

INTEGRATING
INTERMEDIATE
PUBLIC TRANSPORT
WITHIN TRANSPORT
REGULATION IN A
MEGACITY: A KOLKATA
CASE STUDY

RESEARCH REPORT



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ABSTRACT

Movement is integral to urban life and cities function off the energy of potential opportunity, growth and freedom. One of the cornerstones of an inclusive urban space is the availability of regular and affordable mobility opportunities for all citizens, irrespective of their socio-economic status.

This report focuses on the regulatory and operational aspects of Intermediate Public Transportation (IPT) in Kolkata, India. The Kolkata Metropolitan Region was chosen because it arguably has the most varied and complex set of transport systems, public and private, among the megacity regions in India, offering citizens ferries, trams, buses, trains, a metro, taxis, auto-rickshaws and cycle-rickshaws. Despite its status as a megacity, Kolkata has an unusual combination of high population density, low vehicular ownership and low road length – constraints that could be harnessed to create more adaptable, environment-friendly transportation alternatives.

This report focuses on the role of auto-rickshaws as IPT in the city as studies have demonstrated that auto-rickshaws in Kolkata serve a larger population of commuters at lower fiscal costs, and levels of environmental destruction and infrastructure usage. These findings are based on a mixed methodology of quantitative and qualitative research, including a pan-city survey and in-depth interviews of stakeholders in the political economy of IPT in Kolkata. The findings are strengthened by a GIS mapping of auto-rickshaw routes and a deep analysis of the regulatory and legal framework within which IPT systems function in Kolkata. This report argues that auto-rickshaws are viewed as a primary form of IPT because they are affordable, regular, safe, predictable and cover large majority of the city's inhabited geographic area.

ACRONYMS

CITU:	Confederation of Indian Trade Unions
CMP:	Comprehensive Mobility Plan
CMVR:	Central Motor Vehicles Rules, 1989
CNG:	Compressed Natural Gas
CO:	Carbon Monoxide
CO ₂ :	Carbon Dioxide
GIS:	Geographic Indication System
GO:	Government Order
INTTUC:	Indian National Trinamool Trade Union Congress
INTUC:	Indian National Trade Union Congress
INR:	Indian Rupee
IPT:	Intermediate Public Transport
KMA:	Kolkata Metropolitan Area
KMC:	Kolkata Municipal Corporation
LPG:	Liquefied Petroleum Gas
MLA:	Member of Legislative Assembly
MoRTH:	Ministry of Road Transport and Highways
MoUD:	Ministry of Urban Development
MP:	Member of Parliament
MVA:	Motor Vehicles Act, 1988
NUTP:	National Urban Transport Policy
PIL:	Public Interest Litigation
PVD:	Public Vehicles Department
RTA:	Road Transport Authority
SESRU:	Self Employment Scheme for Registered Unemployed
STA:	State Transport Authority
UMTA:	Unified Metropolitan Transport Authority
WB:	West Bengal

BOXES

Box 1: SESRU (Self Employment Scheme for Registered Unemployed) and Auto-rickshaws

Box 2: Narrative on Second-hand auto-rickshaw sale

FIGURES

Figure 1: Motor Vehicle Act categories with a focus on public service vehicle

Figure 2: Stakeholder Map of IPT in KMC

Figure 3: Role of union

Figure 4: Share of Routes Surveyed from different RTAs

Figure 5: Route irregularities

Figure 6: Share of Different Kinds of Deviations in Surveyed Routes

Figure 7: Type of Route Operations by Length

Figure 8: Percentage of income spent on auto-rickshaw expenses in a month

Figure 9: Route share and fare variance

Figure 10: Modal split of auto-rickshaw users

Figure 11: Problems faced by male and female passengers

Figure 12-13: Carbon Monoxide (CO) Emission of 2-wheelers and 4-wheelers compared to autos

Figure 14-15: CO and CO₂ emission savings done by auto-rickshaws by replacing four-wheelers

Figure 16: PCU savings done by two-wheeler and four wheeler owners by using auto-rickshaw instead

MAPS

Map 1: Kolkata Metropolitan Area

Map 2: Notified routes in KMC

Map 3: Surveyed routes

Map 4: Surveyed routes

Map 5: Cut routes

Map 6: Deviated routes

Map 7: Extended routes

Map 8: Different routes

Map 9: Mixed routes

Map 10: Auto-rickshaw Density (Licensed Autos)

Map 11: Spatial Pattern of Route Density

Map 12: Spatial Distribution of Disparate Routes

TABLES

Table 1: Auto-rickshaw Characteristics of Different Indian Cities

Table 2: City-Based Private Vehicle Ownership

Table 3: District-Based Private Vehicle Ownership

Table 4: Auto usage and expenditure in major cities

Table 5: Auto usage and expenditure in KMA

Table 6: Conditions fulfilled by IPT in KMC and KMA

TABLE OF CONTENTS		
I. INTRODUCTION	9	
II. OBJECTIVES	10	
III. GEOGRAPHIC SCOPE OF THE STUDY	11	
IV. METHODOLOGY	12	
1. Primary Data Collection	12	
2. Secondary Data Collection	14	
3. Workshop Consultation	14	
4. Limitations and Challenges	14	
V. OVERVIEW OF AUTO-RICKSHAW SYSTEMS IN INDIA	15	
1. The Importance of the Auto-Rickshaw in Urban Transport	15	
2. Institutional Framework of Regulation in India	15	
3. IPT and Kolkata	16	
VI. LEGAL AND REGULATORY FRAMEWORK	19	
1. Policy	19	
2. History of Auto-Rickshaw Policy and the KMC	20	
3. Regulatory position of battery-powered vehicles	21	
4. Ongoing debates on draft Road Transport and Safety Bill, 2015	21	
5. Proposed Amendments to the Motor Vehicles Act	21	
VII. POLITICAL ECONOMY OF STAKEHOLDERS IN THE IPT NETWORK IN KOLKATA	22	
1. Modes of IPT in the KMC and KMA Region: An Evolution of IPT Systems	22	
2. Formal and Informal stakeholders of IPT in Kolkata	23	
VIII. OPERATIONAL ASPECTS OF IPT IN KOLKATA	27	
1. Route Mapping	27	
IX. OPERATOR SURVEYS	33	
1. Affiliation with stand	33	
2. Income of Auto-Rickshaw Operators	33	
3. Fare Determination	35	
X. USER INFORMATION	35	
1. Prevalence	35	
2. Perceptions of convenience and safety	36	
XI. ENVIRONMENT AND CONGESTION ISSUES	37	
XII. KEY FINDINGS	40	
XIII. RECOMMENDATIONS	42	
1. Transportation Policy at National and State Levels	42	
2. Passenger Comfort and Facilitation	43	
3. Epilogue	44	
BIBLIOGRAPHY	45	
NOTES	46	
ANNEXURES	48	
Annexure 1: List of court judgements	48	
Annexure 2: Case summary of Arun Barua v. State of West Bengal	49	
Annexure 3: Surveyor Manuals	51	
Annexure 4: Beltala RTA Auto-Rickshaw Permitted Routes (Notification No. 2027-WT/4M-23/95)	64	
Annexure 5: Travel Statistics for Private Vehicle Owners Using Auto-Rickshaws in Kolkata	70	

I. INTRODUCTION

Movement is integral to urban life and cities function off the energy of potential opportunity, growth and freedom. One of the cornerstones of an inclusive urban space is the availability of regular and affordable mobility opportunities for all citizens, irrespective of their socio-economic status. In the cities of the Global South, formal transportation services are often unable to serve the burgeoning demand. A wide array of informally provided modes of transport, usually referred to as Intermediate Public Transport (IPT) or paratransit systems including cycle rickshaws, auto-rickshaws and mini buses have stepped in, often on a wide scale, to fill the gaps and meet mobility needs (Parnell and Oldfield, 2014) (Thirumurthy and Yamamura, 1986). Indian cities follow similar trends and the variety of modalities of IPT available on Indian roads is a testament to this reality.

This report seeks to add to the growing literature regarding transportation in India, with a specific focus on auto-rickshaws as a form of IPT in Kolkata and its peripheries. The Kolkata Metropolitan Region was chosen because it possesses arguably the most varied and complex set of transport systems, public and private, among the megacity regions in India including several modes such as ferries, trams, buses, trains, metro rail, taxis, auto-rickshaws and cycle-rickshaws. Despite its status as a megacity, Kolkata has an unusual combination of high population density, low vehicular ownership and low road length (Fouracre and Maunder, 1979) (Centre for Science and Environment, 2011) – constraints that could be harnessed to create more adaptable, environmentally sustainable transportation alternatives.

In fact, earlier studies indicate that Kolkata's auto-rickshaws have achieved some success in providing a high frequency, doorstep-to-doorstep, affordable and efficient alternate to the private vehicles. (Switch On, 2013) (Chakrabarty and Gupta, 2015.) This could be partially attributed to the unique system of pre-determined routes and strong ties to formal, informal and semi-formal networks that create and regulate IPT systems in the city. The primary intended outcome of the project has been to delve deeper and provide a grounded understanding of the de-jure (regulatory) and de-facto (operational) aspects of this IPT system in Kolkata (India).

This report offers a detailed description of the regulatory architecture and the role of formal and informal stakeholders that are key to the IPT system in Kolkata. It offers a documentation of user and operator experiences as well as a GIS mapping of auto-rickshaw routes in the city. Thus, it provides a framework for understanding the efficiencies the current system offers as well as highlighting gaps that need to be addressed.

We find that, while IPT is often perceived as performing supportive functions and last mile connectivity, auto-rickshaws in Kolkata are viewed as a primary form of public transport owing to their being regular, affordable, safe and covering a majority of the city's geographic region. In our analysis, the current regulatory system for auto-rickshaws in Kolkata has been a double-edged sword. While the controlled permits and system of shared autos as opposed to on-contract modes has essentially converted auto-rickshaws into mini-buses with standardised routes and public carriage; the closed-permits act as an entry barrier and give rise to irregular and illegal actions on the routes. If IPT is to be integrated with the overall transportation system in the long run, as it must for Kolkata to have efficient mobility, the system of regulation would need to take into account the current functioning of the routes in Kolkata and utilise this information to strengthen them and make them more effective. This might require formalising certain informal aspects of the IPT system while leaving others to be informally regulated to achieve inclusion and efficiencies.

Though the research makes forays into understanding emerging IPT systems, especially electrically operated 'totos' in the periphery of the city, further studies would be required to explore the impacts of competing IPT modes in the Kolkata Metropolitan Area and suggest appropriate regulatory responses. Comparative studies of IPT modes across India's megacity regions could also be useful to explore the relationship between aspects of regulation and operation in a megacity context, especially to achieve comprehensive mobility planning as visualised in the National Urban Transport Policy, 2006 and the proposed Road Transport and Safety Bill.

II. OBJECTIVES

A certain set of objectives were envisaged at the inception of the study:

Regulatory:

- A granular and nuanced documentation of the *de jure* (pertaining to the law) and *de facto* (pertaining to facts or the reality of the operations) regulatory landscape in Kolkata megacity region, with a focus on auto-rickshaws.
- An understanding of the regulatory experience of both IPT service providers and users.

Route mapping:

- An analysis of the IPT routes planned and prescribed by the local regional transport offices and the functioning routes on the ground, through GIS enabled surveys.

Operational:

- Documentation of innovative self-organisational models for IPT services, especially in provision of a network of services for the city, rather than a limited routes system.

- An understanding of the user experience of auto-rickshaws - what works and doesn't.

Environmental:

- An understanding of the environmental impacts of IPT systems in Kolkata, towards building a more energy efficient transportation systems.
- The contribution of IPT in increasing the use of non-private transportation, especially among the 'middle class', thus supporting lower-carbon mobility in cities.

Social:

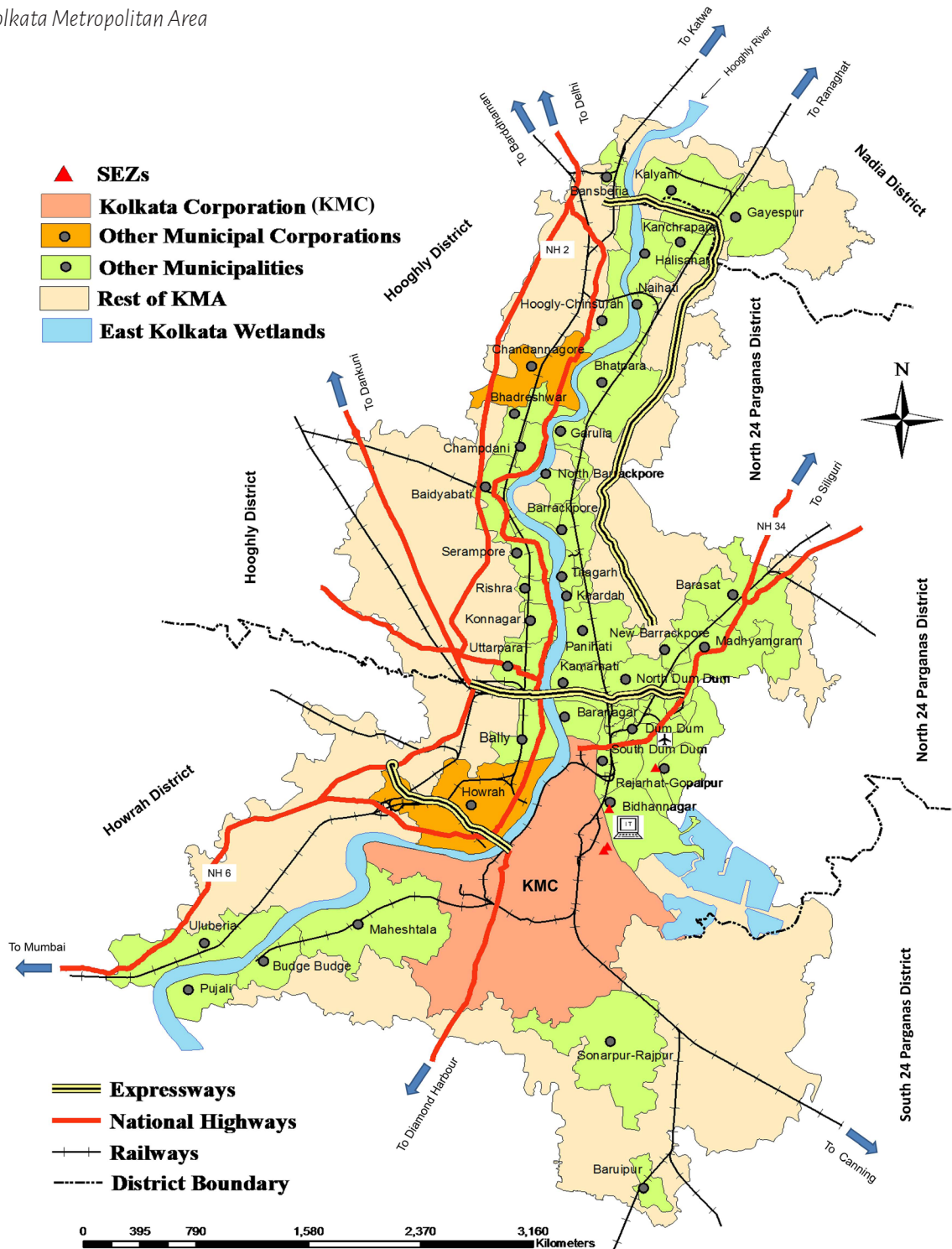
- A gendered perspective on mobility, security and economic viability of the system.
- An understanding of the livelihood options that the auto-rickshaws provide.

III. GEOGRAPHIC SCOPE OF THE STUDY

The project covers the Kolkata Metropolitan Area (KMA), with a population of over 14.8 million people spread over approximately 1900 sq. km. across five districts – Hooghly, Howrah, Nadia, North 24 Parganas, and South 24 Parganas – including three municipal corporations of Kolkata, Howrah and

Chandannagore) (Kolkata Metropolitan Development Authority, 2011). The area within the Kolkata Municipal Corporation (KMC) is the primary focus of the study, while the other districts were studied qualitatively to understand differences in operations.

Map 1: Kolkata Metropolitan Area



Source: CPR report on megacities, 2013

IV. METHODOLOGY

A web of institutions, both formal and informal, oversee and control IPT within this vast geographic space. Policy is primarily determined by the State Transport Department and enforced by the various Regional Transport Authorities (RTAs) in coordination with the Traffic Police at the local level. Within this framework, a more complex and informal interaction between the transport unions, the operators and ultimately the users of transportation determines the way auto-rickshaws operate in the city. All of these are occasionally mediated by the judiciary (the Calcutta High Court) when disputes about policy, regulation or operation are brought before it by any of the aforementioned players.

In order to understand multiple perspectives and grasp the context in detail, the research used a combination of quantitative and qualitative methods. A team stationed in Kolkata collected primary data from the field, including a GIS mapping of the prescribed routes and their functioning on the ground. A detailed study of existing literature on IPT and policy/legal systems also formed an integral part of the research.

1. Primary Data Collection

a. Subjects

While conceptualising the project, State authorities and auto-rickshaw operators were envisioned as the primary subjects of the surveys and interviews, while users and affiliated bodies were proposed to be studied from secondary data. However, a pilot study established that primary data was required from a variety of stakeholders including operators, users, as well as local auto-rickshaw stand managers called 'Starters'.

The team in Kolkata has made approximately 10 visits to RTA offices in Kolkata in order to 1) collect information regarding the route numbers, the cap on permits and other regulatory data and 2) conduct semi-structured interviews with the RTA officials.

b. Technology

The project used various modes to record data, and has made extensive use of technology while doing so, including using tablets to conduct surveys. This allowed for an instant uploading of filled survey forms to the database, and a real time monitoring and data analysis. This improved the quality of data collection, as faulty survey questions were rectified and missing data immediately noticed.

Additionally, the tablets enabled the field team to use GPS coordinates to record exact locations of routes, stands and other data. This enabled the creation of maps and Google Earth compatible files that has provided the project with visual analysis tools.

c. Surveys

The project utilised a mixed methodology of gathering and analysing qualitative and quantitative data.

- **Route Mapping:** A route mapping exercise was at the core of this study, and provided the study with original data essential to understand the operational practices of IPT in the city. In order to track the de-facto routes used by the auto-rickshaws and superimpose them on the permitted routes, the survey used GPS coordinates to record a little under 200 auto-rickshaw routes. The route maps currently covered by the survey (see maps 2 and 3) illustrate the routes covered including the stop locations. The routes cover most of the KMC area and some part of the peripheral districts. For the purpose of analysing the coverage of these routes, we used a buffer of 500 m on either side of the road along a defined route. This is based on our understanding of the average distance people walk to take an auto-rickshaw in Kolkata.

- Quantitative surveys

Auto-rickshaw Operator Survey: Through this survey, the team gathered basic information from auto-rickshaw operators about their vehicles, the routes, permissions and finance. These interviews were conducted on an individual basis. A little under 140 forms were collected.

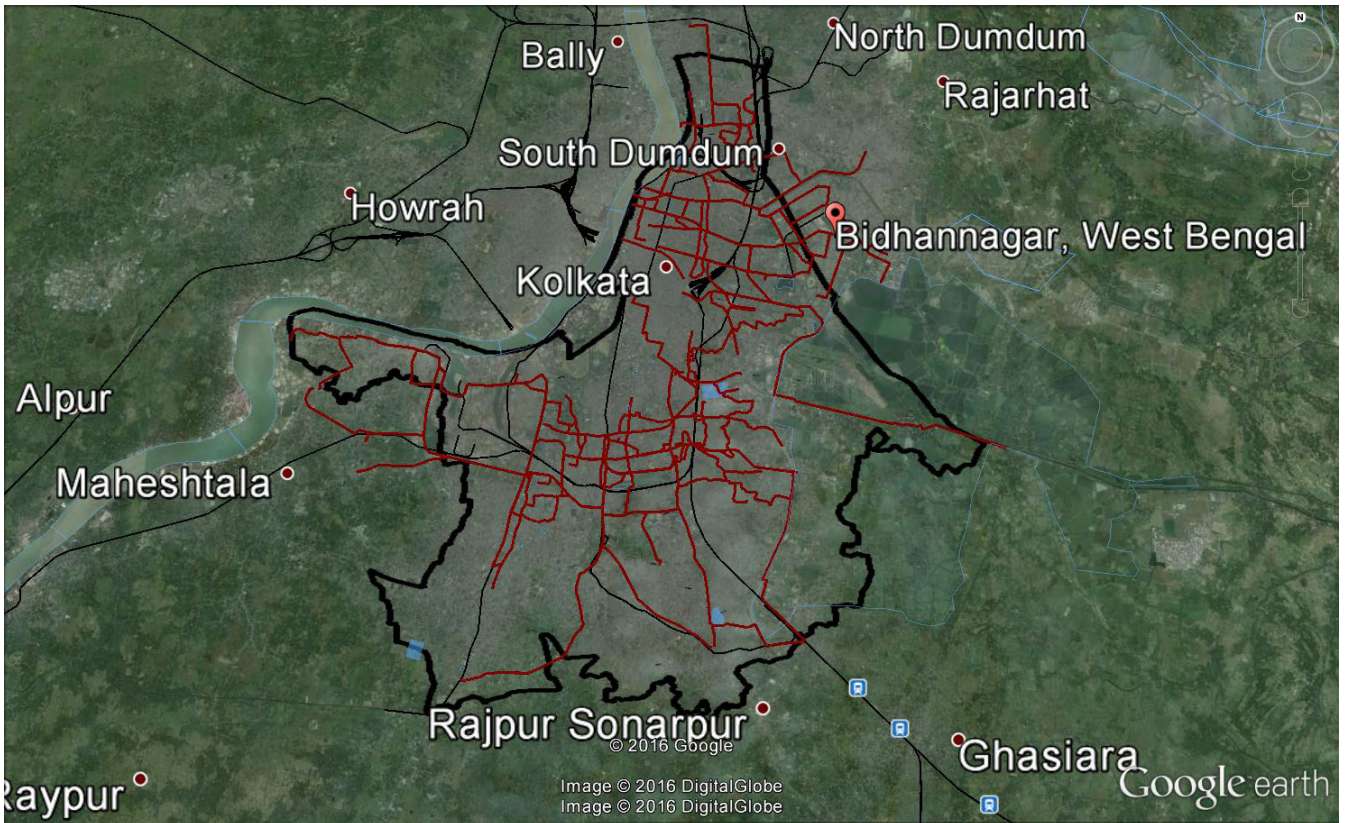
Auto-rickshaw User Survey: This survey gathered basic information about the general travel details of users, mobility related expenditure and their reasons for using various forms of transport. The team collected over 270 forms.

Starter Survey: Starters are individuals who are in charge of the auto-rickshaw stands. These surveys were conducted on an individual basis to garner information about the rules of the stand and how they are formulated. The team has collected under 24 forms from Starters.

- Qualitative

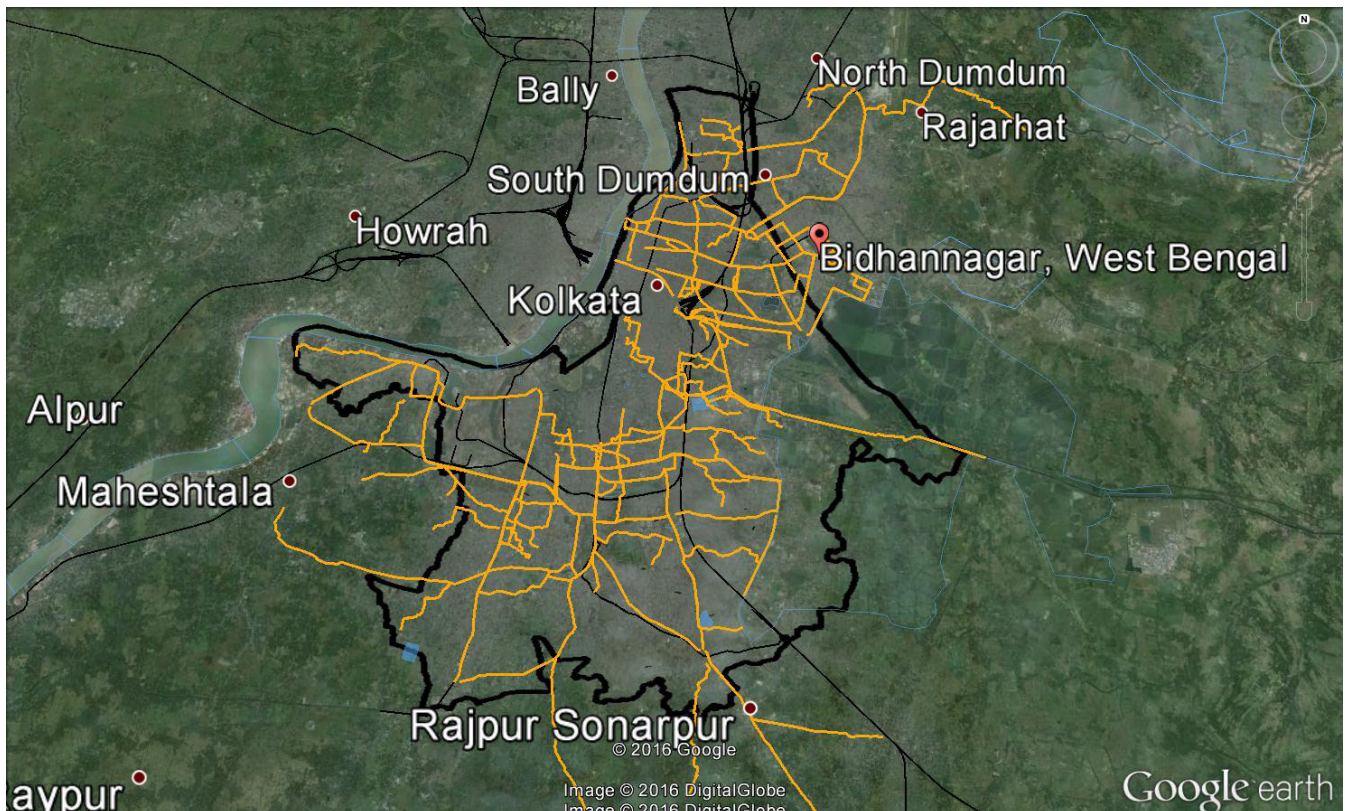
Focus Group Discussions: The FGDs comprised questions that were asked collectively to groups of auto-rickshaw operators to add granularity to the data collected as part of the surveys.

Map 2: Notified Routes in KMC



Source: Survey data for this study

Map 3: Surveyed Routes



Source: Survey data for this study

These were semi-structured interviews, and the team collected over 40 forms FGDs.

Interviews: The project used in-depth interviews and interactions with State government officials, local government authorities and other organisations that are involved with para-transit systems. These included:

- State Transport Department
- Road Transport Authorities
- Auto-rickshaw Unions
- Traffic Police

2. Secondary Data Review

In the context of IPT in Kolkata, the secondary review included:

- Legal framework and regulatory systems
- Literature review of IPT studies in India, along with a specific focus on Kolkata
- Understanding transportation usage in the region using NSS data
- Newspapers reports

This formed a substantial part of contextualising and analysing the data. While findings culled from secondary data sources have already been discussed in Section 2, the legal and regulatory framework is described in Section 5 of this report.

3. Workshop Consultation

The team presented the data and findings of the project on December 15, 2015 in Kolkata as a means of getting feedback from the academic community. The consultative workshop was held in the CUES premises. The workshop included 30 participants who work on issues of labour, unions, transport and members of the police force and provided necessary insights into the history and contextualised the status of IPT in Kolkata. The team presented their findings to the consultative group as the legislative and policy background to the project and a delineation of the qualitative and quantitative data, from both the city and the periphery of the city. The police provided input on routes and engagement with the formal and informal institutions that govern the IPT system in Kolkata. The academics and labour representatives provided clarifications on the historical context within which the policies regarding transport in Kolkata have been created. They were also able to provide feedback on the logistics of IPT in the periphery. In terms of quantitative data, the participants were able to provide feedback based on their older studies, and the extent of GPS mapped routes along with the list of RTA routes in this project

brought great fodder for dialogue on theorising the notion of irregular and illegal routes in Kolkata's IPT project.

4. Limitations and Challenges

The survey team found it challenging to find willing respondents among auto-rickshaw users, who are usually in a hurry and unwilling to give time to answer questionnaires. Finding willing respondents among auto-rickshaw operators was challenging as they needed to be convinced that their earnings will be unaffected if they spare time to answer survey questions. Data from auto-rickshaw operators was largely collected while the auto-rickshaw operator was on duty. Auto-rickshaw operators were given the option to stand and talk or to continue working while the surveyor was interviewing them. As Kolkata has a shared auto-rickshaw system, there often tended to be other passengers on board who were not a part of the study. The team found that this hindered the openness of the operators with regard to finance-based questions, especially regarding income. It was often difficult to get the operator to specify their daily or monthly income, or the sources for financing loans, among other financial questions. Future studies can work towards ensuring that operators are in spaces where they feel comfortable to speak about these points.

Field researchers reported difficulties in conducting tablet-based surveys during the rainy season. The field research period of the project also faced delays due to excessive rains in Kolkata. The project envisioned a better understanding of the permitting process and sought government data on pollution control levels for vehicles from the Regional Transport Authorities (RTAs).

While the team made repeated visits to various RTAs to get this information, only one provided us with a comprehensive list of routes and number of permits allowed on each route. This RTA, at Beltala, was the primary provider of permits and allowed for a strong starting to the project. The other RTAs were less forthcoming and this reduced the effectiveness of the data collected. Given that Beltala RTA oversees a significant portion of the KMC area, the quantitative data focused on the KMC while the qualitative data amassed from the FGDs covered the KMA.

The RTAs were unwilling to share data on the 'Pollution Under Control' (PUC) information, as were the private organisations that collected the data with the authorisation of the state. If the team had access to this information, the analysis would have been more directly linked to the present ground reality.

V. OVERVIEW OF AUTO-RICKSHAW SYSTEMS IN INDIA

1. The Importance of the Auto-Rickshaw in Urban Transport

Several studies have demonstrated that IPT, and auto-rickshaws in particular, play an important role in the transport needs of Indian cities (EMBARQ 2013, ITrans 2009). According to Fouracre and Maunder (1979), depending on a city's size and transport characteristics, IPT modes may fall under two broad categories: 'contract carriage services' and 'informal public transport services'. While the former are flexible demand-based services where the passenger determines the destination, the latter are characterised by shared fixed-route services with intermediate stops for boarding and alighting. While most Indian cities have auto-rickshaws operating on the contract carriage model, Kolkata is unique in that all auto-rickshaws are required to operate on the latter model as is discussed in detail later in this report.

The popularity of motorised auto-rickshaws is evidenced by the fact that the production of this vehicle has doubled between 2003 and 2010 and an estimated 4-16 auto-rickshaws serving every 1000 people in Tier I and II cities in India (EMBARQ, 2013). While this study demonstrates that the Kolkata Metropolitan Area utilises the auto-rickshaw, the landscape is much more varied in the periphery. There are regulatory and financial reasons for this variation, as is discussed below.

IPT services are understood as largely competitive and affordable for the urban poor (CPPR, January, 2015). Besides being affordable to users, auto-rickshaws serve a larger population of commuters with lower environmental costs and infrastructure usage. One study in Kolkata demonstrated that while auto-rickshaws consumed only seven per cent of the studied road area, they supported seven percent of the city's population. When contrasted with the statistics that private vehicles that consumed 29 per cent of the road share but supported only six percent of the population, the benefits of IPT systems become quite clear – especially in a road scarce city like Kolkata. (Chakrabarty and Gupta, 2015) (Switch On, 2013)

2. Institutional Framework of Regulation in India

Permits for auto-rickshaws in all the cities are regulated by the Regional Transport Authorities (RTA), established by respective state governments. A permit is a document issued for an auto-rickshaw, authorising its use as a transport vehicle (CiSTUP, 2012). An auto-rickshaw can only legally ply on the roads after receiving a permit. There are two kinds of permit systems, which vary by city: open permit and closed permit.

Closed Permit: In this system, auto-rickshaw permits are not freely available at all times, but their numbers are capped and controlled by governing transport authorities (CiSTUP, 2012). In general, cities with closed permit systems have higher shares of renter operators, due to the unavailability of new permits and escalation of permit costs, while cities with open permits have higher shares of owner operators (EMBARQ, 2012) (see Table 1).

The closed permit system restricts the free entry of auto-rickshaws into the market, hence attempting to control the supply and traffic congestion on the roads. In reality the 'closed permit system' does not succeed in controlling numbers; instead, this contributes towards illegal auto-rickshaw operations, permit mafias, the black market and added costs to procuring an auto-rickshaw. Closed permits are found to perpetuate systems of illegality, including middlemen, corruption, and exploitation of poor (CiSTUP, 2012). A 2013 study found real permit costs in Mumbai to be INR 40,000-90,000 as opposed to the official cost of a mere INR 100 (EMBARQ 2013). However, this study finds that in the specific case of Kolkata, the closed system could be viewed in a positive manner owing to special regulatory provisions that create a route based system.

Open Permit: In this system, there is no restriction on issuing permits to the auto-rickshaws. The numbers are not capped, freely allowing the entry of auto-rickshaws into the market. While open permit systems may be more able to handle supply and the issue of pricing of the permits (CCF, 2011), planning and congestion issues created by a large number of vehicles need to be addressed.

Table 1: Auto-Rickshaw Characteristics of Different

City	Population in Millions	Permit Policy	Engine	Fuel	Percentage of renter operators
Delhi	13.5	Closed	4 stroke 90–95%	CNG 100%	Around 60 - 70%
Mumbai	18	Closed	2 and 4 stroke 50%	CNG 100%	Around 50%
Rajkot	1.5	Open	2 stroke 80% - 90%	CNG 95%	Around 25%
Pune	5.5	Closed	2 stroke 90% - 95%	Petrol 90% CNG 10%	Around 65%
Surat	3.3	Open	2 stroke 90% - 95%	CNG 100%	Around 50%
Jaipur	3.2	Closed	4-stroke (90%)	Diesel 90% LPG 10%	More than 75%
Kolkata	4.6 ¹	Closed	4 stroke 100%	CNG 100%	Over 51 % ²

Source: (EMBARQ, 2010) and this study

3. IPT and Kolkata:

“Kolkata was designed as a city based on pedestrian movement and mass transit system in the form of tram. Cycle rickshaws and hand pulled rickshaws supported the need of the city considering the narrow streets and the required manoeuvrability.” (IDFC & SGIS, 2008, p. 55)

Historically, Kolkata has had several forms of IPT including cycle rickshaws, hand-pulled rickshaws, taxis and auto-rickshaws. While hand-pulled rickshaws have been gradually eliminated and new forms like the totos are emerging in the KMA of late, only taxis, cycle-rickshaws and LPG auto-rickshaws have been permitted to ply in Kolkata.

The importance of IPT in Kolkata has been underlined by various studies, including the 2008 Comprehensive Mobility Plan of Kolkata Metropolitan Area (CMP). The CMP suggests that auto-rickshaws played a significant role as far back as 2004,

comprising about 46.5% of all para-transit trips of which a majority were intra-zonal (short distance). The CMP projected an increase in auto-rickshaw passenger volume from 15 lakh (1.5 million) in 1998 to about 23 lakh (2.3 million) in 2011 and 27 lakh (2.7 million) in 2016.³ The popularity of these forms of transport is supported by the low private vehicle ownership in Kolkata. This information has been reinforced by our analysis of data from the National Sample Survey 72nd Round (Sch. 1.5) and Census 2011.

As per the 2011 Census, 12% of households in Kolkata metropolitan region own 2-wheelers, while 8% own 4-wheelers. The comparative figures for Delhi are 39% and 21% respectively. Areas surrounding Kolkata have lower ownership of 2-wheelers than the city core. While private vehicle ownership in most megacities is lower in the periphery as opposed to the core, this difference is most pronounced in Kolkata, where only 5%

Table 2: City-Based Private Vehicle Ownership

Cities	% HH Two-wheelers Ownership	% of HH Four-wheelers ownership	Total Number of Private Vehicles
Delhi	39	21	19.5
Bangalore	46	19	13.7
Hyderabad	49	14	10.2
Ahmadabad	53	14	7.8
Greater Mumbai	16	13	7.6
Chennai	47	13	6.6
Pune	59	21	5.9
Kolkata	12	9	2.0

Source: census 2011, Note: only urban regions have been calculated.

Table 3: District-Based Private Vehicle Ownership

Metropolitan Region districts	% HH Two-wheelers Ownership	% of HH Four-wheelers ownership	Total Number of Private Vehicles
Mumbai	19	11	14.5
Bangalore	45	18	14.3
Chennai	46	11	13.5
Hyderabad	45	12	12.7
Kolkata	12	5	7.0

Source: census 2011; Note: only urban regions have been calculated in the graph above.

households in the Kolkata Metropolitan Area (KMA) own 4-wheeled vehicles as opposed to 9% in Kolkata Municipal Corporation (KMC). Tables 2 and 3 demonstrate the comparison across megacities and megaregions. Kolkata city and the metropolitan area has the lowest number of privately owned vehicles.

This scenario likely indicates higher usage of public transport and IPT in Kolkata, both in peripheral and core areas. Questions around whether people use public transportation or IPT systems, and whether these choices are made due to ease of availability, lower costs or convenience, form part of the survey.

While the CMP recognises the importance of IPT in the city's overall transport planning, and devotes a full chapter to "intra paratransit" (sic), some of its recommendations regarding IPT are based on an understanding of ground realities in 2007 and earlier, and may need revision in light of recent developments, the understanding of some of which has been enhanced by this report. For instance, the primary issue at the time was pollution. Starting 2007, auto-rickshaws in the KMA have progressively switched over from various liquid fuels to significantly cleaner LPG, under the directions of the Calcutta High Court in 2008. (Bhattacharjee, Neogi, and Das, 2011; Ghosh and Somanathan, 2013)

"Safety and security of the passengers" of the city has been presented as one of the primary reasons for restricting the movements of auto rickshaws. Here, it is imperative to examine

whether the statistical reading of road safety supports the argument that auto-rickshaws are unsafe. The number of road accident fatalities in West Bengal and Kolkata in particular are significantly low. According to 2013 data from the National Crime Records Bureau, Kolkata is registered as the third most densely populated city with 8.8% of all the population of mega cities but reported the lowest share of accidental deaths at 1.3% of national data. The same data ranked West Bengal lowest among all states in terms of deaths caused by three-wheeled vehicles in India, accounting for just 1.9% of the total. The statistics for Kolkata were even lower with only 8 recorded fatalities (or 1%) caused by auto-rickshaws in 2013, compared to the 1.2% of road fatalities caused by cars in the city (National Crime Reports Records Bureau, 2013). This data shows that lack of safety is not an adequate critique of auto-rickshaws in the context of Kolkata.

As the study will demonstrate, auto-rickshaws continue to remain a significant player in the IPT space in Kolkata, and on many routes, also serve as a primary mode of public transit. In addition, other modes of transport have evolved in the KMA, particularly e-rickshaws, which regulatory authorities are still grappling with. In light of these changes, it is necessary to create an enabling regulatory and operational environment to give auto-rickshaws their rightful space in the transport planning architecture of Kolkata, in furtherance of the CMP's objectives for reducing congestion and pollution, and increasing usage of public transport.

Table 4: Auto Usage and Expenditure in Major Cities

Cities	Per Capita Exp/month (Rs.)	% to HH Total Transport Exp	% of HH reporting
Delhi	40.1	12.0%	61.8%
BBMP	36.3	10.7%	43.2%
GHMC	43.5	16.3%	48.6%
Ahmedabad	19.9	28.3%	42.6%
Greater Mumbai	49.3	17.5%	50.6%
Chennai	24.7	13.6%	30.3%
Pune	24.0	8.1%	33.4%
Kolkata	32.0	15.0%	62.9%
All Urban	20.6	16.3%	43.2%

Source: Computed from unit level records of NSS 72nd Round (Sch. 1.5)

The importance of IPT in India, and Kolkata is clearly demonstrated by the tables on auto-rickshaw usage and expenditure in major cities (Table 4) and auto-rickshaw usage and expenditure in KMA (Table 5). The main takeaway is that almost 63% of KMC and 68% of the KMA are reliant on IPT. Amongst the metropolitan cities in India, Kolkata had the highest usage of auto-rickshaw reliance and in the KMA, some

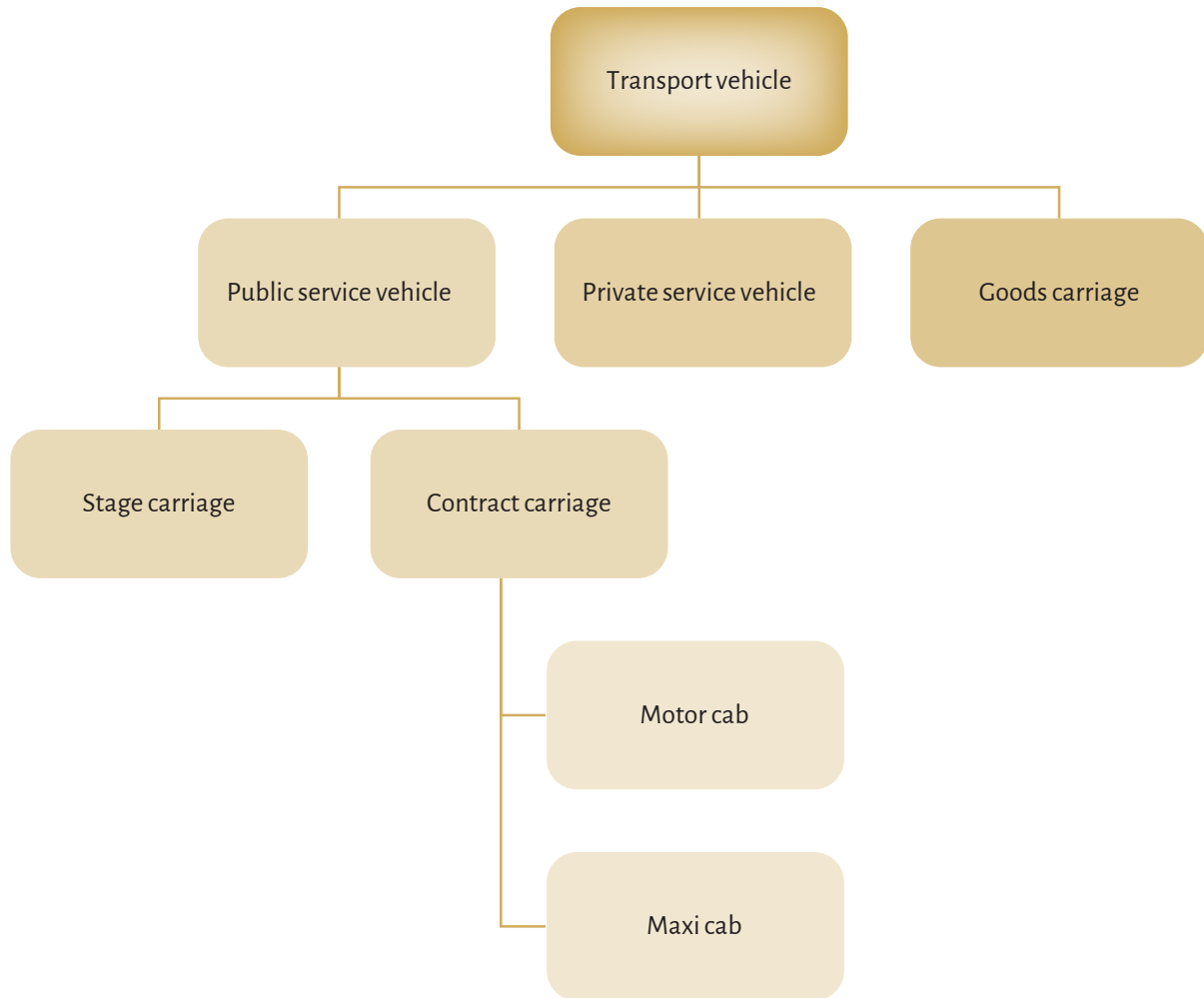
of the areas were over 90 percent reliant on auto-rickshaws. In terms of expenditure, the percentage of household expenditure on auto-rickshaws in Kolkata was mid-range, when compared to other cities, despite the higher reliance on this system. This data further buttresses the argument that auto-rickshaws are a well utilised and economic mode of transportation that warrants further study and improvement.

Table 5: Auto Usage and Expenditure in KMA

KMA Cities	Per Capita Exp/month (Rs.)	% to Total Transport Exp	% of HH reporting
Rajarhat Gopalpur	58.91	33.29%	92.18%
South Dum-Dum	55.74	24.98%	55.91%
Howrah	13.02	11.01%	50.26%
Kolkata	32.00	14.99%	62.88%
Maheshtala	10.71	37.16%	78.66%
Rajpur Sonarpur	26.21	20.10%	65.91%
All KMA Cities other than Kolkata	30.71	22.59%	67.90%

Source: Computed from unit level records of NSS 72nd Round (Sch. 1.5)

Figure 1: Motor Vehicle Act Categories with a Focus on Public Service Vehicle



VI. LEGAL AND REGULATORY FRAMEWORK

The current operation of the IPT system in Kolkata is deeply intertwined with its regulation and the process of litigation and judicial intervention in the existing policies in the area. Auto-rickshaws emerged on Kolkata roads only in the late 1980s as an employment generation scheme (see Box 1) and created competition for the taxis. The response of the state was to encourage a compartmentalised system of various modes of transport that did not consistently compete with each other and provided complementary transportation options. This section will delineate the various laws, policies, notifications and judicial processes that have shaped the current contours of IPT regulation in Kolkata. In addition to auto-rickshaws, a variety of other forms of IPT, including the battery-operated 'totos' have entered the transportation landscape. This section will address regulatory aspects of these as well.

1. Policy Overview

At the national level, the Ministry of Road Transport & Highways (MORTH) is responsible for setting the regulatory standards of motor vehicles in India. Parliament has enacted the Motor Vehicles Act (MVA), 1988 and the Central Motor Vehicles Rules (CMVR), 1989 have been notified by MORTH with reference to the Act. Along with these rules, the respective State governments have also framed Rules for the regulation of motor vehicles and road transportation in each state.

The overall policy framework for transportation in cities is provided by the 'National Urban Transport Policy' (NUTP), formulated by the Ministry of Urban Development (MoUD) in April 2006 and comprehensively revised in February 2014, in response to growing concerns regarding urbanisation and motorisation and ensuing the challenges in accessibility, mobility, and escalating health and safety risks from excessive

pollution and traffic accidents. The NUTP has recently identified the important role of para-transit systems in urban transport and has drawn a policy vision for para-transit systems as well.

Section 66 of the MVA, 1988 requires owners of motor vehicles to obtain a permit from the jurisdictional State Transport Authority (STA) or Regional Transport Authority (RTA) before using their vehicles as transport vehicles in public places. As figure 1 demonstrates, this study is primarily concerned with 'Public Service Vehicles',⁴ which can be further divided into two types of permits for passenger transport vehicles viz. 'Stage Carriage Permits' and 'Contract Carriage Permits'.⁵ The RTA is permitted to attach a number of conditions to a contract carriage permit, including specifying the route, fare structure and number of passengers.⁶ In West Bengal, this licensing process is detailed in Rules 87-136 of the West Bengal Motor Vehicles Rules, 1989 (the WB Rules, 1989) which also lay down the powers of the State and Regional Transport Authorities in this regard.

The State Government of West Bengal engages with issues regarding transportation, especially with reference to licenses, permits, renewals and other aspects of through the Department of Transport, run by the Minister of Transport. The Motor Vehicles Department regulates operations at the district level. In addition to the RTAs there are independent motor vehicle offices in seven densely populated sub-divisions. These are known as additional regional transport offices.

The draft National Road Transport and Safety Bill, proposed by MoRTH in 2015, is expected to provide a revised architecture for transport regulation in the country. Amendments to the MVA were also pending in Parliament as of 2016. A discussion on how these are likely to impact IPT transportation systems is included in the conclusion and recommendations section of this report.

2. History of Auto-Rickshaw Policy and the KMC

The regulation of auto-rickshaws under the MVA, 1988, occupies a particular niche that lies somewhere between stage carriages (buses) and contract carriages (taxis). This is broadly in consonance with the structure of intermediate public transport, which is meant to fill the interstices of mainstream public transport. Recent developments in transportation regulation in West Bengal, however, have posed challenges to this structure, and regulatory authorities have grappled with the question of how to incorporate them.

Auto-rickshaws in Kolkata were initially operated similar to taxis, using motor-cab permits granted by the RTA, with metered fares and no fixed routes. Subsequently, lobbying from the taxi

unions prompted a change in regime to the present system of fixed routes and non-metered fares, which received legislative sanction through an amendment to the WB Rules in 2003. This amendment inserted Rule 120(4),⁷ which provides certain special conditions in respect of a permit for auto-rickshaws. In particular, these include that (i) the contract carriage permits for auto-rickshaws are to be granted only for specified fixed routes approved by the RTA outside which the auto-rickshaws are not permitted to ply; (ii) fares for auto-rickshaws are to be fixed by the State Government and there will be no metering system.

This rule has been supplemented with notifications issued by the State Government, which have largely resulted in a restriction on the issue of permits to auto-rickshaws, or an imposition of restrictions on the operation of auto-rickshaws in the KMA.⁸ The first of these notifications was issued in 2004, and clarified that auto-rickshaws could no longer be treated as maxicabs for the purpose of issuing contract carriage permits. It also restricted the issue of permits to auto-rickshaws within the KMA as well as for inter-district conveyance, but permitted other RTAs to issue permit.⁹ The 2004 notification was challenged in the Calcutta High Court in January 2010 where it was argued that the RTAs could not reject applications for auto-rickshaw permits as this level of authority was not specified in the MVA, 1988 or the WB Rules. This was followed by a fresh notification in 2010, which specified six conditions for the grant or rejection of an auto-rickshaw permit. It provided, among other things, that no new auto-rickshaw permits would be granted (a) in the Kolkata Metropolitan Area; (b) routes and areas covering more than one district; (c) on National Highways, except to cross them at particular points (d) covering more than 30% of existing bus routes. It also restricted auto-rickshaws from plying on State highways for more than 3 km at a stretch.¹⁰ After 2010, the West Bengal STA has issued various notifications specifying the list of routes for auto-rickshaws to operate in various districts, including the KMA, which continue to be in force as on date.¹¹ Thus, auto-rickshaws in the KMA are issued contract carriage permits, but operate on fixed routes, with fixed fares for stops, similar to stage carriages.¹²

Interestingly, all the Notifications issued in connection with auto-rickshaws are prefaced with similar language, referring to the "congestion of road traffic and safety and security of the passengers" as justification for imposing restrictions on the movement of auto-rickshaws. No similar restrictions exist in respect of bus and taxi permits, suggesting that auto-rickshaws, at least on paper, are subject to more stringent regulation in this regard.

3. Regulatory Position of Battery-Powered Vehicles and the KMA

One change in the transportation landscape in KMA has been the proliferation and increasing popularity of battery-powered motorised vehicles, commonly known as 'e-rickshaws' and in the KMA, as 'Totos' that operate in a grey area of regulation. As will be seen in section VII, these emergent forms of IPT have been one of the primary markers of difference between how IPT systems function inside and outside Kolkata's city limits. The MVA, 1988 did not specifically recognise e-rickshaws as a distinct category, given that they were not in common use in 1989. In the second decade of the 21st century, they became a popular mode of local transport and a means of employment in several Indian cities, including Delhi and Kolkata. However, the absence of a licensing or permit system under the MVA, 1988 and the Rules thereunder meant that they operated largely as an unregulated medium, or in some cases with 'permits' issued by local bodies, akin to cycle rickshaws.

The operation of e-rickshaws in Delhi was challenged as a public interest litigation (PIL) before the Delhi High Court.¹³ In 2014, the Delhi High Court held that e-rickshaws were motor vehicles under the MVA, 1988, and all the provisions of the MVA, 1988 applied to them. Consequently, the operation of e-rickshaws without appropriate licenses, permits and third-party insurance as mandated under the MVA, 1988 was held to be illegal. Following this judgment, the Delhi Traffic Police began impounding e-rickshaws that were operating in Delhi. This led to a debate about the absence of a framework for registration of e-rickshaws, which culminated in a series of legal and regulatory changes including the Motor Vehicles (Amendment) Act, 2015 and the Central Motor Vehicles (1st Amendment) Rules, 2015. As a result, e-rickshaws are now recognised as a distinct class of vehicles under the MVA, 1988 with a special licensing process, and technical specifications under the CMVR.

Pursuant to the changes in the MVA, 1988 and the CMVR, the Government of West Bengal has issued a notification for registration and issue of contract carriage permits to e-rickshaws, and also exempted them from the payment of road taxes.¹⁴ Guidelines have also been issued to the RTAs for formulation of routes, registration and issue of driving licenses for e-rickshaws,¹⁵ following which some district administrations have issued notifications for issuing new permits to e-rickshaws on specified routes.¹⁶

4. Ongoing Debates on Draft Road Transport and Safety Bill, 2015

In 2014, the Ministry of Road Transport proposed substantial changes to the MVA, 1988, in furtherance of the newly elected Central Government's attempts to revise and simplify legislation. The latest draft Road Transport and Safety Bill, 2015 ("the Bill") makes a drastic and significant departure from the structure of the MVA, 1988, in so far as the scheme for regulating public transport is concerned. It does away with the distinctions between different kinds of transport vehicles and provides for a unified permit for passenger transport and another unified permit for goods transport. This would mean, in the context of IPT, that all forms of public transport, from buses to e-rickshaws, would be regulated under a common scheme, unlike the present system where there are distinct permits for each.

The proposed Bill creates a National Transport Authority as a central regulatory authority to exercise some of the powers that are at present exercised by the Ministry of Road Transport and Highways. However, a perusal of its functions (clause 87 of the Bill) suggests that its authority will be far more wide-ranging, appropriating powers that were hitherto exercised by the STAs under the MVA, 1988, and include actions such as approving tariff schemes for local public transport. While the Bill attempts to achieve a certain degree of standardisation and simplify processes relating to permits for public transport, it does so at the cost of centralising the regulatory and policy process. This could be problematic as issues of transportation are often highly localised and a centralised body may not be able to engage with issues at this level.

5. Proposed Amendments to the Motor Vehicles Act

Pending consensus over the Road Transport and Safety Bill, the Central Government in August 2016 proposed certain amendments in the MVA, through the Motor Vehicles (Amendment) Bill, 2016 ("Amendment Bill") which has been tabled in the Lok Sabha in August 2016 and referred to a Parliamentary Standing Committee for its opinion. The Amendment Bill proposes three major changes to transportation policy, in so far as the permitting and regulatory regime is concerned:

Firstly, it permits the State Government (for intra-state transport) and the Central Government (for inter-state transport) to make schemes for the transportation of goods and

passengers, and issue licenses for operation of transport vehicles under these schemes, in addition to the existing system of permits for transport vehicles. These schemes may be prepared in furtherance of a number of specified objectives including enhancing last mile connectivity and rural transport, reducing traffic congestion, improving urban transport, increasing accessibility and mobility, protecting the environment, promoting energy conservation, and enhance multimodal integration among other purposes.

Secondly, it exempts transport vehicles, operating with a licence under such a scheme, from acquiring a permit. It also allows a transport vehicle which has been issued a permit, in addition to a licence under such a scheme, to ply either under such permit or such licence at the discretion of the owner of the transport vehicle; and clarifies that no permit holder will be required to surrender an existing permit on being issued such a licence.

Thirdly, it empowers the Regional Transport Authority to waive any permit condition for a contract carriage to promote low cost last mile connectivity solutions in its jurisdiction.

It is submitted that the Amendment Bill, while failing to address the issues related to simplification of the permit system, actually complicates matters further with additional schemes and licenses. However, from a regulatory point of view, its structure is far more decentralised and recognises objectives related to transport planning that may be relevant for grant of permits and licences at the local level.

VII. POLITICAL ECONOMY OF STAKEHOLDERS IN THE IPT NETWORK IN KOLKATA

The operations of the large variety of IPT modes in Kolkata (corporation and metropolitan area) is intrinsically connected to a complex web of formal and informal stakeholders and processes within the political economy of the megacity. The varying levels of regulation and financial investment required for auto-rickshaws and battery operated forms of IPT have resulted in a unique landscape with auto-rickshaws dominating the IPT systems with KMC and battery-operated IPT forms gaining importance in the periphery. This section will delve into formal and informal aspects of IPT in the area, focusing on the role of stakeholders.

1. Modes of IPT in the KMC and KMA Region: An Evolution of IPT Systems

While IPT in Kolkata city is predominantly yellow taxis and auto-rickshaws, the periphery of the city has a variety of forms of transportation available for people to utilise. These other modes include the battery-operated Toto e-rickshaw, which is prevalent in the adjacent Howrah Municipal Corporation, Bidhannagar Municipal Corporation, distant municipal bodies such as the Chandannagar Municipal Corporation, Kalyani municipality and in areas outside the KMA.

In addition to totos, diesel-fuelled vehicles like Tata Magic and Piaggio Ape also ply in peripheral areas of the city. The Tata Magic are largely used for long distance commuting, while the Piaggio Ape is utilised frequently in the peripheries. Officially, these vehicles are supposed to carry 4-5 passengers but in reality, they carry more. Qualitative research as part of this project shows that while these two do not ply under commercial permits, they are deeply linked to unions and have definite routes provided by the RTA or the Union. The routes are delineated keeping in view the routes of the auto-rickshaws to avoid competition between the different modes of transportation.

Which mode of IPT functions in what geographical context is determined by two aspects—regulation and the amount of financial investment required. For example, battery-operated forms of IPT have been prohibited from the city limits of Kolkata thus ensuring that they function only in the periphery. This ban coupled with the fact that battery-operated forms of IPT do not need formal permits to operate make them a more viable livelihood opportunity in the periphery, as investments needed are low. In contrast, a fixed number of permits has driven up the prices of auto-rickshaws substantially. The differences in the two regions in terms of the forms of IPT, their regulation and the involvement of various stakeholders is clearly demonstrated in table 4 where the flexibility, low investment costs and sheer range of options in non-auto-rickshaw IPT forms have resulted in a far more diverse landscape in the periphery as compared to the KMC.

2. Formal and Informal Stakeholders of IPT in Kolkata

While IPT forms other than the auto-rickshaw come under little formal regulation, auto-rickshaws operate under a system of regulation prescribed by the RTAs. Yet, a substantial degree of informality is evident in the operational aspects of this system. The research approach to understanding informality within the regulated system of auto-rickshaw is focused on: (a) constructing a stakeholder map and deeply understanding the roles of the different types of formal and informal stakeholders in the regulation and operation of auto-rickshaws; and (b) mapping the operational routes of auto-rickshaws within the landscape of officially permitted routes. Combined, these two distinct approaches offer a detailed picture of the operational climate of auto-rickshaws in the city. Further, the study draws on survey data to understand how operators and users perceive and experience the system to answer questions on how auto-rickshaws serve the city as a system of informal transportation.

a. Transport Department and RTA

The Transport Department of West Bengal is a wing of the State Government that is responsible for formulating and implementing transport policy, including the administration of the Motor Vehicles Act, 1988. The latter function is carried

out through the State Transport Authority at the state level and the regional transport authorities (RTAs) at the district level, also known in West Bengal as the Offices of the Public Vehicles Department (PVD).

The RTAs control the regulation of IPT systems through the registration of vehicles and issue of licenses, route-based permits at the district level, fitness certificates, pollution under control certificates and other documents that operators require. The RTAs are largely located in the precincts of the district magistrate's office and are also the authority for payment of taxes, with reference to commercial vehicles.¹⁷ While a district may have more than one RTA, one RTA will have primary importance.¹⁸ Caps on the number of permits that may be issued and issue of inter-district route permits takes place at the level of the STA.

While the RTA can issue permits, only the Transport Department can create new routes. This normally occurs in Kolkata, formally, through a process of interaction between the route committees and the transport department.

Figure 2: Stakeholder Map of IPT in KMC

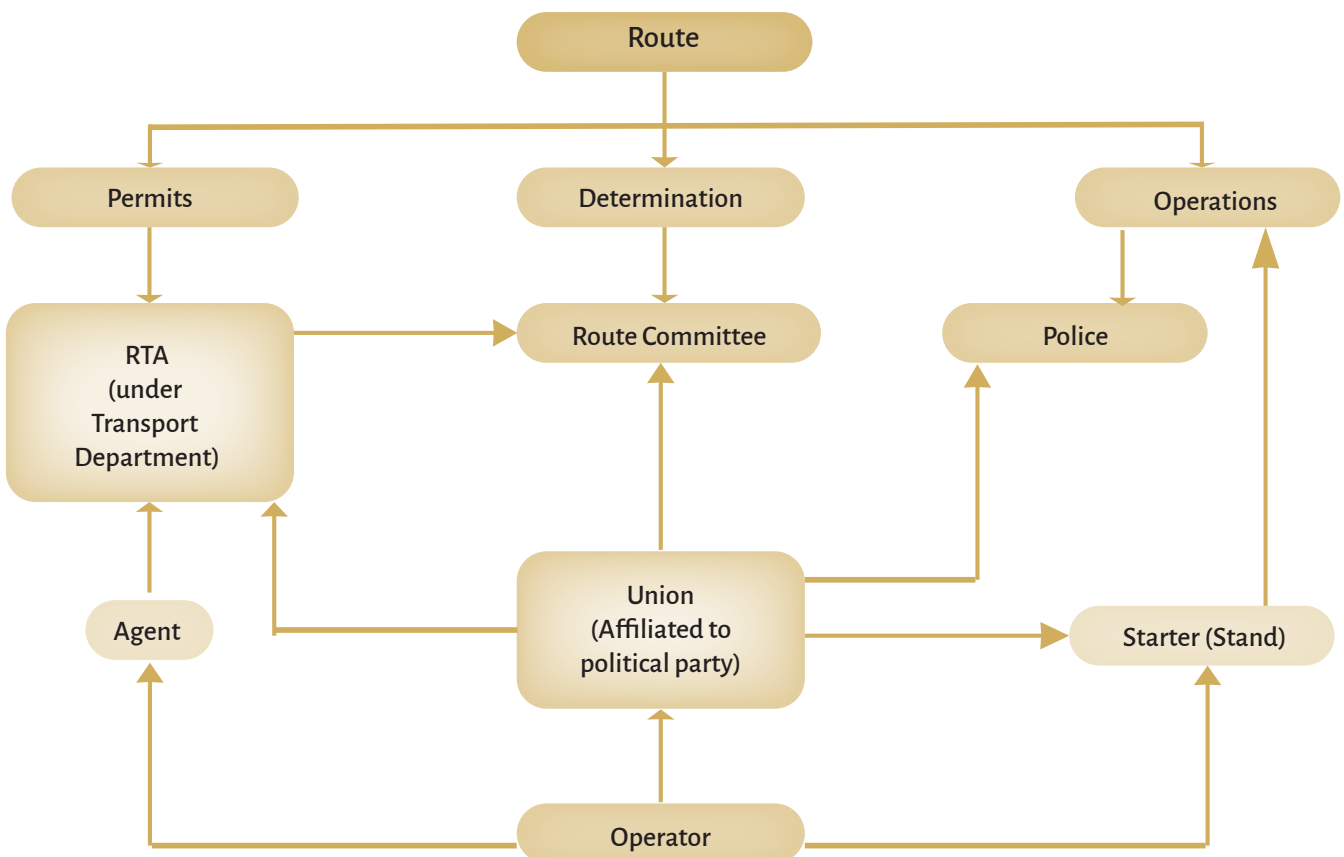


Table 6: Conditions Fulfilled by IPT in KMC and KMA

Parameters	Within KMC	Periphery of the City
Vehicle Type / Fuel Type	Only two types – Auto-rickshaw & Taxi Auto-rickshaw (mostly on CNG/LPG) and Taxi (Diesel).	Various types of Vehicles. Only few Autos function on CNG/LPG. They mostly operate on diesel and petrol, and battery (in case of Toto).
Permit	Necessary	Auto-rickshaw permits taken by some, other autos ply without permits. Other IPT modes are mostly illegal and unorganised
Defined Routes	Defined and organised routes.	Most of the auto-rickshaw routes are defined and recognised. For other modes, no routes/locally defined routes are present.
Union Involvement	Either registered unions / operator committees/ sometimes both are present.	Union involvement is very much there for all modes. Operator Committees are also present for all modes.

Source: Survey data for this study

The route committee, constituted by the RTA, is headed by a president who is either the local MLA, or prominent local personality (definitely with political alignment). Other members may or may not have political affiliations and are largely operators on the concerned route, who may be operators or starters. The route committee is formed at the micro locality or point of origin of the route, and each committee may have jurisdiction over more than one route originating from that point. The route committee looks into the different problems of the operators and maintains the discipline of the route. Different route committees in a given area meet occasionally over the year to decide on fare hikes, or route or operations-related disputes and other problems. In practice, the unions negotiate both the formal and informal parts of the political economy that influence route committees, and hence auto-rickshaw operators.

b. Police

Police and traffic guards are empowered to check for relevant documents and in determining whether auto-rickshaw operators are breaking rules and serving them with notices. If a operator has over 50 notices in a month, he can be called to the Lok Adalat or the measure adopted by the state to quickly hear several complaints against auto-rickshaw operators which could include issues of violating traffic rules, incomplete or lack of permits, behavioural problems with users and other issues.

c. Unions

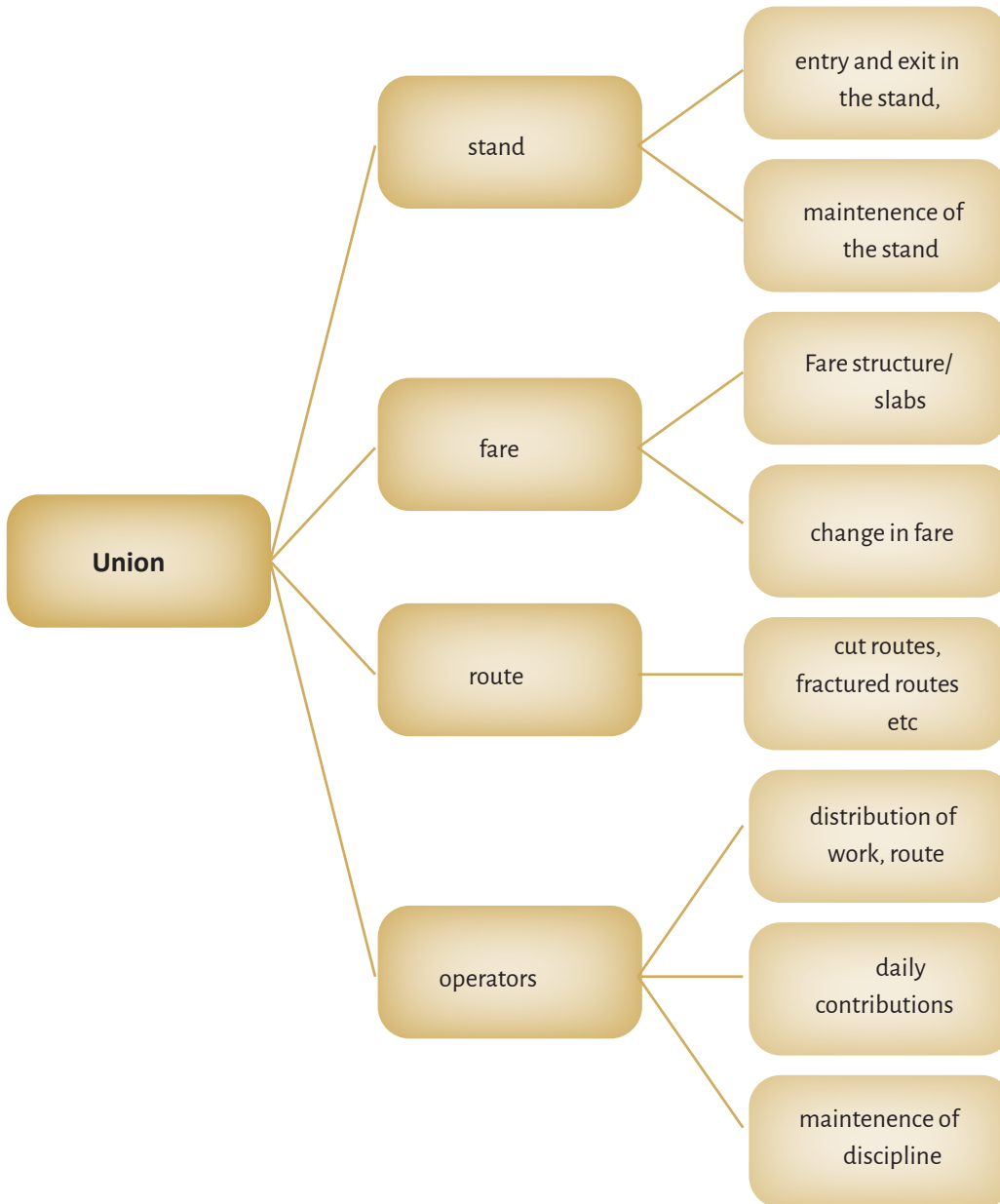
The unions play a strong role in the city and they have been able to carve out a power structure parallel to the formal structure provided through the RTA. Though informal, arrangements created by the unions are highly organised and localised. The locality or neighbourhoods have special significance as far as the auto-rickshaw operation is concerned. Unions assume the

role of principal agent for the operation of auto-rickshaws in the city. There are primarily three party unions involved in the operation of autos. They are the Indian National Trinamool Trade Union Congress (INTTUC) led by Trinamool Congress, Indian National Trade Union Congress (INTUC) led by Indian National Congress Party of India, and Centre of Indian Trade Unions (CITU) of the Left Front. Being the party in office at the state level, INTTUC currently dominates the auto-rickshaw scenario in the city. Respondents reported that if the party in office changes, the trade union with power at the stand level could change and members from one union may migrate to the union with power. Auto-rickshaw operators have stated that while the unions could be a space to negotiate their rights, they often felt under-represented by the unions and stated that they didn't find the unions accessible. This perception lead the researchers to understand that while the unions were essentially set up as a rights-based system to ensure the rights of the auto-rickshaw operators, the reality seemed more akin to an informal regulatory structure. These issues often resulted in stands and operators who were not union-affiliated.

Stands that were affiliated may be linked to one or more unions. Unaffiliated stands may never have had affiliations in the past, or they may have had past affiliations and shed them subsequently. This highlights the dynamic nature of union control and interaction with operators, whether owner operators or renter operators.

The influence of union on the auto-rickshaw is observed through four different facets of operation, namely, the operators, the stand, the route and the fare. Such an involvement is essentially informal but at the same time organised and localised.

Figure 3: Role of Unions



The union operates through the formation of route committee in each stand which would comprise of auto-rickshaw operators (the owner-operator or rented operator), other party members, as well as noted local persons or elected representatives at the head (Member of Parliament or Member of Legislative Assembly). Thus the union member who is part of the auto-rickshaw stand committee may be a channel through which operators can voice their opinion to the RTAs and the state government. The multiple hats that people wear within this system allows for these different processes to occur simultaneously. For instance, a union member may also be a party member as well as an operator and thus could be a conduit for hearing out the operators. Also, while the

RTA notifies stage routes, unions hold the power to influence modifications and deviations. These will be discussed in detail in Section VIII of the report.

About 70% of the respondents stated that the funds collected from them were used by the unions as fees, which is generally controlled by the union head/secretary. There are no other expenses paid by the unions like that to RTO or Traffic Police but the union fund is generally kept for providing books to the children of the operators, medical fees, starters salary, organising programmes during festivals and protest rallies, annual feast, tour for the auto-rickshaw operators, expenses for meetings, preparing flexes, providing facilities to secondary

exam candidates. In case of accidents, immediate medical expenses to operator and passenger, helping the operators in case of marriage or death.

d. Starters

The stand is the point of origin as well as destination for an auto-rickshaw route. Each stand has the presence of either one or multiple unions. The union monitors the stand as well as controls the entry and exit of autos via an individual known as a starter, whose primary duties are ensuring order within the stand and collecting relevant union fees. The starter also penalises operators for violating the rules of the stand, including a suspension of driving rights for select periods of time. The study found that the starter was often an auto-operator appointed by the union to perform starter duties. The interaction between operators and the union are layered and the starters often act as a direct link between the operators and the union. However, this link is delicate and the starter is perceived more as a part of the union than a voice for the operators.

The average salary of a starter is around INR 4,000 and varies from INR 1,500 to INR 9,000 depending on the route and there is no specific criterion for deciding this salary, which is paid either by the union, or directly by the auto-rickshaw operators in the form of daily contribution.

e. Operators

As per the findings of our survey, owners and renters are equally represented among auto-rickshaw operators, in contrast to the trends in the literature which show that most cities with closed systems have a majority of renters as the financial and regulatory barriers are quite extensive. The operator is the key player on which the political economy stands. The operators are usually affiliated to a union and a stand. In the absence of affiliation to a union, where the operator is expected to pay a daily or monthly fee, the operator has no permission to wait for customers in a queue and has to rely on constantly circulating in the city and seeking passengers. The operators said that buying second hand auto-rickshaws, bundled with a pre-existing permit, was the easiest way to get into the system. This has inflated the cost of auto-rickshaws and is further elaborated in Section VIII.

f. Judiciary

As discussed earlier, the study finds that the judiciary plays an important role in regulating and shaping IPT systems in Kolkata. The Courts have done so via several important judgements, including the one by the Calcutta High Court in March 2014.

As demonstrated earlier, the regulatory framework for IPT in Kolkata has been shaped by various notifications and additions to supplement the course set by the MVA, 1988. After the 2010 judgment of the Calcutta High Court (see Section VI) a number of applications for auto-rickshaw permits in West Bengal were rejected on one or more of the grounds mentioned in the 2010 Notification (No. 268-WT/3M-01/2010). Several of these applicants, particularly from the district of Nadia (bordering the Kolkata Metropolitan Area) approached the High Court challenging both the Notification itself as well as the rejection of their applications by the RTAs. The High Court in March 2014 pronounced its judgment in Arun Barua v. State of West Bengal, which upheld the validity of the Notification and clarified the scope of the powers of the RTA in this regard. As regards the validity of the Notification, the Court held that it was not in violation of the MVA, 1988 or the WB Rules, but in fact supplemented the regulatory framework that was already in place.

The Court also held that while the RTA had the power to reject an application for permit under the said notification, this power had to be exercised in accordance with law and the principles of natural justice. Accordingly, the applicants were to be given a hearing before their application was decided, and supplied with copies of any reports or documents that were being used by the RTA to decide on their application. In case of rejection of the application, the RTA was further bound to state the grounds of rejection, including the specific condition in the Notification that was being violated, and in what manner the application did not conform to the requirements of the Notification.

Following this judgment of the High Court, a number of additional petitions were filed before the High Court by aggrieved applicants, challenging the rejection of their applications. All of these were disposed of with similar orders to the RTA directing it to reconsider the applications, provide an opportunity of hearing to the applicants before taking a decision on the applications, as well as detailed reasoning for its orders in case of rejection of the applications.

g. Agents

Agents, while not recognised within the legal/formal system, perform a facilitative role for auto-rickshaw operators to access the RTA, which is otherwise perceived as inaccessible. The study found that an operator had to engage with an agent at all points of interaction with the RTA. The auto-rickshaw operators stated that there was a lack of will, on the part of the RTA, to engage directly with the operators and an agent was essential

whether to get permits, renewals or PUC. These agents charge commissions for the processes they help with, thus pushing up costs of compliance for operators.

Though enfolded within the legal architecture, IPT systems are able to thrive not in spite of, but because of the interplay of formal and informal processes by multiple stakeholders. This interplay allows for hybrid processes that permit flexibility in responding to needs. The following section on the operational aspects will explain further how this flexibility benefits users in Kolkata.

VIII. OPERATIONAL ASPECTS OF IPT IN KOLKATA

1. Route Mapping

The *sui generis* aspect of IPT in Kolkata is based on the clear system of predetermined routes, which requires auto-rickshaw operators to get a permit to ply on a prescribed route that has been authorised by the Regional Transport Authority. As Kolkata has a closed system of permits, there is a cap on the total number of permits provided overall and per route.

For the purposes of this study we have looked at the primary RTA in KMC – Beltala along with Barasat and Alipore RTAs. The permits are capped in order to deal with the vast numbers of auto-rickshaws and curb an explosion of vehicles on Kolkata's already cramped streets. However, from our fieldwork we find that rather than control, a closed system encourages illegal or

irregular manipulations of the system. In the case of Kolkata, the team mapped the routes through GIS mapping and sought to understand (a) the source from where permits were issued to autos and (b) the extent to which auto-rickshaws followed permitted routes in reality.

It is important to note that some auto-rickshaws needed permits from more than one route as the geographic scope of their journey required permissions from different RTAs. During the study nearly 200 auto-routes were tracked, but due to an overlap of routes the team mapped 140 individual routes. Beltala PVD provides the primary route permits for the KMC area and the team was able to map 79 of the 125 routes.

In terms of source, the team observed 6 categories of sources:

Beltala – the project covered over 79 of the 125 routes permitted by this PVD.

Alipore – the project covered over 28 routes permitted by this PVD

Barasat – the project covered over 9 routes permitted by this PVD.

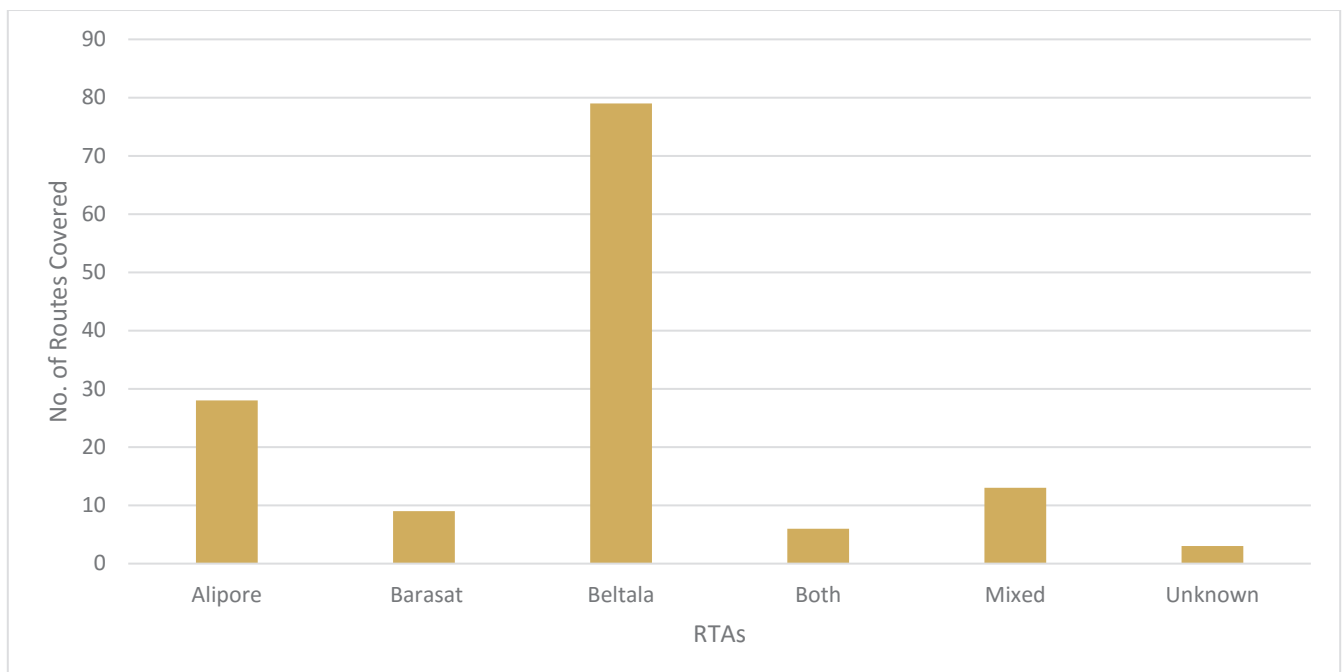
Both – permits are required from more than one PVD

Mixed – This categorisation was made to signify auto-rickshaws that had permits for routes on one of the PVDs but travelled on other formal routes.

Unknown – This categorisation was made to signify routes that were not accounted for by any PVD.

Route mapping offers a clear view of the geographical coverage

Figure 4: Share of Routes Surveyed from Different RTAs



Source: Survey data for this study

of auto-rickshaw routes in Kolkata. A route that operates within the same district is known as a single route while a route that operates within two districts is known as a double route. An additional value of the route mapping was an in-depth understanding of the pattern of irregularities, i.e. the manner and extent of difference between the prescribed route and the ground realities of the route operation.¹⁹

a. Geographical coverage in KMC

An analysis of the buffer zone of 500 m around auto-rickshaw routes reveals that it constitutes 72% of the inhabited area of Kolkata. About 40% of the major roads of Kolkata are covered by auto-rickshaw routes.

About 97% of the total route length falls within a 500 m buffer of major roads of where buses operate at Kolkata – indicating a very high level of overlap between bus and auto-rickshaw routes. The distance between the roads are often less than 500 meters, as seen from the buffers; it appears that autos form the connections among them. If the railway, tram and metro routes are taken as reference points, 60% of the route length falls within 500 m buffer of them.

The analysis of routes, therefore, finds that autos are one of the

chief modes of transport in Kolkata and cannot be classified as an intermediate mode or one meant merely for last mile connectivity in the city.

b. Irregularities in the route system

Given that the auto-rickshaw permits specify the exact course the auto-rickshaw must follow, any changes from these prescribed routes have been determined as irregularities by the study. Nearly 43% of the surveyed routes are subjected to a particular kind or a combination of irregularities. However, route irregularities, technically violations, are rarely a result of individual choice but a response to demands from the public. Commonly, they are created by or sanctioned by the relevant auto-rickshaw union.

This report has defined the following kinds of routes:

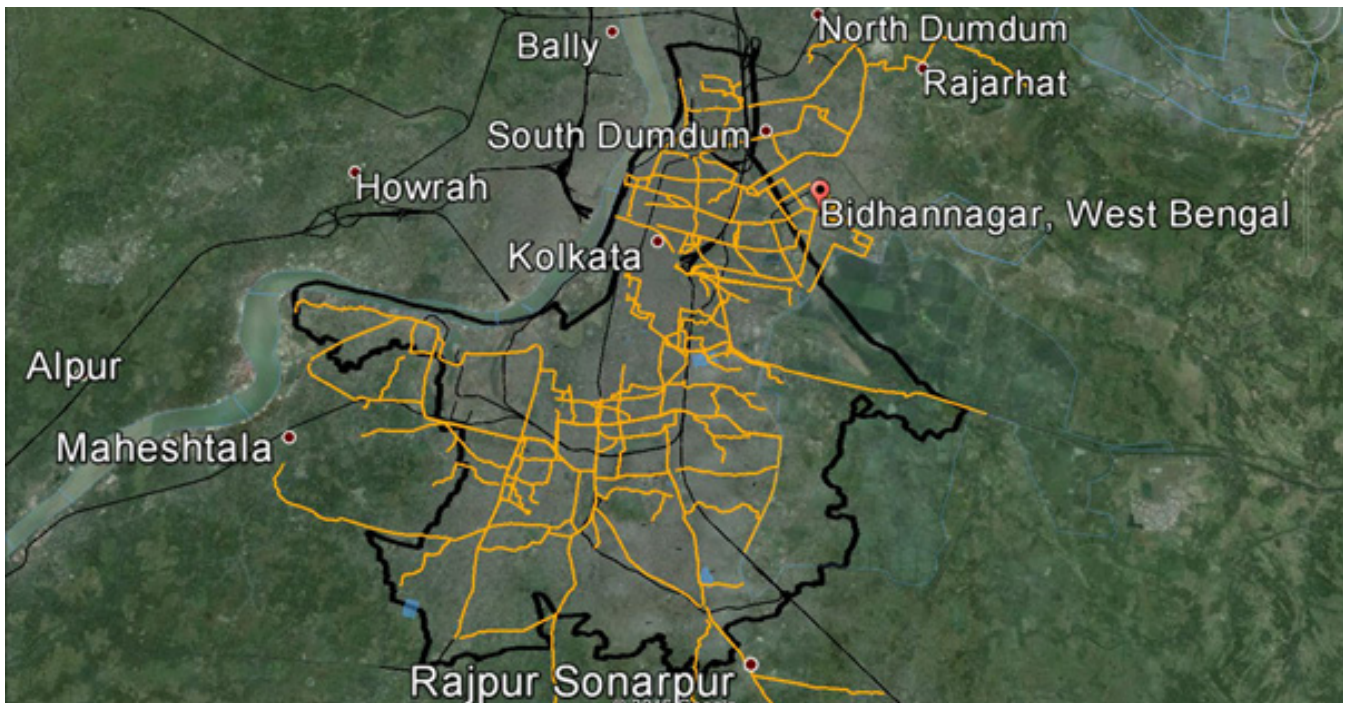
Regular routes are ones that stick to the prescribed route

Irregular routes are shorter in length than prescribed

Cut route These are shortened, either permanently or temporarily. These could also be shortened or ‘fractured’ wherein they are cut from both ends of the prescribed route and end at a common space

- **Deviated routes** have moved slightly outside the bounds of the prescribed route; here the intermediate path or the

Map 4: Surveyed Routes



Source: Survey data for this study

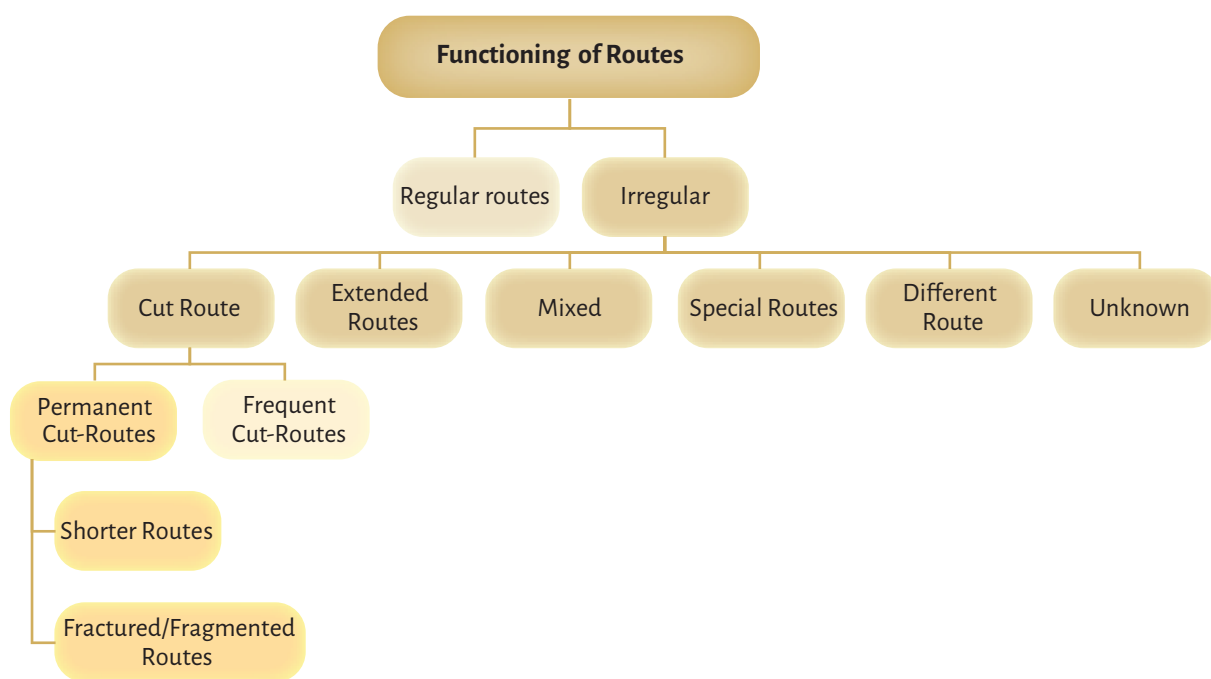
via-path diverges though the point of origin and destination remains same

- **Extended routes** are longer than the prescribed route, going beyond the prescribed destination
- **Different route** are completely different routes from the ones notified by the RTA
- **Mixed routes** have a variety of changes on the same route and comprise a combination of two or more deviations
- **Special Routes** are different from the official route but with permission to do so, sometimes for limited periods of time

In terms of spatial distribution, irregular routes are more prevalent in the high-density areas. These high-density areas of the city (south-central and eastern Kolkata) have a correspondingly high number of routes operating within the same geographical space. As a result of this, cut-routes or mixed deviations are prominent here.

The graph demonstrates the different types of irregularities found in the survey data.

Figure 5: Route Irregularities

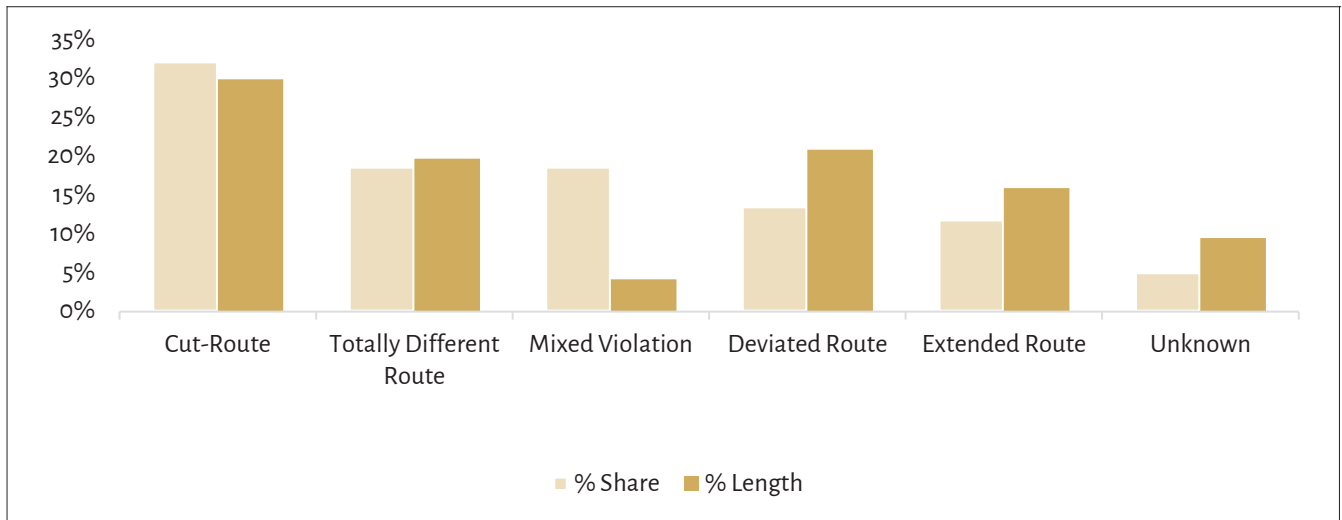


Fringe areas, on the other hand, have lower density; here, routes tend to be extended beyond its desired length or deviated to cover a larger area. Fringe areas have a lower density of licensed autos.

The spatial distribution of cut routes and mixed routes are highest in the southern part of the city while other kinds of irregularities, especially extended routes, are more prominent in the eastern fringe. Route irregularities, especially cut routes,

seem to respond to peak hour periods as well, though these are often not planned but at the whims of the operators. This could be seen in many of the routes spread across the city, but more prominently in the areas of Gariahat, Topsia, and Behala. There appears to be a correlation between the route length and the amount of deviation. Shorter routes that have a distance of less than 2 km, have a deviation of more than 30%. Cut-routes are more prominent in shorter segments while extended and deviated routes are prominent in longer segments.

Figure 6: Share of Different Kinds of Deviations in Surveyed Routes



Source: Survey data for this study

c. Flexibility in the system

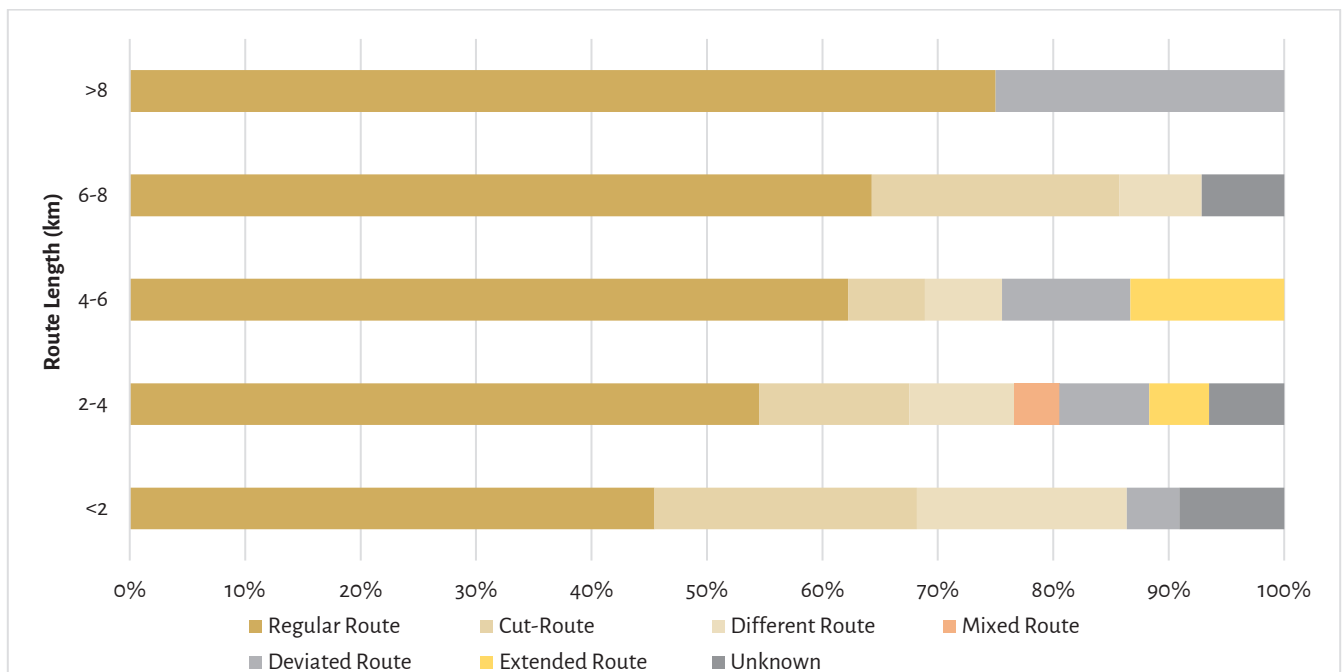
The extent and pattern of irregularities demonstrates the high levels of flexibility in Kolkata's auto-rickshaw system. Route irregularities are largely sanctioned by the unions, which in turn have a mechanism of consultation and feedback from auto-rickshaw operators. In this way, the system is able to adapt to the needs of the city. This takes place in two ways: 1) through the regularization of route deviations; and 2) time-bound changes to routes during Durga Puja, the primary

religious and cultural festival in the city. However, as has been mentioned before, while the structures of formal and informal governance provided users with fairly flexible and convenient systems of transportation, the auto-rickshaw operators often perceived the unions as inaccessible.

d. Demand driven regularization of routes

One form of response from the formal system is regularisation. For instance, one route that was 8 km long and unwieldy for

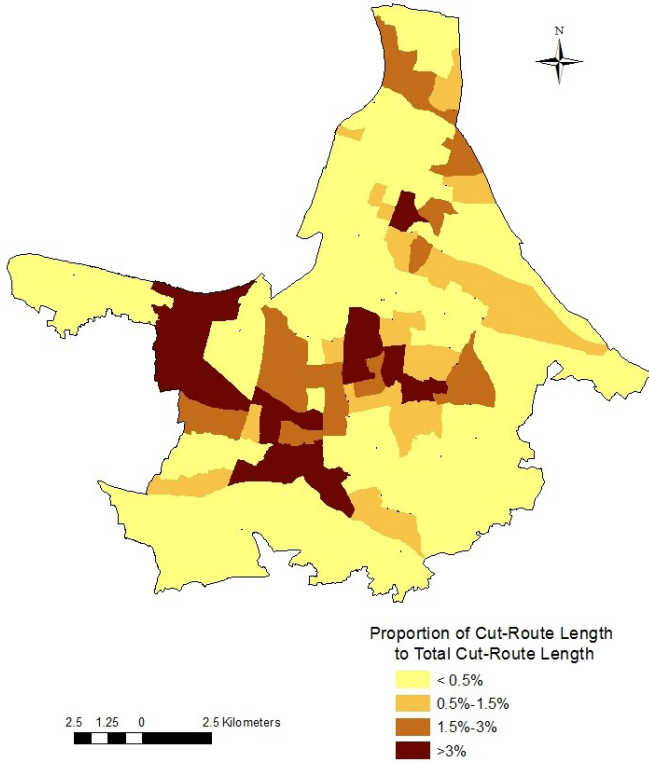
Figure 7: Type of Route Operations by Length



Source: Survey data for this study

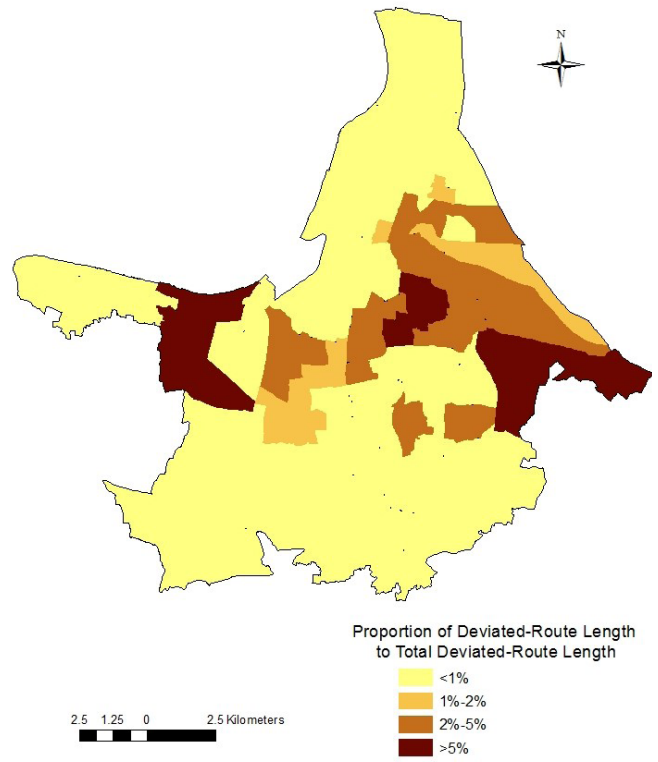
Heat Maps Illustrating the Density of Route Irregularities within the KMC.

Map 5: Cut-RoutesMap



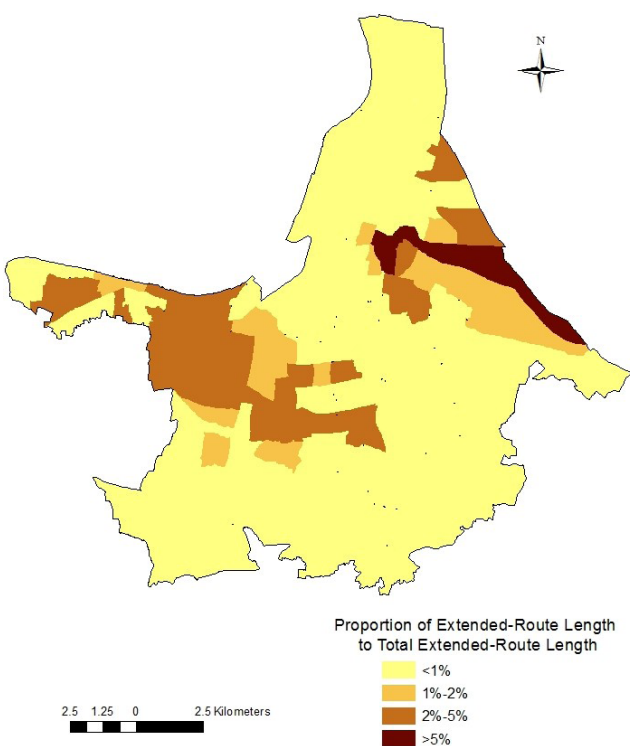
Source: Survey data for this study

Map 6: Deviated-Routes



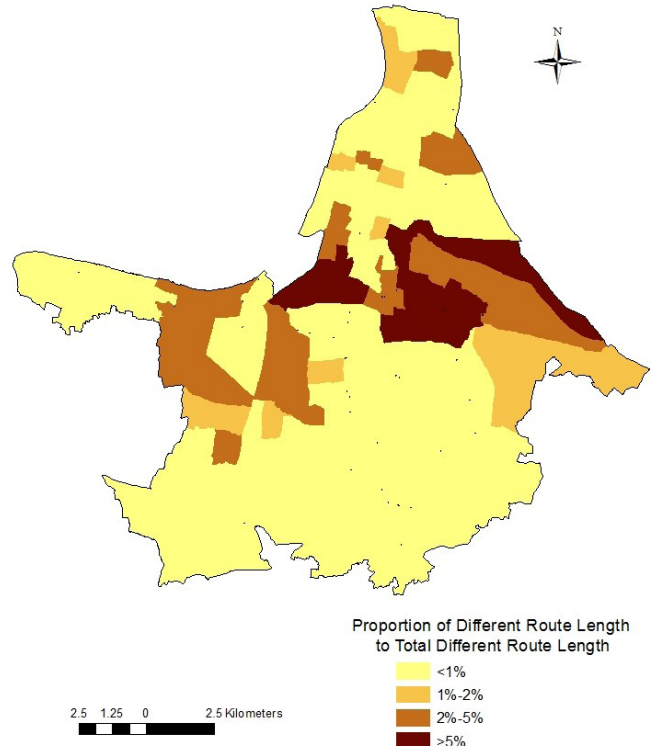
Source: Survey data for this study

Map 7: Extended-Routes



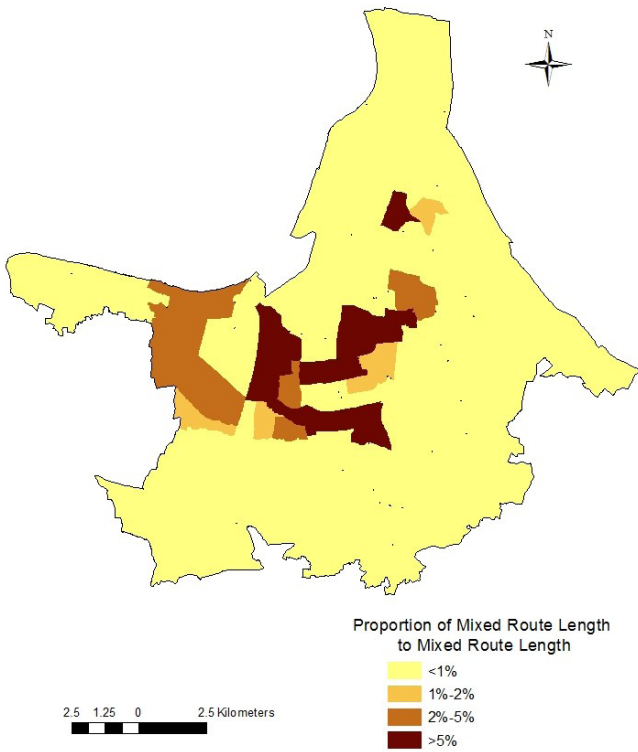
Source: Survey data for this study

Map 8: Different Routes



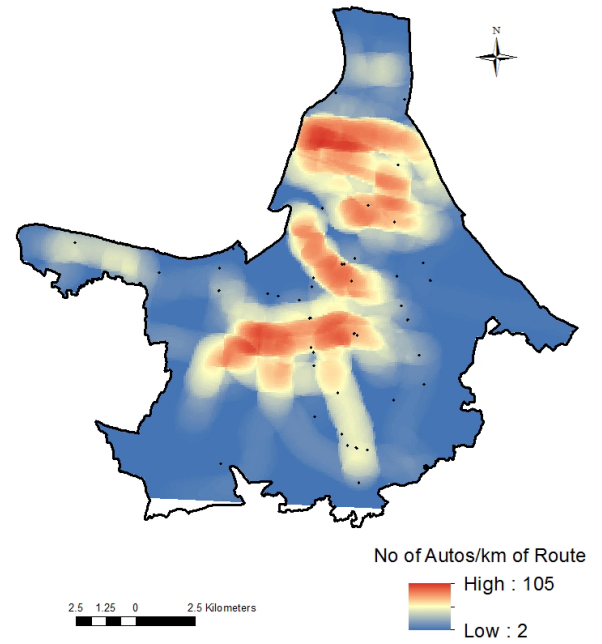
Source: Survey data for this study

Map 9: Mixed Routes



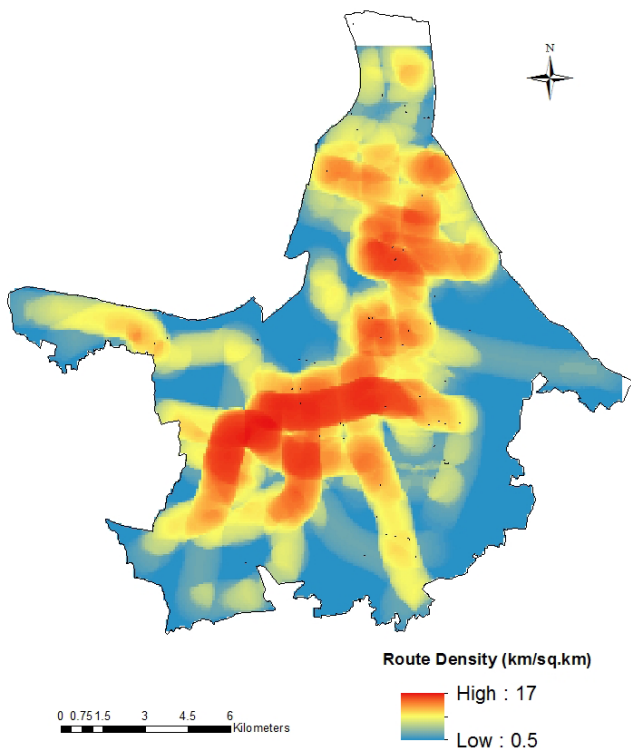
Source: Survey data for this study

Map 10: Auto-rickshaw Density (Licensed Autos)



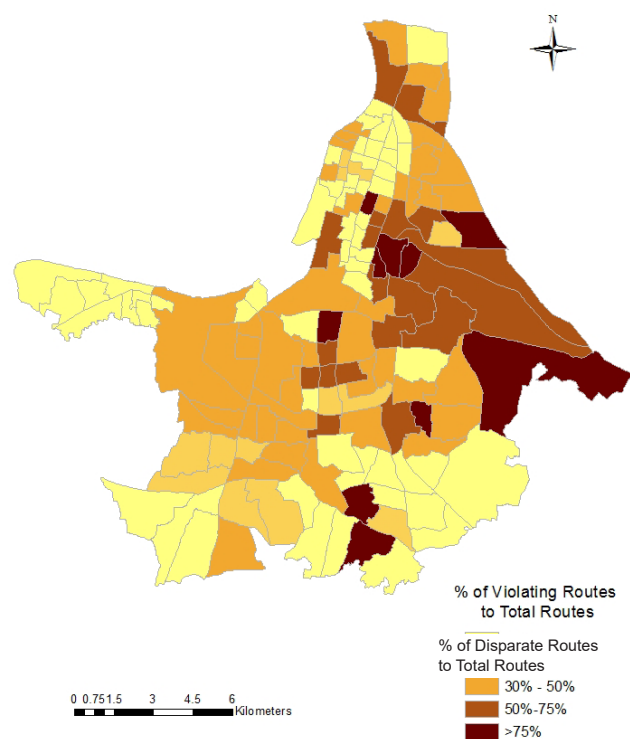
Source: Survey data for this study

Map 11: Spatial Pattern of Route Density



Source: Survey data for this study

Map 12: Spatial Distribution of Disparate Routes



Source: Survey data for this study

auto-rickshaw operators to cover in one stretch, was broken up into three sections and auto-rickshaw operators asked to utilise these fragmented routes on a rotational basis. The rotation ensures that all operators have equal opportunity to drive the routes and sub-routes. These decisions are made by the route committee and were not individual decisions made by auto-rickshaw operators. Similar decisions have been made for other routes in Kolkata and they demonstrate the demand-driven changes in the routes that are made.

e. Semi-formal systems: Durga Puja

All the routes and regulatory systems are amended annually during Durga Puja festivities. This is the largest festival celebrated in the state and has a significant impact on the structure and functioning of the traffic in Kolkata during this period. Thousands of small and large temporary structures of worship (or ‘pandals’) are constructed throughout the city largely in public spaces, often roads and pathways. The traffic system needs to be reconfigured to the altered road system

and also to accommodate the large numbers of visitors to these pandals. The duration of the festival is a little over two weeks. During October 2015, in the fieldwork phase of this project, it was observed that auto-rickshaw routes were affected by the festival and this played out through formal and informal regulatory processes. In terms of formal processes, the Commissioner of Police, Kolkata regulated vehicular traffic during the festival period between October 18 and 22, 2015. The change affected over 50 routes, and began at 15:00 hours and was valid till early hours the next day. The Commissioner of Police exercised these powers using a combination of acts, state government orders and notifications. The team observed notices from the Auto-rickshaw Route Committee at the Indian National Trade Union Congress, stating changes in government mandated routes and the pricing structure of the routes with increases in the fare. In this way, a non-state actor like the union uses its informal but formidable authority to make effective changes to the functioning of auto-rickshaws in Kolkata.

Image 1&2: Durga Puja in Kolkata



Photo credit: Sudipta Arka Das²⁰

IX. OPERATOR SURVEYS

The auto-rickshaw operator survey was integral to understanding the IPT landscape in Kolkata. Driving auto-rickshaws as a form of livelihood was promoted by the government of West Bengal in the 1980s as part of an employment scheme (Box 1).

1. Affiliation with Stand

The study found that the distribution of work, routes to be covered and the duration of their operation is guided or monitored by the union. All operators are affiliated with a particular stand, usually a physical space at a fixed location

from where routes start and end. Operators pay the stand a fee, on a daily or a monthly basis. The operator is provided with a receipt for the payment and this amount is used to cover the starter’s salary, annual gatherings and an amount set aside for an emergency, including coverage for accidents. Once enrolled to a stand, the operator may use the facilities at the stand and wait for customers in the given location.

2. Income of Auto-Rickshaw Operators

The distribution between those who owned auto-rickshaws and those to who rented them, in our study, was roughly equal. This was higher than studies of IPT in other cities, which normally place ownership at an average of 40%. (EMBARQ, 2010). This

study also found that ownership of the auto-rickshaw reportedly did not severely impact the income of the operator. A significant portion of the sample (79%) earned under INR 500 per day.²¹ Additionally, unofficial costs of paying agents, middle-men, the

police etc. eat into the already low income of operators. Owing to the closed-permit system, the cost of permits is inflated - ranging between INR 2,00,000-9,00,000 (see Box 2).

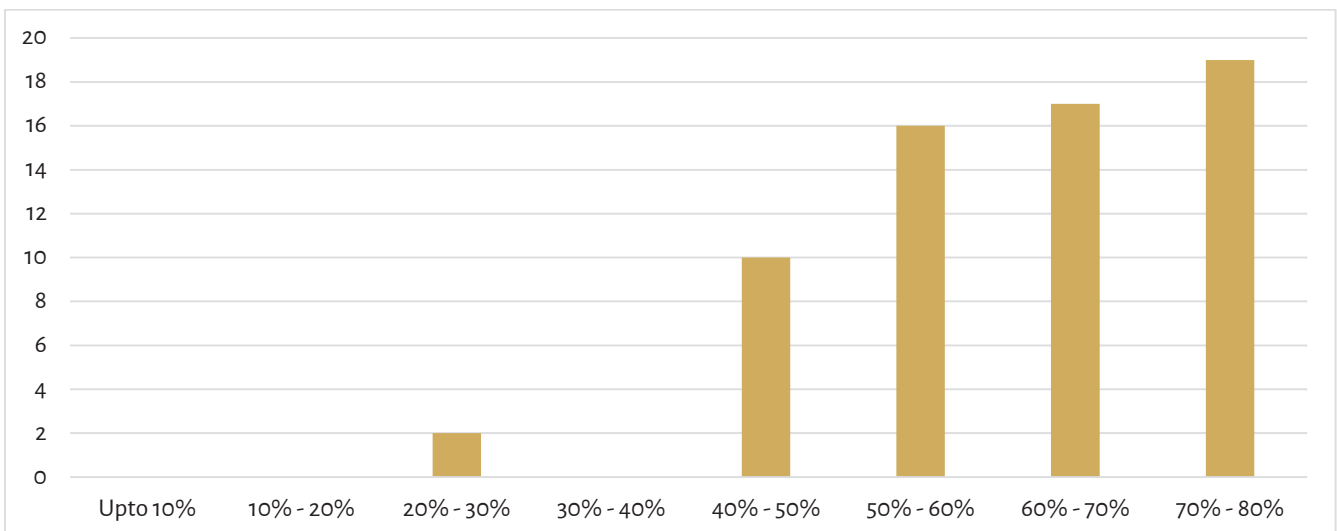
Box 1: SESRU (Self Employment Scheme for Registered Unemployed) and Auto-rickshaws

The Self Employment Scheme for Registered Unemployed in West Bengal 1985 was introduced under the Department of Labour (G.O. No. 420 – EMP dated 04/07/1985) to encourage registered unemployed individuals in the state of west Bengal to find meaningful employment, with marginal grants from the government and loans from selected banks, viz. National Banks, Regional Rural Banks, or government financial institutions. While this scheme was replaced by Udiyaman Swanirbhar Karmansanathan Prakalpa (USKP), 2008, it was the starting point of creating a network of auto-rickshaw operators in Kolkata. The scheme only covered recognized individuals who were registered with employment exchanges under the directorate of employment government of West Bengal. The process of getting an auto-rickshaw under this scheme was multi-level – first apply for the loan under the scheme, if the individual is allotted the funds, s/he may apply for a contract carriage permit from the local RTA. Once the individual has the permit s/he may utilize the loan and buy the auto-rickshaw rickshaw.

Box 2: Narrative on Second hand auto-rickshaw selling

The ceilings on maximum number of permits in each route has resulted in a heightened dependence on procuring auto-rickshaws from the second hand market because the auto-rickshaw is sold along with the permit for the respective route. The cost of the auto-rickshaw along with the permit multiples several times its original price. The survey revealed that in the case of the second hand auto-rickshaws, the price is settled on the basis of the demand of the mode in the area and the discretion of the seller. Focused group discussion conducted at different locations in the city show that the rate varies from INR 2,00,000 to as high as INR 9,00,000 in some areas. Rates are lower in peripheral areas towards south (Alipore MVD) compared to the north and north eastern margin which part of the Barasat RTA. For instance, in Nagerbazar, second-hand auto-rickshaws along with permit cost between INR 7,00,000 - 8,00,000. A recent advertisement on the second-hand dealership web portal features the sales price of an auto-rickshaw with permit as INR 9,00,000 on Nagerbazar stand (South Dum Dum Municipality in the northern periphery) Kolkata. Another advertisement in the similar website shows the price to as high as INR 14, 50,000.

Figure 8: Percentage of income spent on auto-rickshaw expenses in a month



Source: Survey data for this study

3. Fare Determination

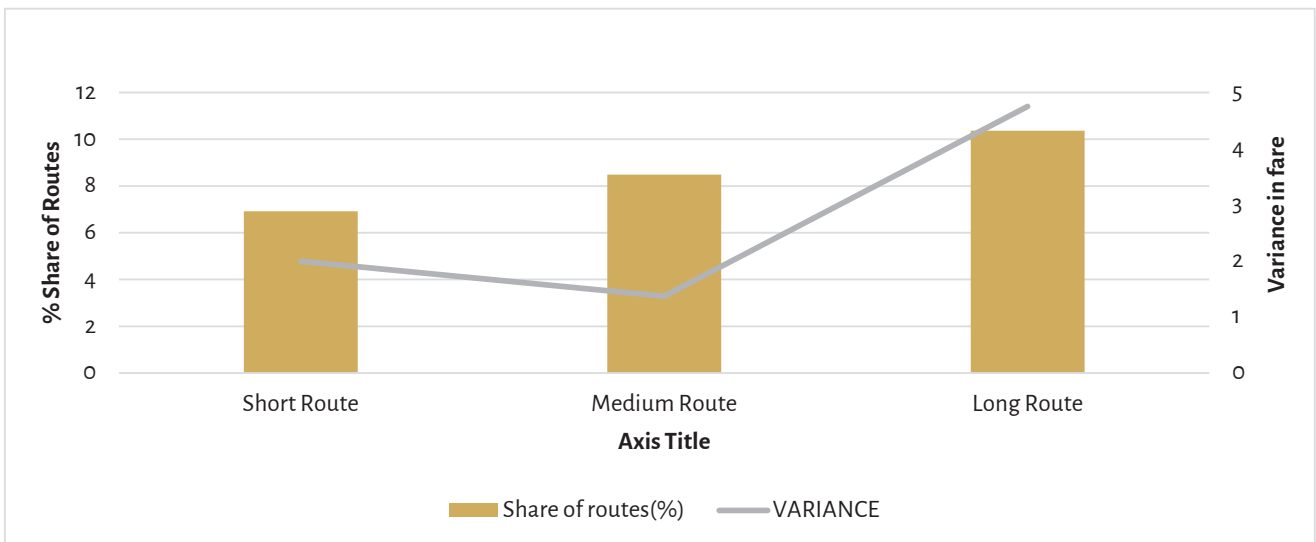
The primary source of income for operators are the fares they charge. The study found that the fare charged by auto-rickshaw operators for each type of route varied. The average fare charged for each type of route is presented in the graph below.

It is important to note that the auto-rickshaw route fares are fixed by different parties on different routes. While the legitimate authority to fix fares under the WB Rules is the RTA, it was found that the fare fixation was in fact most commonly carried out by the union. This appropriation of authority clearly demonstrates the power the unions wield at the local level. Fares largely structured by the union are based on the distance covered. Distance was categorised as short (under 3 km),

medium (between 3-5 km) and long (greater than 5 km), with a direct correlation between the distance covered and fare. The graph above shows a gradual increase in fare proportionate to increase in the distance of the trip. The fare charged for medium and short distance routes is more compared to that of long distance routes, as the variance is highest in long distance routes and very less in short and medium distance route.

The fare slabs are fixed based on the distance covered by the auto-rickshaw on the route, regardless of number of stops. The number of stops appears to be irrelevant to fare determination, strengthening the 'hail down' nature of this mode of transportation.

Figure 9: route share and fare variance



Source: Survey data for this study

X. USER INFORMATION

The preference for autos over privately-owned vehicles – when seen in conjunction with the high coverage of auto-rickshaw routes revealed in the route mapping – makes a convincing case for re-imagining the auto-rickshaw as a primary, not intermediate, transportation mode in Kolkata, especially in the context of the KMC.

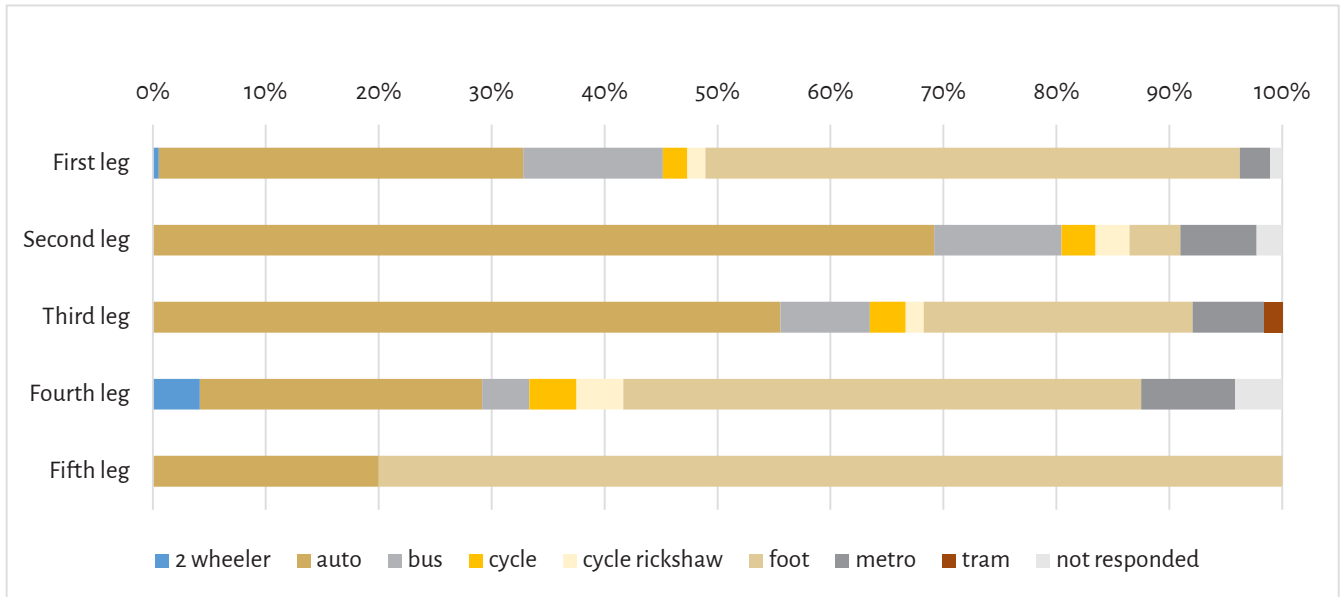
1. Prevalence

Private vehicle ownership is well linked to income and it is evident that auto-rickshaws are popular across income groups. While auto-rickshaw users who are 2-wheeler and 4-wheeler owners constituted under 40% percent of the surveyed users, over 50% of car owners and under 40% of two-wheeler owners stated that they used IPT frequently.

Survey responses about iterative modes of transport revealed that the auto-rickshaw served as a prominent choice for all legs of a trip being made in the city. This supports the idea that IPT is a primary form of transportation, as opposed to the perception that it provides only last mile connectivity.

There is a gender dimension to the usage pattern of auto-rickshaws in Kolkata. As per the survey, women comprise about 40% of auto-rickshaw riders in KMC. While the workforce participation of women in Kolkata is very low (17.29% as per Census 2011), office going women comprised 13.44% of the auto-rickshaw riders compared to 19.89% male office goers. Additionally, female riders exceeded male riders for education, shopping and other purposes and equalled male riders for leisure trips. This indicates that women use auto-rickshaws for a variety of activities through the day, including household

Figure 10: Modal split of auto-rickshaw users



Source: Survey data for this study

chores, dropping and picking children and social activities, besides education and work trips.

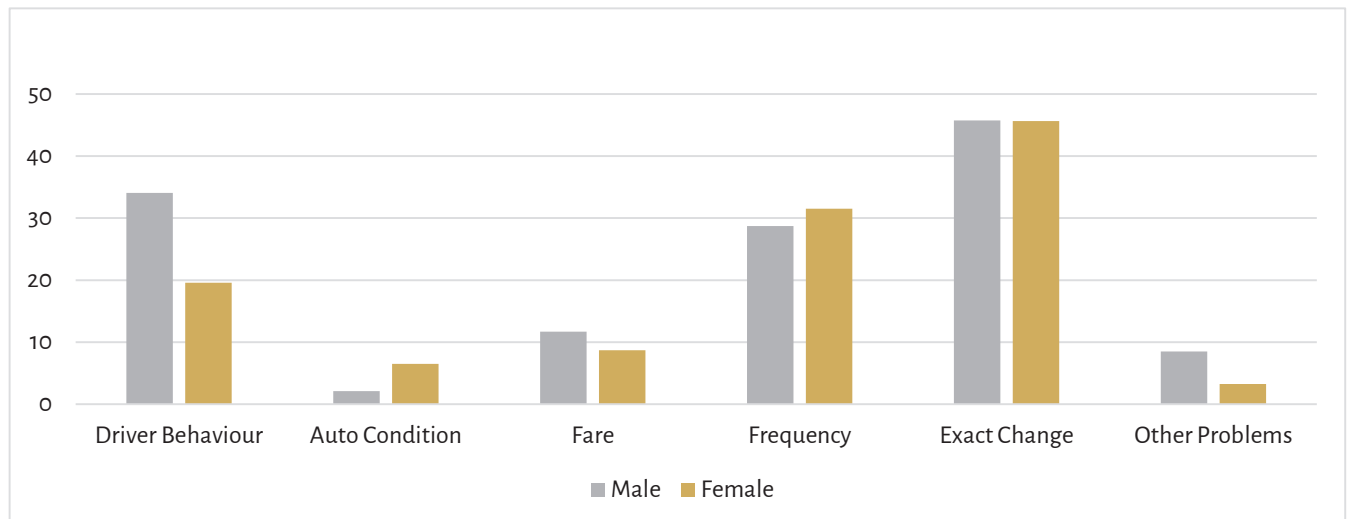
2. Perceptions of Convenience and Safety

Walking was reported as the most significant non-auto-rickshaw mode of transport in the user survey, with 90% of respondents citing it as an important element of mobility. In contrast, other forms of transportation like buses, trains and bicycles did not seem to be very popular. Almost 84% of the respondents stating that they did not use buses, citing reasons of crowding and low frequency. About 70% of respondents stated that they did not have train passes and over 65% of the respondents stating that they did not cycle in Kolkata because

it was dangerous and inconvenient. In contrast, autos are perceived as safe and convenient.²² Data also indicates that women perceived autos to be safe and convenient modes of transport.

However, auto-rickshaw systems are not perfect. The most commonly reported problem was the unavailability of exact change for fares. Users also demanded higher frequency of auto-rickshaws on busy routes. Interestingly, data on complaints by male and female users reveals that male auto-rickshaw users perceive the behaviour of auto-rickshaw operators as more problematic than female travellers do.

Figure 11: Problem faced by male and female passengers



Source: Survey data for this study

XI. ENVIRONMENT AND CONGESTION ISSUES

That auto-rickshaws are polluting and add to congestion has been a dominant narrative in media reports as well as mentioned repeatedly in legal notifications. The 2008 CMP for KMA states, in the context of reporting the number of vehicles of different types plying on city roads, that “a significant increase in the number of two wheelers and auto-rickshaw is a major area of concern as they add to congestion along with increased environment degradation.” Participants of a consultative workshop held by project partners in Kolkata in December 2015 repeatedly made references to the nuisance value that autos posed owing to congestion and unruly behaviour. Kolkata has also had a history of citizen awareness and activism around the issue of air quality (CSE 2011). Consequently, in 2008 and 2009, a number of High Court orders were passed for the phasing out of old vehicles and fuel conversions towards relatively clean fuels. In this period, one-stroke auto-rickshaws were phased out and all two-stroke autos were retrofitted for the usage of LPG fuels.

The study set out to measure the emission impact of auto-rickshaws in KMC. However, collecting pollution related data proved to be a formidable task. The survey team was told informally by PUC operators that the process of obtaining this certification was not stringent. In any case, either because of this or for entirely other reasons, the RTA did not share PUC data with the research team. As such, in this study, the argument for auto-rickshaws being a relatively fuel-efficient and less polluting mode of transport is based on calculations premised on non-usage of private vehicles as survey results demonstrate that owners of private vehicles are regular users of autos. The study estimates that, on a per day basis, 230,000 km and 207,000 km are travelled by auto-rickshaws instead of by privately owned 2-wheelers and 4-wheelers respectively (see Annexure 5 for method of calculation).

Owing to the shared nature of usage of the auto-rickshaw in Kolkata, where about 4 passengers are using the auto-rickshaw simultaneously at full capacity, auto-rickshaws have lower per passenger emissions than private vehicles. Add to that the benefits deriving from the fuel type being LPG as opposed to private vehicles that run on diesel or petrol. Autos also provide a congestion benefit owing to their smaller size compared to a four wheeler.

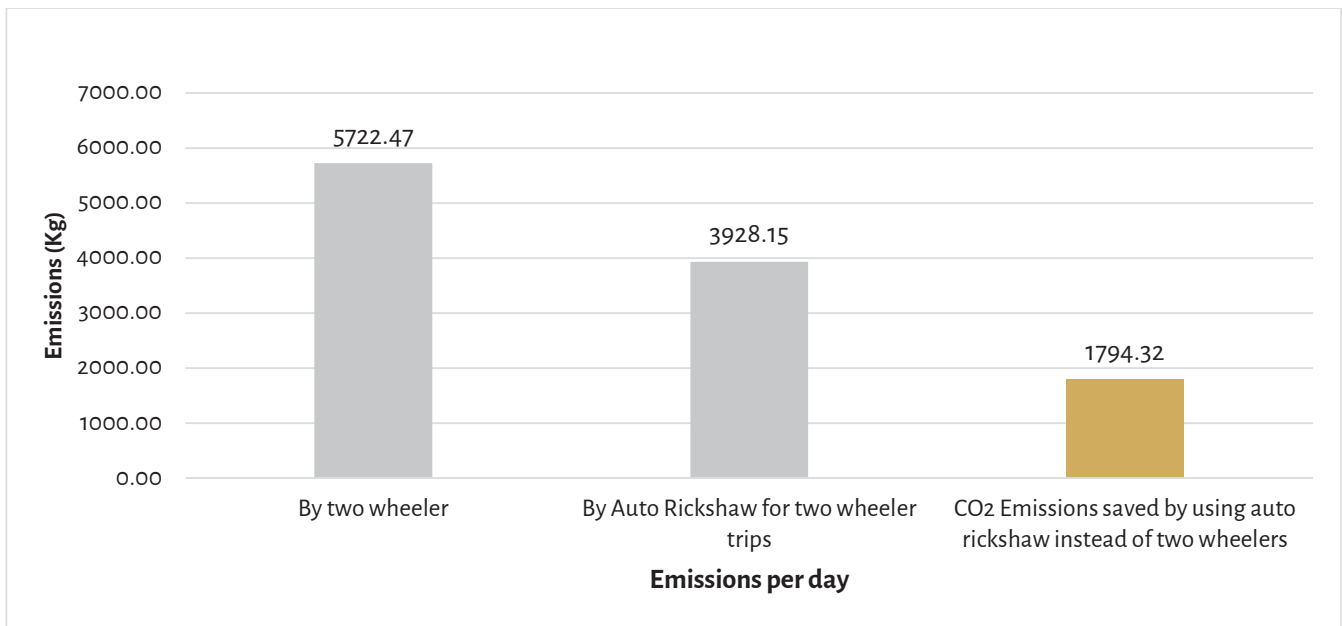
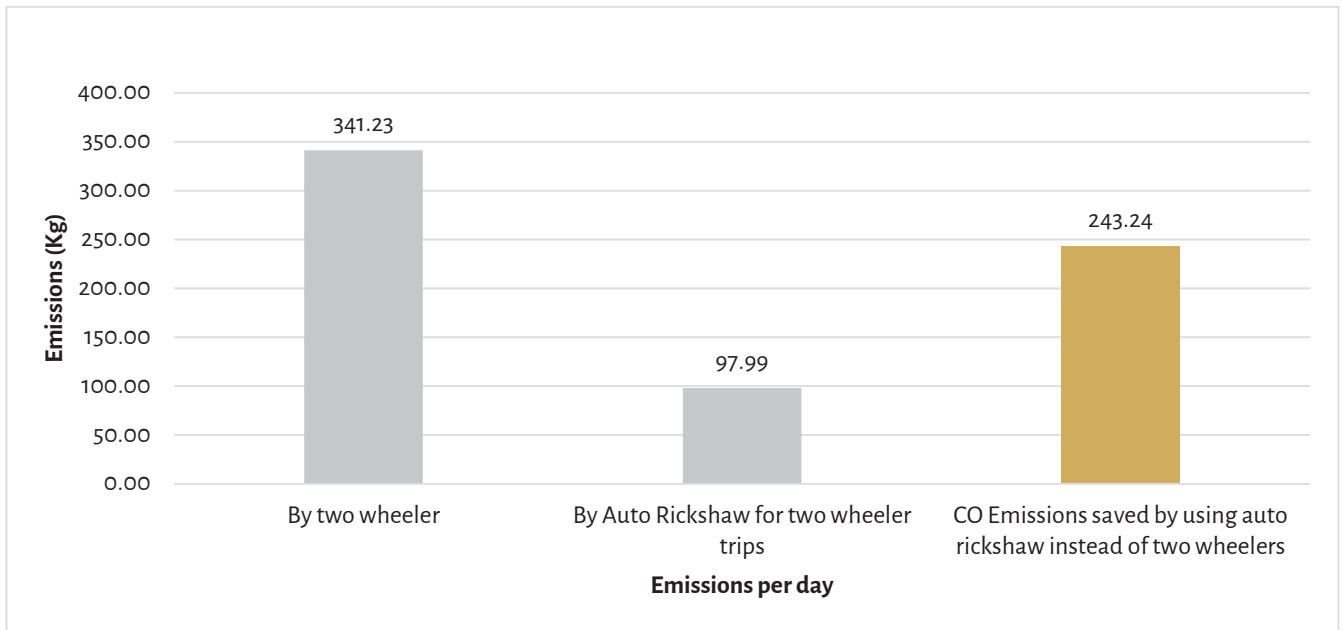
The emission savings were calculated taking two important emission gases of automobiles into account i.e., Carbon Oxide (CO) and Carbon Dioxide (CO₂). The CO emission factors considered for an auto-rickshaw, a two wheeler and a four wheeler are 1.7 g/km, 1.48 g/km and 3.01 g/km respectively. For CO₂, the emission factors considered were 68.15 g/km, 24.82 g/km and 126.5 g/km (CPCB, 2007). The per passenger emission factor for an auto-rickshaw, a two-wheeler and a four-wheeler was calculated by dividing the vehicular emission factor with the respective average occupancy. Average occupancy observed during the site visit for a two wheeler is 1, four wheeler is 1.25, and auto-rickshaw is 4. The per passenger emission factor for all the three modes were then multiplied to the total distance (in kilometers) that users travelled by the private vehicle and by auto-rickshaws in lieu of using private vehicles; the difference between these gave the emission savings.

The results show that, on a per passenger basis, a total of 243.24 kg CO emissions are saved in a day whereas, 1794.32 kg CO₂ emissions are done in a day. For 4-wheelers, 411 kg CO emissions are saved in a day, whereas, 17456 kg CO₂ emissions are saved in a day. For 2-wheelers, 243 kg of CO and 1794 kg of CO₂ emissions were saved in a day.

Assuming that car emissions are 44,00,000 tons per year (CSE 2011) for KMC, we calculate per vehicle CO₂ saving of 18870 kg per day. If these car users were to use auto-rickshaws instead, they would emit 8132 kg of CO₂. This results in a saving 10,738 kg per day and 39,19,370 tons per year, a mere 0.08% of total emissions by 4-wheelers. A modal shift away from private vehicles to autos and other public transport will amplify these savings considerably.

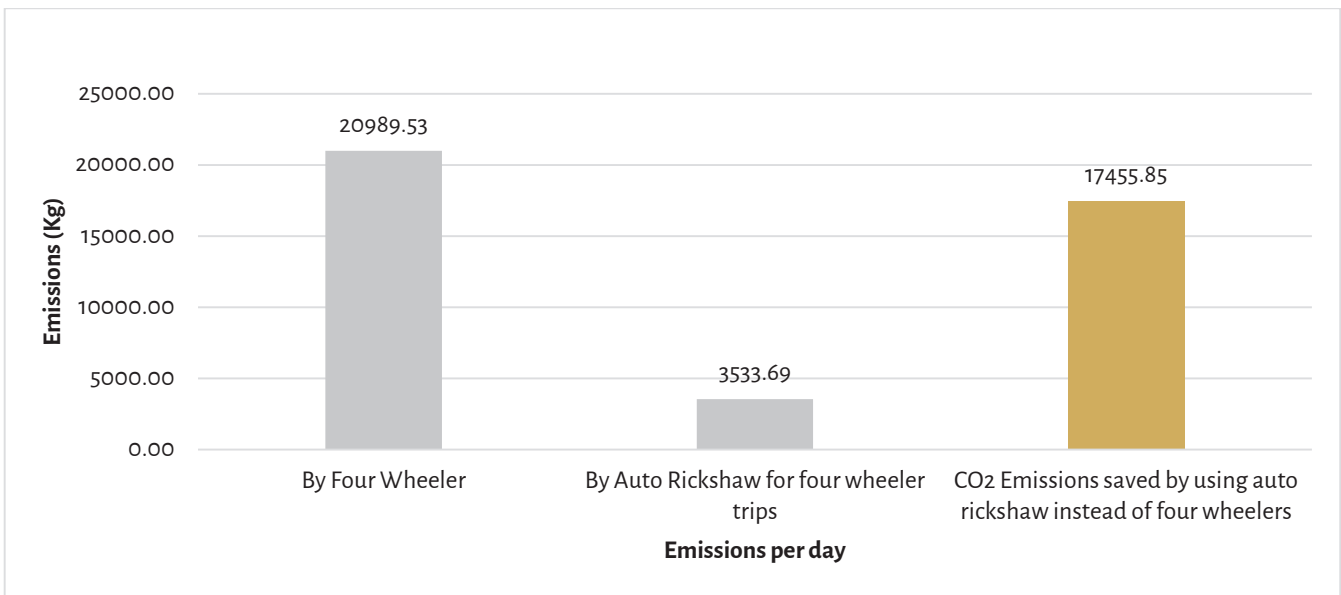
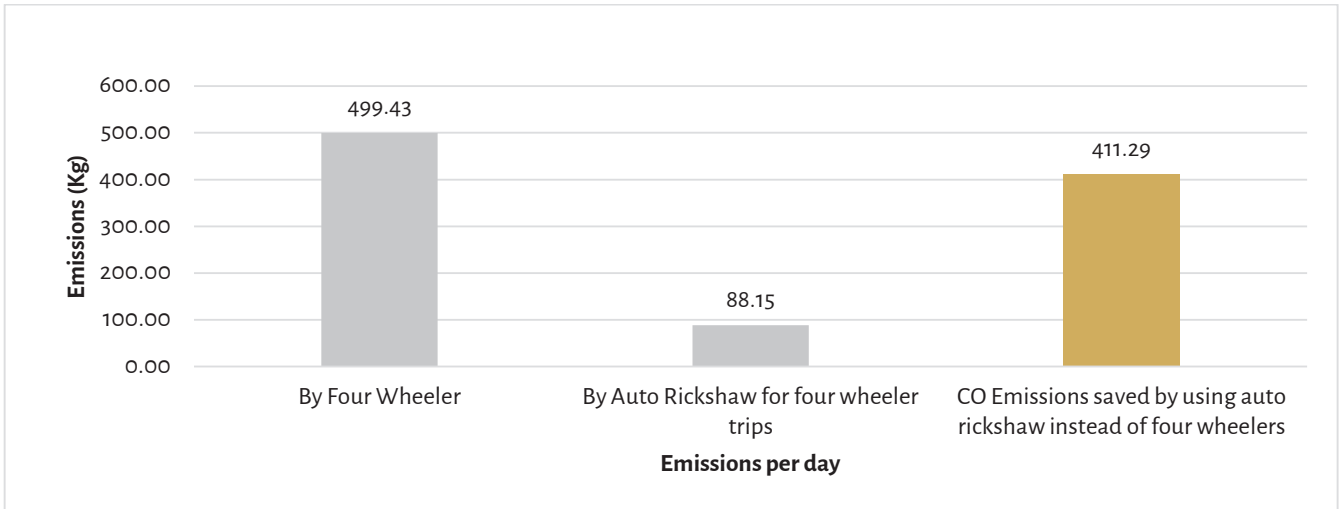
Auto-rickshaws also contribute to decongestion. Using passenger car equivalent (PCU), a unit used to measure impact of a vehicle on traffic flow, the study finds that the PCU of an auto-rickshaw is less than car for the same carrying capacity and more than two-wheeler for carrying double the passengers. About 75445 PCUs are saved by two-wheelers and 133022 PCUs are saved by four wheelers.²³

Figure 12-13: Carbon Monoxide (CO) Emission of 2-wheelers and 4-wheelers compared to autos



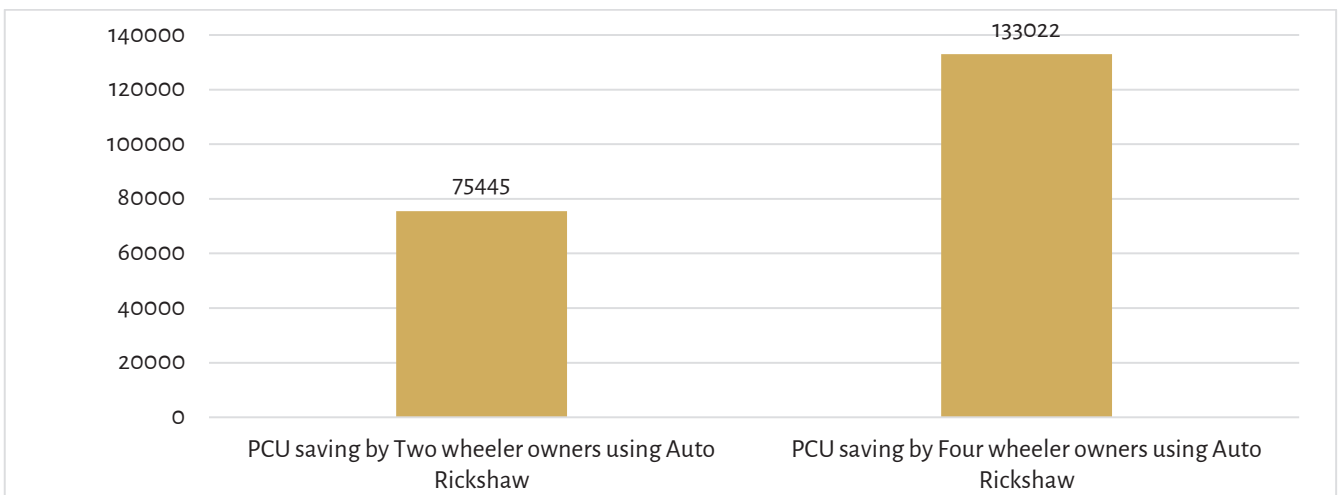
Source: Survey data for this study

Figure 14-15: CO and CO₂ emission savings done by auto-rickshaws by replacing four-wheelers



Source: Survey data for this study

Figure 16: PCU savings done by two-wheeler and four wheeler owners by using auto-rickshaw instead.



Source: Survey data for this study

XII. KEY FINDINGS

Though auto-rickshaws are usually viewed as supplementary forms of transport that provide commuters feeder or last-mile connectivity, they appear to be a predominant form of transportation in Kolkata. This form of IPT in this city, which is marked by the existence of shared auto-rickshaws and the complete elimination of 'on contract' autos, functions as an integral part of the transportation system in the city, one that is used by a cross section of society. In contrast to the perception of auto-rickshaws as causing nuisance and congestion, as reported by the media and reflected in the policies of the State transport department, the study finds that auto-rickshaws in the KMC area are popular owing to their affordability, regularity, safety, predictability and wide coverage. They also offer significant environmental and congestion benefits over privately owned transport.

Almost 70% of the respondents used auto-rickshaws 'every day' or 'a few times a week' while only 30% of the respondents used auto-rickshaws 'occasionally'. Survey responses about iterative modes of transport revealed that the auto-rickshaw served as a prominent choice for all legs of a trip being made in the city, and not exclusively for offering last mile connectivity for other modes of transport. Among the survey respondents, 58% of daily auto-rickshaw users own 4-wheeler and 48% of daily users own 2-wheelers, demonstrating the popularity of auto-rickshaws as a primary mode of transport. The popularity of auto-rickshaws among private vehicle owners is underscored by the relatively low ownership of private vehicles in Kolkata compared to other Indian metropolitan cities. Through a route mapping exercise, the study has found that auto-rickshaws cover 40% of the city's major roads. This extensive coverage is bolstered by the fact that 91% of the inhabited areas of KMC fall within a kilometre of an auto-rickshaw route. Almost half of the auto-rickshaw users stated that the auto-rickshaw was their primary form of transportation. The notion of the auto-rickshaw as an interstitial or 'intermediate' form of transport is certainly inappropriate in the context of Kolkata; however, this might need further exploration in other cities.

While women are well represented in the auto-rickshaw user profile across age groups, a proportionately high usage of auto-rickshaws by working women (40%), in comparison to the city's low female workforce participation (17.9%), indicates that auto-rickshaws are particularly popular among women. Women tend to find autos convenient to use throughout the day for a variety

of purposes that might include dropping and picking children, household chores and social visits, in addition to work. Women respondents were also less offended by the behaviour of auto-rickshaw operators.

The substitution of private vehicle trips with auto-rickshaw trips, the study finds, contributed significantly to emissions savings, to the tune of 411 kg CO and 17456 kg CO₂ emissions per day for 4-wheelers, and 243 kg of CO and 1794 kg of CO₂ emissions per day for 2-wheelers.

Users are benefited by a certain flexibility exhibited by Kolkata's auto-rickshaw system. This is seen in the large number of route irregularities whereby auto-rickshaw routes do not strictly follow the routes permitted. These irregularities—deviations, shorter routes and extensions, for example—are found to respond to user needs. For example, differences between peak and non-peak hours, the need to service new areas of the city and to accommodate special requirements during Durga Puja festival in Kolkata.

The responsiveness of the auto-rickshaw system in Kolkata, the study finds, can be largely attributed to the evolution of a regulatory system that leverages informal stakeholders to fill gaps in the formal regulatory process. Under the overarching provisions of the MVA, the West Bengal state transport department regulates auto-rickshaws in Kolkata through RTAs at the district level. RTAs do so through several means including route-based permits and requirements for other documents like fitness certificates, pollution under control certificates, etc. Operationally, auto-rickshaw operators are disciplined by the police and traffic guards.

Interactions between these formal actors and the auto-rickshaw operators are mediated by auto-rickshaw unions, which have strong political linkages and wield considerable power over both the regulatory and operational aspects of IPT in the city. These formally registered unions play a role in determining routes and fixing fares through the route committees set up by the RTAs. The unions play an important role in organising individual operators and representing them before the State. However, rent seeking by agents who help operators negotiate bureaucratic process at the RTA appears to be outside their purview. Vitality, unions coordinate the functioning of the auto-rickshaw stands at the local level, often through individuals called 'starters', streamlining aspects like frequency and resolving disputes with passengers. Operators are affiliated to a specific stand and pay

stand fees to the union for their services as well as for additional social security benefits they can avail through the union.

While historically auto-rickshaws in Kolkata can be linked to employment schemes for youth, results of this survey show that nearly 80% of the auto-rickshaw operators earn less than INR 500 per day. Since RTAs in West Bengal follow the closed permit system, the cost of permits in the second hand market are inflated and auto-rickshaw operators invest significantly to obtain one. Operational costs are reported to be high—a majority of the respondents reported spending over 60% of their earnings on operational costs. Therefore, while auto-rickshaws serve as an important mode of transportation in Kolkata, operators do not seem to receive commensurate financial gains from them.

In the peripheral areas of Kolkata, a variety of IPT options have emerged, chief among them the 'toto' or battery operated auto. Negligible regulation by RTAs and the police, and the low cost of acquisition and operation have resulted in their proliferation.

With the recent inclusion of e-rickshaws under the mandate of the MVA in 2015, totos are expected to become more accessible forms of IPT in the KMA, especially in the light of poor coverage of public transport, but what kind of regulatory framework emerges remains to be seen.

In conclusion, the study finds that IPT, specifically auto-rickshaws in KMC, plays an integral role in offering convenient, affordable and reliable doorstep-to-doorstep connectivity to Kolkata's commuters. This is made possible by the interventions of informal/semi-formal stakeholders, chief among them the operators' union, into the formal regulatory landscape as well into operational aspects. However, operators do not seem to be getting substantial economic benefits from the system. Nor is IPT integrated in any way into the larger transportation landscape of the city.

XIII. RECOMMENDATIONS

As detailed in the preceding sections, the study shows that the regulatory and operational aspects of IPT in Kolkata are closely intertwined. IPT in Kolkata operates primarily through a system of shared auto-rickshaws which are licensed as contract carriages but operate as stage carriages. This system has a significant advantage of being able to combine the advantages of size and frequency provided by IPT, with the regularity and route-based systemic operation of mainstream public transport. However, while the responsibilities of stakeholders are well-defined, a number of stakeholders are not formally recognised by the legal and regulatory framework. In the context of Kolkata, while the findings of the study indicate that IPT forms a central part of the public transportation system, the regulatory approach has been one of ambivalence, as evidenced by a range of policy documents ranging from the CMP to notifications issued by the Transport Department of West Bengal. In addition, the permit process under the MVA creates a complex legal framework in terms of differing categories of permits while vesting significant discretion in RTAs and other administrative authorities. In West Bengal, this has resulted in the regulators (i.e. the Transport Department and RTAs) attempting to push IPT modes to the fringes, rather than recognise them as an integral part of the main public transit system. Consequently, service providers have to navigate a web of inefficiencies and rent-seeking at the RTAs, and the entire system remains functional largely because of the role played by the unions in coordinating between different stakeholders and filling up the gaps at an informal level.

The recommendations of this report, consequently, speak to the need to recognise the critical role of IPT – specifically shared auto-rickshaws – in Kolkata's transport system. The recommendations of this report address improvements in policy, regulation and process to streamline current operations of auto-rickshaws and integrate IPT into the city's transportation system. They are organised under two main heads, addressing the expectations and roles of the regulatory and operational process respectively.

1. Transportation Policy at National and State Levels

In Kolkata, the significance of IPT at present is only recognised by some stakeholders (commuters, politicians, and traffic police), while being denied by some others (RTA), and demonised by still others (media). This study is seen as a beginning in creating awareness among important

stakeholders about the positive aspects of auto-rickshaws in Kolkata, especially within the dense KMC area. In light of the findings from the study, we propose the following changes to transportation policy.

a. *Transition to unified permits*

At the national level, the proposed Road Safety Bill, 2015 recognises the complications created by the existing permit process under the MVA, and proposes to replace it with a unified permit policy for all modes of commercial road transport. This will facilitate ease of application and reduce the potential for arbitrary decision-making and rent-seeking behaviour. However, the Bill is yet to be introduced in Parliament and in the interim, strict enforcement of existing outmoded processes by regulators may prove detrimental to a smooth transition to the new regime. The Amendment Bill of 2016 also does not address the issue of unified permits, but further complicates the field through the creation of additional schemes and licences. The report recommends that at a national level, whatever legislative course the Government chooses to take should involve a simplification of the existing regulatory system by creating a single unified category of permit for all passenger transport vehicles.

b. *Metropolitan-level decision making*

Under the MVA, a large part of regulation takes place at the state and district level, through the state transport departments and RTAs. This creates issues in urban areas, especially megacities which may not be co-terminus with or may extend across district boundaries. The proposed Road Safety Bill, 2015 is silent on regulation at the sub-state level. Despite the lack of success of the Unified Metropolitan Transport Authority (UMTA) model, there is no doubt that transportation planning needs to be done at the metropolitan level in some form to ensure integration across modes. We recommend that the regulatory regime must allow for adequate decision-making at the city level in urban areas, particularly megacities, in line with comprehensive local traffic and transportation planning needs. This may be achieved by a statutorily mandated and empowered framework, or appropriate modifications to the existing regulatory framework to include city-based traffic planning involving municipalities and other local authorities, including town planning authorities and the police. In Kolkata, given the KMA is spread over five districts and 38 local bodies, the lead in this may be taken by the RTAs of the districts, in coordinating with each other as well as other authorities. Formal consultative processes: A critical finding of the study has been that informal and semi-formal stakeholders are crucial to

success of the IPT system in Kolkata. At present, consultation with these stakeholders in transport regulation takes place at an informal level through the route committees. We recommend that this process of representation be formalised at all levels of the regulatory process to enable decisions on city-based transport routes and traffic planning to be taken only after an informed consultation with all the stakeholders, including transport unions, service providers, and representation from users. Formally including all existing stakeholders in the consultative process would be a concrete step towards formulating a realistic and responsive transportation policy for Kolkata. The formalisation may be ensured by statutorily recognising the role of each of these stakeholders in the transport planning and operations process, through amendments to the WB Rules or appropriate notifications issued thereunder.

c. Rationalising permits and routes

The need for caps on permits is an aspect of the IPT system that needs a more robust discussion. While conventional wisdom from the existing literature suggests freeing up the permit system from caps, the study found Kolkata to be a special case, where the closed permit system was an essential aspect of autos operating on fixed routes. However, the allocation of routes and permits was found to be carried out without adequate data about passenger densities and commuting patterns, resulting in various operational irregularities to cater to user demand that have been highlighted earlier in the report. This report recommends that the RTAs, with the help of route committees, must collect data regarding use of auto rickshaws. This data must be used to rationalise route permits, including the regularisation of currently irregular routes.

d. Improving regulatory efficiency

The study revealed several inefficiencies in the functioning of the nodal regulatory authorities, the RTAs, which have adverse financial consequences for the auto-rickshaw drivers and encourage a system of unauthorised intermediaries in the form of agents. Consequently, we recommend improvements at the level of the RTA to simplify application processes, which would reduce rent-seeking behaviour, among other inefficiencies. One means of ensuring such transparency and efficiency would be to move the application processes online, which would be in line with the thrust on citizen-centric e-governance encouraged under the Digital India programme of the Government of India. This would involve the improvement of infrastructure within the RTA, setting up online processes and training officers as well as applicants in computer literacy. We also recommend that issue

and renewal of permits be notified as services under the West Bengal Right to Public Services Act, 2013 with reasonable time-frames, on the lines of issuing of fitness certificates which is a notified service under this Act.²⁴

In addition, West Bengal has a specialised cadre of transport officers.²⁵ It is recommended that the advantages of this specially trained cadre could be harnessed effectively by increasing their strength and setting up additional sub-offices of the RTA based on an assessment of demand, particularly in the KMA region which sees a high number of applications for auto-rickshaw permits.

2. Passenger Comfort and Facilitation

The CMP for Kolkata envisaged the phasing out of auto-rickshaws; however autos have in effect emerged as an important and widely used transportation mode in the city. In the same time period, public bus transport has failed to expand and IPT appears to have grown to fill the gap. As mentioned before, a robust system of collecting transportation data and estimating travel patterns and demand for various modes needs to be put in place to make the auto-rickshaw system more responsive to user needs. The report recommends improvements in the following areas to facilitate passenger comfort and improve usability and convenience of the system:

a. Information availability

While the study found users to be generally aware of auto-rickshaw routes and fares, an accessible information system to inform passengers would greatly improve usability. We recommend measures for providing information like route maps and fare charts online, in printed form at popular locations, as well as displays at stands.

b. Physical infrastructure

The auto-rickshaw system in Kolkata suffers from poor infrastructure, especially inadequate space and poor design of designated stands. Improvements in the design and maintenance of stands should be made in order to facilitate a more systematic methodology of pick up and drop off. While auto-rickshaws by virtue of their design are easier vehicles to access for persons with disabilities and senior citizens, access at stands needs to be improved.

c. Better practices at stands

At present, persons with limited mobility are informally given preferences in auto-rickshaw queues. In order to strengthen and consolidate these practices, we recommend that government,

along with civil society, involves unions in training starters and operators for better practices at stands and pick-up/drop-off points.

d. Modes of payment

One of the primary issues with IPT systems for all users was the issue of exact change for cash transactions, which indicates the need for a simpler system of payment. There are several methods to tackle this issue, the most technological solution being to introduce smart cards on the lines of public transportation systems worldwide. In the interim, coupon booklets with specified fare denominations could be made available at stands, to be used by passengers in lieu of cash transactions with auto-rickshaw drivers. Alternatively, rounding off of the fares to multiples of five, on the lines of the Kolkata Metro and suburban railway, is also an option that may be considered.

e. Traffic data

At a city-wide level, it is important to integrate the auto-rickshaw stands with other forms of public transport to ensure more seamless connectivity. While several routes already begin or end at other modes of transport - such as ferry ghats and railway stations – integration on the ground remains a problem that needs to be addressed. We therefore recommend that the data from this study – in terms of the difference between permitted routes and functional routes – be used as a starting point to create a more realistic understanding of what the

transportation needs of the city are. This can be built upon to evolve a robust database of the transportation system, with mechanisms for regular upgradations.

3. Epilogue

For a metropolitan area the size of Kolkata, and one that is expanding into the peri-urban and suburban territories, some form of integration and rationalisation in transport regulation is desirable to allow for enhanced efficiencies and convenience. At a time when the environmental sustainability of cities is a key concern, the smooth functioning of IPT within an integrated transportation network will help Kolkata retain its commendable record for low private vehicle ownership.

A primary takeaway of the study was the value that the shared auto-system added to Kolkata's transport network, by bringing together the advantages of IPT and mainstream public transport. The shared auto-system has brought safety in transportation and reduced the carbon emissions of transportation significantly. Other cities could perhaps look to adding route based systems to their transportation networks and make concerted efforts towards integrating IPT systems in a more formal manner with buses and other forms of public transport. Combined with an extension of its positive urban design features, including zero lot lines, high-density mixed-use urban form and well-developed pedestrian infrastructure, transportation enhancements in Kolkata could go a long way in enhancing quality of life in an environmentally sustainable manner.

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NOTES

1. Based on table 1.3(b) in Sivaramakrishnan, K. C. (2015). *Governance of Megacities: Fractured Thinking, Fragmented Setup*. Oxford University Press.
2. Note: The last row quotes figures from the findings of this study
3. The number of auto-rickshaws in 1998 was only around 38,000. The CMP observed that an annual increase in the number of auto-rickshaws by 5.5%, in line with the increase in passengers, would result in severe environmental concerns due to rampant use of adulterated fuel, as well as pose safety concerns due to the observed practice of overloading auto-rickshaws beyond their capacity.
4. The licensing process for transport vehicles is governed by Chapter V of the Act. The chart below provides a brief outline of the classification of transport vehicles under the Act. 'Transport vehicle' is a broad category which in the Act, covers all vehicles other than those used exclusively for private purposes. Auto-rickshaws are not specifically mentioned in the Act but would be covered within the definition of 'public service vehicle' which is defined as "any motor vehicle used or adapted to be used for the carriage of passengers for hire or reward".
5. Sections 71-74 of MVA, 1988. Stage carriages operate on fixed routes which are divided into stages, and carry multiple passengers between different stages, each of whom pays a fixed fare depending on the number of stages travelled. Contract carriages, on the other hand, are hired by a passenger for her exclusive use, for a fare agreed on by contract, or determined through a meter, for the entire journey.
6. Section 74(2) states:

The Regional Transport Authority, if it decides to grant a contract carriage permit, may, subject to any rules that may be made under this act, attach to the permit any one or more of the following conditions, namely:-

 - (i) that the vehicles shall be used only in a specified area or on a specified route or routes;(…)
 - (iii) the maximum number of passengers and the maximum weight of luggage that may be carried on the vehicle, either generally or on specified occasions or at specified times and seasons;(…)
 - (v) that, in the case of motor cabs, specified fares or rates of fares shall be charged and a copy of the fare table shall be

exhibited on the vehicle;(…)

(x) that the conditions of permit shall not be departed from save with the approval of the Regional Transport Authority;

(xi) that specified standards of comfort and cleanliness shall be maintained in the vehicles;

(xii) that, except in the circumstances of exceptional nature, the plying of the vehicle or carrying of the passengers shall not be refused;

These powers have been exercised by the RTAs in West Bengal, particularly the KMA, to a significant extent while issuing permits to auto-rickshaws.

7. Rule 120(4) states:Special condition of permit in respect of auto-rickshaw—

(i) A contract carriage permit to be granted in respect of an auto-rickshaw on a specified or fixed route approved by the respective Regional Transport Authority subject to compliance of the provisions under the Motor Vehicles Act, 1988 and the rules framed thereunder.

(ii) No auto-rickshaw shall be allowed to ply in any route other than the specified or fixed route, allotted to it by the respective Regional Transport Authority, violation of which is punishable under the Motor Vehicles Act, 1988.

(iii) Fare for auto-rickshaw shall be fixed or determined by the State Government. Any complaint of overcharging of fare shall render the permit to be suspended/ cancelled.

(iv) The driver of auto-rickshaw shall not misbehave or be rude to the passengers. In the event of any complaint of this nature, the permit will be liable to be cancelled/suspended under section 86 of the Motor Vehicles Act, 1988.

(v) There shall be no metering system in the auto-rickshaw.

8. Section 74(3) states:

(a) The State Government shall, if so directed by the Central Government, having regard to the number of vehicles, road conditions and other relevant matters, by notification in the Official Gazette, direct a State Transport Authority and a Regional Transport Authority to limit the number of contract carriages generally or of any specified type as may be fixed and specified in the notification, operating on city routes in towns with a population of not less than five lakhs.

(b) Where the number of contract carriages are fixed under clause (a), the Regional Transport Authority shall, in considering an application for the grant of permit in respect of any such contract carriage, have regard to the following matters, namely :-

- (i) financial stability of the applicant
- (ii) satisfactory performance as a contract carriage operator including payment of tax if the applicant is or has been an operator of contract carriages ; and
- (iii) such other matters as may be prescribed by the State Government:
9. Notification No. No. 4786-WT/3M-49/2001 Pt. I, dated 19th October 2004.
 10. Notification No. 268-WT/3M-01/2010, dated 29th January 2010.
 11. See, for instance, Notification No. 2027 – WT/4M-23/95, dated 9th April 2010 (list of 125 routes in KMA); Memo No. 902(11)/MV/BST, dated 18th June 2012 (list of 453 routes under District North 24 Parganas).
 12. An unreported judgment of the Calcutta HC in March 2013 directed the metering system to be implemented in auto-rickshaws, but does not seem to have been implemented till date.
 13. Shanawaz Husain v. Municipal Corporation of Delhi, W.P. (C) 5764/2013 (Delhi High Court).
 14. See, Notification No. 1526-WT/3M-56/13/Pt.II, dated 27th April 2015 (Transport Department, Government of West Bengal).
 15. See, Notification No. 1569(19)-WT/3M-56/13(Pt-II), dated 28th April, 2015 (Transport Department, Government of West Bengal).
 16. See, for instance, Notification No. T-12013/2/2015-MV/120114, dated 14th July 2015. This notification from the North 24 Parganas district magistrate provided a list of 20 new routes that would be opened to e-rickshaws. The rationale for this decision was the large number of applicants for New Permit for e-Rickshaws (Three Wheeler Passenger) against Existing or New Vehicle' in addition to engaging with unemployed youth and to 'augment passenger transport service in public interest (...) bridge the gap between demand and supply of transport services and for purpose of providing efficient, adequate, and economical mode of transport service for last mile connectivity...'
 17. See Government of West Bengal, Office of the District Magistrate and Collector, Howrah (Motor Vehicles Department) (<http://howrah.gov.in/templates/motorvehicles.htm>)
 18. See Government of West Bengal, Department of Transport (http://vahan.wb.nic.in/wb/vahan/gui/jsp/websitePages/description_office_structure.jsp)
 19. Furthermore, there are auto-rickshaws that need to get permits from more than one Public Vehicle Department. For instance route No.79 (Taratala to Mollargate), 103 (Ruby General Hospital to Jadavpur P.S.), 109 (Metiabruz P.S to Shailashree cinema) has permit from both Beltala PVD as well as from Alipore PVD. The reason for these multiple permits has often been cited as a means of increasing the number of vehicles on routes that have a high volume of users.
 20. CC - [https://www.flickr.com/photos/sudiptadas/22425372801/in/photostream/October 2015](https://www.flickr.com/photos/sudiptadas/22425372801/in/photostream/October%202015)
 21. This was of a sample of 133 operators interviewed, and after accounting for their expenses.
 22. This is from qualitative data.
 23. The calculations for the de-congestion were done by converting the vehicular numbers into PCU values. The PCU values taken for an auto-rickshaw rickshaw, two wheeler and four wheeler were 0.75, 0.50 and 1 respectively.
 24. See notification No. 3916-WT/3M/72/2013, dated 31.10.2013, as modified by notification No. 1618-WT/3M/72/2013, dated 04.05.2015. Under these notifications, fitness certificates are required to be issued within five working days from the date of application.
 25. For further reading – West Bengal Motor Vehicles Enforcement Officers' Association formed in 1986 (<http://www.wbmveoa.org/about-us/>)

APPENDIX

Annexure 1: List of Court Judgements

Name	Summary	Location	Date
Arun Barua v. The State Of West Bengal & Ors	Upholds the validity of the Notification and clarifies the scope of the powers of the RTA (See Annexure 2)	Calcutta High Court (Appellate Side)	Mar 28, 2014
Pijush Kanti Bain v. State Of West Bengal & Ors	Nadia RTA is directed by HC (Kolkata) to reconsider its refusal to grant contract carriage permit. The court states that while the RTA has the power to refuse the permit it needs to provide sufficient reason to do so which the court found lacking	Calcutta High Court (Appellate Side)	June 30, 2014
RTA Board Meeting, Nadia	The Nadia RTA decisions on permits for individual applications	Nadia	July 15, 2014
Debashis Mondal v. The State Of West Bengal & Ors	Dismissal of WP in a second appeal before State Information Commission	Calcutta High Court (Appellate Side)	July 15, 2014
Anil Kumar Chowbey v. The State Of West Bengal & Ors		Calcutta High Court (Appellate Side)	July 23, 2014
Shamim Akhtar & Ors. v. State of West Bengal & Ors.	In all these cases, the RTA rejected the applications for permits by merely referring to the 2010 notification without providing any detailed reasoning therefor. The Court, relying on its earlier judgment in Arun Barua, held that when an application for a permit is rejected, detailed reasons should be provided explaining which part of the 2010 notification is violated and in what manner. The decisions of the RTA were set aside and the RTA was directed to reconsider the applications in accordance with law. Further, the RTA was directed to provide an opportunity of hearing to all applicants as well as provide them with extracts of relevant documents that were relied upon for making the decision.	Calcutta High Court	July 23, 2014
Sri Subrata Sarkar v. The State Of West Bengal & Ors		Calcutta High Court (Appellate Side)	July 28, 2014
Sri Protap Biswas v. The State Of West Bengal & Ors		Calcutta High Court (Appellate Side);	July 28, 2014
Prabir Hazra v. The State Of West Bengal & Ors		Calcutta High Court (Appellate Side)	July 28, 2014
Sri Ananda Biswas v. The State Of West Bengal & Ors		Calcutta High Court (Appellate Side)	July 28, 2014

Annexure 2: Case Summary of Arun Barua v. State of West Bengal

Case: Arun Barua v. State of West Bengal [Writ Petition No. 19227 of 2012] Calcutta High Court (March 28, 2014)

Bench: Justice Dipankar Datta

Facts:

- The Petitioners had applied for permits to operate auto-rickshaws before various regional transport authorities (RTAs) in West Bengal. These applications were denied on the basis of a state government notification dated 29.01.2010. (Note: the text of the notification is reproduced in the judgment).
- Prior to this, the Calcutta high court had, in another case, directed the State Government to formulate a policy for grant of licenses to three-wheeled vehicles. The notification contained this policy. In that case permit had been denied because the proposed route was covered by a bus route. Since no law provided for this, the state to frame a policy if it wanted to do this in the future.
- The notification provided, amongst other things, that no new permits would be granted (a) in the Kolkata Metropolitan Area; (b) routes and areas covering more than one district; (c) on National Highways, except to cross the at particular points (d) covering more than 30% of existing bus routes. It also provided that auto-rickshaws would not be permitted to ply on State highways for more than 3 km at a stretch.
- The notification provided that grant of permits would be by local RTAs in compliance with directions from the State Transport Department.

Issues Raised:

Based on the arguments advanced by the petitioners and the state of West Bengal, the main legal issues that emerged were:

- Whether the notification is ultra vires (outside the scope of) the State Government's powers, given that the Centre has framed the Motor Vehicles Act (MVA) and

- Whether the State Government could restrict control and co-ordination of transport by an executive order instead of legislation or delegated legislation (such as rules framed under a statute); and
- Whether the denial of permits to the Petitioners was lawful, given that the reason for denial was the claim that some of the routes fell within the Kolkata Metropolitan Area, and the policy prohibited new permits in that area.

Holding:

The High Court has held, on consideration of the arguments raised, that:

- The guidelines are in conformity with the provisions of the MVA. [Paragraph 33].
- The State was within its powers to frame the notification, for the following reasons. The MVA framed when operation of auto-rickshaws was at a nascent stage, and consequently, the act does not provide for specific regulation of routes. When an act does not provide specific instructions, issues arising from new developments can be addressed by executive orders. These orders cannot supplant the act or rules, but must be in compliance with the same. [Paragraph 22]. Even though the MVA is a central law, the power to regulate motor vehicles comes from List III of the Constitution, which covers items on which the Centre and State have concurrent powers. So the State may issue executive instructions on this issue, provided that such instructions are (1) not against public policy (2) not contrary to the object of the MVA, and (3) are in public interest. [Paragraph 26]. The State was bound to implement the orders of the High Court in the previous case, directing them to frame a policy. [Paragraph 30]
- The denial of permits was lawful, because the petitioners themselves admitted that the point of origin for the route they wanted was within the Kolkata Metropolitan Area. The denial of permits was clearly in accordance with the policy, so the claim that this violates the right to equality was also rejected. However, in some cases where the rejection was done without providing reasons or giving details of the alleged breach of the policy, the RTAs decisions were struck down [paragraph 51]/

- The Court noted that normally the petitions would have been dismissed with giving the petitioners permission to apply afresh for new permits. However, given that in this case the petitioners had surrendered their employment exchange cards and would suffer some difficulty. Therefore the Court directed the RTA to call upon the petitioners and ask them if they were

willing to operate auto-rickshaws on other routes that did not violate the policy. They would also be free to challenge the grant of permits to other people in violation of the guidelines. Specifically for one petitioner, the rejection of application was struck down because the RTA did not provide reasons.

Annexure 3: Surveyor Manuals

I. Introduction to the Project:

The project proposes to conduct a focused study of the regulatory architecture and the manner in which different urban transport service providers interact with regulators in one megacity region, specifically Kolkata.

The primary intended outcome of the project is to integrate intermediate public transport (IPT) within regulatory structures for transportation in the megacity regions of India, in order to move to a more seamless transport system and support the shift of users away from private transport by providing high frequency assured seating public transport options that start and end close to user origins and destinations.

The project will collate data through a combination of policy reviews, grassroots surveys and detailed interviews with key institutions that engage with traffic policy creation and implementation in West Bengal

II. Intent of the Manual:

This manual will detail the questions in the surveys and provide detailed explanations of both the intent and the information required to be collected from each question. The surveyors are required to fill out three kinds of forms – Focus Group Discussions, Driver Surveys, Starter Survey, User Surveys and Auto rickshaw Mapping Form.

III. Respondents for the Surveys:

The respondents of the Focus Group Discussions and Auto rickshaw surveys are, largely, auto rickshaw drivers and also include individuals who drive other automated vehicles like three wheeler motor van (Chinese Motor),

Tata Magic, Tata Magic Iris (Small), Mahindra Gio, Mahindra Champion (Auto rickshaw), Piaggio Ape, Force Trax (long open car), Toto (Battery Rickshaw) and Cycle Rickshaw. The FGD are meant for group discussions while the Driver Surveys are for individual interviews.

The respondents of the Starter Surveys are the ‘Starters’ or the individuals who are in charge of the auto stands in Kolkata. These individuals maintain the time schedules of the stands.

The respondents for the User Survey are individuals who use auto rickshaw and the allied forms of transportation (three wheeler motor van (Chinese Motor), Tata Magic, Tata Magic Iris (Small), Mahindra Gio, Mahindra Champion (Auto rickshaw), Piaggio Ape, Force Trax (long open car), Toto (Battery Rickshaw) and Cycle Rickshaw)

The Auto rickshaw Mapping Form does not require any respondents but surveyors are requested to map various routes using GPRS systems that they have been provided with by the project.

IV. Geographic Area of the Project:

The project covers the Kolkata Metropolitan Area (“KMA”), with a population of over 14.8 million people spread over approximately 1900 sq. km. across five districts (Hooghly, Howrah, Nadia, North 24 Parganas, and South 24 Parganas) including three municipal corporations – Kolkata, Howrah, and Chandannagore (KMDA 2011).

V. Surveys

These are the surveys along with the intention behind a question or the explanation of the question

I. Auto Driver Survey		
No	Question	Comment
By Surveyor	This information can be filled out prior to talking to the driver	
1	Location	Please record the location through the GPS function
I	Latitude (x,y °)	This will occur automatically
II	Longitude (x,y °)	This will occur automatically
2	Form No.	Fill in the form number for the day
3	Origin of Route	Starting point of the route
4	Destination of Route	Name of the final destination on the route
5	Route Number	Route number assigned to the auto
6	Route Length (in Km)	Entire length of the route
7	Fare Minimum	The minimum fare for the journey
8	Fare Maximum	The maximum fare for the journey
9	Who fixes the fares?	
I	Union	
II	Government	
III	Myself	
IV	Other (Box)	
10	Fare increased on the basis of:	Intent: to understand how fares are increased
I	Distance	Are fares increased according to distance covered?
A	Amount per km	Amount (if increased acc. To distance)
li	Stops	Are fares increased according to the number of stops covered?
A	Amount per stop	Amount (if increased acc. To number of stops)
11	Are you satisfied with the fares?	
I	Yes	Is the driver content with the fare rates?
li	No	
A	Why are you not satisfied with the fares?	If they choose 'no', please explain why they are unsatisfied with the fare rates
12	Actual vehicular capacity	The number of people the auto can carry (not total number of people who use the auto per journey)
13	Auto Brand/Model	
14	Does the route have a starter?	
I	Yes	Intent: Need to understand if the auto stand has a starter or not
li	No	

15	Photo	
I	Stand	
II	Auto	Take a photo of the following options
III	Stop	
IV	Change-Over Point	
16	Odometer Reading	The current odometer reading
17	Date of Registration	Date when the auto was registered (if they are unwilling/ unable to provide you with the date fill in the next question)
18	How old is your auto? (in years)	An approximate number will do if they are unsure about the age of the auto
19	Fuel Type	
I	CNG	
II	LPG	
III	Petrol	
IV	Diesel	Intent: to understand the fuel type used by the vehicle
V	Other (Box)	

Information that needs to be filled out by the driver This information can be filled out through discussions with the driver

20	Name	Name of the Driver
21	Age	Age of the Driver
22	Where do you stay?	Area of residence of the driver
23	Details of your residence	Intent: to understand the household details (ownership, family etc.) of the driver
I	Owned	Does s/he own the house s/he lives in?
A	Who do you stay with?	If yes, then whom does s/he live with?
-	Alone	Is living without family
-	Family	is living with family
II	Rented	Does s/he rent out the current house s/he lives in?
A	Who do you stay with?	If yes, then whom does s/he live with?
-	Alone	Is living without family
-	Family	Is living with family
-	Friends	Is living with friends
-	Other	Is living with someone else, please specify whom
III	Friend's Place	Does s/he live with friends
IV	Other (Box)	Does s/he live in some other place, please specify
24	Do you park the auto near your house?	Intent: to understand where the auto is parked in the night
I	Yes	
II	No	
25	Auto Ownership	To understand who owns the auto rickshaw

I	Owned	If the driver owns it
A	Cost of auto (in lakhs)	How much did the auto cost?
B	Cost of Permit (in Rs)	How much did the permit cost?
C	What were your sources of finance?	How did s/he finance the auto purchase?
-	Bank	Formal loan from a bank
-	Personal Savings	The driver's own funds
-	Moneylender	Borrowed money from a moneylender
-	Family	Borrowed money from a friend
-	Multiple Sources	Used multiple sources
D	Total loan amount (in Rs.)	Total amount taken for the loan
E	Total EMI (in Rs.)	Monthly EMI for the loan
F	Duration of the loan (in years)	The duration to pay back the loan
li	Rented	Is the auto rented out
A	What is the frequency with which you pay the rent?	How often does s/he pay rent for the vehicle, please choose the appropriate response
-	Daily	
-	Weekly	
-	Monthly	
-	Other (Box)	
B	Rental Charge (in Rs)	The amount paid
26	Maximum no. of passengers per trip	Maximum number of passengers who use an auto per journey (inc. people who get off and on during the whole route)
27	Average no. of round trips per day	Minimum number of passengers who use an auto per journey (inc. people who get off and on during the whole route)
28	No. of riding hours per day	Number of hours the driver spends driving everyday
29	No. of riding days per month	Number of days the driver takes the auto out every month
30	What are your total earnings in a day of driving?	Total income per day
31	What are your total earnings in a day of driving, after meeting all your daily expenses?	Total profit per day
32	Fuel consumed per day, in Litres	Amount of fuel consumed in terms of litres per day
33	Fuel consumed per day, in Rs	Amount spent on fuel per day
34	Pollution Under Control Certificate	Does the driver have a PUC?
35	Do you have any vehicular insurance?	Does the driver have vehicular insurance?
I	Yes	Choose if s/he has insurance
A	What kind of insurance do you have?	Intent: to understand the kind of insurance that the driver has
-	Vehicle insurance	
-	Third party insurance	
36	Do you pay any fees to the police?	Does the auto driver pay any fees to the police
I	Yes	Choose if yes

A	What kind of fees do you pay to the police?	What kind of fees, please choose the appropriate response
-	Formal	Please choose if the fees are formal
-	Informal	Please choose if the fees are informal
-	Both	Please choose if both formal and informal fees are paid to the police
li	No	Choose if fees are not paid to the police
37	Do you pay any fees to the RTO?	Intent: to understand if fees are paid to the RTO
I	Yes	Choose if yes
A	What kind of fees do you pay to the RTO?	What kind of fees, please choose the appropriate response
-	Formal	Please choose if the fees are formal
B	Informal	Please choose if the fees are informal
C	Both	Choose if fees paid are both formal and informal
li	No	Choose if fees are not paid to RTO
38	Do you pay any fees to the union?	Intent: To understand if fees are paid to the Union
I	Yes	Choose if fees are paid to the union
A	What kind of fees do you pay to the Union per month?	Intent: to understand the fee structure and services the union provides
-	Formal	Choose if formal fees are paid to the union
-	Informal	Choose if informal fees are paid to the union
-	Both	Choose if formal and informal fees are paid to the union
39	Are you satisfied with the union?	
I	Yes	Intent: to understand how useful the drivers find the union, please choose the appropriate response
li	No	
A	Why are you not satisfied with the union?	Explain why the drivers are not satisfied with the union
40	Do you pay any fees to the stand?	Intent: to understand if fees are paid to the Stand
I	Yes	Choose if yes
A	What kind of fees do you pay to the Stand per month?	What kind of fees, please choose the appropriate response
-	Formal	Please choose if the fees are formal
-	Informal	Please choose if the fees are informal
-	Both	Choose if formal and informal fees are paid to the stand
li	No	Choose if fees are not paid to the stand
41	Do you pay fees to anybody else?	Intent: to understand if fees are paid to an entity other than Police/RTO/Stand
I	Yes	Choose if yes
A	To whom do you pay fees to?	Whom are the fees paid to
B	What kind of fees do you pay here?	Kind of fees
-	Formal	Choose if formal
-	Informal	Choose if informal

-	Both	Choose if both
ii	No	choose if no
42	Who pays for the major maintenance of the vehicle?	Intent: to understand who pays for the major maintenance of the vehicle
i	Owner	Choose if owner pays for the major maintenance of the vehicle
ii	Driver	Choose if driver pays for the major maintenance of the vehicle
iii	Other (Box)	Choose if someone else pays for major maintenance, please name the individual
43	Who pays for the minor maintenance of the vehicle?	Intent: to understand who pays for the maintenance of the vehicle
i	Owner	Choose if owner pays for the minor maintenance of the vehicle
ii	Driver	Choose if driver pays for the minor maintenance of the vehicle
iii	Other (Box)	Choose if someone else pays for minor maintenance, please name the individual
44	Major Maintenance cost per year (in Rs)	Amount paid for major maintenance costs per annum
45	Minor Maintenance cost per month (in Rs)	Amount paid for minor maintenance costs per annum
46	Do you have any suggestions on improving the current system?	Intent: To get suggestions from the driver to improve the systems that they navigate
I	Yes (Box)	Choose if yes and write down their ideas
li	No	choose if no
	Information to be filled out by the surveyor	To be filled by the surveyor
47	Any other remarks to be noted	Any misc. remarks

II. Auto Route Mapping

No.	Question	Comment
1	form Number	Input the number of form for the day
2	Route Number	Match this to the route list
3	Route Length (in KM)	the distance covered
4	Stop 1	Use GPS to record the stop
5	Latitude	automatically generated information
6	Longitude	automatically generated information
7	passengers got off auto	Choose if passengers only get off
8	passengers got on auto	Choose if passengers only get on
9	both	Choose if passengers get off and get on
10	Repeated 8 times	Repeat as many times as is needed

III. Auto Starter Form

No.	Question	Comment
1	Location	Please record the location through the GPS function
i	Latitude	This will occur automatically
ii	Longitude	This will occur automatically
2	Form Number	Fill in the form number for the day
3	Are you the Starter?	The surveyor asks the respondent if s/he is a starter, please choose the correct option
i	Yes	
ii	No	
4	What are your timings here?	Write down the hours that the starter mans the stands
5	How many routes are there on the stand?	Write down the number of official routes that operate through this stand
6	How many routes do you manage on this stand?	write down the number of official routes the starter manages at the auto stand
i	Number of routes	Number of routes (the next two questions will be repeated according to the number of routes)
ii	Route Number	each individual route number
iii	How many permits on this route?	number of permits for this route
7	How many round trips for each auto in a day	Number of round trips for all auto rickshaws for all days
8	What is the average amount of time per round trip? (in minutes)	Average time take for all routes in minutes
9	When are the peak hours?	When are there the most auto rickshaws and passengers
10	What is the frequency of autos during peak hours?	How many autos are found at the stand during peak hours (if they give a range of numbers write down the higher number)
11	What is the frequency of autos during off-peak hours?	How many autos are found at the stand during off peak hours (if they give a range of numbers write down the higher number)
	Functions	These are the functions of the starter
12	Do you schedule the departure of autos?	Does the starter determine the order of the autos? Please choose the appropriate answer
i.	Yes	If yes
A	How?	How does he decide the order
a	First in First out	First come first basis for autos
b	Other	If other, please explain
ii	No	If the starter does not decide the order
13	What rules are there?	What are the rules of the stand? Multiple choice possible. Explain 'other' if chosen
i	Agreed number of passengers	
ii	Adherence to routes	
iii	Others (Box)	
14	Do you penalize autos for violating rules?	Are auto drivers punished for breaking rules of the stand?
i	Yes	If yes, please choose

A	Do you charge monetary fines?	Is there a fine?
a	Yes	If yes, please choose
-	How much do you charge in monetary fines (Rs)	How much money must they pay as a fine?
b	No	If they are not fined, please choose
B	Do you stop autos from operating?	Are auto drivers banned from the stand for breaking the rules? Please choose the appropriate option
a	Yes	
b	No	
C	Do you penalise them in any other way?	Are auto drivers punished in other ways (other than fines or banning) for breaking the rules of the stand?
a	Yes	If yes, please choose
-	How?	Describe how they are penalised
b	No	If no, please choose
ii	No	If no, please choose
15	How much salary do you get (in Rs.)?	The starter's salary
16	Who pays it?	The source of income
17	Do you collect Union fees?	Does the Union collect fees from the auto drivers at the stand?
i	Yes	If yes, please choose
A	How much?	Amount
B	Does it pay your salary?	Source of the salary
a	Yes	If yes, please choose
b	No	If no, please choose
ii	No	If no, please choose
18	Are there any regular payments to the police?	Are auto drivers asked to make payments at regular intervals to the police?
i	Yes	If yes, please choose
A	Frequency?	How many times per year
B	How much?	Amount
ii	No	If no, please choose
19	Are there any regular payments to the RTO?	Are auto drivers asked to make payments at regular intervals to the RTO?
i	Yes	If yes, please choose
A	What is the frequency of payment?	How many times per year
B	How much do you have to pay?	Amount
ii	No	If no, please choose
20	Are there any regular payments to others?	Are payments made to other people?
i	Yes	If yes, please choose
A	To whom?	Designation of individual or name of institution
B	What is the frequency of payment?	How often are payments made
C	How much do you have to pay?	Amount

D	What are the other major expenditures for Union collections?	Other expenditures like payment for lawyers, children's education etc...
ii	No	If no, please choose
21	Any remarks by the surveyor	If any remarks by the surveyor, please choose
III.	Auto User	
No.	Question	Comment
1	Location	Please record the location through the GPS function
i	Latitude	This will occur automatically
ii	Longitude	This will occur automatically
2	Form Number	Fill in the form number for the day
3	Name	Name of the respondent
4	Age	Age of the respondent
5	Gender*	Gender of the respondent, please choose the correct option
i.	Male	
ii	Female	
iii	Other	
6	Occupation	Occupation of the respondent, please choose the correct option. Fill in the 'other' box if the correct option is not specified here
i	Student	
ii	Business	
iii	Service	
iv	Part-time Worker	
v	Housewife	
vi	Other (Box)	
7	Do you own a vehicle	Whether the respondent owns private transportation (if the answer is 'yes' you can choose multiple choices)
i	Yes	
A.	Cycle	
B	2 wheeler	
C	4 wheeler	
ii	No	
8	Frequency of commuting by shared auto	Number of times the user normally uses shared autos, please choose the correct option
i	Daily	
ii	Frequently (more than once a week)	
iii	Weekly	
iv	Every 15 days	
v	Occasionally (2-3 times a month)	
vi	Monthly	
9	The present trip is	How frequently does the user travel on the route s/he has currently taken
i	Daily	
ii	Occasional	
iii	Frequent	

10	Purpose of the trip	The purpose of the present trip, please choose the appropriate option. Fill in the 'other' box if the purpose is separate from the options already provided
i	Office	
ii	Business	
iii	Shopping	
iv	Leisure	
v	Education	
vi	Other	
11	Total trip time (in minutes)	Total time for the trip taken in minutes
12	Total waiting time (in minutes)	Time spent not moving
13	Where did you start from?	This is the start of a series of questions to understand the modes of transport, the costs and time taken by the user to reach his/her current location. Origin of travel, please choose the correct box
i	Home	
ii	Office	
iii	School	
iv	Market	
v	Other	
14	Starting point of the trip (Locality)	Area from where the journey starts
15	What mode did you use?	What mode did you use to travel
i	Foot	
ii	Cycle	
iii	Cycle Rickshaw	
iv	2 Wheeler	
v	Auto	
vi	Personal Car	
vii	Taxi	
viii	Bus	
ix	Tram	
x	Metro	
16	What distance did you cover? (in km)	Distance covered in this mode of transport
17	How much did it cost? (In Rs.)	Cost of this section of the travel
18	How much time did it take? (in minutes)	Time taken to complete this section of the journey If they took more than one form of transport, please choose the correct option and repeat questions 13-19 if required
19	Did you take any other mode?	
i	Yes	
A	(Repeat from 13-19)	
ii	No	

20	Do you face any problems with auto rickshaws?	This is a list of problems that users face in their travel in auto rickshaws, rate the problems if they select 'yes' or fill in the 'other' box if the problem is not listed.
i	Yes	
A	Driver behaviour	
B	Auto condition	
C	Fare	
D	Frequency	
E	No exact change	
F	Other (Box)	
ii	No	

21	Do you face any problems with other modes of transport?	This is a list of problems that users face in their travel in other vehicles, rate the problems if they select 'yes' or fill in the 'other' box if the problem is not listed. Select the appropriate vehicle and problem where relevant.
i	Yes	
A	Mode of transport	
a	Cycle	
b	Rickshaw	
c	Taxi	
d	Bus	
e	Tram	
f	Metro	
	Problem	
a	Driver behaviour	
b	Vehicle condition	
c	Fare	
d	Frequency	
e	No exact change	
f	Other (Box)	
ii	No	

22	Do you have a railway pass?	To check if auto users also have railway passes
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23	How much do you spend on transport per day? (In Rs.)	Daily cost of transport
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24	Why didn't you use a bus for the present trip?	Intent: to understand why people do not use public transport. Please choose the appropriate option and fill in the 'other' box if the reason is not listed
i	Journey is not on the route	
ii	Bus stop is too far	
iii	Frequency is low	
iv	fare is high	
v	Crowded	
vi	Other	

25	Do you walk to access public transport?	
i	Yes	Intent: to understand if people do walk, please choose the correct option
ii	No	
26	Would you walk to access Public Transport if the footpaths are well maintained and wide?	Intent: to understand why people do not walk, choose the correct option
i	Yes	
ii	No	
A	Why Not	
a	Inconvenient	
b	Unsafe	
c	Climate not suitable	
d	Too far	
e	Other (Box)	
27	Do you cycle to access public transport?	
i	Yes	To understand if people cycle to access public transport, please select the appropriate box
ii	No	
A	Would to cycle to access public transport if cycle lanes, cycle stands or PBS system is provided?	To understand if and how people would be motivated to use cycles
a	Yes	
l	How	
-	Own cycle	
-	PBS	
b	No	
l	Why not?	
-	Not legally permitted	
-	Unsafe	
-	No parking	
-	Inconvenient	
-	Too far	
-	Climate not suitable	
-	Other (Box)	
28	Any suggestions for improvement?	If they would like to change transport or road systems to make travel more comfortable

III. Focus Group Discussion

No.	Question	Comment
1	Form Number	Fill in the form number for the day
2	Location:	Location where the FGD takes places
3	Route Number	Route numbers at the stand
4	Route name:	Route names at the stand
5	Peak hours:	of auto traffic
i	Morning	In the morning
ii	Evening	In the evening
6	Who decides the fare:	Please choose the appropriate option
i	Traffic Police	
ii	Auto Union	
iii	Individually	
iv	User	
7	Frequency of fare revision:	How often are fares increased
8	Who decides the designated stops:	Who decides the stops on the route
i	Traffic Police	
ii	Auto Union	
iii	Individually	
iv	User	
9	No. of Autos in the route:	Number of autos who ply the route
10	Are there any non-designated stops?	Are there stops outside the official stops
11	Any suggestion for change in:	If the drivers want to offer suggestions for changes
i	Permit System:	
ii	Fare Revision System:	
iii	Union System:	
iv	Route Obtaining System:	
12	Any other issues regarding:	If the drivers want to discuss issues they face
i	Infrastructure:	
ii	Traffic police: E	
iii	Use of auto:	
iv	Other modes (taxi, bus):	
13	Pricing Structure	How is the pricing structure determined and what are the prices
i	Per Passenger	
ii	Per Km	
14	Frequency of Auto in:	What is the frequency of autos
i	Peak Hour	
ii	Non-Peak Hour	

Annexure 4: Beltala RTA Auto-Rickshaw Permitted Routes (Notification No. 2027-WT/4M-23/95, dated 9.4.2010)

Route No.	From	To	Via	Maximum no. of permits
1	Ahiritola L Ghat	Beadon Street & APC Road Crossing	Beadon Street	56
2	Ahiritola L Ghat	Ultadanga Station	Ahiritola Street, BK Pal Avenue, Aurobindo Setu	160
3	Ahiritola	Maniktala	Bidhan Sarani APC Road Crossing	65
4	Alipore Judge Court	Ballygunge Station	Gopal Nagar, Kalighat Bridge, Hazra, SP Mukherjee Road, RB Avenue, Gariahat	88
5	Akra Fatak	Santoshpur	Santoshpur Road, Ghosh Para	50
6	Bose Pukur (Gariahat)	Behala		50
7	Ballygunge Bus Stand	Alipore Judge Court		108
8	Ballygunge Phari	Picnic Garden		67
9	Ballygunge Phari	Hazra More	Hazra Road	25
10	Ballygunge Station	Hazra More		26
11	BR Singh Hospital	Dhapa Math Pakur	Beliaghata Main Road, Pamar Bazar Crossing, Metropolitan Co-operative Society without touching EM Bypass	245
12	BR Singh Hospital	Baishali	Beliaghata Main Road	166
13	9 & 15 Bus Stand	ESI Hospital (Raja Bazar)	Biplabi Bankim Ghosh Sarani, Maniktala Main Road, Raja Dinendra Street, Gas Street	30
14	BK Paul (MG Sarani)	MG Road Rabindra Sarani Crossing		125
15	BR Singh Hospital	Baman Ghata Bantala	Beliaghata Main Road	57
16	Bagbazar Bata	Bagbazar Launch Ghat	Bag Bazar Street	20
17	Bengal Chemical	Kaizar Street	Maniktala Main Road, Kankurgachi More, CIT Road, Phoolbagan More, Narkeldanga Main Road, Gas Street	83
18	Cossipore 4B Bus Stand	Paikpara 2 No. Stand	Cossipur Road, KC Road, Chiria More, Dumdum Road, Rani Harshamoyee Road	38
19	Chetla	Gariahat	Chetla Central Road, RB Avenue	48
20	Chiria More	Dumdum GS Colony		10
21	Chitrapuri Cinema	Metiabruz	CGR Road	10
22	Chiria More	Gun Shell Factory		10
23	Dumdum Station	Chiria More		40
24	Dumdum Station	Cossipore Ferry Ghat	Dumdum Road, KC Road, Gun Shell Factory	25

25	Deshpriyo Park	Lake Gardens Lords Bakery	Dhaka, Kalibari, Jatin Das Road	15
26	Gariahat	Ram Lal Bazar (Haltu)	RB Avenue, Bijan Setu, BB Chatterjee Road, Rathtala, Garia Main Road	110
27	Gariahat	Kasba	RB Avenue, Bijan Setu, RB Connector, Gol Park	88
28	Gol Park	Garia	SC Malick Road	515
29	Gariahat	RB Avenue Dena Bank	RB Avenue, D Park, Lake Market, Chetla, New Alipore E Block	82
30	Gol Park	Tollygunge PS	Southern Avenue	30
31	Hazra	Behala		76
32	HUDCO	Salt Lake 13 No. Tank		115
33	HUDCO	Salt Lake SDF Building	Karunamoyee	100
34	Hazra (Andool Raj Road Crossing)	Bondel Gate	Hazra Road, Ballygunge Phari, Bondel Road	144
35	Hazra More	Khidirpore More	Gopal Nagar, Hastings Park, Belvedere Road, Alipore Road, Ekbalpur Road, DH Road	64
36	Hazra (Andool Raj Road Crossing)	Ballygunge Phari		25
37	Hazra	CR Hospital	Townsend Road, Beltala Road, Richie Road, Ballygunge Circular Road, Broad Street, Lohapul, Darga Road	72
38	Jadavpur PS	Taratola	Tollygunge Phari	150
39	Khidirpore	Hazra Crossing	Gopal Nagar, Hastings Park, Belvedere Road, Alipore Road, Eqbalpur Road, DH Road	50
40	Kasba (Lalkuthi)	Gariahat	Bijan Setu	40
41	Kasba	Behala Tram Depot	Chetla	133
42	Kasba	Hazra	Mohoharpukur Road, SPM Road	56
43	Kasba	Ballygunge Phari	Basanti Devi College, Ramani Chatterjee Road, Gariahat Crossing	20
44	Kadapara	Mechua Fruit Market	Narkeldanga Main Road, Keshab Sen Street, MMB Street	215
45	Kimber Street (Park Circus)	Topsia	New Park Street, 4 No. Bridge, PC Connector, Topsia Road, Jin Masjid	310
46	Kustia	Ekdalia Road (Bharat Sevashram)	Ballygunge Place, Cornfield Road, Jamin Lane, RB Avenue, Ballygunge Station	30

47	Lohapool	Dharmatala	Biresh Guha Road, Bright Street, New Park Street, Park Street, Elliot Road, RA Kidwai Road, Grant Street	360
48	Maniktala Beadon Street	Beadon Square	Azad Hind Bag	27
49	Maniktala Beadon Street	Beadon Square	Nimtala Ghat, Nimtala Street, Anandamayee Tala	140
50	Metiabruj	Akra Fatak Road	GR Road, Gandhi Maidan	100
51	Metiabruj PS	Raja Bagan Bus Stand	AK Road, Garden Reach Road	100
52	Metiabruj (GRSE Gate)	Khidirpore Crossing (Chitrapuri Cinema)	Garden Reach Road, CGR Road, Ramnagar	50
53	Mudiali	Khidirpore		30
54	Orient Row	Dharmatala	Park Street, AJC Bose Road, Elliot Road, RA Kidwai Road, SN Banerjee Road, Grant Street	345
55	Phoolbagan	Salt Lake 13 No. Tank		55
56	Panchanatala	Park Circus	Syed Amir Ali Avenue	25
57	Panchanatala	4 No. Bridge	Broad Street	10
58	Phoolbagan More	CIT Building	Beliaghata Main Road	85
59	Phoolbagan	Ganesh Talkies	Maniktala, Baghmari, CIT Road	410
60	Ram Nagar More	Badartala	Kamal Talkies, Metiabruj PS	70
61	Ram Nagar More	Mudiali	Taratala, Paharpur Road	30
62	Ram Nagar More	Santoshpur		25
63	RG Kar Hospital	Dumdum Road (30A bus stand)	Belgachia Bridge, Indra Biswas Road, Manmath Road, Northern Avenue	30
64	Raja Bazar (Tasbir Mahal)	Pilkhana	Canal West Road	30
65	Rash Behari More (Melody)	Behala Tram Depot	Chetla, New Alipore, Taratala	75
65A	Rash Behari (Basanti Devi College)	Behala Tram Depot	Rashbehari, Chetla, New Alipore, Taratala	50
66	RG Kar Hospital	Kaizar Street	Dinendra Street	30
67	Rash Behari Avenue	Tollygunge Tram Depot	DPS Road, SPM Road	60
68	Rash Behari Avenue & Pratapaditya Road Crossing	Chetla	Dalminya Park	105
69	Ram Nagar More	Metiabruj	Kanchi Sarak	25
70	SP Mukherjee Road	Cornfield Road	SP Road, RB Avenue	18
71	Sahapur	Tollygunge Phari	Sahapur Road, TC Road	25
72	Sovabazar L Ghat	Ultadanga Station	Strand Bank, Sovabazar Street, Ultadanga Main Road	95

73	Sealdah Court Complex	CIT Building	BM Road	290
74	Sealdah (Chhabi Ghar)	Bara Bazar	New Howrah Bridge Approach Road	205
75	Tollygunge Phari	Behala Tram Depot	TC Road, SP Road, DH Road	87
76	Tollygunge Phari	Jadavpur PS	P Saha Road	70
77	Tiljala	Topsia	4 No. Bridge	30
78	Taratala	Ram Nagar Crossing	New Taratala Road	50
79	Taratala	Mollargate	Taratala Road, Budge Budge Road	50
80	RG Kar Hospital	Beliaghata ID Hospital	Dinendra Street, Maliktala PS, Kankurgachi, Phoolbagan	108
81	Ultadanga Station	Jora Bagan Power House	Aurobinda Sarani, Sova Bazar, BK Paul Avenue	382
82	Ultadanga	Sova Bazar	Aurobinda Sarani	130
83	Ultadanga Station	Salt Lake (13 No. Tank)		67
84	Ultadanga Station	Baguihati		65
85	Ultadanga Station	Salt Lake (Karunamoyee)		93
86	Ultadanga Station	Lake Town	VIP Crossing	35
87	Belgachia Metro	VIP Crossing		50
88	Park Circus	Bose Pukur	Gariahat, Basanti Devi College, Ramani Chatterjee Road, Gariahat More	51
89	Southern Avenue & SPM Road Crossing	Garia	Tollygunge Tram Depot	118
90	Southern Avenue & SPM Road Crossing	Tollygunge Tram Depot		40
91	Bose Pukur	Gariahat		30
92	Bag Bazar Street & Rabindra Sarani Crossing	BK Paul Avenue	Baishnabb Sett Street, KK Tagore Street, Singharh	22
93	Sports Authority of India (Main Gate)	Rotary Netralaya	KB/KC Block, Karunamoyee	60
94	Kankurgachi More	Karunamoyee		52
95	Chakraberia	Bijaygarh College	Padmapukur Square, Motor Vehicle, Deshpriyo Park, Rabindra Sarobar, Lake Gardens, LG Children Park, Lord Bakery, TV Centre, 17A Bus Stand	50
96	Phoolbagan	Karunamoyee	Salt Lake Tank No. 13	85
97	BK Paul Avenue (Sova Bazar Metro)	4B Bus Stand (Cossipore)	Raj Ballav Para, Girish Mancha, Cossipore Road	60

98	Hazra Road (Khirood Ghosh Market)	14 No. Bus Stand (Behala)	Alipore Bridge, Rakhal Das Auddy Road, Chetla Road, New Alipore Petrol Pump, Buro Sibtala, Ray Bahadur Road	55
99	Chetla Park	Khidirpore	Alipore Road, Burdhaman Road, DH Road, Mominpore	25
100	Khidirpore	14 No. Bus Stand (Behala)	DH Road	25
101	Judges Court	Alipore Police Court		20
102	Chetla Park	Behala Chowrasta	Mani Sanyal Sarani, Durgapore Bridge, Tollygunge Circular Road, James Long Sarani	50
103	Ruby General Hospital	Jadavpur PS	Kasba Connector, Bijan Setu, Fern Road, Gol Park, Dhakuria Bridge	52
104	Dhapa	Chittaranjan Hospital	Khal Par, Garia Station, Gol Park, Patuli Upanagari, Dhalai Bridge	50
105	Garia Station	Gol Park	Patuli Upanagari, Dhalai Bridge	120
106	Tagore Park	Circus Tram Depot	Picnic Garden Road, Bondel Road, Ballygunge Phari, Beckbagan	50
107	Triangular Park	Sakher Bazar (Behala)	Southern Avenue, Menoka Cinema, Tollygunge Rail Bridge, Tollygunge Phari, Tollygunge Circular Road, James Long Sarani, Chowmatha	50
108	Rash Behari Avenue & Pratapaditya Road Crossing	Behala Chowrasta	Peary Mohan Roy Road, Chetla Siding, New Alipore Petrol Pump, Taratala, Pathak Para	85
109	Metiabruj PS	Sailasri Cinema	Kanchi Sarak, Paharpur Road	50
110	Deshpriyo Park	Tollygunge Tram Depot	Sarat Bose Road, Southern Avenue, DP Sasmal Road, Russa Road	50
111	Ruby General Hospital	Garia Station		50
112	Haltu (Kayasta Para)	Behala Tram Depot	Bijan Setu, Fern Road, Gol Park, Southern Avenue, Pratapaditya Road, Chetla, New Alipore, Taratala	50
113	Ruby General Hospital	Jadavpur PS	Kali Tala Road, South Purbanchal Road, Haltu Kayasta Para, Gosai Park, Babu Bagan, Dhakuria	50
114	Rajdanga Bazar	Aleya Cinema	Rathtalla, BB Chatterjee Road, Bijan Setu	50
115	CIT Padmapukur (Entally)	Saatgachi (Topsia)	CIT Road, Sundari Mohan Avenue, Park Circus Maidan, 4 No. Bridge	50
116	Topsia	Deys Medical	Chetla, New Alipore, Southern Avenue	50

117	Taratala	Mouchak (Gol Park)	Chetla, New Alipore, Southern Avenue	25
118	Ruby General Hospital	Cancer Hospital (Thakurpukur)	Bijan Setu, Fern Road, Gol Park, Southern Avenue, Tollygunge Phari, Karunamoyee	50
119	Menoka Cinema	Behala Tram Depot	DP Sasmal Road, Tollygunge Circular Road, New Alipore, Taratala, DH Road	50
120	RG Kar Hospital	Karunamoyee	Gajnabi Setu, Canal East Road, 15 No. Bus Stand, Ultadanga, Bridge Underpass, PNB Salt Lake	105
121	Milk Colony	Sinthee More	Dutta Bagan, Paik Para, Birpara More, BK Pal Lane, Seven Tanks, South Sinthee	20
122	Chetla Park	Tollygunge Tram Depot	Chetla Central Road, RB Avenue, SP Mukherjee Road, DPS Road	20
123	Tollygunge Tram Depot	3A Bus Stand	MG Road, Kabardanga, Cancer Hospital	50
124	Menoka Cinema	Bengal Lamp	Southern Avenue, Lake Garden Flyover, PA Shah Road	50
125	Menoka Cinema	Alipore Zoo Garden	Southern Avenue, RB Crossing, Moni Sanyal Sarani, Rakhal Das Auddy Road, Gopal Nagar Road, Judges Court, Bhabani Bhaban	30

Annexure 5: Travel Statistics for Private Vehicle Owners Using Auto-Rickshaws in Kolkata

Total number of trips per day in Kolkata	701,400
Per capita trip rate in Kolkata (MoUD, 2008)	1.56
Total number of IPT trips (4% of total)	280,000
Number of passenger trips using auto-rickshaws by 2-wheeler owners (based on survey data showing 21.51% of trips by 2-wheeler owners are auto-rickshaw trips)	60,335
Percentage share of auto-rickshaw commuters (based on survey data showing 19.35% of trips by 2-wheeler owners are auto-rickshaw trips)	54,294
Average trip length in km (primary survey)	3.82
Total number of kms traveled by auto-rickshaws instead of privately owned 2-wheelers	230,000
Total number of kms traveled by auto-rickshaws instead of privately owned 4-wheelers	207,000

