Parking policy: Getting the principles right

Parking Reforms for a Liveable City

Centre for Science and Environment

New Delhi, August 17, 2011

Statement of concern to the Supreme Court 2004

First phase of action has stabilised and avoided pollution. But city's air is still polluted….

On vehicle technology and fuel quality

Enforced Euro II emissions standards in 2000, five years ahead of schedule, Euro III in 2005, Euro IV in 2010

Mandated pre-mix petrol to two- and three-wheelers

On alternative fuels

Implemented largest ever CNG programme

Largest ever public transport bus and three-wheeler fleet on natural gas

Other measures related to vehicles

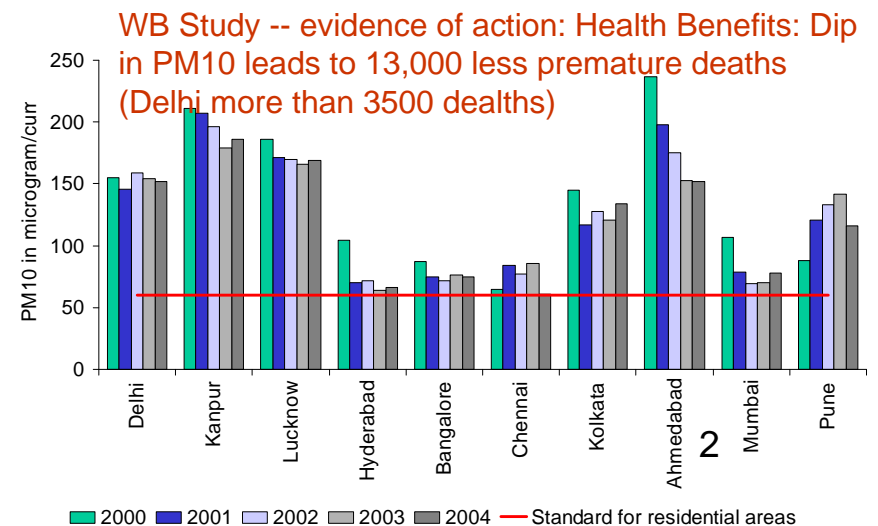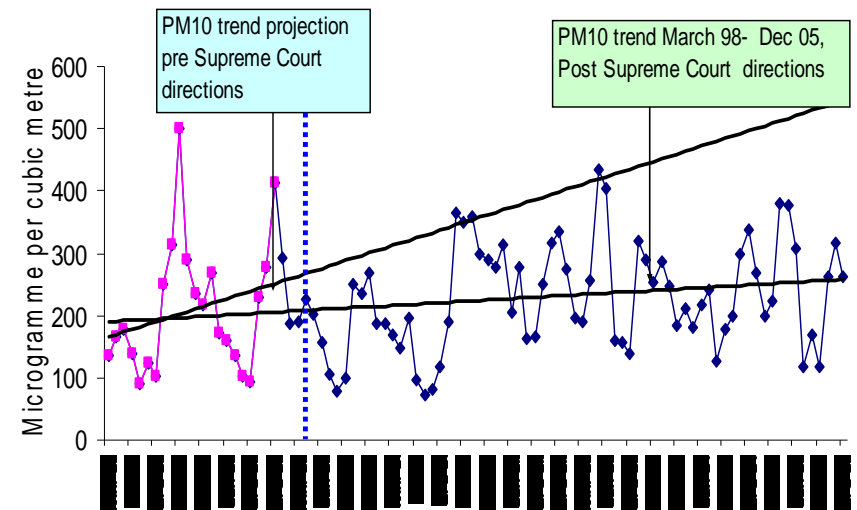Capped the number of three-wheelers

Phased out 15 year old commercial vehicles

Strengthened vehicle inspection programme (PUC)

Efforts made to bypass transit traffic
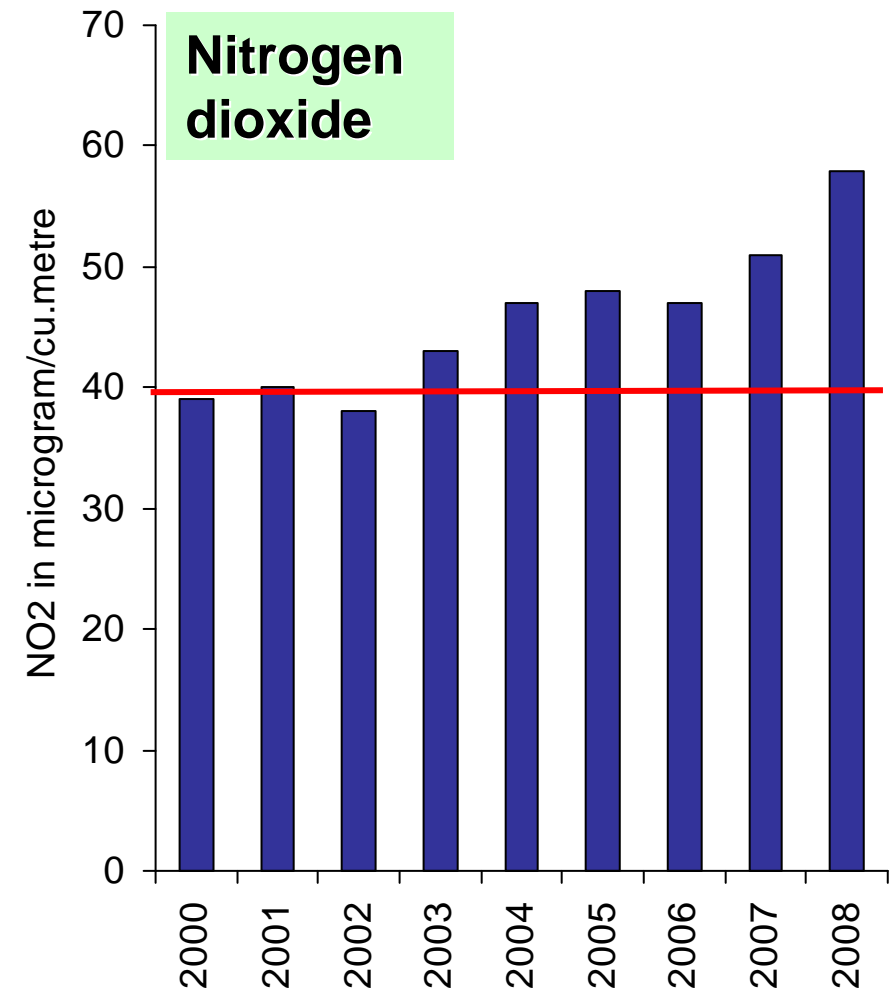
Relocated polluting industry. Stricter action on power plants

PM10 at ITO Traffic Intersection

WB Study -- evidence of action: Health Benefits: Dip in PM10 leads to 13,000 less premature deaths (Delhi more than 3500 dealths)

2

Delhi has lost its gains. After a short respite pollution curve turns upward

RSPM

NO2

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |

Nitrogen dioxide
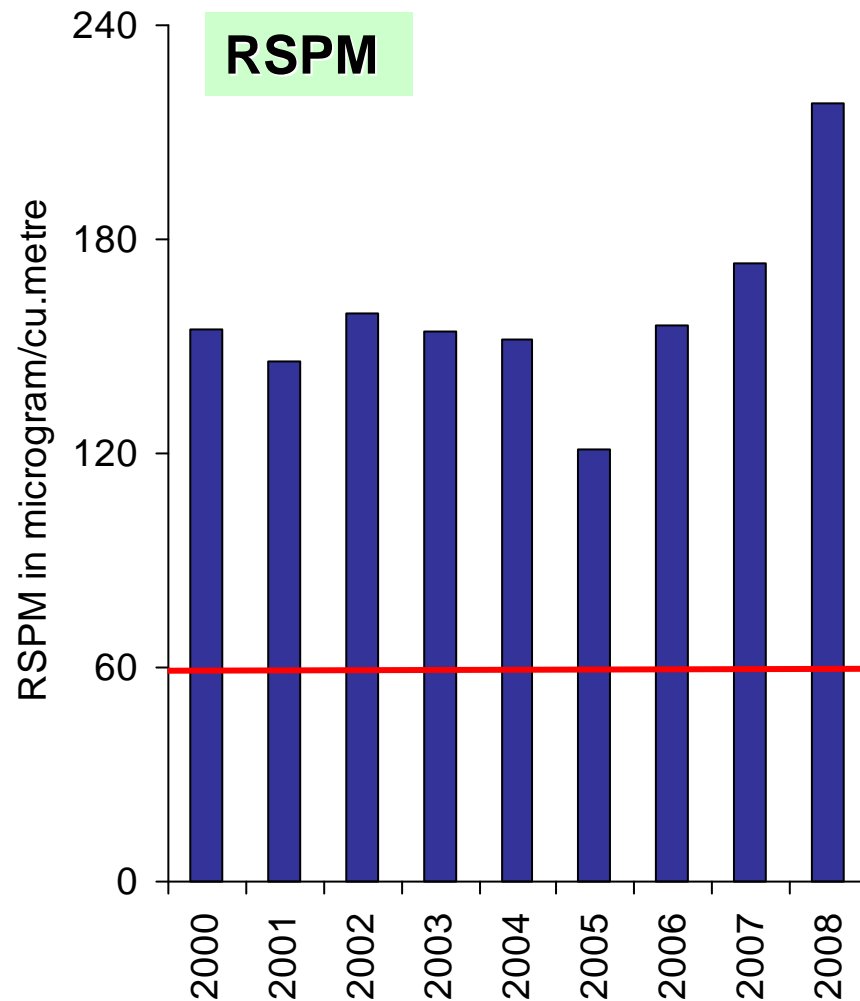
Based on CPCB data

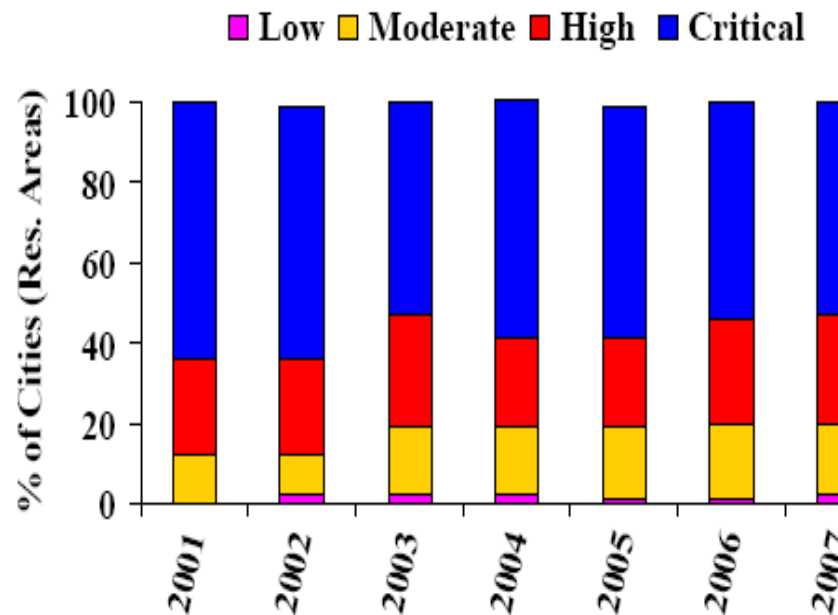# Air quality trends in India: scary

Half of the cities have critical level of PM10

NO2 rising in many cities

PM10

NO2

Source: Estimated based on CPCB data
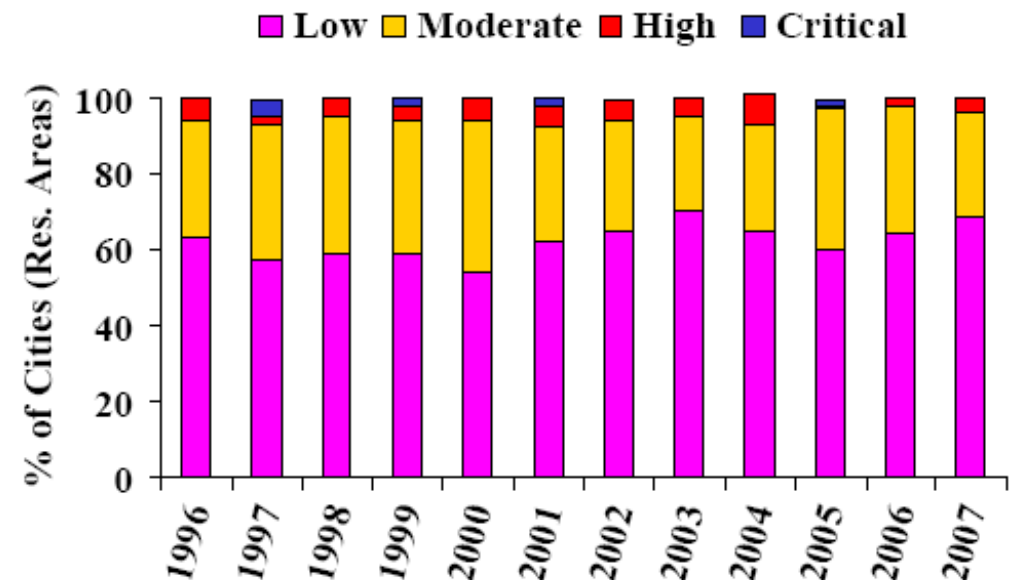
The car bulge
Mobility crisis hits our cities

…… an increasing share of our daily trips are being made by cars that occupy more road space, carry fewer people, pollute more, guzzle more fuel. They edge out pedestrians, bicycles, cycle rickshaws and buses………..

Vehicular emissions contribute to significant human exposure.

The Supreme Court admits the statement of concern. Direction – …Formalise a strategy to control the number of vehicles and congestion…….

2006

"Land is limited and there is a limit to the additional parking space that can be created in the city. This will also require …. well thought out pricing policy to control the demand for parking."

- The provision of parking for personal motorised vehicles cannot be considered as a matter of public good.

- Individual user of personal vehicle should pay for the use of the space for parking and parking facilities. The 'user pays' principle should govern the pricing of parking.

- Government should not subsidise this cost

- Use a wide variety of tools for pricing parking -- time variable rates –etc.

- On the basis of these principles MCD, DDA, NDMC should frame the rationalised pricing policy for all types of parking facilities…

Supreme Court has taken this on board. Issued directives for a parking policy as a demand management tool…….

National Urban transport policy provides for parking as a restraint measure. JNNURM reform agenda linked to the NUTP principles demands parking reforms:

-- Urban land is valuable. Levy high parking fee that represents value of land occupied. This should be used as a means to make use of public transport and make it more attractive. Graded parking fee should recover the cost of the land.

-- Public transport vehicles and non-motorised modes of transport should be given preference in parking space allocation.

-- Easier access to encourage the use of sustainable transport.

-- Park and ride facilities for bicycle users with convenient interchange are a useful measure.

-- Multilevel parking complexes should be made a mandatory requirement in city centres that have several high-rise commercial complexes….

-- In residential areas byelaws need changes to free the public carriageway….

This is an opportunity……...

First reaction …. Provide more parking……

The draft proposals from MCD, NDMC, Traffic Police to the Supreme Court in 2008-9

-- The common position – expand and increase parking provisions; make more multi-level parking to meet the growing demand……

But why is it important to rethink parking policy?

Let us understand the parking crisis Urban land is limited. Where will cities find more land to park cars?

- **Parking: wasteful use of cars**: Out of 8760 hours in a year the total steering time of an average car is 400 hours. For about 90 to 95 per cent of the time a car is parked. (CRRI)

- **Insatiable demand for land**:

    - If demand for land for an average car is computed based on average car size and parking spaces per car -- the total cars already use up close to 10% city's urbanised area. The forest cover in Delhi is 11.5 %.

    - Daily registration of cars is generating demand for land bigger than 310 football fields! Land is expensive and has other opportunity costs.

    - **Inequitous use of land**: A car is allotted 23 sq m for parking. Under low cost housing scheme only 18-25 sq m is allotted to very poor families. The car owning minority using up more and more road space and urban space.
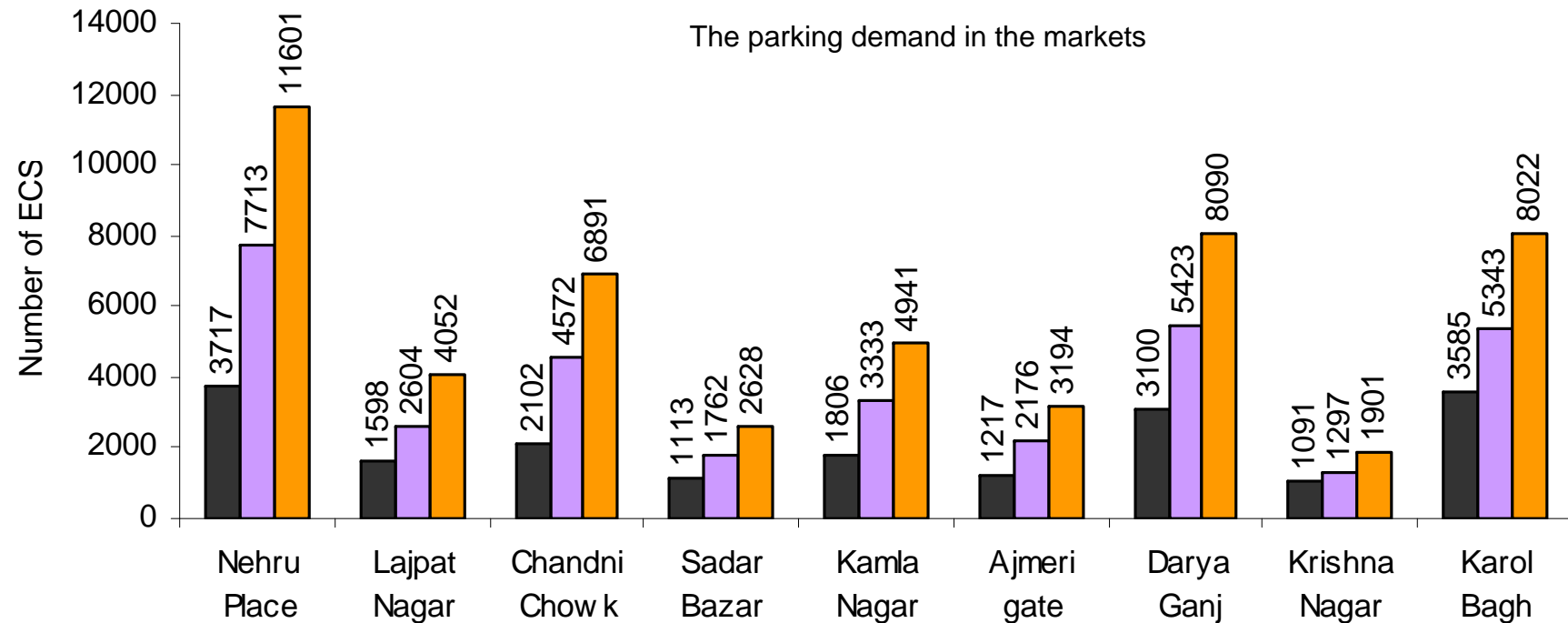
    - **Urban common, green spaces, walkways at risk**

Land is limited. Where will Delhi find more land to park cars?

Parking demand has nearly doubled in five years……

Urban commons under threat

The parking demand in the markets

Number of ECS

Market	Total parking supply (ECS)	Current peak parking demand (ECS)	Maximum projected demand in 2010 (ECS)*
Nehru Place	3717	7713	11601
Lajpat Nagar	1598	2604	4052
Chandni Chowk	2102	4572	6891
Sadar Bazar	1113	1762	2628
Kamla Nagar	1806	3333	4941
Ajmeri gate	1217	2176	3194
Darya Ganj	3100	5423	8090
Krishna Nagar	1091	1297	1901
Karol Bagh	3585	5343	8022

■ Total parking supply (ECS) ■ Current peak parking demand (ECS) ■ Maximum projected demand in 2010 (ECS)*

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Cars and two wheelers worsening parking crisis.
They dominate peak parking demand

Legend: □ Cars ■ Two-wheelers □ Autorick-shaws □ Buses ■ Goods vehicles ■ Other vehicles

Y-axis: 0% 20% 40% 60% 80% 100%

X-axis: Nehru Place | Lajpat Nagar | Chandni Chowk | Sadar Bazar | Kamla Nagar | Ajmeri gate | Darya-ganj | Krishna Nagar | Karol Bagh

Yawning gap between parking demand and parking supply
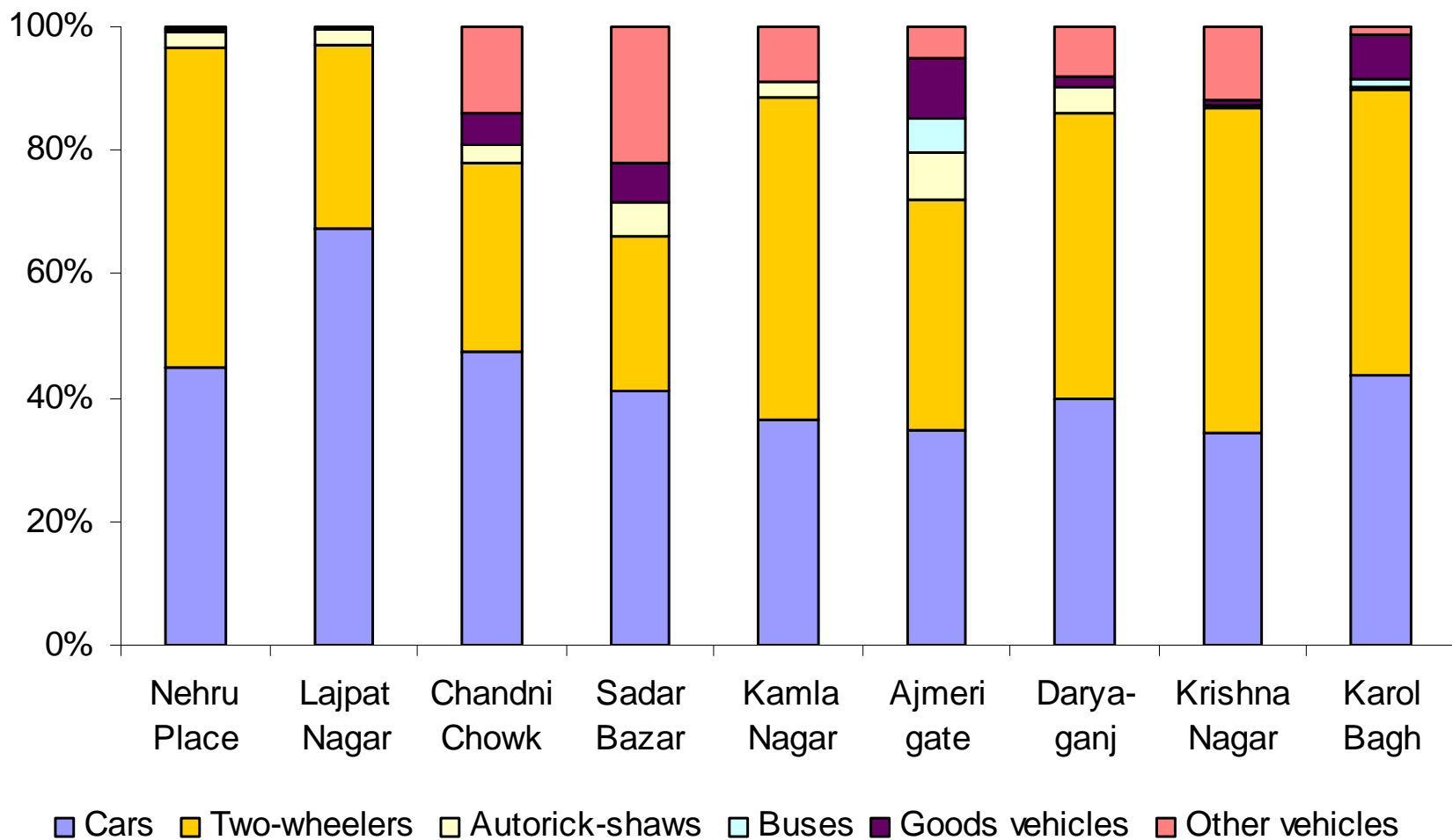
The shortfall in the range of 16 to 52 per cent
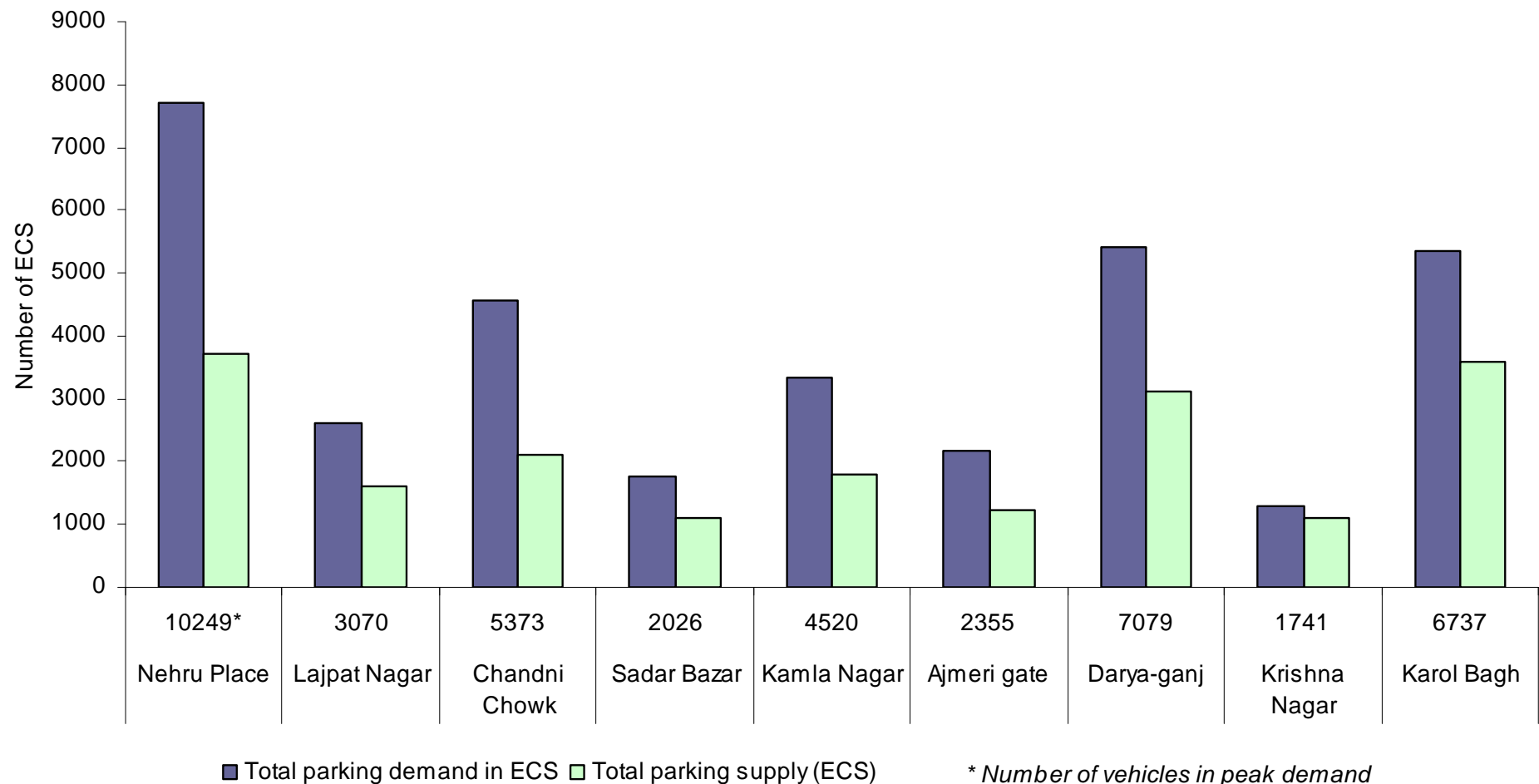
Based on: CRRI 2006, Congestion and parking problems of selected locations in Delhi, Final report, New Delhi, p 160

High share of on-street parking add to traffic congestion

In some areas 45 per cent of the circulation area is under parking encroachment

Location	On street	Off street
Mangalam Place	13	87
BKS Marg	12	88
Sarojini Nagar	39	61
South Ex Part I&II	71	29
Shastri Park	87	13
K G Marg	24	76
Nehru Place	20	80

in %

☐ On street ☐ Off street
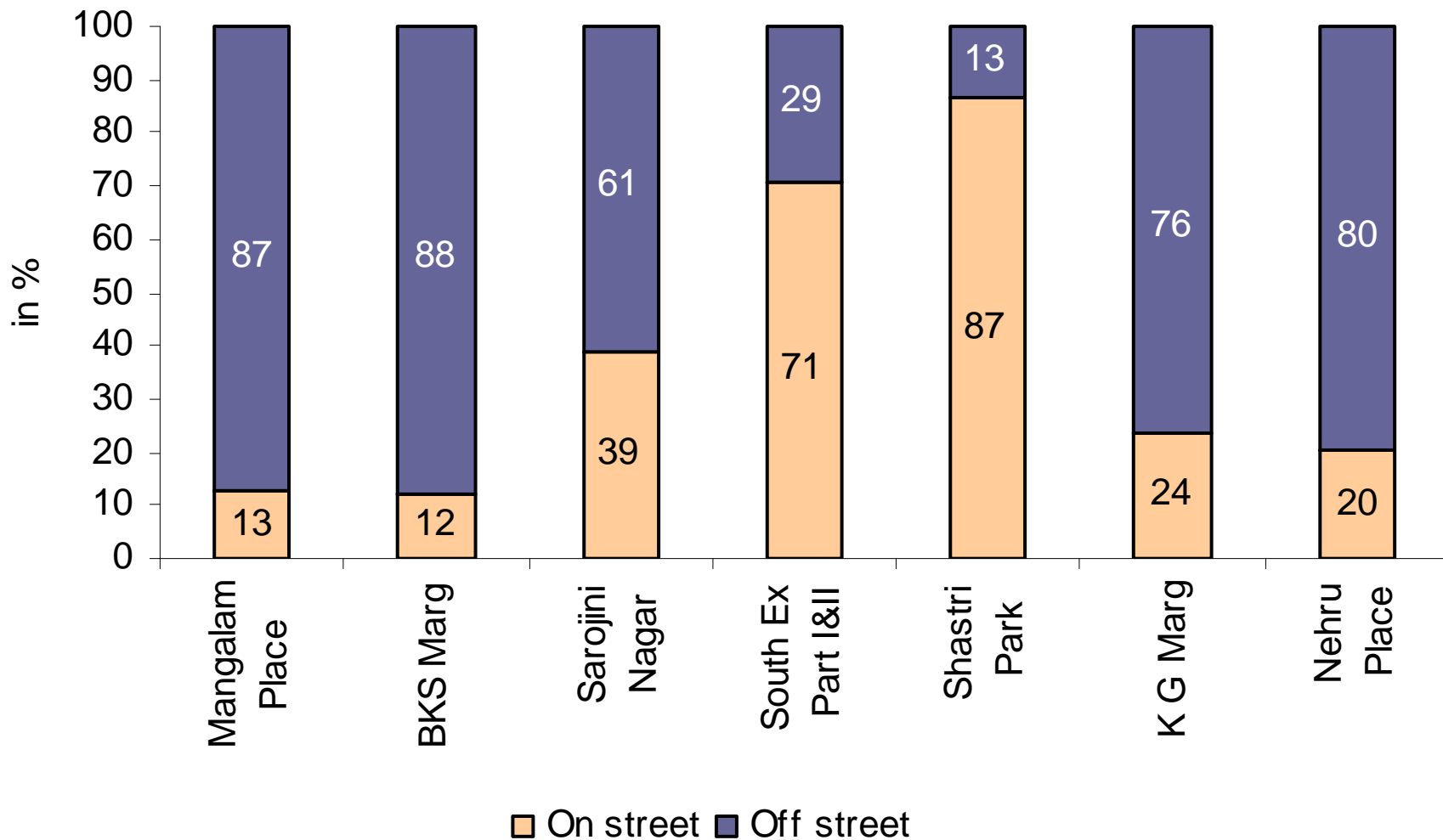
Short term users dominate parking lots

In many sites 50 to 85 percent of users stay upto 2 hours

Parking duration
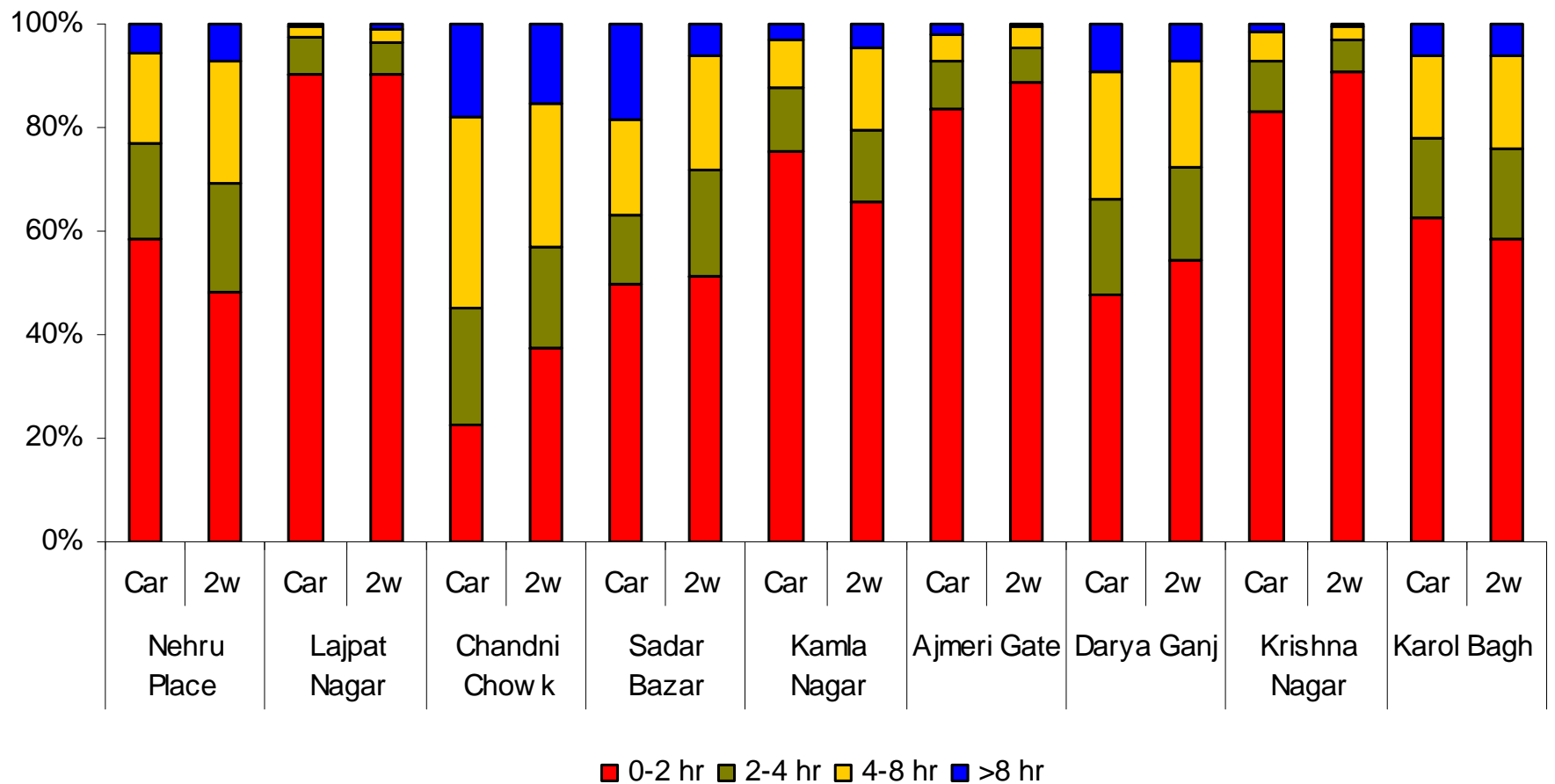
Legend: ■ 0-2 hr ■ 2-4 hr ■ 4-8 hr ■ >8 hr

Sites (Car / 2w): Nehru Place, Lajpat Nagar, Chandni Chowk, Sadar Bazar, Kamla Nagar, Ajmeri Gate, Darya Ganj, Krishna Nagar, Karol Bagh

Source: Based on CRRI Study

Car user profile

Legend: ☐ Employer ☐ Employee ☐ Shopping ☐ Trade for business ☐ Others
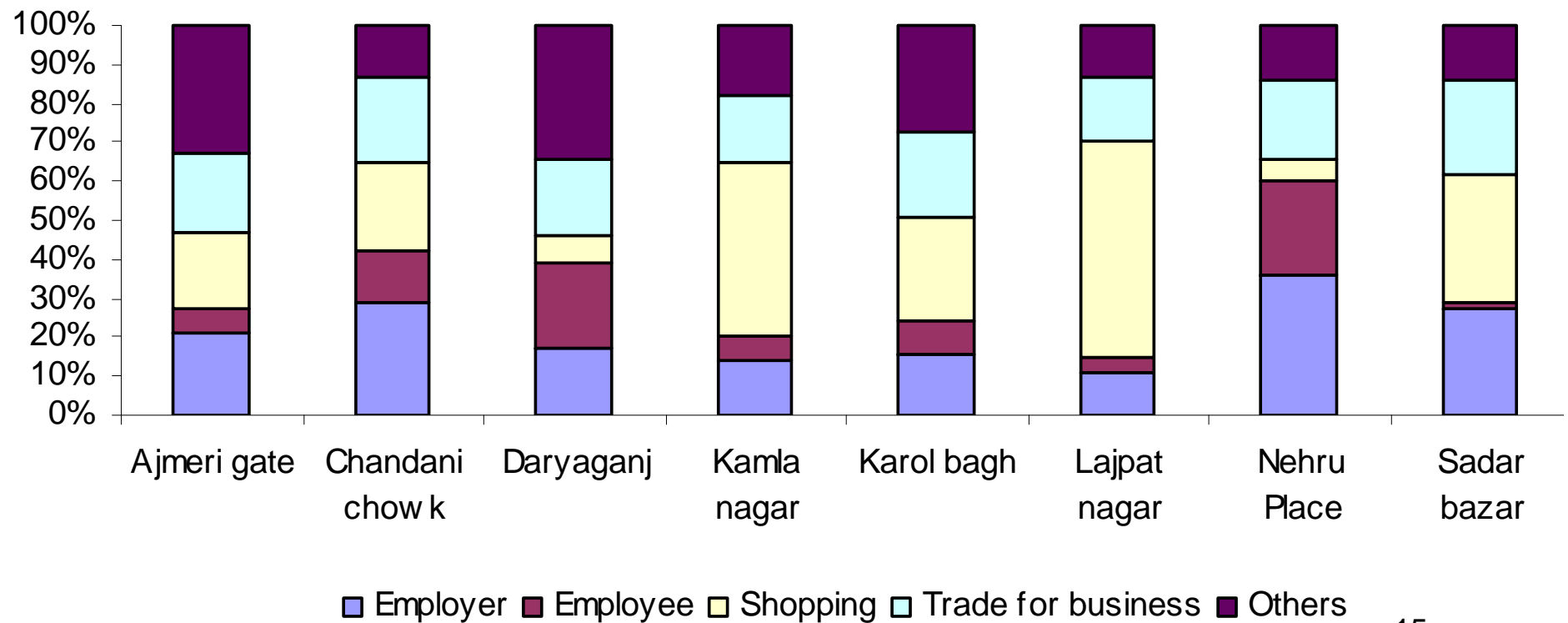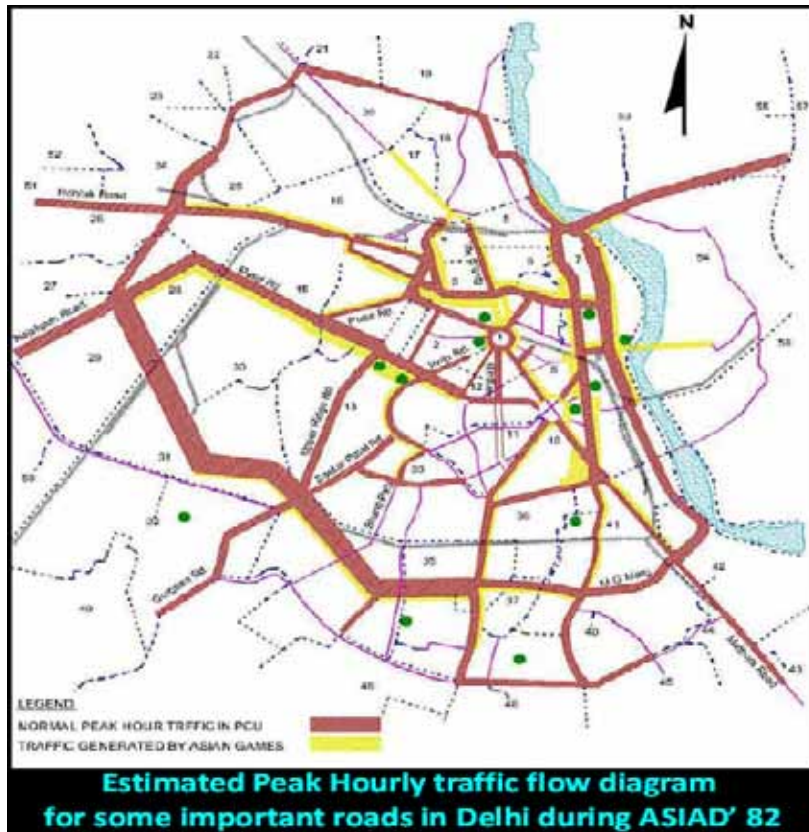
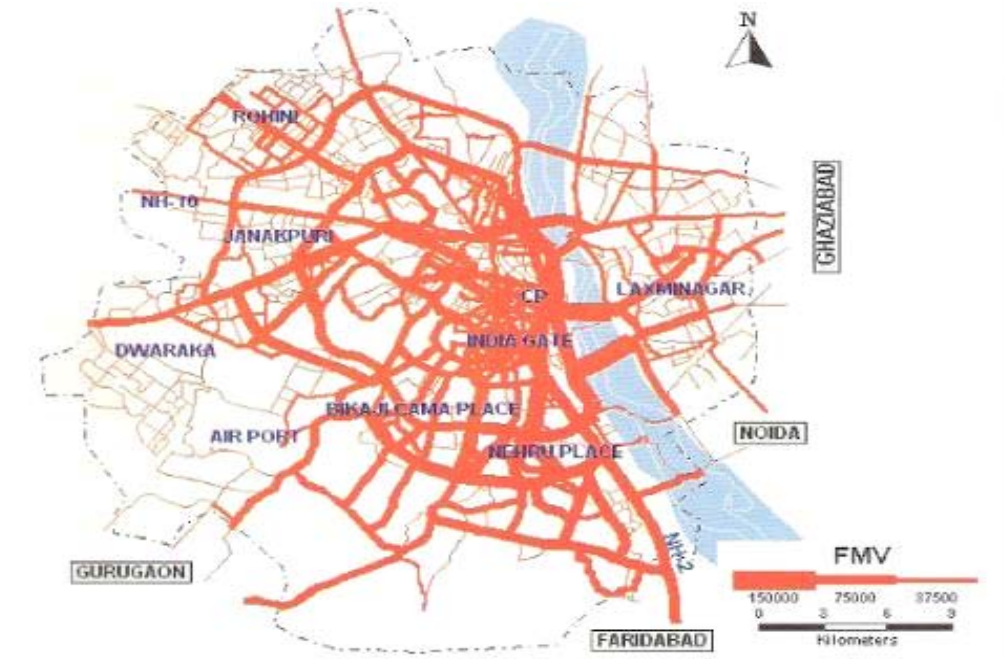# Minimise on-street parking. Roads under pressure

Asiad 1980

Source: CRAPHTS

Delhi before Commonwealth

Source: RITES/CRRI

During Asiad in 1980 arterial roads with dense traffic were much fewer

Central Road research Institute survey in 2007 shows now traffic in 51 arterial roads have exceeded designed capacity.

Uncontrolled on-street parking will aggravate congestion

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The first steps......

Find method in the madness....Tame the chaos

-- Demarcate legal parking spaces

-- Inventorise the parking spaces

-- Put out the list on the website

-- Introduce handheld metering

-- EPCA directives to MCD, NDMC in Delhi

-- Similar moves in other cities – Chennai, Pune, Pimpri Chinchwad etc

-- Impose penalty

Important as on-street parking cannot be eliminated. Needs to be managed well.

DATTAWADI TRAFFIC DIVISION - PARKING & NO PARKING MAP

INDEX

Pune, Pimpri Chinchwad getting organised
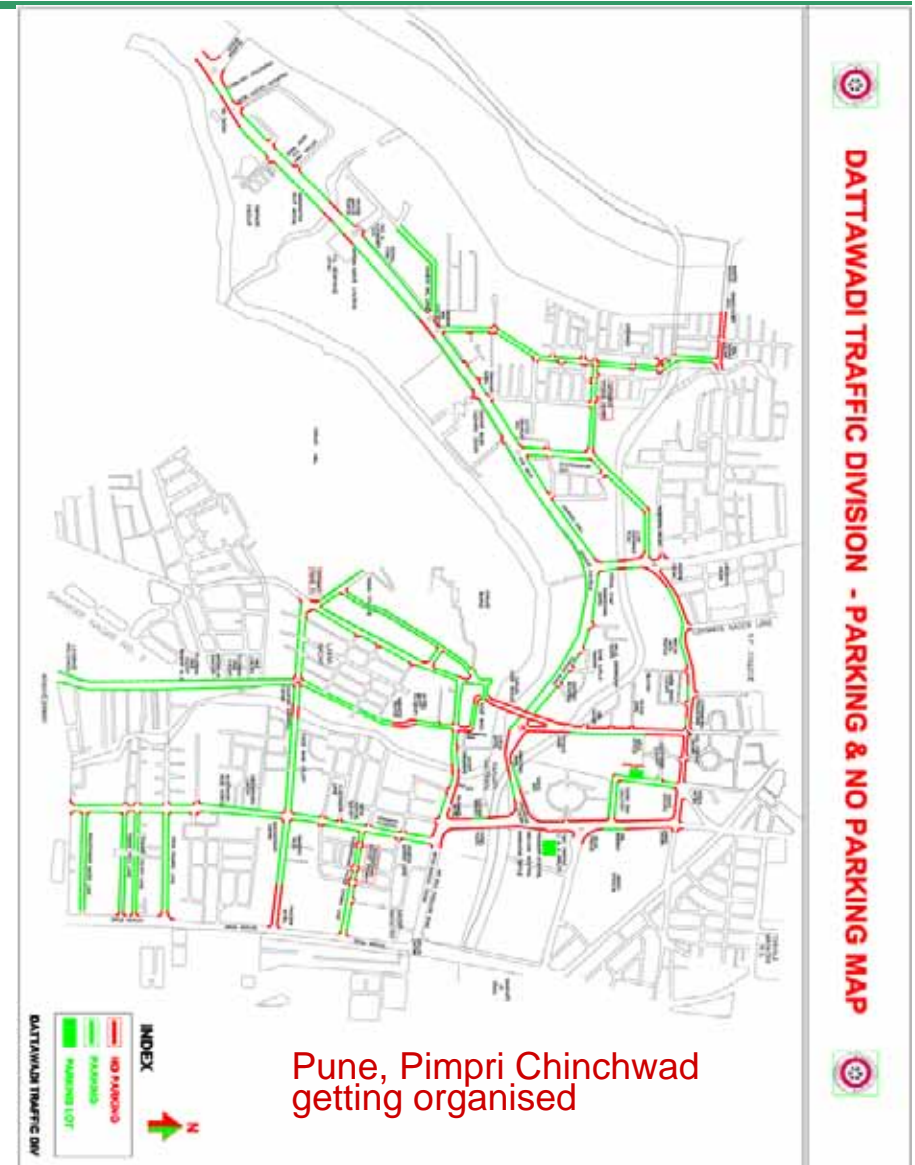
The confounding questions……

How much parking do cities need? Or is this a right question?

How can parking policy …..

    ….. reduce pollution and congestion?
    ….. reduce demand for parking?

How can parking pricing make a difference?

How can parking policy integrate different modes, reduce car
    dependency and shift to alternatives?

How do we reinvent parking policy?

Parking and clean air?

It was still not clear to many how good parking management and restraints can reduce air pollution and public health

There are obvious benefits of reducing exhaust pipes with restraint measures.

Even in the car manic US, the city of Boston froze their parking requirements at a level that is only 10 per cent higher than the 1973 level to meet the Federal clean air standards.

In New York very high parking fees and limited parking supply have lowered car ownership far below the average rates in other US cities.

How much parking should cities provide?

The convention: **Cities set parking norms and define building bye laws for making parking provision… But there is no common matrix**

Delhi Master Plan 3 ECS/100 sqm in Commercial; 2 ECS/100 sqm in residential; 1.8 ECS/100 sqm in Government buildings. Kolkata and Pune specify ECS per 75 sq m; Hyderabad -- percentage of built up area……and so on

Indian standards are minimum standards. One can provide more…..

But the practice is changing globally………….

Shifting from minimum requirement to maximum caps

Flexible standards: Eg. In Hong Kong parking provision is decided based on accessibility of an area. In Tokyo parking norms in CBD lower than Delhi…..

Rigid norms can create over capacity: Account for improved accessibility to limit future expansion and reduce parking demand

- Improved access can lower parking demand. Sites may change from parking deficit to parking surplus. The parking plans must account for the changes in parking demand with improvement in public transport. For Eg, -- In CP parking demand dropped by 10% after introduction of metro.

- The feasibility study for Mangalam Place projects shift in modal split in favour of public transport after metro. DMRC study shows that in Vikas Marg metro can reduce the trips of different modes. That will indirectly impact upon parking demand.

Opt for common and shared parking. Discourage individual – private parking 20

Can parking pricing make a difference?

Free parking induce more car ownership and driving…………But huge resistance to priced parking…

The Khan Market imbroglio

Shoppers fight for free parking for their affluent clientele; take on the burden to pay license fee to NDMC; Defeats user pay principle; Settle down for a lower bound fee; Why?

The license fee works out to be only Rs 93/sqm. If paid at the rate of Connaught Place it would have been at least Rs 186 per sqm. – But real estate value of that land is astounding…….

Eliminate hidden subsidy…..

Global experience shows that appropriately priced parking can make significant impacts: Shifting from free to cost recovery parking rates can reduce automobile commuting by 10-30 per cent especially if linked with transportation choices

• What principles must guide parking pricing?

Parking pricing evolving in Delhi……

NDMC strategy: Graded parking rates according to the commercial importance of the area. Also time variable rates:

> **Category A:** (Connaught Place, Dilli Haat, INA etc)
>
> **Category B: (**Pandara Road, Sarojini Nagar, Bengali market etc)
>
> **Category C: (**Government offices, Supreme Court, High Court etc)

Parking rates are highest in category A. This is further graded according to peak and lean hours: -- Surface parking Rs 10 (2hr); Rs 10/hr (Palika parking)

MCD and DDA charges are very nominal and are not graded: Rs 10 for 10 hours

Pricing and structured parking…..

Surface area is exhausted in prime areas:

NDMC: Area of available surface   parking:
NDMC: 1.6 lakh sq m
MCD: NA
DDA: 1.35 lakh sq m

All civic and development agencies have proposed nearly 27 multilevel structured parking: NDMC – 3; MCD – 19; DDA – 5

There is little policy clarity about the economics of capital intensive multilevel structures

Multi level parki ng lot

Off street parking

Huge investments. Cost recovery minimal

All cities are planning multilevel parking structures; JNNURM funding available……

Capital cost vary depending on the type of structures

Stack parking 16 sqm/ECS @ Rs 1.5 lakh/ECS

Conventional multi-level parking 23sqm/ECS @ Rs 4-6 lakh/ECS

Baba K Marg/Sarojini -- Rs 8 lakh/ecs:

Rs 10/2 hr+ Rs 10 over 2 hr/Rs 50 full day (12 hr), 500 metres/no parking area

Delhi Master Plan allows 25% of the area to be used as commercial complex to cross subsidise the cost of providing parking. This restricts the available area for parking. Also induces more parking demand.
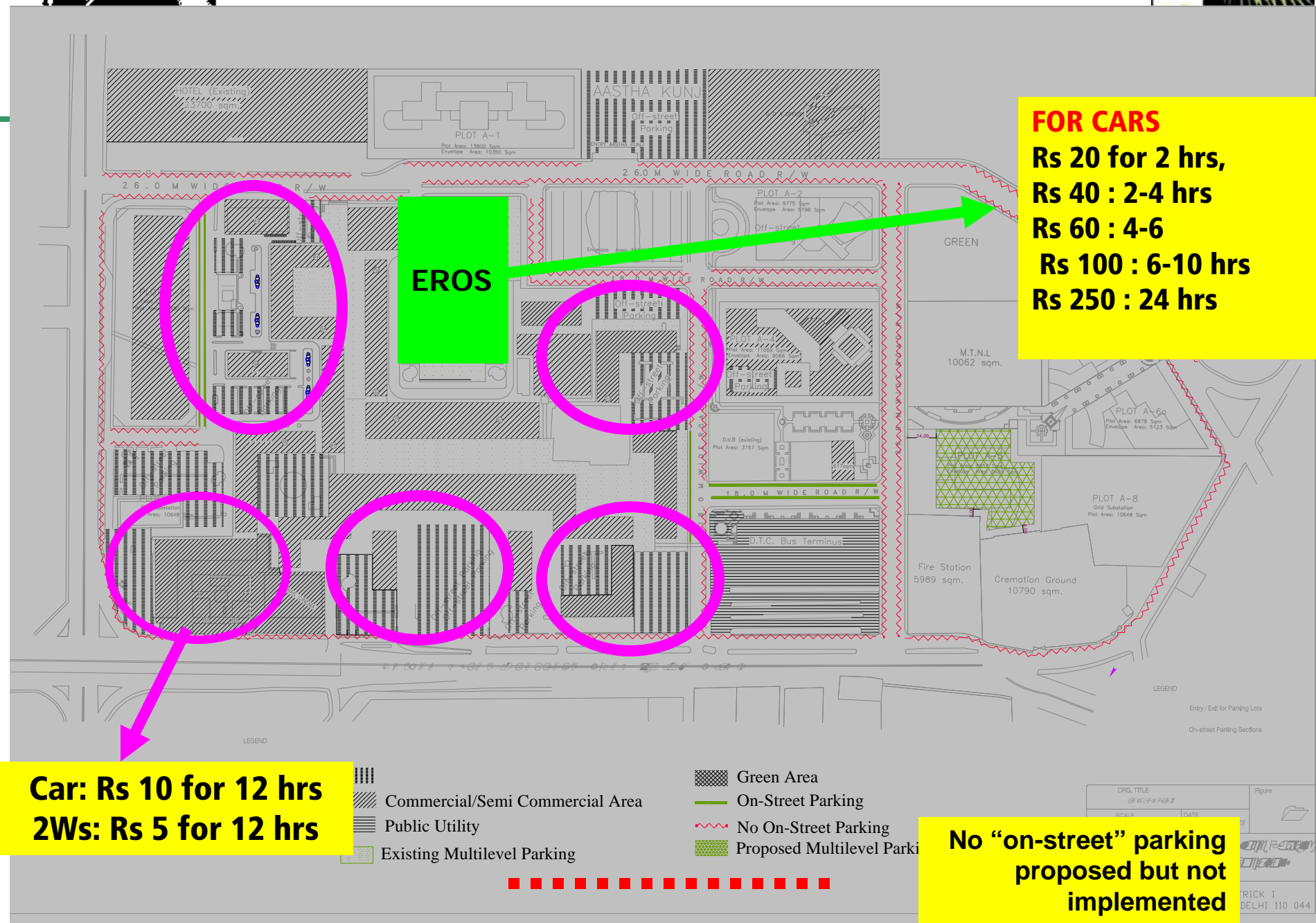
Understanding cost of multi level parking

	BKM multi level parking		HT multi level parking	
	Parking and commercial	**Parking only**	**Parking and commercial**	**Parking only**
ECS	941	780	1,209	1,025
Cap. Cost Rs in lakh per ECS	4	4	4	4
Total Cost in lakhs (including cap, working, taxes etc) (Net Present Value)	**5,290** (Rs 1672 per sq feet)	**3,849**	**7,523**	**5,310**
Revenue in lakhs (NPV)	**6,724**	**4,168**	**9,352**	**5,574**
IRR in %	12.68	12.67	12.68	12.69
Parking charges	**Rs 10/h**	**Rs 30.25/h**	**Rs 10/h**	**Rs 39/h**

Harmonise parking rates for MLP and surface parking

EROS

FOR CARS
Rs 20 for 2 hrs,
Rs 40 : 2-4 hrs
Rs 60 : 4-6
 Rs 100 : 6-10 hrs
Rs 250 : 24 hrs

Car: Rs 10 for 12 hrs
2Ws: Rs 5 for 12 hrs

No "on-street" parking proposed but not implemented

Green Area
On-Street Parking
Commercial/Semi Commercial Area
No On-Street Parking
Public Utility
Proposed Multilevel Parki
Existing Multilevel Parking

Need parity of rates between structured and surface parking

Mumbai: Discrepancy in rates can lead to underutilisation of MLP

INOX the multiplex in Nariman Point: Before construction of MLP: No. of surface parking spaces: **140,** Utilisation: **100%** during office hours

After: No. of parking spaces: **540,** Utilisation of MLP during office hours: **10%** Parking rates are Rs 5 per 30 minutes or Rs 10 per hour.

Surface parking rates : Rs 5 per hour and Rs 3 for every additional hour.

Resolve this

New game in town: Free floor space index (FSI) to builders to builders to create free parking lots.

Poor utilization

Situation in INOX Parking area on 5th May 06 – a weekday at peak time of 11:am

Source: Mumbai Environmental Social Network

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- **Eliminate and minimise free parking in key areas with good public transport access**. This will encourage people to use other forms of transport and reduce congestion.

  Introduce variable parking rates according to peak hour, duration of stay; commercial importance of areas; according to weekdays when demand is high, and weekends when low. Higher rates for bigger vehicles

  Charge convenient parking spaces higher than the inconvenient places to reduce congestion and influence commuting choices:

  Limiting parking duration for short term users can ensure higher customer turnover rates for local businesses and also reduce local congestion.

- **Free parking should be allowed only to cycles and cycle rickshaws and battery operated vehicles and public transport vehicles. Park and ride. Give NMT a greater privileged access to public transport**

  Proposal of annual lump sum payment retrograde: Annual passes allow unlimited use and do not reduce demand. Commuter behaviour will remain unresponsive

- **Caution on liberal byelaws to create more parking: Need proper pricing**

- **How will government fix rates if cities move towards full cost pricing? Should rates be market driven?**

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Nascent steps in pricing reforms….

Kolkata takes the lead by hiking parking charges

Rate Chart for Day Parking

Category of parking space	Previous parking rates Rate / hour or part thereof, for first hour (in Rs.)*		Revised parking rates effective from 1st August, 2011 Rate / hour or part thereof, (in Rs.)*	
	Two wheelers	Cars / vans	Two wheelers	Cars / vans
A	3	7	5	10
B	2.5	6	5	10
C	2.25	5	5	10

In Kolkata a car pay Rs 80 for eight hours
In NDMC area of Delhi:

  Group A areas (Rs 70): Rs. 10 for first two hours, Rs 10 For every subsequent hour & part thereof
  Group B areas (Rs 30): Rs 10 for first 4 hrs, Rs 30 for 4-8 hrs, Rs 50 for beyond 8 hrs
  Group C areas (Rs 30): Rs 10 for first 4 hrs, Rs 30 beyond 4 hrs
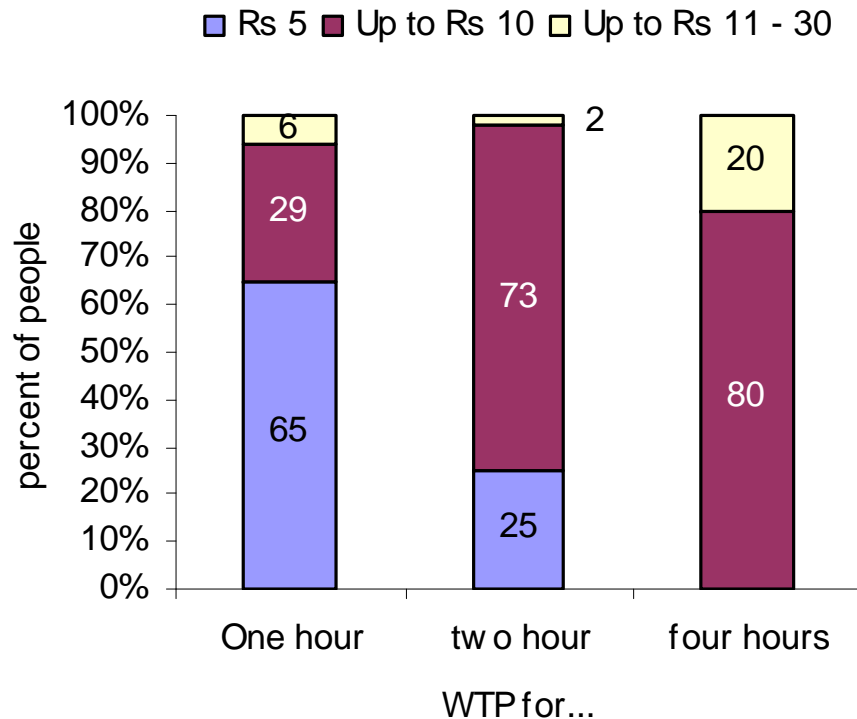 **Delhi (MCD) (Rs 10)** Rs 10 for up to 10 hrs, Rs 20 for 10-24 hrs

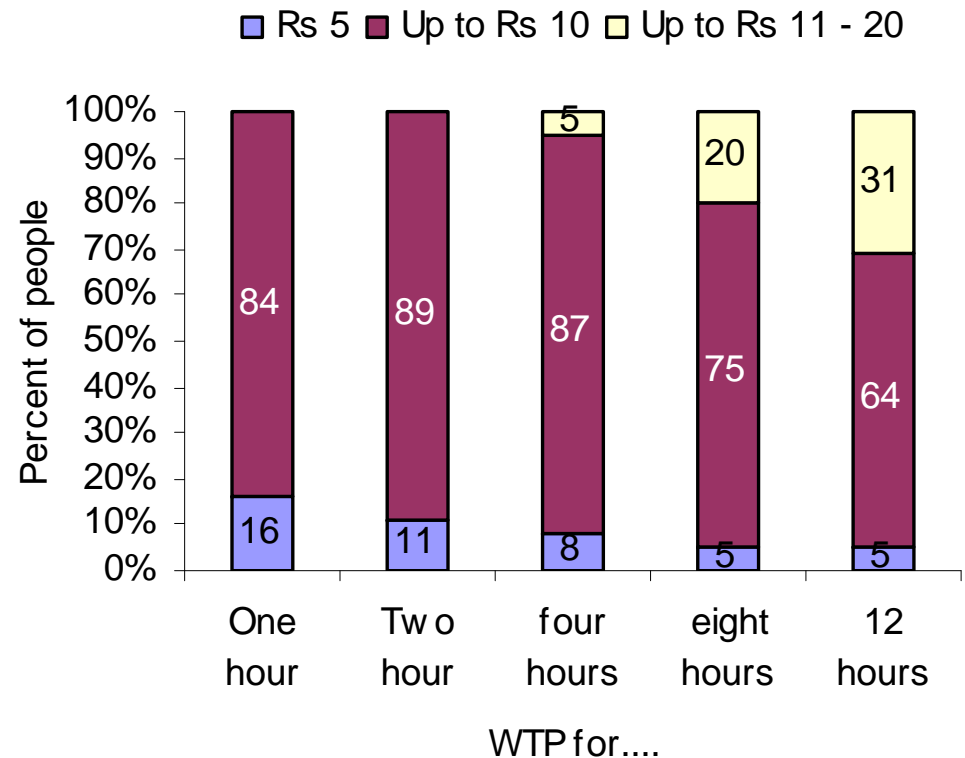# Willingness to pay is low.

Surveys do not reflect ability to pay

Most people prefer up to pay Rs 5-10 for one hour parking,

Long term users prefer Rs 20-30 for 4-12 hrs parking (i.e. Rs.2.5 per hour)

NDMC-BKM

Legend: Rs 5 | Up to Rs 10 | Up to Rs 11 - 30

percent of people

WTP for...

One hour: 65, 29, 6
two hour: 25, 73, 2
four hours: 80, 20

DDA-Mangalam

Legend: Rs 5 | Up to Rs 10 | Up to Rs 11 - 20

Percent of people

WTP for....

One hour: 16, 84
Two hour: 11, 89
four hours: 8, 87, 5
eight hours: 5, 75, 20
12 hours: 5, 64, 31

How parking can be leveraged for multi-modal integration and to improve access?

--- Deploy parking innovatively to facilitate shift to other modes

--- Park and ride facilities to improve public transport usage.

--- Build them away from the busy commercial centres and connect with NMT, IPT, PT and pedestrian ways.

-- Public transport buses and NMT to be given priority and privileges in the design for integration.

-- Park and walk and park and ride in targeted areas

--- Provision for buses, and freight

Park and walk – increases customer throughput

Parking in residential and mixed land-use areas

Densification and mixed land use are needed for compact cities to reduce travel distances, reduce fuel use, improve efficient use of public transport, reduce car use, make cities walkable…….

But parking is a flash point in mixed land use areas…..Find solution …

-- Promote shared and collective parking instead of individual owner parking

-- Introduce priced parking. Enforce residential parking permits that can be purchased for on-street parking.

-- De-link cost of residential units from the cost of the parking space. Pay separately for parking spaces. Higher tax for multiple car ownership

-- MPD 21 links vehicle license to parking space.

-- Environment impact assessment of high impact buildings

Lajpatnagar

Chandni Chowk

Protect green areas from parking

Prevent erosion of green cover for parking provision

MCD is charging one time parking rates from property owners to create off site parking facilities …. But no space available on the designated commercial streets…..

MCD is trying to create underground parking space under play grounds and green spaces. Not allowed. Public protest.

-- EPCA: parks / playgrounds would not be permitted to be utilized for parking purpose as it would destroy breathing space / playground for children.

-- The nine locations where such constructions have been allowed, are mandated to restore 90 % of the site to flat playground conditions with landscaping using shrubs and grasses. On the remaining 10% land on the sides, trees will be planted. A small portion will be used as ramp.

-- Important to protect green parks and spaces in the neighbourhoods. Public protest.

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Mizoram Regulation and Control of Vehicles Parking

To own and buy a car…..

- the owner of any type of motor vehicle including two wheelers shall have a garage within his own residential or business compound or in some other place, or a garage hired from any other person, for parking the vehicle (*The Mizoram Gazette, Vol XL, Issue No. 52, February 2011*)

- Purchaser, before purchasing any type of motor vehicle including two wheelers or the person intending to purchase any such motor vehicle shall obtain a certificate from the ….transport department…that he has a garage, within his own residential or business compound or in some other place, or a garage to hire from other person, for parking the vehicle he intends to purchase (*The Mizoram Gazette, Vol XXXIX, Issue No. 295, August 2010*)

Parking revenue for public good

- **Parking revenue has been earmarked to create dedicated urban transport funds**

-- Periodic license renewal pegged to the market driven parking rates can be an important source of revenue.

-- Tax parking spaces at the same rate – if the land was used for other developments. Offset revenue losses from the other potential uses of the land

-- Use parking pricing revenue to fund transportation and other local area development programmes,

-- Finance special transportation and pollution reduction projects etc.

Other countries are limiting and pricing parking supply

Portland, Oregon set an overall cap of 40,000 parking spaces downtown. This increased public transport usage from 20-25 per cent in the 1970s to 48 per cent in mid 1990s.

Seattle allows a maximum of one parking space per 100 square metres at downtown office

San Francisco limits parking to seven per cent of a downtown building's floor area

New York: Very high parking fees and limited parking supply lowers car ownership far below the average rates in other US cities.

Boston has frozen parking requirements at 10 per cent higher than the 1973 levels. This has helped Boston to meet the federal clean air standards.

Bogota has removed limit on the fees that private parking companies can charge. The revenue is dedicated to road maintenance and public transit improvement.

Shenzhen: Hike in parking fees during peak hours leads to 30% drop in the parking demand.

Tokyo: Enforcement against parking violations cuts congestion drastically . Private firms allowed to issue tickets for parking violations. This makes on-street parking expensive.

Bremen: No free parking in city centre. Parking charges higher than public transport cost.

Globally, customers agree to pay high parking charges if they get good shopping and pedestrian environment. This also improves business.

What other countries are gaining from parking policy?

Clean air gains:

Boston: When Boston was unable to meet the federal clean air standards it froze the parking requirements in the city at a level that is only 10 per cent higher than the level in 1973. This has helped them to control car usage and meet the federal clean air standards.

Amsterdam -parking fees expanded to meet EU directives regarding NO2 and PM10 emissions. Car plate numbers are registered with emissions information. Trucks are allowed to unload for a maximum of 15 minutes in spots where they are not allowed to park

Zurich considers total NO2 emissions when determining the amount of parking to be allowed.

New York has lowered pollution levels with parking policy

Increased ridership of public transport:

Portland, Oregon, set an overall cap of approximately 40,000 parking spaces downtown, and allowed for only 3 per cent increase in spaces in 1990. Result -- nearly 43 per cent of commuters that came into the city centre shifted to public transport. Seattle allows a maximum of one parking space per 100 square metres of downtown office space and excess amount is allowed only by administrative review. Result -- Nearly 45 per cent of city centre employees use public transport and few carpools set aside spaces.

Financial benefit of parking revenue:

Barcelona, Spain -- all the revenue from parking fees was directed to a special fund for mobility purposes.

In **Antwerp, Belgium** parking fines are currently invested into mobility projects in the city.

Copenhagen collected 180 million DKK (€24 million) in fines in 2008. The parking money goes into a general city fund.

In **London**, parking income must be channeled to transportation projects.

Public support can be stronger if people understand the benfits

Car user will benefit: More reliable and predictable advance information about parking
Reduce cruising time and fuel cost. Efficient billing makes payment more transparent and accurate. Chances of finding a space improves; reduces waiting time. This decreases traffic chaos due to indiscriminate on-street parking.

Non-car user will benefit: Protect footpaths and allow barrier free walking;
frees up public spaces for cycle tracks, rickshaw parking, autoriskshaw-parking, play grounds;
Improves access to bus-stops. Improve safety of children, women and elderly people.
Improves visibility of shops, shopping experience and throughput of customers. Improve overall environment, green areas and public recreational spaces. Make it easier for emergency vehicles like ambulances, fire trucks, police, etc. to reach all homes/ offices/ buildings.

Public health will benefit: Reduce car use/ dependency which can reduce air pollution and congestion in the city. Noise level can also be controlled. Global experience shows that when parking policy is designed as a travel demand management it reduces car usage and therefore congestion, air emissions as well as fuel use. Boston, New York etc

Build public support for parking tool that restrains car usage

The way ahead
Devil is in detail….

- Adopt flexible parking standards and gradually move towards maximum caps to account for improved public transport access and reduction in personal vehicle travel.

- Integrate parking design with multi-modal integration

- More stringent controls and enforcement in areas well served by public transport

- Parking pricing -- Minimise free parking, restrict on-street parking, use variable parking rates, avoid fixed annual payment, price parity between surface and multi-level parking etc.

- No parking on green spaces, pavement, NMT lanes, and service lanes. Non-negotiable.

- Need parking strategy for residential areas and mixed land use areas.

- Use parking revenue for other congestion reduction strategies and local amenities

- Stringent penalty on parking violations.

- Develop parking strategy for special localities like hospitals, railway station, cinemas, shopping malls, schools, high impact events etc

- Design parking strategy for buses, IPT, freight

- Commercial buildings with more than 20,000 sqm need Environment Impact Assessment. Parking and congestion impacts of these buildings should be assessed

Thank You