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"Identification of Accident Black Spots on NH-65" (Hisar City to Behbalpur Village, Hisar)

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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 Hisar City to Behbalpur Village, Hisar on NH-65 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 17.4 kms is taken for study. In this paper, I have identified the road accidents and its causes, variations with respect to yearly, monthly, hourly, user type, vehicle, age, seasonal and also I have identified the black spots by further giving the suggestions and conclusions to reduce the road crashes and to make safer for road users.

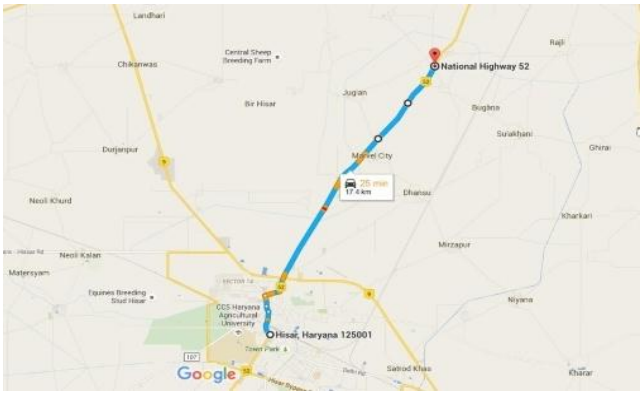
Key Words: Road Accidents, Fatalities, NH-65 (new NH-52), Black Spots, Improvement Measures

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 Hisar City to Behbalpur, Hisar in the state of Haryana i.e. 17.4 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

Data was collected from FIR index from police department during period 2011-2015. It has been collected from various Police Stations i.e City Hisar, Sadar Thana Hisar and also downloaded online from website www.haryanapoliceonline.gov.in. 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

5.1 Yearly Variation of Accidents

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

Year	No. of Accidents
2011	17
2012	24
2013	16
2014	27
2015	32
Total	**116**

Table 1 shows that there are 116 numbers of accidents took place from the year 2011-2015.

5.2 Monthly Variation of Accidents

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

Month	No. of Accidents
January	3
February	7
March	4
April	9
May	10
June	13
July	23
August	6
September	14
October	9
November	12
December	6
Total	**116**

Table 2 shows that there are 116 numbers of accidents took place from the year 2011-2015. Maximum no. of accidents occurred in the month of May, June, July, August and September which is the summer season and driver's do move at excessive speeds and are also inattentive.

5.3 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.	4
04:00 a.m. to 06:00 a.m.	2
06:00 a.m. to 08:00 a.m.	7
08:00 a.m. to 10:00 a.m.	9
10:00 a.m. to 12:00 p.m.	3
12:00 p.m. to 02:00 p.m.	19
02:00 p.m. to 04:00 p.m.	11
04:00 p.m. to 06:00 p.m.	13
06:00 p.m. to 08:00 p.m.	23
08:00 p.m. to 10:00 p.m.	15
10:00 p.m. to 12:00 a.m.	7
Total	**116**

Table 3 shows that the maximum accidents occurred during night time between 06:00 p.m. to 08:00 p.m. Accidents are occurred more during night time as compared to day time. It is 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.

5.4 Accident Identify as per Vehicle Type

Table -4: Accident as per vehicle hitted type

Vehicle Hitted	No.
Car/Jeep/Microvan	36
Bus	5
Truck	25
M/C	9
Unknown	11

Vehicle Hitted	No.
Auto-Rickshaw	4
Pick-Up	5
Canter	2
Tractor	9
Tanker	8
Total	**116**

Table 4 shows maximum no. of accidents occurred due to Car/Jeep/Microvan and Trucks; this may be due to formation of ruts and cracks on the highway which creates unsuitability for the traffic to flow properly. There are also unknown vehicle in the stretch, this is may be due to lack of installation of CCTV cameras on the highway.

5.5 Accident Identify as per Vehicle Type

Table -5: Accident as per vehicle hitten type

Vehicle Hitten	No.
Pedestrian	31
Auto-Rickshaw	5
Canter	2
Cycle	6
M/C or Scooty or Scooter	34
Bus	1
Car/Jeep	25
Truck	5
Public Property	3
Unknown Vehicle	1
Pick-Up	2
Tractor	1
Total	**116**

Table 5 shows that Motorcycle/Scooty/Scooter, Pedestrians and Car/Jeep/Microvan 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.

5.6 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	27
Head-on-collision	40
Rear-end collision/Shunt	22
Side Collision	13
Single-Vehicle collision	4
Roll-Over Collision	2
Speeding & Rough Driving	8
Total	**116**

Table 6 that the 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. Rear-end collision/Shunt also took place in the stretch; this is maybe due to the uncontrolled and speeding of vehicles or may be due to carelessness of driver.

5.7 Accident Identify as per Accident Type/Severity

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

Injuries	No.
Minor	32
Fatalities	75
Serious	110
Total	**217**

Table 7 shows that there are 114 no. of severity occurred which consists of 110 serious injuries, 75 fatal and 32 minor. There is a high rise in the severity of the injuries during 2011-2015.

5.8 Accident Identify as per Day

Table -8: Accident Identify as per day during 2011-2015

Day	No.
Monday	20
Tuesday	18
Wednesday	19
Thursday	15
Friday	14
Saturday	14
Sunday	16
Total	**116**

Table 8 shows that the maximum number of accidents occurred on Monday, which is due to the first working day of the week and there are more number of traffic flow on the highway.

6 BLACK SPOT IDENTIFY

Table -9: shows Black Spot locations with number of accident details:-

Location	No. of Accidents
Azad Nagar, Hisar	21
Hisar City	16
Talwandi Rana Village, Hisar	50
Juglan Village, Hisar	20
Behbalpur Village, Hisar	9
Total	**116**

Black Spot Locations are shown in Fig. -2 and a serious accident of truck which got unbalanced due to the non-existence of street light at night nearby Talwandi Rana, Village, Hisar which is a major black spot location in the stretch as shown in Fig. -3:-

(Source: Google Map)

Fig. -2: Black Spot Locations

Fig. -3: Truck got unbalanced due to the non-existence of street light on the unpaved shoulder nearby Talwandi Rana 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 and also rear-end-collision.
2) Majority of accidents occur at village junction on highway.
3) Maximum number of accidents occurred mostly on Monday.
4) Maximum are recorded during day time (12:00 p.m. to 02:00 p.m.) as well as during night time/peak hours (06:00 p.m. to 08:00 p.m.) but the accidents during peak hours are more than during day time.
5) Maximum no. of accidents occurs due to Car/Jeep/Microvan and further due to Trucks.
6) Two-wheelers and Pedestrians became the main victims of accidents and severity. Four-wheelers also came into account to some extent.
7) Most of the accidents are caused during monsoon season in the month of July indicating lack of driver's alertness during bad weather conditions.
8) Maximum accidents are caused due to heavy traffic.
9) The numbers of serious injuries are also high on the stretch further results in increasing number of fatalities.

8 REMEDIAL MEASURES

1) There is a need to maintain the pavement marking in the selected stretch from Hisar City to Behbalpur Village, Hisar.
2) Speed breakers/Rumble Strips need to be constructed up to the approach road near Azad Nagar.
3) Inadequate hoardings on the shoulders including advertisements which further results in lack of concentration while driving for driver.
4) Pedestrian crossings required for the pedestrians to move freely on the road near Talwandi Rana Village and Behbalpur Village.
5) Separate bus bays must be constructed for the passenger safety and facility near Talwandi Rana Village and Behbalpur Village.
6) There are many road links near Azad Nagar and Talwandi Rana Village, so there is a need to provide service road for the local traffic to move safely without merging into the heavy traffic on highway.
7) Various stalls are there on the shoulder of highway near Azad Nagar and Talwandi Rana Village, 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 street lighting in the village areas like Talwandi Rana Village 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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