Traffic Congestion- Cause and Solutions : A Case Study of Hadapsar Road, Magarpatta, Pune

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ABSTRACT

In modern life we have to face with many problems one of which is traffic congestion becoming more serious day after day. It is said that the high volume of vehicles, the inadequate infrastructure and the irrational distribution of the development are main reasons for increasing traffic jam. The major cause leading to traffic congestion is the high number of vehicle which was caused by the population and the development of economy. The traffic problem in city like Pune is increasing with every day. Congestion occurs when traffic demand exceeds the operational capacity, when vehicle got breakdown, etc of the roadway. To overcome the congestion and to save precious time it is essential to find proper solution for traffic congestion. In this study the data will collect from various sources. In this study traffic congestion problem in Pune city will be identified and studied for finding out the causes and proposed solution of it. The collected data will be analyzed by using Regression Analysis and the correct suggestions will apply on the basis of severity of the congestion problem.

Keywords : Traffic, Traffic Congestion, Delay, Traffic Jam, Increasing Population, Regression Analysis

I. INTRODUCTION

Traffic congestion is a situation on road networks that occurs as their use increases, and is characterized by slow speeds, long trip timings, and high vehicular queuing. The most common instance is the physical use of roads by vehicles. When traffic demand is great enough such that the interaction between vehicles slows the speed of the traffic stream, this results in congestion. Cities and traffic have developed together since the earliest human settlements. In recent years, with the rapid growth of privacy car, urban road transportation load enlarges suddenly and many road sections approach to saturated limit in peak time interval. Traffic congestion has been the universal problem for most big cities.

Traffic congestion is one of the worldwide urban problems, which can lengthen journey time, increase energy consumption, aggravate environmental pollution and result in traffic accident. If we take no measure to govern it, not only individual journey cost will be enhanced, but also the entire municipal transportation system will paralysis and urban sustainable development will be restricted. Therefore how to solve traffic congestion becomes the hot issue for each big city.

The essence of traffic congestion is the unbalance transportation of supply and demand. Increasing road supply is one kind of solutions to alleviate supply and demand contradictory. However practices coming from various countries indicated that dependence on constructing more roads would inevitably result in the vicious circle of "traffic congestion -road building -congestion alleviation - attracting more transportation demand - producing

new congestion - building more roads", which could not truly solve the traffic congestion problem. Therefore more and more experts hope to find new breach from the demand management aspect and have proposed many demand management methods, in which traffic congestion charging as one of the effective measures has aroused widespread interest in city administration department

II. LITERATURE REVIEW

Thi Phuong Linh Le and Tu Anh Trinh (2016) has presented research paper on encouraging public transport use to Reduce Traffic Congestion and Air Pollutant. They stated that motorcycle was the premier means of transport because of its features in terms of convenience and flexibility to travel and the degradation of bus service quality and insecurity of bus transport. They give the conclusion about Vietnam city, there would no negatively environmental effects from shifts from motorcycle to public bus transport. Furthermore, although motorcycle was the highest transport mode priority for both employee and student commuting every day, they showed their perception of the negative sides of motorcycle to environment and community, and also expressed their willingness to switch to travel by bus if its infrastructures and quality were upgraded.[1]

Lin Xu, Yang Yue, and Qingquan Li (2013) are presented paper on Identifying Urban Traffic Congestion Pattern from Historical Floating Car Data in 2013. They propose a historical floating car data analysis method based on data cube to identify and explore urban traffic congestion pattern. This method is based on numerical statistics. It is modeled and measured as congestion event. In order to implement this kind of cube, we propose a level-by-level computation method, which make full use of level of granularity of road network space, and linear referencing method.[2]

Sourabh Jain, Sukhvir Singh Jain, and Gaurav Jain(2017) are presented paper on Traffic Congestion Modeling Based on Origin and Destination in 2017. Their paper proposes an idea of estimating congestion on urban roads with reduced cost of field data collection by limiting observation sites at only a few select nodes in the route instead of the entire length. A model for prediction of travel time on a given segment was prepared using multiple linear regression. Combined with the knowledge of free flow time for that segment, which from among other methods can also be approximated from the midnight field observation data, Congestion Index, which is an efficient, route length independent measure of congestion, can be calculated. This procedure was carried out in this study for a major road route in Delhi. The use of node data to estimate travel time may help in estimation of travel time, but it falters in providing help for suggesting alternative routes because the node data for alternative routes remain the same notwithstanding anything but roadway parameters such as length and diversions. In order to make this distinction clear, more roadway parameters should be studied for influence on traffic congestion.[3]

Feifei He, Xuedong Yan, Yang Liu and Lu Ma(2016) presented paper on A Traffic Congestion Assessment Method for Urban Road Networks Based on Speed Performance Index in 2016. Their study selects the speed performance index as the road network state evaluation indicator. They divided the traffic state into four categories namely heavy congestion, mild congestion, smooth and very smooth. Based on the traffic state classification standards, the study proposed the road network congestion index and the road network congestion index to measure the congestion degree of road segment and road network respectively. They took Beijing expressway congestion analysis as a case study, this study carried out Beijing expressway network characteristics analysis, road segment congestion assessment and road network congestion assessment. They stated that morning peak has the congestion delay

phenomenon in the way that road network congestion continues to about 10:00. According to road segment congestion assessment and road network congestion assessment, the Beijing expressway network during the morning peak is much better than the evening peak, and season is also an important influence factor to urban road network congestion.[4] Liang Ye, Ying Hui, Dongyuan Yang(2013) are presented paper on Road traffic congestion measurement considering impact on travelers in June 2013. The article uses three new congestion indicators to estimate urban traffic congestion based on travelers' feelings. They are Transport Environment Satisfaction (TES), Travel Time Satisfaction (TTS), and Traffic Congestion Frequency Feeling (TCFF). A survey was taken in Shanghai China to collect travelers' attitudes about congestion and trip information. Based on the survey data, we estimated the three indicators' value of travelers in Shanghai. Nine congestion situations were designed in the survey to collect the frequency that travelers meet in their most frequent trips and the feelings when meet these situations. In the nine congestion situations, most respondents (76.2 %) feel moderately bad or extremely bad when they are delayed about 30 min. The situations that the speed is slower than a bicycle and cannot estimate travel time because of traffic congestion. Three congestion indicators can describe travelers' feelings of congestion from three different levels. They said that Traffic movement is highly influenced by climatic condition so, it is evident that traffic congestion also affected by climatic factor.[5]

III. CONCLUSION

This study gives the condition of traffic jam. Encourage the people to use public transport to reduce the traffic congestion. On street parking should be restricted. In the time of peak hour the vehicles using the congested road should be charged, because of charging condition we may reduce the traffic congestion.

IV. REFERENCES

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