

MOTORIZED TWO-WHEELERS IN INDIAN CITIES: CASE STUDY OF PUNE

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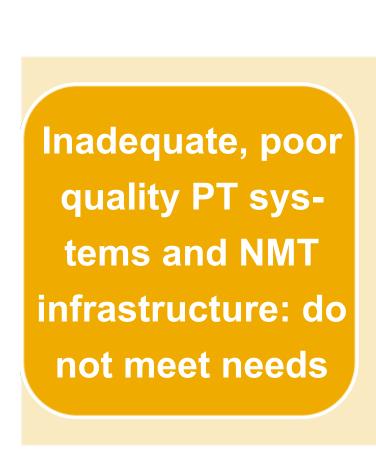
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Context

- > Motorization and vehicle ownership in developed countries is slowing down, but is increasing at a fast pace in developing countries; largely due to rapid urbanization and rising income levels. Two-wheelers are leading this process of mass motorization.
- > India has the second largest motorized two-wheeler market in the world behind China.



unaffordable by

Two-wheele benefits

115.4 million registered two-wheelers in India (March 2012)

- > Two-wheelers play an important role in motorized transport in Indian cities of all sizes, with highest motorized modal shares of 24-29% in small to mid-sized cities.
- > While two-wheelers provide several benefits to travelers, increasing access to opportunities, they also create several challenges. These include serious safety concerns and the negative externalities of dependence on private motorized vehicles.

Study Purpose and Method

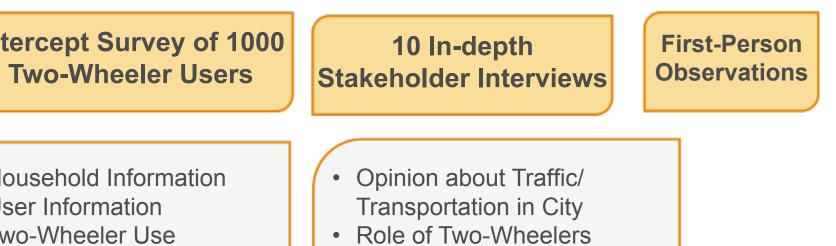
Research objectives were to gain a better understanding of:

- Motorization rates in India and the effect of two-wheelers > Role of motorized two-wheelers in Indian
- urban transport Motivations and profile of users (income,
- demographics) Mobility advantages offered by two-wheelers,
- and challenges they present
- Implications for policy and planning decisions to effectively manage the sector

This research aims to inform the debate using empirical evidence and insights from Pune, a typical mid-sized Indian city where two-wheelers are the dominant and fastest growing transport mode.

Research Methods





Case Study of Pune City

Two-Wheeler Use Issues Concerning

72% Male, 28% Female

Measures to Manage Them Politicians Activists/Citizen Groups **Government Officials**

Pune City Profile

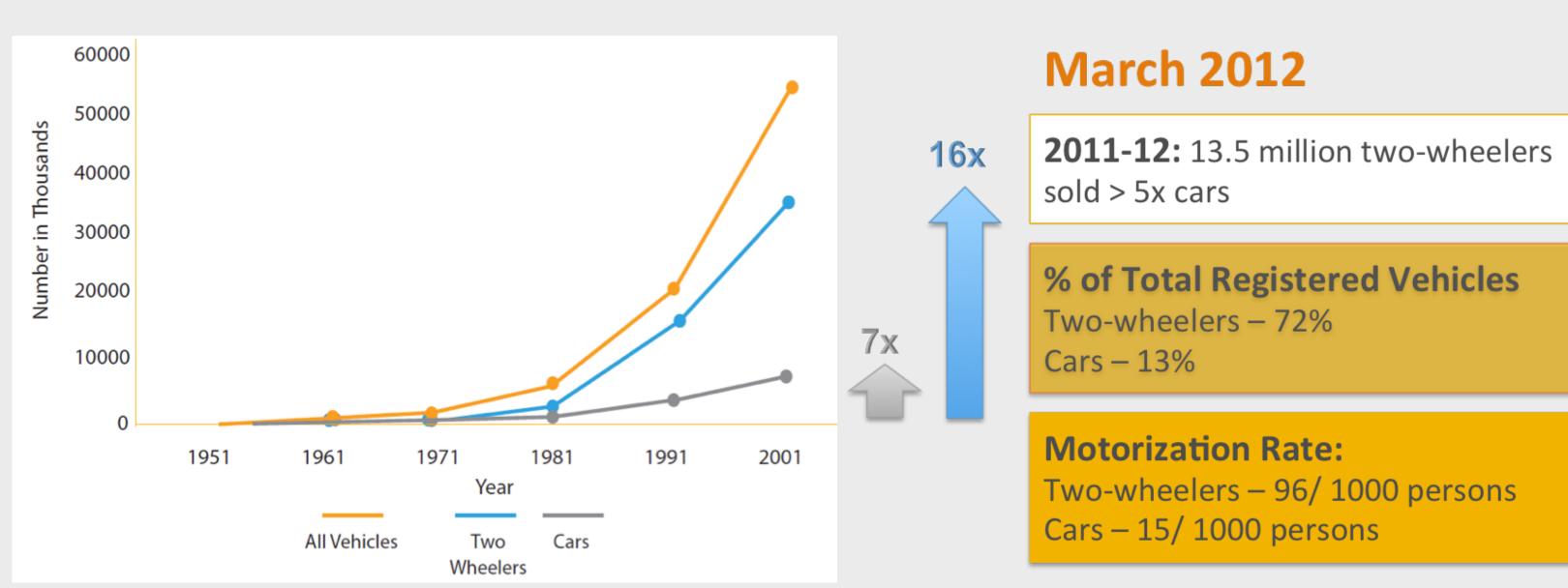
- > Eighth largest city in India ~ population (20 3 million, over 0.5 million students
- > Sixth largest metropolitan economy in India, Second highest per capita income
- > Historically the 'Cycle City of India', Pune is now a city of two-wheelers; in 2005 more than 53% of households, 30% of population owned a two-wheeler.



Research and Survey Findings

Growth of Two-Wheelers and Cars in India, Motorization Rates

> Since the 1980's motorized two-wheeler growth in India has far outpaced car growth; the trend not expected to change much in the near future.



- > Some key factors influencing two-wheeler ownership and use in Indian cities:
- low costs and fuel economy
- relative speed, maneuverability and ease of parking in congested conditions
- shorter distances or trip lengths
- low levels of public transport services, walking, and cycling infrastructure

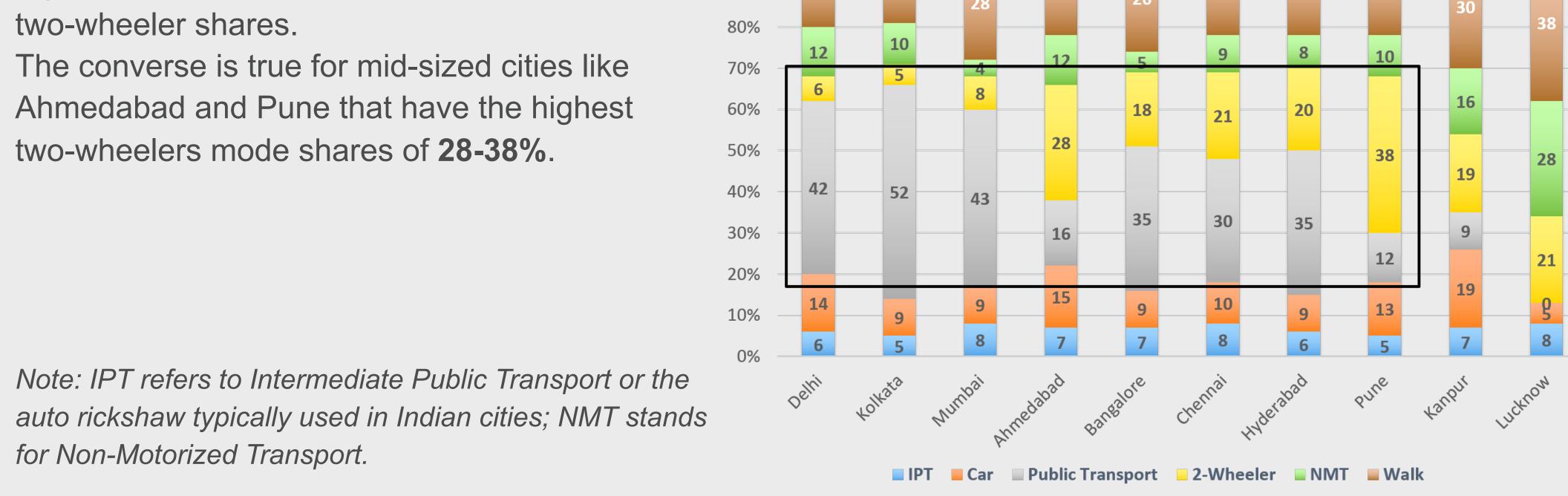
Co-Relation between Motorized Mode Shares of Public Transport and Two-Wheelers

- > A key challenge for sustainable mobility is pressure from increasing motorization causing a decline in the modal share of public transport
- > Rapid growth in two-wheeler use has implications for public transport ridership. Large metros like Delhi, Kolkata and Mumbai -

with better developed public transport systems and longer trip lengths - seen to have relatively higher public transport mode shares and lower two-wheeler shares.

The converse is true for mid-sized cities like Ahmedabad and Pune that have the highest two-wheelers mode shares of 28-38%.

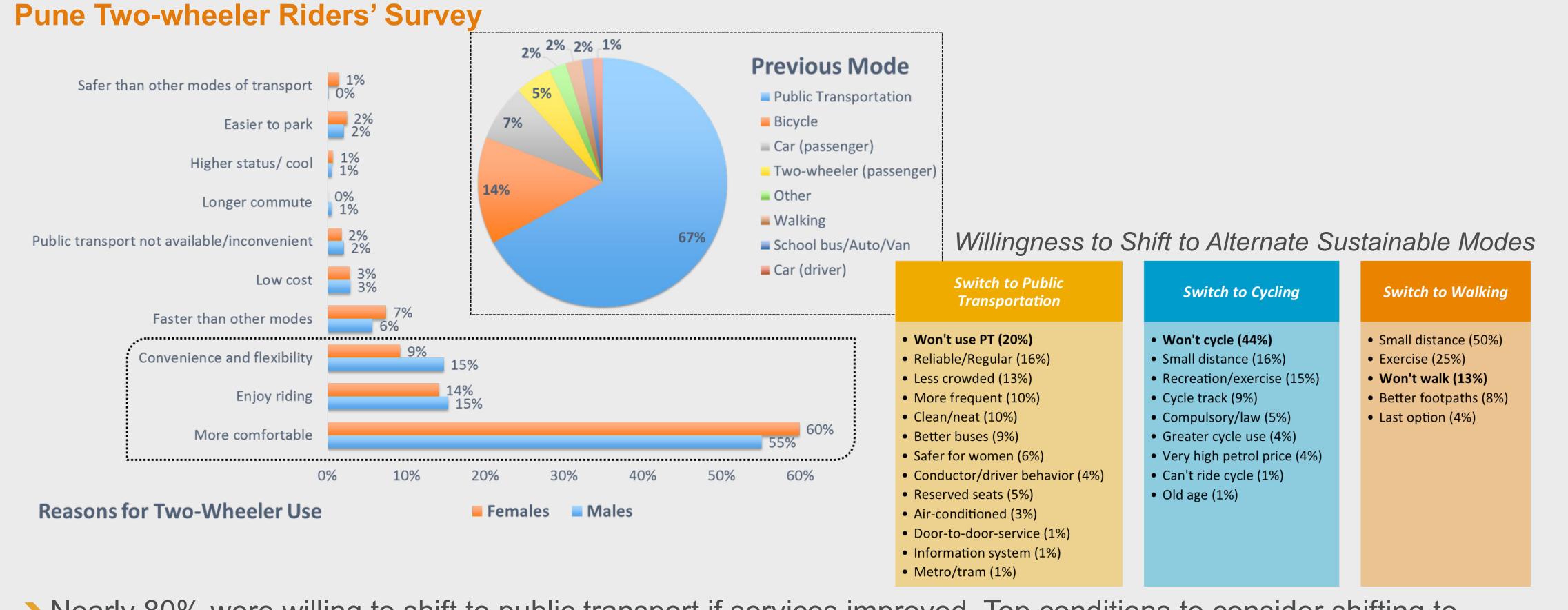
for Non-Motorized Transport.



Modal Split in Indian Cities (2006)

and loss in worker

Considerations to Switch from Two-Wheelers to Sustainable Alternatives



- > Nearly 80% were willing to shift to public transport if services improved. Top conditions to consider shifting to walking and cycling were if distances were small, or for exercise/ recreation.
- > Fuel price thresholds were fairly inelastic and given the need, even significant increases in prices may not prove to be much of a disincentive for two-wheeler use. 32% would not consider shifting modes till prices doubled and 11% till prices quadrupled or rose even higher, while notably 11% responded with 'never'.

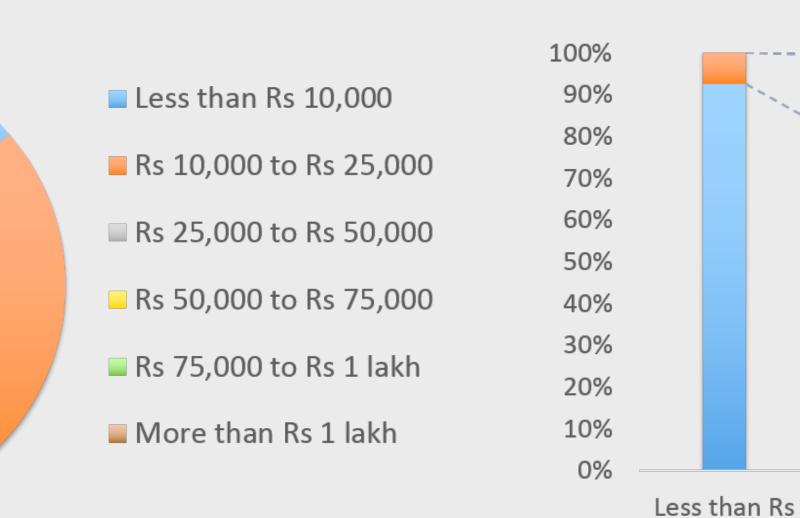
Usage Patterns

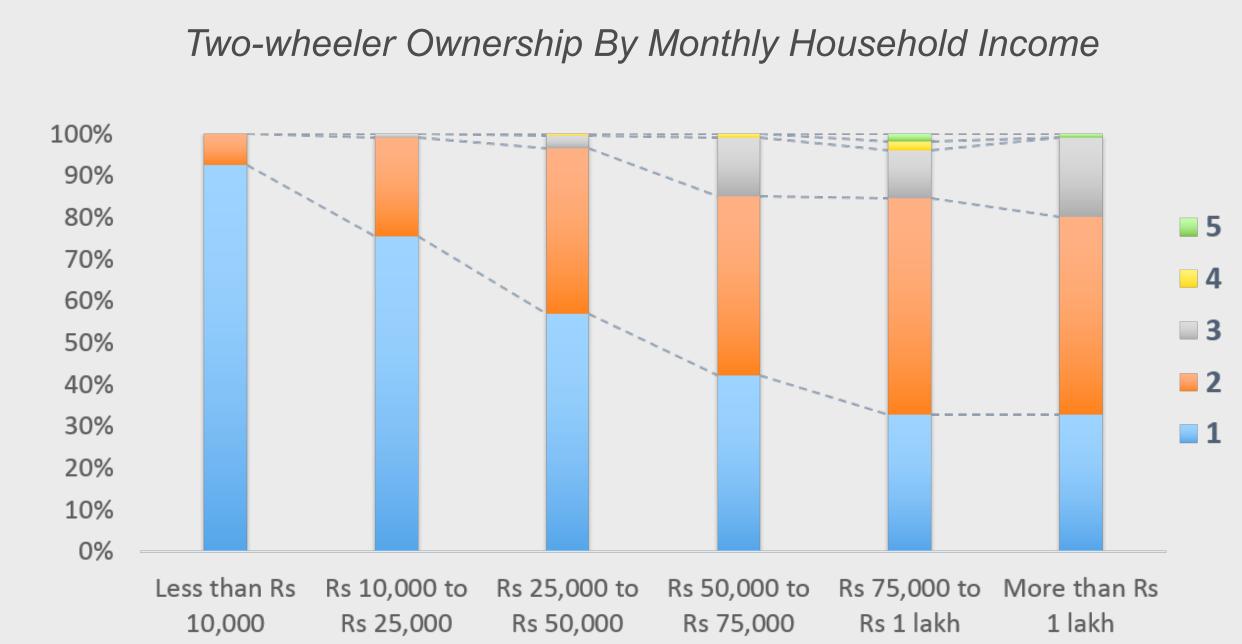
- For majority of men and women the primary purpose of two-wheeler use was travel to work. More women used them to access education or for recreation/shopping trips – showing opportunities provided by the mode to women.
- > 78% used the two-wheeler more than 10
- > Interestingly, 27% of riders used the two-wheeler with another mode on a single trip, primarily bus (43%) and auto rickshaws (33%), pointing to the potential for integrating two-wheelers with other public and para-transit

Demographic and Income Profile of Two-Wheeler Users

- > Two-wheelers were the primary transport mode for 55% of all household members (as drivers or passengers) – particularly men and women in the 18-50 age group.
- > After age 50, percentage of men and women two-wheeler drivers dropped drastically; shifting to cars or public transport. Safety concerns, greater desire for comfort and improved purchasing power of an older adult, possible reasons for this.
- Wide income distribution among two-wheeler users; not limited to lower income populations, as is typically perceived.
- Monthly household income of the majority (33%) of two-wheeler users between INR 25,000-50,000; an equal third below and above this range. Ownership seen to increase with higher household incomes.
- Mode Split by Gender > Relatively low capital, operational and maintenance costs ~ 86% of users spent less than INR 2000/ month on fuel and maintenance.

Monthly Personal Income Less than Rs 10,000 Rs 10,000 to Rs 25,000 Rs 25,000 to Rs 50,000



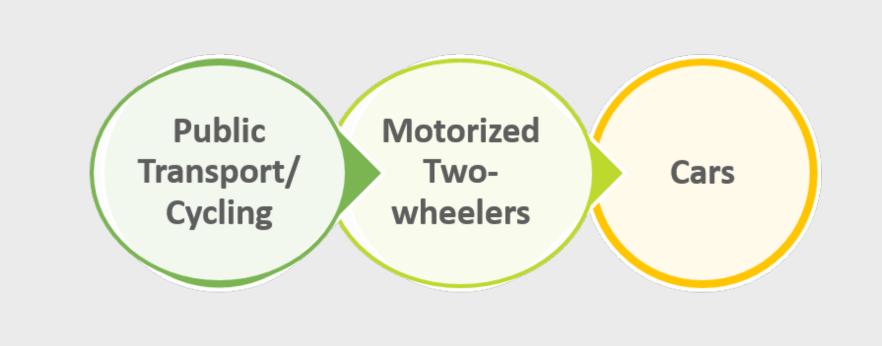


Trip Purpose

Male users (of total sample)
Female users (of total sample)

Two-Wheelers: A Step towards Cars?

- > A third of surveyed riders also owned a car in the household; average monthly household income INR 65,650
- > 80% of those not owning a car stated interest in purchasing one in the future; primary impetus being higher income (76%), marriage and children. This suggests that use of two-wheelers can engender a continued preference for private motorized
- > A **third** of respondents with children also owned a car.



Studies show that many Indian cities have higher two-wheeler motorization, but lower car motorization than average for middle-income Asian cities. In India, two-wheeler ownership and monthly household income levels often not correlated ~ as seen in Pune.

Findings suggest that increases in income levels would likely to lead to car ownership, but not necessarily to a decline in the role or mode share of two-wheelers, given their unmatched benefits in Indian conditions.

Challenges and Policy Implications for Managing Two-Wheelers

- > Private motorized vehicles generate numerous negative impacts on the environment and society as a whole ~ on sustainable mobility, use of public space/resources, efficiency and productivity, safety and health, etc. While two-wheelers have a smaller footprint than cars, they contribute nonetheless, especially given their significant numbers in Indian cities.
- > Lessons can be drawn from the experience of other Asian cities like Taipei and Hanoi that have successfully implemented reforms and two-wheeler management measures.

> Improving public transport systems to retain users and further induce a shift from private vehicles. Potential

Managing Two-Wheeler Numbers

- for integrating two-wheelers with mass transit systems can be explored. > Need for good, fully-equipped and integrated public transport systems, before restricting or discouraging
- two-wheelers can be considered.
- Private sector initiatives to encourage sustainable
- Charge parking fees for private motor vehicles; reserve free parking for car-poolers, cyclists
- Stop providing incentives to acquire personal vehicles, instead incentivize travel by non-motorized or public transport and company buses
- Actively support initiatives like Bus or Cycle Days, work with local authorities to address traffic/transport issues



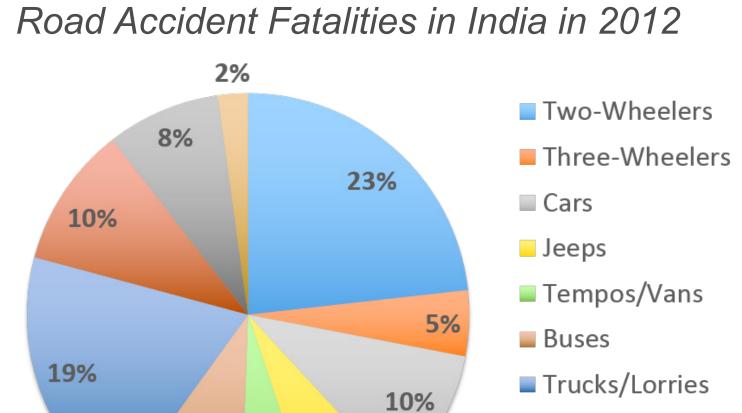
Traffic Congestion and Parking Problems, Restrictions on Two-Wheelers

- Ambiguity regarding congestion impacts of two-wheelers
- > Improve infrastructure design and management for roads, traffic and parking - introduce two-wheeler specific speed, lane regulations to improve traffic efficiency and safety. Need for effective monitoring and enforcement.
- > Rather than banning or restricting vehicles, consider appropriate management strategies. Start with smaller initiatives like vehicle-free days in campuses/certain areas, restriction along BRT/Metro corridors etc.



Safety Issues

> India records the most deaths from motorized two-wheeler accidents in the world.





- > 2010-11: **50%** of accident fatalities in Pune were two-wheeler riders, only **1%** wearing a helmet.
- > Of surveyed two-wheeler riders, 20% reported being in an accident average number 1.2; 43% wore helmet regularly, 24% occasionally, 33% never. Most surveyed riders (64%) and interviewed stakeholders in favor of compulsory helmet laws.
- > For a variety of reasons, Indian states have not notified the helmet law or introduced partially. Its effectiveness related to public education/compliance and enforcement – which has been poor. Need for implementation of helmet laws and commitment to enforcing its statutes.
- > Need for proper pricing of regulatory fines to incentivize safer two-wheeler use.
- > Improved vehicle design/technology from safety and environmental perspective.

Charging Real Costs of Use

- Can be in the form of higher vehicle taxes and fuel prices, parking fees and congestion charges; though opinions regarding this are conflicting and politically difficult to implement for fear of public backlash.
- > Given mobility needs and unmatched benefits provided by two-wheelers, disincentives or 'push' strategies would only PULL STRATEGIES really be effective when preceded and combined with 'pull' strategies, such as improving multi-modal public transport systems and making them affordable and attractive.



- Improving PT services Improving NMT infrastructure