Delineation of Peri Urban Area of Jaipur City

* Surendra Kumar Yadav

Abstract

Statistical Approach to Delineation of Fringe

Peri Urban is a dynamic area which fluctuates in span of time. It continues shifting outward from the city with the diffusion of urban innovation in the surrounding localities. As its development is associated with growth of the city, it becomes more difficult to delineate the ever changing area on the periphery of a growing urban centre. The delimitation of such a geographical expansion of a city that binds the socio-economic influence is in fact a matter of interest for the scholars. Several articles have been published on various aspects of rural-urban fringe phenomenon. But only a few of them have adopted a systematic approach to delineate the fringe area. Here some of the methods have been examined which were used in the delimitation of the peri urban area of the Jaipur city.

On the basis of aforesaid studies carried out at global and national levels from time to time, some common factors revealing peri urban characteristics may be taken as the indicator of the urban influence on the periphery and outskirts of the urban centers. It would be rather a wise step to decide first those indicators or determinants.

Simple tabulation of data and arranging them in statistical tables is not a solution to the problem and does not help much in coming to any conclusion for demarcation of the limit of rural-urban fringe of Jaipur city. The calculation of index value from raw data is highly complex which often creates confusion. To avoid such confusion the researcher has taken the help of statistics. Scholar has depended much upon statistics;

(a) For calculating the Urban Index (UI) of entire 107 villages adjoining to Jaipur city,
(b) For find out Town and Village Value (T and V value) depending upon 16 variables.
(c) For determining the Scale of Urbanity (SU),
(d) For determining suitable methods viz. Mean, Median and Mode to delineate Jaipur city's fringe.

Calculation of Urban Index

Without bringing all variables on a same scale, scientific delineation of fringe is not possible. Previously, several studies on this concept were done but the contents of those studies were not approachable. By this method the limit is bound to vary from one research worker to another based on the same set of data because the methods call for comprise where the lines do not coincide.

In this method all variables of villages will be either in positive or in negative terms. There are two formulas for these conditions, one for such type of data whose Index Value decreases with increase in distance, such as density of population and price of land etc. and another such types of variables whose Index Value increases with increase in distance from Jaipur Municipal Corporation boundary such as net sown area, sex ration etc. the formulas are given below:

In the case of positive

$$UI = \frac{F - V}{T - V} X100$$

In the case of negative

$$UI = \frac{V - F}{T - V} X100$$

In the above formulas, the three letters F, T and V have been used.

Where,

> **F**- stands for villages which are considered as peri-urban for the broad demarcation
> **T**- denotes town (urban value)
> **V**- denotes village (village value)

Grading of villages based on the index of urbanization which is to be calculated with the 16 variable using Sinha's method used for Patna. The variables are:

- A. Number of households
- B. Population density
- C. Sex ratio
- D. Literacy rate
- E. Decadal growth rate
- F. Percentage of working population
- G. Percentage of main workers
- H. Percentage of marginal workers
- I. Percentage of household workers
- J. Percentage of cultivators
- K. Percentage of other workers
- L. Distance from city center in kms
- M. Average land value in thousand per square yard
- N. Time taken to reach city center in minutes
- O. Percentage of net sown area
- P. Percentage of area under non-agricultural uses

After calculating the urban index, the Scale of Urbanity has to be calculated. For the calculation of SU the following formula has been applied:

$$SU = \sum_{n=1}^{n=16} U.I.$$

Where,

n- number of variables.

For Town Value (T) and Village Value (V) 107 villages the broad demarcation of the peri urban boundary has been selected that are the outer villages of Jaipur city. Thus attempt has been made to represent the entire area of the peri urban. Then the average of Index Value for all variables was taken to calculate Urban Index and Scale of Urbanity has been calculated for the area considering T and V. Town and Village values are the same foe all 107 villages, but F varies. In this way Urban Index of all the villages for the 16 variables are calculated.

Urban Index has been calculated with the help of above formula and tabulated T and V values following:

Delineation of Peri Urban Area of Jaipur City

Surendra Kumar Yadav

Table 1: Town (T) and Village (V) Values of Villages 16 Variables

Variables	T_Value	V_Value
A	2421	46
B	2420	131
C	1127	751
D	83.81	54.76
F	432.98	-84.3
G	65.65	25.38
H	100	32.86
I	67.14	0
J	9.6	0
K	9772	0.64
L	96.79	1.75
M	52	10
N	20000	3500
O	78	15
p	92.69	9.11

Source: Calculated by scholar

Table 2 : Index Value (VI) and Urban Index (UI) of Villages adjoin to Jaipur City area

Block	Village_Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	S_U
Chomu	Anatpura	18.6	15.3	62.3	61.1	8.3	38.3	43.5	56.5	2.6	0.3	29.3	47.6	3.0	47.6	95.0	9.8	**33.70**
	Jaitpura	40.9	31.5	45.1	52.0	19.8	27.9	74.4	25.6	21.2	0.5	31.6	50.0	6.1	50.0	74.6	0.0	**34.45**
	Morija	87.6	19.7	41.1	62.5	19.7	47.7	79.2	20.8	17.8	0.6	26.1	57.1	4.2	57.1	69.6	4.5	**38.46**
Dudu	Gadota	4.8	0.6	55.4	49.2	21.3	21.2	40.3	59.7	15.0	0.3	19.8	81.0	0.0	81.0	84.8	4.6	**33.68**
	Mahlan	30.1	14.2	43.5	58.6	20.2	28.8	16.0	84.0	13.8	0.1	32.3	64.3	0.0	64.3	23.4	39.1	**33.29**

Delineation of Peri Urban Area of Jaipur City

Surendra Kumar Yadav

	Ajairajpura	8.5	14.5	46.5	21.7	22.7	32.5	98.2	1.8	19.0	0.6	29.0	45.2	6.1	45.2	100.0	15.2	**31.67**
	Awaniya	6.3	7.3	47.6	47.8	18.2	57.2	68.2	31.8	1.7	0.5	21.1	64.3	6.1	64.3	84.6	4.8	**33.23**
	Beelwa Kalan	27.4	26.3	44.1	63.0	25.6	37.4	88.6	11.4	51.5	0.4	49.5	31.0	15.2	31.0	18.8	32.1	**34.56**
	Bhambhoriya	13.1	14.3	31.0	68.5	20.4	5.9	78.3	21.7	38.4	0.1	66.3	38.1	9.1	38.1	11.8	14.0	**29.32**
	Bhapura	6.7	2.3	40.5	7.3	21.4	41.7	83.1	16.9	41.8	0.7	16.7	59.5	3.0	59.5	94.0	0.5	**30.98**
	Dahmi Kalan	36.8	22.2	61.7	71.5	22.4	40.4	43.6	56.4	10.7	0.2	31.9	42.9	27.3	42.9	43.0	17.7	**35.72**
	Dantli	14.9	17.6	39.5	60.4	19.7	30.1	85.4	14.6	14.3	0.5	41.3	16.7	51.5	16.7	37.1	10.5	**29.42**
	Goner	39.3	11.8	39.4	76.6	20.2	24.4	76.6	23.4	71.4	0.2	52.4	31.0	21.2	31.0	57.6	16.1	**37.03**
	Harchandpura @ Deoliya	5.5	8.8	55.7	65.7	20.5	10.5	94.6	5.4	14.2	0.3	65.7	35.7	27.3	35.7	50.2	11.1	**31.68**
	Jaisinghpura	27.1	26.6	52.2	62.2	27.6	31.4	68.6	31.4	24.0	0.4	37.2	21.4	69.7	21.4	42.0	11.1	**34.65**
	Kalwara	23.5	4.7	47.7	42.2	20.4	17.7	79.5	20.5	26.9	0.2	53.8	42.9	15.2	42.9	22.5	2.0	**28.91**
Sanganer	Kapoorawala	13.9	13.6	62.9	73.4	21.6	44.6	87.6	12.4	39.0	0.4	51.3	45.2	9.1	45.2	64.2	11.0	**37.21**
	Lakhana	1.1	5.9	58.3	44.4	19.6	20.6	100.0	0.0	13.4	0.0	100.0	38.1	21.2	38.1	74.5	14.3	**34.35**
	Mahapura	21.4	14.9	45.8	86.5	22.6	37.8	73.0	27.0	16.0	0.4	38.8	23.8	39.4	23.8	19.0	24.7	**32.19**
	Mohanpura	6.8	8.7	49.7	43.6	17.8	32.0	70.4	29.6	81.1	0.4	28.5	19.0	27.3	19.0	80.7	21.7	**33.52**
	Muhana	44.7	17.4	44.9	62.8	25.1	36.0	74.9	25.1	24.6	0.4	43.2	33.3	87.9	33.3	58.8	12.4	**39.06**
	Narsinghpura	3.9	9.5	68.8	73.5	18.5	37.6	86.1	13.9	5.0	0.8	7.2	23.8	69.7	23.8	44.9	8.4	**30.97**
	Neota	26.7	5.5	52.6	48.4	21.2	32.9	82.8	17.2	85.9	0.5	27.6	33.3	51.5	33.3	20.8	7.5	**34.24**
	Pawaliya	13.7	5.3	78.5	30.4	21.5	40.6	67.1	32.9	49.0	0.4	27.7	47.6	9.1	47.6	76.6	8.3	**34.76**
	Rampura Unti	13.8	4.8	57.7	46.7	21.6	53.4	72.1	27.9	15.3	0.5	24.0	64.3	27.3	64.3	86.0	12.0	**36.98**
	Shri Ram Ki Nangal	35.9	97.0	31.1	70.1	55.9	21.5	90.7	9.3	31.4	0.1	83.7	28.6	100.0	28.6	29.1	2.1	**44.69**
	Thikariya	12.6	22.7	57.8	93.7	18.2	0.0	64.9	35.1	18.3	0.3	40.6	33.3	9.1	33.3	16.9	93.8	**34.42**
	Vidhani	2.4	10.6	26.5	51.2	21.4	53.2	96.1	3.9	3.0	0.5	31.7	23.8	9.1	23.8	53.7	26.0	**27.30**
	Watika	68.7	15.2	45.4	58.7	21.7	27.3	61.7	38.3	35.2	0.2	46.0	40.5	100.0	40.5	35.5	8.2	**40.18**

Delineation of Peri Urban Area of Jaipur City

Surendra Kumar Yadav

	Begas	28.7	7.1	57.6	60.6	20.8	47.9	91.4	8.6	15.0	0.7	21.2	50.0	27.3	50.0	96.7	8.0	**36.97**
	Bhambhori	20.1	9.8	45.4	72.7	19.7	27.1	85.7	14.3	10.4	0.5	31.9	31.0	27.3	31.0	84.3	10.5	**32.60**
	Dhankya	14.1	11.2	47.7	60.5	17.7	39.5	88.8	11.2	19.5	0.6	30.0	40.5	21.2	40.5	96.8	16.0	**34.73**
	Durjaniyawas	3.7	12.7	72.8	75.5	17.9	42.8	71.6	28.4	8.9	0.4	33.8	45.2	51.5	45.2	96.9	5.5	**38.31**
	Hathod	44.5	35.2	44.4	89.4	40.0	15.3	82.3	17.7	19.7	0.1	74.2	14.3	27.3	14.3	9.2	43.9	**35.73**
	Jaisinghpura Kankroda	3.5	5.2	27.3	42.9	19.5	8.6	61.3	38.7	5.0	0.4	21.9	42.9	15.2	42.9	72.6	8.1	**26.00**
Jhotwara	Kalwar	60.7	13.0	52.5	67.2	22.0	18.9	76.2	23.8	39.9	0.3	47.7	19.0	51.5	19.0	52.5	45.8	**38.13**
	Manchwa	15.0	10.3	44.8	60.2	25.2	23.0	79.7	20.3	19.6	0.3	53.7	21.4	39.4	21.4	12.3	6.9	**28.35**
	Neemera	18.7	15.2	52.1	73.5	20.1	29.6	88.1	11.9	12.8	0.5	41.9	28.6	39.4	28.6	65.9	33.5	**35.03**
	Niwaroo	87.8	57.7	41.0	87.3	58.1	22.8	91.8	8.2	65.2	0.1	74.6	9.5	51.5	9.5	47.6	10.9	**45.23**
	Pachar	32.6	10.2	48.6	52.2	21.7	36.7	81.9	18.1	15.1	0.6	24.5	52.4	51.5	52.4	86.6	0.3	**36.58**
	Sarna Chaur	6.0	8.5	70.3	61.7	22.9	45.8	99.8	0.2	0.0	0.9	4.2	28.6	39.4	28.6	91.1	6.3	**32.14**
	Sarna Doongar	14.2	22.8	39.3	59.2	19.6	18.4	94.7	5.3	12.9	0.3	64.2	16.7	45.5	16.7	67.8	15.6	**32.07**
	Shyosinghpura @ Shyopura	6.3	6.5	51.2	63.5	17.9	55.3	97.3	2.7	4.6	0.7	22.5	61.9	51.5	61.9	85.0	11.7	**37.54**
	Sumel	20.3	23.2	37.5	42.5	25.9	18.0	83.2	16.8	17.5	0.2	67.7	2.4	51.5	2.4	14.6	100.0	**32.72**
	Vijaypura	57.8	100.0	38.4	84.2	100.0	6.5	90.2	9.8	14.4	0.0	90.9	0.0	27.3	0.0	0.0	36.3	**40.99**
	Achrol	100.0	13.9	44.4	46.8	19.7	21.1	79.7	20.3	23.7	0.4	35.4	50.0	12.1	50.0	21.8	0.0	**33.71**
	Akhepura	2.6	9.9	39.7	74.4	27.0	52.9	47.1	52.9	30.8	0.2	26.8	35.7	6.1	35.7	48.6	4.2	**30.92**
	Beelpura	9.3	8.0	42.9	91.5	16.0	35.9	75.2	24.8	7.6	0.4	43.9	83.3	3.0	83.3	20.7	7.2	**34.57**
Amber	Bhatton Ki Gali	12.8	11.6	49.6	90.9	19.8	29.1	81.6	18.4	32.7	0.5	32.6	45.2	3.0	45.2	68.5	11.7	**34.58**
	Bhanpur Kalan	6.5	10.7	53.5	22.6	24.2	48.0	82.0	18.0	9.8	0.5	32.6	40.5	15.2	40.5	65.4	3.4	**29.59**
	Bilonchi	24.7	14.5	44.8	44.8	19.8	40.4	65.2	34.8	14.0	0.4	33.4	52.4	6.1	52.4	54.5	12.6	**32.17**
	Boodthal	17.7	20.6	51.7	61.0	20.3	25.8	94.6	5.4	1.9	0.5	38.6	47.6	6.1	47.6	83.7	8.0	**33.20**
	Chandwaji	13.7	82.4	46.5	69.2	17.6	9.2	95.8	4.2	100.0	0.1	78.1	76.2	15.2	76.2	21.6	28.8	**45.92**

Delineation of Peri Urban Area of Jaipur City

Surendra Kumar Yadav

Chatarpura	13.3	12.3	100.1	44.1	21.6	46.4	62.0	38.0	8.6	0.2	43.2	35.7	6.1	35.7	65.9	11.1	**34.02**
Chhaprari	6.0	3.5	76.6	23.7	24.2	37.1	59.1	40.9	0.0	0.4	27.5	42.9	6.1	42.9	7.6	1.4	**24.99**
Chittanukalan	20.8	15.2	45.0	34.3	21.0	37.8	60.0	40.0	19.9	0.3	36.3	73.8	18.2	73.8	53.8	13.2	**35.21**
Chonp	37.9	19.1	54.0	51.0	20.6	40.2	86.4	13.6	8.3	0.5	33.8	50.0	12.1	50.0	67.7	10.8	**34.75**
Daulatpura	22.7	9.1	41.5	33.8	21.0	22.5	77.7	22.3	8.1	0.5	29.5	35.7	12.1	35.7	33.7	2.1	**25.51**
Deogudha	15.1	15.7	45.2	55.0	20.0	55.1	54.0	46.0	0.8	0.4	25.9	52.4	9.1	52.4	94.7	7.8	**34.35**
Dhand	14.8	21.6	66.9	68.6	19.1	0.5	69.3	30.7	0.0	0.1	70.5	31.0	21.2	31.0	37.4	20.6	**31.46**
Jairampura	30.9	12.9	45.3	50.1	21.0	37.8	66.7	33.3	17.4	0.5	26.4	38.1	9.1	38.1	76.5	19.8	**32.74**
Kant	6.0	1.6	28.3	19.3	19.4	55.6	73.9	26.1	7.4	0.6	12.1	71.4	12.1	71.4	31.7	3.6	**27.53**
Kanwarpura	0.0	5.3	54.9	74.0	0.0	70.0	29.0	71.0	0.0	0.4	9.2	85.7	9.1	85.7	94.6	3.3	**37.02**
Khora Meena	17.8	13.1	42.2	56.6	19.4	8.9	70.9	29.1	55.8	0.4	33.2	38.1	24.2	38.1	32.1	70.8	**34.42**
Khora Shyamdas	23.1	16.5	36.4	53.2	19.9	23.5	89.1	10.9	16.8	0.5	31.0	38.1	21.2	38.1	73.1	19.0	**31.90**
Khorabeesal	37.9	34.6	52.0	69.6	30.9	18.1	88.1	11.9	28.4	0.3	54.2	21.4	9.1	21.4	66.6	21.3	**35.37**
Kookas	25.1	4.2	45.5	59.9	22.8	13.1	60.4	39.6	67.3	0.2	45.7	23.8	87.9	23.8	5.1	4.9	**33.08**
Kotra	5.5	2.1	51.3	48.6	23.7	100.0	40.2	59.8	0.0	0.5	7.2	38.1	15.2	38.1	17.3	11.2	**28.67**
Labana	19.5	11.1	45.4	56.7	18.3	18.8	91.3	8.7	35.5	0.2	46.8	45.2	15.2	45.2	30.3	18.6	**31.67**
Lakher	24.5	14.1	38.7	54.8	19.5	28.0	61.3	38.7	1.5	0.4	31.6	100.0	12.1	100.0	54.0	19.7	**37.43**
Maheshwas Kalan	14.5	6.5	53.9	54.8	20.6	49.1	47.3	52.7	4.5	0.4	14.1	38.1	6.1	38.1	66.9	17.2	**30.31**
Manpura Mancheri	60.7	22.2	41.3	43.2	20.6	23.3	94.8	5.2	33.7	0.6	35.6	71.4	6.1	71.4	61.1	17.7	**38.06**
Mundota	36.4	7.5	43.5	37.4	20.6	37.0	76.3	23.7	4.9	0.5	32.7	47.6	39.4	47.6	49.7	13.7	**32.42**
Nagal Susawatan	34.5	52.5	-0.1	89.0	33.2	34.6	90.7	9.3	5.2	0.1	83.2	19.0	57.6	19.0	5.7	8.9	**33.91**
Nangal Purohit	17.4	19.5	57.7	53.9	37.6	24.5	84.5	15.5	11.6	0.6	29.1	31.0	15.2	31.0	55.8	20.4	**31.58**
Nangal Siras	9.9	11.2	36.6	34.7	8.8	53.5	94.5	5.5	3.7	0.7	13.6	33.3	12.1	33.3	73.4	15.1	**27.51**

Delineation of Peri Urban Area of Jaipur City

Surendra Kumar Yadav

	Rojda	19.5	14.4	57.4	55.7	20.7	26.4	68.2	31.8	4.5	0.4	32.9	35.7	27.3	35.7	68.3	7.4	**31.65**
	Roondal	50.4	15.9	46.7	55.5	19.3	25.1	45.3	54.7	14.1	0.4	19.9	78.6	3.0	78.6	65.5	6.0	**36.19**
	Sewapura	9.5	8.5	30.0	48.6	20.7	29.9	86.8	13.2	0.0	0.3	58.7	40.5	39.4	40.5	36.1	15.0	**29.85**
	Shyampura	5.9	10.6	42.1	46.3	21.1	7.3	96.1	3.9	10.3	0.4	51.8	90.5	3.0	90.5	64.4	11.4	**34.72**
	Sirohi	10.1	5.2	49.6	34.0	20.6	47.0	58.7	41.3	8.3	0.5	17.0	83.3	3.0	83.3	15.2	25.3	**31.41**
	Sirsi	7.7	10.4	50.1	38.6	20.3	62.1	100.0	0.0	0.0	1.0	0.0	16.7	51.5	16.7	96.0	3.6	**29.67**
Jamwa Ramgarh	Indragarh	10.0	12.3	41.4	27.2	20.6	46.6	0.0	100.0	3.7	0.2	13.7	23.8	3.0	23.8	74.3	13.2	**25.86**
	Langareeywas	11.5	3.9	40.6	24.6	16.7	18.7	65.8	34.2	6.1	0.1	48.7	19.0	6.1	19.0	5.1	29.8	**21.88**
	Natata	29.5	29.1	54.3	25.8	21.7	32.4	67.4	32.6	15.0	0.5	27.8	21.4	27.3	21.4	59.8	2.9	**29.30**
	Nayla	29.8	24.6	46.4	54.9	22.5	25.8	59.3	40.7	43.7	0.0	62.6	33.3	33.3	33.3	29.2	16.8	**34.77**
	Rahori	12.3	13.5	54.6	26.4	22.5	36.5	77.2	22.8	11.6	0.4	41.6	38.1	27.3	38.1	35.5	16.2	**29.66**
	Roopwas	7.1	15.2	45.6	100.0	19.2	52.7	41.7	58.3	79.4	0.4	9.8	35.7	9.1	35.7	84.0	14.9	**38.04**
	Saipura	8.0	8.6	43.3	61.6	25.6	0.7	94.2	5.8	48.3	0.3	43.2	16.7	27.3	16.7	39.2	4.4	**27.75**
Bassi	Boorthal	11.6	27.3	45.6	39.9	21.8	48.2	74.2	25.8	0.0	0.4	38.6	33.3	51.5	33.3	57.7	25.9	**33.45**
	Doodhali	7.8	15.3	45.9	71.4	18.0	41.6	65.9	34.1	58.0	0.4	31.9	52.4	9.1	52.4	70.9	18.0	**37.06**
	Jeetawala	8.2	12.3	49.0	58.0	27.9	26.6	54.0	46.0	20.0	0.4	30.3	42.9	27.3	42.9	61.1	12.4	**32.45**
	Mansar Kheri	19.7	15.5	38.4	50.7	21.9	24.6	85.6	14.4	4.0	0.4	45.1	33.3	15.2	33.3	53.8	8.2	**29.02**
	Mohanpura	16.9	40.4	57.6	64.5	20.2	16.6	83.9	16.1	12.5	0.1	74.9	50.0	27.3	50.0	74.3	31.3	**39.80**
	Phalyawas	10.7	29.1	60.2	38.8	19.6	39.9	88.9	11.1	0.0	0.6	35.7	40.5	3.0	40.5	83.6	23.7	**32.87**
	Ramratanpura	1.6	5.6	51.9	59.2	23.1	55.7	90.3	9.7	17.6	0.5	43.3	31.0	39.4	31.0	36.6	9.5	**31.62**
	Ramsar	0.9	14.2	53.2	2.3	18.4	67.6	100.0	0.0	0.0	0.8	5.9	38.1	12.1	38.1	62.9	20.6	**27.19**
	Todabhata	14.1	13.7	54.1	38.0	19.7	45.0	34.3	65.7	1.0	0.3	22.2	54.8	15.2	54.8	58.3	8.6	**31.24**
Chaksu	Chandlai	44.7	10.4	45.2	51.1	21.9	25.8	64.3	35.7	15.1	0.2	48.2	50.0	21.2	50.0	46.8	18.7	**34.32**
	Kareda Khurd	3.7	5.3	51.6	35.8	18.4	71.2	17.7	82.3	13.7	0.4	5.6	69.0	9.1	69.0	80.0	12.0	**34.05**
	Maksoodanpur	4.6	11.8	58.9	50.2	21.4	23.8	66.5	33.5	0.0	0.3	46.9	54.8	27.3	54.8	33.2	25.7	**32.10**

Delineation of Peri Urban Area of Jaipur City

Surendra Kumar Yadav

	a @ Bara Padampura																
	Surajpura @ Tootoli	11.9	1.6	37.6	0.0	19.4	50.7	87.6	12.4	5.3	0.5	17.7	64.3	33.3	64.3	81.5	13.7	**31.37**
	Teetriya	19.2	6.2	52.2	46.6	19.1	50.0	41.3	58.7	18.5	0.3	26.7	64.3	12.1	64.3	79.9	9.1	**35.54**
Phagi	Chittora	22.1	1.4	41.1	20.2	20.3	72.3	55.5	44.5	7.5	0.5	19.3	76.2	12.1	76.2	76.5	8.5	**34.63**
	Mohabbat Pura	8.0	10.0	55.7	16.8	15.3	68.0	59.5	40.5	38.4	0.5	12.3	50.0	6.1	50.0	69.0	3.0	**31.44**
	Pahariya	12.2	0.0	39.8	31.8	19.6	42.9	69.1	30.9	27.1	0.2	46.3	57.1	3.0	57.1	48.4	18.0	**31.48**
	Renwal Manji	45.3	9.9	42.0	48.5	19.5	38.3	45.0	55.0	39.1	0.2	42.0	54.8	3.0	54.8	47.3	33.8	**36.16**
	T	2421	2420	1127	83.81	432.98	65.65	100	67.14	9.6		9772	96.79	52	20000	78	92.69	47.13
	V	46	131	751	54.76	-84.3	25.38	32.86	0	0	0.64	1.75	10	3500	15	9.11	0	

S_U= Scale of Urbanity

Delineation of Peri Urban

The next step after calculating Scale of Urbanity is to determine the value of SU for delineating Jaipur's peri-urban. For this measurement Mean, Median and Mode may used. Mode is not as scientific as the other two. Therefore, Mean and Median were calculated and analyzed. The Median or Q-1 (lower quartile), Q-2 (median quartile) and Q-3 (upper quartile) have been calculated.

Table 3 : Class Interval and Frequency of Villages

Class Interval	Frequency
20-25	2
25-30	19
30-35	57
35-40	24
40-45	3
45-50	2
Total	107

Source: Calculated by scholar

Q-1 or Lower Quartile

$$Q-1 = \frac{N+1}{4}$$
$$Q-1 = \frac{107+1}{4}$$

Q-1 Observation = **27**

Q-2 or Median Quartile

Delineation of Peri Urban Area of Jaipur City

Surendra Kumar Yadav

$$Q-2 = \frac{N+1}{2}$$

$$Q-2 = \frac{107+1}{2}$$

Q-2 Observation = **54**

Q-3 or Upper Quartile

$$Q-3 = N+1 \ X \frac{3}{4}$$

$$Q-3 = 107+1 \ X \frac{3}{4}$$

$$Q-3 = \frac{108 \ X \ 3}{4}$$

Q-3 Observation = **81**

Now, to find out the class range for peri urban, inner peri urban, outer peri urban and village zone following formula has taken:

$$L1 + \frac{L2-L1}{fg} \ (qu-c)$$

where,

L1- Lower limit of median class

L2- Upper limit of median class

fg- Frequency of median class

qu- Quartile observation

c- Cumulative frequency upto previous class

For **village zone**,

$$Q1 = 25 + \frac{30-25}{19} \ (27-21)$$

Q-1 = **31.57**

Range belonging SU 20.0 to 31.57

For **outer peri urban zone**,

$$Q2 = 30 + \frac{35-30}{57} \ (54-21)$$

Q-2 = **32.89**

Range belonging SU 31.57 to 32.89

For **inner peri urban zone**,

$$Q3 = 35 + \frac{35-30}{24} \ (81-78)$$

Q-3 = **35.62**

Range belonging SU 32.89 to 35.62

Delineation of Peri Urban Area of Jaipur City

Surendra Kumar Yadav

For **peri urban zone Range belonging SU above 35.62**

To find out the suitability between Median and Mean, the calculation of Mean, Mean+SD or Mean-SD is necessary:

$$\text{Mean Value} = \frac{\text{fx}}{\text{N}} = \frac{3542.5}{107} = \mathbf{33.10} \text{ is Mean value}$$

Table 4 : Standard Deviation Value of UI Ranges

CI	x_1	f	Fx_1	c	x	fx	fx^2
20-25	22.5	2	45	2	10.6	21.2	449.44
25-30	27.5	19	522.5	21	5.6	106.4	11320.96
30-35	32.5	57	1852.5	78	0.6	34.2	1169.64
35-40	37.5	24	900	102	-4.4	-105.6	11151.36
40-45	42.5	3	127.5	105	-9.4	-28.2	795.24
45-50	47.5	2	95	107	-14.4	-28.8	829.44
Total		**107**	**3542.5**				**25716.08**

Source: Calculated by Scholar

Where,

CI- Class interval X_1- Mid points   F- Frequency   C- Accumulating frequency
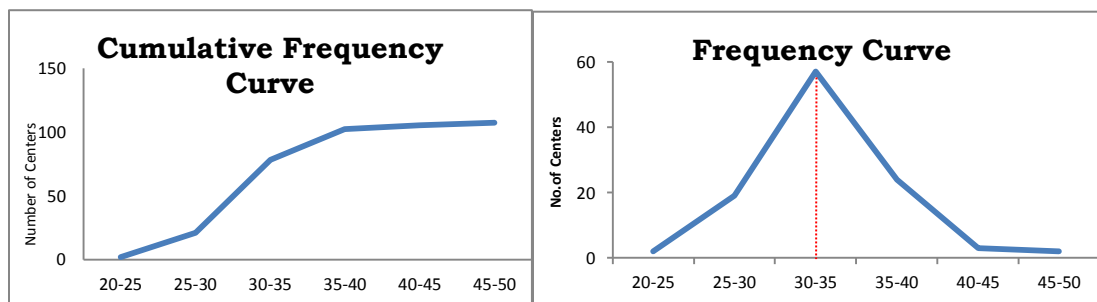X- Mean-Midpoint

$$SD = \frac{\sqrt{\sum fx^2}}{N}$$
$$SD = \frac{\sqrt{25716.08}}{107}$$
$$SD= 15.5$$

Where,

Mean value is 33.10, so Mean+SD are 48.6 and Mean-SD is 17.6

To find out the suitability between Median and Mean, a cumulative frequency diagram was drawn and to substantiate the idea frequency curve was also drawn. Frequency curve indicates that Median and Mean value are almost same i.e. 32.89 and 33.10, but Q-1 and Q-3 have much difference with each other here.
In the case of accumulative frequency graph the edge of 'S' is not a curve and the central part of 'S' is almost slanting on the 'V' shape. When the accumulative frequency curve 'S' is perfect, Mean gives good result, if 'S' is not perfect, Mean is not suitable for this purpose. In that case Median gives a clear picture.

Diagram 1 : Suitably of Mean and Median by Frequency Curves

Delineation of Peri Urban Area of Jaipur City

Surendra Kumar Yadav

This is because of the fact that the observations are accumulated in the interval range of 40 to 45. A few villages have scale of urbanity value beyond the above range. Thus mean deviation does not give a clear picture. Therefore, demarcation of Jaipur city's peri urban is based on median value as following:

Table 5 : Demarcation of Zones based on Scale of Urbanity

Zones	Scale of Urbanity (Ranges)
Peri Urban Zone (PU Zone)	Above 35.62
Semi Peri Urban Zone (SPU Zone)	32.89 to 35.62
Peri Rural Zone (PR Zone)	31.57 to 32.89
Villages Zone	Below 31.57

Source: Calculated by Scholar

Thus up to SU value 31.57, the area has some characteristics of urbanity but further away the whole area is of rural character and demarcation are drawn following the village boundary for PU zone, SPU zone and PR zone.

Peri Urban Zone is bounded on one side by Jaipur Municipal Corporation and on other side by semi peri urban area; this area has greater urban characteristics. Semi peri urban zone is on the one side bounded by peri urban zone of Jaipur city and on the other side by Peri Rural Zone. Peri Rural Zone is outer zone of villages where a few characteristics of urban has been found. Beyond of these zones pure rural characteristics are distributed in village zone.

Geographical Delineation of Jaipur City's Peri Urban Zone

All these variables were studied for 107 villages of six different Blocks (Jhotwara, Amber, Jamwa Ramgarh, Bassi, Sanganer, Chaksu and Phagi). On the basis of literature review and secondary analysis it has been found that the region covering these villages was urbanizing due to its connectivity, availability of land and vicinity to the core city.

So, as far as residential development is concern this urban corridor having highest potential of development and looking to the constraint of the study of the following villages has been selected as study areas. All the villages are along the National Highways and the city is growing towards South and northwest direction, which is one of the major corridors which connect the national highway No.48 (Delhi-Bombay Road). Along this corridor, the growth was natural and majorly started in last 10 years. Mostly private developers' residential colonies and some housing board initiatives in these villages. These villages in the periphery area of Jaipur are along the major roads which connect to Kota, Jodhpur, Delhi, Agra, Mumbai within 10-40 km Radius of Jaipur Development Authority.

Table 6 : Zone Wise Villages of Jaipur City Agglomeration

Peri Urban Fringe		
Tehsil	Village	Urban Index Value
Amber	Chittanukalan	35.21
Amber	Khorabeesal	35.37
Chaksu	Teetriya	35.54
Sanganer	Dahmi Kalan	35.72

Delineation of Peri Urban Area of Jaipur City

Surendra Kumar Yadav

Jhotwara	Hathod	35.73
Phagi	Renwal Manji	36.16
Amber	Roondal	36.19
Jhotwara	Pachar	36.58
Jhotwara	Begas	36.97
Sanganer	Rampura Unti	36.98
Amber	Kanwarpura	37.02
Sanganer	Goner	37.03
Bassi	Doodhali	37.06
Sanganer	Kapoorawala	37.21
Amber	Lakher	37.43
Jhotwara	Shyosinghpura @ Shyopura	37.54
Jamwa Ramgarh	Roopwas	38.04
Amber	Manpura Mancheri	38.06
Jhotwara	Kalwar	38.13
Jhotwara	Durjaniyawas	38.31
Chomu	Morija	38.46
Sanganer	Muhana	39.06
Bassi	Mohanpura	39.80
Sanganer	Watika	40.18
Jhotwara	Vijaypura	40.99
Sanganer	Shri Ram Ki Nangal	44.69
Jhotwara	Niwaroo	45.23
Amber	Chandwaji	45.92
Semi Peri Urban Fringe		
Tehsil	**Village**	**Urban Index Value**
Amber	Kookas	33.08
Amber	Boodthal	33.20
Sanganer	Awaniya	33.23
Dudu	Mahlan	33.29
Bassi	Boorthal	33.45
Sanganer	Mohanpura	33.52
Dudu	Gadota	33.68
Chomu	Anatpura	33.70
Amber	Achrol	33.71
Amber	Nagal Susawatan	33.91
Amber	Chatarpura	34.02
Chaksu	Kareda Khurd	34.05
Sanganer	Neota	34.24
Chaksu	Chandlai	34.32
Amber	Deogudha	34.35
Sanganer	Lakhana	34.35
Sanganer	Thikariya	34.42

Delineation of Peri Urban Area of Jaipur City

Surendra Kumar Yadav

Amber	Khora Meena	34.42
Chomu	Jaitpura	34.45
Sanganer	Beelwa Kalan	34.56
Amber	Beelpura	34.57
Amber	Bhatton Ki Gali	34.58
Phagi	Chittora	34.63
Sanganer	Jaisinghpura	34.65
Amber	Shyampura	34.72
Jhotwara	Dhankya	34.73
Amber	Chonp	34.75
Sanganer	Pawaliya	34.76
Jamwa Ramgarh	Nayla	34.77
Jhotwara	Neemera	35.03
Amber	Chittanukalan	35.21
Amber	Khorabeesal	35.37
Chaksu	Teetriya	35.54
Peri Rural Zone		
Tehsil	**Village**	**Urban Index Value**
Amber	Nangal Purohit	31.58
Bassi	Ramratanpura	31.62
Amber	Rojda	31.65
Amber	Labana	31.67
Sanganer	Ajairajpura	31.67
Sanganer	Harchandpura @ Deoliya	31.68
Amber	Khora Shyamdas	31.90
Jhotwara	Sarna Doongar	32.07
Chaksu	Maksoodanpura @ Bara Padampura	32.10
Jhotwara	Sarna Chaur	32.14
Amber	Bilonchi	32.17
Sanganer	Mahapura	32.19
Amber	Mundota	32.42
Bassi	Jeetawala	32.45
Jhotwara	Bhambhori	32.60
Jhotwara	Sumel	32.72
Amber	Jairampura	32.74
Bassi	Phalyawas	32.87
Village Zone		
Tehsil	**Village**	**Urban Index Value**
Jamwa Ramgarh	Langareeywas	21.88
Amber	Chhaprari	24.99
Amber	Daulatpura	25.51
Jamwa Ramgarh	Indragarh	25.86

Delineation of Peri Urban Area of Jaipur City

Surendra Kumar Yadav

Jhotwara	Jaisinghpura Kankroda	26.00
Bassi	Ramsar	27.19
Sanganer	Vidhani	27.30
Amber	Nangal Siras	27.51
Amber	Kant	27.53
Jamwa Ramgarh	Saipura	27.75
Jhotwara	Manchwa	28.35
Amber	Kotra	28.67
Sanganer	Kalwara	28.91
Bassi	Mansar Kheri	29.02
Jamwa Ramgarh	Natata	29.30
Sanganer	Bhambhoriya	29.32
Sanganer	Dantli	29.42
Amber	Bhanpur Kalan	29.59
Jamwa Ramgarh	Rahori	29.66
Amber	Sirsi	29.67
Amber	Sewapura	29.85
Amber	Maheshwas Kalan	30.31
Amber	Akhepura	30.92
Sanganer	Narsinghpura	30.97
Sanganer	Bhapura	30.98
Bassi	Todabhata	31.24
Chaksu	Surajpura @ Tootoli	31.37
Amber	Sirohi	31.41
Phagi	Mohabbat Pura	31.44
Amber	Dhand	31.46
Phagi	Pahariya	31.48

The zone of Jaipur's peri urban is narrow in east but broad in west and south. The shape is roughly rectangular. In the north east the peri urban zone is again narrow because of terrain slope. In the west of the city bypass (NH 48) road is a key to enlarge the scope of peri urban and in the south NH 52 played a vital role to extent the urban characteristics along with road transportation.

*Research Scholar
Department of Geography,
University of Rajasthan, Jaipur

References:

Jaipur Municipal Corporation, Jaipur

Master Plan 2011 and 2025 : Jaipur Development Authority, Jaipur

Census of India, Rajasthan

Delineation of Peri Urban Area of Jaipur City

Surendra Kumar Yadav

District Census Handbook, Jaipur, 2001 and 2011, Census of India, Rajasthan

"Urban India 2011: Evidence." New Delhi, pp.7

Sinha, M.M.P.: The Impact of Urbanization on Land Use in the Rural Urban Fringe: A case of Patna. Patna: Concept Publishing Company, 1980.

Ramachandran, R.: The Rural-Urban Fringe. Ramachandran, R. Urbanization and Urban System in India. Oxford University Press, 1989. 297.

Bentinck, J.: Unruly Urbnisaiton on Delhi's fringe. Netherland Geographical Studies, 2000.

McGee, T.: The Extend Metropolis: Settlement Transition in Asia. University of Hawaii, 1991.

Rao, M.: Urbanization and Social Change. Orient Longmans Ltd., 1970.

Rao, P.: Some Aspects of Urbanization. Madras: Prasaranga, May,1971.

"Rural - Urban distribution of Population (Provisional)." 2011. International Journal of Scientific & Engineering Research, Volume 5, Issue 7, July-2014