

# Investigation of Traffic Volume of Wagholi Using AI

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## ABSTRACT

India is a country with a rapidly growing economy and a large market, it has the second largest population in the world, which was 1.4 billion in 2022. India also suffers from environmental problems, such as air pollution, sound pollution and global warming that is contributed by traffic CO<sub>2</sub> emissions from transportation. In order to analyse this problem, a particularly challenging issue in developing countries like India, is the collection of traffic data.

In general, developing countries do not often have well established infrastructure such as installations of small traffic signals, they lack new road construction and public transportation, etc.

**Key Words:** Q-GIS, Road accident, Road safety, Route Optimization

## INTRODUCTION

A review of literature was done for publications related to the topic focusing on the last 10 years. Sources included Pubmed, Google scholar, WHO website, Ministry of Home Affairs, Government of India, Transport Research Wing, Ministry of Road Transport and Highways. Government of India, National Crime Record Bureau, Central Pollution Control Board Government of India etc. There are various influencing factors that affect the speed of vehicles on the road, such as width of road, structure of the road, construction work on road. Mapping out these factors using GIS capabilities can help in the assessment and management of traffic congestion. Geographic Information System (GIS), from many years, has emerged as one of the efficient technological tools in the field of transportation engineering. GIS has a large database storage capacity. which can integrate data from sources. Mapping out these factors using GIS

capabilities can help in the assessment and management of traffic congestion.

Following studies are considered for the investigation:

- Mapping Location of Road Accidents
- Geographical Locating of Congestion
- Route Optimization
- Predicting Traffic Accident Hotspots

## OBJECTIVE

- To identify the roadside friction locations on varying widths of urban, arterials and sub-arterials in wagholi, pune region.
- To predict influence of the friction points on the vehicular speed on urban roads.
- Road accident analysis according to yearly variation

## METHODOLOGY

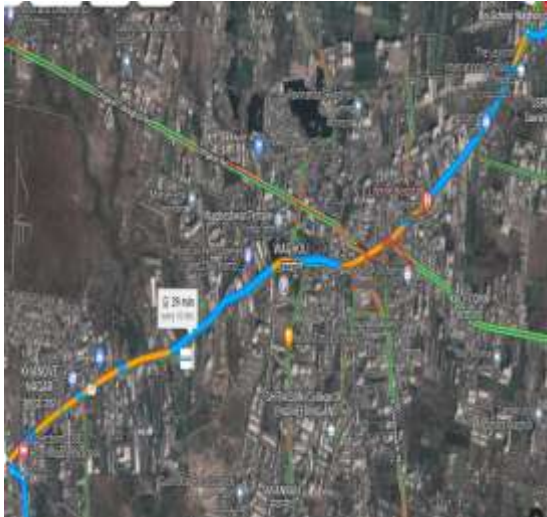
- 1) Selection of study corridor.
- 2) Data Collection.
- 3) Analysis of Accidental Data.
- 4) Automated signal using AI

### Selection Of Study Corridor

Traffic congestion occurs in certain spots and stretches of roads in Wagholi. Area of study is from Ubale Nagar to BJS Stop. The Distance from Ubale Nagar to BJS Stop is 5 km.

Past few decades Wagholi is one of the Villages where rapid urban growth is happening in Pune dis.

In Wagholi traffic congestion has been increased due to the increase in vehicle growth.



**(Study Corridor)**

**1) Data Collection**

Using Manual counters:

We have used most traditional method.

In this method we have collected the Data by observing the traffic.

This data cannot be Collected efficiently through automated counts.

Table1: Vehicle Count Survey Data (Peak day One )

VEHICLE	6 -8 AM	12-2 PM	8-10 PM
CAR	340	685	893
TWO WHEELER	967	1073	1684
HEAVY	623	264	569
THREE WHEELER	281	312	295

Table2: VehicleCount Survey Data (Peak Day Two )

VEHICLE	6 -8 AM	12-2 PM	8-10PM
CAR	368	712	906
TWO WHEELER	1003	917	1693
HEAVY	753	301	589
THREE WHEELER	342	293	316

**2) Analysis of Accidental Data**

For collecting this accidental data Sources included Government of India, Transport Research Wing, Ministry of Road Transport and Highways.

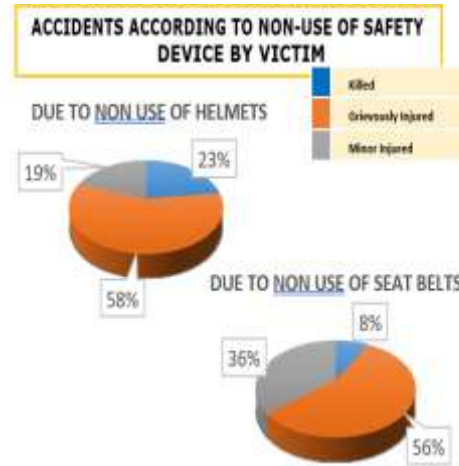
Due to Non-use of helmets

- Most of the people are grievously injured, which is 58%.

- Some of them are Killed, Which is 23%.
- Remaining 19% are Minor injured.

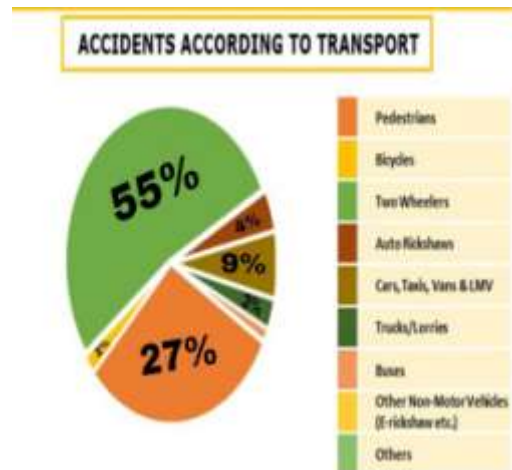
Due to Non use of Seat Belts

- Most of the people are grievously injured, which is 56%.
- Very few of them are killed, which is 8%.
- Remaining 36% are Minor injured.



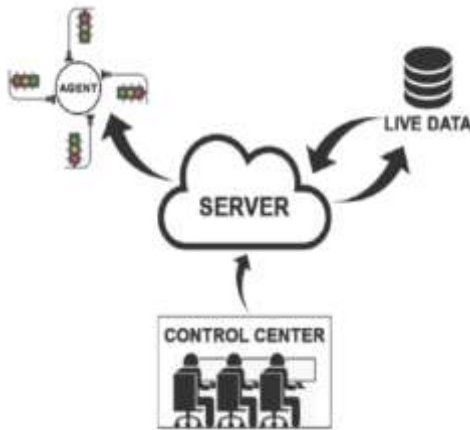
**ACCIDENTS ACCORDING TO TRANSPORT**

- More number of Accidents are happened due Two-wheeler vehicle and Other vehicles.
- Some Accidents due to Auto rikshaw and Four wheelers
- Very few are Accidents happened due to truck or Lorries.
- Rare Accidents happened due to Buses and Bicycles.
- Due to traffic congestion Pedestrian also perform major role 25% of Accidents happened Because of Pedestrian



3) **Automated signal using AI**

AI based traffic control system is to reduce the heavy traffic and congestion on the road by using real time traffic data to give optimal green red distribution



Shows the framework of the proposed system model which consists of four elements:

- Live Data
- Computational Server
- Intersection Control Agent and
- Control Center



**FIG (a) SIGNAL AT KESNAND FATA**

In Fig (a) & (b) the red indicator shows the flow of heavy traffic is more on the side which is headed towards the pune city from wagholi and the green indicator shows the traffic flow is less in between the time period of 6am to 12pm.



**FIG (b) SIGNAL AT WAGHESHWAR MANDIR**



**FIG (c) SIGNAL AT WAGHESHWAR MANDIR**

In Fig (c) & (d) the red indicator shows the flow of heavy traffic is more on the side which is headed towards the A.nagar city from wagholi and the green indicator shows the traffic flow is less in between the time period of 4pm to 8pm.



FIG (d) SIGNAL AT KESNAND FATA

#### EXPECTED CONCLUSION

It has been illustrated how the use of GIS can effectively help in the processing of accident data, and for performing complex spatial analysis. GIS helps tremendously in the visualisation of the problem of road accidents.

However, there are still outstanding issues which need to be addressed. Data quality, especially relating to the accuracy of accident location, remains a serious matter for all types of analysis and spatial queries.

Another concern for the safety expert in having a GIS based accident system is the cost implication in terms of the resources needed, e.g the GIS software licences, map licences, database and system maintenance. However, many of these issues could be resolved with the development of web based delivered accident system, as described.

In this project we have proposed the solution with different technique i.e. we use live data to calculate traffic intensity of a lane, this is possible by Google traffic in which we take two conjunction and mark them as one as source and another one as destination through which we have live traffic intensity of a lane. Similarly this is used for all four downstream traffic. And with higher intensity have the maximum passing time.

Intersection of Road is also a Conclusion for Traffic Analysis

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