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Urban Transport and Road Accident in India – An Overview

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Abstract

The rapid urbanization and revolution in the automobile industry and liberalized economy has led to a tremendous increase in the vehicle ownership levels. This has resulted in changing transport characteristics on the road network and increasing the road accidents. An attempt is made in this to analyze the urbanization and changing traffic and transport composition trends. Further, the impact of changing traffic composition trends and emerging issues thereof are discussed. The scheme of this paper is to examine the extent of the problems and suggests ways and mean to improve the situation.

Key words: ***Urbanization, traffic, vehicles, road and accidents.***

INTRODUCTION

Industrialization and urbanization are two of the most important features of the modern civilization. Industrialization has brought in the need to reap the benefits of economies of scale grouping together of many people, raw material and machinery with the present high level of technology, innovation and specialization, urbanization, on a large scale is inevitable. Urbanization provides the necessary infrastructure for trade, commerce and industry. It also provides better living standards in terms of housing, educational facilities, health care, recreational and scope for several intellect al pursuits. Urbanization also attracts the surplus labour from rural areas and such labour utilizes in running the various services, which are vital to the existence of towns and cities.

Indian is one of the emerging economies in the world with 60% of the country's GDP coming from the urban areas, known as engines of future growth and transportation system became their lifeline. If the cities are to be developed and competitive, they must provide efficient access and mobility to for citizens. Thus, transportation plays a vital role in promoting economic growth and prosperity of any country. In this context, the importance of intra-urban transportation is of paramount importance as trade and social integration rely on the conveyance of both people and goods. The road transportation sector contributes a share of 4.5% to India's GDP with a growth rate of 9.5% per annum, much higher than the over all growth rate of 6.5% GDP.

The successive technological improvements in transportation hardware in respect of speed carrying capacity and convenience have facilitated the process of urbanization. While rapid strides in transportation technology have facilitated the expansion of the city and increase in the size of population, there have been certain undesirable consequences viz., heavy traffic, pressure on the road network, traffic delays, increasing fatalities on the roads etc., management of traffic in cities and towns is emerging as one of the problem areas in urban management.

An attempt is made in this paper that first reviews the trends of urbanization and highlighted the growth of metropolitan cities in India. Further, the study focused on the growth of urban transportation and also discussed the consequences with transportation growth. It primarily focuses on those areas that are

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important from a policy point of view. This followed by a discussion on road accidents and highlighted the causes of accidents in Inida. Building on this background, this paper proposes policy measures to improve the urban transportation in India. The study is based on the secondary data. The data available in various public and private publications have been used to understand the existing state of affairs. A few discussions have been held with transportation officials to gain insights into the problems at the operational level.

URBANISATION IN IDIA

According to the 2011 census (Provisional), India has a population of 1210 million with approximately 31% or 377 million people living in urban areas. As a result of the liberalization policies adopted by the Government of India is expected to increase the share of the urban population may increase to about 40 percent of the total population by the year 2021. In advanced countries, the rate of growth of urbanization is said to be more than 75%. The urban entities of the third world too are showing tremendous growth vis-a-vis the population. Though India is essentially a rural oriented country, the urban population has been growing at a rapid rate, as can be seen from the table.

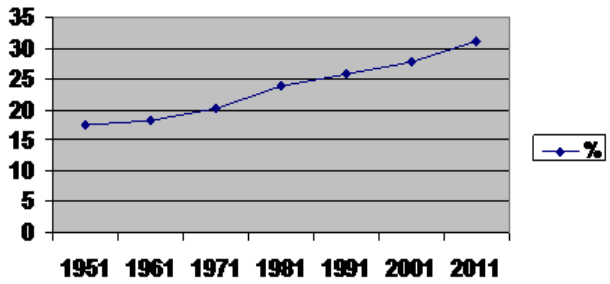
Table – I: Growth of Urban Population in India

Year	Total Population (m)	Urban Population (m)	%of urban Population	No. Of metropolitan cities
1951	350	62	17.62	5
1961	425	78	18.26	7
1971	529	107	20.22	9
1981	685	159	23.73	12
1991	846	218	25.7	23
2001	1027	285	27.8	35
2011	1210	377	31.16	53

Sources: Census Reports of India 2001 and India Development Report 1999-2000.

By 1971 almost 20% of the country's population lived in the urban areas and by 1991 a fourth of Indian population became urban (Chart 1). By 2001 it registered an additional growth of 2 percent. According to the provisional data released by the census, India 2011 indicate that the level of urban population increased from 27.8 percent in 2001 to 31.16 percent in 2011. This analysis shows that there is a remarkable growth in urban population over a period of last 70 years. For the first time since Independence, the absolute increase in population is more in urban areas that in rural areas.

Chart-1: Growth of Urban Population



Among the notable factors responsible for the increased urbanization area, industrialization, the rise in the employment, growth of trade and commerce, failure of Agrarian economy to support rural workforce leading to migration, migration of students and their families to avail urban educational facilities.

GROWTH OF MIILION PLUS CITIES

Literally, the word metropolis means a mother city, a meaning no longer holding any significance, though it does mean a dominant or a large city. Generally metropolitan cities also called million plus cities. The following table 2 presents the increasing number of million plus cities in India. Over 50% of the population of these metros lives in the six giant conglomerate- Mumbai (16.3 million), Calcutta (13.2 million), Delhi (12.8 million), Chennai (6.5 million), Bangalore (5.7 million), and Hyderabad (5.6 millions).

Table 2: Trends in the Growth of Metropolitan Cities in India

Year	No. of Metropolitan Cities	Population in Millions	Average population in millions
1951	5	11.75	2.35
1961	7	18.10	2.59
1971	9	27.83	3.09
1981	12	42.12	3.51
1991	23	70.66	3.07
2001	35	107.88	3.08
2011	53	160.70	3.11

Source: Census *of India, Reports: 2011.*

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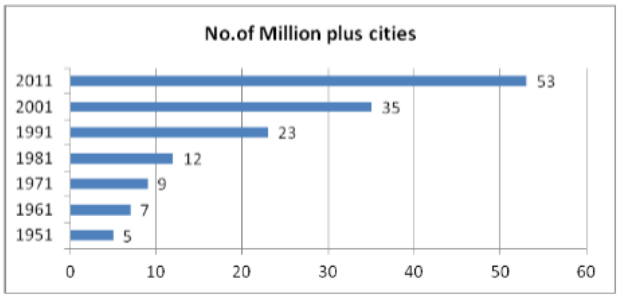
Chart-2: Number of Million Plus Cities in India



The table and chart reveals that Indian metropolitan cities have witnessed tremendous growth in urbanization since independence from 1951 to 2011; the number of metropolitan cities has increased from 5 to 35 in 2001 and 53 by 2011. The 60 or more metropolitan cities are projected to be added by 2021. During the last decade (2001-2011) 18 more million plus cities have been added. The total population of these million plus cities is 160.70 million. The rapid growth of urbanization and increasing the number of million plus cities causes for increases the strength of motor vehicles, which became the challenging job for public administrators to the management of traffic..

TRANSPORT GROWTH

Urbanization and transport growth are mutually dependent factors. As urbanization increases the strength of the transport is bound to rise. Transport demand in most urban areas has been increased substantially, due to increases in urban population. The total road length in India had also increased significantly from 3.99 lakh km as in 1951 to 42.36 lakh km as in 2015 Despite increases the road length, investments in road infrastructure, plans for land use and transport development, all face the problem of congestion, traffic accidents and air pollution and the problems continue to grow. Indian cities of all sizes are facing the crisis of urban transport.

Contemporary urban life in India is throwing many challenges to its Public Administration, its Policymaking, and law enforcement. These have become formidable concerns of modern public administration in India. One such concern, posing a threat to the security of urban life, is the remarkable increase in the vehicular population in urban areas. The following table presents the growth of vehicular population in India.

Table –3: Total Number of Registered Vehicles and density per Km 1951 - 2008

Year	Total Vehicles (000)	% Of Growth	Total Road length (KM)	Vehicle density per Km
1951	306	--	3.99,942	0.76
1961	665	117.32	5,24,478	1.26
1971	1865	180.45	11,88,728	1.56
1981	5291	183.69	14.91,873	3.54
1991	21,374	303.96	19,83,867	10.77
2001	54,991	157.27	33,16,078	16.58
2008	89.618	62.96	42,36,429	21.15
2015	210,023	120,410	54,72,144	26.05

Sources: 2015 Reports of Ministry of Road Transport and Highways, Govt., of India.

Thus, it can be noticed that the growth of vehicular population has been slow in the initial decades, rising in the eighties and acquiring phenomenal spread in the last 6-7 years. Registered vehicles in 1951 are 306 thousand, which rose to 54.991 thousand by 2001 and by 2015 the strength rose to more than 210 thousand. It means a rise of 686 times. The density of vehicles per km was 0.76 in 1951 rose to 26.05 by 2015. The impact of Liberalization in the wake of globalizations since 1990's had significantly added to this growth. Further, the study notices that the percentage of mass transportation is negligible. The rapid growth in motor vehicles has also led to the traffic congestion. The following table presents the growth of different mode of vehicles in India.

Table-4: Mode of Transportation growth in India since 1951.

(000)

Year	2 Wheelers	Cars/jeeps/ Taxis	Buses	Goods Vehicles	Others	Total
1951	27	159	34	82	4	306
1961	88	310	57	168	42	665
1971	576	682	94	343	170	1865
1981	2618	1160	162	554	897	5391
1991	14,200	2954	331	1356	2533	21374
2001	38,556	7058	634	2948	5795	54,991
2008	64,743	11,526	992	4436	7921	89,618
2015	154.298	28.611	1971	9344	15,799	210.023

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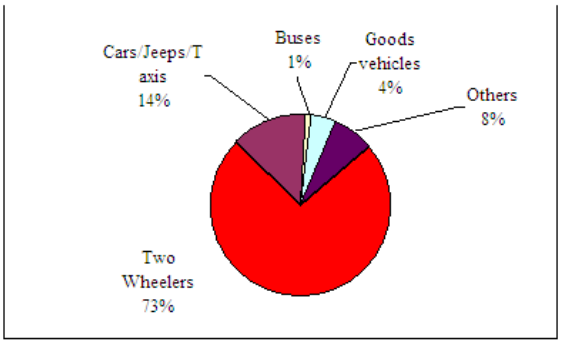
Chart-3: Share of Vehicles in Total Strength during 2015



Urban transport in Indian cities is heterogeneous, reflecting the heterogeneity in the socio-economic and land use pattern. It is dominated by walking trips, non-motorized modes such as bicycles, auto rickshaws and depending on the size of the city, motorized para-transit and public transport. Above table reveals that two wheelers occupy major portion i.e., 73 percent in the total strength of vehicles in India, followed by Cars/Jeeps/Taxis (14%), another mode of vehicles and Goods vehicles (4%). Public Transport occupies very meager strength, i.e., only 1 %. In absence of Public Transport the demand for Auto's and private taxi's is on the increase in the cities. However, any measures to control it require an efficient Public Transport system. Further, it is suggested that the authorities may exercise control on registration of new motor vehicles, especially that of two wheelers, if the problem has to reduce.

Vehicle population in Metropolitan Cities

Amongst the 48 reporting Million-Plus Cities, The number of total registered vehicles upto 31st March, 2015 in respect of these Cities was 662.44 lakhs. Of these, Delhi (88.51 lakhs) recorded the highest number of registered motor vehicles, followed by Bengaluru (55.60 lakh), Chennai (49.34 lakh), Ahmedabad (34.20 lakhs), Greater Mumbai (25.71 lakhs) and Surat (24.59 lakh) and in Hyderabad City (23.69 lakhs). These six cities, excluding Hyderabad accounted for 41.96% of the total registered vehicles of the reported Million Plus Cities during the period 2014-15. Kannur (1.88 lakhs) reported the lowest number of registered motor vehicles amongst reporting Million Plus Cities in India during the period 2014-15.

To sum up, the growth of the cities, the location of the commerce, business, educational institutions and administrative organizations have influenced the growth, nature, volume and directions of the traffic in urban areas in India.

It may be observed that, there is a steep rise in the increase of the private transport system as compared to the public transport system. Increase in two and three wheelers and cars substantiates this observation. Such an increase has come to pose several challenges to the traffic administration. The traffic congestion has aggravated. Air pollution has reached unmanageable limits. Further, noise pollution has also as increased to a considerable extent. Besides, consumption of petrol is causing imbalances in the management physical administration. Efforts may be made by the concerned authorities to see that the individual mode of transport must be reduced while the future road network will enable the use of Public Transport in a big way.

ROAD ACCIDENTS

Expansion of road network, motorization and urbanization in the country has been accompanied by a rise in road accidents leading to road traffic injuries and fatalities as a major public health concern. Today road traffic injuries are one of the leading causes of deaths, disabilities and hospitalizations with severe socioeconomic costs across the world. According to the WHO global status report on road safety over 3000 people die on the world's roads every day. Tens of million people are injured or disabled every year. Nearly 1.17 million deaths occur each year worldwide due to road accidents, if trends continue unabated deaths will rise to an estimated 2.4 million a year by 2030. The majority of these deaths, over 90 percent occurs in low-income and middle-income group countries, which have only 48% of the world's registered vehicles. Sixty-five percent of deaths involve pedestrians and 35 percent of pedestrian deaths

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are children. Over 10 million people are crippled or injured each year. The majority of road crash victims (injuries and fatalities) in developing countries are not the motor vehicle occupants, but pedestrians, motorcyclists, bicyclists and non-motor vehicles (NMV) occupants. India is no exception to this situation. The following table presents the rate of road accidents in India.

Table-5: Decadal Growth of Road Accidents from1971 to 2011.

Year	No.of Road Accidents (000)	No.of persons killed	No.of persons injured
1971	120.2	14.5	70.1
1981	161.2	28.4	114.0
1991	293.4	56.4	255.0
2001	405.6	80.9	405.2
2011	497.6	92.0	511.3

The table explains that road accident rate have been increasing every decade. In four decades, almost three times increased the rate of accidents.

Table-6: Road Accidents in India from 2011 -2015.

Year	No. of Accidents		No. of Persons		No. of persons killed per 100 accidents	Road accidents per lakh population
	Total	Fatal	Killed	Injured		
2011	4,97,686	1,21,618(24.4)	1,42,485	5,11,394	28.6	41.1
2012	4,90,383	1,23,093 (25.1)	1,38,258	5,09,667	28.2	40.6
2013	4,86,476	1,22,589 (25.2)	1,37,572	4,94,893	28.3	39.8
2014	4,89,400	1,25,828 (25.7)	1,39,671	4,93,474	28.5	39.5
2015	5,01,423	1,31,726(26.3)	1,46,133	5,00,279	29.1	40.0
Accidents in Rural & Urban areas						
Urban	2,31,894 (46.2)	50,959 (38.7)	56,978(39.0)	2,04,545 (40.9)		
Rural	2,69,529 (53.8)	80,767 (61.3)	89,155 (61.0)	2,95,734 (59.1)		

Source: road Accidents 2015 Report: Ministry of Road Transport and Highways, Govt., of India.

The table shows that Road accidents have become the single largest threat to human life in the urban areas. Approximately 1.40 lakh people are killed in road accidents and 5.1 million meet with serious injuries every year in India, causing an annual social, economic loss of Rs.55, 000 crores ($550 billion).

An analysis of road accidents in urban and rural areas for the calendar year 2015 reveals that rural areas are more prone to accidents. The total number of road accidents in urban areas was lower (2,31,894) as compared to the number of accidents in rural areas (2,69,529). The percentage share of accidents in rural areas and urban areas were 53.8 and 46.2 respectively in total number of accidents in the country.

Accidents per ten thousand vehicles are available up to the end of the 2006 only. The average road accidents per ten thousand vehicles have consistently declined over the year and fallen to about 51 in 2006. Further, the study analyses that during 2008 one accident took place for every 185 vehicles and for every 747-vehicles one person got killed. Every hour almost 8 persons are killed on Indian roads. Following table presents the share of vehicles in road accidents.

Table-7: Share of different vehicle in total Road Accidents (2015)

	Two Wheeler	Autos	Cars	Buses	Trucks/ Tempos/ Tracters etc.	Other MVs	Other slow vehicles/ Objects*
Accidents	21.8	7.5	20.7	9.0	23.4	9.1	8.5
Fatal	16.9	4.6	20.0	9.8	30.3	11.1	10.2
Killed	16.1	4.8	17.7	1.04	29.9	11.4	9.7
Injured	19.4	8.4	19.5	12.8	22.7	9.5	7.7

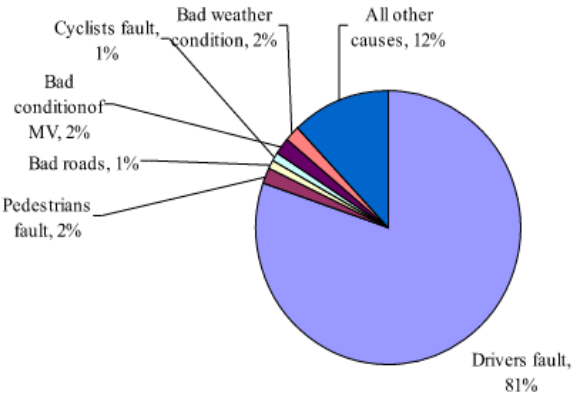
* Other vehicles/Objects include slow moving vehicles like Carts, Cycles, Rickshaws and pedestrians.

The tables reveal that Motorized vehicles accounts for 91.5% of the total road accidents while non motorized vehicles and other objects accounted for a small portion of 8.5% in the total number of accidents in the year of 2008. Among the vehicles category Trucks and Tempos etc., accounted for 23.4%, followed by the Cars, Two wheelers, Buses and autos. However, trucks and tempos category vehicles accounted for 30% of the persons killed, followed by Cars, Two wheelers and Buses.

CAUSES FOR ROAD ACCIDENTS

Following chart presents the causes of accidents during the year 2008.

Chart-5: Causes of Road Accidents in India during 2015.



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The analysis of accidents by causes shows that the drivers' fault is the single most important factor responsible for accidents. Drivers' fault accounted for about 81% of total road accidents during 2015. It appears that lack of education and proper training to the drivers is the causes for such road accidents. The fault of the cyclist and that of the pedestrian appears to be of marginal consequence accounting for about 2-3% of the accidents. The accidents caused due to defects in the motor vehicles also accounted for 2% of the total road accidents. Lack of road safety strategies and allocation of funds for implementation are vital reasons for increasing road accidents in the country.

Above statistics also are indicating that negligent road-user behavior is the main factor the road accidents and a contributing factor in about 81 per cent of the cases. Efforts may be made by the transport authorities that the stringent action against fault drivers may be taken to reduce accidents.

To sum up, based on the above discussions the study would like to focus some of the problems of urban transport in India.

- Increasing journey timings to automobiles due to the heavy traffic densities on the road network.
- Lack of parking space and facilities to vehicles resulting in reduced access.
- Due to the absence of public transportation system rapid increasing of personalized vehicles in Indian cities.
- Mixing up of distance traffic with local traffic due to non availability of alternative routes.
- With the increase in the sprawl of the city, average trip lengths would naturally increase.
- The share of personalized modes, especially of two wheelers have gone up leaps and bounds clocking 12% per annum in the past two decades, while public transport has generally dwindled. Some public transport services have been even pushed out of business. Consequently, street congestion has dramatically increased and overall speeds on major corridors have dropped.
- Professionalism in driver training is absent, the proportion of untrained drivers is continually on the rise and a positive driving culture is lacking.

CONCLUSION

With population growth, cities have tended to sprawl and increased travel distances have made non-motorized modes impossible to use. The Traffic pattern on Indian Roads is highly heterogeneous in nature. There are around 90 million vehicles in India, which are growing at the rate of 15-17% annually. With the absence of urban transport increased use of personal vehicles has led to increased traffic accidents.

Indian traffic and transport system has a number of drawbacks which causes problems of delays, unsafe, pollution and inadequate parking. Average number of Road accidents per ten thousand of vehicles are around 51, which is one of the highest in the world. Road infrastructure in India is highly inadequate both in quantum and quality. In spite of many measures have been taken by the Government to streamline the traffic problems, but, the situation continues till today.

SUGGESTIONS

The researcher likes to put forward the suggestion that the following measures may go a long way in strengthening the transportation sustem.

The data and analysis of the study indicate that Mass Transport will be the only way forward. Be it in the form of Buses, BRT's, LRT or Metro Systems. Therefore, efforts may be made by the Government to improve the mass transport system in urban areas especially in million plus cities.

Many cities in India don't have an effective public transportation system. Before we embark on the implementation of larger mass transport systems, there must be an effort to first ensure that bus systems are in place and the city bus index stands satisfied.

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Lack of road safety strategies and allocation of funds for implementation are vital reasons for increasing road accidents in the country. In view of this, it is suggested to prepare a road safety strategy, policy and separate funds should be allocated for implementation of the policy.

It suggests that since the ultimate objective is to provide adequate and efficient transport system, there is a need to have a coordinating authority with the assigned role of coordinating the operations of various modes.

The study suggested that there is need to create a national level institute that would build up a database for use in planning, research, training, etc in the field of urban transport is brought out in the National Urban Transport Policy also.

The National Urban Transport Policy recognizes that the current structure of governance in the transport sector does not provide for the right co-ordination mechanisms to deal with urban transport problems. The study suggested to setting up of Unified Metropolitan Transport Authorities (UMTAs) in all million plus cities, to facilitate more co-ordinated planning and implementation of urban transportation programs and projects and an integrated management of urban transport systems.

Finally, the study feels that the participation of people is the most effective solution to ease the traffic problems in the city.

References:

1. Census Reports of 2001 and 2011 (Provisional), Government of India, New Delhi.

2. The Central Motor Vehicle Rules 1989, section 8-9/1, Chapter II, Deepak Pub. New Delhi, 1993, P.3.

3. Global Status Report 2009, on Road Safety, published by the World Health Organization, UNO.

4. Report 2008, on Road Accidents in India, Transport Research Wing, Ministry of Road Transport and Highways, Government of India, New Delhi.

5. Basic Road Statistics of India Report 2007-08, Ministry of Road Transport and Highways, Government of India, New Delhi. July, 2010.