International Multidisciplinary Research Journal

# Indían Streams Research Journal

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#### **RNI MAHMUL/2011/38595**

#### **ISSN No.2230-7850**

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## **Indian Streams Research Journal**

International Recognized Multidisciplinary Research Journal

ISSN: 2230-7850

Impact Factor : 4.1625(UIF)

Volume - 6 | Issue - 2 | March - 2016



#### STUDY OF ROAD ACCESSIBILITY IN SOLAPUR DISTRICT





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#### **ABSTRACT:**

Man always engaged in travels to fulfill his needs, so there is no place remaining where man cannot reach. That means each and every place on the earth is accessible to mankind. Accessibility of region is positively correlated with the economic as well as social development hence planning for road accessibility is a prerequisite for overall development. In measuring of accessibility the distance is determined from roads or railway stations because traveling taken place through these places. Hence here is an attempt has been made to assess the road accessibility of Solapur District of Maharashtra. In the present study physical accessibility is determined by applying buffer analysis. In Solapur District road accessibility is high in flat area, on the other hand it affected by physical constraints. Out of eleven tahsils North Solapur and Pandharpur tahsil shows highest accessibility by roads and Barshi tahsil stood least in term of road accessibility.

#### KEY WORDS: Transport, Accessible, Graph Theory.

#### **INTRODUCTION:**

The word accessibility is derived from the word 'access' and 'ability' thus meaning ability to access, where 'access' is the act of approaching something. In other words accessibility means to ease to reaching destinations or activities. The term accessibility is used in the transportation and planning field for more than 50 years. In concern to that, Hansen (1959) defines 'accessibility as a measure of potential opportunities for interaction'. As per Choraly and Haggett (1968) accessibility is closely related with the concept of minimization of distance. According to Ratcliff, It is the ease to contact with relative little friction. While, Hack (1976) gives typical definition of accessibility as the accessibility of a point in a system is a function of it's the system. Thus accessibility is reflecting as the relative term. Accessibility accessible and inaccessible area is measured in terms of physical distance from transport artery. Nodal accessibility is examined with reference to nodal centers and studied with the help of graph theory. The accessibility of region or place is an essential ingredient in an expanding economy.

#### **Study Area:**

Solapur District lies to the south- western part of Maharashtra State in India. Solapur is the fifth largest district in terms of area and seventh largest in terms of population in Maharashtra. It entirely lies in the Bhima-Sina-Man basin. The average height of Solapur District from mean sea level varies from 500 to 800 meters. The geometrical position of Solapur District located between 17° 10' to 18° 32' north latitude and 74°42' to 76°15' east longitude. (Map 1.1) It is bounded on the south -west by Sangli District, on the west by Satara District, on the north- west by Pune District, on the north by Ahmadnagar District, on the east by Osmanabad District and Bijapur District of the Karnataka to the south as well as Gulbarga District to its east of the Karnataka. The total population has been registered 4315527 in 2011 in this region. Obviously highest population is observed in North Solapur tahsil 24.50 percent as it is district headquarter, and very low population is observed 4.77 percent in Mangalvedha tahsil.



#### **Objective:**

The present paper aims to examine access of physical accessibility and its tahsilwise variation in Solapur District of Maharashtra state.

#### Database and Methodology:

The present study is relying on secondary data which is obtained from socio-economic abstract, District census handbook, Gazetteer of Solapur District and Road Development Plan. In order to understand physical accessibility a map is represented of study area by applying ArcGIS 10.1 desktop software. National Highways and Major State Highways are considered as artery roads. For analysis accessible and inaccessible area from arteries, a Buffer Analysis Tool is used and calculated the area within up to 5 km, 5 km to 10 km and 10 km to 15 km from roads. The area lying within 5 km is considered as high accessible area, similarly 5 km to 10 km distance from artery road treated as moderate accessible area, whereas 10 km to 15 km distance from roads categorized in less accessible area and finally beyond 15 km distance from road referred as inaccessible area for the present study.

#### **Physical Accessibility:**

Table 1.1 and map 1.2 shows the road accessibility pattern of Solapur District. As is evident from map, National Highway No 65 is divided study area in two broad divisions (Western part and Eastern part). Due to presence of Major State Highways in western part of study area, increase accessibility by roads as compared to eastern part. The total accessible area present is 32.53% whereas inaccessible area is denotes 27.24%. Out of total area 24.73% area found is moderate accessible area. The presences of artery roads leave impression on regional as well as tahsil wise variation of accessibility pattern in Solapur District. For the detailed study whole district categorized in four classes as below:

#### I) High Accessible Area (0 to 5 km):

The highest accessible area is found in North Solapur tahsil with score 58.89% of total tahsil area followed by Mohol tahsil scored 57.11 %. North Solapur tahsil have district headquarter where two National Highways passing through this nodal point hence score highest accessible area. National Highway no 65 is passing through Mohol tahsil so it scored second highest accessible area. At the same time, Barshi tahsil denotes nil area in this category due to absence of artery roads.

#### ii) Moderate Accessible Area (5 to 10 km)

Pandharpur tahsil stood first in this category. Out of total area of Pandharpur tahsil 37.57 % area found in this category. This happened due to recently converted roads in Major State Highway Category. Pandharpur is emerging market center in district hence gain advantage. Again Barshi tahsil denotes lowest score as 2.61 % of its total area.

#### iii) Less Accessible Area (10 to 15 km)

South Solapur tahsil claimed 22.42 % area in low accessibility group. National Highway passing through from this tahsil according to the length of this road South Solapur tahsil scored highest in less accessible criteria. Out of the total area of Barshi tahsil 4.15 % area fall under this heading hence stood least.

Sr. No.	Tahsils	Total Area (in sq km)	Area in 0-5 Km		Area in 5-10 Km		Area in 10-15 Km		Beyond 15 Km (Inaccessible Area)	
			Area	%	Area	%	Area	%	Area	%
1.	Akkalkot	1390.00	4.58	0.33	75.55	5.44	173.44	12.48	1136.43	81.76
2.	Barshi	1483.00	0.00	0.00	38.74	2.61	61.52	4.15	1382.74	93.24
3.	Karmala	1610.00	541.66	33.64	541.74	33.65	330.72	20.54	195.88	12.17
4.	Madha	1545.00	474.38	30.70	264.03	17.09	270.72	17.52	535.88	34.68
5.	Malshiras	1522.00	552.79	36.32	529.02	34.76	305.76	20.09	134.43	8.83
6.	Mangalvedha	1141.00	577.88	50.65	316.1	27.7	141.58	12.41	105.44	9.24
7.	Mohol	1408.00	721.22	51.22	504.68	35.84	141.29	10.04	40.81	2.90
8.	North Solapur	746.00	439.32	58.89	159.39	21.37	77.16	10.35	70.30	9.40
9.	Pandharpur	1304.00	581.64	44.60	485.99	37.57	231.74	17.77	4.63	0.35
10.	Sangola	1551.00	475.82	30.68	418.93	27.01	307.28	19.81	348.97	22.50
11.	South Solapur	1195.00	475.92	39.83	349.08	29.21	267.94	22.42	102.06	8.54
	Total	14895.00	4845.21	32.53	3683.25	24.73	2309.15	15.50	4057.57	27.24

Table No 1.1: Tahsilwise Road Accessibility (2011)

Source: Compiled by using AcrGIS software.



#### iv) Inaccessible Area (beyond 15 km)

As expected Barshi tahsil remarked 93.24 % area out of its total area in this inaccessible heading as followed by Akkalkot tahsil 81.76 % (out of its total area). The lowest inaccessible area found in Pandharpur tahsil which recorded 0.35 %. It suggests that highest accessible area is lying in Pandharpur tahsil.

#### Problems and Prospects of road accessibility:

1. Many of the tahsil headquarters not covered under the National Highway and Major State Highways network. They still remain inaccessible in terms of these artery roads.

2. The artery roads length is inadequate in Sangola, Madha and Karmala tahsils and the situation is alarming in Akkalkot and Barshi tahsils.

3. Accessibility is somewhat become satisfactory with the completion of four lane expressway.

4. Out of eleven tahsils six tahsils (Malshiras, Mangalvedha, Madha, North Solapur, Pandharpur and South Solapur) shows improvement in accessibility.

5. The accessibility area spread over western part of study area but eastern part yet not come in to light.

#### **Conclusion and Suggestion:**

The present article revealed that Padharpur tahsil is having high accessibility than North Solapur tahsil. It is because, Pandharpur is important religious center of Maharashtra and emerging market center, here two Major State Highways meets each other therefore it is high accessible area. In North Solapur tahsil, at Solapur city, which is district headquarter, the polarization of road network found. Two National Highways crossed from here as well as one Major State Highway emerge from this nodal center hence the empirical high accessible area appeared. By the quantification of accessible and inaccessible area, Padharpur tahsil has 44.60% accessible area and 0.35% inaccessible area. These two places enjoy high accessible area according to the Geography of Locations and promote the spatial flows within district and within region. In order to increase the level of accessibility not only from above centers but its surrounding areas, some parameters can be suggested as below-

1. In future National Highway or Major State Highway will be plan such as it starts from Kurduvadi, which is railway junction in Madha tahsil, and went towards the eastern part of Solapur District and extended till Marathawada.

2. There is urgent need of artery road in Akkalkot tahsil.

3. Tahsil headquarters will be brought on map of artery roads network.

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