

Accident Study of Sonipat to Kharkhoda Road

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Abstract—Road traffic accidents have been recognized as one of those adverse elements which contribute to the suffocation of economic growth in the developing countries, due to the high cost related to them, hence causing social and economic concern. So Traffic safety is an important key and integral role in sustainable transportation development areas. Now days, the main negative impact of modern road transportation systems are injuries and deaths in road accidents. The success of traffic safety and highway improvement programs hinges on the analysis of accurate and reliable traffic accident data. This study discusses the present state of traffic accident information on Sonipat to Kharkhoda Road (19.1 km Stretch) in Haryana State. It shall also discuss the Identification of high rate accident Locations by using different methods and safety deficient areas on the highway. So, implement the remedial measures to those accidental locations (Black Spots) and provisions for traffic safety.

Keywords: Traffic Accidents, Black Spots

1. INTRODUCTION

Rapid growth of population coupled with increased economic activities has resulted in tremendous growth of motor vehicles. Traffic accidents related to deaths and injuries result in not only substantial economic losses but also serious physical and mental sufferings. Developing countries are much more affected from traffic accidents than developed countries. The highway network is accelerated at a very fast rate and the safety of vehicular movements becomes a concern for everybody due to reporting of loss of lives and properties along with the fatal injuries and periodical obstruction of traffic flow. . Each of these basic elements comprises a number of sub elements like payment characteristics, geometric features, traffic characteristics, road user behavior, vehicle design, driver's characteristic and environmental aspects. Causation of accidents can be well understood with the help of analysis of accident statics, which can provide clues to many factors of road accidents. The road accidents in our country are increasing at an alarming rate. The extent of loss of life in road accidents in road accidents is such that one person is dying every 3-4 minutes in the country in road accidents. The state of Haryana and the city of Sonipat or no exceptions. The road accidents in the city are causing great loss of life and property. The study topic ‘‘ Accident Study of Sonipat to Kharkhoda Road’’ aims at collecting and analyzing the accident data of Sonipat to Kharkhoda to determine the

black spots of accidents on these roads and to provide proper remedial solution.

2. DATA COLLECTION

The accident data of last four years (2012-2015) for the selected stretch were collected from the FIR copies of the following police stations and data available on website of Haryana police.

1. Sonipat Sadar station.
2. Kharkhoda police station

Road accident data include the information like number of accidents in an individual year, time of accident, type of accidents, vehicles involved in accidents, location of accident, etc. The traffic volume data of Sonipat- Kharkhoda road was done to find out the type of traffic mix.

3. ANALYSIS OF THE ACCIDENT DATA

After the compilation and tabulation of data, further analysis of the data according to different characteristics of accidents was completed. The different characteristics that were analyzed are:

1. Number of accidents
2. Fatal and non-fatal accidents
3. Accidents based on the time period
4. Proportion of victims of accidents
5. Proportion of victims involved in accidents
6. Severity of accidents
7. Accident prone areas
8. Causes of accidents and remedial measures

4. ACCIDENT PRONE LOCATIONS

The accident prone locations are determined on the stretch of Kharkhoda to Sonipat road. The accident prone locations have been found out on the basis of given below criteria:

Accident severity index of the location.

5. ACCIDENT SEVERITY INDEX

The accident severity index measures the seriousness of an accident. It is defined as the number of persons killed per 100 accidents. (MORTH, 2012).

Table below represents the accident severity index for selected stretch of Sonipat to Kharkhoda from 1st January 2012 to 31st December 2015. It can be seen from the table that the accident severity index is 26.82 in 2012, thereafter it gradually increased from 26.82 to 38.10 in 2013 to 46.15 in 2014, and thereafter it decreases to 37.50 in 2015.

Table 1

Year (1)	Total no. of accident (2)	Number of persons killed		Total Death (5)	ASI (6) = (5/2)*100
		Male (3)	Female (4)		
2012	41	8	3	11	26.82
2013	42	12	4	16	38.10
2014	52	23	1	24	46.15
2015	48	15	3	18	37.50

It shows that the total number of accidents though has increased from 2012 to 2014 also the number of deaths and percentage of fatal accidents have increased leading to increase in accident severity index. This increase in fatalities may be attributed to the increased speeds with improved technology of vehicles on the road.

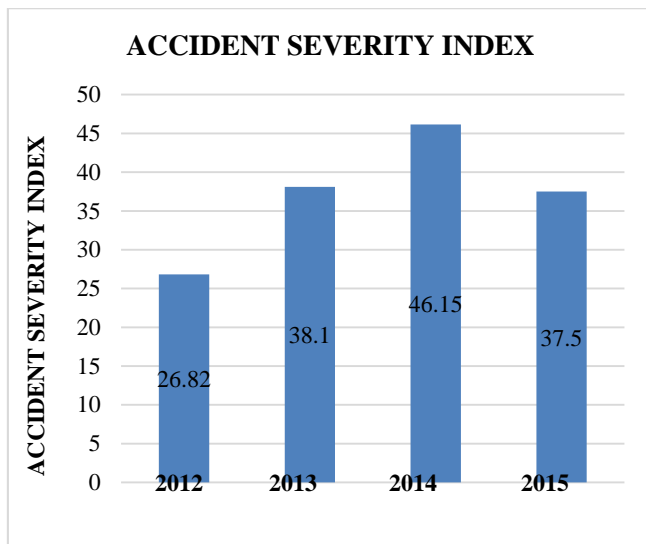


Fig. 1

The accident severity index (ASI) of the accident prone Locations identified on the basis of FIR collected of accidents have been calculated according to locations of the accident and given in table below.

Table 2 ASI of accidents prone locations

Location	Total Accidents	Average Accidents	ASI
Village Rohat	11	2.75	54.54
Mehlana	5	1.25	20
Rohat River Bridge	26	6.5	27.78
Harshana Mor	14	3.5	50
Kawali Mor	11	2.75	9.09
Kakroi river Bridge	6	1.5	0
Baiyanpur	24	6	27.78
Jharot	25	6.25	22.22
Bus stand Sonapat	5	1.25	0
Peer Baba Rohat	11	2.75	36.36
Fatehpur Mor	5	1.5	20
Kalupur Chungi	8	2	0
Baiyanpur school	5	1.25	20
Rajdhana	7	1.75	0
Farmana mor	12	3	16.66

6. BLACK SPOT IDENTIFIED AND THEIR REMEDIES



Fig. 2 Black spot at Kalupur Chungi

Remedies:

- Sight triangle should be visible properly.
- Pavement Markings must be done.
- A speed breaker should be installed in order to calm high speed vehicles.



Fig. 3 Black spot on Baiyanpur School

Remedies:

- Rigid obstruction should be marked with white and black paint with 50mm strip width.
- Warning sign like school zone should be installed before 150m with white background, red border and black strips and rigid obstruction should also be painted with black and white paint.



Fig. 4 Black spot on Peer Baba Rohat

Remedies:

- Installation of curve sign with white background, red border and black symbols and installation of road delineator with light yellow reflector paint to show the alignment of road throughout the curve.
- A Speed limit Sign Board should be installed in order to calm high speed vehicles.



Fig. 5 Black spot on Rohat River Bridge

Remedies:-

- Narrow bridge sign must be installed.
- Marking of obstruction should be done with black and white strips of 50cm width.
- Shoulder damage near service road.
- Provision of crash barriers near shoulder otherwise installation of falling rocks sign should be installed in equilateral triangle shape with white background, red border and black symbols.
- Hazard marker should be painted with white paint with red reflector paint and black border at the top.

7. CONCLUSION

1. Three major and common black spots are identified by ASI method on the selected stretch (Sonipat to Kharkhoda Road) of 19.1 km. Names of black spots identified are Rohat river bridge, Baiyanpur, Jharot.

2. The accident rate can be decreased by road side clearance, proper maintenance of shoulders, lighting, and junction improvement. Speed limit should be brought down by providing humps near accident spots. Sight distance near curves should be obstruction free.

8. SCOPE OF THE STUDY

In this study an attempt has been made to analyze the data of road accidents of Sonipat to Kharkhoda Road (a stretch of 19.1 km). The study involves the analysis of road accident data of the past four years in respect of this road. On the basis of analysis of the data and field study of the roads, the accident prone locations have been identified and remedial measures are suggested. The methodology followed for these roads being of general nature can be applied to any other Road having similar traffic, roadway and environment conditions.

REFERENCES

1. A. Ramesh and M. Kumar (2011), " road accident models for Hyderabad metropolitan city of India", Indian highways journal, volume 39, No. 7, 2011.
2. A. Tortum and Muhammed Yasin (2010), " Modelling traffic accidents in Turkey using regression analysis",Igdir university journal of the Institute of Science and Technology, Volume 2, issue 3,pp:69-78, 2012.
3. " Accidental deaths and suicides in India 2009, 2010 and 2011", released by National motor transport statics of India. Ministry of surface transport. New Delhi.
4. Department of Economics and statistical analysis, government of Haryana, Chandigarh.
5. Global status report on road safety (2009) published by world Health Organization.
6. Keli K, stephanie A. Rowcliffe (2008), "Missing the signs: The impact of cellphone use of driving performance", journal of psychology, volume 1, 2008.
7. M. Ziyadi, F R Moghaddam (2010)," prediction of accident severity using artificial neural networks", international Journal of civil engineering, volume 9,No 1, march 2011.
8. Mustafa Calisici, M Melik and Omer Cansiz (2009), " Use of artificial neural network to estimate Number of persons fatally injured in motor vehicle accidents", proceedings of the third international conference on Applied Mathematics, simulation, modelling, 2009.
9. MORTH (Ministry of Road Transport and Highways) survey report on road accidents.
10. National crime record bureau (NCRB), ministry of Home Affairs, government of India, new Delhi.
11. National transport planning and Research report on road accidents.
12. 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.
13. Road traffic education institute, New Delhi, Report on Road Traffic Accidents (2006).
14. RK Singh, S K Suman (2001)," accident analysis and prediction of model on national highways" international Journal of Advanced technology in civil engineering, volume 1, issue 2, 2012.
15. Sandeep Chakraborty and Sudeep K Roy (2005)," Traffic accident characteristics of Kolkata", transport and communication Bulletin for Asia and the Pacific, No. 74, 2005.
16. S. Harnen, R S Umar, S V Wong (2004)," development of prediction models for motorcycle crashes at signalized intersection on urban roads in Malaysia", journal of transportation and statics, volume 7, No. 2,2-4.
17. SK Singh and Ashish Mishra (2004)," road accident analysis: A case study of Patna city", urban transport journal 2(2): 60-75.