



“REVIEW ON ESTIMATION OF L.O.S THROUGH CONGESTION ON URBAN ROAD” -A case study of Vrundavan Chowkdi - Vadodara City

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Abstract: A fast emerging problem of urban areas throughout the world is the problem of traffic congestion. There is a need to define traffic congestion for different regions and use that for measurement of level of service of different roads. The observation shows that the fluctuations in speed, which is the most primary effect of congestion, have not yet been utilized for congestion modeling. Present study focuses on the relationship of congestion with speed variations and hence to quantify congestion using these speed variations. The assessment of the effect of roadway width on congestion levels and service volumes will be done. While it is possible to assess the realized benefits from an increase in roadway width, the required number of traffic lanes for a desired level of service can also be estimated. Also study will summarize the remedial measures to increase L.O.S for particular study area.

Key Words: Traffic congestion, Level of service.

I. INTRODUCTION

In urban areas, traffic congestion is a major issue. Heavy traffic flow on National highways with high speed, when mixed up with local traffic at crossings, traffic congestion is likely to occur. This results in many negative problems like pollution, delay, accidents and congestion at intersections. Traffic congestion in urban and Sub-urban areas has immersed from mere annoyance to a severe problem. Road congestion is spreading, Movements of goods and people are slowing to a crawl and transportation cost escalating.

Most of the cities in Asian countries are experiencing such problems as a result of rapid urbanization. Urban congestion is one such problem afflicting urban agglomerations in Asia and has multiple effects on urban economies. Urban congestion is broadly defined as excess demand for travel over its supply. In fact, the reason why governments are forced to revisit their policies for urban mobility is because of growing demand for travel with limited supply of services. The presence of urban congestion affects free movement of traffic

In many respects, rapid urbanization is an indicator of economic growth in Asia, and it is expected to continue if the scenario remains same. As per an estimate by the Asian Development Bank (ADB), about 44 million people are added to Asia's urban population every year. Asian cities are also characterized by high population density. For instance, Dhaka, Bangladesh, grew rapidly during the last decade and became the most densely populated city in the world, whereas Mumbai stands at number two.

As per situation in India, Road traffic conditions in are getting worst day by day. The average number of vehicles in India is growing at the rate 10.16% annually, since last five years. Spending hours in traffic jam has become part and parcel of city life style which leads to health and environmental hazards. Traffic congestion is a major problem for the transportation professionals in India. Most of the cities are suffering from medium to high level of traffic congestion. Although, in some major cities the growth of private vehicle usage has increased at the faster rate, in general car ownership and usage has remained at much lower level in Indian context. The poor roadway condition, non-uniform roadway features in terms of carriageway and shoulder width, abutting land use, pedestrian activities, poor lane discipline, improper bus stop location and design, vehicles of wide ranging characteristics of the technology and operating condition, heterogeneity of traffic, unauthorized parking etc. indicate that the nature and cause of congestion in India might be substantially different from that in developed countries. As traffic congestion on urban and suburban roads in India is due to only volume of traffic but also other causal influences, the problem of traffic congestion is more complex in nature and measures for congestion mitigation are also likely to be different from those in developed countries.

The migration of rural population to urban areas in search of better job prospects has made cities densely populated.

About 27 percent the population lives in urban areas.

1.1. Traffic flow characteristic

The knowledge of traffic flow characteristic is useful to highway engineer in the development of highway and transportation plans, geometric design criteria, selecting and implementing traffic control measures and evaluating the performance of transportation facilities. The Traffic flow characteristics have been considered following measures of effectiveness are as below:

- Relation between speed-flow-density,
- Composition of traffic,
- Traffic volume and rate of flow,
- Speed and travel time,
- Spacing and headways,
- Traffic density or concentration.

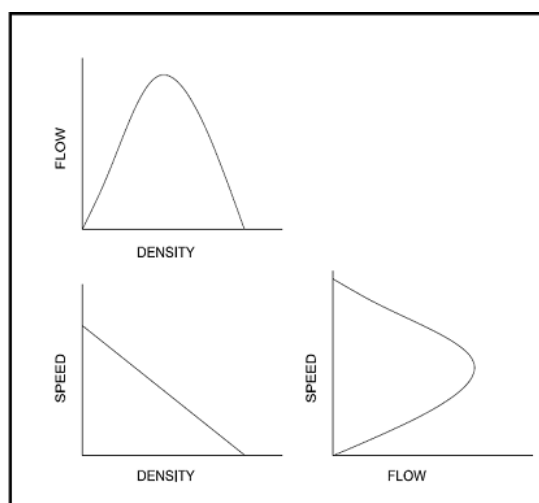


Figure 1 Flow, speed and density relationship

II. PROJECT STUDY

2.1 Need of the study

- In present condition of Vadodara city, especially Vrundavan cross road is suffering from problems of congestion.
- Reasons of congestion nearby Vrundavan cross road are unauthorized parking, movement of pedestrians, movement of traffic due to college scheduled and industrial bus scheduled.
- Maintenance work during day time and not completing it in within time limit.

2.2 Objective

Objectives of project or study outline of the project:

- To collect traffic volume data.
- To collect spot speed study data.
- To provide recommendations to reduced congestion and improve level of service of stretch.

2.3 Study area profile:

Present study include a study of Vrundavan cross road situated at Waghodiya road, Vadodara,Gujarat, India. Vrundavan cross road is situated at 22°18'0"N and 73°14'18"E. The point ofattractions are Sigma collage, Parul

collage, L&T Knowledge city, Sumandip collage, ITI, Apollo Company.

2.4 Pictorial view of problems:



III. LITERATURE REVIEW

“Traffic congestion - causes and solutions”

Shekhar k. Rahane, prof. U. R. Saharkar (2012) had studied Due to traffic congestion, there is possibility of accidents because of poor traffic management. To eliminate road accidents and to save precious human life it is essential to find proper solution for traffic congestion. In this study traffic congestion problem in Talegaon Dabhade, Tal-Maval, and Dist-Pune is identified and studied for finding out the causes and proposed solution of it.

In the recent years there has been a considerable loss due to the accidents to the precious human life and to the vehicles to some extent in Talegaon Dabhade. So, Traffic congestion constraints can be ameliorated by embarking on various strategies such as road capacity expansion, improved road infrastructures, restricting routes for Rickshaw, financial penalty to the traffic law breakers and application of Fly over. Most importantly, proper traffic management system along with appropriate implementation of traffic rules is necessary to mitigate the problems of traffic congestion in Talegaon Dabhade.

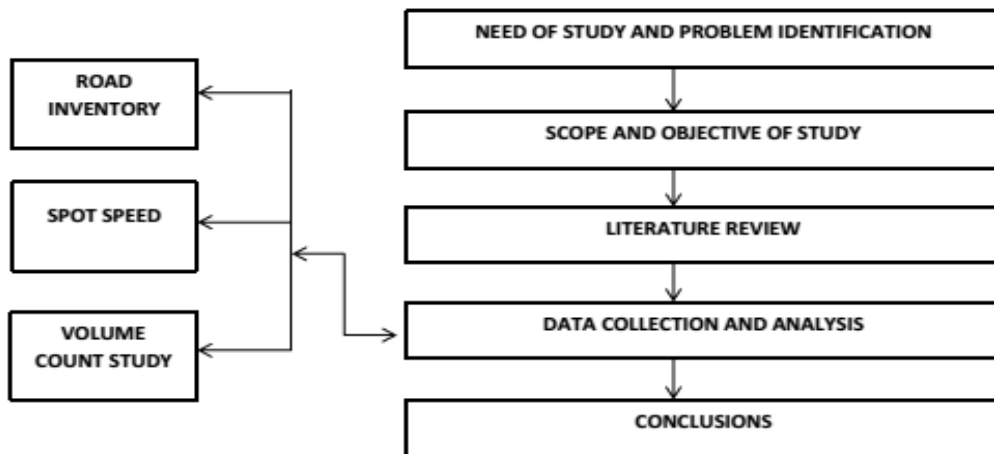
“Road traffic congestion in the developing world”

Vipin Jain, Ashlesh Sharma, Lakshmi Narayanan (2012) had studied Road traffic jams continue to remain a major problem in most cities around the world, especially in developing regions resulting in massive delays, increased fuel wastage and monetary losses. Due to the poorly planned road networks, a common outcome in many developing regions is the presence of small critical areas which are common hot-spots for congestion; poor traffic management around these hotspots potentially results in elongated traffic jams.

In this paper, we first present a simple automated image processing mechanism for detecting the congestion levels in road traffic by processing CCTV camera image feeds. Our algorithm is specifically designed for noisy traffic feeds with poor image quality. Based on live CCTV camera feeds from multiple traffic signals in Kenya and Brazil, we show evidence of this congestion collapse behavior lasting long time-periods across multiple locations. To partially alleviate this problem, we present a local de-congestion protocol that coordinates traffic signal behavior within a small area and can locally prevent congestion

collapse sustaining time variant traffic bursts. Based on a simulation based analysis on simple network topologies, we show that our local de-congestion protocol can enhance road capacity and prevent congestion collapse in localized settings.

IV. METHODOLOGY



V. CONCLUSION

1. Congestion can be quantified based on both the operational and volume characteristics by observed speed-flow variation.
2. Based on traffic volume count and spot speed study, the average speed on this stretch 40 to 45kmph for two wheelers, for four wheelers it is 25 to 30kmph. 6 different LOS has suggested according to congestion level have been proposed with 5 in a stable flow zone (presently designated as A-E), and 1 representing an unstable operation (presently designated as F). The LOS for arterial roads is 60kmph. Here we are getting less speed as compare to LOS criteria.
3. The variation of congestion due to change in traffic and control conditions can be captured through Modeling. The calibrated coefficients of model are capable in capturing the contribution of different vehicles in the traffic stream.
4. The effect of encroachments and on-street parking on congestion level has been quantified. In present study, on Vrundavan road the intensity of on-street parking and encroachment is high at evening time as compare to morning time so; it can be say that the congestion level at evening time is higher than after noon time on that road.
5. Modeling congestion can be used as a tool for embraced Technique of Travel Demand Management. Promoting the usage of public transport while discouraging private modes and Para transit modes is an effective way of congestion mitigation on urban roads.

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