

# Traffic Volume Study at S. M. Lohia College Road Kolhapur

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## ABSTRACT

Traffic bottleneck in cities is a major problem mainly in developing countries; to mitigate these problems many models of traffic system have been planned by many researchers. Different ways have been suggested to make the traffic system smarter, reliable. The advanced world requests adaptability. Vehicles address the principal strategy for versatility, yet the present blocked roadways and city-roads don't move quick, and here and there they don't move by any means. The India has 70% versatility out and about mode; consequently, the grim issues made in urban communities are the gridlock, wastage of significant time in created nations. For this need to take care of the serious issue of traffic, to accomplish the essential objective of decreasing the clog and improving the wellbeing of the street clients, fundamental point is to plan the best traffic framework that will be compliant and accessible. In this paper we have studied the existing road infrastructure at S. M. Lohia College Road Kolhapur and suggested few improvements which were intended to increase the efficiency of the zone. For that we did the Traffic volume studies to determine the number, movement, and classification of vehicles at the given location, which is done by the manual method. The vehicles are counted manually without using any device or sensor with respective vehicle categories like a passenger, commercial and agricultural etc. The recommendations was given based on the study data and the Indian Road congress guidelines by adopting maximum average Passenger count unit (PCU).

**Keyword:** Traffic Management, Traffic Control, Traffic Signal, PCU.

## 1. INTRODUCTION

In earlier time traffic is controlled by traffic police manually by showing sign to the traffic in each direction but as the traffic volume is growing large and large it is not possible to handle the traffic by one traffic police so as to under come this problem traffic signals has been designed to control the traffic with accuracy and timely. The traffic signals have three lights orderly red, yellow, green, by which they can guide the traffic whether to move or stop. The first traffic signal was fixed in London in 1868, which was a semaphore- arm type signal.

In this paper, we have taken S. M. Lohia College Road Kolhapur, which is surrounded by shopping malls, restaurants, corporate Offices, etc. Moreover, there is a bus stand due to which there is a heavy movement of people and traffic. Therefore, at that place, an effective traffic signal must be required which will reduce the chance of an accident, time of travel for the passengers, congestion, conflict, and bottleneck. These problems can be solved by providing an efficient traffic control at intersections and that can be achieved by a provision of fixed time traffic signal system at intersections for continuous and efficient movement of vehicles through the intersections.

### A. Objective & Methodology of the Study

The main objectives of the study are:

- 1) To carry out traffic volume study on selected section of S. M. Lohia College Road.
- 2) To study the traffic flow pattern on weekday for hourly variations.

### B. Study Methodology

- 1) Pilot Survey: Pilot survey was conducted in order to understand the road network & the existing problems in that area.
- 2) Data Collection: The Data was collected for the volume studies, for the purpose of designing or improving planning & management.

3) Traffic volume study: Traffic volume study was done by using manual counting method at selected points. Conclusions & Recommendations: After the analysis was done, conclusions were drawn & recommendations were made for the same.

## 2. DATA COLLECTION & ANALYSIS

The data collection was done after carefully studying the study area. After doing the pilot survey, particular roads were taken. It was made sure that the roads under study were free from all the obstructions like signals, stop sign. The study was conducted on a clear weather when the pavement was dry & no repair work was under operation at that time. Traffic volume survey was conducted on all the one days of a week. Traffic volume counting was done by using manual methods. Traffic volume survey was conducted on S. M. Lohia College Road in Kolhapur City.

## 3. METHOD USED FOR TRAFFIC COUNT

Traffic volume or traffic flow is the number of vehicles that pass across a given transverse line of the road during time. As the carriageway width of the roads may differ, the traffic volume is generally stated as number of vehicles per hour or per day, per traffic lane. In this study, the traffic volume counting was done by using manual method. In this method, vehicles are counted manually by using a hand tally system. The observer carried out the vehicle counting and recorded them on a data sheet using hand tally system. Different classes of vehicles make use of the same roadway, thus the traffic stream consists of 'mixed traffic flow'. The vehicles of the traffic stream are classified into different vehicle classes. They are: fast moving vehicles such as (a) passenger cars, (b) buses, (c) trucks or heavy commercial vehicles (HCV), (d) Light commercial vehicles (LCV) (e) Auto-rickshaws, (f) two-wheeler automobiles (motor cycles and scooters) and (ii) slow moving vehicles such as animal drawn vehicles like bullock carts, cycle rickshaws. Heterogeneous traffic is a mixed traffic stream which consists of different type of vehicles with different dimensions. While as homogeneous traffic stream consists of vehicles of same type (same dimensions). Traffic volume data collected is converted into passenger car unit (PCU) to convert different type of vehicles which offer different degree of interferences to other traffic and it is necessary to convert all types to a common unit which is known as passenger car unit (PCU).

**Table -1:** Classified volume count data

TIME	Vehicle Type						
	TWO WHE	THREE WH	CAR	LCV	HCV	BUS	CYCLE
09:00 - 10:00	2984	69	61	21	5	8	120
10:00 - 11:00	2515	99	54	19	4	8	108
11:00 - 12:00	964	75	52	15	3	9	90
12:00 - 01:00	1040	86	62	20	4	6	110
03:00 - 04:00	656	77	40	15	8	8	122
04:00 - 05:00	580	72	58	14	6	7	90
05:00 - 06:00	1530	87	58	25	5	8	100
06:00 - 07:00	1755	101	70	23	4	8	140
Total	12024	666	455	152	39	62	880
PCU Factors	0.5	1	1	1.5	3	3	0.5
Total PCU	6012	666	455	228	117	186	440
Total PCU per day							<b>8104</b>

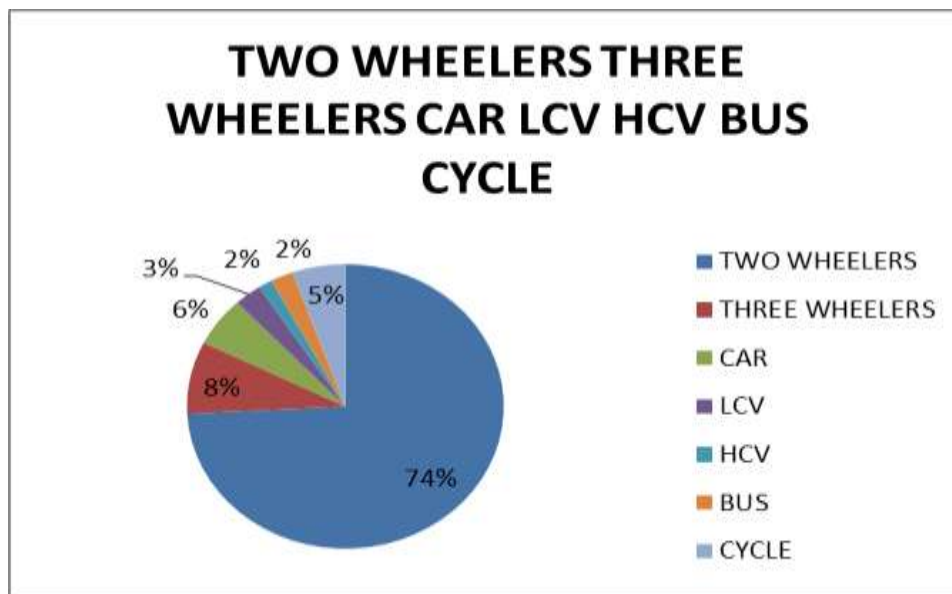


Chart-1: Pie chart of volume count distribution

Table -2: Capacity of different types of roads

Types of roads	Capacity PCU per day (both direction)
Single lane with 3.75m wide carriage way and normal earthen shoulders	1000
Single lane roads with 3.75m wide carriage way and 1.0m wide hard shoulders	2500
Roads with intermediate lanes of width 5.5m and normal earthen shoulders	5000
Two lane roads with 7.0m wide carriage way and earthen shoulders	10000
Four lane divided highway (depending on traffic access control)	20000-30000

#### 4. CONCLUSIONS

- Vehicle composition of the traffic shows that more than 70% of vehicle composition consists of the two-wheelers and three-wheelers.
- As per the data collected from the traffic volume count, the peak hour of the traffic was identified as 9:00 am- 10:00 am & 5:00 pm- 6:00 pm.
- We can conclude that the existing infrastructure is able to handle the traffic volume after providing signal & zebra crossing.
- To avoid accidents, speed breakers & concave mirror needs to be provided.
- restrictions has to be imposed on the road side parking which reduces the capacity of the road in handling the traffic.

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