Study of Traffic Congestion in Lucknow

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Abstract - *Traffic congestion is one of the major problems that are faced in many of the Indian cities along with other countries. Traffic congestion has a negative impact on economy, the environment as well as the overall quality of life. Traffic jamming, road accidents, increase in pollution levels are some of the common traits that can be observed in. Therefore, it is high time to effectively manage the traffic congestion problem. This paper describes the identification of problem or issues that cause traffic congestion, identifying at what time of the day traffic congest the most, which zones has the highest traffic and basing on the findings, necessary suggestions and recommendation are provided so as to bring about improvement in traffic congestion in Lucknow.*

*Key Words***:** Traffic congestion, Urban transportation system, congestion, traffic, vehicles, public transport, infrastructures.

1. INTRODUCTION

Traffic congestion is when vehicles travel slower, trip takes longer time, and increased queuing of the vehicles. They are also known as traffic jam. With affordability and higher acquiring power, it has become easy for a common person to own a vehicle. The number of cars that has sold last year in India was much higher than cars sold 20 years back. Though this has led to a comfortable lifestyle, many commuters are affected by traffic congestion every day which has led to lose of valuable time and time is money. When the number of vehicles exceeds the capacity of the road, traffic congestion occurs. In most of the Indian cities traffic congestion is a major problem. Individual incidents such as accidents on the road or road being close or bad road layouts or sudden braking of a car in a smooth flow of heavy traffic may cause traffic jams.

Therefore, there is a need to manage traffic in a smart way. Managing of traffic congestion can be a combination of physical infrastructure, new smart technologies and new ways of thinking. Smart traffic control systems, smart parking and smart transportation have gained a lot of interest. These smart traffic control systems use advanced technologies such as Smart traffic lights or Intelligent traffic lights with cameras and wireless sensor network, big data, Automatic Fare Collection System/cashless payment, Smart Parking System/ Parking Mobile App, image processing, computer vision, intelligent controls and artificial intelligence to make traffic routing decisions and a task is typically done by traffic officers. Other application areas include: surveillance, management of freeway and arterial networks, intersection traffic light control, congestion and incident management.

1.1 Area of Study

Lucknow city was taken as an area for the study. It was divided into six zones

1.   Zone 1: Mubarakpur
2.   Zone 2: Jankipuram
3.   Zone 3: Indira Nagar
4.   Zone 4: Gomti Nagar
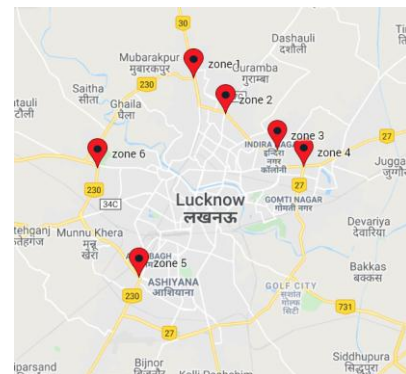5.   Zone 5: Alambagh
6.   Zone 6: Dubagga

Fig -1: Area of study (six zones)

1.2 Objective of the Study

The main objective of the study includes
1.   To identify during what time of the day traffic congest the most
2.   Which zone has the highest traffic
3.   To identify what is the causes
4.   To suggest measure for the improvement of traffic congestion in Lucknow.

2. METHODOLOGY

The methodology used to study the traffic congestion in Lucknow is observation through google map traffic. The tools which were used to collect data is Internet and Excel. Data were collected from the month of 'December 2019', 'January 2020' and 'February 2020' i.e., 80 days for 16 hours through the observation of google maps traffic.

2.1 Levels of traffic congestion

The levels of traffic congestion were taken as Low, Moderate and High. The green lines are taken as Low (L), orange lines are taken as Moderate (M) and the red lines are taken as High (H).
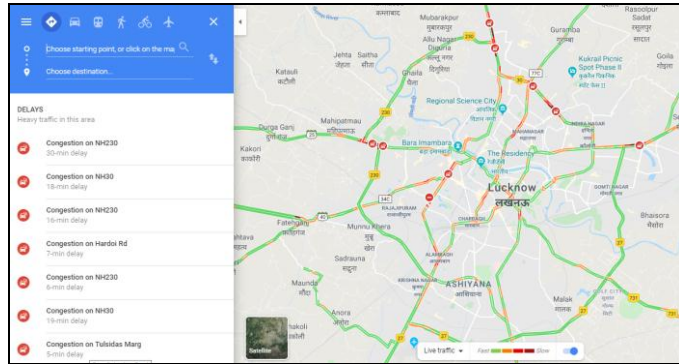

Fig- 2: Shows when traffic is Low, Moderate and High

3. ANALYSIS AND INTERPRETATION

Keeping in view the objectives of the study and the nature of the data, the data collected were counted and display the results in form of tables and charts.

Analysis and interpretation of data are presented in a tabular form as follows:

Table -1 Shows the overall data collection of traffic congestion in Lucknow.

Table -2 Shows the overall data collection of traffic congestion in Lucknow for separate Zone.

Table -3 Shows each zone with hourly distribution of traffic and with highest percentage

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Table -1 Shows the overall data collection of traffic congestion in Lucknow.

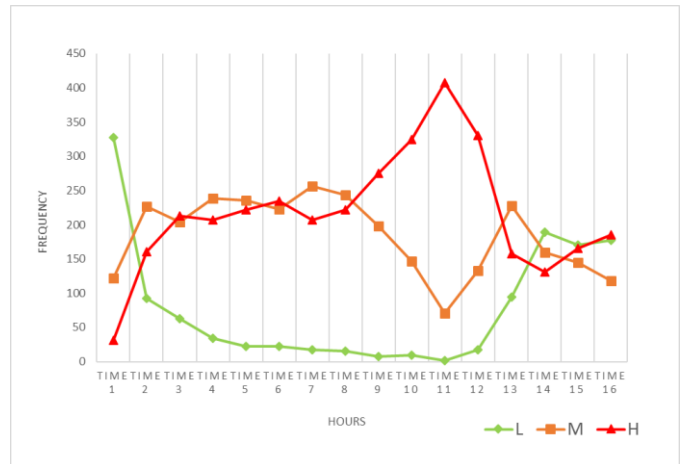| Status	Time1	Time2	Time3	Time4	Time5	Time6	Time7	Time8	Time9	Time 10	Time 11	Time 12	Time 13	Time 14	Time 15	Time 16
	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 AM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
L	327	92	63	34	22	22	17	15	7	9	2	17	94	189	170	177
M	122	227	204	239	236	223	256	243	198	147	71	133	228	160	145	118
H	31	161	213	207	222	235	207	222	275	324	407	330	158	131	165	185
total	480															

Chart -1: The overall data collection shown in a graph form

Table -2 Shows the overall data collection of traffic congestion in Lucknow for separate Zone

Table -3 Shows each zone with hourly distribution of traffic and with highest percentage

Hours		Zone1 (Mubarakpur)		Zone 2 (Jankipuram)		Zone 3 (Indira Nagar)		Zone 4 (Gomti Nagar)		Zone 5 (Alambagh)		Zone 6 (Dubagga)	
Time 1	8:00 am	68.75%	L	60%	L	86.25%	L	71.25%	L	61.25%	L	61.25%	L
Time 2	9:00 am	56.25%	M	45%	M	43%	M	55%	M	53.75%	M	52.50%	H
Time 3	10:00 am	61.25%	M	48.75%	M	37.50%	H	47.50%	H	60%	H	60%	H
Time 4	11:00 am	70%	M	55%	H	63.75%	M	65%	M	63.75%	H	73.75%	H
Time 5	12:00 pm	66.25%	M	65%	H	78.75%	M	65%	M	70%	H	75%	H
Time 6	1:00 pm	61.25%	M	60%	H	73.75%	M	57.50%	M	82.50%	H	65%	H
Time 7	2:00 pm	71.25%	M	52.50%	H	77.50%	M	61.25%	M	75%	H	58.75%	H
Time 8	3:00 pm	61.25%	M	53.75%	H	72.50%	H	55%	M	82.50%	H	52.50%	M
Time 9	4:00 pm	61.25%	H	72.50%	H	70%	M	52.50%	H	80%	H	50%	H
Time 10	5:00 pm	62.50%	H	90%	H	53.75%	H	71.25%	H	86.25%	H	52.50%	H
Time 11	6:00 pm	80%	H	97.50%	H	83.75%	H	92.50%	H	92.50%	H	62.50%	H
Time 12	7:00 pm	57.50%	H	87.50%	H	72.50%	H	77.50%	H	81.25%	H	51.25%	M
Time 13	8:00 pm	42.50%	M	55%	H	56.25%	M	61.25%	M	57.50%	H	46.25%	L
Time 14	9:00 pm	52.50%	L	51.25%	H	62.50%	L	60%	H	81.25%	H	80%	L
Time 15	10:00 pm	46.25%	L	46.25%	H	58.75%	L	57.50%	H	83.75%	L	82.50%	L
Time 16	11:00 pm	46.25%	M	58.75%	H	67.50%	L	88.75%	H	56.25%	H	85%	L
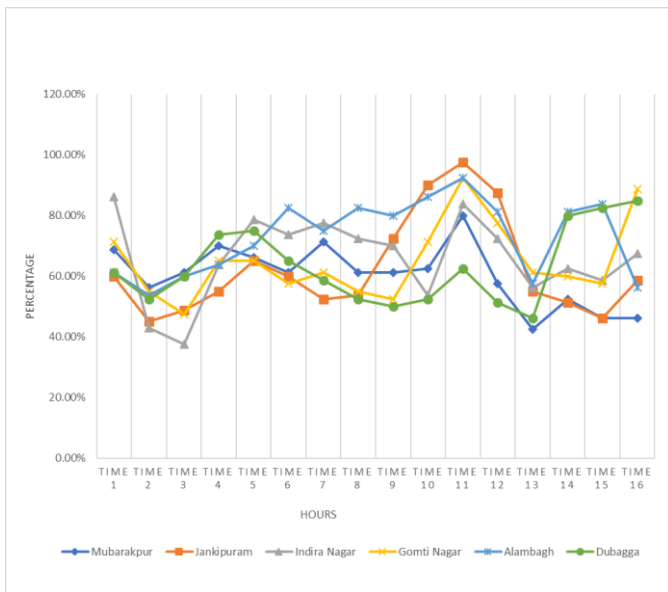
Chart -2: Hourly distribution of traffic with highest percentage shown in graph form.

4. FINDINGS OF THE STUDY

The major finding of the study is presented as follows;

4.1 FINDINGS RELATED TO AT WHAT TIME OF THE DAY TRAFFIC CONGEST THE MOST

The study revealed that traffic congested the most at 11:00 AM in the morning and 6:00 PM in the evening.

Table -4 AM and PM Peak Hour

Descriptor	Mubarakpur		Jankipuram		Indra Nagar		Gomti Nagar		Alambagh		Dubagga	
		time		time		Time		time		time		time
AM Peak Hour	70%	11:00	55%	11:00	37.50%	10:00	47.5 0%	10:00	63.7 5%	11:00	73.7 5%	11:00
PM Peak Hour	80%	6:00	97.5 0%	6:00	83.7 5%	6:00	92.5 0%	6:00	92.5 0%	6:00	62.5 0%	6:00

4.2 FINDINGS RELATED TO WHICH ZONE HAS THE HIGHEST TRAFFIC

The study revealed that Zone 5 (Alambagh) has the highest traffic with 87.50% followed by Zone 2 (Jankipuram) with 81.25%, Zone 6 (Dubagga) with 56.26%, Zone 4 (Gomti Nagar) with 43.75%, Zone 1 (Mubarakpur) with 25% and Zone 3 (Indira Nagar) with 18.75%.

Chart -3: Shows which Zone has the highest traffic

4.3 FINDINGS RELATED TO THE CAUSES OR REASONS FOR TRAFFIC CONGESTION IN LUCKNOW

The reasons for Traffic congestion are mention below:

1.   No traffic light and signals or no proper functioning of traffic light and signal. Even though there's a proper working of traffic light and signal nobody's follows them this is the main causes of traffic congestion and Improper traffic management by the traffic police.

2.   Some driving habits cause more congestion than others like some drivers illegally enter their vehicles at intersection and driving on wrong side of the road. Vehicles crawl along looking for passengers, and even stop on the road to drop or pick up the passenger which also give rise to congestion.

3.   Lack of parking place at the intersection. No proper bus/taxi stops are constructed in the area and there's lots of on street parking of public transport which are using up the lanes and that causes traffic congestion

4.   Illegal and unauthorized shop on pathways and even on the roads.

5.   Footpath are not properly built or lack of proper facilities for people in footpath. Some zones don't have a separate footpath which led people to walk on the road and make more congestion.

6.   Fail to mark traffic lanes and zebra crossing. Some marking of traffic lanes and zebra crossing has faded away in some zones.

4.3.1 Images of traffic congestion in six zones

Fig- 6: Zone 4 Saheed Path Chowk (Gomti Nagar)

Fig -3: Zone 1 Bhitauli Crossing (Mubarakpur)

Fig- 4: Zone 2 Tedhi Puliya Chauraha (Jankipuram)

Fig- 7: Zone 5 Avadh Chauraha (Alambagh)

Fig- 8: Zone 6 Dugga Bagh Chauraha (Dubagga)

Fig- 5: Zone 3 Munshipulia Chauraha (Indira Nagar)

4.4 SUGGESTIONS FOR IMPROVEMENT OF TRAFFIC CONGESTION IN LUCKNOW

The following steps can be taken to reduce the traffic congestions,

1. Illegal parking on the side of the road should be strictly prohibited.

2. Shops at pathways and on the road should be removed.

3. Proper pathways should be created.

4. Increase more buses

5. Marking of traffic road lines and zebra crossing lines should be clearly visible and should be preferably light reflective, so that they will be visible during night also or install "smart" pedestrian crosswalk which light up when people cross the road at night or in foggy and rainy conditions.

6. Traffic lights and signals should be installed and the broken traffic lights should be repair properly.

7. Strictly follow traffic rules.

5. CONCLUSION

Basing on the findings of the study we can conclude that, in order to solve traffic congestion in Lucknow, the first and foremost thing to do is to strictly follow traffic rules, prohibit illegal parking, shops on pathways and roads to be removed, create proper pathways, increase public transport and also traffic road lines and zebra crossing lines to be mark properly.

ACKNOWLEDGEMENT

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