

Microlevel Study of Accident Data from Jalandhar to Phagwara on NH-44

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Abstract

Background/Objectives: As road accidents is a major health problem but yet neglected in most of the countries especially in the developing countries like ours i.e. India. It is due to various causes Vehicular Characteristics, Human Behavior and many Environmental factors causing Road Traffic Accidents (RTA). Multiple agencies like Police department, Transport Department and health involved addressing road safety. **Methods/Statistical Analysis:** Modifiable and preventable factors can help in reducing road accidents up to some extent. Study is planned by using information from different sources like district hospitals, Traffic police, and other private hospitals in a given area (NH1). **Findings:** After collecting this data, the micro level study of black spots (where maximum accidents occur) are to be carried out and other defects, unevenness and degradation in road surface, lack of engineering in design of highway from which we can view the cause of accidents. **Applications/Improvements:** The area on which the study is to be done on is from Jalandhar to Ludhiana (NH1), it's about 55 kilometer distance with high density traffic and greater no of road accidents. There is an essential need to create awareness and create road safety awareness among people. The Government alone cannot tackle road accident problems.

Keywords: Accidents, Accident Data, Accident Study, Black Spot

1. Introduction

The total quantity of vehicles in our country is shown in Table 1. This data describes that total no of vehicles changed from 37 million in 1997 to 73 million in 2004. It shows average increase of 11% of motorized two wheelers and cars and 7% for trucks and buses, however all of the vehicles remain in official records but only 60 to 70% of them ply on roads¹. Traffic fatalities per million population has been taken as an indicator of the health burden of road traffic crashes on society at the city⁴, regional or national level, at the individual level risk injury² per trip is a consequence and the no of trips in proportional to population, therefore traffic fatalities per unit population can be taken as rough indicator of risk faced by individuals, the risk of being involved in fatal road traffic crash obviously been increasing for Indians over the past few years, while some of this increase can be attributed to increase in motor vehicle per capita in India³. However, increasing

vehicle ownership need not result in increased fatality rates if adequate safety measures are implemented⁵.

1.1 Accident Situation in India

It is estimated that in the U.S.A, about 44000 persons are killed and 3 million injured every year. This figure is alarming and statics shown in Table 4. The number of accidents as per sex or gender shown in Figure 2 and accident as per age group shown in Figure 5. The accident situation is more serious in India because of the rapid growth of motor vehicles in the past few years and inadequacy of many of our roads and street to cope up with this traffic. The mixed traffic conditions prevailing on the roads in India make the matters much worse.³

2. Methodology

The accident analysis can be done by accessing the data from Police Station/Enforcement Department with

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Table 1. Road accidents in India, 1970-2001 (source LR Kadyali)

Year	Road accidents	Persons Killed	Persons Injured
1	2	3	4
1970	114.1	14.5	70.1
1971	120.2	15.0	70.7
1972	122.3	16.1	76.4
1973	121.6	17.6	79.3
1974	114.3	17.3	76.7
1975	116.8	16.9	77.0
1976	124.7	17.8	82.5
1977	135.4	20.1	95.6
1978	146.3	21.8	99.5
1979	144.4	22.6	102.9
1980	153.2	24.6	109.1
1981	161.2	28.4	114.0
1982	166.2	30.7	126.0
1983	177.0	32.8	134.1
1984	195.0	35.1	156.2
1985	207.0	39.2	163.4
1986	215.5	40.0	176.4
1987	234.0	44.4	189.0
1988	246.7	46.6	214.8
1989	270.0	50.7	229.7
1990	282.6	54.1	244.1
1991	293.4	56.4	255.0
1992	260.3	57.2	267.2
1993	280.1	60.7	287.8
1994	320.4	64.0	311.5
1995	348.9	70.6	323.2
1996	371.2	74.06	369.5
1997	373.7	77.0	378.4
1998	385.0	79.9	390.7
1999	386.4	82.0	375.0
2000	391.4	78.9	399.3
2001	405.6	80.9	405.2
2002	407.5	84.7	408.7
2003	406.7	86.0	435.1
2004	429.9	92.6	464.5
2005	439.2	94.9	465.2

In addition to this we can have a primary survey of Road Surface, Vehicle conditions, Driver conditions then the results and alternative methods can be given, keeping in

Table 2. Motor vehicle registration in India

Year	MTW*	Cars/Jeeps	Trucks	Buses	Others**	Total
1997	25,729(69)**	4,672(13)	2,343(6)	484(1.1)	4,104(11)	37,332(100)
2004	51,922(71)	9,451(13)	3749(5)	768(1.3)	6,828(9)	72,718(100)
Growth per Year (%)	10.6	10.6	6.9	6.8	7.5	10.0

*Motorised two wheelers

**Other including tractors, trailers, three wheelers and miscellaneous vehicles

***Numbers in parentheses represent row percentage

Table 3. Vehicle sales in India

Year	Motorised two-wheeler	Three wheelers	Cars	Commercial vehicles	Total
1997	2,885,004(79)	216,729	396,450	169,937	3,668,120
2007	7,416,191(78)	380,663	1,273,893	479,593	9,550,340
Growth/Year (%)	10	6	12	11	10

Table 4. Road traffic fatalities in India

Year	Fatalities	Population(million)	Fatalities/million persons
1997	77,000	995	81
1998	79,900	971	82
1999	82,000	987	83
2000	78,900	1,002	79
2001	80,900	1,027	79
2002	84,059	1,051	80
2003	84,430	1,068	79
2004	91,376	1,086	84
2005	98,254	1,103	89
2006	105,725	1,120	94
2007	114,590	1,136	101

view the above discussed Methods to access the accident data, the below mentioned conditions are elaboration for that.

2.1 Pavement Surface

- Alligator Cracking or Fatigue Cracking
- Block Cracking
- Hungry Surface
- Formation of Corrugations
- Depressions

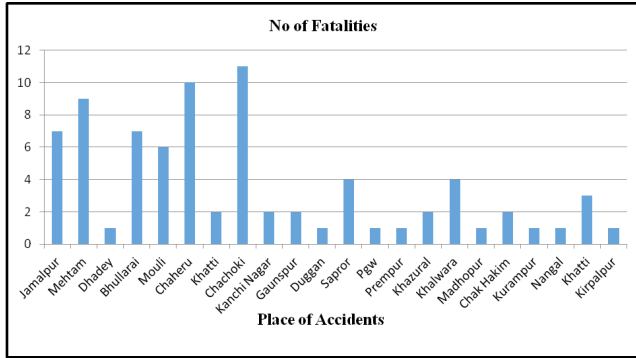


Figure 1. Fatalities on different places on Phagwara-Jalandhar highway.

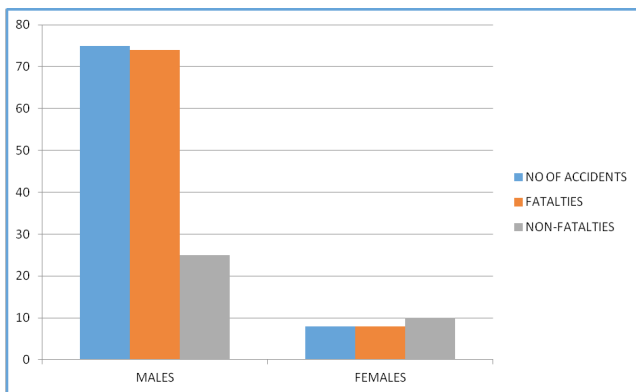


Figure 2. No of accidents (fatal/non-fatal) as per sex.

- f) Fatty surface or Bleeding
- g) Formation of Potholes
- h) Loss of Aggregates
- i) Stripping
- j) Reflection Cracking
- k) Ravelling
- l) Frost Heaving
- m) Longitudinal Cracking

2.2 Vehicle

- a) Braking System
- b) Vehicle Lighting System
- c) Vehicle Body and Its Features
- d) Tyres
- e) Vehicle Inspection and Maintenance

2.3 Driver

- a) Driver judgment, skills and emotional behavior
- b) Age of driver

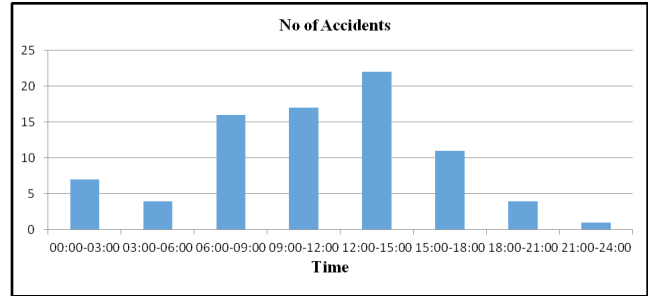


Figure 3. Accidents occurring at different times of day.

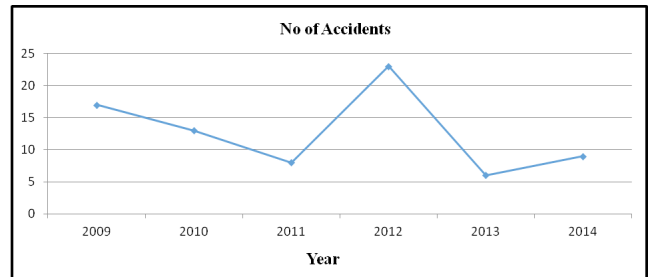


Figure 4. Accidents from year (2009-2014).

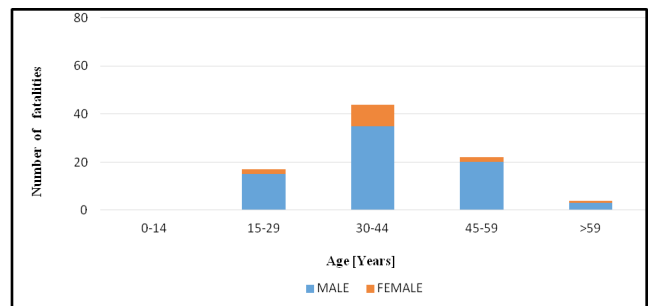


Figure 5. Accidents as per different age group.

- c) Gender of driver
- d) Marital status

3. Results and Discussions

Accident data analysis for the period 2009-2014 (5 years) from Jalandhar to Phagwara has been done in present study⁵, accident data analysis has been accessed from Phagwara to Jalandhar, the area comes under PS, Sadar, Phagwara and fatalities shown in Figure 1 and accident time frequency shown in Figure 3. So, the data analyzed is totally based on police records, with addition to these primary survey has been done on this stretch to analyze the road conditions, vehicle condition and driver conditions.

4. Conclusions

The graphs conclude that the reason of accidents on Phagwara to Jalandhar Stretch is decreasing /increasing after a year as shown in Figure 4. So, no predictions can be made for future as accidents are uneven, Chachoki, Chaheru, Bhullrai, Mehtam are the places where maximum accidents occur, and mostly the age group from 20-40 are the victims and two wheelers are most among all, the female groups are less is no as there are less female drivers in India, so our conclusion can be improvised access to roads, separate lanes for two wheelers, road side speed guns to check speed of vehicles and according enforce a law on them, if it is economical, we can introduce an ITS on this highway as the traffic flow is too high.

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