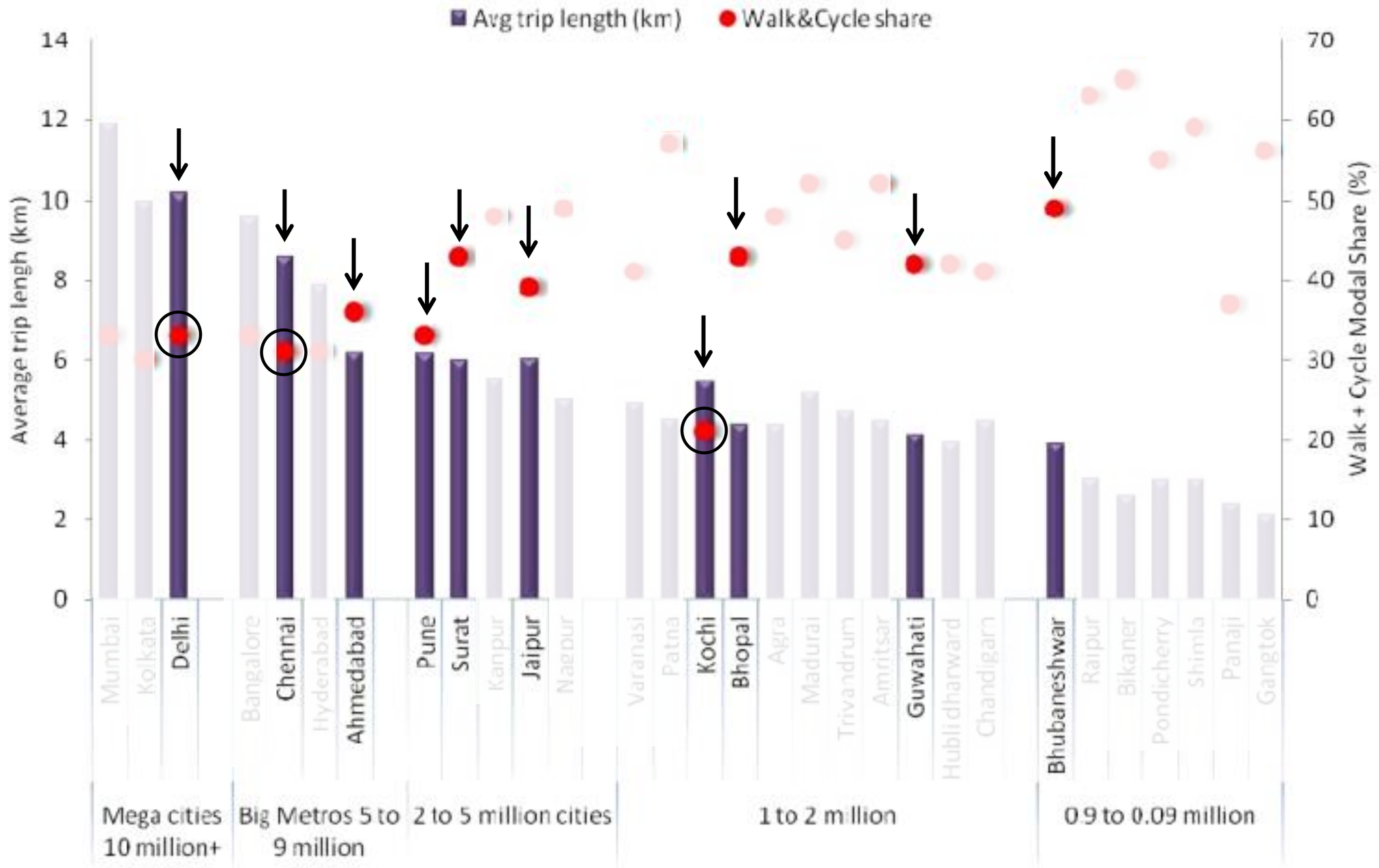
Trends in Bicycle Use, 2008



Source: Centre for Green Mobility

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Indian Smart Cities, Case of New Delhi

Key Bicycle Infrastructure Features in New Delhi Municipal Corporation Smart City Plan

- Physical Infrastructure
- Bike Sharing
- ITS

Data Source: Smart City Proposal NDMC

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Indian Smart Cities, Case of New Delhi

India Habitat Centre (IHC) is a multipurpose complex in central Delhi with work, commercial and social spaces. Located at a distance of around 2 kilometres from the nearest metro stations, employees and visitors to India Habitat Centre face the typical **'last mile connectivity'** issues. As a solution, IHC has created a **bike-share system** connecting it to Jor Bagh Metro Station. This was done in collaboration with multiple agencies – **IHC, NIUA, Delhi Police, NDMC, SDMC, PWD, CPWD, Delhi Metro**

Indian Smart Cities, Case of Ludhiana

- City's average trip length - 3.7 Km
- Bicycles – 15% mode share
- Highest per capita automobiles in India
- High rate of road accidents
- Potential growth of bicycle use to reduce pollution* & improve health

* 70% of pollution is caused by diesel and petrol vehicles

Data Source: Smart City Proposal Ludhiana

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Image Source: https://www.youtube.com/watch?v=uolwGEGUMDk

Bicycle Manufacturing in India, Case of Ludhiana

- Ludhiana manufactures more than 50% of India's bicycles
- More than 10 million units of bicycle each year or more than
- Manufacture of 25,000 cycles per day.
- Home to over 1,500 factories making bicycles parts
- Employment for 0.25 million people

Data Source: Smart City Proposal Ludhiana

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Image source: news.cn

COPENHAGEN

Key Targets for Copenhagen's Bicycle Strategy:

- Proportion of people who cycle to work/education (%)
- Proportion of cycling Copenhageners who feel secure (%)
- Cycling casualties (number per year)
- Proportion of PLUS network that has 3 lanes (%)
- Reduction in cycling travel time (%)
- Satisfaction with state of cycle tracks (%)
- Satisfaction with cycling culture's impact on urban life (%)
- **Yawn (number of Yawns or number of bicyclists yawning)**

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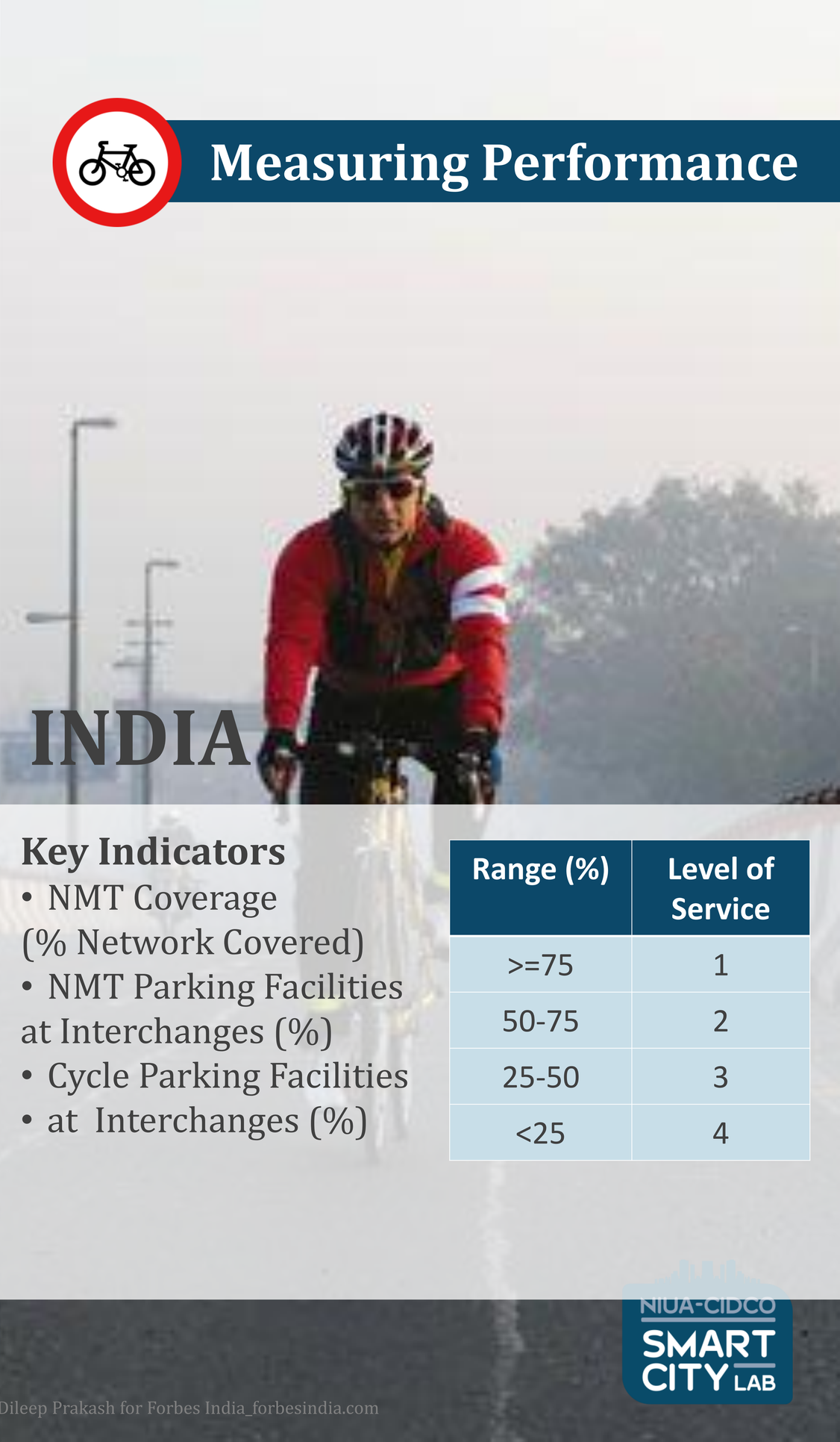
Copenhagen, City of Cyclists, The Bicycle Account 2014
Image source: Copenhagenize.eu

Measuring Performance



INDIA

Key Indicators

- NMT Coverage (% Network Covered)
- NMT Parking Facilities at Interchanges (%)
- Cycle Parking Facilities at Interchanges (%)

Range (%)	Level of Service
>=75	1
50-75	2
25-50	3
<25	4

Dileep Prakash for Forbes India_forbesindia.com

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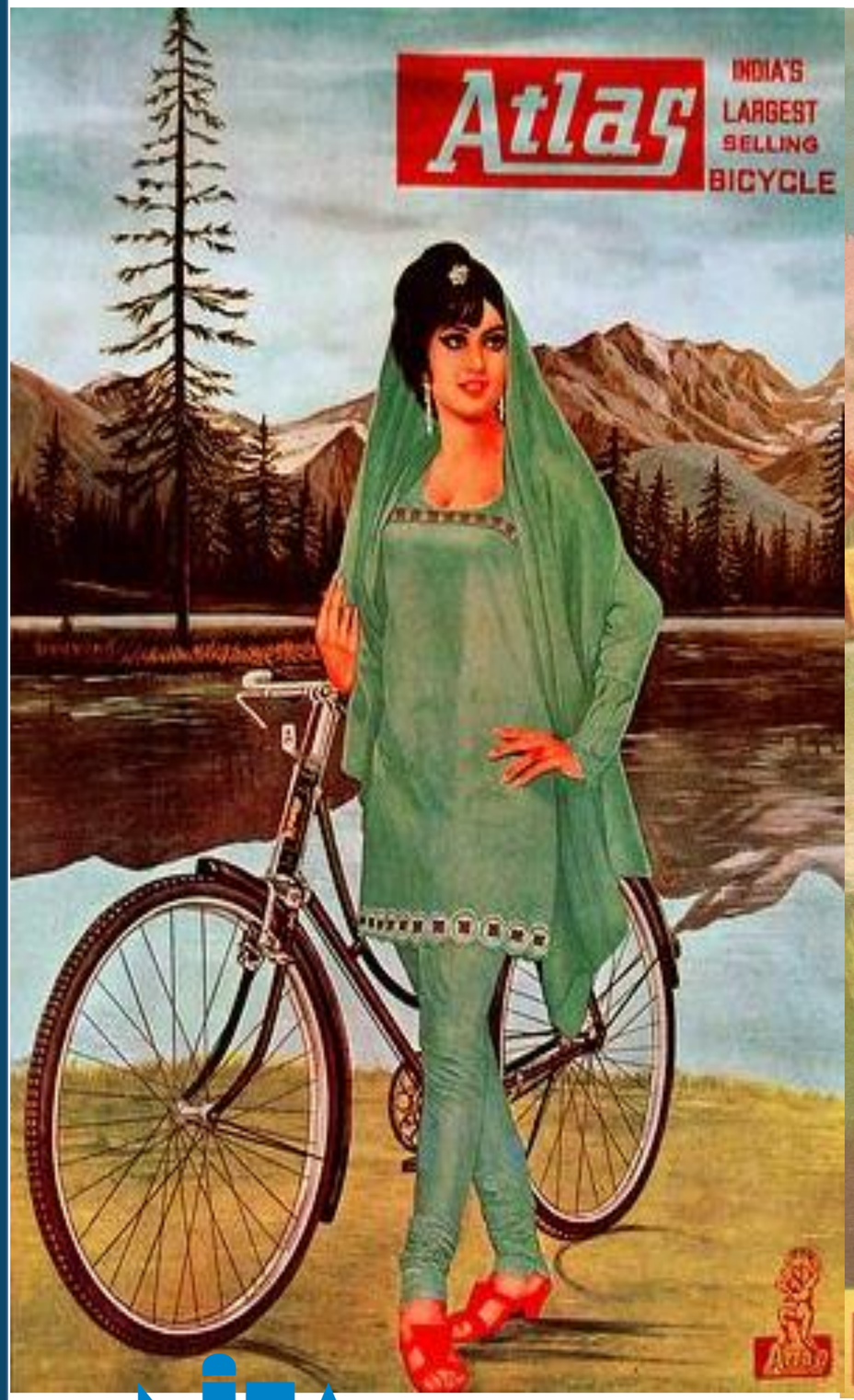
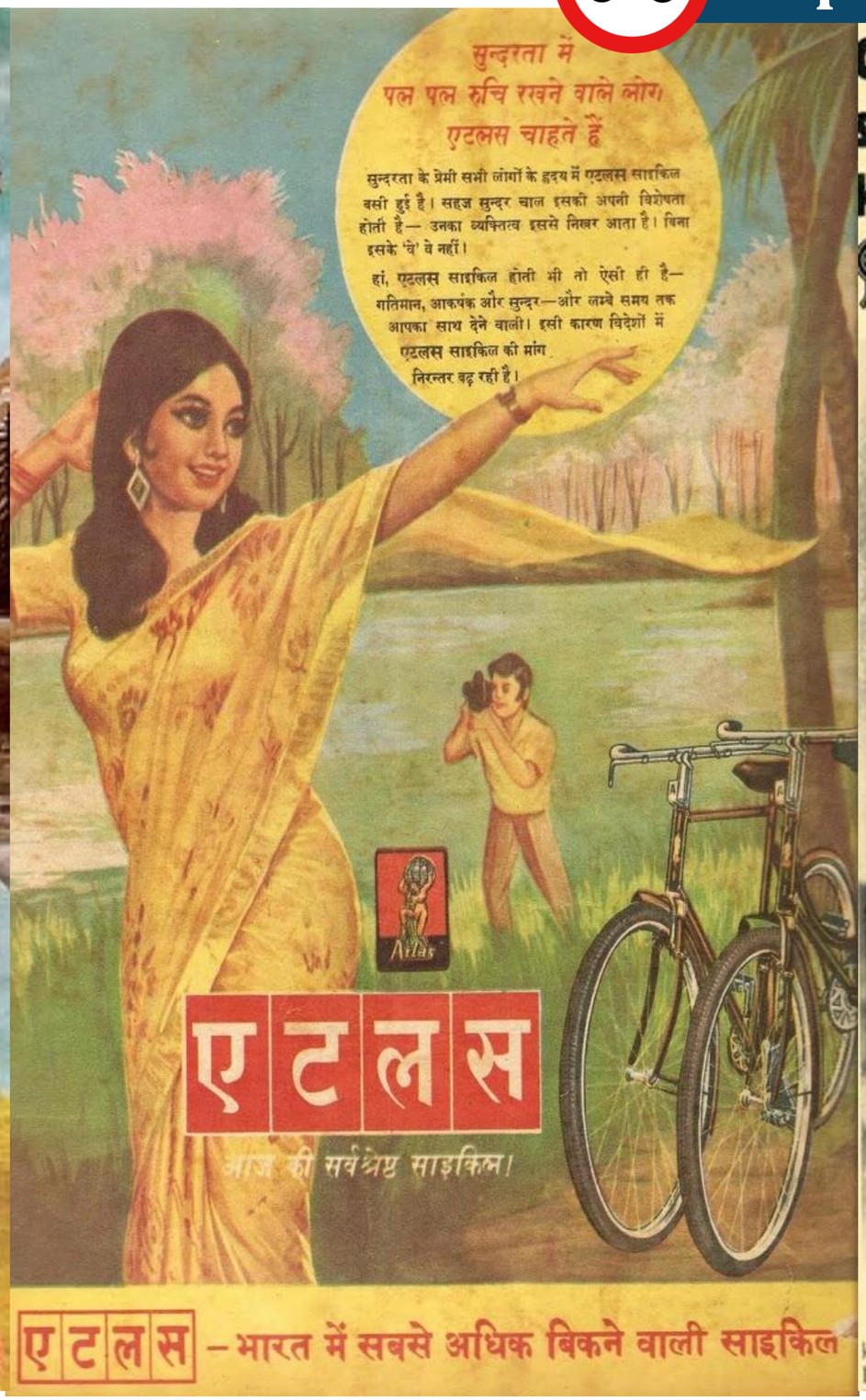
Popular Imagination





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Bicycles & Bollywood

dildhadaknedoposter


Kick


Khelein Hum Jee Jaan Sey

Jab We Met

A-HED

Bicycle Thieves: In India, Parties Fight Over Political Symbols

If the Elephant Is Taken, How About the Cauliflower? No Live Lions

By **TRIPTI LAHIRI**
Updated March 28, 2012 10:53 a.m. ET

NEW DELHI—When voters turn out for municipal polls in the Indian capital next month, they may be confronted with a bewildering gallery of household items: possibly a cauliflower, nail clippers, a TV antenna and a calculator.

Image: Wall Street Journal

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http://cidco-smartcity.niua.org/

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