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AN ASSESSMENT OF KERALA'S ROAD ACCIDENTS POSITION IN THE NATIONAL CONTEXT

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ABSTRACT

Road accidents have become a serious economic and social problem. According to a 2015 report by World Health Organizations, every year 1.3 million lives are lost and 50 million suffer from serious injuries on the roads across the world. The major brunt is borne by low and middle-income countries. It is predicted that without appropriate countermeasures, this problem will become the third leading cause of death in the world by 2020. Considering the severity of the problem, the United Nations is observing the decade of 2011 to 2020 as the 'Decade of Action for Road Safety', with the objective of achieving zero accident rate by 2020. All its member countries, including India, have set out ambitious plans and policies to achieve the desired objective. India registers a high rate of road accident fatalities and injuries every year. Kerala, the southern state of the Indian union, which accounts for only 2 percent of the geographical area and 4 percent of the population of the nation, registers around 7 to 9 percent of road accidents in the country. Kerala, commonly known for its paradoxical development pattern, high human development with low economic growth, labeled "Kerala model of development", faces serious repercussions because of the involvement of people from the most productive age group in road accidents. Against this background, this paper attempts to analyze the road accidents of the state in the national context, based on data gathered from the annual reports of Ministry of Road Transport and Highways on "Road Accidents in India".

KEYWORDS: *Road Accidents in Kerala, Road Accidents in India*

INTRODUCTION

The road network is a popular mode of transportation.And it is unavoidable. Even when other modes of transport are used, the dependence on roads as an intermediatemode or for last mile connectivity cannot be entirely ruled out. This mode of transport has been popular because of the clear advantages it has over other modes such as easy availability and door to door service (Bowers ox et al,. 1981). There is a high dependence on this sector for passenger and freight transportation due to these inherent advantages that it has to offer.

In India, ninety percentage of passenger traffic and sixty-five percentage of freight traffic are carried out using the road network (WHO, 2015). As a result, the road network in the country should be sufficient to accommodate such increased quantum of motorized vehicles. It should also be equipped in all the engineering aspects such as adequate pedestrian facilities, parking spaces, and road markings. The availability of road networks with adequate capacity built by incorporating the safety requirements, awareness about road safety measures, and a strict enforcement of traffic laws for

the users of different categories of roads are essential for safe road transportation. Though India has the highest road density in the world, of about 0.66 km per square kilometer of land, it lacks heavily in the implementation of the required safety measures. The poor quality of roads in various aspects and the mismatch between demand and supply have created severe problems in the sector. India witnessed 501,423 road accidents in 2015. The sheer number of road accidents is an indication that the network is plagued with serious problems. India also has the ignominy of laying claim to theunwanted first position in the list of total number of fatalities in road accidents since 2010, with more than one lakh fatalities per year.

Within the country, among the various states, Kerala has been witnessing a very high number of road accidents. Kerala has been experiencing tremendous growth in the number of vehicles with more than 10 percent average annual growth, while the national average is less than 10 percentage (Economic Review, Govt of Kerala). Along with this, the poor quality of Kerala roads adds to the problem of road accidents. The National Highways in Kerala, which is only 0.86 percentage, witnesses nearly 34 percentage of fatalities. This statistic perfectly captures the state of the quality of Kerala roads (Road Safety Authority of Kerala).

Objectives and Data Sources for the Study

The main objective of this study isto assess the road accidents in Keralain the larger national context. To achieve this objective, this paper looks atthe accident data of Kerala from three levels:

- Initially, the paper analyses the state's sharein the national road accidents statistics, as observed from annual reports of the Ministry of Road Transport and Highways, 2011 to 2015
- The paper then drills down a bit more and looks at the accident data to ascertain Kerala's position among the South Indian states
- Finally, the paper analyses the data for Kerala to look at the top cities in Kerala in terms of accidents

An attempt is also made to propose remedial road safety measures for the state.

The data for the study has been gathered from publications of World Health Organization, World Bank, and National Transportation Planning and Research Centre.

KERALA'S SHARE IN THE NATIONAL ROAD ACCIDENTS STATISTICS

The fact that the nation registers lakhs of road accidents, fatalities and injuries per year has forced India to take the problem of road accidents seriously in its policy agendas. In the category of the number of people killed per lakh population, India comes second after Russian Federation which registers 19 deaths per lakh population from road accidents whereas India registers 11 fatalities per lakh population(NATPAC, 2016).

Among the states in India, Kerala has a large share in the nation's road accidents statistics.Kerala's share of the total road accidents in India is given in Table 1. It is interesting to note that the total number of road accidents in India, which was showing a downward trend for the years 2012 and 2013, showed a marginal increase in 2014, but showed a big increase in 2015.

The total number road accidents in Kerala, and Kerala's share in the count of road accidents in India also show very similar trends, although the increase in 2015 for these two categories is not as high as that for the total road accident count for India.

Table 1: The Share of Kerala to India's Road Accidents

Year	Total Road Accidents in India	Total Road Accidents in Kerala	Kerala's Percentage Contribution to India
2011	497,686	35309	7.1
2012	490,383	36137	7.4
2013	486,476	35230	7.2
2014	489,400	36318	7.4
2015	501,423	39040	7.8

Source: *Ministry of Road Transport and Highways and NATPAC*

Table 2 shows the number of injuries due to road accidents in India, number of fatalities in India, the corresponding figures for Kerala, and percentage share of Kerala to India's figures during the time period 2011 to 2015. The total number of injuries in India due to road accidents shows a decreasing trend from 2011 to 2014 butincreases suddenly in 2015. The corresponding figures for Kerala remains almost constant over the period varying within a small range for the years 2011 to 2014 and increasing by small margin in 2015. The total number of fatalities due to road accidents in India shows a decreasing trend from 2011 to 2013, but like the other accidents statistics, shows a steep increase in the year 2015. The total road accident fatalities in Kerala, and the related percentage share of Kerala in India's corresponding figure, though remains almost constant.

Table 2: The Share of Kerala to India's Road Accident Injuries and Fatalities

Year	Total Number of Injuries in India	Total Number of Injuries in Kerala	Kerala's Percentage Contribution to India's Road Accident Injuries	Total Number of Road Accident Fatalities in India	Total Road Accident Fatalities in Kerala	Kerala's Percentage Contribution to India's Road Accident Fatalities
2011	511,394	40709	8.0	142,485	3990	2.8
2012	509,667	41287	8.1	138,258	4133	3.0
2013	494,893	40208	8.1	137,572	4151	3.0
2014	493,474	40752	8.3	139,671	3964	2.8
2015	500,279	43562	8.7	146,133	4052	2.8

Source: Ministry of Road Transport and Highways and NATPAC

From the above analysis, it is seen that the all India and Kerala figures for the total number of road accidents and the total number of injuries due to road accidents had a sharp increase in 2015. The all India figure for the total number fatalities due to road accidents too followed a similar pattern. The only exception was the figure for the fatalities due to road accidents in Kerala, which bucked the trend and remained almost constant.

DRILLING DOWN: KERALA'S POSITION AMONG SOUTH INDIAN STATES

In this section, this paper looks at how Kerala fares in relation to the other three South Indian states in the road accident statistics for the year 2011.

In the year 2011, Kerala registered 35,309 number of road accidents, contributing 7.1 percentage to the national statistics. In the same year, 3,990 people were killed in road accidents in the state, making up 2.8 percentage of the all

India figures. And also, 40,709 people got injured contributing 8 percentage to the national statistics.

During the same year, Kerala occupied the number one position among the South Indian states in the category of the number of road accident victims per lakh population with 106 people involved in road accidents, while Karnataka had 73, Tamil Nadu had 91, and Andhra Pradesh had 52.

In the category of Number of persons killed per lakh population, Kerala occupied the fourth position among the South Indian states while Tamil Nadu holds the first position with 21, Andhra Pradesh stands second with 17.9 and Karnataka third with 15.

In the category of number of road accidents per ten thousand vehicles, Kerala occupied the first position with 58 road accidents per ten thousand vehicles, followed by Karnataka with 45, Andhra Pradesh with 43 and Tamil Nadu with 42.1.

In the category of the number of fatal road accidents, the vehicle involvement per ten thousand was as follows: Kerala-6.8, Andhra Pradesh-14.9, Tamil Nadu-10 and Karnataka-9.0.

Road Accidents Severity is defined as the Number of people who died in road accidents out of 100 road accidents. In 2011, for this category, the positions were Kerala-11.8, Tamil Nadu-23.4, Andhra Pradesh-34.3 and Karnataka-20.1, while the national average was 28.6.

DRILLING DEEPER: HOW THE POPULOUS CITIES OF KERALA FARE

The Ministry of Road Transport and Highways (MoRTH) releases the list of top cities in India with million plus population that witness the maximum number of accidents. This section drills deeper into Kerala's accident data to look at the cities contributing maximum to Kerala's accident figures and also how these cities fare in the national context. For this purpose, data for each year from 2011 to 2015 is analysed.

Year 2011

In the year 2011, 39 cities with million-plus population from all over India contributed 12,025 cases to fatal road accidents, which is 9.8 percentage of all India fatal accidents. In these accidents in these cities, 13,021 persons lost their lives, which is 9.1 percentage of all road accident fatalities in India.The Accident Severity of all these cities put together was 14.6% while the national figure was 28.6%.

Five cities from Kerala – Kochi, Kollam, Kannur, Malappuram, and Thrissur, which have a population of over a million, found a place in the list (MoRTH, 2011). Table 3 shows the contribution of these5 cities from Kerala to the selected 39 cities of the nation.

Table 3: Million Plus Populated Cities from Kerala and their Share to the Nation's Cities-2011

Selected Cities(Million Plus Population) from Kerala	Fatal Accidents	All Accidents	Persons Killed	Persons Injured	Accident Severity
Kochi	171	1986	182	2008	9.2
Kollam	209	1668	222	1811	13.3
Kannur	52	557	55	833	9.9
Malappuram	290	2694	324	3534	12
Thrissur	134	1262	141	1343	11.2
Contribution of 5 million-plus cities together	856	8167	924	9529	11.12
Contribution of 39 cities in India(million-plus)	12,025	89,086	13,021	62,215	14.6
All India figures	121,618	497,686	142,485	511,394	28.6

Source: Ministry of Road Transport and Highways and NATPAC

While the 39 Indian cities with a million-plus population together registered 12,025 fatal accidents, Kerala's five cities in the category contributed 7.11% of it. This effectively means ashare of 7.11% of the figures for 39 Indian cities, whose sharein the all India figures is 9.8%. In the category of people injured in the accidents, the 39 cities from all over India contributed 12.16 percentage to the national statistics, in which, the 5 million-plus cities from Kerala contributed 15.3% to the 39 cities.

Year 2012

In the year 2012, there were 4, 90,383 number of road accident cases registered in the nation, of which, 138,258 were killed and 509,667 injured. Kerala registered 36,137 road accidents with 7.4 percentage contribution to the all India figure.

For the year 2012, the MoRTH list contained 50 cities from all over India with million-plus population. These 50 cities in the nation registered 22.5 percentage of road accidents and 13.2 percentage of fatal accidents(MoRTH-2012).

Table 4: Million plus Population Cities from Kerala and its Share to the Nation's Cities-2012

Selected cities(Million Plus Population) from Kerala	Total No of Fatal Accidents	All Accidents	Persons Killed	Persons Injured	Accident Severity
Kannur	74	618	78	814	12.6
Kozhikode	166	1270	174	1451	13.7
Kochi	136	2280	144	2431	6.3
Kollam	197	1763	213	1909	12.1
Malappuram	295	2711	325	3604	12
Trivandrum	164	1933	167	2244	8.6
Contribution of 6 cities from Kerala	1032	10575	1101	12453	10.88
Total of 50 cities	16190	110439	16955	80967	15.4
All India number	123,093	490,383	138,258	509,667	28.2

Source: Ministry of Road Transport and Highways and NATPAC

In the list of the 50 cities from all over India that witnessed maximum number of road accidents, there were 6 cities with million-plus population from Kerala. These 6 cities contributed 6.3 percentage to the fatal accidents of the nationally selected 50 cities; 9.5 percentage to the total accidents registered by the all cities; 6.4 percentage to the fatalities; and a high share of 15.3 percentage of the total number of injured persons from the 50 cities.

Year 2013

In the year 2013, India recorded 486,476 road accidents. They included 137,572 fatalities and 494,893 injured. In the same year, Kerala registered 35,230 number of road accidents, which amounted toa share of 7.2 percentage of the all India figure. In these accidents, 4151got killed, which was 3 percentage of the national average. Another 40,208 got injured and Kerala's share to the national figure in this category was 8.1 percentage.

In 2013, the MoRTH list contained 50 cities with population over a million, which witnessed the highest number of accidents. Thecities in the all India list contributed 22.7 percentage of all accidents registered in the nation, 13.1 percentage of fatal accidents, 12.4 percentage of persons killed and 16.2 percentage of persons injured to the national statistics(MoRTH, 2013).

Table 5: Million plus Population Cities from Kerala and its Share to the Nation's Cities-2013

Cities(Million Plus Population) from Kerala	Total No of Fatal Accidents	All Accidents	Persons Killed	Persons Injured	Accident Severity
Kannur	55	593	58	737	9.8
Kozhikode	172	1,151	182	1,298	15.8
Kochi	147	2,248	151	2,219	6.7
Kollam	247	1,577	265	1659	16.8
Malappuram	314	2,653	354	3,249	13.3
Trivandrum	191	2,000	195	2,341	9.8
Thrissur	127	1,297	133	1,400	10.3
Contribution of 7 selected cities from Kerala	1253	11519	1338	12903	11.78
Total of 50 cities	16,087	1,10,192	17,007	80,380	15.4
All India number	1,22,589	4,86,476	1,37,572	4,94,893	28.3

Source: Ministry of Road Transport and Highways and NATPAC

In the list there were 7 million-plus cities from Kerala. The contribution of the 7 cities from Kerala to the figures of the selected all million-plus (population) cities in the country is a dominating one. The selected 50 million-plus(population)cities contributed 22.65 percentage to the all India figures, while the 7 million-plus cities from Kerala alone contributed 10.4 percentage to the figures of the 50 cities. In the category of the total number of persons injured, while the 50 million-plus (population) cities contributed 16.24 percentage to all India figures, the 7 cities from Kerala together had a share of 16.05 percentagein the figures of the 50 cities.

Year 2014

In the year 2014,4,89,400 road accidents were registered in India; 1,39,671 persons were killed in the road accidents; and there were 4,93,474 number of injured victims. Kerala witnessed 36,318 number of registered road accidents, which amounts to 7.4 percentage of the national figure; 964 persons were killed in these road accidents, which amounts to 2.8 percentage of the all India figure; and 40,752 persons were injured, which accounts for 8.3 percentage of the national figure.

In the same year, 22.7 percentage of all accidents registered in India came from the selected 50 million plus (population) cities(MoRTH-2014).

Table 6: Million plus Population Cities from Kerala and its Share to the Nation's Cities-2014

Cities(Million Plus Population) from Kerala	Total No of Fatal Accidents	All Accidents	Persons Killed	Persons Injured	Accident Severity
Kannur	72	570	77	909	13.5
Kozhikode	151	1,177	159	1253	13.5
Kochi	134	2257	136	2264	6
Kollam	206	1703	217	1768	12.7
Malappuram	336	2719	357	3305	13.1
Trivandrum	165	2007	175	2371	8.7
Thrissur	103	1317	107	1417	8.1
Contribution of 7 cities from Kerala	1167	11750	1228	13287	10.8
Total of 50 cities	15,745	110958	16611	83000	15
All India number	1,22,589	4898400	139617	493474	28.5

Source: Ministry of Road Transport and Highways and NATPAC

In the year 2014, the share of the 7 million plus cities from Kerala to the total selected cities of the country is dominating one. The categories of the all accidents and persons injured in Kerala contributed to more than 10 to 15 percentages. The percentage share of Kerala cities to the total number of fatalities was 7.41 and the share of the persons killed was 7.39 percentage of the total selected cities in the nation.

Year 2015

In the year 2015, there were 501,423 road accidents cases registered in the nation in which 146,133 people were killed and 500,279 people injured. Kerala witnessed 39,040 road accidents, which is 7.8 percentage of the national road accidents statistics .4052 persons lost their lives in road accidents, which is 2.8 percentage of the total number of persons killed in the country in road accidents. The total number of persons injured due to road accidents in Kerala was 43,562, which is 8.7 percentage of the total injured in road accidents in the country.

In 2015, the 50 cities with million-plus population registered 22.1 percentages of all road accidents in the nation, 12.8 percentage of fatal road accidents, 11.3 percent of persons killed, and 16.4 percentage of persons injured (MoRTH-2015).

Table 7: Million plus Population Cities from Kerala and its Share to the Nation's Cities-2015

Cities(Million Plus Population) from Kerala	Total No of Fatal Accidents	All Accidents	Persons Killed	Persons Injured	Accident Severity
Kannur	65	624	67	796	10.7
Kozhikode	150	1487	159	1567	10.7
Kochi	159	2561	168	2721	6.6
Kollam	191	1561	204	1601	13.1
Malappuram	332	2882	367	3264	12.7
Trivandrum	159	2199	164	2660	7.5
Thrissur	103	1406	110	1538	7.8
Contribution of 7 cities from Kerala	1159	12720	1239	14147	9.8
Total of 50 cities	15,799	111,024	16,513	82220	14.9
All India number	131726	501423	146,133	500279	29.1

Source: *Ministry of Road Transport and Highways and NATPAC*

Kerala had 7 cities in the list. The share of the cities had increased compared to the previous years as these cities contributed 11.45 percentage to the total road accidents registered in the 50 cities at the national level, and 17.20 percentage to the figures of injured victims.

ROAD ACCIDENTS: KERALA'S POSITION OVER THE YEARS

In the Previous sections, this paper analysed the road accidents in Keraladuring each year from 2011 to 2015. In this section, the time series data of accidents inthe million-plus population cities from Kerala, which were part of the national list released by MoRTH, for the years 2011 to 2015 is analysed.

Figure 1 shows the number of million-plus population cities from Kerala which have found a place in the national list of cities with high accidents statistics. While in 2011, there were 5 cities from Kerala with million-plus population that were part of the national level list of cities with high accident numbers, in 2012, the number of cities from Kerala increased to 6, and from 2013 onwards, there have been 7 cities. In 2011, there were only 39 cities in the all India list from MoRTH. From 2012 onwards, the list was expanded to 50 cities from all over India.

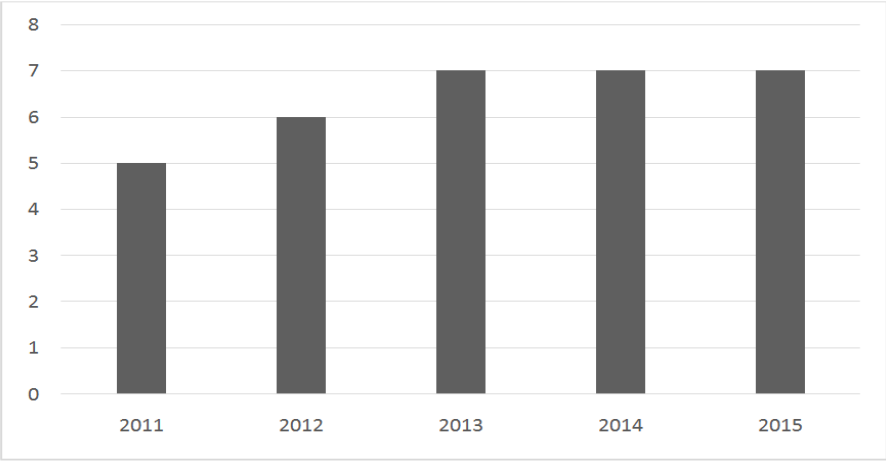

Figure 1: Number of Million-Plus Cities in Kerala in the National List

Kochi, Kannur, Kollam, and Malappuram find a place in all the lists. While Thrissur is part of the for 2011, it drops out of the list in 2012, and re-enters the list in 2013 and retains its spot thereafter. Thiruvananthapuram, which is not in the 2011 list, finds a place in the list from 2012 onwards.

Figure 2 shows the percentage share of Kerala's million-plus population cities in the accident numbers of the cities in the all India list released by MoRTH in the years 2011 to 2015.

The percentage share of the cities from Kerala in the number of injured persons and Accident Severity show upward trends over the years. Accident Severity shows a downward trend from 2013 onwards.

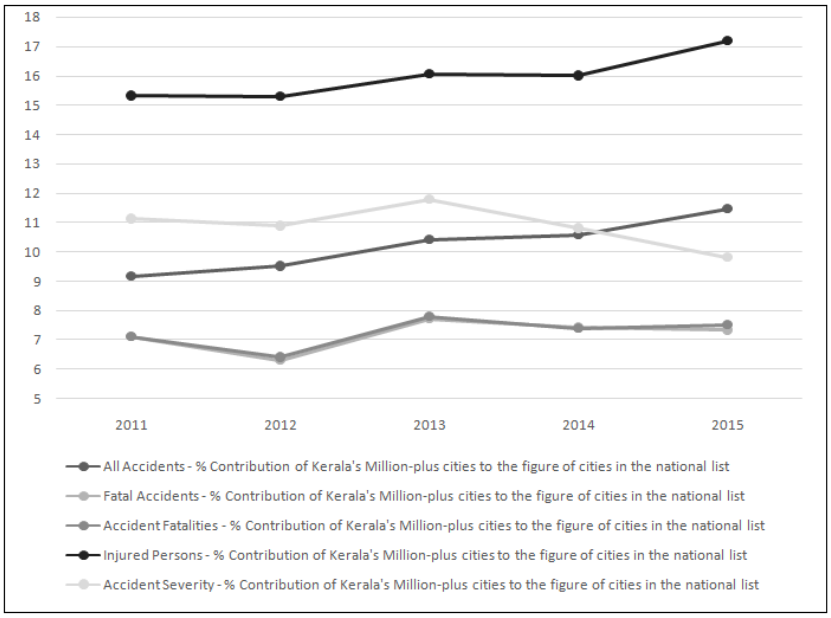

Figure 2: Share of Kerala's Million-Plus Cities in the Accident Figures of Cities in the National List

The percentage share of the cities from Kerala in the category of fatal accidents and the fatalities due to accidents shows a decline in 2012 but increases in 2013 and has remained almost constant thereafter.

DISCUSSIONS

In the categories of number of road accidents, fatalities and injuries the situation of Kerala is alarming. The state for the last five years has been witnessing huge numbers in all these categories.As state which accounts for only 2 percent of the geographical area and 4 percent of the population of the nation, registers around 7 to 9 percent of road accidents in the country. Effective policy measures need to be put in place to drastically reduce the number of accidents and accident injuries and fatalities.

To begin with, there is a need for a perception change -from a belief that these accidents are inevitable to a logical understanding that it can be avoided through rational analysis and remedial action. These are the methods that helped the developed countries to reduce the intensity of the problem. The success achieved by developed countries is an outcome of oriented and system based approach which was strengthened by the research works of the Ralph Nader in the United States of America and William Haddon Jr.

The first step towards an effective road safety policy is the collection of the details of road accidents. The systematic collection of data along with its precise causes and types of injuries helped the developed countries to identify the causes and address them, thereby reducing the problem. But India is still far behind in the direction of framing a systematic road traffic data recording and management system. In addition to this, there are high numbers of under-reported mishaps. The reason being clerical errors or at times issues being mutually resolved on the spot.

In order to effectively frame policies for road safety, an accurate and comprehensive data collection and management system should be given priority by India as suggested by the report, "Road Traffic Injury Prevention" by World Health Organisation-2004, addressing all developing countries.

In the state-wise analysis, it is seen that Kerala, though small in geographical area, registers comparatively high number of road accidents in the country. Its economic and social consequences on the victims and their family members will be enormous, which demand strong road safety policies and its implementation. Kerala should coordinate with all the stake holders who are engaged in road safety activities in the state. Mere technology transfer may not work well in the state as there is a preponderance of non-motorized and vulnerable road users including two-wheelers, cyclers, and pedestrians. But some common methods can be applied, emulating the success of the developed countries. The avoidance of the under-reporting of road accidents along with the systemic approach of data collection will be useful for Kerala.

The Haddon Matrix, a nine-cell matrix which incorporates three factors like users, vehicles and the environment of the road traffic crashes, first devised by the United States in their traffic crash data collection by William Haddon Jr, is an effective one. The conditions of the three factors during the pre-crash and post-crash scenario are useful in identifying the causes of road accidents. This system proved to be very effective in the United States and other developed countries. In Kerala too, it is relevant; as the State Crime Record Bureau identifies that 97 percent of road accidents take place because of the sole fault of the commuters. Developing institutional capacity for handling the Research and Development activities related to road accidents and safety measures need to be strengthened in the state.

The stakeholders, including Motor Vehicle Department, Health Service Department, General education Department, Kerala Road Transport Corporation, Kerala Road Fund Board, Traffic Police, Kerala Road Safety Authority, Public Works Department, Local Self Government, Social Welfare Department and National Transportation Planning and

Research Center are being involved in the road safety activities in varying forms. But there is a lack of coordination among them and it is also found that there is overlap in the studies done by them, thus resulting in a waste of government resources. So, their activities should be evaluated and coordinated by a single nodal agency in the state. Periodically, the road safety fund spends by these official agencies and NGOs should be assessed and their effect on beneficiaries should be identified.

REFERENCES

1. *Donald J. Bowersox, Pat J. Calabro and George D. Wagenheim (1981) Introduction to Transportation, Macmillan Publishers., Inc. New York, pp150-180*
2. *United Nations Road Safety Collaboration (World Health Organization)http://www.who.int/roadsafety/decade_of_action/en/*
3. *Kerala Motor vehicles Department http://www.keralamvd.gov.in/*
4. *Kerala Road Safety Authority http://www.roadsafety.kerala.gov.in/*
5. *Government of Kerala (2015) Kerala Economic Review, Chapter 5, Infrastructure, pp 50-60*
6. *Government of India, Ministry of Road Transport and Highways (2011), Road Accidents in India, pp42-65*
7. *Government of India, Ministry of Road Transport and Highways (2012), RoadAccidents in India, pp12-25*
8. *Government of India, Ministry of Road Transport and Highways (2013), RoadAccidents in India, pp8-18*
9. *Government of India, Ministry of Road Transport and Highways (2014), RoadAccidents in India, pp5-19*
10. *Government of India, Ministry of Road Transport and Highways, (2015) RoadAccidents in India, pp1-45*
11. *World Health Organization (2013)Global Status Report on Road Safety, Supporting a Decade of Action*
12. *World Health Organization (2009) Global Status Report on Road Safety, Time for Action*
13. *World Health Organization and World Bank (2004) World Report on road traffic Injury Prevention Summary*
14. *National Transportation Planning and Research Centre (2016) Road Accidents Data Various Years compiled*
15. *World Health Organization and World Bank (2004)World Report on road traffic Injury Prevention Summary*