CHAPTER 9

CONCLUSION

9.1 CONCLUSIONS

Road traffic accidents are an important cause of death and serious injuries in developed societies. Road traffic injuries are a major but neglected global public health problem, requiring concerted efforts for effective and sustainable prevention. Of all the systems that people have to deal with on a daily basis, road transport is the most complex and dangerous one.

Tamilnadu is one of the most urbanized and developed states of India. Rapid development on both economic and industrial front coupled with globalization has resulted in enormous growth of vehicles. Consequently road accidents are also on the increase causing heavy loss to society. To enhance highway safety, the state government has lately started allocating significant funds to counter this problem. To identify the zones which are accident risk, a scientific approach to assess the problem is needed. The findings of such an approach will enable the authorities to channelize the funds according to the actual needs and not on adhoc basis.

The severity factors and accident point weightage got using black spot study on selected roads of Tiruchirappalli city are very effective methods to quantify and categorize road locations with respect to accidents. The black spot chapter gives results of accident spots. The accident rates studied using
regression equations correlating the vehicle ownership and population, indicate that from the years 1997 to 2008, the trend is increasing and correlation between vehicle ownership and vehicle population indicates that the trend has become decreasing which shows that fatality rate is low. Accident rate in a locality is closely related to vehicle movement rather than the population or the number of vehicles. Therefore, accident rate expressed in terms of million vehicle-kilometers is a more reliable approach.

From this study more information regarding accidents are obtained. The results of the accidents got are analyzed by using ranking method. Ranking is done on the basis of the number of accidents and accident rate. Comparing local with district, state and national average, some sites identified and ranked, have much higher accident rates. For considering the four parameters, the accident severity index of Tamilnadu has shown an increasing trend, accident fatality rate has decreased, accident fatality risk has also increased and finally the accident risk showed an increasing trend from 1997 to 2008.

A probabilistic procedure is used to estimate the accident reduction factor due to pavement marking. To eliminate the effect of regression to the mean, Bayesian approach is used for estimating the expected accident rate. It is concluded that a beta distribution adequately fitted accident reduction factor frequencies, accident reduction factors, as well as expected accident rate in the second period, are positively correlated with expected accident rate in the first period. Considering all marked sites, the overall accident reduction factor resulting from pavement marking is not significant and considering the hazardous sites, pavement marking provides a significant reduction.

An attempt has been made in this study to compute ARI for 29 districts by analyzing accident data from 1997 to 2008 and rank the districts according to the computed values. It reveals that Chennai is the most accident
risk district followed by Thiruvarur and Perambalur. The least accident risk district is Thiruvallur. Computation of ARI values also help to group the districts as high, medium and low accident risk zones. Ranking of districts in respect of ARI is close to only a few factors which may influence the values of ARI. Thus it can be seen that a number of factors influence ARI either positively or negatively. Some factors can be controlled within a short period and a few others in long term by proper planning and implementation.

Accident severity index (ASI) is computed by combining four ratios namely population, area, surfaced road length and number of vehicles based ratios. Chennai stands first, when vehicle, surfaced road length and area based ratios are considered. Cuddalore and Thanjavur are among the first ten districts in all the ratios. But the Nilgiris has the least value in all the ratios except in vehicle and road length based ratios. The comparison of ASI values of Chennai is 4 to 7 times higher than the next higher value in 1997 and 2008. The results also indicate that though all districts are badly in need of road safety measures, priority should be given to Chennai, Villupuram, Cuddalore, Thanjavur and Kancheepuram. It is also found that districts like Coimbatore, Dharumapuri, Dindigul, Madurai, Namakal, Perambalur, the Nilgiris, Thiruvarur, Tiruchirappalli and Virudhunagar have improved their safety ranking.

The correlation coefficients, linear and multiple regressions on 12 years accident data reveal the following. It can be concluded that multiple regression gives the best coefficient of correlation and this technique provides an accurate prediction of the road traffic accident. An attempt has also been made to develop models which may be used to estimate the future number of different types of accidents in the districts of Tamilnadu. Models for the projection of future accidents can be used as tools to measure the effectiveness of future safety improvements implemented in the districts of Tamilnadu. Hence, different models were developed for different districts depending upon the data trends of
each district. However, the fatalities model accuracy is acceptable for all districts. The above models have been used to predict road accidents for the years 2012 and 2015. In order to minimize accidents, major policy may be evolved to reduce the growth of personalized vehicles and simultaneously encourage the use of public transport vehicles. Though a study has been reported so far in the area of road accidents, it is desirable to look into the causes and effects of road accidents to be carried out not only at a macro-level but also at a micro-level.

The conclusion is drive safely; each and every user must think that life is precious, save other’s life and live long with family. It is observed that among all categories of vehicles, buses comprised the single highest number involved in accidents. This suggests that some studies should be undertaken in the future to investigate the possible causes of involvement of buses in accidents in order to find appropriate remedial measures. This would in turn help to improve the overall road safety situation in Tamilnadu.

9.2 FUTURE STUDY

If the accident details obtained from the traffic police department, the road length and area from the statistical department and the traffic volume collected in person are available than both the accident rate and pavement marking can be calculated for the other districts in future study as done for the three districts. The problem of this thesis can also be modeled as a non–homogeneous stochastic process as briefly discussed in section 8.6.