Research Paper
Impact Factor: 3.029
Peer Reviewed & Indexed Journal

IJMSRR
E- ISSN - 2349-6746
ISSN -2349-6738

PERCEPTION OF DRIVERS ON ROAD ACCIDENTS: AN INVETIGATIVE STUDY

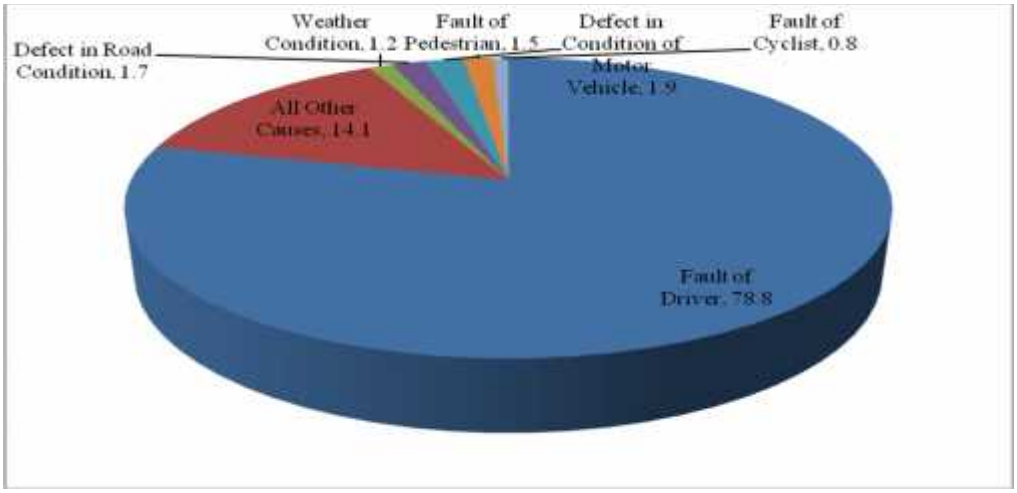
T. Srinivas * Dr. V. Tulasi Das B. Sreedhar Reddy*****
**Ph. D Research Scholar, Dept. of HRM, Acharya Nagarjuna University, Guntur.*
***Coordinator, Dept. of HRM, Acharya Nagarjuna University, Guntur, A.P.*
****Ph.D. Scholar, Dept. of HRM, Acharya Nagarjuna University, Guntur, A.P.*

Abstract
Roads are now the biggest killer of young people over the age of 10, with road traffic deaths constituting a global health epidemic that has reached crisis proportions. The Safe and Sustainable Roads report, launched by the Campaign for Global Road Safety, says road safety is one of the world's greatest development challenges and predicts the number of people killed in traffic accidents will rise from 1.3 million to 2 million a year if no urgent action is taken. Currently, 3,500 people die every day in traffic-related incidents and 50 million are injured every year on the world's roads. According to Ministry of Road Transport and Highways, about 33% of total numbers of accidents occur on National Highways and over 78.8% of total are due to drivers fault. Moreover, these accidents are a great burden to nations' economy. In India the accident problem is a combination of various factors, viz., Prevailing lack of adequate safety management strategies, improper placement of traffic control devices, roadside hazards, ribbon development along the highway network, low level of safety awareness and education, meager inclination towards attitudinal changes by the road users. The present study is aimed at examining and gathering the impact / after effects of introduction of the Pilot Project on Road Safety with the coordinated efforts of National Highways Authority of India, General Insurance Council of India, GMR, STPL & HMRI on the stretch of National Highway No.65 between Hyderabad to Vijayawada running in the States of Andhra Pradesh and Telangana, which was witnessing more number of accidents particularly of fatal nature.

Key Words: Road Accident, Fatalities, Safety Management Strategies, Awareness.

Introduction

India is experiencing one of the highest motorization growth rates in the world accompanied by rapid expansion in road network and urbanization over the years. Generally speaking, this phenomenon has significantly contributed in raising the road accident rate resulting into injuries, fatalities, disabilities and hospitalization. All of these, in turn cause severe socio-economic costs to the country. A number of road safety initiatives have been taken by the Government of India, State Governments and other stake-holders during the calendar year 2014. Though the total number of road accidents increased marginally (by 0.6%) from 4, 86,476 in 2013 to 4, 89,400 in 2014. The total number of persons killed also increased by about 1.5 per cent from 1, 37,572 in 2013 to 1, 39, 671 in 2014. However road accident injuries have marginally reduced (by 0.5%) from 4, 94,893 in 2013 to 4, 93,474 in 2014 an analysis of road accident data of 2014 revealed that 0.5% on an average about 56 accidents take place and 16 lives are lost every hour in India. A very high percentage of road accident victims are in the age group of 15 to 35 years. This group of people account for 53.8 per cent of all persons killed in road accidents during 2014.



Causes of Road Accidents: 2014

Factors Influencing Road Accidents

Defect in Condition of Motor Vehicle - Over the past decades motor vehicles became the primary mode of transportation in developing countries. At the same time an improvement in automotive engineering and manufacturing as well as the phenomena of urbanization have resulted in more vehicles spending more time on the road at higher speeds. Invariably this leads to driving scenarios where safety critical man oeuvres have to be performed that rely on the mechanical condition of the vehicles. In developing countries, where economic realities force the population to make use of older and less reliable vehicles, the risk of accidents caused by some sort of mechanical failure increases.

Fault of Cyclist - A tiny proportion of accidents involving cyclists are caused by riders jumping red lights or stop signs, or failing to wear high-visibility clothing and use lights. The risky behaviour by riders, such as listening to music players while cycling, could be behind a near 20% rise in cyclist deaths and serious injuries.

Fault of Pedestrian - The majority of micro models of vehicle–pedestrian conflict describe pedestrian decision making in respect to the potential danger of a vehicle-related accident. Typically, logit models of a pedestrian's choice between two alternatives—to cross the road or to wait until the car passes—are constructed, in which the probability of crossing is related to the approaching vehicle time gap, age of the pedestrian, the number of pedestrians crossing in a group, and so on. Models of this kind provide very likely predictions of pedestrians' decisions (Schroeder & Rouphail, 2011). Extensions of this approach include motorists' yielding behavior (Papadimitriou et al., 2009; Sun et al., 2003) and pedestrians' jaywalking outside of crossing facilities (Wang et al., 2010).

Weather Condition

Road Weather Variables	**Roadway Impacts**	**Traffic Flow Impacts**	**Operational Impacts**
Air temperature and humidity	N/A	N/A	Road treatment strategy (e.g., snow and ice control) Construction planning (e.g., paving and striping).
Wind speed	Visibility distance (due to blowing dust) Lane obstruction	Traffic speed Travel time delay Accident risk	Vehicle performance (e.g., stability) Access control (e.g., restrict vehicle type, close road) Evacuation decision support
Precipitation (type, rate, start/end times)	Visibility distance Pavement friction Lane obstruction	Roadway capacity Traffic speed Travel time delay Accident risk	Vehicle performance (e.g., traction) Driver capabilities/behavior Road treatment strategy Traffic signal timing Speed limit control Evacuation decision support Institutional coordination
Fog	Visibility distance	Traffic speed Speed variance Travel time delay Accident risk	Driver capabilities/behavior Road treatment strategy Access control Speed limit control
Pavement temperature	Infrastructure damage	N/A	Road treatment strategy
Pavement condition	Pavement friction Infrastructure damage	Roadway capacity Traffic speed Travel time delay Accident risk	Vehicle performance Driver capabilities/behavior (e.g., route choice) Road treatment strategy Traffic signal timing Speed limit control
Water level	Lane submersion	Traffic speed Travel time delay Accident risk	Access control Evacuation decision support Institutional coordination

Common Road Conditions that contribute to accidents -

- Confusing, damaged or missing signs
- Roads not salted or plowed in winter weather
- Blind curves and poorly banked roads
- Lack of traffic signals or poorly placed signals
- Improperly graded curves and uneven shoulders
- Poor landscaping and vision obstructions
- Overly bright lights or lack of nighttime lighting
- Lack of appropriate road markings
- Inappropriate road materials
- Low bridges or incorrect overhead bridge markings
- Broken guardrails

Fault of Driver in Road Accidents - Ninety percent of our road accidents are related to bad driving behaviour — driving recklessly and speeding under the influence of alcohol, changing lanes without signaling, driving on the hard shoulder and passing through red lights. I can count 55 behaviours that control driving. If we can influence these, we can modify driver's behaviour.

Review of Literature

T.Sivakumar and R.Krishnaraj (2012), Paper entitled, "Road Traffic accidents (RTAS) Due to Drunken Driving in India Challenges in Prevention" published in *International Journal of Research in Management & Technology (IJRMT)*, analysed Strict enforcement supplemented with education is one of the most powerful tools to tackle the problem and need to be seriously considered. Current enforcement mechanism could be reinforced by strict laws, availability of trained police and dedicated teams, the use of breath analyzer in a scientific manner ,the introduction of random checks increase in current penalty levels: and the strict enforcement of laws in a visible, uniform and regular manner.

Gennady Waizman, Shraga Shoval and Itzhak Benenson (2015), Paper entitled "Micro-Simulation Model for Assessing the Risk of Vehicle–Pedestrian Road Accidents" published in *Journal of Intelligent Transportation Systems*, analysed SAFEPED can serve as a sophisticated tool for assessing modifications to existing and hypothetical black spots, identifying those safety countermeasures that will provide maximum road safety benefits. The model does not propose safety measures, but estimates the results of their implementation. For example, our model can help in testing the usefulness of the safety measures and in establishing priorities in their implementation.

M. Driss, K. Benabdeli, T. Saint-Gerand & M.A. Hamadouche (2014), Paper entitled "Traffic safety prediction model for identifying spatial degrees of exposure to the risk of road accidents based on fuzzy logic approach" published in *Geocarto International* analysed research currently under way for the integration of GIS and Multi- Criteria Analysis Methods for the identification of hazardous road segments is thus another way to develop a special GIS in real tools for spatial decision support according to the preferences of decision makers. Consequently, we will integrate multi-criteria analysis which contains both the spatial data and the parameters of the Multi-Criteria algorithm.

Francisco J. Bahamonde-Birke, Uwe Kunert & Heike Link (2015), All analysed methods (considering both the damage-cost approach and the WTP approach) have shortcomings that must be considered in the interpretation of the results. The human-capital approach does not reflect the value ascribed by the society to a human life. The reproduction-and-resources-costs method (and practically all damage-cost approaches) suffers from a similar problem as it also does not consider the individual preferences. Hedonic pricing suffers from a lack of adaptability and representativeness, while the contingent valuation tends to lead to bias due to the simplified nature of the underlying survey technique. Finally the SC methods are criticized for possible misinterpretations of questions by the respondents, as the surveys are an essential part of this methodology.

Objectives of the Study

- To examine the extent of awareness in drivers regarding causes of Road Accidents.
- To correlate the demographic factors with the perceptions of drivers regarding Road Accidents.
- To put forth certain suggestions and conclusions based the findings that have been arrived.

Hypotheses

Ho1. There is no association between Age and the perceptions of drivers regarding Road Accidents.

Ho2. There is no association between Education and the perceptions of drivers regarding Road Accidents.

Research Methodology

To fulfill the aforesaid objectives the data have been collected from two sources i.e. primary and secondary sources. The secondary data were collected from various journals, periodicals, magazines, books and unpublished documents. The primary data was collected directly from the sample respondents with pre - designed questionnaire.

Research Approach

A quantitative approach was followed in this exploratory study. The primary data was collected by using the questionnaire. Results were presented by means of descriptive group statistics and correlations.

Research Method

The participants selected for this study driver traveling through on Urban & rural sections of the National Highway No 65 from Hyderabad to Vijayawada from Km 40 to Km 270. The participants are selected using convenience sampling method. Total 130 questionnaires been distributed among the drivers. The resultant response rate of useable questionnaires was 96.1%. Thus total 125 questionnaires are considered for the study.

Data Analysis

Reliability and Validity Analysis

Reliability can be defined to the extent to which a variable is consistent in what it is intended to measure. In the present research, the reliability of questionnaires was determined by using Cronbach's Coefficient alpha.

Table-1: Reliability Statistics

Cronbach's Alpha	N of Items
.622	6

The reliability coefficient indicated that the scale for measuring is quite reliable. An alpha value of 0.60 or above is considered to be the criterion for demonstrating internal consistency of new scales and established scales respectively.

To arrive at pertinent analysis, the collected data was put to statistical analysis using SPSS package. The tools, which were employed to test the drafted hypothesis for analysis included: ANOVA Analysis. After scoring the questionnaire the data was tabulated for each variable being studied separately.

HO1. There is no association between Age and the perceptions of drivers regarding Road Accidents.

Table-2: One-way ANOVA causes of Road accidents by Age of the Drivers

		Sum of Squares	df	Mean Square	F	Sig.
Defect in Condition of Motor Vehicle	Between Groups	5.489	3	1.830	2.621	.054
	Within Groups	84.463	121	.698		
	Total	89.952	124			
Fault of Cyclist	Between Groups	9.271	3	3.090	4.028	.009
	Within Groups	92.841	121	.767		
	Total	102.112	124			
Fault of Pedestrian	Between Groups	16.348	3	5.449	9.095	.000
	Within Groups	72.500	121	.599		
	Total	88.848	124			
Weather Condition	Between Groups	23.005	3	7.668	16.639	.000
	Within Groups	55.763	121	.461		
	Total	78.768	124			
Road Conditions	Between Groups	11.424	3	3.808	5.262	.002
	Within Groups	87.568	121	.724		

	Total	98.992	124			
Fault of Driver	Between Groups	3.907	3	1.302	1.901	.133
	Within Groups	82.893	121	.685		
	Total	86.800	124			

The information presented in the above table observed that H02, H03, H04, H05 (Fault of Cyclist, Fault of Pedestrian, Weather Condition and Road Conditions) are significant at 5% level. It is observed that for H01 (Defect in Condition of Motor Vehicle) and H06 (Fault of Driver), there is no significant difference in perceptions of the drivers by Age. Therefore we can conclude that there is an influence of the Age on the Driver's perception on the road Accidents.

H_{o2}. There is no association between Education and the perceptions of drivers regarding Road Accidents.

Table-2: One-way ANOVA Causes of Road Accidents by Education of the Drivers

ANOVA						
		Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Defect in Condition of Motor Vehicle	Between Groups	11.639	5	2.328	3.537	.005
	Within Groups	78.313	119	.658		
	Total	89.952	124			
Fault of Cyclist	Between Groups	15.283	5	3.057	4.189	.002
	Within Groups	86.829	119	.730		
	Total	102.112	124			
Fault of Pedestrian	Between Groups	11.991	5	2.398	3.713	.004
	Within Groups	76.857	119	.646		
	Total	88.848	124			
Weather Condition	Between Groups	14.334	5	2.867	5.295	.000
	Within Groups	64.434	119	.541		
	Total	78.768	124			
Road Conditions	Between Groups	14.645	5	2.929	4.133	.002
	Within Groups	84.347	119	.709		
	Total	98.992	124			
Fault of Driver	Between Groups	18.879	5	3.776	6.615	.000
	Within Groups	67.921	119	.571		
	Total	86.800	124			

The information presented in the above table observed that H01, H02, H03, H04, H05, H06 (Defect in Condition of Motor Vehicle, Fault of Cyclist, Fault of Pedestrian, Weather Condition, Road Conditions and Fault of Driver) are significant at 5% level. Therefore we can conclude that there is an influence of the Education on the Driver's perception on the road Accidents.

Findings

- The major cause of the road accident is fault of the driver.
- There is a significant influence of Age on the Driver's perception on Fault of Cyclist, Fault of Pedestrian, Weather Condition and Road Conditions.
- There is no significant influence of Age on the Driver's perception on Defect in Condition of Motor Vehicle and Fault of Driver.
- There is a significant influence of Education on the Driver's perception on Defect in Condition of Motor Vehicle, Fault of Cyclist, Fault of Pedestrian, Weather Condition, Road Conditions and Fault of Driver.

Suggestions

- Though the Drivers being the major cause for the accidents, there should be much focus on the Drivers awareness programs.
- Government should establish truck lay bye's where ever it is appropriate to establish with minimum facilities so that drivers can relax there, till they feel them self ready for driving.
- Difference in perceptions by different Age groups says that government should plan different strategies for each age group.

- Defect in Condition of Motor Vehicle seems to be one of the factor on which there is no difference of opinion among the different Age groups. Thus one single strategy will do for all the Age group Drivers. Drivers should go through the check list referred by the vehicle manufacturers before starting their journey.
- As for as Education is concern, it predominantly influenced Drivers perception. It means people are judging Road Accidents in their own way. Thus, it is the responsibility of government is to come out with real picture of this issue and create awareness among the Drivers.

Conclusion

Broadly there are three types of causes for Road Accidents. First one is Environment controlling issues; second one is Government controlling issues and thirdly people controlling issues. Though environmental issues are not in our hand Drivers can be educated what then can do during each environmental problem so that accidents can be minimised. Regarding road problems, government should make sure that road is in good condition in accident prone areas. Finally, people controlling issues can be minimised only through Driver awareness programs. We hope very soon government will come out with innovative ideas by involving Drivers in conducting awareness programs.

References

1. T.Sivakumar and R.Krishnaraj (2012), Road Traffic accidents (RTAS) Due to Drunken Driving in India Challenges in Prevention. International Journal of Research in Management & Technology (IJRMT), Vol. 2, No. 4.
2. Gennady Waizman, Shraga Shoval and Itzhak Benenson (2015), Micro-Simulation Model for Assessing the Risk of Vehicle–Pedestrian Road Accidents. Journal of Intelligent Transportation Systems, 19:63–77.
3. M. Driss, K. Benabdeli, T. Saint-Gerand & M.A. Hamadouche (2014), Traffic safety prediction model for identifying spatial degrees of exposure to the risk of road accidents based on fuzzy logic approach. Geocarto International, Vol. 30, No. 3, 243–257.
4. Francisco J. Bahamonde-Birke, Uwe Kunert & Heike Link (2015), The Value of A Statistical Life in A Road Safety Context — A Review of the Current Literature. Transport Reviews, 35:4, 488-511.
5. Schroeder B. J. & Rouphail N. M (2011). Empirical Behavioral Models to Support Alternative Tools for the Analysis of Mixed-Priority Pedestrian-Vehicle Interaction in a Highway Capacity Context, Procedia - Social and Behavioral Sciences (16), 653-663
6. Papadimitriou, E., Yannis, G., & Golias, J. (2009). A critical assessment of pedestrian behaviour models, Transportation Research F, 12(3), 242-255
7. Sun, D., Ukkusuri, S., Benekohal, R.F., & Waller, S.T. (2003). Modeling of motorist pedestrian interaction at uncontrolled mid-block crosswalks. Proceedings of the 82d Annual Meeting of the Transportation Research Board 03-3340
8. Wang, T., Wu, J., Zheng, P., & McDonald, M. (2010) Study of pedestrians' gap acceptance behavior when they jaywalk outside crossing facilities, Proceedings of 13th International IEEE Conference Intelligent on Transportation Systems, Portugal, 1295 - 1300