International Journal of Application or Innovation in Engineering & Management (IJAIEM)
Web Site: www.ijaiem.org Email: editor@ijaiem.org
Volume 3, Issue 12, December 2014 **ISSN 2319 - 4847**

Analysis of road accident data of stretch from Radhanpur junction (Mahesana) CH 00.00 km (SH-55) to Chanasma junction CH 32.80 km (SH-55)

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ABSTRACT

India uses 20 billion rupees consistently because of the absence of road wellbeing. This sum is likeness nourishment procurements for half of the country's malnourished kids. Road safety is an issue of national concern. Its extent and gravity, results contrary effects on the economy, general wellbeing and the general welfare of the individuals. Today, road traffic injuries are one of the main sources of passing's, incapacities and hospitalizations, with serious financial expenses, over the world. Poor road geometry coupled with lack of road control devices are one of the factors making road mischance's and have helped the nation being at the highest point of the table in terms of road death statistics. A road accident is an unplanned and uncontrolled occasion, which happened on a road open to an open activity bringing about individual harm, harms to the property and death toll in which no less than one moving vehicle was included. The essential objective of this paper is to gather the road accident data of chosen stretch from Radhanpur junction (Mahesana) CH 00.00 km (SH-55) to Chanasma junction CH 32.80 km (SH-55) from police home office and to workout purposeful examination of road accident of it and propose remedial measures too. All out road accidents recorded are 534 amid the period 2008-2014 on SH-55.

Keywords: Accidents, fatal, vehicles, road safety.

1. INTRODUCTION

Mahesana is in the heart land of Gujarat state. The commercial Center of District is Unjha with world famous markets of Fennel, Cumin seed and Isabgol. Dudhsagar have created white revolution in field of animal husbandry by forming 671 milk co-operatives of milk producers and cattle breeders. Mahesana situated at 23.6 degree North Latitude and 72.4 degree East Longitude. The total population Mahesana district recorded is 18, 37,696 according to population census 2011. Patan situated at 24.20 degree North Latitude and 84.18 degree East Longitude. The total population Patan district recorded is 11, 81,941 according to population census 2011. Owing to tremendous industrialization coupled with trading activities has put strain on road having nearly constant road width experiencing strain in the form of decreased level of service and increase in many numbers of accidents due to large number of road users with different purposes. The aim of this study is to analyze the traffic accidents occurring in a selected stretch from Radhanpur junction (Mahesana) CH 00.00 km (SH-55) to Chanasma junction CH 32.80 km (SH-55) by statistical approach which is encountering strain as diminished level of administration and increment in numerous quantities of accident's because of vast number of road user clients, specially four wheelers. It manages investigative examination of the mishaps information and suggests remedial measures for reduction in accidents on stretch.

2. DATA COLLECTION AND ANALYSIS

Accident data was collected from various police station along the study area stretch from Radhanpur junction (Mahesana) CH 00.00 km (SH-55) to Chanasma junction CH 32.80 km (SH-55). The data are entered in the First Information Report (F.I.R) and details are recorded in case diaries. Road accident information were gathered from 4 police headquarters to be specific chanasma police headquarters from Patan and Taluka, A-Division, B-Division police headquarters from Mahesana who are the whole and sole custodians of the records. The information accessible from the police office is of first information report, gathered and examined in for analysis and interpretation of accident data. Total accidents recorded are 534 during the period 2008-2014 on SH-55 from Radhanpur Junction (Mahesana) (CH: 00.00Km) and Chanasma Junction (Ch: 32.80Km). The collected data are analyzed according to the following Parameters:

2.1 Yearly variation of accidents (2008-2014)

The systematic examination of chart 1 demonstrates that there is a significant reduction in deadly mishaps i.e. fatal accidents from 2008 onwards, this may be because of a few steps taken by government for therapeutic consideration or a few measures to diminish road accidents have occurred which may be due such as developing emergency medical services by having a 24X7 call centre with a dedicated common telephone number backed by ambulances. In any case at present physical examination on chosen stretch shows poor roadway geometrics and no activity signs out and about for alarming the driver. There was no rate limit confinement sign out and about as well.

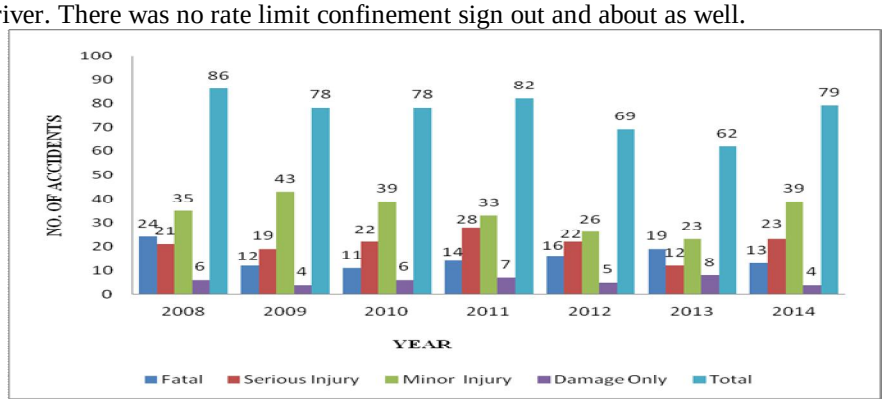

Chart 1: Graphical representation of Year wise accidents on SH-55 (2008 - 2014)

2.2 Accidents classified according to month (2008-2014)

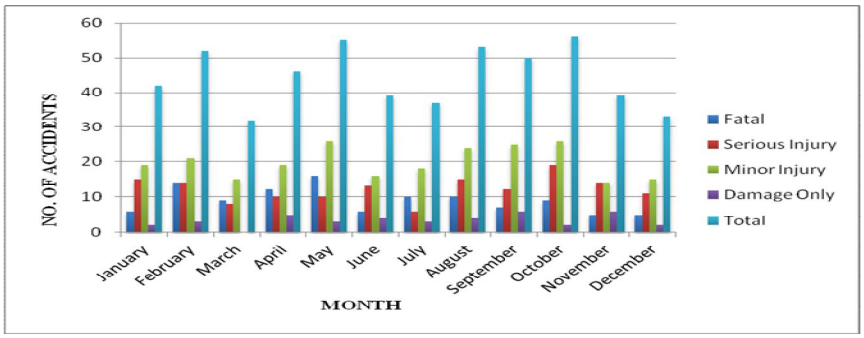

Chart 2: Graphical representation of Monthly basis No of accidents

Month shrewd mishap grouping demonstrates that in the month of May lethal road accidents are high in number yet the aggregate mishaps are most elevated in the month of October. In May, peak summer is there; temperature is high typically in the scope of 45°c to 48°c amid mid day, The driver is additionally presented to glare which is delivered by brilliance inside the field of vision that is sufficiently more noteworthy than the luminance to which the eyes are adjusted to cause inconvenience, uneasiness, or misfortune in visual execution and detectable quality. Likewise recurrence out and about may increment because of get-away helping somewhat more lethal accident. October month winter season is there having more genuine harm representing more aggregate mischance.

2.3 Accidents classified according to day (2008-2014)

Day savvy road accident grouping demonstrates that Saturday and Sunday is encountering climbing pattern in lethal accidents likewise add up to mishaps are more contrasted with other week days. Particularly Sunday the developments of vehicles are all the more because of occasions, more business trips and by and large visitor are going by adjacent religious. Chart 3 shows day astute mishaps saw in chose stretch.

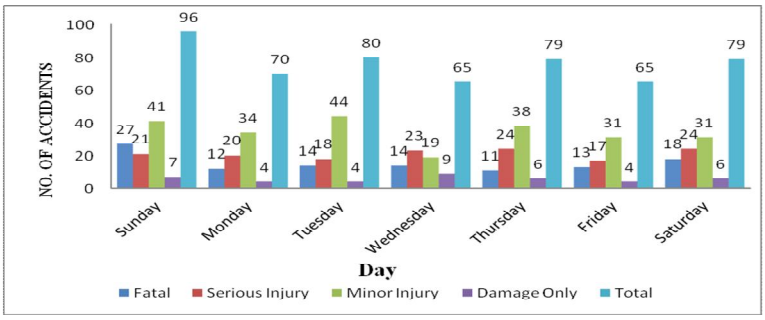

Chart 3: Graphical representation of Day vs Nos. of Accidents

2.4 Accidents classified according to collision type (2008-2014)

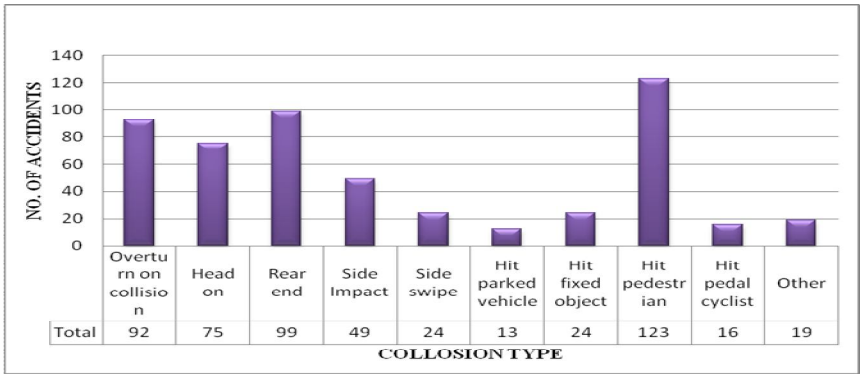

Chart 4: Graphical representation of collision type Vs Nos. of Accidents

Accidents classified according to collision type shows that head on, rear end and overturn on collision contributes a slight more than 50 % of total accidents as there is no provision of median in the centre and road geometry is poor with low traffic control devices. Also more number of curvatures is there owing to poor geometry of road. Also no safety aspects for pedestrians are there for the villagers to move as person on road. Pedestrians are specifically uncovered in activity situations and are hence unprotected. In the occasion of an accident, they come in immediate contact with the affecting vehicle and vitality exchange is high (even in low speed accidents) bringing about genuine wounds and passing as shown in chart 4.

2.5 Accidents classified according to accident spot (2008-2014)

A mishap ordered by spot demonstrates that 39 % of accidents are happened on straight road having curve at a few spots. General mentality of the driver is to move at high speeds on straight road however the roads under study needs legitimate geometric outline and activity control measures. T-intersection is having Minor Street meeting the principle state highway and needs sight separate likewise unlawful vehicles are stopped.

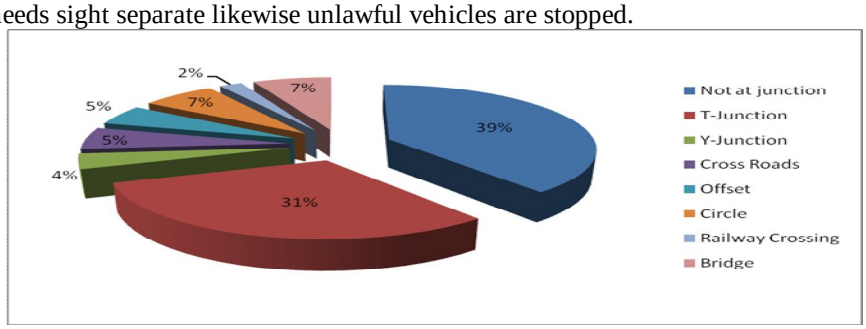

Chart 5: Pie chart of Accident spot

2.6 Accidents classified according to vehicle type (2008-2014)

One of the primary elements helping the increment in road crash wounds is the becoming number of engine vehicles. The issue is not simply the development in numbers and increment in presentation to the danger additionally guaranteeing that suitable road safety measures go hand in hand with this development. The engine vehicle, alongside the consequent development in the quantity of engine vehicles and in road base, has brought societal profit however it has additionally prompted societal expense, to which road movement harm helps fundamentally. Road crashes by road user group demonstrates that 36.14% of road accidents are the most elevated happening in the road extend because of car/jeep/van/taxi and second to it is 21.35% of mishaps because of bikes.

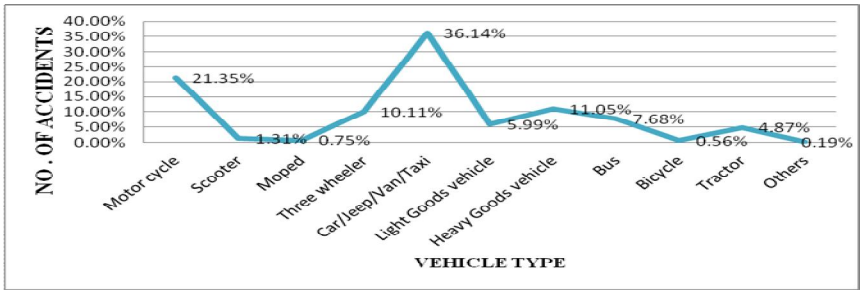

Chart 6: Line chart of Vehicle type vs Nos. of Accidents

2.7 Accidents classified according to time (2008-2014)

Chart 7 shows that majority of accidents have been occurred during the night time on SH-55. The maximum 34.087% of accidents occurred during decreasing light time between 18:00 PM to 24:00 mid night and 30.52% of accidents occurred during morning time between 6:00 AM to 12:00 noon and 30.15% of accidents occurred during day time between 12:00 noon to 18:00 PM. The less 5.24% of accidents occurred during day time between 00:00 AM to 6:00 AM as during this time the traffic volume is low. Two distinct peaks of accident is seen between 18.00 to 19.00 pm & 19.00 to 20.00 pm. This may be because of persons moving in intemperate pace to go to home; additionally the change in perceivability happens amid this period. Activity volume builds the complex conduct of road clients on the stretch needing fitting geometric outline likewise sufficient lighting office is not seen.

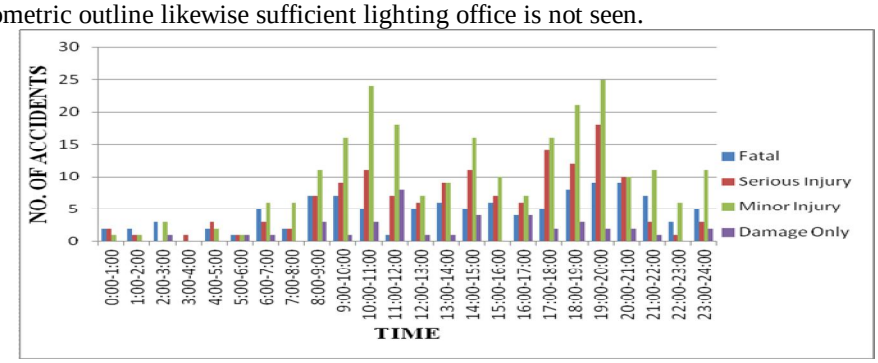

Chart 7: Graphical representation of Time vs Nos. Of Accidents

2.8 Accidents classified according to vehicle maneuver (2008-2014)

Road accident grouped by move demonstrates that 55.06% of accidents have been brought on because of vehicles moving straight on road. The real commitment is because of poor street geometry coming about a greater amount of head on impacts, side on crashes and surpassing impacts. Likewise the drivers are under their feeling that once you are having permit, you are gifted in every part of driving particularly unreasonable rate. Such psychology contributes to accidents too as drivers move at excessive speed.

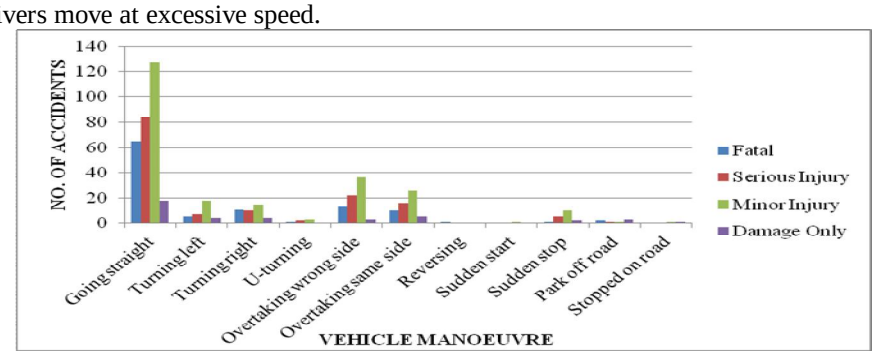

Chart 8: Graphical representation of Vehicle Maneuver vs Nos. of Accidents

2.9 Accidents classified according to driver's error (2008-2014)

Drivers have a tendency to be adolescent, to drive high mileages, and to be more slanted than others to disregard both formal and casual activity principles. The mischance risk of drivers is connected with rate such that higher speed drivers are connected with a fundamentally more noteworthy mishap association than are slower drivers; also, the higher the rate the more quick is the rate of expansion in drivers' mishap risk which is the highest of the driver's error. Also the tendency of bad overtaking due to carelessness is seen.

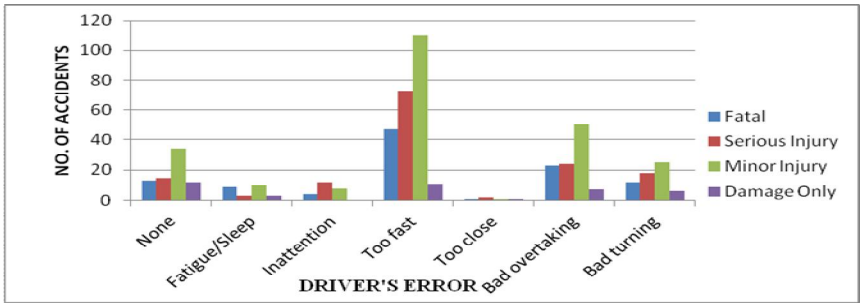

Chart 9: Graphical representation of Driver's Error vs. Nos. of Accidents

2.10 Accidents classified according to driver's age (2008-2014)

Despite the fact that driver age and experience are profoundly associated, it has been seen as imperative to figure out which is the better indicator of accident danger. Unmistakably, both aptitude and motivational components are imperative components in driver crashes. It is seen that driver's majority accidents during driving their vehicles are in the age group of 30 to 40 years which signifies fatal accidents as well as total accidents more in number compared with other age drivers.

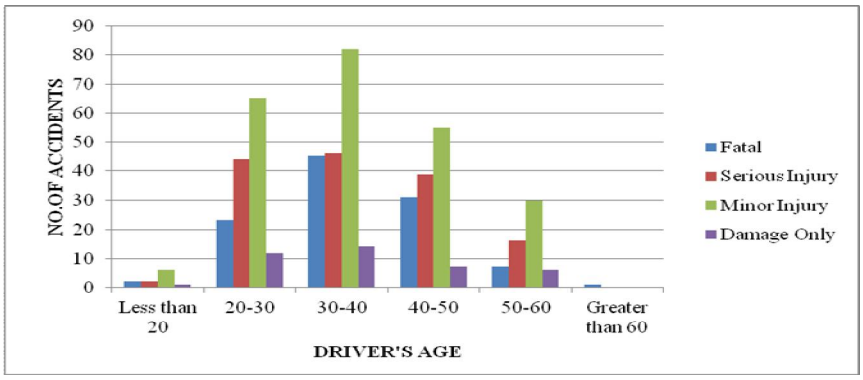

Chart 10: Graphical representation of Driver's Age vs. Nos. of Accidents

2.11 Accidents classified according to weather (2008-2014)

Visibility is one of the basic needs for safe driving. To figure out which times of the day had applicant sun positions liable to cause a glare impact for most drivers, the position of the sun in respect to the position of the vehicle must be known. It is well known fact that sun-related glare may meddle with movement when it is low in the sky and when the vertical and even roadway geometry is basically pointing activity specifically into the sun. It is the general tendency of drivers to move at excessive speed in clear weather on dry roads to reach to destinations hurriedly even in a complex situation of traffic on roads, which are not having proper geometry and traffic control devices too. The driver loses the control over the vehicles and the surface geometry of the road also enhances the cause of accident.

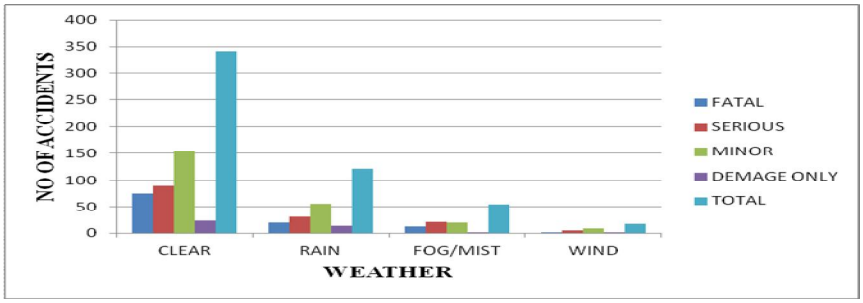

Chart 11: Graphical representation of Weather vs. Nos. of Accidents

2.12 Accidents classified according to alcohol/drugs (2008-2014)

In Gujarat state, alcohol is banned but still person violates the laws. Alcohol adversely affects driving-related skills such as vision, reaction time, judgment, and the ability to divide attention, and intoxication decreases driving performance. The study reveals that 31 % of drivers suspected of alcohol intake contributed to road accidents.

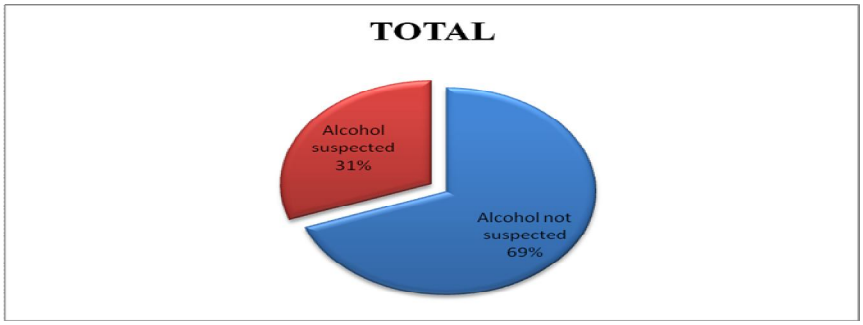

Chart 12: Pie chart of Accidents Classified According to alcohol/drugs in percent

3. KEY ROAD SAFETY MEASURES:

It is a socio-specific issue with different measurements needs to be adequately handled to enhance road safety. The different road safety measures which needs to be given significance are rundown of well being peculiarities for vehicle plan (e.g. safety cinch, air sacks, collapsible controlling, braking execution and so forth), Fitness confirmation and support of vehicles, proper preparing and viable authorizing for drivers including improvement of VAHAN & SARTHI software for computerization of all the RTOs including uploading of legacy data, improvement in the software for recording repeated traffic violations, detection of fraudulent driving licenses etc, road plan and geometric changes to make up for deficiencies of road clients, activity direction, road signs, rate farthest point posts, and other movement control gadgets, road asphalt markings, development of trails/cycle tracks and other way side luxuries, and so on. Activity training and fight on movement discipline – consideration of movement instruction in school educational program, advancement of preventive driving, and so on are important. Requirement of most maximum speed limits and campaign on helmet use and seat belt use, curbing alcohol consumption among drivers, etc. Emergency medical service with emphasis on sparing the lives of exploited people and so on. There is a need of setting up road safety audit mechanism and road safety councils too.

4. CONCLUSIONS

The preventive measures brought through this study further control us to control or cut down these rates by utilizing diverse new safety measures, infrastructural configuration fatalities and most recent vehicle engineering. The central purpose of mishap aversion and control methodology is depending on 4 E's, vis. (i) Education, (ii) Enforcement, (iii) Engineering and (iv) Environment and Emergency consideration of road accident exploited people. Road wellbeing clearly does not get the consideration that is obliged and merited. It needs to be tended to as a genuine concern and systems to spread mindfulness about the same must be built so that to lesson road accident wounds and casualty.

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