

Transport Network Analysis Of Ahmednagar District, Maharashtra State, India

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ABSTRACT:

The development of transport greatly helps the socio-economic development of a region. The greater the density of transport network in a geographical region, the greater the socio-economic development. Studies have been done regarding their length in Ahmednagar district. For this study, the information about the length of the roads has been taken from the secondary material. The information is from 2017 2019. At the same time, a comparative study of roads in Ahmednagar district of India, Maharashtra has been done.

Key Words: Transport, Network, analysis, Graph Theory,

INTRODUCTION:

The mobility of passengers and freight is fundamental to economic and social activities such as commuting, manufacturing, distributing goods, or supplying energy. Each movement has a purpose, an origin, a potential set of intermediate locations, and a destination. Mobility is supported and driven by transport systems composed of infrastructures, modes, and terminals. They enable individuals, institutions, corporations, regions, and nations to interact and undertake economic, social, cultural, or political activities. The development of transportation systems takes place in a socioeconomic context. While development policies and strategies focus on physical capital, recent years have seen a better balance by including human capital issues. Irrespective of

the relative importance of physical versus human capital, development cannot occur without both interacting as infrastructures cannot remain effective without proper operations and maintenance. At the same time, economic activities cannot take place without an infrastructure base. The highly transactional and service-oriented functions of many transport activities underline the complex relationship between its physical and human capital needs. For instance, effective logistics rely on infrastructures and managerial expertise. The development of transportation systems is embedded within the scale and context in which they take place, from the local to the global and from environmental, historical, technological, and economic perspectives.

Transportation is literally described as a means of carrying people as well as goods and animals from one location to another. It has been in existence since the earliest times where wooden carts and animals like horses, donkeys, and bulls were used exclusively. As times changed we saw numerous inventions taking place and the changes resulted in the invention of cars, buses, trucks, spacecraft, helicopters, ships, airplanes, etc taking the place of earlier transports. The importance of transportation is that it enables trade, commerce, and communication that establish civilization. It is good planning that manages traffic flows and enables the undisturbed and steady movement from one place to another. It is transportation that acts as a link between manufacturing facilities and consumer markets. Transportation is a reality of our life and without effective and affordable transportation it becomes impossible for any kind of movement from one place to another.

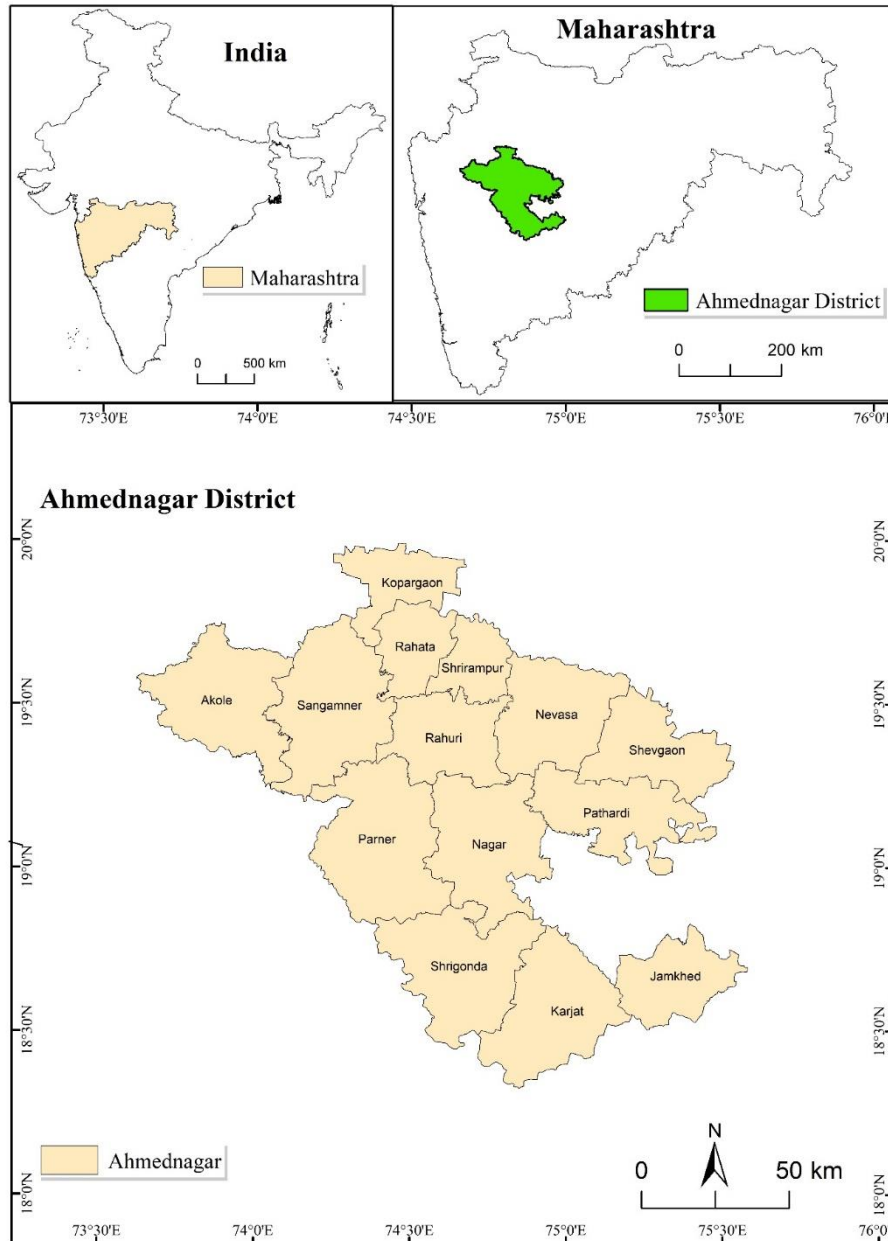
Study area:

The present study Ahmednagar district has been selected as a study area. It extends between $18^{\circ} 20'$ and $19^{\circ} 59'$ north latitudes and $73^{\circ} 40'$ to $75^{\circ} 43'$ east longitudes (Map.1) located in part in the upper Godavari basin. The district is very dense in shape and length of 200 km. a width of 210 km. This study region is divided into there are three physical divisions namely, first Sahyadri moutons ranges i.e. Kalsubai, Adula, Baleshwar and Harishchandragad, second Plateau third plains area. The Godavari, Bhima River is the main rivers in this district with the major tributaries are Paravara, Mula, Sina, Dhora, Kukdi etc. Ahmednagar district occupies 17,048 square km geographical area the administratively there are divided into 14 tehsils. The average annual

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rainfalls is 578.8 mm. (22.79”) and mean daily maximum temperatures is 39°C and mean daily minimum temperature is 11.7° C. In study region 71.10 percent area under cultivation area out of them 32.40 percent is irrigated and 67.60 percent rain fed or rain shadow area. According to 2011 census population is 45, 43,083 in which male and female are 2,348,802 and 2,194,281 correspondingly and density of population was 266 persons per square kilometers.



Amis and objective:

In this research paper, the main objective is to classify the length of roads in Ahmednagar district

1. To study the length of various roads in Ahmednagar district and Maharashtra state.
2. To study the types of roads in India and their length.

Methodology:

The information taken to accomplish the objective in this research paper is dependent on the secondary data / information. The data obtained according to different types of roads in Maharashtra, Ahmednagar district, and India have been converted into percentages. Various bar graphs have been drawn from these percentages. In short, cartography has been used. GIS software has been used to map the study area.

Result:

In this research paper, studies have been done in India Maharashtra and Ahmednagar district to study the transport network. The study is from 2017 to 2019.

1. Road Network of India:

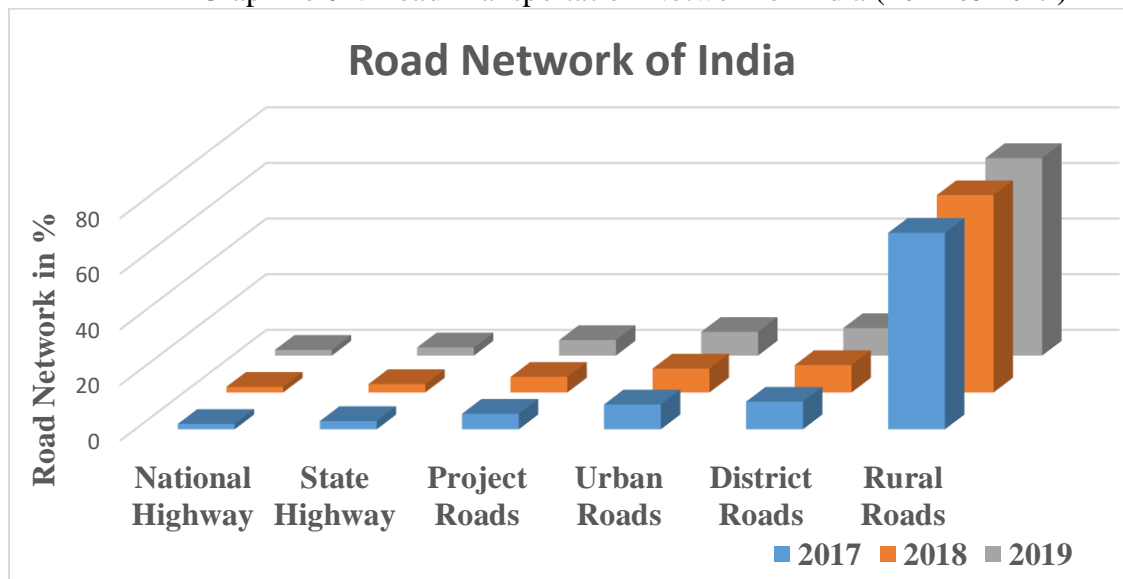
Table and Graph Number One shows the different types of roads in India and their total length between 2017 and 2029. Indian road network (62, 15,797 km) is second largest in the world after the United State of America (66, 45,709 km) (GoI MRTHTRW, 2021). As per Basic Road Statistics of India 2017-18 share of rural road is largest (71%) in total road network subsequently district road (10%), urban road (9%), project road (5%), state highways (3%) and national highways (2%).

Table no 01: Road network of India 2017 -2019

Types of Roads	Road length in Percentagewise		
	2017	2018	2019
National Highway	1.94	2.03	2.07
State Highway	2.97	3.01	2.92
Project Roads	5.58	5.59	5.56
Urban Roads	8.93	8.59	8.53
District Roads	9.94	9.83	9.90
Rural Roads	70.65	70.94	71.02

Source: GOI MRTHTRW2021

Graph no 01: Road Transportation Network of India (2017 to 2019)



2. Road Network of Maharashtra and Ahmednagar District:

Table-2 reveals total road network of Ahmednagar district having length of 20742.46km whereas Maharashtra state has a road network of 336182.56 km. The Ahmednagar district network is only 6.15% compare to state road network. The Fig.2 shows comparison of road.

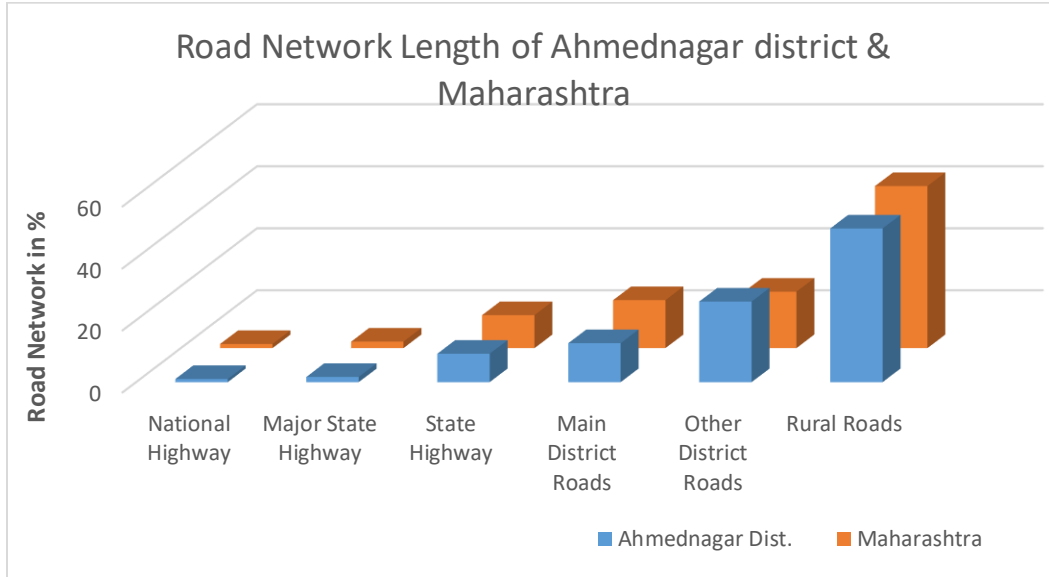
Road network of district is plays a significant role in the development of agriculture, tourism, industry and trade sectors of district economy. Rural roads are larger in the length compare to national and major state highway roads. In the present study focus on the assessment of major state and state highway road network connectivity and accessibility assessment with respect to tehsil centers.

Table-2: Road Network Length of Maharashtra and Ahmednagar district

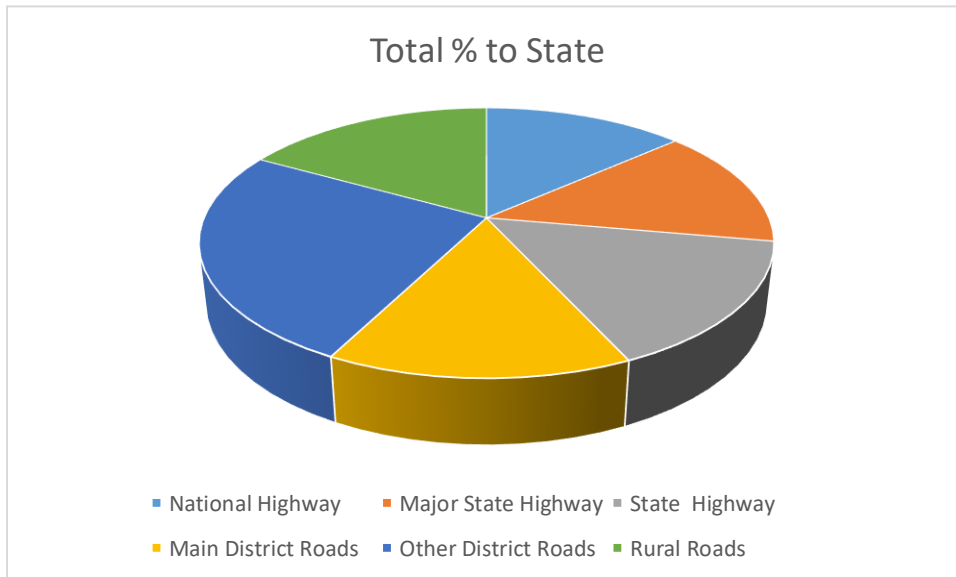
Types of Roads	Road length in Percentagewise		
	Ahmednagar Dist.	Maharashtra	Total % to State
National Highway	1.02	1.34	4.67
Major State Highway	1.68	2.09	4.94
State Highway	9.16	10.64	5.31
Main District Roads	12.57	15.47	5.01
Other District Roads	26.01	18.19	8.82
Rural Roads	49.57	52.27	5.85

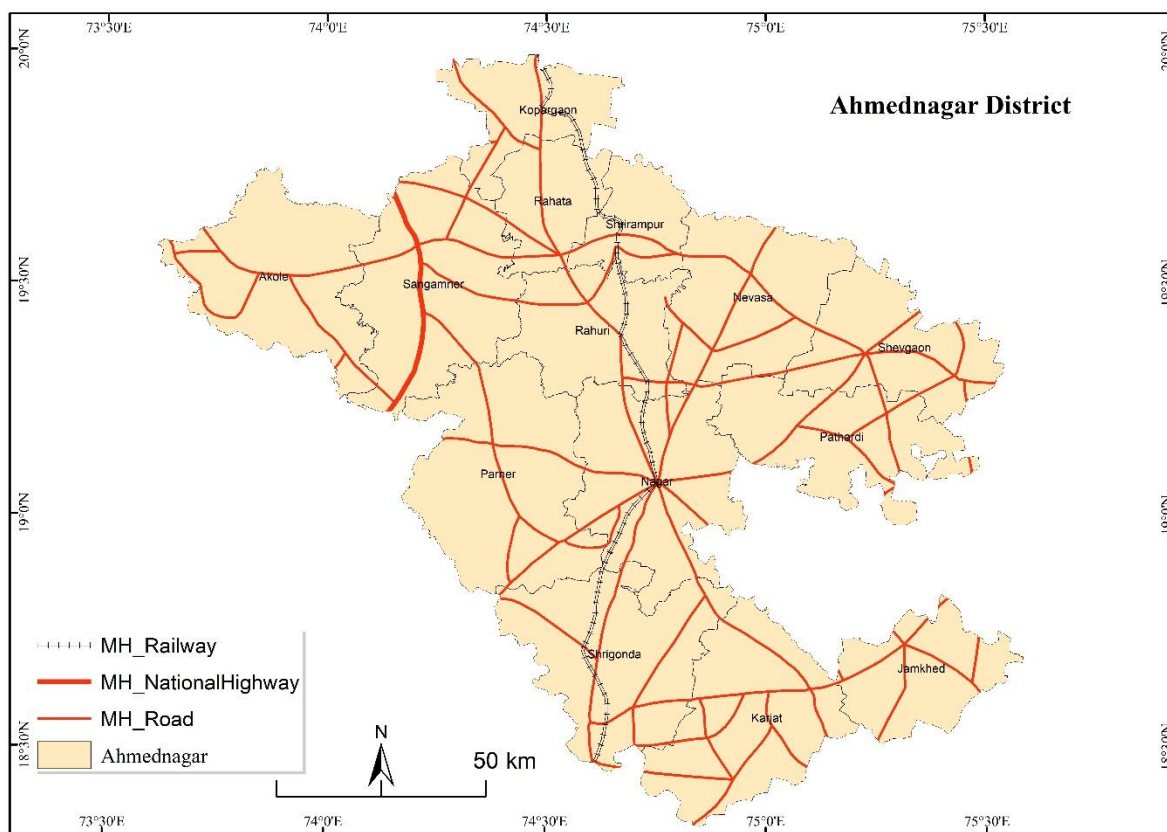
(District Survey Report for Ahmednagar District Part-A for Sand Mining or River bed Mining, 2020)

Graph no 02: Road Network Length of Ahmednagar district & Maharashtra



Graph no 03: Road Network to total state in %



Map no 02; Transport network of Study area**Conclusion:**

Road network of district is plays a significant role in the development of agriculture, tourism, industry and trade sectors of district economy. Rural roads are larger in the length compare to national and major state highway roads. In the present study focus on the assessment of major state and state highway road network connectivity and accessibility assessment with respect to tehsil centers. Increasing road connectivity and quality.

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