



Future of Urban Mobility

May 2023

Integration of Platforms



Uber

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नितिन गडकरी
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MESSAGE

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सड़क परिवहन एवं राजमार्ग
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I am glad to know that the American Chamber of Commerce in India (AMCHAM India) has brought a Report THE AMCHAM UBER, focusing inter-alia upon affordable, convenient, sustainable, and safe transportation solutions in the country. AMCHAM India is a member to the U.S. Chamber of Commerce in Washington DC and the AMCHAMS of Asia.

India, today, is at the forefront of an economic revolution where the Government is making concerted efforts to provide the most modern infrastructure with the infusion of new technologies and modern equipment and materials, and this can be observed very prominently in the transportation sector. With 'Ease of Living' as the enabler to achieve Social Equity. India is moving ahead at an unprecedented pace to provide safe transportation and roads, healthy air through decarbonisation and faster movement through technology amalgamation and integrated platforms for providing first and last mile seamless connectivity.

THE AMCHAM UBER study, supports the Government of India's vision of enhancing sustainable livelihoods and the related multiplier effect on the economy by strategic suggestions for opening up the mobility sector. It is indeed laudable that aggregators have been supporting India's vision through creation of gainful employment, and enhancing their quality of life.

I appreciate the focus of the report on shared mobility which is extremely crucial to enhance use of public transportation, since the urban transportation sector is witnessing increasing use of private vehicles, having a huge impact on the environment. Shared mobility has extensive potential to create assets and parking spaces efficiently, and connect the last mile in our cities, while also creating work opportunities for over 12 Lakh platform workers. AMCHAM's vision of providing greater employment opportunities, as also, engaging the youth of the county, can also be supported by the private sector with the use of motorbikes in the urban and rural areas for the first and last mile connectivity.

I applaud AMCHAM for their initiative and concern for the research and development in the areas mentioned above. I also convey my best wishes to the Members and Staff of AMCHAM for their unstinted efforts and endeavours to perform the above services, meeting various challenges, to bring about holistic solutions to make Indian roads safe, green and healthy.


(Nitin Gadkari)

Date: 1st May, 2023
Place: New Delhi

Foreword by AMCHAM

India's fast-growing economy is set to become one of the top three global economic powerhouses within a decade. Progressive government policies and the emphasis on ease of doing business have made India the 7th top destination for foreign direct investment (FDI) with the U.S. among the top 3 investor countries.

A world-class infrastructure is the way to achieve a \$5 trillion economy, as envisaged by the Government of India, and the policies of the government aimed to transform transport planning are playing a pivotal role to encourage amalgamation of technology in transportation to provide safe and efficient transport solutions across the country. Zero emission mobility platforms to achieve carbon neutrality by bringing in the EV policy and integrated solutions create seamless experiences to passengers for the first and last mile connectivity. These laudable initiatives culminate in aiding the ease of living.

U.S. companies in India are keen to forge innovative and tested partnerships to support the vision of the Government of India for the application of the world's best and most advanced technologies in the transportation sector.

U.S. companies in India have created extensive gainful employment from high technology to the grassroots level contributing to GDP growth. The AMCHAM-UBER knowledge paper on the **Future of Mobility** quantifies the existing mobility scenario in India with recommendations to enhance sustainable livelihoods through faster development of this very significant sector of the economy.



Ranjana Khanna

Director General CEO
AMCHAM India



Uber



Executive Summary

The Need For Shared Mobility:

As India's cities expand at an incredible pace, its local, state and national governments have sought to guide their development under the principles of smart growth in an effort to support multiple goals of facilitating economic growth, control urban emissions and improving urban air quality.

Indian cities are currently witnessing increasing ownership of private vehicles and decreasing use of public and non-motorized transport. In order to curb the growth of private vehicles, while reducing carbon emissions and driving livelihoods, it is necessary to adopt shared mobility. The shared mobility ecosystem in India has created immense value for the economy, and created income generating and augmenting opportunities for millions of Indians.

Generating Livelihoods:

Ride Hailing is one of the most prominent and well established sectors of gig work, and the platform economy. The segment has helped create hundreds of thousands of livelihood opportunities in the country. The platform is an inclusive and flexible option for individuals to have a gainful livelihood. Over the years, Uber's platform has been at the forefront of providing a range of benefits like insurance, microcredit and ease of access to government schemes.

500,000

500,000+ drivers remained active on the platforms in 2022, thereby earning income.

2 million

American platforms like Uber aim to quadruple active drivers to 2 million to contribute to India's growth. The numbers are staggering once you consider more urban mobility platforms, and even more so when gig platforms outside mobility like Amazon are factored.

Transportation decarbonization can be achieved through a combination of two crucial strategies - use of clean fuel vehicles or ZEVs and shift to shared modes of mobility including public transportation.

Ridesharing platforms in India, combine these two strategies by committing to electrify their fleets, which are high kilometer vehicles.

36,537 tonnes

While it was active, a service uberPOOL had helped curb over 36,537 tonnes of CO2 emissions in India.¹ The explosion of the shared mobility space is expected to have had a meaningful impact on vehicles since vehicles on these platforms encourage cleaner fuels like CNG as opposed to petrol and diesel which is the norm among private vehicles.

25,000+ EVs

Through a partnership with Tata Motors is expected to add another 25,000 further electric cars to the platform by 2025. Platforms and the commercial vehicle segment can offer great opportunities for the EV portion of the Make in India effort as they aggressively look for vehicles that fit the Indian roads.

¹UberPOOL has saved \$4.5 million worth in fuel import costs in India since launch" Economic Times. Jun 05, 2018

Policy Recommendations:

1. Promoting Ease of Doing Business for high occupancy vehicles

For promoting high occupancy vehicles, contract carriage permit systems may need to be reviewed in order to allow more flexibility to state governments to support different types of shared mobility models. Further inspiration may be found right within the Indian subcontinent, with the digital enlistment model instituted by the Bangladesh Road Transport Authority. A single window clearance or licensing may be looked at for platforms offering mobility services thereby encouraging them to expand to more modes without additional compliance burdens.

2. Livelihoods

Measures should be considered to promote individual entrepreneurs or gig workers to enter the shared mobility market. Easy mobilization of assets for passenger or goods transport use will play a key role here as well as easy access to credit. To make sure workers in this space are secure from shocks, the government must operationalise the Code on Social Security, 2020 at the earliest.

3. Future Ready Cities

With an explosion of car ownership on the horizon it is important for India to get our cities ready for the changes. Low emission zones, public charging infrastructure, well designed streets and curbs, multi-modality, etc. are some of the very basic tenants of urban mobility of the future.



Section I

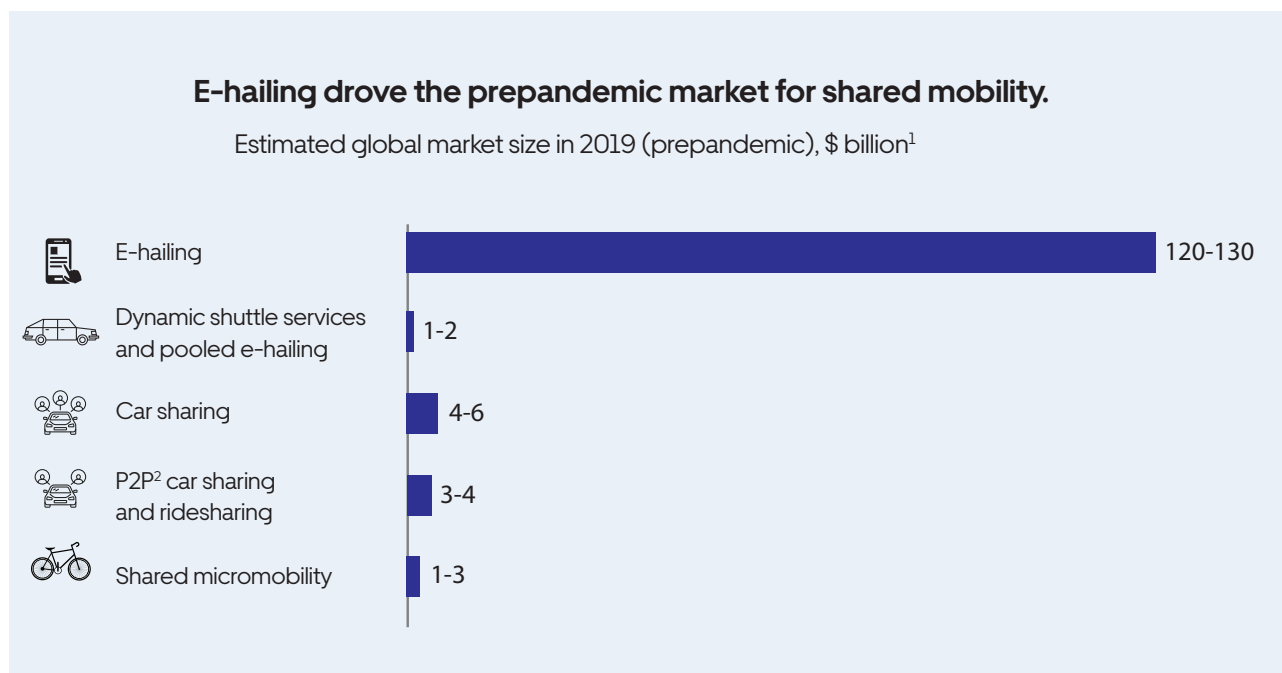
Emergence of Shared Mobility Platforms

As India's cities expand at an incredible pace, its local, state and national governments have sought to guide their development under the principles of smart growth in an effort to support multiple goals of facilitating economic growth, control urban emissions and improving urban air quality. Collectively these programmes seek to expand public transport, electrify vehicle fleets, encourage non-motorised transport and develop equitable access to mobility options.

Indian cities are currently witnessing increasing ownership of private vehicles and decreasing use of public and non-motorized transport.² These trends have implications on India's energy consumption, energy security and economy, pollution, congestion, health, and safety.

The NITI Aayog in 2018³, considered ridesourcing as one of the most effective means for shared mobility. Ridehailing/Ridesharing/Ridesourcing refers to on-demand services that link riders to hire drivers who are using their own vehicles as commercial vehicles. These services use online platforms to link drivers with riders and facilitate direct payment. These services operate on dynamic routes (i.e. not fixed routes like most public transit) and fares.

Across the world, since its inception, e-hailing has been a key driver in the shared mobility ecosystem.



Source: McKinsey, Shared mobility: Where it stands, where it's headed, 2021

Shared mobility has a number of benefits, most of which arise from an increase in system efficiency through higher asset utilization and improved connectivity. Whereas private vehicles often sit idle, or with low occupancy, shared vehicles are often better utilized, with more passengers and goods in available vehicle space and higher utilization, lower fuel consumption, reduced emissions and lower cost of transportation.

³NITI Aayog, Rocky Mountain Institute, and Observer Research Foundation. Moving Forward Together: Enabling Shared Mobility in India. 2018

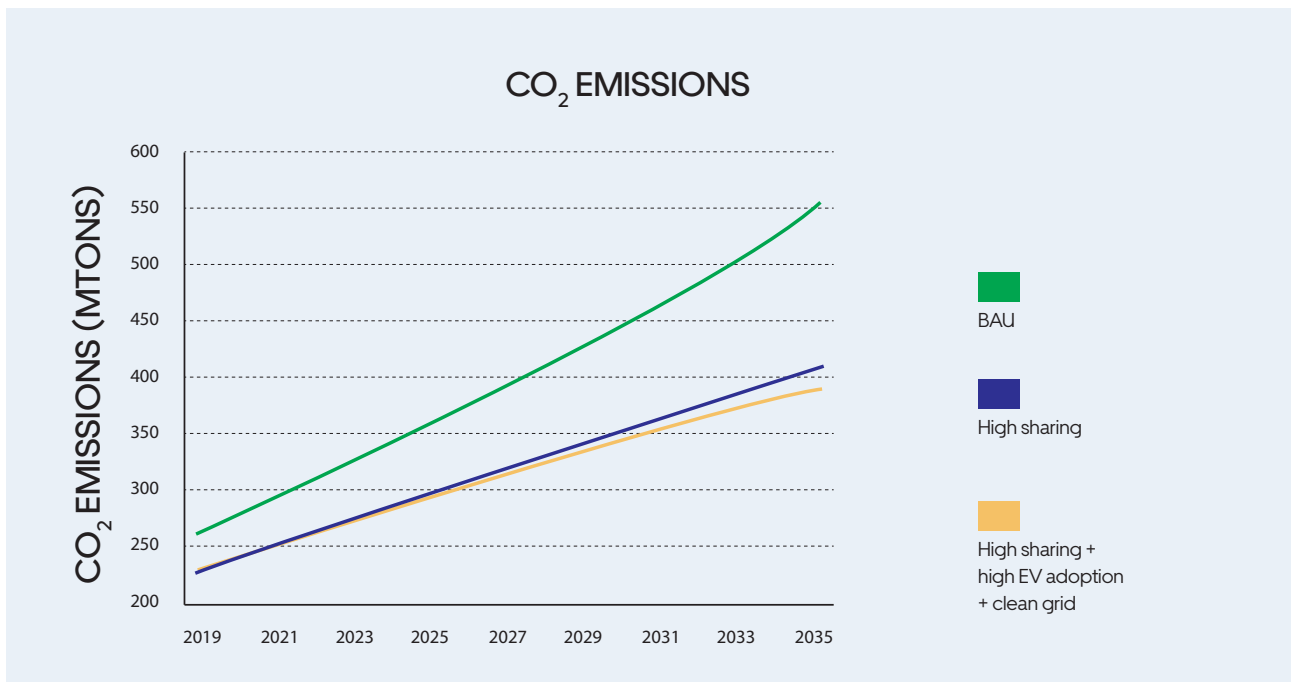
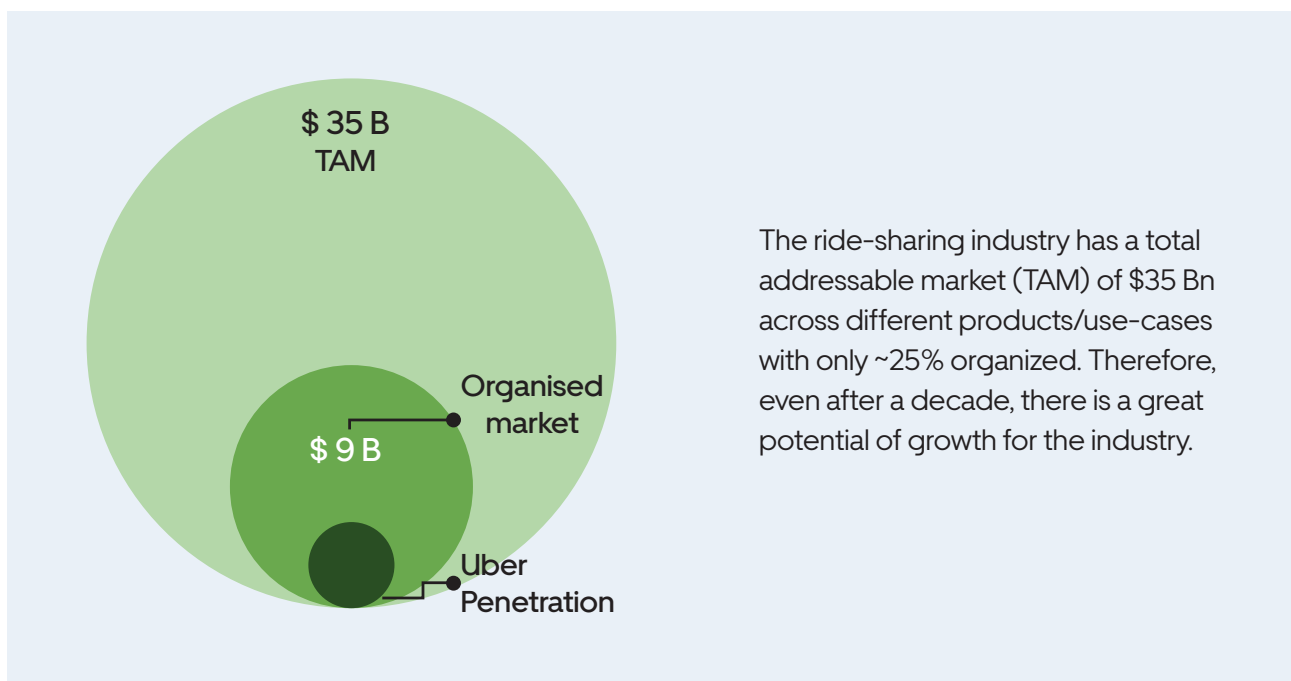


Figure 8: CO₂ emissions in BAU, shared mobility future, and shared mobility future with high renewably sourced energy generation in India
Source: NITI Aayog, Rocky Mountain Institute, and Observer Research Foundation.
Moving Forward Together: Enabling Shared Mobility in India. 2018

Shared mobility has expanded to more modes of transport and now encompasses almost every type of vehicle ensuring consistent demand, supply and optimum asset utilization while generating livelihoods. Post pandemic, the industry has witnessed a shift in mobility use cases, while cabs were the most prominent form of shared mobility, new low cost options, such as, auto-rickshaws, bike taxis and HCVs have gained prominence amongst users.

The ridesharing platforms began offering auto services through their apps and have seen a thriving e-hailing auto sector take shape because of the value the service brings to drivers and riders alike. In 2021, multiple cities, such as Mumbai and Bhubaneswar, saw a 2x demand in auto rides as riders prefer e-hailed autos as a safe, convenient, and affordable transport mode to move around town.

Growth Potential of the Ridesharing Industry



Section II

Impact of Shared Mobility

A. Economic Impact/Empowerment

1. Gainful Livelihood Generation

The digital economy has seen rapid growth over the last couple of decades, particularly driven by the pace of adoption of smartphones across populations in developed and developing economies. A recent report pegged the number of smartphone users in India alone at 500 million. This rapid digitization has also changed how we work and procure services, leading to the emergence of the sharing economy and the 'gig economy.' India, with its large informal economy and workers, has always had the equivalent of gig work – and the current scenario presents an opportunity to formalize and organize it.

Under the Code on Social Security, 2020, the term 'gig worker' has broadly been defined as "a person who performs work or participates in a work arrangement and earns from such activities outside of traditional employer-employee relationship." The code has also defined 'platform work' as "an employment form in which organizations or individuals use an online platform to access other organizations or individuals to solve specific problems or to provide specific services in exchange for payment." The code also indicates that such workers, albeit not employees, may be provided with certain social security benefits as determined by the central government. These may include life and disability cover, accident insurance, health and maternity benefits, old age protection, crèche and childcare services, and other benefits.

The Code on Social Security is a global first governing document which can suitably regulate the sector and enshrine benefits to the millions of gig workers in India. The Code, if implemented, has the potential to impact policy across the world, and institutionalize a forward-looking arrangement beyond the employee, and wage labor standards.

The NITI Aayog released the following estimates for Gig Work in India :

77 lakh

In 2020-21, 77 lakh (7.7 million) workers were engaged in the gig economy.

2.35 Crore

The gig workforce is expected to expand to 2.35 crore (23.5 million) workers by 2029-30.

47%

At present about 47% of the gig work is in medium skilled jobs, about 22% in high skilled, and about 31% in low skilled jobs.

Trend shows the concentration of workers in medium skills is gradually declining and that of the low skilled and high skilled is increasing. It may be expected that while the domination of medium skills would continue till 2030, gig work with other skills will emerge.

Ride Hailing is one of the most prominent and well established sectors of gig work, and the platform economy. Uber and many other mobility service companies have helped create hundreds of thousands of livelihood opportunities in the country. The platform is an inclusive and flexible option for individuals to have a gainful livelihood. Over the years, platforms like those from Uber have been at the forefront of providing a range of benefits like insurance, health check-ups, microcredit and ease of access to government schemes.

Uber has half a million driver partners associated with the platform, and aims to quadruple the growth to 2 million.⁷

⁴ BCG, and Michael and Susan Dell Foundation, Unlocking the Potential of the Gig Economy in India, 2021. ⁵ Ministry of Labour and Employment, 2020

⁶ NITI Aayog, India's Booming Gig and Platform Economy: Perspectives and Recommendations on the Future of Work. June, 2022.

⁷ "Uber positively confident of quadrupling growth in India : CEO" The Hindu Businessline; April 26, 2022

Table: Approximate Livelihood Generation Opportunities Created in India by Uber over last 9 years

Tier I Cities		Tier II Cities	
Delhi NCR	7,00,000	Agartala	1,700
Bengaluru	4,70,000	Guwahati	42,000
Mumbai	3,90,000	Nagpur	19,000
Hyderabad	4,30,000	Visakhapatnam	22,000
Kolkata	1,90,000	Surat	9,300
		Kochi	31,000
		Kanpur	14,000

A study by IIM-Bangalore on Livelihood Opportunities on Gig Platforms provided insights on the earning opportunities on the Uber platform. Some of the notable findings of the study were:

- Irrespective of the years that they have been driving on the platform, respondents of the study stated better earning opportunities and flexible working hours as the main reasons for engaging with companies like Uber.
- It has been observed that earnings on the Uber platform are comparatively higher than in entry-level formal jobs and informal work.

In states such as Maharashtra, Karnataka, West Bengal and Telangana, several drivers have received government subsidies to buy assets such as cars and auto-rickshaws. These government subsidies have been extremely impactful and have had a transformative impact on the lives of people, who until now did not have access to such an asset or the opportunities that the asset could open up. U.S. companies in India, such as Uber, have been at the forefront of partnering with governments to create work opportunities for marginalized citizens.

AMCHAM members have always been on the forefront for contributing to sustainable livelihoods in India. There have been multiple other driver welfare initiatives such as the Uber Care program. Launched in 2018, the program provides easy access to life insurance, family health insurance, micro-loan(s), etc. to thousands of drivers. The top 5 cities where the maximum number of drivers were impacted are Delhi, Bangalore, Mumbai, Hyderabad and Pune. Major Uber Care Milestones include:

35.6 crore Micro-loans worth INR 35.6 crore	95 lakhs 34,000 car servicing packages resulting in overall savings worth INR 95 lakhs	600 Uber partnered with Indus Action to help more than 600 children get admission into schools till date through RTE
38.7 Crore INR 38.7 crore fuel credits with Indian Oil have been facilitated	92,000 Over 92,000 drivers have signed up with DocsApp for free doctor consultations, subsidized prescription medicines, and lab tests	

2. Multiplier effect of ridesharing on economic activity

The relationship between mobility and economic activity is not by any means novel. In the early stages of the country's recovery from the pandemic in Jan 2021, after vaccination and resumption of economic activity, increased mobility was listed as a key factor expected to lead the economy towards a path of recovery by the Finance Ministry in its monthly economic report⁸. By facilitating a more convenient and on-demand form of transport, platforms can help save time, expand mobility, and provide flexible earning opportunities for thousands of driver-partners in India.

In an analysis done by UK based policy firm Public First in 2021⁹, it was estimated that Uber alone unlocked an estimated ₹446 billion in economic value for the Indian economy. This includes both the impact of earnings of driver-partners and the wider indirect and induced multiplier effect created throughout the company's wider supply chain. In 2021, they estimated that ridesharing with Uber produced ₹1.5 trillion in consumer surplus for Indians. In total, in 2021, they found that driver-partners earn an additional ₹17 billion a year in higher income through Uber, or an average of 49% more than their next best alternative source of income or work.

B. Complementing Public Transportation

Public transportation is the backbone of cities across the world, affording people access to social and economic opportunities in a manner that is both low cost to the rider and environmentally friendly. Most importantly, public transportation, more than any other mode, facilitates the movement of large numbers of people through small spaces, enabling cities to achieve the density that makes them such viable and attractive places to live.

Cities and riders benefit when platforms and providers are able to seamlessly integrate it into the suite of options they provide to create a seamless transit experience. A multimodal transportation system, centered around public transportation in concert with ridehailing, new mobility, and active transportation, has tremendous potential to compete more vigorously with the private car than public transportation alone. Reducing the use of private cars, while expanding a multimodal transportation system can lead to more equitable and environmentally sustainable cities accessible by all.

As found by researchers at the Smart Public Transport Lab at TU Delft,¹⁰ ride hailing can serve as an important complement to public transportation to improve access within a city. Platforms could work with public transportation authorities to more seamlessly integrate their own offerings to further achieve this ideal. Places like Seattle¹¹ that have seen growth in population, jobs, and mobile vehicle trips, have at the same time witnessed growth in public transportation ridership and a decrease in vehicle-miles traveled.

C. Raising the Bar for Safety in Passenger Transportation

Road safety has been a primary concern for the Government of India. According to World Bank estimates¹², with only 1% of the world's vehicles, India accounts for almost 10% of all crash related deaths. The poor households bear a higher proportion of the socio-economic burden of road crashes due to loss of income (over 70% of crash victims in poor households), high medical expenses and limited access to social safety nets. According to a World Bank study, road crashes are estimated to cost the Indian economy between 5% to 7% of GDP a year. Official government data show that each year road crashes in India kill about 150,000 people and injures another 450,000. More than half of the victims are pedestrians, cyclists, or motorcyclists and almost 84% of all fatalities are among road users between the working ages of 18-60 years.

A key, but often forgotten aspect of road safety is vision correction for drivers. Enhancing rider and driver safety continues to remain a top priority for the Ministry of Road Transport and Highways (MoRTH). Uber partnered with the MoRTH, and various state governments for sharing the costs of providing free eye-tests, and subsidized vision correction and reading glasses worth INR 1.5 crore to drivers across India,

⁸Recovery to bank on economic activities, increased mobility" Indian Express, New Delhi; January 6, 2021 | ⁹ Uber Technologies Inc.: The Impact of Uber in India, 2022.

¹⁰ Uber Technologies Inc.: Uber and public transport interaction: An analysis of empirical evidence. | ¹¹ Uber Technologies IncUber and the Evolving Mobility Landscape in Seattle.

¹²World Bank Approves \$250 million Program for Making India's Roads Safer" World Bank; June 24, 2022

starting with Delhi NCR. Additionally, there is also an educational video for the driver community, which lists measures that they must follow for enhancing both driver and rider safety.

By the end of 2022, over 15,000 drivers have received free eye tests and eye wear under Uber's commitment in 8 cities in India - Delhi, Mumbai, Bangalore, Hyderabad, Kolkata, Jaipur, Patna and Guwahati.

Technology Led Safety Initiatives

As tech platforms are central to the shared mobility ecosystem, it has been the need of the hour to introduce technology led interventions which can make mobility safer. A total of 16,397 persons were killed in road crashes in 2021 due to not wearing seat belts, of which 8,438 were drivers and the remaining 7,959 were passengers, according to a report by the Ministry of Road Transport and Highways (MoRTH).¹³ A key tech intervention taken in this regard is the audio-seatbelt reminder by Uber. When an Uber ride is booked, the driver's phone will play an audio reminder asking passengers to **"Please use rear seat belt for your safety."**

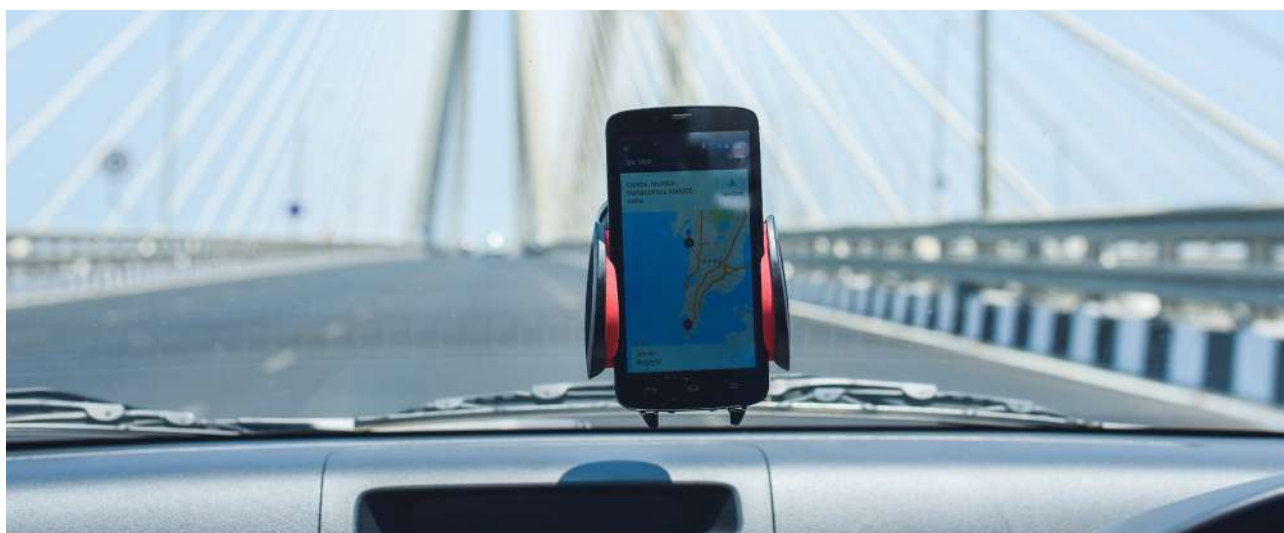
The passenger will also receive an in-app notification.¹⁴ Additionally, Uber has also announced the first of many SOS support integrations with the local police, beginning with Hyderabad. This will provide public safety authorities with real-time actionable data in case of an

emergency on its platform. Further, applications like Uber also use GPS based technology to create innovations like RideCheck to identify and flag deviations in the route adopted and share live location with contacts for greater confidence and convenience.

Gender Sensitization Trainings

Across the world, men and women differ in the way they use public transport. In India, in particular, women tend to travel more at off-peak hours than men, keep within a limited area, often have children in tow, and make several short trips to complete household chores or fetch children from school.¹⁵ Only 9% of women in Indian cities feel public transport is completely safe, while 3% claim it is completely unsafe, according to a report which surveyed 9,000 women in 11 cities of India.¹⁶ In 2018, as part of commitment to safety, Uber and Manas Foundation, a leading expert deployed gender sensitization workshops for the driver partners on the platform. Since the launch of virtual trainings post the pandemic, it has gender sensitized over 100,000 drivers. These sessions help drivers understand, and be sensitive, to the needs of women riders.

Drivers on the Uber platform across 34 Indian cities have benefited from this initiative. Today, 97% of female riders say that safety is an important factor in their choice to use the cab aggregators, and 76% of female riders agree that it is now easier to get home late at night.



¹³The Hindu, December 2022. | ¹⁴Hindu Business Line, April 2022. | ¹⁵India: Making public transport more women-friendly, World Bank, 2022. | ¹⁶Ola, What Do Women And Girls Want From Urban Mobility Systems?, 2019.

Section III

New Mobility

A. On-Demand (E-Hail) Bike Taxis

Congestion in Indian Cities

Rapid urbanization and economic opportunities are fueling growth in Indian cities. While the Government of India and State Governments have made significant investments in improving road conditions, congestion continues to be an issue of rising concern in Indian cities. As per a BCG Study¹⁸, the level of congestion is significantly higher in Indian cities than comparable cities around Asia. This is partly attributable to India's large population and high population density, as well as an under-developed public transportation network (especially mass rapid transit systems).

A major cause for concern that exacerbates the problem of congestion is the single passenger ridership in private vehicles (studies estimate usage of private vehicles at only 4%), occupying critical space on roads and parking places.

Among the several available paratransit alternatives in India, bike-taxi— motorbikes that operate as taxis—must be popularized for use. Although some Indian states have allowed bike-taxis to operate, many others are still considering the option, particularly because of the lack of clarity in the regulations regarding mobility as a service.¹⁹

As an affordable mode of transport, bike taxis can make transportation more affordable and accessible for all. They are often available in ride-sharing forms and via mobile-based ridehailing apps, enhancing their accessibility.



Bike Taxis Around the World

Various countries around the world have permitted the use of motorbikes as taxis. Bike-taxis are particularly popular in specific regions in Latin American countries such as Mexico, Colombia, and Brazil. Bike-taxis are widely prevalent in many Southeast Asian countries, such as Cambodia, Thailand, Indonesia, and Vietnam, particularly on account of the associated low costs and quick travel time.²⁰

¹⁸ Boston Consulting Group, "Unlocking Cities: The Impact of Ride-sharing across India" 2018. | ¹⁹ ORF, "The case for Bike Taxis in Indian Cities", June 2022.

²⁰ TERI, Emerging Role of Bike Taxis, 2020

First and Last Mile Connectivity

Bike-taxi services provide first and last mile connectivity to public transit. The small size of the two-wheelers and the ability to occupy less road space helps bikes navigate any part of a city. Further, the demand responsiveness and affordable nature of bike-taxis make them useful to increase the reach of public transit itself since two-wheelers can be used as feeder service.

Notably, one in three bike-taxi rides in Gurugram are to and from metro stations. City authorities and planners may, thus, improve the linkage with public transportation (PT) systems by integrating bike-taxi operations at the design stage itself.²¹ This includes providing designated pick and drop spots at PT stations/stops, parking and curb spaces for bike-taxi services, and digital integration with PT for ticketing and payment purposes, and more.

Access to Mobility

Studies²² conducted in cities that have bike taxi operations illustrated that 89% of female respondents found bike taxis to be a safe mobility option. Women in urban India have relatively limited access to affordable transportation which has an adverse impact on their capacity to generate income.²³ In the same study, 88% of women respondents who had never used a bike taxi were willing to use it, if the fare was more affordable than existing modes. With more women engaging in economic activities, transportation by motorcycles presents an excellent affordable mode of transport for them to utilize.

Asset Utilisation and Livelihood Generation

In India, the penetration of two-wheeler vehicles is approximately 45% in urban areas and 25% in rural areas. Till early 2020, 72.4% of the registered vehicles in India were two-wheelers. The large number of motorcycles and scooters in India is primarily due to their affordable purchase prices and low running and maintenance costs. Vehicular assets are often idle for a large section of users, these when brought onto bike taxi platforms have efficient utilization of the vehicle (in this case two-wheelers). The fuel usage for bike taxis would be much less than the other modes of public transportation, which is a key factor in determining fares, which are based on increasing fuel prices.

Asset owners can leverage an idle asset to generate additional income for their household. People can become transportation providers with lower cost of entry barriers, like the cost of new transport (commercial) vehicles. Ease of entering this business improves manifold with reduction in entry cost, time and effort.



²¹ Ola Mobility Institute, The Power of Two Wheels: India's New Shared Mobility Frontier. 2020. | ²² TERI, Emerging Role of Bike Taxis, 2020.

²³ India's women commuters are the pillars of Public Transport

B. The New Frontier - HCVs



The use of High Capacity Vehicles (HCVs) such as buses for public transportation has been the most sustainable, economical and viable method of transportation for multiple decades. However, with mobility as a service becoming a promising option, there are new frontiers to explore with the introduction of on-demand buses, or demand responsive buses.

Studies²⁴ have found that a Demand-Responsive Transit (DRT) service is complementary to a fixed route system that operates a vehicle along a prescribed route according to flexible schedule and timing. It is an advanced form of public transport which has many advantages over a fixed route system as providing fixed service on static routes will not solve the problem of capturing user dynamic demand.

On-demand transportation leverages technology to connect an HCV in the vicinity with a passenger looking to travel in the same direction, in a demand responsive route. Convenient pick up aside, on-demand buses provide their passengers the assurance of seating for the duration of the journey, only allowing as many to board as there are empty seats. Consequently, accommodating fewer passengers on board, unlike conventional buses, also means fewer stops and a relatively quicker commute.²⁵

There has also been a popular opinion which suggests that bus aggregator services would siphon off the public transport options, such as government buses. A study²⁶ finds that only 2% of the sample of respondents would have traveled by public bus services in Delhi-NCR if a bus aggregator service were unavailable. Therefore, it can be understood that bus aggregators do not necessarily compete with public bus agencies and that they can co-exist. It would appear that bus aggregators have introduced a reliable new commuting choice for this particular segment of commuters. While states and cities continue to figure out how best to finance the expansion of public transit, HCVs can meet mobility demands and demonstrate where service can grow.

Uber and Gurugram Metropolitan City Bus Limited (GMCBL) launched a first of its kind partnership making it possible for commuters to book and pay for their seats in Gurgaon's public transport buses using the Uber app. This pilot perfectly exemplifies the multi-modal vision for the country and takes one step closer to the vision of getting more people in fewer vehicles. Such public-private partnerships can go a long way in reducing congestion and enhancing green mobility.

²⁴ Sayed Anwar, 2021 "Planning for demand responsive bus transit in Indian context" | ²⁵ WRI, On Demand buses in India, 2017

²⁶ WRI, Understanding the impact of bus aggregators, 2020

Section IV

Future of Mobility

A. Sustainability & Electrification

The current state of transportation is unsustainable. Transportation emissions have grown fast over the last 3 decades, and it is one of the largest contributors to climate change. Road Transport including road passengers and freight is accountable for 15% of total CO₂ global emissions. According to the IPCC, without aggressive and sustained mitigation measures, transport emissions could increase faster than any other sector between now and 2050.

Cities depend on a rapid transition to more sustainable modes of transportation to assure their future economic growth while reducing transport CO₂ emissions. For platforms, emissions resulting from the use of their services are the most material part of their carbon footprint, making electrification as one of their key priorities, with companies like Uber committing to 100% ZEV across the world by 2040 and looking for opportunities to work with government to create favorable policy conditions.

A well-lauded study by UC Davis and ITDP from December 2021 showed how transportation decarbonization can occur through a combination of two crucial strategies: (1) vehicle electrification (resulting in ~75% of total emissions reduction need), and (2) mode shift towards increased walking, micromobility and transit via urban densification (~25% of emissions reduction need).²⁷ Society of Indian Automobile Manufacturers (SIAM) estimates that 40% new personal vehicle sales (including 2Ws) and 100% of new intracity public transport (buses, 3Ws) will be electrified by 2030 (for context bus sales for public transport account for less than 10% of overall bus sales in India²⁸). These projections are broadly similar to the high adoption scenario projected by the Council on Energy, Environment and Water (CEEW) at 43% EV sales by 2030.²⁹ However, these estimates and adoption will vary by segment. Each vehicle segment is at different stages of evolution and maturity.

2Ws

For example, by most estimates 2Ws are expected to account for 80% of vehicle sales in 2030, their contribution to India achieving the EV targets will be crucial. The fundamentals for a rapid uptake of e2Ws seem to be falling into place. India has supportive policies and incentives, there is increasing business investment in supply and financials are improving as economies of scale are introduced. E-2W sales are expected to lead EV adoption in India. However we must note that even within this category motorized e2W vehicle sub-categories, i.e., scooters and motorcycles are likely to follow different trajectories. E-motorcycle adoption is expected to lag behind e-scooter adoption as the current product portfolios (vehicle availability) are not yet mature.

Taiwan, quite similar to India, has a high volume of two-wheelers. Most of the EV subsidies in Taiwan are directed towards two-wheelers, in order to incentivise replacement of ICE motorbikes. Staggered goals and a detailed city specific roadmap towards complete electrification are key for adoption. Again, quite similar to some Indian state specific policies like Maharashtra, Gujarat and Delhi, Taiwan has elaborate scrappage incentives.

3Ws

The e-3W market in India has already achieved an adoption rate of 14% for new vehicle sales and leads adoption as compared to other vehicle segments. Positioned as an affordable means of intermediate public transportation of last-mile goods delivery, over short-to-medium distances, the 3W segment is considered as low hanging fruit in EV adoption. Similar to e-2Ws, competitive purchase prices relative to conventional ICE three-wheelers, presence of numerous domestic electric three-wheeler manufacturers, enabling policy environment and favorable TCO economics are the prominent factors fuelling the demand for electric three-wheelers in India. Since 3Ws primarily represents commercial fleets, they are expected to lead the EV adoption sequence ahead of other vehicle segments.

²⁷ To Combat Climate Change, Electrification needs Compact Cities for Full Impact.

²⁸ <https://www.siam.in/uploads/filemanager/114SIAMWhitePaperonElectricVehicles.pdf>

²⁹ <https://www.ceew.in/cef/solutions-factory/publications/CEEW-CEF-financing-india-transition-to-electric-vehicles.pdf>

4Ws

Car ownership in India is expected to increase by 775% over the next two decades. Private cars and commercial car fleets constitute 11% of road transport emissions. Thus, an accelerated transition is extremely critical for this segment.

While the e-car market in India is still at a nascent stage, a mature western EV market such as Berlin or London have between 90 to 130 models of e4Ws available in the market.³⁰ The silver lining is that investments in this sector are accelerating. Globally, on the demand side, e-cars across commercial applications such as ride hailing and employee transport are fast moving towards electrification. A similar trend would be visible in India in the future once the e4w ecosystem matures.

Private adoption is lower when measured as a share of sales, but is now significant enough in absolute terms to start attracting supply side investments. Several new vehicle models are being launched, targeted at both, the private adoption, as well as, the commercial fleet adoption.

However, due to relatively harsher economics and concentration of car sales at the lower end of the pricing spectrum in India, mass-market adoption may be delayed compared to other segments.

Buses

The electrification of public buses is an immediate focus of the Indian government to decarbonize public transport to transition the maximum passenger-kilometers of travel with targeted public sector action. The government-led demand has catalyzed investments by various bus suppliers that are increasingly aiding state-owned corporations to their fleets of e-buses. This is driving vehicle manufacturing and e-bus operation capabilities to be built to meet the public-sector demand. Most large private bus OEMs have already forayed into this market to cater to the emerging demand. We should expect benefits for e-bus procurement for the state-run buses to be extended to the private bus market with leading initiatives such as CESL's landmark tender for buses.



³⁰Lazer, L., S. Wachche, R. Sclar, and S. Cassius. "Electrifying Ride-Hailing in the United States, Europe, and Canada: How to Enable Ride-Hailing Drivers to Switch to Electric Vehicles" Working Paper. Washington, DC: World Resources Institute. Available online at <https://doi.org/10.46830/wriwp.21.00053>

B. Cities that Move



For the urban transportation sector — one slice of the climate change equation — the road to keeping below 1.5°C global warming involves both compact cities developed for walking, cycling and public transit, as well as a rapid and strategic transition to electrified vehicles.

These two policy changes, implemented in tandem, are necessary to lower cumulative greenhouse gas emissions from urban passenger transport by 59 gigatonnes (Gt) CO₂-eq by 2050. Factors including the explosion of renewables with leadership from countries like India on solar and the significant improvements in battery and charging tech from manufacturers across the world will act as great force multipliers. Other promising means such as hydrogen are set to play a big role in high kilometer goods use, but challenges persist on the passenger side. This combination of policy changes would reduce the sector's emissions by about 50% over the next 30 years, just below the amount needed to limit the impending damage that climate change can bring.

If EVs are to be the core of our transition to clean mobility in cities, there are some core barriers that make switching to EVs which need to be overcome. This calls for real change, which will require action from national and local governments to generate a supportive policy environment that removes barriers to EV adoption and ensures that EVs become a feasible choice for drivers of all kinds. A significant lever for this may be achieved by making our cities ready for sustainable mobility.

Right to Plug for Easy Access to Charging Stations

Charging is a key driver for mass adoption of electric mobility, with growing investments, there is great momentum in the market to address this gap. Maturity in markets can be gauged by the number of public chargers per rideshare (commercial passenger) EV with WRI in its working paper on Electrifying Ride-Hailing rating green only those cities which scored above 16.

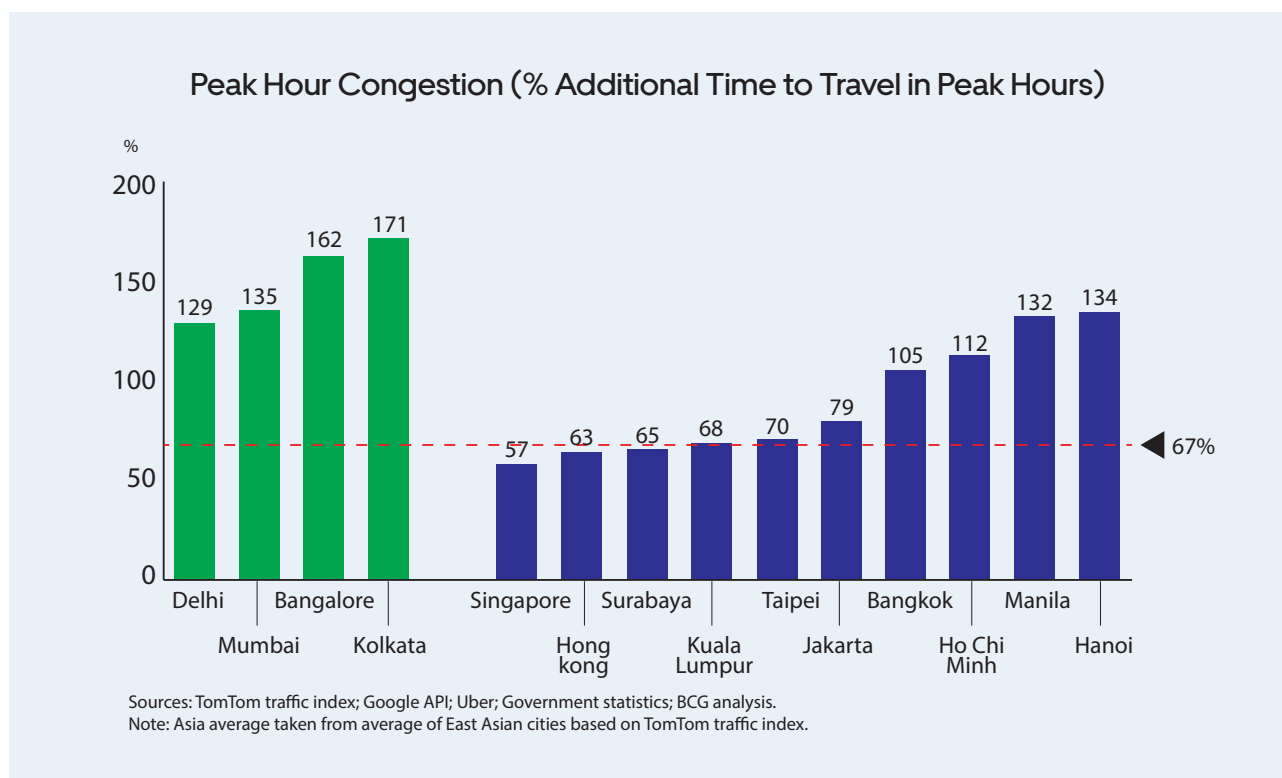
addressing parking requirements. is one of the most underrated tools to drive zero emission vehicle adoption. For renters and owners housing units without parking, pass “right to plug” (or “right to charge”) laws at the highest level of jurisdiction possible (e.g. national or state) to ensure that any tenant or co-owner is able install a charge point for an electric vehicle without having to obtain (potentially difficult) consent from the landlord or from the housing society (other co-owners).

Further, for these individuals without off-street parking and lacking access to nearby public charging — which would especially include lower income and high-utilization commercial drivers — extend “right to plug” policies and install curbside charging within 3 minutes walk via a public-private demand-driven curbside charging program coordinating between EV drivers, qualified local charge point installers and utilities, and city government officials.

Policies to this effect exist in Spain, which has a Right to Plug via Horizontal Property Bill, or in Amsterdam that has a 10 step process for demand driven curb-side EV infrastructure policy.

Congestion Pricing/Low Emission Zones

In four of the largest cities in India, namely Delhi, Mumbai, Bangalore, and Kolkata, total congestion costs were estimated to be as much as USD 22 billion per year.³¹



Cost of Congestion Across Cities

Mitigating congestion should be a high priority and this can be coupled with incentivising electrification. An illuminating global example which is hard not to spotlight is London, which happens to be Uber’s most successful EV markets policy for disincentivizing ICE transport across the board.

1. Firstly, the city has congestion charge zones for all road users, with full or partial exemptions for ZEV drivers until ZEV adoption reaches 50% of on-road vehicles as opposed to applying restrictions simply to taxis or selected road users.
2. Secondly, there are ultra-low emissions charge zones for all road users whereby drivers pay for access based on government-rated vehicle fuel economy (e.g. CO₂e emissions per mile, or kilometer) or criteria pollutants (e.g. NO_x, CO, PM) per mile, and exempting ZEV drivers at all times.

³¹ BCG, Unlocking Cities: The impact of ridesharing across India, 2018

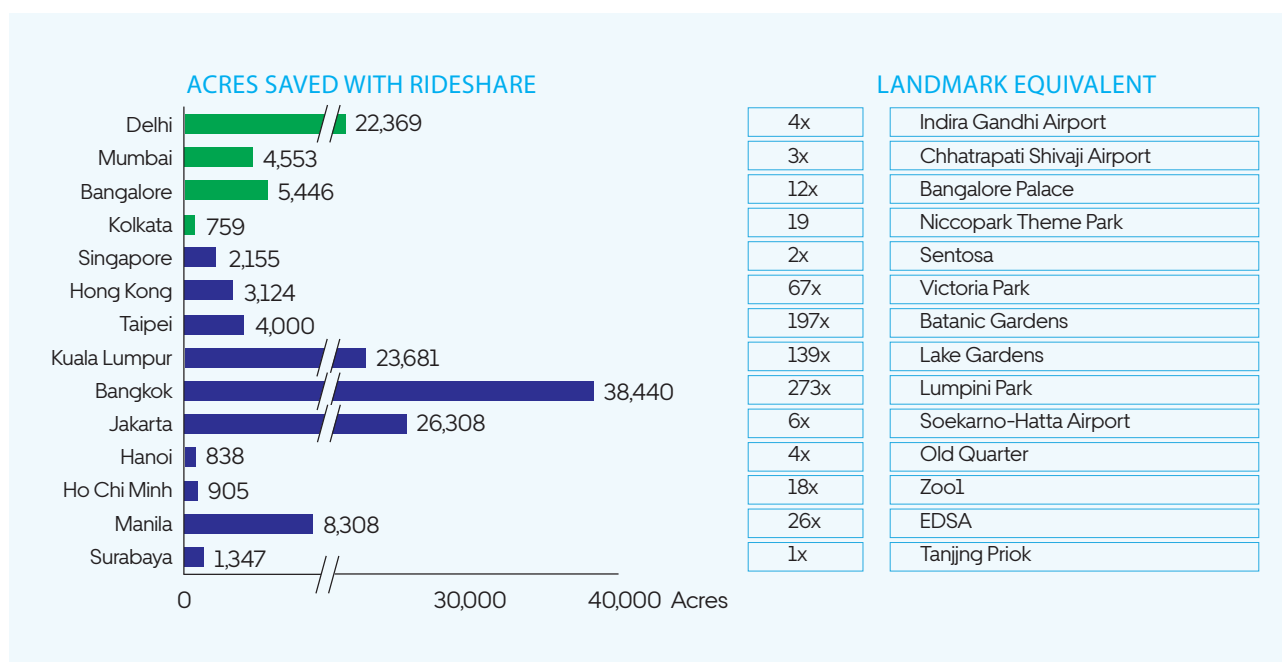
Parks not Parking

Cities have dedicated vast amounts of their space to on-street parking. Yet as the demand for curb space increases - with the rise of urban delivery, shared mobility services, and eventually AVs - cities are looking for ways to make their curbs safer, more efficient, and more productive. This has become even more pronounced during COVID, when many cities are expanding slow streets and allowing restaurants and stores to expand their business into parking spaces. In the United States, there may be as many as 2 billion parking spaces³², more than 6 times the number of residents. And since the average car spends 95% of its life parked, many cities are devoting up to a third of their urban land to parking. Platforms naturally should share cities' goals of rethinking curbs as flexible space and ultimately making it safer, quicker, and easier for people to get around without having to use their own car.

A great reason to promote the combination of mass transit and ridesharing is that with reduced car ownership, land previously used for parking spaces could be re-allocated to enhance living conditions, such as providing additional housing and social infrastructure such as parks.

In an optimal ridesharing adoption scenario, a reduction of 33%-68% in private cars and congestion reduction by 17%-31% can be achieved across these cities according to one estimate by the Boston Consulting Group. Consequently, they estimated that this could significantly help cities in India improve their amenity by saving approximately 760 to 22,000 acres of unnecessary parking space in each city.

Estimated Space that can be Saved by Rideshare Assuming Rideshare Substitutes for Private Cars



Sources: ASEAN Maritime Working Group, Data.Gov.Sg, FIFA, MapDevelopers/Google Maps, HDB, HK Census and Statistics Dept., LTA, Manila Times, Perdana Botanical Garden, URA, Thanhnien News, The Straits Times, Taipei Botanical Garden, expert interviews, BCG analysis. Note: Size of local landmarks vary greatly between cities. Area represents estimated total flat area of all parking lots (existing and needed) to serve a city's car population. Area estimated by deriving ratio of cars (private + rideshare) to estimated parking lots in Singapore (~2.2) and then extrapolating this ratio to car populations in other markets. Assumes standard parking lot (19m²), Area saved under hypothetical scenario in which rideshare becomes displaces private vehicles in terms of modal split and 50% of rideshare is pooling.

1. HCMC Zoo and Garden complex.

³² <https://www.nytimes.com/2012/01/08/arts/design/taking-parking-lots-seriously-as-public-spaces.html>

Section V

Policy Recommendations

1. Strengthen mass transit



In contemporary urban governance and transit planning work, investing in mass transit is hardly a novel recommendation. However, it is important to make sure we are not guided by our own preconceived notions of what mass transit ought to look like. While metro systems are appropriate to retrofit most existing large cities, newer modes should consider the vastly cost efficient BRTS or trams. For the bigger metros, as public transit operates on fixed routes and schedules, improving first-and last-mile connectivity will be paramount in maintaining, or improving India's existing mode share of public transit. Improving public transit efficiency and convenience with route rationalization and better vehicles will also support public transit.

2. Promote use cases which encourage high occupancy and asset utilization



Evidence in this paper points to significant benefits that can be achieved from ensuring higher utilization of existing transportation assets. For promoting high occupancy vehicles, contract carriage permit systems may need to be reviewed in order to allow more flexibility to state governments to support different types of shared mobility models. Further inspiration may be found right within the Indian subcontinent, with the digital enlistment model instituted by the Bangladesh Road Transport Authority. A single window clearance or licensing may be looked at for platforms offering mobility services thereby encouraging them to expand to more modes without additional compliance burdens.

3. Enable electrification



Electrification is a critical strategy for driving more sustainable urban mobility. Governments may urge platforms to conduct self assessment and set targets which may be vetted through independent agencies like the Science-Based Targets initiative (SBTi) and self publish results.

EV adoption by drivers using mobility apps is moving fastest in places where government policies and industry investment are strongest. There must be exemplary policies and investments across critical areas:

- Growing EV markets, including emerging secondary markets and improving vehicle selection and affordability
- Plentiful EV charging supply, especially in urban areas.
- Thoughtful, scalable user incentives (inc. carbon and road pricing) that send strong consumer signals to shift to zero-emissions
- improving access to credit to make all of the above possible through measures, such as the NITI Aayog recommendations on extension of PLI Scheme

4. Livelihoods



Measures should be considered to promote individual entrepreneurs or gig workers to enter the shared mobility market. Easy mobilization of assets for passenger or goods transport use will play a key role here as well as easy access to credit. To make sure workers in this space are secure from shocks, the government must operationalise the Code on Social Security, 2020 at the earliest.

5. Future Ready Cities



With an explosion of private car ownership on the horizon it is important for India to get our cities ready for the changes. Low emission zones, public charging infrastructure, well designed streets and curbs, multi-modality, etc. are some of the very basic tenants of urban mobility of the future.

6. Bike Taxis



Bikes are by far the largest chunk of vehicles on Indian roads and therefore it is important to maximize asset utilization here both to fight congestion and also to hasten electrification. Rather than create an onerous process, ease of use must be prioritized.

Section VI

Conclusion

In conclusion we can say that a holistic, safe and inclusive mobility system is crucial for supporting a well-functioning and prosperous community. In order to meet the transportation needs of the Indian population, while also maintaining sustainability and asset utilization goals, it is essential to build an ecosystem which is conducive for shared mobility platforms.

These platforms complement the existing public transport infrastructure in the cities and provide first and last mile linkages. Today, all such platforms form an indispensable part of everyday life, and also have the potential to mitigate the primary issue facing Indian society – lack of livelihood opportunities.

In order to promote livelihoods through such platforms, the existing commercial vehicle permit systems may need to be relooked at. There are multiple models across the world which would allow private vehicles with appropriate documentation and fee payment, to join such platforms. Further inspiration may be found right within the Indian subcontinent, with the digital enlistment model instituted by the Bangladesh Road Transport Authority.

Lastly, formal recognition of gig work and establishing its legitimization, is essential for securing the millions of livelihood opportunities available on gig platforms and consequently. Platform work has proven to be indispensable to the functioning of cities, and novel measures of the Government of India, such as the Code on Social Security would provide dignified social security to gig workers, over and above the benefits received from corporate platforms.





Uber