

Analysis of Motor Vehicle Accidents in Karnataka Between 2008-2017

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How to cite this article: Manashree Mane, Ambulu V R, Ajay Kumar. S et al. Analysis of Motor Vehicle Accidents in Karnataka Between 2008-2017. Indian Journal of Forensic Medicine and Toxicology 2022;16(3):240-247.

Abstract

Background: Motor vehicle collisions usually result in consequences like property damage, injury and death. It causes financial losses to the victim himself, families of the victim and to the country. Traffic collision often results in injury, death or property damage.

Purpose: The objective of the research is to provide a better understanding on motor vehicle accidents that occurred in the time span of 2008-2017 in Karnataka.

Procedure: The data obtained was secondary data from report of Ministry of Road Transport and Highways and CEIC Data Global Database website. This data was then categorised under India Premium Database's Automobile Sector- table IN.RAF018: Road Accidents: Karnataka.

Conclusion: From the data obtained it is seen that the rate of Motor vehicle accidents in Karnataka is still growing at a rapid pace.

Keywords: Motor vehicle collision; Road Traffic Accidents; Injuries; Safety precautions.

Introduction

Motor vehicle accidents (MVA) happen when a motor vehicle strikes or collides another vehicle, a stationary object, a pedestrian, or an animal. Every year approximately 1.35 million lives are affected as a result of motor vehicle accidents. Somewhere around 20 to 50 million lives sustain injuries that are non-fatal. The accidents cause considerable economic loss to victims, the families of those victims and to the country. The financial loss or crisis mainly arise from

the treatment or consequence on productivity for those who died or have some disabilities by the injuries they sustain. Motor vehicle accidents cost many of them around 3% of their gross domestic product.¹

Common Causes of Car Accidents:

Weather and road conditions the most common factors that are correlated to the car accidents. Whilst the inability of the driver to keep awareness

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on the road and operating his vehicle are the most commonly associated factors, a few others related to the causes of car accidents are:

- a) Speeding –Negligence to adhere the legal speed limit.
- b) Using a Device – texting or talking on phone while driving or even turning on the music player or GPS device.
- c) Driver Fatigue – driving when extremely tired can lead to falling into a trans-state or even falling asleep.
- d) Drunk Driving – driving under the influence of drugs or alcohol.
- e) Defective Auto Parts – when a part on a vehicle is defective or goes bad,brake issues, defects in tires, defective air bags, top-heavy design and more.
- f) Rubbernecking – drivers looking along the roadway, traffic accidents, flashy billboards and other things cause distraction.
- g) Poor Weather Conditions – weather conditions like wet or icy roads, high winds, blowing dust, fog and torrential downpours.²

Who is at Risk?

(a) Socioeconomic Status:

Majority of deaths occur in low-income countries and middle-income countries. Even in high-income countries, people from lower socioeconomic backgrounds are more likely to be involved.

(b) Age:

Leading cause of death in children and young adults aged 5-29 years.

(c) Sex:

About 73% of motor vehicle accidents occur among young males who are below the age of 25 years.³

In 225 autopsied of MVA victims, 55.11% victims fall between 21-30 years of age, with 78.22% as males of the total victims. Most of the MVAs occur during the daytime. Head injuries account for 30.22% of the total injuries, followed by injury to the abdomen, thorax and limb. Hemorrhagic shock cause 63.11% of deaths, while head injury accounts to death in 30.22% of cases.⁴

Buses being major mode of public transportation, unfortunately involved in significant number of crashes in recent. Passenger's safety fully depends upon the bus driver's attitude and ability to comprehend traffic. The importance of driver behavior on road safety and the use of Zuckerman's sensation seeking scale (ZSSS) in behavioral studies of Indian drivers are crucial in understanding the effect of sensation behaviour on crash involvement rate of bus drivers.⁵

In 2015, total of 715 incidents were reported of traffic accidents, of which 499 convicted and in the year 2016, 699 cases were reported of traffic accidents and 439 were convicted.⁶

RTAs remains as one of the major reason for mortality and morbidity owing to the high usage of vehicles, change in lifestyle adapted by the individuals and the risk behaviors. In 879 autopsies conducted, 39% were accounted for RTAs. The head injuries were responsible for 3/4th of deaths followed by abdominal injuries. The most common victims of RTAs are mainly the occupants of motorized two wheelers (43%) and pedestrians (33%).⁷

Head injury is one of the key cause of mortality for individuals involved in fatal road traffic accidents. Most of the accidents occurred during afternoon and evening hours and the most vulnerable age groups was 21 and 30 years and mostly two-wheeler occupants. Skull fractures was reported in 88.88%, fractures of vault in 88%, base of the skull in 35.97%, intra-cranial hemorrhages in 52.63% and contusions and lacerations in 35% of the cases.⁸

Motorized two-wheeler accidents have been increasing in India. Most of the victims are males, and the accidents take place due to over speeding and negligence. A total of 630 external injuries, 56.5% of abrasions, 77.9% complications of head injury and linear fractures in skull. Obeying the traffic rules, wearing helmet, avoiding over speeding and negligence and taking necessary safety precautions can significantly reduce the two-wheeler vehicle accidents.⁹

Transport of petroleum products in India by road has a record of high fatality rate. Petroleum companies have as many as 1635 transport accidents in the last five years. The analysis reveals Hindustan Petroleum Corporation Limited records the highest number of transportation accidents in India. States

like Karnataka and Maharashtra have maximum number of transportation related accidents. Driver negligence, road conditions and equipment failure are the main reasons behind these accidents. The analysis of accident reports and inputs from experts may further strengthen the gap to reduce the number of accidents in future.¹⁰

The highways account for a major share of travel and transport in India. Road deaths and injuries are high on these highways. The burden, pattern, characteristics and outcomes of highway road crashes gives proper analysis using combined data from police and hospital sources. With the help of mixed method approaches, resource mapping, environmental scanning the high-risk crash locations are identified. The two national highways and five state highways contributed for 37% and 25% of total road deaths. Collision patterns indicated the involvement of heavy vehicles along with motor cars on the highways. Safety of all road users and vulnerable road users should be given greater importance on highways.¹¹

Road traffic accident is a public health problem. Globally 1.25 million people die each year due to road traffic crashes. A semi-structured questionnaire was used for the survey where it was found out that good knowledge was seen among 82.2%, good attitude in 88.9%, but good practice in 58.9% of the participants. It shows that the knowledge about road traffic accident is not brought into practice. Hence the laws should be made more stringent.¹²

Road Traffic Accident (RTA) is any vehicular accident occurring on the roadway this includes collision of an automobile with a pedestrian, another automobile or with a non-automobile on the roadway/ fall from a moving vehicle causing injuries or death of involved individuals. Victims in RTAs sustain injuries which are fatal to life. The study of injuries associated with fatal outcome helps in implementation of measures to prevent fatalities due to RTAs.¹³

Mandibular fractures are discontinuation that occur in from the mandibular bone which are commonly found in during road traffic accident. In

a study conducted, total numbers of autopsied cases during 2011 to 2014 were 453 where 21 cases had mandibular fracture. Maximum number of victims belongs to 21-30 years followed by 31-40 years. The maximum numbers of victims were found to be males. Not wearing helmet and seat belt may further lead to facial injuries and permanent disfigurement of face in all road traffic accident cases.¹⁴

Methodology

The data collected was secondary data from the report of Ministry of Road Transport and Highways and CEIC Data Global Database website. The records of the number of accidents, road traffic accidents, injuries and deaths were analysed. The data is categorized under the India Premium Database's Automobile Sector- Table IN.RAF018: Road Accidents: Karnataka. Data completely represents the entire number of road accidents, injuries and deaths which had occurred in the decade 2008-2017. This data includes all the vehicles like two wheelers, auto rickshaw, cars, buses and heavy motor vehicles (HMV).¹⁵

Discussion

The data obtained was analysed including the accidents, injuries, and death caused by two wheelers, cars, buses, auto rickshaws, and Heavy Motor Vehicles. According to data obtained the accidents due to two wheelers are high in the year 2013 when compared to others.¹⁶⁻¹⁸ (Refer Figure 1). According to data obtained the accidents due to autorickshaws are high in the year 2008.^[19-21] (Refer Figure 2). According to data obtained the accidents due to cars are high in the year 2008.^[22-24] (Refer Figure 3). According to data obtained the accidents due to bus are high in the year 2011.^[25-27] (Refer Figure 4). According to data obtained the accidents due to Heavy Motor Vehicles are high in the year 2008.²⁸⁻³⁰ (Refer Figure 5)

There was a significant reduction in mortality and morbidity from year 2014 which could possibly be due to introduction of National Road Safety Policy by Government of India and National Road Safety Council (NRSC).

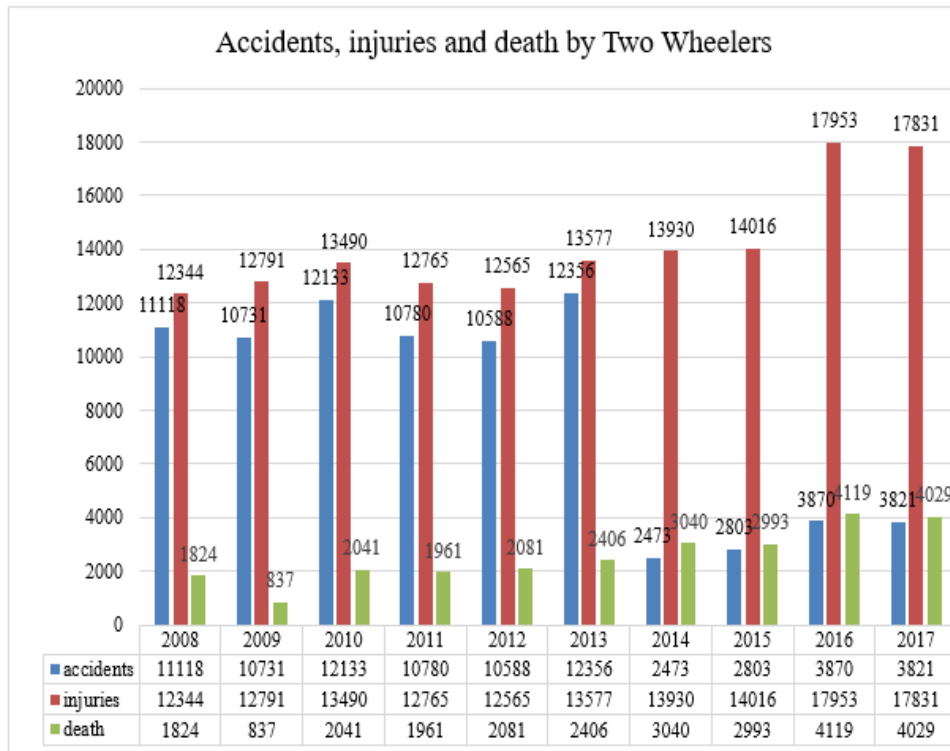


Fig. 1: Number of accidents, injuries and death caused due to two-wheelers in between the year 2008 to 2017.

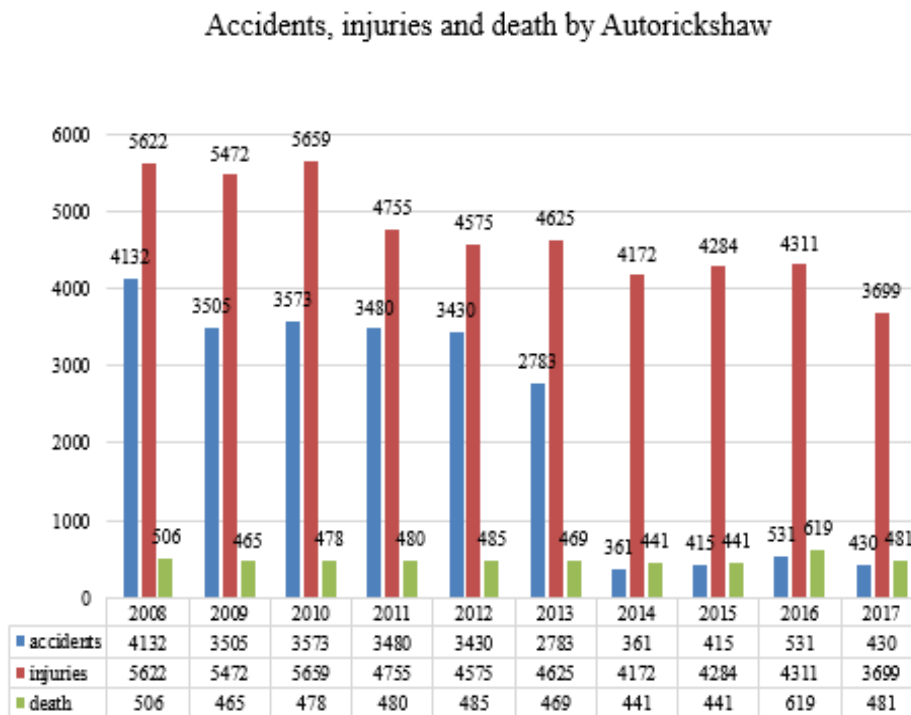


Fig. 2: Number of accidents, injuries and death caused due to autorickshaws in between the year 2008 to 2017.

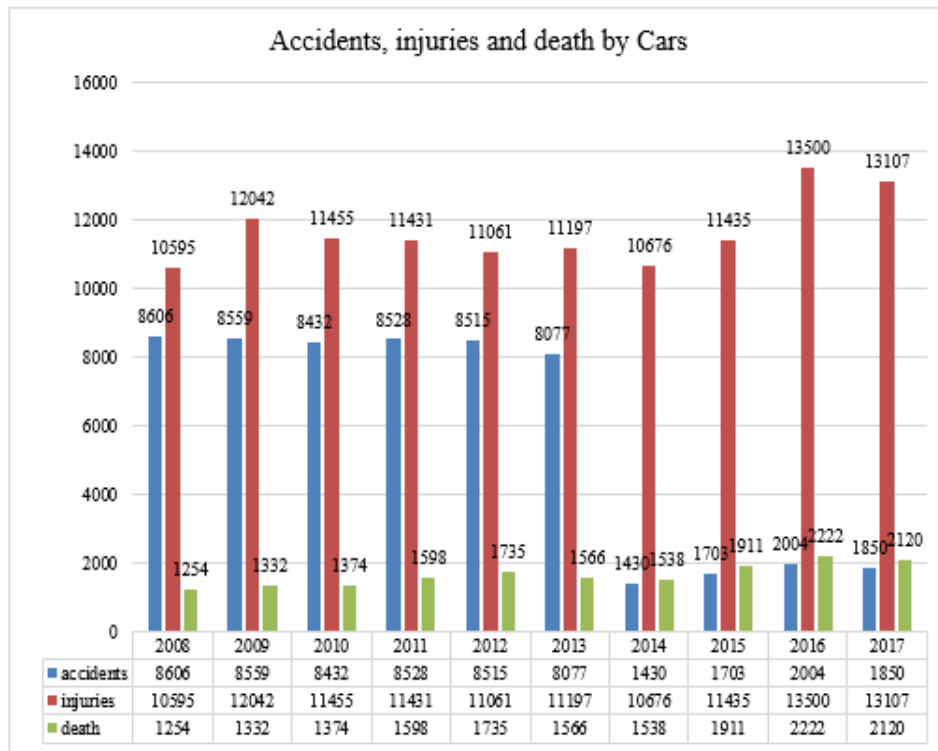


Fig. 3: Number of accidents, injuries and death caused due to car accidents in between the year 2008 to 2017.

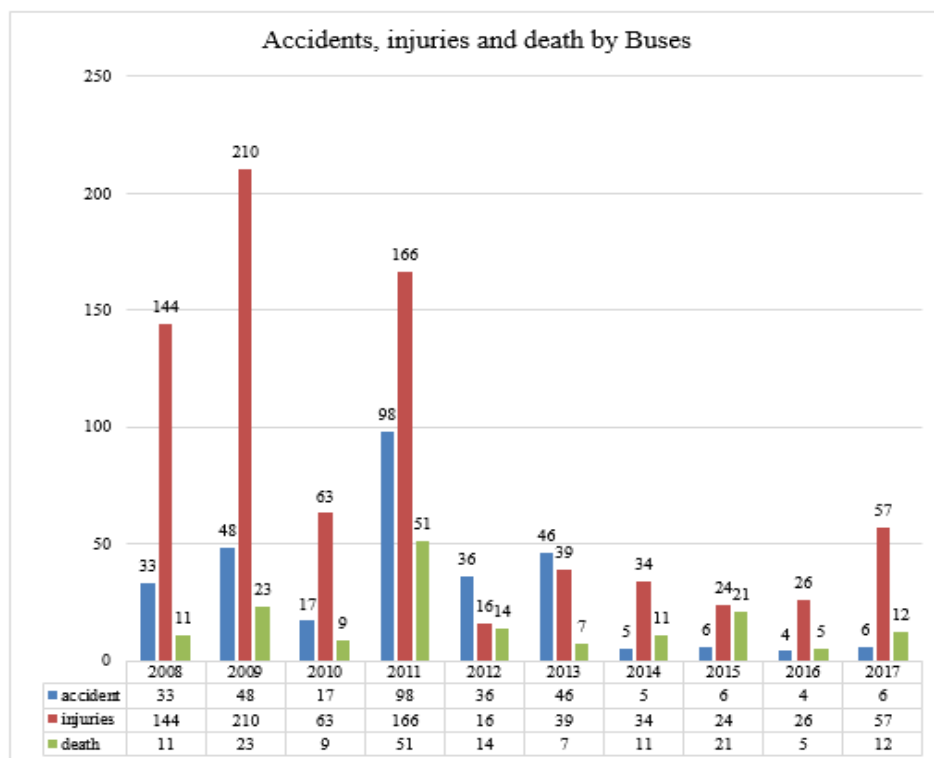


Fig. 4: Number of accidents, injuries and death caused due to Bus accidents in between the year 2008 to 2017.

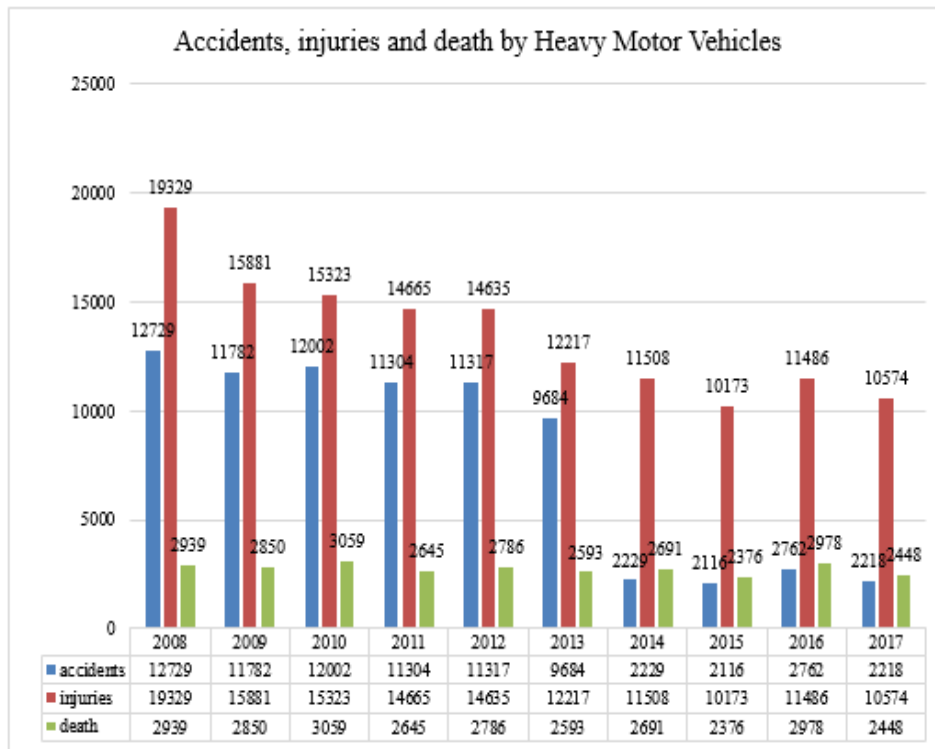


Fig. 5: Number of accidents, injuries and death caused due to Heavy Motor Vehicle accidents in between the year 2008 to 2017.

Engineering, enforcement, education and emergency care should be regarded as prime safety measures. Periodic assessment of accident-prone stretches by the zonal officers may help in reducing the accidents. A strict enforcement by Police and Transport officials for drunken driving will help set a benchmark for stricter implementation of the rules. Rules of the road, correct manner of crossing etc. by help of posters and electronic media exhibiting the serious results can be introduced as necessary instruction in the schools for the children.

Karnataka proposed a full-fledged Road Safety Authority (RSA) in 2016 on the lines of the one in Kerala to reduce the number of accidents. RSA will look after the improvement of road engineering and its design, increase the awareness related to the road-safety, provide emergency care facilities and strict enforcement on accident-prone roads. It will also oversee the development of an accident information system and coordinating with multiple departments.

Three main factors that are mainly associated to the cause of accidents are vehicle condition, road design and driver behaviour. The government should take steps to rectify road design flaws, especially if any particular stretch is witnessing more accidents.

Obedying the traffic rules, wearing helmet, keeping away from over speeding and by taking necessary safety precautions may result in a smaller number of accidents. Victims generally sustain injuries, which are fatal. Not using the helmet and seat belt may lead to permanent disfigurement of face which form the facial injuries. Collision patterns indicates the involvement of heavy vehicles along with motor cars on the highways. Excessive speeding is also a major cause of crashes. Safety of all road users and vulnerable zones should be given greater importance on highways.

Conclusion

The aim to improve and work on road engineering and design, road-safety awareness, emergency healthcare and medical facilities and strict enforcement on accident-prone roads are an integral part to accident information system. This also should be coordinated with multiple departments for an improved and enhanced way of managing the road traffic accidents. Steps to rectify road design flaws in the design or construction of road or a stretch witnessing more accidents can help in improving the system and avoiding the accidents.

Acknowledgment

The authors would like to acknowledge Dr. Asha Rajiv (Director, JAIN (Deemed-to-be University) and Dr. Reena Susan Philip (Head, Department of Forensic Science, JAIN (Deemed-to-be University) for their constant guidance and support.

Ethical Clearance: No ethical clearance required.

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Conflict of Interest: The authors declare there is no conflict of interest.

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