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AN ANALYTICAL STUDY ON ROAD SAFETY AWARENESS AND ACCIDENT DATA ANALYSIS IN BHOPAL AND JABALPUR

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Abstract - Road safety is a pressing concern, particularly in rapidly urbanizing cities like Bhopal and Jabalpur. This study undertakes an analytical approach to assess road safety awareness and examine accident data in these cities. By analyzing accident statistics, traffic patterns, and public knowledge of road safety regulations, the research identifies key factors contributing to road accidents, including human behavior, infrastructure challenges, and enforcement gaps.

The study highlights the correlation between low awareness levels and high accident rates, underscoring the need for comprehensive educational campaigns and stricter law enforcement. It also suggests infrastructure improvements, such as better signage and pedestrian facilities, to mitigate risks. The findings aim to guide policymakers and stakeholders in implementing effective strategies to enhance road safety and reduce accident-related fatalities and injuries in Bhopal and Jabalpur.

1 INTRODUCTION

Accidents are defined as "a worsening global disaster destroying lives and livelihoods, preventing growth, and making billions more susceptible," according to the International Federation of Red Cross and Red Crescent Societies. The current population, industrialization, and urbanization trends in this developing world are putting a lot of stress on the transportation network as a whole and the road structure in particular. Few of the unintended consequences of this growth in traffic, such as noise and congestion, are visible to the individual civilian. Road accidents are a significant cause of death, especially in developing nations, where they are typically a leading cause. On Indian roads, it is anticipated that an accident that results in injury occurs on average every four minutes.

With complete mortality and fatality records rapidly rising in the majority of emerging nations and death rates significantly higher than those in developed nations, this reveals a serious and emerging problem. Around 85% of all street traffic-related passings on the planet result in non-industrial nations. In contrast to developed nations, the growth in the number of automobiles, inadequate public health infrastructure, inadequate access to health care, and other factors are the primary contributors to the high rate of road traffic-related fatalities and injuries in developing nations. Traffic accidents and damages cost these nations anywhere from $65 billion to $100 billion annually, even without taking into account the problem's humanitarian aspect. These expenses include both the burden on families to care for their injured relatives and the loss of income. A couple of studies have uncovered that thruway casualty rates per 1000 vehicles are ordinarily higher in unfortunate nations when contrasted and related more industrialized countries.

2 OBJECTIVES OF THE RESEARCH

1. To concentrate out and about mishaps in Indian situation and to survey the purposes behind them.
2. To compare fatal accident data from Jabalpur and Bhopal.
3. To compare fatal accident data in Bhopal and Jabalpur based on age, time, vehicle, and road wise.
4. To concentrate on street security mindfulness among individuals in Bhopal to break down in view of segment factors.
5. To determine where accidents frequently occur in Bhopal and to look into the underlying causes.

3 MODEL 1: COMPARISON OF FATAL ACCIDENT DATA'S

Model 1 compares the major cities of Jabalpur and Bhopal, including the fatal accident categories.

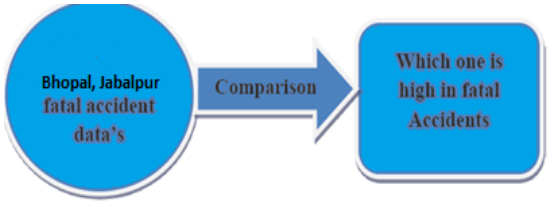

Figure 3.1 Comparison of Road Accident

4 DATA ANALYSIS

4.1 Introduction

The analysis's most crucial component is data exploration and interpretation. This refers to interpreting the data that has been tabulated. It involves combining a number of simple parts that break down complicated factors into new arrangements that are necessary for interpretation.

This performs the following tasks

- To creation of raw data meaningful
- To checking the hypothesis
- Attaining significant results

Any examination is presented to measurable investigation. The Traffic Investigation Wing, Bhopal, and Jabalpur city provide the accident data. Casualty Mishap information were gathered month wise for each year from each police headquarters records for the period 2011-2014.

4.2 Limitations of the Study

1. The current study only looked at a small number of aspects of road characteristics.
2. This study is confined to Bhopal and Madurai.
3. Age, vehicle, time, and the road are all factors taken into account in this study and used in accident analysis
4. The current review covered just street security mindfulness among individuals in Bhopal city as it were
5. The street security mindfulness broke down limited to segment factors as it were

4.3 Comparison of Fatal Accidents In Jabalpur And Bhopal

Table 4.1 Fatal Accidents in Bhopal and Jabalpur (2011-14)

YEAR	JABALPUR	BHOPAL
2011	301	483
2012	320	501
2013	350	524
2014	260	530
TOTAL	1231	2038

Null hypothesis There is no distinction among Jabalpur and Bhopal city in normal number of lethal mishaps for the review time frame 2011-2014.

Alternate Hypotheis During the study period of 2011-2014, the average number of fatal accidents in Jabalpur and Bhopal differed.

Table 4.2 Descriptive for Fatal Accidents in Bhopal and Madurai

City	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
JABALPUR	20	61.5500	32.49044	7.26508	46.3440	76.7560	17.00	140.00
BHOPAL	20	101.9000	55.50334	12.41092	75.9236	127.8764	20.00	224.00
Total	40	81.7250	49.32102	7.79834	65.9514	97.4986	17.00	224.00

Table 4.3 ANOVA for Fatal Accident

Type of Group	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	16281.225	1	16281.225	7.872	.008
Within Groups	78588.750	38	2068.125		
Total	94869.975	39			

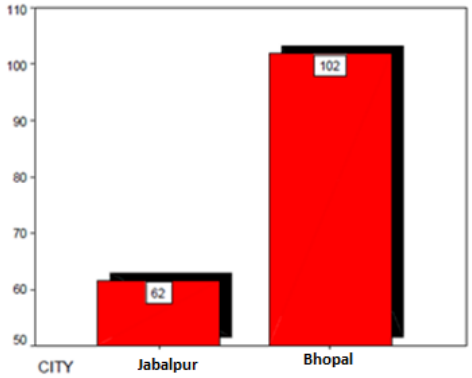

Figure 4.1 Mean Plots

Interpretation: From the Important Esteem (0.008) is under 0.05, Invalid theory is dismissed. From the table 4.2 and figure 4.1, it is perceived that Bhopal has more lethal mishaps than Madurai. 102 mishaps on a normal occur in each age bunch in every year.

Table 4.17 Descriptive for Vehicle wise Accident Analysis

Vehicle Type	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
GBus	8	43.875	8.79021	3.10781	36.5262	51.2238	36	59
PBus	8	21.75	7.94175	2.80783	15.1105	28.3895	7	29
Trucl/Lorry	8	65.75	27.21213	9.62094	43.0001	88.4999	37	95
Car/jeep	8	84.125	37.20767	13.1549	53.0186	115.2314	37	123
Two wheeler	8	121.75	33.47387	11.8348	93.7651	149.7349	78	158
Three wheeler	8	21.75	10.64693	3.76426	12.8489	30.6511	13	42
Others	8	49.5	21.9089	7.74597	31.1837	67.8163	24	72
Total	56	58.3571	40.33921	5.39055	47.5542	69.1601	7	158

Table 4.18 ANOVA Test for Vehicle Wise Accident

Type of Groups	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	61645.107	6	10274.185	18.074	.000
Within Groups	27853.750	49	568.444		
Total	89498.857	55			

Table 4.19 Multiple Comparisons of Vehicle Wise Fatal Accident (Scheffe t Test)
Dependent Variable: No. of Accidents Vehicle Wise

Vehicle Type	Mean Difference (I-J)						
	GBus	PBus	Trucl/Lorry	Car/jeep	Two wheeler	Three wheeler	Others
GBus		22	(22)	(40)	-77.8750(*)	22	(6)
PBus	(22)		(44)	-62.3750(*)	-100.0000(*)	-	(28)
Trucl/Lorry	22	44		(18)	-56.0000(*)	44	16
Car/jeep	40	62.3750(*)	18		(38)	62.3750(*)	35
Two wheeler	77.8750(*)	100.0000(*)	56.0000(*)	38		100.0000(*)	72.2500(*)
Three wheeler	(22)	-	(44)	-62.3750(*)	-100.0000(*)		(28)
Others	6	28	(16)	(35)	-72.2500(*)	28	

* The mean difference is significant at the .05 level.

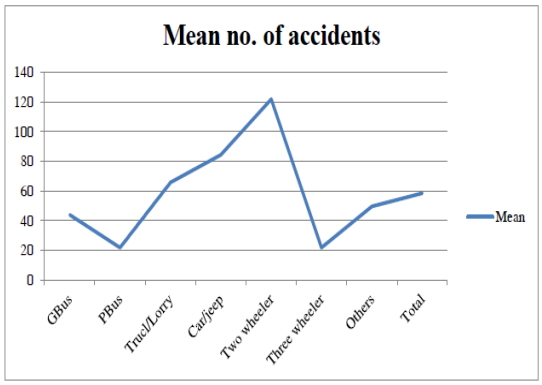

Figure 4.9 Overall Plot

Interpretation

From the Huge. esteem (0.000) is under 0.05, Invalid speculation is dismissed. From the table 4.17 and figure 4.9, it is perceived that Bike have a greater number of mishaps than different vehicles. This might be by different reasons. Bikes have higher lethal mishaps than vehicle/jeep, government and private's transports. Close to that three wheelers are likewise more than vehicle and jeep according to Scheffe t test.

4.3.5 Findings of the test are Listed Below

i. Age savvy lethal mishaps was more in Bhopal when contrasted and Jabalpur for the review time of 2011 to 2014.
ii. Time savvy lethal mishaps is made more in Bhopal city thought about too Jabalpur for the review time of 2011 to 2014
iii. Road savvy lethal mishaps are more in Bhopal city when contrasted and Jabalpur for the review time frame 2011 to 2014
iv. Vehicle savvy lethal mishaps are made solely bikes more in Bhopal city contrast with Jabalpur for the review time frame 2011 to 2014

It is obvious from this examination that the lethal mishaps is made high in Bhopal contrast with Madurai

4.3.6 Remedial Measures for Suggestion

- In the four street intersection the speed brake should be given in the branch street to meet the N.H.
- Satisfactory street signals and sign sheets should be kept at intersection of NH to Administration street.
- Severe requirement by both the police and transport division should be made.
- Severe authorize discipline against the mix-up made drivers ought to be given.
- Lighting office should be given.

4.4 Summary

This part has portrays the main period of the examination which includes investigation and translation of deadly mishaps information in Bhopal and Madurai. One way ANOVA examination is finished to examinations the mindfulness score for the different factors like age, orientation, instructive capability, occupation and area, and it plainly made sense of what are the main drivers for mishaps in Bhopal and what are the medicinal measures for the inclined zones in Bhopal.

5 FINDINGS

This examination has been isolated in to three sections. Initial segment is the correlation and examination of deadly mishap information's in Bhopal and Madurai. The mishap information's gathered from traffic examination wing situated in Bhopal and Jabalpur for the period 2011 to 2014 and co-organizing information's parts, the variables utilized in the information Examination are

1. Age wise
2. Time wise
3. Vehicle wise
4. Road wise.

6 CONCLUSION

The current exploration manage correlation of mishap insights about fatalities happened Bhopal and Jabalpur (from 2011 to 2014) are gathered and ordered by age, time, street, and vehicle wise. The examination taken for Bhopal and Jabalpur shows that Bhopal has more fatalities when contrasted with Jabalpur in view of the relative multitude of four classes. With this respect, a survey is ready to find the solutions in regards to street security mindfulness from the Bhopal public. Answers are gathered from 534 individuals in view of the age, orientation, training, economic wellbeing and spot wise broke down has been finished. The investigation shows that

under half of individuals don't know about street wellbeing. Subsequently plainly extra street wellbeing mindfulness among public is required. The flow research obviously presents the manners by which street security mindfulness must be gotten to the next level. Also, the high event of street mishap region in Bhopal is distinguished and the purposes behind street mishaps and how to keep away from street mishaps in such places are plainly introduced.

- Most extreme significant technique to cut down mishaps is severe use of speed limits.90 % of mishaps can be dodged by severe authorization of speed limits.
- Weighty punishment ought to be authorized on every one of the individuals who cross speed limits. Assuming this is completely utilized, no one will set out to go at fast.
- Traffic rules ought to be kept and it is essential to show reasonable signs/flags particularly while moving paths or before a turn.
- Medications and liquor ought to evaded while drive.
- Mindfulness program ought to be coordinated through the office worried in every one of the towns.
- Reflecting passerby crossing ought to be put in the whole intersection.
- Flex board ought to be set in successive mishap happening places by showing the photos.
- Intelligent wariness board ought to be set in specific appropriate spots.
- Bike clients ought to wear Cap.
- Secondary lounge riders additionally ought to wear Protective cap.

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