

Traffic accidental studies and causes

Bharat Kumar¹, Varuna shree meti², Vamsi³, Narasimha Reddy⁴

¹Assistant professor of Civil engg dept.,RGM College Nandyal

²Assistant professor of Civil engg dept.,RGM College Nandyal

³Student of civil engg dept., RGM College Nandyal

⁴Student of civil engg dept., RGM College Nandyal

Abstract - Road accidents are Studies on road accidents have indicated that the rate of accidents in developing countries are high compare to those in developed countries. The probability of accidents taking place is influenced by many factors. The basic structure of roads, vehicle characteristics, condition of pavements and weather condition; each of these factors contribute its own share in the occurrence of accidents important cause of accidents. The present study mainly deals with accidental analysis on National Highway-40(NDL-KNL) and its causes. Accident data for a period of six years were collected from the concerned RTI for analysis.

Key Words: — Road accidents , Structure of roads , Vehicle characteristics , Condition of pavements and Weather conditions , Nandyal – Kurnool.

1.INTRODUCTION

Road accidents are treated as one of the main reasons for deaths globally. Nearly half a million people have been killed in road related accidents every year. Studies on road accidents have indicated that the rate of accidents in developing countries are high compare to those in developed countries. The probability of accidents taking place is influenced by many factors. The basic structure of roads, vehicle characteristics, condition of pavements and weather condition; each of these factors contribute its own share in the occurrence of accidents important cause of accidents. Accident data for a period of Six years were collected from the concerned **RTI** for analysis. From this analysis suitable preventive measures were suggested.

2 Objectives of study

1.To identify various factors responsible for the occurrence of accidents in selected stretch of NH-40 from Nandyal to Kurnool.

2.To quantify their effects on the causation of accidents.

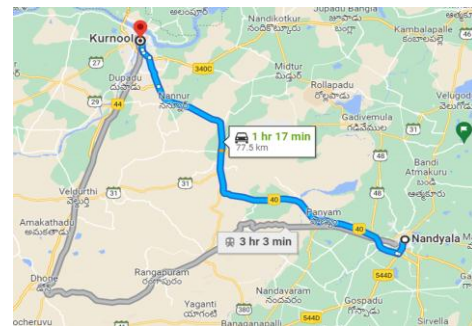
3.To ensure that all highway schemes should operate to traffic and to minimize risks of all road users.

4.To rectify the failures of road and providing guidelines to the road users.

3 Study area

NH-40 Road network is from Kurnool to Chittoor.

Accidental study stretch is NANDYAL-KURNOOL.



4 Terms and definitions

Accident: An accident is an unintentional incident that happens unexpectedly resulting in damage or injury.

Fatal: It means a personal injury resulting in death of the person.

Non-Fatal: Non-fatal means which does not leads to death.

Grievous: Which causes great pain or very severe to individual.

Head on Collision: A head on collision is a traffic collision where the front end of two vehicles (Such as cars, trains) hit each other in opposite direction.

Rear end Collision: It is a traffic accident where in vehicle crashes into the vehicle in front of it.

Side Collision: Side collision are vehicle crashes where one or more vehicles are impacted.

4 Methodology

4.1 DATA COLLECTION

Data related to number of accidents , type of vehicles as well as how many persons are died and injured, date and time occurrence were collected for study stretch from the concern authorities.

The road details of past six years (2017-2022) were collected from RTI online .

4.2 ANALYSIS OF THE DATA

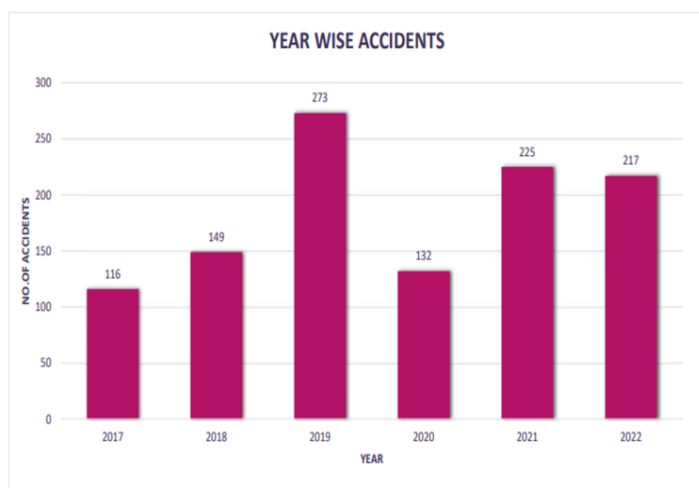
After the data compilation is completed the further analysis of the data is done based on the accident severity index method. The data gathered is then sorted out and put into respective tables for comparison. Various graphs are plotted to see the variations in accident rates over the years and observe the trend.

YEAR WISE ACCIDENT DATA:

The following table shows year wise accidents occurred in 2017-2022 . It reveals that more number of accidents occurred in each year are in rural areas and less number of accidents are occurred in urban areas.

SL.NO	YEAR	NO.OF ACCIDENTS
1	2017	116
2	2018	149
3	2019	273
4	2020	132
5	2021	225
6	2022	217

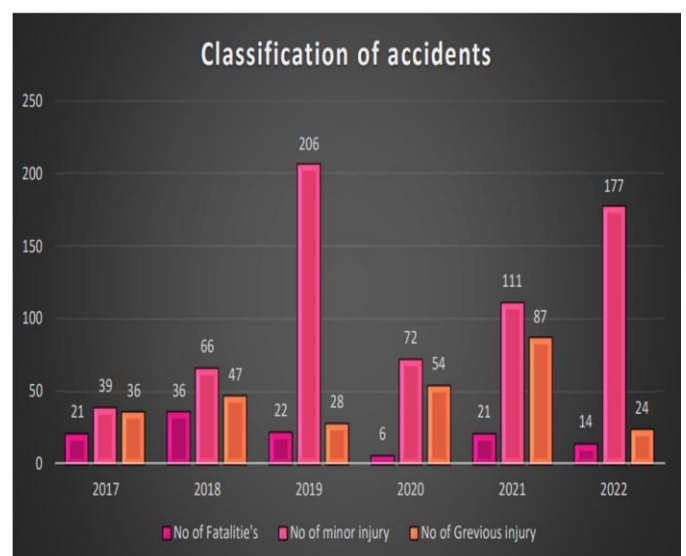
CLASSIFICATION OF ACCIDENTS



Classification accidents are fatal, grievous injured and minor injured.

The following table shows year wise classification of accidents.

YEAR	FATAL	GRIEVOUS INJURED	MINOR INJURED
2017	21	39	36
2018	36	66	47
2019	22	206	28
2020	6	72	54
2021	21	111	87
2022	14	177	24
TOTAL	120	671	276

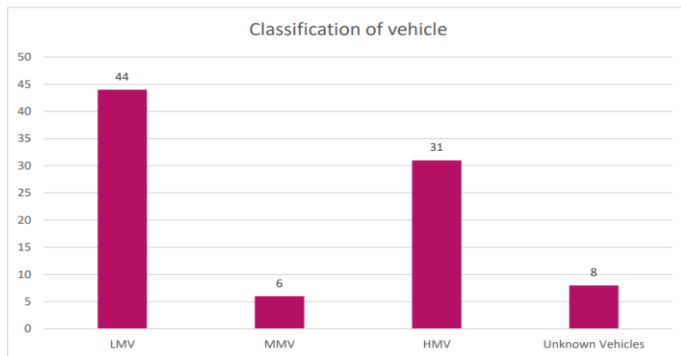


TYPES OF VEHICLES INVOLVED IN ACCIDENTS

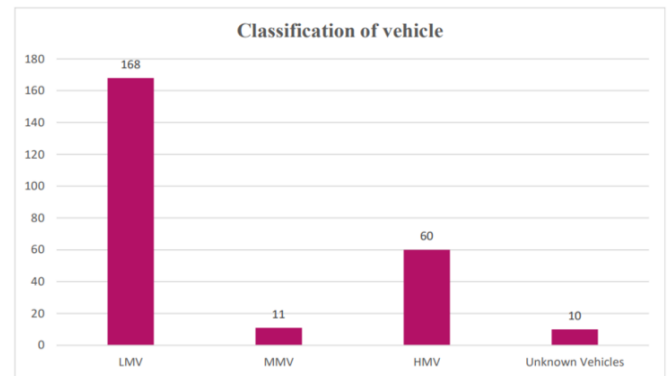
The vehicles are categorized into

1. Light Motor Vehicle (LMV)
2. Medium Motor Vehicle (MMV)
3. Heavy Motor Vehicle (HMV)
4. Unknown

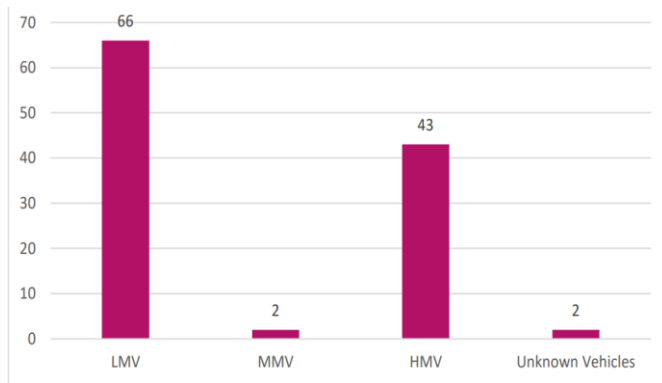
1. LMV : Light Motor Vehicle which is known as the non-transport vehicle .
Ex : Motor vehicles , cars etc.,
2. MMV : Medium Motor Vehicle which is known as a heavy passenger vehicle .
Ex : Mini vans , Institutional buses etc.,
3. HMV : Heavy Motor Vehicles are heavy – duty and used for commercial purpose.
Ex : Trucks , Lorries etc.,



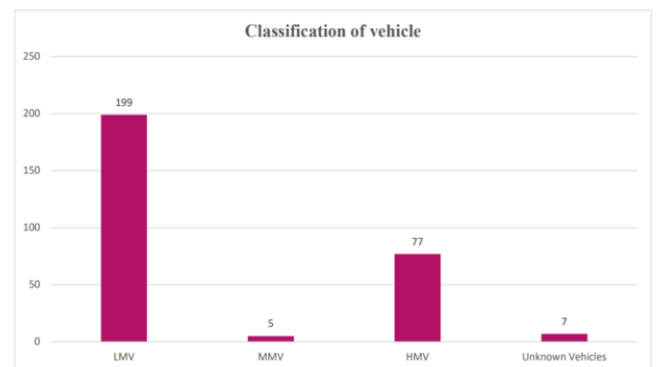
2017



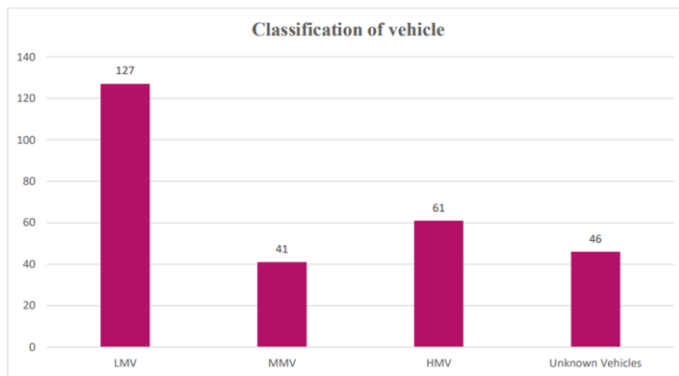
2021



2018

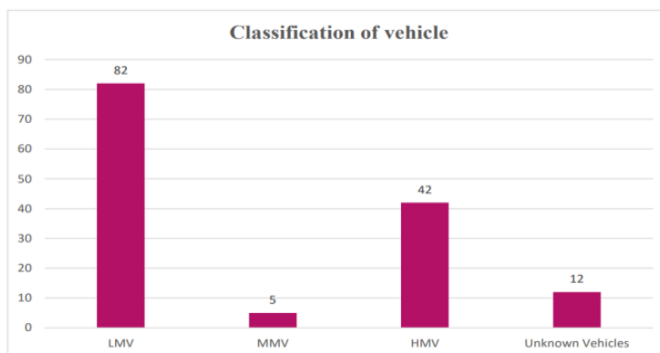


2022



2019

YEAR	LMV	MMV	HMV	Unknown Vehicle
2017	44	6	31	8
2018	66	2	43	2
2019	127	41	61	46
2020	82	5	42	12
2021	168	11	60	10
2022	199	5	77	7

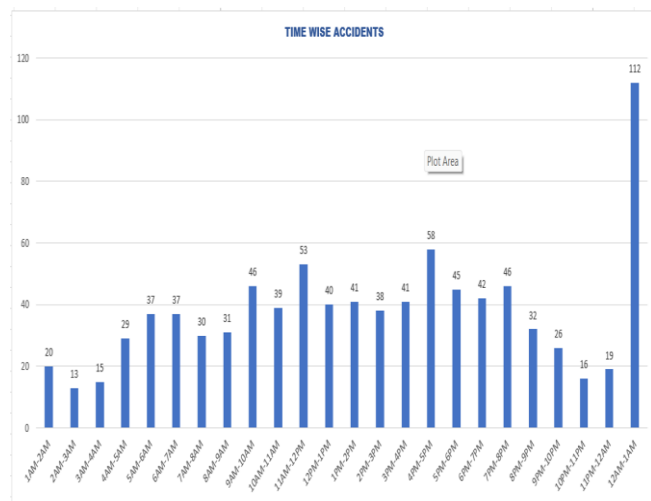


2020

TIME WISE DISTRIBUTION OF ACCIDENTS

The time of occurrence of accidents is categorized into hourly blocks indicating that the accidents are distributed throughout the day.

S.NO	TIME	TOTAL NO.OF ACCIDENTS
1	1AM-2AM	20
2	2AM-3AM	13
3	3AM-4AM	15
4	4AM-5AM	29
5	5AM-6AM	37
6	6AM-7AM	37
7	7AM-8AM	30
8	8AM-9AM	31
9	9AM-10AM	46
10	10AM-11AM	39
11	11AM-12PM	53
12	12PM-1PM	40
13	1PM-2PM	41
14	2PM-3PM	38
15	3PM-4PM	41
16	4PM-5PM	58
17	5PM-6PM	45
18	6PM-7PM	42
19	7PM-8PM	46
20	8PM-9PM	32
21	9PM-10PM	26
22	10PM-11PM	16
23	11PM-12AM	19
24	12AM-1AM	112



In this accident analysis clearly brings out that the number of accidents are more during the time of 11am - 12pm, 4pm -5pm and 12am - 1am i.e., the number of accidents are 53,58,112 respectively.

If we observe above graph there are more accidents between 12am - 1am there may be a reason depends upon human characteristics i.e., driver thinks that needs to reach the destination place as early as possible at that time there may be possible for occurring more accidents.

NATURE OF ACCIDENTS

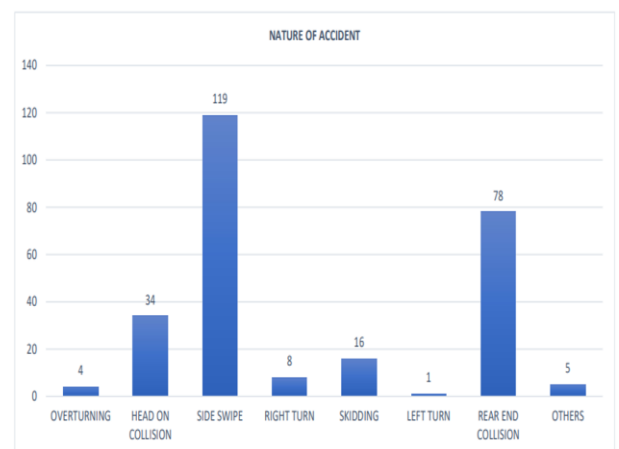
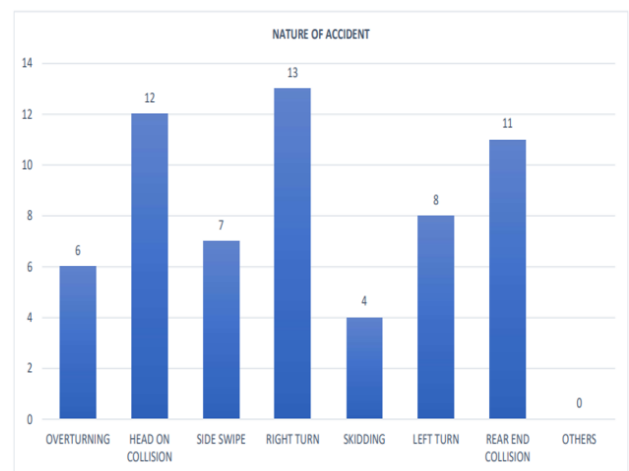
The head on accidents are more due to erroneous judgement of placing of vehicles and mis judgement of speeds between opposing and following vehicles.

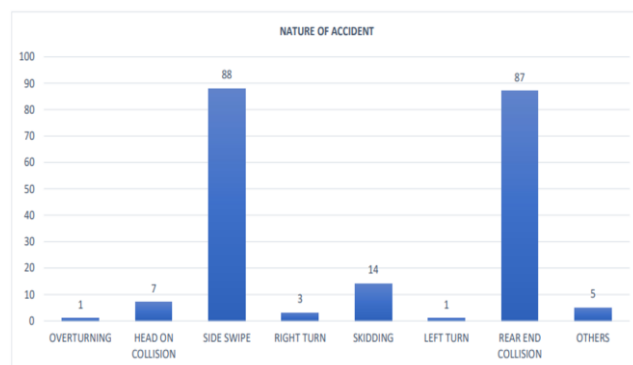
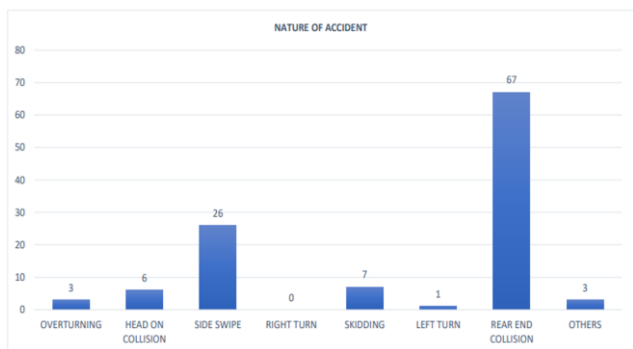
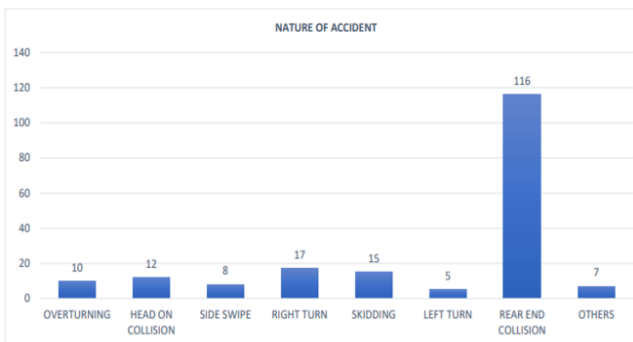
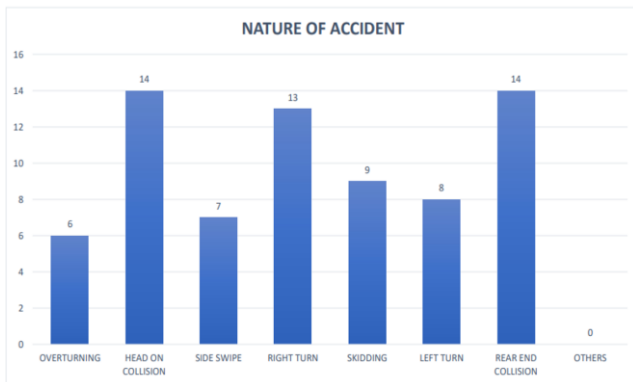
The loss of control, sideswipe and overturn exhibits either vehicular defects or insufficient road geometry or lack of information about road traffic/condition to take advances actions to prevent accidents.

The nature of accidents are head on, rear end, side swipe, right turn, left turn etc.,

The analysis clearly brings out the urgent need to improve road geometry and improve the advance precautions.

In the given below from 2017-2022 classified based on nature of accidents for each of year.





CAUSES OF ROAD ACCIDENTS

1. Road user : Excessive speed, rash driving, violation of traffic rules , sign, signals, carelessness, Alcohol, sleep etc.,

2. Vehicle: Failure of brakes, steering system, tire-burst, lighting system.
3. Road condition : Skidding road surface , pot holes etc.,
4. Road design: Inadequate sight distance, inadequate width of shoulders, improper curve design, improper traffic control devices and improper lighting.
5. Environmental factors: Mist, snow, smoke and heavy rainfall.
6. Other causes: Improper location of advertisement.

CONCLUSIONS

1. By the observation that the most of the accidents are non-fatal injury accidents in the study stretch.
2. We observed that road condition is the main reason for the accidents.
3. Finally, through the proposed road, accidents are occurring due to the over speed of vehicle, rash driving and drunken and drive cases.
4. In the study area stretch the mainly causing accidents due to lorry's and cars.
5. To overcome this, we have to bring awareness to the vehicle users and educate the people about

REFERENCES

1. Ministry of Road Transport Highway(MORTH)
2. June 2018 International journal of Civil Engineering and technology (IJCET) B.Naga kiran and Dr.N.Kumara swamy,(2018) Driver's opinion on Road safety for Indian National Highway 40.