

**CAUSES AND CONSEQUENCES OF ROAD ACCIDENTS IN KERALA**

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**ABSTRACT**

*Road accident scenario in the country is a matter of great concern, as it has developed into a major social, economic and health problem. 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 programme, developing vehicle technology and new Motor Vehicle Act etc are considered, planned and implemented to control the impacts of road transport injuries. This paper attempts to find out the main causes of accidents occurring in Kerala and suggest some remedial measures.*

**Key words:-** *Safety Management, Accident, Pain, Grief, Suffering*

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## INTRODUCTION

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 12 lakh people die in road accidents around the world. About 70 percent of these fatalities are reported in developing countries.

The first injury in road crash occurred on 30<sup>th</sup> May 1896 in New York city on account of a collision between a bicycle and a motor car. The first fatality in road crash was a pedestrian on 25<sup>th</sup> February 1899 in London. The first registration plates for motor vehicles were introduced by Paris police in 1893, followed by New York State in 1901 and Britain in 1903. It was only in the year 1903 the driving system was introduced in the world for first time in Britain, and in USA the development of traffic legislation commenced in the year 1924.

In our country the first provincial motor vehicle Act to control the movement of motor vehicles was passed as Bengal Province Act, 1903 which was followed by Bombay Province Act 1909, Burma Act 1906, Madras Act 1907, Punjab Act 1907 and United Provinces Act 1911. The Indian Motor Vehicle Act was first formulated in the year 1914, but it did not cover the safety regulations. In the Motor Vehicles Act 1939, some provisions were made for road safety. The consequent regulation may be the Central Motor Vehicle Rules, 1989, further in corporate with provisions about the quality of drivers, specific standards of vehicles including safety standards, regulation for driver's training etc. A study by the world health organization showed that in 1990, traffic crashes were assessed to be the ninth important cause of death in the world. By the year 2020, road accidents would be the third most important cause of death and disability facing the world community. The Table 1 given below is a projection indicating the ranking of leading causes of death world wide.

**Table 1 Ranking of major causes of death**

1990		2020	
Disease/Injury	Rank	Disease/injury	Rank
Respiratory	1	Ischaemic heart disease	1
Diarrhoeal diseases	2	Unipolar major depression	2

Perinatal	3	<b>Road traffic accidents</b>	<b>3</b>
Unipolar major depression	4	Cerebro vascular disease	4
Ischaemic heart disease	5	Pulmonary	5
Cerebro vascular disease	6	Respiratory	6
Tuberculosis	7	Tuberculosis	7
Measles	8	Diarrhoeal diseases	8
<b>Road traffic accidents</b>	<b>9</b>	HIV	9
Congenital anomalies	10	Perinatal	10
Malaria	11	Congenital anomalies	11
Pulmonary	12	Measles	12

According to the WHO statistics in 2002 almost 16,000 people die globally every day from all types of injuries. Injuries represent 12% of the global burden of disease, and are the third most important cause of overall mortality. The World Health report 2002 on “Reducing Risk and Promoting Healthy Life” states that disease burden as measured in Disability Adjusted Life Years (DALYs) lost in road traffic injuries in the year 2002, was assessed at 38 million i.e. 2.5% of the global burden of disease and ranked ninth position. Going by current trends, it is expected that by the year 2020 it would rise to 5.1% i.e. to the 3<sup>rd</sup> position. Furthermore, road traffic injuries cost low income and middle income countries each year between 1% and 2% of their Gross National Product, which is more than total development received annually by these countries. (Alok Rawat 2005)

## NATIONAL SCENARIO

Road accident scenario in the country is a matter of great concern, as it became 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 motor vehicles. Over 85,000 people are killed annually in our country, where as in the United States, less than 42,000 people are killed in traffic crashes. Every year more than 4 lakh accidents take place on Indian roads, leading to more than 80,000 fatalities. There is no denying the fact that the number of road accidents in our country is high. With about 5.5% of the total motor vehicle population in the world, the number of fatalities or persons killed per ten thousand vehicles is 14.39 in India, as against 17.10 in china and between

1.0 and 2.50 in many high income countries. In absolute terms, the number of road fatalities in our country is very high and ranks second highest in the world after China.

As per the recent statistics available, nearly 4.4 lakh accidents (one road accident every minute) take place on Indian roads every year, resulting in death of over 94,968 people (one road accident death every 6 minutes) and causing injuries to another 6 lakh persons. In other words, 235 persons die and another 1600 get injured/ hospitalized every day due to road traffic accidents. These accidents result in huge economic loss of about Rs 15,000 crores per year to the country, besides pain, grief and suffering caused to the families of the victims. It implies that accident cost has increased to almost one percent of GDP. The Table - 2 shows the road accident statistics of all states in India

**Table 2 State wise number of road accidents, persons killed and persons injured in India on all roads, national highways**

States/ U Ts	All Roads			National Highways		
	Accident	Persons Killed	Persons Injured	Accident	Persons Killed	Persons Injured
Andhra Pradesh	34826	9679	47477	12511	2948	12053
Arunachal Pradesh	245	127	374	46	45	90
Assam	3262	1122	4361	1775	719	2545
Bihar	4128	1680	2760	N A	N A	N A
Delhi	8863	1801	7829	1129	302	924
Goa	3244	235	2626	1291	99	979
Gujarat	30604	5161	33680	8038	1479	6905
Hariyana	8690	3028	8287	3378	1298	2982
Himachal Pradesh	2680	733	4358	1453	263	1676
Jammu & Kashmir	5904	836	8056	2317	294	2656
Karnataka	37658	6195	45781	10578	2130	13185
Kerala	39496	2905	46532	10543	1149	N A
Madhya Pradesh	30164	4523	33375	8156	1578	8888

Maharastra	65686	9483	46692	13930	3168	11878
Manipur	523	127	988	329	84	588
Meghalaya	617	168	523	425	122	327
Mizoram	122	76	112	80	41	92
Nagaland	101	46	123	47	23	22
Orissa	6668	2293	8838	2949	1155	2179
Punjab	4429	2655	4077	1888	1155	2179
Rajasthan	21933	6025	29079	7515	2615	10613
Sikkim	131	40	279	34	8	62
Tamilnadu	51025	9275	55242	20655	4426	22325
Tripura	676	168	927	314	69	378
Uttar Pradesh	14286	7845	9348	5490	3240	3579
West Bengal	10444	4361	12769	3999	1732	4977
Jharkhand	4457	1802	4243	N A	N A	N A
Uttranchal	1222	756	1692	445	266	549
A&N Islands	180	12	252	NIL	NIL	NIL
Chandigrah	442	134	437	45	24	35
D & N Haveli	73	34	65	NIL	NIL	NIL
Daman & Diu	72	19	74	NIL	NIL	NIL
Lakshadweep	1	NIL	1	NIL	NIL	NIL
Chattisgrah	10521	1881	8732	3000	643	2402
Pondicherry	1586	188	1695	769	102	798
Total	404959	85413	431684	123129	31177	115310

Source: Dept of Road Transport and Highways

In our country, twelve road safety related themes are selected annually and in corporate in Road Safety calendars, which are printed and circulated to different states/ UTs by department of Road Transport and Highways. Additional themes are selected for road safety campaigns through the print and electronic media. Besides road safety week is celebrated in our country each year, with a theme selected each year to focus on an aspect of road safety.

Year 2000 – Let us have safe transportation and happy journey in the new millennium

Year 2001 – Drive only if you are physically fit, mentally alert (Don't mix drinking with driving)

Year 2002 – Live and let live – Obey traffic rules

Year 2003 – Life is precious – take care: Drive carefully

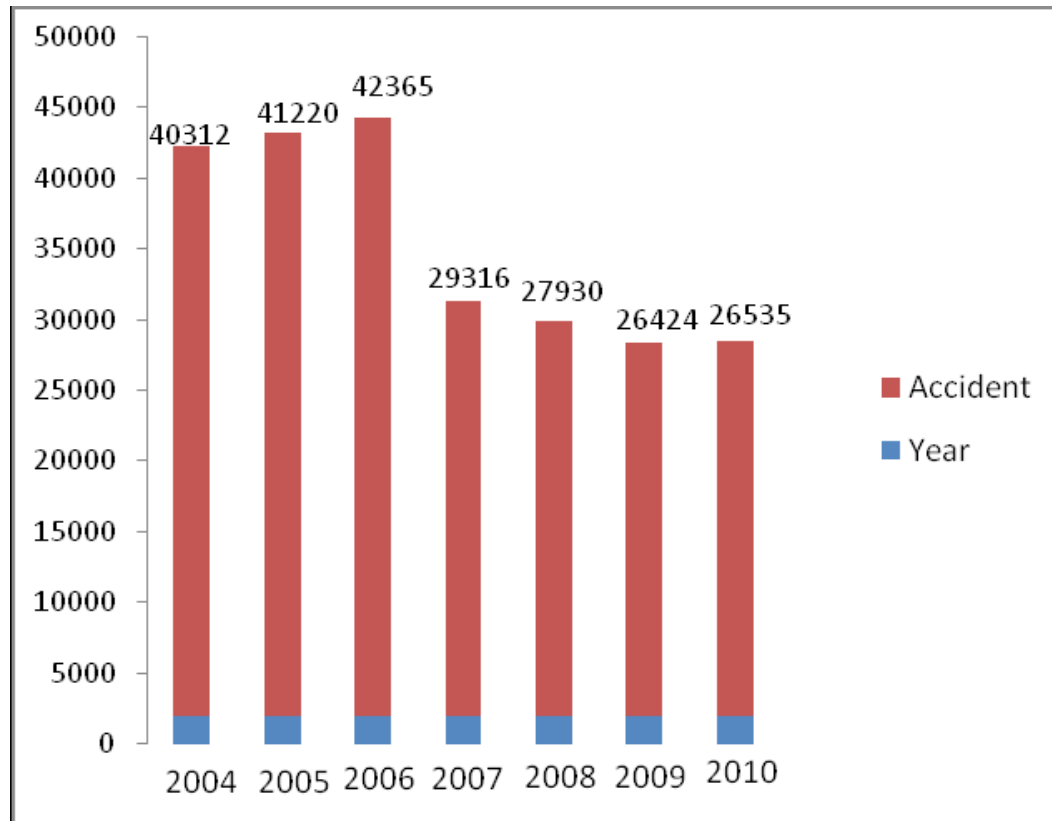
Year 2004 – Better Roads do not mean batter your life (Avoid over speeding)

Year 2005 – Road safety is no accident

## **KERALA SCENARIO**

The Kerala state leads the country in certain social and health indicators like high literacy rate, 100 percent road connectivity to villages, better health care system, and high density of population distribution. But it is also leading the country in terms of risk factors like high rate of road accidents and high injury rate due to road traffic crashes. Road accidents are considered to be 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% of the country's population but it has recorded about 10 % of the country's road traffic accidents. According to the causality figures recorded in major medical college hospitals in the state, nearly 70% of the head injuries are reportedly caused due to traffic crashes.

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 state. The vehicle population has increased by 10 times between 1980 and 2000 and by 3 times between 1990 and 2000. Almost 60 percent of motor vehicles in the state are two wheelers. Two wheeler populations increased from mere 0.5 lakh in 1980 to 24.19 lakh in 2007. This is evident from the fact that the 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.(Economic Review 2010) The trend of motor vehicle accidents in Kerala is shown in the Figure – 1

**Figure – 1 Trend of motor vehicle accidents in Kerala**

Source: *Economic Review, State Planning Board, Kerala*

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 2003-2004, the total cost of accidents works out to more than Rs 400 crore per annum. This is a terrible price we have to pay for mobility of people in the state.

## CAUSES OF ACCIDENTS

Police records shows that rash and negligent driving on the part of the drivers is the main cause of road accidents. According to the records, almost 99.7% of the accidents were caused due to the fault of driver of motor vehicles. The rest of the accidents are reportedly caused due to other

reasons like defective vehicle, bad weather, poor road surface, fault of pedestrians etc (T Elangovan 2004). Table – 3 shows the district wise details of Motor Vehicle Accidents in Kerala, by primary causes of Accidents during 2010 By and large, road accidents are caused due to one or more of the following reasons.

- Over speeding and unhealthy competition of vehicles
- Poor surface conditions, road cutting, lack of pedestrian crossing facilities
- Uncontrolled access streets and unmanned junctions
- Bad driving habits and lack of discipline by road users
- Haphazard parking on road side
- Absence of proper bus bay and shelter
- Visual acuity of drivers
- Encroachments/dumping of materials on road
- Protruded lamp post, unscientific check barriers, speed breakers etc.

**Table – 3 shows the district wise details of Motor Vehicle Accidents in Kerala, by primary causes of Accidents during 2010**

SI No:	Name of the District	Fault of Driver of motor vehicles	other than motor	Fault of Cyclist	Fault of Pedestrian	Fault of Passengers	Defect of motor vehicles	Defect of road surface	Bad weather condition	Other causes	Causes not known	Total
1	Thiruvananthapuram City	1146	0	0	0	0	2	2	0	82	3	1235
2	Thiruvananthapuram Rural	1867	0	0	0	0	12	8	2	93	3	1985
3	Kollam	1979	0	0	0	0	0	0	0	95	0	2074
4	Pathanamthitta	1017	0	0	0	0	0	0	0	40	0	1057
5	Alappuzha	2195	0	0	0	0	3	7	1	48	0	2254
6	Kottayam	1698	7	32	0	0	7	0	2	65	7	1819
7	Idukki	801	0	0	0	0	15	0	0	0	0	816
8	Ernakulam City	1336	0	0	0	0	0	0	0	6	0	1342
9	Ernakulam Rural	2487	0	0	0	0	0	0	0	39	0	2526



10	Trissur	2973	0	0	0	0	0	17	0	16	0	3006
11	Palakkad	1640	0	0	0	0	0	0	0	0	0	1640
12	Malappuram	2077	0	0	0	0	0	0	0	0	0	2077
13	Kozhikode City	1167	0	0	0	0	9	0	0	0	0	1176
14	Kozhikode Rural	1210	0	0	0	0	0	0	0	0	0	1210
15	Wayanad	455	3	0	0	0	2	0	0	1	0	461
16	Kannur	1243	0	0	0	0	0	0	0	16	0	1259
17	Kasaragod	598	0	0	0	0	0	0	0	0	0	598
	<b>Total</b>	<b>25889</b>	<b>10</b>	<b>32</b>	<b>0</b>	<b>0</b>	<b>50</b>	<b>34</b>	<b>5</b>	<b>501</b>	<b>13</b>	<b>26535</b>
	<b>Percentage to Total</b>	<b>97.57</b>	<b>0.04</b>	<b>0.12</b>	<b>0</b>	<b>0</b>	<b>0.19</b>	<b>0.13</b>	<b>0.02</b>	<b>1.89</b>	<b>0.05</b>	<b>100</b>

*Source: Director General of Police*

## **COST OF ROAD ACCIDENTS**

The cost to society such as lost productivity and economic opportunity, diverted institutional resources, as also the cost to accident victim, to their families, to Government, to insurer, to tax payers and damage to property etc can be estimated in economic terms. However, valuing the psycho-social issues likes suffering and loss of life associated with road traffic injuries is difficult and often contentious. It is difficult to assign monetary value on pain and suffering caused by road accidents.

Social cost of road accidents can be the direct cost of illness like the cost of medical treatment as also the indirect cost of illness like the loss in productivity associated with the death or injury. The cost of medical treatment normally include emergency treatment, initial medical cost, and for serious injuries the cost of long term care and rehabilitation. Medical cost also include emergency transport, rehabilitation, mental health, treatment cost, funeral expenses, administrative cost of processing medical payments to providers etc. productivity losses include the value of lost house hold services and the value of lost earnings for 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 (Telson M T *et al*, 2003).

## **REMEDIAL MEASURES**

To tackle road traffic accidents, it is necessary that accident prone locations on the highways need to be identified scientifically and suitable improvement schemes to be implemented on priority basis. It is seen that over speeding and unhealthy competition of private buses on highways result in many accidents. To control speed at certain locations, the police and/ or local people put up check barriers across major roads. This is counter productive, since motorists are caught unaware of such man made barriers without any warning. This results in minor accidents involving two wheelers losing control over speed breakers. As per the Government of India circular, speed breakers should not be constructed on highways, as this would defeat the basic purpose of providing obstruction free movement. It is suggested that such unauthorized speed breakers be removed on National Highways.

The Government took various administrative measures like revival of Kerala State Road Safety Council under the Chairmanship of transport Minister, reactivated road safety committees at district level and local level, provision of adequate road safety funds, organizing public awareness programme and strict enforcement of traffic rules. These measures resulted in reduction of accident rate and casualties in the state. A road safety policy for the state should be formulated spelling out the target for reduction of accidents and casualties in the coming years. The immediate task should be to bring down the accident rate at least on par with all Indian

average, i.e. reduce the accident rate by half. An action plan for the implementation of Road Safety Programme should be formulated. As the matter requires multi department involvement, a High Power Committee may be formed to review the progress and monitor implementation of various schemes.

Lack of inter departmental coordination results in delay in implementation of road safety measures. Traffic police are not available in adequate numbers except in major cities. Even available police personnel are posted for other duties. There is a need to set up a dedicated Traffic Police Wing in each district and also for major towns in the state. Multidisciplinary Road Safety Task Force should be constituted in each district that could be given special training. This task force should visit the accident sites and prepare investigation reports on various aspects and recommended suitable safety measures. Poor eye sight of drivers has been one of the main reasons for increase in the number of accidents on the roads. A comprehensive medical check up should be made compulsory before issuing driving license. Highway patrolling should be extended to all major roads and should not be limited to NHs only. They should be given special training for the evacuation of accident victims, providing emergency relief measures and also arranging first aid to the injured persons.

Unauthorized parking of auto rickshaw, taxi, tempo vans along the main road causes obstruction to smooth movement of traffic. These parking should be regulated away from the main carriage way portion bus stop around the junctions (with in 60 meters) should be banned. If at all necessary, bus stops can be permitted on the service road or 75 to 100 meter beyond the junction with out interfering to main traffic flow. Segregated bus bays should be provided on all major roads, conforming to Indian Roads Congress specifications. Another reason for increase in accidents is drunk driving. Regular breath analyzer checking by police on the roads should be carried out on highways. Road Safety education for school children should be introduced as a part of curriculum. To minimize the glare related accidents in night, planting of trees on road side should be undertaken with out affecting the sight distance. The road dividers, traffic islands should be green turf rather than concreting. Encroachment along highways is a common phenomenon. The unutilized portion should be productively put to use by green parks and tree plantation.

Human failure is sited as a major reason for causing majority of accidents in the state. Hence an intensive Road Safety Campaign should be organized through out the state by all concerned

departments. The campaign should be focus on various target groups. NGOs, academic institutions may be entrusted with this task, with adequate funds to carry out this in a sustained manner. Over speeding on the roads cause a number of fatal accidents, especially on the National Highways. Speed zones should be clearly notified for major arterial roads in the state, specifying speed limit for urban areas of NH, Rural areas, bypasses and city roads. Violations should be punished by police. Adequate number of radars should be made available to enforcing agencies to check over speeding vehicles. Use of mobile phone while driving diverts the attention of drivers, resulting in a number of accidents and near miss situations. Hence use of mobile phone and pager service while driving a vehicle should be checked by special squad all over the state. Scheme of rewards/incentives for safe drivers need to be introduced for public transport drivers, commercial vehicle drivers and staff drivers to practice safe driving habits. For private bus crews, suitable incentives could be arranged through NGOs. Road Safety Research, accident analysis, data base and identification of accident prone locations and preparation of improvement schemes for accident black spots need to be carried out in a sustained manner. This task can be entrusted to specialized agencies in the state. An Expert Committee may be constituted to go into the accident situation in the state and review the recommendations of various Commission of Enquiry and suggest suitable follow up action for implementation of road safety programme in the state.

Road safety programme conducted by NATPAC are

- Safe road to school – a proactive programme for promoting safety of school children
- Safe community programme for selected panchayats
- Accident abatement measures for selected urban areas
- Strategies for safe transportation of dangerous goods in Kerala
- Pre and post enforcement impact on the use of helmet and seat belt in selected cities

## **CONCLUSION**

To 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 percentages 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. Safety management is mainly confined to the regulation of traffic, pedestrian movement and crowd control. Whatever be the limitations in the road network and transport facilities, the traveling public is more concerned about their safe and comfortable route. To achieve this ultimate aim, there is a requirement for every traffic authority to keep abreast with the latest trends and techniques of traffic engineering and management.

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