

Impact of Relief on The Road Network of West Vidarbha Region (Maharashtra State)

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Abstract

Road network plays an important role to the development of the region, but the road development is also directly or indirectly depends on the physical condition of the region. The topography of the region impacts on the construction and its development of the any region, height, drainage, slope, forest etc are impacts on the many things which are helps to the development. The present paper is based on the impact of the relief on the road network in West Vidarbha region of Maharashtra state.

Keywords: Relief, road network, development

Introduction

Road network is an impact on the distribution of several things, like, settlement, population, market centers, commercial centers, artificial tourist centers etc. But the nature is great, and it is directly or indirectly impacts on the road network. Especially height of the any region influences on the construction of the road, it difficult and costly task to construct the more road network in most heighted region. In the present paper the road network analysis according to the height of the region has been analyzed.

Objectives of the Study

The main objective of the present study is to analysis the road network and the density of the road network in the study region according to the height.

Study Region

The study region West Vidarbha situated between 19⁰ 23' N to 21⁰ 43' N latitude and 75⁰ 57' E to 79⁰ 09' E longitudes. The region occupied 46018 sq.km geographical areas which is 14.75 % to Maharashtra state's geographical area. Total population of the study region is 11258117 according to the year 2011 census, Amravati, Akola, Washim, Buldhana and Yavatmal, these 5 districts are included in West Vidarbha region. West Vidarbha region is also known as Amravati Division and Amravati is the head quarter of the division.

Data Source & Methodology

The present research paper is based on the graphical analysis. The road network map of Yavatmal district is collected from the PWD Divisional office, Amravati, and Relief map of the region generated by the source of Maharashtra Remote Sensing Application Center, Nagpur. The both maps are digitized in GIS software and the road network layers are overlapped on the relief map of the study region. The graphical length of the road network is calculated according to the height of the region and it shows in the table.

Relief and Road Network

Generally is observed that the road length is decreased when the heights of the region increases. The study region is also a part of them; the height of the region is in between 150 meter to 1200 meter. Table no 1 show the height and the road network of the region.

Table No 1
West Vidarbha Region: Relief and Road Network

Height in Meter	Area in Sq.Km.	Observed Road Length in Km.	Density of Road Network in Per 100 Sq.Km.
< 300	14709	1790	12.16
300 – 450	20682	2224	10.75
450 – 600	8128	892	10.97
600 – 750	2144	343	15.99
> 750	355	31	8.73
Total	46018	5280	11.47

Source: - Calculated by researcher

i) Below 300 Meter Height and Road Network

This heighted region occupied total 14709 sq.km area of the region and it is 31.96% of the total area of the region. In this zone total road length is observed 1790 Km (33.90%) and the density is 12.16 km in per 100 sqkm. The eastern part of Yavatmal district, Southeast part of Amravati district and north part of Buldhana district is mainly located in this heighted zone.

ii) 300 to 450 Meter Height and Road Network

This zone covered maximum part of the region, it covered 20682 sq.km areas and it is 44.94 % to the total geographical area of the region. The total road length is observed 2224 km (42.12 %) and the road density is 10.75 km in per 100 sq.km. Maximum part of Amravati district and west part of Yavatmal district also middle part of Buldhana and Akola district found the height in between 300 to 450 meter.

iii) 450 to 600 Meter Height and Road Network

This heighted region covered 8128 sq.km area and it is 17.66 % of the region. Total road length observed 892 km (16.89%) and road density is 10.97 km in per 100 sq.km. Southwestern boundary part of Yavatmal district, middle to south part of Buldhana district and Washim district found in this heighted zone. The road length is decreases in this zone because the height is increases.

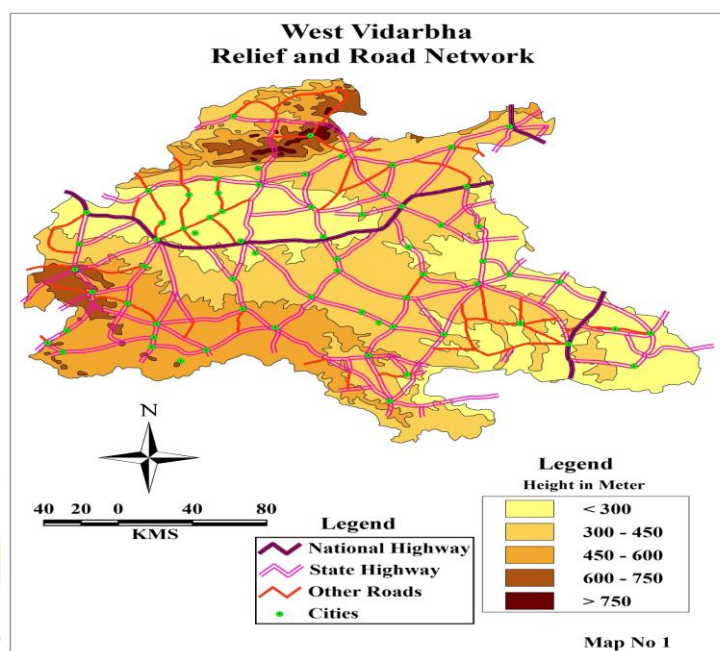
iv) 600 to 750 Meter Height and Road Network

This heighted zone covered 2144 sq.km area and it is only 4.66 % to the total area of the study region. The road length in this zone observed 343 km (6.50 %) and the density in per 100 sq.km is 15.99 km. Chikhali, Buldhana, also some part in Buldhana district and Melghat region in Amravati district found the height 600 to 750 meter. The road length is decreases but density is increases in this zone because the occupied area of this zone is also less.

The correlation between relief and road network is found positive and it is high degree ($r = +0.97$), it clearly shows that the topography and the development of the road network are interrelated with each other. And relief features of the study region impacts on the development of the road network in West Vidarbha region.

v) More Than 750 Meter Height and Road Network

The greater than 750 meter height region occupied only 355 sq.km area which is the lowest in the region, it is only 0.77 % of the region. The road length in this zone observed only 31 km and road density is 8.73 km in per 100 sq.km. The Melghat region especially Gawilgadh hills in Maravati district are the part of this heighted zone. The road length and road density both are decreases in this zone.



Conclusions and Suggestions

The road network development is found low in heighted region also the length is decreases when the height is increases. The height up to 450 meter region covered 75% road network of the West Vidarbha region. The maximum heighted region found the low road network and lowest road density because it is the rough topographic region.

The overall road network in the study region found is an average. The height of the region is affects on the development of the road network and road network impacts on the socio-economical development of the region. Therefore the development of the road network in the study region is an essential part. The proper planning and with the help of Government schemes the road network can be well developed in heighted region and it will helps to the socio-economical development of the study region.

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