Identification of Accident Black Spots on NH-65
(Chaudhriwas, Hisar to Hisar City)

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Abstract - *Road accidents are increasing rapidly in India with the increase in traffic density. Due to which there is a huge loss of life and property. The location of road where the maximum number of accidents occurs is known as a Black Spot.*

This paper deals with the study and to analyze the traffic safety situations in the section from Chaudhriwas, Hisar to Hisar City on NH-65(new NH-52) in the state of Haryana(India) and to identify countermeasures for the stretch so that the total harm caused by the road crashes can be reduced to some extent in future. The stretch of 19.5 kms is taken for study. In this paper, the identification of road accidents and its causes, variations with respect to yearly, monthly, hourly, user type, vehicle, age, seasonal and also the number of black spots by further giving the suggestions and conclusions to reduce the road crashes and to make safer for road users.

Key Words: Road Accidents, Fatalities, NH-65 (NH-52), Black Spots, Improvement Measures

1   INTRODUCTION

Road accidents are increasing day by day in India, as India is the largest country in the phase of larger number of Accidents in the Worldwide. More than 700 Black spots were identified & analyzed on National Highways across the country in the year 2011 to 2014 according to Ministry Of Road, Transport & Highways (MORTH). The accident rate is much higher in India as compared to the other countries such as USA , Canada, Europe As, there is a huge network of Highways in India but traffic density is also very much high. Indian Literacy percentage is 65% and hence people are less aware of the traffic rules and regulations. These factors have added in increase in road accidents and further increase in the loss of life and property. Traffic collision-related deaths increased from 1.5% in 20014 to 2.5% rises in 2015. More than 40 per

cent of these casualties are associated with motorcycles and trucks. The most accident-prone time on Indian roads is during the peak hour at afternoon and evening. According to road traffic safety experts, the actual number of casualties may be higher than what is documented, as many traffic accidents go unreported. Moreover, victims who die sometime after the accident, a span of time which may vary from a few hours to several days, are not counted as car accident victims.

2   STUDY AREA

National Highway-65 (NH-65) (from Chaudhriwas, Hisar to Hisar City in the state of Haryana i.e. 19.5 kms.) is one of the major national highway starting from Ambala (Haryana to Pali (Rajasthan) as shown in the Fig.-1:-

(Source: Google Map)

Fig. – 1: Stretch under Study

3   OBJECTIVE & SCOPE OF THE WORK

The selected stretch is a part of NH-65 which is further named as NH-52. The accident data collected for the last five years from 2011 to 2015 and to derive the improvement measures. The objectives of study include:

a) Identification of suitable black spots.
b) Analysis of top ranked black spots and suggestion of possible improvements & measures.

4   DATA COLLECTION

Datas were collected from FIR index of police department during period 2011-2015. It has been collected from various Police Station i.e City Hisar, Sadar Thana Hisar, Barwala Sadar Thana and Uklana. Accident data was collected under the following heads:

1. Date of accident.
2. Time of accident
3. Day of accident
4. Type of Hitting Vehicle
5. Type of Hitten Vehicle.
6. Injuries (Severe/Minor).
7. No. of deaths/Fatalities
8. Monoveour Type/Collision Type
9. Location of accident
10. Ref. No. or Entry No.
11. Beat duty.
12. Driver Age(years)
13. Victim Age(years)
14. Village/landmark nearby location.
15. Damage to property

5   DATA ANALYSIS

5.3.1   Yearly Variation of Accidents

Table -1: Yearly variation of Accidents data from 2011-2015

Year	No. of Accidents
2011	14
2012	20
2013	10
2014	19
2015	15
Total	**78**

Table1 shows that there are 78 numbers of accidents took place from the year 2011-2015.

5.3.2   Monthly Variation of Accidents

Table -2: Monthly variation of Accidents data from 2011-2015

Month	No. of Accidents
January	6
February	3
March	6
April	3
May	8
June	4
July	11
August	10
September	9
October	6
November	9
December	3
Total	**78**

Table 2 shows that there are 78 numbers of accidents took place from the year 2011-2015. Maximum no. of accidents occurred in the month of July and August which is the summer season and driver's do move at excessive speeds and are also inattentive.

5.3.3   Hourly Variation of Accidents

Table -3: Hourly variation of Accidents data from 2011-2015

Time	No. of Accidents
12:00 a.m. to 02:00 a.m.	3
02:00 a.m. to 04:00 a.m.	0
04:00 a.m. to 06:00 a.m.	4
06:00 a.m. to 08:00 a.m.	3
08:00 a.m. to 10:00 a.m.	5
10:00 a.m. to 12:00 p.m.	6
12:00 p.m. to 02:00 p.m.	15
02:00 p.m. to 04:00 p.m.	8
04:00 p.m. to 06:00 p.m.	7
06:00 p.m. to 08:00 p.m.	9
08:00 p.m. to 10:00 p.m.	16
10:00 p.m. to 12:00 a.m.	2
Total	**78**

Table3 shows that the maximum accidents occurred during night time between 08:00 p.m. to 10:00 p.m. Accidents are occurred more during night time as compared to day time. Its seen that during day time visibility is more and no. of strips are also more, so drivers have a tendency to take risks more in the day timings. It is also seen that the persons leaving from work in the late night hours shows the rise in accidents.

5.3.4   Accident Identify as per Vehicle Type

Table-4: Accident as per vehicle hitted type

Vehicle Hitted	No.
Car/Jeep	28
Bus	4

Vehicle Hitted	No.
Truck	19
M/C	8
Unknown	5
Auto-Rickshaw	4
Pick-Up	4
Canter	2
Tractor	4
Total	**78**

Table 4 shows maximum no. of accidents occurred due to Car/Jeep and Trucks; this may be due to formation of ruts and cracks on the highway which creates unsuitability for the traffic to flow properly.

5.3.5 Accident Identify as per Vehicle Type

Table-5: Accident as per vehicle hitten type

Vehicle Hitten	No.
Pedestrian	21
Auto-Rickshaw	2
Canter	3
Cycle	4
M/C or Scooty or Scooter	28
Animal	1
Car/Jeep	13
Bus	1
Truck	2
Public Property	1
Unknown	2
Total	**78**

Table5 shows that Motorcycle/Scooty/Scooter and Pedestrians becomes the main victims of the accidents. This is may be due to the inadequate and improper installation of traffic signs and symbols and poor pavement markings.

5.3.6 Accident Identify as per type of Collision

Table-6: Accident as per type of collision during 2011-2015

Type of Collision	No.
Vehicle-Pedestrian Collision	21
Head-on-collision	28
Rear-end collision/Shunt	14
Side Collision	9
Single-Vehicle collision	4
Vehicle-Animal collision	2
Total	**78**

Table 6 shows that maximum no. of accidents occurred due to Head-on-collision type and then vehicle-pedestrian collision type; this may be due to speeding of vehicles and overtaking from wrong side.

5.3.7 Accident Identify as per Accident Type/Severity

Table-7: Accident as per accident type/severity of a during 2011-2015

| Injuries	No.
Minor	24
Fatalities	26
Serious	64
Total	**114**

Table 7 shows that there are 114 no. of severity occurred which consists of 64 serious injuries, 26 fatal and 24 minor. There is a high rise in the severity of the injuries during 2011-2015.

6 BLACK SPOT IDENTIFY

Table-8: shows Black Spot details

Location	No. of Accidents
Chaudhriwas Village, Hisar (A)	17
Gangwa Village, Hisar (B)	25
Azad Nagar, Hisar (C)	21
Hisar City (D)	15
Total	**78**

Black Spot Locations are shown in the Fig.-2 and stretch condition including formations of ruts, pot holes and poor maintenance is shown in Fig. 3 & 4 respectively :-
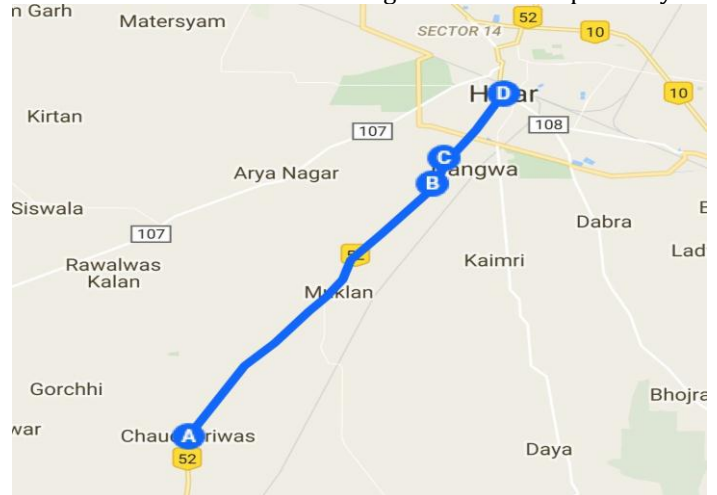
(Source: Google Map)

Fig.-2: Black Spot Locations

Fig.-3: Formation of ruts, cracks and pot holes nearby Gangwa Village, Hisar.

Fig.-4: Poor pavement markings and maintenance nearby Chaudhriwas Village, Hisar

7　CONCLUSIONS

From the accident analysis, it is observed that maximum accidents are occurring during night as compared to day time. This may be attributed due to heavy road traffic, poor lighting conditions on highway, poor pavement markings and formation of ruts, pot holes and cracks. Policies during rush hours must be there on highway. This will reduce the accident on black spots considerably.

On the basis of data recorded and analyzed, it can be concluded that:

1) Maximum accidents found to occur due to head-on-collision and further due to vehicle-pedestrian collision.
2) Majority of accidents occur at village junction on highway.
3) Maximum are recorded during day time (12:00 p.m. to 02:00 p.m.) as well as during night time/peak hours (08:00 p.m. to 10:00 p.m.) but the accidents during peak hours are more than during day time.

4) Maximum no. of accidents occurs due to Car/Jeep and further due to Trucks.
5) Two-wheelers and Pedestrians became the main victims of accidents and severity.
6) Most of accidents are caused during monsoon season in the month of July and August indicating lack of driver's alertness during bad weather conditions.
7) Maximum accidents are caused due to heavy traffic.

8　REMEDIAL MEASURES

1) There is a need to maintain the pavement marking in the selected stretch from Chaudhriwas, Hisar to Hisar City.
2) Speadbreakers/Rumble Strips need to be constructed upto the approach road near Gangwa Village and Azad Nagar.
3) Inadequate hoardings on the shoulders including advertisements which further results in lack of concentration while driving by driver.
4) Pedestrian crossing required for the pedestrians to move freely on the road near Gangwa Village.
5) Separate bus bays must be constructed for the passenger safety and facility near Gangwa Village.
6) There are many road links near Azad Nagar, so there is need to provide service road for the local traffic to move freely without merging into the heavy traffic on highway.
7) Various stalls are there on the shoulder of highway near Azad Nagar, so there is need to provide them another space for their selling of goods which will further results in efficient movement of pedestrians.
8) Proper lighting in the village areas like Gangwa and Chaudhriwas needs to be installed for the efficient movement of heavy traffic on highway.
9) Filling of cracks, patch work need to be done on the complete stretch as there is heavy traffic flow takes place.

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