Chapter 3
Methodological Issues in Studying Urban Influence

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Abstract The interaction of rural and urban settlements with each other is vital for the sustenance of both. While urban areas are advantageously placed, the development and growth of rural areas hinges on its effective interaction with urban. The study of this process has been widely taken up by geographers. However such studies are based on voluminous sets of data. The present study making methodological variation opens the way to undertake such studies on a country-wide scale. Further, the study focuses on analysis of characteristics of city vis-à-vis their rural peripheries in the census year 2001, a decade after the implementation of New Economic Policy of 1991 so as to unravel the growth equation between the two after a major policy shift. Overall, the results do not show break in the population attributes from city to villages.

Keywords City · Zone of influence · Rural peripheries · Diffusion · Random axes · New economic policy

Acronyms

NCAER	National Council for Applied Economic Research
HDI	Human Development Index
DMA	Delhi Metropolitan Area

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3.1 Introduction

Cities interact with each other however widely apart in physical space through exchange of goods, services, ideas, people, money, etc. Simultaneously they interact with their immediate periphery via expansion/contagious diffusion.[1] The interaction of city brings series of changes in rural periphery from changes in agriculture land use, occupation and finally complete transformation and the merger with the city. Over time dispersal of population and reverse commuting also takes place to optimize the functioning of the city.

However, these movements may not be operating uniformly across the rural periphery. The carriers or barriers in the interaction may facilitate or truncate the transition of periphery from rural to urban. While the carriers in the form of commuters, migrants and lines of communication hasten the process of transition from rural to urban, the barriers in the form of settlement size, on road, off road location, physical proximity to city, cultural traits to name a few may delay or limit the process. The absorbing capacity of rural periphery is thus widely affected by the impact of carriers or barriers.

Also urban areas being higher up in the settlement hierarchy exercise unencumbered influence over rural areas lower in the hierarchy. The segmentation of human settlements as rural and urban not only just reflects demographic differences it also conveys economic, social and political differences.

The influence of the city on its rural periphery has been studied widely in India. The approaches based on structural (population) and interaction (supply of commodities) data have brought out very important works to understand the diffusion process. The studies are based on voluminous data containing entire set of villages in the periphery. This article focuses on the methodological variation of using sample observations to bring out fringe area characteristics and to undertake such studies on a larger scale. Since New Economic Policy of 1991 offered many opportunities in the wake of liberalization, privatization and globalization it is indeed important to see the changes in the periphery of the cities after the implementation of this policy. Although the New Economic Policy in general is more benefiting the urban areas, the rural areas adjacent to an urban area would definitely show the high impact. Both the development of variety of work opportunities in cities together with shifting of industries and population to peripheries must have brought economic, sociocultural and political changes in both the locations. In light of this study aims at understanding the growth equation of cities vis-à-vis their rural peripheries in 2001, a decade after the implementation of Economic Policy. Post 1990s distributional impact (inequality reducing) impact of urban growth on rural poverty reduction has been noticed (Datt and Ravillion 2009). This is expected to

[1]Expansion diffusion is always of contagious type and vice versa. There can be hierarchical/leap-frogging and relocation diffusion working simultaneously over space and society. See Abler et al. (1971).

have materialized in reduction of spatial inequalities as well and brought continuum in the change of population attributes from city to sample villages.

This paper is divided into five sections. The first section deals with chronological changes in Methodology. The second section explains the methodologies adopted in rural periphery studies. The third section explains the methodology followed in the present study.

3.2 Chronological Changes in Methodology

There are many interchangeably used terms periphery, hinterland, umland, rurban, fringe, periurban, city region in use. These areas are characterized by mixed urban and rural populations, land uses and influences.[2] The structural composition of the fringe shows that these areas are enclosed within the green belt, designated by planners to control physical expansion of the city (Ramachandran 1989). The demarcation of green belt or the outer limit of expansion perhaps depends on population projection and its probable distribution on the basis of development potential, land availability, accessibility and density (Government of Maharashtra 1999).

Various criteria have been adopted by geographers for demarcation of influence area. The pioneering work in this direction has been of Singh (1955). He used five criteria, i.e. vegetable supply, milk supply, supply of grain, bus service and newspaper circulation in identifying the umland of Banaras. The umland has been identified on the basis of observations of the routes in case of vegetable, milk (interviews were also conducted with milk suppliers and officials of Banaras Milk Cooperative Society) and grain supply. The information relating to bus service was obtained from bus schedule available from Roadways Office. For newspapers (Aj and Sansar) the circulation information is obtained from newspapers managers. However, in the absence of population aspects, the influence area demarcated is incomplete.

Ellefsen (1962) measured hinterland of five cities viz., Madras, Delhi, Hyderabad, Bombay and Baroda using demographic data of villages from Census 1951. He also used transportation as an indicator. The villages showing values similar to city are taken in hinterland area. The hinterland is thus found extending up to an average distance of 11 miles from the city boundary. Hinterland identified cartographically includes villages on belt (2 miles from the city boundary), on ribbon (1 mile on each side of major transport routes), on secondary roads and interstitial villages.

[2]Even in the absence of distinct urban land uses in the villages, the existence of influence simply qualifies that rural area to be treated as part of fringe. The influence is seen on crops grown, animal husbandry (meant for the city) and employment pattern (commuting to the city). See Ramachandran (1989).

Boundary girdle (cartographically) has been used by Nangia (1976). On the basis of the literature survey, Nangia took 25 mile (40.23360 km) boundary as a limit of Delhi Metropolitan Region. The region comprises of city area, fringe and peripheral rural area. While city area comprises of continuous built-up area of the city, fringe comprises of villages bounded between the outer boundary of city area to break points of spatial, occupational, functional and demographic determinants. The determinants are graphically plotted and bring out fringe between 7 and 18 miles of distance from the city. The outer boundary of fringe is taken as the extent of metropolitan zone of influence. The peripheral rural area is mentioned as one which is not completely rural and interspersed by pockets of urban settlements and their zone of influence.[3]

NCAER (National Council for Applied Economic Research) HDI (Human Development Index) survey data of 1765 villages has been used by Kundu et al. (2002) for analyzing the continuity or dichotomy in the impact of towns on the villages. For this, the distance data of each village from the nearest town is extracted from Census 1991 and various socio-economic indicators pertaining to economic condition, health and education have been computed using survey data. The distance analysis of the socio-economic indicators has been done to gauge the impact of the towns on its peripheries.

In 2011 a book titled, "The Urban Fringe of Indian Cities" contained collection of articles dealing with fringe area demarcation, policy and planning aspects. One such article in the book dealing with fringe demarcation is that of Thakur (2011). The author demarcated inner fringe between Delhi Urban Area (DUA or city) and Delhi Metropolitan Area (DMA, it is a city planning area makes a ring around the DUA) and outer boundary beyond DMA in the National Capital Region (NCR or Delhi Metropolitan Region, includes Delhi state, Haryana, Uttar Pradesh and Rajasthan sub-region, forms a successive ring around DMA) using Landsat TM images of 1974 and 1999 following logic of spatial affiliation and economic ties. The author has studied the development characteristics of the five community development blocks viz. Alipur, Kanjhawala, Najafgarh, Mehrauli, Shahdara.

Another author Parkhi (2011) identified villages in the urban fringe of Pune on the basis of villages with more than 20% workforce in non-agricultural activity (1991); density of more than 400 persons per sq km (1996); population above 5000 (1996); and land price more than 200 per sq feet (2000). Villages satisfying three or more than three criteria are included in urban fringe. Rangaswami (2011) treated area outside municipal limit but part of Vadodara Urban Development Authority Area as urban fringe of Vadodara. Kulkarni (2011) studied outgrowths of 39 urban agglomerations in 2001 to bring out the character of fringe villages in Gujarat. Barai et al. (2011) considered potential urban area delimited by Bangalore Metropolitan

[3]Peripheral rural area should not be treated separately from fringe area. As mentioned by the author the peripheral rural areas are not completely rural and interspersed with urban settlements. The existence of urban settlements is in fact a result of leap frog urban development due to influence of larger nearby urban area. Such pockets of urban area together with their zone of influence show that the rural area is under urban influence directly or indirectly.

Region Development Authority as fringe area. The authors have studied the changes in the land use between 1988 and 1996 using remote sensing data. The change in the lives in the fringe has been studied using case study approach. Likewise Pathak (2011) treated the panchayat samities in Kolkata Metropolitan Area as delineated by Kolkata Metropolitan Development Authority as fringe area and studied the population density pattern vis-à-vis Kolkata.

Nengroo et al. (2012) have demarcated fringe of Srinagar as primary fringe (more than mean +3SD of an indicator), secondary fringe (mean +1SD to mean +3SD) and rural periphery (mean +1SD) on the basis of population density, non-agricultural workforce and literacy levels.

3.3 Methodology Used in the Present Study

Three sets of sample villages have been chosen to bring out attributes of villages in the hinterland

1. Villages adjoining the boundary of urban area. These villages are most proximate to the city. The physical expansion of urban areas is experienced often in these villages.
2. Villages on the highways/important roads emanating from urban area. Transport lines carry the urban influence and open up rural societies. Transport lines fulfil not just the demand and supply requirement of places but triggers further important changes in the form of migration and commuting.
3. Villages on the random axes using pairs of random points. While both the choices above show advantageous location of rural areas vis-à-vis urban, it is also possible to select neutral set of villages. The real influence should be checked independent of locational advantage. Randomly chosen villages could therefore be used as unit for analysis. The study of a set of villages along the random axes has been used in the study.

All the above approaches are used in studying influence of five cities on their rural periphery. The five cities selected are Kolkata, Mumbai, Bangalore, Ahmadabad and Lucknow. Cities correspond to their Urban Agglomeration (UA) boundaries. As per census, UA denotes a town with outgrowths or two or more towns together with or without their outgrowths. UA must contain at least one statutory town with population of not less than 20,000 as per 2001 Census (Census 2011). Thus UA is coterminous with geographical city which correspond to continuous built up around the city.

Out of the five cities selected two viz., Kolkata and Mumbai have population of million + since pre-independence time. The other three viz. Bangalore, Ahmadabad and Lucknow attained million + city status during post independence time (Table 3.1). The latter three cities are selected randomly from list of metropolitan cities in the year 2001.

Table 3.1 Population size of cities under consideration (in absolute numbers)

Year	Kolkata	Mumbai	Bangalore	Ahmadabad	Lucknow
1901	**1,520,721**	839,672	163,091	185,889	256,239
1911	1,756,805	**1,046,579**	189,485	216,777	252,114
1921	1,872,737	1,285,402	240,054	274,007	240,566
1931	2,123,128	1,316,413	309,785	313,789	274,659
1941	3,597,595	1,747,234	410,967	595,210	387,177
1951	4,685,869	3,216,904	786,343	877,329	496,861
1961	5,999,986	4,515,495	**1,206,961**	**1,206,001**	655,673
1971	7,429,952	6,596,370	1,664,208	1,760,950	813,982
1981	9,192,797	9,421,962	2,921,751	2,557,560	**1,007,604**
1991	11,041,705	12,596,243	4,137,314	3,364,259	1,669,204
2001	13,205,697	16,434,386	5,701,446	4,525,013	2,245,509
2011	14,112,536	18,414,288	8,499,399	6,352,254	2,901,474

Source Census of India 2001, General population tables; Census of India 2011 at the website
Note Figures are highlighted to show the year of attaining million city status by cities under consideration

3.3.1 Demarcation of Zone of Influence

Before selecting samples, the prime requirement was of generating the influence zone of the selected cities. It is demarcated on the basis of median distance between the city and nearest big city. The nearest class I cities considered for each of the five cities are Asansol (population 1,067,369 in 2001) for Kolkata; Pune (population 3,760,636 in 2001) for Mumbai; Tumkur (population 248,929 in 2001) for Bangalore; Vadodara (population 1,491,045 in 2001) for Ahmadabad and Kanpur (population 2,715,555 in 2001) for Lucknow.[4] All the nearest class I cities except Tumkur are also million + cities.[5]

The selection of nearest class I cities has been followed by digital joining of all the tahsil maps around the city covering the area up to the nearest big city. The maps are thus brought in digital format, on same scale and the mosaic developed with village boundaries. The exercise has been completed using ERDAS Imagine 8.4. After completing this exercise, the line is drawn joining centre points of city and its nearest counterpart. The centre point is derived using ILWIS 3.0 software. Zone of influence is demarcated by taking midpoint of the line running between city and nearest city as radius. The area falling under the circle drawn for each city is taken as an area of influence of that city. This part of the study is completed in Arcview 3.2.

[4]As per provisional results of Census 2011 population of the nearest big cities is as follows—Asansol 1,243,008 persons; Pune 5,049,968 persons, Tumkur 305,821 persons; Vadodara 1,817,191 persons and Kanpur 2,920,067 persons.

[5]In Karnataka there is only one million + city and that is Bangalore.

Influence area of cities is found extending roughly up to 25–30 km. In case of Kolkata, it is about 60 km.

Having demarcated the influence area, all the three sets of sample villages (on the city boundary, on the highways and on random axes) are identified.

Selection of villages on the city boundary and on highways has been done by visualizing the mosaic maps. For selecting random sample villages, two random axes are drawn using two sets of random numbers, one correspond to longitudes and the other to latitudes. The random numbers are generated in MS Excel by roughly considering the longitudinal and latitudinal spread of the state of location of each city. Two pairs of random numbers (each pair include one random number corresponding to longitude and the other to latitude) are marked inside the city area and the line connecting them is treated as random axis. In the same way another random axis is drawn. Thus in each city two such random axes have been drawn. Figures 3.1, 3.2, 3.3, 3.4 and 3.5 show sample villages of five cities under consideration.

3.3.2 Selection of Indicators

Fifteen indicators[6] have been selected for analyzing the urban rural differences. The indicators pertain to socio-economic characteristics.

The indicators computed are population growth rate (1991–2001, keeping 2001 as base), household size, child sex ratio, share of scheduled castes in total population, male and female literacy rates, male and female workforce participation rates, share of main workers in total workers, share of main cultivators, main agricultural labourers, main household industry and main other workers in main workers and ratio of agricultural labourers to cultivators.[7]

Data is collected from District Census Handbooks of both 1991 and 2001. Since all the three samples are from same influence zone, some overlap in sample sets has occurred. In order to minimize the overlap villages on random axes and boundary are exclusive of villages on highways. The average of all indicators with respect to city and each set of villages in the influence zone of cities is presented from Tables 3.2, 3.3, 3.4, 3.5 and 3.6.

3.4 Results of Empirical Analysis

Comparison of city attributes with the villages in the influence zone brings out following features:

[6]Proportion of Scheduled Tribes is computed for Mumbai and its rural influence zone.

[7]Since in workers we have considered only main workers and its constituents the word main is not used in Tables and the text that follows.

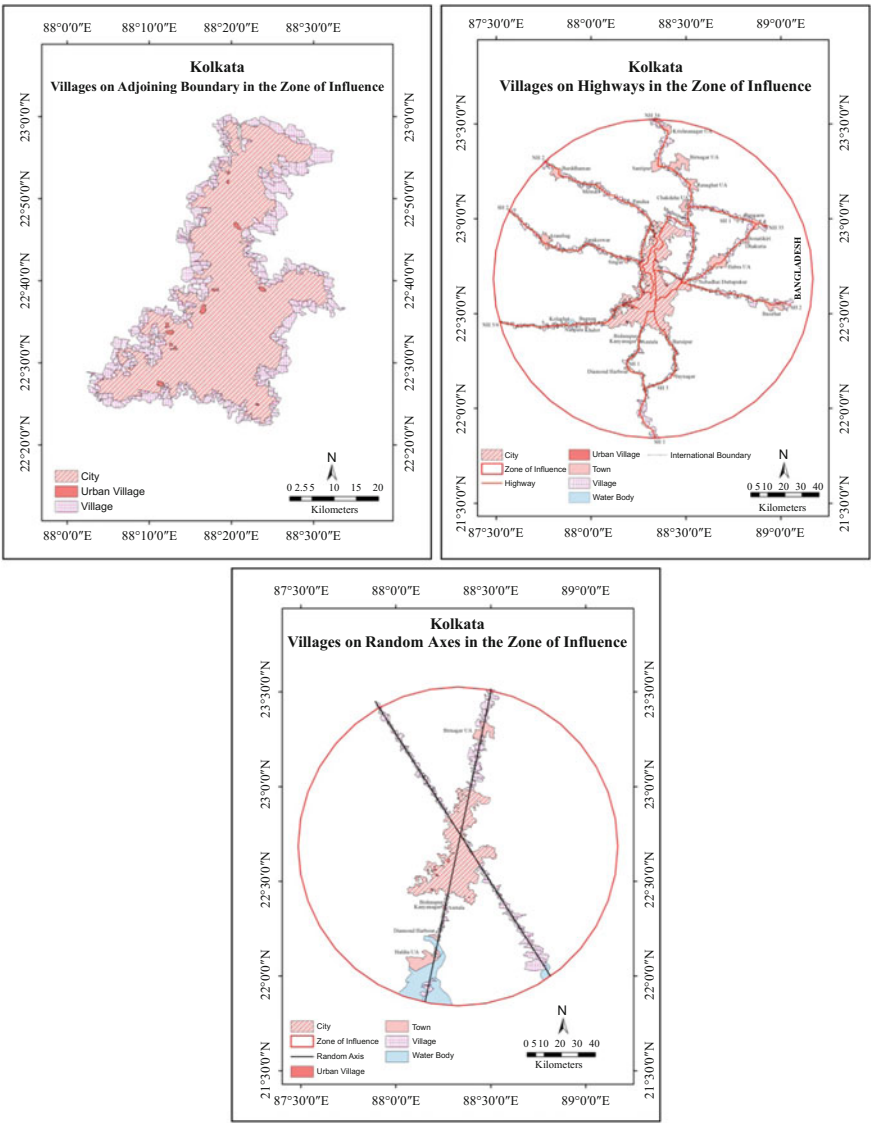

Fig. 3.1 Villages in the Zone of influence of Kolkata. *Source* Author

1. In case of four cities viz. Kolkata, Mumbai, Bangalore and Lucknow population growth rate (1991–2001) is higher in villages vis-à-vis city with few exceptions. Population growth is lower in boundary villages of Mumbai, villages on highways in the influence zone of Lucknow and villages on random axes of Bangalore. A slightly low growth in villages on adjoining boundary of Mumbai actually signifies expanding city influence.

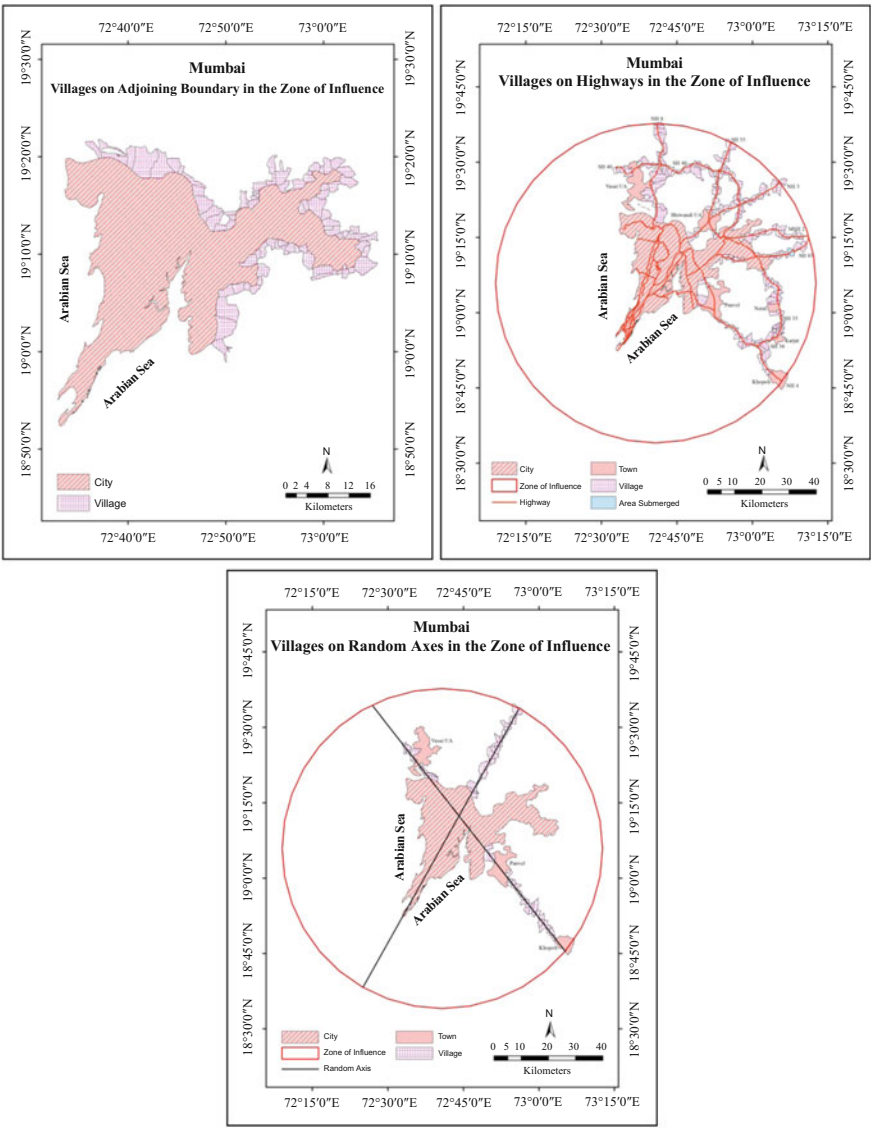

Fig. 3.2 Villages in the Zone of influence of Mumbai. *Source* Author

In case of Bangalore, in spite of lower growth in villages on random axes, the higher growth in highway villages denotes gravitation of growth towards transport network which in turn does not contradict the expansion of city influence. Keeping exceptions aside population growth of both city and villages is found higher than the national average of 31.5 and 18.1% for urban and rural areas respectively for 1991–2001.

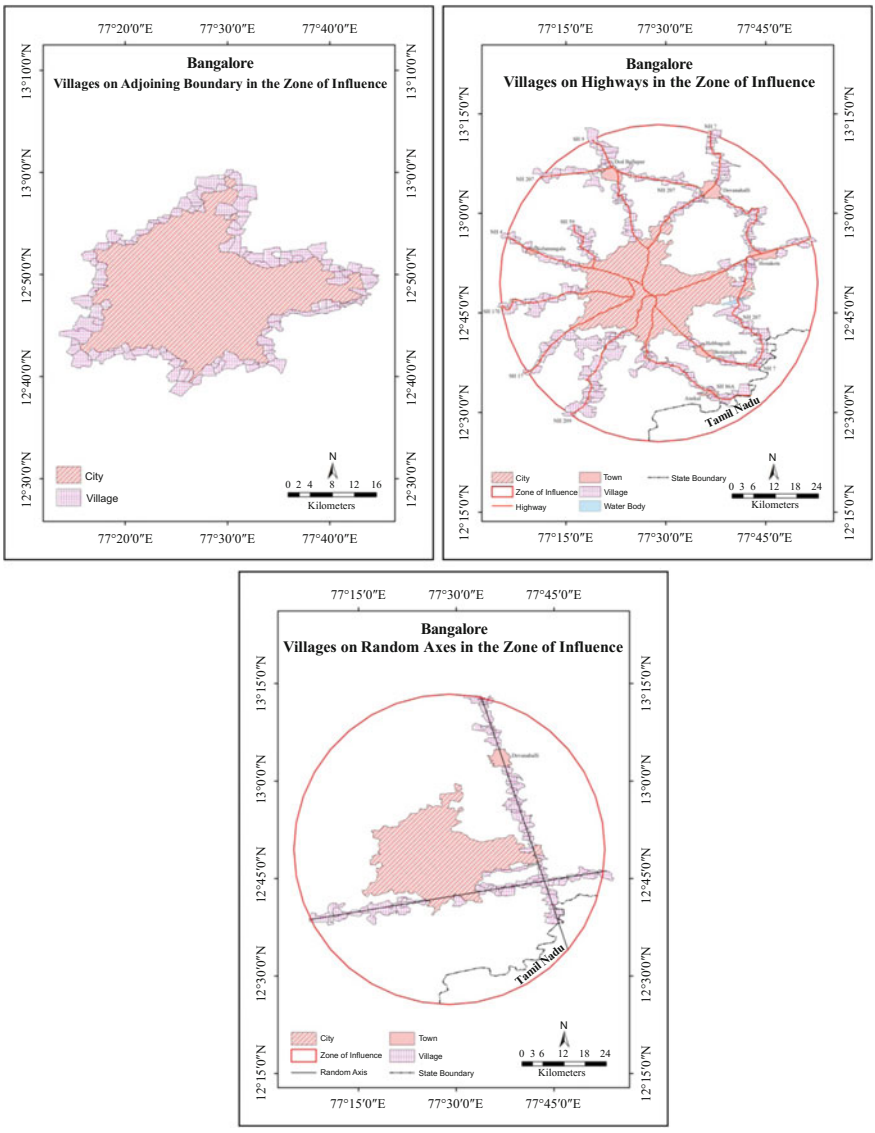

Fig. 3.3 Villages in the Zone of influence of Bangalore. *Source* Author

Interestingly, Ahmadabad represents an opposite case. Here the villages have population growth half of what is experienced in city. This however may not be a case of declining city influence as infilling of city itself may have contributed to such a growth scenario. In case there are difficulties in entering the city due to high land prices, rentals and cost of other infrastructures the rural periphery of cities is a preferred site for work and settlement. The growing land purchase,

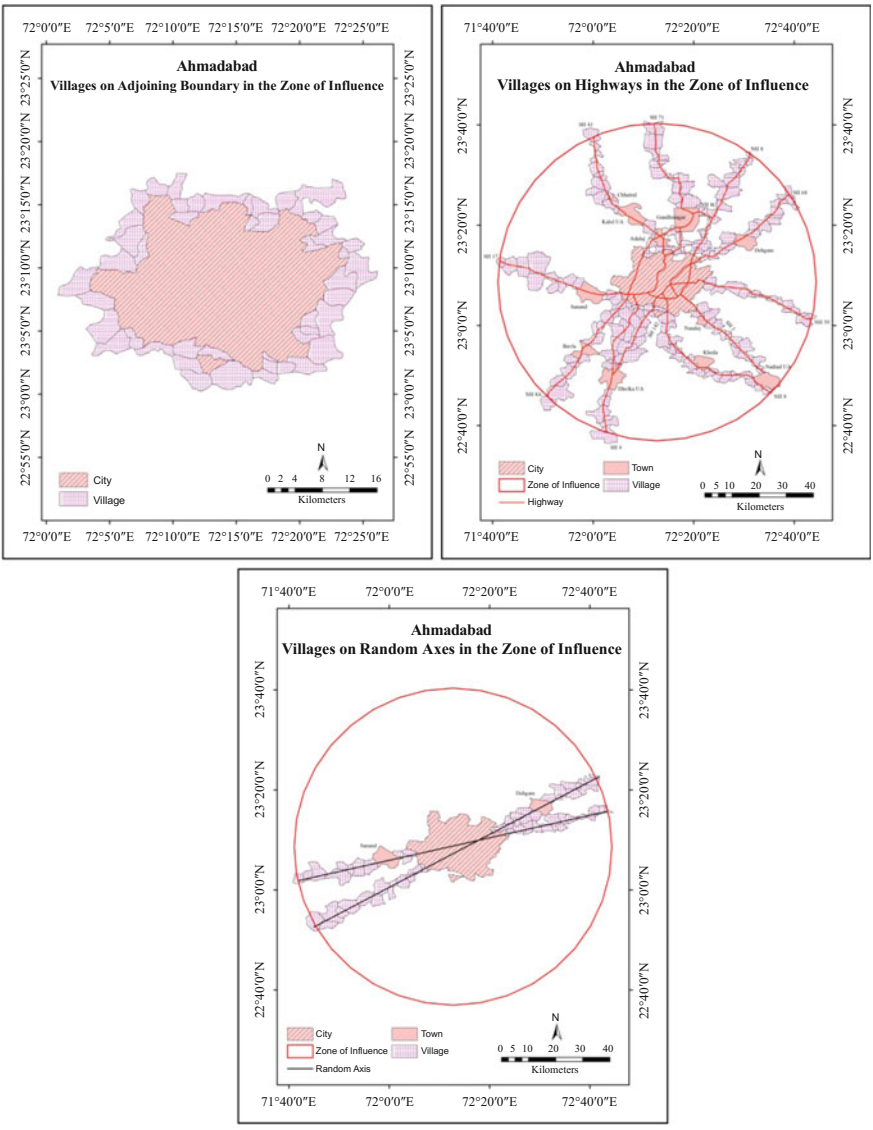

Fig. 3.4 Villages in the Zone of influence of Ahmadabad. *Source* Author

construction and trading activity in the rural periphery of cities may be taken as explanatory factors.

2. From such a population growth pattern of city and villages vis-à-vis national average (31.5 and 18.1% for urban and rural areas respectively for 1991–2001) three growth patterns can be gleaned, one, declining city and growing villages as in case of Kolkata, second, growing city and growing villages in case of

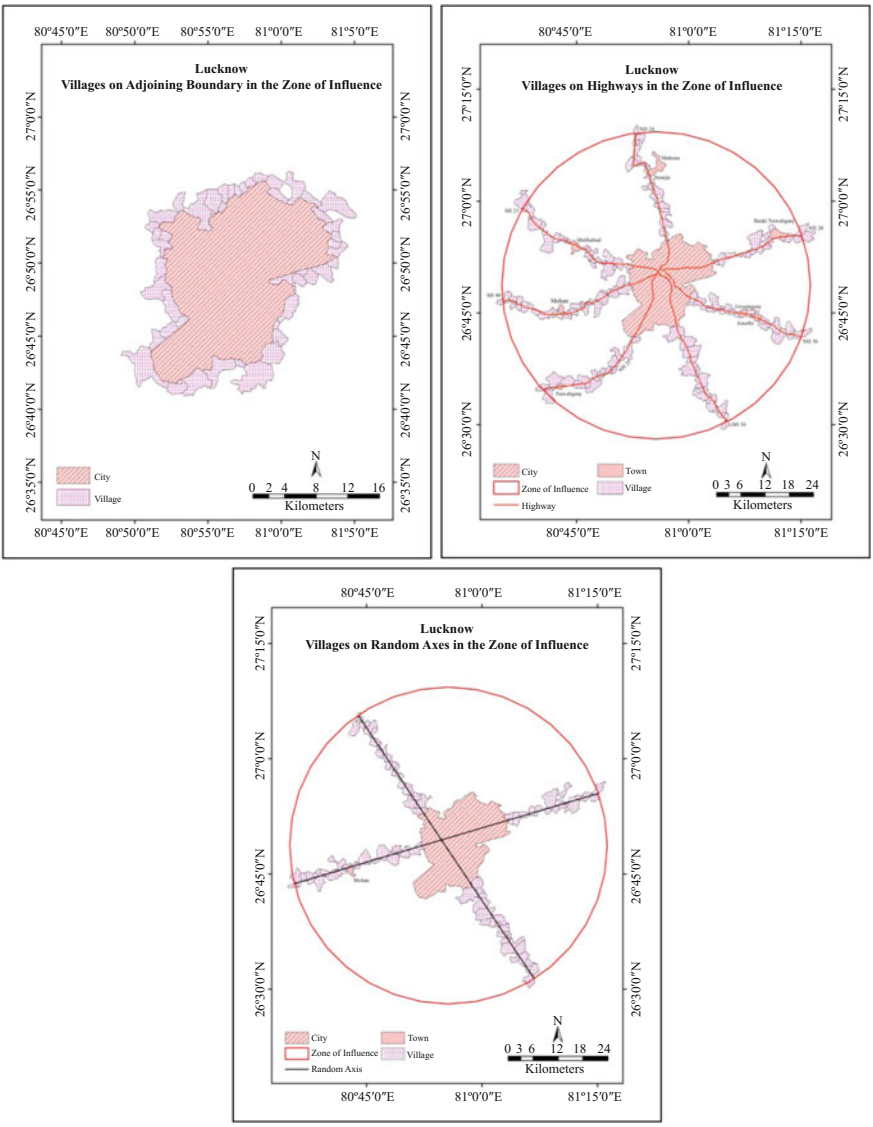

Fig. 3.5 Villages in the Zone of influence of Lucknow. *Source* Author

Mumbai, Bangalore and Lucknow, and third, growing city and declining villages as in case of Ahmadabad. However, it needs to be noted that growing villages in case of Kolkata indicate enlargement of city towards rural periphery. As per 2001 Census, the city of Kolkata is an agglomeration of 99 towns (Census 2001). Similarly, in case of Ahmadabad, infilling in city itself may be a reason for a growth pattern of growing city and declining villages.

Table 3.2 Kolkata city and villages in the influence zone

Indicators	City	Villages		
	Kolkata	On highways	On boundary	On random axes
Population growth rate (1991–2001)	19.60	22.58	26.97	21.47
HHS (persons per household)	4.82	4.95	4.93	5.01
CSR (female child per 1000 male child)	941	965	957	960
Sex ratio (females per 1000 males)	869	944	941	947
Scheduled castes (in %)	9.69	25.81	34.13	37.16
Male literacy rate (in %)	86.51	80.47	81.26	76.21
Female literacy rate (in %)	78.11	64.56	66.72	57.57
Male WPR (in %)	55.58	54.20	54.55	53.64
Female WPR (in %)	10.79	12.73	11.01	13.37
Workers (in %)	92.61	83.20	83.45	78.70
Cultivators (in %)	0.36	14.01	8.24	22.40
Agricultural labourers (in %)	0.36	18.76	9.25	26.81
Ratio of AL to CL (in %)	98.65	133.98	112.19	119.72
Household industry workers (in %)	2.84	6.73	10.05	4.49
Other workers (in %)	96.45	60.50	72.46	46.30

Source Computed from the data obtained from Census of India 2001, District census handbooks
Note HHS is household size; CSR child sex ratio; WPR is workforce participation rate; AL agricultural labourers; CL is cultivators

Table 3.3 Mumbai city and villages in the influence zone

Indicators	Villages			
	Mumbai	On highways	On boundary	On random axes
Population growth rate (1991–2001)	30.47	40.78	26.12	39.37
HHS (persons per household)	4.67	4.78	5.15	4.74
CSR (female child per 1000 male child)	919	930	973	937
Sex ratio(females per 1000 males)	822	873	944	931
Scheduled castes (in %)	5.13	2.91	2.02	1.98
Scheduled tribes (in %)	1.10	20.17	17.45	18.65
Male literacy rate (in %)	91.52	84.31	81.88	87.27
Female literacy rate (in %)	81.53	66.71	62.43	71.76
Male WPR (in %)	56.21	56.83	54.58	55.13
Female WPR (in %)	12.64	25.47	33.39	31.10
Workers (in %)	94.44	78.06	71.27	80.54
Cultivators (in %)	0.20	16.36	23.80	13.33
Agricultural labourers (in %)	0.11	10.65	10.08	10.87
Ratio of AL to CL (in %)	56.16	65.10	42.37	81.58
Household industry workers (in %)	2.48	2.74	2.12	3.11
Other workers (in %)	97.21	70.24	63.99	72.69

Source Same as Table 3.2

Table 3.4 Bangalore city and villages in the influence zone

Indicators	City	Villages		
	Bangalore	On highways	On boundary	On random axes
Population growth rate (1991–2001)	37.81	36.43	38.23	14.04
HHS (persons per household)	4.46	4.55	4.62	4.91
CSR (female child per 1000 male child)	941	956	965	979
Sex ratio (females per 1000 males)	908	904	936	940
Scheduled castes (in %)	11.38	20.26	20.54	24.33
Male literacy rate (in %)	89.17	81.90	75.97	79.91
Female literacy rate (in %)	79.80	64.31	60.58	60.15
Male WPR (in %)	57.61	60.35	58.97	58.30
Female WPR (in %)	17.48	24.75	26.81	28.00
Workers (in %)	94.18	86.40	86.20	80.13
Cultivators (in %)	0.37	21.90	12.72	30.58
Agricultural labourers (in %)	0.32	10.94	7.24	17.83
Ratio of AL to CL (in %)	87.56	49.97	56.87	58.32
Household industry workers (in %)	2.24	3.57	3.94	5.43
Other workers (in %)	97.08	63.59	76.10	46.15

Source Same as Table 3.2

Table 3.5 Ahmadabad city and villages in the influence zone

Indicators	City	Villages		
	Ahmadabad	On highways	On boundary	On random axes
Population growth rate (1991–2001)	34.50	16.81	17.44	14.54
HHS (persons per household)	5.02	5.00	5.02	5.17
CSR (female child per 1000 male child)	822	841	846	878
Sex ratio (females per 1000 males)	884	916	908	929
Scheduled castes (in %)	10.74	7.69	7.08	8.09
Male literacy rate (in %)	89.87	85.23	85.67	77.79
Female literacy rate (in %)	77.26	57.59	58.08	44.76
Male WPR (in %)	52.47	55.03	54.24	55.28
Female WPR (in %)	8.73	32.10	24.75	37.15
Workers (in %)	95.21	80.36	82.79	73.49
Cultivators (in %)	0.34	24.36	21.20	38.00
Agricultural labourers (in %)	0.48	26.25	21.85	27.52
Ratio of AL to CL (in %)	142.80	107.77	103.05	72.41
Household industry workers (in %)	2.01	1.42	2.03	1.15
Other workers (in %)	97.18	47.96	54.92	33.33

Source Same as Table 3.2

Table 3.6 Lucknow city and villages in the influence zone

Indicators	City	Villages		
	Lucknow	On highways	On boundary	On random axes
Population growth rate (1991–2001)	34.53	31.93	47.16	41.01
HHS (persons per household)	5.57	5.84	6.08	5.62
CSR (female child per 1000 male child)	907	921	922	903
Sex ratio (females per 1000 males)	888	886	885	893
Scheduled castes (in %)	10.25	33.28	29.12	40.78
Male literacy rate (in %)	81.91	67.40	66.57	66.48
Female literacy rate (in %)	71.98	44.09	45.33	41.41
Male WPR (in %)	45.64	48.93	47.09	48.74
Female WPR (in %)	7.08	14.20	12.08	17.20
Workers (in %)	89.81	74.71	74.34	72.68
Cultivators (in %)	0.94	41.56	34.29	56.27
Agricultural labourers (in %)	0.68	13.83	12.67	15.10
Ratio of AL to CL (in %)	72.45	33.27	36.96	26.84
Household industry workers (in %)	4.56	6.06	5.88	4.18
Other workers (in %)	93.81	38.55	47.16	24.44

Source Same as Table 3.2

3. Differences are evident in case of female literacy and female workforce participation rate. Female literacy has dropped in rural peripheries of all cities. Similarly a clear rise is observed in female workforce participation rate in all except Kolkata. The increasingly high participation of females in work especially agriculture may have led to rise in female workforce participation rate. Also, the work in the construction activities as well as commuting to the cities for work may have further raised the participation rate of females in rural peripheries.
4. In case of rural periphery of Kolkata and Lucknow, clear increase is observed in the share of Scheduled Castes in total population. A rise is also observed in case of Bangalore. Scheduled Castes are disadvantageous groups in rural areas. Their caste and consequently their work status, class and levels of poverty led to their outmigration from the villages to the cities. However, a scenario as observed in these three cities may have been due to inhospitability of city or alternatively to situation of flux in the rural periphery of cities wherein the urban activities and opportunities have been opened up for these castes in rural periphery. The land ownership of Scheduled Castes in rural periphery of Lucknow may have also been a reason for high proportion of these castes in villages. In case of Mumbai the proportion of Scheduled Castes is low while that of Scheduled Tribes is high and interestingly their proportion is high in villages than in city.
5. Coming to work categories, a distinct rise is observed in case of primary workers from city to villages. On the other hand, drop is observed in case of other workers towards the villages. The increase in primary workers is corollary

to use of land to meet the demand for agricultural commodities of the urban areas.

6. The percentage share of main workers in total workers is more than 75 % in the rural peripheries of all cities except Lucknow. In case of Lucknow, the share is above 70% but less than 75%.
7. Further, the examination of indicators in villages on highways vis-à-vis villages on city boundary and random axes show minor differences between the sets of villages. This signifies that different location of villages in the influence zone does not make much difference with respect to population attributes.
8. Overall, continuity is observed in the population attributes from city to villages. This signifies influence of urban areas in the rural periphery.

3.5 Concluding Remarks

From the study it has been shown that one can undertake the study of urban influence by taking variety of samples from the rural periphery. This not only reduces the quantum of data but also permits study of urban influence by taking variety of villages.

The study of rural periphery in the influence zone of five cities shows that the metro cities in consideration are influencing their rural peripheries irrespective of villages (or samples) location. The location on highways traversing from the city, on adjoining boundary of the city and on random axes does not bring out differences in the influence of the city. This finding though may not be applicable to all urban areas and to all the previous times but it is quite probable from metro cities and after 1991.

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