

# Study of Traffic Flow at a Busy Intersection in Kanchipuram, India

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**Abstract:** Traffic flow analyses are used to achieve the safe, effective and efficient movement of peoples and goods on roadways within a scheduled time are directly linked with traffic characteristics. The parameters which are deciding the traffic flows are density, speed and volume. Nowadays the density and vehicle volume becomes very high due to increase in population, drastic changes in the economics of the middle class families and also people want the sophisticated life. To improve the road infrastructure for the future, the well planned and effective management is mandatory. In this study the traffic volume at junction, which is considered as a heavy traffic area was carried out manually and the footage from CCTV were taken and the suggestions were given to regularize the traffic. The results obtained clearly stated that two wheelers and Cars take major proportion in the traffic stream flow.

**Keywords:** Traffic volume; density; Traffic congestion

## 1. INTRODUCTION

Bright future of the city is mainly based on its transportation. Many cities are facing various problems due to rapid industrialization and urbanization [1, 10]. In the developing cities the numbers of private and public vehicles are to be increased but the available space for the road is not sufficient which leads to traffic congestion. One of the unbearable problem occurs in the urban areas are traffic congestion which affects the society and economy [2]. Congestion affects the free flow of vehicles which increases the journey time, accidents and makes the people getting annoyed. This traffic congestion creates a most challenging problem in all developed and developing towns or cities [3]. In most of the metropolitan cities particularly during peak hours in the morning and in the evening people find very difficult to reach their work places and their homes. They will get mental tension and also it leads to waste more amount of fuel, time and creates lot of pollution [4]. The number of pedestrians crossing and the tremendous increased in the number of all type of vehicles especially cars but there is no way for extending or widening the road due to various political and land acquisition problems [5, 8]. This difficulty should be overcome by increasing the road space or diverting the traffic by considering the distance and also convenience to the public. The current work focuses the traffic characteristics in the town of Kanchipuram at one selected priority city [6, 11]. Traffic flow is studied by manual methods. For better understanding of the present status of traffic flow at the junction, traffic survey is conducted with the help of the data collection, an attempt had been made to understand the traffic patterns during different time periods. Traffic control at that junction is also dependent on the

traffic flow characteristics [7, 9]. Hence the results from the present study are helpful in controlling the traffic at the intersection and also in suggesting some of the remedial measures to improve the traffic safety in the region. Remedial measures such as widening the road, changing 4-lane to 6-lane or by providing more public transport can be recommended based on the outcomes of the work.

### 1.1 Scope of traffic volume studies

- To identify the transport either from public or private influences the traffic system.
- To know the seasonal, daily and hourly variations in the flow of vehicles is mainly used for the future expansion of roads.
- To assess the quality of air in the particular area where the traffic is heavy.

## 2. STUDY AREA

The city of Kanchipuram (12.8342° N latitude, 79.7036° E longitude, 83.2 m (273 ft) above sea level) is located in the Indian State of Tamilnadu. The city covers an area of 11.605 km<sup>2</sup>. The land around Kanchipuram is flat and slopes towards the south and east.

As Kanchipuram falls as one of the seven Tirthas (pilgrimage sites) in India, it has tourist visitors from all over the country and even world. As Kanchipuram is known for its cultural heritage, tourism is greater here.

## 3. MATERIALS AND METHODS

For determining the study area, traffic survey was done by obtaining CCTV Footages from Kanchipuram Control Room. MoongilMandapam is one of the great junctions in kanchipuram town. CCTV footage of one camera that is for road going from MoongilMandapam to Collectrate was studied

and the vehicles passing were noted down by segregating them as Buses, Cars, Truck/Tempo, Two-wheelers by using the software Smart Traffic Analyser, (Fig.2).

CCTV Camera Footages of MoongilMandapam was obtained for one week that is from 24<sup>th</sup> February 2017 to 2<sup>nd</sup> March 2017 from morning 4.00 a.m to 12.00 a.m. (Table.1).The timing of footage for each day in week was classified as 4.00 – 8.00, 8.01 – 12.00, 12.01 – 16.00, 16.01 – 20.00, 20.01 – 24.00.Heavy Traffic, from the CCTV footages collected from the Control room, we can

say that the heaviest traffic area is MoongilMandapam with around 6,50,000 vehicles including Buses, Cars, Trucks, Minibuses, Two-wheelers, Auto-rickshaws moving in a week from all directions. From the Data obtained, a total of 75,439 vehicles pass by one camera in a week in MoongilMandapam, this area being the junction for four roads, still more vehicles pass by. So we can say that MoongilMandapam holds most Traffic in Kanchipuram Town and hence it is taken as Heavy Traffic Point for the Study. (Fig.1.)



Fig.1. Study area- MoongilMandapam

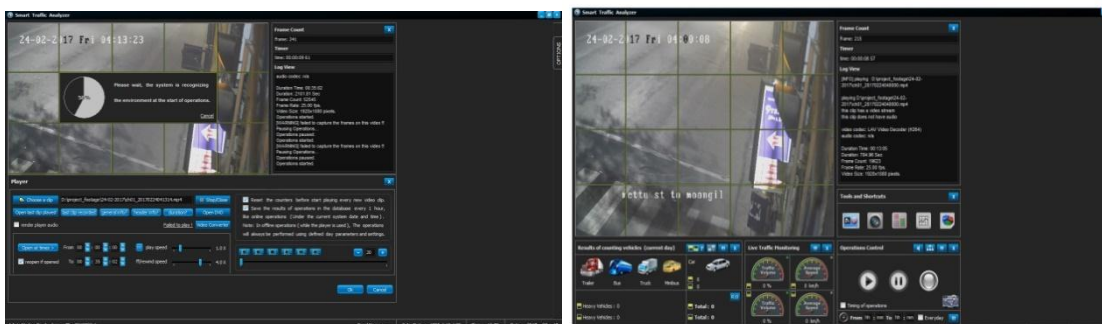


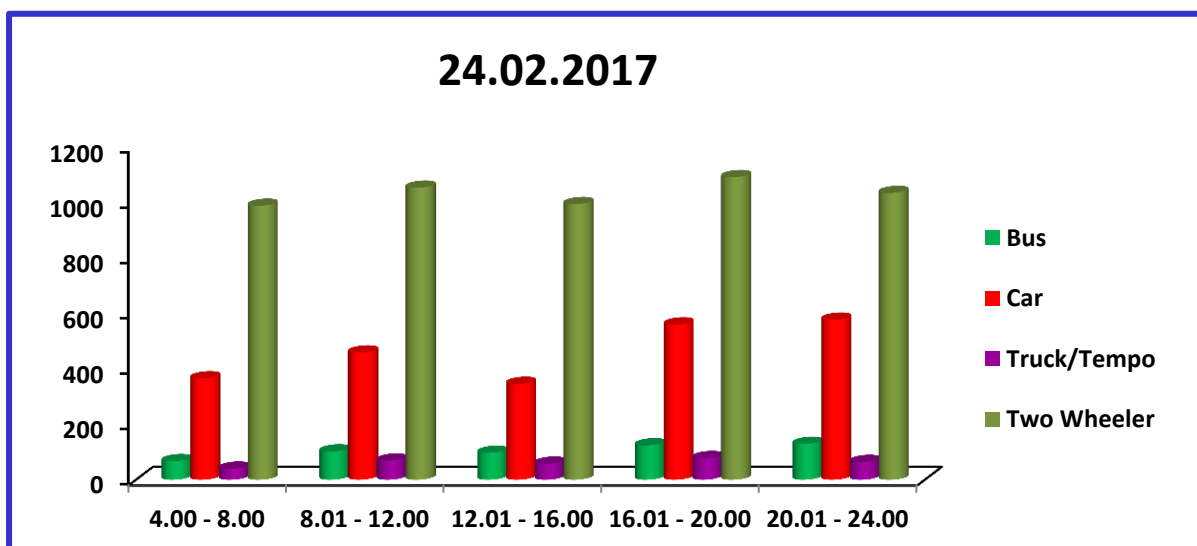
Fig.2. Screenshots of STA (SMART TRAFFIC ANALYSER)

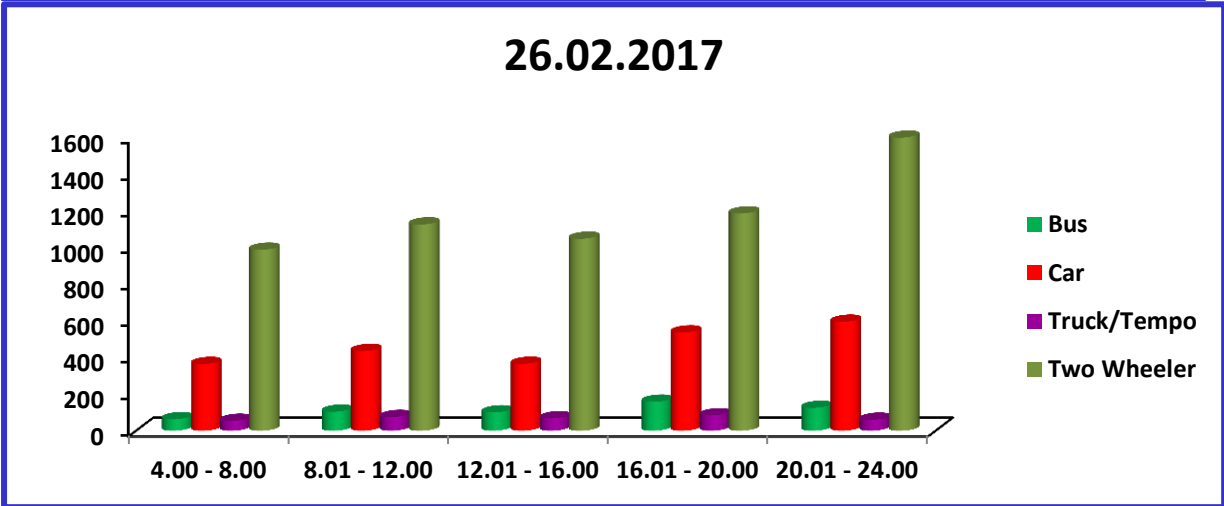
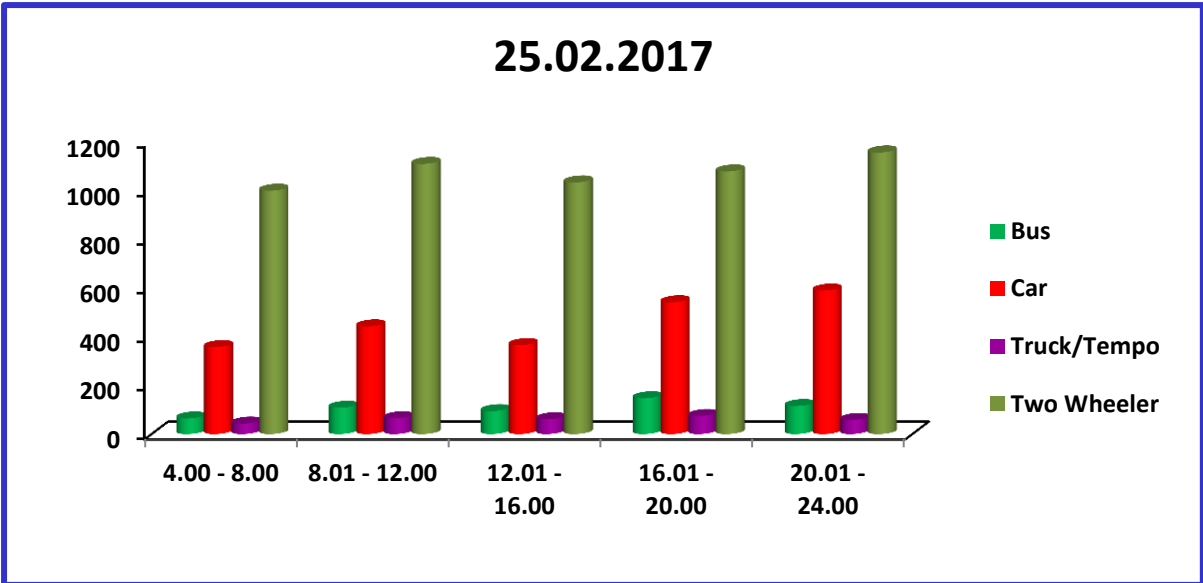
Table 1. Composition of traffic flow stream from 24.02.2017 to 02.03.2017

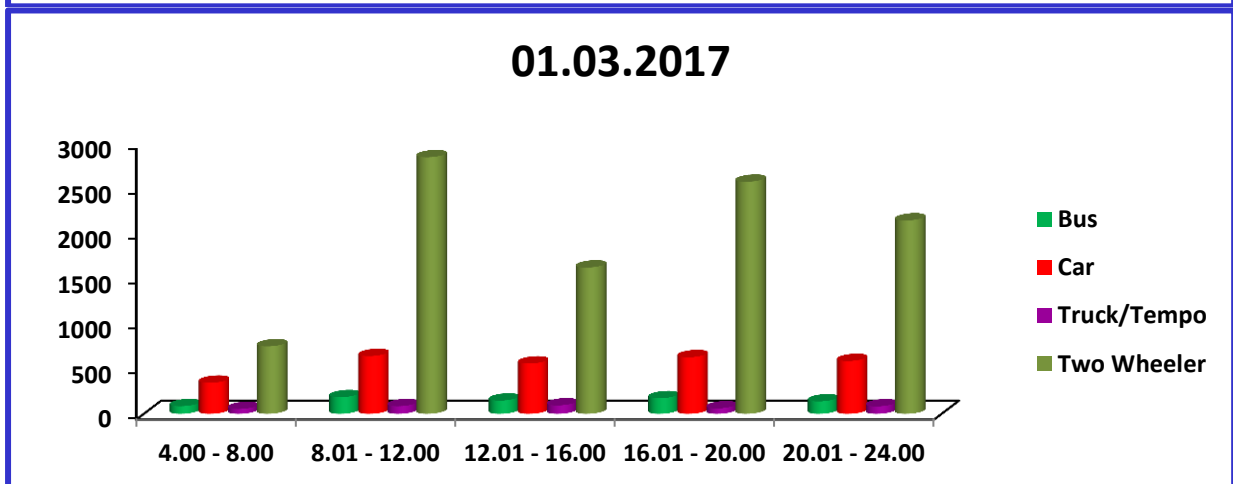
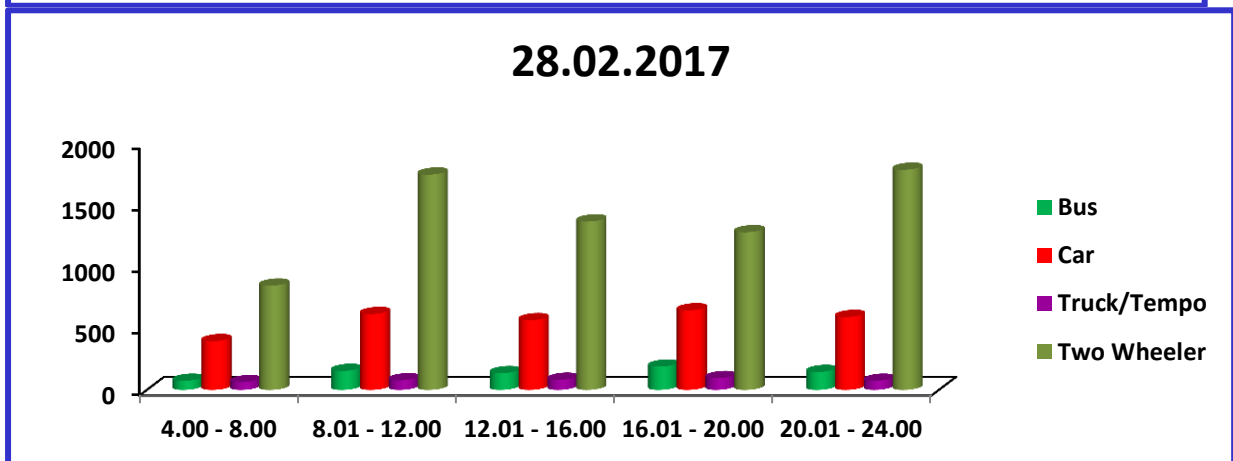
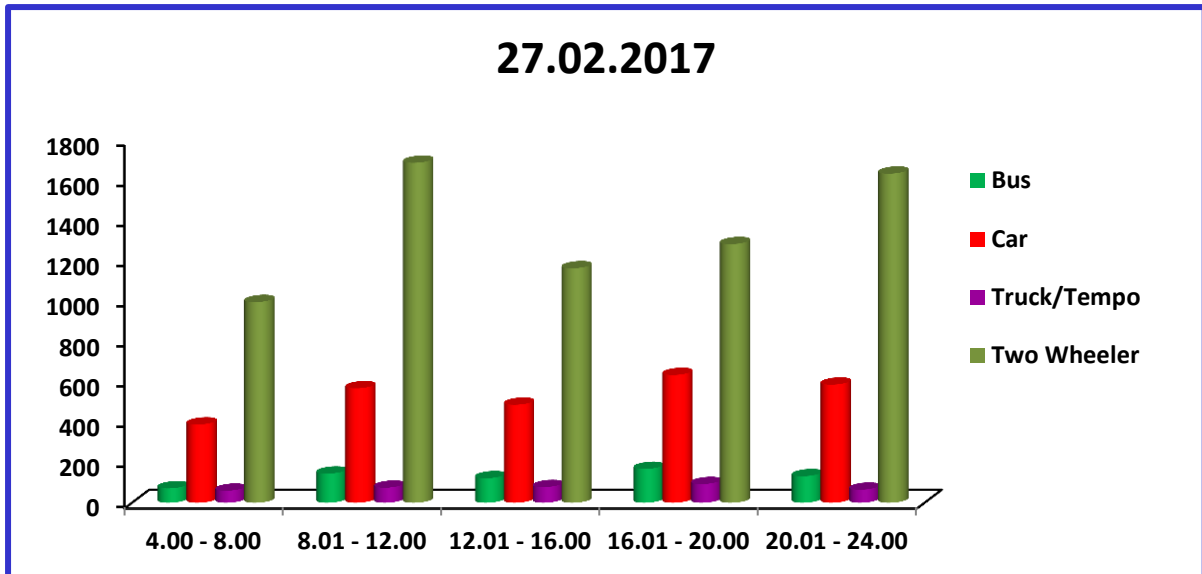
Time	Bus	Car	Truck/Tempo	Two Wheeler	Total
<b>24<sup>th</sup> February 2017</b>					
4.00 - 8.00	67	365	40	986	1458
8.01 - 12.00	102	458	69	1051	1680
12.01 - 16.00	97	345	58	992	1492
16.01 - 20.00	124	559	78	1089	1850
20.01 - 24.00	129	576	64	1032	1801

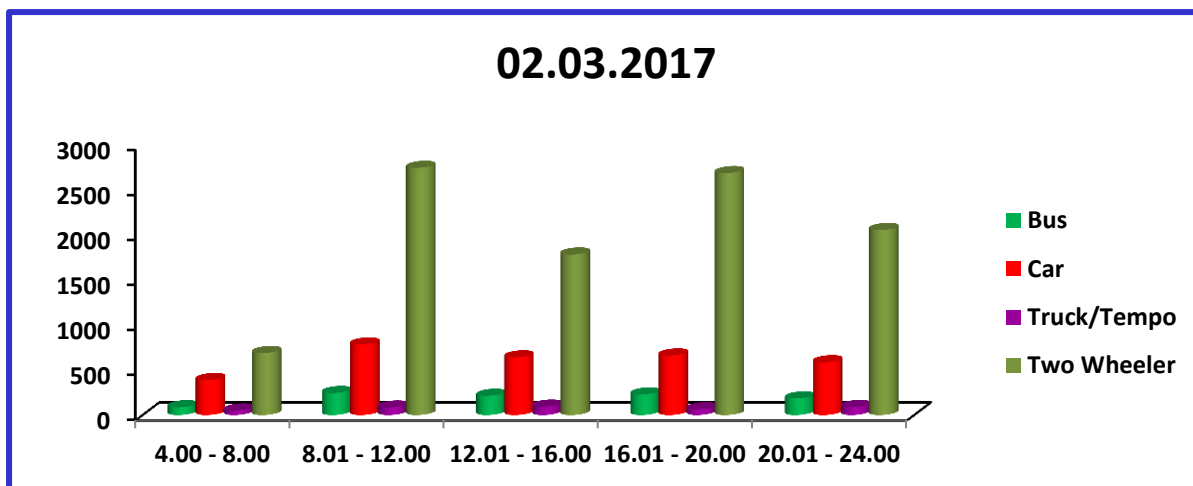
Total	519	2303	309	5150	8281
<b>25<sup>th</sup> February 2017</b>					
4.00 - 8.00	64	357	43	999	1463
8.01 - 12.00	108	442	65	1109	1724
12.01 - 16.00	94	365	61	1033	1553
16.01 - 20.00	147	541	74	1078	1840
20.01 - 24.00	115	589	58	1156	1918
Total	528	2294	301	5375	8498
<b>26<sup>th</sup> February 2017</b>					
4.00 - 8.00	63	364	54	987	1468
8.01 - 12.00	104	435	75	1125	1739
12.01 - 16.00	100	365	68	1047	1580
16.01 - 20.00	158	536	84	1185	1963
20.01 - 24.00	125	594	60	1598	2377
Total	550	2294	341	5942	9127
<b>27<sup>th</sup> February 2017</b>					
4.00 - 8.00	72	389	60	997	1518
8.01 - 12.00	145	569	75	1689	2478
12.01 - 16.00	122	487	78	1165	1852
16.01 - 20.00	168	635	93	1285	2181
20.01 - 24.00	132	587	65	1635	2419
Total	639	2667	371	6771	10448
<b>28<sup>th</sup> February 2017</b>					
4.00 - 8.00	74	395	63	845	1377
8.01 - 12.00	154	615	78	1745	2592
12.01 - 16.00	136	565	82	1365	2148
16.01 - 20.00	189	645	96	1278	2208

20.01 - 24.00	145	591	74	1784	2594
Total	698	2811	393	7017	10919
<b>1<sup>st</sup> March 2017</b>					
4.00 - 8.00	85	345	54	749	1233
8.01 - 12.00	185	641	85	2846	3757
12.01 - 16.00	147	558	94	1623	2422
16.01 - 20.00	173	628	61	2574	3436
20.01 - 24.00	138	586	83	2145	2952
Total	728	2758	377	9937	13800
<b>2<sup>nd</sup> March 2017</b>					
4.00 - 8.00	87	389	51	689	1216
8.01 - 12.00	245	784	84	2745	3858
12.01 - 16.00	214	641	94	1783	2732
16.01 - 20.00	229	662	65	2687	3643
20.01 - 24.00	185	587	90	2055	2917
Total	960	3063	384	9959	14366









#### 4. RESULTS AND DISCUSSIONS

The results shown that the number of vehicles passed that junction during week days were higher than weekends. The density of traffic was high during peak hours in the morning and in the evening hours.(8.01 a.m. – 12.00p.m and 4.00p.m-8.00 p.m.). In the composition of traffic stream flow the two wheelers are in higher density than other mode of vehicles.

#### 5. CONCLUSION

Vehicle composition shows that two wheelers were in major proportion compared to other vehicles. The two wheelers occupied 60% in the total number of vehicles. The reason for this were most of the people are using two wheelers immaterial of their status and it occupied less space. It is very comfortable and convenient for the people during traffic jam. The results were clearly indicated that the number of cars passing through the junction is considerably increased than any other mode of vehicles due to the economic status of the people and it is the main junction to reach most of the important towns. While comparing the type of vehicles per day 20% was taken by cars from the total number of vehicles. This study clearly stated that it is better way to make it as one way or widening of the junction. The second alternative what we suggested will take some time to clear all the issues, the immediate way to solve the problem is to make alternate routes and divert the traffic stream.

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