

ROAD TRANSPORT SAFETY THROUGH EFFECTIVE TRANSPORT PLANNING USING STREAMING ANALYSIS: A CASE STUDY

Jasleen Pramitha Pereira¹, Kavery Muthappa² and Prof Santhosh Rebello³

Abstract - The safety of the road users is one of the major fundamental social purpose. There are several measures which are carried out for the betterment of black spots. This is done in various phases, from planning the foreseen measures, valuation procedures, the implementation of those processes to observation and also the valuation derived measures. Certain problematic places are been repaired by changing the traffic signalization. Those places are measured and described in this paper. The importance of transport planning is fully appreciated in terms of public services in this context. Public transports require a guaranteed long-term strategy. This is not only in the field of transport organization but also in the transport services. The first requirement for successful transport planning is the most precise picture of the passenger flow. This also includes the constraints which affect the choice of transport mode. These inputs are some of the important factors for the additional steps: the creation of a line network, accident statistics, creating the circulation of vehicles, controlling, and any requests for infrastructure improvements. The solutions and conclusions of these measures are described in this paper.

KEYWORDS: public traffic, accident statistics, periodic timetable, transport planning, vehicle circulation.

I. INTRODUCTION

Transportation services mean safeguarding transport every day. This is especially used in schools and certain institutions, the public specialists, hospitals, to work and also to meet the cultural and social needs which also includes transportation back.

It is very clear that the public transport cannot cover all the passenger streams, nor all the transport requirements of each individual. The public transports with regard to the need for recompense i.e. the income from fares will not cover the providing cost. These compensations must have the elements of mass. With regard to the rational planning of public transport and funds for compensation payments cannot be on one hand.

II. LITERATURE SURVEY

Millions of people die every year on the world's road. According to the study of World Health Organization (WHO). It is said that approximately 1.24 million people die every year in accidents and more than 60 million are injured. Road traffic takes a massive toll on individuals, communities as well as on the national economy. At the national level, road accidents result in extensive financial costs and this is particular to the developing economies. It is estimated to the cost countries which comes up to 4% of their gross national product. In several high – income countries, it is said there was an increase in the total number of road deaths from last few years. But in low-income country such as India, it is said that there is an increase over the same period of time. The current trends propose that by 2030 road traffic deaths will be the 5th leading cause of death regardless urgent action is been taken.

Road safety in Mangalore is at a lower level. One of the major reason is poor road infrastructure. Mangalore city is spread out over an area of 132.45 square kilometers. In 1971 the total length of the State Highways was 6005 kilometers. From the past 44 years, the state highway road network has gradually increased to 132.45 square kilometers (as of March 2015). Most of the State Highways earlier are said to be village and District

¹ *Aloysius Institute of Management and Information Technology Beeri, Mangalore, India*

² *Aloysius Institute of Management and Information Technology Beeri, Mangalore, India*

³ *Aloysius Institute of Management and Information Technology Beeri, Mangalore, India*

Roads. At the Later stage, it was reclassified as State Highway. As a result, 45% of carriage route width of these State Highways are single lane. On the other hand, traffic on these highways is gradually increasing.

During last few years, the number of registered vehicles in Mangalore is around 200,000, counting all vehicles category and about 85% are passenger vehicles. The rate is approx. 286 passenger vehicles per 1,000 populations, (see Table 1).

Table 1: Number of vehicles in Mangalore

	2011	2012	2013	2014
Registered vehicles	164653	171973	173865	188662
per 1000 inhabitants	266	277	279	286

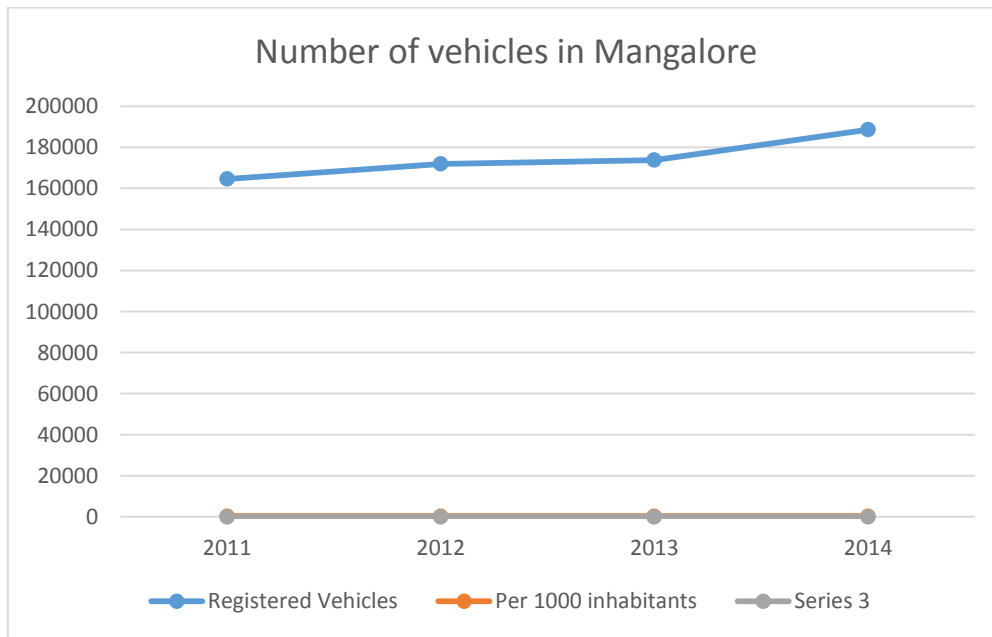


Figure 1: Number of vehicles in Mangalore

Table 2: The following shows the number of fatal and non-fatal cases reported persons killed & injured from the year 2011 to 2015 in Mangalore city.

Accident Statistics					
Year	Fatal	Killed	Non-Fatal	Injured	Total
2011	727	757	5297	4976	6024
2012	740	760	4767	4471	5502
2013	737	771	4493	4289	5230
2014	711	737	4293	4096	5004
2015	714	740	4114	4047	4828

These are the top 13 states which were recorded 86.8% of the road accidents which took place in 2015^[1]

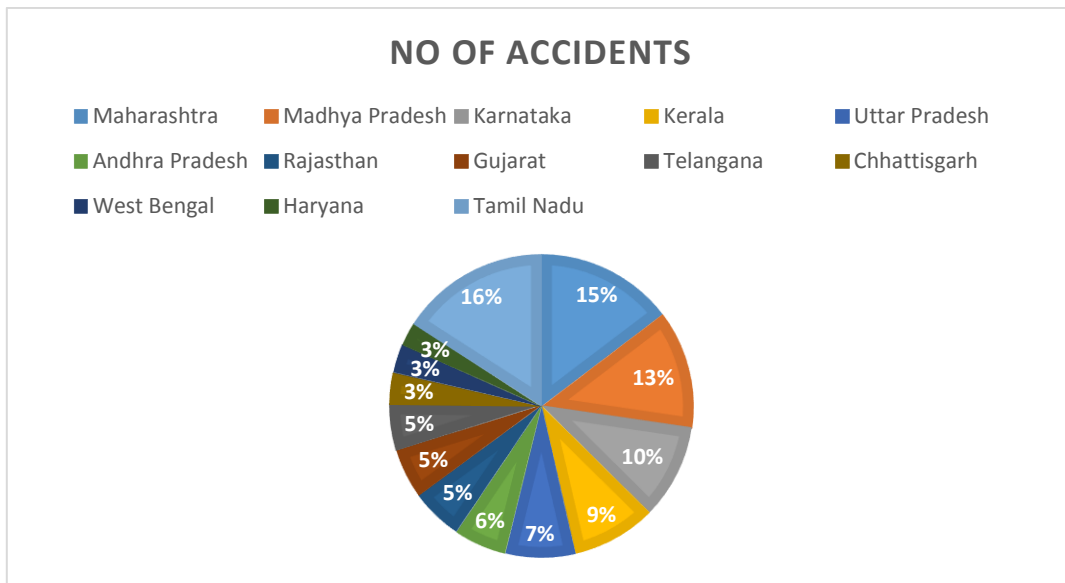


Figure 2: Number of accidents

Table 3: These are the top 13 states which are accounted for 83.7% of all the road death rate.

Recorded death rate in road accidents in the different states	
Uttar Pradesh	17,667
Tamil Nadu	15,643
Maharashtra	13,213
Karnataka	10,857
Rajasthan	10,511
Madhya Pradesh	9,315
Andhra Pradesh	8,297
Gujarat	8,120
Telangana	7,111
West Bengal	6,235
Punjab	4,894
Haryana	4,880
Other states/UTs	23,981

Table 4: These are the top 13 states that is accounted for 87.3% of all the injuries caused by road accidents [2].

Recorded injuries caused due to road accidents in the different states	
Tamil Nadu	79,747
Karnataka	56,972
Madhya Pradesh	55,816
Kerala	43,736
Maharashtra	39,607
Andhra Pradesh	29,440
Rajasthan	26,154
Uttar Pradesh	23,305
Telangana	22,949
Gujarat	21,449
Chhattisgarh	13,427
Odisha	11,826
West Bengal	11,795

Table 5: These are the recoded number of road accident based on the user category.

User category	Recorded number
Two – wheelers	31.2%
Car / taxis / vans / light & medium vehicles	17.3%
Other vehicles	12.8%
Trucks	11.2%
Pedestrians	9.6%
Buses	7.5%
Auto Rickshaws	5.1%
Cycle rickshaws / hand carts / animal drawn carts etc.	3.3%
Bicycles	2.1%

A. Impact of Economic Growth on Urban Traffic -

As the income rises, vehicle loans increase and the automobile industry tosses out low-cost vehicles to shove them off their automobiles. People are driving recklessly to get behind the wheel. Cumulative growth of the passenger vehicle segment during April 2013 to March 2014 was 14.79 %. In 2013 and 2014 alone, 362,527 motorized vehicles were sold in Mangalore. Mangalore population and its traffic are determined within its town. The migration of rural population to urban areas in search of better job prospects has made cities efficiently colonized. Mangalore city has a population of 684,785 per the 2011 census of India. The decadal growth rate was 45.90 [3].

B. Traffic Safety - risks and solutions-

Indian roads are completely unsafe. This statement is made even gloomier as it is closer being an assumption rather than established a fact. We do not have a good quantitative understanding of the nature and extent of human safety related problems on the roads. Acute under-reporting, deprived recording of accidents and the limited data that are actually being collected make it problematic to form an impartial view on the brutality of the problem. As a qualitative comparison, consider the following daily observations: overloaded vehicles, unregistered vehicles, unlicensed drivers, overloaded goods vehicles and poor obedience and enforcement of road rules.

The narrow and poorly maintained roads do not exactly follow the safety-related principles such as traffic segregation, the divided roadways, lane markings and also the created connections. The road design favours the pedestrians and motorized vehicles at the expense of the helpless cyclists and pedestrians. The latter be likely to number amongst the less financially accomplished and who can bear an unequal burden related to traffic injuries and mortalities. The emergency medical response at the place of accidents is rarely guaranteed and is most often delayed.

The interactive map which shows the basic constraints of traffic safety in all the countries in the world has already been started. Throughout the world every year on the roads almost 1,240,000 persons are being killed. On the roads in Mangalore, the most common cause of traffic accidents is: speed driving, driving under the influence of alcohol and not buckling up of seat belts. The passengers mostly killed in traffic are children. Research shows that Mangalore is positioned very low when compared to others cities when it comes to the mode of safe transport of children in vehicles and usage of seat belts.

It is interesting that in Mangalore city during that past 4 years, around 400 drivers have passed the “corrective” tests because their driving license has been taken away by the authority for being received 18 negative opinions. At the same time, close to 2000 drivers lost their licences because of their violent driving. However, thanks to the Law of traffic safety which came into force in December 2009. This year there has been a reduction in the count of the persons killed in traffic accident compared to the same period 4 years earlier. During 2013 according to the new data that is obtained the count as reduced by more than 9%. i.e. 68 fewer persons were killed compared to that of the same period in 2012. The results of this research are also the base for the further activities of the Traffic Safety Agency on the protection of the pedestrian [4].

C. Certain steps the government can take in order to improve road safety-

- The initial step the government needs to take is to digitize the issuance of drivers licence procedure. Along with it ensure that the driving licence is only given to those who mandatorily undertake the simulator test, which records all the responses of the driver to various driving conditions. But the present system is misused and manipulated due to corruption.
- The quality of the roads need to be improved by the government during the road building process. The current process which is called ‘contractor’ driven road building with a very less accountability.

- The government needs to improve on the road lighting. This had to be mainly put up at the junctions along with a signage system in the local languages belonging to the state.
- The highway patrolling must be improved in order to check the speed driving, rash driving, drink and drive and over loaded vehicles. Unless there is a frequent checking, the drivers will still continue to misuse the roads.
- Lastly, the care units must be established along the National Highways so that the highway accident victims can be served [5].

III. EXPERIMENT AND RESULT

According to the survey conducted the road accidents mostly occur as a result of reckless driving, carelessness, not respecting the road safety rules and regulations, jumping the red light, wrong overtaking, truck drivers are being careless most of the times and do not pay attention to the other road users when they need to access the equal share of the road.

Yet again, most of the vehicles do not have a speedometer. But when they get on the road, the driver speeds up without even knowing the kilometres per hour the vehicle is moving at. As a result, a case of bus transport overloading has become common and is acceptable to the extent that buses should take a limited number of passengers in a row instead of limitless passengers. All these stated factors contribute to the various accidents we witness on the roads every day.

The authorities such as traffic police, traffic wardens, the National Road Safety Commission and other patrons are working back and forth to bring out sanity to our roads. But unfortunately, the evil still continues.

It is now time to have a human face methodology towards reducing the accident caused on road traffic to the simplest minimum.

As a part of road safety week which was conducted on January 15th, 2016, the Giving Tree Trust (GTT), which is a Mangalore-based NGO in association with Chevrolet, Forum Fiza Mall has propelled a series of programmes at the various locations in the city. This programme includes the display of the accident vehicles, an awareness walk as a human chain, bike show, street plays and much more. They also distributed road safety calendars and stickers to the public.

For the effective management of the road accidents, NGO took help from the local politicians and also the traffic police. The road safety management initiative is being carried out effectively by the team of NGO's. They have conducted various events and rallies road safety and no honking programs which also collaborates with some of the motor companies. The public has been insisted on following the traffic rules strictly and warned that the violation of traffic rules would result in the holdup of their driving license [6].

A. Survey carried out in Udupi on November 26th.

The regional transport office (RTO) held a meeting on November 26th to receive complaints related to the road safety and transport.

The RTO received various applications which raised a complaint on issues such as road humps, need for maintenance of the quality roads, no horn zone and numerous other safety measures to prevent road accidents.

The deputy commissioner (DC), Dr R Vishal who presided over the meeting said that rumble strips could be placed instead of humps on the national highways. He stated that three measures have been taken up in order to have a control on the road accidents such as usage of proper signs and also installation of concave mirrors to spot the things which are far away. And in addition to that as per the RTO's decision they have increased the vehicle's life from 12 years to 15 years [7].

B. Week in Mangalore Road safety

On September 2016 road safety week was being held in Mangalore. This was done as a mark of the first anniversary of Mangalore Traffic Warden Programme. This programme started functioning from October 2nd, 2015.

At the meeting held to hear the traffic problems at the office of Police Commissioner, the Deputy Commissioner of Police (Crime and Traffic) M. Sanjeev Patil stated that the laminated route charts will help the travellers complain to the traffic police in case any buses skip some stops. He even said the city police will be organising an orientation programme for the city bus drivers and the conductors on the traffic rules and discipline to be taken care of. This will help for the betterment of the society.

C. Traffic warden

Mr Patil stated that the city police will be encouraging the people to become Traffic Wardens and also allowed to work along with the police officials to regulate the vehicular movements in and around the city and the city police will be visiting various schools and colleges to conduct a traffic awareness programmes [8].

IV. CONCLUSION

The study indicates that abandoned and restricted vehicles contribute to more than 20% of the road accidents in India. The road safety management is a communal responsibility. Hence, let us all support the safety assistance of the road safety to win the war against the accidents on roads in our country.

REFERENCES

- [1] <http://www.mapsofindia.com/my-india/government/road-accidents-in-india>
- [2] <https://data.gov.in/keywords/indian-road-accident-data>
- [3] www.nyooz.com/mangalore/615939/bus-route-names-to-feature-at-entrance-exit
- [4] www.kamdeen.blogspot.com
- [5] http://www.daijiworld.com/news/news_disp.asp?n_id=376539
- [6] www.opinion.myjoyonline.com/pages/features/201301/100519.php
- [7] www.daijiworld.com/news/news_disp.asp?n_id=376539
- [8] <http://www.thehindu.com/news/cities/Mangalore/mangalore-police-plan-slew-of-activities-for-road-safety-week/article9146697>