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### **Para-Transit Modes: A Boon or Bane of Kolkata City**

**Majumdar Sushobhan**

<sup>1</sup>Senior Research Fellow, Department of Geography, Jadavpur University, Kolkata-700032

#### **ABSTRACT**

Transport is the most important parameter of rural, peri urban and urban land use change. Para-transit modes are mostly used for trips with shorter journey length, link trips and marketing and educational trips. They are also essential to feed the main roads with the feeder roads. At the beginning Kolkata was designed on pedestrian movement and mass transit in the form of tram. That time cycle rickshaw and hand puller rickshaw were the principle mode of transport to connect main road. Later on with development of new technologies the use of environment friendly rickshaw got reduced and promotion of taxi and auto rickshaw began. Present study will focuses on the spatial expansion of Kolkata city toward south along the auto rickshaw routes and an emphasis will be given to find out their reciprocal relationship. This study reveals that auto rickshaw is both the boon and bane of Kolkata city, as it can move through both the arterial and major roads. But in congested areas this has created lots of problem. For the transportation development of an area this plays an important role. For the development of smart transportation plan the number of auto rickshaw must be under control which indirectly reduces the externalities of transport of Kolkata city.

**KEYWORDS:** Para-transit Mode, Spatial Expansion, Smart Transportation Plan, Negative Externalities.

#### **\*Corresponding Author**

**Sushobhan Majumdar**

Senior Research Fellow,

Department of Geography,

Jadavpur University, Kolkata-700032

Email: [sushobhan91@gmail.com](mailto:sushobhan91@gmail.com)

## **INTRODUCTION**

Para-transit services are those public or private entities that provide transportation services with a fleet of buses of small capacity. The critical element of these systems is that there are no fixed routes or schedules for the vehicles thus constitute demand responsive systems. The existing transportation system in most of the cities of the world experiences numerous traffic and environmental problems such as severe traffic congestion and road accidents coupled with air and noise pollution with a cascading effect on human life. More than a million people are either killed in road accidents or die due to severe air pollution in the world. Gasoline-based transportation system is one of the major problems making the existing transportation system very unsustainable. In view of this, an attempt has been made here to explore the possibilities of finding a possible approach to the development of a sustainable transport system. Traffic problems in various cities and the methods adopted to mitigate the problems have been discussed. Transport is the most important parameter of rural, peri urban and urban land use change<sup>1</sup>. Para-transit modes are mostly used for trips with shorter journey length, link trips and marketing and educational trips. They are also essential to feed the main roads with the feeder roads. At the beginning Kolkata was designed on pedestrian movement and mass transit in the form of tram. That time cycle rickshaw and hand puller rickshaw were the principle mode of transport to connect main road. Later on with development of new technologies the use of environment friendly rickshaw got reduced and promotion of taxi and auto rickshaw began<sup>2</sup>. With the urban growth people are forced to live in the peripheral areas or outskirts of the city because living cost in the central urban area is much more than periphery. The land use pattern in outskirts of Kolkata is along the transportation routes through a linear pattern, which are connected by different modes of transport. A case study in Kolkata was taken up to appreciate problems and issues of the existing transport system which is increasingly becoming unsustainable. Based on earlier studies, an approach to make the transport system sustainable for Kolkata has been suggested.

## **OBJECTIVE**

- Spatial expansion of Kolkata city toward south along the auto rickshaw routes and an emphasis will be given to find out their reciprocal relationship.
- To scrutinize role of auto-rickshaw mode as boon and
- To identify major banes of auto-rickshaw are major objective of this study.

## **STUDY AREA**

KMA (Fig 1) is one of the oldest and second largest agglomerations in the country. The concept of Kolkata Metropolitan Area (formerly CMD i.e. Calcutta Metropolitan District) was

introduced by the Calcutta Metropolitan Planning Organization (CMPO) by the Use and Development of Land Control Act of 1965. In the year 1966, a basic development plan was prepared by the CMD which was basically a perspective plan. According to this Schedule Act the area of the Calcutta Metropolitan District was the 1380 Sq. Km after its development. Now at present after the addition of few gram panchayats within the KMA, it extends over an area of 1841.47 sq.km. (Table 1) covering the whole of Kolkata district and parts of five other districts, namely, 24-Parganas (South), 24-Parganas (North), Howrah, Hooghly and Nadia. The boundary of this area was delineated by the Kolkata Metropolitan Development Authority (KMDA) and all types of planning and future development of this area is under the control of KMDA.

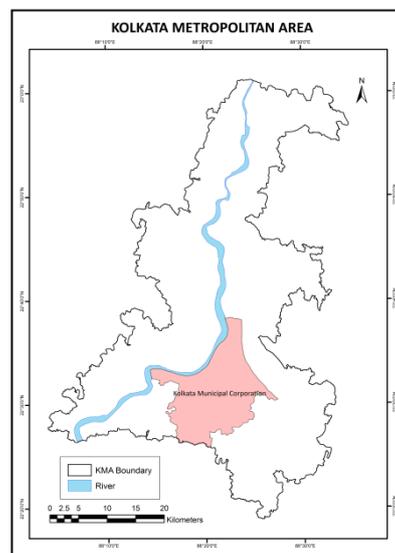


Figure 1. Study Area

## DISCUSSION AND ANALYSIS

Para-transit services are those public or private entities that provide transportation services with a fleet of buses of small capacity. It is an alternative mode of flexible passenger transportation that does not follow fixed routes or schedules.

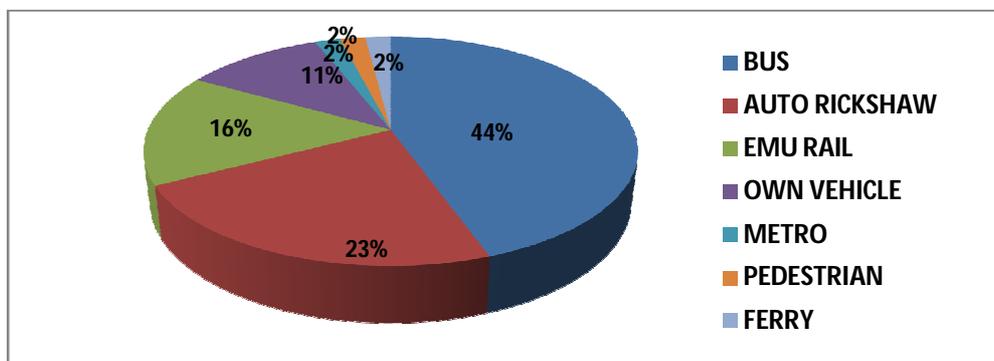


Figure 2. Trip Distribution in Kolkata

Kolkata city is the only city in India which is consist of modes ranging from taxies, auto rickshaws, cycle rickshaws to hand pulled rickshaws. Out of these major four modes, the policies in the recent past have tried to reduce the use of environment friendly cycle rickshaws and hand pulled rickshaws thereby promoting the taxis and auto-rickshaws. Fig 2 and 3 shows various types of transport in Kolkata.

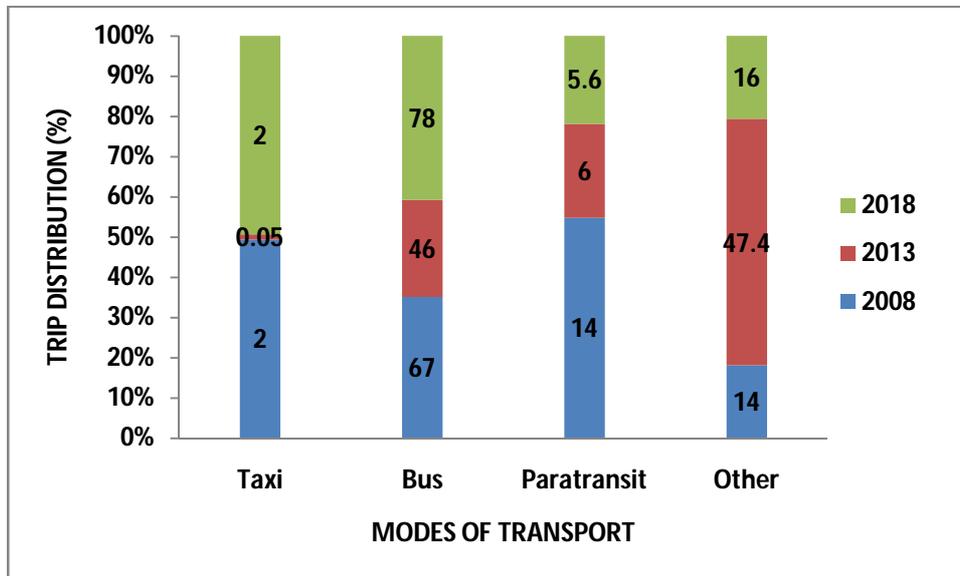


Figure 3. Trip Distribution among Various Modes

### Boon

- More faster because it can penetrate jams even in congestion than other public transport modes.
- It is comfortable because of limited passenger with seats.
- It is good when we have luggage
- It is easily available in their definite routes
- It connects feeder road with main roads and thus helps for expansion even in far area
- Better mode transport for shorter distance. Passengers can choose the mode various purposes like employment, business, education, social, medical etc. purposes (Fig 4).

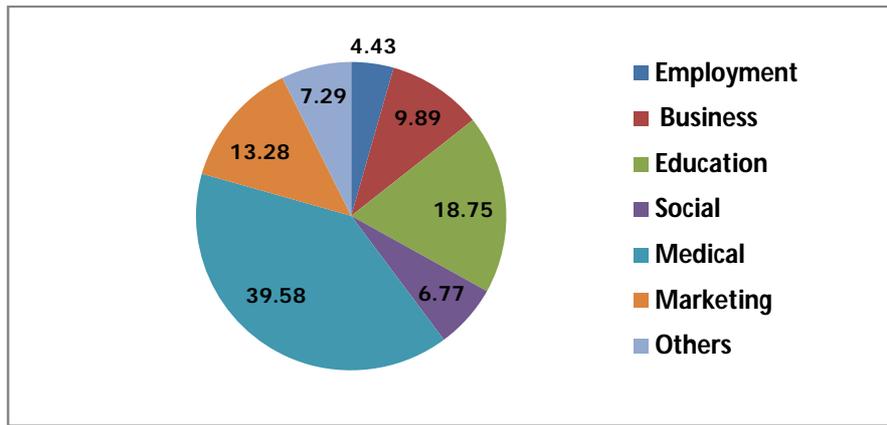
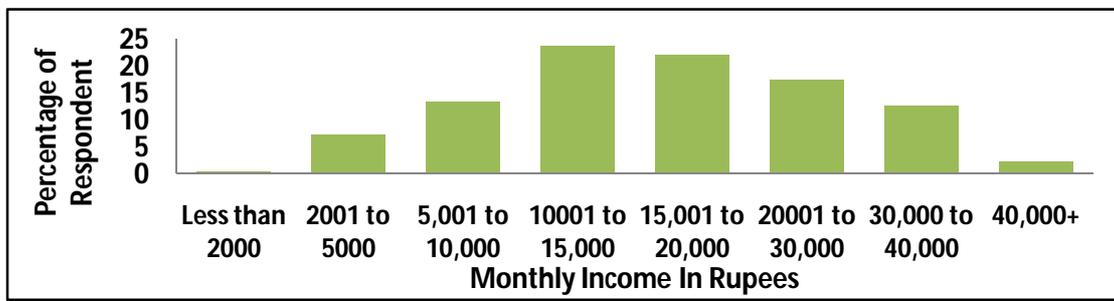


Fig 4. Purpose of Journey

- Fare price vehicle because it is cheaper than hired taxi or personal car. Thus all income groups can afford (Fig 5).



Source: SGI Primary survey, Comprehensive Mobility Plan, January 2008

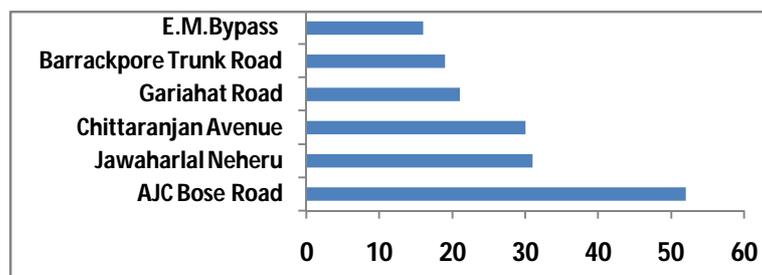
Fig 5. Distribution of Income Groups of Auto Transport

## Bane

### Accidents

Most of the major cities in the world are increasingly confronted with numerous traffic problems leading to a high level of traffic congestion coupled with a considerable number of road accidents. Auto rickshaw causes accidents mainly because they used to rush within small passage of traffic. Fig 6 shows accident prone roads in Kolkata.

- Most of the time they carry more than four passengers, sometime even seven including driver.



Source: Kolkata Traffic Police, Kolkata, 2018

Fig 6. Accident Prone Roads for Auto Rickshaw

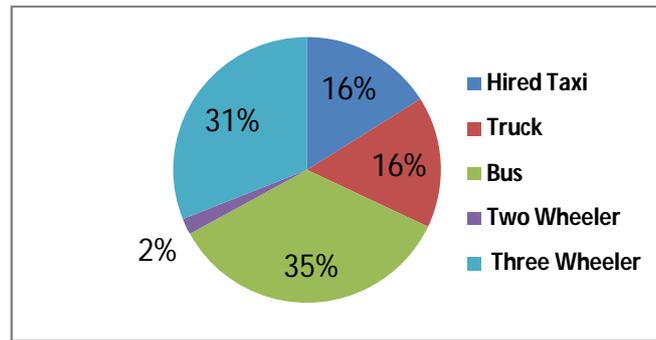


Fig 7. Vehicle-Type Contributions to Pollutant in Kolkata

### Noise and Air Pollution

Noise pollution caused by road traffic is another serious problems. The generation of noise level in the road system depends on factors such as traffic intensity, speed, the type and condition of the vehicle, acceleration depending on the level of congestion and quality of roads. Continuous exposure to noise of high intensity has serious implications on human health and efficiency. The permissible limit of noise for auto rickshaw is 82 dB (A). At present the average noise levels in KMA is 70.23 dB, where as the peak hour noise level recorded is 81.60 dB. The permitted level is 60 – 65 dB as prescribed under CPCB norms, which is significantly higher than the permissible limits. Fig 7 shows that three wheeler experiences 31 percent of air pollution among the all vehicles in Kolkata.

### Parking Problem

Auto rickshaw used to halt on along the roadside. Sometime they obstruct the flow of other vehicles. Mainly because they face parking problems like

- Lack of parking Facilities.
- On-street parking.
- Non existence of parking rules.
- Relatively “Free” parking fee structure.

### Unfixed Fare

Auto rickshaw do not follow any fixed fare chart or meter bill. Auto drivers sometime tried to be smart specially if the passenger is new to the route, thus they demand more money than the running fare.

### **Traffic Congestion**

- Traffic composition in Kolkata is mixed type at most of the major corridors, where along with other motored vehicles, auto rickshaw, cycle rickshaw, even sometime movement of people affects the traffic.
- In some roads to catch auto rickshaw people have to stand in queue which also affects movement of traffic.
- Most of the time they carry more than four passengers, sometime even seven including driver.

### **CONCLUSION**

Auto-rickshaw played a very important role as public transport and will remain the if it reduce its negative aspects. Its drawbacks can be reduced by

- Checking the pollution parameters regularly,
- Controlling the speed and maintaining traffic rules,
- Monitoring the number of passengers,
- Providing parking facilities for them,
- Preparing particular fare chart for particular distance or metered auto,
- Rude behavior can be reduced by immediate action and punishment as well.

Kolkata Auto Rickshaw is the only motored public vehicle which can penetrate even into small lanes. Thus plying of auto causes proliferation of buildings outward. Outward peripheral expansion is also helpful to reduce the burden of infrastructure of the core city. For the transportation development of an area this plays an important role. For the development of smart transportation plan the number of auto rickshaw must be under control which indirectly reduces the externalities of transport of Kolkata city.

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