



Road Safety Audit: A Case Study of National Highway No. 44 (From Nagpur Airport Intersection to Buttibori)

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ABSTRACT

Nowadays, in every 5 minutes one human being's life is lost due to various accidents reasons. In all over world, India has world's huge heavy traffic and road accidents also. A Road Safety Audit (RSA) is a formal technique for evaluating well being execution examination of a current or future road or crossing point by an autonomous review group. A road safety audit is a formal examination of an existing or planned road or intersection to identify potential safety issues and recommend improvements to prevent accidents and reduce risks for all road users. In this study, the area of road from Nagpur airport intersection to buttibori (21.8km) road section of (NH-44) In the state of Maharashtra under NHDP The purpose of a road safety audit of National Highway 44 would be to assess the safety performance of the highway and identify potential hazards or deficiencies that could lead to accidents. By conducting such an audit, transportation authorities can implement measures to enhance safety for all road users, including drivers, pedestrians, and cyclists, thereby reducing the risk of accidents and improving overall road safety.

I. INTRODUCTION

Road safety audit is comparatively an extraordinary tool for the improvement of road safety and to recognize potentially dangerous areas, includes on highway and propose remedial measures. It is a systematic approach for evaluating of new and existing roads by an independent team at different stages of planning, design, construction, operation and maintenance to achieve accident free roads and to increase overall safety performance. In Nagpur, maximum 15,000 accidents occur annually with about maximum 3,000 people losing their lives. Besides fatalities, nearly 12,000 people suffer injuries in road accidents which lead to lifelong miseries for the victims and their families. Accidents are caused by several reasons such as human error, machine failure, or weather condition. Some of these variables cannot be tackled but those which can be tackled should be addressed. To reduce these losses (human as well as property), effort needs to be made towards thorough investigation and subsequent corrective action. The National Highway No. 44, stretching from Nagpur Airport Intersection to Buttibori, serves as a vital artery for transportation and commerce.

This audit aims to identify potential hazards, assess current safety measures, and recommend improvements to enhance overall safety for motorists, pedestrians, and cyclists alike. The National Highway No. 44, connecting Nagpur Airport Intersection to Buttibori, stands as a lifeline for both local commuters and interstate travelers, facilitating the movement of goods and people across central India.

Site Location - From Nagpur Airport Intersection to Buttibori.

Site Distance - 21.8Km

Surveyed Areas - Nagpur Airport Intersection, Chichbhavan, Jamtha, Dongargaon, Borkhedi, Buttibori Police Station Intersection

II. LITERATURE REVIEW

THE STATISTICAL ANALYSIS OF ACCIDENT FREQUENCY DATA: A CASE STUDY OF NATIONAL HIGHWAY NO 6"

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Road accidents are a major cause of death & disability worldwide. Traffic accident models help predict accidents caused by human factors and poor road design. The research shows that most accidents are caused by human factors, including drivers, pedestrians, vehicles, poorly designed roads.

“DEVELOPMENT OF SAFETY AUDIT METHODOLOGY FOR EXISTING ROAD WAY SECTIONS”

Krunal Baraiya

Professor and Head Of Department, Civil Engineering Department, B.V.M. Engineering College, Vallabh Vidyanagar, Gujarat, India.

It focused on road safety funding and seemed to provide an insight into how funding factors may affect both the effectiveness and the efficiency of road safety management. This paper had reviewed the concept of the road safety audit and its stages.

1. OBJECTIVES

- ✓ To collect traffic and road inventory of Chandrapur road from Nagpur Airport Intersection to Buttibori.
- ✓ To collect accident data and perform accident data analysis.
- ✓ To develop a model for identification of safety influencing parameters in minimizing accident rate on selected squares of roads.
- ✓ To examine safety features and find out deficiencies and conflict point in the road network which lead to accident and safety hazards to road users.

2. SITE LOCATION

The site distance is 21.8 km i.e from Nagpur Airport Intersection to Buttibori. The selected intersection stretch has been studied for the safety aspect. The important areas on the survey area are Nagpur Airport Intersection, Chichbhavan, Jamtha, Dongargaon, Borkhedi, Buttibori Police Station Intersection on the NH-44.



Fig. 1 Alignment of NH No - 44 (Nagpur Airport Intersection To buttibori)

➤ Salient Features of National Highway No - 44

1.	Length of Road	-	21.8km
2.	Width of Carriageway	-	7m
3.	Type of Road	-	Two lane with paved Shoulder
4.	Bridges	-	3 Nos.
5.	Culverts	-	0
6.	Major Junctions	-	5 Nos.
7.	Left Side Road	-	10 Nos.
8.	Right Side Road	-	7 Nos.
9.	Curves	-	9 Nos.
10.	Cross Road	-	2 Nos.
11.	Habitation Areas	-	7 Nos.
12.	Police Stations	-	1 Nos.
13.	Educational Institution/Schools	-	3 Nos.
14.	Bus Stops	-	7 Nos.
15.	Filling Station	-	8 Nos.

3. ACCIDENTAL DATA OF LAST FIVE YEAR (From 2019 to 2023)

The Accidental data is collected from Regional Transport Office (RTO) from Nagpur Airport Intersection to Buttibori. The accidental data is for the period 2019 to 2023.

Year 2019 To Year 2023											
Accident happened in Nagpur (Urban)											
Year	Fatal Accidents					Serious Accidents			Minor Accidents		
	Total Accidents	Dead		Seriously Injured		Total Accidents	Seriously Injured		Total Accidents	Minor Injured	
		Male	Female	Male	Female		Male	Female		Male	Female
2019	27	24	6	3	0	37	33	19	29	25	7
2020	19	16	4	7	0	18	18	5	19	24	5
2021	37	33	12	5	2	34	33	10	20	43	5
2022	39	39	3	26	9	50	59	15	32	33	16
2023	27	19	11	3	1	48	54	24	33	30	9
Total	149	131	36	44	12	187	197	73	133	155	42

Year 2019 To Year 2023											
Fatal Accidents happened in Nagpur (Rural)											
Sr. No.	Police Station	2019		2020		2021		2022		2023	
		Fatal Accidents	Total Death	Fatal Accidents	Total Death	Fatal Accidents	Total Death	Fatal Accidents	Total Death	Fatal Accidents	Total Death
1.	Buttibori	34	35	31	33	36	38	24	24	35	40

Fig. 2

Year 2019 To Year 2023											
Serious & Minor Accidents happened in Nagpur (Rural)											
Sr. No.	Police Station	2019		2020		2021		2022		2023	
		Serious & Minor Accidents	Total Injured	Serious & Minor Accidents	Total Injured	Serious & Minor Accidents	Total Injured	Serious & Minor Accidents	Total Injured	Serious & Minor Accidents	Total Injured
1.	Buttibori	40	75	30	33	45	90	48	95	53	107

Fig. 3

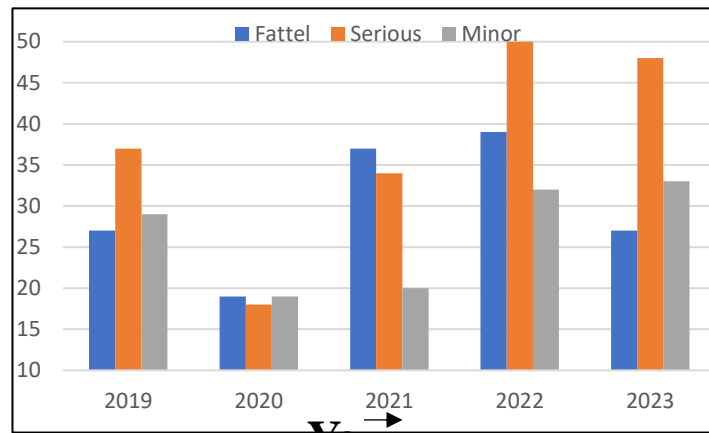


Fig. 4 Graph Showing Accidents rates

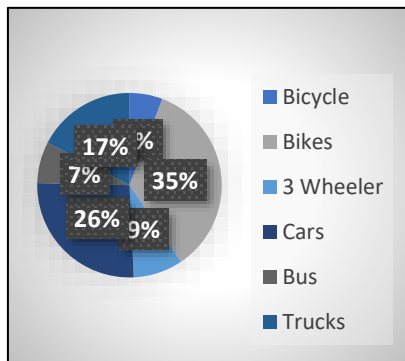


Fig. 5 Morning Time (9 to 11 am)

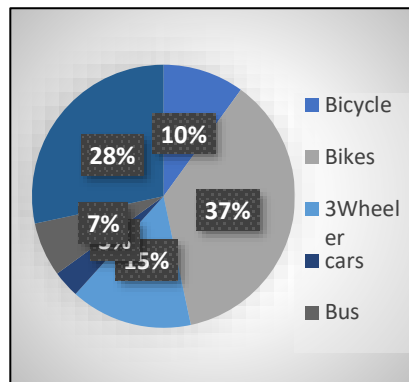


Fig. 6 Afternoon Time (1 to 3 pm)

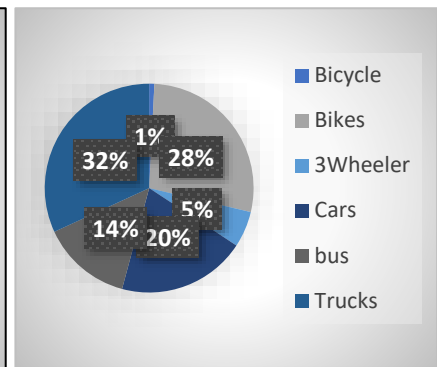


Fig.7 Evening Time (5 to 7 pm)

4. FINDINGS AND GENERAL OBSERVATIONS

Hazardous Issues-

1. Chinch Bhavan (not a hazardous issue)

Recommendations-

Provide a Signals & Advanced Warning Sign



Hazardous Issues-

2. Approach Road Leading towards Jamtha Undesired

Over head Gantry & Bent Sign Board

Recommendations-

Height & Size of the Sign Board Should be Increased



Hazardous Issues-

3. Borkhedi Bent due to heavy loaded Vehicles

(not a hazardous issue)

Recommendations-

The board needs to be straightened and its height needs to be increased.

**Hazardous Issues-**

4. Empress Place, Nagpur Bye Pass Undesired Over head Gantry

Recommendations-

Its height needs to be increased

**6. CONCLUSION**

The conclusion of a road safety audit for National Highway 44 would typically include recommendations, for improving safety measures such as signage, Warning Signs, Sign Boards, speed limits, Traffic Composition and potential infrastructure changes to reduce accidents and enhance road safety. Highlight areas of concern and emphasize the importance of implementing the suggested measures to mitigate risks and enhance overall safety for road user.

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