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Rural Infrastructure in Andhra Pradesh : Connectivity of Villages and Basic Amenities

Motkuri Venkatanarayana[‡]

Introduction

People live in different geographical locations – rural and urban within a region/state and scattered clusters (villages/habitations) within the rural locations. Physical connectivity between such people through different modes (road, rail, air and navigation) would expand the size of the market, economic activities and thereby employment opportunities enhancing people’s mobility. This connectivity facilitates information sharing and opportunities to improve people’s capabilities. Moreover the availability of basic amenities within the locations/villages is an important factor which plays a large role in the development process in the village economies.

Herein, the objective of the paper is to present the district levels analysis of rural infrastructure base with respect to connectivity of villages and availability of basic amenities in these villages across district in Andhra Pradesh.

I Density of Villages and Rural Population

The total geographical area of the state is 275 thousand Sq. Kms (or 275 lakh hectares). According to the 2001 Census, there were 28 thousand revenue villages (of which 26.6 thousands were the inhabited ones) 210 towns/cities within the geographical boundary of the state. Again, most of the revenue villages had at least one or more number of hamlets in their fold. Therefore, the total number of habitations including revenue villages and their hamlets/habitations in the state were 66,528. Thus, each revenue village, on an average, had 2.5 hamlets/habitations (Table 1.1).

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Table 1.1: Density of Villages and Population in AP and India

Sno	Parameter/indicator	Year	AP	India	% of AP
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
1	Geographical Area (GA – Sq Kms)	2001	275045	3287240	8.4
2	% of Forest Area	2001	15.0%	21.02%	-
3	Total Population (Million)	2001	76.2	1028.6	7.4
4	Density of Population	2001	277	361	
5	Total number of Revenue Villages	2001	28123	638596	4.4
6	Number of Inhabited Revenue Villages	2001	26613	593731	4.5
7	Number of Habitations (incl. Rev. Vil. & hamlets)	2001	66528	1231390	5.4
8	Number of Towns	2001	210	6000	-
9	Average no of habitations/Revenue Village	2001	2.5	2.1	-
10	Geographical Area – Rural (Sq Kms)	2001	229395	-	-
11	Rural Population (million)	2001	55.4	742.5	7.5
12	Number of Habitations/100 Sq Km GA	2001	29	37	-
13	Average area (hectares)/Habitation	2001	345	267	-
14	Average size of Revenue village	2001	2082	1251	-
14	Average size of Habitation	2001	833	603	-
15	Approximate Radius of a Revenue Village (Kms)	2001	2.7	-	-
16	Approximate Radius of a Habitation (Kms)	2001	1.1	-	-

Note: % of AP is to India.

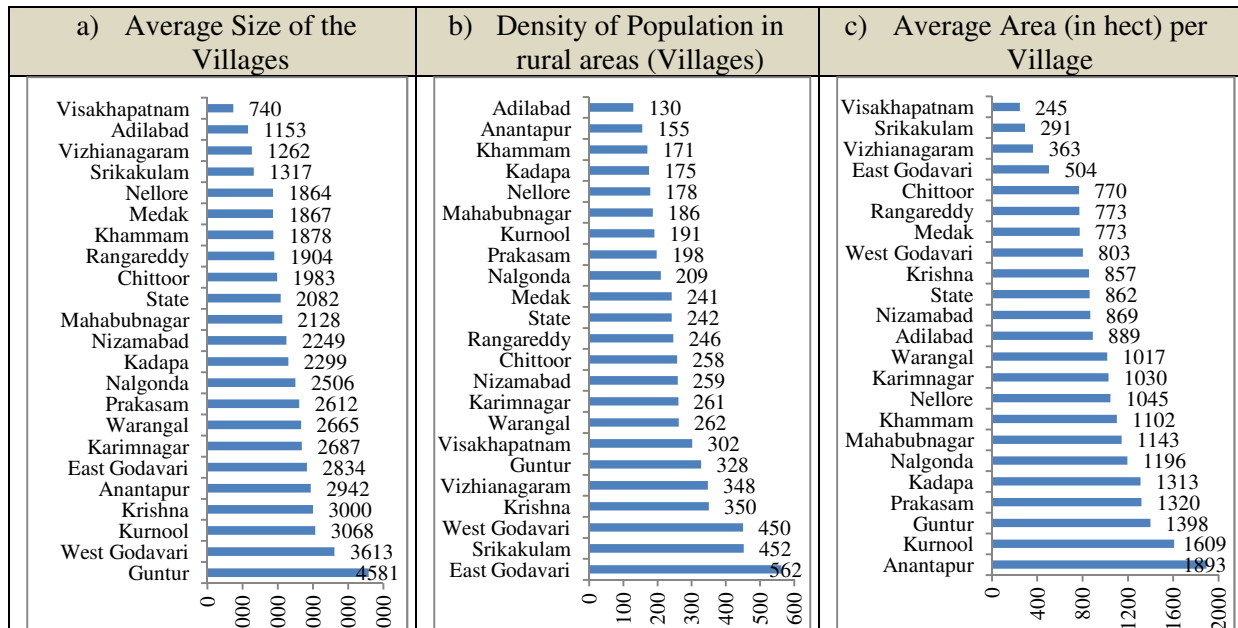
Source: Census of India.

These habitations were spread over the 230 thousand Sq. Kms (or 230 lakh hectares) of rural geographical area (excluding urban area) of the state. The average number of habitations spread over per 100 Sq. Kms. of rural geographical area of the state was 29. It also indicates that each habitation, on an average, covered 345 hectares of rural geographical area. The approximate radius coverage of a revenue village in the state was 2.7 Kms and that of the habitation, 1.1 Kms (Table 1.1).

Across districts the average size of the village in terms of population varied between the highest 4581 persons to the lowest 740 persons. The average size of the village was the highest in Guntur district followed by West Godavari, Kurnool, Krishna and Anantapur districts; and the lowest was in Visakhapatnam district preceded by Adilabad, Vizianagaram, Srikakulam and Nellore districts (Figure 1.1a).

In terms of the density of population (rural persons per sq km of rural geographical area) it varied across districts between the highest of 562 to the lowest of 130 persons per sq km. The density was the highest in East Godavari district followed by Srikakulam, West Godavari, Krishna and Vizianagaram districts; and it was the lowest in Adilabad district preceded by Anantapur, Khammam, Kadapa and Nellore districts (Figure 1.1b).

Figure 1.1: Density of Villages and Population Across Districts, 2001



Note:

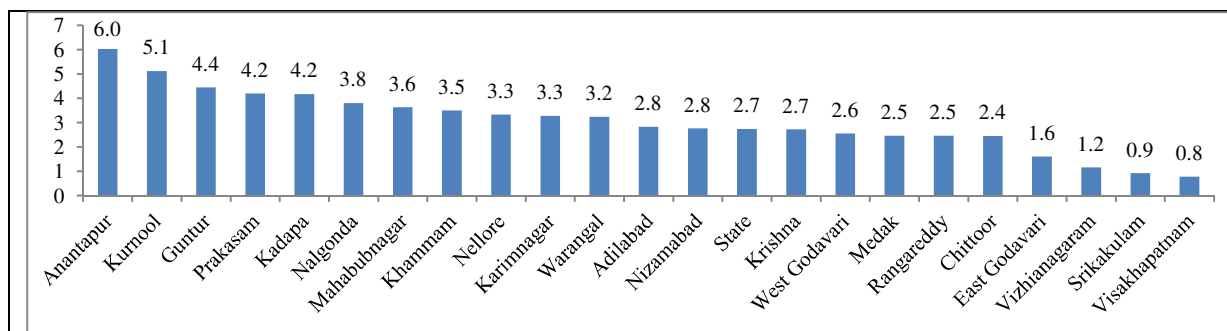
Source: Village Directory, Andhra Pradesh, Census of India, 2001.

The average area (in hectares) per village varied across districts between the highest 1893 hectares to the lowest 245 hectares per village (Figure 1.1c). The average area per village was the highest in Anantapur district followed by Kurnool, Guntur, Prakasam and Kadapa districts; and it was the lowest in Visakhapatnam district preceded by Srikakulam, Vizianagaram, East Godavari and Chittoor districts.

II Physical Connectivity: Road and Transportation

It is evident that the villages are scattered/spread over the given geographical area. The distance between villages and the physical connectivity with respect to road transportation across these villages is a matter of concern. Given the number of villages (26.6 thousand) and geographical area of the rural area (230 thousand Sq. Kms), the approximate radius coverage (in Kms.) of a village was estimated at 2.7 Kms. It is to be noted that if each village had a radius of 2.7 Kms, the distance between two villages would be doubled at 5.4 Kms.

Figure 2.1: Approximate Radius area (in Kms.) of Villages across Districts in Andhra Pradesh, 2001



Source: Village Directory, Andhra Pradesh, Census of India 2001.

Across the districts the approximate radius coverage (in kms) of a village varied between the highest six Kms to the lowest one Km. The approximate radius coverage was the highest in Anantapur district followed by Kurnool, Guntur, Prakasam and Kadapa districts; and it was the lowest in Visakhapatnam district preceded by Srikakulam, Vizianagaram, East Godavari and Chittoor districts (Figure 2.1).

Given the geographical distance between different villages, in the absence of any kind of physical infrastructure facilitating the connectivity across villages, people living in these villages would remain isolated from one another. Therefore, the connectivity of the people living in different villages in the neighbourhood as also those living within the state and across the states is important for facilitating a development process to take place.

Table 2.1: Percentage of Villages without a Facility, Andhra Pradesh

Facility		1991	2001	Change
1	2	3	4	5
1	Transport Facility	53.4	28.8	14.6
2	Approach Road: Pucca	59.0	28.4	20.6

Note: Change is difference between 1991 and 2001 and the positive figures indicate the improvement.

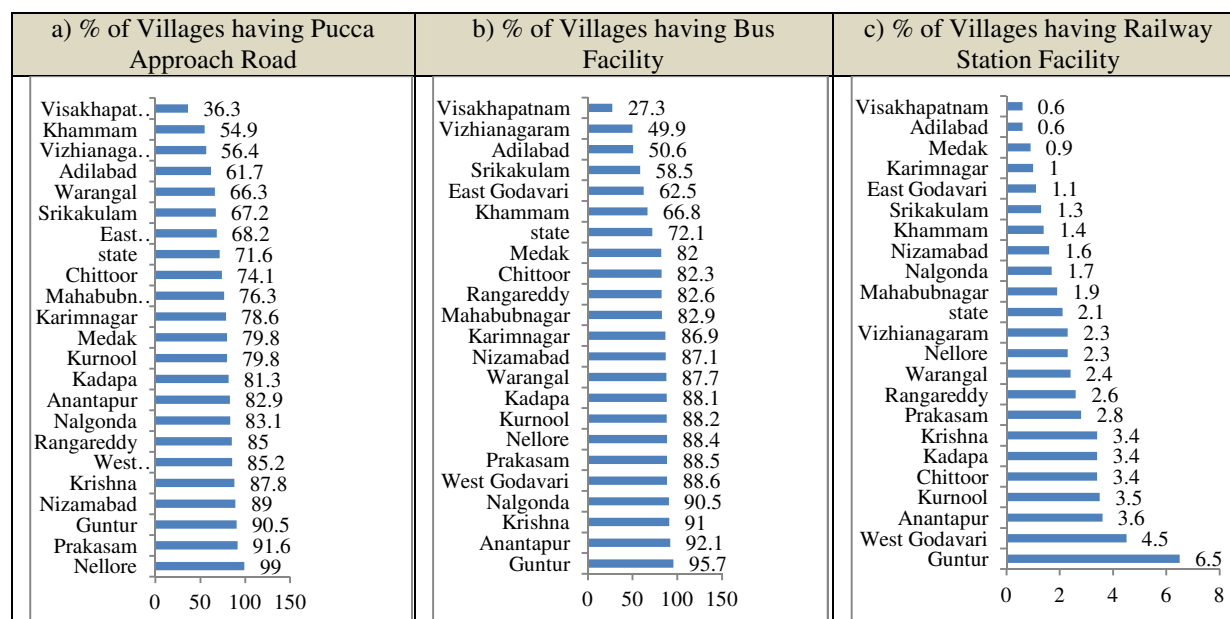
Source: Census: Village Directory, 1991 & 2001.

According the 2001 Census information, more than one-fourth of the villages in the state were without pucca approach road and without any public transportation facility (Table 2.1). Having a remarkable performance of the state over a period of time in terms of physical connectivity through road network and transportation, the exclusion of some villages from it undermines the achievement.

Across districts, the percentage of villages having pucca approach road varied between the highest 99% to that of the lowest 36%. The percentage of villages having pucca approach road was the highest in Nellore district followed by Prakasam, Guntur, Nizamabad and Krishna districts; and it was the lowest in Visakhapatnam district preceded by Khammam, Vizianagaram, Adilabad and Warangal districts (Figure 2.2a).

With respect to the transportation, the percentage of villages with a bus facility varied across districts between the highest, 96% to the lowest, 27%. The percentage of villages having bus facility was the highest in Guntur district followed by Anantapur, Krishna, Nalgonda and West Godavari districts; and it was the lowest in Visakhapatnam district preceded by Vizianagaram, Adilabad, Srikakulam and East Godavari districts (Figure 2.2b).

Figure 2.2: Connectivity of Villages through Road and Transportation Facility across Districts in Andhra Pradesh



Note: percentage of villages having facility.

Source: Village Directory, Andhra Pradesh, Census of India 2001.

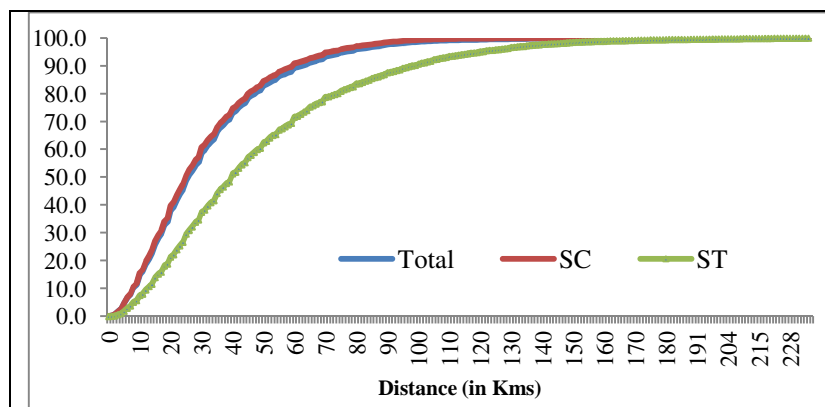
As for having the facility of railway station, the percentage of villages having it was very minimal across the districts. It also varied across districts between the highest, 6.5% to the lowest, 0.6%. The highest was in Guntur district followed by West Godavari, Anantapur, Kurnool and Chittoor districts. And it was the lowest in Visakhapatnam district preceded by Adilabad, Medak, Karimnagar and East Godavari districts (Figure 2.2c).

III Urban Proximity

The urban proximity to the villages would influence the development process of the village economy. According to the 2001 Census Report there were 210 towns and 26,613 revenue villages in Andhra Pradesh. Thus, there were 127 revenue villages per a town in the state. Given the large number of villages per town the distance between village and the local town varied between the least distance of zero km and the longest distance of 250 kms. The villages especially in the state border areas may claim the nearest local towns from the neighbouring states.

The cumulative distribution of population living in villages by their distance to nearest local town indicated that only 15% of the rural population in the state were living in villages located in the 10 Kms. distance orbit of local towns. Around one-third of people in rural Andhra Pradesh were living in the villages within the 20 Kms distance orbit of local towns; half of them were living in the villages within the 26 Kms. distance and about three-fourths in villages within the 45 Kms. distance orbit of local towns and so on.

Figure 3.1: Cumulative Percentage Distribution of Population living in Villages by the Distance to the Local Town, Andhra Pradesh, 2001 Census



Note:

Source: Village Directory, Andhra Pradesh, Census of India 2001.

Among the social groups, although the distribution pattern of population belonging to SC community had more or less followed that of the overall distribution, the one for the ST community had deviated. This showed that a large proportion of ST population was living in villages far away from the local towns (Figure 3.1).

Across districts the urban proximity of villages varied. Districts like Guntur and West Godavari had having one-fourth villages with one-third of the population living within the 10 Kms. orbit. Again, 55% and 63% of villages in West Godavari and Guntur districts respectively were within the 20 Kms. distance orbit of local towns. In terms of population, 65% each of East and West Godavari and Guntur, and 55% in Rangareddy lived in villages within the 20 kms. distance orbit of local towns (Table 3.1).

Visakhapatnam district had 48.5% of the total villages located at more than 100 Kms. away from the local towns with 16% of the district's population living in these villages. As many as 78% of villages in this district were located at a distance more than 60 Kms from local towns.

Table 3.1: Urban Proximity across Districts in Andhra Pradesh - Percentage of Population Living in Villages by their Nearest Distance to a Local Town, 2001

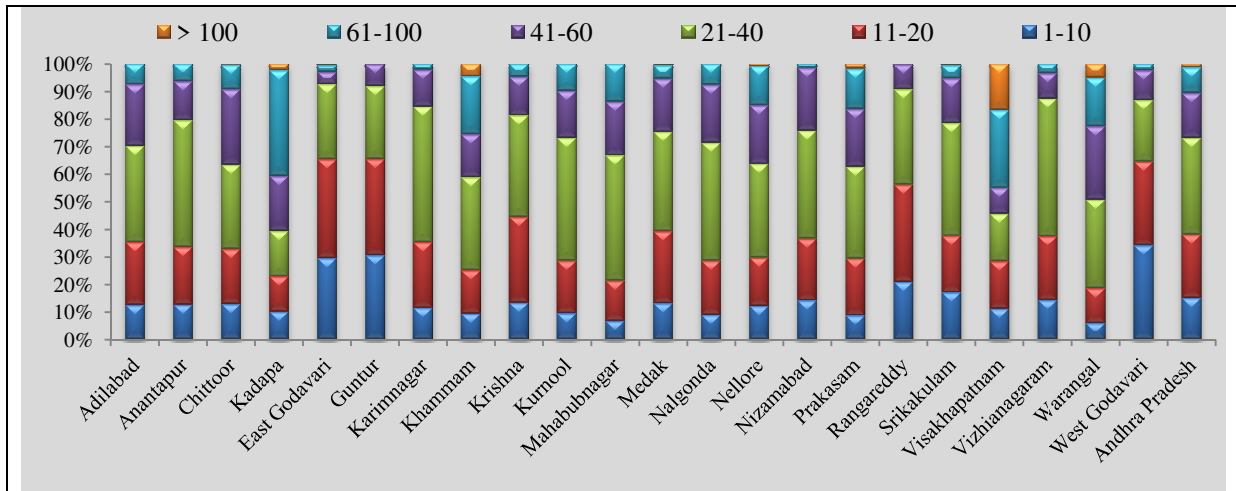
Sno	District	Percentage of Villages by Distance (Kms)							Percentage of population by Distance (Kms)						
		0	1-10	11-20	21-40	41-60	61-100	> 100	0	1-10	11-20	21-40	41-60	61-100	> 100
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>	<i>14</i>	<i>15</i>	<i>16</i>
1	Adilabad	0.1	10.5	19.7	36.6	24.7	8.4	0	0	12.5	22.7	35	22.2	7.6	0
2	Anantapur	0.2	12.1	21.7	44.9	16.4	4.6	0	0	12.6	20.9	45.9	14.2	6.4	0
3	Chittoor	0.4	12.1	19.9	31.6	23.2	12.4	0.5	0.1	12.8	19.9	30.5	27.4	8.9	0.4
4	Kadapa	0.1	8.4	12.8	21.5	19.6	33.7	3.9	0	10	12.8	16.5	19.9	38.3	2.5
5	East Godavari	0	17.3	23.4	24.6	10.2	17.3	7.2	0	29.4	36	27.2	4.5	2.4	0.6
6	Guntur	0	27.5	35.7	24.1	12.1	0.6	0	0	30.5	34.9	26.4	8.1	0.1	0
7	Karimnagar	0	9.6	23.5	47.2	16	3.7	0	0	11.4	23.8	49.2	13.4	2.2	0
8	Khammam	0	4.5	8.8	22.9	16.2	33	14.7	0	9.3	15.7	33.8	15.5	21	4.7
9	Krishna	0	14.9	30.4	39	12.1	3.6	0	0	13.3	31.1	36.8	14	4.8	0
10	Kurnool	0	8.8	20.7	43.6	18.2	8.5	0.2	0	9.4	19.1	44.5	17.1	9.9	0
11	Mahabubnagar	0	5.5	13.7	46.6	19.6	14.5	0	0	6.7	14.6	45.4	19.5	13.8	0
12	Medak	0	9.6	25.6	39	19.4	5.5	0.8	0	13.1	26.1	36.1	19.2	4.9	0.6
13	Nalgonda	0	9	19.7	41.2	20.6	9.5	0	0	8.9	19.6	42.8	21	7.7	0
14	Nellore	0.5	5.9	15.5	32	29.7	15.4	1	0	12.1	17.5	34	21.3	14.3	0.8
15	Nizamabad	0	12.8	22.6	40.6	21.9	2.1	0	0	14.1	22.4	39.2	22.8	1.5	0
16	Prakasam	0.1	6.5	16.9	32.4	19.7	20.8	3.7	0	8.6	20.7	33.4	20.9	14.6	1.9
17	Rangareddy	0	18.7	33.4	39	8.6	0.3	0	0	20.8	35.3	34.6	9	0.3	0
18	Srikakulam	0.1	15.3	18.7	42	19.4	4.4	0.2	0	17	20.5	40.8	16.2	4.8	0.6
19	Visakhapatnam	0.4	2.6	5.8	6.5	7	29.3	48.5	0	11.1	17.2	17.2	9.5	28.2	16.8
20	Vizhianagaram	0	11.7	18	50.6	14.8	4.9	0	0	14.2	23.1	50	9.2	3.5	0
21	Warangal	0	4.6	12	29.7	23.4	21	9.3	0	5.9	12.6	32.2	26.5	17.7	5.1
22	West Godavari	0	27.5	28	23.8	15.7	5	0	0	34.1	30.4	22.3	10.7	2.5	0
	Andhra Pradesh	0.1	10.6	18.7	33	17.2	13.1	7.4	0	15	23	35.1	16.2	9.3	1.4

Note:

Source: Village Directory, Andhra Pradesh, Census of India 2001.

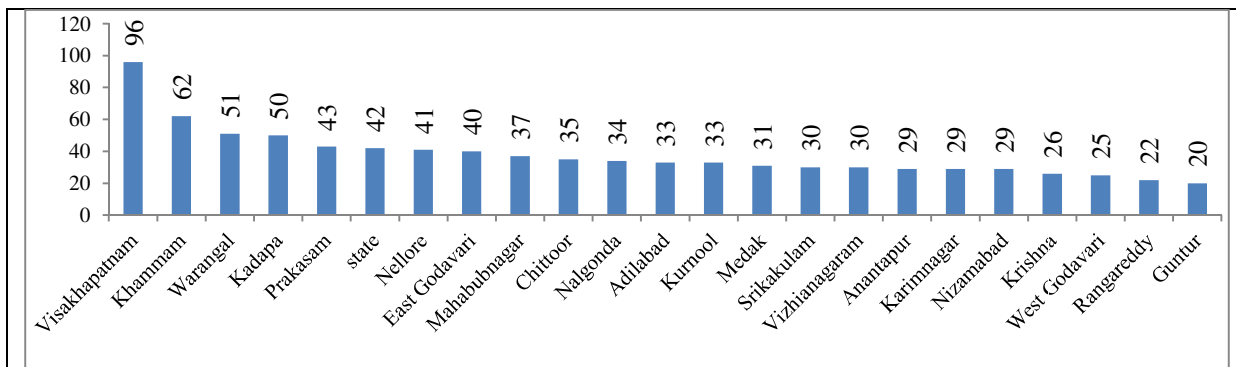
Across the districts a larger chunk of the rural population was concentrated in villages located within 20 to 40 Kms distance orbit of the local towns. However, Kadapa district appeared to be an exception since a larger chunk of its rural population was concentrated in villages located within 60 to 100 Kms distance orbit of the local towns.

Figure 3.2: Percentage Distribution of Population living in Villages by their distance to Local Towns across Districts in Andhra Pradesh, 2001



Source: 1. Table 4a; 2. Village Directory, Andhra Pradesh, Census of India 2001.

Figure 3.3: Average distance from a Local Town to the Village across Districts in Andhra Pradesh, 2001



Source: Village Directory, Andhra Pradesh, Census of India 2001.

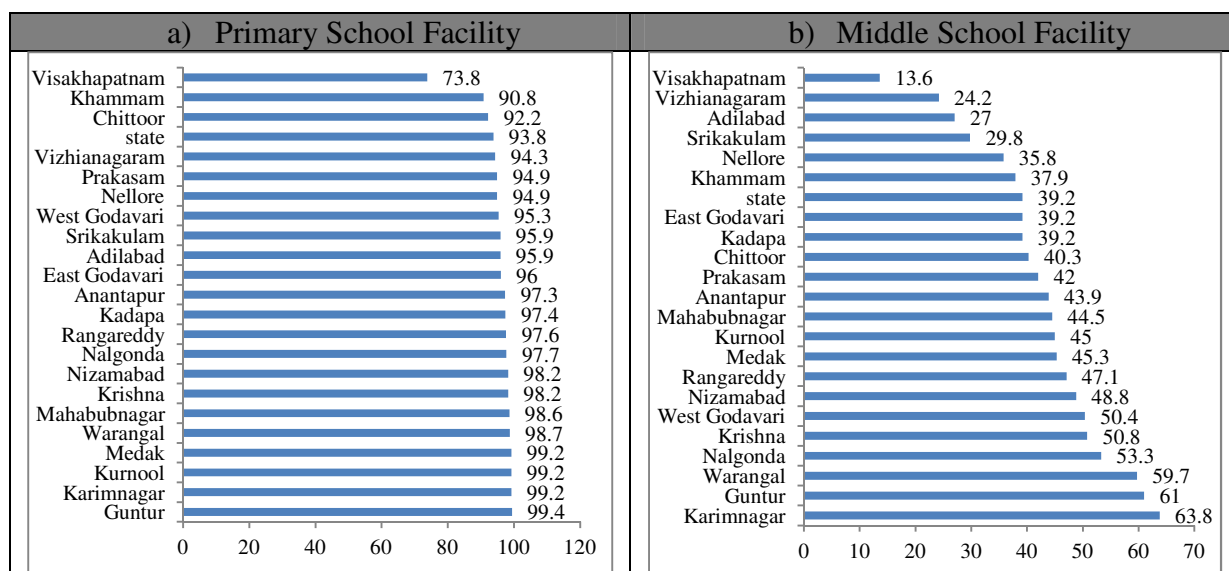
The average distance from a local town to a village varied across districts between the highest 96 Kms to the lowest 20 Kms (Figure 3.3). The average distance was highest in Visakhapatnam district followed by Khammam, Warangal, Kadapa and Prakasam districts; and it is the lowest in Guntur district preceded by Rangareddy, West Godavari, Krishna and Nizamabad districts.

IV Basic Amenities within the Villages

The most important factor is the availability of basic amenities like drinking water, educational institutions and health care and communication facilities in these villages.

The percentage of villages having a primary school facility varied across districts, between the highest, 99% to the lowest, 74%. The percentage was the highest in Guntur district followed by Karimnagar, Kurnool, Medak and Warangal districts; and it was the lowest in Visakhapatnam district preceded by Khammam, and Chittoor districts (Figure 4.1a). However, it must be noted that more than 90% of villages across these districts had this facility. Only in Visakhapatnam district this percentage stood at the lowest figure of 74%.

Figure 4.1: Percentage of Villages across Districts Having Schooling Facility



Note:

Source: Village Directory, Andhra Pradesh, Census of India 2001.

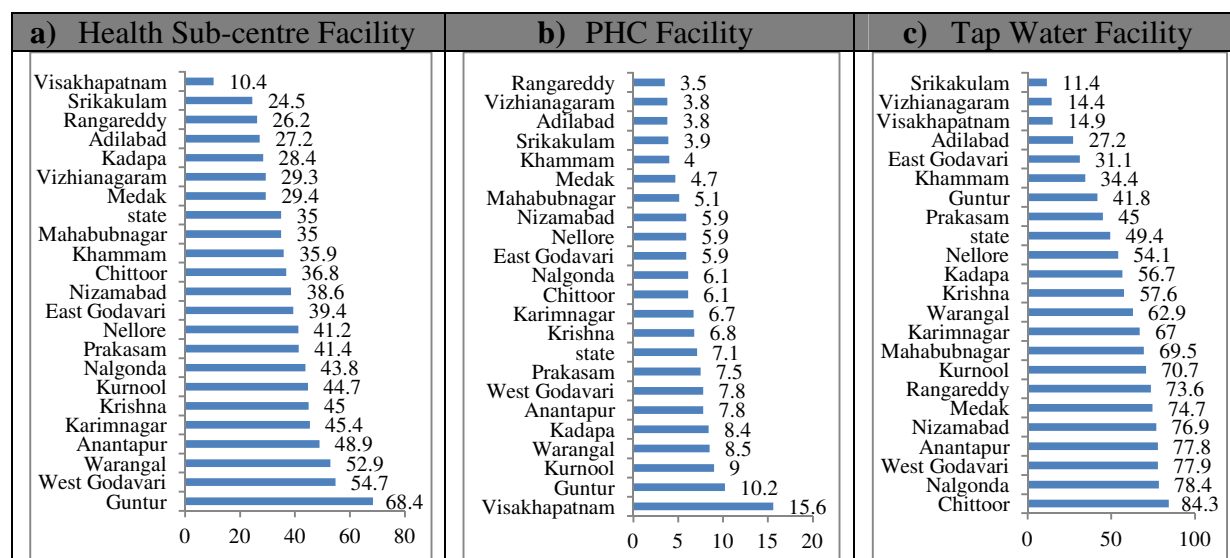
In the case of having a middle school facility, there was a wide variation; it varied across districts between the highest of 64% to the lowest, 14%. The percentage was the highest in Karimnagar district followed by Guntur, Warangal, Nalgonda and Krishna districts; and it was the lowest in Visakhapatnam district preceded by Vizianagaram, Adilabad, Srikakulam and Nellore districts (Figure 4.1b).

As regards the health care facility, the percentage of villages having a primary health sub-centre (PHSC) varied across districts between the highest, 68% to the lowest, 10%. The percentage was the highest in Guntur district followed by West Godavari, Warangal, Anantapur and Karimnagar districts; it was the lowest in Visakhapatnam district preceded by Srikakulam, Rangareddy, Adilabad and Kadapa districts (Figure 4.2a).

As for having the primary health centre (PHCs) facility, the percentage of villages with a PHC varied across districts between the highest, 15.6% to the lowest, 3.5%. It was the highest in Visakhapatnam district followed by Guntur, Kurnool, Warangal and Kadapa districts; and lowest in Rangareddy district preceded by Vizianagaram, Adilabad, Srikakulam and Khammam districts (Figure 4.2b).

The other most important basic amenity is drinking water. In this regard tap water is considered as the protected one and hence a required facility. However, in Andhra Pradesh only half-of the villages have tap water as a source for drinking water. Across districts there was a wide variation in terms of the percentage of villages having tap water facility with the highest of 84% to the lowest, 11%. The percentage of villages having tap water facility was the highest in Chittoor district followed by Nalgonda, West Godavari, Anantapur and Nizamabad districts; and it was the lowest in Srikakulam district preceded by Vizianagaram, Visakhapatnam, Adilabad and East Godavari districts (Figure 4.2c).

Figure 4.2: Percentage of Villages across Districts in Andhra Pradesh Having Health and Tap Water Facility



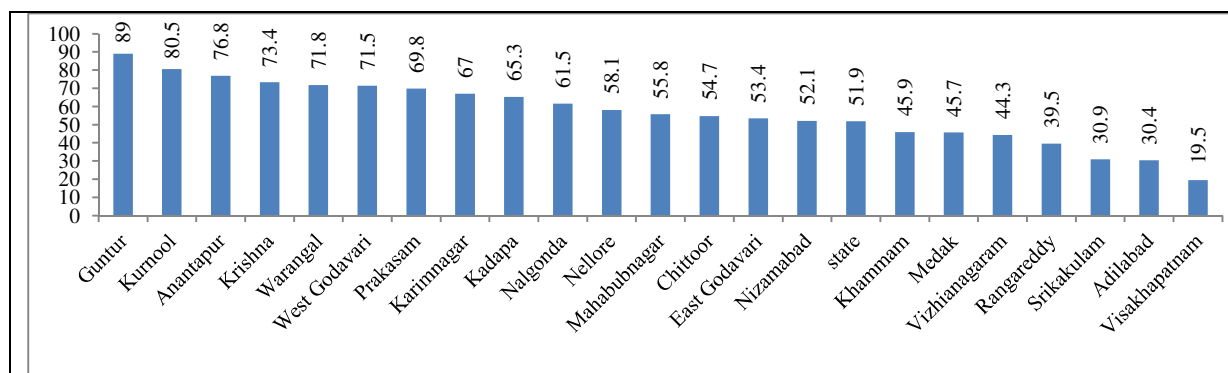
Note:

Source: Village Directory, Andhra Pradesh, Census of India 2001.

Regarding the access to energy in terms of availability of the power supply to the villages, most of the villages (99.9%) had it. However, there were about ten villages in Visakhapatnam, six villages each in Nellore and Chittoor, two each in Anantapur and Rangareddy, one each in Prakasam, Srikakulam, Khammam and Kadapa - altogether 31 villages of the state without the power supply.

The percentage of villages having post office facility varied across districts between the highest 89% and the lowest 19.5%. The percentage was the highest in Guntur district followed by Kurnool, Anantapur, Krishna and Warangal districts; it was the lowest in Visakhapatnam district preceded by Adilabad, Srikakulam, Rangareddy and Vizhianagaram districts (Figure 4.3).

Figure 4.3: Percentage of Villages having Post Office Facility across Districts in Andhra Pradesh, 2001



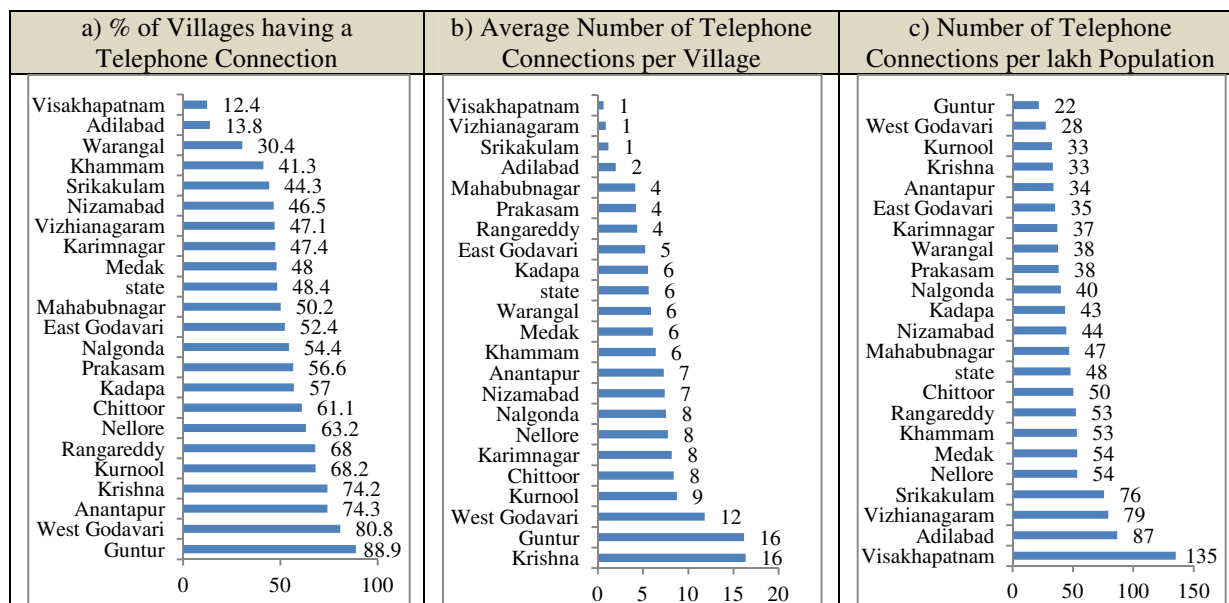
Note:

Source: Village Directory, Andhra Pradesh, Census of India 2001.

Similarly with respect to the telephone connections, the percentage of villages having at least one telephone connection varied across districts between the highest 89% and the lowest 12%. The percentage was the highest in Guntur district followed by West Godavari, Anantapur, Krishna and Kurnool districts; and lowest in Visakhapatnam district preceded by Adilabad, Warangal, Khammam and Srikakulam districts (Figure 4.4a).

The average number of telephone connections per village varied across districts between the highest 16 and the lowest with only one connection. The average number of telephone connections per village was the highest in Krishna district followed by Guntur, West Godavari, Kurnool and Chittoor districts; and it was the lowest in Visakhapatnam district preceded by Vizhianagaram, Srikakulam, Adilabad and Mahabubnagar districts (Figure 4.4b).

Figure 4.4: Percentage of Villages across Districts in Andhra Pradesh having Telephone Connections



Note:

Source: Village Directory, Andhra Pradesh, Census of India 2001.

The number of telephone connections within the villages per lakh rural population varied across districts between the highest 135 to the lowest 22 connections. The percentage was the highest in Visakhapatnam district followed by Adilabad, Vizhianagaram, Srikakulam and Nellore districts; and it was the lowest in Guntur district preceded by West Godavari, Kurnool, Krishna and Anantapur districts (Figure 4.4c).

V Summary

The above analysis which was about the size of the villages, connectivity of and the basic amenities available within the villages across districts of the Andhra Pradesh indicates a wide range of variations. But there had not been any unique pattern observed across districts; rather the patterns varied along with the parameters. Nevertheless it is observed that a few districts with substantial tribal population appeared to be lagging behind in many of the indicators related to the connectivity and village infrastructure. The most striking observation is that around three-fourths of the rural population in the state were living in the villages within the 45 Kms. distance orbit of local towns.

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