

**Road Accidents Analysis and Identification Black Spots on Dahod to Jhalod  
Section of NH-113**

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**Abstract:-** Road accidents are a human tragedy, which involve high human suffering. They impose a huge socio-economical cost in terms of untimely deaths, injuries and loss of potential income. Road accidents are one of the most relevant problems in today's humanity. In this study collected accident data last five years on Dahod to Jhalod section of NH-113 and analysis accident data. There are four identified black spots based on highest accident rate on study area. From accident analysis it is estimated that maximum accidents occurred in Summer Season and During Night time. This highway section is unsafe from safety point of view. The main reason is local traffic has direct access to the National Highway, which results in congestion and accidents.

**Keywords:** - Accident; safety; Black spots; fatal; Injury.

**I. INTRODUCTION**

Road accidents are one of the most relevant problems in today's humanity. Every year 1.24 million people die in road accidents around the world. Road traffic injuries are the leading cause of death among young people, aged 15–29 years. Half of those dying on the world's roads are “vulnerable road users”: pedestrians, cyclists and motorcyclists. Road accidents not only impose huge economic losses representing between 1-3 % of annual Gross Domestic Product in most countries but also causes great emotional and financial stress to the millions of families affected. India is the developing country, and the Highways are the most vulnerable places for the occurrence of the accidents.

**II. OBJECTIVES OF STUDY**

- 1 To analysis of road accident Data on Dahod to Jhalod section of NH-113
- 2 Identify black spots based on accident occurrence rate on the study area.

**III. ANALYSIS OF ROAD ACCIDENT DATA**

**Accident Classified According to Year Wise**

Accident analysis is carried out for five years (2010-2014) data. The result shows that 509 Accidents occurred in the year 2010-2014. Accident Classified According to Year Wise shown in Table -1.

**Table: 1 Accident Classified According to Year Wise**

Year	Type of Accident			Total	Severity Index
	Fatal	Major Injury	Minor Injury		
2010	25	36	22	83	30.120
2011	29	41	28	98	29.59
2012	37	47	33	117	31.62
2013	27	45	30	102	26.47
2014	32	44	33	109	29.35
<b>Total</b>	<b>150</b>	<b>213</b>	<b>146</b>	<b>509</b>	<b>29.46</b>

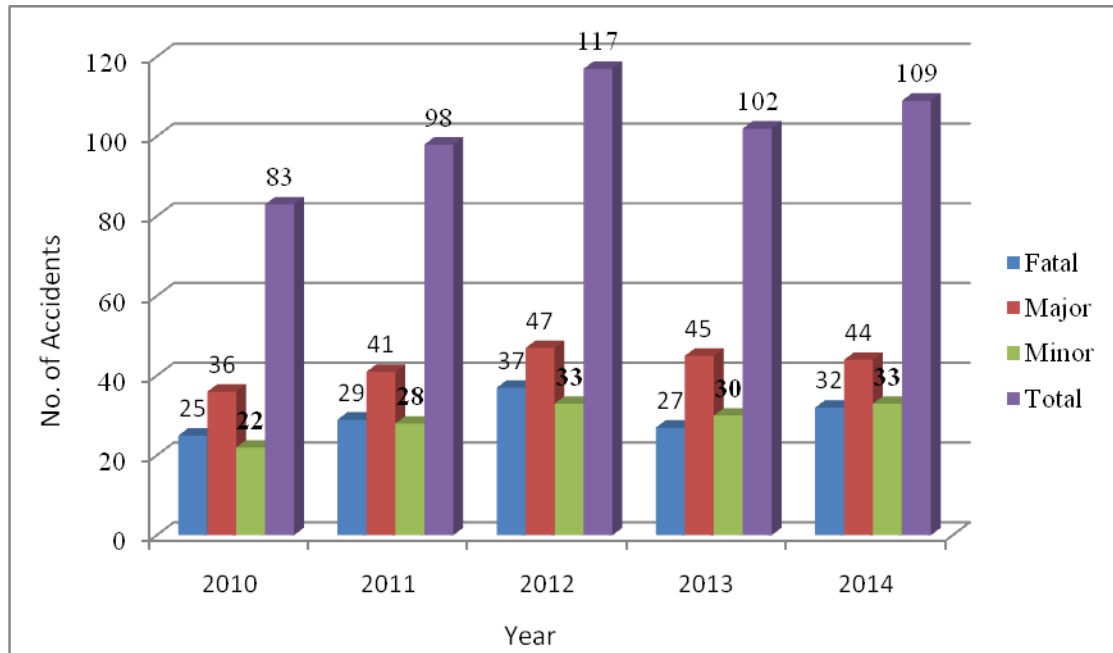


Fig-1 Accidents Classified According to Year Wise

### Accident Classified According to Time

Accident Classified According to Time shows that maximum 36.70 % of accident occurred during Night time between 18.00 to 24.00 .Accident Classified According to Time shown in fig-2.

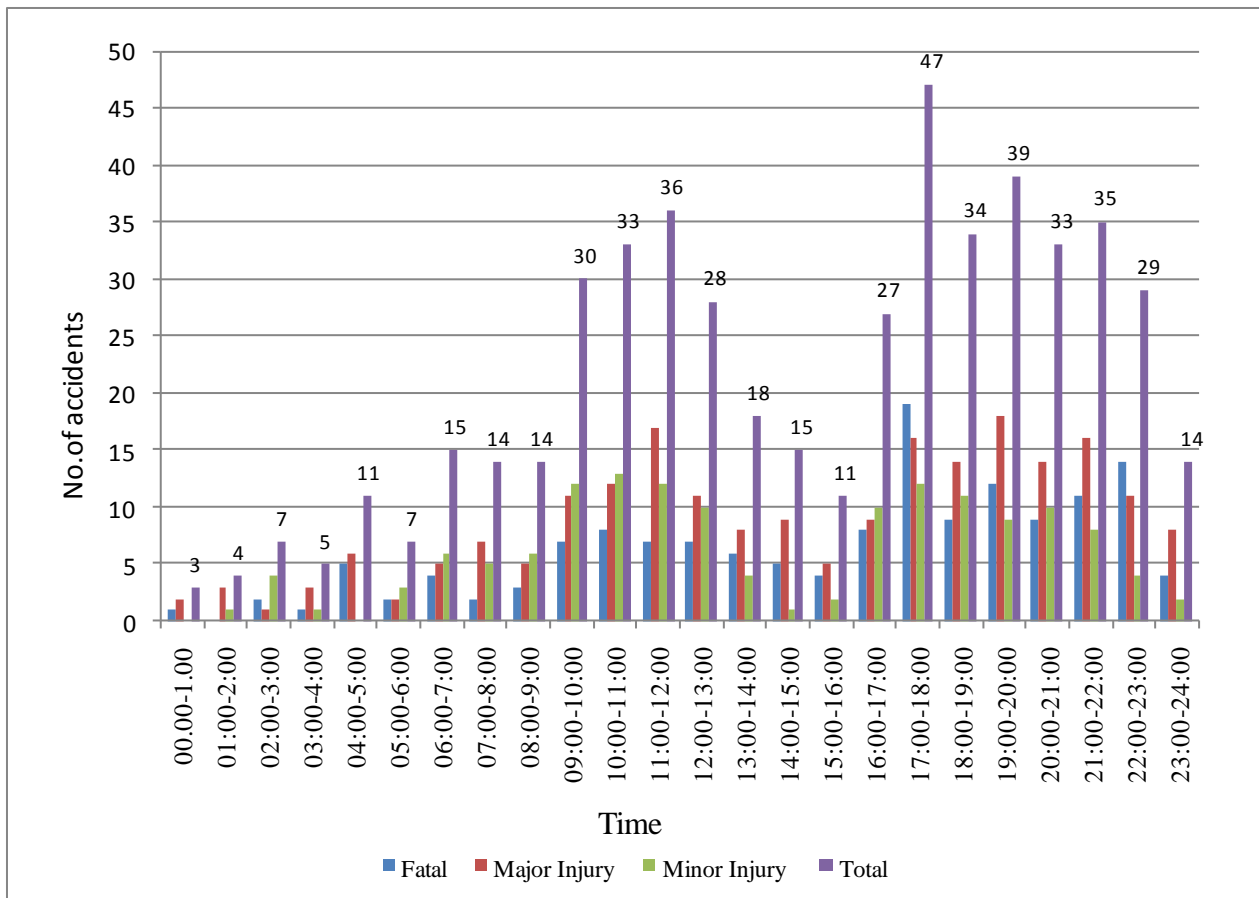


Fig: 2 Accidents Classified According to Time

**Accident Classified According to Month**

Month wise accident classification shows that in the month of March and April there was highest number of accidents occurred during period 2010 to 2014. Accident Classified According to Time shown in Table-4.

Table:2 Accidents Classified According to Month

Month	Type of Accident			Total	Percentage
	Fatal	Major Injury	Minor Injury		
January	8	15	7	30	5.89%
February	10	14	5	29	5.69%
March	21	17	18	56	11.00%
April	18	27	16	61	11.99%
May	15	23	15	53	10.41%
June	12	17	18	47	9.23%
July	13	20	13	46	9.04%
August	11	14	14	39	7.66%
September	12	21	11	44	8.64%
October	10	19	12	41	8.06%
November	9	14	8	31	6.09%
December	11	12	9	32	6.28%
<b>Total</b>	150	213	146	509	100%

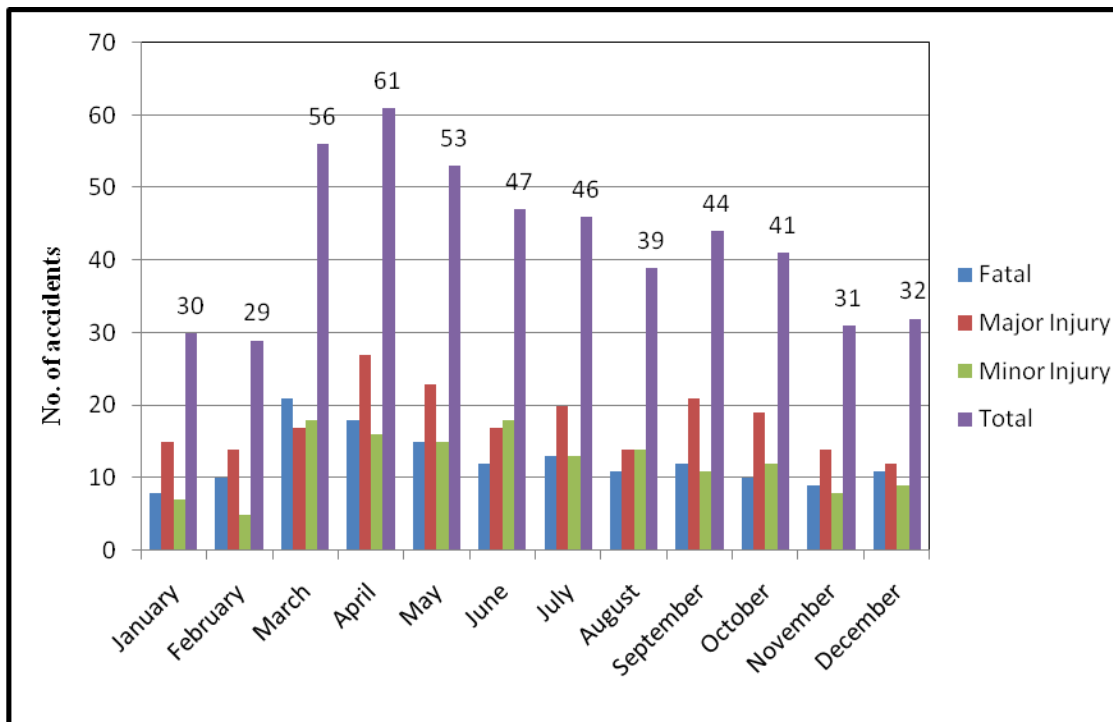


Fig: 3 Accidents Classified According to Month

**Accident Classified According to Weather Season**

Accident Classified according to Weather shows that majority of accidents have been occurred in summer season (42.63%).

Table: 3 Accidents Classified According to Weather Season

Weather Season	Fatal	Major Injury	Minor Injury	Total	Percentage (%)
Summer	66	84	67	217	42.63%
Monsoon	46	74	50	170	33.40%
Winter	38	55	29	122	23.97%
Total	150	213	146	509	100%

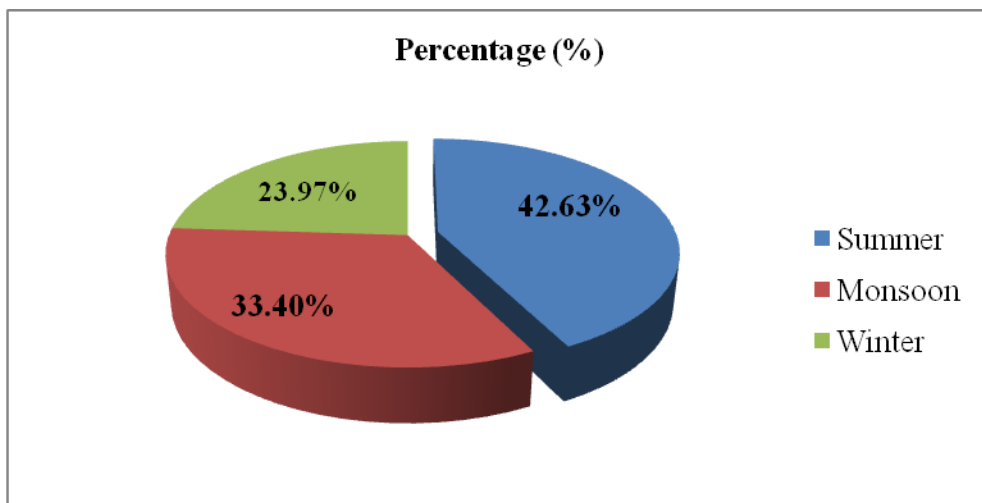


Fig: 4 Accidents Classified According to Weather Season

**Accidents Classified According to Type of Collision**

Accident classified according to Type of collision shows that number of accident occurs due to Head on Collision (31.23 % ), Rear-end (24.75 %) and Hit Pedestrians (12.96%), which are presented in Table- 6

Table: 4 Accidents Classified According to Type of Collision

Collision Type	Type of Accident			Total	Percentage (%)
	Fatal	Major Injury	Minor Injury		
Overtun no Collision	25	36	28	89	17.48
Head on Collision	51	62	46	159	31.23
Rear end Collision	45	49	32	126	24.75
Side impact	0	6	3	9	1.76
Side swipe	3	9	4	16	3.14
Hit parked vehicle	1	3	2	6	1.17
Hit fixed object	2	11	5	18	3.53
Hit pedestrian	19	26	21	66	12.96

Hit pedal cycle	3	7	2	12	2.35
Other	1	4	3	8	1.57
<b>Total</b>	<b>150</b>	<b>213</b>	<b>146</b>	<b>509</b>	<b>100</b>

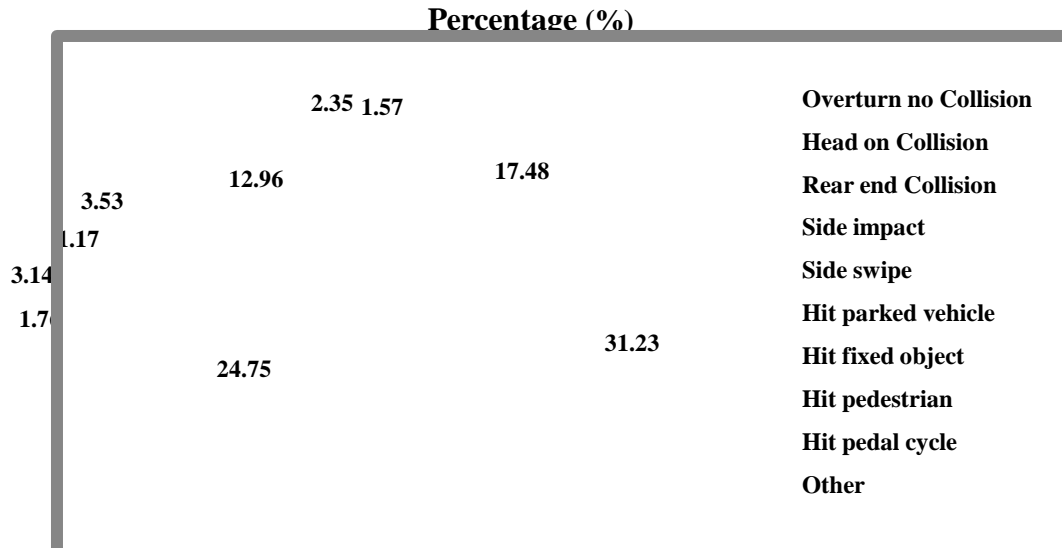


Fig-5 Accidents Classified According to Type of Collision

**Accident Classified According to Type of Vehicle involve**

Two-wheelers (20.62%) and four-wheelers (27.5%) involve the highest share of Percentage in total road accident.

Table: 5 Accidents Classified According to Type of Collision

Vehicle Type	Type of Accident				Percentage (%)
	Fatal	Major	Minor	Total	
Two wheeler	31	45	29	105	20.62
Three wheeler	19	23	14	53	10.41
Car/jeep/van	43	59	38	140	27.50
Light goods vehicle	17	23	16	59	11.59
Heavy goods vehicle	21	29	24	74	14.53
Bus	13	20	16	49	9.62
Tractor	6	14	9	29	5.69
<b>Total</b>	<b>150</b>	<b>213</b>	<b>146</b>	<b>509</b>	<b>100</b>

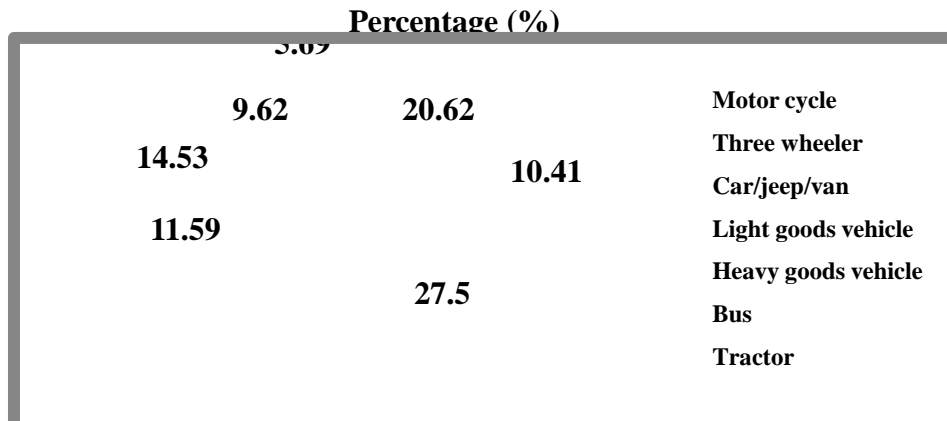


Fig: 6 Accidents Classified According to Type of Vehicle involve

**Accidents Classified According to Different location**

Accident classified according to Type of collision shows that highest number of accident occurred Near Limdi Bus stand, Mirakhedi village and Nansalai village

Table: 6 Accidents Classified According to Different location

Sr. No.	Location	Type of Accident			Total
		Fatal	Major Injury	Minor Injury	
1.	College Road Dahod	13	17	9	39
2.	Chhapri village	9	13	8	30
3.	District court	8	15	14	37
4.	Kharod village	7	8	8	23
5.	Retiya village	11	13	9	33
6.	Mirakhedi village	14	21	15	50
7.	Pavdi village	10	16	11	37
8.	Kalimahudi village	9	8	5	22
9.	Karath village	6	10	7	23
10.	Limdi circle	18	22	17	57
11.	Tandi village	9	15	8	32
12.	Varod village	6	8	5	19
13.	Sapoi village	8	10	7	25
14.	Nansalai village	15	21	12	48
15.	Muvada Jhalod	7	16	11	34
	<b>Total</b>	<b>150</b>	<b>213</b>	<b>146</b>	<b>509</b>

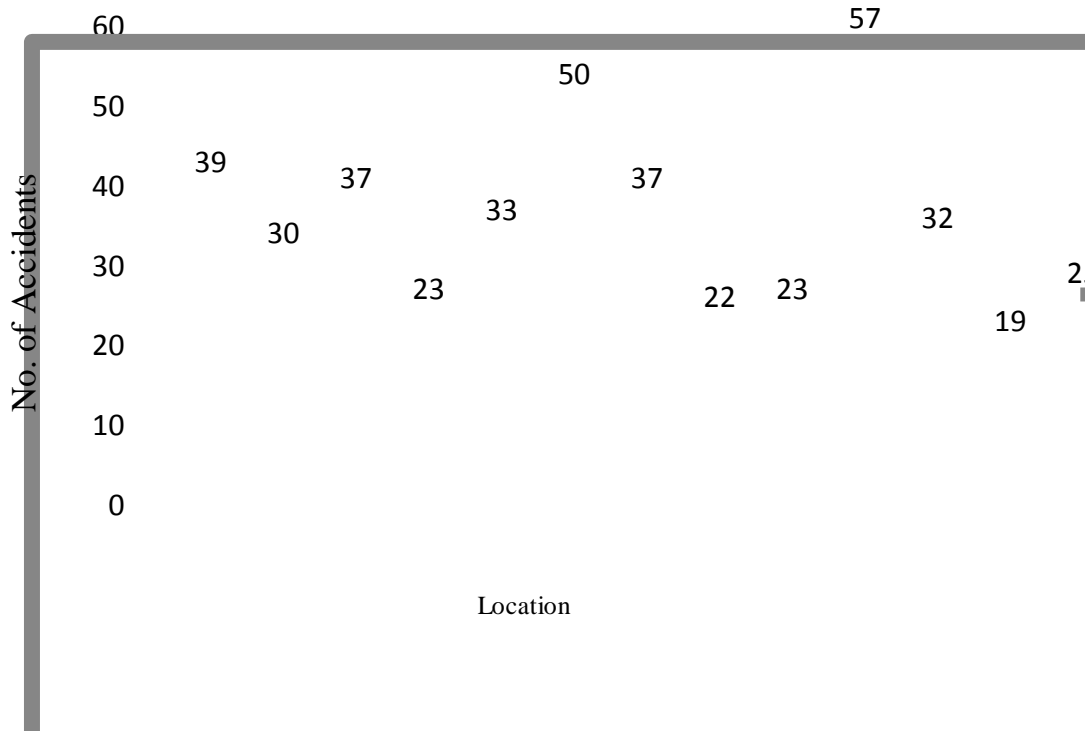


Fig -7 Accidents Classified According to Different location

#### IV. IDENTIFICATION OF BLACK SPOTS

Identified of black spots are based on maximum number of accident rate on the study area. The study area is divided in to six section of each section is 5 km length. In this study area identified four black spots section which are AB, CD, EF and FG shown in table: 8.

Table: 7 Accidents Detail to Different Section on study area.

Section	Location		No. of Accidents	Percentage (%)
	From (Km)	To (Km)		
AB	College Road (CH:00.00)	District court (CH:05.00)	106	20.82
BC	Kharod (CH:05.00)	Retiya (CH:10.00)	56	11.00
CD	Mirakhedi (CH:10.00)	Pavdi (CH:15.00)	87	17.09
DE	Kalimahudi (CH:15.00)	Karath village (CH:20.00)	45	8.84
EF	Limdi (CH:20.00)	Varod village (CH:25.00)	108	21.21
FG	Sapoi (CH:25.00)	Muvada Jhalod (CH:31.00)	107	21.02
<b>Total</b>			<b>509</b>	<b>100</b>



Fig -8 Indication black spots on Google Map

## V. CONCLUSIONS

The following conclusions are drawn from the above study:

From accident analysis it is estimate the maximum number of accident occurs due to Head on Collision there is no provision median on centre of lane.

Two-wheelers (20.62%) and four-wheelers (27.5%) involve the highest share of Percentage in total road accident.

Highest number of accidents occurred in month of March and April.

Majority of accidents have been occurred in summer season (42.63%).

Maximum 38.70 % of accident occurred during Night time because poor visibility, free speed and drunken driver.

The highest accident occurred at limdi circle because there is surrounding commercial area so traffic volume very high and also no provision traffic signal, zebra crossing, footpath and improper design of rotary intersection.

There is identified four section of black spots based on accident occurrence rate on study area.

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