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Accidental Analysis on M.D.R-119 Kaithal to Kurukshetra Road

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Abstract: The accidents cost approximately about 3% of India GDP. To bring down this huge burden on Indian economy, it is imperative to find out accident potential of an existing road network and to plan safety measures accordingly.
The main aim of this study is to develop a safe guard for the state of Haryana for predicting road accidents and fatalities based upon socio-economic factors such as GDP, population, motor vehicle registration, total road length, total number of employed people. The selection of factors for the study is based upon previous studies and only those factors were selected into final research which was found significant. The data of 5 years (2013-2017) was collected from different departments and analyzed. The concept of Study can be used for road safety improvement in future in the state of Haryana.
Keywords

I. INTRODUCTION

Road accidents claim the lives of a million people per year around the world with an estimated 23 to 34 million injured. The strong trend is for these alarming figures to continuously increase in low-income countries and these countries now account for about 85% of the world's annual road deaths . Among these countries India is one contributing one death in every four minutes due to road accidents. An improvement in socio-economic conditions of the people along with industrial and infrastructural development is bound to create an additional burden on roads by means of an increased number of vehicles and associated modes using the roads. Along with the enormous advantages caused by this magnitude of progress, roadway accidents have also become one of the main causes of concerns due to both individual (persons) and economic losses. Therefore, there is a huge demand for assessing these accidents through identifying and analyzing the various causes that are responsible for their occurrence, and also to recommend the various remedial measures to mitigate the accidents. An increasing or decreasing number of accidents depend on many factors such as pavement characteristics, geometric features, road user's behaviors, drivers' behavior, vehicle design and environmental characteristics and socio-economic factor like population, employment, no. of motor vehicles etc. Many researchers have done work for understanding the causes of these accidents in India and various types of models were developed for predicting road accidents' for various major cities including various factors responsible for road accidents.

The road accidents in our country are increasing at an alarming rate. It is estimated that in the year 2013 about 1.45 lac person lost their lives in road accidents. 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 selected stretch M.D.R. 119 or no exceptions. The road accidents in the city also are causing great loss of life and property.

II. LITERATURE REVIEW

A. Road Accidents in india

In 2012, according to National Crime Records Bureau (NCRB) the study on characteristics of time of road accidents have found the maximum number of road accidents 1802 occurred between 06:00 pm to 9:00 pm and 578 was minimum accidents that occurred between 00:00 am to 03:00 Am in Haryana and overall total number of accidents occurred in Haryana was 9971 in 2012. But the maximum number of road accidents 73762 occurred between 03:00pm to 06:00 pm and the minimum of same 27905 was occurred between 00:00am to 03:00am in India and overall total number of accidents 440042 took place in India in the year 2012.

Singh R.K., Suman S.K. (2001) proposed a study on accident analysis and prediction of model on national highway 77 aiming at finding the monthly and annual variation in accidents rate and to develop model using AADT and Road condition. Equation represented by them for road accidents prediction is:

Accident/km year = C0 + C1 (AADT) + C2 (Road Condition Risk)

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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.

Similar to the previous studies on development of model for accident prediction, Ramesh A., Kumar M(2011) , made an attempt to develop road accident models for Hyderabad metropolitan city of India. This study was confined to accident prediction models and and identifying the black spots in Hyderabad city and the following conclusions were drawn out:

Smeed'sApproch (1949) why we use to develop accident prediction model for Hyderabad city as:

$C/N = 0.0002 (N/P)^{-1.95} (R^2 = 0.954)$

Blackspot locations were identified in West and Central zone as Golconda, Banjara Hills, Gandhinagar and Sahibabad. Over the past 60 years, many models have developed to estimate the traffic accident all over the world. When developing his model Smeed investigated the relation among death, number of vehicle and population by using 1938 data gathered from 20 different countries (Smeed 1949). However, Andreessen seriously criticized Smeed's model seems only one year data was utilized in the Motel development, stating that this model could not be used for all countries because each country has distinct traffic and social and economic parameters.

Valli P.P.(2004) developed a road accident model for large accidents metropolitan cities of India. The main aim was to develop models by analysing the road accident data at all India level for large metropolitan cities. The data for 25 years.

From 1997 to 2001 was analyzed to built models to measure the nature and extent of accident using the concept of smeed'sconcept and Andreessen's equations. The main conclusion drawn was to minimize the accidents. Major policies may be transformed to reduce the growth personalized vehicles and encourage the people to use public transport vehicles.

Dhamaniya conducted a case study of Surat city in Gujarat. Total accident occurred in the city one regressed with population and vehicle ownership. Second model was the urban arterial base accident prediction model.

Comprehensive study of road safety found that human error was the sole cause in 57% of all accidents and was a contributing factor in over 90%.

The accident time also has the characteristics of two peaks and one through i.e.

The morning Rush Hour appears in 06:00-9:00 A.M., the evening peak appears in 18:00-21:00 and 23:00-5:00 in a day. Therefore, traffic safety management and monitoring should be enhanced to provide the condition of Peak time. View from the time characteristics of casualties, casualties during the day time is more serious than the night.17:00-21:00 is the peak time of accidents, casualties accounting for 30% of the whole day.

Side collision, front Collision, trailing collision accounted for 80% of the total casualties, accident casualties in generally on straight and curved roads were more than 95% of the total, casualties on roads without side protection, lighting and physical isolation are very serious, casualties on roads are much more than in sections; casualties caused by driving motorcycle accounted for 90% of the total casualties, so it is necessary to enhance the management of motor vehicles. Accidents occurred on rural roads are usually caused by side impact, head-on collision and trailing collision.

III. METHODOLOGY OF SURVEY

A. General

The study aims to identify accident prone locations on main road of kaithal to kurukshetra with a view to reduce the future road accidents on the stretch. With this objective in mind, the accident data of the last Five years of kaithal to kurukshetra road were collected from police records from FIR copy of accidents.

B. Problem of road accidents

Due to highly heterogeneous nature of traffic on the stretch of kaithal to kurukshetra road, ranging from pedestrian, animal drawn carts, rickshaws, handcarts, to motorized vehicles like motorcycle, three wheelers, motor cars, buses and trucks, the number of accidents is increasing year after year.

The haphazard pattern of the roads, absence of proper traffic controlling devices and lack of driving discipline in people are the main culprits for the increase in accidents. The extent of loss of life in road accidents is such that one person is dying every 3-4 minutes in country in road accidents. The state of Haryana and city of kaithal and kurukshetra are no exceptions.

C. Selection of roads for the study

The accident data for the last Five years, that is, from 2013 to 2017 for the selected stretch of 53.8 km was selected from FIR's of police records to find out the accident details and causes of accidents .

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D. Data collection and tabulation

The accident data of last Five years (2013-2017) for the selected stretch were collected from the FIR copies of the following police stations made available on website of Haryana police.

E. 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 accident
7) Accident prone areas
8) Causes of accidents and remedial measures

F. Identification of Accident Prone Location

On the basis of the analysis of accident data like total number of accidents at a given stretch of the road, the accident prone locations where more accidents have taken place in the past or more persons have died in the past were identified.

G. Remedial Measures

Field study was taken up on all the critical accident prone locations to know the physical features of the road which could be responsible for causing the accidents. On the basis of the results of analysis and the field study, possible Road related causes of accidents were identified and remedial measures are suggested accordingly for them.

IV. ROAD ACCIDENTS DATA COLLECTION

A. Data Collection Source

The requisite data are collected from FIR copies of Haryana Police records from six police station of kaithal and kurukshetra district's for the analysis of road accidents on the particulars selected stretch.

B. Study Area

The stretch from kaithal to kurukshetra is selected for finding out the accident details and causes of road accidents at a particular stretch. In this study, the accident data is taken for the last Five years from 2013 to 2017 at the particular stretch. The selected stretch and corresponding Police stations are given below in table where the studies conducted.

The data obtained from these police Stations have the following information:

1) Number of Accidents year wise, month wise and day wise
2) Time of accidents with day and night
3) Locations of accidents
4) No. of Deaths in accidents
5) Minor injuries of accidents
6) Major injuries of accidents
7) Victim of accident
8) Vehicle involved in accidents

IV. ANALYSIS OF ACCIDENT AND DISCUSSION

A General

The analysis of road accident data was done for determining the type and cause of accidents. In this study accident data were collected from the identified stresses of selected roads from the FIR copy of police records of the concerned police station. The road accident data so ploted are there for analysing respect of the stretch and results discussed are under:

1) Number of accidents

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2) Fatal and Non-fatal accidents
3) Accidents based on time.
4) Proportion of victims of accidents
5) Proportion of vehicles in Golden accidents
6) Severity of accidents
7) Accident prone areas
8) Causes of accidents and remedial measures

B. Accident prone location

Accident Prone Location on Selected Stretch Under this section the accident prone locations are determined on the stretch of kaithal to kurukshetra roads. The accident prone locations have been found out on the basis of two criteria:

First, the accident prone locations were find out on the basis of average number of accidents per and one of various locations and then for the locations having more number of accidents, the other three criteria were also applied to determine the critical location for accidents.

1) *Accident prone locations as Per Average Number of Accidents:* In this section the accident data are discussed according to the locations on yearly basis from 2013 to 2017. This criteria give 9 locations where on an average 2 or more accidents take place per year. These are: (1) Dhand Bye pass Chowk kaithal , (2) Village Pabnawa, (3) Village Mirzapur (4) New Bus Stand Kurkushetra,

Table 5.1 Accidents prone locations

Location	Year					Total Accidents	Average Accidents
	2013	2014	2015	2016	2017		
Dhand Bye pass Chowk kaithal	2	4	3	6	2	17	5.67
Village Pabnawa	2	3	5	3	3	16	5.33
Village Mirzapur	2	3	5	4	3	17	5.67
New Bus Stand Kurkushetra	3	3	4	3	2	15	5.00
New Bus Stand Kaithal	1	4	2	2	2	11	3.66
Kanda Chowk, KKR	5	2	2	3	3	15	5.00
Mohan Nagar Chowk KKR	5	2	6	3	3	19	6.33
LNJP Hospital KKR	3	3	2	6	3	17	5.67
Pipli Chowk	10	4	4	6	2	26	8.67

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Black Spot Identified and Their Remedies



Fig. I

C. Remedies

1) Un authorize parking should be pro habited

2) Speed Limits and service road should provided 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.



Fig. II

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D. Remedies

1) Pot Holes should be maintained by routine maintenance
2) No stopping or standing sign must be installed near the bus stand.
3) Manual traffic control should be done by traffic police in the rush hours.
4) Unauthorized land used should be removed

V. CONCLUSION

A. 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.

B. At the teek railway fatak where an 'S' type curve which is very dangerous in nature. A railway over bridge (ROB) should be constructed .

C. Along the road length lack of sign board is observed at different black sport and major & minor intersection there should be installed.

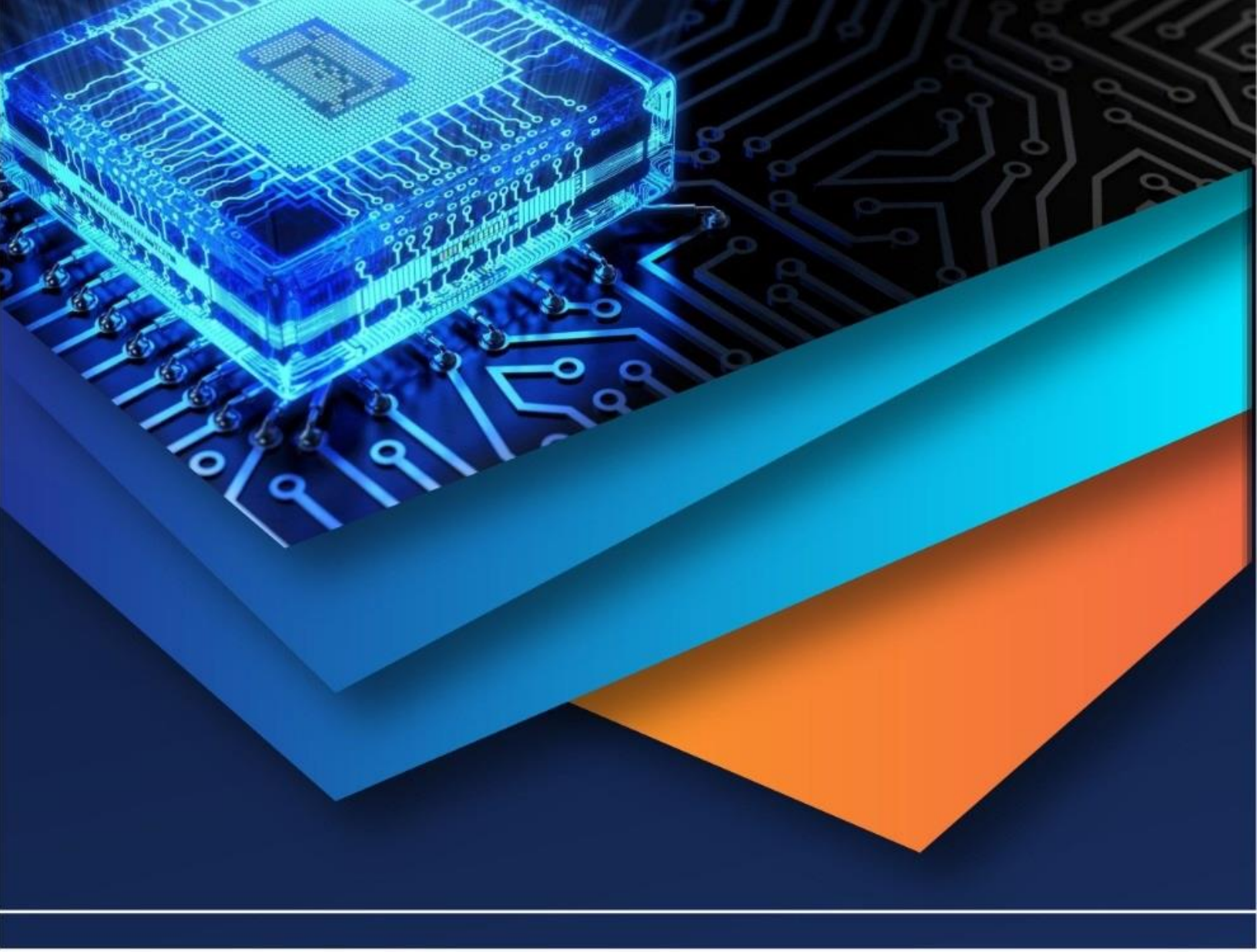
D. Service road along major cities and towns should be constructed

E. Proper road marking at major and minor intersection should be done

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