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Changing work participation in West Bengal: Patterns and trends from post-independence onward

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Abstract
This paper analyses trends and patterns of the work participation rate (WPR) in overall, rural, and urban areas by using a Differential Index method from independence onwards. The result shows remote districts from Kolkata observed a sound overall WPR compared to peripheral districts of Kolkata over the last several decennials. Over the last four decades, all districts observed a growing trend of rural WPR. The outcome of the study also shows that neighbouring districts of Kolkata perceived a low WPR in contrast to northern and western districts throughout the decades in rural areas. Highly urbanized districts in the north part, south-eastern part, and central part have experienced high urban WPR. Kolkata and its peripheral districts registered a negative change in WPR in urban areas for several decades. The study also shows that marginal districts of Kolkata have experienced a high dependency ratio (DR) contrasted to remote districts and the urban dependency ratio is high than rural. The Differential Index clearly shows rural WPR high than urban but the dominance of rural WPR is shrinking.

Keywords: Work participation rate, dependency ratio, growth rate, periphery, urbanized, differential index

1. Introduction

Work Participation Rate (WPR) denotes the proportion of the working population to total population in an area and is calculated as the percentage of total workers (main + marginal workers) to the total population. Currently, employment becomes a serious challenge in the world for the young generation for several reasons. Globally, youth unemployment is set to escalate in 2016 (35%) and young people are unduly ostentatious by working poverty (ILO, 2016) though the size of the working force is dependent on social (migration behaviour), demographic (population size, distribution, composition), and economic dynamics. Indian economy is fundamentally agricultural-based, and it is regulating about one-third of the total economy and about half of the workforce. Nevertheless, West Bengal has always endured an agricultural state attributable due to its geographical and lithological, atmospheric environment. The transformation of the working structure of the workforce has transpired because of the speeding up of modernization, industrialization, and urbanization. Due to the liberalization of the Indian economy in the 1990s, many reorganizations in the economy have been emulated. Consequently, WPR over the periods has been transformed for males and females in main and marginal workers in diverse sectors. “Inclusive growth” was one of the goalmouths of the twelfth five-year plan through engendering productive and lucrative employment and letting down unemployment by generating new work opportunities (Planning Commission, 2011) [16].

Globally, the work participation rate (WPR) is 61% for the age group of 15 and above in 2016. Therefore, lower developing, developing, and developed countries accounted for 67%, 66%, and 60% respectively of WPR, and as a regional continent, South-East Asia and the Pacific noted 67% of WPR in the working age group (ILO, 2016). However, WPR in India is around 40% whereas rural is 42% and urban is 35% in 2011. As per sectoral distribution of total workers, 25% engaged in cultivation, 30% in agriculture 4% in the household industry, and 42% in other works. In India, Himachal Pradesh and Sikkim recorded the highest (>50%) WPR while Bihar and Uttar Pradesh noted the lowest (33%) WPR in 2011. As far as West Bengal is concerned, WPR is 38%, whereas 39% rural, and 37% is urban in 2011.

In West Bengal, 15% of workers engaged in cultivation, 29% in agriculture, 7% in the household industry, and 49% in other works (Census of India, 2011) [8].

2. Database and methodology

2.1 Study Area

The total area of West Bengal is 88,752 sq. km. (2.70%). West Bengal is bounded by the Himalayas in the north and the Bay of Bengal in the south. West Bengal has been divided into 19 districts (figure 1) in the 2011 Census. In 2011, around 9.13 crore population was there in the state where 31% resided in urban and 69% in the rural area. The sex ratio of the state has grown from 934 (2001) to 950 (2011) and the decadal change in population is 13.84% from 2001 to 2011. The literacy rate of the state was 76% in 2011 whereas 72% in rural and 85% in urban.

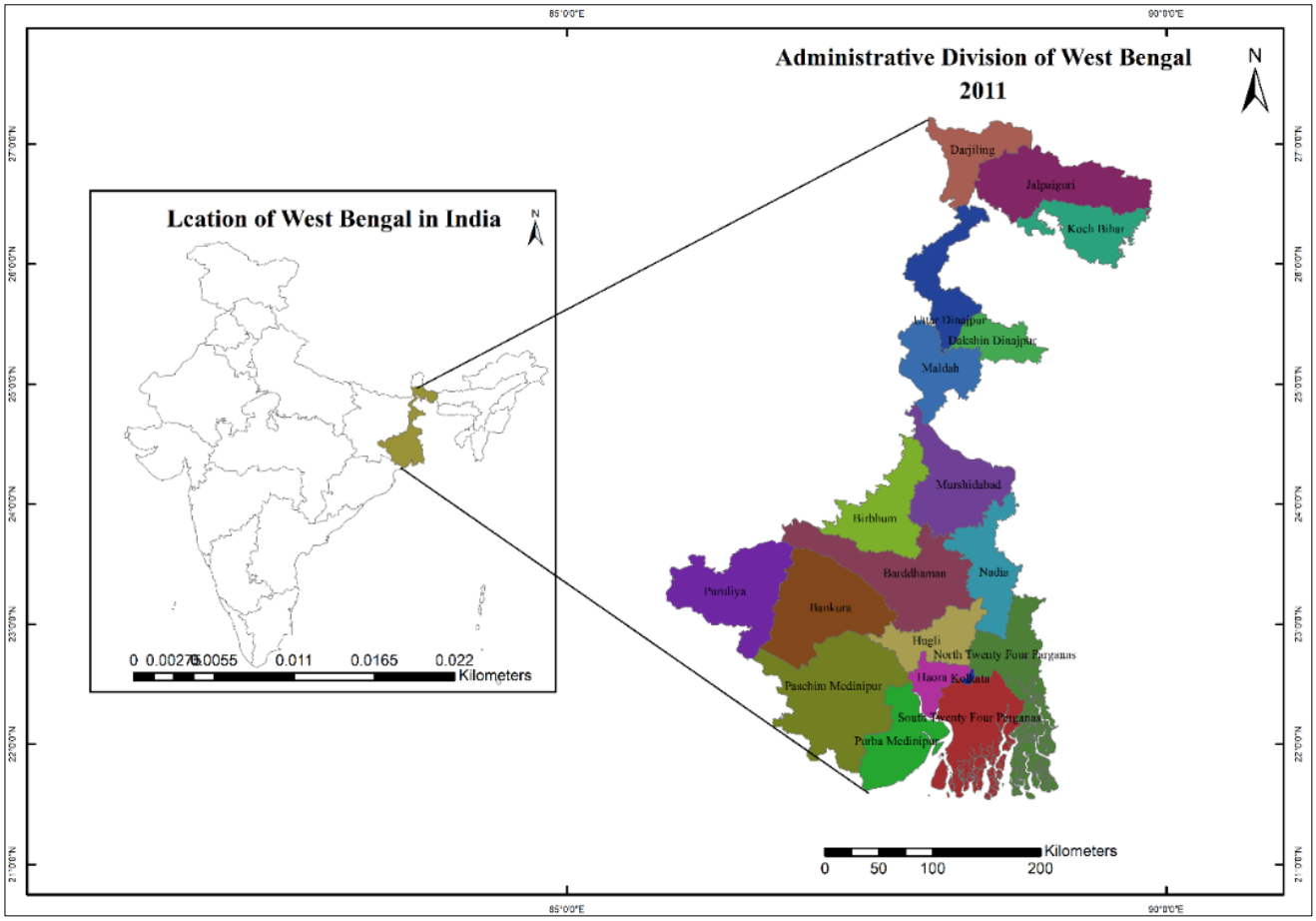

Fig 1: Location Map of West Bengal

2.2 Data sources

This study is based on secondary data sources. The relevant data is achieved from the Economic table, District Census Handbook (DCHB) - West Bengal, Office of the Registrar General & Census Commissioner, India, and International Labour Organization (ILO).

2.3. Data Analysis Method

2.3.1 Statistical Processing of Data

Firstly, the work participation rate of the total, rural and urban has been calculated and analyzed. To differentiate the change in WPR between the decades, the decadal change of percentage has been calculated.

Secondly, to find out the degree of inequality among rural and urban areas concerning WPR, the rural-urban differential index (RUDI) technique has been applied to calculate the differential index of WPR for each district of the state. Hence, the resulting index values of WPR have been analogized consecutively with the time period from 1951 to 2011.

$$\text{RUDI} = \frac{R_{wpr} - U_{wpr}}{T_{wpr}} \qquad \text{..... (i)}$$

Where

URDI = urban-rural differential index of WPR;

R_{wpr} = rural WPR;

U_{wpr} = urban WPR; and

T_{wpr}= total WPR.

However, the RUDI of WPR is the representation of hegemony of WPR of rural or urban on the one hand and the degree of WPR gap on the other hand. Therefore, if the value of RUDI is positive (+) then it shows rural omnipotence of the WPR while a negative (-) of WPR imposes urban supremacy in the districts. The greater the value of the RUDI index connotes the bigger degree of variance between rural-urban WPR. Though researchers like Krishan and Shayam (1978) [12], Chaubey and Chaubey

(1998) [4], Shafiqullah (2011) [17], Som and Mishra (2014) [3], Chattoraj and Chand (2015) [3] used this method.

Thirdly, the dependency ratio has been calculated to show working and non-working population variation. The dependency ratio (DR) is measured as the total dependent population to the total working population. Here it should be pointed out that, DR shows dependent people per one independent person. For example, the overall DR in the state is 1.63 which indicates that 1.63 persons are dependent on one person.

Fourthly, to analyze the magnitude of the degree of correlation between the variables, Pearson Correlation Coefficient has been calculated as follows;

$$r = \frac{\varepsilon(x-\bar{x})(y-\bar{y})}{\sqrt{\varepsilon(x-\bar{x})^2 \varepsilon(y-\bar{y})^2}} \quad \text{(ii)}$$

Where

r= correlation coefficient

x= values of the x-variable in a sample

$\bar{x}$= mean of the values of the x-variable

y= values of the y-variable in a sample

$\bar{y}$= mean of the values of the y-variable

2.3.2 Cartographic Representation of Data

Based on the WPR and growth rate from 1951 to 2011, the bar graph has been drawn for each decade by using ArcGIS to elucidate the decadal pattern and growth rate pattern of WPR of the districts. A line graph has been drawn to represent state-level WPR from 1951-2011.

3. Results and Discussion

3.1 Overall WPR

In 1951, urban areas noted the highest WPR (40.9%) in comparison to rural (32.6%) and total (34.7%) but the urban part observed lower WPR than rural and overall in 2011 in West Bengal (figure 2). WPR (total, rural and urban) in West Bengal has followed a declining trend from 1951 to 1971. But, from 1981 onward, WPR increased for rural and total while it decreased for urban WPR from 1981 to 1991. In the decade 1961-1971, the highest negative growth rate (-7.5%) declination has been observed in urban areas. From 1991 to 2001, a high growth rate (4.7%) has noticed in rural areas. In between last six decades, urban areas have registered a negative change (-4.2%) in WPR in the state.

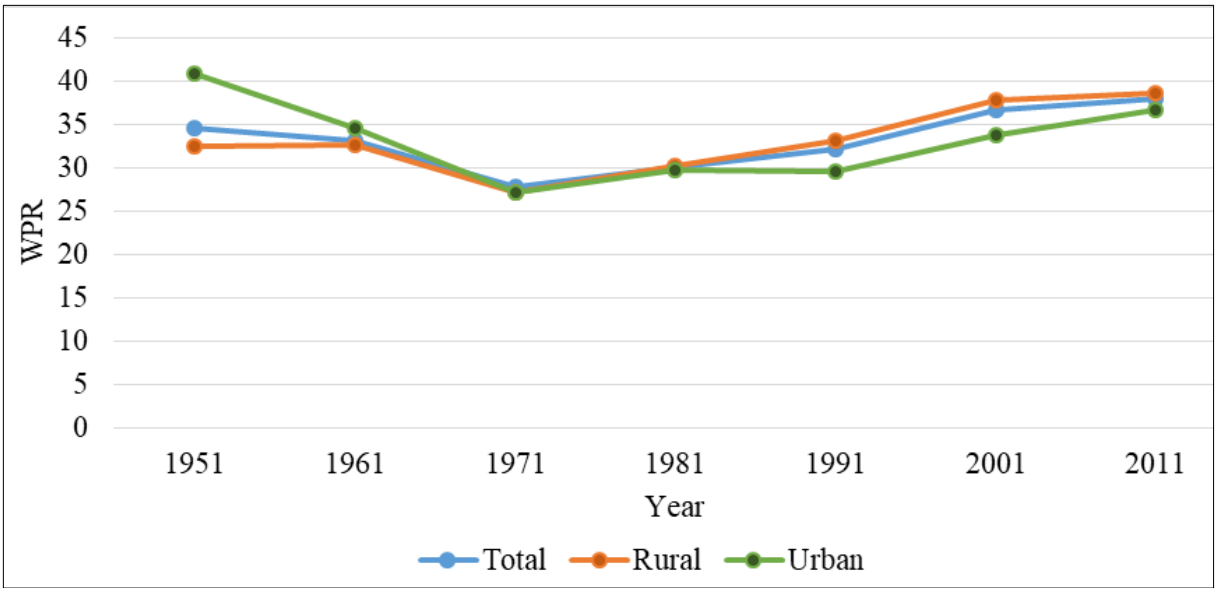

Fig 2: Work participation rate in West Bengal, 2011

Across the districts, Jalpaiguri, Murshidabad, Birbhum, Barddhaman, Nadia, Twenty-four Parganas, Haora, Medinipur, and Hugli followed a consistent decline in WPR from 1951 to 1971. While all the districts excluding a few districts (Darjiling, Uttar Dinajpur, Bankura, and Kolkata) have recorded an increasing trend of WPR from 1981 to 2011(figure 3). Kolkata has noted a continuous decreasing trend of WPR from 1951 to 1991 and the last two decade has shown reasonable growth. Bankura, Puruliya, and Darjiling have noted an inconsistent trend over the decades. From 2001 to 2011, Four districts; Uttar Dinajpur, Maldah, Puruliya, and Bankura have shown a decrease in WPR. In 1951, Kolkata and Jalpaiguri (above 40%) observed the highest WPR followed by Darjiling (39%), Barddhaman (39%), Hugli (35%), and Birbhum (35%) while Maldah noted very low WPR (27%). However, only 37% of the total districts namely, Darjiling, Jalpaiguri, Birbhum, Barddhaman, Haora, Kolkata, and Hugli observed above state average WPR (34.7%) in 1951. Half of the districts in 2011 reported above state average WPR (38%). However, non-peripheral districts reported a sound overall WPR compared to peripheral districts of Kolkata over the last few decades.

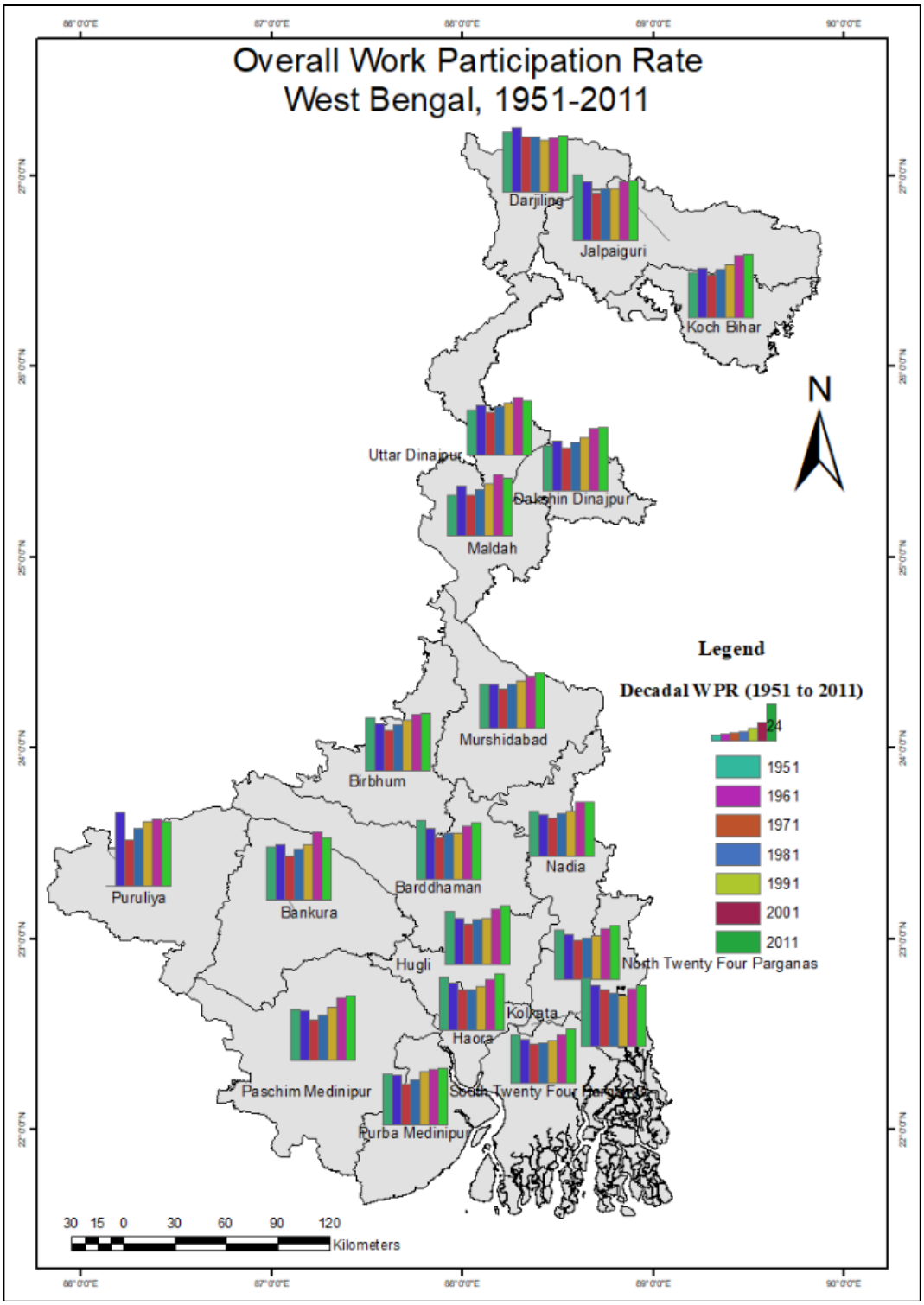

Fig 3: Overall WPR in West Bengal, 1951-2011

3.2 Growth Rate of Overall WPR

From 1951 to 1961, all districts except Darjiling, Koch Bihar, Dinajpur, Maldah, and Bankura observed negative decadal change in WPR. Maldah noted the highest positive decadal variation (6%) while Barddhaman accounted highest negative (-5%) change of WPR in 1951-1961. From 1961 to 1971, all districts accounted negative growth rate where Puruliya reported the highest negative change (-18%) followed by Bankura (-8%), Jalpaiguri (-7%), Darjiling (-7%), Barddhaman, Maldah, and Medinipur (-6%). However, northern, and western districts have observed the highest negative decadal change of WPR than southern and eastern districts. From 1971 to 1981, Puruliya experienced the highest positive decadal change (7%). From 1981 to 1991, there are moderate positive decadal change has been observed in all districts except Kolkata and Darjiling (figure 4). From 1991-2001, around all districts have noted a sound decadal change where northern and south-eastern districts like Koch Bihar, Dakshin Dinajpur, Maldah, Nadia, Bankura, Medinipur, and Hugli have noted above 5% WPR. In the last decade, no significant decadal change has been observed but peripheral districts of Kolkata have noted moderate positive growth while Maldah, Puruliya, Uttar Dinajpur, and Bankura have observed a negative WPR between 2% to 4%.

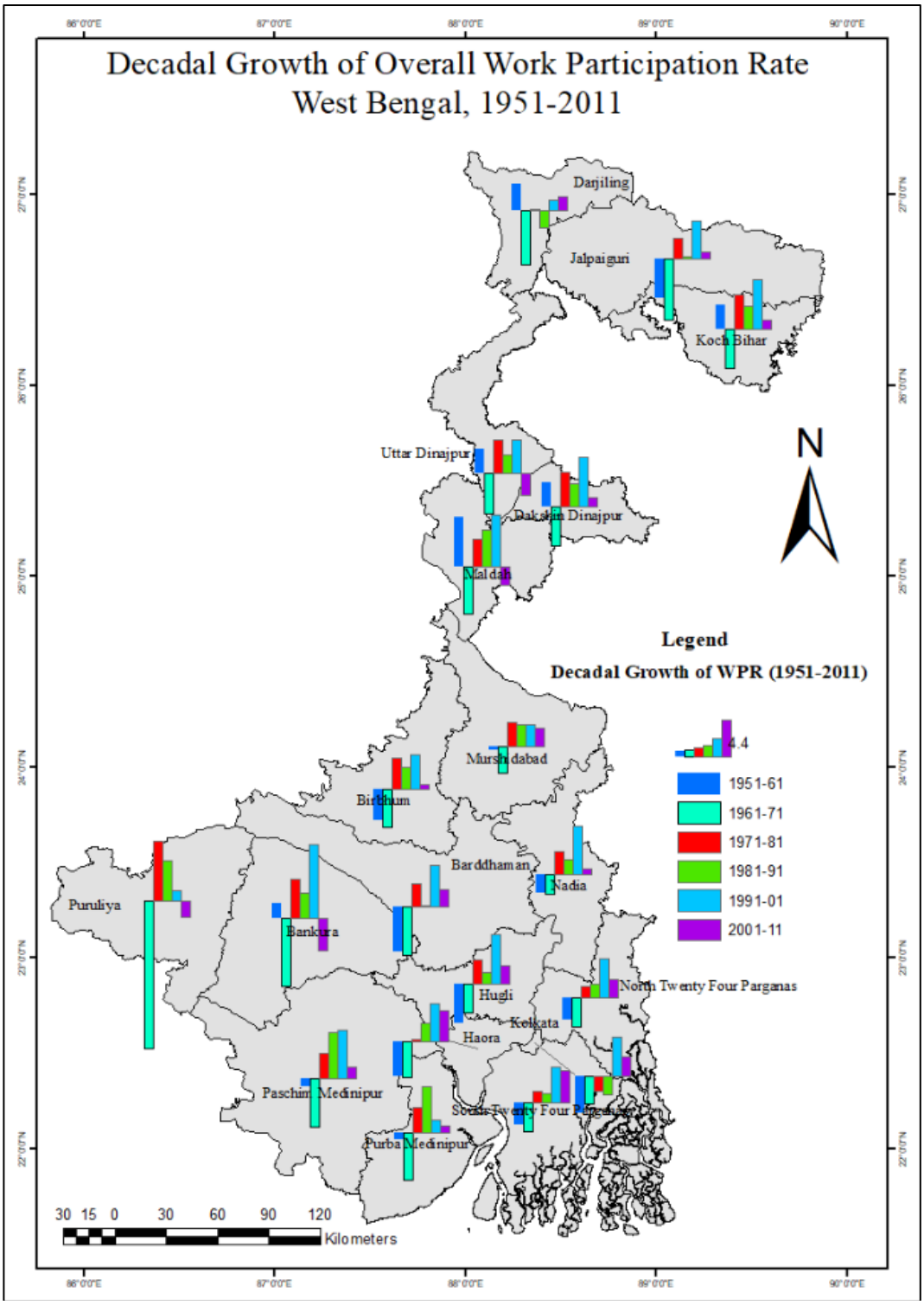

Fig 4: Decadal Growth of Overall WPR in West Bengal, 1951-2011

3.3 Rural WPR

An uneven trend of WPR has been noticed over the decades across the districts in rural areas. Koch Bihar, Dakshin Dinajpur, and Murshidabad have observed a constant increase in WPR from 1951 to 2011 except in 1971. Barddhaman, Nadia, Hugli, Jalpaiguri, Birbhum, Twenty-four Parganas, Haora, and Medinipur observed a steady decreasing trend of WPR from 1951 to 1971 (figure 5). While 1971 onwards, all districts noted an increasing trend of rural WPR except Darjiling in 1991, Uttar Dinajpur, Maldah, Nadia, Bankura, and Puruliya in 2011. Around 42% of the districts have noted above the state average (32.5%) WPR in rural area in 1951 where Darjiling (40%) and Jalpaiguri (43%) in the northern and Barddhaman (39%) in the central part has observed the highest WPR. Puruliya (50%) recorded the highest rural WPR in 1961 followed by Darjiling (45%) and Jalpaiguri (39%). All districts in 1971 observed a decline in WPR compared to the previous decennial (1961). It is remarkable that bordering districts of Kolkata noted low WPR in contrast to northern and western districts of the state over the decades. Though bordering districts of Kolkata are more urbanized, consequently, more working-age group people are moved to urban areas and dependent people stayed in the rural part.

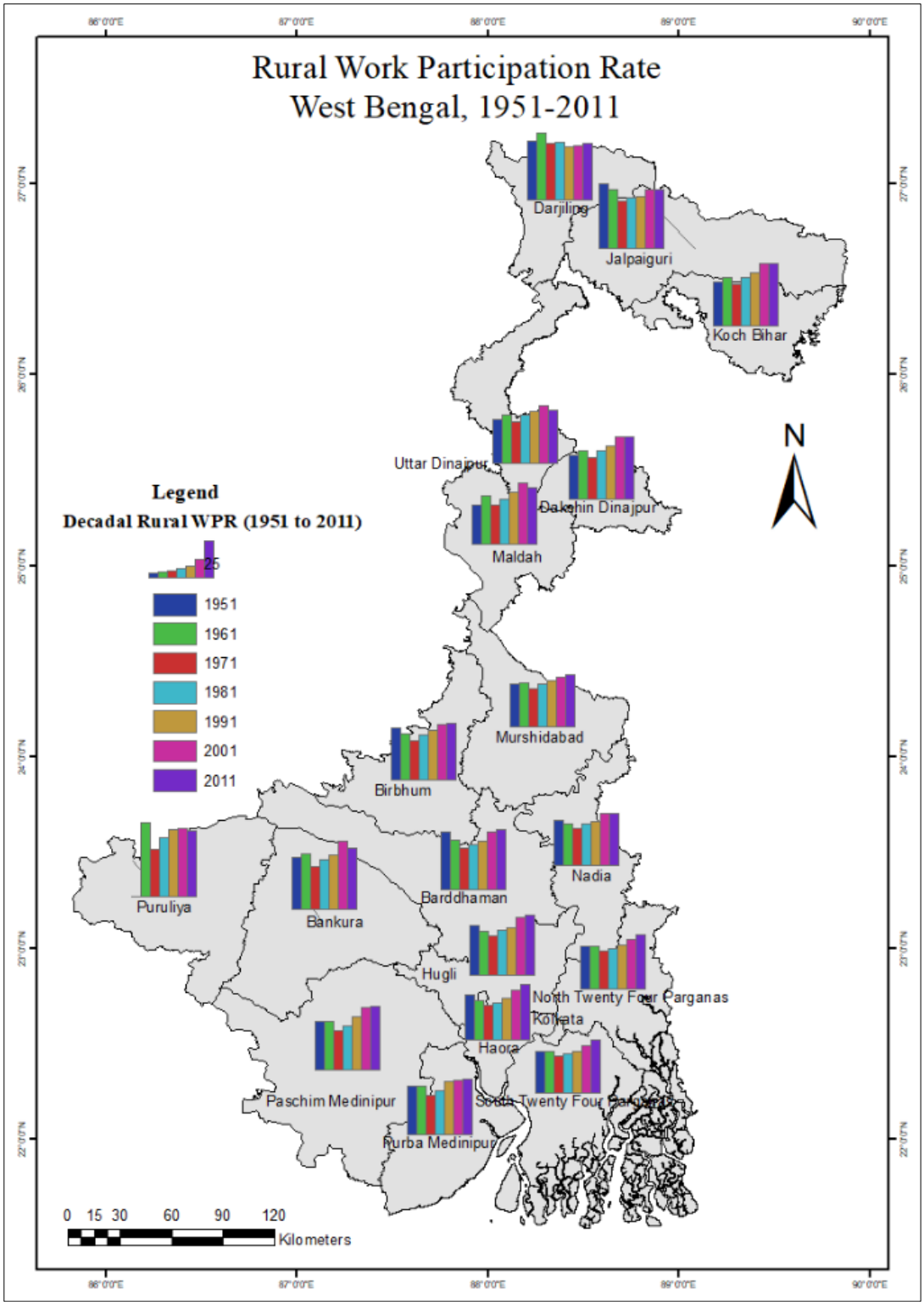

Fig 5: Rural WPR in West Bengal, 1951-2011

In 2011, sound WPR has been noticed in all districts while 26% of districts namely Uttar Dinajpur, Nadia, Maldah, Puruliya, and Bankura revealed shrinkage of WPR compared to the previous decade because, in the last decade, many progressive rural villages converted to urban areas as a result, WPR of rural areas declined while urban WPR increased. Puruliya, Hugli, Paschim Medinipur, Bankura, Barddhaman, Dakshin Dinajpur, and Koch Bihar has stated above 40% WPR which is much higher than the state average. It has also alluded that Puruliya has accounted for all times high WPR all over the decades because around 61% of workers are engaged in agriculture and cultivation (Census of India, 2011) [8].

3.4 Growth Rate of Rural WPR

A lopsided decadal change of percentage has been noticed in rural WPR throughout the decades. Murshidabad and Puruliya from 1971-1981 to 1991-2001 noted a consistent decline in a decadal change of WPR. Decennial 1951-1961, all the south-eastern districts (52% of districts) and one northern district (Jalpaiguri) recorded a negative growth rate whereas Barddhaman noted the highest negative change (6%). All districts in 1961-1971, detected negative decadal

change where Puruliya registered the highest negative change (-18%) followed by Bankura, Jalpaiguri, Darjiling, and Maldah (above -6%) due to the stagnant agriculture sector. In 1971, Arra and Chapari rural settlement transformed into a census town which results in very low WPR in Puruliya.

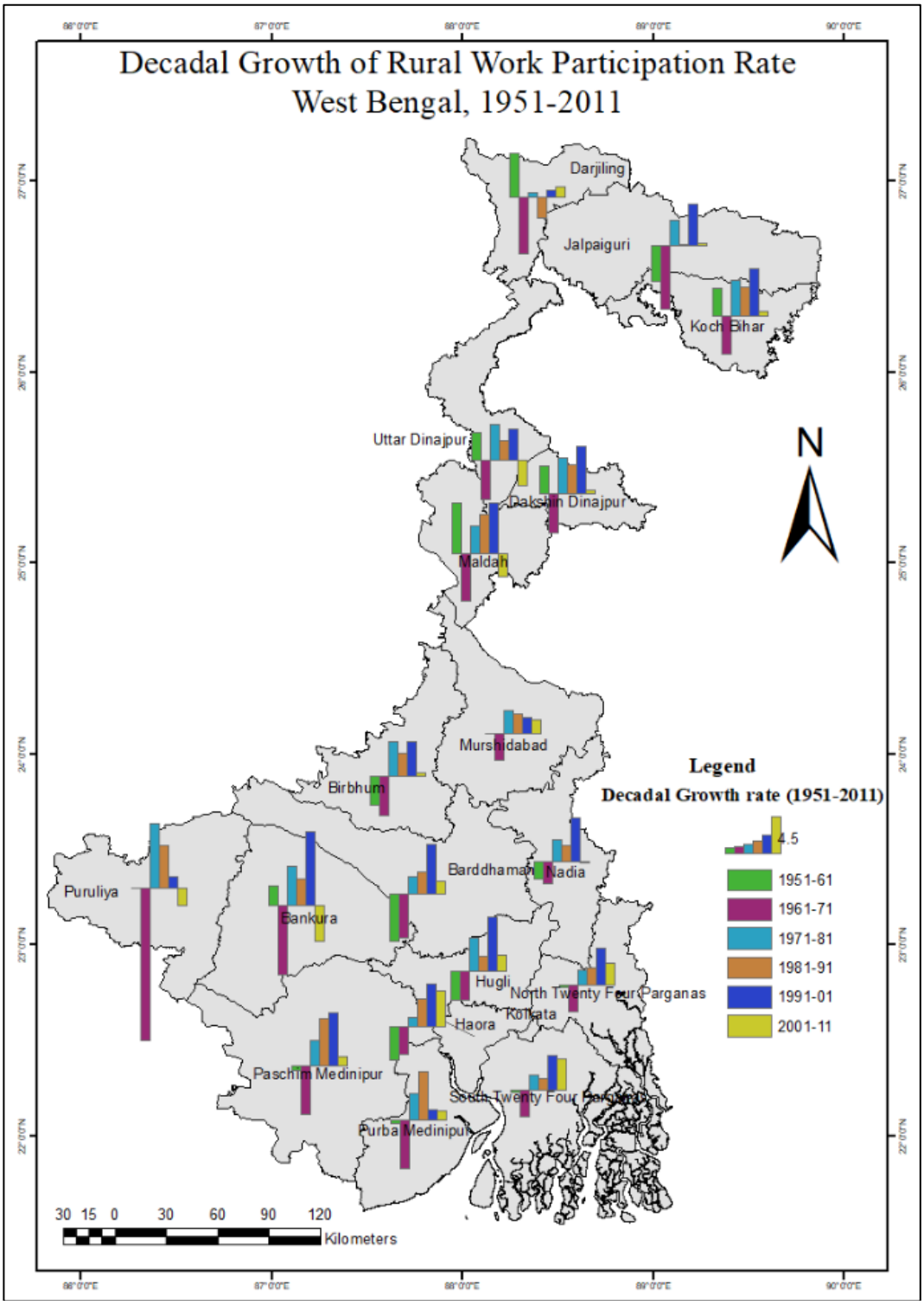

Fig 6: Decadal Growth of Rural WPR in West Bengal, 1951-2011

From 1971 to 1981 and 1991 to 2001, all districts noted a positive change in WPR whereas peripheral districts of Kolkata observed low growth of rural WPR in comparison to northern and western districts (figure 6). From 1991 to 2001, Bankura has shown the highest positive growth rate (9%) followed by Paschim Medinipur, Hugli, Maldah, Barddhaman, Dakshin Dinajpur, Koch Bihar, Haora, and Nadia (above 5%). No remarkable positive growth rate has been noticed in the last decade while Uttar Dinajpur, Maldah, Nadia, Bankura, and Puruliya have accounted for negative decadal growth rates.

3.5 Urban WPR

Two clear trends of urban WPR could be observed; one is the declining trend of all districts from 1951 to 1971 and the second is the increasing trend from 1981 to 2011 except in 1991 in Darjiling, Barddhaman, South 24 Parganas, 1981, and 1991 in Kolkata, and in 1981 in Hugli (figure 7).

Kolkata is consistently shown a decreasing trend of WPR from 1951 to 1991. It is also observed that highly urbanized districts like Darjiling, Jalpaiguri in the north, Barddhaman in the central part, and Kolkata and its peripheral districts in the south-east have noted high urban WPR. In 1951, WPR in West Bengal was 40.9%, therefore, only Kolkata and two of its peripheral districts; Haora and Hugli observed above the state's urban average WPR. In the last decade, 42% of districts; Koch Bihar, Koch Bihar, Dakshin Dinajpur, Maldah, Murshidabad in the north and Nadia, Haora, and Kolkata in the south have accounted for more than the state average WPR (36.7%) while only 21% of districts recorded above the state average in 2001.

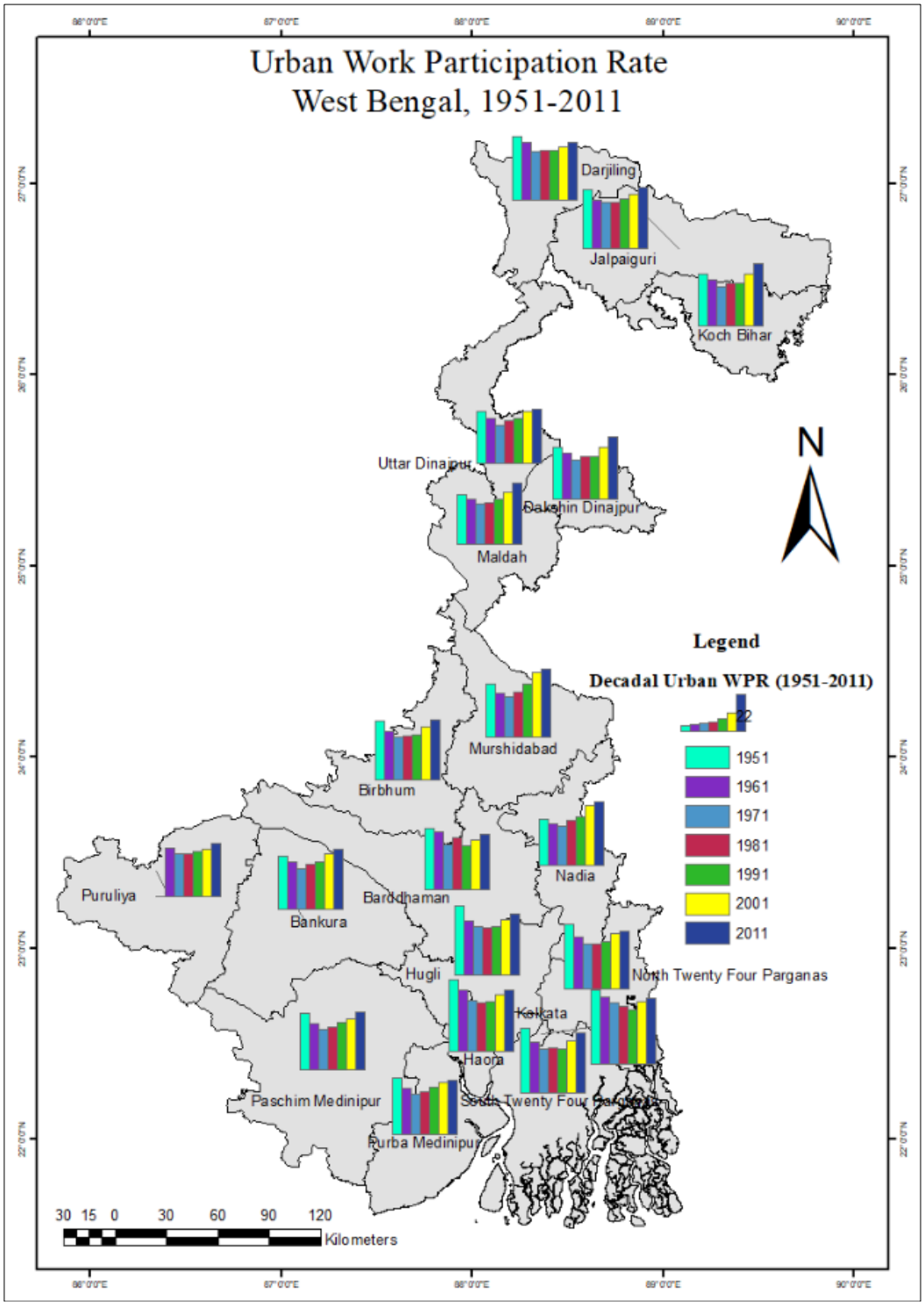

Fig 7: Urban WPR in West Bengal, 1951-2011

3.6 Growth Rate of Urban WPR

Three kinds of a pattern of the decadal growth rate of urban WPR have been observed. First, from 1951 to 1961 and 1961 to 1971, all districts noted a negative decadal change. Second, from 1971 to 1981 and 1981 to 1991, positive as well as negative decadal growth rates have been noticed, and third, from 1991 to 2001 and 2001 to 2011, all districts recorded a positive decadal growth rate of urban WPR. Kolkata from 1951-1961 to1981-1991 and Hugli and Haora from 1951-1961 to1971-1981 experienced a negative change (figure 8).

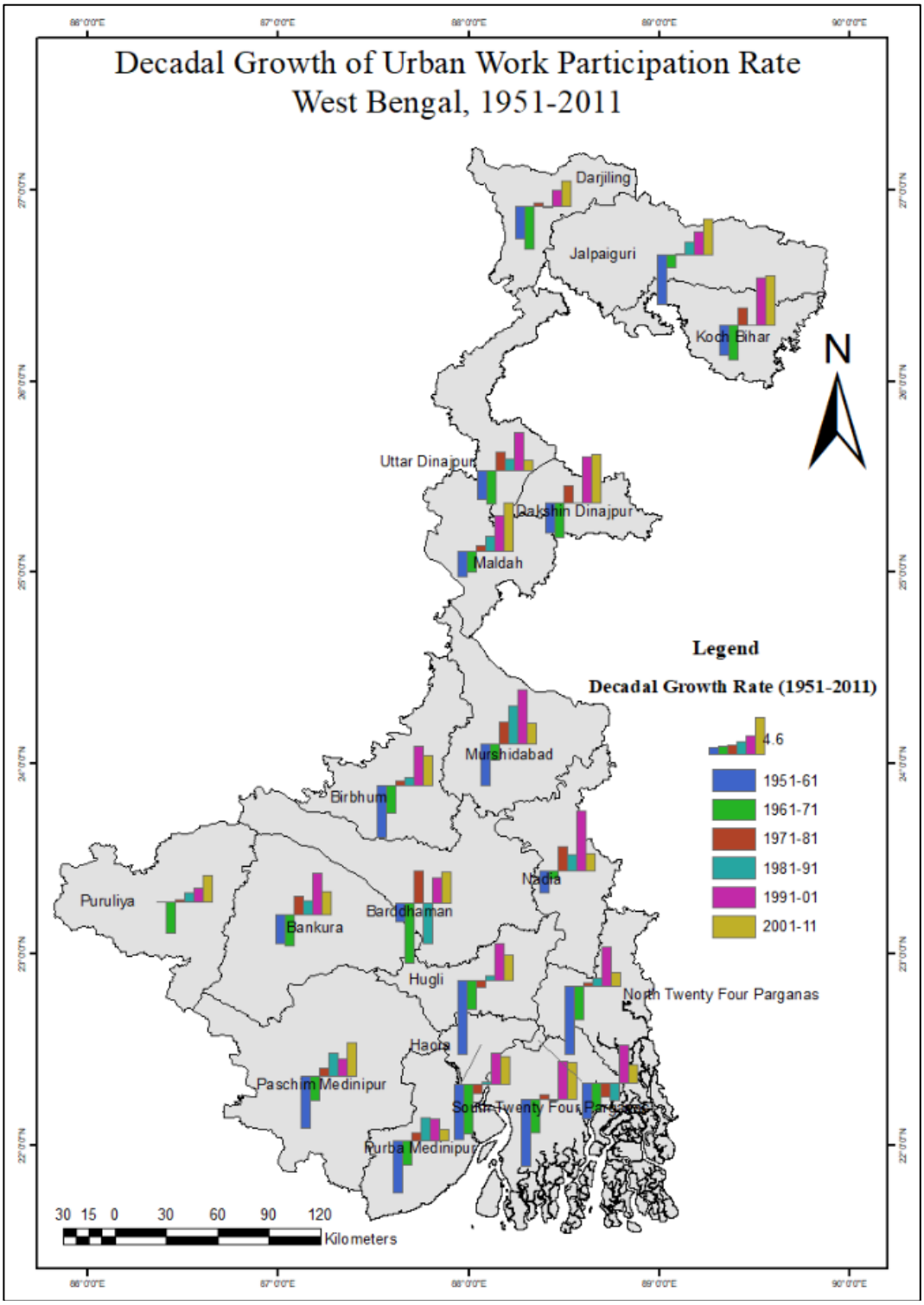

Fig 8: Decadal Growth of Urban WPR in West Bengal, 1951-2011

From 1951 to 1961, Kolkata and its bordering districts reported the highest negative decadal change of percentage (-4% to -9%) in contrast to northern districts (-3% to -6%). While 1961 to 1971, Barddhaman recorded the highest negative decadal change (-7%) followed by Haora, Darjiling, Koch Bihar, Dinajpur, and Twenty-four Parganas (above -4%). Though 1971 to 1981, Kolkata, Haora, and Hugli have noted a negative decadal growth rate while other districts have shown a low positive growth. From 1991-2001 and 2001-2011, northern districts have shown better decadal growth of WPR than the south-eastern and western districts due to economic reforms in the 1990s and the transformation of rural into the urban settlement. Apart from that, the central-northern districts are economically growing due to development in the transport networks and economic activities which generate work opportunities.

3.7 Rural-Urban Differential Index (RUDI)

No uniformity of the RUDI values is observed throughout the decades which means some districts are portrayed as urban dominance while others are rural dominance. Peripheral districts of Kolkata such as Twenty-Four Parganas from 1951 to 1981, Haora from 1951 to 2001, and Hugli from 1951 to 1971 show a consistent urban

dominance of WPR in the state. While these three districts also experienced a decreasing trend of urban dominance (reducing RUDI values) which indicates that they are going towards rural dominance of WPR.

Table 1: Rural-urban differential index of WPR in West Bengal, 1951-2011

Districts	1951	1961	1971	1981	1991	2001	2011
Darjiling	0.03	0.24	0.24	0.24	0.19	0.14	0.09
Jalpaiguri	0.19	0.26	0.12	0.19	0.15	0.19	0.08
Koch Bihar	-0.06	0.16	0.17	0.22	0.30	0.25	0.11
Uttar Dinajpur	-0.06	0.16	0.17	0.22	0.24	0.19	0.08
Dakshin Dinajpur	-0.06	0.16	0.17	0.22	0.30	0.25	0.11
Maldah	-0.14	0.17	0.09	0.17	0.23	0.24	0.03
Murshidabad	-0.11	0.08	0.04	0.04	-0.03	-0.16	-0.18
Birbhum	-0.02	0.07	0.03	0.14	0.18	0.14	0.05
Barddhaman	0.05	-0.05	0.01	-0.06	0.19	0.25	0.17
Nadia	0.08	0.10	0.04	0.03	0.02	-0.04	-0.11
North 24 Parganas	-0.33	-0.08	-0.06	-0.01	0.03	0.01	0.04
South 24 Parganas	-0.33	-0.08	-0.06	-0.01	0.05	0.02	0.00
Bankura	0.08	0.24	0.14	0.20	0.23	0.27	0.12
Haora	-0.36	-0.33	-0.27	-0.19	-0.07	-0.02	0.01
Paschim Medinipur	-0.03	0.15	0.07	0.14	0.20	0.28	0.21
Purba Medinipur	-0.03	0.15	0.07	0.14	0.20	0.16	0.14
Hugli	-0.25	-0.10	-0.11	0.06	0.10	0.14	0.10
Puruliya	N. A	0.43	0.19	0.36	0.41	0.39	0.29

Source: Calculated by author from District Census Handbook, 2011 [8] Note: N. A= data is not available

On the other hand, Murshidabad from 1991 to 2011, Nadia in 2001 and 2011, and Barddhaman in 1961 and 1981 have noted urban dominance of WPR. It should be mentioned that rural dominance is reducing while urban dominance is growing in Murshidabad and Nadia. On the other side, Darjiling, Jalpaiguri, and Puruliya have experienced rural dominance of WPR throughout the decades. It is remarkable that no continuous growth of rural dominance of WPR has been noticed except in Dinajpur and Koch Bihar from 1961 to 1991. In 1951, 67% of northern and south-eastern districts noted urban dominance of WPR. While in the last decade, 78% of districts have registered a decreasing trend of rural WPR in comparison to 2001 which signifies that in the coming decades, the work participation of workers could be urban dominance in West Bengal.

3.8 Dependency Ratio (DR)

Urban dependency ratio is higher than total and rural in West Bengal as well as across the districts. At the state level, the dependency ratio has been reduced in 2011 for total, urban, and rural in comparison to 2001. While 68% of districts have experienced decreasing in DR in 2011 compared to 2001 for total and rural where all districts have registered a decline in DR for the urban area. Peripheral districts of Kolkata have shown high DR compared to distant districts, in the other words, high urbanized districts have more DR than low urbanized districts.

Table 2: Dependency ratio in West Bengal, 2001-2011

Districts	2001			2011		
	Total	Rural	Urban	Total	Rural	Urban
Darjiling	1.83	1.70	2.13	1.70	1.61	1.85
Jalpaiguri	1.61	1.53	2.08	1.56	1.50	1.72
Koch Bihar	1.56	1.52	2.07	1.50	1.47	1.80
Uttar Dinajpur	1.61	1.55	2.15	1.80	1.77	2.02
Dakshin Dinajpur	1.45	1.37	2.16	1.38	1.35	1.64
Maldah	1.45	1.41	2.15	1.59	1.58	1.65
Murshidabad	1.93	1.99	1.56	1.74	1.84	1.41
Birbhum	1.67	1.64	2.07	1.63	1.61	1.76
Barddhaman	1.81	1.58	2.33	1.65	1.48	1.95
Nadia	1.85	1.88	1.75	1.80	1.89	1.61
North 24 Parganas	1.99	1.97	2.01	1.80	1.75	1.85
South 24 Parganas	2.08	2.07	2.13	1.75	1.76	1.75
Bankura	1.24	1.19	1.97	1.45	1.43	1.74
Haora	1.97	1.99	1.95	1.67	1.65	1.67
Kolkata	1.66	N.A	1.66	1.50	N.A	1.50
Paschim Medinipur	1.56	1.50	2.22	1.36	1.30	1.88
Purba Medinipur	1.56	1.50	2.22	1.67	1.62	2.05
Hugli	1.71	1.59	1.99	1.56	1.47	1.73
Puruliya	1.25	1.16	2.49	1.34	1.26	2.13
West Bengal	1.72	1.64	1.95	1.63	1.58	1.73

Source: Calculated by author from District Census Handbook, 2011 [8]
Note: N. A= data is not available

Between 2001-2011, Maldah, Uttar Dinajpur, Bankura, Purban Medinipur, and Puruliya have shown an increase overall and rural DR. In 2001, North and south 24 Parganas, Haora, Nadia, and Barddhaman has shown high DR in all areas where urban areas show around double which means two people are dependent on one person but this high gap has reduced in 2011. Murshidabad registers a low dependency ratio in the urban area in both decades because, there is an enormous number of small industrial units like Silk, Beedi manufacturing industries, Bell metal, Jute, and Brass industries, etc. have established which marks many populations engaged in various economic activities that consequences a low dependency ratio. Urban decadal change of percentage of DR is dropped more than rural in 2001-2011. It is concluded that urban DR is high than rural DR in both decennials except Nadia (2001 and 2011), South 24 Parganas (2011), and Murshidabad (2001 and 2011). Northern and western districts of the state perceive a low dependency ratio because these districts are more rural and agricultural prepotent. Kolkata shows low urban DR because Kolkata is economically developed and holds its economic base in tertiary activities which attract a large section of workers. Kolkata does not have a rural population; therefore, it does not show DR in rural columns.

3.9 Relationship of WPR with other significant variables

Overall WPR is positively but weakly correlated (<+.41) with seven variables; A (Literate with educational level), C (Tech/non-tech diploma or certificate only), D (Graduate and above educational level), G (Dependency ratio), I (Population Density), K (Sex ratio), and R (Consumption of Electricity). While total WPR has a low negative correlation (<-.41) with fifteen variables including B (Literacy Up to S.S), E (Degree of urbanization), F (total migrants), H (Literacy level), J (Growth rate of the population), L (0-6 Population), M (No. of Schools up to S.S), N (No. of General College & University), O (Net sown area), P (Average size of landholding), Q (No. of small scale industries), S (No. of factories), T (Per capita income), U (GDP), V (Pucca road density).

Rural WPR is positively correlated with ten variables, out of these, three variables such as A, G, and M are low related (<+4.4), and four variables like B, F, L, and O are moderately related (+0.5 to +0.6), while J, K, and P are highly correlated (>+0.6). On the other hand, twelve variables (C, D, E, H, I, N, Q, R, S, T, U, V) are negatively related to rural WPR. Out of these, seven variables (E, I, N, Q, R, T, V) are a very high negative (>-0.6) correlation to rural WPR.

Table 3: Correlation of WPR with other variables in West Bengal, 2011

Variables	Total WPR	Rural WPR	Urban WPR	Variables	Total WPR	Rural WPR	Urban WPR
A	0.09	0.00	-0.14	L	-0.04	.482*	-0.19
B	-0.36	.569*	-0.02	M	-0.10	0.21	-0.25
C	0.40	-0.29	-0.34	N	-0.15	-.782**	0.24
D	0.34	-.558*	0.05	O	-0.09	.514*	-0.19
E	-0.21	-.770**	0.28	P	-0.04	.620**	-0.28
F	-0.32	.528*	-0.26	Q	-0.08	-.745**	0.37
G	0.17	0.43	-.966**	R	0.05	-.912**	0.31
H	-0.09	-0.36	0.02	S	-0.40	-0.17	-0.03
I	0.08	-.959**	0.38	T	-0.10	-.616**	0.00
J	-0.33	.617**	-0.23	U	-0.42	-0.36	0.00
K	0.01	.781**	-0.20	V	-0.18	-.800**	0.33

Source: Calculated by author from District Census Handbook, 2011 [8]

(Note; A- Literate with educational level, B- Literacy up to S.S, C-Tech/non-tech diploma or certificate only, D-Graduate and above educational level, E-Degree of urbanization, F-Total migrants, G-Dependency ratio, H-Literacy level, I-Population density, J-Growth rate of population, K-Sex ratio, L- 0-6 Population, M- No. of Schools up to S.S, N- No. of General College & University, O- Net sown area, P- Average size of landholding, Q- No of small scale industries, R- Consumption of electricity, S- No. of factories, T- Per capita income, U- GDP, V- Pucca road density) Urban WPR has a positive correlation with eight variables (D, E, H, I, N, Q, R, V) and no correlation with two variables (T, U). Out of positively correlated variables, all are low to moderately (<+0.4) correlated with urban WPR. While twelve independent variables (A, B, C, F, G, J, K, L, M, O, P, S) are negatively correlated with urban WPR where G (Dependency ratio) is high negatively (-.999) correlated with urban WPR and remaining variables have a low negative correlation (<-0.4).

However, WPR from north to south and east to west in the state is varied due to its economic, political, and geographical position. Northern districts like Darjiling, Jalpaiguri, and Koch Bihar shows a sound WPR because tea, timber, and tourism is the main economic activity where a huge number of male and female are working. While Kolkata and its peripheral districts in the south-east showed more urban WPR than rural WPR because the secondary and tertiary activity is more dominant in these districts. However, the Kolkata Metropolitan area is the centre of ITC, manufacturing, services, wholesale, and retail where a massive workforce from rural and small urban areas migrates and engaged in various economic activities. Kolkata has plentiful small to large industries where nearly 12,601 micro and small industries with 146,218 employees working in the district in 2011-12 (District Census Handbook, 2011) [8]. However, about 18 lakh workforces are working in Kolkata in 2011, where 15.74 lakhs are main, and 2.19 lakhs are marginal workers; out of this, only 3.58 lakhs are secondary, and 14 lakhs are tertiary workers (Census of India, 2011) [8]. North 24 Parganas is one of the uppermost industrialized districts in the state. In the last century, leather tanning, cutlery, bell metal, cotton handloom, brush manufacturing industries, pottery, etc., have been developed. But, later, jute, manufacturing, textile paper, engineering, rubber, chemical, etc., industries flourished in this district. Therefore, about 20.13 lakhs total workers are engaged only in the urban areas in the above sectors in the North 24 Parganas in 2011. Rural WPR is high in central-northern, western, and south-western districts because the economy of these districts is agriculture-based.

Apart from this, small-scale cottage industries are developed in these areas (Maldah, Murshidabad, Dinajpur, Bankura, Puruliya, Birbhum, and Medinipur).

The growth rate of rural and urban WPR in the northern and western parts is higher in comparison to the south-eastern part. The higher WPR growth rate is detected in low urbanized districts and those districts where the secondary workforce and marginal workforce are dominated. On the other hand, newly emerged urban centres (Maldah, Birbhum, Murshidabad, Jalpaiguri, and south 24 Parganas) offer more work opportunities due to their rising economic magnitudes. However, these districts retained more secondary marginal workers in the state, which reflects the high growth rate of workers. The growth rate of the workers in secondary and tertiary sectors is higher than that of the primary sector and female workers' growth rate in secondary and tertiary sectors is higher than male workers in India (Mutkuri and Naik, 2013). The urban dependency ratio is higher than rural in the state because West Bengal is an agricultural-based state where huge workers are betrothed. Most of the districts have recorded diminishing trends of DR due to substantial growth in the working-age groups. Bordering districts of Kolkata have observed high DR contrast to remote districts. Northern and western districts noticed a low dependency ratio because these districts are more rural dominant and agricultural prevailing. High fertility is an ancillary consequence of high adult dependency while decreasing fertility rate is led to low child DR (Bhagat and Unisa, 2006) [2] which results in the decline of overall DR. However, in this study, WPR is positively associated with overall (+0.17) and rural (+0.43) DR while negatively related with urban DR (-0.97).

Highly urbanized districts have more urban WPR than rural WPR, while low urbanized districts have more rural WPR than urban WPR across the districts of West Bengal. Rapid urbanization is engendering more unemployment in urban areas (Hope, 1984). Degree of urbanization has a negative correlation with rural (-0.21) and overall WPR (-.77) while positive (+0.28 with urban WPR though urbanization is supposed to generate work opportunities. Migration has a significant role in WPR, the age composition of workers (ILO, 2016), short-term and long-term impact, and growth of labour market efficacy (Devlin et al., 2014) [7]. Migration is positively correlated (+.53) with rural WPR while negatively (-0.26) related to urban WPR in this study. Urban WPR is positively correlated with urban higher education (+0.05) and negatively associated with rural higher education (-0.56). Though there is a marked decrease among graduates WPR from 65% in 1993-94 to 58% in 2011-12 especially females (Abraham, 2013) [1]. In the rural areas, male WPR declined among Graduated and the above qualifications could be attributed to participation in advanced higher education to aim for better careers while female WPR reduced due to contribution in domestic responsibilities (Verick, 2014; Mathew, 2015) [18, 13], issues in measurement and gender bias (Verick and Choudhary, 2014) [18], and inadequate women's favourable employment opportunities (Kannan & Raveendran, 2012) [11] which aggregately decline WPR (Chandrashekhar and Jayati, 2011) [6].

4 Conclusion

The scrutiny of the trend in the growth of work participation and the variation in its structure in West Bengal during the last six decades using census data show that non-bordering districts stated a sound overall WPR compared to fringe districts of Kolkata over the last three decades. Northern and western districts have noted the highest negative decadal growth of overall WPR than southern and eastern districts. 1971 onwards, all districts observed a growing trend of rural WPR except a few districts in some decades. The result of the study also shows that neighbouring districts of Kolkata noticed low WPR in contrast to northern and western districts throughout the decades in rural areas. The outcome of the results shows that sound urbanized districts like Darjiling, Jalpaiguri, Barddhaman, Kolkata, and its outlying districts have experienced high urban WPR. Kolkata and its peripheral districts not showing reasonable growth in WPR in urban areas for several decades. Marginal districts of Kolkata have experienced a high dependency ratio contrasted to remote districts and the rural dependency ratio is low than urban DR. In the last decade, WPR has improved due to the increase of marginal workers. Therefore, for sound growth of work participation there is a need of improvement of agriculture activities, well connectivity, small scale industries, professional education, constructive government policies, women participation etc. Thus, ultimately the denouement is that the economic actions should be more labour intensive, dynamic, and economic development patterns should be reformed.

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