

Road Accident Analysis of State Highway 8 (Thodupuzha to Pala Road)

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Abstract - Every year the lives of approximately 1.3 million people are cut short as a result of traffic clashes. Between 20 and 50 million more people suffer non-fatal injuries. A traffic collision occurs when a vehicle collides with another vehicle, pedestrian, animal, road debris, or other stationary obstruction, such as a tree, pole, or building. Road accidents often result in injury, disability, death, and property damage as well as financial costs to both society and the individuals involved. The common causes of these accidents are overspeeding, poor road lighting, drunk driving, defective geometric design like super elevation, improper curve design, inadequate sight distance, improper traffic control devices, etc. The analysis of accidents in Thodupuzha - Pala road, which is a part of State Highway 8 in Kerala, State is done. After the reconstruction of the road, there is an increase in the accident rate. The aim is to determine the accident-threatening road stretch from this accident analysis.

Key Words: Traffic, Road accident, Accident analysis, Road stretch, State Highway 8

1. INTRODUCTION

India ranks first in the number of road accident deaths across the 199 countries and accounts for almost 11% of the accident-related deaths in the World. . The problem of accidents is very acute in road transportation due to complex flow patterns of vehicular traffic, the presence of a mixed type of vehicles and pedestrians on roads. One of the main objectives of road transportation is safe traffic movement. The accident studies are relevant to the road accidents that occur from time to time on an existing road system. Though road accidents cannot be totally prevented, the accident rate can be reduced substantially by suitable management measures. Therefore it is to carry out a systematic accident study to investigate the causes of accidents. Accident data collection and analysis assist to pick out the cause and type of vehicles involved in the accident.

2. OBJECTIVES

The main objectives of our study are:

- To study the relationship between accident rate, year, and place of occurrence
- To find the vehicles involved in the accidents
- To find the road stretch which is highly accident prone

3. DATA COLLECTION

Accident data are collected from the Police Station, Karinkunnam, Kerala, within a road stretch of 10 km from Thodupuzha to Nellappara via Pala-Thodupuzha road, for the past 10 years.

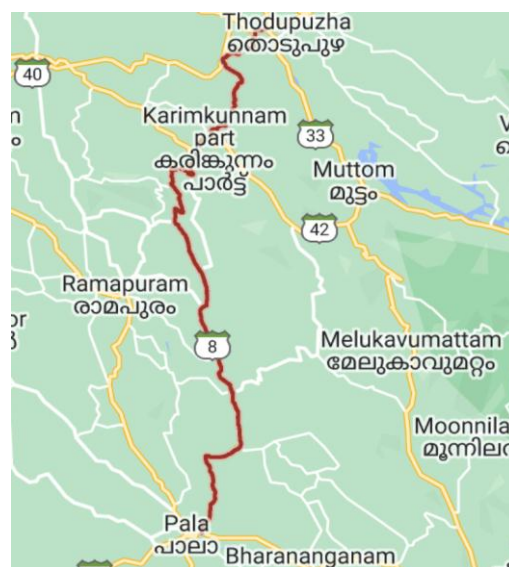


Fig-1: Study Area (source: Google)

3.1 Data collected

Table-1: Accident Details

Year	Death	Minor	Major
2012	1	6	5
2013	0	11	7
2014	0	4	3
2015	0	5	5
2016	0	3	3
2017	0	17	11
2018	1	13	12
2019	0	10	9
2020	1	1	0
2021	0	2	2
2022	0	1	1

Table -2: Accident Details w.r.t Place and Year of Occurrence

	Aadupaara	karinkunnam	Nellappara	Nadukkandam	Naduttadam	Puttanpalli	Kuzhimattom	Manjakadambu
2012	1	2	1	2	2	0	0	0
2013	0	2	1	0	0	3	0	0
2014	0	0	1	0	0	1	0	0
2015	0	3	0	0	0	1	0	0
2016	1	0	1	0	0	0	0	0
2017	0	2	3	1	0	0	0	1
2018	0	5	4	2	0	0	1	1
2019	0	1	2	2	0	2	1	2
2020	0	0	1	0	0	0	0	0
2021	0	0	0	0	0	1	0	1
2022	0	0	1	0	0	0	0	0

3.2 Data Analysis

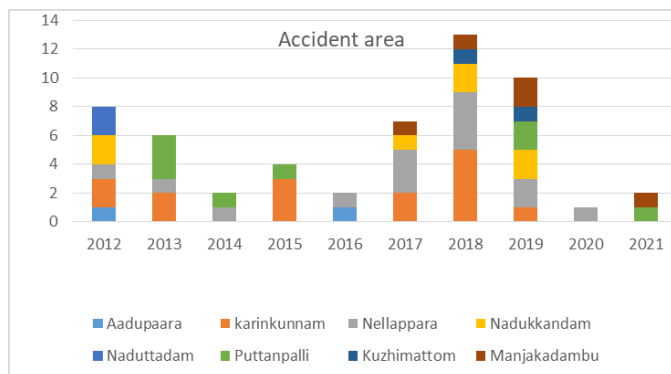


Fig-2: Accident Areas Versus Year of Occurrence

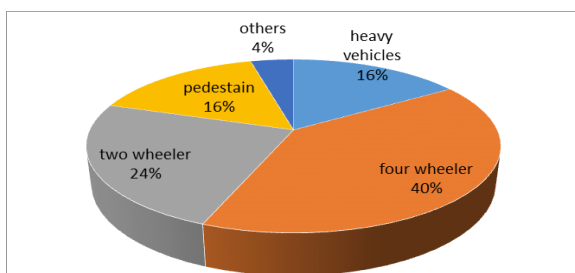


Fig-3: Vehicles Involved

The data analysis shows that the most vulnerable road stretch is the road section passing through Nellappara village. Two-wheelers, four-wheelers, and heavy vehicles are affected by accidents. When compared with the vehicle density in road traffic, heavy vehicles are highly affected.

4. ACCIDENT AREA



Fig-4: Accident Area (source: Google Earth)

The drivers who are unfamiliar with the road are the common victims of the accident; mainly the loaded heavy vehicles including trucks and lorries. There are four horizontal curves created in a sloped area with improper geometric features. The sight distance on the curve is very low, which make it difficult to see vehicles coming in opposite direction. So it is important to find the geometric features such as superelevation, radius of curvature, degree of curvature, gradient, sight distance, etc. of that horizontal curve.

5. CONCLUSIONS

The accidents that occurred during the years 2017-2019 were increased when compared to other years. The road section passing through Nellappara village is highly affected by accidents. Heavy vehicles are always engaged in accidents while correlate with traffic density. It consists of four consecutive curves in a sloped area. Most of the accidents happen in a common pattern; that is, the unfamiliar vehicles descending from the slope cannot see the upcoming curve due to the presence of grasses and shrubs on the roadside at curves. So vehicle causes skidding.

REFERENCES

- [1] Adithya Abhayalal, Arya Mohanan, Dinoy P Jose, Agaja G, "Performance Evaluation And Improvements To Pala Civil Station Junction", International Research Journal of Engineering and Technology (IRJET), Vol. 08, Issue 06, June 2021
- [2] Apoorva Shukla, Tarun Kumar Narnaure, "Transportation Network and Road Accident Analysis: A Case Study of Khandwa City-A Review Paper", Vol. 08, Issue: 10, Oct 2021

- [3] Faheem Ahmed Malik, Shah Faisal, Inam ul Haq, "Road Accidents and Prevention", International Journal of Engineering Development and Research (IJEDR), Vol. 5, Issue 2, April 2017.
- [4] Godwin Y. Nyamuame, Moses K. Aglina, "Analysis Of Road Traffic Accidents Trend In Ghana: Causing Factors And Preventive Measures", International Journal OF Engineering Sciences & Management Research, Sept 2015
- [5] Mridula G M, Ashamol Jose, Lidiya P M, "Traffic Accident Analysis and Mitigation Measures at Kariyad (NH-544), Ernakulam, Kerala", International Journal of Science, Engineering and Technology, Vol. 4 Issue 5, 2016
- [6] Muthusamy A P, Rajendran M, Ramesh K, Sivaprakash P, "A Review on Road Traffic Accident and Related Factors", International Journal of Applied Engineering Research, Vol. 10, Number 11, Jan 2015
- [7] R. Nirmala, "Road Crash- Analysis and Alleviation Measures", International Journal of Engineering and Technology (IJET), Vol 7 No 3 Jun-Jul 2015
- [8] Siddhant Karahe, Dr. Sunil Sugandhi, "Review On Road Safety Audit And A Case Study Of Sh26 & Sh27 From Khandwa To Sanawad (M.P.) India", International Research Journal of Engineering and Technology (IRJET), Vol. 07, Issue 02, Feb 2020
- [9] S K Khanna, C E G Justo., " Highway Engineering", March 2011
- [10] Younus Maqbool, "Road safety and Road Accidents: An Insight", International Journal Of Information And Computing Science, Vol. 6, Issue 4, May 2019