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AREAL DISPARITIES IN THE DISTRIBUTION OF AMENITIES IN HILLS

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ABSTRACT : The inter-regional and intra-regional differentials in the distribution of services and amenities are evident realities. The problem is more acute in hill areas where the diverse physical condition is added to the socio-economic differences. However, the configuration and transport and communication seem to be the most effective factors in guiding the location of facilities.

In this context the paper highlights the areal gaps in the distribution of amenities in hills and identified the functions reflecting the highest variability in terms of the area as well as population served by them. Furthermore, factors responsible for such disparities have been noted and remedial measures are suggested so as to achieve an optimum distribution in the tehsil.

The study unit, tehsil Almora of Kumaon division has been divided into functionally homogenous segments for the analysis by using growth centre approach. The relative standard of service availability coefficient, which is the indicator of adequacy or inadequacy of a function within a given segment of various functions in the tehsil, is measured on the basis of the average area and population served by each unit of a function in different segments. The assessment of service standard availability with reference to each identified segment is worked out by comparing each of them with that of the tehsil as a whole. The factors responsible for such areal gaps as well as the variability of functions have been noted and remedial measures to chalk out these gaps are recommended.

TABLE I : TEHSIL ALMORA : GENERAL CHARACTERISTICS OF THE THIRD LEVEL CLUSTERS

Sl. No.	Clusters Items	Someshwar	Takula	Hawalbag	Almora*	Lamgara	Jainti	Danya	Panuanaula	Badrechhina	Tehsil Almora
1.	Area of Villages in Hec.	6963	5156	8950	11517	8615	12717	9959	12988	5858	82723
2.	Percent of forested/Barren Land to total area	60.01	42.06	58.13	46.00	56.67	62.19	69.92	72.61	26.81	54.89
3.	Total Population 1971	26763	9918	23521	46637	11362	20242	25857	19531	10997	194828
4.	Road length(kms) per sq. km. of area under villages	0.76	0.66	1.61	0.85	0.41	0.35	1.11	0.35	0.65	0.73
5.	Road length (kms) per sq. km. of Geographical area	0.26	0.60	0.98	0.64	0.34	0.28	0.51	0.25	0.35	0.46
6.	Road length (kms) per 1000 population	1.98	3.53	6.12	2.10	3.08	2.17	4.29	2.36	3.46	3.10
7.	Per cent of electrified villages to total villages	43	11	31	22	7	2	3	12	13	16
8.	Arithmetic density of population per sq. km.	385	195	263	404	132	159	259	151	187	235

* Including the Urban Population of Almora Town.

THE PROBLEM

One of the basic objectives of integrated area planning has been to accelerate the pace of economic development with a due emphasis on the equality of distribution of gains among the masses. Unfortunately, this has not happened despite various steps taken by the Government and some other voluntary agencies. The problem of unequal distribution of amenities, inter-regional and intra-regional differentials are thus evident realities. The problem in hills is more acute on account of physical diversities. The concentration of amenities in few sites is a common phenomenon in hills. The transport, guided by physical factors, seems to be the most operative factor in deciding the location of these amenities. Obviously, the flat valley land, relatively gentle in slope and fertile, susceptible to the extension of irrigation facilities has been the first occupancy of man. The communication and transportation facilities could be developed simultaneously to these areas on account of comparatively favourable physical factors as well as accessibility. Development of such means led to the further concentration of amenities in these areas while the dissected parts with steeper slopes and thereby inaccessible were occupied in later stages with the growth of population and consequent pressure on the land already occupied. But most of these parts remained deprived of social amenities mainly because of lack of adequate transport facilities and means of communication; albeit in few cases the flat tops of hills occupied by man have been linked with other parts and provided with amenities. This has created intra-regional variations in addition to the other problems in the distribution of amenities in hills which are more or less same in the nature from one part to another. Still there are such localities in U.P. hills where people have to travel more than 20 kms for a health facility or an educational facility of intermediate level which is a pity condition in the absence of mechanical transport.

The integrated planning approach calls for the demarcation of gaps and deficiencies in the distribution of facilities and the suitable measures for their removal so as to achieve an optimal distribution in the area.

OBJECTIVES

The present attempt highlights the areal gaps in the distribution of amenities in hills and identifies the functions reflecting the highest variability in terms of the area as well as population served by them. Furthermore, it deals with the remedial measures for such disparities which are consequent upon physico-socio-cultural factors.

THE STUDY AREA

The study region, with an area of 1326 sq. kms. on a horizontal plane, lies between 290° 25' and 29° 53' N. Latitudes and 79° 31' and 80° 5' E. Longitudes. It is one of the three tehsils that constitute the Himalayan district of Almora in the Kumaun division of Uttar Pradesh.

The region had a population of 1,94,828 as per the 1971 Census (2,22,768 as per 1981 Census - provisional) which is predominantly rural (89%) distributed in 859 Census villages with an average population range of two to more than one thousand. It is worked out that 70 per cent of the total population lives only in 38 per cent of total inhabited villages. In fact, it is four times bigger than the tehsils of U.P. plains in respect of village numbers but almost one third as regards of the population size. There is only one urban centre i.e. Almora, which is also a district headquarter and accounts for the entire urban population of the region.

Geographically, the tehsil falls in the Outer Lesser Himalayan zone of Kumaun Himalaya characterized by unfossiliferous

TABLE II : TEHSIL ALMORA : SERVICE STANDARDS BY AVERAGE POPULATION SERVED BY EACH UNIT OF A FUNCTION

Sl. No.	Clusters Service	Someshwar	Takula	Hawalbag	Almora	Lamgara	Jainti	Danya	Panuanaula	Badrechhina	Tehsil Almora
1.	Senior Basic School	0.78	1.05	1.33	0.59	2.14	1.17	1.08	0.89	0.95	1.00
2.	M.C.W./F.C.	0.82	1.48	1.09	0.71	0.97	1.09	0.85	1.32	1.67	1.00
3.	Stock man centre	0.75	1.35	1.71	0.72	1.77	0.66	0.78	1.03	1.22	1.00
4.	Bus stop	1.38	0.78	1.82	0.75	1.37	0.58	0.60	1.00	1.77	1.00
5.	High School	1.10	1.79	1.25	0.76	0.52	0.87	1.14	0.91	1.07	1.00
6.	Govt. Hospital	1.03	1.12	1.42	0.36	0.48	1.38	1.08	1.42	1.52	1.00
7.	Telephone	3.83	2.18	0.92	1.16	0.95	-	0.84	0.55	1.97	1.00
8.	Seed and Fertilizer distribution cer re	1.18	1.06	1.57	0.56	0.46	1.04	1.02	1.08	1.44	1.00
9.	Veterinary hospital	0.30	1.64	1.38	0.87	1.43	0.80	0.94	1.25	1.48	1.00
10.	Co-op. shop	1.32	0.89	1.13	0.76	0.78	0.44	1.03	1.36	1.61	1.00
11.	Inter college	0.43	1.13	1.46	1.47	1.01	0.56	0.89	0.59	1.04	1.00
12.	Primary health centre/Civil hospital		3.27	1.38	0.70	0.86	-	1.26	-	2.95	1.00
13.	Bank	0.91	1.23	0.52	1.30	2.14	0.60	0.94	0.62	1.11	1.00
14.	Agricultural Extn. Office	-	3.27	1.38	0.70	2.85	-	1.26	-	2.95	1.00
15.	Post & Telegraph	1.21	1.64	0.69	0.70	1.43	-	1.26	0.83	2.95	1.00
16.	Total Standard score	15.04	23.08	19.05	12.11	19.16	9.19	14.97	12.85	25.70	15.00

sedimentary rocks of Precambrian to Paleozoic ages. Altitudinal variations range from 700 to 2750 metres above the mean sea level. The terrain is dissected by various perennial and non-perennial rivers leading to precipitious configuration varying from below 10 to more than 30 average slope. Strikingly, about 85 per cent and 60 per cent of the total geographical area falls under the altitudinal range of 1200 to 2000 metres and average slope group of 20 to 30 respectively.

About two thirds of the total geographical area is under forest, pasture and barren land while net cultivated land accounts merely for 28 per cent. Irrigation facilities have been extended to only 11 per cent of the net cultivated land.

There is a deplorable lack of physical as well as socio-economic infrastructure. The motorable road density (0.23 km/km) as well as the road length per lakh of population (159 kms) is below the standard of Indian Road Congress. A little less than 50 per cent of villages lie more than 5 kms away from motorable road while 75 per cent of villages are at a distance of more than 3 kms from a bus stop. The percentage of electrified villages is only 16. While 30 and 73 per cent settlements are still located at a distance of more than 5 kms from a Junior Basic School or a MCW/FC, about 80 per cent settlements do not have post and telegraph facilities within a reach of 5 kilometres. Similarly about 52 per cent villages are lying at more than 5 kms distance from STMC/VH centres. Other facilities are also found inadequate in terms of population as well as area served by them.

Methodology

The tehsil has been divided into various small and large clusters (planning units) by using growth centre approach of spatial planning for an integrated development. To demarcate these clusters the first step taken is the identification of focal points (central places) on the basis of their functional establishment by using Davies' formula. The number of functions in a centre and its capacity to serve adjoining areas have determined its hierarchic order in an array of central places. For this purpose a total of 56 functions have been selected and grouped into four hierarchic levels following the criteria of scarcity, specialization and requirement since the most popular technique of functional classification i.e. Threshold population was not found appropriate.

At the outset a total number of 63 centres have been identified as first level (lowest) central places - out of these 22 centres qualified for second level, of which 7 qualified for third level and only one centre out of 7 centres for the fourth (highest) level. Except the fourth level centre, Almora, the only urban centre in the area, all settlements are classified as rural settlements and none has emerged as marketing centre. Mainly the presence of policy functions have guided the emergence of a central place. The inadequacy of marketable surplus available from agriculture and industry sectors and the dearth of other commercial activities have primarily been responsible for the general absence of large commercial and business centres.

The spatial distribution of the existing centres has been found inadequate since large number of villages are located far away from some of these centres and do not fall within the generally accepted limit of a central place. Therefore, on the basis of functional level, potentiality for central position and people's choice for new establishment of some functions, it has been considered essential to propose 3 new centres at the first level. Besides, 8 first level centres have been recommended as second level while 2 second level as third level centres.

TABLE III: TEHSIL ALMORA : SERVICE STANDARDS BY AVERAGE AREA SERVED BY EACH UNIT OF A FUNCTION (AREA UNDER VILLAGES)

Sl. No.	Clusters Services	Someshwar	Takula	Hawalbag	Almora	Lamgara	Jainti	Danya	Panuanaula	Badrechhina	Tehsil Almora
1.	Senior Basic School	1.77	0.86	1.49	1.03	1.20	0.81	1.19	0.57	0.76	1.00
2.	M.C.W./F.C.	1.34	1.25	1.22	1.22	0.54	0.74	0.94	0.84	1.33	1.00
3.	Stock man Centre	1.23	1.11	1.91	1.24	0.99	0.45	0.86	0.66	0.97	1.00
4.	Bus Stop	1.66	0.64	2.03	1.29	0.77	0.39	0.66	0.64	1.41	1.00
5.	High School	1.80	1.46	1.40	1.31	0.29	0.59	1.26	0.58	0.85	1.00
6.	Govt. Hospital	1.70	0.91	1.58	0.61	0.27	0.93	1.19	0.91	1.21	1.00
7.	Telephone	2.00	1.78	1.03	2.00	0.53	-	0.92	0.35	1.57	1.00
8.	Seed & Fertilizer Distribution Centre	1.93	0.87	1.75	0.97	0.26	0.70	1.12	0.69	1.14	1.00
9.	Veterinary Hospital	0.49	1.34	1.54	1.50	0.80	0.54	1.04	0.80	1.18	1.00
10.	Co-op. Shop	2.16	0.73	1.26	1.31	0.44	0.30	1.13	0.87	1.28	1.00
11.	Inter College	0.70	0.94	1.63	2.54	0.56	0.38	0.98	0.37	0.83	1.00
12.	Primary Health Centre/Civil Hospital	-	2.67	1.54	1.20	1.60	-	1.38	-	2.35	1.00
13.	Bank	1.49	1.00	0.58	2.24	1.20	0.41	1.04	0.40	0.88	1.00
14.	Agricultural Extn. Office	-	2.67	1.54	1.20	1.60	-	1.38	-	2.35	1.00
15.	Post & Telegraph	1.98	1.34	0.77	0.60	0.80	-	1.38	0.53	2.33	1.00
16.	Total Standard Score	19.75	19.57	21.27	20.27	12.85	6.24	16.47	8.21	20.44	15.00

Thus in all, the clusters of 66 first level, 30 second level and 9 third level have been delineated on the basis of *Choice Place Data** and *Reilly's Retail Gravitational Model* which determine the functional relationship between central place and its dependent settlements and performs a functional complexity. The clusters identified and delineated on the basis of mutual interdependencies between central place and its periphery, consist a close functional community, which are small and large in their extent according to the specialization of their respective centres. These three levels of clusters have been taken for the planning of different type of economic activities.

On account of the varied population size and area served by the 15 selected functions, in the present study, the third level clusters have been considered to chalk out the areal disparities in their distribution and the factors determining their location (Table I and Fig. 1).

In order to analyse the areal gaps in the distribution of amenities *'The Relative Standard of Service Availability Coefficient.* has been worked out taking into consideration the population and the area served by each unit of selected functions.

The average population and area served by each unit of the functions in

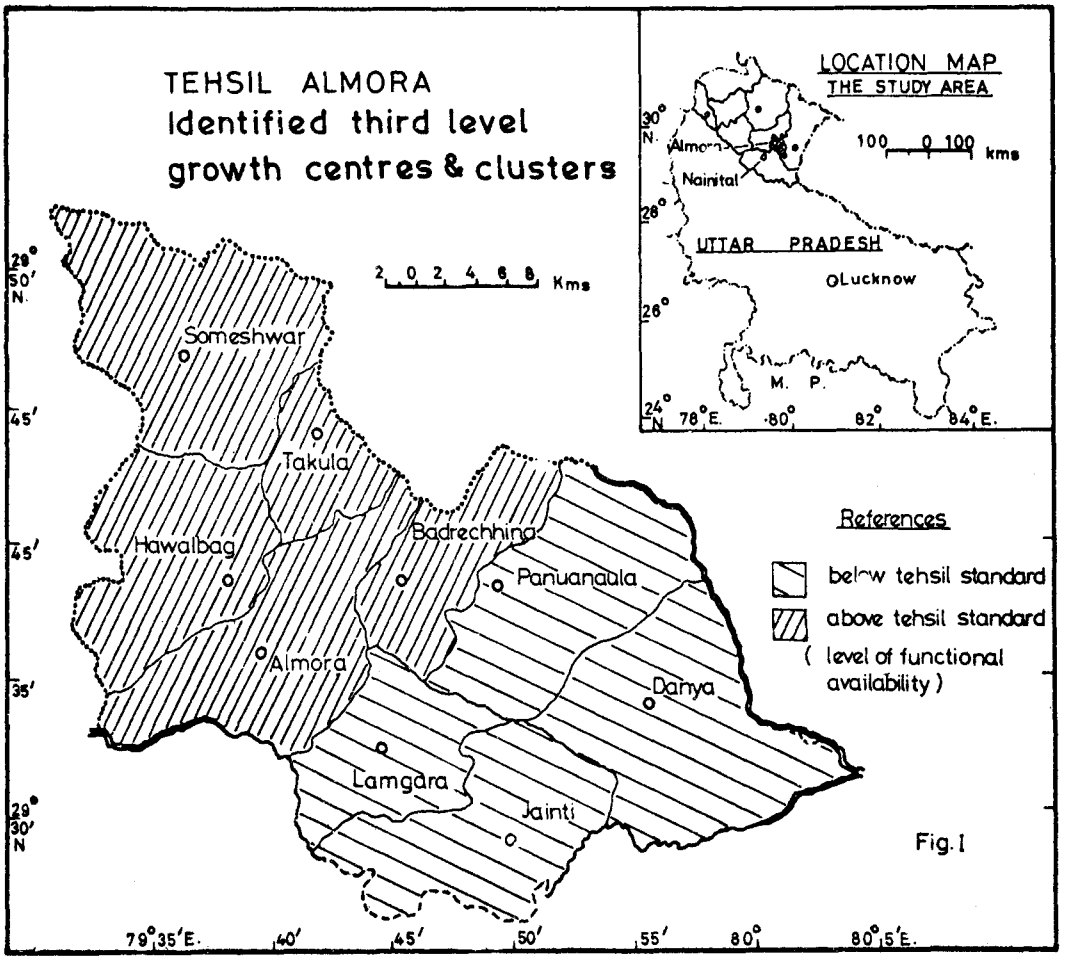

Fig. 1

different clusters have been computed and each of them has been compared with that of the Tehsil as a whole to obtain the relative standard of service availability coefficient. This coefficient indicates the adequacy or inadequacy of a function within a given cluster, when compared with the score of the Tehsil as a whole. For example, on an average, there is one senior basic school for a population group of 3479 at the Tehsil level (coefficient = 1.00) while in the Someshwar cluster one unit of that function serves 4460 persons and thus the coefficient of the cluster is 0.78 (Table II), below the Tehsil standard. Similar exercise has been done to compute the coefficient of other functions in each of the clusters (Table II & III). It has been done by assuming that the level of services obtained in the Tehsil as a whole should be ensured for every cluster.

If a coefficient in a pocket is nearly to the equity or one unit, it is implied that the availability of services in the pocket is reciprocal to the Tehsil. If it is less than that, it indicates that the area or population is not adequately served by the function, while in the cases where the coefficient happens to be more than that, it indicates that the segment is served more adequately as compared to the Tehsil as a whole.

DESCRIPTION

A few characteristics in the Table I reveals that Almora, Someshwar and Hawalbag clusters have comparatively higher proportion of the population. The average arithmetic density is highest in Almora cluster followed by Someshwar and Hawalbag. Obviously, the transport density and percentage of clectrified villages have followed almost the same pattern. Those three clusters, and to some extent Taluka and Badrechhina have a good proportion of flat valley land suitable not only for the purpose of cultivation but also for extending other physical and social infrastructure in these areas. On the other hand, with a relatively higher extent of the area in the clusters like Danya, Lamgara, Panuanaula and Jainti have lower concentration of population and dispersed settlement pattern due to rough, dissected infertile terrain, lack of suitable cultivated land as weli as physical and social infrastructure. Still, Jainti cluster does not have a metalled road and most of the settlements in this cluster as well as in Lamgara, Panunaula and Danya fall more than 20 kms away from a road head and the people of this cluster have to travel long distances to avail the very basic facilities of health, education and extension services. The factors responsible for differences in the distribution of these facilities in different clusters are basically physical. But the occurrence of physical infrastructure played an important role in this regard.

Table II depicts the function-wise scores obtained by different clusters in terms of population. The clusters like Almora, Jainti, Panuanaula and Someshwar exhibit the level of services below the standard of tehsil in more than half of the selected functions. These functions are related with educational facilities, transport and health facilities. Badrechhina, Takula, Hawalbag and Lamgara are better off in terms of population served by the functions. It is worthwhile to mention here that Almora and Someshwar concentrated quite high number of functions as compared to other clusters but in terms of their population they are found inadequate. Contrary to this, Jainti and Panuanaula are smaller in the size of population still the number of functions; particularly higher facilities are, so short in number as to serve the population adequately. Among the clusters showing the scores above tehsil, Takula and Badrechhina conceal the real picture since most of the functions located there serve also the population dwelling outside the tehsil area which is not taken into account for the present study. However, clusters of Hawalbag, Someshwar

and Lamgara reflect a more adequate distribution of services.

Owing to unequal distribution of population in the area, the criterion of population has some limitations, particularly in hills where accessibility is found poor due to topographical constraints. Hence, the standard scores computed in terms of area is also found significant to be considered (Table III). As a result, Lamgara has shown a decline in its status determined by the population criterion and stands with the cluster of Jainti and Panuanaula; both retaining the previous status of inadequate distribution of amenities. Almora, on the other hand, has shifted to the group of clusters which are adequately served by the functions. The reasons of shift can be explained by the large area of the cluster in case of Lamgara and small area in case of Almora.

By averaging the scores, it is found that Jainty and Panunaula exhibited the level much below the standard of tehsil whereas clusters like Lamgara and Damya are almost equal to the tehsil average. Rest of the clusters reflect an average score much above the tehsil average.

Functionwise, the maximum variability is noted in the distribution of primary health centre/civil hospital, and agricultural extension services followed by telephone facilities, post and telegraph, transport facilities and inter colleges. The functions showing comparatively low variability are seed and fertilizer distribution centres, high schools, senior basic schools, stock man centres and maternity and child welfare centres.

Findings

On the basis of above analysis it is concluded that the factors like topography, transport density and availability of agricultural land have been instrumental in determining the distribution of amenities in the region. Obviously, topography of the region is the root cause creating disparity since the availability of agricultural land and transport density are determined mostly by the topographical conditions of the region. The impact of natural environment is also evident in the spatial pattern of amenities and services. The cluster of Hawalbag, Almora and Someshwar are endowed with suitable physical conditions encouraging easy accessability and agricultural level and thereby concentrating most of the social amenities and services. The clusters of Danya, Lamgara, Jainty and Panuanaula, where physical conditions are not conducive to the enhancement of transport facilities, and extension of agriculture, have shown comparatively a low standard. However, their standard can be raised by extending transport facilities and allocating higher facilities.

The second important conclusion obtained is that disparities are found more in the distribution of higher level function such as post and telegraph, telephone, inter college, bus station, primary health centre, agricultural extension services and co-operative store. While the functions like senior basic school, high school, government hospital, veterinary hospital, stock man centre, fertilizer distribution centre and banking facility reflect more or less an optimal distribution. It is worthwhile to mention here that the tehsil when compared to other parts of the state is poorly served with most of the facilities and extra units of functions are required to be located there giving priority to the higher order functions. Moreover, they should be distributed first in those clusters which fall much below the standard of tehsil as a whole.

Thirdly, a few functions in some clusters though adequately served in reference to the population, are inadequate in reference to the area. The case is vice-versa regarding

some other functions. This is in fact because of two different criteria adopted for the evaluation of functional distribution. All such functions are however inadequate and discrepancies regarding them can also be removed by increasing the units of functions in those clusters.

On the whole, it may be suggested that while planning the distribution of functions, not only population but the consideration of area served by a unit also needs greater precisions particularly in the case of hills. The second aspect that needs proper attention is the determination of location of the functions so as to ensure a minimum aggregate travel distance for the dependent population. The location can be determined by undertaking further analyses and identifying functional gaps which distinguishes the settlement viable for the sustenance of a particular function. The central places of the different levels identified in the region, however, can be considered as suitable locations for the establishment of new units.

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