


TRIPP

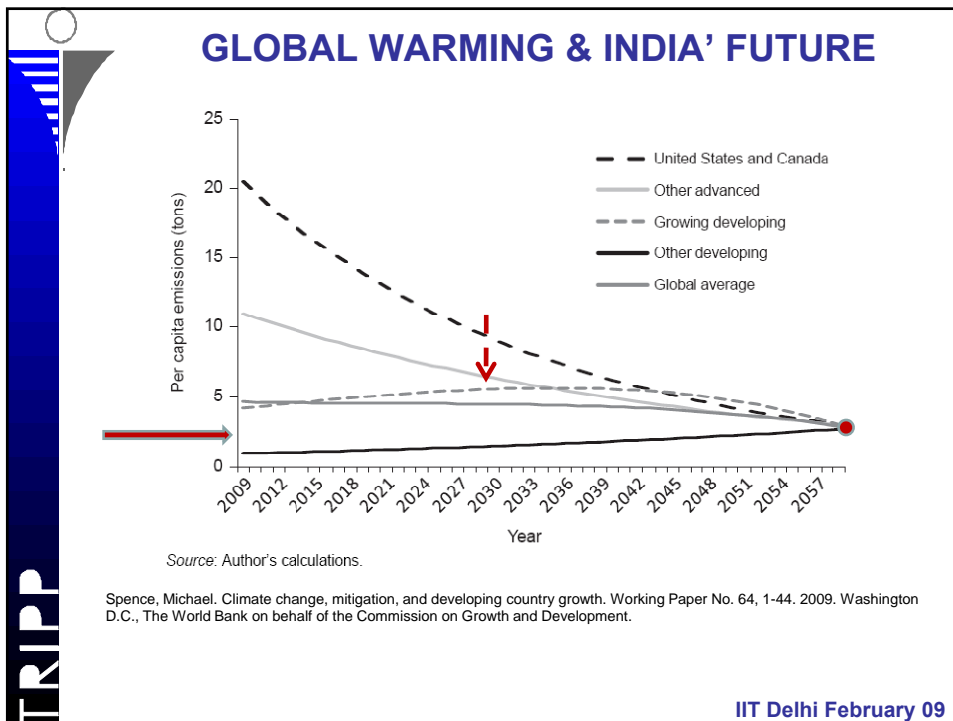
Delhi 29 October 2009

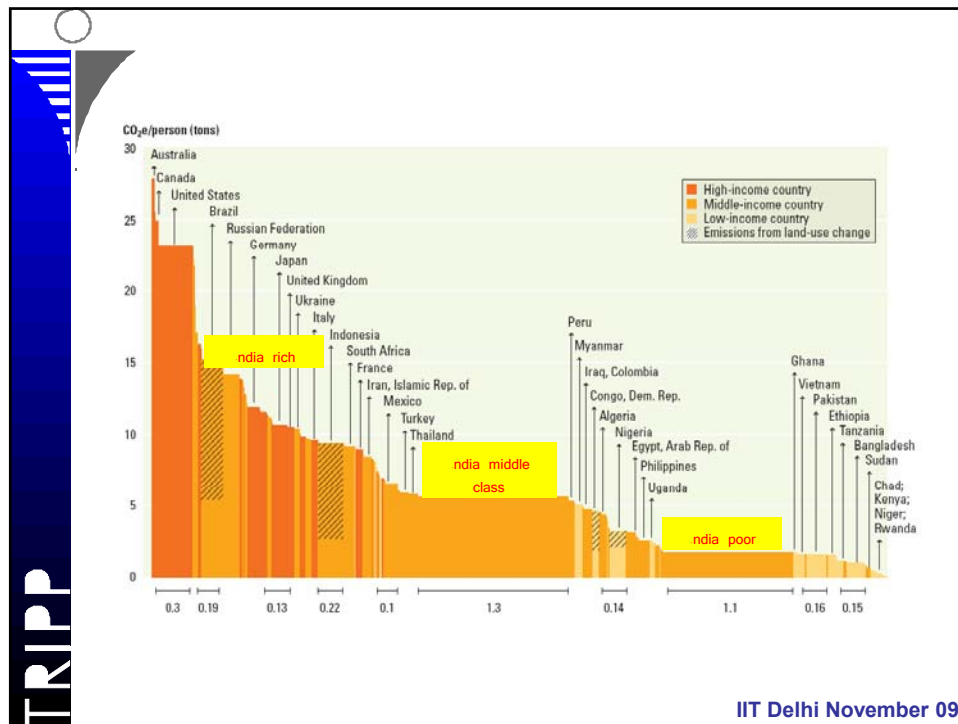
**Urban Transport:
Moving from
tailpipes to
people's
concerns**



Dinesh Mohan

INDIAN INSTITUTE OF TECHNOLOGY DELHI





CITIES

- ❑ India as a whole can afford to increase the total energy use for some time
- ❑ To be accompanied by decrease by the upper-middle and upper classes in all walks of life
- ❑ Increases in the bottom 50 percentile should be focussed more on food and housing needs, rather than transport.
- ❑ A “decarbonised” transportation future is considered essential.
- ❑ Decarbonised technologies do not seem to have a low cost future
- ❑ Appropriate “decarbonised” future for Indian cities is to maintain and increase the modal share of walking and cycling in our cities..

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CITIES

“I regard the growth of cities as an evil thing, unfortunate for mankind and the world, unfortunate for England and certainly unfortunate for India...It is only when the cities realize the duty of making an adequate return to the villages for the strength and sustenance which they derive from them, instead of selfishly exploiting them, that a healthy and moral relationship between the two will spring up.”

M. K. Gandhi

“The unprecedented urban growth taking place in developing countries reflects the hopes and aspirations of millions of new urbanites. Cities have enormous potential for improving people’s lives, but inadequate urban management, often based on inaccurate perceptions and information, can turn opportunity into disaster.”

State of World Population 2007, UNFPA.

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“Car traffic is cooling social relationships by heating up the atmosphere! Traditional transportation engineering is a discipline to maximize congestion and as a side effect damages the urban fabric and finally the city. Global warming as a consequence is inevitable”

Knoflachner 2007

“What American traffic engineer going to the Middle East doesn't want to make limited access highways and doesn't think in terms of wide streets and automobile capacities? They victimize American cities this way. Why won't they victimize foreign cities this way?”

Jane Jacobs

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ISSUES

- ❑ Even cities in high income countries have not been able to solve the problems that all of us have to deal with in the near future

City	Modal share, percent		
	Car + MTW	PT	W&C
Bristol, UK	65	12	23
Leeds, UK	61	36	3
Nantes, France	58	14	28
Helsinki, Finland	54	20	26
Marseille, France	53	12	35
Edinburgh, UK	52	29	19
Newcastle, UK	48	19	33
Brussels, Belgium	44	18	38
Frankfurt, Germany	42	21	37
Stuttgart, Germany	36	25	39
Amsterdam, Neth's	32	16	52

NO INDIAN CITY HAS CAR USE MORE THAN 15%

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CO2 and roads

20th CENTURY SOLUTIONS:

- One way streets?
- Road widening & expansion?
- Flyovers, elevated/underground corridors?
- Metro/LRT/Monorail/Skybus - providing corridor capacity to serve link demand



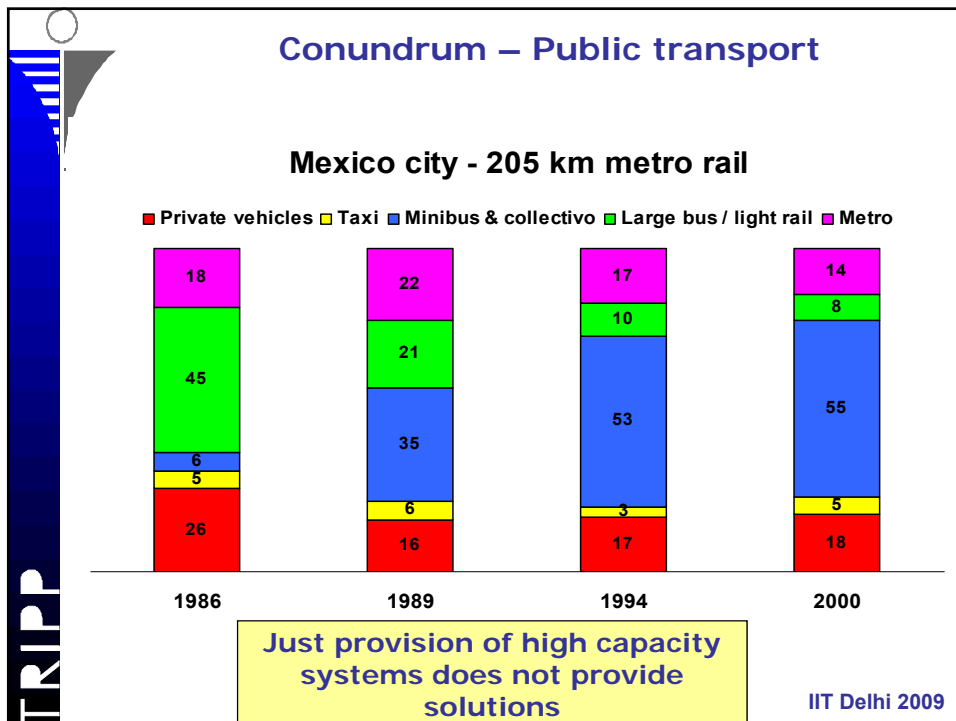
- ❑ Surface transport less energy consuming
- ❑ Underground or elevated transit does not reduce congestion, provides extra supply > CO2↑
- ❑ CO2 ≈ road area + distance of travel

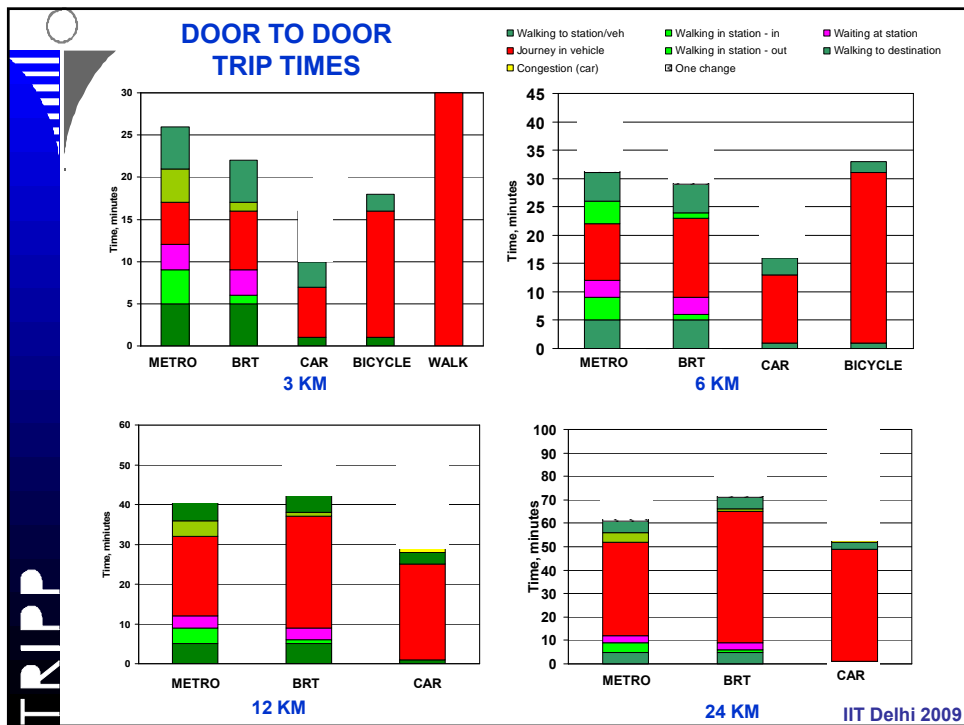
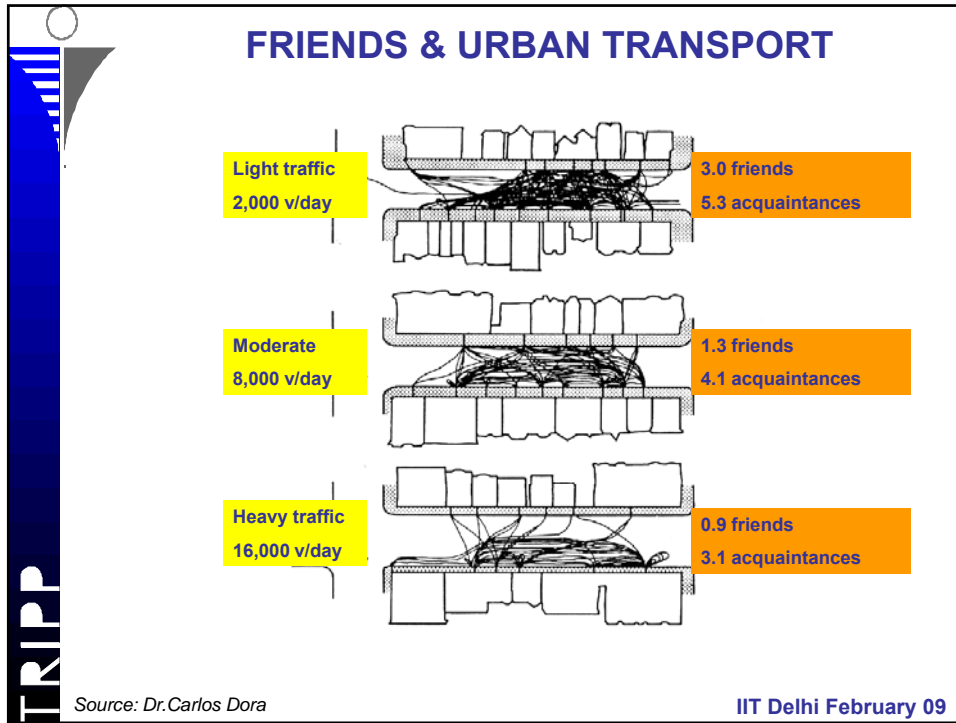
**Solutions contractor driven
Not people driven**

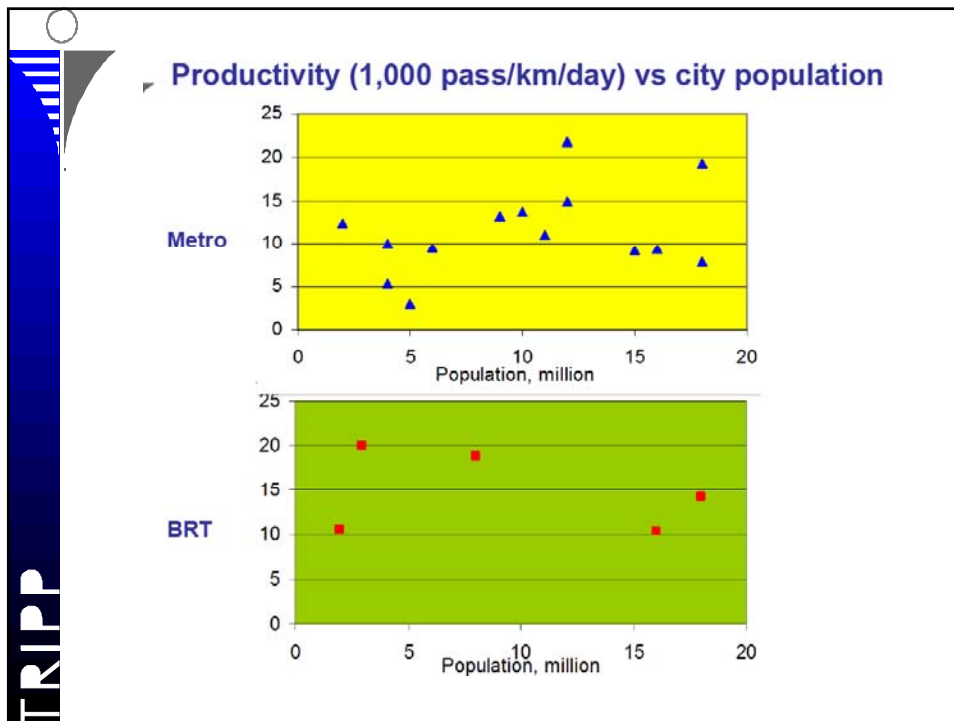
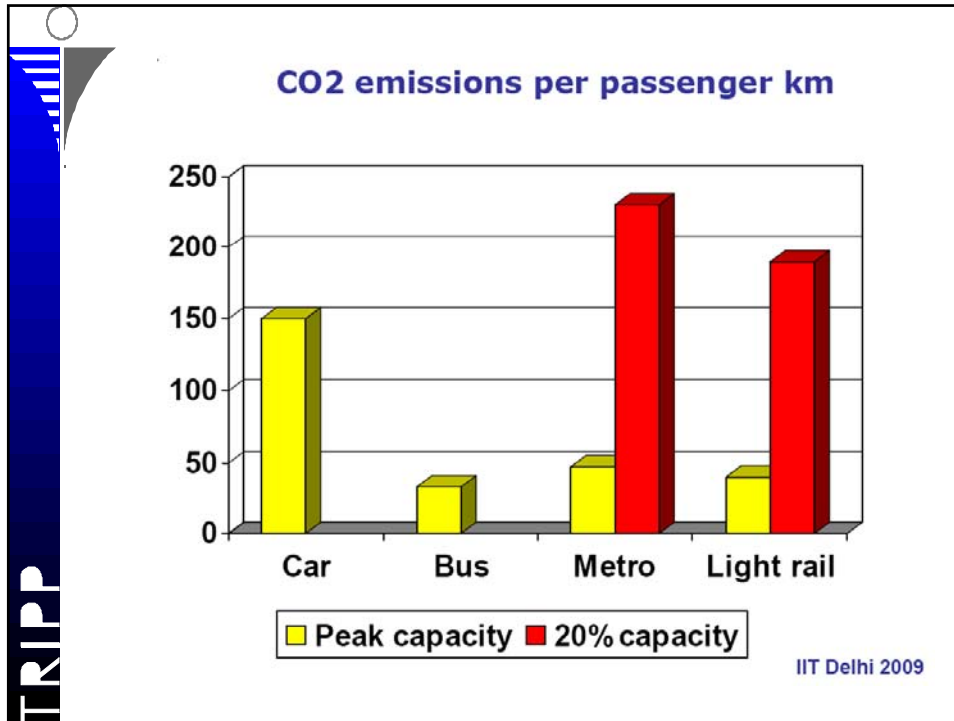
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19 th century city	21 st century city
Central business district critical	Multiple business districts, cities within cities
Public transport (mainly rail) before cars	Motorcycles, inexpensive comfortable cars challenge role of public transport
Manual labour in factories	Service and informal sector
Car movement & speed concerns dominate	Safety, climate change & pollution
Management by mechanical systems	Internet & ITS

IIT Delhi November 09



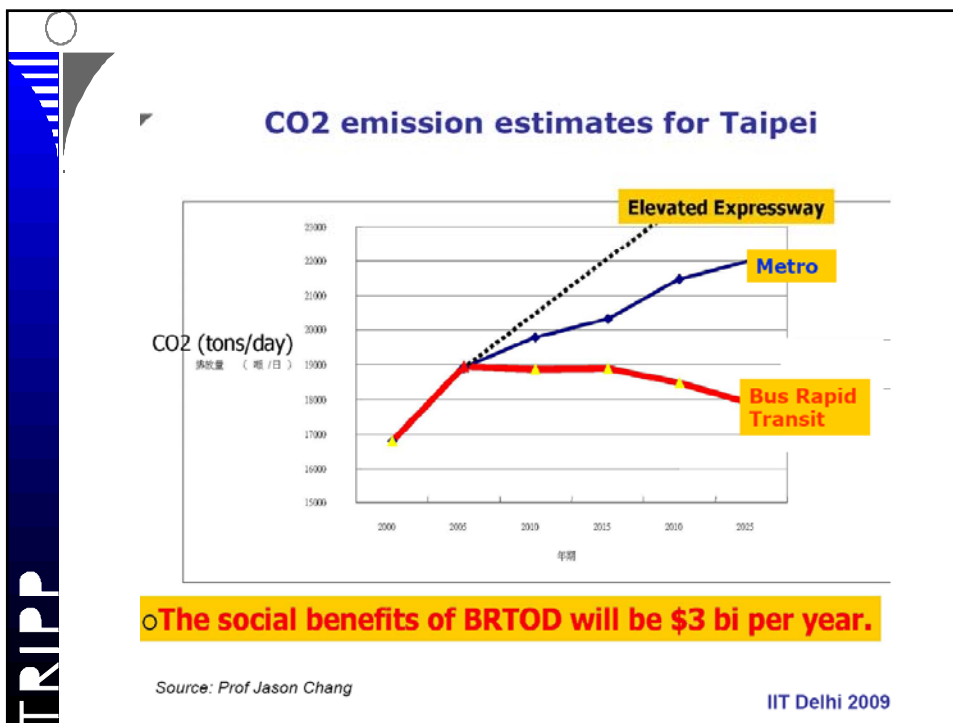


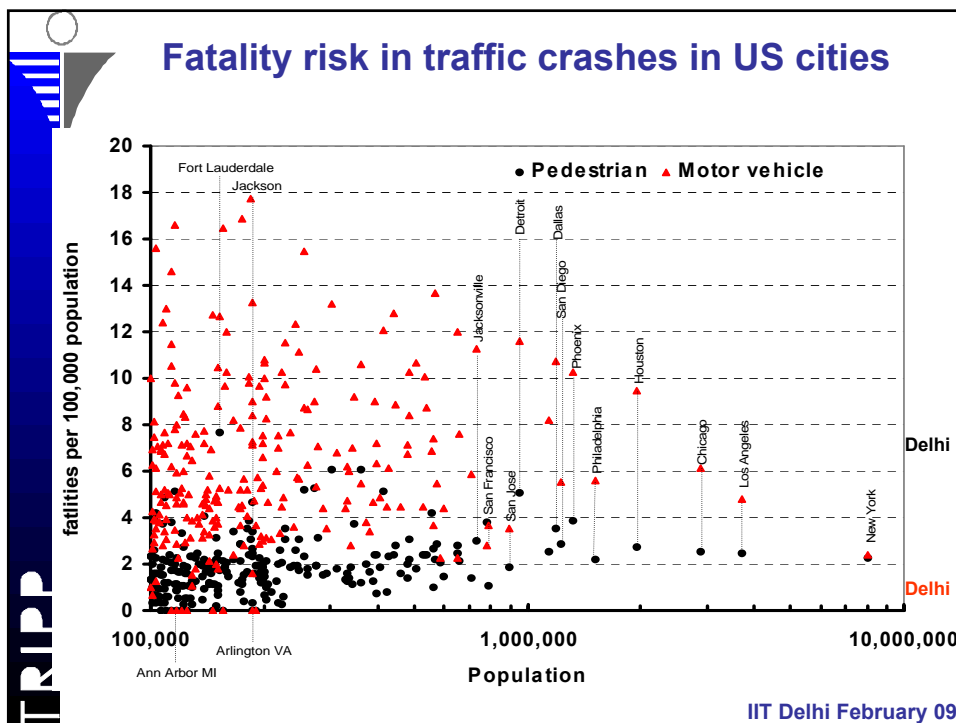
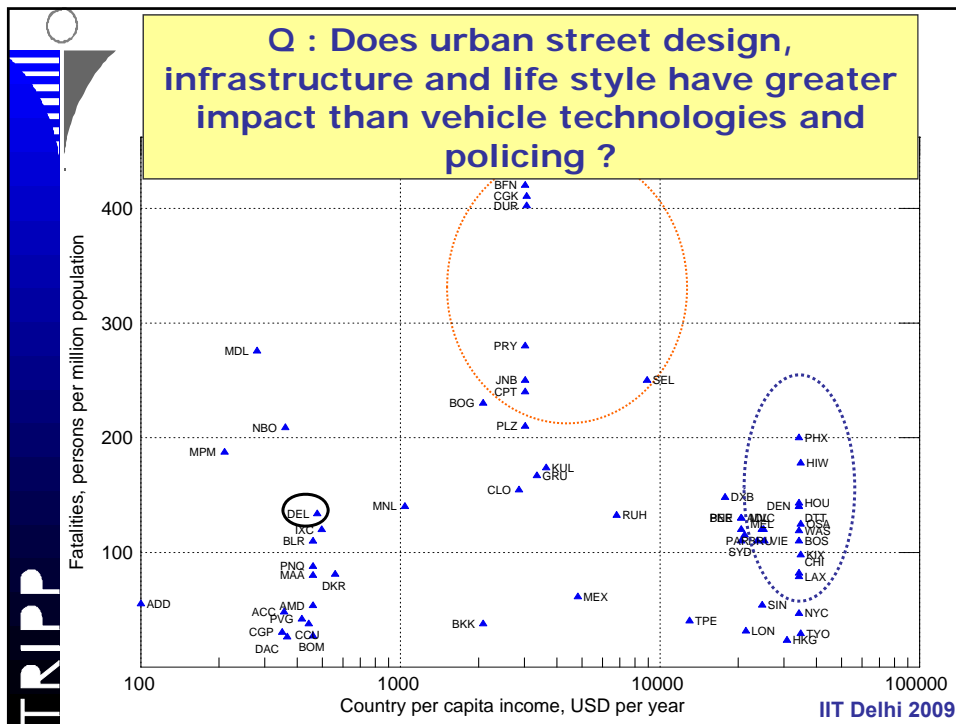


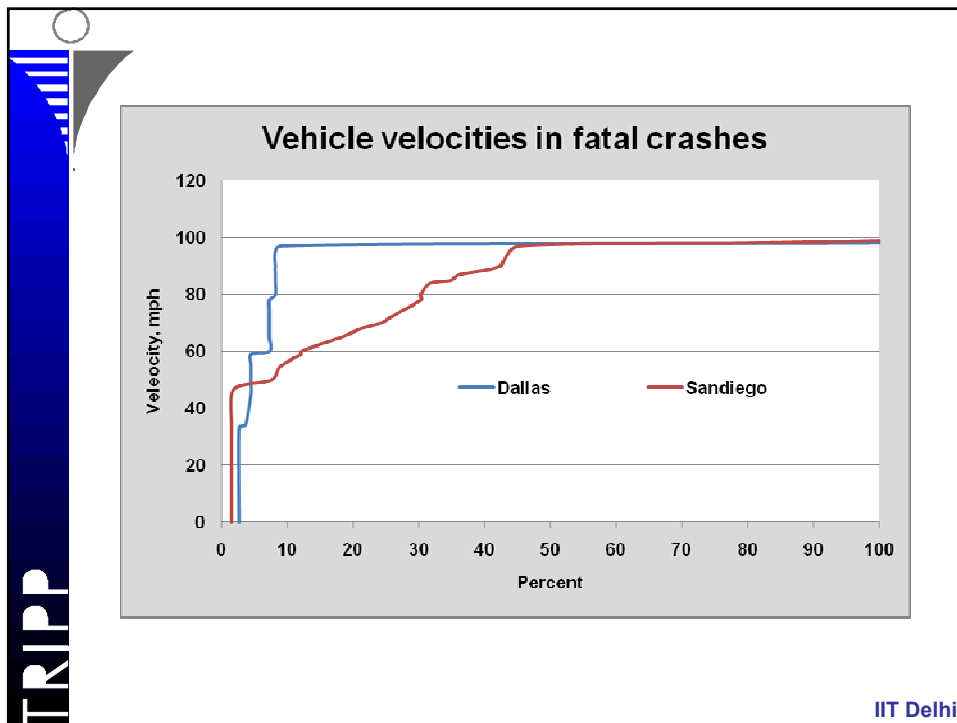
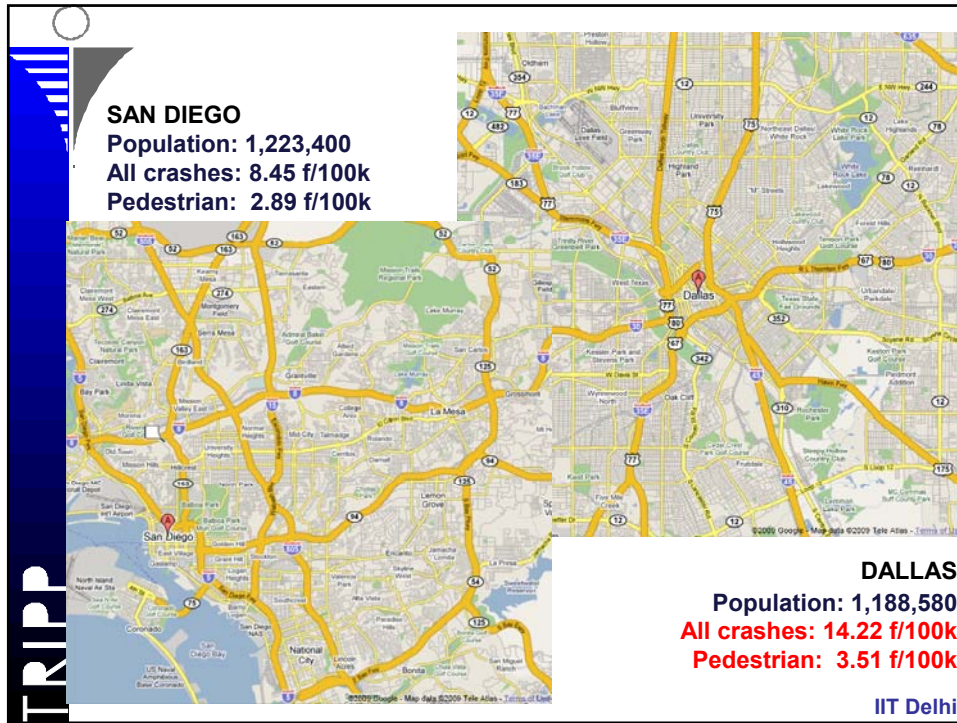
Conundrum – Public transport

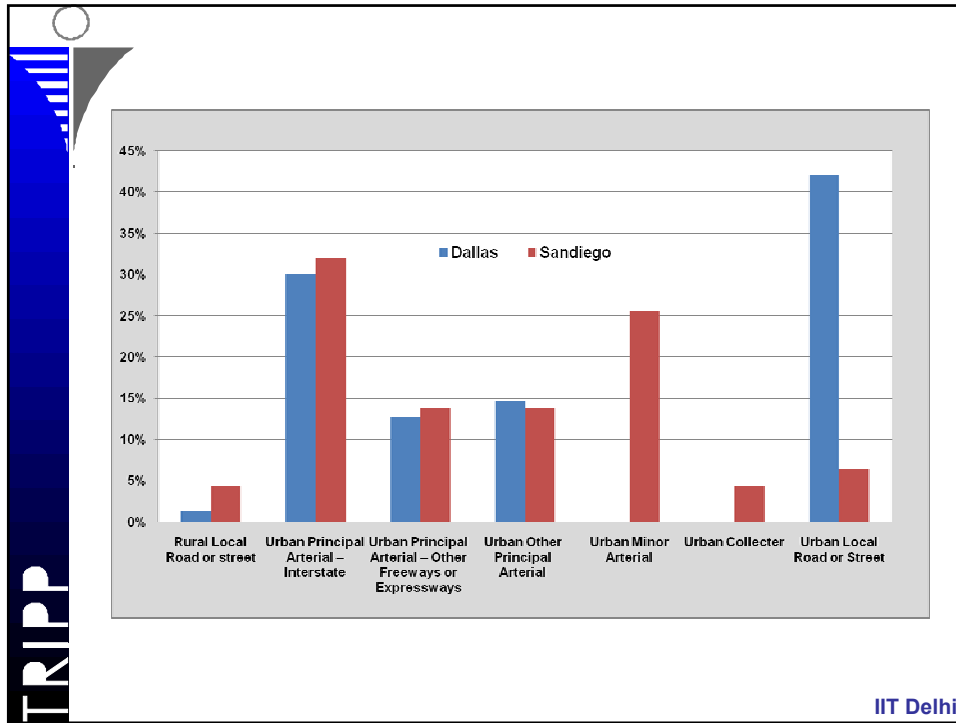
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MTW- motorized two-wheeler, PT – Public transport
W&C – Walking and cycling









SAFETY BY DESIGN

- ❑ Valley Lines network – 33% increase in annual passenger flows
- ❑ Attributable station improvement program.
- ❑ High visibility shelters reduced fear of crime and have higher levels of consumer confidence




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Latest evidence

Possibilities to reduce CO₂ emissions from road traffic for urban planners seem limited: **a restriction of space dedicated to traffic** and a change of transport means for commuting represent leverage points.

Reckien, D., Ewald, M., Edenhofer, O., & Ludeke, M. K. B. (2007). What Parameters Influence the Spatial Variations in CO₂ Emissions from Road Traffic in Berlin? Implications for Urban Planning to Reduce Anthropogenic CO₂ Emissions. *Urban Studies*, 44(2), 339-355.

The results suggest that public transport users could achieve dramatic savings on their commute if the **density of that network was increased considerably**

Murphy, E. (2009). Excess commuting and modal choice. *Transportation Research Part A: Policy and Practice*, 43(8), 735-743.

Current urban policy, which relies predominantly on ambitious and expensive programmes of transport infrastructure provision must be rethought in Beijing

ZHAO, P., LU, B. & LINDEN, G. J. J. (2009) The effects of transport accessibility and jobs and housing balance on commuting time: evidence from Beijing. *International planning studies*, 14, (1) 65-83.

High speed systems will further encourage sprawl and greater energy consumption, and hence, Public Transit (PT), **even if the commercial speed is rather low, is probably the only way to improve urban accessibility** and urban attractiveness in a sustainable way

CROZET, Y. Economic development and the role of travel time: the key concept of accessibility, Gothenberg: Volvo Research & Educational Foundations, pp. 1-22.

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Safe roads a precondition for the future low CO₂ city

- ❑ Children, elderly, walking speed ~ 0.8 m/s
- ❑ Pedestrian green phase < 30 s
- ❑ Therefore, motorised lanes < (30 X 0.8) = < 24 m

- ❑ Shops and/or street vendors by design
- ❑ City blocks ~ 800 m square
- ❑ Maintain urban average speeds at 15 km/h
- ❑ Public transit on surface
- ❑ Small cars in urban areas and larger for interurban

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