

Identification of Accident Black Spots on NH-65 (Barwala to Surewala Mod, Barwala Road)

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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 Barwala to Surewala Mod, Barwala Road 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 16 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

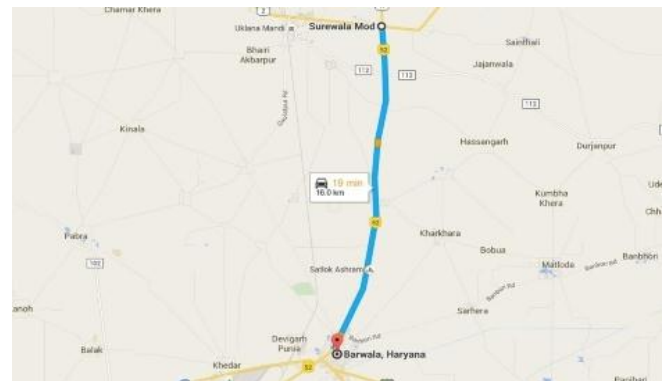
1 INTRODUCTION

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 Barwala to Surewala Mod, Barwala Road in the state of Haryana i.e. 16 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 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

5.1 Yearly Variation of Accidents

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

Year	No. of Accidents
2011	22
2012	16
2013	10
2014	19
2015	20
Total	87

Table 1 shows that there are 87 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	6
February	13
March	4
April	9
May	7
June	6
July	7
August	7
September	6
October	7

Month	No. of Accidents
November	9
December	6
Total	87

Table 2 shows that there are 87 numbers of accidents took place from the year 2011-2015. Maximum no. of accidents occurred in the month of February which is the winter season and due to smog & fog, it might be difficult for the driver to drive efficiently. Visibility of road markings is poor in foggy season.

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.	8
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.	6
10:00 a.m. to 12:00 p.m.	5
12:00 p.m. to 02:00 p.m.	6
02:00 p.m. to 04:00 p.m.	15
04:00 p.m. to 06:00 p.m.	11
06:00 p.m. to 08:00 p.m.	14
08:00 p.m. to 10:00 p.m.	13
10:00 p.m. to 12:00 a.m.	2
Total	87

Table 3 shows that the maximum accidents occurred between 02:00 p.m. to 10:00 p.m. Accidents are occurred more during night time as well as in 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	28
Bus	6
Truck	26
M/C	2
Unknown	15
Auto-Rickshaw	2
Pick-Up	5
Canter	3
Tractor	2
Total	87

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 few unknown vehicles on the stretch.

5.5 Accident Identify as per Vehicle Type

Table -5: Accident as per vehicle hitten type

Vehicle Hitten	No.
Pedestrian	24
Auto-Rickshaw	2
Canter	1
Cycle	2
M/C or Scooty or Scooter	32
Animal	1
Car/Jeep	12
Truck	6
Public Property	1
Unknown Vehicle	1
Total	87

Table 5 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. Car/Jeep/Microvan also becomes the victims to some extent.

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	24
Head-on-collision	21
Rear-end collision/Shunt	22
Side Collision	8
Single-Vehicle collision	1
Vehicle-Animal collision	2
Multiple Vehicle Collision	1
Speeding & Rough Driving	8
Total	87

Table 6 that maximum no. of accidents occurred due to vehicle-pedestrian collision type, rear-end-collision type and head-on-collision type. This may be due to speeding of vehicles and overtaking from wrong side.

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

Injuries	No.
Minor	37
Fatalities	55

Serious	79
Total	171

Table 7 shows that there are 171 no. of severity occurs which consists of 79 serious injuries, 55 fatal and 37 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
Old Bus Stand, Barwala (1)	17
Dhani Prem Nagar, Barwala (2)	16
Ghaibipur, Barwala (3)	17
Kallar Bhaini, Barwala (4)	14
Litani Mod Village, Parbhuwala Road, Barwala (5)	14
Surewala Mod, Barwala (6)	9
Total	87

Black Spot Locations are shown in the Fig.-2 and stretch condition including formations of ruts, pot holes, poor maintenance and other conditions are shown in Fig. 3, 4, 5, 6 & 7 respectively :-



(Source: Google Map)

Fig. -2: Black Spot Locations



Fig. -3: Formation of ruts, cracks and pot holes and poor drainage system nearby Dhani Prem Nagar, Barwala Road.



Fig. -7: No pavement markings for vehicles and pedestrians with unprotected 4-leg intersection. Delineators are in poor condition nearby Agrasen Chowk, Barwala Road.



Fig. -4: Poor condition traffic lights, no pavement markings, bad condition of rotary island at Surewala Chowk, Barwala Road.



Fig. -5: Wrong crossing of vehicles around the rotary due to non-existence of traffic lights, traffic signs & symbols nearby Old bus stand, Barwala.



Fig. -6: Poor condition of delineators, reflectors and poor maintenance of traffic signs and symbols nearby Old bus stand, Barwala.

7 CONCLUSIONS

From the accident analysis, it is observed that maximum accidents are occurring during day time as well as during night 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 vehicle-pedestrian collision, rear-end-collision and head-on-collision.
- 2) Majority of accidents occur at village junction on highway.
- 3) Maximum accidents are recorded during day time (02:00 p.m. to 10:00 p.m.).
- 4) Maximum no. of accidents occurs due to Car/Jeep and further due to Trucks and also due to unknown vehicles.
- 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 February indicating lack of driver's alertness during bad weather conditions.
- 7) Maximum accidents are caused due to heavy traffic.

8 REMEDIAL MEASURES

- a) There is a need to maintain the pavement marking in the selected stretch from Barwala to Surewala Mod, Barwala Road.
- b) Speed breakers/Rumble Strips need to be constructed up to the approach road near Old Bus Stand, Barwala, Agrasen Chowk and at every road links of villages.

- c) Inadequate hoardings on the shoulders including advertisements which further results in lack of concentration while driving by driver.
- d) Pedestrian crossing required for the pedestrians to move freely on the road near Agrasen Chowk and Surewala Chowk.
- e) Separate bus bays must be constructed for the passenger safety and facility near Bus Stand, Barwala.
- f) There are many road links near Dhani Prem Nagar, Ghaibipur Village, Satlok Ashram, Kallar Bainsi Village and Litani Mod, Parbhuwala Village, Barwala Road so there is need to provide service road for the local traffic to move freely without merging into the heavy traffic on highway.
- g) Various stalls are there on the shoulder of highway near Old Bus Stand, Barwala, Agrasen Chowk and Surewala Chowk so there is a need to provide them another space for their selling of goods which will further results in efficient movement of pedestrians.
- h) Proper lighting in the village areas like Kallar Bhainsi, Ghaibipur and Dhani Prem Nagar need to be installed for the efficient movement of heavy traffic on highway.
- i) Filling of cracks, patch work need to be done on the complete stretch as there is heavy traffic flow takes place.
- j) Proper maintenance of median, pavement markings, traffic signs & symbols should takes place.

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