

Statistical Analysis on Road Accidents in an Area of Jaipur City

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Abstract—The main aim of this paper is to determine the change in the rate of number of accidents in Jaipur city. In this paper determines and classifies the accidents in different forms and factors like age, gender, year and time. The investigation of the specific area of Jaipur city from B2 bypass to Rambagh circle is carried out by determining the change in rate of road accidents from year 2007 to 2016. The road accidents in cities usually happen during the working periods when the traffic is at its peak. There are various potential reasons and causes on account of which road accidents are found continuously increasing. Look into other developing countries like china, the rate of road accidents in cities are decreasing but in India it's found to be increasing and that's because of no initiatives steps have been taken towards this problem and unawareness of the people. This research has a target to create a condition to minimize the rate of accident on the general road section.

Keywords: Accident, Traffic flow, road safety.

1. INTRODUCTION

Road traffic accident is very crucial in India. In a survey, it is recorded that street injuries kill greater people than any other hazard [1]. One fatal road accident used to happen in India every single minute and 16-17 people die on roads every hour [1]. Another past data gives idea that 1214 average crashes occur every day in India in which two wheelers account for more than 25% of road crash deaths[2]. It is recorded that everyday 20 children age below 14 die due to street crashes in India. Jaipur is indexed no.3 in highest number of street crashing deaths with approximate 3000 road accidents and 850 people died [1] in a year. Some preventive measures have been applied for the road safety and with that “The number of injuries and cases of road accidents has also come down by 2,050 to 1,006 in 2016 [3,4]. Jaipur district have a record of maximum road accident with deaths at 1,406, followed by Ajmer 598, Alwar 563, Udaipur 534 and Bhilwara 451 [1, 5].

All the above existing date indicate that the road network in the city is inadequate. Functionally, the road does not have any hierarchy which can resist sudden change in every individual road characteristics after a short distance [6]. At

present 5.84% of the total developed area of Jaipur is belonging to roads which are much below the required level [1, 5]. Moreover, the recorded vehicular population growth is quite high with just registered motorized vehicles in 4.3 million to 13.4 million vehicles on 31st March 2016, an increase of around 3 fold in span of 10 years [6].

Most of the roads in Jaipur city are heavily influenced by the vehicles parked. These things result in traffic volume as well as traffic accidents and make the life at risk. Present research is an attempt to analyze the road accidents in Jaipur using the annual data from 2007-2016 [7].



Fig. 1: Symbol of road accident to aware people

2. OBJECTIVE OF CASE STUDY

The objective of the case study is to identify the current condition of roads of Jaipur city and the road safety. To fulfil this objective the study has been conducted to find out the factors that are responsible for the road accidents and to aware the people of Jaipur city against this situation.

3. METHODOLOGY

All the data has been collected from the government agencies and from government websites to make the research more effective. On the basis of the data we have collected, we have

drawn the charts to show the change in rate of accidents as well as various other factors.

4. RESULTS AND ANALYSIS

The year wise data of road accidents collected are tabulated in the table 1.

Table 1: Data of accident of B2 bye pass

Data of Accidents of B2 By Pass				
S.No	Year	Fatal	Serious	Minor
1	2007	29	94	81
2	2008	21	57	73
3	2009	15	62	61
4	2010	16	59	3
5	2011	8	54	75
6	2012	17	39	61
7	2013	13	64	67
8	2014	16	75	91
9	2015	18	89	117
10	2016	21	105	137

For the better understanding about the reason behind the occurrence of the accident, a vehicle vs. year graph is plotted in the Fig. 2. It is observed that the vehicle passing through the chosen section is increased in regular pattern. And the increased vehicle desires improvement in the road facilities.

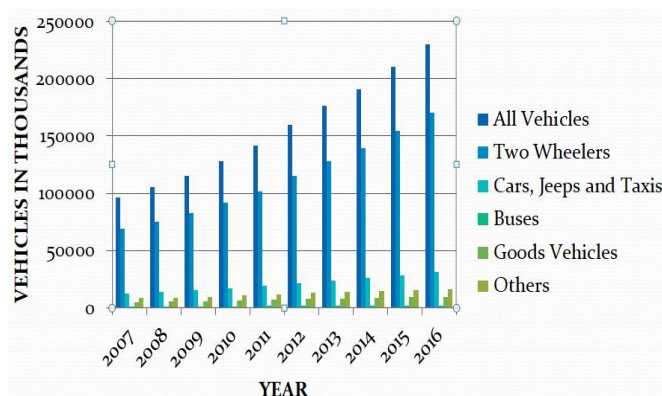


Fig. 2: Increase in vehicles per year

The number of fatal road accident decreased continuously from year 2007 to 2010 as shown in Fig. 3. The decrease in the accident on this chosen section was due to effective effort of the state government by providing essential rule regulation and its implementation. Further, the accident rate increased due to the increment in the number of the vehicle and the crowd creation on account of construction nearby the chosen section.

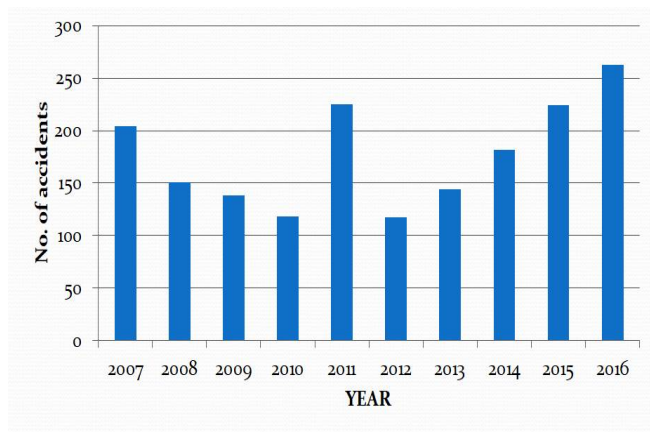


Fig. 3: No. of accidents per year

A loss of the life and the resources is recorded and the graph is shown in the Fig. 4.

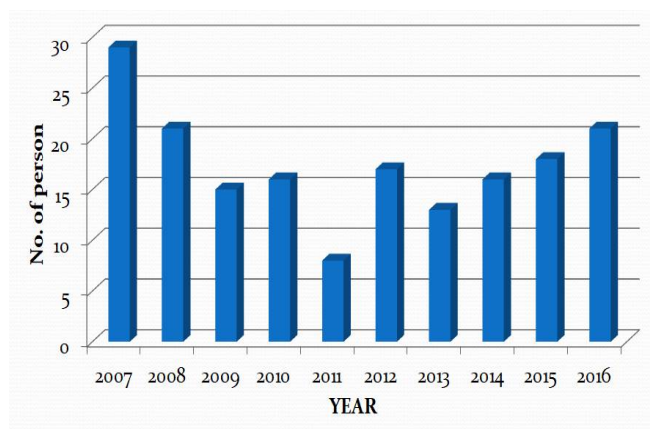


Fig. 4: No. of persons killed in past 10 years

Mode of the transportation is also an accident deciding factor. The accident caused by the two wheelers is found better irrespective of other modes (Fig 5.)

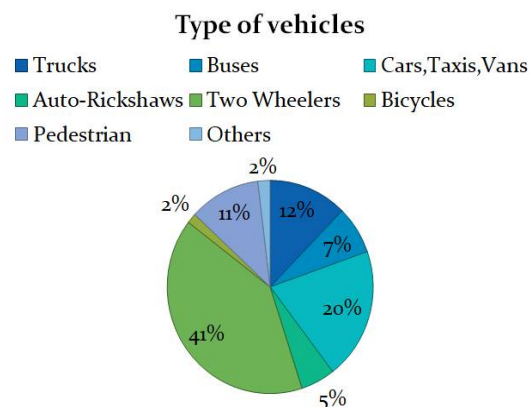


Fig. 5: Accidents due to different type of vehicles in 2016

5. CONCLUSION

From all above results it is concluded that the road safety at chosen road section of Jaipur city is decreasing day by day which results in increased accident. The most prominent reason behind the increase in no. of accidents are found mainly due to unawareness of road users, poor road parking facilities, construction work nearby the road section, caused blockage of the part of road and created difficulty for road uses, adverse road geometry, improper road signs and signals. It is suggestion to the government to take required action to prevent the continuous increasing in road accidents by providing better road conditions and proper road traffic controls system.

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