



REVIEW PAPER OF ACCIDENT ANALYSIS OF A STATE HIGHWAY (GOHANA TO SONEPAT SH- 11 HARYANA)

Er. Shakir Ahmad Bhat¹ Dr. Rakesh Gupta²

¹M TECH Scholar, Civil Dept, SRMIET, Bhurewala, Ambala, Haryana, India.

²Professor and Director, Civil Engineering Department, SRMIET, Bhurewala, Ambala, Haryana, India.

Abstract: Rapid growth of population coupled with economic activities has resulted in continuous growth of motor vehicles and due to increasing population and vehicles, traffic accidents are increasing day-by-day. Traffic accidents related to deaths and injuries result in not only substantial economic losses but also serious physical and mental suffering. The increasing road accident has also created social problems due to loss of lives and human miseries. The road accidents are very much on Gohana-Sonepat Road & due to which it was very essential to evaluate “Accident analysis of Gohana-Sonepat Road” so that the remedial measures should be suggested to the accidents on Gohana-Sonepat road, according the data related to traffic volume, type of vehicles, accident data, type of accident, causes of accident vehicles involved in the accident, were collected from the last five years and analysed.

Keywords: Highway, safety, road accident, traffic volume, cause of accident.

INTRODUCTION

Developing countries are much more affected from traffic accidents than developed countries. The highway network is accelerated at a fast rate and the safety of vehicular movements becomes a concern for everybody due to reporting of loss of lives and properties along with fatal injuries and periodical obstruction of traffic flow. National highways provide the efficient mobility and accessibility function. The increasing road accidents have created social problems due to loss of lives and human miseries. Road accidents are essentially caused by interactions of the vehicles, road users and roadway conditions. Each of these basic elements comprises a number of sub elements like pavement characteristics, geometric features, traffic characteristics, road user’s behaviour, vehicle design, driver’s characteristics, and environmental aspects. Causation of accidents can be well understood with the help of analysis of accident statistics, which can provide clues to many factors of road accidents. Many researchers have devoted their research to the area of road accidents and reported pioneering work on the analysis of road accidents. A number of studies on investigating the variations in the rate of accidents have been carried out in India in different cities such as Delhi, Ahmadabad, Hyderabad, Chennai, Bangalore, and Kolkata for predicting road accidents using population and vehicular population. In this study an attempt has been made to accident Analysis on Gohana-Sonepat Road.

Urban transport facilities in most of the Indian cities are inadequate and deteriorating over the years. The development of public transport system has not kept pace with traffic demand both in terms of quality and quantity. With the rising motorization and expanding road network, travel risks and traffic exposure grow at a much faster rate, as the growth of registered vehicles always out numbers population growth.

Today road traffic accidents are one of the leading causes of deaths, disabilities, and hospitalizations with severe socioeconomic costs across the India. The increasing numbers of road accidents has imposed considerable social and economic burdens on the victims of accidents.

Sonepat district is located in Haryana. Population of Sonepat district is 1480080 as per Census 2011. Sonepat is 16th most populous district out of total 21 districts in Haryana. On an average of 43 road accidents in a year takes place on Gohana Sonepat road in which 84% are injurious and 16% are fatal in nature. Like other roads, this road has also shown an increasing trend of road accidents taking place annually.

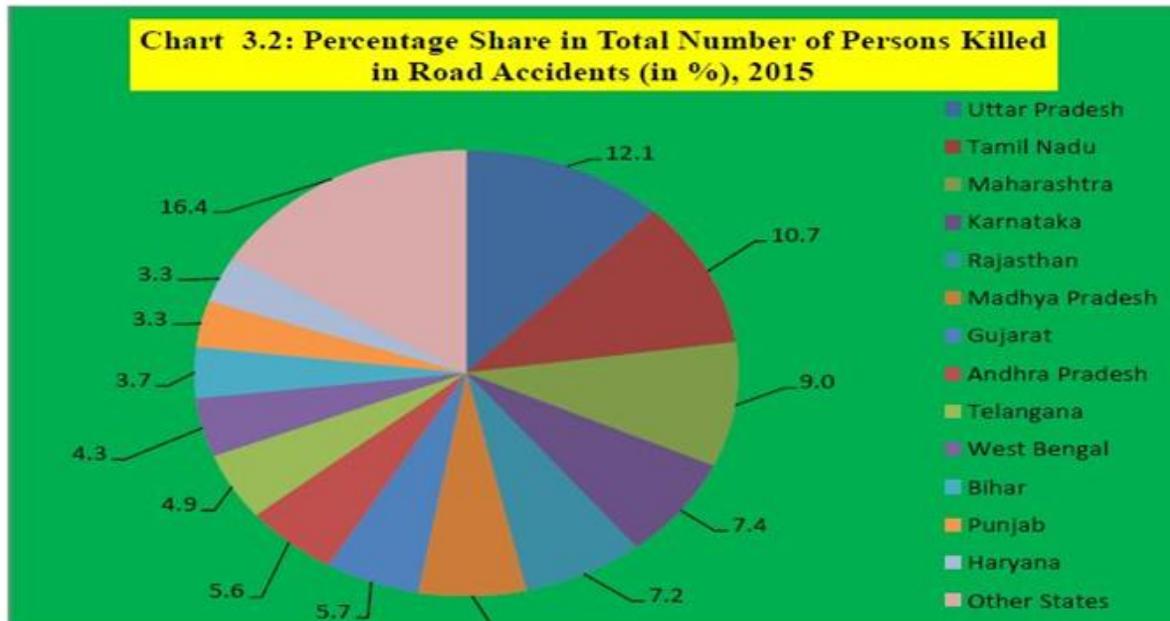


Figure 1.1 Percentage share in Total no. of persons killed in road accidents in 2015

Road Accident Statistics for Haryana

Year	Accident	Death	Injured
2016	7310	3243	6890
2015	11174	4879	10812
2014	10676	4443	8944
2013	10482	4517	9143
2012	10065	4446	9452

LITERATURE REVIEW

MORTH survey has shown that, small states of India had a doubtful record as far as the rate of accident-deaths per thousand vehicles was concerned. It was highest in Arunachal Pradesh at 5.7%, followed by 3.6% in case of Sikkim. Similarly the rate of accidents was highest in Nagaland at 92.1% followed by Mizoram at 89.7%, against the national level of 28.4%. As compared to an all India level, the total road accidents in the seven metropolitan cities namely Ahmadabad, Bangalore, Mumbai, Kolkata, Delhi, Hyderabad and Chennai were about 21.5% of the total accidents during 1977, which marginally came down by 5% to 16.9% in 2001. The fatalities and injuries during this period exhibit a declining trend significantly from 10.52% to 6% and from 23.28% to 8.96% respectively. This decline in most of the selected cities reflects not only the relative expansion of the road-network, but also the extent of safety measures taken by concerned city authorities.

National crime records Bureau statistics show 13 people die in our country every hour due to RTAs and road accidents had the maximum (37%) share of unnatural causes of accidental deaths in the country. The average cost of RTAs in India is approximately 12.5 billion dollars (Rs.7 lakh crores). This does not include the economic burden of permanent disability of the more than 10 lakhs people who survive major accidents every year. 85 % of the victims of these fatalities are men in the age group 20-50 years. Majority of these men are the bread-winners for their families.

RTA fatalities and serious injuries place a huge strain on the economic and social fabric of the family and the society. The family loses the source of income in addition to their loved one. Searching for a new source of income is a challenging task and is fraught with uncertainties and exploitations. The larger ramifications of this include children dropping out from the school for employment and elderly being forced to work. Physical disability resulting from RTAs also hugely impacts the society. For example, spinal cord injury -permanently disables the patient resulting in him/her being confined to wheel chair or bed for the rest of their life. The plight of their family is similar to, if not

worse, than those of the fatally injured. The costs of rehabilitating the spinally injured patient is enormous, with little help expected from the government. Most of these patients are employed at the time of injury and the injury changes their lives forever. Spinally injured patients, depending on their level of injury need assistance in feeding, personal hygiene, and basic mobility.

R K Singh, S K Suman (2001) proposed a study on Accident Analysis and Prediction of Model on National Highway-77 aiming at finding the monthly and annual variation in accident rate, effect of traffic volume on accident rate and to develop model using AADT and road condition.

Equation represented by them for road accident prediction is:

Accidents/Km-Year = $C_0 + C_1 (\text{AADT}) + C_2 (\text{Road Condition Rank})$.

Using the above equation conclusion was made that number of accident increases per km- year with AADT and decreases with improvement in road shoulder condition.

S K Singh and Ashish Misra (2004) conducted a case-study on 'Road Accident Analysis of Patna city' made a conclusion that congestion and encroachment are the main reasons behind road accidents performed a case study.

Further, **P. Pramada VALLI (2004)** developed Road Accident Models for Large Metropolitan Cities of India. The main aim of this study was to develop models by analyzing the road accident data at all India level as well as for large metropolitan cities. The data for 25-year period from 1977 to 2001 was analyzed to build models to measure the nature and extent of accident using the concept of Smeed's concept and Andreassen's equation. The main conclusion drawn from the study was made that to minimize the accidents, major policies may be transformed to reduce the growth of personalized vehicles and encourage the people to use public transport vehicles.

ROAD ACCIDENT STUDIES IN OTHER COUNTRIES

Over the past 60 years, many models have been developed to estimate the traffic accidents all over the world. When developing his model Smeed investigated the relationship among death, number of vehicle and population by using 1938 data gathered from 20 different countries (Smeed, 1949). However, Andreassen seriously criticized Smeed's model since only one-year data was utilized in the model development, stating that this model could not be used for all countries because each country has distinct traffic, and social and economical parameters.

S. Hamen, R S Umar, S V Wong (2004) carried out a study on urban roads in Malaysia aiming at developing models for predicting motorcycle crashes at signalized intersections. The conclusion drawn from this study was that number of motorcycle crashes was proportional to the level of traffic entering the intersections.

Keli K, Stephanie A. Rowcliffe (2008), attempted to found the impact of using cell phones on driving performance. Detailed study on this topic found that drivers who were conversing on the cell phone were less likely to make a complete stop at the stop sign.

Mustafa Calisici, M Melik and Omer Cansiz (2009), demonstrated an ANN approach based on supervised neural networks to estimate the number of persons fatally injured in motor vehicle accidents and results indicated that ANN model is an approach in predicting fatalities in motor-vehicle crashes.

M. Ziyadi, F R Moghaddam In (2010), presented the study on prediction of Accident severity using artificial neuron network technique. This study revealed that ANN models can be used to estimate crash severity and significant crash related factors.

A Tortum and Muhammed Yasin (2012), demonstrated a study on modelling traffic accidents in Turkey. Conclusion was made that lack of standards in highway projects is the main factor affecting traffic safety.

CONCLUSION

Road accident scenario in the country is a matter of great concern. The number of accident fatalities is increasing every year due to over speeding on all categories of roads, overloading of commercial vehicles. The data was analysed to determine the cause /characteristics of accidents. The following conclusions are drawn from the study:

1. Population, numbers of registered vehicles and volume on the road have increased in the last five years leading to increase in the number of accidents and fatalities.
2. The reason for most accidents on this segment include a) Narrow Bridges b) encroachment of carriageways on T-junction of canal road and this road on corners on the curves by vehicles mostly auto-rickshaws c) Absence of control devices, absence of speed control devices d) absence of footpaths for pedestrians.

3. On the basis of data analysis, characteristics of accident and field visits conducted for the study of remedial measures have been suggested to reduce accidents on the accident-prone segments of the studied stretch of the road.

These measures include

- a. Widening of all the narrow bridges/culverts
- b. Improvement of sharp curves
- c. Providing speed control device especially on approaching road
- d. Avoiding of overloading
- e. Providing better road surface.
- f. Providing central verge along town and village area.

REFERENCES

1. S K Singh and Ashish Misra (2004), "Road Accident Analysis: A case Study of Patna City", Urban Transport Journal.
2. P Pramada VALLI (2004), "Road Accident Models for Large Metropolitan Cities of India", International Association of Traffic and Safety Science Research, Volume 29, No. 1, 2005.
3. Singh, R. K. and Suman, S. K., Accident Analysis and Prediction of Model on National Highways, International Journal of Advanced Technology in Civil Engineering, ISSN: 2231 -5721, Volume-1, Issue-2, 2012.
4. Road accidents in India – 2015 Ministry of Road Transport & Highways Transport Research Wing.
5. Accidental deaths & suicides in India 2015 National Crime Records bureau Ministry of Home Affairs.
6. F. Rezaie Moghaddam¹, Sh. Afandizadeh^{2,*}, M. Ziyadi¹(2010) "Prediction of accident severity using artificial neural networks" International Journal of Civil Engineering, Vol. 9, No. 1, March 2011