THE POWER OF TWO WHEELS

BIKE-TAXI: INDIA'S NEW SHARED MOBILITY FRONTIER

A STUDY BY

OLA MOBILITY INSTITUTE

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What can India do to fully seize the bike-taxi opportunity to transform the economy?

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Ola Mobility Institute (OMI) is the policy research and social innovation think-tank of Ola, focused on developing knowledge frameworks at the intersection of mobility and public good. The institute concerns itself with public research on the social and economic impact of mobility as a service, electric mobility, climate change, future of work and the mobility economy, transit oriented planning, digitilisation of mobility, accessibility, safety, and gender. All research conducted at OMI is funded by ANI Technologies Pvt. Ltd. (the parent company of brand Ola)

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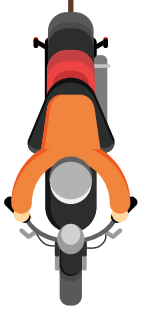


EXECUTIVE SUMMARY

India has always been and will continue to be a champion of Shared Mobility. The world's most populous democracy witnesses low penetration of cars, and relies instead on public transit and intermediate public transport, two-wheelers, and walking and cycling for its daily travel needs. For a variety of reasons, however, traffic congestion is a real problem that cities of all sizes in India need to urgently tackle. Building on our legacy of sharing assets, strengthening shared mobility in the form of public transit and intermediate public transport such as taxis in all forms - two-wheelers, three-wheelers, four-wheelers - coupled with digital tools to improve efficiency is the only and the most sustainable way forward for the country. As India heads steadfast towards the goal of becoming a *Five Trillion-Dollar Economy,* it needs to fast-track urbanisation in order to provide opportunities to all its citizens while simultaneously removing barriers to inclusive economic growth.

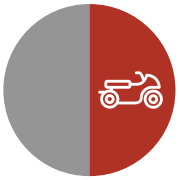
It is in this context that we as a nation must turn our attention to the humble yet all-pervasive two-wheeler (2W). Two-wheelers are an automobile class that Indians of all ages, genders, and socio-economic groups use and have relatively easy access to. This asset category has become a symbol of empowerment for the (hitherto) underrepresented communities as can be gleaned from its widespread use. The figures of ownership, usage, and market size of 2Ws truly paint a holistic picture of the ubiquity of 2Ws in India.

INDIA IS THE WORLD'S LARGEST TWO-WHEELER MARKET -

nearly

63,000

two-wheelers are sold in the country every day (SIAM, 2019),



and

1/2

the households in big cities and developed rural areas own two-wheelers (Census, 2011).

There are

102 TWO-WHEELERS

for every 1000 persons in the country as against

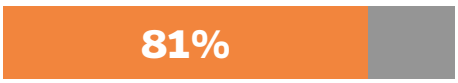
22 CARS

per 1000 individuals.

One in three Indians

use 2Ws for their daily commute to and fro work. 2Ws are primarily a **utilitarian choice** for Indians rather than an aspirational or lifestyle choice.

Automobiles Sold



2Ws constitute 81% of the automobiles sold in India; thereby becoming one of the **leading contributors to India's GDP.**

Overall, 2Ws form 72.4% of the registered automobiles in the country.

With the advent of digitalised mobility services, 2Ws have also emerged as the engine of growth for the booming on-demand, hyperlocal economy, thereby driving India forward on the wheels of affordability and convenience. Bikes can be regarded as the new vehicle of job creation - both in goods and passenger movement. From enabling food delivery and package transfers to transporting people and providing last-mile connectivity to public transit, bikes (scooters, motorcycles, mopeds, and all other motorised 2Ws) are the most visible segment on Indian roads. Sharing the 2W asset in the ways described, particularly to move people, will help cities build a strong fleet of bike-sharing services - a category that can be used as a taxi, or for rental or pooling purposes - catering to individual intra-city travellers who would otherwise crowd Indian roads by using their own individual vehicles.

Unclogging Indian roads, i.e. decongesting cities, and unlocking economic opportunities all across India are the primary goals necessitating an urgent and widespread recognition of 2Ws as bike-sharing services, i.e. as bike-taxis, bike-pool, and bike-rentals.

Taking a cue from the forward-looking mobility policies of the Government of India as well as select state governments, Ola Mobility Institute (OMI), through this report, explains why all states and UTs in India must legalise bike-taxi, and how they can effectively govern this mobility category. In doing so, this study traces how two-wheelers are transforming mobility, livelihoods, and the economy.

It is estimated that BIKE-TAXI in India

has the POTENTIAL to create
2+ million
LIVELIHOOD OPPORTUNITIES,

along with a
REVENUE OF
USD 4-5 billion.

Factoring in trips in rural areas as well, **the overall economic opportunity presented by bike-taxi is indeed the new shared mobility frontier for India.**

UNLOCKING INDIA'S ECONOMIC OPPORTUNITY BY LEGALISING BIKE-TAXI

The analysis of bike-taxi operations, by Ola Mobility Institute (OMI), in Gurugram and Jaipur - two cities with differing characteristics - quantifies the numerous benefits of bike-taxi operations to commuters and travellers, cities and the economy overall. Using empirical evidence from the two cities as well as the experiences of riders, users, and businesses in this domain across India, OMI has derived a series of policy and regulatory recommendations to suitably govern this transport category.

State governments may unlock the potential of bike-taxi - as an affordable, efficient, fast, and safe alternative to private vehicles - to help India become a five trillion-dollar economy by adopting a seven-pronged approach.

A) WHY SHOULD INDIA LEGITIMISE BIKE-TAXI?

1. By recognising the role of Bike-taxi in urban mobility, provide coherent legal clarity

Bike-taxis are **a popular choice of intra-city travel in India's urban agglomerations as well as the hinterlands.** Bike-taxi operations in Gurugram, for instance, witnessed 100% growth in the number of bookings within 7 months of launch. Further, with 70-85% of the rides under 7 km in cities of varying sizes, bike-taxis are an **effective mode of travel for short distances.** The widespread promotion and use of bike-taxis is therefore expected to shift individuals from their private cars with low occupancy to shared mobility such as bike-taxis. This will, thereby, **reduce traffic congestion and the need for individualised parking spots all over the city.** Through a time-of-use analysis, it is found that 50-60% of the bike-taxi rides occur in two peak periods of the day - from 8 AM to 12 PM, and 4 PM to 8 PM, corresponding with office timings in India. Bike-taxis are thus found to be an **affordable mode of daily commute to and fro work, especially for short distances and accessing public transport.** Bike-taxis are also ideal to **promote tourism** as has been witnessed in a city like Jaipur.

State Governments may issue **coherent policies enabling commercial application of bikes** - whether as rentals, or taxis, or pooling options - and thereby, spell out all-encompassing conditions of their commercial application, and issue clear time-bound notifications to the Regional Transport Offices to allow their plying on Indian roads.

2. Improve linkage with public transit systems by integrating bike-taxi operations at the design stage itself

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, irrespective of the degree of congestion. Further, the demand-responsiveness and affordable nature of bike-taxis make them the ideal mode 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 fro metro stations.**

City authorities and planners may, thus, **improve the linkage with public transit (PT**) systems by integrating bike-taxi operations at the design stage itself. 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.

3. By offering legitimacy to bike-taxis, enhance road safety

Bike-taxi services across India have systems making it possible to **detect and prevent unsafe incidents and also offer much-needed remediation and grievance redressal.** Currently, platforms, i.e. bike-taxi businesses, onboard drivers and vehicles only after a thorough check of all necessary legal documentation as well as the fitness of the vehicle. Aggregators are mandating the use of helmets for drivers and pillion riders. Additionally, drivers are trained in customer interaction, defensive driving, first-aid training, and more. Further, the practice of the customers rating the drivers enables platforms off-road dangerous drivers. Bike-taxi services are also increasingly using Artificial Intelligence and Machine Learning to achieve road safety as well as personal safety.

Thus, the **organised nature of operations empowers cities to achieve road safety outcomes in the category of bikes as well.** By organising bike-taxi operations through aggregators, cities now have the opportunity to **curtail road accidents involving two-wheelers through better enforcement of safety rules, and thereby enhance road safety.**

B) HOW SHOULD INDIA LEGITIMISE BIKE-TAXI?

4. Remove entry barriers and create a level-playing field

State governments may **remove entry barriers** and **create a level-playing field for all.** All bikes may be permitted to ferry passengers. In other words, states may actively classify bikes under the transport vehicle category. This would encourage the availability of large fleets of bikes for sharing purposes in a city, as well as the emergence of such on-demand two-wheeler businesses of all sizes - micro, small, medium, and large-scale.

5. Enhance access to institutional credit and promote financial inclusion

For India to be able to fully benefit from the transition to the digitalised shared mobility economy, it must eliminate cost barriers to the means of livelihood. A large section of the country's population, particularly those that are 'new to credit' or are from lower-income groups typically access loans outside the formalised credit umbrella. In order to improve access to credit and achieve financial inclusion in India, formal lenders, i.e. banks, may transition from asset-based lending to cash-flow-based lending. Thus, **unsecured loans to first-time borrowers participating in the mobility economy may be classified as Priority Sector Lending (PSL).** Such a measure would strengthen India's financial inclusion programmes such as MUDRA and UDAAN, and thereby mainstream formal lending to individuals using bikes to earn a livelihood. **Today, lenders may utilise new kinds of data available through digital transactions to profile the social and economic background of the borrowers. Banks and micro-finance institutions (MFIs) may, thus, practise cash-flow-based lending by mapping beneficiaries with digital platforms.**

6. Promote demand-responsiveness of mobility services

The rise of on-demand tech-enabled mobility platforms the world over, and their widespread acceptance among drivers and users in India, is a testimony to the fact that people value the flexibility in terms of time and route, and diversity of choice in terms of pricing and variety of services that platforms offer. The demand-responsive mobility industry (India's new mobility market in the form of technology-enabled ride-hailing, ridesharing, corporate sharing, P2P vehicle sharing, mobility-as-a-service, all forms of taxi services, etc.) is expected to touch USD 90 bn by 2030. Undoubtedly, super-apps and aggregator models are the harbingers of the 2W revolution.

State governments may, therefore, **promote demand-responsiveness** of the bike-taxi category as well by encouraging fleet ownership of bikes, and not curtailing bike-taxi operations to fixed hours or a fixed number of trips in a day.

7. Create micro-entrepreneurial opportunities and lay the road to inclusive economic growth

Bike-taxis constitute **an attractive livelihood opportunity for those aged 18-45 years,** i.e. young adults. Bike-taxi operations help an individual **earn a livelihood by maximising the utilisation of their existing asset.** The bike-taxi category, for instance, augments livelihoods in the mobility economy in a variety of ways. People from **diverse professional backgrounds** as well as **students** and those **unemployed**, and **not just individuals traditionally involved in the driving domain**, find bike-taxis to be an attractive livelihood opportunity. Bike-taxi driving

offers both part-time and full-time **micro-entrepreneurial opportunities.** The part-time potential of bike-taxis holds promise to augment incomes by empowering riders to take up other avenues of productive activity like food and package delivery during off-peak mobility hours; Both part-time and full-time opportunities are essential for India's economy to thrive.

Therefore, by providing legitimacy to bike-taxi services, the government is recognising their role in providing mobility to urban, semi-urban, and rural areas, especially that of providing first- and last-mile connectivity to public transit, and is directly **creating part-time and full-time opportunities to augment livelihoods, and by leveraging the power of shared mobility, is laying the road to inclusive economic growth.**

1. **Provide coherent legal clarity**
2. **Improve linkage with existing Public Transportation (PT) Systems**
3. **By offering legitimacy to bike-taxis, enhance road safety**
4. **Reduce barriers to entry and create a level-playing field**
5. **Enhance access to institutional credit and promote financial inclusion**
6. **Promote demand-responsiveness**
7. **Create opportunities to augment incomes**

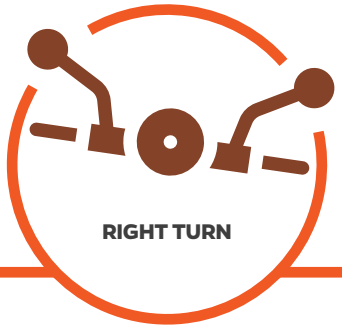
1

INDIA'S ON-DEMAND AND HYPERLOCAL ECONOMY

India's new mobility market, i.e. the market of demand-responsive mobility services offered by technology-enabled platforms, is expected to touch USD 90 bn by 2030 (Frost & Sullivan, 2019; Narasimhan, T.E., 2019). The new mobility market encompasses all ride-hailing and ridesharing formats such as traditional vehicle sharing, P2P vehicle sharing, corporate sharing, dynamic shuttle, mobility-as-a-service (MAAS), and taxi services. At a whopping USD 90 bn, this estimate does not take into account the contributions to the economy that people make when they become more mobile by tapping into this new mobility market. Needless to say, as much as it is a market opportunity in its own right, mobility is a critical enabler of economic opportunity as well.

At a time when keywords around "shared", "electric", and "connected" are espoused in the context of the future of mobility, the word "hyperlocal" is being increasingly used to define living in the upcoming decade. In general terms, hyperlocal refers to the very specific area in an individual's vicinity, and the phrase has come to denote an economy where, from dining and entertainment to commerce and business, all occur in close proximity to oneself. And in the Indian scenario, what lies at the intersection of mobility and the hyperlocal economy? - the humble two-wheeler!

As the most visible vehicle segment on Indian roads, two-wheelers have emerged as the symbol of the hyperlocal economy. From enabling food delivery and package transfers to transporting people and offering last-mile connectivity to public transit, bikes are ever-pervasive on our roads. Yet the lack of regulatory clarity in their legal status renders the future of bike-taxis - bikes for passenger movement - in India circumspect.



REPORT OUTLINE

Taking a cue from the forward-looking mobility policies of the Government of India as well as select state governments, Ola Mobility Institute (OMI), through this report, explains why all states and UTs in India must legitimise bike-taxi, bike-rental and bike-pool, and how they can effectively govern this mobility category. In doing so, this study traces how two-wheelers are transforming mobility, livelihoods, and the economy.

This report delves into a specific analysis of bike-taxis - their journey in India, the economic and systemic salience of this vehicular segment and their future in the country. The study further empirically evaluates the impact bike-taxis have had on urban transportation systems with Gurugram and Jaipur serving as cases in point. And finally, it offers recommendations whereby providing legal coherence to the status of bikes for passenger mobility, improving linkages with existing public transportation systems, and reducing barriers to entry, policymakers can truly unlock the multifaceted benefits this category can provide towards mobility scenarios, and earnings of the service providers - thereby, augmenting livelihoods, and the hyperlocal and mobility economy.

2

INDIA'S PASSION FOR TWO-WHEELERS

TWO-WHEELERS AS TAXIS

"Under the Motor Vehicle Act, 1988, the states may issue permits for taxi under section 72 and 73. Therefore it is legal for the states to issue taxi permits for all kinds of vehicles including two-wheelers", pronounced the former Minister of State for Road Transport and Highways, Mansukh L Mandaviya at the winter session of the Lok Sabha in December 2018 in response to a written query of whether bike-taxis were legal in 14 states of India.[1]

The journey of bike-taxis in India has been fraught with many ups and downs. While the Central Government has paved the way for States to frame their bike-taxi policies, to date only 13 States and Union Territories in India have set out clear rules permitting bike-taxi operations. Some of the largest mobility markets like Delhi, Maharashtra, and Karnataka are yet to notify rules governing bike-taxis.

With slowing average speeds of cities in India and visible increase in congestion and pollution, governments, city planners, and experts alike have been trying to find creative solutions to serve citizens' mobility needs. These often tend to take the shape of metro corridors, new bus fleets, and other assets of mass transit shared mobility. It seems inevitable that to make a lasting impact on the mobility ecosystem the focus must shift from asset ownership to asset sharing; why then are State Governments shying from converting the most pervasive vehicle on Indian roads - the ubiquitous two-wheelers (2W) - into shared bikes?

Jaipur, Rajasthan, India - September 15, 2019: *Motorbikes in India. Two-wheelers (2Ws) contribute the largest share of volume, approx. 81%, to the automobile industry.*

[1] Notably, the Motor Vehicles Act, 1988, was amended recently in August 2019.

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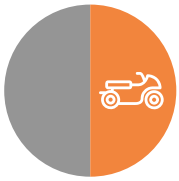

and
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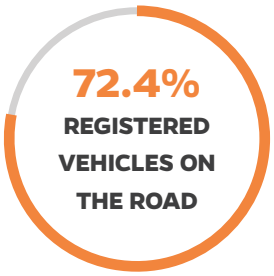
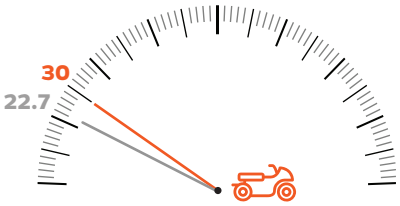
the households in big cities and developed rural areas own two-wheelers (Census, 2011).



At
72.4%
two-wheelers form the **largest proportion** of **registered vehicles** on the road (Paul B., 2018).

With the **average speed** of 7 metropolitan cities at **22.7 kmph** (Ola, 2017), **bikes,** a category which maintains an **average speed of 30 kmph** (ibid), can better navigate through traffic.



Internationally too there is evidence from **Indonesia** and countries in **Sub-Saharan Africa** on bike-taxis as a quick, affordable mode of transportation and a catalyst for employment (see chapter, "The Effects of On-Demand Economy on Emerging and Underdeveloped Markets", Pages 48-50).

Brazil and **Vietnam** too boast of a big bike-taxi market.

Indonesia has built a unicorn on bike-taxi alone providing **livelihood opportunities to one million people in three years** (Urs, S.R., 2018).

While the significance of bike-taxis to provide First Mile Last Mile (FMLM) connectivity to public transit seems intuitive, many State Governments are reluctant to notify clear policies allowing the same. Their hesitation could be the result of the following issues - a) a lack of precedence stemming from technical and legal uncertainty over the classification of bikes as a transport vehicle, i.e. vehicles that engage in commercial operations, and are usually identified by yellow registration plates, and b) a lack of clear evidence of the positive impact of bike-taxis in Indian cities. In the absence of empirical evidence on the contribution that bike-taxis make to the mobility ecosystem and to cities, bike-taxi operators and State Governments have been engaged in prolonged deliberations around identifying and notifying an enabling policy environment.

TWO-WHEELER COUNTRY

Automobiles Sold

81%

Two-wheelers (2Ws) contribute the largest share of sales volume, approx. 81%, to the automobile industry, which itself is a key contributor to India's GDP (Vennapusa, L., Kumar, D.P., Reddy, T.N., 2017; India Brand Equity Foundation, 2019).

33% **63%**

Within the 2W segments,

Scooters constitute 33% of the 2W sales and are a more urban phenomenon

whereas Motorcycles make up for 63% volume and are present pan-India.

Even in times marred by auto-sale slowdown (2018/19), **2W sales in India grew at a Compound Annual Growth Rate (CAGR) of 8% during FY14-18 period with FY18 witnessing a 14.8% YoY growth (HDFC, 2019) overtaking China as the world's leading 2W market[2].**

The ubiquity of the 2Ws is such that

one in three Indians

prefer 2Ws for their daily commute to and fro work.

(PRICE, 2016; Bhattacharya, P., 2016; Kundu, T. & Bhattacharya, P., 2018)

[2] YoY growth for FY19 stands at 4.8% according to papers released at SIAM Convention 2019

In spite of being the world's largest 2W market, **India's 2W penetration levels** are quite low compared to other Asian countries.

Indonesia with
281
2Ws for every 1,000 people

and Thailand with
291
report twice as many 2Ws as

India which stands at only
102
vehicles for every 1,000 people.

Further stratification reveals

Urban India

40-45%

urban India has a 2W penetration of 40-45%,

Rural India

20-25%

while in rural areas the penetration is close to 20-25%,

National

30-40%

resulting in a national average of 30-40% (ibid).

Notably, Census data reveals that the **penetration levels are only increasing** (Mode of Transportation: 2001-2011, Census of India, 2011). In the face of auto companies betting on increasing demand from rural India, especially in the entry-level motorcycle segment, there is enough and more room for increased 2W sales in the country (Narasimhan, T.E., 2019).

With most locally manufactured motorcycles in India reporting engines under 200 cc (HDFC, 2019) - 2Ws also seem to be a more utilitarian choice than an aspirational or lifestyle purchase, and with fair reason. With the choice of vehicles ranging from as low as INR 30,000 (TVS XL100) to INR 48L (Indian Roadmaster Classic) and offering a mileage of 35-40 kms on a litre (on highways), motorbikes present a far more compelling mobility choice to users compared to four-wheelers (4Ws).

With Government's focus on raising income levels (short-term fluctuations notwithstanding), increase in infrastructural investments, and strong focus on improving road connectivity (especially in rural India), coupled with the dominantly utilitarian use case, the domestic sales of 2W are only expected to grow, and that too by leaps and bounds. In this context, how India optimally uses this growing asset in the face of visible congestion and slowing speeds of its top cities will be key.

Jabalpur, Madhya Pradesh, India - April 15, 2015: *A Business Standard story (Modi, A., 2015) highlighted a trend of increasing 2W sales among women. A senior official from Honda Motorcycle and Scooter India (HMSI) was quoted citing company numbers, "last [2014] year the share of registered female customers was about 20% and had already grown to 25% this year. There is a definite trend of increased female employment. Women not working also want individual mobility". The company reported recording 75,000 new women buyers a month and maintained that the actual share of women using scooters is estimated to be much higher at about 35% as a large number of sales are registered in the names of male family members in case a woman is not eligible for a loan.*

3

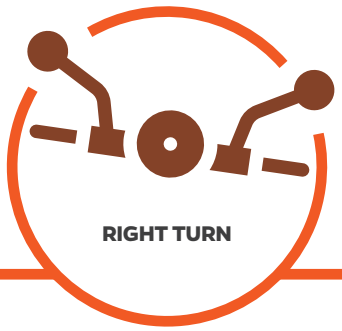
WHY SHOULD INDIA LEGITIMISE BIKE-TAXI?

AN URGENT NEED TO DECONGEST CITIES

While it is evident that some of India's biggest cities are visibly congested, the data humbly puts its extent in perspective. According to a study by the Boston Consulting Group (BCG), peak-hour commuting in Delhi, Mumbai, Bengaluru, and Kolkata takes on average 149% more time than non-peak-hour commute. That's equivalent to an extra 1.5 hours that residents of these cities spend on their daily commutes on average (Chin, V. et al, 2018). It is not just the inconvenience of delays, congestion also has economic implications with the four cities above losing INR 1.47 lakh crores annually (ibid).

A 2018 World Bank paper (Akbar, P. et al, 2018) that simulated 22 million trips in 154 cities in India estimated the average speed of Indian cities as 24.4 kmph. (This figure stands at 38.5 kmph for USA). This was corroborated by field data from Ola which reported the average speed of top 7 metropolitan cities (Delhi, Mumbai, Bengaluru, Kolkata, Hyderabad, Pune, and Chennai) at 22.7 kmph in 2017 - a drop of approx. 3 kmph from the previous year (Ola, 2017).

While unbridled urbanisation coupled with unfettered motorisation has caused congestion in Indian cities, a simplification of the reason why India is facing such congestion can be attributed to one single fact - the growth of mobility infrastructure has not kept pace with the exponential growth of mobility demand. For example, between 2010 and 2015, there was an impressive 29.8% (Ministry of Statistics and Programme Implementation, 2017) increase in surface road length in India; the growth in registered motor vehicles in this same time frame was 64.3% (Ministry of Road Transport and Highways, 2016).[3]



Clearly, Indian cities cannot afford more vehicles on their roads. The focus therefore must shift towards improved utilisation of existing assets - Enter, bike-taxis!

[3] Of course, this is not to suggest that India should focus on increasing road length and breadth. When cities increase road capacity, traffic rises to meet the new capacity leaving congestion levels unchanged - a phenomenon known as "Induced demand" and documented for Delhi by the High Powered Committee on Decongesting Traffic in Delhi of the Ministry of Housing and Urban Affairs, accessible here– http://mohua.gov.in/upload/uploadfiles/files/Decongesting_TrafficDelhi06.pdf

Bengaluru, Karnataka, India - 2019: *TomTom Traffic Index 2019 report deemed Bengaluru as the most congested out of 416 cities surveyed across 57 countries. Bengaluru drivers spent on average 71% extra travel time caught in traffic (Press Trust of India, 2020).*

CASE STUDY OF BELGIUM, EUROPE: THE POTENTIAL OF 2WS TO DECONGEST CITIES

A 2012 study by the University of Leuven found that if just 10% of drivers swapped their cars for 2Ws, their time spent in traffic would decrease by 40%. When 25% of car users switched, congestion was eliminated entirely. The time benefits on the Belgian highway network were estimated at 50 M€/ year (IMMA, 2019).

WHY BIKE-TAXI

The space for bike-taxis essentially emanates from the ubiquitousness of the 2Ws on the Indian roads, as well as the principle of shared mobility.

- With 2Ws constituting the single largest category of privately-owned vehicles, these are the most readily available assets on the roads that can be immediately utilised for shared mobility purposes;
- The ergonomics of a utility bike may not make it desirable for long-distance travel but for shorter trip lengths. Bikes hold potential to become an important first-mile-last-mile connectivity option, feeding efficiently into existing public transport modes and bolstering their riderships and utilisation;
- Bike-taxis address the gap of affordable transport for commuters;
- With 80% of the bike-taxi market residing in small towns and cities with a population of less than 1 million each (Abrar, P., 2019), bike-taxis can become a ubiquitous mobility service in India's hinterlands and thereby fuel the engine of economic growth;
- With costs as low as INR 5-6 per km[4], bike-taxis present an affordable choice to users for short distance travel;

[4] Data from Ola Analytics

- With an average speed of 30 kmph and their ability to occupy less space on roads, bikes can better navigate through traffic. This also presents a compelling use case for emergency services;

- Further, bikes when doubling up as bike-taxis act as an alternative for private vehicle users, and thus reduce the demand for parking spots in a city and help cities optimise the use of land;

- With 'hyperlocal' emerging as the new pattern and doorstep deliveries becoming increasingly common, bike-taxis can augment incomes of delivery persons by offering another source of income through passenger travel.

With these intuitive benefits and a large market to serve, it is no wonder that startups keep emerging to tap into this potential.

BIKE-TAXI AND INDIA'S ECONOMIC OPPORTUNITY

The Economic Survey of India 2018-19, estimates that the country needs to create 55-60 lakh new jobs annually for the next decade (assuming labour force participation remains at 60% for the next two decades). With rapid urbanisation, the labour market shift is occurring from farm to non-farm related activities and re-skilling is key to engaging the shifting labourforce in productive activities. Mckinsey Global Institute's 2017 report on India's labour market identifies the sectors of transport, construction and trade as absorbing most of the shifting work-force from farm to non-farm sectors (McKinsey Global Institute, 2017). The report further states that job growth has been the fastest in transportation and trade vis-a-vis the overall employment growth in the country. As India becomes increasingly urbanised, the mobility demand is only bound to grow, generating new employment and livelihood opportunities.

2011

According to the Census 2011, about **2.5 crore (or 25.5 million) motorised work-trips** were performed through **two-wheelers**, out of which **1.9 crore (or 19.1 million, i.e. approximately 75%) trips** were in **urban areas** (Census of India, 2011).

Similarly, Census 2011 places work-trips by **four-wheelers at 54.7 lakhs (or 5.47 million)** across India (ibid). Out of this, **42.1 lakh work-trips** (or 4.21 million, i.e. 77%) occur in **urban areas**.

2019

Assuming a 10% annual growth rate, the total work-trips by two-wheelers in 2019 is estimated to be **5.45 crores** (or 54.5 million) across India, and **4.09 crores (or 40.9 million) in urban areas** alone.

These figures, when extrapolated to 2019, stand at **1.23 crores (or 12.3 million) car-based work-trips** pan India and **94.6 lakh (or 9.46 million)** car-based work-trips in **Urban India.**

To ensure the growing mobility demand is met sustainably, most of the work trips performed by private vehicles (cars included) need to be shifted to public shared mobility, i.e. public transit and intermediate public transport, both technology-enabled and otherwise.

The market size of work-trips that digitalised shared mobility can address is estimated to be at least 49-50 million trips per day in urban areas alone. As seen in the aforementioned figures, 80% of the current addressable market is for two-wheelers. Evidence presented in this report suggests that bike-taxis provide convenient first and last mile solutions to public transit. Therefore, bike-taxis could play a critical role in shifting users from private vehicles to public transit.

It is estimated that BIKE-TAXI in India

has the POTENTIAL to create
2+ million
LIVELIHOOD
OPPORTUNITIES,

along with a
REVENUE OF
USD 4-5 billion.

Factoring in trips in rural areas as well, **the overall economic opportunity presented by bike-taxi is indeed the new shared mobility frontier for India.**

WHO'S RUNNING BIKE-TAXIS?

2015-16 saw a spurt in the number of startups that launched bike-taxi operations in India. In early 2017, as many as 40 app-based companies were estimated to have started bike-taxi services in Indian cities (Paul, B., 2017). Players such as Baxi, RideJi, Ola Bike, UberMOTO and more introduced bikes as the new vehicle category that could be booked through apps with a click of a button. Cities like Gururgram, Bengaluru, and Hyderabad - known for the high proportion of young professionals - saw quick proliferation of this segment.

In a year since its launch in India, UberMOTO (Uber's bike-taxi segment) announced the completion of 2 million trips (Bansal, V., 2017). Another statistic revealed by the company was that an UberMOTO was requested every 18 seconds in Hyderabad. Uber's bike-taxi service was relaunched in July 2019, and by early December 2019, the company reported completing over 150,000 trips a day across 30 cities, with each bike-taxi driver-partner earning INR 10-15,000 a month (Gupta, S.d., 2019). From its inception in 2016 till March 2019, bike-taxi startup Rapido, has grown to over 90 cities, engaging 500,000 driver-partners, serving 10 million customers (Kashyaap, S., 2020). Another startup riding the wave of growth is Ola Bikes. Since its launch in three cities in 2016, Ola Bikes has scaled to over 200 cities and 300,000 driver-partners in a span of less than three years, and aims to impact livelihoods of a million bike-taxi driver-partners by 2020 (Abrar, P., 2019; PTI, 2019).

Not just in India, but globally too, mobility services using two-wheelers in the form of bike-taxis and bike-rentals, are witnessing increasing adoption and attracting huge investments. In 2018, two-wheeler startups raised $2.6 billion across 67 rounds globally. By the start of November 2019, that number crossed $2.1 billion across 52 rounds. Closer home in India, several companies, including Rapido, Quick Ride, Vogo, Bounce, and Yulu[5], among others, raised capital in 2018 alone (Shrivastava, A., 2019).

Even though bike-taxis gained traction among users, in the face of regulatory uncertainty many had to wind up their operations (Kashyaap, S., 2017). The table below captures some of the players who remain in the market even as Zingo, Dot, TuWheelz, Headlyt, and Rideji, among others, ceased operations (Ghosh, D., 2019).

TABLE 1 - Brands/ Companies operating Bike-Taxis in India

Company	Funding	Status
Ola Bikes	USD 3.8 bn - for all Ola categories - over 23 rounds	Currently running in 200 cities and towns with over 300,000 bike-partners
Uber Moto	Uber became a publicly listed company in 2019	Completing over 150,000 trips a day across 30 cities
Rapido	USD 78.4 mn over 8 rounds	Present in over 90 cities with 500,000 partners catering to 10 million customers
Baxi/ Baxi Fresh	USD 1.8 mn over 3 rounds	One of the first bike-taxi companies; Now pivoted into hyperlocal deliveries

Data Source: Crunchbase, as of March 4, 2020

THE ROAD TO LEGAL RECOGNITION

The journey of bikes-taxis in India has been fraught with many ups and downs. While the category is yet to be recognised as an intrinsic part of mobility solutions in Indian cities (a fact true for all modes of intermediate public transport), the Government at various levels has been supportive in its approach towards recognising 2Ws as a mode of shared mobility.

Bike-taxis - contrary to what one would assume - are not a new-age, app-based transport intervention. The earliest bike-taxis in India were operationalised in Goa (incidentally a state where app-based cab aggregation by private actors is prohibited) in 1981 (Goa Motorcycle Riders' Association, 2018) with services being plied on black & yellow motorbike which weren't regulated by any fare meter. The state then provided legitimacy to bike-taxis by including it in the Goa Motor Vehicle Rules, 1991.

[5] This list includes a mix of bike-taxi and bike-rental companies.

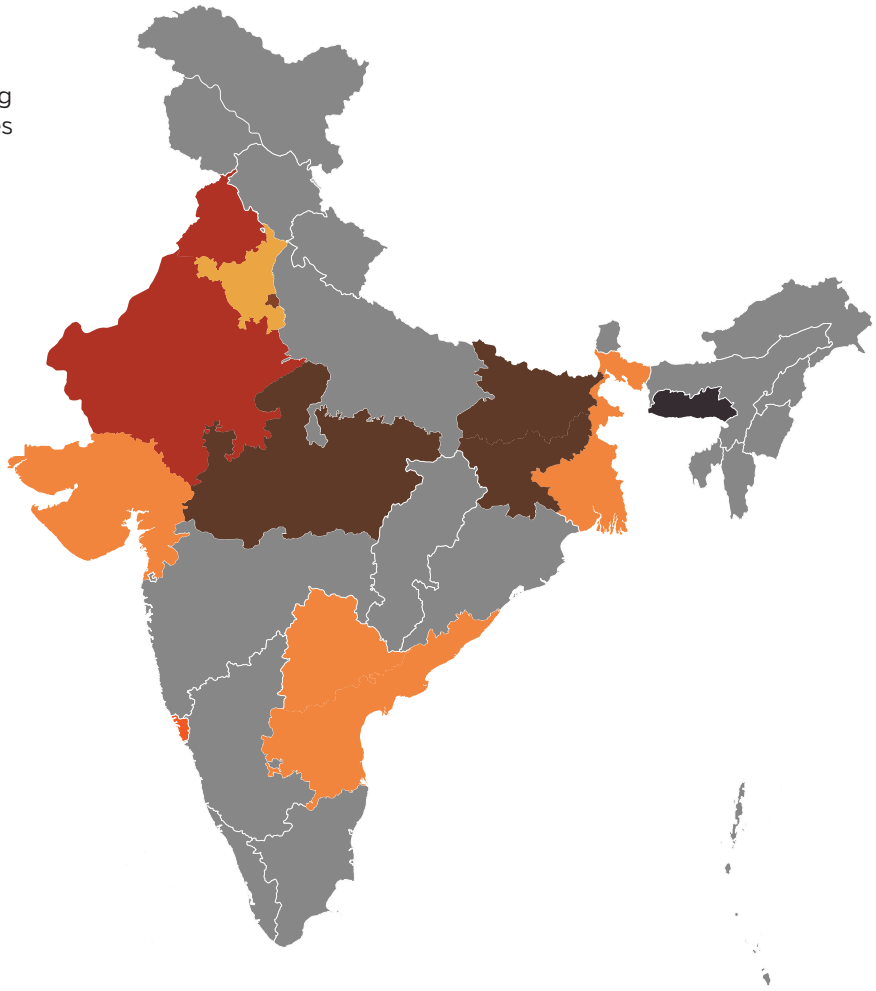
Beyond Goa, the first institutional acceptance of bike-taxis could be traced to the National Urban Transport Policy 2004. The policy focused on moving people instead of vehicles and recognised the need to integrate private modes of transport like the ubiquitous 2W into mass rapid transit networks (Institute of Urban Transport, 2014). 2015-16 saw various startups experiment with bike-taxi operations in Gurugram, Mumbai, and Bengaluru (Vardhan, J., 2015) tasting success with the consumer, and in equal measure - penalties from various State Transport Regulators. In 2016, Uber and Ola entered the fray launching their own bike-taxi operations in India which ostensibly - owing to their scale - invited strong attention from the regulators. In the absence of clarity on rules set out in the Motor Vehicles Act 1988 or the amended Act that came into force in September 2019 (the overarching transport legislation of the country; also known as the Central Motor Vehicles Act) recognising bike-taxis, various state governments responded by instituting fines, seizing vehicles, and issuing explicit statements disallowing bike-taxi operations (Bhat, A., 2016).

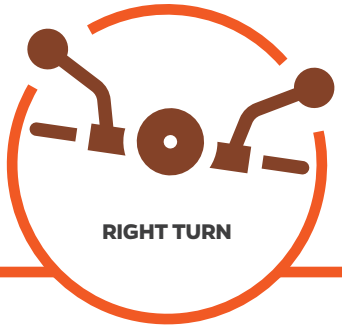
While the Central Motor Vehicles Act by way of a Statutory Order (S.O.) 1248(E), dated 05.11.2004 already included 'Motorcycle used for hire to carry one passenger on pillion…' as a category of transport vehicle under Section 41 (Ministry of Road Transport and Highways, 2004), a report by the Ministry of Road Transport and Highways (MoRTH) in December 2016 further clarified the commercial aspect of it by recommending, "..existing private bikes may be allowed for such transportation in order to facilitate utilisation of idle assets and State Governments may also consider online option to allow private bikes to convert to taxis." (Ministry of Road Transport and Highways, 2016). By doing so, the Ministry gave legitimacy to bike-taxi operations, but placed the onus on State Governments to frame an appropriate policy, thereby, leading to wide variations amongst States in regulating Bike-Taxis.

As things stand, there are 14 States and Union Territories that have currently notified Bike-Taxi Policies. Additionally, the High Court of Madras as recently as of August 2019 passed two orders permitting the operations of bike-taxis until the Tamil Nadu government framed express regulations to this effect. In states where bike-taxis are legalised, bike-taxi operators are required to convert their private (white plate) vehicles into commercial (yellow plate) vehicles to ply as a taxi. While some states have also issued aggregator licences around this - which compels app-based operators to secure these licences for operations - many states do not require a separate licence to be granted. Further, some states also recognise bike-pooling as a non-profit venture. However, some of the biggest, mobility markets like Maharashtra (Mumbai), Karnataka (Bengaluru), and Delhi are yet to notify rules governing bike-taxis. Lack of clear policies has resulted in penalties (Soni, S., 2019), licence cancellations (Chatterjee, S., 2019), and bans (Kaveri, M., 2019).

TRACING THE ROAD TO LEGITIMACY

Centre/ State/ Union Territory	Year of Legalising Bike-taxi Services
Goa	1981
Ministry of Housing and Urban Affairs, Government of India	2004
Haryana	2015
Andhra Pradesh, Gujarat, Telangana, West Bengal	2016
Ministry ofRoad Transport and Highways, Government of India	
Punjab, Rajasthan	2017
Bihar, Chandigarh, Jharkhand, Madhya Pradesh	2019
Meghalaya	2020





However, the Motor Vehicles (Amendment) Act, 2019 is expected to bring better coherence and consistency to the applicable laws. For one, the Act now legally recognises aggregators; two, suggests State Governments may follow guidelines to be issued by the Central Government; and finally, encompasses aggregation of all vehicle categories including but not limited to bikes. The onus to frame the final policy still remains with the State, that now has an opportunity to recognise bike-taxis and promote FMLM connectivity, fight congestion, and provide a supplementary source of income to people engaged in urban mobility for their livelihoods.

The next few sections analyse the impact of bike-taxis on the urban mobility scenarios of the two cities of Jaipur and Gurugram.

4

CASE STUDY OF GURUGRAM AND JAIPUR

SCOPE AND METHODOLOGY

This case study attempts to analyse existing bike-taxi operations in Indian cities and empirically measure the impact of such vehicles on mobility. In particular, this study aims to answer the following questions on bike-taxi operations.

- **Are bike-taxis a preferred mode of intra-city travel? If so, what is the preferred purpose of travel and time of the day?**
- **What is the average trip length of a bike-taxi ride?**
- **What is the role of bike-taxis in providing first-mile and last-mile connectivity (FMLM) to public transit?**
- **What is the typical age of a bike-taxi driver?**
- **Who becomes a bike-taxi driver? Do they already own an asset?**
- **In what ways can bike-taxis be expected to augment livelihoods in the mobility domain?**
- **What is the effect of large-scale commercial operations of bike-taxis on road safety?**

The study uses data from bike-taxi operations of the rideshare platform, Ola, for the period from January 2019 to July 2019 for the cities of Gurugram (Haryana) and Jaipur (Rajasthan). To analyse interactions of bike-taxis as a vehicle category with public transport systems, metro stations have been used as a proxy for public transport in both cities. Additionally, insights from interviews of bike-taxi drivers associated with mobility platforms in Gurugram and Jaipur have been included. Throughout the report, short-haul distances, short distances, short trips, or short rides have been used interchangeably to denote rides under 5 kms in length.

Haryana and Rajasthan were two of the earliest states to notify a bike-taxi policy and have witnessed bike-taxi operations at scale. Ola has a sizeable share of supply of bike-taxis and therefore the acquired data has been rich enough to carry out conclusive analyses. But not just the size of the market, the varying characteristics of Gurugram and Jaipur as cities itself make for a compelling comparison of bike-taxi operations.

Gurugram, located 30 kms south of Delhi is a major satellite city in the Delhi-NCR region and a leading industrial and financial hub. More than 250 of the Fortune 500 companies (Modi, A., 2016) have offices in Gurugram. Today, numerous service sector professionals from all parts of India call this city home. The rapid urbanisation has not just attracted talent into Gurugram but has also seen the growth of the local economy with various service providers (housekeeping staff, personal chauffeurs, commercial drivers, hyperlocal deliveries, convenience stores, salons, etc.) mushrooming to service this booming city. The pace of development has brought along with it a fair share of infrastructural challenges with mobility being a chief concern (the mobility trends for Gurugram are captured in greater detail in the later sections). The city's proximity and connectedness to Delhi (the yellow line of Delhi Metro serves 5 stations in Gurugram), a population always mobile for work, and demography that is representative of a wide socio-economic background, make Gurugram an interesting case to study bike-taxi operations in a new, modern city.

Jaipur, on the other hand, was founded in 1727 and is on UNESCO's list of Heritage Cities. An old city, Jaipur is a popular tourist destination and, like most cities in India, is trying to meet the mobility challenges of a bustling population. However, in sharp contrast to a new city like Gurugram, the balance that Jaipur has to maintain between modernisation of its transport infrastructure and its heritage status makes for a unique case study.

Any evidence of the positive impact that bike-taxis can make on the urban transportation landscape of such different cities, has the potential to bolster their case as a reliable transport vehicle category.

HOW GURUGRAM AND JAIPUR TRAVEL

GURUGRAM

Census 2011 pits the population of Gurugram at 876,969 (Urban Mass Transit Company Limited, 2010). This is anticipated to go upto 43 lakhs by 2031 (Metro Rail Connectivity, 2016). The peak hour motorised transport demand is also expected to be 3.7 lakhs in 2031 which currently stands at 1.3 lakh. At present Gurugram lacks proper, organised public transport save for 20 kms of metro (Tiwari, S., 2019), which has led to an increased use of private modes of transport. According to the Comprehensive Mobility Plan for GMDA Area, 2019, 65% of the surveyed households own 2Ws followed by 23% that own cars. The latest draft of Gurugram's Comprehensive Mobility Plan estimates that amongst vehicular trips (i.e. all trips excluding excluding walk) 2Ws comprise 41% share of all modes of travel. Given that 32% of roads in the city are 2-laned, the use of 2Ws for everyday mobility is understandable.

According to the proposed livability index prepared by the Gurugram Metropolitan Development Authority (ibid), public transport only comprises 5% of the total transport system in Gurugram, and metro lines cover only 3% of the city. In 2018, Gurugram launched "Gurugraman", the first city bus-service for the area. Even though the bus operates only 40 vehicles over two routes, ridership has been low with commuters citing issues of last mile connectivity (Citizen Matters, 2019).

These statistics, when viewed together, suggest (a) Gurugram roads cannot accommodate more vehicles; residents must be nudged towards shared mobility; and (b) FMLM connectivity to public transport must be improved, especially in areas underserved by mass transit.

JAIPUR

As per the 2011 Census, Jaipur had a population of over 30 lakhs (Census of India, 2011). Jaipur's comprehensive mobility plan estimates a population of 93 lakhs by 2031 (Jaipur Development Authority, 2010) which translates into 6.3 lakh peak hour motorised trips, 2.8 times of present value.

City buses are a prevalent mode of public transport with private players competing with Government services but both, according to consumers, are inadequate in terms of capacity and unreliable in terms of frequency and timing (Pai, M., et al, 2014). This is reflected in private vehicle ownership where in spite of being a Tier-2 city, there are 551 cars per 1,000 people compared to 331 in Delhi (Times News Network, 2014). Further the road length in Jaipur in 2007-11 grew by 33% while vehicle ownership increased by 58%. In a city where 34% of the roads are 2-laned and 52% 4-laned but underutilised due to encroachments, vehicle congestion is imminent, and visible. The city invested in a metro project which became operational in June 2015. The performance however has not been satisfactory with ridership in the first 22 months at only 19.17% of the projected number and the inability of Jaipur Metro Rail Corporation to meet its operating expenditure (Chandna, H., 2018).

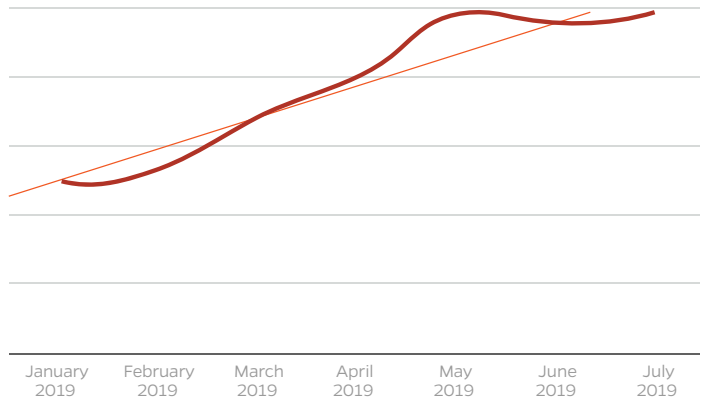
Mobility trends in Jaipur, therefore, necessitate the prioritisation of intermediate transport solutions along with continuous improvements in the quality and reliability of existing public transport.

FINDINGS FROM DATA ANALYSIS OF BIKE-TAXI TRIPS

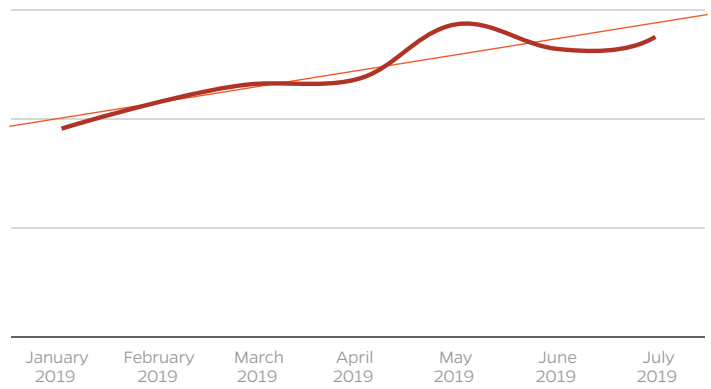
This section presents trends from bike-taxi operations of the platform, Ola, in select cities. Absolute figures have not been included due to business sensitivity.

POSITIVE UPTAKE OF BIKE-TAXIS AMONG USERS

Uptake of bike-taxi services in Gurugram represented by the growth in the number of bike-taxi rides completed



Uptake of bike-taxi services in Jaipur represented by the growth in the number of bike-taxi rides completed

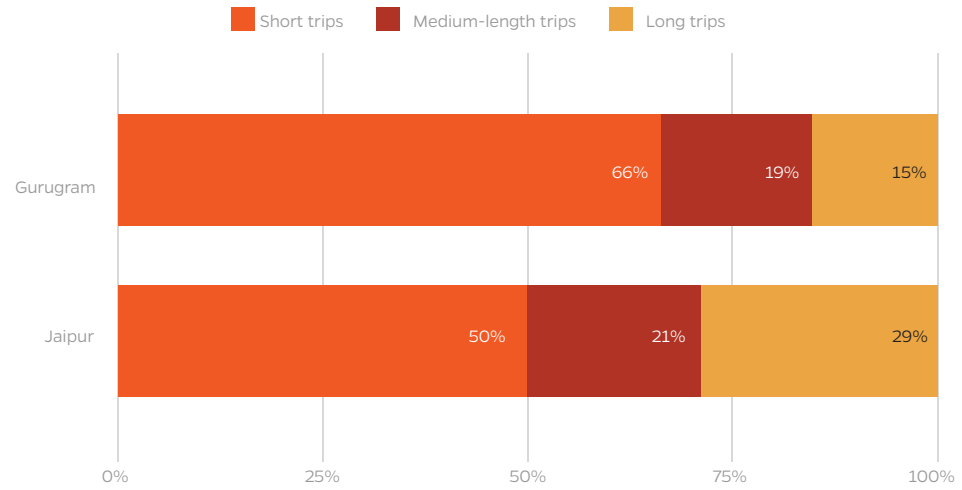


The trend lines in the above charts are a clear indication of the consistent growth of the category, reflective of the increasing preference and use of bike-taxis by commuters and other intra-city travelers in Gurugram. While the slope of the growth in the preference and use of bike-taxis in Jaipur is lower than that of Gurugram, Jaipur too witnessed positive uptake of bike-taxi services.

In Gurugram, it was noted that within seven months of launch, bike-taxis saw over 100% growth in the number of bookings. On average, the month-on-month growth was over 12%. Similarly, in Jaipur, within seven months of launch, bike-taxis saw over 43% growth in the number of bookings. And the average month-on-month growth was over 7%.

EFFECTIVE MODE OF TRAVEL FOR SHORT DISTANCES

Distribution of rides by trip length



An analysis of trip data from Ola revealed that in the period of January-July 2019, a majority of the trips in Gurugram were short trips. Overall, in Gurugram, 85% of the trips were short or medium-length trips. In Jaipur, half the trips were short trips and over 70% of the trips were short or medium-length trips. Thus, **bike-taxis are an effective mode of travel for short distances.**

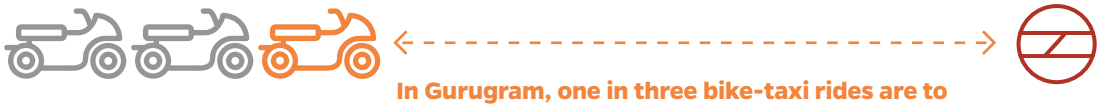
FIRST MILE LAST MILE CONNECTIVITY TO PUBLIC TRANSIT

In November 2018, Ola Mobility Institute (OMI) had conducted a primary survey of approximately 43,500 respondents across 20 Tier 1, Tier 2, Tier 3 cities in India to understand their mobility choices and patterns. Out of the 2,010 respondents in Jaipur, and 2,111 respondents in Delhi-NCR, 55% and 85% respectively, reported the need to walk upto 15 minutes to access the nearest public transportation stop (Tiwari, R. & Raman, A., 2018). **Bike-taxis which cost as low as INR 5-6 per km and reveal an increasing use case for short-distance trips, are likely to be catering to this population in accessing various modes of public transportation.**

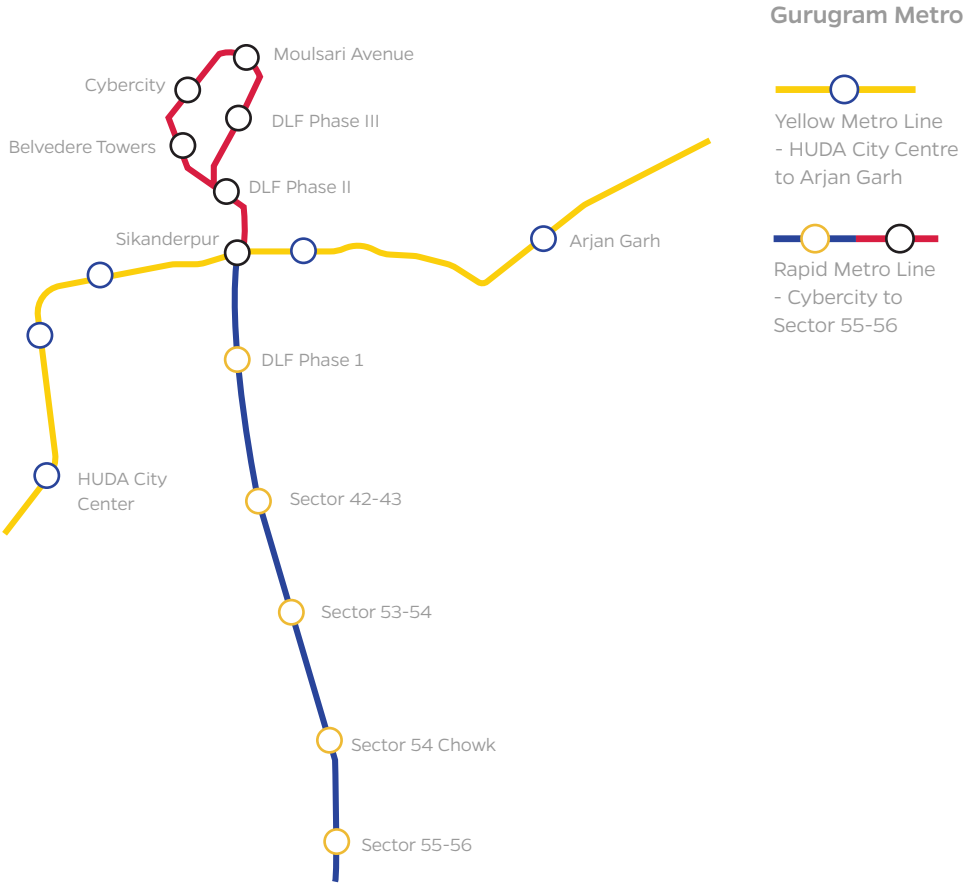
Gurugram

A deep dive into the bike-taxi usage in Gurugram is telling. OMI studied all the trips originating and terminating at the Yellow Line and Rapid Metro Stations. These included the 15 stations of HUDA City Centre, IFFCO Chowk, MG Road, Sikanderpur, Guru Dronacharya, Cyber City, Moulsari, Phase 3, Belvedere Towers, Phase 2, Phase 1, Sector 42-43, Sector 53-54, Sector 54 Chowk, and Sector 55-56.

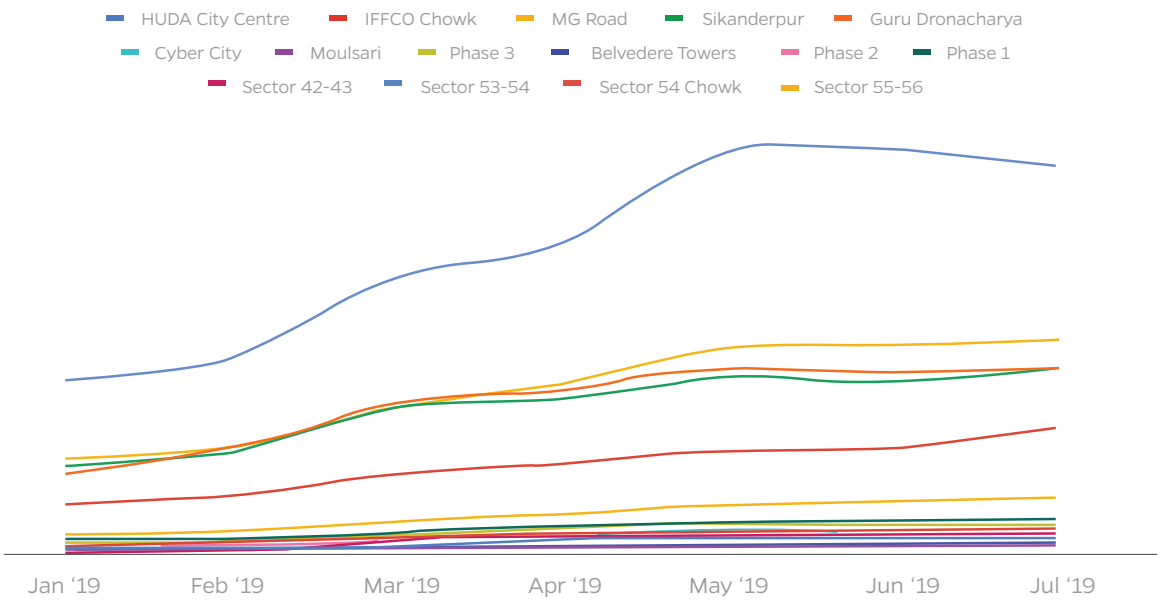
The map on the next page shows bike-taxi pickups and drops at metro stations in Gurugram.



In Gurugram, one in three bike-taxi rides are to and fro metro stations.



Growth in first-and last-mile trips to and fro metro stations - Gurugram

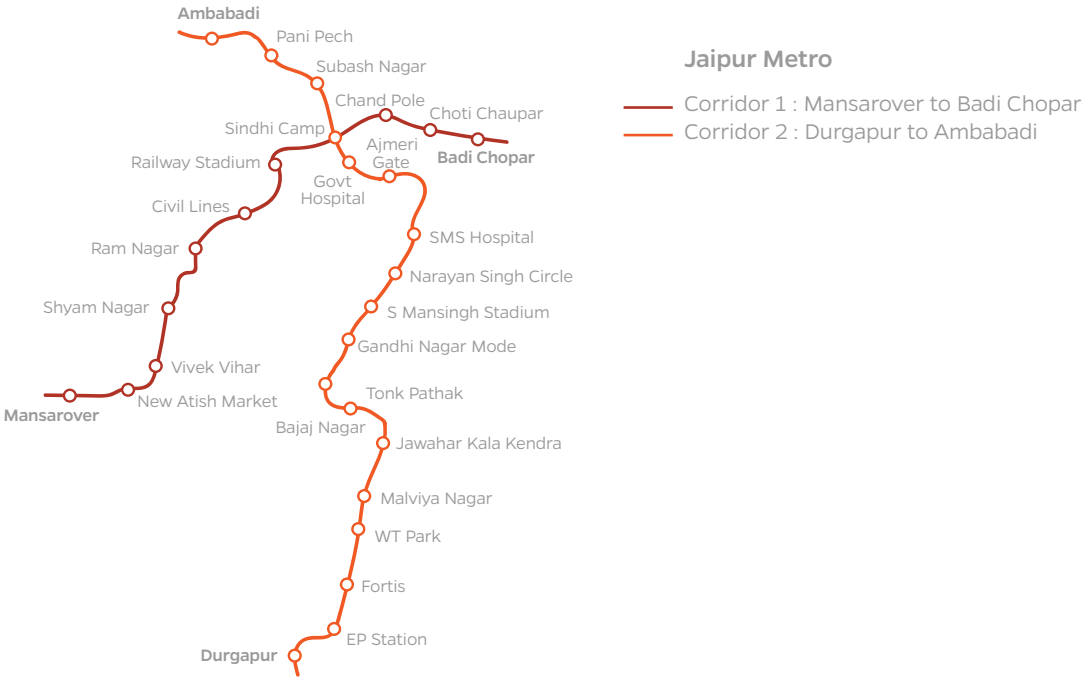


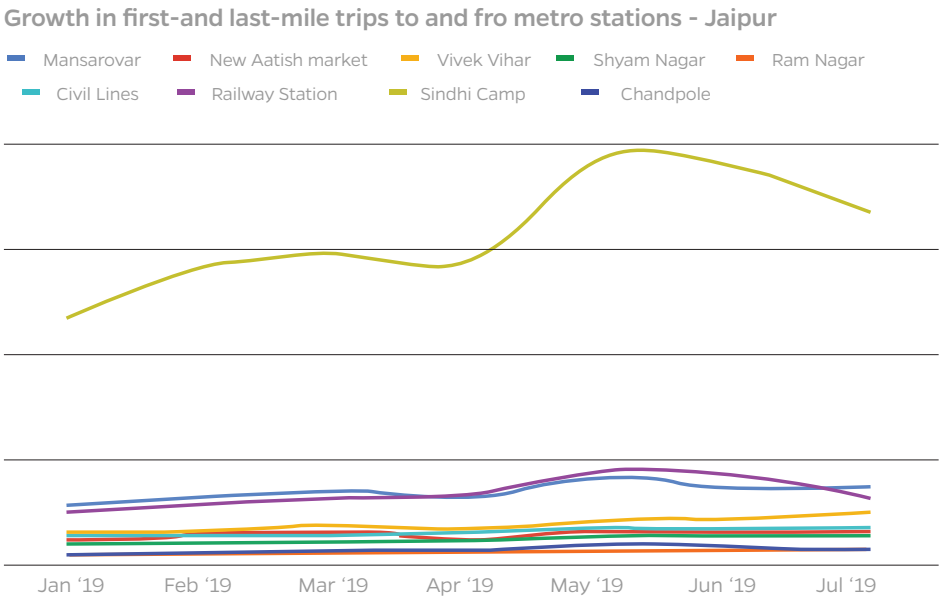
The stations of HUDA City Centre, MG Road, Guru Dronacharya, Sikanderpur, and IFFCO Chowk witness the highest proportion of travelers using bike-taxis to cover the first and last mile.

Notably, the number of trips originating at metro stations peaks between 10 am and 12 pm, and the number of trips terminating at metro stations peaks from 4 pm to 8 pm. **Both the time periods overlap with office timings.**

Jaipur

Similarly, OMI analysed trips originating and terminating at the metro stations of the operational route in Jaipur, viz. Mansarovar, New Aatish Market, Vivek Vihar, Shayam Nagar, Ram Nagar, Civil Lines, Railway Station, Sindhi Camp, and Chandpole. A majority of the rides are to and fro metro stations at the Sindhi Camp, Mansarovar, and Railway Station.



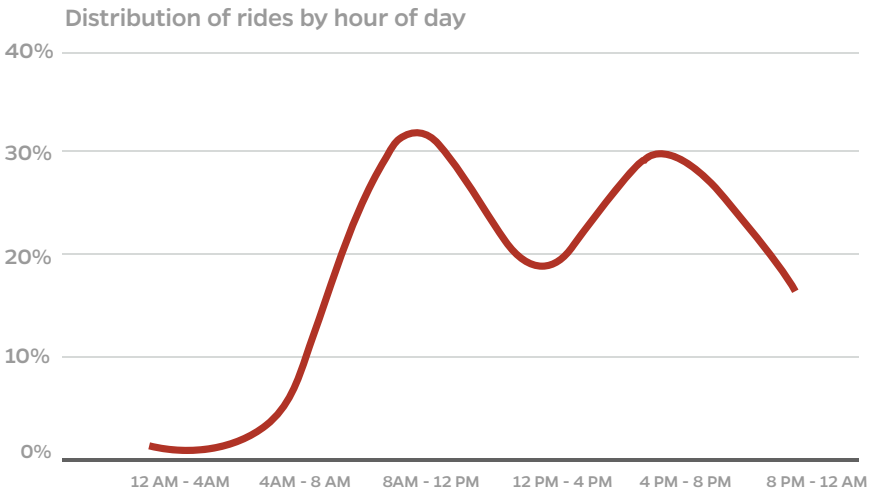


While the uptake of bike-taxis for FMLM connectivity is low in Jaipur, it is emblematic of the low metro ridership and not so much a reflection of the potential (or lack thereof) of bike-taxis. The operational Metro Route between Mansarovar and Chandpole is the shortest in the country (Times News Network, 2019) failing, therefore, to attract passengers, and causing a continuous drop in metro ridership.

AFFORDABLE CATEGORY FOR EVERYDAY COMMUTE

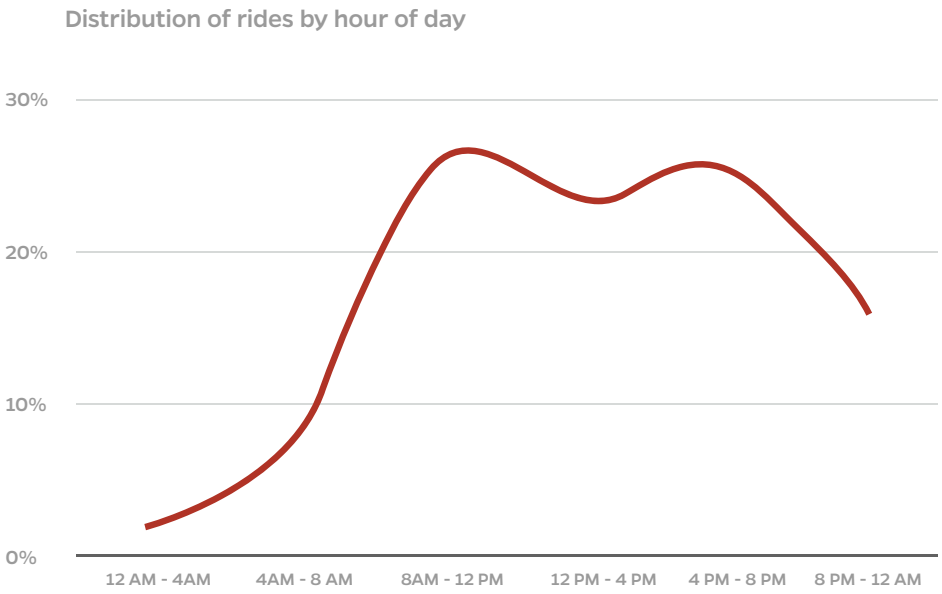
OMI analysed the use of bike-taxis by the hour of day. Priced the lowest of all on-demand vehicle categories, **bike-taxis are found to be effective for everyday commute because of their affordable nature. This is reflected in the time-of-use analysis carried out for the cities of Gurugram and Jaipur.**

Gurugram



The rides peak between 8 AM and 12 PM, and between 4 PM and 8 PM, which coincide with the vehicular peak hours in the city of Gurugram, and overlap with office timings. **Over 60% of the rides occur in the morning and evening peaks.**

Jaipur



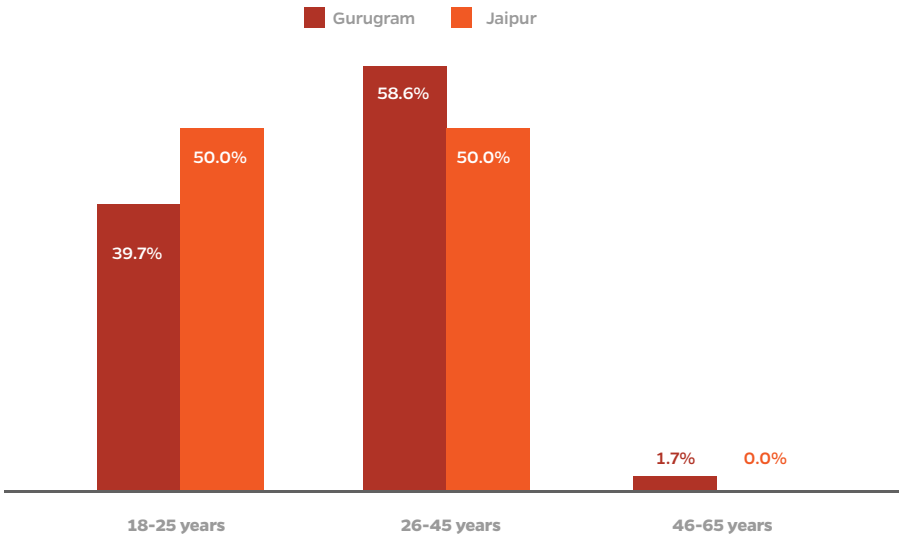
The rides peak between 8 AM and 12 PM, and between 4 PM and 8 PM, which coincide with the vehicular peak hours in the city of Jaipur. Over 50% of the rides occur in the morning and evening peaks. Additionally, over 20% of the rides happen in the afternoon between 12 PM and 4 PM. The use of bike-taxis between 12 PM and 4 PM can be attributed to the nature of Jaipur, a popular tourist destination. **Overall, 75% of the rides happen between 8 AM and 8 PM.**

FINDINGS FROM SURVEYS OF DRIVERS ASSOCIATED WITH BIKE-TAXI PLATFORMS

OMI interviewed drivers affiliated to bike-taxi platforms in the cities of Gurugram and Jaipur. 59 drivers in Gurugram and 43 drivers in Jaipur were contacted between September and October, 2019. Random sampling technique was used to identify the bike-taxi drivers for the survey. The key findings from the survey are presented in the following sections.

AN ATTRACTIVE LIVELIHOOD OPPORTUNITY FOR YOUNG ADULTS

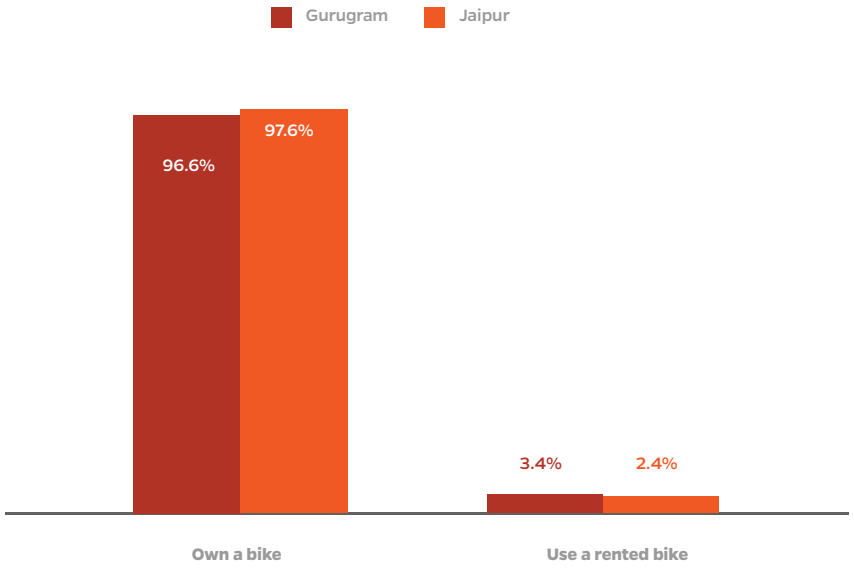
Distribution of bike-taxi drivers by their age



Bike-taxis augment livelihoods of adults in the ages 18 through 45 years.

MAXIMISING THE UTILISATION OF AN EXISTING ASSET

Distribution of bike-taxi drivers by the ownership of their asset

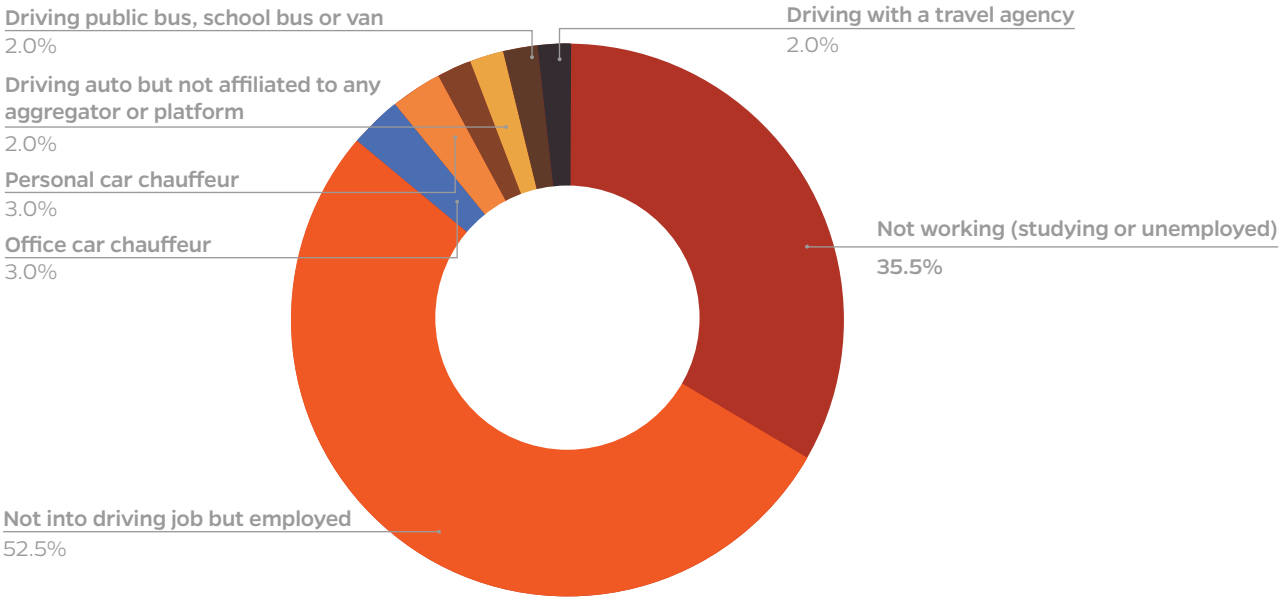


Over 9 out of 10 drivers interviewed reported using their own bikes for bike-taxi operations.

AUGMENTING LIVELIHOODS IN THE MOBILITY ECONOMY

People from diverse professional backgrounds as well as students and those unemployed, and not just individuals traditionally involved in the driving domain, find bike-taxis to be an attractive livelihood opportunity. This can be gleaned from the past occupations of bike-taxi drivers.

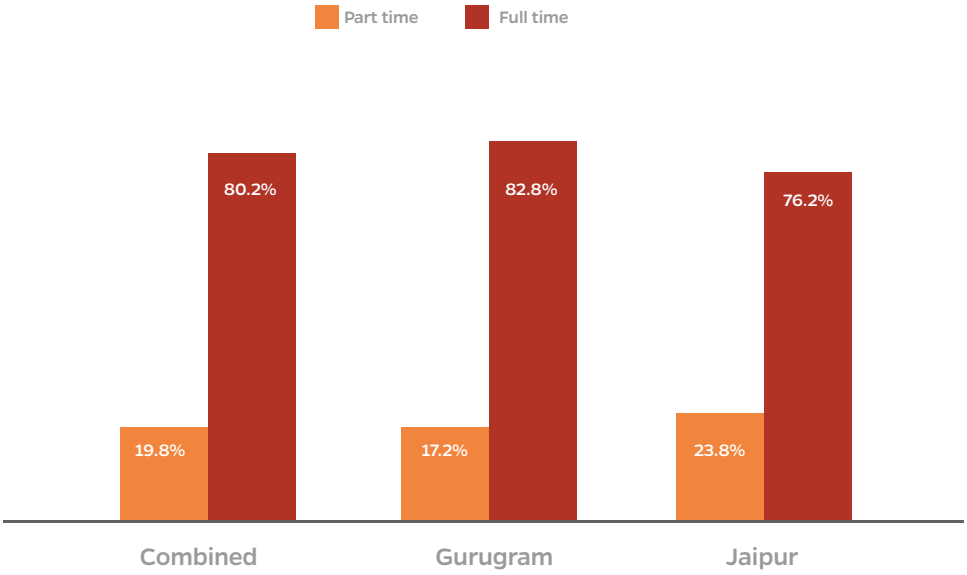
Distribution of respondents by their past occupation



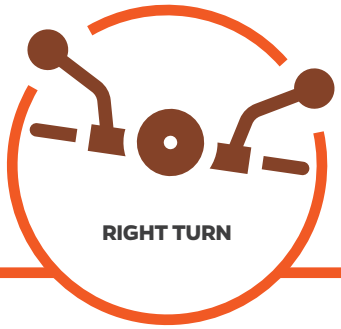
Gurugram, Haryana, India - September 2019: *Sundar (name changed) is a bike partner with Ola since February 2019. A resident of Haryana, he brought his (commercial) bike from a dealership for INR 45,000. Conversion from white plate to yellow plate officially costs INR 4,000-5,000; Sundar reported a plethora of informal costs and opportunity costs that drive this figure up to INR 10,000-11,000 for yellow plate conversions. 23-year old Sundar rides on Ola full-time but knows of his other biker friends (with whom he shares a whatsapp group) who ferry passengers during office time in mornings and evenings and deliver food during lunch hours.*

Bike-taxi driving is indeed regarded as a viable earning opportunity for both part-time and full-time considerations. Part-time may be defined as driving on any platform for 2-4 hours per day and full-time, as driving on any platform over 6 hours per day. It may be noted that even full-time drivers operate across multiple platforms on a single day or different days.

Distribution of respondents by nature of driving



Bike-taxis present a wide range of earning potential to those engaged in driving. A majority of those driving bike-taxis on a part-time basis report earning up to INR 500 per day. A majority of the full-timers report earning over INR 500 daily.



Interviews with over 100 drivers affiliated to bike-taxi platforms in Gurugram and Jaipur reveal how bike-taxi driving :

- **is an attractive livelihood opportunity for young adults;**
- **maximises the utilisation of an existing vehicular asset and provides remunerative opportunities to those involved in the mobility economy;**
- **provides livelihood opportunities to individuals from diverse professional backgrounds as well as students and the unemployed, and not just those traditionally involved in the driving domain;**
- **is regarded as a viable earning opportunity for both part-time and full-time considerations; a majority of the part-timers report earning up to INR 500 a day, while a majority of the full-timers report earning over INR 500 daily.**

ENHANCING ROAD SAFETY AND PERSONAL SAFETY

Safety is of paramount importance to all platforms since their brand value is derived from consumer acceptance and appreciation of safety measures undertaken. Ola Mobility Institute's study finds that organised bike-taxi operations are in a better position to uphold safety norms for two-wheelers. This is because they have a series of safety measures covering all three legs of a journey- before, during and after ride.

Safety Checks during Driver and Vehicle Selection

Platforms place mandatory checks on bike owners and drivers by way of verifying their driving licence, registration certificate of the bike, insurance policy, PAN and bank account details, and inspection of the bike itself. Platforms like Uber and Ola are hiring background verification services to check police and court records (Das, P., 2014). Bike-taxi service, Rapido, also ensures that their driver-partners do not have a criminal background particularly "cases of sexual offense, crime, felony or substance-abuse." (Rapido, 2019)

Driver Training on Safe Driving and Customer Engagement

Bike-taxi services, in their bid to secure the patronage of women riders, have publicly reported the salience they attach to driver training. Rapido, for instance, requires all its drivers to pass a series of 400 tests including ride tests, as part of their mandatory training and verification measures (Press Trust of India, 2016). Typically, the training provided by platforms is intended at ensuring that the motorcycle drivers/ owners are abreast with the latest laws, rules and regulations and towards apprising all the motorcycle riders/ owners regarding road safety measures including but not limited to riding within the prescribed speed limit, lane driving, and behavioral aspects while dealing with customers.

Mandating the Use of Helmets

All services have mandated the use of helmets for both the driver and the pillion rider alike. "To ensure personal hygiene, the rider is given a disposable head cap which the rider can use before wearing the helmet." notes Rapido's co-founder in a media interview (Economic Times, 2018). Ola too mandates the use of safety gear in the form of ISI-certified helmets and first aid box (Goode, N. & Ranipeta, S., 2019). Platforms like Ola and Uber encourage riders to cancel rides if the driver-partner who is mandated to carry a helmet for the pillion-rider does not provide one (ibid).

Securing Trips through Insurance

Bike-taxi services like many other on-demand tech-enabled intra-city travel solutions empower riders and drivers to secure their trips using the app. In April 2018, for instance, Ola launched an in-trip insurance programme for users across all categories pan-India. Such insurance by platforms have coverage ranging from INR 3 lakhs to INR 5 lakhs or more. Benefits include accidental death, permanent total disability/ permanent partial disability, accidental medical expense, OPD treatment, hospital daily allowance, ambulance transportation cover and evacuation, repatriation of mortal remains, missed domestic flights, loss of baggage, loss of laptop, emergency hotel requirements, home insurance cover, fire and allied perils (Chengappa, S., 2019). Similarly, in September 2019, Uber too announced free insurance to its riders. The Uber insurance provides cover for physical injury as a result of any accident that might occur while on trip with Uber, from the point the rider enters the vehicle until the end of the trip (ET Now Digital, 2019). Such tech-enabled platforms are empowering commuters to report accidents and claim insurance via their respective apps. Notably, the insurance coverage also extends to driver-partners of these platforms.

Emergency Alerts and Integration with a City's Institutional Emergency Response

Be it Rapido (IANS, 2018), Uber (Rayman, N., 2015), or Ola (DHNS, 2015), bike-taxi services have an inbuilt emergency alert mechanism in the form of an Emergency or SOS button in their mobile applications, which can be used by a pillion rider during an ongoing trip, in case of any emergency or threat to safety. The emergency button alerts the service-provider's control unit or safety response team. Platforms are also actively integrating their solutions with data and control centres managed by government agencies. For instance, in Hyderabad, emergency alerts on Ola and the state Tourism app are automatically transmitted to the police control room who then share the location of the vehicle along with the driver and vehicle details to the closest patrol mobile, concerned jurisdictional police officials, et al. for swift emergency response (TNN, 2019). A platform like Rapido is also connected to hospitals and emergency ambulance services (IANS, 2018) to enhance safety.

Registering Friends and Family as Emergency Contacts

Platforms allow riders to register friends and family as emergency contacts who receive a rider's emergency alerts via SMS and email (DHNS, 2015). In addition, platforms allow emergency contacts to track the progress of the ride in real time once the rider enables this feature.

Masking/ Disguising Phone Numbers to Safeguard Privacy

Since 2015, platforms like Ola (Press Trust of India, 2015) and Uber (Track, 2018) have made it possible for riders to contact drivers without revealing their phone numbers. Ola, for instance, has integrated a cloud telephony solution, which sends an encrypted number to the driver whenever a customer books a vehicle. With this, the driver-partners do not bear the cost of calls made to customers as they would be routed through their app/ device. Such a system helps platforms protect the privacy of the riders and the drivers, and also enables call traceability (BS Reporter, 2019) necessary for issue resolutions.

Improving Service Quality via Customer Feedback and Rating

The emergence of on-demand tech-enabled mobility services has made possible for customers to rate the quality of the ride, incorporating qualitative feedback on driver-partner's driving and interpersonal skills, among others. This feedback mechanism permits platforms to off-road dangerous drivers and flag them for future.

Use of Artificial Intelligence (AI) and Machine Learning (ML) to Augment Safety

New-age mobility services are leveraging the power of technology to achieve the societal goal of safe mobility. In September 2018, Ola launched Ola Guardian, a ride-monitoring system that uses AI and ML algorithms to track and analyse rides on indicators such as unexpected and midway stops and route deviations in addition to plugging other vulnerabilities on the platform such as driver impersonation, all in an effort to augment safety. The identification of such vulnerabilities automatically triggers action by the company's safety team (Kashyaap, S., 2018; SNS Web, 2018).

Overall, bike-taxi services running on tech-enabled systems make it possible to detect and prevent unsafe incidents and also offer much-needed remediation and grievance redressal. Platforms onboard drivers and vehicles only after a thorough check of all necessary legal documentation as well as the fitness of the vehicle. Platforms mandate the use of helmets for drivers and pillion riders. Drivers are trained in customer interaction, defensive driving, first-aid training, and more. The practice of the customers rating the drivers enables platforms off-road dangerous drivers. The organised nature of operations empowers cities to achieve road safety outcomes in the category of bikes as well.

Gurugram, Haryana, India - September 2019: *A woman riding pillion on Sundar's bike from Cyber City metro station to Udyog Vihar Phase 3. While there has been speculation around women's willingness to use bike-taxis, anecdotal accounts suggest that women find bikes safe since they are open. There are hesitations however around late-night rides as well as some initial discomfort around sitting in such close proximity with male drivers (Philip, C.N., 2017). The attitudes however are changing. In 2017, Rapido shared that around 15% of its new customers in Bengaluru were women (ibid). While there aren't many instances of women bikers, Governments and Businesses could work together to enable this demographic as well.*

CASE STUDY: SAFER MOTORCYCLING - THE GLOBAL MOTORCYCLE INDUSTRY'S APPROACH TO ROAD SAFETY

In May 2019, global 2W manufacturers published an authoritative compendium of industry-led best practices in safety and transport policy and awareness, training and education (IMMA, 2019). The report proposes a four-stage strategy to promote road safety.

- **2Ws must be positively included in public policy;**
- **Road infrastructure must be designed and maintained with 2Ws in mind;**
- **Effective and affordable training and education must be provided by all stakeholders - public and private agencies;**
- **Leveraging technology and notifying vehicle-design-related safety requirements for 2Ws would further help achieve road safety.**

5

THE IMPACT OF BIKE-TAXIS

AN URGENT NEED TO DECONGEST CITIES

The findings from the analysis of Ola's bike-taxi operations and interviews with drivers affiliated to bike-taxi platforms in Gurugram and Jaipur present interesting insights and offer empirical backing to some of the intuitive benefits of bike-taxis.

- Bike-taxis are undoubtedly a popular choice of intra-city travel in India's urban agglomerations as well as the hinterlands; **Bike-taxi operations in Gurugram, for instance, witnessed 100% growth in the number of bookings within 7 months of launch;**

- Bike-taxis are an effective mode of travel for short-distances; **70-85% of the rides are under 7 km in cities of varying sizes;**

- The short trip length and affordable nature of rides allows **bike-taxis to provide feeder service to public transit.** Indeed, this is corroborated by the high proportion and increasing number of rides that have been occurring on bike-taxis to and fro metro stations; Notably, **one in three bike-taxi rides in Gurugram are to and fro metro stations;**

- With the preference for and use of bike-taxis reaching a peak at specific time intervals of the day corresponding to the start and close of office hours, bike-taxis are indeed being used as an affordable category for everyday commute; Further, **bike taxis are ideal to beat peak hour congestion evidenced by their use in morning- and evening-peak hours of 8 AM - 12 PM, and 4 PM - 8 PM.**

- Bike-taxis can also be used to **promote tourism as witnessed in Jaipur** where substantive bike-taxi rides occur between 12 PM and 4 PM as well.

- Bike-taxis are an **attractive livelihood opportunity for those aged 18-45 years**, i.e. young adults;

- Bike-taxi operations help an individual earn a livelihood by **maximising the utilisation of their existing asset;**

- The bike-taxi category **augments livelihoods in the mobility economy in a variety of ways**;
  - People from diverse professional backgrounds as well as students and those unemployed, and not just individuals traditionally involved in the driving domain, find bike-taxis to be an attractive livelihood opportunity;
  - Bike-taxi driving offers both part-time and full-time livelihood opportunities; The part-time potential of bike-taxis holds promise to augment incomes by empowering riders to take up other avenues of productive activity like food and package delivery during off-peak mobility hours; Both part-time and full-time opportunities are essential for India's economy to thrive.

- By **organising bike-taxi operations through aggregators**, cities now have the opportunity to curtail road accidents involving two-wheelers through **better enforcement of safety rules, and thereby enhance road safety.**

These findings correspond to the larger trend on shared mobility being observed in India. NITI Aayog in its publication, "Moving Forward Together", notes, *"More than 50% of the population in India is below the age of 25 and more than 65% is below the age of 35. A young population may be more inclined to adopt new and innovative ideas. India's emerging entrepreneurial culture further supports the development of innovative shared mobility solutions."* *(NITI Aayog, 2018)*

6

UNLOCKING INDIA'S ECONOMIC OPPORTUNITY BY LEGALISING BIKE-TAXI

State Governments on their part have been experimenting with Bikes as a mobility mode. From running **bike ambulance** (Business Today, 2019) pilots to deliver critical care at doorstep, to enabling **bike rentals as an FMLM connectivity option** (Choukkar, M., 2016), there is an appetite on the part of the stakeholders to scale this vehicle category.

Bike-taxis as a service category and bikes as a vehicle segment in general, should therefore be allowed to flourish. State governments may unlock the potential of bike-taxis - as an affordable, efficient, fast, and safe alternative to private vehicles - to help India become a trillion-dollar economy by adopting a seven-pronged approach.

1. **Provide coherent legal clarity**
2. **Improve linkage with existing Public Transportation (PT) Systems**
3. **By offering legitimacy to bike-taxis, enhance road safety**
4. **Reduce barriers to entry and create a level-playing field**
5. **Enhance access to institutional credit and promote financial inclusion**
6. **Promote demand-responsiveness**
7. **Create opportunities to augment incomes**

1. Provide coherent legal clarity

State Governments may issue coherent policies enabling commercial application of bikes - whether as rentals, or taxis, or pooling options. This should entail spelling out all-encompassing conditions of their commercial application, and issue clear time-bound notifications to the Regional Transport Offices to allow their plying on the roads. A consistent regulatory and policy environment would provide business certainty to players engaged in this segment, freedom from fear of fines and impounding of vehicles of the owners and drivers of bikes, and safety and assurance to commuters, thereby allowing scaling of this vehicle category.

2. Improve linkage with existing Public Transportation (PT) Systems

Applicable to ridesharing more generally and bike-taxis specifically due to their role as feeder service to public transportation systems, city planners should look at promoting bike-taxis at the design stage itself. Designated pick- and drop-spots near PT stops/ stations, dedicated parking and curb spaces, in-app (digital) integration with PT for ticketing and payment, are some of the ways in which this can be realised. In areas underserved by Public Transport, prioritisation of bike-taxis can offer mobility options at a fraction of the cost.

3. By offering legitimacy to bike-taxis, enhance road safety

The organised nature of bike-taxi operations empowers cities to achieve road safety outcomes in the category of bikes as well. By organising bike-taxi operations through aggregators, cities now have the opportunity to curtail road accidents involving two-wheelers through better enforcement of safety rules, and thereby enhance road safety.

4. Reduce barriers to entry and create a level-playing field

In states where bike-taxis are currently legal, certain conditions levied on bike drivers to ensure commercial plying have placed undue financial and/or operational burden on them. For instance, conversion fees from white plates to yellow plates cost anywhere from INR 6,000 to 8,000 per vehicle and together with admin costs round up to about INR 10,000 on average. With average selling price of bikes at INR 40,000 - 60,000 in India, the conversion costs stand at 15% to 25% of the price of the vehicle which crowds out potential bike owners/ drivers from the market. Removing this requirement would therefore ensure that a greater number of existing vehicles start plying on road at minimum additional cost thereby improving idle vehicle utilisation and promoting shared mobility. All bikes may be permitted to ferry passengers. In other words, states may actively classify bikes under the transport vehicle category.

Further, conditions such as the installation of physical devices on the bike like CCTV cameras, among others, place excessive financial burden on the driver and reduce their ability to enter the market with the existing vehicles. Fitness criteria like conservative floor on the age of vehicles also contradict the idea of promoting utilisation of the existing assets.

Removing entry-barriers, thus, would encourage the availability of large fleets of bikes for sharing purposes in a city, as well as the emergence of such on-demand two-wheeler businesses of all sizes - micro, small, medium, and large-scale.

5. Enhance access to institutional credit and promote financial inclusion

The mobility economy can unlock massive livelihood opportunities for India (Ramachandran, S., and Raman, A., 2019). The bike-taxi market alone is a USD 4-5 billion industry with potential to add 2+ million micro-entrepreneurial opportunities, when legitimised. Accelerating India's adoption of digitalised shared mobility, however, can be achieved better by increasing individual's access to institutional credit. This refers to the state's efforts in removing cost barriers to the means of livelihood. A large section of the country's population, particularly those that are 'new to credit' or are from lower-income groups typically access loans outside the formalised credit umbrella (Ravi, S., 2019).

In order to improve access to credit and achieve financial inclusion in India, formal lenders, i.e. banks, may transition from asset-based lending to cash-flow-based lending (Ghosh, S., 2020). Thus, unsecured loans to first-time borrowers participating in the mobility economy may be classified as Priority Sector Lending (PSL).

Such a measure would strengthen the Financial Inclusion programmes launched by the Government of India and the Small Industries Development Bank of India (SIDBI) in the form of Pradhan Mantri MUDRA Yojana (Micro Units Development and Refinance Agency Ltd.), and UDAAN (Credit Guarantee Fund Trust for Micro and Small Enterprises - CGTMSE) which duly include loans for transport vehicles. Soon, formal lending to individuals using bikes to earn a livelihood would become the norm.

Additionally, lenders may utilise new kinds of data available through digital transactions to profile the social and economic background of the borrowers. Banks and micro-finance institutions (MFIs) may, thus, practise cash-flow-based lending by mapping beneficiaries with digital platforms.

6. Promote demand-responsiveness

Policies should refrain from stymying the most important element that makes bike-taxis efficient - demand-responsiveness. Conditions such as fixed operating hours, a fixed number of trips per day or those that disallow corporate or fleet ownership of bikes are inadvertently keeping this vehicle category from flourishing.

7. Create opportunities to augment incomes

According to BetterPlace, 41% of migrant workers in India work as drivers while 32% work as delivery persons. Out of the 19 lakh new jobs estimated to be created from March to August 2019, the delivery executive space is expected to account for over 10 lakhs (Saraswathy, M., 2019). Allowing the use of Bikes as taxis can therefore instantly augment the average earnings of delivery executives by opening up another source of income.

Therefore, by providing legitimacy to bike-taxi services, the government is recognising their role in providing mobility to urban, semi-urban, and rural areas, especially that of providing first- and last-mile connectivity to public transit, and is directly creating part-time and full-time opportunities to augment livelihoods, and by leveraging the power of shared mobility, is laying the road to inclusive economic growth.

7

THE EFFECTS OF ON-DEMAND ECONOMY ON EMERGING AND UNDERDEVELOPED MARKETS

Bike-taxi is a runaway success in countries like Indonesia which suffer traffic congestion worse than India. Jakarta with the record of being the worst city for traffic stops and starts (33,240 times a year on average) witnesses an average driver drive only 8.3 km in an entire hour (Werdhani, D.A., 2015). Motorbikes in this context help people zip around and navigate distances faster than a car. Entry of aggregators such as Go-JEK have formalised the sector and reportedly boosted incomes. There were 800 Go-JEK drivers in 2015, and with a year's time, there were more than 240,000 across Indonesia all experiencing improved utilisation of idle time (Taka, 2016). As of 2019, Go-JEK employs more than a million drivers and processes more than 100 million transactions for 25 million monthly users. Go-JEK is also a super-app: The venture's 18 on-demand services include Go-Mart (grocery shopping), Go-Clean (housecleaning), Go-Glam (hairstyling and makeovers), and Go-Massage (self-explanatory). Go-JEK claims 108 million app downloads and says at least half of those who have used its app have also used its payment service, Go-Pay (Chandler, C., 2019).

There is documented evidence of how transformation in the management and use of motorcycle taxis in Indonesia by way of using information and communications technology (ICT) comprises changes in employment modes, business models, and government policies, thereby delineating the role of ICT in transforming mobility and promoting development in emerging markets (Kruse, L.C., 2016). The on-demand economy in Indonesia, thus, provides workers with an alternative to existing low wages and underemployment in the informal economy (Fanggidae, V. et al, 2018). Such platforms tend to formalise various aspects of an already prevalent and highly precarious 'street economy' by consolidating it with smartphone technology (Kibaroglu, O., 2019). The transformative effects of the on-demand economy in Southeast Asia - a region boasting a GDP of USD 2.8 trillion - can be witnessed by the impact of the super-app, Grab, offering food delivery, digital payments, financial services, and even health care along with rides, benefitting 650 million customers in the region. These hundreds of millions of customers are only now getting access to conveniences long taken for granted in China and the West (Chandler, C., 2019). In sub-Saharan Africa, bike-taxis or 'Boda Bodas' account for a major source of employment - 30 lakh in Nigeria and 1 lakh in Tanzania, as early as 2015 (Kavuma, R.N., 2015). Closer home, more than 10,000 livelihood opportunities in Punjab, Haryana and Telangana alone have reportedly been generated by Ola's bike-taxis in 2018.

CASE STUDY: SOCIO-ECONOMIC IMPACT OF GO-JEK ON THE INDONESIAN ECONOMY

The University of Indonesia [Lembaga Demografi Faculty of Economics and Business Universitas Indonesia (LD FEB UI)] measured the impact of Go-Jek on the Indonesian Economy in the year 2018. The report (Walandouw, P., et al, 2019) and other studies (Urs, S.R., 2019) highlight the following.

1. As of early 2019, Go-JEK

a. Engaged over a million driver-partners in Indonesia, making the platform the largest organised transport company in the country;

b. Had over 250,000 merchants on its platform;

c. Processed over 50 orders per second.

2. By creating new jobs, Go-JEK was responsible for eradicating roughly 15% of the total unemployment in Indonesia by early 2019.

3. Go-JEK contributed (Indonesian Rupiah) IDR 55 trillion (US$ 3.85 billion) to the Indonesian economy in 2018 alone.

a. The economic contribution is derived from the additional income earned by partners after joining the Go-JEK platform (GoRide, GoCar, GoFood, and GoLife).

4. The average income of Go-JEK partners (drivers, talent, merchants) is higher than the average minimum wage in Indonesian cities.

a. After joining Go-JEK, the average driver has witnessed 44% increase in their earnings and 31% increase in their spendings.

b. Go-JEK partners obtain numerous benefits from their partnership with Go-JEK, including increased time spent with family; increased ability to save money; and increased work flexibility.

5. A majority of the Micro, Small, and Medium Enterprises (MSMEs) in Indonesia have gone digital for the first time upon joining Go-JEK.

a. 85% of the merchants on the Go-JEK platform are small businesses, mom and pop stores, who now have a wider audience to cater to.

b. The MSMEs obtain various benefits through their partnership with Go-JEK, including digital marketing and acceptance of non-cash payments.

6. Go-LIFE - Go-JEK's lifestyle services brand covering house-cleaning, vehicle maintenance, beauty and massage services, etc. - provides income opportunities for women and those from underprivileged backgrounds (elementary) to high school graduates.

a. Go-LIFE increases women's participation in the digital economy; almost half of GO-LIFE female partners are breadwinners of their families.

The world over, there is an increasing consensus of the benefits of the on-demand economy in that it promotes the efficient and public utilisation of privately-held assets and skills, and increased job-creation and social interaction (Fanggidae, V. et al, 2018). **Closer home in India, bike-taxis, is an idea whose time has come. With greater discretionary powers vested with state authorities as per the Motor Vehicles (Amendment) Act 2019, it is now up to the governments at the state, and city levels to seize the opportunity.**

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