

A Review on Spot Speed Survey of Maharashtra State Highway (SH-264) and National Highway (NH-44)

**Mrs. P. H. Salodkar¹, Mr. R. N. Bhosle², Mr. Sharad Shambharkar³, Mr. Gourav V. Melekar⁴,
Mr. Sudhanshu Shende⁵, Mr. Pratik Meshram⁶**

Assistant Professor, Department of Civil Engineering^{1,2}

Students, Department of Civil Engineering^{3,4,5,6}

Nagpur Institute of Technology, Nagpur, Maharashtra, India-441501

Abstract: *The spot speed study concentrates on measuring the speed characteristics at predetermined areas under the natural conditions. The spot speed studies are coordinated to assess the movement of rates of vehicles in a surge of activity at a particular region on a roadway. Designing and construction of a road involves estimation of traffic volume and setting up ideal speed for the vehicles to travel in a comfortable way. Now days, due to rapid increase in volume of traffic the designed speed on high ways could not be maintained resulting a delay in reaching target point. Our project also involves survey of spot speed of vehicles near a school zone. This helps us to recommend changes to the existing system. These recommendations may involve establishments of precautionary signs like school zone, speed limit etc. This study includes the traffic volume and check the time to reach the target in off-peak timing on a highway Chandrapur-Ballarshah (SH264), Nagpur-Deolapar (NH44). The conclusion of the project is the solution to problems faced in chandrapur-ballarshah and Nagpur-deolapar Road journey by checking personally and taking feedback off public using the highway.*

Keywords: Spot Speed Study

I. INTRODUCTION

Speed is a measure of distance traveled and time spent over a period of time. Speed is also one of the macroscopic parameters of basic traffic broadcast parameters that typically marked total traffic. Typically, speed is used to define travel quality and road network performance to meet the need for traffic as it relates to safety, comfort, time, economy and comfort.

There are a variety of factors that will affect speed such as driver signs, traffic structure and type of terrain. For example, increased speed limits in areas with severe weather conditions are found to have a positive effect on risk. With regard to the effects of climate change, the impact of rainfall is considered persistent and often leads to increased risk levels. In addition, reckless driving such as delays and reckless driving are also some of the causes for speeding and lead to road accidents. Strong emotions in the driver are the keys that influence the behavior of the driver. Based on previous research, anger causes acceleration and top speed of up to 2 miles after an emotionally charged event such as a slow-moving car or a roadblock. It has been shown that the driver's emotions will primarily affect the driving behavior and increase the likelihood of a road accident.

As the data collected in the local speed survey is important, so it is collected, analyzed and presented very well. During the data collection process, procedures should be strictly followed to avoid any errors that will reduce the accuracy of the data.

Scope of this project is: Spot speed courses are compiled to evaluate the movement of vehicle values in the continuation of activity in a particular road area. The proposed oversight is the task of distinguishing the speed of the vehicle, part of the highway framework, preventing high and low speed control, planning and analyzing traffic control and traffic.

Problems resolved in this project is: In the current context of traffic congestion, the current traffic volume is not sufficient to maintain design speed. With the help of local speed studies we can control traffic volume by diverting it or designing cycle time.

The main aim of this study is:

- The main objective is to achieve efficient, free and rapid flow of traffic with safe drive.
- To calculate spot speed and prepare tables for statistical analysis of spot speed
- To plot histograms, frequency curves and cumulative frequency curves of spot speeds.
- To determine weighted average speed, model speed, speed limit (85th percentile speed), design speed, etc. of spot speeds.
- To establish speed limit at school zone.
- To recommend zebra crossing or pedestrian signal if necessary.
- Proper placement of sign boards.
- To present detailed diagram of spot speed calculations,

Speed is an important measure of the speed and safety of a network of roads. Speed by definition is the speed of movement of a car in a distance during each unit. Normal unit speed per kilometer (KMPH) or miles per hour (MPH).

The main purpose of this study was to determine the parameter of traffic especially speed. Local speed measurements are usually taken from the road surface under conditions of free flow. The purpose is to determine the speed driven selectively, which can be affected by the presence of traffic congestion. This information is used to determine common trends in speed, to help determine reasonable speed limits, and to assess safety.

Basically, there are two types of speed: the speed of time and the travel time of a few cars in this particular category.

II. LITERATURE REVIEW

CURRIN (2001), Speed is an important measure of road safety assessment. Speed is equally an important transport parameter due to the fact that apart from well-being, it is compatible with time, comfort, comfort, and financial factors. Rapid transmits high risk, while low speed is moderately protected. The speed of the system should be adjusted to the safety of the road closure. speed is one of the functional components to be considered in a road geometry framework.

DK THAKOR, In order to have a scientific system of road traffic, it is important to have a proper database of traffic traffic parameters present in the road system. Different traffic parameters have been identified and later tested on a designated urban road. A study of traffic volume and reading speed was performed. In May 2014, Anand City Dipak K. Thakor, Drs. L B Zala, Prof. A.A. Amin observed that the average flow rate of normal motion was 25km / h which was less. This has shown a decline in the level of management. Similarly, the fifteen percent speed was 19kmph which indicates that a vehicle under this speed (LE. Cycles) does not encourage running activity. Which shows that the information was very bad.

Solomon (1) found high levels of consensus in his 1964 thruways investigation into the U.S. note that modern cars and drivers have different characteristics than those of 1964. Solomon's study examined 2-path and 4-path partitioned thruways, just one of them. he could fully control it as an interstate. Therefore, the consensus obtained by Solomon does not coincide with those found in this study.

According to Garber and Hoel (2009), three local methods are commonly used to do spot research. First, it must reflect the different traffic conditions on the selected road in order to collect data. Second, the middle blocks of a straight and moving road to analyze speed trends. Thirdly, any areas that are used to get to the solution of a particular traffic planning problem. Sample local speed data should be at least 50 vehicles and preferably 100 vehicles (Ewing 1999). This is to ensure that the samples represent well the target population in the study area. Spot speed lessons should usually be directed at a time when part of the road encounters conditions for "free flow" driving or less efficient hours. During this time drivers will drive at the desired speed due to the reduction of traffic on the road.

In 2003 Fitzpatrick Et Al., Gave the impression that speed was being used as a stepping stone to test road and road strategies. Agent El al., (1998) suggested that road speed is an important parameter because it is related to a time of safety, luxury and economy.

Tayler et al., (2007); Mc faden et al., (2001); Najjar et al.,(2001) agent et al.,(1998) conducted the procedure to set speed limits have evolved through years of experience and research. That means most states and localities set speed limits for streets and highways based on the results of engineering and traffic investigations. For Example, Garber,(2002) conducted the spot speed study to estimate the distribution of vehicle speeds in a stream of traffic at a particular location of highways.

Hall and Ibrahim (1994); gave the ideas that is light rain affected speed by 1 mph and heavy rain had an effect of 3 to 6 mph. that means wet and dry condition of the pavement also affects the traffic speed.

III. CONCLUSION

Spot A

- Precaution sign stating “school zone” should be established.
- Speed limit board of 35 KMPH should be established along with school timings.
- Zebra crossing for the school students should be provided.
- School zone board should be established before 50 meter from the school.

Spot B

- We would recommend to place radar meter so that It will show actual speed of vehicle.

REFERENCES

- [1]. Fitzpatrick K, Carlson, P., Brewer, M.A., Wooldridge, M.D., and Miaou, S.P. Design Speed, Operating Speed, and Posted Speed Practices, NCHRP, Department of Transportation Engineering; 2003. Report No. 504.
- [2]. Currin, T.R.2001. Spot Speed Study. In Introduction to Traffic Engineering: A Mannual for Data Collection and Analysis, ed. B. Stenquist. Stamford, conn.: Wadsworth Group, pp. 4-12.
- [3]. Garber, N. J. and Gardiraju R. 1989. Factors affecting Speed Variance and its Influence on accidents. In transportation research record 1213 (pp 64-71). Washington DC.: transportation research Board, National Research Council.
- [4]. Solomon, D. accidents on Main Rural Highways Related to Speed, Driver, and Vehicle. Publication by U.S. Department of Commerce, Bureau of public Roads, 1964.
- [5]. Taylor, D.R., Muthiah, s., kulakowski, B.T., Mahoney, K.M., and Porter, R.,(2007). “artificial neural network speed profile model for construction work zones on high speed highway.” Journal of transportation engineering vol.133,No.3.pp 198-204
- [6]. Ibrahim. A.T., and hall, (1994). “Effect Of Adverse Weather Conditions on Speed Flow Occupancy Relationship” Journal of transportation research record No. 1457, pp 184-191