

Identification of Accident Black Spots on Roads in Jaffna District and Identification of Possible Root Causes

K. Kasinathan¹, H.L.K. Perera², J.M.S.J. Bandara³

¹Engineer, Road Development Department, Northern Province
kkknathan@hotmail.com

²Senior Lecturer, Department of Civil Engineering, University of Moratuwa, Sri Lanka
perera.loshaka@uom.lk

³Professor, Department of Civil Engineering, University of Moratuwa, Sri Lanka
samanjbandara@gmail.com

Road accidents and the consequential fatalities have become a national tragedy in Sri Lanka. According to the records in the Police Department 37,881 road accidents occurred in the country in 2013 of which 2,363 were fatal. Fatal accidents of 2,436 were also reported in year 2014, out of total 38,481. The number of fatal accidents is rising yearly and the alarming rate warrants some meaningful steps to be taken by the authorities concerned to reduce them now and to create an “accident free road environment” in future. The vehicular traffic in Jaffna peninsula has increased steadily with the restoration of peace in 2009, but on the other hand that leads to increased number of accidents. Road accidents have been increased in the recent past in Jaffna according to Jaffna Teaching Hospital sources. 2,224 accident victims were admitted in Year 2013, but in the year 2009 only 454 accident victims were admitted in Jaffna Teaching Hospital. Meanwhile, the records in Motor Traffic Department, Northern Province indicate the number of vehicles registered in Jaffna district has increased significantly from 45,763 to 101,931 between years 2009 and 2013. Unlike in the past, the fuel prices have also been brought in par with the prevailing prices in rest of the country and the rehabilitated high ways and other main roads in the peninsula has contributed to this increased vehicular traffic. Therefore outcome of this Case Study on accidents in Jaffna District would be a pragmatic approach in the present context.

Main Objectives of this research study are to identify the accident black spots in Jaffna peninsula, and to investigate possible causes for such accidents in order to propose mitigation measures. The road network is depicted in the GIS map of the Jaffna peninsula. Based on the accident data collected from the Police Department, the vulnerable unsafe spots were located in the GIS map of Jaffna Road Net Work. “Kernel Density” was calculated based on the frequency of accidents that was shown in the map by using “Spatial Analysis Tool”, and the high density accident zones are termed as “Accident Black Spots”. There are around fifteen of such accidents intensive junctions and seven accident intensive

sections found within the Case Study Area. It was observed that more than 50 percent of traffic accidents were occurred on roads due to high speeds beyond the specified limits and nearly 30% of drivers were found without driving licenses. It was also found that 35 % of accidents occurred between 18:00 Hours and 20:00 Hours. Out of the fifteen accident intensive junctions, twelve junctions were posing poor visibility. Moreover “Human Behaviors”, “Lack of Street Lighting” and “Poor Geometric Designs at Intersections” are the major causes for these accidents. Therefore awareness on the accidents and causes need to be educated among public, especially to drivers and riders. Geometry of major intersections shall be designed with re-alignment improving the visibility for road users. Cycle lanes shall be constructed with proper lane marking for the use of pedestrians and motorcyclists. In conclusion the implementation of above mentioned mitigation measures would reduce the accident rates and severity of injuries.

Key Words Accident Black Spots, Spatial Analysis, Root Causes for the Accidents