Scientific Journal of Impact Factor (SJIF): 4.14

e-ISSN (O): 2348-4470
p-ISSN (P): 2348-6406

International Journal of Advance Engineering and Research Development

Volume 3, Issue 4, April -2016

Problems and Possible Solution for Better Traffic Management: A Case Stuty Of Amroli, Surat.

ASST. PROF. RUTUL DIYORA[1]

[1]*Civil Engineering Department, K J Institute of Engineering and Technology, Savli*

Abstract *— Indian cities are growing in a very fast pace. Due to the pressure of rapid growth Indian cities and towns are facing uncountable challenges to provide basic facilities and amenities like proper water supply, sewerage, health and educational amenities, adequate public transportation and better road network to each and every household. Traffic congestion is a major urban transport problem. The lot of problem born when a huge traffic passes day to day from the same place but in multiplying amount. Increase in no. of accidents, traffic jams, noise pollution, air pollution, trip delay, etc. are the fruits of inadequate transport infrastructure and improper traffic management. To eliminate the transportation issues it is essential to dig out a proper solution which have better Traffic management. In this paper, the detailed study is being performed to identify the traffic congestion problems of Amroli area, Dist-Surat and also derived possible strategies.*

Keywords- *traffic; encroachment; congestion; trip; LP method;*

I. INTRODUCTION

Cities and traffic have developed hand-in-hand since the earliest large human settlements. The same forces that draw inhabitants to congregate in large urban areas also lead to sometimes intolerable levels of traffic congestion on urban streets and thoroughfares. Effective urban governance requires a careful balancing between the benefits of agglomeration and the disadvantages of excessive congestion. Road traffic congestion poses a challenge for all large and growing urban areas.

Urban traffic congestion is a significant and growing problem in many parts of the world. Moreover, as congestion continues to increase, the conventional approach of "building more roads" doesn't always work for a variety of political, financial, and environmental reasons. Against this backdrop of serious existing and growing congestion traffic control techniques and information systems are needed that can substantially increase capacity and improve traffic flow efficiency. Therefore we are constantly in search of solutions to our transportation problems that will give us not only increased mobility, but also greater economic productivity and a cleaner environment.

Surat is a city located on the western part of India in the state of Gujarat. It is one of the most dynamic cities of India with one of the fastest growth rate due to immigration from various parts of Gujarat and other states of India. Surat is the one and only flourishing diamond business centers in India. On the other hand Surat city is equally popular for its textile industry. Thousands of textile industries processing various stages of textile material are located in and around Surat. These industries are ranging from small scale to very large process houses.

Surat has experienced very high migration. Since 1971, the population of Surat has experienced high growth rates primarily because its wealth has attracted a large migrant population. Its decadal growth rate in 2001 was the highest in the country. 56 percent of its population in 2001 consisted of migrants, of which 47 percent were from other states. In the last decade the population of the city doubled up and is likely to touch the figure of 5.00 million by the end of this decade. The growth rate of Surat City is 11.5%. According to census 2011 the population of Surat city is 44 lacs and Population Density is 1379/km^2. Due to explosion of population and rapid industrialization the transportation in the city increased to unimaginary heights but due to insufficient public Mass Transit facility, individual vehicular growth also touched the new heights. Thus the explosion of population, rapid industrialization and highest growth rate in vehicle population made the traffic problems complicated.

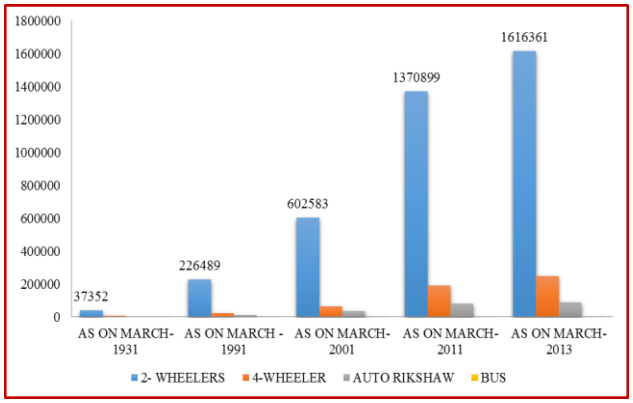
Amroli is northern part of Surat located at the side of Tapti River. This area is backward in terms of public infrastructure, amenities, dwelling units and land use zonings. There is a bridge over Tapti River that is the only way for daily public migration from residence to job place.

In this paper, vehicle Growth Rate, travel activity, parking characteristics, vehicle migration, road side encroachment are being studied with the help of reliable data sources form the Govt. authorities, RTO data, License Plate methods and In-Out method to carry out sound analysis and their possible solutions within the preview of Amroli Area..

II. VEHICLE GROWTH OF SURAT CITY

As on 31-12-2013, the vehicles registered at R.T.O. is 22 lacs plus which is equivalent to the highest growth rate of Delhi. Thus the explosion of population, rapid industrialization and highest growth rate in vehicle population made the traffic problems complicated.

Year	As on March-1931	As on March - 1991	As on March - 2001	As on March - 2011	As on March - 2013
2-Wheelers	37352	226489	602583	1370899	1616361
4-Wheelrs	6883	21398	64883	189409	247684
Auto Rikshaw	3701	12562	33432	79980	87003
BUS	93	419	948	1437	1737



[Source: Regional Transport Office (RTO), Surat.]

According to above table the number of two-wheelers is obviously increasing but the average of increment are decreeing in short the growth rate is decreasing but the travelling need of public is increase according to previous data collection.

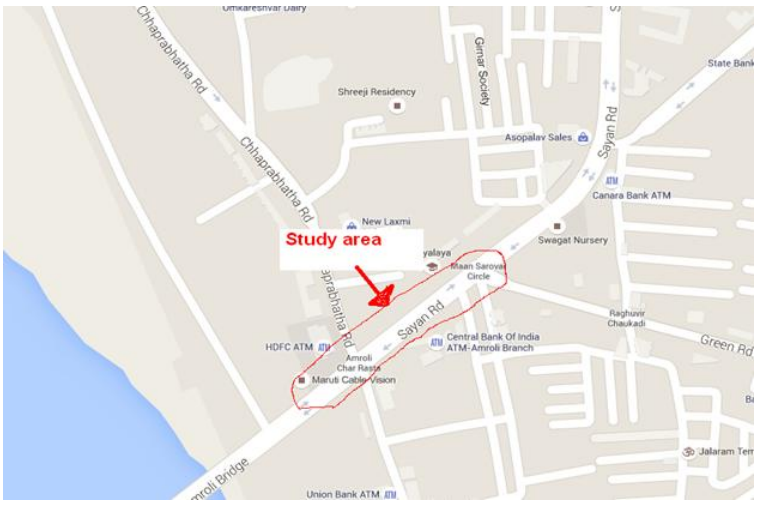
If we see the same scenario in auto riksha the number of auto riksha is increasing but the growth of auto is nominally decreasing compare to number of two-wheeler. As well as 4-wheeler also increase but growth of 4-wheeler is decrease.

INCREASE VEHICLE REGISTRATION DATA PER YEAR			
YEAR	2010-11	2011-12	2012-13
2-Wheelers	29755	24212	13244
4-Wheelers	7941	7507	4910
Auto Rikshaw	1215	543	504
BUS	58	12	76

III. VEHICLE GROWTH OF SURAT CITY

3.1. Geometric details of the selected route:

Type of road= Divided
Length of the street selected= 200 m
Right of way= 23.5 m to 26.0 m
Width of the carriage way = 14 m
Width of road encroach= 9.5 to 10 m
Width of the parking space= 0 m
Width of the footpath= 2.2 m
Max vehicles passes from road= 7500 to 8000 (between 5 to 8 p.m.)
Maximum no of vehicles parked= 251 No.



3.2. Characteristics of selected starches in study area:

1. Two way traffic flow
2. Minimum carriage way width 7mt
3. Both public transport system and Para transit system available
4. Very high parking demand because of market area
5. Haphazard development of area.

IV. IN-OUT SURVEY METHOD

In this method the on road pass vehicles were noted manually at one hour interval. As regular vehicular flow are at Peak between 5pm to 8pm this duration is considered for survey.

The figures in the right side table shows the number of vehicle daily travel from this area. That total number of vehicle travel ratio is higher with respect of road width. Apart from 13 meter of one sided 2 lane road only accessible patch remains of 7 meter for such a huge bulk.

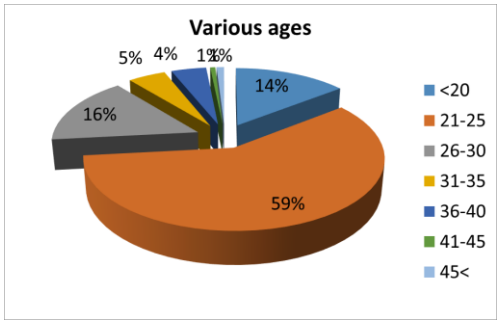
From	To	No. of vehicle
Amoli junction	Mansarovar junction	6882
Mansarovar junction	Amroli junction	7333
Amroli junction	Surat	7786
Mansarovar	Sayanroad	4221

V. FIELD SURVEY AND ANALYSIS

Total 270 data samples were collected from the residence of study area. From those 270 persons, 237 persons were having 2 wheelers which is 87.77% and 78 persons were having 4 wheelers which is 28.88%.

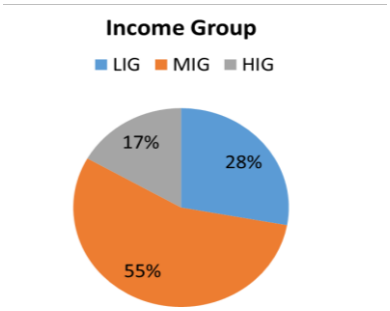
5.1 Age Group

According to the chart apart from those 270 persons 59% person falls in the age group between 21-25. This age group shows the younger working and student class are dominant users of the study patch.



5.2 Income Group

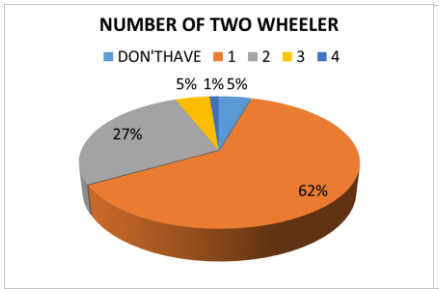
According to the chart there is 55% of people are in MIG group that is in medium category. This number is directly affected to the public transport facility

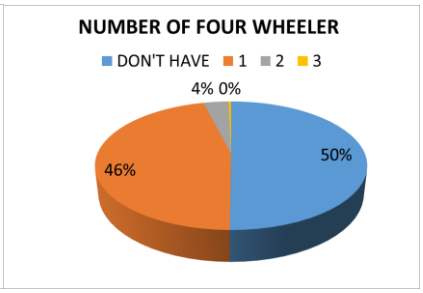


5.3 Vehicle Ownership

According to the chart 62% persons are holding one two wheeler and 27 % persons are holding 2 two wheelers per household. According to the second chart 46% persons are holding one four wheeler and 4 % persons are holding 2 four wheeler per household. If all these owned vehicles may be there on road it may block the highly demanded accessible patch of Road.

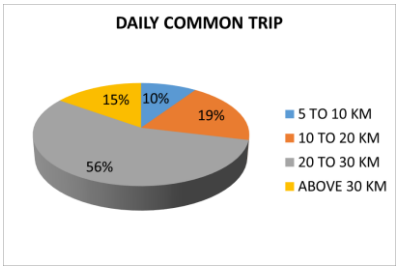
It clearly shows the demand of accessible patch is high.





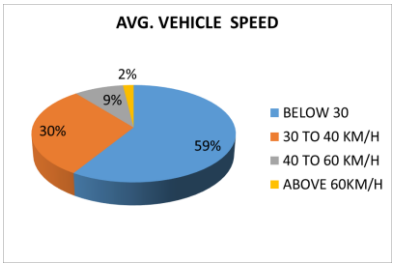
5.4 Daily Common Trips

It is observed that from the Fig. 5 56% persons from 270 samples are travelling 20 to 30 km of common distance on daily basis. There is a need of faster traveling access to reach the destination. Slow access may delay them to reach the destination. In such case the Rapid Transit System may prove as reliable source.

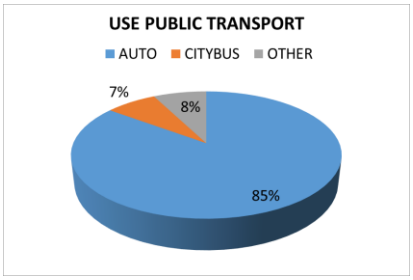


5.5 Average vehicle Speed

According to the survey of 270 local persons 59% persons are declaring the Average Vehicle Speed on this patch of road is below 30 km/hr. 30% persons declare the Average Vehicle Speed as between 30-40 km/hr. Traveler cannot move faster above 30 km/h that there is big need any rapid transit system.



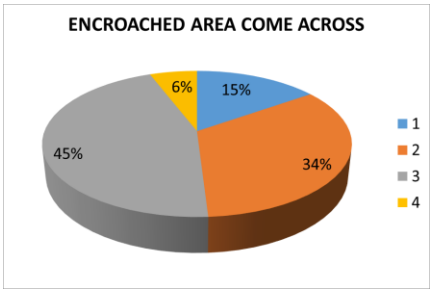
5.6 Use of Public Transport



There is only two type of public transport facility available at the study region one is auto rickshaw and second one is city bus. 80% persons are agree to use auto rickshaws as their daily public transport. Very few are using city buses.

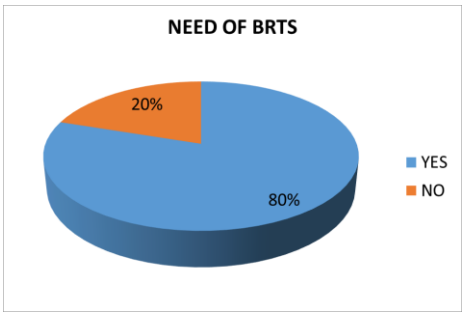
There is big need of cheap, faster and high capacity public transport facility to serve in this region.

5.7 Encroached Area come across



According to the survey of 270 local persons 45% persons are facing min three encroached areas during their daily trips across the study region. The vegetable market is the main encroached region where the parking facility is not available and due to that the haphazard parking takes place.

5.8 Need of BRTS



80% persons out of 270 are highly recommending the Bus Rapid Transit System to get started.
The other reasons behind the BRTS need are faster, safe, cheaper and traffic hassle free journey.
It is also noted that a BRTS bus is occupying the space similar to 4 four wheelers but BRTS can carry 50 persons a time where 4 four wheelers can carry max. 25 persons a time.

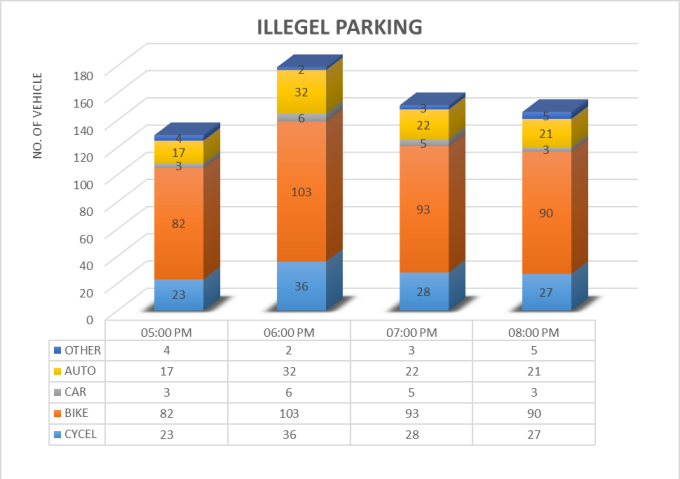
VI. LICENCE PLATE METHOD SURVEY

For the parking survey methods "License plate method" was adopted. The Registered number plates of on-street parked vehicles were noted down manually at one hour interval. The survey was conducted at a time between 5.00 p.m. to 9.00 p.m. for total 4 hours.

- This will give the data regarding the duration for which a particular vehicle was using the parking bay.
- This will help in calculating the parking charges as it is estimated based on the duration for which the vehicle was parked.

6.1 Illegal Parking

From the chart it's observed that the illegal parking is very high for that particular selected stretches. Here the data shows 4 hour's evening observation of illegal parking on that particular stretch. The peak illegal parking takes place at 6:00pm because of the vegetable market and the other reasons of high parking demands are closing time of offices and other nearby shops and schools. In the other 4 hour there are same trend in the paring demand.



	05:00 PM	06:00 PM	07:00 PM	08:00 PM
OTHER	4	2	3	5
AUTO	17	32	22	21
CAR	3	6	5	3
BIKE	82	103	93	90
CYCEL	23	36	28	27

VII. CONCLUSION

1. Suggestion for provision of fly over bridge for the particular patch which may lead to solve huge traffic problem in the Amroli.
2. It is assumed that above 60% of vehicle will directly move by fly over which will not be affected by traffic, market, etc.
3. For the better utilization of road the encroachment need to be clear. It will increase the road efficiency.
4. Because of haphazard development of area population of area increases day by day that road widening, over bridge, and remover encroachment to be suggested.
5. In study area the only public transport available is autorikshaw that may be replaced by B.R.T.S. as public transport.
6. B.R.T.S. is also helpful to decrease the heavy rush of autorikshaw on the road.
7. Market should be rehabilitate to the place where public have enough space to park their vehicles so that there is no chance of parking encroachment.

REFERENCES

[1] D Shoup, Cruising for Parking, Transport Policy, Traffic Engineering & Control,2006

[2] Kian AhmadiAzari; SulistyoArintono; Hussain Hamid; RizaAtiqO.K.Rahmat; (2012); Transport Policy; Elsevier Ltd.

[3] Faculty of Planning and Public Policy, FoPP, CEPT UNIVERSITY, AHMEDABAD, "*Developing a Framework for Ward Level Planning Mechanism: The Case of Pune", 2009*

[4] S Yousif, Purnawan, "On-street Parking: Effects on Traffic Congestion", 1999

[5] The Institute of Transportation Engineer's Manual of Transportation Studies, 2nd Edition, 2010

[6] Traffic Impact Analyses for Site Development, 2010

[7] Traffic Volume Count Survey, "License Plate Method Survey", IIT Bombay, 2011

[8] Regional Transport Office, Surat, "Data of Vehicular movement for Amroli Region", 2014-15

[9] Census of India, Demographic details of Surat Region, 2011

[10] Surat Municipal Corporation, Ward Maps, Transportation Study Maps, 2014

