CHAPTER - VII

ZONE OF INFLUENCE OF CITIES IN
MAHARASHTRA

An attempt had been made in this chapter to delimit
the zone of influence of cities in the study area and to
examine their functional relationship with other cities of
the area. The zone of influence is also defined as an
" urban field ". The spatial impact of the cities on the
surrounding area is an important point discussed by various
geographers (Hartshorne, 1980). The location and spacing
of cities clearly indicate the manner in which the urban
settlements are linked to other places. Any city big or
small has its area linked to it by economic and social
bonds. Cities are called the focal points of the surrounding
areas. The zone of influence is also called " Umland "
several other expression have appeared in the published
literature such as " catchment area ", " urban field ",
" tributory area ", " city region " and " complimentary
area ". Dickinson (1947) has defined term umland as the
portion of an urban field that is nearest to the city up to
a distance of 20 miles.

Taylor (1949) has consider the term umland of
acity as that portion of surrounding area which is linked
culturally with the city .

According to Singh (1955) the area in which the region and the city are culturally, economically and politically inter-related forms the umland of that particular city.

There have been two approaches to the identification and delimitation of zone of influence. The first has looked out ward from the city in order to find out the areas served by it. The second has look inward from countryside (Carter 1972).

While examining the zone of influence of large number of cities, one is brought up against practical difficult of collecting information. When large number of cities to be consider, field data collection becomes laborious, time consuming and expensive. In such cases generally impirical methods are avoided and theoretical models and quantitative methods are used.

REVIEW OF METHODS :

In impirical studies, Dickinson (1930 and 1934) Smailes (1947), Bracey (1953), Green (1950), Park and New Comb (1933), Schultze (1951), Whitelaw (1962) and Scott (1964) have worked and delimited the zone of influence of towns. In India R.L. Singh (1955) V. Singh (1961) Dwivedi (1964), Mukharjee (1962), Dixit (1968), Alam (1965) have used various functions tor delimiting zone of influence of towns.

Apart from these impirical methods, several authors have used quantitative methods for calculating the zone of the influence of urban centre. Reilly (1931) tried to put forward the law of retail gravitation. Stewart (1958) and several others, have used gravity potential model of human interaction. In India Mahadeo and Jayashankar (1969) have used modified gravity potential model and calculated the amount of inter action between two major cities of Karnataka.

Prakash Rao (1958) in simple mathematical model tried to calculate the zone of influence of towns of Karnataka.

CHOICE OF METHOD IN THE PRESENT STUDY :

In the present study a mathematical model invented by Prakash Rao has been used.

METHODOLITY :

V.L.S. Prakash Rao has given a working formula for calculating zone of influence. It is accepted as a working hypothesis that each urban centre has same influence as a service or a market centre on a surrounding area. The degree of such influence depends upon its population size and functions. This hypothesis is used as a basis to workout the following formulla :

$$D = \frac{T \times A}{U} \quad \ldots \ldots \ldots I$$

$$R = \sqrt{\frac{T \times A}{U}} \quad \ldots \ldots \ldots II$$

Where

'D' is degree of urban influence

'A' is total area of the region under study

'U' is total urban population of the region

'T' is town population

'R' Radious of the circle indicating the
degree of influence.

$\frac{A}{U}$ is a standard value. The degree of influence of
each city is measure by the above mentioned formula and
results have been plotted in Fig. 7.1.

REGIONAL ANALYSIS :

The Fig. 7.1 clearly indicates that the zone of
influence of Greater Bombay city lies up to 339.3 kms.
It exerts its influence upto Solapur, Osmanabad, Deulgaon
Raja, Jalgaon and Chopda urban centres of the area. It
covers entire western Maharashtra, part of Marathwada and
very little part of Buldana district of Vidarbha.

It serves the 16 cities and several urban centres
of Maharashtra. Fig. 7.1 clearly shows the area served by
different cities of Maharashtra. Table 7.1 indicates the
range of zone of influence and number of urban centres of
different orders served by each city.

Pune and Nagpur are the important regional cities
of Maharashtra. These both cities have an influence up to
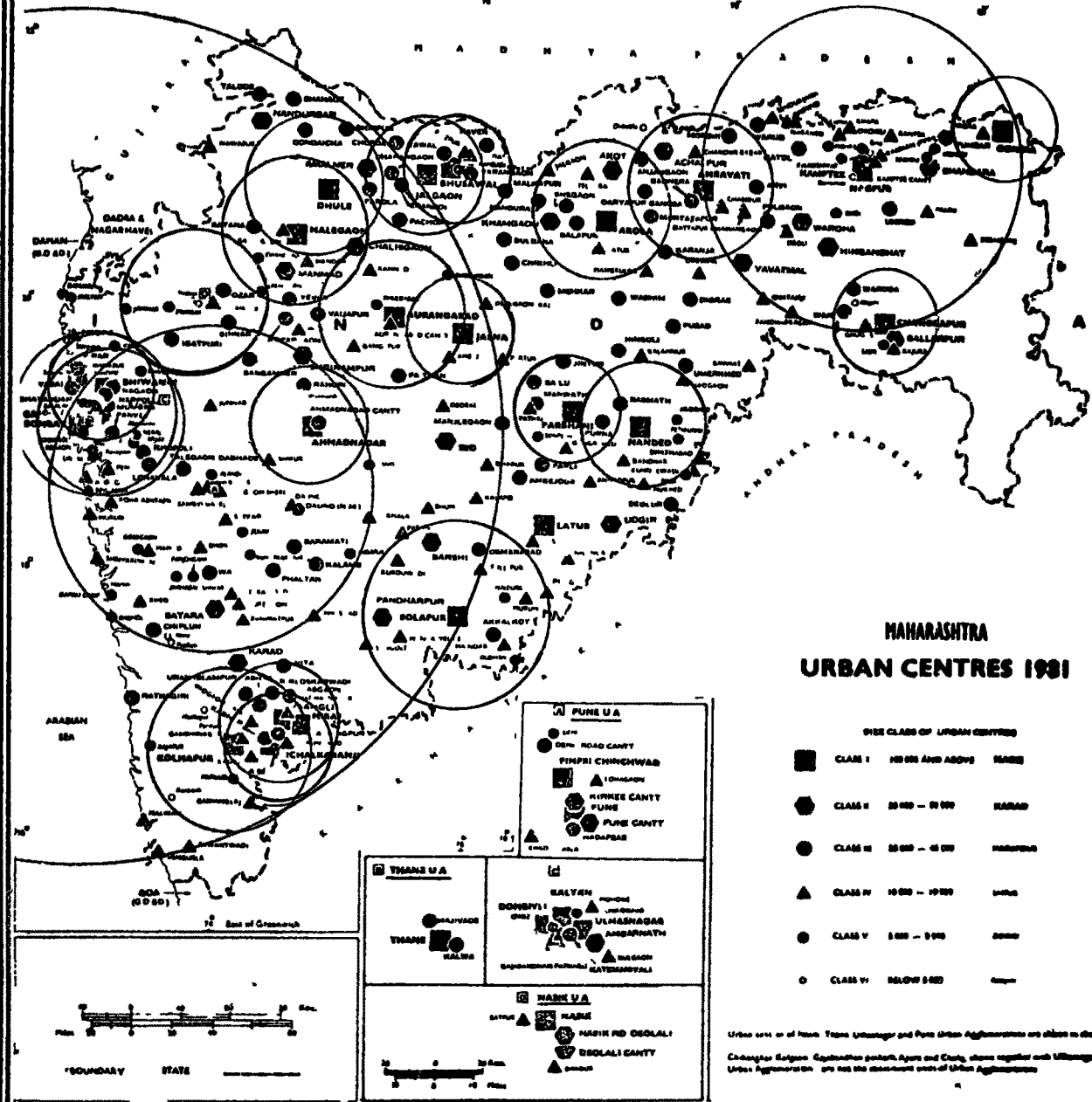
ZONE OF INFLUENCE OF CITIES
IN MAHARASHATRA

Fig. 7·1

130 kms. Pune has a influence on five cities namely Bombay,
Bhivandi, Thane, Ulhasnagar and Ahmednagar. It also serves
the several important towns like Chiplun, Satara, Pandharpur
Baramati, Sangamner, Shrirampur, Lonavala and Phaltan urban
centres of the area.

Nagpur city serves three cities Amravati, Gondia
and Chandrapur and several urban centres of Vidarbha.

Solapur, third order urban centre of Maharashtra
has its influence up to 76 kms. It serves major part of
Solapur district and some part of Marathwada region. Kolhapur
city serves nearly an area up to range of 70 kms. It serves
two important cities, Sangli and Ichalkaranji of the study
region. The city of Aurangabad an important urban centre of
Marathwada, serves a range of 64 kms. and indicates its
influence on the city of Jalana and few urban centres of
Marathwada.

All remaining cities of Maharashtra have their
zone of influence below the range of 62 kms. These all
cities are classified as 4th order cities of Maharashtra.
Out of these 18 cities Ulhasnagar, Nasik and Amravati have
a zone of influence ranging between 60 to 62 kms. Malegaon
Dhulia and Nanded cities have their influence ranging between
50 to 58 km. Sangli, Jalgaon, Ahmednagar, Ichalkaranji,
Bhusaval, Jalna, Chandrapur and Bhivandi all these cities
have their zone of influence ranging from 40 to 46 kms.

T A B L E - 7.1

RANGE OF SERVICE AREA AND URBAN CENTRES SERVED
BY EACH CITY

Sr. No.	Name of City	Popula- tion (In Lakh) 'T'	Range of Service area in kms. 'R'	Urban Centres of various class order served						Total
				I	II	III	IV	V	VI	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.	Bombay	82.27	339.3	14	15	52	58	32	12	183
2.	Nagpur	12.15	130.4	3	4	9	13	6	3	38
3.	Pune	12.03	129.0	5	1	22	23	18	6	75
4.	Solapur	4.11	75.8	-	2	2	6	2	-	12
5.	Kolhapur	3.40	69.0	2	-	6	5	1	3	17
6.	Thane	3.09	65.8	3	-	12	7	9	4	35
7.	Aurangabad	2.93	64.07	1	-	1	4	2	-	8
8.	Ulhasnagar	2.73	61.8	3	-	12	6	9	3	33
9.	Nasik	2.62	60.5	-	2	5	3	3	1	14
10.	Amravati	2.61	60.4	-	1	8	4	-	-	13
11.	Malegaon	2.45	58.6	1	2	2	2	2	-	9

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1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
12.	Akola	2.25	56.1	–	2	6	3	–	–	11
13.	Dhulia	2.10	54.34	1	1	3	1	–	–	6
14.	Nanded	1.90	51.68	–	–	3	3	2	–	8
15.	Sangli	1.52	46.18	2	–	7	4	–	–	13
16.	Jalgaon	1.45	45.0	1	1	6	2	1	–	11
17.	Ahmednagar	1.43	44.8	–	–	2	1	–	–	4
18.	Ichalkaranji	1.33	43.2	2	–	3	5	1	–	11
19.	Bhusaval	1.23	41.2	1	–	4	2	1	–	8
20.	Jalna	1.22	41.36	–	–	–	2	–	–	2
21.	Chandrapur	1.15	40.1	–	1	2	2	1	–	6
22.	Bhivandi	1.15	40.1	2	–	9	–	6	–	17
23.	Latur	1.12	39.5	–	–	–	2	–	–	2
24.	Parbhani	1.09	39.1	–	–	5	1	1	–	7
25.	Gondia	1.00	37.4	–	–	–	1	–	–	1

Latur, Parbhani and Gondia indicate their zone of influence ranging between 37 to 40 kms. The table 7.1 shows the range of influence of various cities of Maharashtra.

From the information given in the table, it is observed that Bombay city serves 183 urban centres of Maharashtra in which it serves the urban centres of all class orders. The lower order cities serve lower class order centres. Pune and Nagpur these two cities of Maharashtra have approximately equal service area but Pune serves 75 total urban centres. On the other hand Nagpur serves only 38 urban centres.

In conclusion one may say that most of the cities of Western Maharashtra serve more urban centres than the cities of Marathwada and Vidarbha. Further it is observed that the size of urban centres and their service areas are prefectly corelated and in the areas of city agglomoration the zone of influence of cities overlap each other. The service area boundries clearly indicate that the eastern and central part of Maharashtra is not efficiently served by any of the cities of Maharashtra.

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