

Impact of Road Transportation Network on Agricultural Development in Solapur

District: A Geographical Study

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Article Info	ABSTRACT
Article History: Received: 26th Sep 2025 Accepted: 10th Oct 2025 Published: 25th Oct 2025 Keywords: Road Transportation, Agricultural Development	Road transportation networks serve as a backbone for agricultural growth by linking rural production centres with markets. The present study reviews the geographical impact of road connectivity on agricultural development in Solapur district, which is a drought-prone region of Maharashtra. The analysis highlights, improved road infrastructure facilitates affect timely movement of inputs such as seeds, fertilizers, and irrigation equipment, as well on ensuring efficient distribution of agricultural outputs from local to regional markets. Road network improvement reduces the post-harvest losses, promote diversification of crops towards high-value agriculture. Moreover, the study reveals that, spatial variations in agricultural productivity closely associated with the density and quality of transportation facilities across talukas of Solapur district. It concludes that strengthening road transportation not only accelerates agricultural development but also promotes regional variation in Solapur district.

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Introduction

Agricultural development in India is deeply intertwined with the efficiency of its transport infrastructure, particularly road networks. It is also a bridge the rural-urban divide. In regions like Solapur District of Maharashtra, where agriculture constitutes the backbone of the local economy. The availability and quality of roads directly influence the productivity and sustainability of farming practices. Roads serve as vital conduits for the movement of agricultural inputs such as seeds, fertilizers, and machinery, while also facilitating the timely marketing and distribution of produce. According to the National Bank for Agriculture and Rural Development (NABARD, 2023), Solapur possesses approximately 13,400 kilometres of road length. However, uneven connectivity and maintenance disparities hinder equitable access to markets and resources across the district. Such infrastructural constraints often exacerbate regional inequalities and limit the potential for inclusive agricultural growth (Chakradeo, 2020).

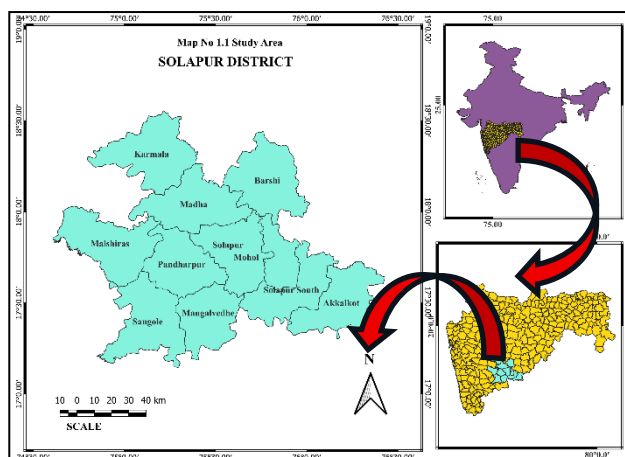
In recent years, infrastructural expansion through national and state highways has significantly reshaped Solapur's economy. The inauguration of ten major highway projects spanning 292 kilometers—worth over ₹8,000 crores—has been projected to enhance the mobility of agricultural goods and stimulate rural enterprise (The Financial Express, 2022). However, disparities persist between well-connected tahsils and interior villages, leading to spatial variations in agricultural development. Hence, a geographical analysis of the road transportation network in Solapur District is essential to assess its direct and indirect impact on agricultural productivity, rural livelihoods, and spatial integration within the regional economy.

Keywords: Road Density, Roads Network, Regional Disparity

Objectives of the Study

The primary objectives of this study are:

1. To assess the spatial distribution and density of road networks in Solapur District.
2. To evaluate the relationship between road density and agricultural productivity, including crop diversification.



Study Region

The present study focuses on Solapur District, located in the south-eastern part of Maharashtra State, India. Geographically, it extends between 17°10' N to 18°32' N latitudes and 74°42' E to 76°15' E longitudes, covering a total area of approximately 14,895 sq. km. (Map1.1) The district shares its boundaries with Ahmednagar and Osmanabad districts to the north, Sangli to the south, and

the state of Karnataka to the southeast. Administratively, Solapur comprises eleven tahsils—Solapur North, Solapur South, Akkalkot, Barshi, Mangalwedha, Pandharpur, Karmala, Madha, Malshiras, Sangola, and Mohol. In terms of transportation, Solapur serves as an important regional connectivity hub, linked by National Highways NH-65, NH-52, and NH-150E, and an extensive network of state highways and rural roads that connect agricultural villages to nearby markets and processing centers. However, disparities remain between tahsils.

Methodology

This study adopts a combining both quantitative analysis and qualitative field observations to assess the relationship between road transportation networks and agricultural development in Solapur District, Maharashtra. The research is based on secondary data collected from government sources such as the *District Census Handbook (2011)*, *NABARD Potential Linked Credit Plan (2023–24)*, *Economic Survey of Maharashtra (2024–25)*, and *Ministry of Road Transport and Highways Reports (2020–2023)*. These data sets provided information on road length, type, and density, as well as agricultural indicators like cropping pattern, irrigation coverage, productivity, and market access. Collected data shows by tables graph and charts and conclude result.

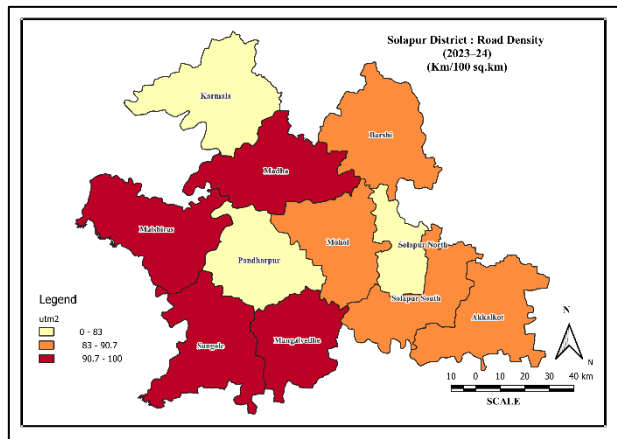
Results and Discussion

The analysis of Solapur District reveals a strong and positive relationship between the road transportation network and agricultural development.

Table 1.1: Tahsil-wise Road Density in Solapur District (2023–24)

Sr. No	Tahsil	Total Road Length (in Km)	Total Area (in Sq Km)	Rank	Road Density (Km/100 sq.km)	Rank
1.	Akkalkot	1219	1390	7	87.70	6
2.	Barshi	1406	1483	5	86.51	7
3.	Karmala	1194	1609	1	74.20	11
4.	Madha	1457	1544	3	94.36	4
5.	Malshiras	1530	1522	4	100.53	1
6.	Mangalwedha	1115	1140	10	97.79	2
7.	Mohol	1259	1408	6	89.44	5
8.	North Solapur	602	746	11	81.88	9
9.	Pandharpur	1062	1303	8	81.48	10
10.	Sangola	1536	1550	2	97.33	3
11.	South Solapur	1014	1195	9	84.92	8
		13400	14895			

Source: Compiled from NABARD (2023), District Census Handbook (2011), and Economic Survey of Maharashtra (2024–25).



The intensity of this relationship varies spatially across tahsils. Tahsils such as Karmala stand first in term of area but least in term of road density. Karmala is far away from district head quarter. Sangola taluka have second largest area in district and host 3 rank in term of road density. Malshiras tahsil stand first in district in term of road density and comprises around 1530 sq.km. area.

Mangalwedha stand second in term of road density having 97.79 km road density per 100 sq. km. Malshiras, Mangalwedha and Sangola possess relatively higher road density and better access to state and national highways. Here found higher agricultural productivity and diversification. In contrast, tahsils like North Solapur, Pandharpur and Karmala where road infrastructure remains comparatively underdeveloped, display slower agricultural growth and limited access to markets and agro-services.

Table 1.2: Tahsil-wise Agricultural Productivity in Solapur District (2023-24)

Sr. No	Tahsil	Road Density (Km/100 sq.km)	Rank	Average Agricultural Productivity (₹/ha)	Remark
1.	Akkalkot	87.70	6	56700	Growing road infrastructure
2.	Barshi	86.51	7	72,000	Relatively High connectivity, irrigation support
3.	Karmala	74.20	11	54100	Sparse connectivity
4.	Madha	94.36	4	58200	Moderate development
5.	Malshiras	100.53	1	61400	Sugarcane dominant area
6.	Mangalwedha	97.79	2	65800	Strong road-market linkage
7.	Mohol	89.44	5	54000	Sparse connectivity
8.	North Solapur	81.88	9	61300	Mixed road and crop pattern
9.	Pandharpur	81.48	10	68500	Well-developed market access
10.	Sangola	97.33	3	58200	Mixed road and crop pattern
11.	South Solapur	84.92	8	62300	Mixed road and crop pattern

Source: Compiled from NABARD (2023), District Census Handbook (2011), and Economic Survey of Maharashtra (2024-25).

The Malshiras tahsil stand first in road development as well in agricultural development. It has high field of sugarcane which is cash crop. Mangalwedha stand second in road development and strong market linkage. As the same Sangola tahsil denotes mixed road development and crop pattern. Because here comparatively village roads develop. Pandharpur surprisingly denote low connectivity but well market access.

Conclusion

Overall, the results confirm that the road transportation network acts as a catalyst for agricultural modernization and rural development in any region. It also observed this in Solapur District. Enhanced connectivity not only improves farm-level productivity but also stimulates agro-based industries, employment opportunities, and regional economic integration. Malshiras shows high growth in sugarcane crop due to canal and road development. However, achieving balanced growth requires continued investment in rural roads, maintenance of existing infrastructure, and inclusive planning to ensure that interior tahsils are not left behind in the development process.

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