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Impact of Brts on Urban Traffic a Case Study of Ahmedabad

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ABSTRACT

Traffic problems in urban areas increase due to rapid growth of population and with the increase in numbers of vehicles which result into excessive delays, travel times and reduction in speeds on urban road network. In order to reduce these problems there is a need for sustainable public transport system. The of promotion of Bus Rapid Transit (BRT) is a veritable option directed at improving the Service delivery in the public passenger transport particularly as it affects the most predominant form of transport mode in Ahmedabad – road transport. The essence is to relieve congestion, enhance mobility, time savings to passengers, reduction in accidents and improve the environment especially with regard to pollution in the Keshavbaug To Anjali area. There are incremental benefits and costs to a number of economic agents: government, private transporters, passengers, general public and unskilled labour. The impact analysis of Keshavbaug To Anjali BRT Corridor done in this study tries to measure all these benefits and costs from project covering a total distance of 4.1kms in Western Ahmedabad. The prime objective of this study is to establish the impacts of the BRT project and comparing BRT to Do Nothing scenario. In this study, the benefits and costs of converting a lane to a BRT lane will depend heavily on how such a project affects traffic speed, delay, and vehicle miles traveled, both in the mixed flow lanes and the BRT lane.

KEYWORDS: BRTS Ahmedabad, Urban Traffic, Impact Study

I. INTRODUCTION

Transportation is the backbone to the development of urban areas. It enables functioning of urban areas efficiently by providing access and mobility. Passenger transport has an overriding influence on the functioning of the city. With growth, the mobility needs increases. People's personal choices and freedom get expressed in increased ownership and use of personalized vehicles. The public agencies operating public transport systems often fail to restructure service types to meet with the changing demand pattern. As a result public transport becomes financially less viable, speeds reduce, and congestion levels increase. The transportation has also become a source of environmental problem. According to a study (World Bank, 1996), 70% of the world's urban population breathes unsafe air. It is also estimated that more than one billion people live in cities with unhealthy levels of suspended particulate matter. Every year millions of people die or suffer serious health effects from air pollution. As per a WHO study (2000), an estimated 3 million people die each year because of air pollution; this figure represents about 5% of the total 55 million deaths that occur annually in the world. Vehicles are major sources of urban air pollution and greenhouse gas emissions. There are economic consequences as well. As per a recent study of the World Bank, the costs to society due to air pollution in large cities of India, a part of which is direct productivity loss, was found to be nearly as high as one-tenth of the income generated in these cities from all economic activities.

The trends appear similar in most third world cities. The city of Ahmedabad, largest among all cities of Gujarat state, accommodating about 5 million people, has a registered vehicular strength of 1.4 Million. The rate of growth of vehicles has been about 9 to 10% per annum. Public transport situation has deteriorated rapidly over the past decade. The end result is visible in terms of increasing congestion on the city streets and the worsening of air quality Among all infrastructures sectors, transportation sector plays an important role in economic development of the country.

II. Traffic scenarios in ahmedabad

Ahmedabad is having population of about 54.53 lakhs, highest in Gujarat and its decade's growth is 20 %. Ahmedabad has a large urban sprawl extending to the nearby rural areas. Urbanization is a determinant as well as result of economic development. It is a natural consequence of economic changes that take place as a country develops. Certain activities are better performed in certain density of agglomerations of people, while others are not. The urban population of Gujarat has mainly been concentrated in six major cities viz. Ahmedabad, Baroda, Surat, Rajkot, Bhavnagar and Jamnagar. Ahmedabad has a large urban sprawl extending to the nearby rural areas. Urbanization is a determinant as well as result of economic development.

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Vehical growth of last decade in Ahmedabad is shown in the fig.1

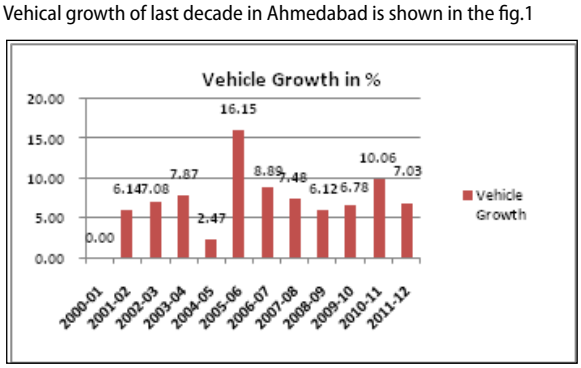

Figure 1 Vehicle Growth of Ahmedabad

III Need for the study

At present, the numbers of vehicles in Ahmedabad are more than some of the major metropolitan cities. The registered number of vehicles in Ahmedabad have significantly increased over the years. Total number of vehicles in Ahmedabad doubled from 12 lakhs in 2001 to 28 lakhs in 2012. It is the well known fact that an efficient public transport system is the best alternative to cater the increasing traffic. Thus it is the need of the hour to improve the efficiency of bus transport system by providing BRT system.

IV. ObjeCTIVE OF STUDY

- To identify the impact of BRT on traffic along implemented corridor
- To identify the impact of BRT on traffic also on the adjacent areas.
- To identify whether the pandemonium created against BRT in Ahmedabad is justified or hype.

V. SCOPE OF THE STYDY

The scope of the work is the implemented BRT stretch from Keshavbaug To Anjali 4.1KM.

- To collect all the required data of CVC for three intersections.
- To measure spot speed and average travel time on identified road.
- To determine travel time, queue lengths and delays for current traffic.
- To do road inventory survey on identified corridor.

VI. Data collection and analysis

For the purpose of study Keshavbaug To Anjali section consisting approx length of 4.1KMS of RTO - Pirana Phase-I BRT has been identified. It connects the areas of western Ahmedabad, which are transit hubs and highly dense commercial areas. The pilot corridor however is crucial link between the residential pockets of Dharnidhar, Manekbaug, Satellite etc. with the commercial hubs located around Anjali, Nehrunagar, and Sivranjani. This accounts for the heavy traffic on the corridor. This area can be considered as a CBD of western Ahmedabad. In the selected network, 4 intersections are four armed and signalized, whereas fourth and fifth intersection is 4 arms and 5 arms roundabout without traffic signal. Fig. shows the selected network, in which No.1 - Keshavbaug, No.2 - Sivranjani Intersection, No.3 - Manekbaug Intersection and No.4 – Dharnidhar Intersection. These are signalized and four armed junctions. No.5 is Nehrunagar Intersection (roundabout) which is having five approaches and No.6 is Anajli Intersection (roundabout) which is having four approaches without traffic signal control.

For purpose of data collection speed and Delay survey and Queue Length Survey were carried out on the identified corridor during peak hours and off peak hours both.

Fig.2 Shows the Average running speed and journey speed for the selected corridor keshavbaug to Anjali.

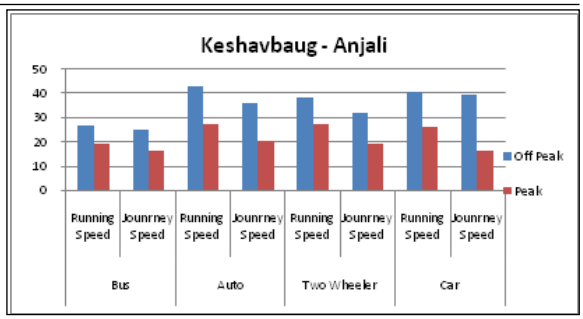

Figure 2 Average Running Speed and Journey Speed Pre & Post BRT

The Queue length analysis was also done on different intersections for the selected corridor. The fig.3 shown below gives the queue length obtained from the survey.

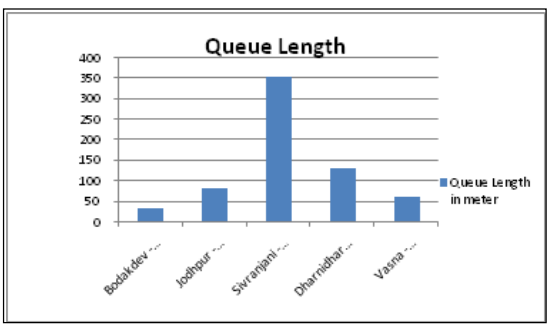

Figure 3 Average Queue Length at Intersections of selected corridor

VII. CONCLUSIONS

- Running Speed and Journey speed after implementation of BRT for different modes increased up to 4kms per hour.
- The queue length is increased up to certain level when comparing with queue lengths before implementation of BRT.
- The queue length is increased because of traffic signals on the selected corridor are not working properly.

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