A Comparative Study on Road Safety Situation in India with Selected Developed Countries

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ABSTRACT

Road safety problem has loomed as a serious and increasing global public health and economic issue. The problem of deaths and injuries as a result of road traffic accident has now been recognized as a global phenomenon. The safety situation in developing countries is rapidly deteriorating with increasing number of road deaths, largely as a direct consequence of rapid growth in population, motorization and urbanization and lack of investment in road safety. Statistics reveals that India has one of the highest fatality rates in road accidents, which are 8.1 deaths per 10,000 motor vehicles on road in 2013 compared with the rates in other developed countries like Australia (0.47), Austria (4.41), Hong Kong (1.70), NZ (0.8), USA (11), Canada (0.87), and South Korea (2.29). The fatality risk is much high in India (11) as compared to the indices of the developed countries like Australia (5.16), Hong Kong (1.77), NZ (5.7), USA (8.06), Canada (5.49), South Korea (9.1). While road safety situation is improving in developed societies, most developing countries like India are facing an ever-worsening situation. In this paper, the attempted has made to draw a preliminary comparative study on road safety situation in selected developed countries with India.

Key words: Road safety, India, NZ, Australia, Canada, USA.

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INTRODUCTION

A safe, adequate and efficient transport system is a prerequisite for both initiating and sustaining economic development. Unimproved traffic system acts as a multi dimensional barrier to economic development endeavor by hindering accessibility with concomitant deaths,

injuries and damages to properties. In 1990 road accident was placed 9th as a cause of premature death. WHO estimates road traffic injuries will be 3rd leading cause of life years lost by 2020. The Global Road Safety Partnership (GRSP) has estimated that nearly one million deaths and 15 million injuries occur on roads worldwide each year. In developing countries like India the situation is made worse by rapid and unplanned urbanization. The absences of adequate infrastructure together with the lack of legal regulatory framework make the exponential rise in the number of road accidents. Statistics reveal that India has one of the highest fatality rates in road accidents, which is 8.1 deaths per 10,000 motor vehicles on road in 2013 compared to other countries like Australia (0.47), Austria (4.41), Hong Kong (1.70), NZ (0.8), USA (11), Canada (0.87), and South Korea (2.29). There remains much scope for improving road safety and for that known and proven interventions need to be implemented with due urgency, ranging from education and engineering to enforcement. This paper makes an effort to put forward the road safety situation in India and the comparative scenario with some selected developed countries.

ROAD SAFETY SITUATION IN INDIA

In 2013, India recorded 4,86,476 road accident deaths highest in the world. Of this about 25.2 per cent (1,22,589) were fatal accidents. The number of persons killed in road accidents were 1,37,572 i.e. an average of one fatality per 3.5 accidents. Trends of reported road traffic accidents are given in Table 1. The proportion of fatal accidents in total road accidents has consistently increased since 2003 from 18.1 per cent to 25.2 per cent in 2013. Persons killed per lakh of population has shown an alarming increase from 2.7 in 1970 to 11.8 in 2011 and declined thereafter to 11.0 in 2013. As regards number of persons killed per 10,000 vehicles the decline has been dramatic. The number of persons killed per 10,000 vehicles in the country has also fallen from about 12.7 in 2004 to 8.1 in 2013. The number of persons killed per ten thousand kilometers of road length increased from 255.7 in 2004 to 303.8 in 2011 and then decreased to 274.2 in 2013.

Table1. Number of Road Accidents, Fatalities, and Injuries in India

Year	All Accidents	Persons Killed	Persons Injured	Population (000)	Road Length (km)	Vehicles Registered (000)	PK / 100,000 population	PK / 10,000 Vehicles	PK / 10,000 km
2004	429910	92618	464521	1079117	3621507	72718	8.6	12.7	255.7
2005	439255	94968	465282	1095722	3809156	81502	8.7	11.7	249.3
2006	460920	105749	496481	1112186	3880651	89618	9.5	11.8	272.5
2007	479216	114444	513340	1128521	4109592	96707	10.1	11.8	284.9
2008	484704	119860	523193	1144734	4109592	105353	10.5	11.4	291.7
2009	486384	125660	515458	1160813	4471510	114951	10.8	10.9	281.0
2010	499628	134513	527512	1176742	4582439	127746	11.4	10.5	293.5
2011	497686	142485	511394	1210193	4690343	141866	11.8	10.0	303.8
2012	490383	138258	509669	1230029	4864684	159491	11.2	8.7	284.2
2013	486476	137572	494893	1250189	5015473	169132	11.0	8.1	274.2

COMPARATIVE STUDY OF DEVELOPED COUNTRIES AND INDIA

The indices most often used for understanding the road safety situation of a nation include fatalities risk (FR), fatalities per vehicle (FPV) and the fatality index (FI).The FI is calculated by dividing the total number of recorded fatalities by the number of injured persons.

Table 2 presents a list of comprises motorization levels, fatality rates and changing trends of selected developed countries and India. The severe road safety situation in India can be understood from the data shown in this table. India has a motorization level 79 and fatality per 10,000 motor vehicles 8.1, whereas Australia, Hong Kong, New Zealand, USA, South Korea, Canada have motorization levels 723, 103, 764, 878, 446, 643 and fatalities per 10,000 motor vehicles 0.47, 1.7, 0.80, 11, 2.49 and 0.87 respectively. Figure 1 also show that a significant decreasing rate of percent fatalities per 100,000 populations over the period 2004 to 2013 for all the developed countries. In contrast, for India, these indices are increasing in dreadful manner.

Table2. Motorization Levels, Fatality Rate and Changing Trends of Selected Developed Countries and India

Country Name	Motorization level (Per 1000 Populations)	Fatalities/ 10,000 Vehicles	Fatalities/ 100,000 Populations	Percentage of fatalities per 10,000 MV('12-'13)	Percentage of fatalities per 100,000 Populations ('12-'13)
Australia	723	0.47	5.16	-14.8	-10.85
New Zealand	764	0.8	5.7	-12.5	-21.05
USA	878	11	8.06	-6.36	-9
South Korea	446	2.49	9.1	-7.63	-9.8
Canada	643	0.87	5.49	-5.7	-9.2
India	79	8.1	11	-7.40	3.5

Table 3 reveals that fatality per kilometer road in developed countries is less than 0.01 whereas in India fatalities are 0.028. The fatality index is much high in India (0.27) in comparison with the developed countries like NZ (0.02), Korea (0.01), Canada (0.01). Figure 2 shows the long term changing trends in pedestrian deaths in selected developed countries and India for the period 2004 to 2013.

Table3. Distribution of Road Accidents and Fatalities of Selected Developed Countries and India

Country Name	Accident per km road	Fatalities per km road	Percent pedestrian fatalities	Pedestrian fatality per 10,000 vehicles	Fatality index	Percent change trend in ’12 to ’13 (fatalities)
Australia	na	0.001	13.16	0.09	-7.1	na
NZ	0.31	0.002	11.81	0.09	-0.3	0.021
Korea	2.13	0.002	38.11	0.08	-2.65	0.014
Canada	0.11	0.002	15.02	0.14	-2.89	0.012
India	1.00	0.028	2.72	0.22	8.01	0.277

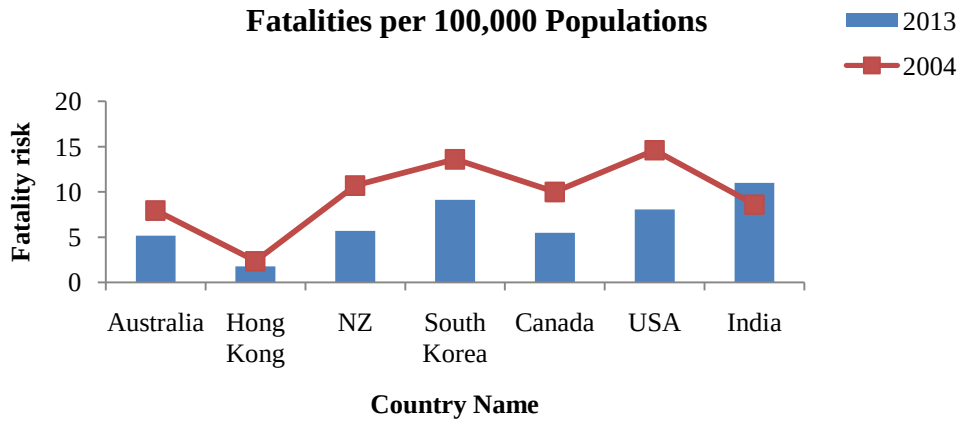

Fig 1: Changing of Fatalities per 100,000 populations for the Period of 2004 to 2013

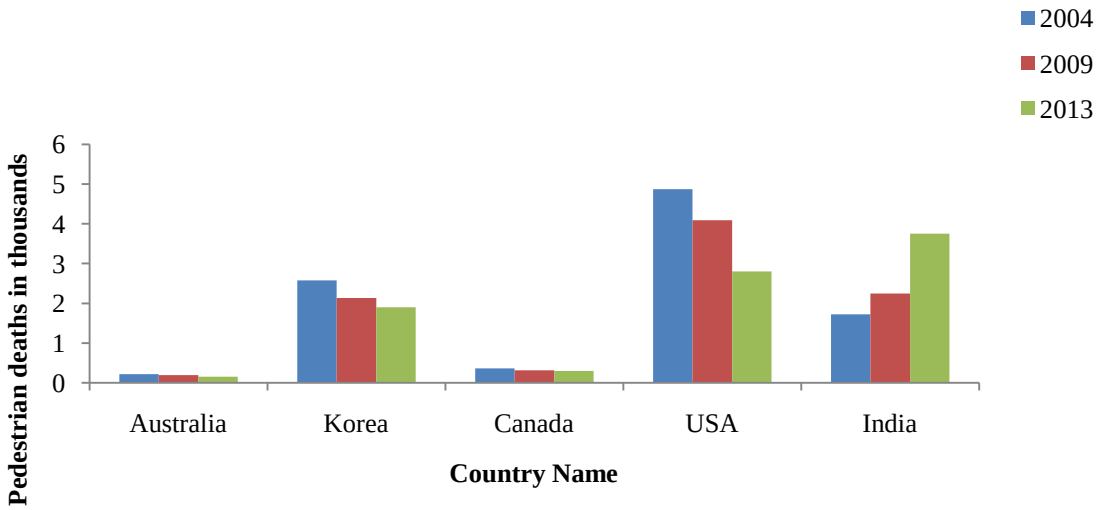

Fig2: Changing of pedestrian deaths for the Period of 2004 to 2013 in developed countries and India.

ROAD SAFETY TARGETS AND INITIATIVES IN SELECTED COUNTRIES

From the analysis it is clear that most of the developed countries in the world the rate of road traffic fatalities and injuries decrease day by day for the causes of successful implementation of road safety measures. Table 4 presents national road safety targets set by different countries.

Table4: Road Safety Targets of Selected Countries

Country Name	National Targets
Australia	30% decrease in number of both death and serious injuries by 2020
New Zealand	Does not include general fatality targets, but several sub targets and performance indicators (2011-2020)
South Korea	30% reduction in population fatality rate
Canada	To achieve downward trend in fatalities and serious injuries throughout its five year duration averaged over a three year time frame (2011-2015)
USA	20% reduction in total road user fatalities and injuries by 2015 compared with 2010 and 50% reduction in commercial vehicles related deaths and injury by 2020.

To achieve these targets, the safest nations are continuing to develop innovative initiatives. A brief description of these initiatives is presented below.

A review of **Australia's** road safety performance and strategic priorities noted that the nation had historically benefited greatly from strong enforcement and education programmes, targeting high-risk behaviours such as speeding, drink-driving and non-usage of seatbelts. It concluded that these measures continue to be important, but that greater emphasis is required on non-behavioural means of improving the safety of the road transport system. This includes:

- Investing in safer road infrastructure;
- Accelerating safety improvements in the nation's vehicle fleet;
- Making greater use of technologies that can support behaviour-change objectives (such as alcohol interlocks and speed adaptation systems), and facilitating the development of emerging technologies;
- Identifying and addressing systemic safety deficiencies in rural and remote areas of Australia.

In **Canada,** a plethora of road safety initiatives ranging from the national to community level have been initiated. Most efforts have been directed toward major safety issues - the non-use of seat belts and drinking and driving - and, to a lesser extent, toward vulnerable road users, such as pedestrians. Other successful ongoing jurisdictional or community-based initiatives include those focusing on deterring speeding in designated community safety zones, school bus safety, winter driving, holiday congestion, cyclists, and pedestrians.

The **United States** is focusing considerable enforcement efforts on increasing seat belt use and decreasing drinking and driving. Four additional problem areas were identified as major contributors to fatalities: single vehicles that run off the road, high speeds, problem intersections, and crashes involving pedestrians and cyclists. Numerous road user and traffic engineering countermeasures have been introduced to help curtail these problems.

The proposed Strategy has been designed to improve safety on **New Zealand** roads. It focuses on the safety features of the different road environments that characterize New Zealand's road network.

The proposed strategy also seeks to:

- protect pedestrians and cyclists who are vulnerable road users
- accommodate the special needs of older road users
- make school trips even safer
- deal with the dispersed pattern of work trips
- encourage greater levels of safety belt wearing, especially among Maori and Pacific peoples
- make open roads safer
- respond to differing regional needs
- improve the safety of New Zealand's vehicle fleet

Additional road safety benefits proposed to 2020

- Urban speed management (mean speed 51 km/h)
- Open road speed management (mean speed 93 km/h)
- Blackspot treatments
- Trauma management
- Compulsory breath testing
- Restraint wearing
- Safety intervention
- Expanded road construction program
- Reduced blood-alcohol limit (BAC)
- License suspension
- Stricter licensing conditions

European Union

Goals: The European Union (EU) target is halving the number of road deaths by 2020, starting from 2010.

Domains of actions:

- Improve education and training of road users
- Increase enforcement of road rules
- Safer road infrastructure
- Safer vehicles
- Promote the use of modern technology to increase road safety
- Improve emergency and post-injuries services
- Protect vulnerable road users

Road Safety Goals of Asia and the Pacific, 2011-2020

Overall Objective: 50% reduction in fatalities and serious injuries on the roads of Asia and the Pacific over the period 2011 to 2020.

Goal 1: Make road safety a policy priority
Goal 2: Make roads safer for vulnerable road users: children, pedestrians and motorcyclists
Goal 3: Make roads safer and reduce the severity of accidents ("forgiving roads")
Goal 4: Make road vehicles safer
Goal 5: Improve road safety systems, management and enforcement
Goal 6: Improve cooperation and foster partnerships
Goal 7: Develop the Asian Highway as a model of road safety
Goal 8: Providing effective education on road safety awareness

CONCLUSIONS

Road safety policy has been a success story in most developed countries over the last twenty-five years, whereas in developing countries like India the road safety situation is worsening day by day. Due to co-ordinate and well planned attack on road accident problem, the road safety scenario in the developed countries has reversed from an increasing fatality rate in '70s to a declining fatality rate in 2013. Transportation planning, exposure control, intelligent separation of non-motorized traffic on major roads, and traffic calming are likely to play a much important role in developing countries like India. In order to improve the current deteriorating road safety situation of developing countries like India, experience of developed countries with this good safety practices could be used as guides, but those need to be customize by taking into consideration of socio-economic aspects, road user's behaviour, local mixed traffic characteristics etc. In line with this, research programs and demonstration projects towards road safety need to be initiated immediately with adequate funding support. The above will not be possible unless programs are taken to raise the awareness of the national policy makers and executives in multinational agencies like the World Bank about modern methods of road traffic injury control.

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