

Rising Automobile Dependency

How to break the trend?



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**6th Environmentally Sustainable
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- ▶ Why is automobile dependency wrong?
- ▶ Myths with automobile use
- ▶ How to break the trend?
- ▶ How can developing cities break the trend?

Why is Automobile Dependency wrong?

- ▶ Excessive use of automobile
 - Lack of alternative modes of travel
- ▶ Public Health
- ▶ Road Safety
- ▶ Economic loss
- ▶ Air pollution
- ▶ Loss of liveability

This is where we're getting to, following the current trend... is it what we want?



Transport Paradox

Transport is unique as the only development sector that worsens as incomes rise. While sanitation, health, education and employment tend to improve through economic development, traffic congestion tends to worsen.

- Peñalosa



Lloyd Wright



ติดต่อ 02-335055-9
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Economic Loss

- ▶ Working hours spent in traffic (ex. Bangkok, affecting up to 8% urban GDP growth, 1/3rd commute time in China lost in congestion, and so is 5-10% of personal income)
- ▶ **Fuel is imported in many developing countries**
- ▶ High %age of income is spent on transport



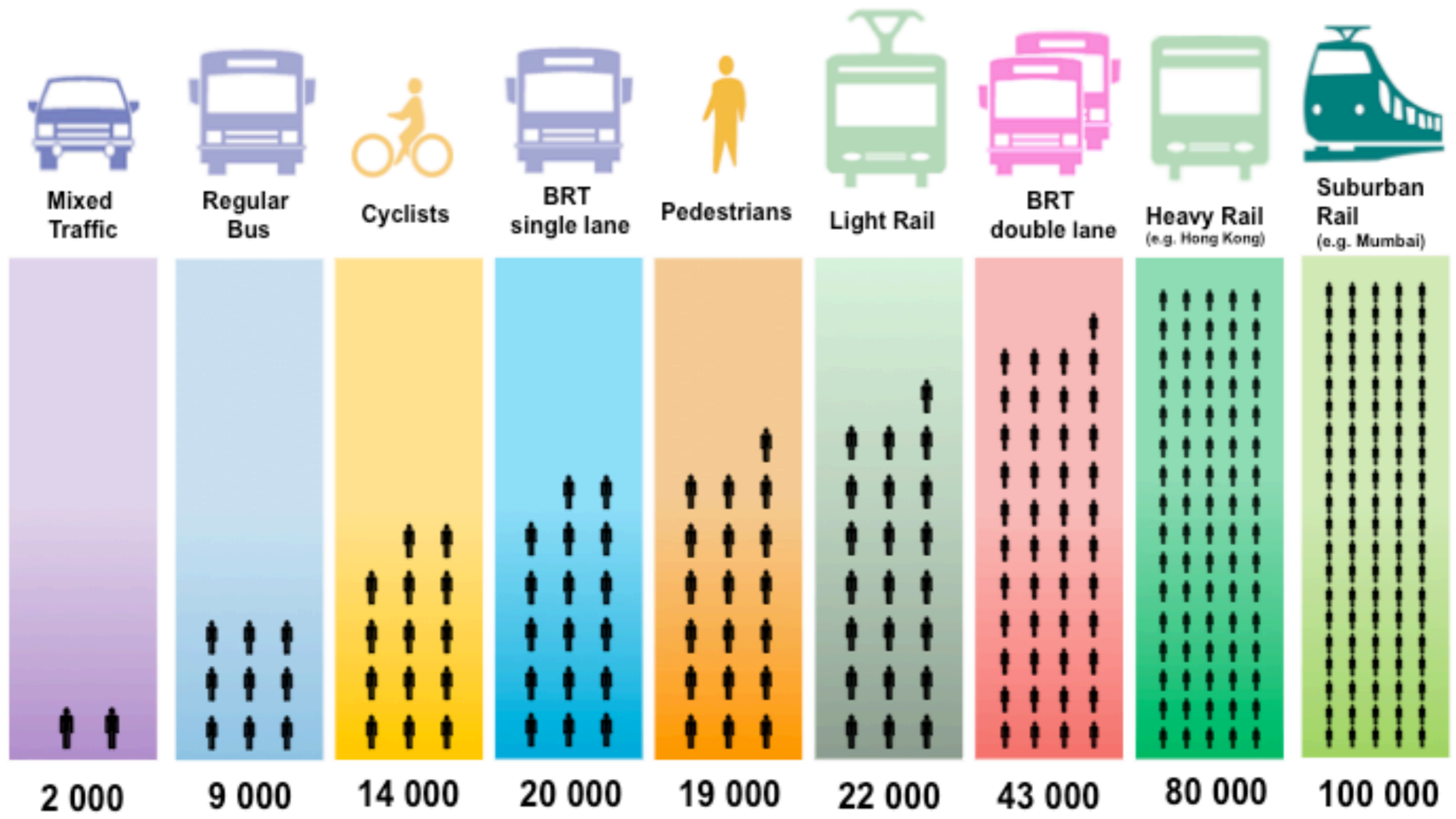
Image source: Carlos F. Pardo

Space requirement

Mode	Standing	Moving	Travel Area	Parking Area	Total Area
	Sq. Metres	Sq. Metres	Sq. Metre–Min.	Sq. Metre–Min.	Sq. Metre–Min.
Pedestrian – 5 km/h	1	3	120	–	120
Bicycle – 15 km/h	2	9	360	960	1 320
Bus – 25 km/h	2	2	80	–	80
Automobile – 30 km/h	10	30	1 200	4 800	6 000
Automobile – 100 km/h	20	300	12 000	9 600	21 600

This table compares road and parking space requirements for a 20-minute commute by various modes, measured in square-metre-minutes (m² times number of minutes).

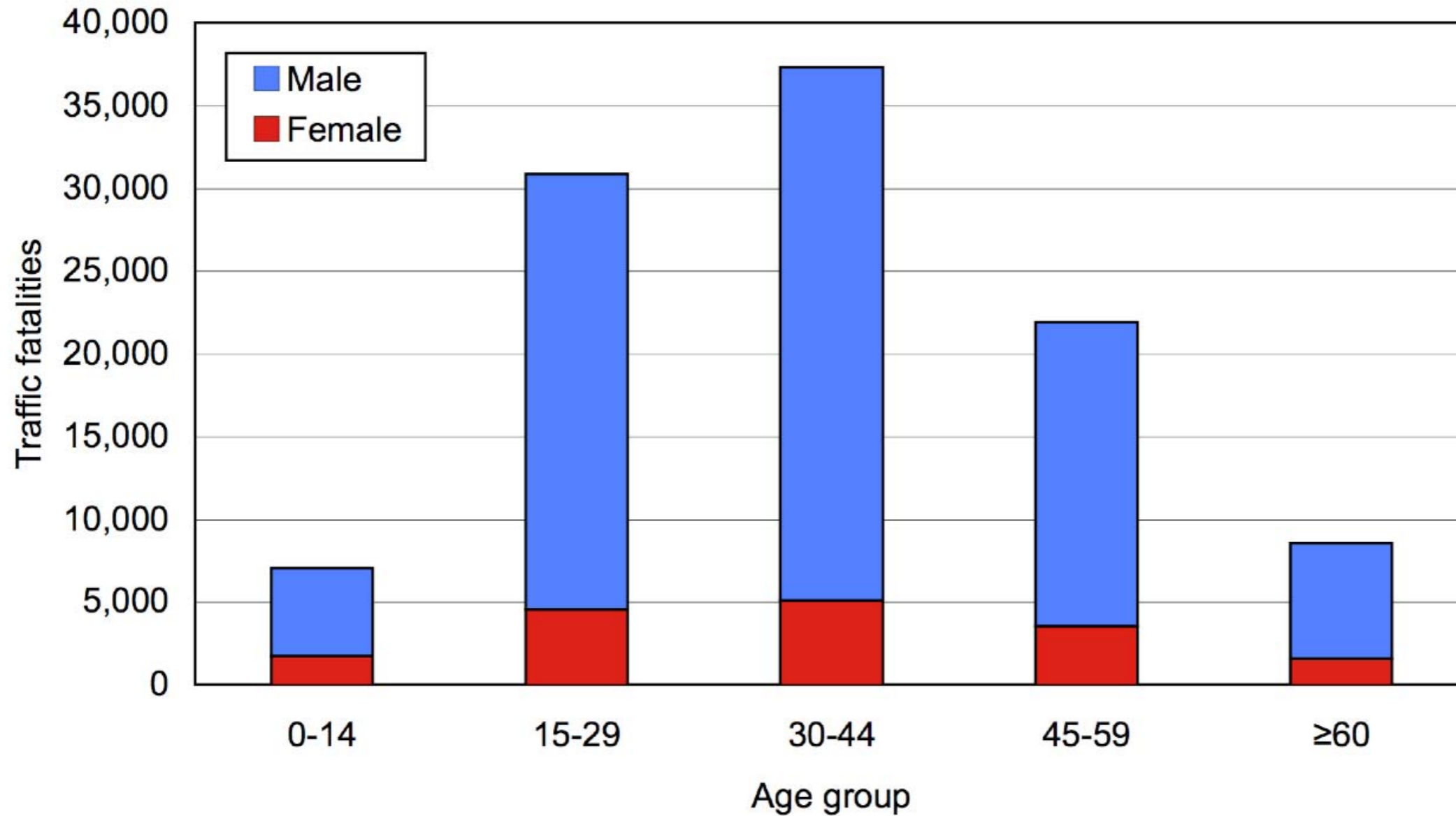
* *Transport Land Requirements Spreadsheet* (http://www.vtpi.org/Transport_Land.xls), based on Eric Bruun and Vukan Vuchic (1995), “The Time-Area Concept: Development, Meaning and Applications”, *Transportation Research Record 1499*, TRB (<http://www.trb.org>), pp. 95–104.



Source: Botma & Papendrecht, TU Delft 1991 and own figures



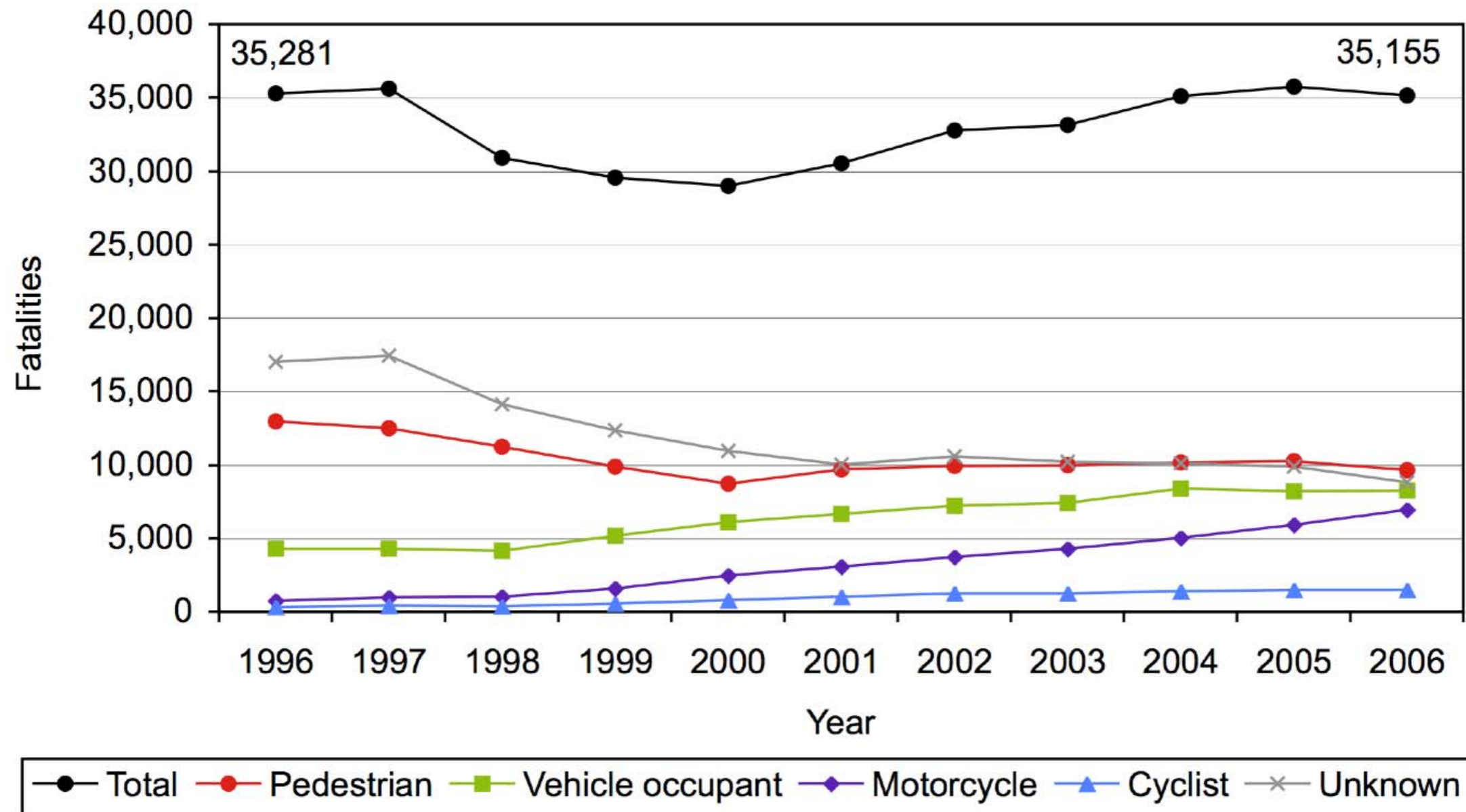
Road Accidents in Delhi



The household income is earned by males in many developing cities.

Source: Mohan, D., Tsimhoni, O., Sivak, M., and Flannagan, M.J., 2009

Same situation even in Brazil



When there are more accidents among non-motorists how will people walk or bicycle.

Source: Eduardo A. Vasconcellos and Michael Sivak, 2009

Air pollution



Vicious Cycle of Transport

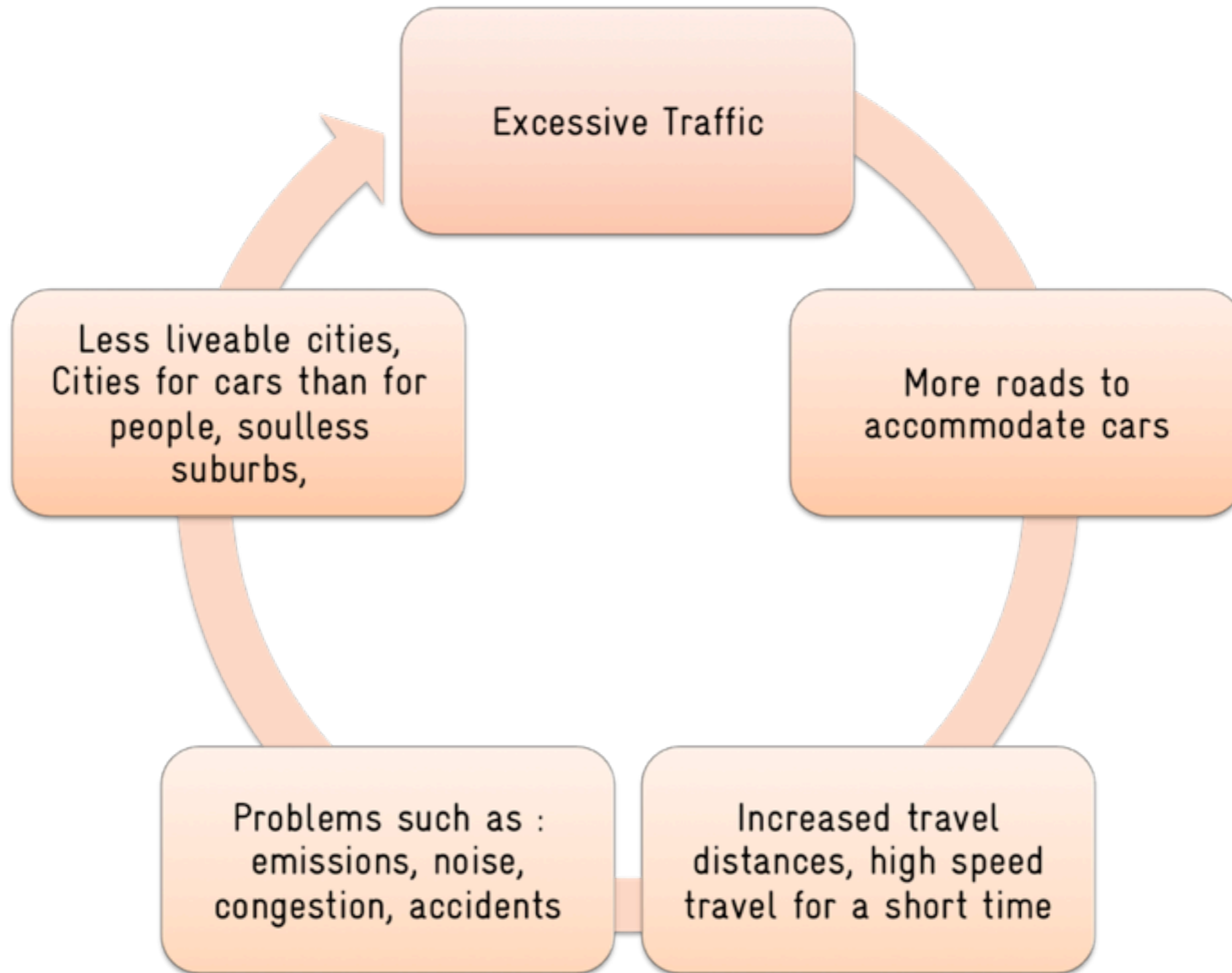


Illustration by Santhosh Kodukula, 2011

So...

- ▶ Automobile dependency is bad for both the people who drive the car and who don't
- ▶ It can create only problems to the city rather than solve mobility problems

Yes...but how to break the trend?

▶ In short:

- Mixed Land Use
- Density
- Non-motorised Transport
- Public Transport
- Transport Demand Management



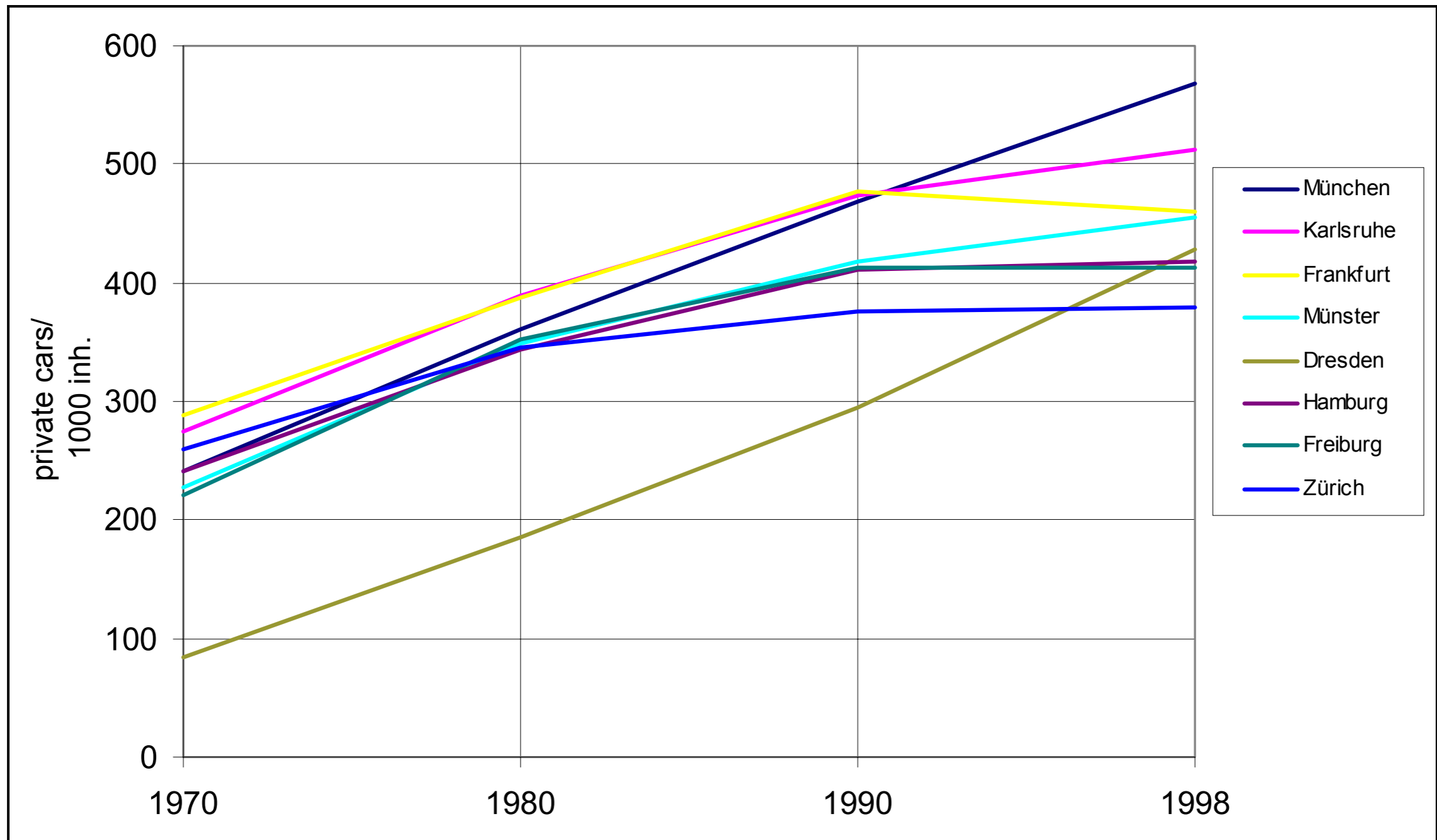
Is it really possible? Did anyone do it?

YES

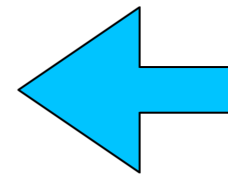
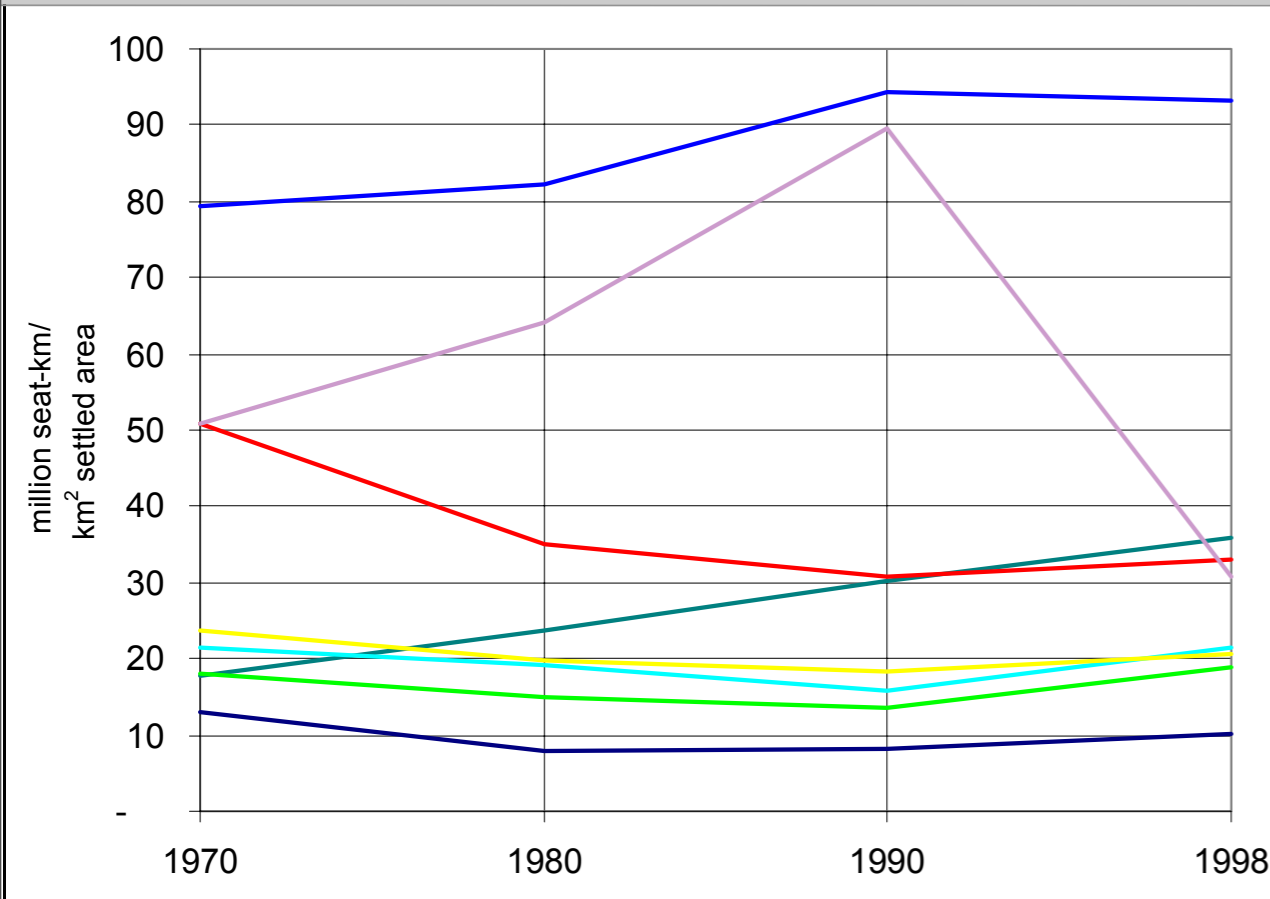
- ▶ Several cities in the developed (and developing) world
- ▶ Some of the successful cities include
 - Zurich
 - Copenhagen
 - Bogota
 - Muenster



Zurich, Switzerland

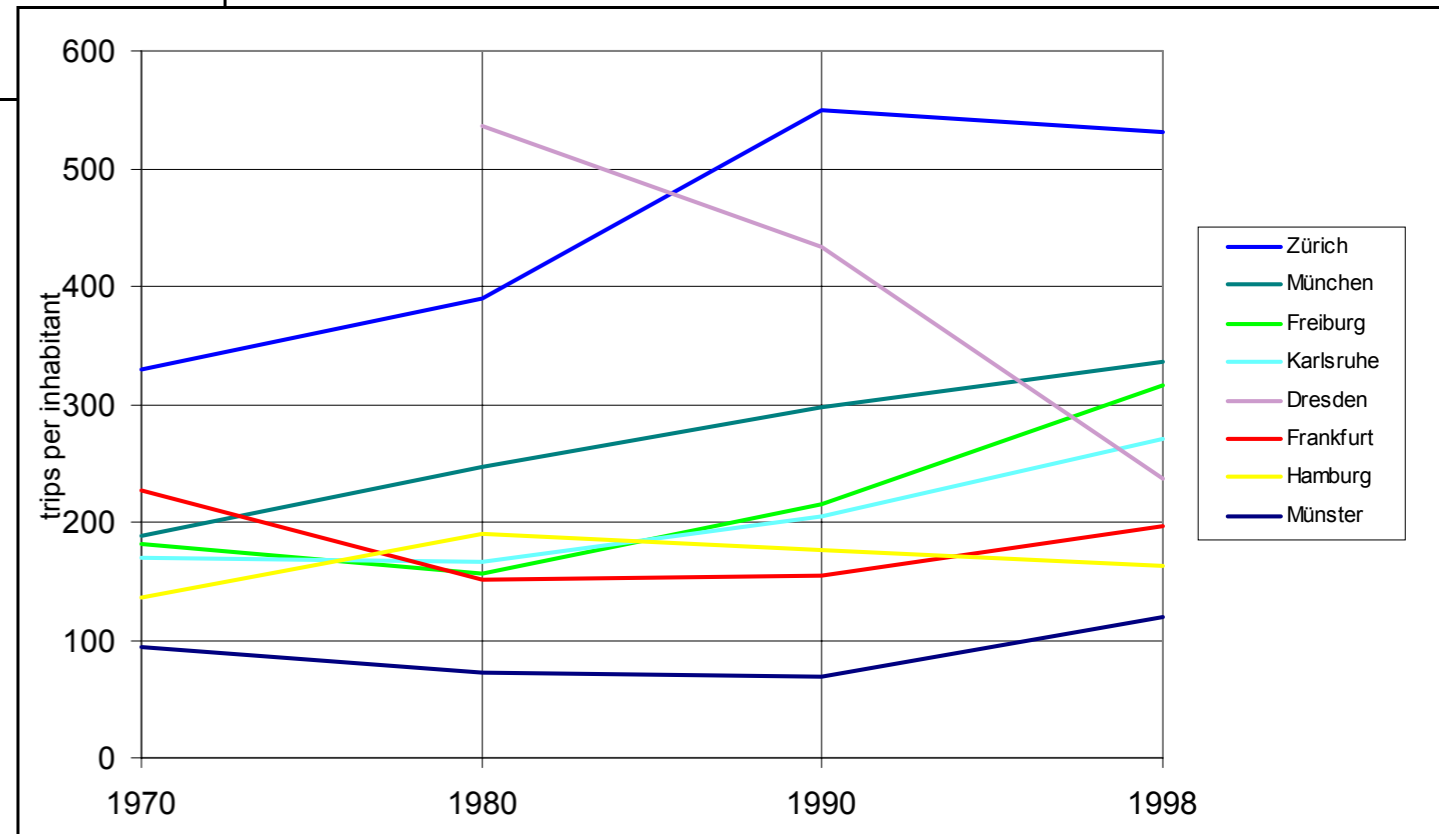
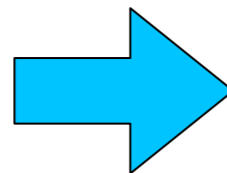


Zurich had 379 cars per 1000 inhabitants during the above period (least compared to other cities in the graph).



Public Transport Supply

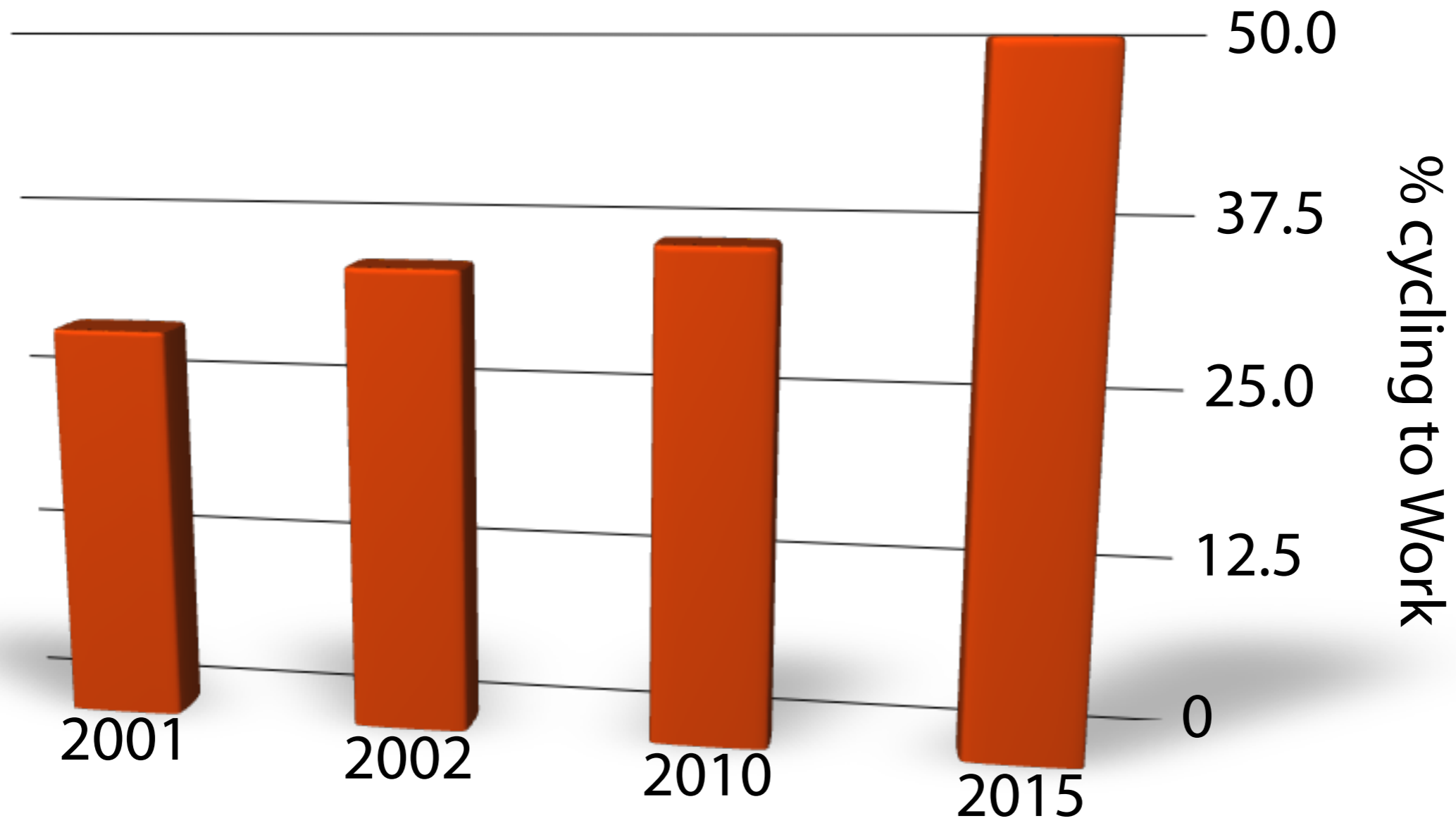
Public Transport Usage



Copenhagen, Denmark



Copenhagen, Denmark



Copenhagen's 3 goals

- ▶ At least 50 % of the travellers will reach their place of work or education by bike
- ▶ The number of killed and seriously-injured cyclists in Copenhagen will be reduced by more than 50 % compared to 2005
- ▶ At least 80 % of cyclists will feel safe when cycling in Copenhagen



What is Copenhagen doing to achieve the goals

- ▶ Integration between cycling and PT (enabling intermodal trips)
- ▶ Supplying infrastructure for bicycle parking
- ▶ Widening of cycle tracks as a reaction to existing and future bicycle traffic demands
- ▶ Decrease in the parking space @ 2–3 % per year
- ▶ Widening of cycle tracks as a reaction to existing and future bicycle traffic demands



Bogota, Colombia

- ▶ Bicycle Share increase from 0.58% to 4.4% in 8 years
- ▶ Green areas increased from 2.5 to 4.1 sq. m (2001-2003)
- ▶ Around 300 kms of dedicated cycle tracks
- ▶ A car-free morning every weekend
- ▶ Transmilenio - a world class BRT system

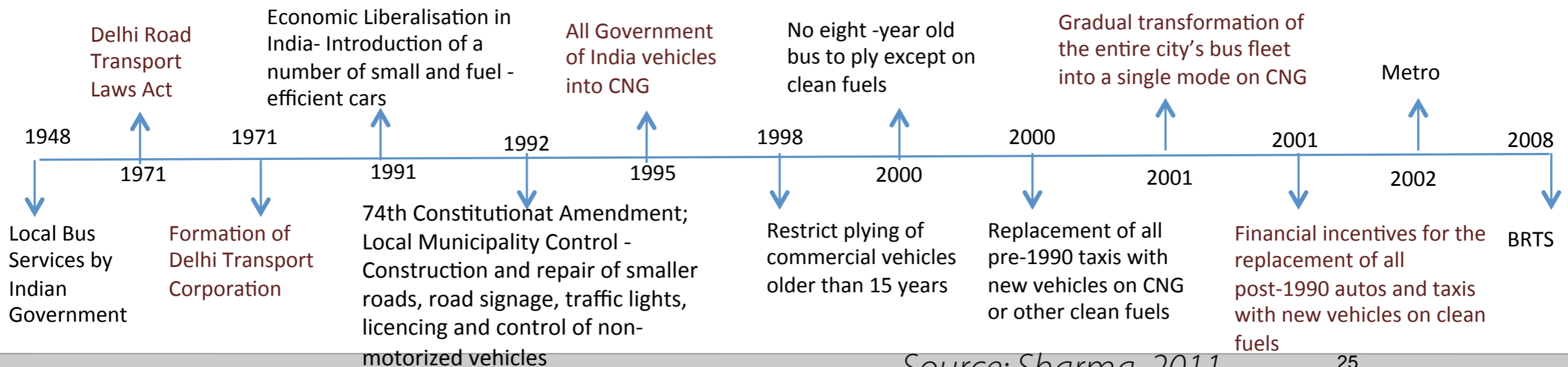
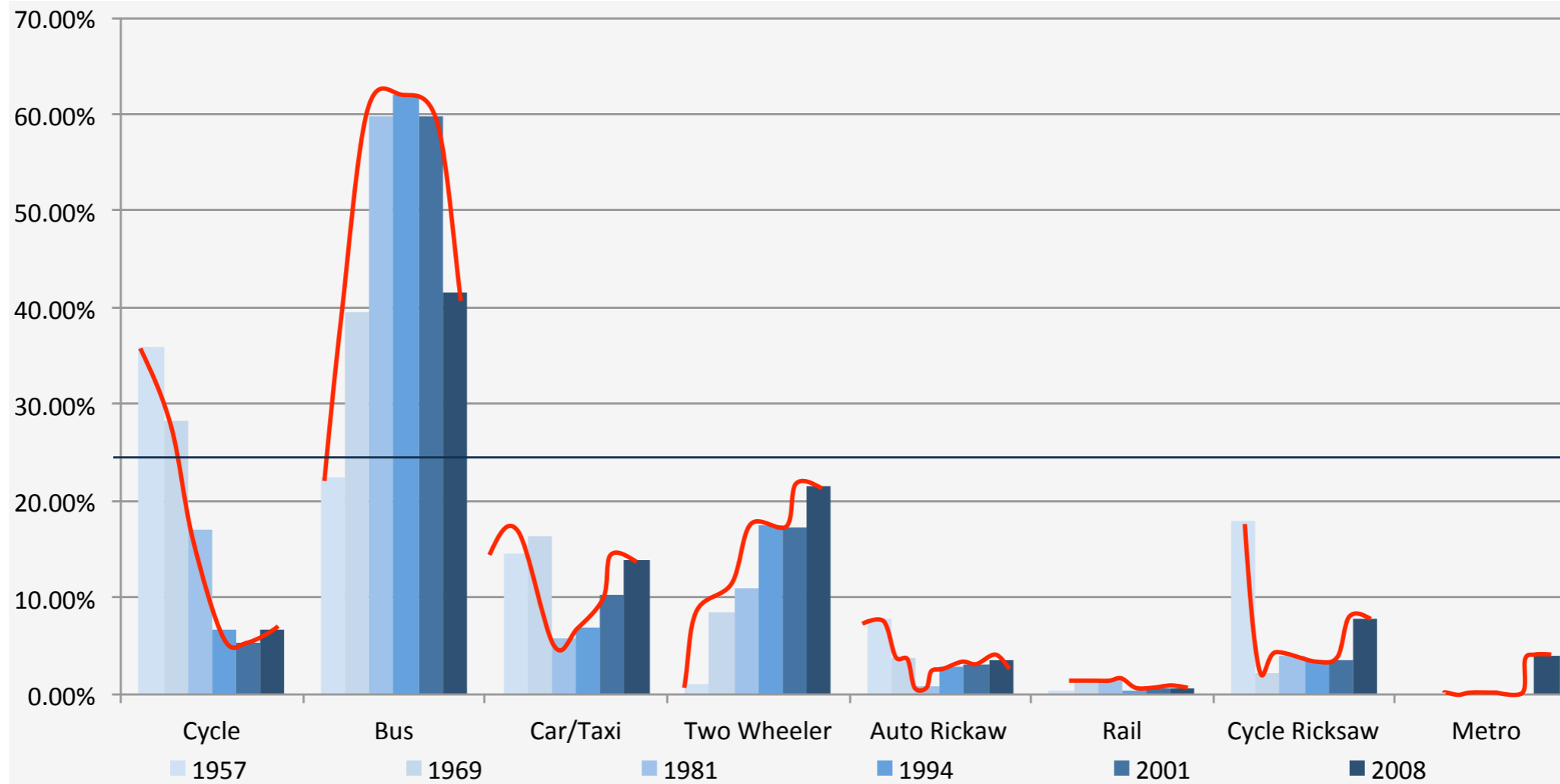


Muenster, Germany

- ▶ Bicycle share rose from 29% in '98 to 38% in 2007
- ▶ 457 kms of cycle network
- ▶ 280, 000 inhabitants own nearly 500, 000 bikes
- ▶ Started with a “Vision Zero” road safety policy
- ▶ Minimum width of cycle tracks > 2m
- ▶ Traffic speeds reduced to 30 kmph



Delhi, India (a good and a bad example)



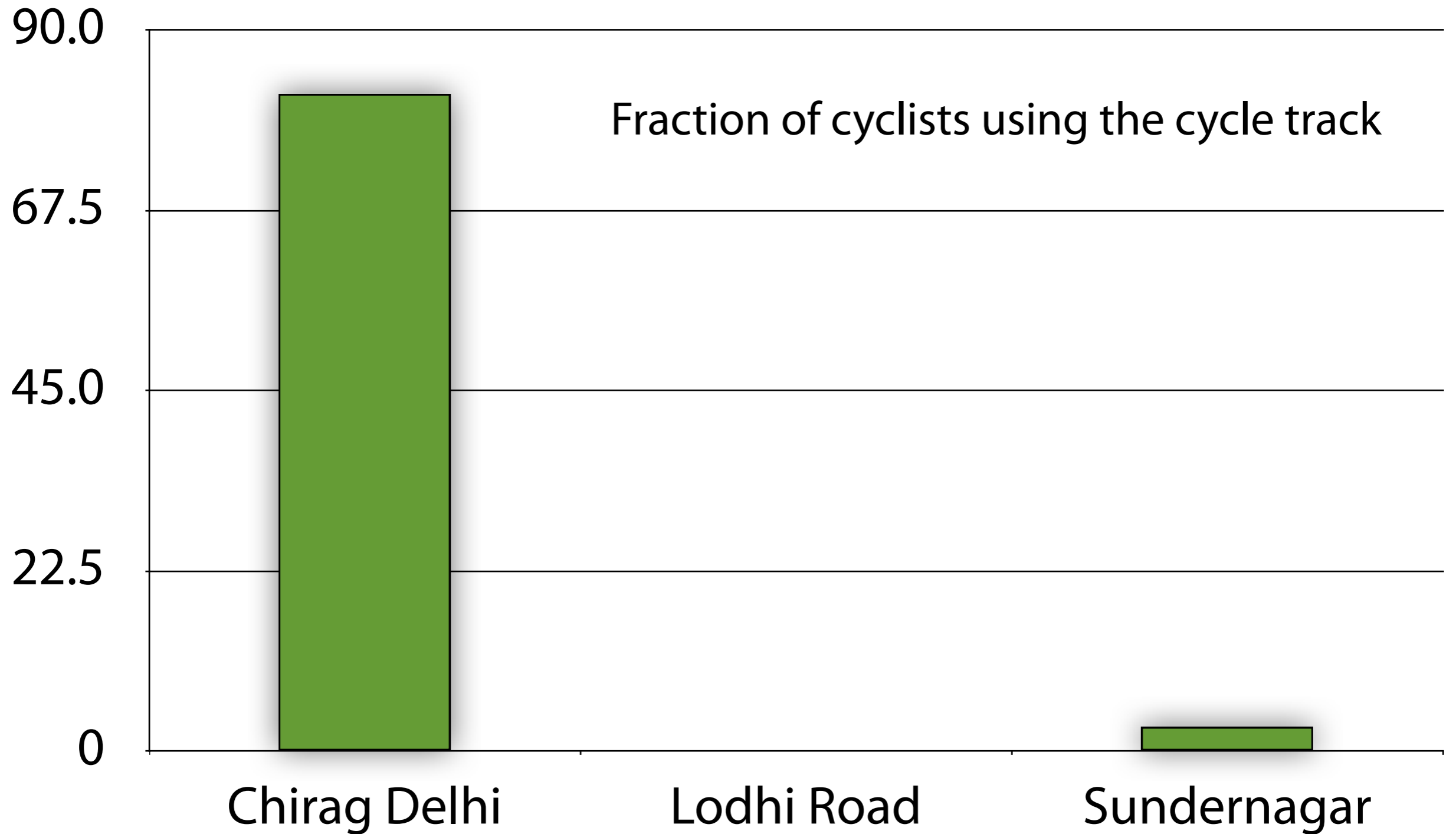
Source: Sharma, 2011

Delhi - Initiatives

- ▶ Dedicated bicycle tracks
- ▶ Initial bike sharing scheme
- ▶ New low floored buses
- ▶ World class metro rail system
- ▶ High capacity bus corridor



Result in Delhi cycling



Source: Kodukula and Kost, 2011 (forthcoming)

Lessons learnt

- ▶ Automobile dependency has a cure
- ▶ Developing countries need not be automobile dependent
- ▶ A firm political will is essential
- ▶ Integration of modes



Lessons Learnt

- ▶ Modal shares of sustainable modes can increase if:
 - PT and NMT is prioritised
 - TDM is properly implemented with alternatives
 - People's need be prioritised



- ▶ 50 pages long
- ▶ Titled “*Raising Automobile Dependency: How to break the trend?*”
- ▶ Examples from Zurich, Copenhagen, Muenster, Freiburg and Curitiba
- ▶ Available for download from <http://www.sutp.org>

