Congestion of Traffic at Gunjan Chowk Junction, Pune

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ABSTRACT

Traffic is a major issue of any city which is continuously increasing. To cater this increasing traffic a continuous monitoring of traffic with suggestions of new alternates with an innovative approach is necessary. In this paper an attempt to study the traffic atGunjanChowk at Pune; Maharashtra; India is made. An analysis of the present conditions, proposals at this Chowk is reviewed. A detail traffic survey is also conducted at this site and the analysis is presented here.

Key Words:-*Traffic Survey, GunjanChowk*

INTRODUCTION

The development of any city planned or unplanned attracts the commuters increasing traffic flow of the city. Planned cities traffic flow can be controlled and monitored. In unplanned cities the increase in traffic flow is uncontrollable as the load carrying capacity of the roads exceeds far beyond the capacity in a short span of time leading to congestion in traffic. In this paper the traffic congestion at GunjanChowk is studied.

The name GunjanChowk was originated from the well known theatre Gunjan Theatre at the junction of the road.GunjanChowk is a 2-way road heading from Pune Station to Ahmednagarand vice-versa.There is also a road which connects Pune Airport to Pune Station via GunjanChowk. So in future there are a more chances of increasing traffic at the junction.GunjanChowk is located near Pune Station so proper planning of roadway width, curves, marking traffic signals, etc. must be carried out to divert the traffic flow.

There is also a garbage depot where most of the heavy traffic comes in and out continuously and stopped at the road side causing traffic congestion at the current situation.There are many IT companies, corporation, school, slum areas, etc which can create a big traffic problem in future.So there is a necessity to have a proper planning of roadway width, footpath length and breadth, signal timings, etc.As the BRT route passes from the chowk the breadth of the roads gets reduced.

LITERATURE REVIEW

Pune is city in the West of India, in the state of Maharashtra and is roughly 160 km east of Mumbai. The city lies approximately 3 miles along a river. The heart of the city is much older than the rest of the city. It has winding roads, many of which follow the natural slopes of the mountainous terrain and end at the rivers feeding the city. As the city expanded unevenly, a large number of roads were built around the central portion of the city, including the major highways which link the city to other parts of the country.

Some of the highways linking the city are maintained by the State of Maharashtra and are the State Highways. Pune is also connected by two National Highways, NH50 and NH4.

Streets perform certain basic functions in the built environment such as providing routes for vehicles and public transport, and accommodating utility services and drainage systems. The design of a street affects how successful it is in performing these functions, and it can also vitally affect the urban character of a neighbourhood and influence how people use the street and interact with each other on it. The quality of a street and its connections can affect whether people choose to walk or cycle, or take the car. It can affect whether people feel safe. Thus the character of the street needs to be developed in such a way so that along with the functions which it has to perform, other purposes could also be served such as encourages public transport, creating interactive neighbourhood etc. Under the current project, the identified streets in Aundh area of Pune have been taken up to the above aspects of usable and friendly streets. It is proposed to undertake the work of redesigning of the street, retrofitting of footpath and road, placemaking on road, junction redesigning etc amongst other improvements on the street.

STUDY AREA

The study is located at Gunjanchowk near Gunjan Theatre. Its location is 18°32'47"N 73°53'17"E. The GunjanChowk is a modified junction with roads heading towards Nagar, Pune Station, Airport and garbage depot road. There is a garbage depot located at the site which carries heavy garbage trucks during peak hours. This causes congestion of traffic so to overcome this traffic flow proper planning of roadway width, curves, marking traffic signals, etc. must be carried out to divert the traffic flow.
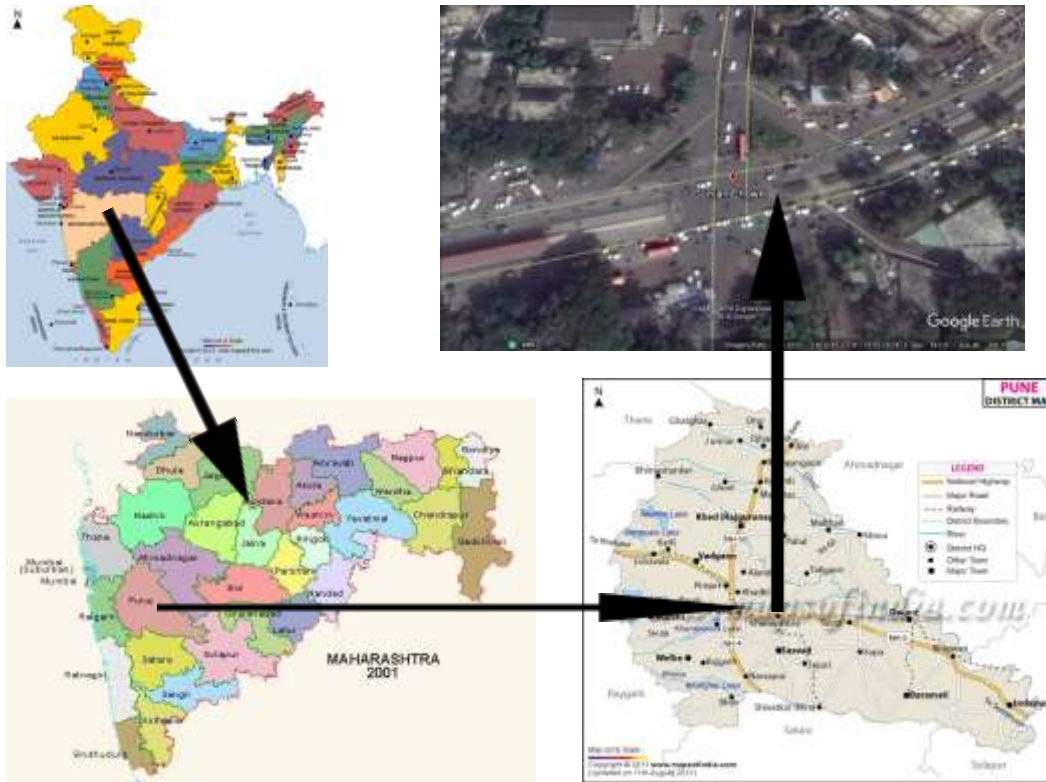
Map of Study Area

DATA REQUIRED

The preliminary data required for the study is as follows

- ➢ Junction Identification – GunjanChowk
- ➢ Present scenario at the site
    - Signals are provided.
    - Road widening is done.
    - BRT bus bay is present.
    - Bus terminals for private transport.

METHODOLOGY

As Gunjanchowk is the main link between Pune station and the Airport this junction is selected

for the study. The problem arising on the chowk is the development of traffic congestion during peak hours of the day. Apart from the road widening traffic persists in that junction hence to reduce the traffic flow analysis and redevelopment is done.

To achieve the traffic count at the junction Traffic Volume study is undertaken. The analysis of the traffic flow is done. The accurate volume of traffic flowing through the chowk at exact time will be specified and later any improvements will be given if possible.

Survey Details:

Traffic volume studies are conducted for number of movements and classification of roadway vehicle at given location. Different types of surveys for traffic count are –

➢ Manual Count Method
➢ Moving Vehicle Survey Method

Most application of manual count require small sample of data, given location. It is sometimes used when the effort and expansion of automatic requirement are not justified, manual count are

necessary when automatic count equipment is not available.

It is typically used for periods of a day. Normal interval for a manual count are 5, 10, 15 minutes. Traffic count during moving rush hour and Friday evening rush may show expansion, high volume and are not normally used in analysis therefore counts are usually conducted. Manual counts are recording is one of the counting boards or electronic counting boards.

The survey details are filled in tabular form using Tally Method and Count Method for to and fro traffic.

RESULTS

The surveyis conducted on the hourly and daily basis. The daily basis survey was conducted from morning 8 am to evening 8pm. For every hour volume count was taken. The daily survey for the entire month was conducted. The survey was conducted in the month of January and March. The data shown in tables represent the readings mentioned below.

Location	GunjanChowk
	Towards Pune
Direction	Station

Timings	Passenger Vehicles					Goods Vehicles		
	Bus		Private Vehicles			Trucks		
	Private Bus	Government Bus	2-wheeler	3-wheeler	4-wheeler	Light Trucks	Heavy Trucks	Dump Trucks
8-9 am	84	72	2415	495	1137	40	4	21
9-10 am	87	76	3130	447	1360	54	3	31
10-11 am	64	86	1715	439	989	112	8	26
11-12 am	46	69	1806	418	1285	110	3	23
12-1 pm	54	63	1930	495	833	97	6	9
1-2 pm	33	67	1797	355	780	84	8	6
2-3 pm	41	62	2208	319	773	77	5	4
3-4 pm	29	64	1673	379	743	70	6	0
4-5 pm	55	65	1907	415	1430	62	4	0
5-6 pm	83	63	2891	430	1477	47	2	3
6-7 pm	132	81	3146	481	1893	39	0	0
7-8 pm	81	82	3397	503	1769	23	1	1
Total	**789**	**850**	**28015**	**5176**	**14519**	**815**	**50**	**124**

The survey table shows the traffic volume count towards Pune Station. It shows that the traffic flow was most during peak hours of morning from 8am to 10am and evening from 6pm to 8pm.

Location	GunjanChowk
Direction	Towards Nagar Road

Timings	Passenger Vehicles					Goods Vehicles		
	Bus		Private Vehicles			Trucks		
	Private Bus	Government Bus	2-wheeler	3-wheeler	4-wheeler	Light Trucks	Heavy Trucks	Dump Trucks
8-9 am	76	71	2197	402	1081	31	16	4
9-10 am	72	68	3012	415	1209	52	12	6
10-11 am	68	82	1609	376	960	85	13	3
11-12 am	49	62	1667	415	1195	102	21	9
12-1 pm	56	63	1339	431	849	87	12	2
1-2 pm	41	59	1239	396	796	73	5	1
2-3 pm	40	72	1275	333	1298	62	9	3
3-4 pm	32	63	1431	431	1365	68	16	0
4-5 pm	41	56	1389	368	1491	72	13	0
5-6 pm	76	68	1439	487	1296	49	31	1
6-7 pm	86	71	1413	489	1132	26	19	2
7-8 pm	81	80	1526	521	1359	19	17	0
Total	718	815	19536	5064	14031	726	184	30

The traffic volume count towards Nagar Road is shown in table. It shows the traffic flow was most during peak hours of morning from 9am to 10am and evening from 7pm to 8pm.

| Location	GunjanChowk
Direction	Towards Pune Station

Days	Passenger Vehicles					Goods Vehicles		
	Bus		Private Vehicles			Trucks		
	Private Bus	Government Bus	2-wheeler	3-wheeler	4-wheeler	Light Trucks	Heavy Trucks	Dump Trucks
Monday	746	893	27840	5153	14779	703	39	151
Tuesday	715	860	28370	5076	12769	568	70	104
Wednesday	792	835	27467	5297	14172	826	49	121
Thursday	774	858	27486	5071	14390	801	74	111
Friday	770	851	28516	5276	15418	807	28	138
Saturday	727	864	21283	3835	15050	847	161	79
Sunday	570	780	16358	3462	15059	334	59	31
Total	5094	5941	177320	33170	101637	4886	480	735

The survey table shows the traffic volume count towards Pune station on a weekly basis showing that the traffic flow was most during the days on Friday and Saturday.

| Location	GunjanChowk
Direction	Towards Nagar Road

Days	**Passenger Vehicles**					**Goods Vehicles**		
	Bus		Private Vehicles			Trucks		
	Private Bus	Government Bus	2-wheeler	3-wheeler	4-wheeler	Light Trucks	Heavy Trucks	Dump Trucks
Monday	741	839	23849	5139	14271	650	156	40
Tuesday	774	842	28313	5229	14394	791	47	28
Wednesday	749	882	28085	5417	15050	803	65	26
Thursday	707	824	19261	5052	13823	713	118	37
Friday	688	797	18854	5040	14096	688	181	33
Saturday	745	795	18356	4481	12134	515	74	26
Sunday	722	828	19448	5059	13899	722	192	24
Total	**5126**	**5807**	**156166**	**35417**	**97667**	**4882**	**833**	**214**

The traffic volume count towards Nagar road on a weekly basis showing that the traffic flow was most during the days of Tuesday and Wednesday is represented in the graph
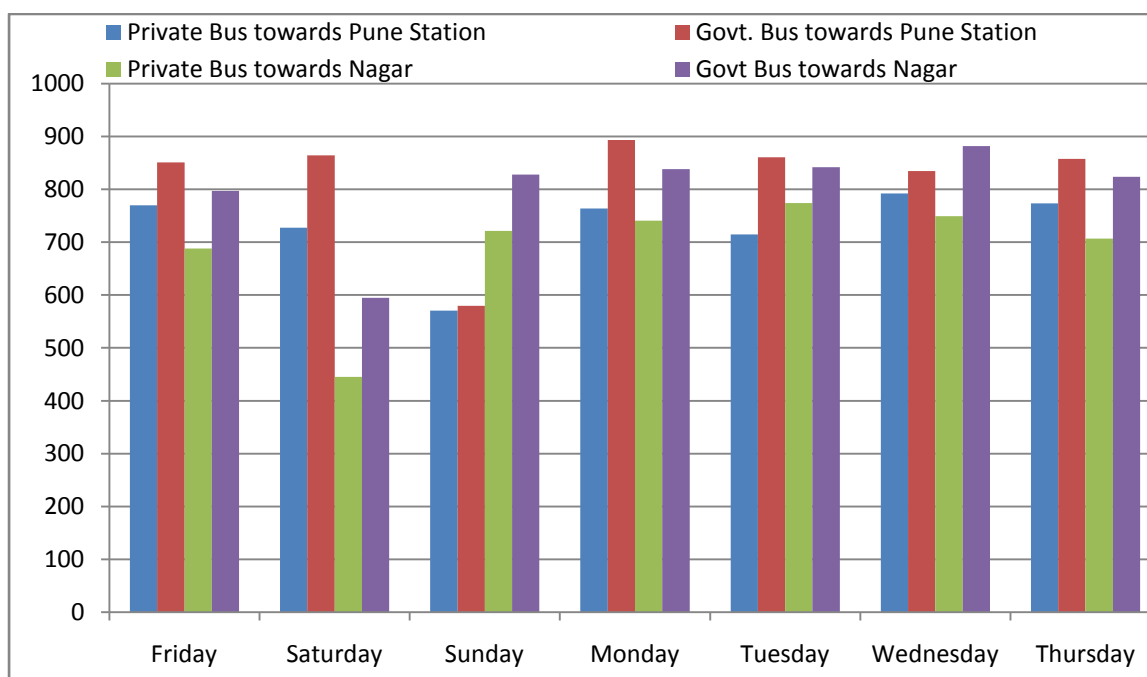

Bar Graph of Buses

The traffic count study of buses on a daily basis shown in graph expresses that the most flow was of Government buses towards Pune Station followed by Government buses towards Nagar and Private buses towards Pune Station and lastly the Private Buses towards Nagar.
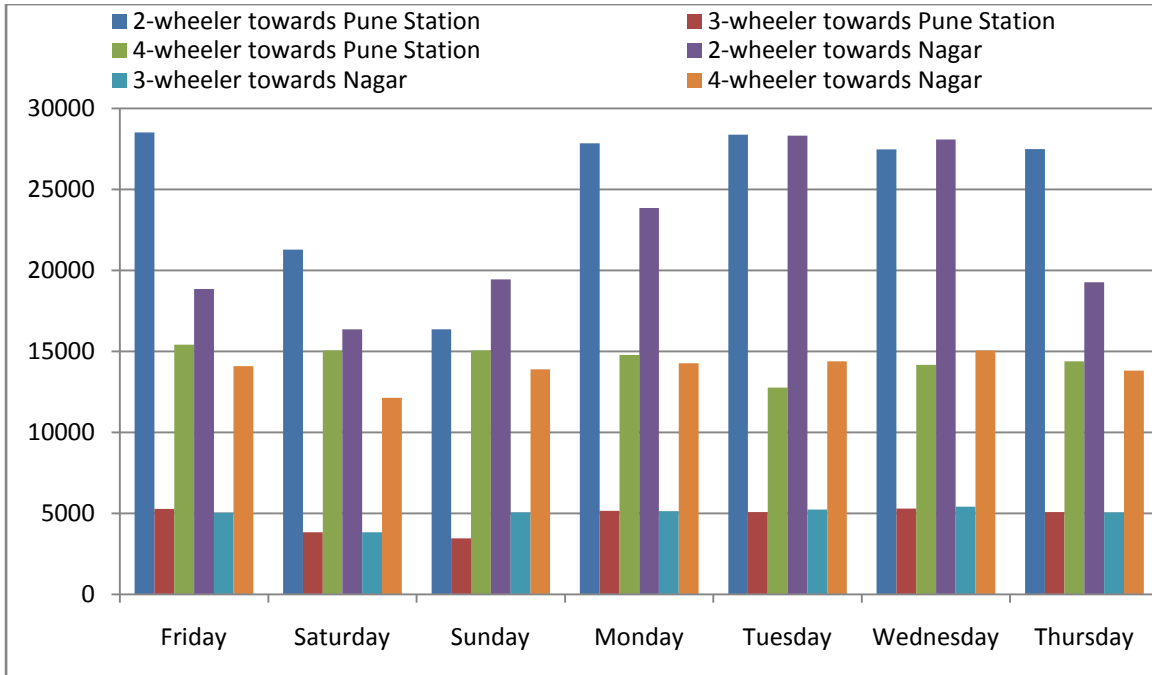
Bar Graph of Private Vehicles

The traffic count study of private vehicles on a daily basis indicating that the most flow was of 2-wheelers towards Pune Station and Nagar whereas the flow of 3-wheelers and 4-wheelers is less than 2-wheelers both towards Pune Station and Nagar combined.
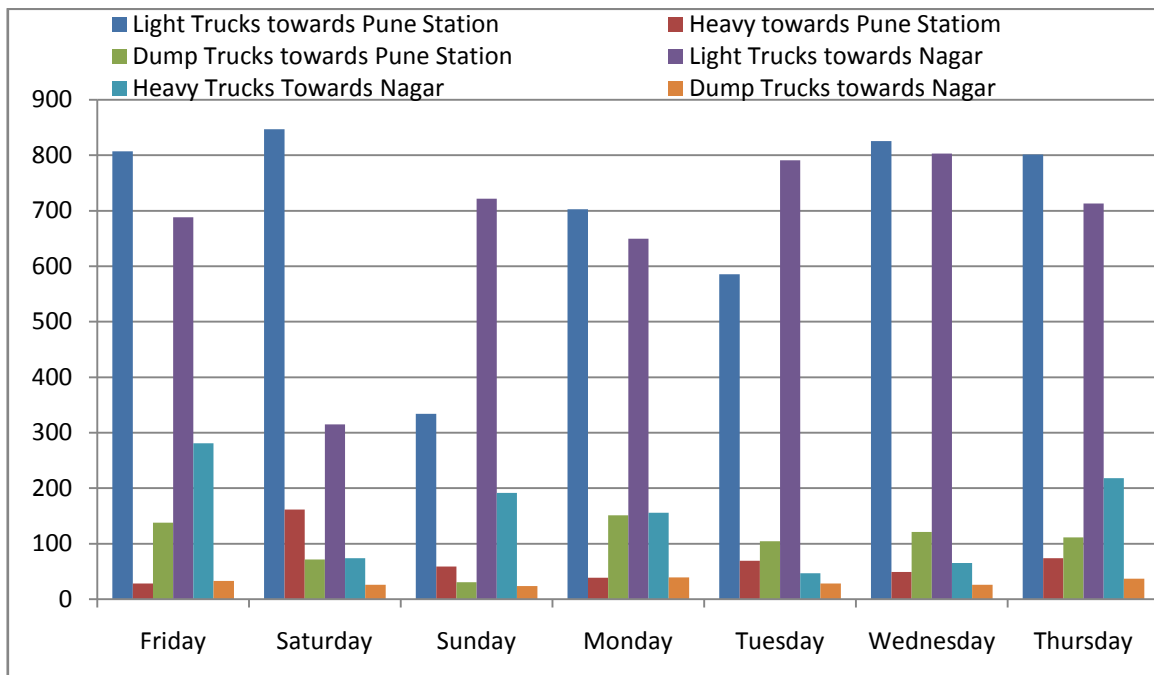
Bar Graph of Trucks

The bar graph shows traffic count study of trucks on a daily basis and it points that the most flow was of Light Trucks towards Pune Station and the flow of light trucks towards Nagar is not less as compared to Pune Station but the flow of heavy trucks and dumb trucks is negligible in front of light trucks.

CONCLUSION

From the results it is concluded that the traffic intensity is more and this being the one of the prime junctions in Pune city so it is essential to give any remedial solutions to this problem to reduce the traffic flow at GunjanChowk.

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