ACCIDENT LOCATIONS ON INDIAN ROADS

TEAM NAME: BSA WOLVES

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ABSTRACT

In the previous few decades, India's urban road network has experienced rapid growth. As a result of this growth, there has been a rise in urbanisation, vehicle ownership, and mobility. According to a World Bank report, about 87% of the country's passenger traffic and 60% of its goods are being transported on Indian roadways. However, due to accidents involving vehicles and pedestrians in India, there had been a 32% increase in mortality since 2007 and a tenfold increase since 1970 [1] [2]. In 2016, Andhra Pradesh alone was responsible for 5,564 collisions, this number increased to 6,768 in 2017, and dipped to 6,196 in 2018 ranking it as the fifth-most dangerous city in India [3]. Road safety is becoming one of the most important and difficult issues, and it needs to be given top importance. This study proposes a GIS method for identifying and evaluating dangerous crosswalks based on spatial autocorrelation of pedestrian-vehicle crash data. To determine the most crucial intersections in Andhra Pradesh's south division, the investigation considered both the quantity and seriousness of car crashes. The analysis's findings show that the GIS-based approach is capable of recognising and detecting spatial patterns of collision data, which can then be utilised to find and rate risky crossroads in the locations of high-traffic vehicle crashes.

INTRODUCTION

The world's second-largest road system, which is constantly being expanded, is in India. But as a result, there have been more car accidents on the road (Ministry of Road Transport & Highway, 2013). According to a survey of eight significant Indian cities, vulnerable road users (pedestrians, bicyclists, and drivers of motorised two-wheelers) accounted for 84–93% of all fatalities [4]. According to the Save Life foundation (2016), 1,50,785 people were killed and 4,94,624 people were injured in road accidents in India in 2016. This equates to 12 fatalities for every 100,000 people. This represents a tenfold increase compared to 1970 and a rise in mortality of 32% since 2007. India has only contributed to 0.7% of the published research on road traffic injuries worldwide, and even though nearly 90% of its population relies on roads for daily commutes, only one-third of

these studies included statistical analysis and modelling (Mohan, 2016). As a result, one of the most important and difficult issues that requires top consideration in India is road safety.

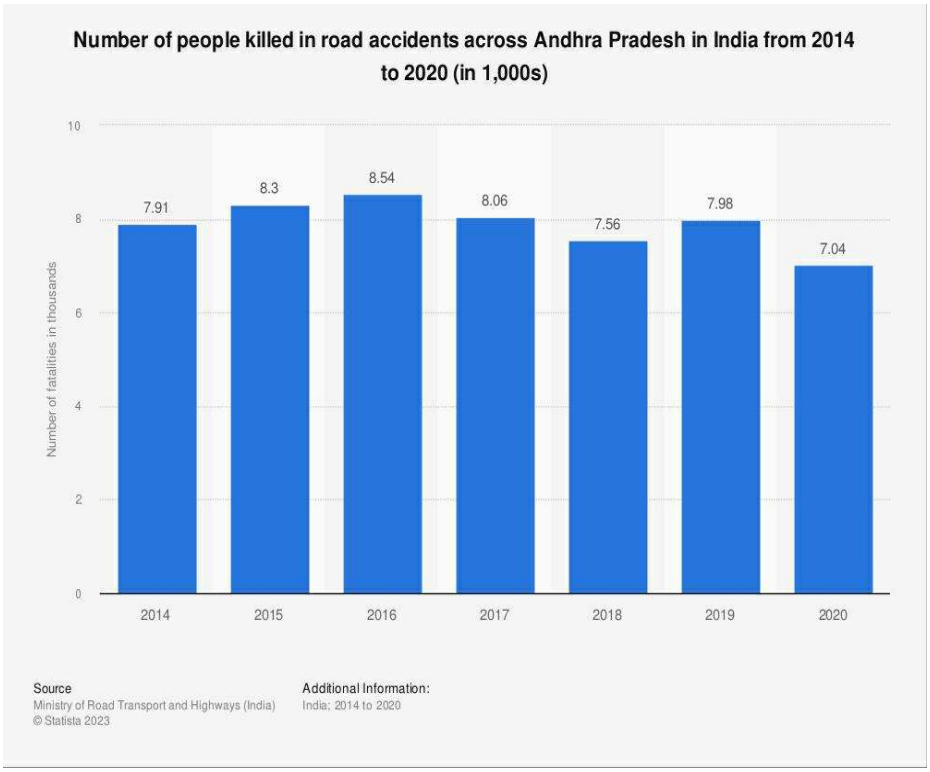

Fig 1. Survey on number of road accidents across AP from 2014 to 2020

Figure 1 shows the bar chart representation of number of road accidents that killed people of Andhra Pradesh during the period of 2014 to 2020. Consequently, safety becomes a must for encouraging public transport and active travel [5]. Further, an effective technique must be designed for identifying the hazardous crash locations based on the accident statistics.

METHODOLOGY

In order to reduce accidents and ensure the safety of road users, this project uses QGIS to locate and analyze the "black spots."

Table 1. Black Spots in the State of Andhra Pradesh

S. No	Name of the District	Location of accidents including chain age (km to km)	NH No.	No of fatalities (2008 to 2010)
1.	Srikakulam	Navatharath junction	16	12
2.	West godavari	Tetali Y' junction	16	22
3.	Nellore	Maddurpadu	16	40

4.	Kurnool	Enugumarri Village	44	25
5.	Kurnool	ASRAM Hospital	16	19
6.	Kurnool	Kaikaram Center	16	16
7.	Kurnool	Pudicherlametta	40	23
8	Kurnool	Bharath Petrol Bunk, Near Ungaraanikunta Village	44	34
9	Kurnool	Balakonda Junction	44	44

GIS MAPPING:

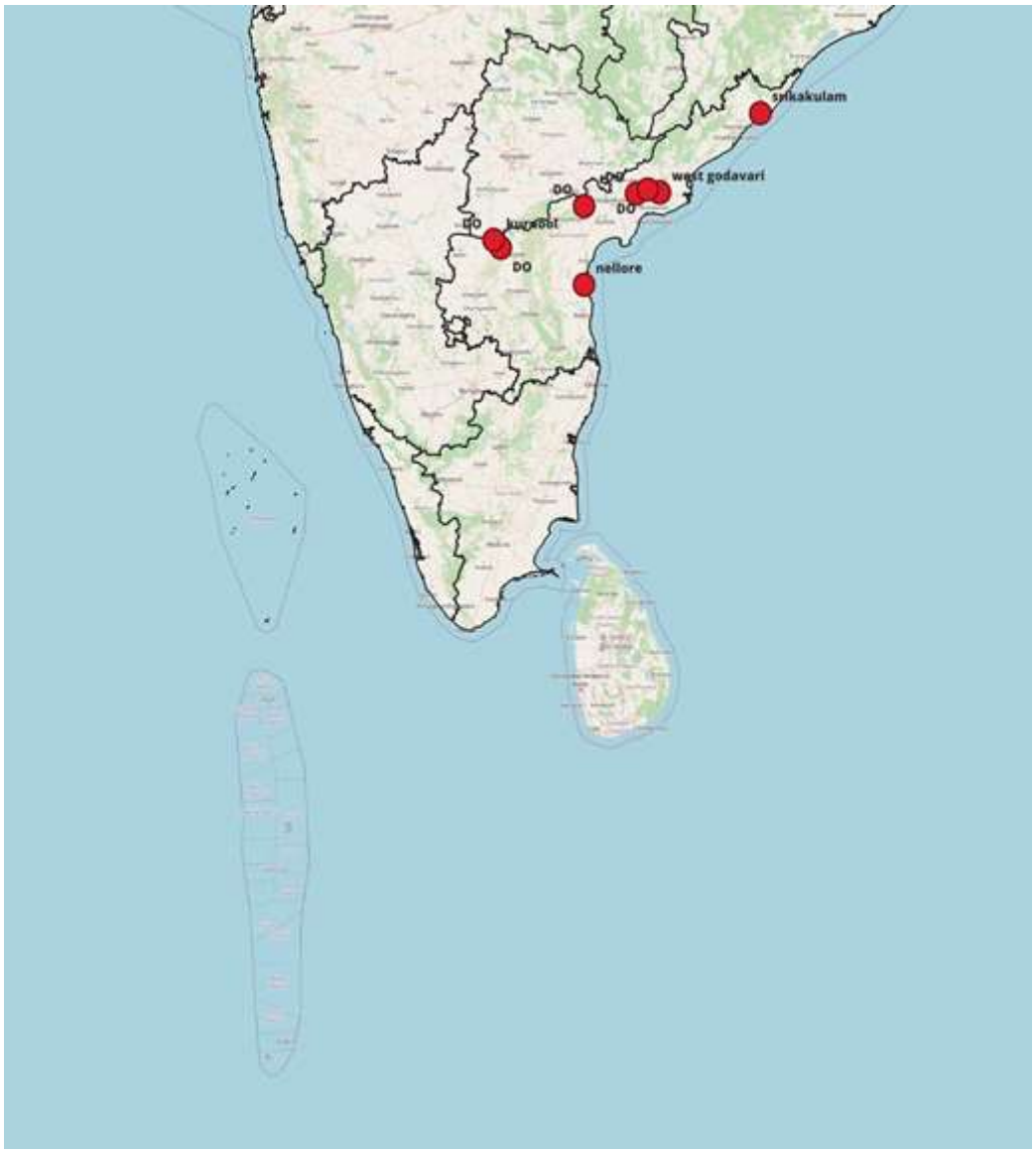

Fig:2The red dots are represents the accident locations on Andhra Pradesh

QGIS is an intuitive and user-friendly software that in this instance has allowed the production of a map that showcases traffic accidents in Andhra Pradesh as well as allowed the user to analyze different scenarios. This is just an example of the many ways that a few shape files can be combined to produce a multitude of useful and easy way of visualizing the black spots that are used to prevent road accidents further.

CONCLUSION AND FUTURE WORK

This work pinpoints areas of Andhra Pradesh, where accidents have occurred frequently. As a result, this study provides a basis for identifying Vehicle Accident Spots and Risky Places where people require extra caution when traveling and crossing highways. This would assist the government in installing automated devices in those areas of concern that would impose fines for exceeding the posted speed limit at each location. This would undoubtedly lower the accident rate due to over speeding because reckless driving is the primary cause of accidents.

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