

Performance of Exclusive Bus Lanes in Chennai

S. P. Sangeetha, P. S. Aravind Raj, R. Divahar, Jummai Tali, Rajat Chander



Abstract: A bus lane is a lane which is provide only for operating buses and used to avoid traffic congestion. The current bus transit system in Chennai, known as MTC (METROPOLITAN TRANSPORT CORPORATION), is accommodating about 4 million transport units sufficient to accompany increasing number of passengers. Buses have to share the lane with other vehicles, which affects their capacity, speed, reliability, and quality of service. Due to traffic congestions, travel during peak hours in Metropolitan cities has become unattractive. An attempt has been made in this paper to provide lanes only for operation of buses. Three arterial roads connecting Kelambakkam to Sholinganallur, Chennai central to Tambaram Vandaloor zoo to Tambaram were selected for the study. Traffic volume survey was conducted in these areas. Based upon the survey conducted and analysis made, suggestions are proposed for the exclusive bus lanes for theselected area where traffic congestion is more during peak hours.

Keywords: Bus lane, peak hour, traffic congestion, traffic volume.

I. INTRODUCTION

In the recent era of transportation, there is a problem of tremendous increase in the individual/private vehicle numbers and which is much heavier in the Metropolitan cities. Thus it is recommended to use mass transportations like bus services and in order to reduce the travel time in the busses, it will be tracked with separate/ exclusive bus lanes. Extensive studies were done on the bus precedence measures for much efficient transportation, including the overview of limited bus lanes since the 1960s (King 1983; Hounsel et al. 1988; Tee 1994; Astrop et al. 1995; Pitsiava-Latino poulou et al. 1988; Tsamboulas et al. 1999;). But in most of the cases, a comprehensive method for

evaluation of Exclusive bus lane (EBL) was not applied effectively. And mostly all the studies are kept only as the theoretical data and not as applied techniques practically. Even when an evaluation is done it is not applied disjointedly. Li and Ju [2009] evaluated the implementation of EBLs by implementing a traffic model of multi exit feature. It was observed that the EBLs has direct advantages of total system time reduction and budget. Thus EBLs is choosen as the medium of the present study which is the eminent application suits exclusively for the bus transport systems.

II. OBJECTIVES OF THE PRESENT STUDY

The main objectives of the study is to

- To collect the traffic volume of buses during variable time intervals by conducting traffic volume survey.
- Analysing the collected data, thereby categorising it according to the parameters
- To suggest the exclusive bus lanes for selected area where traffic congestion is more in peak hours.

III. METHODOLOGY

The entire road volume survey was divided into several phases as shown in the flowchart Fig. 1. Traffic volume study was conducted to count the number of vehicles crossing a road per unit time during peak hours manually. A complete traffic volume study was conducted and the volume of various types and classes of traffic were recorded. The traffic volume survey was conducted for the different routes which are highlighted to know the total volume count of buses on an average. The survey was conducted only during peak hours where maximum number of buses can be record. The number of vehicles passing through a road over a period of time is termed as traffic volume count. The distance between Kelambakkam to Sholinganallur is 14.0 km. The fastest route of bus from Kelambakkam to Sholinganallur is Hindustan Institute of Technology and Science, Padur, Egatour, Navallur, AGS Cinemas, Semmanjeri, Sholinganallur. The distance between Chennai central to tambaram is 29 km. The fastest route of bus from Central to Tambaram is Egmore, MA Chidambaram Stadium, Nungambakkam, T. Nagar, Anna University, Guindy, Ramapuram, Chrompet, Tambaram Sanatoriums and Tambaram. The distance between Vandaloor Zoo and Tambaram is 10.6 km. The fastest route of bus from Vandalur Zoo to Tambaram is Perungulathur bus stand, Irumbuliyur, Tambaram bus stand. The routes of area under study is shown in Fig.2.

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Table 1: Geometric characteristics of study area

Location	Width (m)	Median width(m)	Foot path width(m)
Navallur	16.3	1	1.78 to 2.2
Kelambakkam	15.8	0.8	1.5 to 1.8
Guindy	21	1.1	1.5 to 2.3
Tambaram	21	1.2	2.1 to 2.5

Vandaloor	16.0	1.1	1.6 to 1.8
Perangalathur	15.8	0.8	1.5 to 1.8

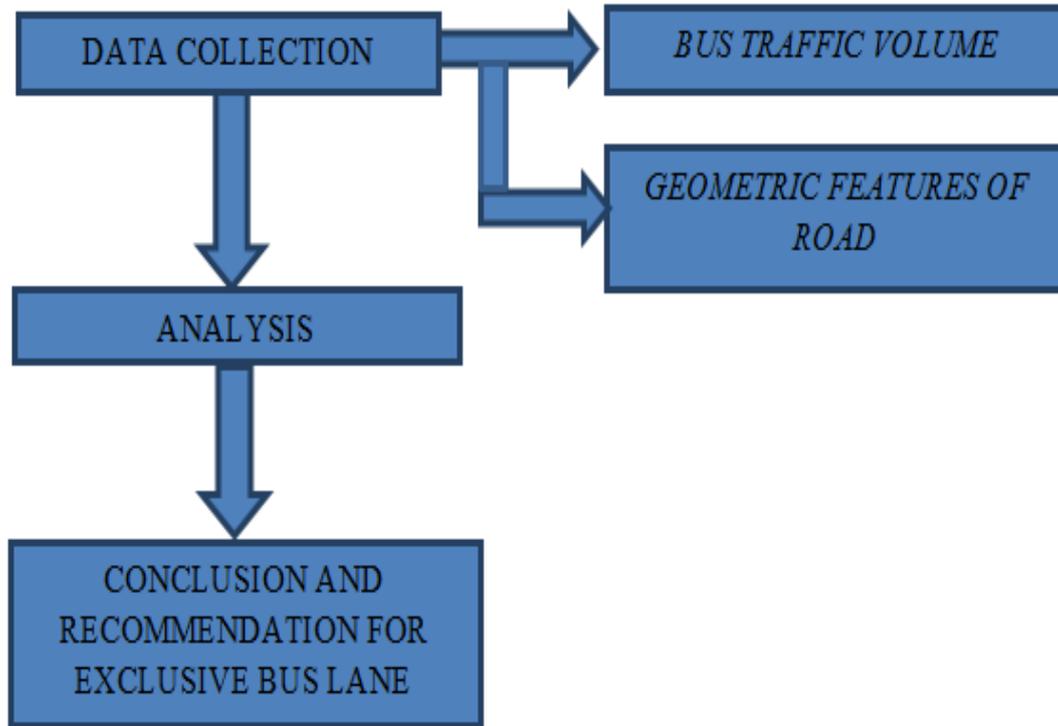


Fig. 1 Methodology

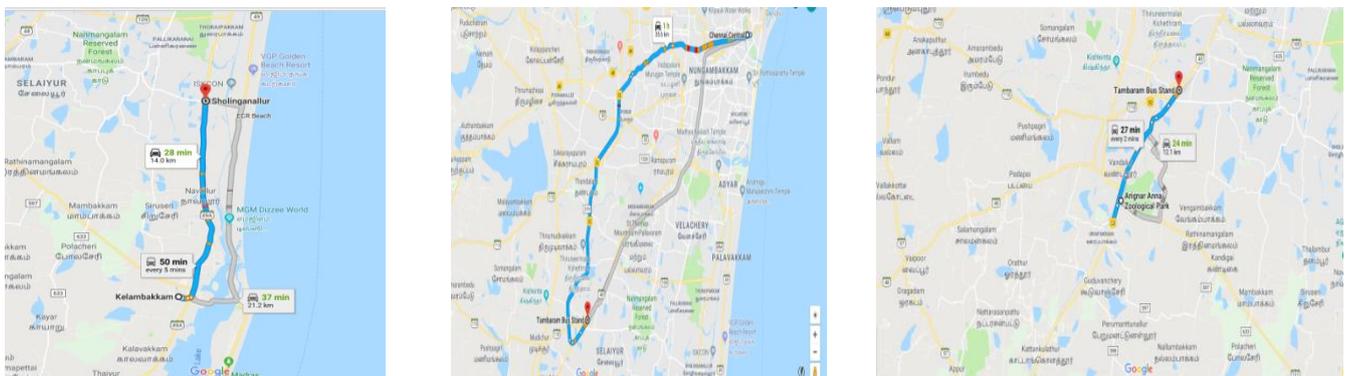
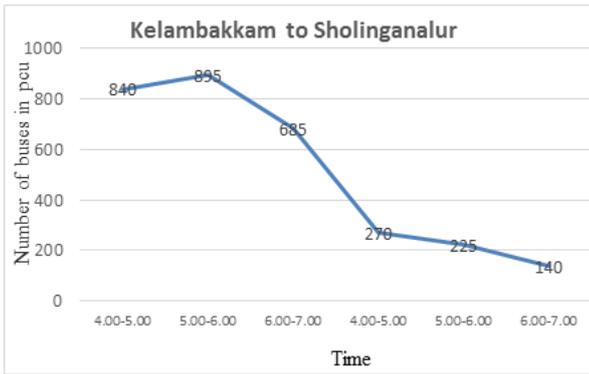


Fig. 2 Area chosen for study

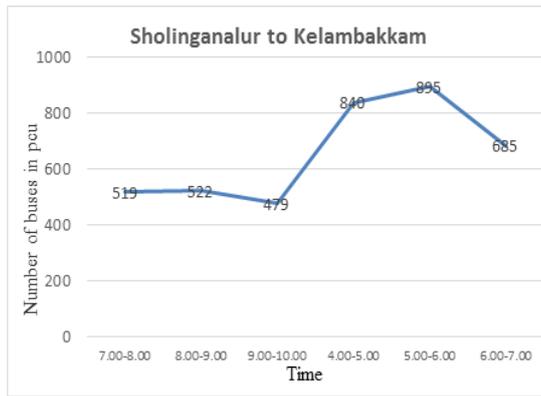
IV. RESULT AND DISCUSSIONS

A complete traffic volume study was conducted including analysing the volume of various types of vehicles and classification of traffic. The traffic volume survey is conducted for the different routes which are highlighted to

know the total volume count of buses on an average. The survey is conducted only during peak hours where maximum number of buses can be recorded. Number buses plying during peak hours are plotted in graph as shown in Fig. 3.



(a)



(b)

V. CONCLUSIONS

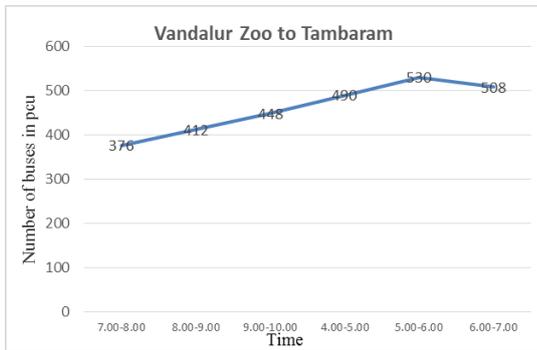
From the survey conducted it was observed that Public transport vehicles and non-motorised modes are the major modes of transport for majority of the city residents

From this study it can be concluded that if bus lanes are provided exclusively, efficiency of Bus Rapid transport system will increase. It also improves the service quality for the welfare of the passengers. Road safety also will be taken care effectively.

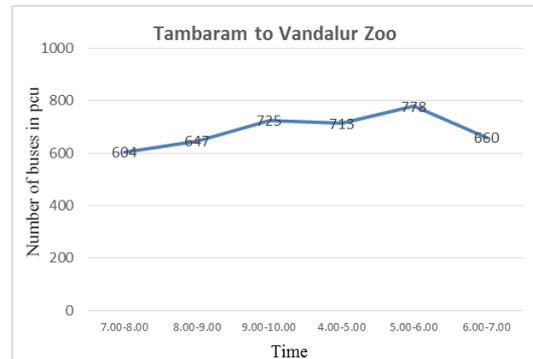
- The exclusive bus lanes are provided mainly to

reduce traffic, noise pollution and to provide an environmental friendly environment. The lanes can be provided where there is more traffic congestion during the peak hours. Hence the exclusive bus lanes should be provided in these areas to reduce excessive traffic and pollution.

- This also helps in improving the efficiency of bus transport when measured in terms of number of passengers travelling in an hour on a particular lane.
- The study showed that the number of private vehicles is increasing at a higher rate in the city. So

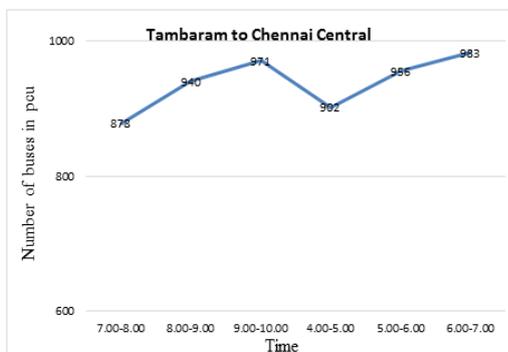


(e)

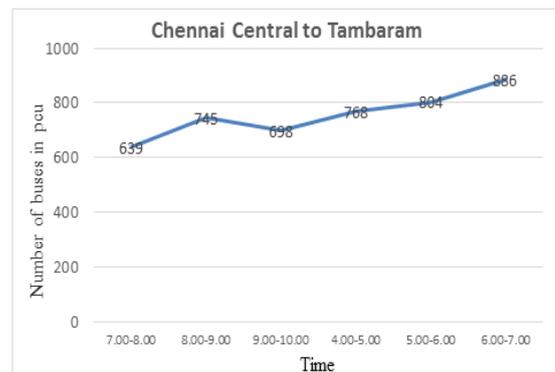


(f)

Fig. 3 Number of buses travel in peak hours for the selected study area



(c)



(d)

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to increase the frequency and speed of the buses, separate lanes for buses should be implemented.

- When vehicles got stuck in traffic, there will be a delay in their regular schedule. This makes public transport unattractive and creates an aversion for the public. This also in turn increases the operational costs.
- Painted lanes are not much effective and lanes separated by barriers serve the purpose. Though building a separate bus way is quite expensive, it serves as a catalyst for implementing other improvements in transportation network.

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