



Riding the Suburban Phenomenon: A study of auto-rickshaws in Mumbai

VISHAL RAMPRASAD, SANKET MONDKAR

EDITED BY: HARSHITA JAMBA, NITYA KAUSHIK

Mumbai shares a special relation with auto-rickshaws. Popular sentiments include precarious driving, refusals, haggling, but also appreciating their timely, kind gestures and service to the city. With as many as 4.5 million people depending on this service, most would agree that auto-rickshaws provide a convenient option for movement in the suburbs. As of writing this article, there are close to 2,00,000 of them within the jurisdiction of the Municipal Corporation of Greater Mumbai alone, roughly completing 3.6 million trips daily. However, very little is known about how rickshaws operate in the city: livelihoods of drivers, how and why people use them and the larger role they play in the mobility ecosystem of Mumbai.

In 2019, World Resources Institute (WRI) India Ross Centre for Sustainable Cities attempted to study the nuances of a service that has been in Mumbai since 1959 (Bajaj Auto, 2020) but done little to reinvent itself against a landscape of tech-driven disruptions, upgrading public transit, a strict regulatory framework and constantly changing commuter preferences. This article presents the findings from this study of this lesser-known trade.

Brief History of Rickshaws in Mumbai

Passenger transport in Mumbai ranges from publicly owned and operated services, like mass-transit, to privately owned and operated service for individual requirements, like private vehicles. Auto-rickshaws sit in the middle – privately owned but serve

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public mobility needs, commonly known as *Intermediate Public Transport services*. They are, however, among the most heavily regulated in their segment. Rickshaws ply in the west, east and north of Mumbai and street hailing is the most common way of accessing these services. Although aggregators have attempted to bring them onto a platform, a little under 7% of rickshaws in Mumbai are registered with large ride-hailing companies like Ola and Uber. This low penetration could be attributed to the availability and efficiency of the street-hail market.

The evolution of fares and permits:

Fare and permit regulations have been particularly strict and the subject of much debate by regulators, unions and consumer forums. The earliest known attempt towards fare assessment was the Patankar Committee in 1990 that developed a mechanism to evaluate if the fare structure was provisioning for enough earnings. Until 2012, the fare calculations for auto-rickshaws were borrowed from the black and yellow taxi mechanisms, which often led to misrepresentations of real costs. Further, revisions were ad hoc and generally responsive to political pressure. In a first, the Hakim committee set up in 2012 that developed a mechanism specifically for auto-rickshaws and suggested an annual fare revision with a reassessment of the mechanism every 10 years. Figure 1 exhibits the evolution of fares in the sector. More recently, the Khatua Committee was set up in 2017 to review and update calculation mechanisms suggested by the Hakim committee.

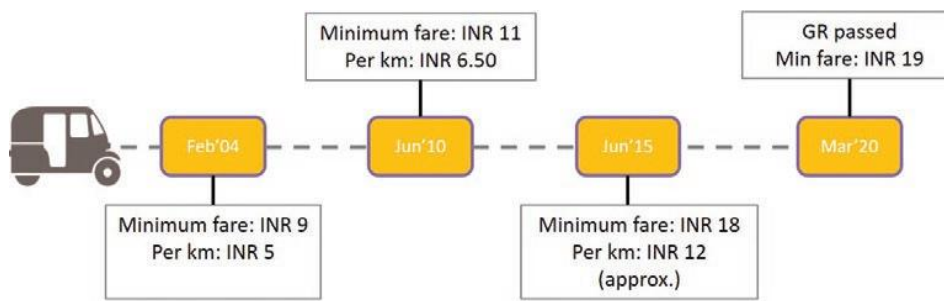


FIGURE 1: FARE EVOLUTION

To prevent the uncontrolled proliferation of auto-rickshaws and taxis in the city, in November of 1997, the Central Government instructed Maharashtra to limit their numbers. (Blog Archieve, 2012) (Government of Maharashtra, 2017). Issuance of new permits was unstructured with little or no assessment of commuter demand. Figure 2 exhibits the pattern of fresh permit issuances in the state.

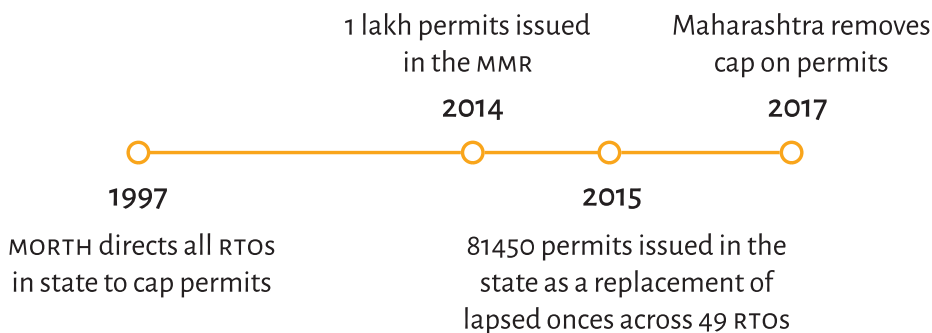


FIGURE 2: TIMELINE OF PERMIT EVENTS

A limited supply of rickshaws against growing transport demand inadvertently led to a black market of trading and leasing permits. According to a study conducted by WRI India in 2012, permits that were officially priced at around INR 15,000 to INR 18,000 in Mumbai were being illegally leased at rates up to INR 1,00,000. On average, a driver had to pay INR 64,000 to lease a permit. This threatened service levels leading to drivers often demanding more than metered fares to recover high permit costs.

How Do People Use Rickshaws In Mumbai?

Our study revealed insights into how auto-rickshaws contribute to the 12-odd million trips taken in the city across different modes. The study considered two types of trips that rickshaws typically cater to, first and last-mile and point-to-point.

Rickshaws are extremely hyperlocal and mostly provide first- and last-mile services to rail-based transit corridors. The average trip length is 3.1 km, and an average driver makes about 22 trips in a day (WRI India, 2019). A quick, unscientific observation of number plates on rickshaws will reveal that in any area in the city, it is more common to see rickshaws registered with the RTO of that region. That is to say, for example, in the eastern suburb of Powai, it will be common to notice rickshaws with registrations starting with MH 03 – the RTO code of the eastern jurisdiction in Mumbai, a proxy that indicates more localized trips.

Through the study, we attempted to understand the influences that determine how rickshaws are used in Mumbai. We looked at three aspects, the details of which are in the sections that follow.

1. Movement of people in Mumbai

We observed two types of movement patterns:

- People who live and commute within a single region, and
- People who commuted across regions.

There was a distinct difference between how these two types of commuters used rickshaws. For movement within the region that they live in (for example, someone living and moving within the eastern region),

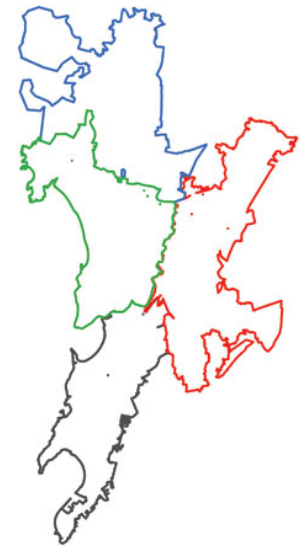


FIGURE 3: DEPICTS THE MAP OF MUMBAI AND ITS RTO REGIONS.

commuters tend to use rickshaws more for point-to-point trips and less for first- and last-mile trips. On the contrary, commuters who move across regions (for example, commuters who live in the east but travel to the west) use rickshaws more for first- and last-mile services, as demonstrated in Figure 4.

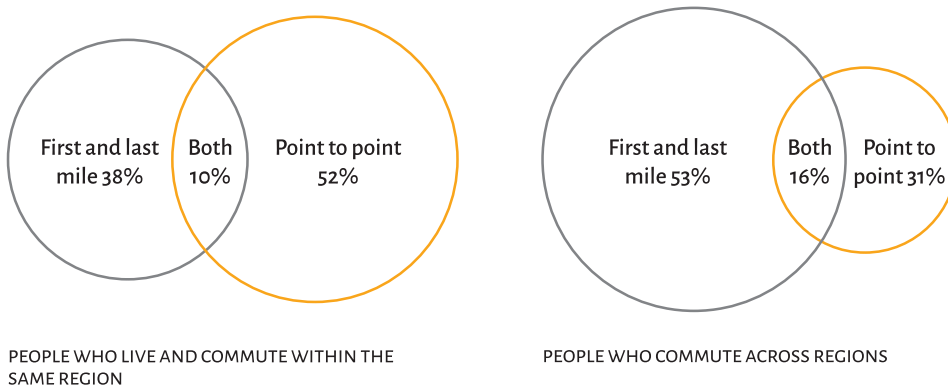
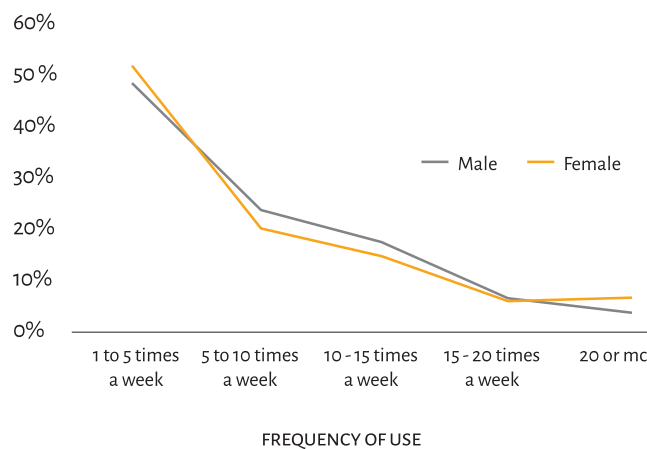


FIGURE 4: TYPES OF TRIPS

2. Ungendered usage of rickshaws

We found little difference between how women and men use auto-rickshaws in Mumbai. There seems to be a little variation in trip lengths, commute hours, weekly use and nature of trips.



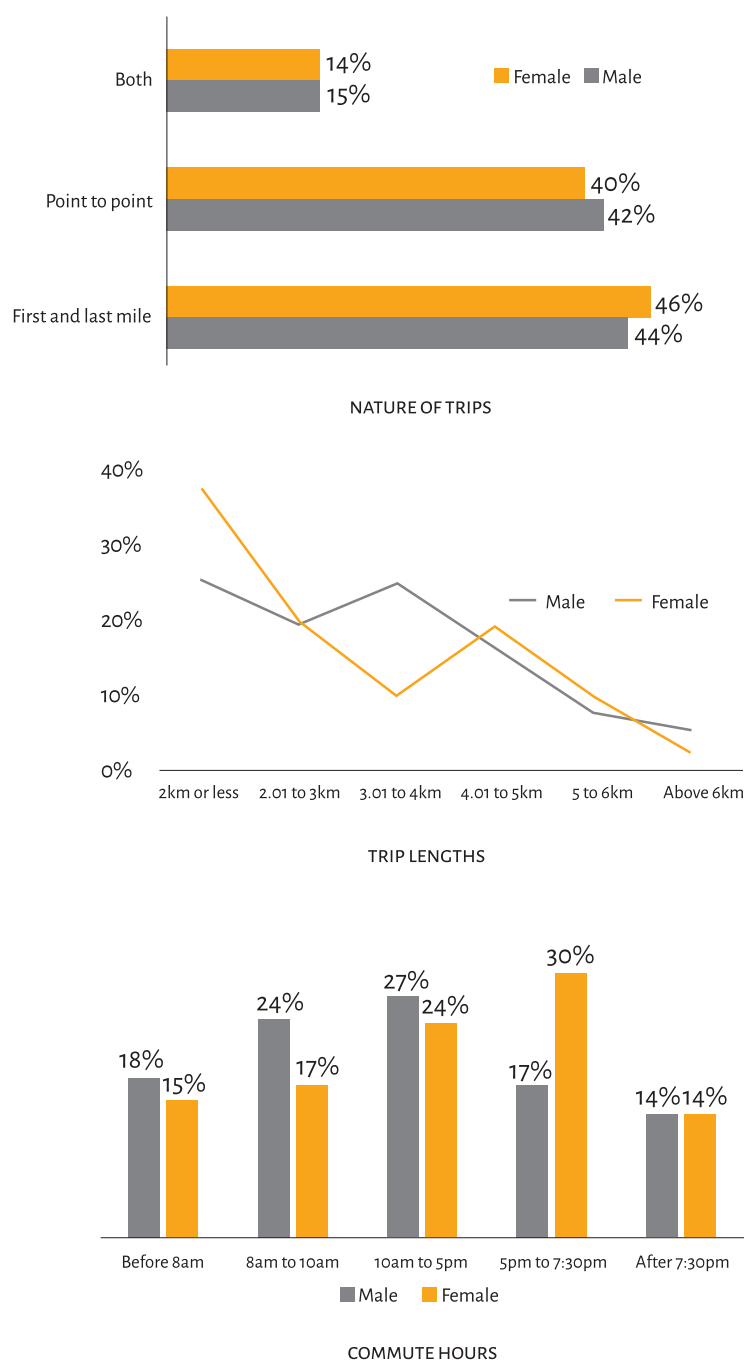


FIGURE 5: COMMUTING PATTERNS
ACCORDING TO GENDER

However, only about 20% of vehicle-owning women would shift to their vehicle if the auto-rickshaw did not exist, as opposed to almost 50% of men (Figure 6). There can be many reasons attributed to this distinction – most significantly, as studies suggest, that the household vehicle is generally accessible to male members

of the family. Whatever the reasons, it is clear that women are disproportionately dependent on auto-rickshaws.

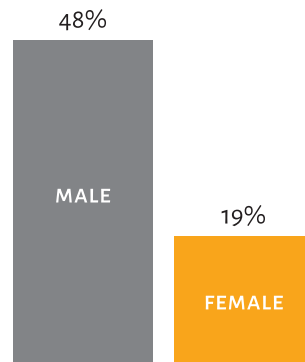


FIGURE 6: PERCENTAGE OF VEHICLE OWNING COMMUTERS WHO WOULD SHIFT TO PRIVATE VEHICLES

3. Distance from train and metro stations

As established before, rickshaws predominantly act as a feeder to mass-transit. We dug deeper to understand if the travel patterns of commuters residing beyond 3 km from any rail-based station exhibited different patterns in service dependency, trip lengths and trip type.

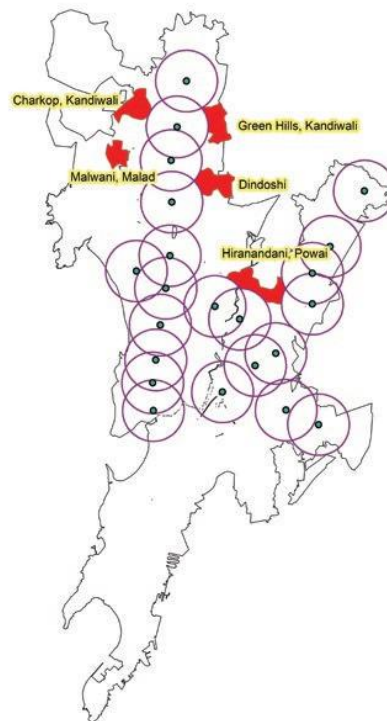


FIGURE 7: AREAS BEYOND 3 KM FROM RAIL-BASED TRANSIT STATIONS

We observed that people living beyond 3 km:

- Were as dependent on a rickshaw as someone living within 3 km.

62% of people beyond 3 km used rickshaws one to five times a week – similar to people living within 3 km.

- Had longer average trip lengths (4.2 km)
- Used rickshaws as feeder services – which possibly explains longer trip lengths, given these areas are further away from transit stations.

Deregulation of Permits

In June 2017, the transport department of Maharashtra deregulated permits, thus removing the caps on taxis and rickshaws instituted in 1997 (MORTH, Dec 2016). It is understood that the transport department took this decision to address three major concerns:

1. Permits were being illegally traded and leased for large sums of money. Deregulating could end the illegal trade and reduce entry barriers.
2. Commuters have historically been complaining about service levels of auto-rickshaws, especially increasing refusals and fares negotiations. Deregulation could lead to an increased number of rickshaws, thus giving commuters more options for rides.
3. Increasing employment opportunities

Impact of deregulation:

WRI India conducted its study in mid-2019 – a little over two years after the permit deregulation. We consider this duration sufficient to absorb the initial shock and for the market to settle. The study – among other things – attempts to understand the extent to which the objectives were met and assess other expected and unexpected impacts of the move.

Changing driver paradigm, more options for commuters and job creation

Registration data (*as of 31 March 2019*) from three regional transport offices in Mumbai indicate that in two years after deregulation, the number of rickshaws increased by about 52% (RTO, 2019). This growth came from two kinds of buyers:

- People driving rented rickshaws who had the means to purchase a vehicle but were unable to because of caps and high permit costs,
- First-time drivers

Our study revealed that about two-thirds of the growth came from renter-drivers who turned owner-drivers. Between 2017 and 2019, roughly around 45,000 drivers turned owner-drivers. Consequently, ownership increased by almost 75% and rickshaws on double shifts that stood at 70% in early 2017 fell to under 13% in mid-2019 (Khatua, 2017).

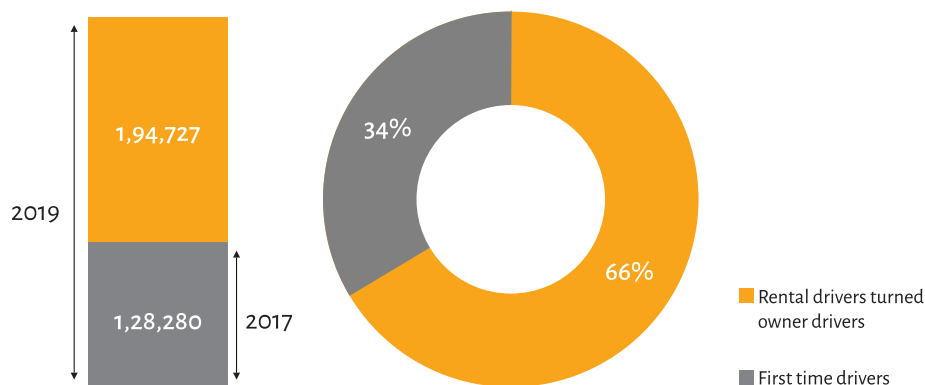


FIGURE 8 (BAR CHART): GROWTH OF AUTO-RICKSHAWS

FIGURE 9 (PIE CHART): BREAKUP OF NEW AUTO-RICKSHAWS

The other one-third – more than 22,000 drivers – were first-time drivers. This directly translates to more than 22,000 fresh jobs in the sector.

An increase in the fleet meant improved availability. As exhibited in figure 10, availability increased from around 10 per 1000 people to a little more than 16 per 1000 people. While it is

difficult to say if this is a good metric, it will be interesting to see how these numbers hold against other metropolitans.

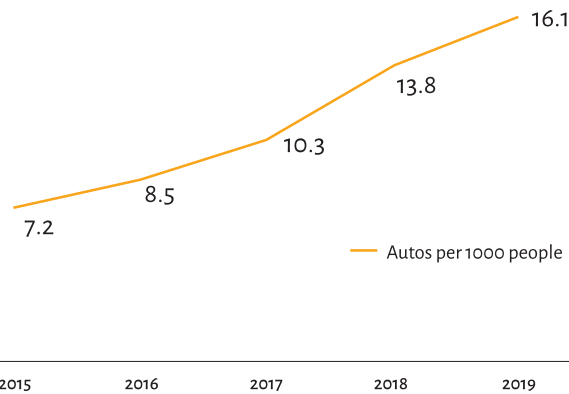


FIGURE 10: RICKSHAW DENSITY CITYWIDE

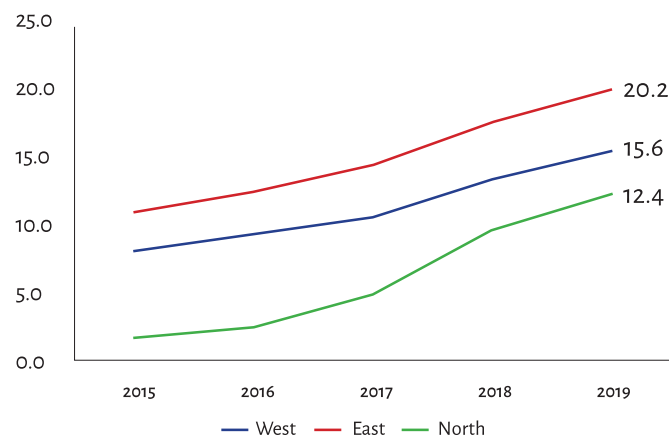


FIGURE 11: RICKSHAW DENSITIES IN RTO JURISDICTIONS

Although the north of Mumbai is least serviced at 12.4 rickshaws per 1000 people, it witnessed the steepest spike between 2017 and 2019. The east is best serviced at 20.2 rickshaws per 1000 people. From our understanding of Indian cities, we know that rickshaws tend to fill gaps in public transport. Using proxies for coverage and service levels, we learn that east Mumbai has a lower density of bus stops (3 per sq. km) compared to the north (3.38 per sq. km) and west (6 per sq. km.). Further, the average number of train services along the harbour line (connecting the east to the south of Mumbai) is lower (554 services) compared to the central (733) and western (820) lines.

This – among other reasons – could explain higher penetration levels of rickshaws in the east.

Fear of congestion:

The union directive in 1997 suggested a permit cap in the apprehension of auto-rickshaws and taxis flooding the streets, leading to congestion. Similar fears were voiced when permits were deregulated in 2017.

However, in both 2017-18 and 2018-19, the growth of rickshaws was lower than the growth of private vehicles in the city (figure 12 and 13). The combined growth of private two and four-wheelers was about 80% more than that of rickshaws (RTO, 2019).

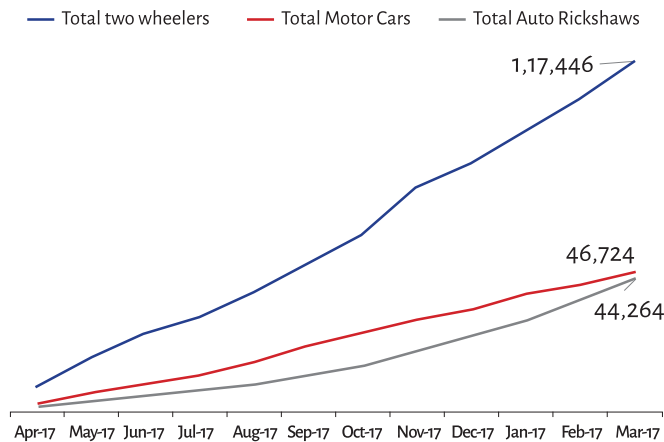


FIGURE 12: VEHICULAR GROWTH (2017-18)

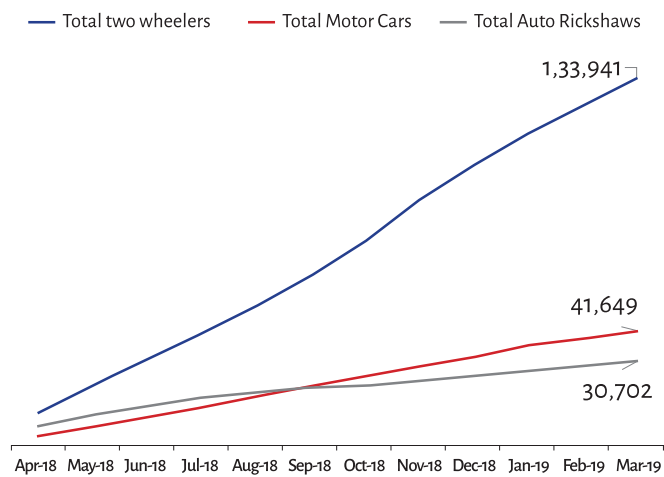


FIGURE 13: VEHICULAR GROWTH (2018-19)

Fewer rides, falling incomes:

New permits brought in many positives, but this new liquidity ate into incomes and disrupted operations of existing drivers.

PARAMETERS	2012	2017	2019
Average operational hours	10	11	9.6
Average daily distances (km)	105	81	96.5
Dead kilometres	10.2%	15%	23%

TABLE 1: OPERATIONAL CHARACTERISTICS

The average operational hours did not change too much since 2012, but there has been a fluctuation in daily distances covered. More importantly, the increased number of rickshaws in the city led to an increase in empty kilometres. Rickshaws now spend more time empty in search of commuters.

As would have been expected, deregulation led to a fall in daily incomes from around INR 770 to about INR 560. The strongest correlation between fleet growth and falling income is seen in the north of Mumbai, which witnessed the steepest growth of rickshaws and the steepest fall in incomes (by 37%) compared to the other two regions.

To cope with reducing incomes, some drivers work longer hours or have taken up second jobs. Most, however, live with reduced incomes. To go back to pre-deregulation levels of earnings while maintaining the current operational working schedules, a driver will have to complete approximately an additional six short trips (3 km or less) or four long trips (4.4 km or more) or a combination of the two.

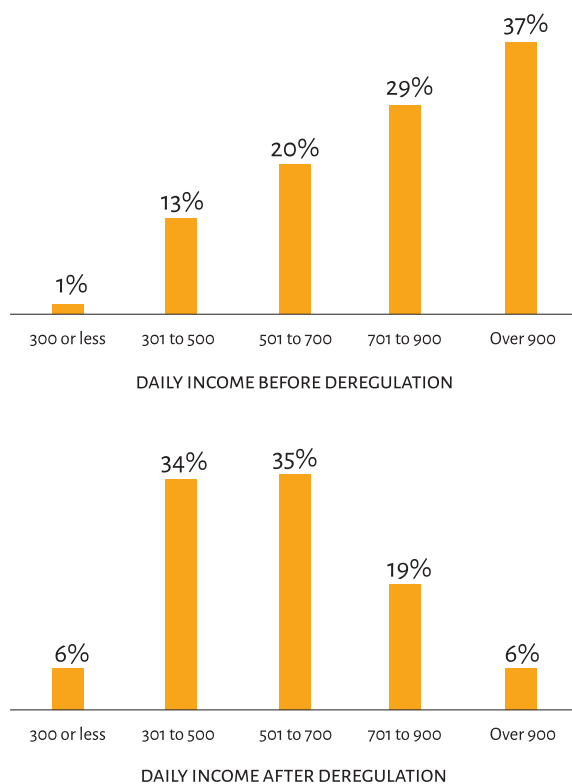


FIGURE 15: IMPACT ON INCOMES

It is worth mentioning that real incomes in the sector have been declining for a while. The last fare revision came into effect in 2016, but there has been no adjustment to cope with inflation since. The real minimum fare, when expressed as purchasing power, has fallen from INR 18 to a little over INR 15 since 2016 (WRI India, 2019).

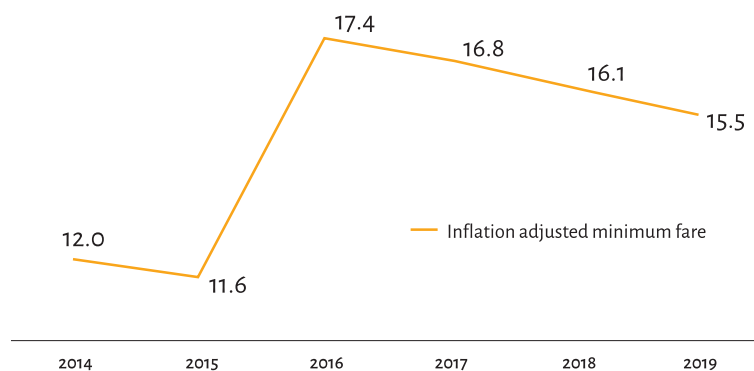


FIGURE 16: INFLATED ADJUSTED MINIMUM FARE

Rickshaw graveyards

Often, rickshaws were driven in shifts, and renter-drivers were abundant. It was common for individuals to own many rickshaws and hire drivers working on standard income arrangements. Deregulation led to more drivers purchasing their own rickshaws, leaving individual fleet owners with no one to lease their vehicles to. This led to many abandoning their rickshaws and associated monthly debt instalments. In many parts of Mumbai, especially under flyovers or large parking lots, abandoned rickshaws gathering dust is a common sight. This directly translated to Non-Performing Assets in the books of lending institutions (Society, 2019).

Areas of Potential Intervention

Through insights from this study and review of existing literature, we could identify a few potential interventions - some more immediate than others that need a comprehensive strategy.

Investing in better infrastructure:

There are 701 designated rickshaw stands in Mumbai, translating to roughly 1 stand for 278 rickshaws (Kurien, 2019). However, most of them do not have proper resting and sanitation infrastructure. Activities like laying pipes, road improvement, etc., have displaced many stands. As an immediate intervention, stands with proper resting and sanitation facilities need to be set up.

After a 2003 directive, all rickshaws eventually transitioned to CNG engines (Akie Takeuchi, 2006). As the fleet grew, fuelling stations did not keep up. There are about 82 stations in Mumbai, which translates to roughly one station for 2,400 rickshaws (Mahanagar Gas, 2020). It is typical for drivers to spend up to 60 minutes or more to refuel in the northern part of the city every day (Kurien, 2019). Further, stations in the north are also used by rickshaws from neighbouring satellite cities (like Mira-

Bhayandar). Developing a better network of CNG stations in Mumbai and other parts of the Mumbai Metropolitan Region (MMR) will reduce the time spent by rickshaws to refuel that can otherwise be used to ferry commuters.

Unionization is insufficient. Think organization.

To represent the common interests of drivers, unions were registered. Organizing drivers goes beyond unionization and includes consolidating drivers into a legal structure that improves efficiencies, brokers benefits and represents driver and commuter interests. Paratransit services in other countries have organized themselves into different entities and benefitted from it. For instance, in the Philippines, the local paratransit service called Jeepney organized themselves into cooperatives (Republic of the Philippines, 2020) that enabled the systematic upgrade of the fleet and financial assistance from the government. A similar structure called Savings and Credit Cooperative Societies (SACCOS) in Kenya led to cheaper insurance, financial assistance, the certainty of livelihoods and legal representation (D McCormick). Closer to home, Kochi set up a Limited Liability Partnership (LLP) called Kochi Wheelz United in 2017 that consolidated 161 private city buses (Mohan, 2017). The entity negotiated cheaper fuel rates through a bulk buying scheme and comprehensive insurance coverage at lower rates.

Through organization, similar challenges in the rickshaw sector can be addressed at least partially, if not fully. Some of these include:

Cost of capital: Although public schemes like Mudra provide cheaper capital, under 2% of drivers subscribe to it. Private financiers and Non-Banking Financial Companies (NBFCs) seem to be more popular sources of finance. The average borrowing rate stands at 19.4%. (WRI India, 2019).

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“As opportunities grow and transport services evolve, cities will sprawl and trips will get longer, more complex and multi-modal.”

Insurance: Insurance is the biggest one-time annual expense for drivers with premiums as high as INR 9,000. Claim processes are long and complex, and approved amounts are a fraction of expenses leading to fewer than 2% of claims (Khatua, 2017).

Welfare: Despite multiple demands from union bodies from the government to provide a social security net for auto-rickshaw drivers, there is none. Drivers do not have access to health insurance or pensions (drivers, 2019).

There already exists some suggested structure in the Khatua Committee Report (2017) that can address these challenges. The Committee recommends setting up an entity called ‘Maharashtra General Insurance and Welfare Corporation’ under the Corporation of Companies’ Act of 2013 to be headed by the transport department of the state with a board. The entity can address grievances around insurance and welfare provision. A detailed assessment of additional responsibilities can benefit drivers greatly.

Keeping Up With The Future

The Centre has made ambitious commitments towards electric mobility. Auto-rickshaws are a good place to start. A quarter of rickshaws in Mumbai (about 47,000) have two-stroke engines – most of which are older vehicles. These become the natural target for the first phase of an electric shift. This, however, needs to be complemented with specific policies and incentives, but merely having this information along with operational characteristics can support the electric goals of the state.

Final Thoughts

At this point, we would like to take a step back and consider the larger transport ecosystem of Mumbai. As opportunities grow and transport services evolve, cities will sprawl and trips will

get longer, more complex and multi-modal. This research on auto-rickshaws and people using them highlights the nuances of the trade. These insights can potentially allow for regulating authorities to address specific topics like welfare, incomes, service levels, gender mobility, etc., through policy measures.

There is little doubt that the mobility landscape in Mumbai and the MMR is chaotic. Investment in periodic data collection and analyses of different mobility services can bring sense and structure to the chaos and empower the administration to meet multiple goals of improving access, managing commuter aspirations and meet sustainability targets.

All graphics were generated by WRI India as a part of the Auto Rickshaw study, 2019.

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