CONTIGENT ORIGIN & RECOGNITION OF BLACK SPOT-NH3

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Abstract - India is a country with a high population. It needs excellent transportation system for it to grow. As road transportation enables door to door transportation and has greater density and distribution all round our country, it becomes a primary factor in transportation which is responsible for the economic and social growth of our country. Accidents on these roads obstruct the growth as it causes high economic loss and loss of life. [1]

As the today's condition of the accidents for the NH-3 selected route for the Pachore vani to kasara are for the stretch of 94 kms is analyzed.

***Key Words*: National highways, population, accidental black spot, road accident, classification of accident etc.**

1. INTRODUCTION

Maharashtra is a state in the western region of India. It is the second most popular and third largest state by area in India. Maharashtra is the world's second most popular first level administrative country.

Nashik is the northwest region of Maharashtra. It is the administrative headquarter of the Nasik District and Nasik Division. Nasik is the 16th fastest growing city in the world as per city. According to the national crime record, the number of vehicular accidents was 90 resulting in 40 deaths and 55 injuries thereby accounting for 75% of all accidental deaths due to unnatural causes. An unfortunate incident that happen unexpectedly and unintentionally typically resulting in damage or injuring is termed as accidents. Accidents are such a happenings resulting in injury that is in no way the fault of the injured person for which compensation or in. Road accidents are happen due to carelessness, high speed of vehicle, driver taking liquor (alcohol), human tendency, age group, violation of rules, times of accident the measure reason behind vehicles and condition of vehicle using road. plex flow .

Accidents are the most important negative impact of transportation system and it is com pattern of vehicular traffic, presence of mix traffic along with pedestrians. Traffic accidents lead to loss of life and property. The road traffic accidents cannot be totally prevented but by suitable measures they can reduce to certain extent. For the purpose systematic study of road accidents or require to be help of providing preventive measure like design and control.

It is pointed out that road accidents were associated with numerous problems each of which needed to be addressed separately. Human, vehicle and environmental factors play roles before, during and after a trauma event. Accidents, therefore, can be studied in terms of agent, host and environmental factors and epidemiologically classified into time, place and person distribution. For the purpose of the study, a Road Traffic Accident (RTA) was defined as accident, which took place on the road between two or more objects, one of which must be any kind of a moving vehicle.

1.1 Objectives:

1. Traffic control planning for speed limits.(maximum and minimum), speed zoning, analyze school zone protection regularly, warning and guide signs, length of passing zone.

2. Speed trends.

3. Traffic speed (for maintaining the traffic speed in planning, geometric feature, location, driver characteristics, traffic conditions, time, climatic conditions and planning of traffic speed is done accordingly)

4. Accident analysis

5. Capacity studies

6. Economy study

7. Spacing and side of letters on sign board should be proper and distinct or clear.

2. Study

2.1 Location –

NH 3 runs for a distance of 1,190 km.
The stretch between Mumbai-Agra is 6 lanes (partly 4 lanes).

Selected route for the survey from Kasara to Pachore (Vani).

The highway originates in Agra in Utter Pradesh, generally travels southwest through Dhaulpur in Rajasthan, Morena,Gwalior, Shivpuri, Biaora, Maksi, Dewas, Indore and Julwaniya in Madhya Pradesh, Dhule, Nashik, Thane and terminates at Mumbai in Maharashtra.

3. Scope of the Project:

1. To study the monthly and annual variation in accident rate on selected stretch.

2. To study the effect of traffic volume on accident rate.

3. Identify accidental black spots on Mumbai-Agra highway.

4. To improve accidental data collection system especially location identification.

5. Comparison of real time data with records available in the police station.

6. To identify various traffic and road related factor causing accidents.

7. To carry out analysis of black spots by using SI method.

8. Detailed analysis of the top ranked spots.

The map of the Mumbai-Agra National Highway is shown in figure. The Mumbai-Agra Highway is controlled accessed Highway. It is three lane roadways with a speed limit of 101 km/hrs along most of its stretches. For present study 124 kms has been selected total 601 accidents occurred on Mumbai-Agra Highway from 2012-2017 in that particular stretch.
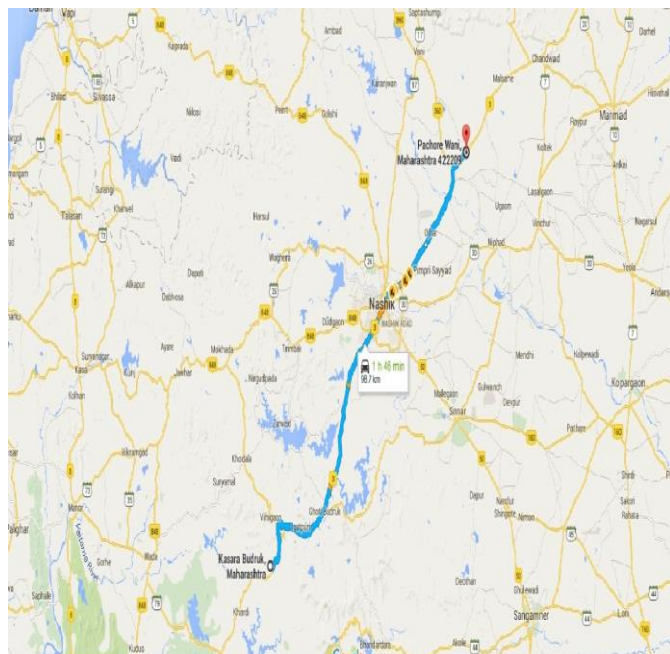

Figure-1: Study Area – Pachore wani to Kasara

4. Methodology

Identification of accidental black spot is the procedure to find spots that are particularly dangerous where accidents had occurred historically in this study the identification of such hazardous locations are done based on accidental record available about location of accident, nature of accident, causes of accidents and classification of accidents and others by using various method like ranking and severity index. The methodology suggested for study includes;

   i. To collect accident data on Mumbai-Agra National Highway from National Highway Authority of India.

   ii. Detailed analysis of the identified black spots.

   iii. To find out different methods to prioritize hazardous locations.

   iv. To identify various traffic and road related factors causing accidents.

   v. The reading taken on Mumbai-Agra National Highway then analyzed by method of ranking. According to importance of the parameter.

   vi. The most important parameter because of which more number of accidents is occurred had given top rank and maximum weightage.

   vii. Analysis of the top ranked accidental spots.

   viii. The percentages after giving rank and weightage were calculated and on the basis of value of percentage the accidental black spots were identified.

   ix. To carry out analysis of black spots by using statistical models.

   x. Comparison of real time data with records available in the police station.

4.1 Analysis:

Sample Calculation:

Severity Index- Severity index denotes vulnerability of a particular spot to accidents,

   a) Severity (β) was calculated by adding respective Weightage of the parameters indicating y for a particular chainage.

   b) Severity index (SI) was calculated as shown below;

SI = (B/SUMMATION W)*100
Where,
Summation W= W1+W2+W3+.... +W8

   c) Sample calculation for nature of accidents

Consider any location distance 4 km

Severity (β) = 8

Severity index

SI= (β/$\sum$ W)*100

Summation W= 11+10+9+8+7+6+5+4+3+2+1=66

Severity index (SI) = (8/66)*100= 12.12%

Severity index Benchmark:

Severity index benchmark is the severity index value above which corresponding spots are black spots. It is calculated as the sum of the Weightage assigned to the top 5 parameters divided by Weightage of all the parameters. The value obtained in % is then subtract from 100 to obtain severity index benchmark for e.g. summation of the Weightage assigned to top 5 parameters 8+7+6+5+4=30

Weightage of all parameters = 36

Severity index benchmark =100-((30/36)*100) =16.66

4.2 Weighted Severity Index In this method, scores are assigned to the accidents on the basis of their number and severity at that particular location.

a) Severity of that accident is classified as Major Injury (MI), Fatal (K) and Minor Injuries (M'I).

b) WSI is calculated by the following formula

c) WSI = (41 x K) + (4 x MI) + (1 x M'I)

d) Locations with WSI more than 40 are termed as accidental black spots.

4.2.1 Sample Calculation WSI = (41 x 1) + (4 x 0) + (1 x 0) = 41

Table -1: Classification of accidents

Sr No	Parameter	Denotation	β	Rank	WSI
1	Fatal	B1	41Y	3	2
2	Major Injured	B2	45Y	2	3
3	Minor Injured	B3	36Y	4	1
4	Non Injured	B4	116Y	1	4

3. CONCLUSIONS

It has been concluded that by considering all these parameters the accidental black spots can be identified by Severity Index (SI) methods. More number of accidents is occurred due to causes of accidents followed by classification of accidents and least number of accidents is occurred due to nature of accidents.

Heavy vehicles like truck are involved in maximum number of accidents on National Highways. It is estimated that a heavy vehicles is involved in almost- 48 % accidents followed by two-wheelers (motorcycle)-16%, car-12% and Bus-10%.

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