

# A STUDY ON THE EFFECTIVE TRAFFIC MANAGEMENT OF ROADS TO REDUCE ROAD ACCIDENTS IN TAMILNADU

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Abstract

The main purpose of this study is to identify and analyze the reasons for road traffic accidents in Tamilnadu. Also this study investigates the different causes of accidents occurred in past years in Tamilnadu. Tamilnadu was reported in one of the accident prone zone in India with having highest rate of road accidents. This study investigates why Tamilnadu reported in top number of accidents. What are the reasons for occurring accidents and how con resistance the accidents.

Keyword: Accident, Pedestrian, RTI- road traffic injuries, Highway.

#### **1. INTRODUCTION**

Road traffic accident is serious global problem. Each year over 1 million people are killed and 50 million injured on roads around the world. Without new and effective action, deaths in low to middle-income countries are forecast to rise steeply. At the same time, progress has slowed in recent years in the better performing countries where investment in preventing and reducing serious health loss from road traffic injury is not commensurate with its high socio-economic cost. The ESCAP secretariat estimates 700,000 people were killed and between 20-30 million in road accidents in ESCAP region in 2007.

As highlighted in the World Report on Road Traffic Injury Prevention, fatal and long term crash injury is largely predictable, largely avoidable and a problem amenable to rational analysis and remedy. Research and experience in North America, Australia and Europe has shown that very substantial reductions in road deaths and serious injuries have been achieved through the application of evidence-based measures against the background of increased motorization.



This paper tries to present the experiences in developing policies and implementing the road safety management in Tamilnadu state of India and recommends for road safety management in National Highway segments in Tamilnadu Therefore, Roads are the principal transport mode in Tamilnadu, and this position is unlikely to change in the foreseeable future.

#### 1.1 NATIONAL STATISTICAL TRENDS IN ROAD ACCIDENT

It is difficult to be accurate about the number of road accident as many accidents, including ones where people are injured, are not reported to the Police. Generally, only those accidents with high injury or property damage or with disputes are reported and recorded in the police station.

Road accidents are increasing in Tamilnadu due to increased vehicle fleet and speed. This has become a serious problem which killed more than 1734 people's life and injury of more than 11000 people in year 2009/10. The estimated annual national loss from road accidents is more than  $\pounds$  9 million2. Considering the heavy loss of lives and wealth in road accidents the concerned road and traffic management agencies have started to incorporate road safety issues in their program but it seems inadequate as the losses of life and property from road accidents is increasing. Trend of road accidents and losses of life and property is increasing in recent year.

However, the figures do not give the full accident picture. Experience shows that a fairly large number of accidents are never reported to the police, mainly because the involved parties want to settle the matter between them. This under-representation is assumed to be less pronounced for severe accidents.

#### **1.2. INDIAN SCENERIO OF ROAD ACCIDENT**

Road accidents statistics of India is given in Table-1 in





Figure.1 Road Accident statistics in India.

The spectacular growth in the Road Transportation Sector in India has been a key element in the economic development. In the country, more than 70,000 people die and nearly 4 lakhs persons are injured in about 3 lakhs and more road accidents every year. The trend in road accidents and number of vehicles registered during the period from 1970 - 1995 are shown in Figure 1. India's motor vehicle population is just 1% of the world's, but her share of world road traffic accidents is 6%. Even though it can be observed from Figure 2 that the accident rate has been steadily decreasing over the past 25 years, the accident rate is still very high compared to the developed nations.

The Compound annual growth rate (CAGR) in number of accidents, injuries, fatalities and motor vehicles (registered) have moderated during 1990s (1990-2000) after a spurt during the 1980s (1980 to 1990) (Table 1). Moderation in the growth of accidents, fatalities and injuries during 1990s has taken place in the backdrop of lower growth in the number of registered vehicles and step up in the growth of road network. However, post-2000 (up to 2009) growth rate of fatalities has accelerated vis-à-vis the preceding decade (1990-2000).



Table 1: Growth in Select Accident Related Parameters: Compound Annual Growth												
	Rate (CAGR) in percent											
Period	Number Number Number Number of Road Length											
	of	of	of	<b>Registered vehicles</b>	(in kilometers)							
	Accidents Injuries Fatalities											
1980/1970	3.0	4.5	5.2	12.4	2.3							
1990/1980	6.3	8.4	8.5	15.5	2.9							
2000/1990	3.3	5.0	3.8	9.8	5.3							
2009/2000	2009/2000 2.4 2.9 5.3 10.0 2.7*											
Note: * refers to	2008/2000. The	e latest year fo	or which road le	ngth data is available is 2008	8.							

Between 1970 and 2009 the number of accidents increased by 4.3 times with more than 7 fold increase in injuries and about 8.7 times increase in fatalities in the backdrop of about 64 fold increase in the number registered motor vehicles and three fold increase in road network.

#### **1.2.1 Recent Trends in Number of Accidents, Injuries and Fatalities**

• During the calendar year 2009, number of accidents reported at 4,86,384 was higher by 0.35 per cent compared with 4,84,704 accidents reported in the year 2008.

• In comparison, the number of persons killed as a result of road accidents at 1,25,660 was higher by 4.8% in 2009 compared with the preceding year. However, the number of persons injured declined to 5,15,458 (a fall of 1.5%).

• The total number of road accidents, injuries and deaths increased at CAGR of 2.4%, 2.9% and 5.3 % respectively between the years 2000 and 2009.

#### **1.2.2 Profile of road accidents**

The total number of road accidents reported by all the States/ Union territories (UTs) in the year 2009 were 4,86,384 of which 1,10,993 were fatal i.e. 22.8% of the road accidents were fatal. The number of persons killed in the accidents were 1,25,660 (i.e. an average of one fatality per 4.4 accidents). Table 2 indicates that the proportion of fatal accidents in total road accidents has consistently increased since 2001 from 17.6% to 22.8% in 2009. The severity of road accidents, measured in terms of persons killed per 100 accidents, had also increased from 19.9 in 2001 to 25.8 in 2009.



Table 2:	Number of Ac	cidents and Nun	iber of Persons	Involved : 200	1 to 2009					
Voor	Number o	f Accidents	Number o	Accident						
rear	Total	Fatal	Killed	Injured	Severity*					
2001	4,05,637	71,219 (17.6)	80,888	4,05,216	19.9					
2002	4,07,497	73,650 (18.1)	84,674	4,08,711	20.8					
2003	4,06,726	73,589 (18.1)	85,998	4,35,122	21.1					
2004	4,29,910	79,357 (18.5)	92,618	4,64,521	21.5					
2005	4,39,255	83,491(19.0)	94,968	4,65,282	21.6					
2006	4,60,920	93,917(20.4)	1,05,749	4,96,481	22.9					
2007	4,79,216	1,01,161(21.1)	1,14,444	5,13,340	23.9					
2008	4,84,704	1,06,591(22.0)	1,19,860	5,23,193	24.7					
2009(P)	<b>2009(P)</b> 4,86,384 1,10,993(22.8) 1,25,660 5,15,458 25.8									
(P): Provisional.	Source: Informatio	on supplied by States	/UTs (Police Depa	rtments). Figures v	vithin parentheses					
indicate share of	fatal accidents (i.e	involving death) to	o total accidents. *	Accident Severity	: No. of Persons					

The magnitude of road accidents and fatalities in India is alarming. This is evident from the fact that every hour there are about 56 accidents (about one accident every minute). Similarly, every hour more than 14 deaths occur due to road accidents i.e. one death in every 4 minutes.

### 1.2.3 Impact of Economic Growth on Urban Traffic

Killed per 100 Accidents

As incomes rise, car loans proliferate and the auto industry churns out low-cost cars to nudge them off their motorcycles, Indians are rushing headlong to get behind the wheel. Indians bought 1.5 million cars in 2007, more than double of that in 2003. The cumulative growth of the Passenger Vehicles segment during April 2007 – March 2008 was 12.17 percent. In 2007-08 alone, 9.6 million motorized vehicles were sold in India.13 By some estimates, India is expected to soar past China this year as the fastest growing car market.

India's population and its traffic are concentrated within its cities. The contrast between urban and rural India is far more pronounced than in most Western nations. The migration of rural population to urban areas in search of better job prospects has made cities densely populated. About 27 per cent the population live in urban areas. There are 4,000 cities and towns in India. About 400 cities have population over 1,00,000. Eight cities have population more than 3 million.14

#### 1.2.4 Other reasons of Traffic Congestion in Indian Cities

India has more truly congested cities than any other nation, which is not surprising, since it is also the world's second-most populous country, after China. Vehicles in India are distributed



somewhat unevenly. Delhi, Mumbai, Kolkata and Bangalore have 5% of India's population, but 14% of its registered vehicles. Traffic is growing four times faster than the population in six cities: Mumbai, Delhi, Ahmedabad, Bangalore, Chennai and Hyderabad. Indeed, Delhi is now said to have as many cars as Mumbai, Kolkata and Chennai combined. Traffic is well known for moving at the pace of its slowest component. Most countries have automobiles, buses, trucks, trains, motorcycles, motor scooters and bicycles. But in India, in addition to this routine urban transportation, and contributing substantially to the congestion, are networks of auto-rickshaws and two-wheelers, as well as bullock carts and hand-pulled rickshaws (disappearing from some urban areas).

There has been a staggering 100 fold increase in the population of motorized vehicles, however, the expansion in the road network has not been commensurate with this increase. While the motor vehicle population has grown from 0.3 million in 1951 to over 30 million in 2004, the road network has expanded from 0.4 million km to 3.32 million km, only a 8 fold increase in terms of length during the same period.16 However, upgrading of roads by way of widening of carriage- ways, improved surface quality, strengthening/ reconstruction of old/ weak bridges and culverts, etc. has been carried out.

#### 1.2.5 Strategies to Mitigate Congestion

Traffic congestion is a serious problem in most Indian metros. The scorching pace of economic growth and the growing incomes of India's burgeoning middle class are only likely to make the situation worse. Public transport systems are overloaded, and there is a limit on how much additional infrastructure such as roads and rail lines a city can add.

Of course, city planners are doing the best they can to cope with the increasing stress on the transportation infrastructure. For instance, in Mumbai, tens of flyovers have been - and continue to be - constructed, and existing roads are being widened.

But creating more infrastructure is not a solution by itself. The improvements in infrastructure will always lag behind the increase in traffic. Its benefits are only short-term; what's needed is a more imaginative, holistic and integrated approach to the problem. A piece of statistic from the Mumbai Traffic Police web site illustrates the magnitude of the problem: While length of roads in Mumbai increased two times between 1951 and 2007, the population increased 5.4 times and the number of vehicles a whopping 43 times.

	1951	2007	Increase No.Times
Road Length (Kms.)	837	1900	2.27
Population (lacs)	29.9	160	5.35
No. of Vehicles	35000	15.03 lacs	42.94



The improving-infrastructure approach seeks to accommodate the future. What is also needed is a preventive approach to actually reduce the traffic on the roads. This can be achieved in two ways.

#### 1.2.6 Build better public transport systems

Transport experts at the second Urban Age conference on mega cities in Sao Paulo, Brazil - a city with 18 million people and 9 million cars - were unanimous in pointing out that throughout the world, whether in industrial or developing countries, public transport had to be promoted at the expense of private, motorized transport which, in effect, implies traffic restraint, among a slew of other measures. The demand so often raised by car owners for more roadways, by way of highways, fly overs and the like. India which is the second largest producer of buses, accounting for 16 percent of world's total bus production has a bus penetration ratio anywhere between 0.4 to six buses per 1000 people17. An efficient public transport system can effectively reduce the traffic on city roads.

There's considerable evidence to suggest vehicle owners will use a mass transit system, if a good one is available. In fact, because of traffic snarls and the problem of finding parking space, many commuters in cities like New York and London choose to travel by the metro rail network. Many cities in India are already taking steps in this direction. City authorities are also exploring providing public transport on sea routes that connect important hubs of Mumbai. But building such alternative transportation systems requires huge investments. That is where we come to the second approach.

#### 1.2.7 Normalized Indicators of Road Accidents, Injuries & Fatalities: All India Averages

Table 3 provides a share of top five States in India in total number of road accidents, persons killed in road accidents, persons injured in road accidents in the backdrop of their share in India's motor vehicle population.

Among the States, Tamilnadu and Gujarat stand out in contrast as regards accidents. Tamilnadu offers an interesting case as it accounts for a share about 4.2 % in total registered vehicles in 2009 compared to its much higher share in total road accidents (7.3% in 2009) [Annex-I A] and persons injured in road accidents (8% in 2009). However, Tamilnadu accounts for a lower share of 3% in the total road accident related deaths during 2009. Factors, which may contribute to high rate of accidents, are population density, road density and composition of vehicle population.

On the other hand, Gujarat accounts for a share of 9.6% in the number of registered vehicles in 2009 but lower shares of 6.4%, 6.4% and 5.6% in total road accidents, persons injured and persons killed respectively in road accidents in 2009.



Table: 3 - All India Share of Select States (in %): Road Accidents, Injuries, Deaths										
	and Register	red Motor Vehi	cles							
State/UT	2006	2007	2008	2009(P)						
Top 5 States: Share in Total Number of Road Accidents (in %)										
Share of 5 States	55.6	55.4	55.4	55.3						
1.Maharashtra	16.4	15.4	15.6	14.8						
2.Tamilnadu	12.0	12.3	12.5	12.5						
3. Madhya Pradesh	8.3	8.8	9.0	9.7						
4.Kamataka	9.4	9.7	9.5	9.3						
5.Andhra Pradesh	9.5	9.2	8.8	9.0						
Share of the above 5	43.5	41.5	41.9	42.0						
States in total										
Registered Vehicles.										
Top 5 States: S	Share in Total Nu	mber Killed in	<b>Road Accident</b>	ts (in %)						
Share of 5 States	51.0	49.8	50.9	50.3						
1.Andhra Pradesh	12.1	11.8	11.5	11.8						
2.Uttar Pradesh	10.3	10.0	11.0	11.6						
3.Tamilnadu	10.4	10.5	10.7	10.9						
4.Maharashtra	10.7	9.8	10.3	9.1						
5.Kamataka	7.5	7.7	7.4	6.9						
Share of the above 5	47.3	45.7	46.0	46.2						
States in total										
Registered Vehicles.										
Top 5 States: Sh	are in Total Num	ber of Injuries	in Road Accide	ents (in %)						
Share of 5 States	56.0	55.4	56.6	55.7						
1.Tamilnadu	13.0	13.9	13.4	13.7						
2. Karnataka	12.3	12.0	12.1	12.0						
3.Madhya Pradesh	8.6	8.8	9.8	10.6						
4.Andhra Pradesh	11.8	11.5	11.2	10.1						
5.Maharashtra	10.3	9.2	10.1	9.3						
Share of the above 5	43.5	41.5	41.9	42.0						
States in total										
Registered Vehicles.										
Note: Totals may not tally du	e to rounding. P : Pro	visional								

#### **1.2.8 Incidence of Road Accidents, Injuries and Deaths: States & UTs.**

Inter State /UT comparisons of accident related data need to be viewed keeping in view the differences in road network, state of roads, size of human and vehicular population, levels of urbanization and accident reporting systems. These parameters have implications for accident rates across the States.

Incidence of accident normalized in terms of road length, human population or vehicle population provides comparable accident data across States and UTs.



	Table 4 : Severity of Road Accident in India (Statewise)									
	Persons Killed per 100 Accidents									
	State/UT	2006	2007	2008	2009(P)					
	States		1	1	1					
1	Andhra Pradesh	29.3	30.6	32.4	33.9					
2	Arunachal Pradesh	51.6	39.6	47.9	51.6					
3	Assam	39.2	36.4	38.6	40.9					
4	Bihar	42.8	44.8	43.8	43.6					
5	Chhattisgarh	19.9	21.2	22.9	22.2					
6	Goa	8.2	8.0	7.6	7.7					
7	Gujarat	19.5	20.6	21.0	22.5					
8	Haryana	38.9	36.8	38.8	38.6					
9	Himachal Pradesh	31.8	33.1	30.8	37.4					
10	Jammu & Kashmir	17.7	16.3	17.8	18.5					
11	Jharkhand	38.4	39.4	39.7	43.4					
12	Karnataka	18.4	18.9	19.0	19.3					
13	Kerala	8.7	9.5	10.5	10.8					
14	Madhya Pradesh	14.0	15.9	15.2	15.6					
15	Maharashtra	15.0	15.2	16.4	15.8					
16	Manipur	30.5	21.2	26.4	21.6					
17	Meghalaya	37.9	42.3	41.8	36.4					
18	Mizoram	67.4	64.9	57.3	69.8					
19	Nagaland	35.1	37.2	92.1	87.3					
20	Orissa	35.6	36.5	37.6	39.7					
21	Punjab	61.9	64.6	62.7	65.9					
22	Rajasthan	30.6	34.1	35.4	36.0					
23	Sikkim	37.2	34.7	40.3	15.4					
24	Tamil Nadu	20.0	20.4	21.2	22.6					
25	Tripura	24.7	27.8	28.8	26.5					
26	Uttarakhand	66.7	64.9	75.7	60.8					
27	Uttar Pradesh	55.7	53.0	51.3	52.0					
28	West Bengal	40.6	40.7	39.2	43.7					
	UTs									
1	Andaman & Nicobar Islands	14.3	13.3	11.5	12.2					
2	Chandigarh	27.5	28.3	30.7	40.3					
3	Dadra & Nagar Haveli	43.7	56.9	56.0	57.0					
4	Daman & Diu	47.4	48.3	58.0	52.4					
5	Delhi	23.3	24.8	24.8	30.9					
6	Lakshadweep	10.0	0.0	0.0	50.0					
7	Puducherry	13.2	14.6	12.5	12.8					
	National Average	22.0	23.0	24.7	25.8					



	Table 5A: Road Accident Profile for Select Cities (2009)										
			Total	No. of		Accident					
Sl. No.	Name of city	Fatal	All	Persons	Persons	Severity*					
		Accidents	Accidents	Killed	Injured						
1	Ahmedabad	188	2179	200	2232	9.2					
2	Bengaluru	715	6872	742	5705	10.8					
3	Bhopal	244	3719	272	3152	7.3					
4	Chennai	602	5177	618	4377	11.9					
5	Coimbatore	262	1098	282	974	25.7					
6	Delhi	2272	7516	2325	6936	30.9					
7	Hyderabad	465	2990	481	2908	16.1					
8	Indore	394	4724	419	3817	8.9					
9	Jaipur	389	2007	415	1840	20.7					
10	Kanpur	477	1178	533	999	45.2					
11	Kochi	153	2042	154	2107	7.5					
12	Kolkata	399	2789	417	2004	15.0					
13	Lucknow	501	1444	524	903	36.3					
14	Ludhiana	185	703	254	286	36.1					
15	Madurai	125	555	127	513	22.9					
16	Mumbai	607	29327	628	6567	2.1					
17	Nagpur	229	1383	250	1224	18.1					
18	Patna	265	922	265	462	28.7					
19	Pune	383	2157	394	1839	18.3					
20	Surat	207	1357	217	1117	16.0					
21	Vadodara	128	1330	136	1052	10.2					
22	Varanasi	252	404	267	162	66.1					
23	Visakhapatnam	434	1771	460	1772	26.0					
	Total 23 cities	9876	83644	10380	52948	12.4					
	All India	110993	486384	125660	515458	25.8					
Note: *	Accident Severity: F	load accident	deaths/100 acc	cidents							

Table 5 B : Percent Share of 23 Cities in Road Accidents during 2009								
1 All Accidents 17.2								
2	2 Fatal Accidents							
3	Persons Killed	8.3						
4	Persons Injured	10.3						



### 2. TAMILNADU SCENARIO

Tamil Nadu is the southernmost state of India. It is the 11th largest state with an area of 1,30,058 Sq.km out of country's total area of 3166416 Sq.km and the third most urbanized State next to Maharashtra and Gujarat. Road network of the state influences considerably the economic development, population distribution, size of cities and towns, environmental quality, energy consumption, access to social infrastructure and above all the quality of life. The language spoken here is Tamil and most people in the urban areas would be able to understand English. The capital of Tamil Nadu is Chennai (formerly known as Madras). Tamil Nadu is divided into 32 districts. Tamil Nadu has Pondicherry, Tamilnadu, Karnataka and Andhra Pradesh as it neighbors. It also has one of the longest coastal lines in India and is very closely situated to Sri Lanka.

It is seventh most populous state in India with a population of 72,138,958 (5.96% of India's population; census 2011). It is the seventh most densely populated state in India with a population density of 555 persons per squarekilometer as of 2011, having increased from 429 in 1991, significantly higher than the Indian average of 382 persons per square kilometer. 44% of the state's population lives in urban areas.

The major administrative units of the state constitutes 39 LokSabha constituencies, 234 Assembly constituencies, 32 districts, 10 city corporations, 152 municipalities, 611 town panchayats and 12,618 village panchayats. Chennai (formerly known as Madras) is the state capital. It is the fourth largest city in India and is also one of the five A1 Metropolitan cities of India. The total length of road in Tamil Nadu is 1, 88,700 Km, of which 61446 Km length of roads are maintained by Highways Department. Tamil Nadu is in the forefront in developing road infrastructure. The density of road network in Tamil Nadu is 286 Km per lakh of population which is higher than the all India average of 258.20 Km and 137 Km per 100 Sq.Km area as against the all India average of 74.90 Km. Roads in Tamilnadu are broadly grouped under two categories viz. (a) Government Roads and (b) Village roads and others. Realizing the importance of developing and maintaining a good network of roads, for the first time in India, a separate department for Highways was formed at the State level, as early as in April 1946 and the Department has completed platinum jubilee year.

Vehicular position in Tamilnadu as on 01-07-2012, it was 15819985 registered vehicles in that, 1023851 vehicles were transport vehicles and 14796134 were nontransport vehicles (13038498 two wheelers).



### **3. REVIEW OF LITERATURE**

Selzer (1968) showed that alcohol was a major problem in single vehicle fatal Accidents. In 72 fatal accidents which claimed 87 lives, he showed that half of drivers had serious drinking problems of chronic nature. A WHO advisory group in 1956 has defined accident as" an unpremeditated event resulting in recognizable damage" According to another definition, an accident is that "Occurrence in sequence of events which usually produces unintended injury death or property damage" Mortality from RTAs accounts for 10% of all deaths.in the 5-44 year age group (Jacobs and Sayer 1983). Road traffic accidents (RTAs) are the leading cause of deaths in adolescents and young adults globally (Mohan and Romer 1991).

Peden et al. (2001: 12) argues that 'the same road space gets used by modern cars and buses, along with locally developed vehicles for public transport (three-wheeled scooter taxis), scooters and motorcycles, tricycle rickshaws, animal and human drawn carts'. He adds that infrastructure which is designed on the basis of homogeneous traffic models has failed to fulfill the mobility and safety needs of this traffic'(Ibid).

Claret et al. 2002:394; Jelalian et al. 2000: 84-93; Oginni 2008: 226). Most authors attribute most accidents to driver dependent factors, which are thought to account for 60% to 90% of all traffic accidents (Ibid). 'The growth in numbers of motor vehicles is a major contributing factor in the rising toll of fatalities and injuries from road traffic crashes in poor countries' (Hague 1999: 212; McGrowder, 2008: 185; Nantulya 2002: 1139). Nantulya added that another explanation for the high burden of RTAs is "Poor enforcement of traffic safety regulations in low income countries due to inadequate resources, administrative problems and corruption. Corruption is a huge problem in some countries, often creating a circle of blame the police, blame drivers and the public, the public blames drivers and the police, and drivers blame the police. Corruption also extends to vehicle and driver licensing agencies". (Ibid)The existing literature in developing countries does not provide clear evidence on whether vulnerable groups of people are mostly affected by RTAs although it suggests that there is a relationship (Nantulia and Reich, 2003; Laflamme and Didderichsen 2000). This might have been hindered by the incompleteness of data on TRAs both in developed and developing countries. 'A study in Bangalore, India seems to provide some evidence for such a negative gradient in income' (Jacobs et al. 2004: 24).

As noted by (Peden and Sminkey 2004:67) 'economic costs are just the tip of the iceberg. For everyone killed, injured, or disabled by a road traffic crash there are countless others deeply affected'. Many families are driven deeper into poverty by the expenses of prolonged medical care, loss of a family breadwinner, or the added burden of caring for the disabled (Ibid).

Oginni (2008: 226) further identified the specific risk factors such as 'uneducated and unlicensed drivers and riders, reckless driving, carelessness, drunkenness, lack of knowledge on road safety rules, driver's age, fatigue, unimplemented government policies, failure in law enforcement and



corruption'. Furthermore the literature on RTAs has noted that poor vehicle conditions, poor road infrastructure and poor traffic management are some risk factors contributing to RTAs. Road Traffic Injuries are modulated by human behavioural and environmental factors. Many studies (Bener et al., 2008a; Bener, Lajunen, Ozkan & Haigney, 2006; Bener, Ozkan & Lajunen, 2008b; Bener & Crundall, 2008c; Bener et al., 2007) have shown that human behavioural factors collectively represent the main cause of road traffic crashes and their remedial measures can go a long way to help prevent RTIs.

Road traffic injuries are 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 they are the second leading cause of death (WHO, 2007a). The projected 40% increase in global deaths resulting from injury between 2002 and 2030 is predominantly due to the increasing number of deaths from road traffic accidents (WHO, 2007b) India already accounts for about 9.5% of the total 1.2 million fatal accidents in the world (Mondal et al., 2011b). In 2007, 1.14 lakh people in India lost their lives in road mishaps — that's significantly higher than the 2006 road death figures in China, 89,455 (Mondal et al., 2011a). One person dies at every 4.61 minutes in India for road crashes. Road deaths in India registered a sharp 6.1% rise between 2006 and 2007.

#### **4. OBJECTIVES**

To find out the major causes of accidents To analyze the severity rate of accidents To analyze the type of vehicle mostly involved in accidents

#### 5. RESEARCH METHODOLOGY

Data collection is based on secondary data. Data were available in detailed accidents in tamilnadu and Chennai from 1993-2013. And also make evaluation of causes of accidents with 2012. Data collections are done with the help of tamilnadu government website and DGP Chennai and daily newspapers of tamilnadu.

#### CHARTS AND DATA INTERPRETATIONS:

#### ACCIDENT DETAILS IN TAMIL NADU FOR CERTAIN YEARS State : TAMIL NADU TOTAL Non-Fatal **Grievous Injury** Minor injury NO.OF injury Total PERSONS YEAR Accidents INVOLVED N.A N.P.K N.A N.P.I N.A N.P.I N.A 6528 7349 3562 5100 17957 27226 6878 1993 34925 39675 1994 7027 7798 4199 6091 18950 28789 6861 37037 42678

#### Table 6: Accident Details In Tamil Nadu For The Year From 1993 To 2012



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N A Ac	: No of cidents		N P K : N	o of persons k	illed	N P I : No of persons Injured			d
20 13 (up to	4893	5234	1564	2075	15068	24081	1033	22558	31390
2012	15072	16175	4851	6972	44604	71376	3230	67757	94523
2011	14359	15422	4619	6573	42766	67672	4129	65873	89667
2010	14241	15409	4613	6844	42320	68601	3822	64996	90854
2009	12727	13746	4448	6721	39676	63783	3943	60794	84250
2008	11813	12784	4426	6696	39193	63555	4977	60409	83035
2007	11034	12036	4498	6873	39494	64226	4114	59140	83135
2006	10055	11009	4630	6833	36262	57508	4198	55145	75350
2005	8844	9760	5214	7815	34669	54152	5151	53878	71727
2004	8733	9507	4875	7642	33222	49641	5678	52508	66790
2003	8393	9275	5163	8557	31600	46685	5869	51025	64517
2002	9012	9939	5830	8697	32183	46433	6478	53503	65069
2001	8579	9571	5442	8354	30963	45928	6994	51978	63853
2000	8269	9300	5278	8496	29137	44910	6239	48923	62706
1999	8734	9653	5276	7287	27231	34157	6845	48086	51097
1998	8510	9801	6562	8525	23862	33970	7789	46723	52296
1997	7947	8755	4542	6567	23362	34010	8352	44203	49332
1996	8079	9028	4474	7383	22151	31198	7493	42197	47609
1995	7974	8773	4440	6380	21661	31922	7610	41685	47075





# Figure 4: Total number of persons involved from 1998 To 2013(upto April)

	ROAD ACCIDENT DATA FROM 1998 TO 2013 (Up to April 2013)											
CHENNAI CITY												
YEAR	Fa	tal	Grievous Injury		Minor injury		Non- injury	Total Accidents	Total No. of persons involved			
	N.A	N.P.K	N.A	N.P.I	N.A	N.P.I	N.A		mvoiveu			
1998	561	724	1832	1844	1928	3041	882	5203	5609			
1999	575	681	87	87	3558	4269	424	4644	5037			
2000	574	590	58	61	3956	4768	578	5166	5419			
2001	611	638	125	147	3822	4640	684	5242	5425			
2002	461	474	212	234	2792	3376	170	3635	4084			
2003	509	529	217	238	3274	4069	202	4202	4836			
2004	560	575	246	279	3750	4549	317	4873	5403			
2005	550	561	435	532	3712	4526	199	4896	5619			
2006	1082	1106	112	128	4336	5208	287	5817	6442			
2007	1110	1146	1564	1907	4367	5331	529	7570	8384			
2008	859	888	66	72	4296	5060	1602	6823	6020			
2009	582	598	121	139	3504	4123	853	5060	4860			

# Table 7. Road accident data from 1998 to 2013 (up to april 2013)



Source: DGP, Ch	ennai								
N A : No of Accio	lents		N P	K : No of pe killed	ersons	N P I : No of persons Injured			
(up to April	504	517	202	510	5102	3085	455	4321	4512
2013	504	517	262	210	2102	2695	152	4201	4510
2012	1367	1401	611	712	6581	7916	1104	9663	10029
2011	906	929	271	320	4513	5343	876	6566	6592
2010	604	621	1470	1749	2227	2664	832	5133	5034

#### Table 8: Number Of Road Accidents According To Type Of Vehicles During The Year 2012

NUMB	NUMBER OF ROAD ACCIDENTS ACCORDING TO TYPE OF VEHICLES												
DURING THE YEAR 2012													
TAMIL NADU													
Types of Vehicles	Fa	atal	Grevious	Injury	Minor injury		Non- injury	Total Accidents					
	N.A	N.P.K	N.A	N.P.I	N.A	N.P.I	N.A						
Bus: GOVT	3027	651	988	5728	9870	1066	10160	24045					
: PRIVATE	3910	1455	2387	13151	22427	1370	19533	48257					
Truck /Lorry	4466	1596	1919	15840	21246	187	21947	49578					
Car/Jeep/Taxi/Tempo	390	242	318	2570	4157	71	3260	8125					
Two wheelers	2186	376	482	2750	4167	151	5378	12213					
Three wheelers	16175	4851	6972	44604	71376	3230	67757	162280					
Others	0	0	0	0	0	0	0	0					
T	30154	9171	13066	84643	133243	6075	128035	304498					

## 6.ROAD ACCIDENTS IN TAMILNADU

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 India. In our Tamilnadu state more than half of the road accident victims are in the age group of 20 to 55, the key wage earning and child raising age group. The loss of the main bread winner and head of household due to death or disability can be catastrophic, leading to lower living standards and poverty.



The main causes of the increasing death rates in the Road Accidents are:

- Not knowing or not adopting correct driving habits.
- Increasing number of New generation vehicles especially Two wheelers.
- Aggressive driving behavior of Heavy vehicle drivers especially Private Buses & Tipper Lorries.
- Drivers sleeping while driving especially of Heavy vehicles & light motor vehicles after midnight due to fatigue and other reasons.
- Over speeding.
- Bad condition of Roads and absence of different lanes.
- Driver /Rider's ignorance of Road conditions, Road signs and the Environmental factors.
- Driver /Rider's ignorance or violation of Traffic Rules.
- Drunken Driving/Driving without seat belt.
- Driving without Helmet.

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All road users should remember that road is to be shared amongst all. Requirements of different road users may differ according to circumstances and observance of traffic rules and consideration for the fellow users can reduce congestions, traffic jams and accidents. All road users must ensure that they

- Obey traffic rules at all times
- Obey all traffic signals and road sings
- Give preference to emergency vehicles and other fast moving vehicles wherever conditions allow.
- Mandatory use signals who turning, stopping, over taking slowing down and parking
- Park only in designated areas.
- Give due consideration to pedestrians at all times
- Keep within permitted speed limits at all times.

# 7. PLAN TO STOP KILLING ON OUR ROADS

If we are determined, we can stop killing on the roads. We all play a role whether it is government, Private sector, industry; Media press TV, citizens, parents, teachers, and every one. We all can do it by:

- Making people, our children staff and contractors aware of rules. Reminding them too often about dangers of the road
- Learning defensive driving techniques
- By Encouragement and appreciation to good drivers
- By strict enforcement of traffic rules
- Sound design and maintenance of vehicles and roads
- Evaluation/adjustment to road conditions



### 8. SUGGESTIONS

Fault of drivers only reported for high rate of accidents, government shall make more enforcement work on drivers. Two wheelers is the mostly expected vehicle for accident Drunken driving, over speeding, over loading, poor maintenance of vehicles and usage of mobile phones while driving are the major reasons for accidents. Sudden crossing by the pedestrian/ animal is also caused accidents. Not wearing seat belt and helmet is increases the severity of accidents. Making a proper road safety programs is the best method to reduce accidents; creating awareness among people about accidents and reasons for accidents. Developing emergency medical services through a 24\*7 call centre with a dedicated common telephone number backed by ambulances. Make sure compulsory training program for before issuance of driving license. Developing highway patrol in national and state highways to find out the mistakes of drivers and making effective punishments. Make proper signals, way boards, and route maps in roads.

#### 9. CONCLUSION

Humans are unanimated, accidents are not made it happens unexpectedly. Creates severity not only financial level also in human lives. Drivers are plays vital role, they have to improve themselves and obey traffic rules. There is clearly a need for road safety education and it should be directed towards road users, who are frequently involved and injured in RTIs (e.g. students). An integrated programme of road safety education is suggested. State shall make proper rules and regulations and changes in traffic rules. And create good road conditions to avoid road accidents.

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