

# A Study on Vehicular Movement Analysis of Some Specified Areas in the City Of Srinagar

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## ABSTRACT

As the Srinagar city is one of a beautiful city in the country with the growth of population the demand of transportation system has been in the greater amount. The prime element of a transportation system is to provide better traffic facility which should not involve congestion, accidents, vague traffic lights and unmannered parking on roads. Presently the Srinagar city faces all these challenges especially in some areas like Lal Chowk, Batamaloo, Pantha Chowk have huge rush of traffic throughout the day because of the reason the Lal chowk is not only commercial hub of city but the famous schools, colleges, government and private offices are located in this area, batamaloo has the largest bus stand in the city which connects the Srinagar to other rural areas of the Kashmir valley and Pantha Chowk connects the Srinagar with national highway-1 by which it connects with rest of India. so there are some factors to deal with transportation problem as follows regulation, planning, designing, enforcement and accident analysis. Through this paper, we will show the present scenario of roads, footpaths and traffic lights in these areas are not up to mark need to be emphasis by showing the statics of vehicle growth and forecasting for future and accident rate to locate the black spots which do not only help in planning but to improve traffic.

**Keywords:-**Srinagar, JandK bank, Parking, Lal chowk, Pantha Chowk, Batamaloo, PCU

## I. INTRODUCTION

The Srinagar is having 417 km<sup>2</sup> and having the population of around 1.19 lakhs as per 2011 census in which male comprises of 53% and 47% of the female population with the density of 4000 per km<sup>2</sup> and its largest city and summer capital of Jammu and Kashmir. It lies on the banks of river Jhelum, Indus tributary and dam lakes and the city are popular for shikaras, Mughal gardens, and waterfronts. Srinagar is called the Venice of the east because of its natural beauty and lakes which surrounds the Srinagar city. The rush for tourism is because of Mughals gardens formed by different Mughal kings. The city is served by numerous roadways like national highway 1A and national highway 1D. On the little outskirts of city international airport is located which is capable of carrying national and international flights and haj flights are also controlled from the airport [1]. As Srinagar city has particular areas like Lal Chowk, batamaloo, and Pantha Chowk is famous for schools, colleges, commercial hubs, and government and private offices, therefore, it is the big challenge for the mid-sized city like Srinagar that increases in the urbanization is directly proportional to the no. of price in vehicles. The main reason for traffic congestion, delays, accidents is due to an inappropriate provision of existing road networks, pathetic planning of traffic and roadway facilities. From the last decade, the Srinagar proves the sudden increase in private vehicle usage (four-wheeler and two-wheeler). The road users prefer private transport over the loose pathetic public transport that has broken the equilibrium distribution between these two which results in wastage of time, air pollution, congestion, noise pollution and unusual social

behaviour of people. Easy accessibility of bank loans has created the mess in the city especially in the described areas. The delayed construction of the flyover from 2013 is still going on has also diverted all the routes of these mentioned areas due to which there has been working traffic mess. As most of the footpaths are not available has created vulnerable situations for pedestrians. Parking lots and areas are missing or either not maintained well also which results in the on-street parking which in turn affects the mobility and speed. Traffic lights don't work properly and the idea of intelligent traffic lights is nowhere despite having 12.95 lakhs registered vehicles [2]. Four big issues that almost all unplanned cities share are

- Unavailability of resources to encounter planning.
- Lack of traffic education among stakeholders.
- Improper communication.
- Technological aspect [3].

## II. OBJECTIVE

The main objective of this research is to achieve and encounter the traffic-related issues in these areas (Lal Chowk, batamaloo and Pantha chowk) that deals with fast, easy and less congestion and minimum fuel utilisation and in addition to its construction of footpaths and enhance the road furniture, maintain the parking facilities and improve traffic lights to control the traffic properly.

### III. METHODOLOGY

In methodology all the streets going towards these areas are considered like traffic volume count, average speed, household survey, public questionnaire and vehicle record were generated from various sources. By collecting the data we can judge present conditions with different analysis because it is the essential tool for any research so that it could give appropriate results which can be taken to manage the better traffic planning.

#### A. Traffic Survey and Analysis

A traffic survey was taken out to recognize the peak hours from 8 am to 8 pm for 10 working days. It was identified that peak hours are 8:30 am to 10:30 am and 4:30 pm to 6:30 pm but it was seen that evening time is more congested having the traffic volume more as compared to morning traffic volume (PCU/h) because of the reason additional traffic is being added in these areas.

Table -1: Peak hour volume of traffic in PCU

Area	Morning hours 8:30 am to 10:30 am	
	volume	PCU
From delicate Toward lal chowk	3975	5363
From lalchowk Towards batamaloo	3696	6043
From zero bridge towards Pantha chowk	2425	3826

Table -2: Peak hour volume of traffic in PCU

Area	Evening hours 4:30 pm to 6:30 pm	
	volume	PCU
From lal chowk Toward delegate	4975	6266
From batamaloo Towards lalchowk	4322	6394
From Pantha chowk towards aerobridge	3937	5897

From the table 1 & 2 we find that the evening volume is more because in city the tippers and in opposite of Iqbal park there are several medical clinics of several doctors and private hospital people clearly bring their patients in private vehicles for comfort level and long leveled construction of 3.94 km flyover from Jahangir chowk to Rambagh has added more problem to vehicular movement, students from this area has to

go for tuitions from the same road towards parrypora which also get addition in evening hours and the carriageway width is not up to mark according to Indian road congress, so that it could not accommodate the whole volume, therefore, causes congestion and wastage of thousands of vehicle hours in these areas .

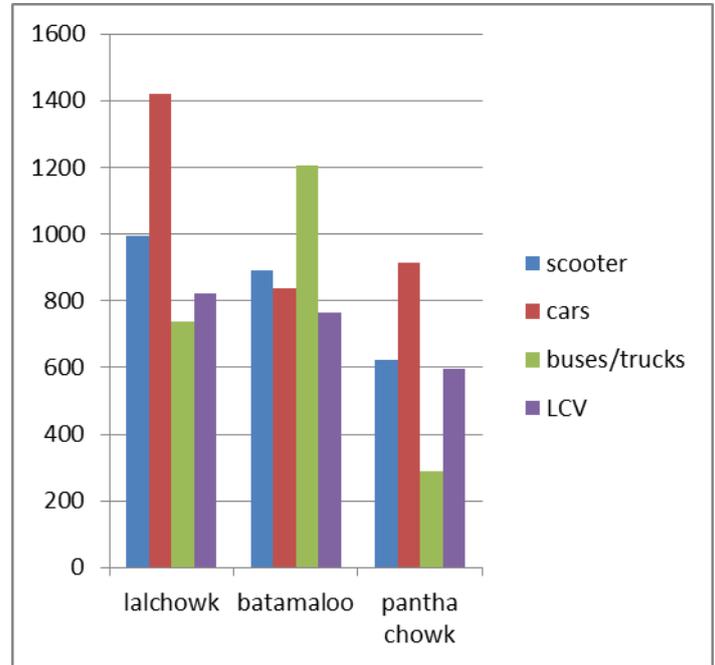


Chart -1: Morning peak hours 8:30 am to 10:30 am for individual class of vehicles

In chart 1 and 2, it shows the individual class of vehicles which indicates that most of the people in Srinagar city or coming from other adjacent areas to the city prefer mostly private vehicles as compared to public transport. This is the reason public transport is not so robust and efficient which causes congestion, an unusual social behavior of people towards the public transport and frequent stops by public transport buses in the city especially at Jahangir Chowk towards batamaloo, amira kadal to lauded hospital. Again here the issue comes forward off the inappropriate carriageway and pedestrians are forced to walk on the streets because of the reason street vendors have already occupied the footpaths on which the pedestrians can move. The role of jandk bank played an important role in enabling the lower-middle-class family to buy their own vehicle which categorically leads to the negligence of public transport. According to jandk bank sources, the car finance has reached more than 110 Crores many years ago.

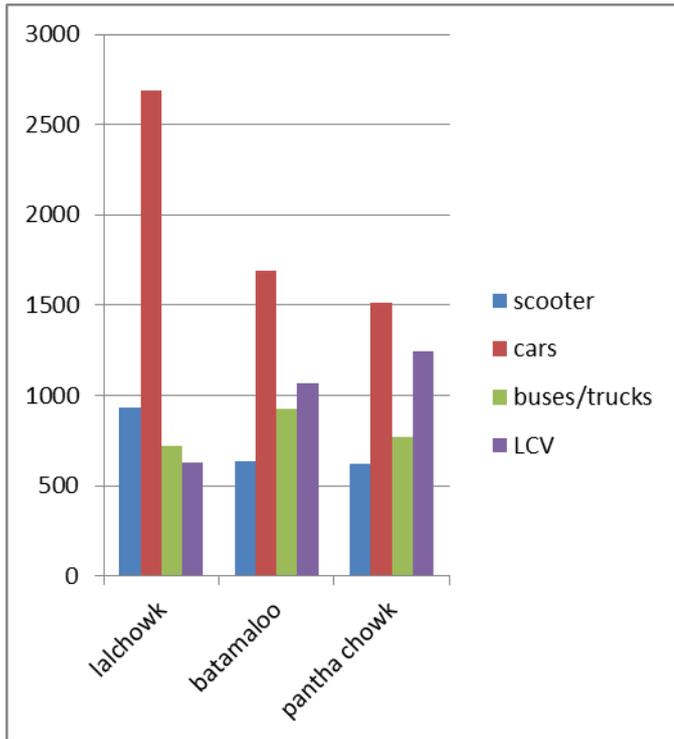


Chart -2: Evening peak hours 4:30 pm to 6:30 pm for individual class of vehicles

Table -3: Traffic Scenario (Vehicles Registration)[4]

Year	Vehicles registered	Increase in transport	% age increase in transport
2009-10	737581	69136	10.34 %
2010-2011	818093	80512	11.92 %
2011-2012	916898	98085	11.98 %
2012-2013	1044980	128082	12.28 %
2013-2014	1198023	153043	12.77 %
2014-2015	1294450	96427	7.44 %

Table 3 shows different vehicles registered from the 2009-2015 and also shows the percentage increase in transport in each year and is still increasing. This increase in transport in every year causes more problems to the vehicular movement as the carriageway available is same from the past years and there is no sign of right of way anywhere in these areas.

**B. Analysis Of Accident Record And Forecasting**

As per the police records obtained, we can manage to find out the accident statistics for the years 2011, 2012 and 2013 only. Which shows that there are fatal as well as nonfatal accidents within the city which indicate that increase in traffic and giving license to irresponsible persons without looking

physiological and psychological factors leads to more accidents not only in an existing situation but will keep on increasing.

Table -4: Statement Of Accidents In Srinagar City

Year	No. of accidents	Fatal	Non fatal
2011	489	75	510
2012	511	64	539
2013	471	59	476

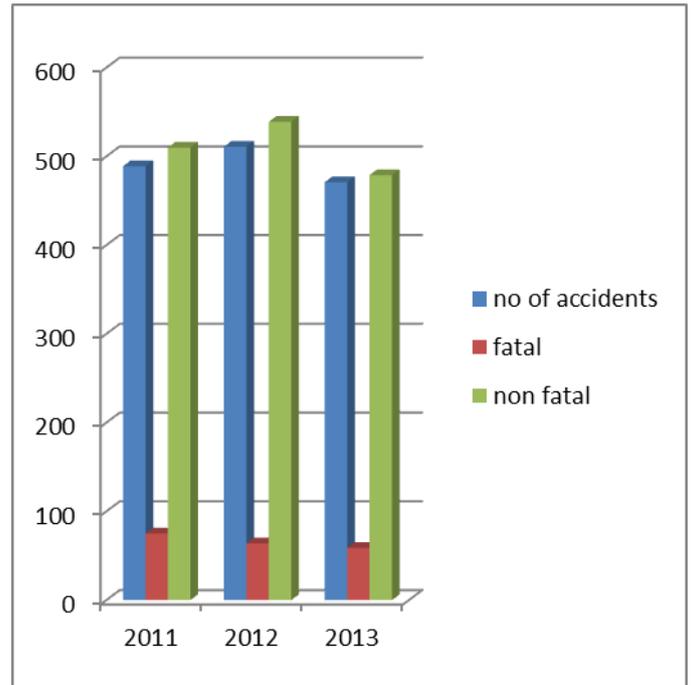


Chart -3: showing graphically the rate of accidents

so we use multiple linear regression methods to get the suitable analysis for future. The equation is as

$$Y=a+bX$$

Where,

$$b = \frac{\sum x_i y_i - n \bar{x} \bar{y}}{\sum x_i^2 - n \bar{x}^2}$$

And

$$a = \bar{y} - b \bar{x} [5]$$

therefore by using this formula for table 4, we could able to find out the different type of accidents in future years that will continue to happen if the curbs on private traffic will not impose an enhancement of roads and public transport will not be preference.

Table -5: Equation of multilinear regression for Accident type

Accident type	Equation
Fatal	Y= 16.96+0.10X

Non fatal	$Y = -251 + 1.55X$
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Table -6: Prediction Of Accident Statics

Year	Fatal	Non fatal	Total no
2017	218	2875	3093
2018	218	2876	3094
2019	218	2878	3096
2020	219	2880	3099
2021	219	2881	3100
2022	219	2883	3102
2023	219	2884	3103
2024	219	2886	3105
2025	220	2888	3108

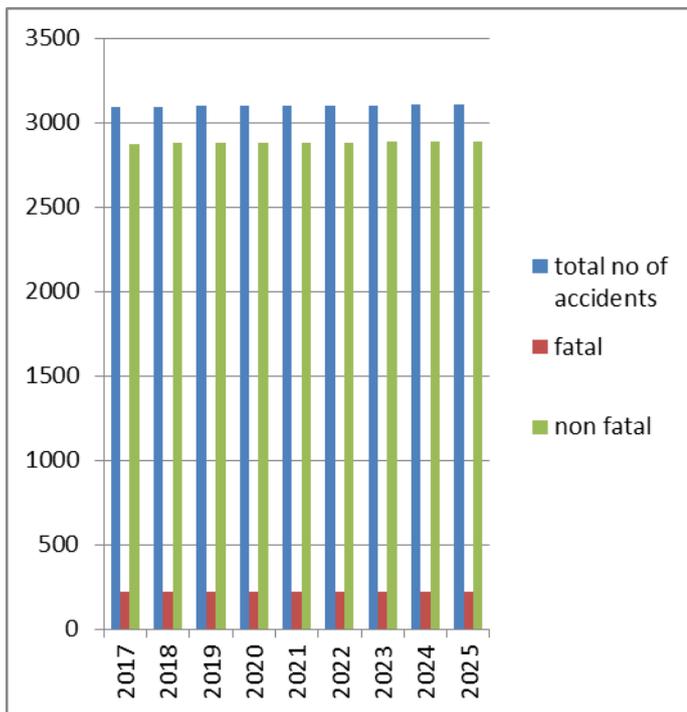


Chart -4: Future Estimate Of Accidents Up to 2025 In Srinagar City

#### IV. RESULTS AND DISCUSSION

1. By all these forecasts in accident and vehicle registered numbers that we calculated is really an alarming figure for the mid-sized city like Srinagar.

2. The areas like Lal chowk, Batamaloo, Pantha Chowk which was observed during the research shows different traffic volume at peak hours in evening and morning need some formulated plan.

3. As the number of vehicles is directly proportional to the no accidents results show a huge number of increment of accidents as well as vehicles in 2025 despite the fact that carriageways and footpaths are same and never developed since 2006.

4. Despite having the public transport available in these areas but we found that people are preferring private vehicles (two-wheelers and four wheeler) on the individual basis which causes more congestion in these areas.

#### V. CONCLUSIONS

1. Batamaloo bus stand should be relocated with the immediate effect.
2. Schools and colleges and other government offices should also be relocated from the Lal chowk area thus to acquire space for proper parking and space for street vendors.
3. The immediate cap should be imposed on car ownership, loan facilities provided by the jandk bank and laws for driving license given to the car owners should become tougher.
4. From the research it was found that frequent public transport is plying in these areas and people prefer them despite the fact that no of busses we found from the research are less as compared to private vehicles but people are willing to take public transport on the conditions if it will be given special attention like increase in no of buses and optimising routes to all these areas at minimum cost and minimum time.
5. The Lal chowk should be considered as "NO PARKING ZONE" as it is commercial hub of the Srinagar city.
6. There should be the perfect organization for the traffic planning, traffic obedience, environmental protection and traffic safety as we found from our research there is lack of coordination between public works department, traffic police and other traffic planners in Srinagar city.
7. Instead of giving preference to flyovers and private vehicle ownership government should promote more and more public transport system in the city.

#### REFERENCES

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