

Accident Data Analysis and Control Measure

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Abstract - India is a developing country and the safety of road is not in good stage. Accidents are increasing day by day due to increase in vehicle and population. Accidents lead to death, serious injury and damage of property, social suffering and general degradation of environment. The road accident situation in India is very high level, shows that there is one fatal at every 2.75 minutes because of road accidents. The high rate of accidents is mainly depends upon the road user behavior, vehicle defects, poor road geometric and visibility. Road accidents impose heavy economic loss to the country. Road safety is important to reduce accidents involving both human and vehicles, thereby making the road more safe and user friendly to traffic. Accidents are also a major cause of traffic congestion and delay. Effective management of accident is crucial to mitigating accident impacts and improving traffic safety and transportation system efficiency. In India the accident problem is a combination of various factors viz., prevailing lack of traffic management measure, improper placement of traffic control devices, roadside hazards and ribbon development along the road network. So in this project, I have gather FIR from near police station and find causes of accident and defect of road geometry as well as analysis data by suggest control measure on those accidents.

Key Words: traffic safety, cause of accidents, fatality, road safety

1. INTRODUCTION

According to the official statistics (National Crime Records Bureau), In India in 2008, 118,239 people were killed in road accidents. The death rate in India is about 10 to 20 time higher than high income countries like Japan, Australia, UK, and USA. In India the share of national highways and state highways is about 6 to 7 % of the total road networks but it cater to about 70 to 75% of total traffic. However in India only national highways comprises of only 2% of total road network, which account for 20% of total road accidents and 25% of total traffic fatalities. The management of accident risk is both a short-term and a long-term strategy, which requires support of central and state authorities

The most effective way of managing accident risk is through the development of a „safety culture“. A safety culture is the beliefs and ideas shared by all members of an organization about accidents and their risk of happening and proper measure which are to be taken to decrease in the number of accidents. The year wise road accidents in India are shown in

the table given below Accident is an event, occurring suddenly, unexpectedly and inadvertently under unforeseen circumstances.

An accident may be defined as a collision occurred on a way or street open to public traffic (The collisions may be between vehicles; between vehicles and pedestrians; between vehicles and animals; or between vehicles and geographical or architectural obstacles) resulting in killing or injuring of one or more persons and involvement of at least one moving vehicle. „Accidents are not natural but they are caused“ is a common cliché in the area of traffic safety. Thus if accidents are caused by some, surely the ones responsible for could be identified and appropriate remedial measures developed and implemented to the extent feasible. Accidents are not often caused due to ignorance, but due to carelessness thoughtlessness and over confident. Road accidents are associated with number of problems from person to the environment and vehicle the road, for proper study of the accidents each problem has to study separately. Due to growth in urbanization in many developing countries there is increase in the number of vehicles to a large extend which led to increase in traffic congestion in many urban centers which ultimately increase the number of accidents on road network which were never designed for these number of traffic and traffic type

Therefore the number of accidents is more in developing countries like India, Ghana as compared with developed countries like USA & Japan. The deaths per 1000 vehicles registered in some developing countries

1.1 AREA UNDER STUDY

Here in this study I have to collect information from police station deori about the F.I.R reports which are related to the various accidents happens in deori police station area. I have to collect accidents data 10 years back from police station deori. **Deori** is a City and a municipal council in Gondia district in the state of Maharashtra, India (Asia).It Connected to NH53. Deori is a taluka central command in the Gondia region of Maharashtra in the western district of India. It lies on the Maharashtra-Chhattisgarh verge on Kolkata National Highway 53(old NH6) and is in a perfectly situated close to the area's outskirts with Chhattisgarh. Deori is found 80 km. east of Bhandara and 67 km. southeast of Gondia, the locale central station. This is the analysis which is relating with the rural accidents prone area where I survey following area

which comes under the police station which is considered as 'accidental prone area zone'



Figure 1 Deori police station area

Basically, the design of roads involves geometric design as well as pavement design. The standards for geometric design provide for appropriate parameters as well as the standards for them, keeping in view the functionality of rural roads, with the main objective of providing safe and efficient roads. Though, the geometric standards may marginally affect the economy in the construction, choice is left to the designer for deviating from the standards in order to achieve the objectives namely safety and efficiency on the rural roads. However, the pavement design controls the economy in road construction with a wide choice of methods of design and materials used in the construction.

Deori Deori is a Village in Gondia Taluka in Gondia District of Maharashtra State, India It belongs to Vidarbha region It belongs to Nagpur Division It is located 0 KM towards west from District head quarters Gondia 950 KM from State capital Mumbai Deori Pin code is 441614 and postal head office is Gondia Ramnagar

Deori is surrounded by Goregaon Taluka towards South , Amgaon Taluka towards East , Kirnapur Taluka towards North , Khairlanji Taluka towards west

- Gondiya , Tirora , Wara Seoni , Balaghat are the nearby Cities to Deori
- Demographics of Deori Marathi is the Local Language here.

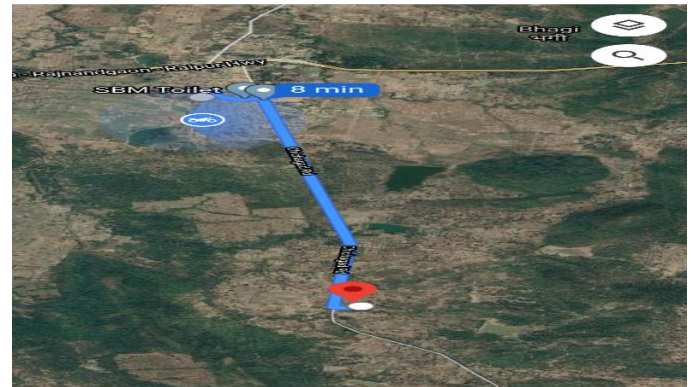


Figure 2 Location of Survey

1.2 CLASSIFICATION OF ROAD

The roads as classified on various basis.

1.2.1 Based on Utility

The different types of roads can be classified into two categories, depending on whether they can be used during different seasons of the year: (a) All-weather roads and (b) Fair-weather roads.

1.2.2 Based on type of Carriage Way

(a) Paved roads, if they are provided with a hard pavement course which should be at least a water bound macadam (WBM) layer.

(b) Unpaved roads, if they are not provided with a hard pavement course of at least a WBM layer. Thus earth roads and gravel roads may be called unpaved roads.

1.2.3 Based on type of Pavement surface provided

Based on the type of pavement surfacing provided; the road types are divided as:

(a) Surface roads, which are provided with a bituminous or cement concrete surfacing.

(b) Un-surface roads, which are not provided with a bituminous or cement concrete surfacing.

1.2.4 Based on Function

The classification based on location and function can be classified into five categories:

(a) National highways (NH) are main highways running through the length and breadth of India, connecting major ports, other highways, capitals of the states and large industrial and tourist centers including roads required for strategic movements for the Defence of India.

(b) State Highways (SH) are arterial roads of a state, connecting up with the national highways of adjacent states, district head quarters and important cities within the state and serving as the main arteries for traffic to and from district roads.

(c) Major District Roads (MDR) are important roads within a district serving areas of production market and connecting those with each other. The MDR has lower speed and geometric design specifications than NH/SH.

(d) Other District Roads (ODR) are road serving rural areas of production and providing them with outlets to market centers, taluka head quarters, block development head quarters or other main roads. These are of lower design specifications than MDR. (e) Village Roads (VR) are roads connecting villages or a group of villages with each other to the nearest road of a higher category

1.3 AIM

1. To study the various causes of road accidents due to highway failures
2. To bring down accidents is strict enforcement of speed limit, 90% of accidents can be avoided by strict enforcement of speed
3. Heavy penalty should be imposed those who cross speed limit.
4. Tamper proof speed controllers should be made mandatory for all heavy vehicles
5. New gadgets are to be developed for collision prevention and should fitted on all vehicles
6. Helmet should be made compulsory by law in all state,
7. All those who do not maintain safe distance for speed should be punished

2. METHODOLOGY

Generally, newspapers give limited information about the causes of accidents. The standard reasons given, as this article from The Hindu illustrates, are loss of control, carelessness, or speeding. This gels with the data from the Ministry of Road Transport and Highways (MoRTH) to some extent. Its 2015 report (Road Accidents in India 2015) lists the major cause of accidents to be over-speeding (47.9%).

What the media does not highlight is that these causes are really symptoms of the same problem of disregarding road rules. While loss of control, speeding, etc may be the proximal causes of many an accident, the underlying cause is the negligence of road users or in other words the fault of the driver. The MoRTH report notes that 77.1%t of ‘accidents’ were the fault of drivers.

2.1 Statistical analysis of causes of accidents in zone I

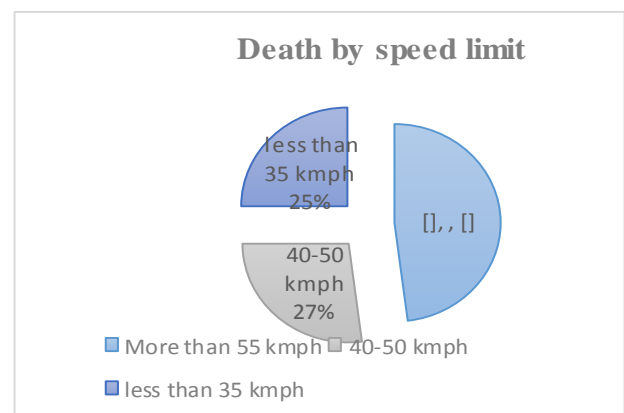
In zone one there is the major causes of casualties are at night time due to the invisible sight distance somehow maximum transportation happened in night time. Another reason for the accident is overtaking of vehicles due to the two lane road. On the curvy road this is NH road but from Masulkasa to Dongargoav near about 5 km road is single lane road so due to overtaking accidents are form

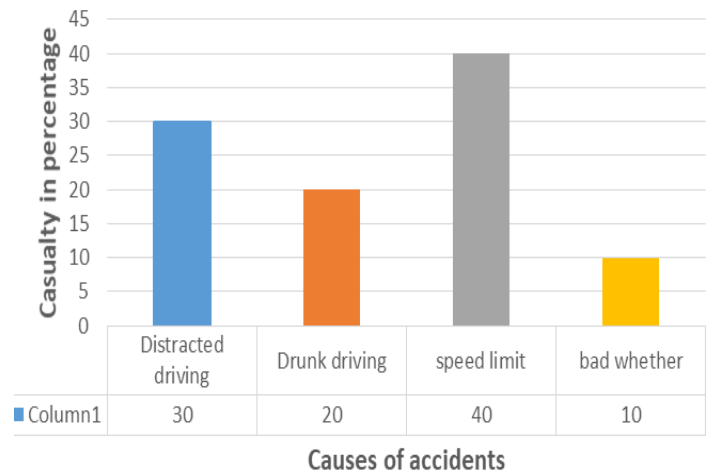
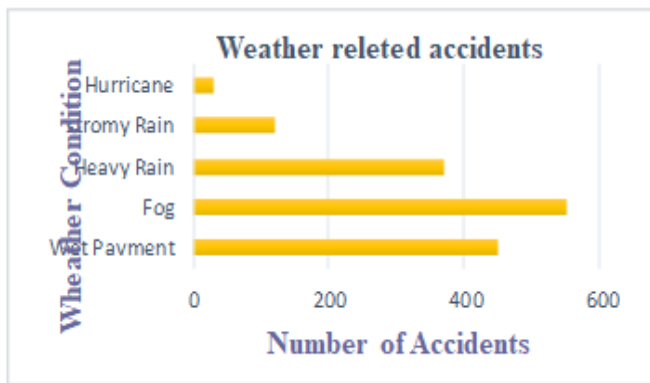
2.1.1 The safe stopping sight distance- the sight distance that is available for the moving the vehicle in the highway that will enable the driver to stop the vehicle safely without collision with any other obstacle. Also The Stopping distance can be defined as the sum of Lagging distance to the brake distance.

The lagging distance is the distance that is moved by the vehicle in a time period ‘t’ at a velocity of ‘v’ in m/s. Hence lag distance is ‘vt’.

The Stopping Sight Distance (SSD) = Lag Distance + Braking Distance

2.1.2 The overtaking sight distance - The minimum distance available for the driver to safely overtake the slow vehicle in front of him by considering the traffic in the opposite direction is called as the overtaking sight distance. This distance will make us see whether the road is clear to undergo an overtaking movement.

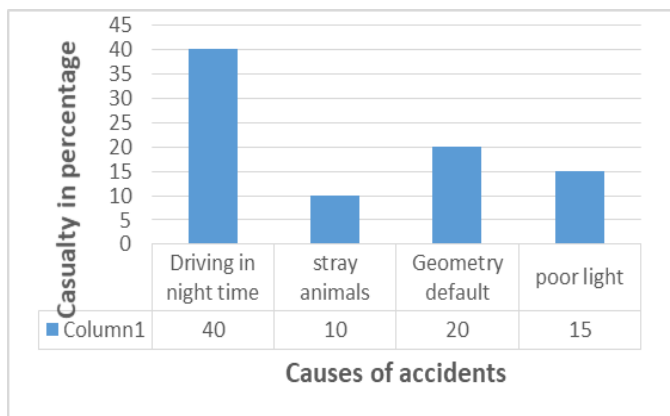




2.2 Factors Affecting Overtaking Sight Distance

The main factors that affect the OSD are:

- Spacing Between the vehicles
- Speed of the vehicles
- The gradient of the road
- The acceleration rate of the overtaking vehicle
- The velocities of the vehicle which is overtaking, overtaken and that coming in the opposite direction
- The driver skill
- The reaction of the driver



2.3 Control measure:

Pull into traffic slowly. Stop, Look, Listen. Be aware of blind spots, including those in rear view mirrors and behind windshield pillars or highway road signs. Also, when at an intersection making a right-hand turn, look both directions at least twice before proceeding. Vehicles can appear almost out of nowhere very quickly, so exercise caution when pulling into a busy intersection.

Watch for red light runners. Count to three before entering an intersection on a green light. Look both ways and be sure no one is trying to speed through a yellow light. Exercise caution when passing semis. Truck drivers have a large blind spot on their right-hand side, so be especially careful when driving next to an 18-wheeler. If you cannot see the truck's side mirrors, the truck driver cannot see you.

Keep at least one hand on the steering wheel. Reduce in-car distractions such as changing radio stations or CDs, cell phones, eating or momentarily taking a hand off the wheel. A gust of wind, pothole or a blown tire could send the vehicle into another lane and cause a serious accident.

Watch for kids. Children and animals have a habit of suddenly popping out from between parked cars and into roadways. If you are driving in a residential neighborhood with kids present, watch carefully and slow down.

Perform engine maintenance regularly. Avoid sudden stalls or other vehicle failure by changing the oil regularly and keeping tires properly inflated.

Scan 12 seconds ahead. Always concentrate on the area where you will be driving in 10-12 seconds. For highway driving, keep positioned far enough from other cars so if someone were to suddenly stop or swerve, you could avoid them.

Look backwards when backing out. Fender benders in parking lots are all too common, so look out for cars leaving parking spaces. Don't depend on mirrors alone -- physically

look over your right shoulder while steering to alleviate blind spots mirrors can create.

Do not tailgate. Leave a three-second cushion between you and the car in front of you and begin your journey early enough so you don't speed to make up time. As tempting as it may be when in a hurry, tailgating is a major cause of accidents.

Be courteous to other drivers. No one owns the roads, so treat others with respect and report any suspicious driving activity to authorities.

3. CONCLUSIONS

According to accidents statistics, a excessive range of provisional license holders concerned in crashes looks to celebration due to inexperience due to the fact using is a new skill. When we are new at something (e.g. taking part in games) we tends to make errors and now not be as skillful as these with plenty of experience. However, new drivers additionally on occasion do matters can extend their threat of crash involvement. These encompass like

1. Travelling too intently in the back of different motors (tailgating)
2. Driving too speedy for the condition
3. Not searching for sufficient beforehand when driving
4. Closing gaps that are too small when making turns in shape of curves, crossing intersections or overtaking
5. Texting whilst the driving
6. All these elements want to be prevented in order to limit the variety of accidents taking place on roads.

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