ROAD ACCIDENTS – ITS ROOT CAUSES AND FINANCIAL REPERCUSSIONS ON FAMILY AND SOCIETY

A STUDY WITH REFERENCE TO KERALA

Minor Research Project Submitted By

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CERTIFICATE

This is to certify that Smt. **DEEPA K.A, Assistant Professor, PG Department of Commerce**, M.E.S Asmabi College, P.Vemballur, Kodugnallur has carried out the project entitled **"Road Accidents- Its Root Causes and Financial Repercussions on Family and Society- A study with reference to Kerala "** undertaken by a minor research project under UGC. This project is an independent work and does not constitute part of any material submitted for any project.

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DECLARATION

I, Deepa K.A, do hereby that this written account entitled **"Road Accident – Its Root causes and Financial repercussions on Family and Society- A Study with reference to Kerala"** is a bonafide record of minor research work done by me. I also declare that the minor research project report has not been submitted by me fully or partly for the award of any degree, diploma, title or recognition before.

Deepa K.A

Place:

Date:

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Deepa K A

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INTRODUCTION

INTRODUCTION

Transport plays an important role in the economic development of any region. Economic growth that result in higher incomes and a rising living standards are expected to create greater demands for travel for both work and non-work/leisure purposes. This is turn can create congestion and reliability problems on the transport network, increasing costs on business and damaging quality of life. As road transport provides door-to-door connection and flexible movement of goods and passengers, its patronage by people are on the rise day by day. The quality of life now greatly depends on the quality of roads.

Road accidents are one of the major causes of death, injury and disability in all over the world both in developed and developing countries. With a broad estimate, in every one minute, two people are killed and 95 people are severely injured or permanently disabled in traffic accidents worldwide. Traffic accident related deaths and injuries result in not only substantial economic losses but also serious physical and mental sufferings. Developing countries are much more affected from traffic than developed countries. According to the World Health Organization (WHO) statistics, 75 Per cent of deaths resulted from traffic accidents occurring in developing countries, although they own only 32 Per cent of the motor vehicles in the world. While the annual fatality per 10,000 vehicles ranges from 20 to 200 in low or middle income countries, it varies between 1.5 and 5 in industrialized countries. The estimated global economic cost of traffic accidents is $518 billion per year. The share of the developing countries is $100 billion which accounts for 1 to 3 Per cent of their gross national product. Road traffic crashes occur on all continents and in every country of the world. Every year they take the lives of more than a million people and incapacitate many millions more. Pedestrians, users of non-motorized vehicles–including bicycles, rick-

shaws, carts and motor cyclists in low–income and middle–income countries carry a large proportion of the global burden of road traffic death and serious injury.

India's record in road deaths has risen to at least 14 deaths per hour in 2008 against 13 the previous year. The total annual deaths due to road accidents have crossed 1.18 lakhs, according to the latest report of National Crime Records Bureau (NCRB). While trucks/lorries and two-wheelers were responsible for over 40 Per cent deaths, the rush during afternoon and evening hours were the most fatal phases. Traffic experts are alarmed over the shooting trend of fatalities on roads between 2003 and 2008, and progressive states having a significant share of road fatalities. While the toll was only 84,430 in 2003, it crossed 1.18 lakhs in 2008, an increase of nearly 40 Per cent in Andhra Pradesh, Maharashtra and Tamilnadu reported 12 Per cent , 11 Per cent and 10.8 Per cent respectively of total road accident deaths in the country. In India, statistics on road accidents indicate over 1, 30,000 deaths and 5, 00,000 injuries occur annually. In 2007 Tamilnadu recorded over 59140 road accidents followed by Maharashtra 51975, Karnataka 46334, Andhra Pradesh 43,594 and Kerala 39861 (NCRB 2007).

Kerala State is blessed with high literacy rate, better health care, and higher density of population distribution and connectivity of roads to all villages. Kerala is one of the leading states in high rate of road accidents and injuries. Road accidents are considered to be the third major cause of death in the state. Vehicles become weapons of mass destruction in Kerala. Kerala has one of the highest per-capita consumption of alcohol in the country. There has been no respite from accidental deaths for God's own country, despite strict enforcement of traffic rules. Though the number of accidental and deaths has come down slightly, the rate is still alarming.

Road traffic accidents are a human tragedy. They involve high human sufferings and socio-economic costs in terms of premature deaths, injuries, loss of productivity etc.

The various causes of road accidents are:

1. Drivers - Over speeding, rash driving, violation of rules, failure to understand signs, Fatigue etc.

2. Pedestrian - Carelessness, illiteracy, crossing at wrong places, moving on carriage way.

3. passengers - Projecting their body outside vehicle, by talking to drivers, alighting & boarding vehicle from side travelling on footboards, catching a running bus etc.

4. Road Users - Excessive speed and rash driving, violation of traffic rules, failure to perceive traffic situation or sign or signal in adequate time, carelessness, fatigue, alcohol, sleep etc.

5. Vehicle - Defects such as failure of brakes, steering system, tyre burst, lighting system, overloading, projecting etc.

6. Road Condition - Skidding road surface, pot holes, ruts, merging of rural roads with highways, diversion etc.

7. Road design - Defective geometric design like inadequate sight distance, inadequate width of shoulders, improper curve design, improper traffic control devices and improper lighting,.

8. Weather conditions - Fog, snow, heavy rainfall, wind storms, hail storms etc.

9. Environmental factors - Unfavourable weather conditions like mist, snow, smoke and heavy rainfall which restrict normal visibility and makes driving unsafe.

10. Other causes - Improper location of advertisement boards, gate of level crossing not closed when required etc.

NEED AND IMPORTANCE OF THE STUDY

Traffic accidents are a major cause of death and injuries worldwide, but while they are declining in many parts of the developed world, fatalities are still on the rise in many developing countries including in India. Kerala is one of the top States in the case of road accidents. In our state more than half of the road accident victims are in the age group of 20-55, the key wage earning and child raising age group. The loss of the main breadwinner and head of household due to death or disability can be catastrophic, leading to lower living standards and poverty. This study is an attempt to highlight the root causes of road accidents and its impact on the life of the victims and society. The study analyses requisite statistical data to find out the root causes of accidents, financial impact on the family of the victims in order to reduce the road accidents at its maximum.

STATEMENT OF THE PROBLEM

Road traffic accident data analysis is an important tool for determining the main safety problems towards which measures should be directed. These days, road safety has become a major concern in most modern societies. Road accidents can never be totally stopped, but with the help of reduced speed limits, increasing the safety of vehicles, the determination of road locations that are more dangerous than others, Pavement marking, finding the accident rates and increasing the minimum age to

drive can all help in preventing road accidents and road safety policies .It could be notable that the roads are occupies an eminent position in transportation and carry nearly 65 Per cent of freight and 87 Per cent of passenger traffic. Traffic on roads is growing at a rate of 7 to 10 Per cent per annum while the vehicle population growth, for the past few years, is of the order of 12 Per cent per annum. Moreover, the lengths of roads show the 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 infinite, eating into the economics of the nation. Today the accident rate is high and a large number of persons are killed or injured. Moreover, it will affect environment, nation's economic status, and society. Kerala has become the second most-accident-prone state in the country. Vehicles become weapons of mass destruction in Kerala. This text depicts that more number of persons are killed in road accident because many do not follow road rules and regulations. By and large, it is urgent to control road traffic accident as its impact on the family and society is significant. In this context, the researcher wants to find out the root causes of increasing road accidents in Kerala, which is the major reason for death among youth and to know the financial repercussions of road accidents in the personal life of victims.

OBJECTIVES OF THE STUDY

The present study is to investigate the following

1. To identify the root causes of increasing road accidents in Kerala, which is the major reason for death among youth.
2. To know the financial repercussions of road accidents in the personal life of the victims.
3. To find out the rate of death, injury and disability due to road accident.
4. To know the impact of road accidents on the society.
5. To find out the remedial measures to reduce the number of road accidents in Kerala.

HYPOTHESES

Following are the hypotheses formulated for the present study

1. There is no significant change in the financial status of the victims before and after the road accident.
2. There is no relationship between the age and road accident.

METHODOLOGY OF THE STUDY

In order to achieve the objectives of the study and to test hypotheses, both primary and secondary data were used. Primary data relating to the causes of accident, financial repercussions of the accident and the impact of road accident on the family were collected from the selected victims of accident through an interview schedule. For this a questionnaire was developed for reliable and first hand data collection. Data were

collected from a sample size of 200 respondents living in Kerala. For this, the state was divided into three zones such as Northern, Central and Southern districts of Kerala. Southern Districts consists of Thiruvananthapuram, Kollam, Pathanamthitta, Alappuzha, Kottayam and Idukki. Central zone consists of Ernakulam, Thrissur and Palakkad Districts. North zone consists of Malappuram, Kozhikkode, Wayanad, Kannur and Kasargodu Districts. From each zone a sample district on which the highest rate of accident occurred was selected. The respondents of the study were the accident victims of the period from 2010 -2014.Convenience sampling method was used for data collection. Secondary data were collected from books, journals, periodicals, leading newspapers, websites etc. The collected data were analysed with the help of statistical tools like tables, Per cent ages, trend analysis, CAGR, mean, standard deviation, correlation, chi-square test etc. The hypotheses were analysed for drawing final conclusion.

SCOPE OF THE STUDY

The study is to analyse the root cause of road accidents and its impact on the personal life of the victims in Kerala state. The state was divided into three zones such as northern, central and southern districts. Southern districts consists of Thiruvananthapuram, Kollam, Pathanamthitta, Alappuzha, Kottayam and Idukki. Central zone consists of Ernakulam, Thrissur and Palakkad districts. North zone consists of Malappuram, Kozhikkode,Wayanad,Kannur and Kasargodu districts. From each zone a sample district was selected on the basis of number of accidents i.e. the most accident occurred district.

LIMITATIONS OF THE STUDY

1. The study covers only Kerala state.
2. The sample size is limited to 200 accident victims only. So the sampling errors may be there.
3. The study comprises both primary and secondary data. So the reliability of findings may depend on both the data.
4. The study does not take into account the type of vehicle involved in the accident and the time in which most of the accident occurred.

CHAPTER SCHEME

The study will be arranged in five different chapters.

Chapter I – Introduction

Chapter II – Review of literature

Chapter III – causes of road accidents and its impact

Chapter IV – Data analysis and interpretation

Chapter V – Findings, Suggestions and conclusion

CHAPTER II
REVIEW OF LITERATURE

REVIEW OF LITERATURE

1. **Rao, R. Prabhakar (1981),** State Transport industry needs an organization which can mobilize finances from the various sources to the extent of about Rs. 500 crores annually and channel the same to State Transport Undertakings. So it was easier for them to plan their future growth. An organization like the shipping development fund will have a limitation in that the resources available are only the funds provided by Government along with the interest and repayment thereon. It may not be able to raise funds from financing institutions. Further, State Transport Corporations already is getting Central Government's Contribution directly under a provision in the Road Transport Corporation Act and they would both be interested in channelising the same funds through the Committee. It would therefore be desirable to continue the flow of Central Government's Capital Contributions to STUs as present by channelising the same through the Ministry of Shipping & Transport and not through Railway Board.The constitution of "TRANSPORT DEVELOPMENT FINANCE DEVELOPMENT CORPORATION" as a statutory corporation/company, with suitable equity base to be provided by the Central Government, State Government & Financing Institution.
2. **Jacobs, GD and Sayer, (1983)**, by the early 1970s countries of the Third World was becoming increasingly aware that they faced a growing road safety problem. In 1972, following numerous requests made by developing countries for aid and guidance in the road safety field, a small research team was formed within the Overseas Unit of the Transport and Road Research Laboratory. The aim of this team was to undertake research in Third World countries with a view to establishing the nature and extent of their traffic accident problems and, in the longer term to assess the effectiveness of remedial measures. The paper describes some of the major findings of this research

team. Research work carried out by the Overseas Unit TRRL has shown that road accident fatality rates (i.e. deaths per 10,000 vehicles licenced) are high in developing countries", very often 20 times greater than for those countries of Western Europe and North America .Perhaps even more worrying was the fact that whereas fatality rates in developed countries have decreased steadily over the last twenty years, those in a considerable number of developing countries have increased. In many Third World countries a major road safety problem may be present that does not exist at all in Western Europe and North America – accidents involving para-transit forms of public transportation. Thus in Surabaya, the second city of Indonesia, 17 per cent of Major casualties was drivers or passengers of betjaks (cycle rickshaws).

3. **K. C. Pant (2001),** focuses his attention on the development of road sector and stressed begin with quality. Road development is expensive but it has many benefits in conserving the future resources. According to Pant the poor financial conditions of the SEB was a major constraint in achieving financial closures. Power sector reforms are therefore the crying need of the hours.
4. **Dinesh Mohan (2002),** there has been a few attempts in India to estimate the costs of road traffic crashes over the past few decades. But, these have followed very simple economic models to include actual expenses and direct and indirect loss of income etc. One of the early studies which attempted to evaluate road accident costs was conducted for Delhi for the year 1968 and another study calculated accident costs based on insurance company data for Chennai (Madras) for the year 1978.The first major Road User Cost Study (RUCS) was published in India in 1982. This study, sponsored by the World Bank, included a section on accidents as a component of road user cost. The costs include where: medical expenses, legal fees, property damage, insurance costs, and loss of output due to death (future consumption as one-third of

income and future output calculated up to the age of 55 years). The latest study on evaluation of road accident costs was sponsored by the Ministry of Surface Transport (Roads Wing, Research Scheme R-79) and conducted by M/s Tata Consultancy Services. The life expectancy of Indians was assumed to be 54 years. This is a serious technical error, as this was the life expectancy at birth at that time. Since very large proportions (approximately 40 per cent) of deaths were at ages below 4 years the life expectancy at birth in India was lower than that at 10 years. If they had calculated the life expectancy of Indians at 5 years they would have found that it was in the region of 70 rather than 54 years. According to their sample only 7 per cent of the victims were under 10 years. Therefore, it is possible that they underestimated the life span by more than 20 Per cent . The study did not account for the undercounting inherent in the official statistics on road accidents.

5. **Nilambar Jha, D.K. Srinivasa, Gautam Roy, S. Jagdish (2004),** from their study clearly indicated that there is a need for road safety education and it should be directed towards road users, who are frequently involved and injured in RTAs (e.g. students). Pre-school children may be introduced to the elementary concepts of road safety through stories involving the animal world. Primary school children may be given practice guidance on the use of sidewalks and road crossing techniques. For middle school students - road signs and bicycle riding. High school students can be taught about reaction time, breaking distance, defensive driving and hazards of alcoholic drinks. Road side random breath testing for alcohol should be done by using breath analyzers, which can be confirmed by blood concentration level of alcohol. The real pressure and motivation to improve driving skills can come only through licensing authorities by adopting stricter, more comprehensive and scientifically based test laying a stress on road rules, regulations and traffic control devices. At the time of

giving license to the public transport drivers (Bus and Trucks), they can be given training in first-aid skills so that victims are attended immediately in the post accident period.

6. **Jolly Jose, Jessil K.J, Remadevi C (2006),** in their study indicate that there is a wide gap between money spent on patients admitted in the ICU and in the general wards. The money spent on patients in the general ward was found to be considerably low. The use of helmets should be encouraged by mass education programmes which could reduce the incidence of head injury. The duration of hospital stay can be minimized if the primary care system is strengthened by back up referral of RTA cases to PHCs. Patients should be advised to contact the community health nurse or multipurpose workers in addressing their rehabilitative needs who in turn must be given adequate training in this regard. The findings imply that there is considerable economic burden on hospitals due to RTA and nurses should take initiative in educating public about prevention of RTA. Nurses can plan the advice on discharge and health education based on the rehabilitation needs. Families of RTA victims should be taught on available resources for rehabilitation. In view of the increase in road traffic accidents the nursing education programmes should incorporate adequate curriculum content in training student nurses in trauma, emergency nursing and rehabilitation nursing. To conclude, there should be more importance to the primary prevention of RTA by improving road conditions and enforcing existing laws.

7. **Brussels (2007),** the main findings of the report were incomplete and inaccurate accident reporting of accident cases. The long-term impacts of transport-related injuries within the EU are to a large extent unknown. Mortality rates are fairly well known in the different member states.Case mortality in road accidents, i.e. the proportion of all those involved in road accidents who are killed, has been declining in many countries for a long time. For example, in Part of the decline in

case mortality is probably attributable to medical progress. This implies that some of those who would have died of their injuries 35 years ago survive today, but very often with lasting impairments. It is therefore highly likely that the number of people living with lasting impairment as a result of traffic injury is steadily increasing. However, the preponderance of evidence suggests that traffic injury is associated with social status. Those who are low in social status sustain traffic injury more often than those who are high in social status. Social disparities in risk appear to apply to all groups of road users and all levels of injury severity. This means that those groups of the population who are disadvantaged in terms of income, education or quality of their residential areas are also disadvantaged as users of the road transport system by sustaining injury more often than the more advantaged segments of the population. There is thus a significant element of social injustice with respect to traffic injury.

8. **Pachaivannan Partheeban, Elangovan Arunbabu, Ranganathan Rani and Hemamalini (2007),** it is felt necessary to carry out detailed accident cost studies for Chennai city. Accident cost needs to be estimated for urban and rural areas separately. Three scenarios were analysed to predict the future accident cost estimation by considering income growth and discount rate per annum. It is found that the combined changes in income growth and discount rate per annum results in higher total accident cost. In this study, a special factor has been considered while calculating the future loss of accident victims. This is also known as future consumption value, i.e. a person would have consumed if he had lived, and that has been deducted from the accident costs. No longer will planners have to struggle through stacks of registers to access information. The portability of data and the ability to incorporate changes and modification in the existing databases make the system a desirable tool for planners and administrators.
9. **Rocky R. J. Akarro (2009),** Tanzania is one of the countries in which big losses due to road accidents was evidenced. For example in 1994 alone the estimated losses due to motor accidents was approximately at least 11 billion ($22 Million) and the trend was continuing. The National Insurance Corporation (NIC) disbursed over 15 billion

Tshs ($30 Million) in 1993 on motor vehicle accidents, which accounted for 55 Per cent of all claims launched by customers during the year. The government of Tanzania has been putting road safety measures in its agenda. Speed limiters on buses have been affected but this has not reduced road accidents significantly as incidences of road accidents was still a common occurrence in Tanzania. Realizing this SIDA/SAREC in conjunction with the Department of Statistics at the University of Dar es Salaam carried out a research on people's opinions regarding possible causes of road accidents with a possibility of designing a remedial solution. People whose opinions were sought were the drivers themselves, the motor cyclist, the pedal cyclist/gutta cyclist/mkokoteni and the pedestrian. Analysis identifies driver errors as the main causes of accidents followed by a combination of driver/vehicle errors and vehicle/road errors. Findings show that effective remedial solutions should be designed to capture for the drivers whom as the study shows are the main players in road accidents.

10. **Binu B Pillai and Dr.Kurian Joseph (2011),** in their study reported that accident cost includes medical expenses, gross loss of output in administrative and court expenses and also the cost of intangible consequences like pain, grief and sufferings. Rapid increase in the number of motor vehicles especially during the last two decades has been the major reason for the increasing number of road accidents. In our country several safety programmes, developing vehicle technology and new Motor Vehicle Act etc are considered, planned and implemented to control the impacts of road transport injuries. They conclude that **t**o prevent Road Traffic Injury on roads in our country, we should consider and use sustainable safety programme of different countries as per our requirements which would bring down the number of accidents and fatalities on roads in future. The preventive measures brought through this report

further direct us to control or bring down these Per cent ages by using different new safety measures, infrastructural design fatalities and latest vehicle technology which would definitely reduce the existing figures of pre-crash and crash conditions in our country.

11. **B. Sandhya**, Inspector General of Police, **(2011) ,** addressed a road safety awareness programme organised by the Regional Transport Office in 2011, she said lack of a road culture and scant regard for traffic rules were the reasons for spurt in accidents. Inspector General of Police, Thrissur Range, B. Sandhya has stressed the need to develop a new road safety culture in view of the increasing road accidents in the State.

    “Kerala has the highest road accident rate in the country. Over 3,800 lives are lost on State's roads each year. About 40 per cent of the victims are two-wheeler riders. Many more road users suffer permanent disability following the accidents,” she said.

    The increase in accidents could be attributed to many factors, she said. “The rapidly shrinking road space in view of the ever-increasing vehicle population is a major factor. Road users seldom adhere to traffic rules. Utter disrespect for the rights of others is the reason for the disregard of traffic rules. Two-wheeler riders often do not wear helmet. Pedestrian’s safety has never been considered,” she said. The State needed an effective road safety action plan, Ms. Sandhya said. Officials and the public should join hands for the effective implementation of the road safety action plan to ensure the safety of all road users, she said.

    “Road safety classes should be conducted at educational institutions regularly. Rules should be made stringent against drunken driving.”

12. **Kiran Sandhu (2012)**, the gravity of the challenges posed by RTAs becomes fairly evident. From time to time,the Government of India has come out with legislation and policy initiatives to address the menace of RTAs. However the failure in addressing the same appropriately is largely due to poor enforcement and lack of implementation. Proper implementation can go a long way in reducing, if not completely mitigating, the risk of mortality on the Indian roads.
13. **Liyamol Isen, Shibu A, Saran M. S (2013),**the study was an attempt to find out the most vulnerable accident locations or the black spots in Alappuzha and Ernakulam districts making use of GIS. The WSI method was used to rank the accident locations, and top ranked six spots in Alappuzha and ten spots in Ernakulam were selected as per the WSI value for the data collection and analysis in GIS platform. Based on the analysis, Kalavoor in Alappuzha and two spots Kalamassery and Mulamthuruthy in Ernakulam were identified as most vulnerable accident locations and suggested some possible alternative or corrective measures to improve the transportation system in these locations, from which the decision maker can select suitable measure for the location. The method is found to be effective in identifying the black spots, provided sufficient secondary data is available.
14. **Manisha Ruikar (2013),** as per bibliometric analysis was done to document injury literature published in low- and middle-income countries, India, the second-most populous country in the world, contributed only 0.7 Per cent articles on road traffic injuries and had less than one article on road traffic injuries per 1,000 road traffic-related deaths. To be effective, policies on injury prevention and safety in developing countries must be based on local evidence and research, and designed to suit the social, political, and economic circumstances found in developing countries. As a

result, strategies to increase research itself must develop alongside steps to stimulate policymakers and practitioners to demand and use research evidence.Strengthening and undertaking research on the public health burden and impact, understanding the risk factors, characteristics of trauma, and measuring the impact of interventions through well-designed public health and clinical research methods (trauma registry, surveillance programs, hospital- and population based studies etc.) is the need of the hour. Health professionals and their professional bodies across wide disciplines need to take an initiative for the same, with active commitment**.**

15. **B.V.Sreekumar and Dr.V.Sreedevi (2014),** 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. 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). 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, the study shows that in state highway having more number of road accidents in 2011 as compared to the initial period of 2001. Moreover, this 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. This study attempts to another objective of district wise classification of road accidents in the study area. It depicts that most of them accidents were occurred in 2001 and the majority districts are Ernakulum , Palakkad , 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.

16. **Pawan Deshpande (2014),** in his study stated that road accidents are a human tragedy. They involve high human suffering and monetary costs in terms of untimely deaths,injuries and loss of potential income. Although we have undertaken many initiatives and are implementing various roadsafety improvement program the overall situation as revealed by data is far from satisfactory. During the calendar year 2010, there were close to 5 lakh road accidents in India, which resulted in more than 1.3 lakh persons. These numbers translate in ten road accident every minute, and one road accident death every 4 minutes. Unfortunately, more than half the victims are in the economically active age group of 25-65 years. The loss of the main bread winner can be catastrophic. Road traffic accidents are amenable to remedial action. Many a countries have curbed the menace of road accidents by adopting a multipronged approach to road safety that encompasses broad range of measures, such as, traffic management,design and quality of road infrastructure, application of intelligent transport system, safer vehicles, law enforcement, effective and quick accident response and care etc. The Government alone cannot tackle road safety problems. There is a need for active involvement of all stake- holders to promote policy reform and implementation of road safety measures. Addressing road safety is comprehensive manner underscores the need to involve multiple agencies and sectors like health, transport and police.
17. **Binu,B.Pillai and Dr.G.D.Singh (2015),** in the year 2001 the total number of road accidents were 38361 and it rose to 42363 in the year 2005. From the year 2006 onwards there is a slight decreasing tendency in accidents and it come to 36282 in 2014.Based on the information gathered from Motor Accident Claim

Tribunal (MACT), the total cost of accidents in Kerala was Rs 291.27 crores at 1998 prices. At current prices in 2013-2014, the total cost of accidents works out to more than Rs 500 crore per annum. This is a terrible price we have to pay for mobility of people in the state. Road accidents and its after effects lead to a major economic, social and health problem. The various costs experienced during and after the accidents include hospital expenses, administrative and court expenses, wastage of time and also the cost of intangible consequences like pain, grief and sufferings. Sudden increase in the number of motor vehicles with the same infrastructure of roads especially during the last two decades has been the major reason for the increasing number of road accidents. Several measures has been planned and implemented in our country to control the impact of injuries during road accidents such as awareness of safety programmes, new vehicle technology and introducing strict Motor Vehicle Act.

CHAPTER III
CAUSES OF ROAD ACCIDENTS AND ITS IMPACT

ROAD ACCIDENTS

A Road Traffic Accident can be defined as, ‘an event that occurs on a way or street open to public traffic; resulting in one or more persons being injured or killed, where at least one moving vehicle is involved. Thus it is a collision between vehicles; between vehicles and pedestrians; between vehicles and animals; or between vehicles and geographical or architectural obstacles’.

No one can put a price tag on a human life, but there is a loss to the family, to the community, every time a person is killed or maimed or temporarily out of action in a road accident. Every year, more than 12000 people die in road accidents around the world. Road accident fatalities reported in developing countries is about seventy Per cent ages.

Road deaths and injuries are a global problem of massive proportions. Of all the systems that people have to deal with on a daily basis, road transport is the most complex and the most dangerous. Some important and major studies on the subject of road accidents and fatalities carried out by World Bank, World Health Organization (WHO), Transport Research Laboratory (TRL), and others have highlighted that road crashes are a cause of death particularly in developing and transitional countries.

World Wide Accident Situation

As per WHO more than 1.17 million people die on road every year. According to WHO, road traffic injuries are the leading cause of death by injury worldwide (20.3 Per cent of all deaths from injury) and rank second to HIV / AIDS as the leading

cause of ill-health and premature death among adult men (aged 15-44). A 1996 study by WHO, 'Global Burden of Disease' showed that in 1990, out of 10 cases of deaths and injuries, road crashes were ninth on the list. Forecast for 2020 shows that the road crashes are expected to move up to the third place in terms of Disability Adjusted Life Years (DALYs).The DALY is an indicator of the time lost by an individual in living with a disability or by premature death. Jacob and Aeron – Thomas suggested that for 2010 the range of global road deaths will be between 900,000 and 1.1 million and between 1 million and 1.3 million in 2020. Without additional efforts and initiatives, the total number of road traffic deaths and injuries worldwide is forecast to rise by 65 Per cent between 2000 and 2020 and in low-income and middle-income countries, the deaths are expected to increase by as much as 80 Per cent (Mittal 2008). As per the 2009 commission for Global Road Safety traffic accidents kill an estimate of 1.3 million people and injure 506 million per year, and global road fatalities are forecast to reach 1.9 million by 2020. The number of deaths on road in Asia is about 7,00,000 per year, accounting for more than half of the world's road fatalities though Asia is accounted for only 43 Per cent of the global vehicle population in 2007 (Road Accidents in India 2009). About 70 Per cent of road accidents occur in developing countries. 65 Per cent of deaths involve pedestrians and 35 Per cent of it is children. Over 10 million are crippled or injured each year. At least 6 more million will die and 60 million will be injured during the next 10 years in developing countries. The majority of road crash victims in developing countries are not the motorized vehicle occupants, but pedestrians, motor cyclist, bicyclists, and Non Motorized Vehicles (NMV) occupants.

India has the second highest number of road accidents in a year, according to World Road Statistics (WRS) 2010 data. In developing countries, the fatality rates (defined as road accidental deaths per 10,000 vehicles) are quite high in

comparison to developed countries. In 2006 over 1,05,749 died in India against China's toll of 89,455 as per the latest figures by the Ministry of Shipping Road Transport and Highways. Road traffic accidents and injuries are a major but often neglected public health problem in India. 1,14,600 people died and 4,65,000 got injured on Indian road in 2007. India is the only country in the world which faces more than 13 fatalities and 53 injuries every hour as a consequence of road accidents (Singh 2009).

Road accidents killed 33 people every hour in Southeast Asia in 2009 and the highest number of these deaths was reported in India. A World Health Organisation (WHO) report by Sample Plianbangchang, Regional Director of WHO for Southeast Asia says "As many as 2, 88,768 people were killed on the roads in the region and almost 73 Per cent of this burden belongs to India". Also among the total number of road accident deaths, almost two-thirds were motorcyclists, pedestrians and cyclists. The young people killed in the accidents (aged between 15-44) corresponds to the economically most productive segment of the population and put a huge economic burden on the countries. Tamilnadu and Maharashtra have the largest number of road accidents in India (one-fourth of the total 3.94 lakhs in 2006). It is partly the responsibility of the citizen to practice safety measures. Every driver seems to be in too much hurry to give passage to any other vehicle and too egoistic to apologize in the scene of an accident and put the blame upon others. Careless overtaking is a common practice. The number of accidents is accelerated by ever increasing congestion of roadway system. Speedy medical assistance is also required to minimize the death toll. The government should avoid myopic policies and strictly enforce the traffic laws since road accidents not only cost human lives but also affect approximately 3 Per cent of Gross Domestic Product (as estimated by World Bank). These alarming statistics have resulted in enhancing roadway safety

through safety research and safety conscious design, which are mainly concerned with reducing the number of consequences of vehicle crashes.

Accident Situation in India

Road accident scenario in India is a great issue, as it has become a major social, economical and health problem. India has nearly six crore motor vehicle on road while the USA has a stock of more than 25 crores. Over 85,000 people are killed annually in India while it is less than 42,000 in the United States. Every year more than 4 lakh accidents take place on Indian roads, leading to more than 80,000 fatalities. With about 5.5 Per cent of the total motor vehicle population in the world, the number of fatalities per ten thousand vehicles is 14.39 in India, as against China (17.10) and high income countries (between 1.0 and 2.50). The road fatalities are very high in India and rank second highest in the world after China.

In India, more than a million are injured and about a lakh are killed on roads annually. It causes the country a loss of around 55,000 crores annually which is 2 to 3 Per cent of GDP.

The total road network in India is 3.34 million kms but the road infrastructure is not up to the mark. India cannot put vast resources on road security. Still something should be done as 40 Per cent of all accidental deaths are caused by road accidents (Mishra 2009). In 2009 India witnessed around 4.9 lakhs road accidents that killed 1,25,660 and injured more than 5 lakh. These numbers translate into one road accident every minute and one road accident death every four minutes. Road traffic injuries and fatalities impose a huge economic burden on developing economies (Road Accidents in India 2009). Mohan (2009) states that road traffic fatalities have been increasing by about

8 Per cent annually for the last ten years. Road safety policies in India must focus on the following issues: pedestrians and other non-motorist in urban areas; slow vehicles on highways; motorcycles and small cars in urban areas; over-involvement of trucks and buses; night-time driving; and wrong-way-drivers on divided highways. India's specific countermeasures will be possible through continuous monitoring and research, which will require the establishment of road safety research centres in academic institutions and a National Road Safety Board (NRSB). Urbanization and the growing number of vehicles in developing countries increased traffic accidents on road networks that were never designed for the volumes and types of traffic that are urgently required. Road traffic accident is a rare, random, multi factor event always preceded by a situation in which one or more road users have failed to cope up with their environment resulting in a collision. Transportation is an essential part of modern existence, linking the various activities in which people participate especially at home, work, school and go to shopping or recreation (Mustaqim et al 2008).

National Crime Records Bureau (NCRB) reports more than 1,35,000 traffic collision related death in India every year. In new Delhi the frequency of traffic collision is 40 times higher than the rate in London. Traffic collision related death went up from 13 per hour in 2008 to 14 per hour in 2009. More than 40 Per cent of these are associated with motorcycles and trucks. The most accident prone time on Indian roads is during the peak hour at afternoon and evening.

Road traffic safety experts opines that the actual number of casualties may be higher than what is documented as many go unreported. Moreover, victims who die some time after the accident are not counted as accident victims.

The “Global Status Report On Road Safety” published by the World Health Organization (WHO) identified the major causes of traffic collision as over speed, driving under the influence of drinks and not using helmet and seat belts. Failure to maintain lane or yield to oncoming traffic when turning are prime causes of accidents on four lane, non-access controlled National Highways. The report noted users of motorcycles and motor-powered three-wheelers as constituting the second largest group of traffic collision deaths.

Road safety is one issue that needs special attention as there’s one death reported every 4 minutes in India. Nearly 5 lakhs road accidents were reported in 2013 in which more than 1 lakh people lost their lives most of whom were aged between 30 and 44 years.

The crucial time between the accident and getting the victim medical attention is very significant. The Law Commission of India says 50 Per cent of victims die as they don’t get medical assistance on time. A simple thing like bringing a patient in time can result in a question of life and death (Gupta).

One can help oneself too. According to a WHO report, wearing a helmet reduces chances of death by 40 Per cent and that of severe injury by 70 Per cent . The report says that using child restraints reduces likelihood of a fatal crash by 70 Per cent among infants and up to 80 Per cent in young children. Wearing a seat belt can reduce fatal injuries by 50 for Per cent front seat occupants and up to 75 Per cent for those sitting in near seats.

Road Accident in Kerala

Kerala has a vast network of over 1.62 lakh kilometers of roads but only 1524 Kms. come under National Highway and 24024 km come under Public Works Department which includes 4650 Km. of State Highways and 19374 Km. of Major District Roads. Even large portions of NH 17 and the State Highways have only single or intermediate lane width. Due to friction and conflicts inflicted by the cris-crossing of vehicles such as cycles, pedestrians, slow mode etc., not only the level of service of the roads deteriorated sharply but also resulted in higher accident causalities. Accidents become a common scene on Kerala roads and major brunt of these accidents is born by cyclists, pedestrians, and two wheelers.

There are about 1.6 lakh kilometers of roads in the state of which only 20 Per cent are motorable. The rest are mostly narrow or single lane pathways intended for residential or street connectivity. 80 Per cent of motorable traffic uses the arterial and sub-arterial roads consisting of National Highways, State Highways and Major District Roads which are under the supervision of Public Works Department. The maintenance and upkeep of these highways are far from satisfactory and devoid of any scientific pavement or bridge management system.

The motor vehicle population in Kerala, which was around 2 lakhs in 1980, has almost doubled every 5 to 6 years. There are about 60 lakh registered motor vehicles in the state of which 25,000 are stage carriages (bus services). 63 Per cent of the vehicles are two wheelers. Around 5 lakh vehicles are now added on the state roads every year. A major chunk of this vehicle stock is found in urban region causing traffic congestion.

Kerala stands third in road accident risk index and on an average around 11 people of crushed under the wheels on our roads everyday and over 100 people are disabled for life. 40 Per cent of accident victims are from the vulnerable groups consisting of pedestrians, students, and cyclists. There is no road culture and traffic rule obedience among road users.

Although the state has high potential in coastal and inland water transport, exploitation of such facilities still remains tardy. There is no proper coordination among service providers of different transport modes. The cities and towns in the state are constraint by narrow roads and bridges and poor pavement and drainage conditions. Adequate footpaths, cycle tracks, pedestrian and vehicle crossing facilities, service roads etc. are absent in city roads. Traffic congestion, long queues at junctions, crowding in buses, dust and smoke, accidents, fuel wastage etc. are the common scene on our urban roads.

In Kerala average around 150 people are getting injured and hospitalized in road accidents daily. While on an average 11 people are killed daily, over 50 persons are grievously injured. 40 Per cent of those killed are from vulnerable road users including pedestrians and cyclists. 40 Per cent of two wheelers are also getting involved in road accidents. Road accident rate and fatalities are increasing in the state without any abetment. There is an urgent need to control road accidents and gradually bring it down to zero level.

Road accidents are the third major cause of death in the state. Heart ailments and cancer are the other diseases that take a heavy toll of human lives in the Kerala State. The state of Kerala has nearly 3 per cent of the country's population but it has recorded about 10 per cent of the country's road traffic accidents. According to the

causality figures recorded in major medical college hospitals in the state, nearly 70 per cent of the head injuries are reportedly caused due to traffic crashes. Rapid increase in the number of motor vehicles has been the major reason for the increasing number of road accidents in our state. The vehicle population has increased by almost 20 per cent per year. Almost 60 Per cent of motor vehicles in the state are two wheelers. Two wheeler populations increased from mere 0.5 lakh in 1980 to 50.41 lakh in 2013. The Kerala state has recorded the third highest number of road accidents in the whole of the country after Maharashtra and Tamil Nadu. The accident rate of Kerala is the highest in the country with 15 accidents per 1000 vehicles, which is twice that of all Indian average. Even bigger states like Uttar Pradesh, Madhya Pradesh, Gujarat, Rajasthan and Andhra Pradesh have reported far less number of accidents compared to Kerala State.

The situation in Kerala is likely to worsen in future due to increase in population, urbanization and demand for personalized transport resulting from economic growth and higher income. The daily transport demand is expected to grow from present 135 lakh trips to over 180 lakh passenger trips by 2025. Kerala will continue to remain as a consumer market for all kind of goods. The existing transport system will not be able to cater to this much demand and hence the inter-modal goods transport system, mass transit system, urban transport infrastructure, traffic management and associated amenities must be improved substantively.

The overall objective of the Transport Policy is to evolve schemes to meet, in a phased manner, the requirements of faster mobility, safety, access to social and economic services and minimizing the impact of negative externalities.

Causes of Road Accident

"Road danger is a man-made crisis, with human error accounting for over 90 Per cent of accidents", said Bob Joop Goos, chairman of the International Organisation for Road Accident Prevention. "More than 90 Per cent of road accidents are caused by human error. We, therefore, have to focus on people in our traffic safety programmes", stated Goos.

According to Goos, 1.3 million road deaths occur worldwide every year and more than 50 million people are seriously injured. The key is focusing on the human element with the "objective of stimulating good (driving) behaviour", remarked Goos.

"Road danger is not just statistics, it causes a great deal of suffering for the people who have lost a loved one or who are handicapped. Road danger has a big impact in our lives", Goos pointed out.

He called on the media to partner with government bodies and international organizations in communicating the message of traffic safety.

"Here comes the important and indispensable role of media in our fight against road crashes. The objective is to bring and to keep road safety on the centre stage and the first step is to raise awareness, to make people see that there's a huge challenge to solve. Many people do not know the extent of the disaster which takes place on our roads every day", Goos remarked.

According to Goos, the second step is to tell people that the challenge of road safety can be overcome, that the danger on the road is a man-made crisis which can be solved. "The sure step is to discuss how we can solve the problem and to implement

adequate measures", Goos explained. He added that the media can help spread awareness by running specific messages about speeding, drinking and driving, seatbelts and traffic distractions, and through broadcasting and hosting programmes and talk shows with experts to speak on the issue of road safety. "This way we are building a kind of road safety culture in society", said Goos.

According to Jose Miguel, chairman of the Portuguese Society for Road Accidents Prevention, a road accident is a consequence of the quality of the road transport system or a break in the balance between the environmental demand and the driver's ability to act. It is, therefore, imperative to "increase the ability of the road users to act in accordance with the needs of the environment" - Miguel.

"Ninety Per cent of our road accidents are related to bad driving behaviour - driving recklessly and speeding under the influence of alcohol, changing lanes without signalling, 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"- Lt Gen Dahi Khalfan, Commander-in-chief of the Dubai Police.

There are 3,500 deaths a day or 150 every hour, and nearly three people get killed on the road every minute. And if we continue with the present efforts, the number of traffic fatalities worldwide will rise by 67 Per cent over the period of 2000 to 2020, 68 Per cent in the Middle East and North African region, and 144 Per cent in Southeast Asia and middle to low-income countries by 83 Per cent , according to the World Health Organisation (WHO) prediction.

Police records shows that rash and negligent driving on the part of the drivers is the main cause of road accidents. According to records, almost 95 Per cent of accidents

occurred due to the fault of drivers of the motor vehicles. The rest of the accidents are caused due to various other reasons like traffic, bad weather, poor road condition, fault of pedestrian's etc.

Road accidents are caused due to one or more of the following reasons.

1. Rash driving and unhealthy competition of vehicles
2. Defective eye sight of drivers
3. Poor surface condition and badly maintained side shoulders of roads
4. Uncontrolled access streets and unmanned junctions
5. Least care regard to traffic rule
6. Haphazard parking on road side
7. Location of bus stops close to junctions
8. Lack of pedestrian crossing, walkway facilities etc.
9. Encroachment/dumping of materials on the road
10. Rapid increase in personalized modes of transport
11. A lack of road discipline

Common causes of Road Accidents

Road accident is most unwanted thing to happen to a road user, though they happen quite often. The most unfortunate thing is that we don't learn from our mistakes on road. Most of the road users are quite well aware of the general rules and safety measures while using roads but it is only the laxity on part of road users, which cause accidents and crashes. Main cause of accidents and crashes are due to human errors.

Here are elaborating some of the common behaviour of humans which results in accident.

1. Fault of driver of motor vehicle driver
2. Over speeding
3. Drunken driving
4. Fault of cyclist and pedestrian
5. Fault of passengers
6. Technical defect of vehicles
7. Bad road conditions
8. Bad weather conditions
9. Distractions to driver
10. Red light jumping
11. Avoiding safety gears like Seat belts and Helmets
12. Blind spots
13. Non-adherence to lane driving and overtaking in a wrong manner

1. Fault of motor vehicle driver

Over-speeding, rash driving, violation of rules, failure to understand signs, fatigue, alcohol etc. of the driver of a motor vehicle leads to accidents. Common driving mistakes are

1. Loosing attention –‘ zoning out’
2. Driving while drowsy
3. Becoming distracted inside the vehicle (cell phone, radio, passengers)
4. Failing to adjust to adverse weather conditions
5. Driving aggressively (tailgating, jumping red lights, and stop signs etc.)

6. Changing lanes without checking blinds spot

7. Making assumptions about other drivers intentions

8. Ignoring essential auto maintenance (brake lights, bad tyres etc.

- **Bad driving habits and road safety**

There are number of things that other driver's do that can be extremely irritating and dangerous. Bad Tailgating, poor lane discipline, not indicating and undertaking are just a few of the bad habits that frequently and are very annoying. Aside from the inconvenience to other road users, this kind of inconsiderate driving is also very dangerous.

- **Tailgating**

This is probably one of the greatest offences. Some drivers are extremely impatient, some people do it without thinking, just following traffic they get a bit close, but then they back off as you accelerate way. Some drivers tailgate deliberately though and these are the ones that are the most dangerous. They sit behind you flashing their headlights in an effort to move you, but of course there is now here to go as you are in the process of overtaking and there is no room to pull in on the left. To this kind of driver, the two second rule means that they can just about cope with another vehicle in front of them before they decide to intimidate them by driving inches away.

- **Undertaking**

Tailgaters that don't get their way will often resort to undertaking if they can. There are also those selfish individuals out there that hog the middle and the outside lane. They have no idea that there is a queue of traffic waiting to get past them, probably because they are in their own little world thinking about what to have for dinner. This causes some individuals to lose patience and undertake.

- **Poor lane discipline**

Some drivers are all over the place and they don't seem to realize that they are supposed to stay in between those white dashed lines.

These are just a few of the things that can be particularly irritating about other drivers and their habits. Below are some other annoyances;

- Cutting corners, particularly at junctions.
- No headlights in conditions that require them.
- Throwing cigarettes out the window.
- Leaving main beam on, or dimming only at the last minute.
- Inappropriate use of the horn.
- Impatient people pushing in ahead of a queue of traffic.

- **Drivers & Riders**

Every day, drivers die in road traffic accidents. Many die as a consequence of inexperience, speeding, intoxication through drink or drugs or just plain recklessness. Being a good driver is not just about the ability to control a vehicle and having good reflexes but about attitude and being able to spot and understand dangers on the road.

- **Young Drivers**

For every kilo meter driven, a 17 year-old male is eight times more likely to be involved in a crash as a middle aged man. Females 17-24 are massively at risk as the victims of male speeding, frequently killed or maimed as passengers.

- **Driving in Fog**

Fog can be thought of as a cloud at ground level. It forms when the temperature drops to the dew point (the temperature at which air is saturated), and invisible water vapor in the air condenses to form suspended water droplets. Fog can reduce visibility to 1/4 mile or less, creating hazardous driving conditions.

- **Driver fatigue**

Driver fatigue can lead to losing control of the vehicle. The risk of a fatal fatigue crash is four times greater between 10 pm and 6 am than for the rest of the day. Fatigue is a general term commonly used to describe the experience of being "sleepy", "tired" or "exhausted". Fatigue is both a physiological and a psychological experience. Driver fatigue can severely impair judgment and can affect anyone. It is particularly dangerous because one of the symptoms is decreased ability to judge our own level of tiredness. Other symptoms vary between drivers, but may include yawning, poor concentration, tired or sore eyes. Restlessness, drowsiness, slow reactions, boredom, feeling irritable, makes fewer and larger steering corrections, missing road signs having difficulty in staying in the lane micro sleeps. It is important to note that driver fatigue is not simply a function of time spent driving but relates to many factors including hours since last slept (hours of wakefulness) and time of day or night.

High risk times for fatigue-related fatal crashes are:

- 10 pm-6 am
- Afternoon
- 1pm-3pm

Fatigue-related crashes at these times of the day coincide with dips in the body's circadian rhythms, which program us to feel sleepy at night when we would normally be asleep and to a lesser extent in the afternoon hours. Fatal crashes identifying fatigue as a factor are more likely to occur during public and school holiday periods. Nearly 30 per cent of all fatal fatigue accidents occur during public or school holidays.

2. Over speeding:

Most of the fatal accidents occur due to over speeding. It is a natural psyche of humans to excel. If given a chance man is sure to achieve infinity in speed. But when we are sharing the road with other users we will always remain behind some or other vehicle. Increase in speed multiplies the risk of accident and severity of injury during accident. Faster vehicles are more prone to accident than the slower one and the severity of accident will also be more in case of faster vehicles. Higher the speed, greater will be the risk. At high speed the vehicle needs greater distance to stop i.e. braking distance. A slower vehicle comes to halt immediately while faster one takes long way to stop and also skids a long distance due to law of notion. A vehicle moving on high speed will have greater impact during the crash and hence will cause more injuries. The ability to judge the forthcoming events also gets reduced while driving at faster speed which causes error in judgment and finally a crash.

Speed is the single biggest factor contributing to road deaths. Over 40 Per cent of fatal collisions are caused by excessive or inappropriate speed. A 5km/h difference in speed could be the difference between life and death for a vulnerable road user like a pedestrian.

Speed has been identified as a key risk factor in road traffic injuries, influencing both the risk of a road crash as well as the severity of the injuries that result from crashes. Excess speed is defined as exceeding the speed limit. Inappropriate speed is defined as driving at a speed unsuitable for the prevailing road and traffic conditions. Excess and inappropriate speed is responsible for a high proportion of the mortality and morbidity that result from road crashes. Controlling vehicle speed can prevent crashes happening and can reduce the impact when they do occur, lessening the severity of the of injuries sustained by the victims.

3. Drunken driving:

Consumption of alcohol to celebrate any occasion is common. But when mixed with driving it turns celebration into a misfortune. Alcohol reduces concentration. It decreases reaction time of a human body. Limbs take more to react to the instructions of brain. It hampers vision due to dizziness. Alcohol dampens fear and incites humans to take risks. All these factors while driving cause accidents and many a time it proves fatal. For every increase of 0.05 blood alcohol concentration, the risk of accident doubles. Apart from alcohol many drugs, medicines also affect the skills and concentration necessary for driving.

Alcohol is estimated to be a contributory factor in 37 Per cent of all fatal crashes (drunk drivers/riders and drunk pedestrians) and a factor in 62 Per cent of single vehicle crashes. One fifth of fatal road crashes that happen between 6 am and 12 noon are alcohol related. Pedestrian alcohol is a factor in 38 Per cent of fatal pedestrian road crashes. Just one drink impairs driving. This not a theory, it's a scientific fact. Safe driving requires clear judgment, concentration, and being able to react to what happens on the road. Alcohol and other drugs affect all of these. Alcohol is a drug that affects your skills, moods and behaviour. Once it has been consumed the effects of alcohol on driving cannot be reversed.

4. Fault of cyclist and Pedestrian:

Carelessness, illiteracy, crossing at wrong places, moving on carriageway, Jaywalkers etc. of pedestrian are causes of accident. Though Pedestrian is the most important constituent of traffic, he belongs to high risk group on road. In order to remain safe from perils of road, pedestrians should cultivate the habit of using road infrastructure in proper manner. Subways, Zebra Crossings, foot over bridges should be used to cross the road. Short cuts and easy options of crossing roads are dangerous and should not be resorted to.

5. Fault of Passengers:

Projecting their body outside vehicle, by talking to drivers, alighting and boarding vehicle from wrong side, travelling on footboards, catching a running bus etc. from the part of passengers are causes of accidents.

6. Technical defect of Vehicles:

Technical defect of vehicles involves failure of brakes or steering, tyre burst, insufficient headlights, overloading, projecting loads etc

7. Bad Road Conditions:

Bad road condition means potholes, damaged road, eroded road, merging of rural roads with highways, diversions, illegal speed breakers.

8. Bad Weather conditions:

Fog, snow, heavy rainfall, wind storms, hail storms etc. are causes of accidents.

9. Distraction to Driver:

Though distraction while driving could be minor but it can cause major accidents. Distractions could be outside or inside the vehicle. The major distraction now a days is talking on mobile phone while driving. Act of talking on phone occupies major portion of brain and the smaller part handles the driving skills. This division of brain hampers reaction time and ability of judgement. This becomes one of the reasons of crashes. One should not attend to telephone calls while driving. If the call is urgent one should pull out beside the road and attend the call. Some of the distractions on road are:

- Adjusting mirrors while driving
- Stereo/Radio in vehicle
- Animals on the road
- Banners and billboards

The driver should not be distracted due to these things and reduce speed to remain safe during diversions and other kind of outside distractions.

10. Red Light Jumping:

It is a common sight at road intersections that vehicles cross without caring for the light. The main motive behind Red light jumping is saving time. The common conception is that stopping at red signal is wastage of time and fuel. Studies have shown that traffic signals followed properly by all drivers save time and commuters reach destination safely and timely. A red light jumper not only jeopardizes his life but also the safety of other road users. This act by one driver incites other driver to attempt it and finally causes chaos at crossing. This chaos at intersection is the main cause of traffic jams. Eventually everybody gets late to their destinations. It has also been seen that the red light jumper crosses the intersection with greater speed to avoid crash and challan but it hampers his ability to judge the ongoing traffic and quite often crashes.

11. Avoiding Safety Gears like seat belts and helmets:

Use of seat belt in four-wheeler is now mandatory and not wearing seat belt invites penalty, same in the case of helmets for two wheeler drivers. Wearing seat belts and helmet has been brought under law after proven studies that these two things reduce the severity of injury during accidents. Wearing seat belts and helmets doubles the chances of survival in a serious accident. Safety Gears keep you intact and safe in case of accidents. Two wheeler deaths have been drastically reduced after use of helmet has been made mandatory. One should use safety gears of prescribed standard and tie them properly for optimum safety.

12. Blind spot

The blind spot in your vehicle is the big area around your vehicle that you just can't see, even when your mirrors are properly adjusted. The blind spot around the average car is about the size of a large swimming pool, it is a huge area that you can't see. If you're driving your big rig trucks, you have got to be really careful because the blind spot around a big rig truck is huge. The rule of thumb is that if you can't see a driver, a truck driver in his or her rear view mirrors, they can't see you at all.

13. Drug driving

Drugs can affect driving in the following ways:

- Slower reaction times
- Poor concentration
- Sleepiness/fatigue
- Confused thinking
- Distorted perception
- Over confidence, so you take unnecessary risks
- Impaired co-ordination
- Erratic behaviour
- Nausea
- Hallucinations
- Blurred vision/enlarged pupils
- Aggression
- Panic attacks and paranoia
- Tremors
- Dizziness
- Cramps

Financial Repercussions of Road accident on family and society

Road traffic injuries (RTIs) and fatalities have emerged as a major public health concern, with RTIs having become one of the leading causes of deaths, disabilities and hospitalizations which impose severe socio-economic costs across the world. Many developing countries including India have a serious road accident problem (Road Accidents in India 2010). In India, fatality rates (defined as, road accidental death per 10,000 vehicles) are quite high in comparison to developed countries. For example, fatality rate in India given by Sikdar and Bhavsar (2009) shows, Indian fatality rates are 15 Per cent to 20 Per cent higher than those of developed countries. In developed countries like Europe and America the situation is normally improving, but in the case of developing countries they face a worsening situation. Apart from the humanitarian aspects of the problem, road accidents cost the developing countries at least 1-3 Per cent of their GDP each year. As per data registered by the World Health organization, in 2010 nearly 1.4 million people are known to die each year due to road accidents globally. Out of this figure nearly 1.34 lakhs people die in India. This shows about 369 people die every day on Indian roads which is nearly 10 Per cent of daily global road accident. According to World Health organization (WHO) report on the Decade of Action for Road Safety 2011–2020 states without any action on road safety would lead to the loss of around 1.9 million lives on the roads each year by 2020.

Road crashes deserve to be a strategic issue for any country's public health and can lead to overall growth crisis, if not addressed properly. Road traffic injuries was the leading cause of death globally among 15-19 year-olds, while for those in the 10-14 years and 20-24 years age brackets, it was the second leading cause of death (WHO 2007).According to the statistics obtained from Indian Ministry of Road

Transport and Highways at least 15 people die every hour in road accidents in 2010 when compared to 14 in 2009 .Due to co-ordinate inter agency approaches in developed countries, the situation is improving. Road crashes significantly inhibit economic and social development burdens on developing nations like India estimating 3 Per cent of gross national product. However, the price being paid for this is exorbitant. The estimated cost includes compensation, asset loss, and loss of man power, loss of productivity, high medical expenses, costly management, property damage and many others. It also includes victims lost wages and the replacement cost of lost household work. In India, as on 2012, the compensation is proposed to be hiked in case of a death in a road accident from Rs.25,000 to 1 lakh. In case of serious injury, compensation will be Rs.50, 000.

There are various studies carried out by Wang et al (1996), Sussman (1985), Robertson (2003), Stutts et al (2001) which estimated about 25 to 37 Per cent of traffic accidents involved driver distraction and causes approximately $50 billion social and economic costs annually. The National Highway Traffic Safety Administration (NHTSA) and the Virginia Tech Transportation Institute (VTTI) found that 80 Per cent of crashes and 65 Per cent of near-crashes involved some form of driver inattention within three seconds of the crash.

Cost of Road Accidents

The economic cost occurred due to road crashes and injuries mainly effects middle income countries between 1 Per cent and 1.5 Per cent of their gross national product (GNP) and for high income countries it is 2 Per cent of GNP. Economic costs are just the tip of iceberg for everyone killed, injured or disabled by a road traffic crash there are countless others deeper in to poverty by the expenses of prolonged medical

care, loss of a family bread winner or the added burden of caring for the disabled. It is difficult to assign monetary value on pain and suffering caused by road accidents. Social cost includes direct and indirect cost. The direct costs are cost of medical treatment normally include emergency treatment, cost for medicines and for serious injuries, the cost of long term care and rehabilitation, funeral expenses, administrative cost of processing medical payments to providers etc. The indirect costs are loss in productivity associated with the death or injury. Productivity losses include the value of lost house hold services and the value of lost earnings from the victim, care givers and family replacement cost of lost house hold work, compensation for lost earnings through litigation, insurance or welfare programs etc.

Injured people often suffer physical pain and emotional anguish that is beyond any economic compensation. Permanent disability, paraplegia, quadriplegia, loss of eye sight, or brain damage, can deprive an individual of the ability to achieve even minor goals and result in dependence on others for economic support and routine physical care. Other resource costs include police, legal, fire, victim services plus cost of property damage or loss in injury incidents. Medical cost and lost productivity do not capture the psychological losses associated with road traffic crashes, either to those injured or to their families. These costs might possibly exceed the productivity losses and medical costs associated with pre mature death, were they accurately quantifiable. Road traffic crashes also place a heavy burden on the family and friends of the injured person, many of whom also experience adverse social, physical and psychological effects.

Direct Consequences of Accidents are:

2. 1 Fatality (Death)
3. Injury
4. Property Damage

NATPAC (National Transportation Planning and Research Centre)

NATPAC, an institute under Kerala State Council for Science, Technology and Environment, has been engaged in research and development studies in the field of transportation covering all modes. It has all necessary testing and laboratory facilities for highway designing. It has plans to establish full fledged test tracks and other training aids for imparting training to all categories of drivers in defensive driving. Government will encourage and strengthen the R&D efforts of NATPAC in the field of traffic and Transportation and Road Safety. Government will also strengthen such efforts taken by other agencies in the state to plan and design transport facilities on a scientific basis. Research studies on future fuel alternatives, vehicle safety, transport planning and management in cities and towns, creation of data bank etc. will be given priority.

Surface Transport and Traffic Planning in Kerala

Across the world, traffic planning to improve transportation facilities as well as safety of passengers is a major concern. Kerala is the most populous state of India. Road accidents are a major safety concern of the State and traffic accidents account for a major portion of Crime Statistics in Kerala. Overpopulation of vehicles, road engineering defects, road conditions and driving defects together contribute to accidents which take away around 4000 lives every year, apart from injuring more than 40,000 people in this

small state. Skills, attitudes and behaviour of drivers and the nature of enforcement of traffic rules and regulations are very important in determining the number of accidents. Apart from the high density of population, the undulating topography, thick vegetation, contiguous habitation and roads strait - jacketed with buildings on either side are major reasons for the increased rate of accidents in the state of Kerala. Apart from road engineering problems, inadequate road signs, poor condition of roads, drunken driving and inadequate road sense of drivers and road users are major concerns as far as road safety is concerned.

Facilities of Ambulance and hospitals throughout the state are a golden line in the darkness. However Trauma Care Special Units need to be developed in all the hospitals, so as to save more lives in accidents. Awareness on how to attend and save lives is a major task to be undertaken seriously by NGOs, hospitals and other agencies in tandem with each other. Those individuals and organisations involved in saving lives from accident scenes need to be encouraged by the society. Trained drivers who are sensitized over traffic regulations tend to drive safely.

With the above dictum in mind the Kerala Government is planning to start an Institution of Drivers Training and Research. With the help of various Governmental and Non-Governmental Organisations, various road safety programmes are being organised in Kerala to make roads safer. Street shows and other awareness programmes, through audiovisual and print media are organised. A street show by the Trivandrum City Traffic Police is worth mentioning here. It is attracting big crowd and conveys good message to the public. Traffic warden system involving school children is introduced in some areas. Pamphlets on road safety are printed and distributed by various agencies. Kochi City Police recently released a Traffic Guide for the benefit of road users in Kochi City.

Complaint Card System is used by many District Police Traffic Units for receiving complaints of public against traffic law violation, misbehaviour while using public transport etc.

Recently the Highway Police Units of Kerala were revamped with new vehicles**.** The Highway Police help can be sought by the public from the telephone number 9846100100. Highway Police is arranging awareness programmes for school children, drivers etc in many districts. Prepaid autorikshaw and taxi facilities are arranged with the help of police in many cities. Various steps to enhance road safety such as Zebra Line and other road markings and road safety audit are being undertaken now, apart from tightening of safety standard of vehicles. Provision of cranes and ambulances owned by the Government and NGOs are available under the National Highway Accident Relief Service Scheme, ALERT Service, etc. Widening of National Highways from 2 lanes to 4 lanes and 6 lanes is taking place in many areas.

The recent High Court Order has urged many a citizen to use helmet while driving two wheelers. Two-wheeler driving safety can be enhanced by using quality helmets. Enforcement of traffic laws, especially regarding over speed, drunken driving etc using modern equipments like Speed Governors, Breath Analyzers etc. helps to reduce accidents. Speed governors fitted to the heavy vehicles also help to reduce the number of accidents. Time punching system is helpful to regulate the speed of buses. However it may be noted here that the amount of fine, punishment etc. are not deterrent enough to create much psychological impact on drivers as the monetary loss / punitive measures are not too harsh as in many advanced countries. Improving road discipline and civic sense are extremely important in such circumstances. Including traffic education in school syllabus and arranging awareness programmes among public etc. along with strong

enforcement measures as well as long term plans to improve road traffic and alternative methods of means of transport such as revival of water transport, construction of metro rail etc. are required to improve transport facilities of Kerala.

Preventive measures for accidents

The following activities have prevented the increase in accidents that would normally result from increases in traffic density. There are three main approaches to preventing accidents:

1. Education and awareness about road safety
2. Strict Enforcement of Law
3. Engineering:

   (a) Vehicle design (b) Road infrastructure

1. Education and training of:

(a) children in school by road-traffic instructors and school teachers; and of

(b) adolescents in the principles of safe driving and in good driving attitudes; by

(c) refresher courses for older drivers to bring home safe-driving principles and to refresh their knowledge of traffic law; and by means of

(d) newspaper, radio television, and other publicity, to draw the attention of all road users both to dangers and to safe practices on the road.

2. Enforcement by :

(a) adopting reasonable and enforceable traffic laws which, at the same time, are best designed to prevent accidents;

(b) concentrating the time and energy of traffic officers on the offences, locations, and times that feature frequently in accidents; and

(c) thoroughly testing new drivers to ensure they will not be liable to cause accidents.

3. Engineering of vehicles and roads:

I. Vehicle engineering, comprising

(a) regular inspection for a “warrant of fitness” to ensure that the main components of the vehicle are safe;

(b) improving the design of the vehicle to give ease of vision and control to the driver and so reduce the likelihood of injury in an accident;

(c) fitting safety equipment, such as seat belts.

II. Road or traffic engineering comprises

(a) the design of new roads which are inherently safe (separating opposing traffic flows, eliminating cross traffic, and providing wide shoulders and traffic lanes and good visibility);

(b) Improving existing roads by realignment, improving vision, and resurfacing slippery surfaces;

(c) Regulating traffic movement by installing traffic signals, traffic islands, road markings, and regulatory signs such as “stop” and “give way” signs; and

(d) Assisting the driver with warning and destination signs to avoid danger and confusion.

CHAPTER IV
DATA ANALYSIS AND INTERPRETATION

DATA ANALYSIS AND INTERPRETATION

The study “Road Accidents - Its Root causes and Financial Repercussions on Family and Society” covers the root causes of accidents in Kerala and its impact on the victim’s family and the society also. The study is based on both primary and secondary data. Primary data have been collected by conducting a survey among 200 road accident victims and secondary data have been collected from books, journals, news papers, periodicals etc. The collected data were organised and presented in the form of tables. Various statistical techniques like Per cent age analysis, weighted average, trend analysis, mean, standard deviation, CAGR, correlation, Chi-square etc were adopted for the analysis. Following are the analysis of data

Table No. 4.1

Socio-economic status of Respondents

Age		
Age	**Number of respondents**	**Per cent age (Per cent) of total**
18-20	18	9
20-30	74	37
30-40	52	26
40 and above	56	28
Total	200	100
Gender		
Gender	**Number of respondents**	**Per cent age (Per cent) of total**
Male	174	87
Female	26	13
Total	200	100

Occupational Status		
Occupation	**Number of respondents**	**Per cent age (Per cent) of total**
Govt. employee	40	20
Professional	22	11
Business	32	16
Self employment	38	19
Private firms	22	11
Others	46	23
Total	200	100
Monthly Family Income		
Income (in Rs.)	**Number of respondents**	**Per cent age (Per cent) of total**
Below 15000	80	40
15000-30000	78	39
30000-45000	24	12
Above 45000	18	9
Total	200	100
Number of Family members		
Number	**Number of respondents**	**Per cent age (Per cent) of total**
2	12	6
3	30	15
4	86	43
5 and above	72	36
Total	200	100

Number of Earning Members in the Family		
Number	**Number of respondents**	**Per cent age (Per cent) of total**
1	96	48
2	74	37
3	20	10
4 and above	10	5
Total	200	100

Source: Primary Data

Table No. 4.1 shows the socio-economic status of respondents. It includes age, gender, occupational status, monthly family income, number of family members and number of earning members in the family of the respondents.

The age of respondents shows that 37 Per cent of the respondents belonged to the age of 20-30 years, followed by 28 Per cent of the respondents in the age of 40 years and above, 26 Per cent of the respondents in the age of 30-40 years and 9 Per cent in the age of 18-20 years.

Gender wise classification shows that out of 200 respondents 87 Per cent are male and the remaining 13 Per cent are female.

Occupational status of the respondents indicates that 23 Per cent of the respondents come under the category ‘others’, followed by 20 Per cent of the respondents are working as Govt. Employees.19 Per cent are self employed, 16 Per cent

are running business and 11 Per cent of the respondents each are working as professionals and in private firms.

Monthly income of the respondents depicts that 40 Per cent of the respondents are getting below Rs.15000 per month , followed by 39 Per cent of the respondents getting Rs.15000-30000 per month, 12 Per cent of the respondents getting Rs.30000-45000 per month and only a 9 Per cent of the respondents getting above Rs.45000 per month.

Considering the number of family members, 43 Per cent of the respondents have 4 members in their family, followed by 36 Per cent with 4 members in their family, 15 Per cent with 3 members in their family. And only a 6 Per cent of the respondents have 2 members in their family.

Regarding the number of earning members , 48 Per cent of the respondents have only one earning member in their family, followed by 37 Per cent with 2 earning members, 10 Per cent with 2 earning members. And only a 5 Per cent of the respondents have 4 or more than 4 earning members in their family.

Financial Repercussions of Road Accidents to an Individual

Following are the financial repercussions due to road accidents to an individual.

- Loss of job
- Immediate medical expense
- Medical expense after the accident at the hospitals
- Medical expense after discharge throughout life time
- Inability to meet household expense
- Inability to meet other family expense
- Inability to meet children's educational expense
- Inability to repay the bank loan
- Expense for vehicle repair
- Inability to save as previous
- Forced to withdraw deposits

The respondents were asked to rank the factors as financial repercussion due to road accident. Weightages are given in the following model:

Rank	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**	**XI**
Weightage	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**

The weighted average score for each factor was calculated and on the basis, the overall ranks were assigned. Table No.4.2 reveals the ranking of financial repercussions of road accident to the individual.

Table No. 4.2

Table showing Financial Repercussions of Road accidents to the Individual

Sl. No.	Financial Repercussions	Weighted Average	Std. Deviation	Rank
1	Lost job	1.56	0.212132	8
2	Immediate medical expense	2.61	0.53033	1
3	Medical expense after the accident at the hospitals	2.59	0.516188	2
4	Medical expense after discharge throughout life time	1.50	0.254558	10
5	Inability to meet household expense	1.74	0.084853	4
6	Inability to meet other family expense	1.66	0.141421	5
7	Inability to meet children's educational expense	1.51	0.247487	9
8	Inability to repay the bank loan	1.61	0.176777	7
9	Expense for vehicle repair	2.40	0.381838	3
10	Inability to save as previous	1.64	0.155563	6
11	Forced to withdraw deposits	1.74	0.084853	4

Source: Primary Data

Table No. 4.2 shows the financial repercussions of road accidents to individuals. Among the eleven financial repercussions of road accidents, immediate medical expense is ranked first with 2.61 score, followed by medical expense after the accident (mean 2.59), expense for vehicle repair (mean 2.40), household expense (mean 1.74) etc.

Medical expense after discharge throughout the life time is ranked last (mean 1.50). The main financial repercussion influencing the respondent is the immediate medical expense at the hospitals.

Financial Repercussions of Road Accidents on the Family

Following are the financial repercussions of road accident on the family

- Need physical support of others
- Discontinue child's education
- Mental depression of family members
- Withdrawal of deposits
- Failure to meet the marriage expense of daughter
- Shift to a rented house
- Anger towards everything
- Thoughts of committing suicide

The respondent and their family members were asked to rank the factors as financial repercussion on the family due to road accident. Weightages are given in the following model:

Rank	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**
Weightage	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**

The weighted average score for each factor was calculated and on the basis, the overall ranks were assigned. Table No.4.3 reveals the ranking of financial repercussions of road accident on the family.

Table No. 4.3

Table showing Financial Repercussions of Road accidents on the family

Sl. No.	Financial Repercussions	Weighted Average	Standard Deviation	Rank
1	Need physical support of others	1.53	0.097227	3
2	Discontinue child's education	1.17	0.157331	7
3	Mental depression of family members	1.82	0.302288	1
4	Withdrawal of deposits	1.55	0.111369	2
5	Failure to meet the marriage expense of daughter	1.27	0.086621	5
6	Shift to a rented house	1.26	0.093692	6
7	Anger towards everything	1.28	0.07955	4
8	Thoughts of committing suicide	1.26	0.093692	6

Source: Primary Data

Table No. 4.3 shows the financial repercussions of road accidents on the family. It depicts that among the eight factors, mental depression of family members is ranked first with 1.82, score followed by the respondents family is being forced to withdraw their deposits with 1.55 score, victims in need of physical support of others with score1.53 etc.

Table No. 4.4

Table showing Root Causes of Road Accidents in Kerala from 2010-2014

Sl. No.	Causes of accident	2010	Per cent of accident	2011	Per cent of accident	2012	Per cent of accident	2013	Per cent of accident	2014	Per cent of accident
1	Fault of motor vehicle driver	34274	97.69	34184	97.06	35140	97.14	34198	97.11	35447	97.70
2	Fault of other motor vehicle driver	144	.41	170	.49	251	.70	253	.72	203	.56
3	Fault of cyclist, pedestrian & passenger	21	.06	31	.09	33	.10	47	.13	38	.10
4	Bad weather & bad road condition	0.00	0.00	1	.002	0.00	0.00	2	.01	0.00	0.00
5	Technical defect of vehicle	9	.03	10	.03	9	.02	16	.05	28	.08
6	Drunken driving	68	.19	101	.29	168	.46	28	.08	20	.06
7	Others	522	1.49	702	1.99	569	1.57	653	1.85	538	1.48
8	Reasons not known	44	.13	17	.05	4	.01	18	.05	8	.02
	Total	35082	100.00	35216	100.00	36174	100.00	35215	100.00	36282	100.00

Source: Official Website of Kerala Police

Table No.4.4. shows the root causes of road accidents in Kerala from 2010-2014.There are so many causes that lead to road accidents. From these, fault of motor vehicle driver is the major cause comes up to 97.70 Per cent in 2014, followed by 97.69 Per cent in 2010, 97.14 Per cent in 2012, 97.11Per cent in 2013, and 97.06 Per cent in 2011.

The fault of other motor vehicle driver comes up to 0.72 Per cent in 2013, followed by 0.70 Per cent in 2012, 0.56 Per cent in 2014, 0.49 Per cent in 2011 and 0.41 Per cent in 2010.

The fault of cyclist, pedestrian and passenger is also a cause of road accident. In 2013 most of the accidents occurred due to this (i.e. 0.13 Per cent), followed by 0.10 Per cent each in 2012 and 2014, 0.09 Per cent in 2011, and 0.06 Per cent in 2010.

The bad weather and road conditions caused 0.01 Per cent accidents in 2013 and 0.002 Per cent in 2011. There were no such accidents in other years.

The technical defect of vehicle lead to 0.08 Per cent of accidents in 2014, followed by 0.05 Per cent in 2013, 0.03 Per cent each in 2010 and 2011 and 0.02 Per cent in 2012.

Drunken driving is the factor that caused most of the road accidents in 2012 i.e. 0.46 Per cent , followed by 0.29 Per cent in 2011, 0.19 Per cent in 2010, 0.08 Per cent in 2013, and 0.06 Per cent in 2014.

1.99 Per cent accidents occurred in 2011 due to ‘other factors’, followed by 1.85 Per cent in 2013, 1.57 Per cent in 2012, 1.49 Per cent in 2010, and 1.48 Per cent in 2014.

In some cases the reasons of accidents are not known. In 2010, 0.13 Per cent of the accidents were recorded without proper reasons, followed by 0.05 Per cent each in 2011 and 2013, 0.02 Per cent in 2014, and 0.01 Per cent in 2012.

From the above factors, it is clear that the main cause of road accident is the fault of motor vehicle drivers.

Table No. 4.5

Table showing the Number of road accidents, Death, Injury and Disability and their Trends from 2010-2014

Year	Number of cases	Trend	Number of death	Trend	Number of injury and disability	Trend
2010	35082	100	3950	100	41473	100
2011	35216	100.4	4145	104.9	41379	99.8
2012	36174	103.1	4286	108.5	41915	101.1
2013	35215	100.4	4258	107.8	40346	97.3
2014	36282	103.4	4049	102.5	41096	99.1
CAGR	**0.67**		**0.76**		**-0.44**	

Source: Official Website of Kerala Police

The Table No. 4.5 shows the number of road accidents, number of people died and the injury and disability in road accidents from 2010 – 2014.Most of the accidents occurred in 2014 (36282) and in 2012 (36174).The same trend (i.e. 100.4) is shown in the total number of accidents in 2011 & 2013. From these, it is clear that the total number of accident shows a fluctuating trend.

Considering number of death in road accidents from 2010-2014, most of the people died in 2012,followed by 2013, 2011 & 2014. Number of death in road accident shows a fluctuating trend.

The number of injury and disability in road accident from 2010-2014 also shows a fluctuating trend. Number of injury and disability was very less in 2013 and it is high in 2012.

The CAGR is low in case of number of accidents (0.67) and number of death (0.76). And it is negative (-0.44) in case of number of injury and disability. It reveals that the number of accidents, number of death and number of injury and disability is fluctuating year after year.

Testing of Hypotheses:-

The hypotheses taken for the study is tested on the basis of Chi-square test and another Correlation as follows.

Hypothesis No.1

H_0: There is no significant change in the financial status of the victims after the road accident.

Result of Chi-Square Test

Degrees of freedom	10
Table Value at 5Per cent level	18.31
Calculated value	23.14

Since the Calculated value of Chi-square 23.14 is numerically greater than the Table value 18.31 at 5Per cent level of significance. So the null hypothesis is rejected. Thus there is a significant relationship between the occupational status of the victims before and after the road accident. Hence we concluded that there is a significant change in the financial status of the victims after the road accident due to the change in the occupational status.

Hypothesis No.2

H_0: There is no relationship between the age and road accident.

The relationship between age and road accident shows a least positive correlation (i.e. 0.38). So it is concluded that there is a relationship between age and road accident. From the study, it is clear that the age group of 20-30 is mainly involved in road accidents.

CHAPTER V
FINDINGS, SUGGESTIONS & CONCLUSION

FINDINGS OF THE STUDY

Following are the findings of the study

- Out of the 200 respondents, the two-third of them (87Per cent) were male, and majority of them from the age group of 20-30 years (37Per cent).

- Occupational status indicates that majority of the respondents come under the category 'others' and includes coolie, salesmen, agricultural labours, taxi/auto drivers etc.

- Before the accidents, most of the respondents (40Per cent) earn a monthly income of below Rs.15000 and most of the respondents (48Per cent) had only one earning member in their family of four.
- Immediate medical expense at the hospital is the major expense to the victim among all other repercussions, followed by medical expense after the accident and expense for vehicle repair etc.
- Majority of the victim's family members had been mentally tensed and depressed during the course of treatment, and were forced to withdraw their deposits for meeting the then expense. Also the victims were in need of physical support of others.
- Among the causes of road accident the main cause is the fault of motor vehicle drivers , followed by the fault of the other motor vehicle

drivers in the accident, drunken driving, technical defect of vehicle, fault of cyclist, pedestrian and other reasons.

- Most of the accidents were occurred in 2012 & 2014 and the total number of accident during the years of study shows a fluctuating trend. Majority of the people died in 2012 & 2013 and the figures show a fluctuating trend through the course of five years. Number of injury and disability also shows a fluctuating trend. Number of injury and disability was very less in 2013 and it was high in 2012. Hence the CAGR is low in the case of number of accidents (0.67) and the number of deaths (0.76) and it is negative (-0.44) in the case of injury and disability.

- There is a significant relationship between the occupational status of the victims before and after the road accidents because the calculated Chi-square value is numerically greater than the table value. Hence it is concluded that there is a significant change in the financial status of the victims after the road accident due to the change in the occupational status.

- The age and road accident shows the least positive correlation (0.38) among the criteria considered. In this study the age group of 20-30 is mainly involved in road accident.

SUGGESTIONS OF THE STUDY

- Most of the respondents in the study needed financial support during treatment, and after discharging from hospital they had to bear a large amount towards medical expense. All these expense were borne by themselves by using their money in hand and withdrawing their savings. Many of the victims do not have insurance policies. But the study did not take insurance matters in to consideration. If all the victims had life insurance policies they must have got a good amount from their insurance to meet the expense. So it is suggested that all vehicle owners and layman should take a life insurance policy.
- The fault of pedestrian is a reason for road accidents. The pedestrian should also be careful while crossing and walking on the road. If there is a footpath, the pedestrian must use it. If there is no foot path, they must walk as close as possible to the right hand side of the road facing the oncoming traffic. Pedestrian must be careful not to walk more than two abreast. If the road is narrow or carries heavy traffic the pedestrian should walk in single file and always carry a torch when walking at night.
- Rapid increase in the number of motor vehicles is the major reason for the increasing number of road accidents in our state. The vehicle population has increased by almost 20 Per cent per year. Almost 60 Per cent of motor vehicles in the state are two wheelers. Two wheeler populations increased from mere 0.5 lakh in 1980 to 50.41 lakh in

2013. According to World Health Organization (WHO) report, wearing a helmet reduces chances of death by 40 Per cent age and that of severe injury by 70 Per cent . So strict enactment and continuous checking of helmet and seat belts and other safety measures from the part of authority related to it is compulsory. Breaking the law punishment must be charged.

- Majority of the accident cases in the study were reported during the daytime. There are so many heavy vehicles on the road which causes traffic jams. In spite of the order which regulates heavy vehicle traffic during daytime, heavy vehicles are a common scene on our roads during the restricted hours. In order to reduce the number of accidents during day time the restrictions should be strictly followed.
- The road accidents put a huge economic burden on the countries as most of the people killed on the roads are young aged between 15 and 44 years, which corresponds to the economically most productive segment of the population. The study revealed that majority of the accident victims are in the age group of 20-30. It is the age of hyper activity. This age group is not bothered about the value of their own lives and those of others. So parents should take care of their children using motor vehicle and provide insights and training to use the vehicles.
- The statistical analysis of accident is to be carried out periodically. It will help to arrive at suitable measures to effectively decrease accident rates. So it helps to measure or estimates the number and severity of accidents.

These reports are to be maintained zone-wise. The rate of accidents on different roads may be assessed by finding the accident density per length of the road. By statistical study of accident occurrence at a particular road or location or zone for a long period of time it is useful to predict with reasonable accuracy the probability of accident occurrence per day or relative safety of different classes of road users in that location. So the concerned authorities can take remedial measures to reduce it.

- Everyone seems to be in hurry. Overtaking has become a common practice. And if the drivers hit someone or some vehicle they are so egoistic not to apologize. One never hesitates to do such things and feel proud to put the blame game on others. As per the study, most of the accidents occurred due to the fault of motor vehicle drivers. The rest of the accidents are caused due to various other reasons like traffic, bad weather, poor road condition, fault of pedestrians etc. So drivers should take care of the following things. They obey the traffic signs, remember that the speed limit is the legal limit in ideal conditions, slow down in rain, allow longer stopping distances, follow signal, check mirrors, and use quick glance. The drivers should also remember that there is a family waiting for all.
- Our licensing system has many demerits. The drivers are offered license even without giving road test. The validity period of a license is an important issue. Also at the time of renewal only eyesight is examined.

- Since Kerala is gifted with abundant backwaters, it is possible to have a parallel system of water transportation.

CONCLUSION

There are so many modes of transport, but roads are narrow and overcrowded. Today people follow fast life in our society due to the changes in income, standard of living, changes in technology etc. Accident is a usual process in our society. Majority of the lives lost by accidents. We can see that so many reasons behind the road accidents i.e. bad condition of roads, ignorance of traffic rules, careless driving, driving without helmet etc. This study evaluates the root causes of road accidents and its financial repercussions on the personal life of the victims and the family. There are so many causes of road accidents. From them, fault of motor vehicle driver is the main cause of road accident and followed by 'other reasons', fault of other motor vehicle drivers, drunken driving, fault of cyclist, pedestrian and passenger, technical defect of vehicles etc. In some cases the reasons are not known. Financial repercussions of road accidents to the individual indicates that most of the respondent bear immediate medical expenses at hospital and after discharge and also the expense for vehicle repair.

Financial repercussions of road accidents on the family indicates that majority of the victim's family members had been mentally tensed and depressed because of the accident and they forced to withdraw their deposits for meeting their household and other family expense. There is a significant change in the financial status of the victims after the accident due to the change in the occupational status because of the accident. The correlation

between the age and road accident is least positive (0.38). Hence there is a relationship between age and road accident. And in this study the age group of 20-30 is mainly involved in the road accident.

Most of the road crashes are caused by human error. The main causes of death and injury on roads remain speeding, drink driving and non-wearing of seat-belts, helmets etc. Because most traffic accidents are the product of several factors, the probability of accidents can be reduced in a number of different ways. So we must build a kind of road safety culture in our society by spreading awareness by running specific messages about speeding, drinking and driving, seatbelts and traffic distractions, and through broadcasting and hosting programmes and talk shows with experts to speak on the issue of road safety. And to tell people that the challenge of road safety can be overcome, that the danger on the road is a man-made crisis which can be solved.

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APPENDIX

QUESTIONNAIRE ON

ROOT CAUSES OF ROAD ACCIDENTS - ITS FINANCIAL REPERCUSSIONS ON THE LIFE OF VICTIMS AND THEIR FAMILY

A. Personal profile

1. Name:

2. Age: 18-20 ☐ 20-30 ☐ 30-40 ☐ Above 40 ☐

3. Sex: Male ☐ Female ☐

4. Occupational status:

Government employee ☐

Professional ☐

Business ☐

Self employed ☐

Others ☐

5. Monthly family income:

Below Rs.15000 ☐ Rs.15000- Rs.30000 ☐

Rs.30000-Rs.45000 ☐ Above Rs.45000 ☐

6. How many members in your family?

2 ☐ 3 ☐ 4 ☐ 5 and above ☐

7. How many earning members in your family?

1 ☐ 2 ☐ 3 ☐ 4 and above ☐

B. Details of accidents

1.Date and Time of accident:

Date:_____ Month:_____

Year:_____ Time:_____

2. Location of accident:_____

3. What is the reason of accident?

1.by my own mistake ☐
2.fault of driver of other motor vehicle ☐
3.fault of passenger or pedestrian ☐
4.fault of cyclist ☐
5.bad weather ☐
6.badd road condition ☐
7.technical defect of the vehicle ☐
8.drunken driving ☐
9.talking by mobile while driving ☐
10.overspeed ☐
11.careless driving ☐
12.reasons not known ☐
13.others (specify):_____

C. Financial Impact on Victims (please Rank them)

1. I missed my carrier on account of physical disabilities/ ailments. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

2. I have to afford huge expenditure on medical bills. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

3. I have to bear a considerable amount on medical charges even after the accident. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

4. I have to pay enormous amount to meet medicinal needs throughout my life. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

5. I find it extremely difficult to meet the household expenditure. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

6. I have to bear the burden of other family related expenses. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

7. I am struggling hard to meet the educational requirements of children. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

8. I find it hard to repay the bank loan. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

9. I have to meet the repairing expenditure for my vehicle. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

10. I cannot contribute to the saving schemes like chitties , LIC's, ☐ Post Office savings etc. as I did before. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

11. I have to withdraw myself from bank deposits and other savings schemes. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

12. If you come across any other sort of difficulties other than listed above, please specify _____

D. Financial Impact on Family (please Rank them)

1. My income has been considerably reduced due to loss of job. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

2. I always need the physical support of a person due to permanent disability. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

3. I need money for the purchase of medicines. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

4. My children had to discontinue their education due to non payment of fees. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

5. My family members are mentally depressed and worried because of my poor health condition. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

6. I am forced to withdraw deposits, chitties, LIC's etc. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

7. The marriage of daughter is concern for me. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

8. I have to move from my own house to a rented one. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

9. I feel angry with everyone and everything. ☐

Agree ☐ Partially Agree ☐ Disagree ☐

10. Sometimes I feel like committing suicide. ☐

Agree ☐ Partially Agree ☐ Disagree ☐