Traffic safety of captive cyclists: Mobility justice in Indian cities

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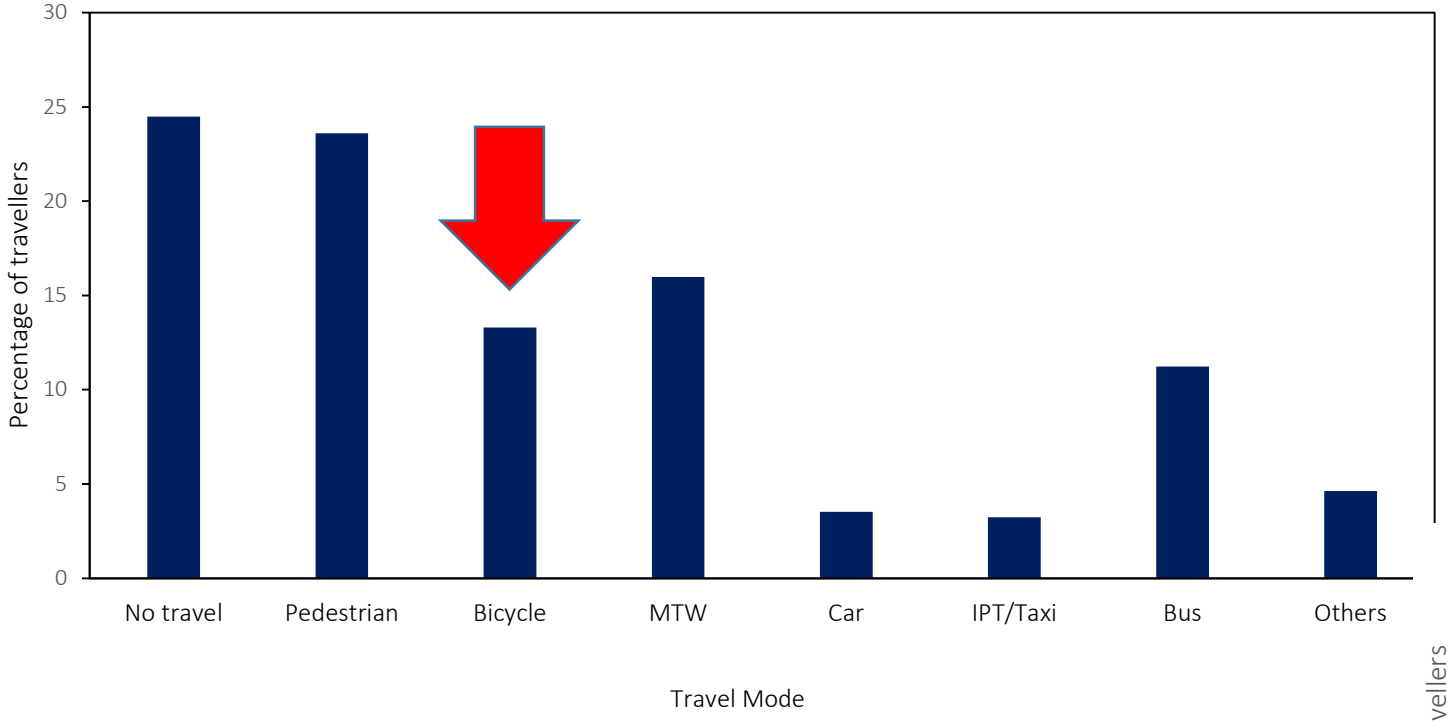
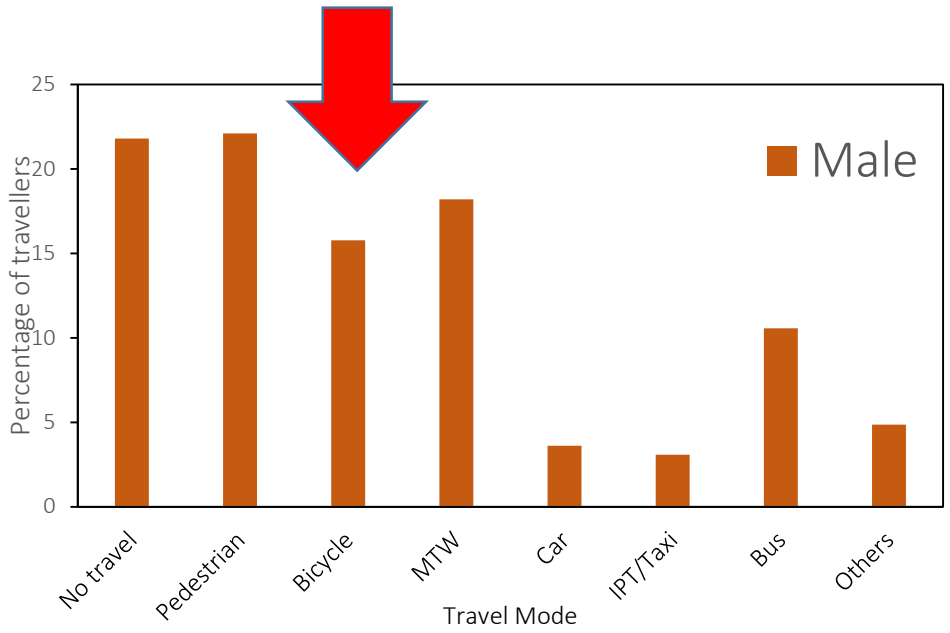
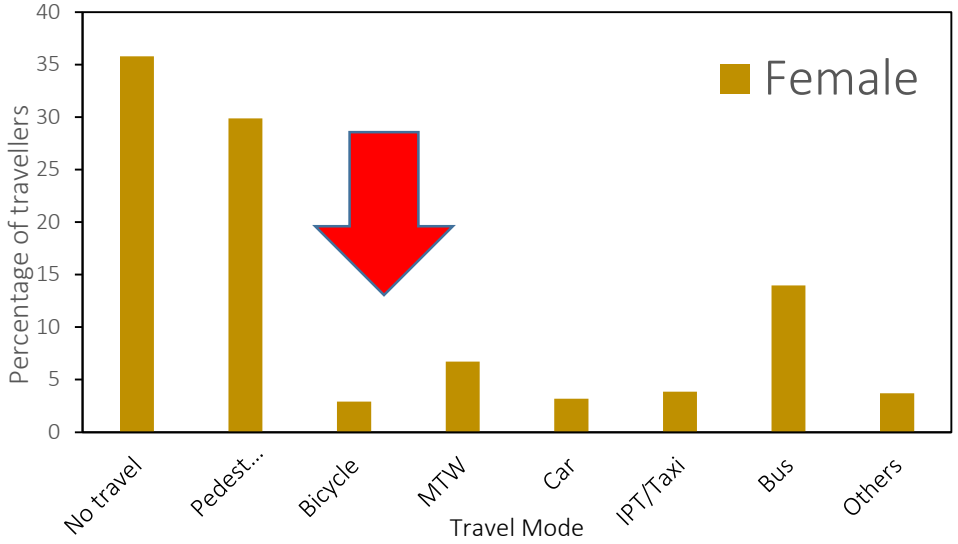
Traffic Safety, City Planning, and Social Justice: A Symposium on Sustainable Urban Mobility

Bicycle plays an important role in work travel in Indian cities

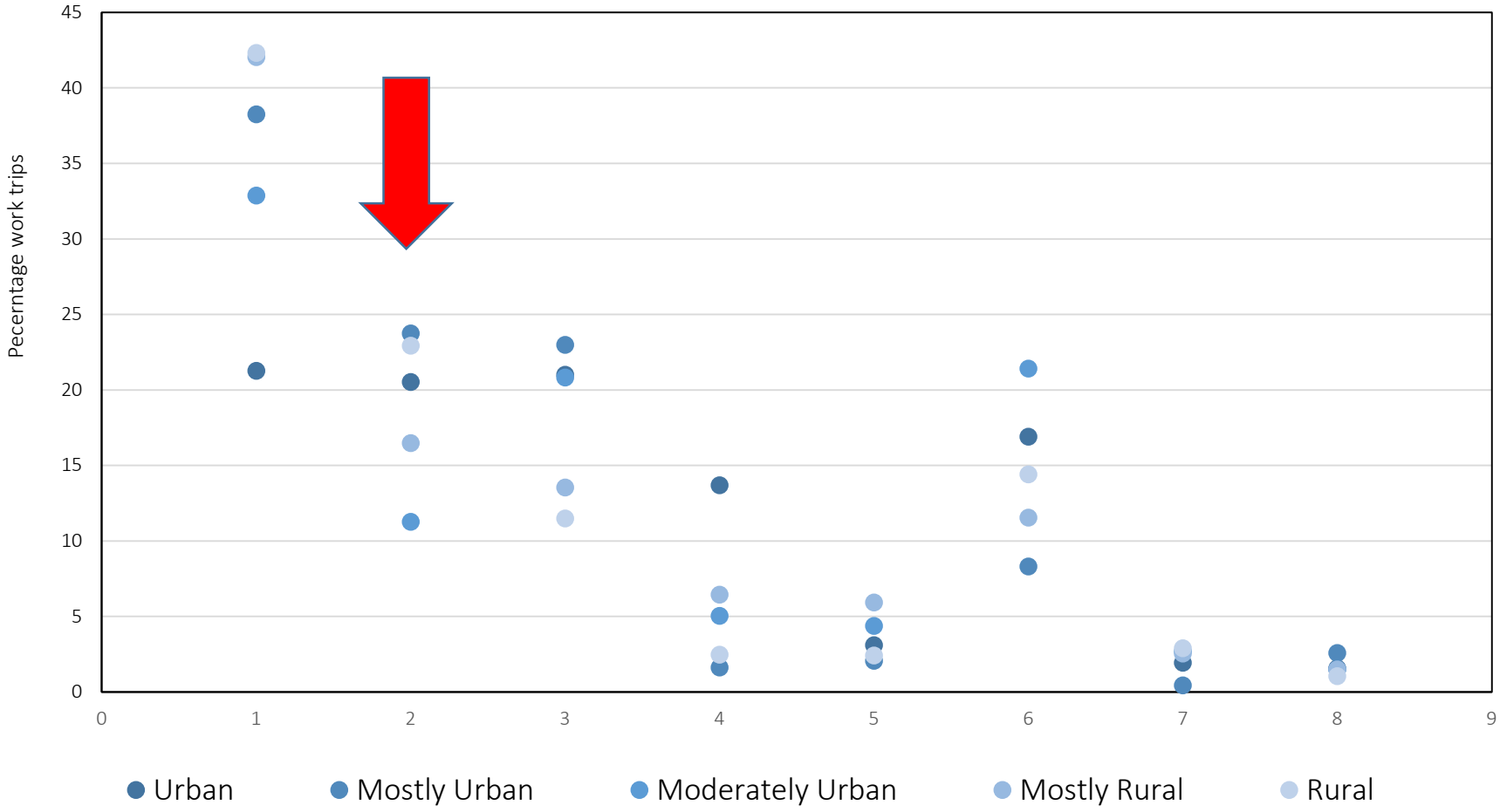




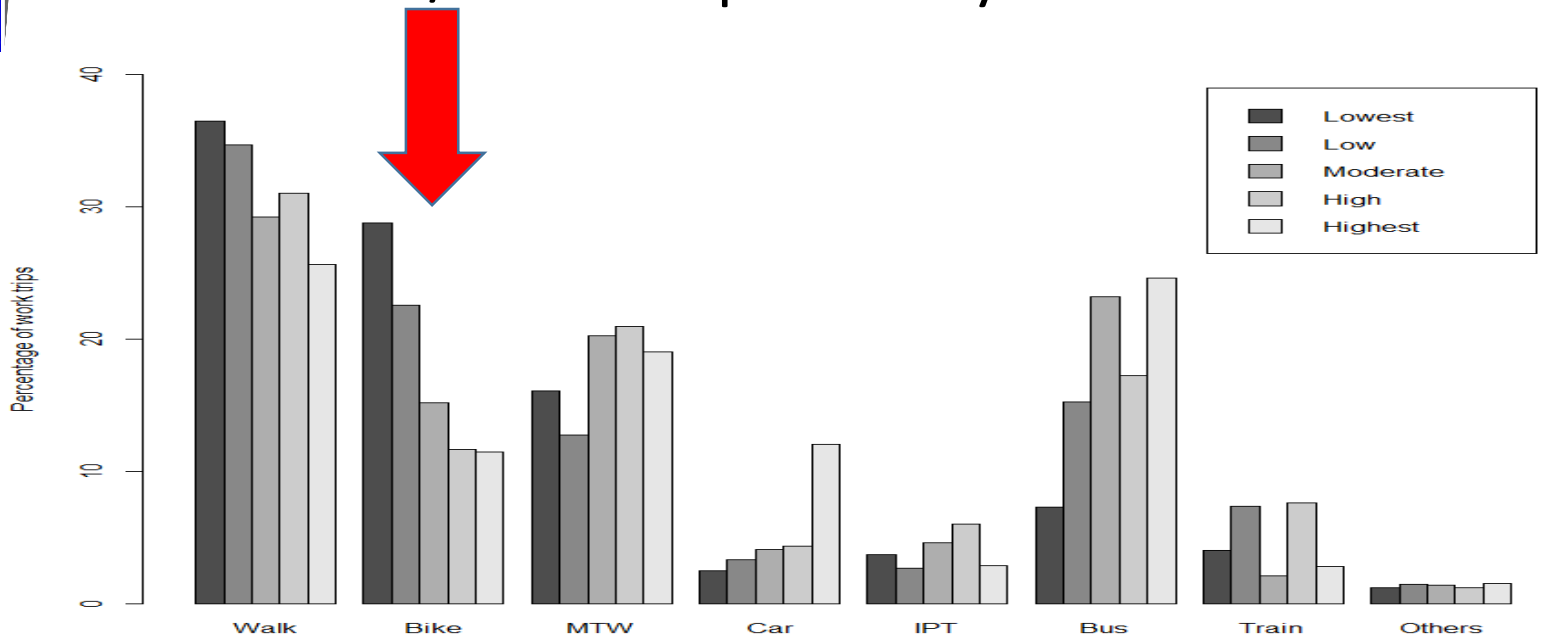


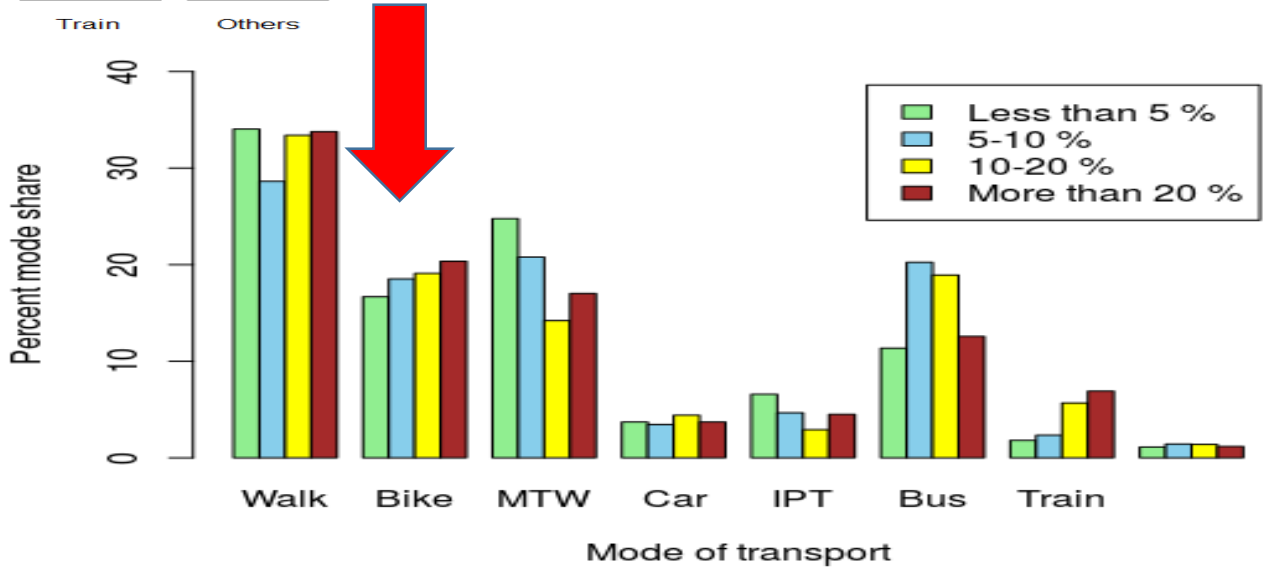
Bicycle use is 4 times higher for men as compared to women for work trips

Bicycle share is similar in mostly urban(80%) and mostly rural states(20%)



Bicycle share declines with increase in state income/urban poverty

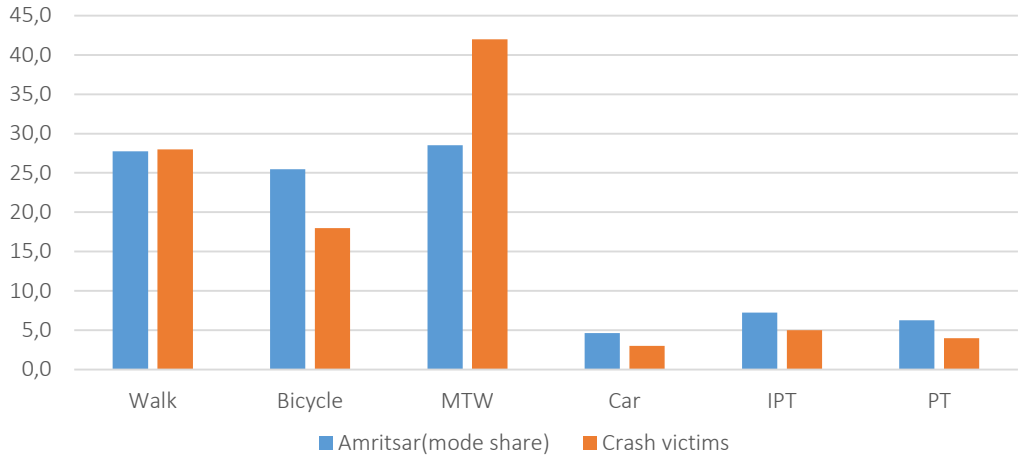


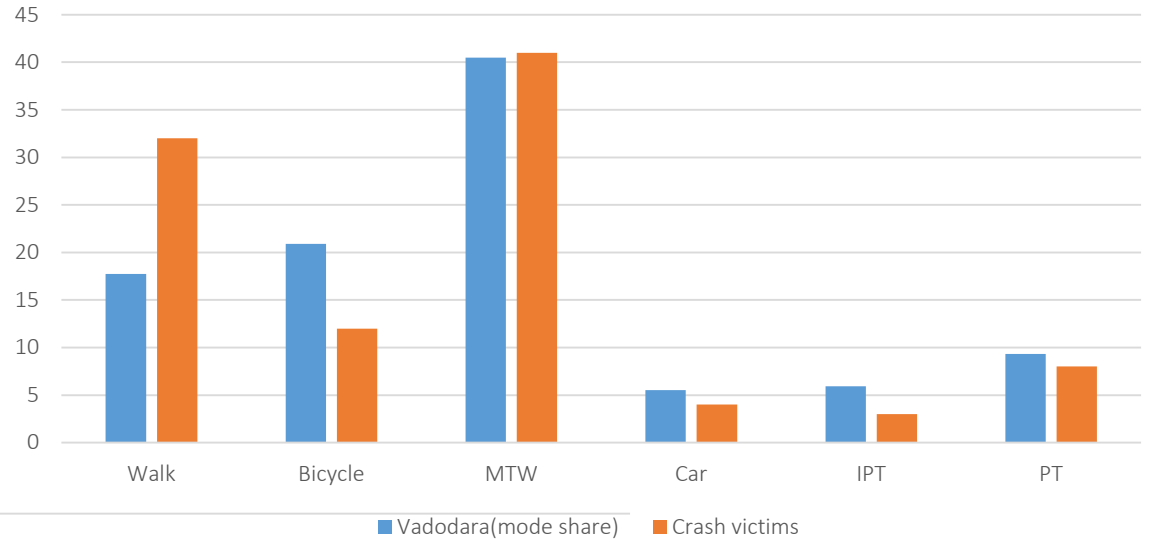


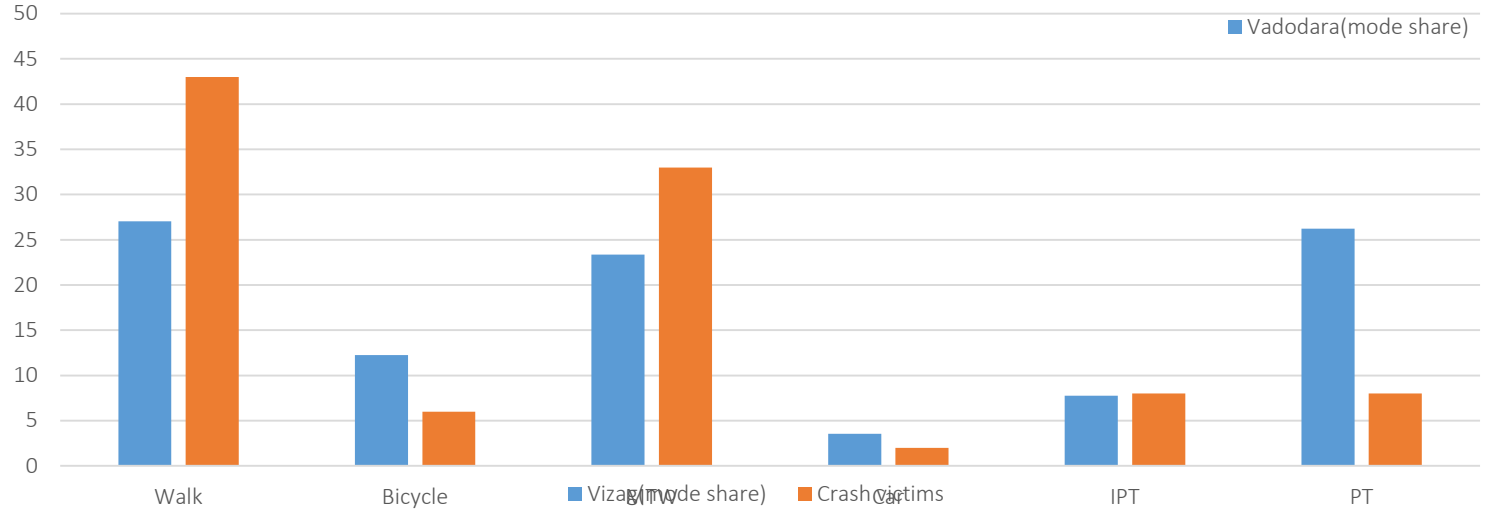
Ludhiana traffic

Agra arterial traffic

Share of bicyclist in fatal crashes is less than the share of trips by bicycles (Selected cities, IATSS report, 2015)

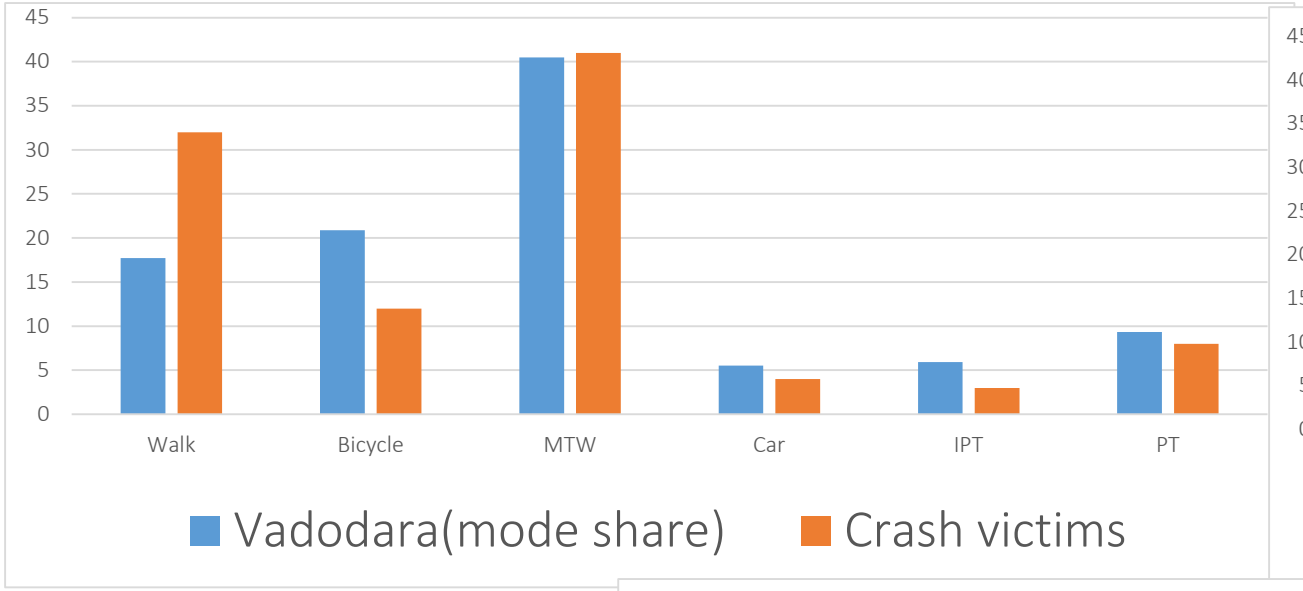


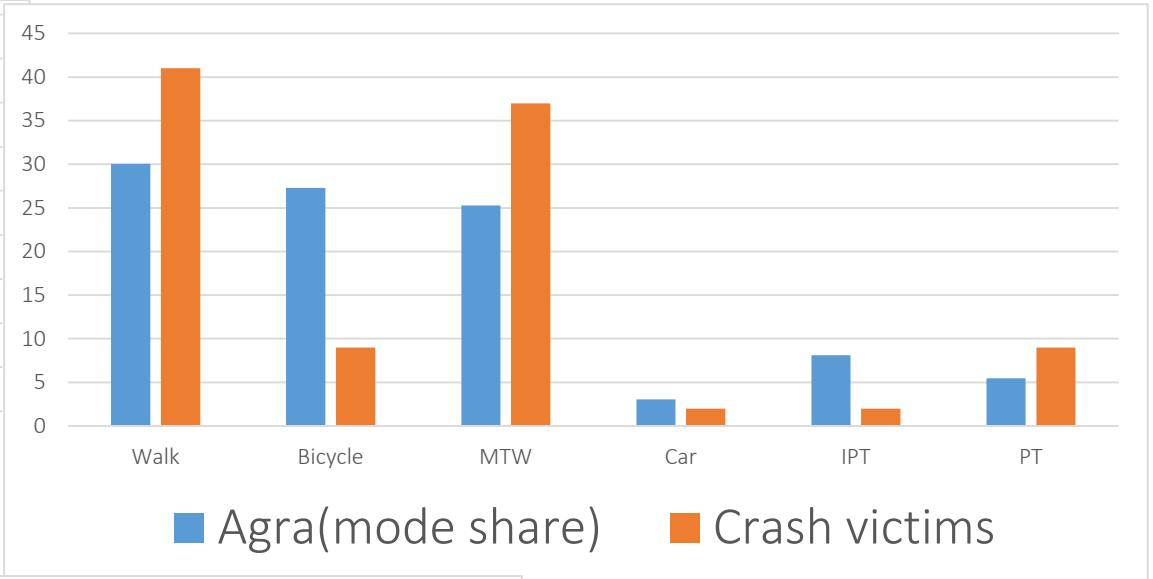


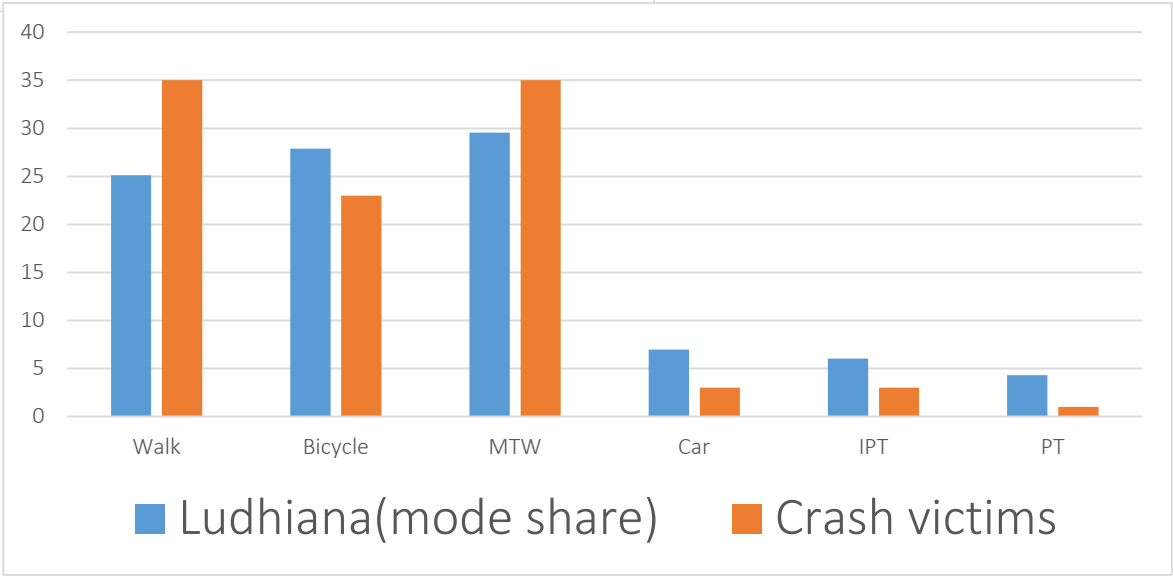


SHARED SPACE?

Share of bicyclist in fatal crashes is less than the share of trips by bicycles (Selected cities, IATSS report, 2015)

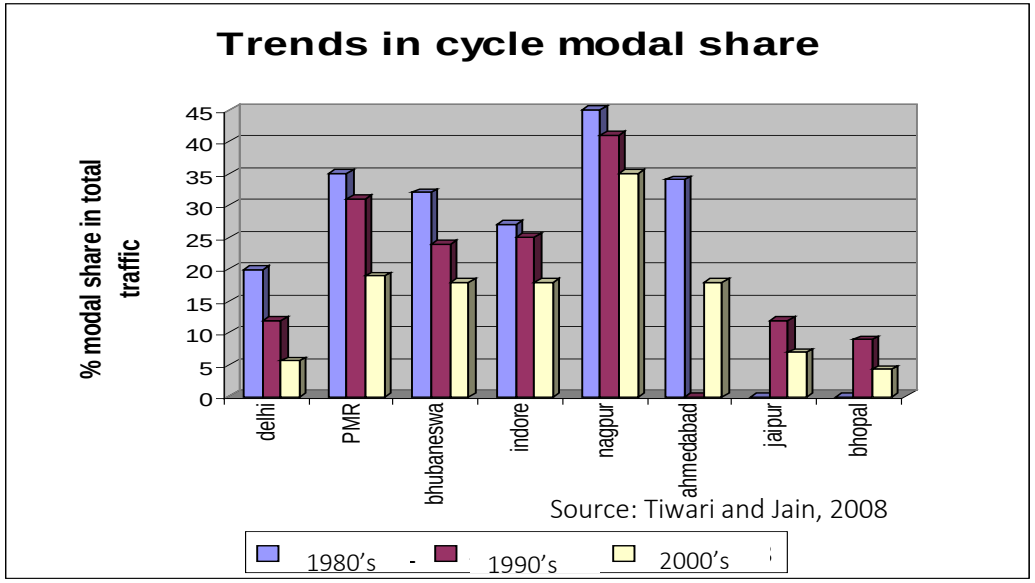






SHARED SPACE?

Context – India medium (3-5 m) and large cities (5-8 m)

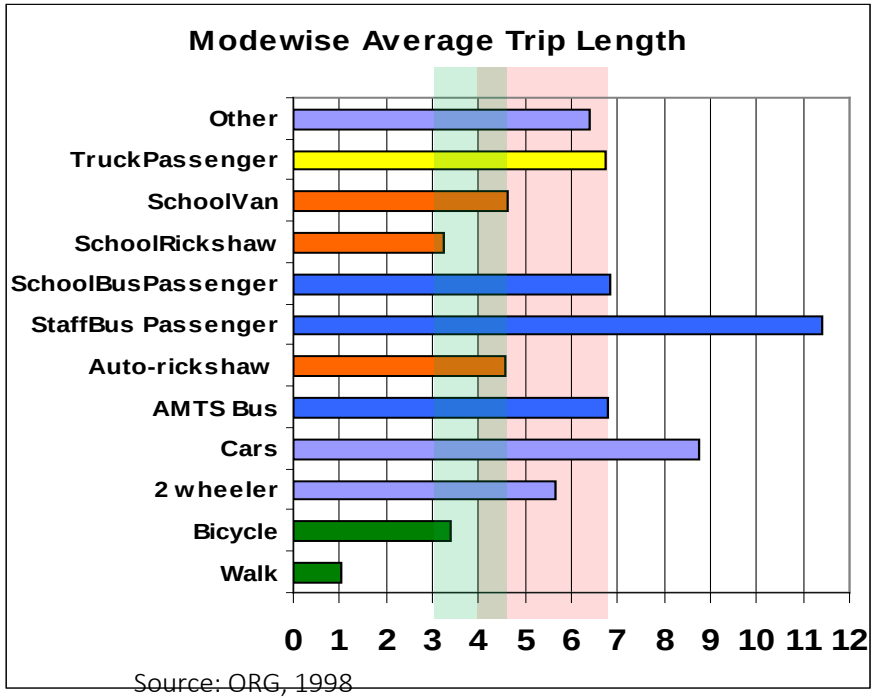


Travel pattern conducive to biking

Vehicular ATL (excluding walk) 4.2 – 6.9km

Bicycles ATL - 3.1 – 4.5 km

Short Trips < 6km (including walk) 56 - 72%



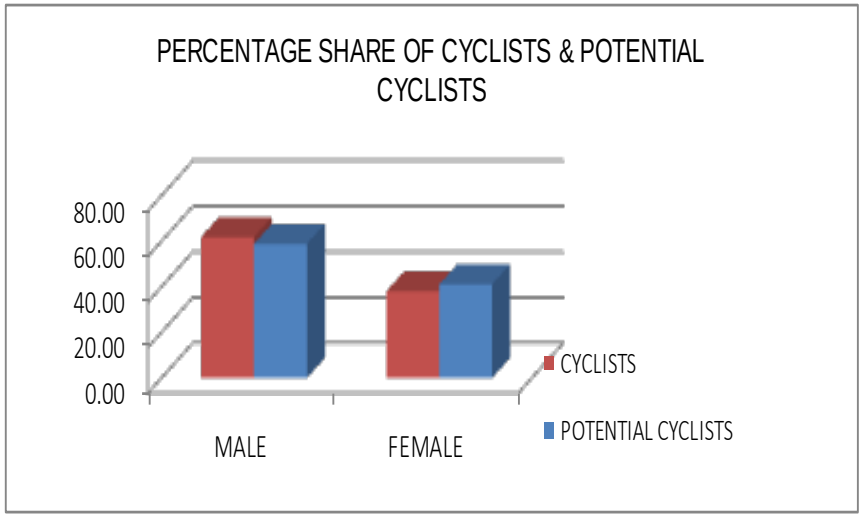
Modal share for bicycle is going down

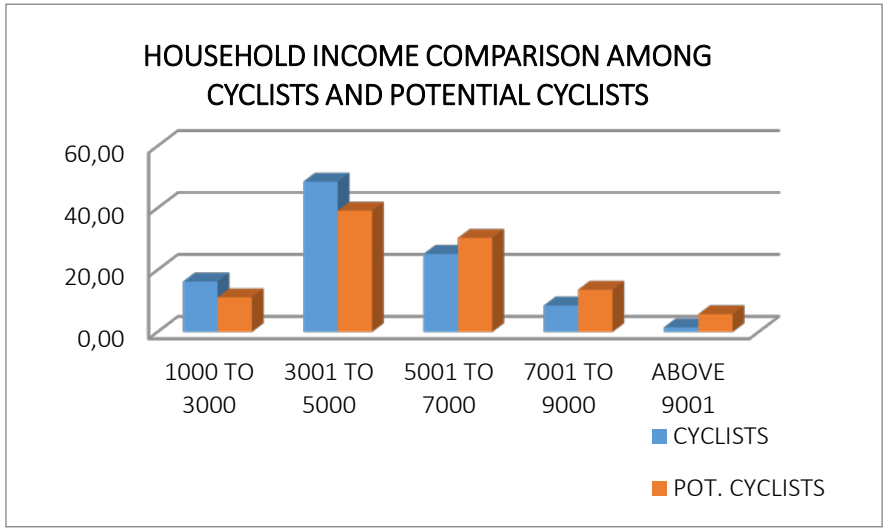
Bicycle ownership is high 35 -65%

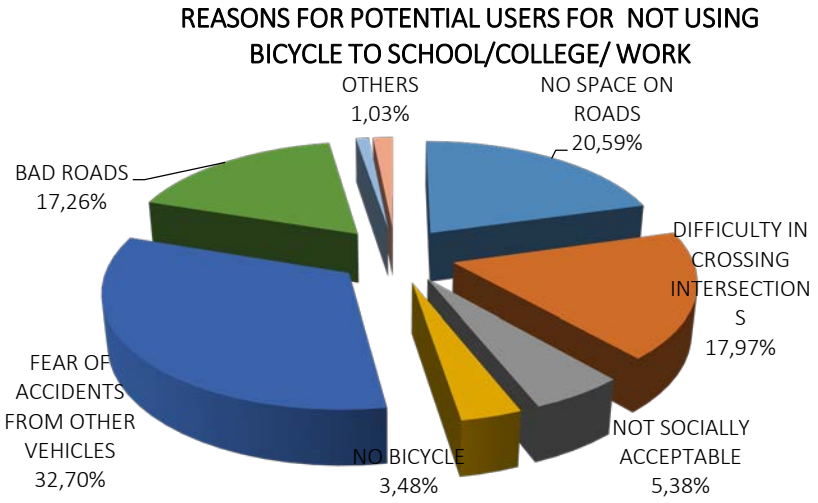
bicycle involved in fatal crashes 8-14%

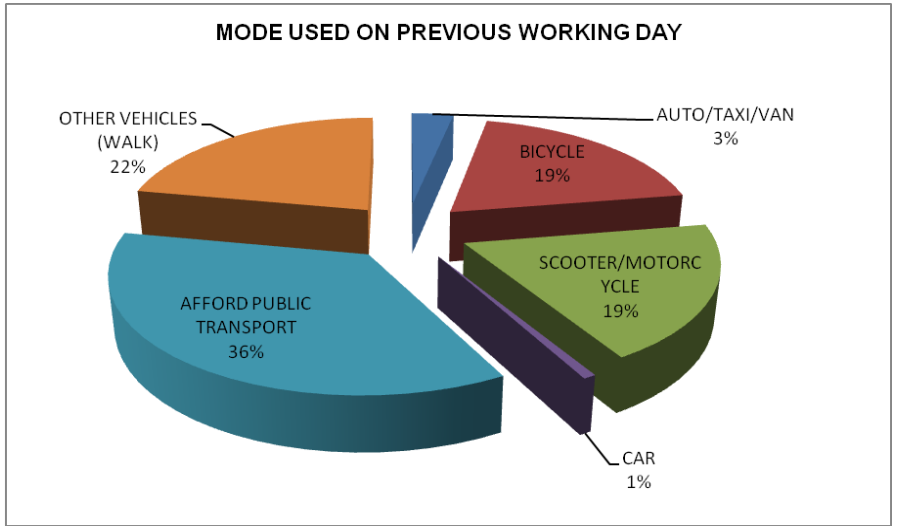
No dedicated facilities for bicycles

Cyclists vs. Potential users









Policy interventions – CAPTIVES

SHORT TERM –

- ✓Pavement quality and street side parking require immediate attention.
- ✓Deterrents - Buses in the curb side lane and high speed of MV.
- ✓Medium Land use mix and informal sector predominant areas preferred as current bike routes.
- ✓Integration of informal sector for social security on bike routes
- ✓Dedicated bicycle infrastructure on higher order roads

Policy effects – POTENTIAL USERS

LONG TERM

✓Proper segregation of informal sector and pedestrians is must to attract choice users.

✓Adequate Lighting and controlled MV entry/exit on streets for enhanced safety perception

✓Segregation of pedestrians and bus commuters from curb side lane.

✓Bicycle network incorporating lower order roads

Current travel scenario: Summary

- NMT and Public transport is used by people who do not have other mode choice available, i.e. CAPTIVE USERS
- Captive users are likely to shift to carbon intensive modes because of
  - Existing hostile NMT and public transport infrastructure
  - Increase in income levels
- Short trip lengths due to compact city structure resulting in high percentage of potential users of NMT

Interventions required to

Impact of possible Modal shifts in Indian cities

Jain, Deepty, and Geetam Tiwari. "How the present would have looked like? Impact of non-motorized transport and public transport infrastructure on travel behavior, energy consumption and CO 2 emissions–Delhi, Pune and Patna." *Sustainable Cities and Society* 22 (2016): 1-10.

Tiwari, G., Jain, D. and Rao, K.R., 2016. Impact of public transport and non-motorized transport infrastructure on travel mode shares, energy, emissions and safety: Case of Indian cities. *Transportation research part D: transport and environment*, *44*, pp.277-291.

	Description		Share of trip shorter than 5 km shifting to NMT	Share of trips longer than 5 km shifting to bus
Scenario 1	Improving only NMT infrastructure	MSS	30% from MTW, three-wheelers & Bus	0%
		LSS	10% from MTW, three-wheelers & Bus	0%
Scenario 2	Improving only bus infrastructure	MSS	0%	50 % from MTW & three-wheelers
		LSS	0%	20% from MTW & 5% from three-wheelers
Scenario 3	Improving both NMT and bus infrastructure	MSS	30% from MTW, three-wheelers & Bus	50 % from MTW & three-wheelers
		LSS	10% from MTW, three-wheelers & Bus	20% from MTW & 5% from three-wheelers

Policy Environment for NMT in INDIA

- National Urban Transport Policy (NUTP, 2006) - movement of people and goods rather than vehicles
- National Mission on Sustainable Habitats (NMSH, 2009) - segregated RoW for bicycles and pedestrians, no-vehicle zones, improving bicycle technology, safer parking facilities for bicycles, public cycle program on PPP, organising cycle rickshaws through PPP and finally promoting cycling and walking as healthy activities
- Dr Kirit Parekh "Low Carbon Strategies for Inclusive Growth, 2011" – emphasis on aggressive effort to increase PT share by 8% and NMT share by 4% resultant 29 MT savings in CO_2, and 18,000 Cr in oil imports and 9% GDP growth. Thus significant impact on the **energy security**.
- National Transport Policy Development (Dec 2011) - NMT should get first priority and funds allocation for major transport infrastructure should be linked to achieving targets for creating facilities for NMT.

Current policies and Urban Missions

- SMART cities
- AMRUT(Atal Mission for Rejuvenation and Urban Transformation)
  - reduce pollution by switching to public transport or constructing facilities for non-motorized transport e.g. walking and cycling.
- HRIDAY(Heritage development and Augmentation Yojna)
  - approach roads, footpaths, street lights, tourist conveniences, electricity wiring, landscaping
- Urban Transport???

TRAFFIC CONGESTION REDUCTION REMAINS THE PRIMARY MOTIVATION