

# Traffic Collision And Redesigning Of The Intersection

(Traffic Study)

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**Abstract**— A state in transportation known as traffic congestion is marked by slower speeds, lengthy travel times, and more vehicle waiting. Due to the rise in automobile ownership, transport is currently the most complicated subject. Travel time eats up a considerable percentage of working hours. The main causes of this are inadequate public transport, antiquated traffic infrastructure, and careless driving. The purpose of this article is to evaluate the traffic situation in the chosen location and to identify potential remedies. Pattithanam is one of the most congested areas and accidental red spot in Ettumanoor so we choose Pattithanam intersection for our study.

**Keywords**— Traffic collision; Traffic congestion; Traffic flow; Intersections; Traffic data; Redesign;

## I. INTRODUCTION

The increase in motoring is impacted by the rising standard of living. This fact has an impact on the rise in personal vehicle traffic as well. Congestion is caused by the overcrowded conditions on the roads. Drivers frequently exhibit tense attitude that endangers other motorists, decreasing road safety and increasing accidents. Every day, roads, junctions, and their elements are overburdened.

The primary goal of transport is to give a wide range of social groups an effective way to meet their individual requirements. To satisfy this demand for mobility, this is the overall objective. Planning for urban transport involves a few actions, including assessing the area's current state, including the land use patterns and travel demand brought on by land development. Following that, projections of land, transport demand, population, etc. are used to create development plans. The process's goal is to estimate travel demand, after which acceptable alternatives are put into practice to lessen traffic congestion.

The intersection is a location where the streams of moving vehicles can connect, disconnect, or cross. In other words, a junction is where at least two roads are connected and where they intersect or unite. A junction needs to have enough space to accommodate all the traffic streams that enter it. The vehicles could stay at the intersection or move to the opposite side. It is essential to ensure that vehicles may pass through the intersection continuously, smoothly, and safely. Consequently, good roads are a crucial component of road safety.

Here, we explore a circular intersection in Pattithanam, Ettumanoor that has a long history of incidents that have been documented throughout the years.

## II. LITERATURE REVIEW

The analyses highlight the key ideas in publications and other works of literature.

1. Sathya Ranjan Samal, Malaya Mohanty, Moses Santha Kumar Selvaraj (September 2022) "Assessment of traffic congestion under Indian Environment". To assess the functional efficiency of the road system, it relies on traffic congestion indicators.

2.Zhenzhen Hao, Rene Boel (November 2022) "Convergence analysis on control for traffic signals in urban road network". It provides an analysis of how the traffic dynamics in a system of signalised crossings converge to a steady state.

3.Prachi Agarwal, Preeti Kumari, Dr Manish Dutta (May 2021) "Designing traffic signal at an unsignalized intersection" deals with the use of a computer language like Python to simulate intended signals.

4.Tanzina Afrin and Nila Yodo(June 2020) "A survey of road traffic congestion measures towards sustainable and resilient transportation system." It pinpointed the underlying reasons for congestion. Each measure's benefits and drawbacks are determined through data analysis.

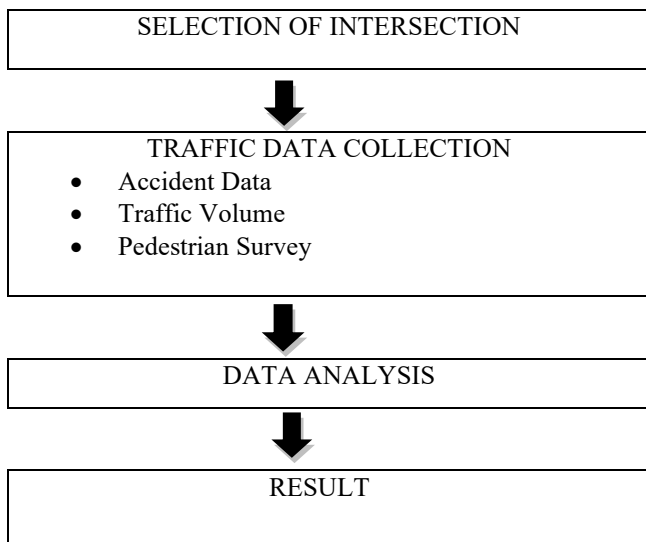
5.A. Vinidha Roc, P. R, Banu Prakash, G. Paul Asir Ninon Raj, L. Prasad. (July 2017) "SMART TRAFFIC LIGHT SYSTEM". A system of cameras is used to manage the data they gather in their various locations, work in tandem with other cameras in the system to alter traffic signals and provide green lights for that route to avoid as much traffic as possible.

6.Geethu Lal, Divya L.G., Nithin K.J, Susan Mathew, Bennet Kuriakose (2016) "sustainable traffic improvement for urban road intersections of developing countries; A Case study of Ettumanoor, INDIA." Poor planning, unlawful parking, and signal failures are the main culprits, according to an examination of the information gathered from the primary investigation of traffic, land use, and pedestrians. The recommended remedial measures are junction signalization and junction augmentation.

### III. OBJECTIVES OF THE WORK

- (i) to study and analyze the existing traffic condition of the pattithanam intersection.
- (ii) to find out factors responsible for congestion.
- (iii) to analyze the acceptability of improved design.
- (iv) to study about pedestrian movement of pattithanam.
- (v) to study about the traffic volume of pattithanam.
- (vi) to suggest remedial measures for the problems.

### IV. METHODOLOGY



### V. DATA COLLECTION

The gathering of data is the main task in any investigation. Most of the traffic study begins with data gathering, which provides an overview of the data collected, followed by its evaluation. Surveys were used to gather the various data needed for the study.

#### A. TRAFFIC VOLUME

Other alternatives for the term "traffic volume study" include traffic flow survey or simply the traffic survey. It is described as a procedure to determine the predominant volume of traffic using the roads at a certain area during a particular time. Each vehicle's turning movement over a 15-minute period is included in the survey. A total of 8-hour survey was done on the selected intersection. Each vehicle is separately noted, and turnings are properly evaluated. The collected data is then converted into PCU units for finding the peak hour of traffic both in morning and evening shifts. Here we take surveying two shifts from 7:00 to 11:00 and 4:00 to 8:00 with a team of 12 members, two of them evaluating the vehicles from a particular road.

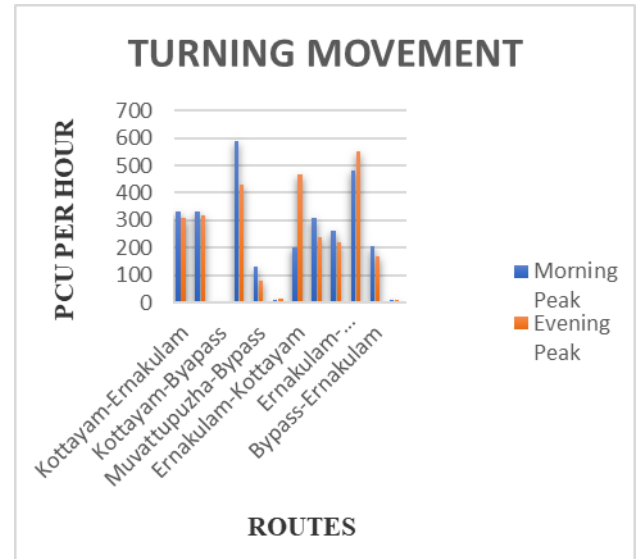


Fig1: Turning Movement

#### B. ACCIDENT DATA

By collecting the accident data over the past three years it was found that both pedestrians and people with vehicles were affected by the existing traffic infrastructure.

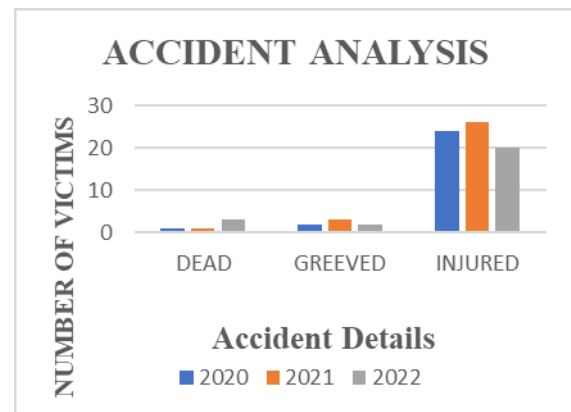


Fig 2: Accident Analysis

### VI.RESULT AND CONCLUSIONS

With reference to IRC, We came to the conclusion that the existing system is unable to handle the volume of traffic already present, and inappropriate conduct is the primary cause of accidents. And we suggest some redesigning to the existing roundabout.

- Radius of the roundabout can be increased by 4m thereby we can regulate the traffic flow in a uniform manner.
- The islands present in the intersection can be moved forward with respect to the roundabout.
- Roads can be properly marked with pedestrian way and footpaths can be provided.
- Signals cannot be installed as it can disturb the natural traffic flow.

- Sign boards and cautionary signs can be installed to avoid confusion.

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