International Journal of Business Research and Management (IJBRM)
Singaporean Journal of Scientific Research(SJSR)
Vol6.No.1 2014 Pp. 51 - 57
available at:www.iaaet.org/sjsr
Paper Received :05-01-2014
Paper Accepted:25-02-2014
Paper Reviewed by: 1Prof.. S.Soundera Valli 2. R. Ram Mohan Reddy
Editor : Dr. Binod Kumar

IMPACT OF ROAD ACCIDENTS IN KERALA DURING 2001 TO 2011 – A CASE STUDY

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ABSTRACT

This study attempt to analyze the road accidents and also collecting secondary sources of data from 2001 to 2011 accordingly year wise and district wise in Kerala state, India. It reveals of purposive of that study focus on today the accident rate are high and more than number of persons are died and also injured. Moreover, it will be affected environmentally, economically, and socially. In this text, depicts that more than persons are died in road accident because of they are not following obedient rules and regulations. Even though more than number of persons not having awareness of the road accident and what are losing from these incidents? Further, this study reveals that more than 12 persons are killed per 100 accidents in 2011 and this report taken over from the report of 2001 census. By and large, the emergence to controlling road traffic accident and switching the safety management of urban and rural road traffic to be digital and its perspective to inculcate the process of regards with road safety development in the economy.

I. INTRODUCTION

In the present scenario everyone has noticing newspaper, magazines, news in channels and also watching directly and nearly shown that more than half of the people have affected road accidents, died and injured on the road. In the road accident not only having on vehicle riding people but also affect on pedestrians. Actually the pedestrians are more affected on road accidents whenever they compared to vehicle riders. Further, the road traffic crash is a collision or incident involving at least one road vehicle in motion, on a road to which the public has right to access. Follow each and every year over 1 million people are killed and 50 million people are injured on road accidents around the world. Road vehicular accidents have been so frequent and common to everyday life that people tend to disregard that these “high velocity moving lumps of metal” are very lethal and sometimes pose as “weapons of mass destruction.” The problems in road safety transcend in the transport sector and it engaged the problem of health aspects, social impact, economic devaluation and environmental harassment. The health sector would have to stretch its bed capacity in order to administer to the victims while still overseeing other important illnesses. Families are displaced and their futures shattered because of the sudden demise of their breadwinners, which is a social welfare problem. Accidents lay off workers, which eventually, if summed up, will translate to millions of rupees of potential lost productivity thereby affecting domestic production and the economy. It was observed that in Metro Manila, traffic management policies have

been implemented without much study, translating to confusion and eventually mishaps. The scale and magnitude of the effects of road accidents on the lives of the people involved and the society in general must be clearly defined for purposes of raising awareness and as an input to the planning and evaluation of the government's road safety intervention measures. Rapid economic growth is usually connected to a rapid expansion of road transportation. Unfortunately, it also leads to an increase of road crashes, injuries, and fatalities.

Moreover, the *World Report on Road Traffic Injury Prevention* presents the fatal and long term crash injury is largely predictable, largely avoidable and a problem amenable to rational analysis and remedy. According to TRB (2011), "management is the direction of resources to attain defined objectives.

The senior managers of transportation, public safety, and health agencies are expected to define traffic-safety-program objectives and strategies, budget and allocate resources to interventions, coordinate programs across agencies and jurisdictions, monitor the effectiveness of interventions and progress towards objectives, and interact with elected officials and the public to maintain support and justify the commitment of the required resources." Peden et al. (2004) called for a "systems approach" to road safety that examines the components of the system (infrastructure, vehicle, and road user) in developing strategies for prevention. Furthermore, six general recommendations were provided:

i. To identify a lead agency in government to guide the national road-safety effort;
ii. To assess the problem, policies, and institutional settings relating to road-traffic Injury and the capacity for road-traffic-injury prevention in each country;
iii. To prepare a national road safety strategy and plan of action;
iv. To allocate financial and human resources to address the problem;
v. To implement specific actions to prevent road crashes, minimize injuries and their consequences, and evaluate the impact of these actions; and
vi. To support the development of national capacity and international cooperation.

By and large, there is growing concern worldwide over increasing incidences of road accidents and consequent loss of human life, together with the loss in workforce due to disabilities caused by road accidents and the economic losses that they inflict on society and environment also.

II. STATEMENT OF THE PROBLEM

It could be notable that the roads are occupies an eminent position in transportation and carry nearly 65% of freight and 87% of passenger traffic. Traffic on roads is growing at a rate of 7 to 10% per annum while the vehicle population growth, for the past few years, is of the order of 12% per annum. Moreover, the lengths of roads are more prosperity of the nation. The prosperity brigades of a nation normally comprise of intelligentsia, hard labour, infrastructures available and lastly smooth functioning of its roads. However, with the positive qualities, there by-product of transportation is pollution and accidents. In India, the total cost of losses due to road accidents are in the range of Rs. 400-500 crores a day. The estimated cost includes compensation, asset loss, time and energy spent on police, hospital and court cases etc. But we cannot measure these sufferings in terms of money. The loss to the nation due to the ever-increasing accidents is untold, eating into the economics of the nation. Without new and effective action, deaths in low to middle-income countries are forecast to rise steeply. By and large, the study enumerates the seeking an environmental rather than an individual solution. It could be viewed as contributing to holistic and developmental approach due to conceptualization and implementation of road safety development programmes in the study area.

Objectives

i. To analyze the total number of road accidents in Kerala during the period from 2001 to 2011 in the study area.
ii. To probe into the district wise variation of road accidents in Kerala during 2001 to 2011 in the study area.

Research Design and Methodology

Thus this study design out a decade of road accidents in Kerala among all districts of the state and much more analyze the time period between 2001 and 2011. It spells out the macro level study and using secondary sources of data in the study area. Using this study examined the analytical part of covering table, percentages, Mean, Standard Deviation and Techniques used in Least Square Trend Analysis.

III. RESULTS AND DISCUSSIONS

The study depicts that the problem of road accident is a very acute in highway transportation due to complex flow pattern of vehicular traffic, presence of mixed traffic along with pedestrians. Traffic accident leads to loss of life and property. Thus this

table 1 portrait the total number of road accidents in the study area. In this table shown that more than people killed under the road accidents in covering the period of time.

Table 1
Total Number of Road Accidents in Kerala during the period from 2001 to 2011

Year	Total Accidents	Person Died	Person Injured	Accident Severity (No. of person killed per 100 accidents)
2001	38361	2674	49675	7
2002	38762	2792	49460	7
2003	39496	2905	48640	7
2004	41219	3059	51228	8
2005	42363	3203	51124	8
2006	41647	3589	49881	9
2007	39917	3778	48246	9
2008	37263	3901	43857	11
2009	35433	3831	41401	11
2010	35082	3950	41473	11
2011	35216	4145	41379	12

This table leads to loss of life and disturbing the common property resources through road accidents in the state of Kerala. Most of them people affected in road accidents during the year of 2005, 2006 and 2004 along with this chart gives clear cut evidence for the more number of persons died and increasingly year by year through road accidents. By and large, it depicts the road accidents died has increased in 2011 (12 persons killed in per 100 accidents) as compared to 2001 (7 persons killed in per 100 accidents).

Continuously, table 2 explicit the road accidents in Kerala regarding the point of National Highway, State Highway and Other Roads.

Table 2
Consistency Analysis of Road Accidents in Kerala during the period from 2001 to 2011

Year	National Highway	State Highway	Other Roads	Mean	SD	Co-Variance
2001	10095	5866	22400	**12787.00**	**8589.438**	**67.17**
2002	10840	5696	22226	**12920.67**	**8459.143**	**65.47**
2003	10543	5334	23619	**13165.33**	**9420.339**	**71.55**
2004	11102	5184	24933	**13739.67**	**10135.271**	**73.77**
2005	11034	5335	25994	**14143.67**	**10660.083**	**75.37**
2006	10664	5215	25768	**13882.33**	**10647.756**	**76.70**
2007	10907	6258	22752	**13305.67**	**8504.599**	**63.92**
2008	9997	6452	20814	**12421.00**	**7481.550**	**60.23**
2009	9425	6637	19371	**11811.00**	**6693.910**	**56.68**
2010	9473	6539	19070	**11694.00**	**6554.092**	**56.05**
2011	9519	6401	19296	**11738.67**	**6727.960**	**57.31**
Mean	**10327.18**	**5901.55**	**22385.73**			
SD	**649.52**	**574.419**	**2544.174**			
C.V	**6.29**	**9.73**	**11.37**			

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This table explains most of them road accidents occurring on other roads. Mostly in rural areas the roads are damaged and not recovery of them. Since, the road accidents are maximum occurring in rural and other roads. Further, this table shows that in state highway having more number of road accidents in 2011 as compared to the initial period of 2001. Moreover, this survey gives evidence from the statistical analysis in mean and standard deviation. It also spells out other roads having more road accidents than compared to national highway and state highway.

Table 3 contributes the method of least square and using trend values for find out the road accidents in Kerala during the period from 2001 to 2011. By the method of using least square easily to examined the forecasting and predicting value of road accidents and this way get to analyze and give the solution for controlling road accidents in the study area.

Table 3

Year	Total Road Accidents (Actual Value)	Total Road Accidents (Approximated Trend Value)
2001	38361	36206
2002	38762	36687
2003	39496	37169
2004	41219	37651
2005	42363	38132
2006	41647	38615
2007	39917	39096
2008	37263	39578
2009	35433	40060
2010	35082	40541
2011	35216	41023

Table 3 spells out the usage of trend value method accordingly utilizing least square model. This model helpful to the researcher by the way of to analyze the forecasting and predictions in total number of road accidents in the study area. The trend value explicit the number of road accident slowly increasing year by year, because it predicts the number of road accident rosed from 2001 to 2011 and to forecast the future value as examined. Follow this table explain the chart of least square model by using trend value method.

Figure 1
Total Number of Road Accidents in Kerala during 2001 – 2011 by using Least Square Method

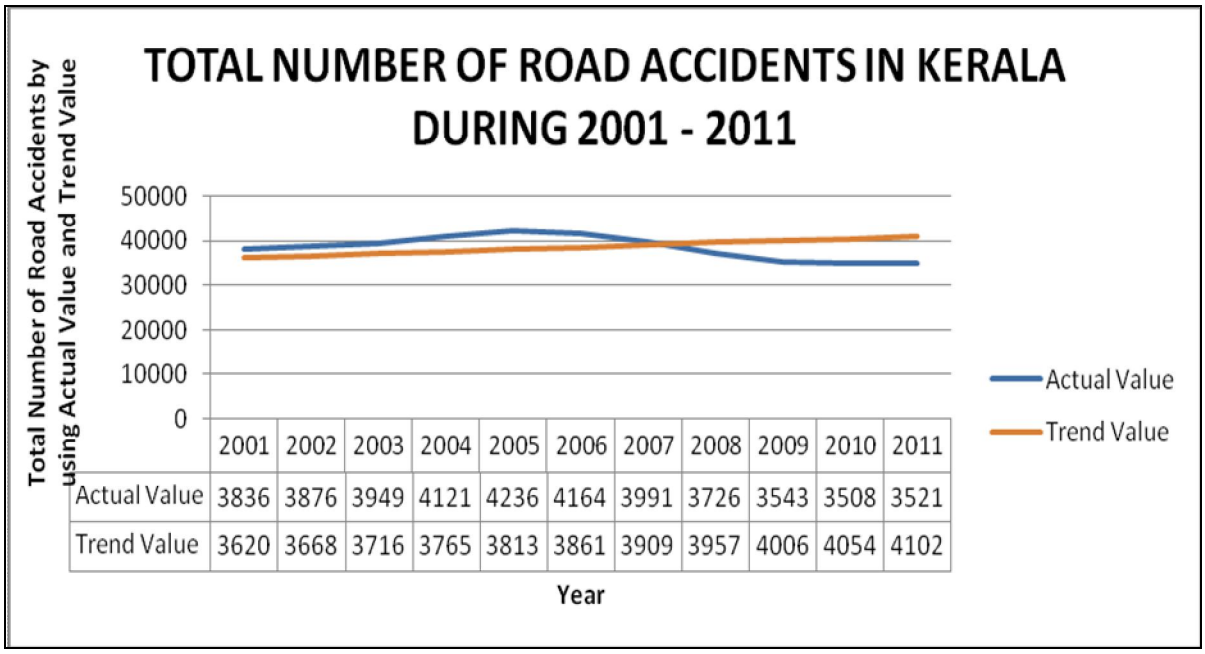

Figure 1 depicts that the up and down line mentioned the actual value of road accidents and straight line mentioned the trend value of road accidents in the study area. This trend line explains the number of road accidents gradually increased from the year of 2001 to 2011. This event slowly reduced the economic development and it will be contaminated the environmental assessment.

This study attempts to another objective of district wise classification of road accidents in the study area. It examined the total number of road accidents in year wise and also district wise.

Table 4
Total Number of Road Accidents in Kerala during 2001 – 2011 as per Year wise and District wise Presentation

Year / District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
TRIVANDRUM	7.86	8.61	9.36	10.28	10.35	10.47	9.17	8.80	8.46	8.15	8.47
KOLLAM	8.68	9.30	9.32	9.74	10.35	10.21	9.31	8.09	8.18	8.23	8.59
PATHANAMTHITTA	8.51	9.27	9.08	9.75	9.74	10.03	9.33	8.98	8.56	8.28	8.46
ALAPPUZHA	9.34	8.68	8.14	8.93	10.18	10.18	10.55	8.96	8.18	8.46	8.39
KOTTAYAM	9.01	9.04	10.79	9.48	11.11	9.86	9.05	8.32	7.91	7.68	7.75
ERNAKKULAM	10.00	9.87	9.91	10.63	10.27	9.64	9.55	8.37	7.60	6.89	7.26
IDUKKI	9.23	8.66	8.61	9.26	9.70	9.98	9.36	9.12	8.50	9.00	8.59
TRISSUR	9.09	9.30	9.74	9.68	9.60	9.50	9.19	8.72	8.46	8.29	8.41

PALAKKAD	8.92	8.47	8.66	9.49	10.03	10.07	8.88	8.93	8.73	8.88	8.92
MALAPPURAM	8.54	8.65	8.18	9.37	9.21	8.88	9.16	9.42	9.34	9.82	9.43
KOZHIKODE	9.37	9.82	9.47	9.39	9.35	9.26	9.47	9.15	8.15	8.70	7.89
WAYANADU	8.28	8.44	8.39	9.75	9.27	9.74	9.49	8.99	9.42	9.16	9.07
KANNUR	9.38	8.82	8.52	8.40	9.01	9.43	9.49	9.47	9.28	9.18	9.02
KASARAKODU	8.94	8.56	9.05	8.78	9.10	10.19	9.39	9.17	9.01	8.97	8.84

Note: All figures are denoted to Percentages

Figure 2
Total Number of Road Accidents in Kerala during 2001 – 2011 as per District Wise Presentation

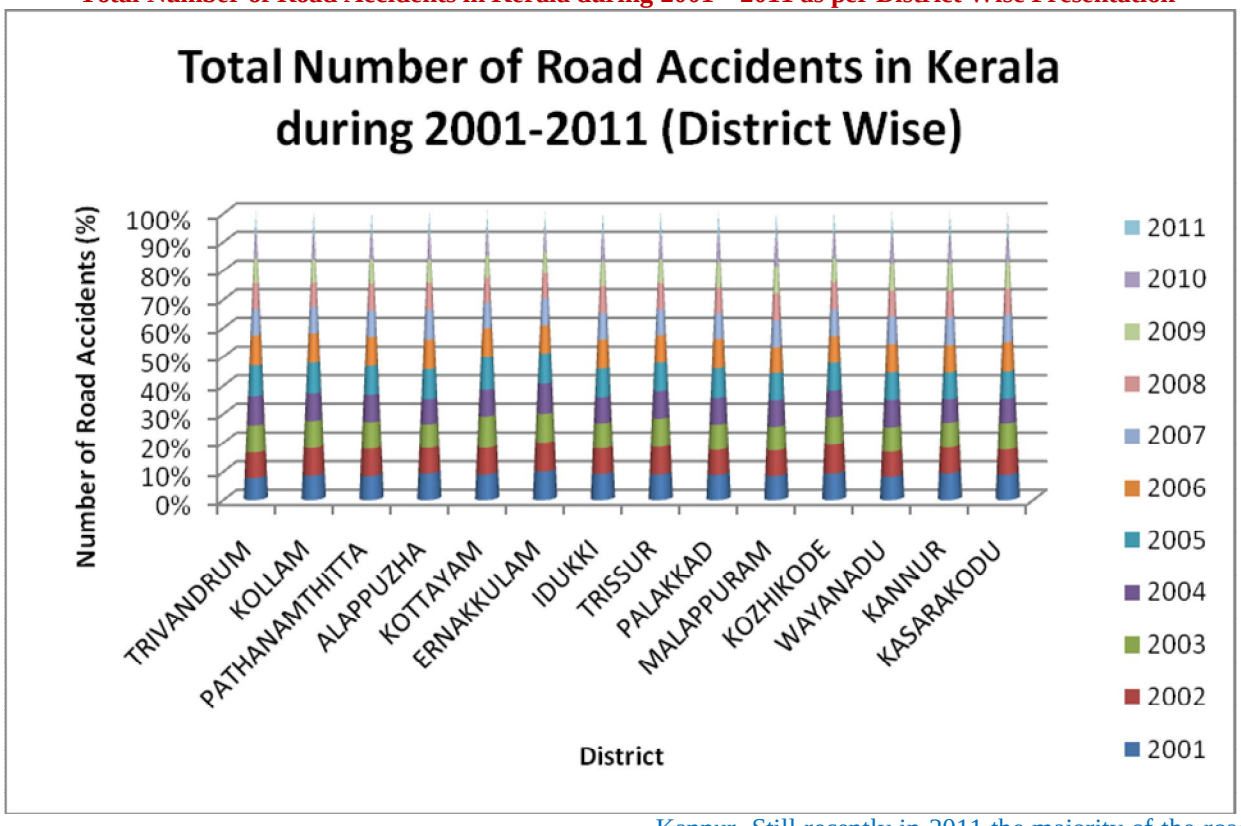

Table 4 portrait the total number of road accidents in the study area as per district wise presentation and the figure shows the variation of chart among the road accidents in Kerala covering the period from 2001 to 2011. This table depict that most of them accidents were occurred in 2001 and the majority districts are Ernakulam, Palakad, Alappuzha and Kannur. Still recently in 2011 the majority of the road accidents in Kerala, the districts are Malapuram, Wayanadu, Kannur, Palakad. At 2011 compared to 2001 the road accdidents ratio are decreased but the died ratio are rosed in every year. In this context, the present study deals with the proper management on traffic control as well as be managed and controlled the road accidents and get stability of road management.

IV. CONCLUSION AND SUGGESTIONS

i. Road management is a main source for economic responsibility. Without responsible of road activities synthesis to the building of rush situation, accident and loss of economic goods.

ii. This study evaluate the total number of road accidents ratio and road accidents injured persons were dwindled from 2001 to 2011, but still rosed by died ratio as compared to 2011 from 2001. In this regard to demotivate the road management activities and also depicts that affected to economic development. Further, it leads to lost of human life, contamination of environment and to collapse the service sector also.

iii. Thus this study majority highlighted the other roads accidents are occuring heavily as compared to national highway and state highway. The other rural area roads are having poor roads and these roads are assembled to increased the road accident. Hence, the Government take step to reformed these roads and making to control the road accidents in rural other roads.

iv. Moreover, the traffic safety management generally and confirms the directions of the road safety development in future. Accordingly, the traffic safety management makes the management have the base on practice concrete policy and measure, and make the traffic safety management perfect further, science and rational.

v. By and large, the traffic security situation of the present is severe in this state. By the traffic safety management, harmonize synthetically the relation between road, traffic flow and the administrators, controlling the emergence of the traffic accident of the road, and switching the safety management of urban and rural road traffic to be digital and its perspective to inform the process with regards to road safety development.

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