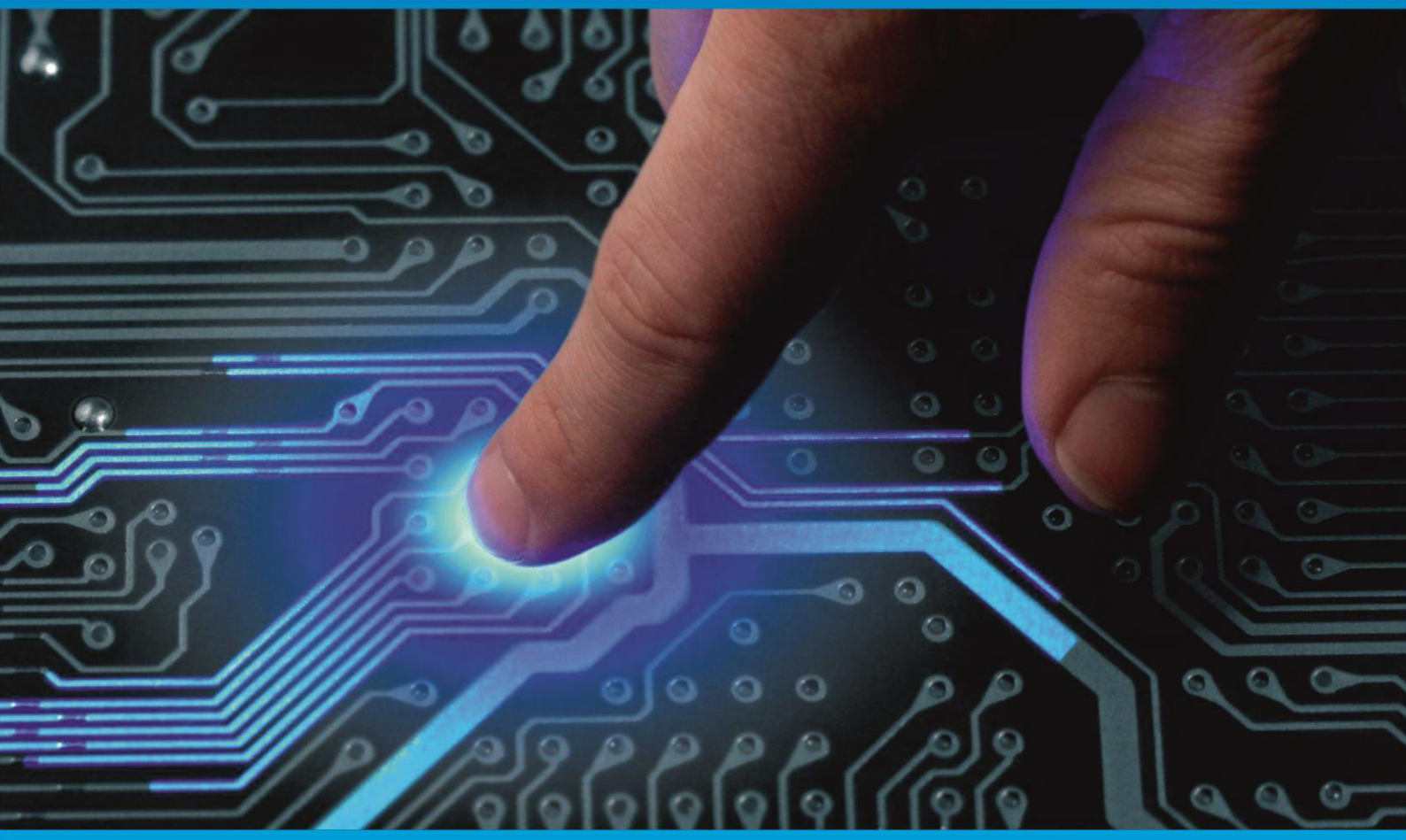
IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 5, May 2021

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.488

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 5, May 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0905050 |

A Study of Road Accident Data

Marlon Pimenta[1] , Siddharth Nanda[2]

U.G Student, School of Engineering, Ajeenkya DY Patil University, Pune, Maharashtra, India [1]

Faculty, School of Engineering, Ajeenkya DY Patil University, Pune, Maharashtra, India [2]

ABSTRACT: In our country maximum death occur due to road accidents and more than people killed in terrorism. It is one of the major loss to India caused by ahuman error. This help to cause tomajor family sufferingand income for dependents and pain for life time or temporary or partial. Government and NGO's grasp many activities, awareness program, and distribution of pamphlets, posters, brief filmand etc to come the accident rate and by implementing various road safety programs. In most of the metropolitan cities in India, the road use patterns are distinct from those of progressing countries. In Indian cities, roads are shared by non- automobiles in large numbers. The rapidsuburbia in India after independence rise within the faster development of 23 metropolitan cities as per the 2001 census. While the alarming increase in road accidents has become a serious concern within the country, which takes away quite 90,000 lives per annum , a big share of it's from the main cities.

KEYWORDS: Accident, lives, cities.

I. INTRODUCTION

The source for road accidents in India are use of mobile phones while driving, messaging, handling of mobiles or not attentive while driving or alcoholic or lack of sleep etc., are some of the basic causes that may lead to human misfortune in road accidents. It calls for immense cost which cannot be filled by money or any other, as cost may be permanent agony for person injured loss of earning for the family members and even death. The growing number of road accidents is imposing sizable social and financial burdens on the victims, and numerous direct and indirect costs. Road accidents are basically caused by improper contact between vehicles, between vehicles and other road users and/orroadway features. The situation that escorts to improper interactions could be the result of the aggregation interplay of a number of factors suchas walkway characteristics, geometric features, traffic characteristics, road users' behaviour, vehicle design, drivers' characteristics and eco-friendlyaspects.

II. LITERATURE SURVEY

1.ROAD ACCIDENT MODELS FOR LARGE METROPOLITAN CITIES OF INDIA

The data collected for selected metropolitan cities couldn't be fitted collectively to precise the accident model properly. Hence, different models were developed for various cities depending upon the info trends of every city. However, the fatalities model accuracy is suitable for all cities. The above models are wont to predict road accidents for the years 2007 and 2010. so as to attenuate accidents, major policy could also be evolved to scale back the expansion of personalized vehicles and simultaneously to encourage the utilization of conveyance vehicles. thanks to data limitations, other metropolitan cities couldn't be considered. Though a limited study has been reported thus far within the area of road accidents, it's desirable to seem into the causes and effects of road accidents to be administered not only at a macro-level but also at a micro-level.

2. TRAFFIC ACCIDENT CHARACTERISTICS OFKOLKATA

As this study shows head impact were common among automated two wheelers (22.6%) and none used helmet. the utilization of properly designed helmet should be made compulsory specially among the riders of motorized two-wheelers. This could be effective in reducing head injuries. Prompt and adequate ambulance service should be provided to the victims with the help of state and other voluntary agencies. Computerization and use of International Classification of Diseases code within the hospitals would help in preparation of an honest database for future studies and other uses

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 5, May 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0905050 |

3.Pattern, Severity and Circumstances of Injuries Sustained in Road Traffic Accidents: A Tertiary Care Hospital-Based Study

The results of this study enable a health care to predict fracture and site of injury. Strict enforcement of road safety regulations Several human and environmental risk factors like age, alcoholism, without driver's license, kind of vehicle, etc. were found associated in circumstance of road traffic injuries. If we control these factors appropriately, mortality and morbidity are often prevented and improving emergency medical services may prevent untimely deaths and disabilities caused by RTAs.

Awareness campaigns regarding safety rules targeted at the high-risk groups and by development of the roads. the actual fact that the economically productive age-group were mostly involved an urgent public policy response with special reference to education, engineering, environment, and emergency care of road accident victims.

4.Pattern of Road Traffic Injuries: A Study from Western Maharashtra

Several human and environmental risk factors like age, alcoholism, without driver's license, sort of vehicle, etc. were found associated in occurrence of road traffic injuries. If we control these factors appropriately, mortality and morbidity are often prevented.

5.Road Traffic Accidents in India: Issues and Challenges

The analysis shows that the dispersion of road unintentionally deaths and injuries in India varies consistent with age, gender, month and time. it's found that the economically active age bracket is that the most vulnerable population group. generally, males face higher fatality and accident risk than their female counterparts. Moreover, road mishap is relatively higher in May-June and December-January which shows that extraordinarily weather influences the occurrence of road accidents. Accidents are comparably constant and high during 9 AM to 9 PM and variable but low during mid-night and early hours of the day. There are several factors liable for mishap but drivers' fault is that the most vital factor; drivers' fault accounted for 78% of total accidents, 76.5% of total injuries and 73.7% of total fatalities in 2013.The study also analysed road accident scenario across Indian states and cities. it's found that in the year 2013, three states, Tamil Nadu (22.8), Haryana (17.2), and Andhra Pradesh (16.9), faced 50% higher fatality risk than all India average (11.2). it's also found that the burden of road traffic accidents in India is marginally lower in its metropolitan cities. However, there's an enormous variation in fatality risk across cities of India, starting from 3.0 fatalities per 100,000 people for Kolkata to 25.5 fatalities per 100,000 people for Jaipur.

6.TRAFFIC SAFETY AND HEALTHIN INDIAN CITIES

Buses and unpowered modes of transport will remain the spine of mobility in Indian cities. For the authority of road traffic bang and air pollution, the use of buses and unpowered transport has to be given importance.

7.ROAD ACCIDENTS IN INDIA

Road traffic fatalities have been increasing at about 8% annually for the last ten years and show no signs of decreasing. Two modelling exercises have attempted to predict the period of time once we might expect fatality rates to start out to say no during a range of countries9,15. Cropper and Kopits predicted that accident in India would reach a total of about 198,000 before starting to fall off in 2042 and Koornstra predicted an earlier date of 2030 for the peak traffic accident in India. If we assume that this rate of growth of 8% per annum declines during a linear manner to 0% by 2030, then we will expect about 260,000 fatalities by 2030. Neither of those projected dates (2042 and 2030) are often accepted as road safety goals for the country. An earlier report cowriter by the present author has a more detailed analysis of the road traffic situation in India and possible countermeasures4. In summary, road safety policies in India must specialise in the subsequent is-sues to scale back the incidence of road traffic injuries: pedestrians and other non-motorist in urban areas; pedestrians, other non-motorists, and slow vehicles on highways; motorcycles and small cars in urban areas; overinvolvement of trucks and buses; night-time driving; and wrong-way drivers on divided highways. There is an urgent got to revamp police data collecting procedures in order that necessary information is out there for scientific analysis. India specific countermeasures are going to be possible through continuous monitoring and research, which can require the establishment of road safety research centres in academic institutions and a National Road Safety Board that would help move toward a safer future as outlined above.

8. National statistics of road traffic accidents in India

A bibliometric investigation was done to record injury literature published in low- and middle-income countries, and also to quantify literature on road traffic injuries by countries before and after the World Health Day on Road protection celebrated in April 2004. On neoplasm there were 280 articles published per million population, whereas, for road traffic injuries, the rate was four-fold articles per million population. India, the second-most populous country in

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 5, May 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0905050 |

the world, contributed only 0.7% articles on road traffic injuries and had less than one article on road traffic injuries per 1,000 road traffic-related deaths. The percentage of change in articles on road traffic injuries for the period 2004-2007 in comparison to period 2001-2004 was +118for India.

9.ROAD SAFETY AND ACCIDENT PREVENTION IN INDIA
Dentificationof black spots/accidents prone spots.Emergency vehicles in highways and in cities or towns Round the clock accident relief team at all district headquarters. Blood donors list and blood bank facility at major towns.Road traffic rules implementation.Educating public on traffic rules regulationsFacilities at road side for maintaining clean India.Regional transport office as per traffic density.4E's Education (ii) Enforcement (iii) Engineering (roads as well as vehicles) and (iv) emergencyImplementing of road safety rules at all levels.Road safety is takenas major criteria in the planning and design of roads.Road Safety Audits on all HighwaysSpecial training for drivers driving on very/heavy vehicles/special vehicles/long body vehiclesTraining to public by e-media on road safety awarenessthe safety standards of the vehicles like power-steering, ABS, beep sound if safety Increasing belt were not using etc

10. Forecasting of Road Accident in Kerala: A Case Study
A bibliometric analysis was done to document injury literature published in low- and middle-income countries, and also to quantify literature on road traffic injuries by countries before and after the World Health Day on Road Safety celebrated in April 2004. On neoplasm there were 280 articles published per million population, whereas, for road traffic injuries, the rate was four-fold articles per million population. India, the second-most populous country in the world, contributed only 0.7% articles on road traffic injuries and had less than one article on road traffic injuries per 1,000 road traffic-related deaths. The percentage of change in articles on road traffic injuries for the period 2004-2007 in comparison to period 2001-2004 was +118for India.

III. PROPOSED ANALYSIS APPROACH

We are using the Simplified Formula for Proportions [5] to find the appropriate sample size for our study. For this, we have assumed Proportion (p) = 0.5 because 0.5 indicates maximum variability in a population and a confidence of 95%.

$$n = \frac{N}{1 + N(e)^2}$$

Where n - sample size
N – Population size
e – precision level

$$n = \frac{N}{1 + N(e)^2} = \frac{640}{1 + 640(.05)^2} = 246$$

So, our sample size is 246

Estimating Population Parameter
In Statistics, we use sample statistics to estimate population parameters. The sample mean will be used to estimate the population parameter

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$$

$$\bar{x} = 944.24$$

Estimating population variance
Sample variance is used to estimate population variance.

$$S^2 = \frac{\sum_{i=1}^{n} [\![(x]\!]_i - \bar{x})}{n - 1}$$

$$S^2 = 3949.18$$

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 5, May 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0905050 |

Sample variance is 3949.18

Calculating Standard Deviation

$$Standard\ Deviation(SD) = \sqrt{Variance}\ (S^2)$$

$$SD = \sqrt{3949.18}$$

$$SD = 62.84$$

Therefore, the standard deviation is 62.84

Computing Standard Error

Standard error represents the variation in the sample means of a sampling distribution [9]. The standard error is the expected value of the standard deviation of means of several samples.

$$SE = \frac{SD}{\sqrt{n}}$$

$$SE = \frac{62.84}{\sqrt{246}}$$

$$SE = 4.05$$

Confidence Level

Confidence interval is the percentage of all possible samples expected to include the true population parameter. For our study, we would select a Confidence level of 95%. A confidence level of 95% means the confidence interval would include the true population parameter.

Finding the Critical Value

The critical value is a factor used to compute the margin of error. To compute the critical value, first, we have to calculate α

$$\alpha = 1 - \left(\text{confidence}\,\frac{\text{level}}{100}\right)$$

$$\alpha = 1 - \left(\frac{95}{100}\right)$$

$$\alpha = 0.05$$

Critical Probability(p*)

$$p* = 1 - \alpha/2$$

$$p* = 1 - 0.05/2$$

$$p* = 0.975$$

For finding the critical value, there are two tests, T-test and Z-test. We use T-test when Sample is smaller than 15 and the population variance is unknown. Z-test is used when population size is big or greater than 15, and population variance is known.

As the sample size is 24, which is significantly big, we will use Z-test. Using the Standard Normal Distribution table to find the critical value of the z-score, we got

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 5, May 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0905050 |

$$\text{Critical value} = 1.96$$

Margin of Error

The margin of error gives the amount of random sampling error in the result.

Margin of error = 7.938

$$ME = Critical\ Value \times Standard\ Error$$
$$ME = 1.96 \times 4.05$$
$$ME = 7.938$$

The margin of error of our sample is 7.93

Confidence Interval

An approximate range of values that is likely to include an unknown population parameter is given by confidence interval, which is calculated from sample data

The lower limit of the Confidence interval

$$Cl_{min} = \bar{x} - ME$$

$$Cl_{min} = 944.24 - 7.93$$

$$Cl_{min} = 936.31$$

Upper Limit of the Confidence interval

$$Cl_{max} = \bar{x} + ME$$

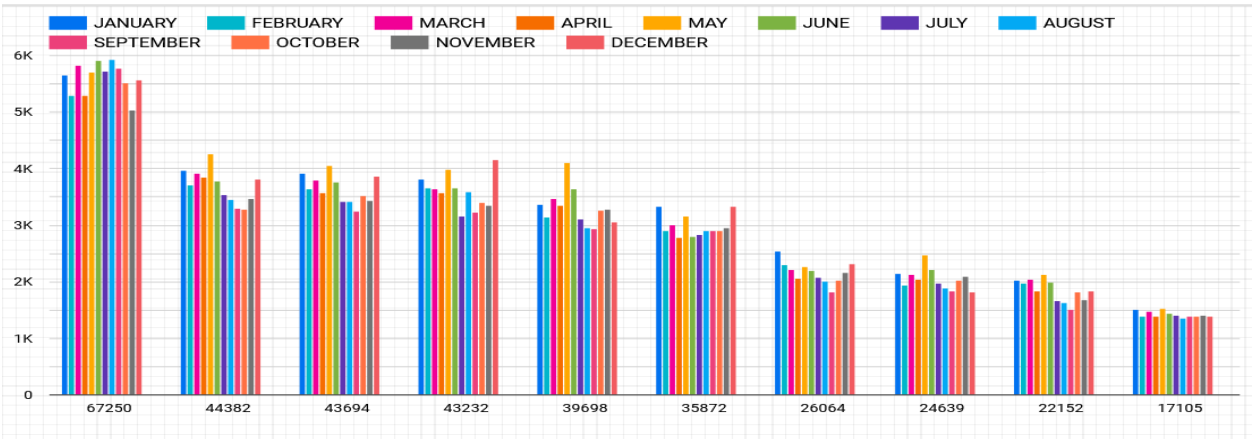
$$Cl_{max} = 944.24 + 7.93$$

$$Cl_{max} = 952.17$$

Confidence interval – 936.31 to 952.17

CONCEPT DEPLOYMENT

Scorecards

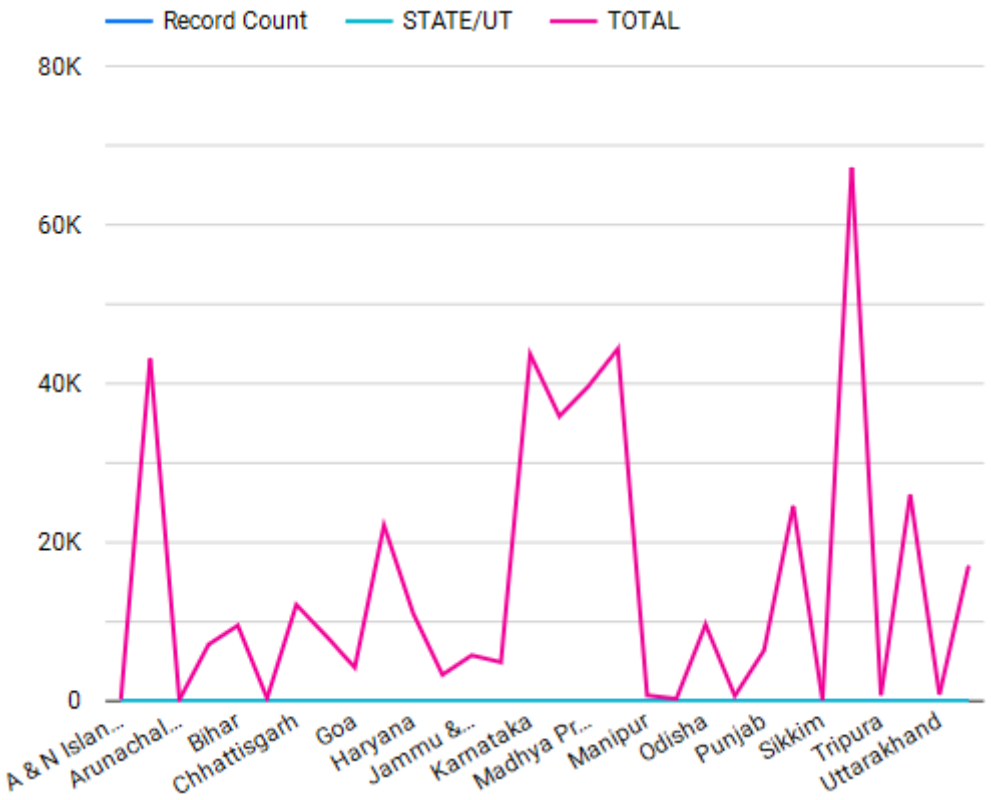


| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 5, May 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0905050 |

Column Charts



Line Chart

	STATE/UT	STATE/UT	TOTAL	JAN...	FEBR...	MA...	APR...	MAY	JU...	JULY	A...	SE...	O...	N...	D...
1	A & N Islands	1	218	25	13	19	19	18	15	15	16	15	23	18	22
2	Andhra Pradesh	1	43,232	3,809	3,657	3,641	3,582	3,986	3,6...	3,167	3,5...	3,225	3,4...	3,3...	4,1...
3	Arunachal Pradesh	1	185	28	10	10	21	9	12	13	14	14	15	22	17
4	Assam	1	7,144	658	615	689	612	566	531	573	528	460	670	638	604
5	Bihar	1	9,531	777	742	852	714	985	1,0...	757	662	685	720	829	806
6	Chandigarh	1	366	35	22	31	40	32	25	22	32	38	31	28	30
7	Chhattisgarh	1	12,140	1,167	1,110	1,000	1,020	1,149	1,0...	934	877	910	1,0...	973	944
8	Delhi Ut	1	8,310	643	698	801	632	661	658	624	744	742	687	720	700
9	Goa	1	4,230	433	359	349	349	367	354	322	324	285	312	354	422
1	Gujarat	1	22,152	2,023	1,978	2,039	1,846	2,127	1,9...	1,673	1,6...	1,506	1,8...	1,6...	1,8...
1	Haryana	1	11,043	892	881	963	911	939	906	955	916	871	891	962	956
1	Himachal Pradesh	1	3,325	246	191	260	234	289	295	292	329	272	302	313	302
1	Jammu & Kashmir	1	5,778	414	415	424	433	506	594	563	515	415	544	517	438
1	Jharkhand	1	4,905	399	434	418	425	454	414	391	384	341	419	373	453

1 - 30 / 30

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 5, May 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0905050 |

IV. FUTURE SCOPE& DISCUSSION

For this study, the data is taken from 2014 report of India. Every year India gathers information of the accident in India. After ever year India tries to improve the road condition and try to make the road safer for the conduct of vehicles. Random Sampling as there were no clear subgroups in data to work with Stratified Random Sampling. Based on what criteria is used to segment the population into various subsets, Stratified Random Sampling may provide a more precise representation.

V. CONCLUSION

The analysis shows that the distribution of road accidental deaths and injuries in India varies according to age, gender, month and time. It is found that the economically active age group is the most vulnerable population group. In general, males face higher fatality and accident risk than their female counterparts. Moreover, road accidents are relatively higher in May-June and December-January which shows that extreme weather influences the occurrence of road accidents. Despite the growing burden of road traffic fatalities and injuries, road safety has received insufficient attention at the central, state, and local government levels. The main reason for this is that the problem of road traffic accidents does not belong to any specific agency, either at central or state or local government levels. The responsibility of dealing with the various aspects of problems including road worthiness test for vehicles, the design of road networks and roads, urban planning, the introduction and enforcement of road safety legislations, and post-crash medical care is divided among many different agencies, sectors, and groups. There has usually been no leader to ensure that they coordinate their efforts and address the problem holistically. This situation needs to change so that responsibility is clearly assigned, specific roles are allocated to specific agencies, and duplication is avoided.

REFERENCES

1) Baviskar, S.B., 1999. Road accidents in Nashik Municipal Corporation Area:A Case Study, Indian Journal of Transport Management, vol. 23(9),pp. 543-555.
2) Chakraborty N., A. Shukla and H.C. Sing, 2001. Aggression and risk taking behaviour a threat to road safety, Proc. International Seminar on Sustainable Development in Road Transport, vol. II, pp. 159-174(New Delhi, Indian Road Congress).
3) Chand M., 1999. An analytical study of bus-related accidents in India, Indian Highways, vol. 27, No. 9, pp. 9-20.
4) Jacobs, G.D. and P. Hutchinson, 1973. A study of accident rates in developing countries, TRRL Report LR546, Transport and Road Research Laboratory, U.K.
5) Traffic & Transportation Policies and Strategies in Urban Areas in India, final report, Ministry of Urban Development (MOUD), Government of India, New Delhi, May 2008.
6) Peden M, Scurfield. R, Sleet. D, Mohan. D, Hyder. AA,Jarawan. E (Eds.). World report on road traffic injury prevention. Geneva: World Health Organization, 2004
7) World Health Organization, Road traffic accidents in developing countries. Technical Report Series No. 73. Geneva, WHO, 1984
8) Accidental deaths and suicides in India -2010. National Crime Records Bureau. Ministry of Home Affairs, Government of India,2010
9) Report on Road Accidents in India 2010: Government of India, Ministry of road transport and highways TransportResearch wing New Delhi, 2010
10) Indian Roads Congress, Highway Safety Code, IRC: SP:44-1996.
11) “Road accidents in India 2014” by Govt of India, Ministry of Road Transport & highway Transport research wing.New Delhi.

INNO SPACE
SJIF Scientific Journal Impact Factor

Impact Factor:
7.488

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

निस्केयर
NISCAIR

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

9940 572 462 6381 907 438 ijircce@gmail.com

www.ijircce.com

Scan to save the contact details