punjab geographer

A PEER REVIEWED AND REFEREED JOURNAL OF APG AND ISPER INDIA

LEVELS OF REGIONAL DISPARITIES IN SOCIO-ECONOMIC DEVELOPMENT IN HIMACHAL PRADESH AND UTTARAKHAND STATES

Nem Raj
B.R. Thakur
Puran Chand

Abstract

This study examines the trend and pattern of socio-economic development in the two Himalayan states of Himachal Pradesh and Uttarakhand. The study has been conducted in context of three reference years at an interval of 20 years i.e. 1971, 1991 and 2011. The study is entirely based on secondary sources of data collected from various government agencies. In order to examine the socio-economic disparities in development, z score technique has been used. Coefficient of variation has also been computed to find out the trend in regional disparities. The study reveals that both the states witnessed declining trend in socio-economic development during the study period and pace of reduction is sharper in case of Uttarakhand than Himachal Pradesh. However, regional disparities have declined at almost same pace in both the states in 1971-1991. But in 1991-2011, unlike Himachal Pradesh, the coefficient of variation has decreased at higher rate in Uttarakhand state. Thus, Uttarakhand state has witnessed comparatively less variations in development than Himachal Pradesh in 1991-2011.

Introduction

The problem of regional disparity is ubiquitous all across the world. Almost, all countries of the world experience regional disparities of varying magnitude in different aspects. India being the second largest populous country in the world and endowed with diverse physical landscape also reflects significant regional differences in socio-economic development. The history of regional disparities in India dates back to the colonial regime. The British developed only those regions, which were politically, economically and administratively important to them. Other parts of the country remained neglected and the problem of regional disparities accentuated further. However, after the initiation of five-year plans, the country laid emphasis on the issue of balanced regional development. But the problem of regional disparity in development still prevails in India.

Lipchitz (1986) has worked on the concept, nature and indicators of regional disparities in socio-economic development and its processes. Similarly, several Indian scholars also took interest in the study of regional disparities, particularly after the initiation of some government programmes focused on the issues of socio-economic dimensions. A few worth mentioning recent studies in this regard are of Rajalakshmi (2013), Ganaie et al. (2014), Asif (2015), Sadaf and Munir (2015), Radhika

et al. (2016), Singh and Kumara (2016), Sharma (2016) and Devi and Rajeshwari (2016) who have analysed the issue of regional disparities with respect to infrastructure, health, education and agriculture sectors at district or sub-district levels. In this context, the present paper also attempts to study the regional disparities in socio-economic development in two mountainous states of Himachal Pradesh and Uttarakhand.

Objectives of the study

The major objectives of the study are:

- to study the trend and pattern of socio-economic development in the study area;
- to examine the trend of variation at individual variable level during the study period.

Study Area

The study area constitutes two states of Himachal Pradesh and Uttarakhand. Geographically, the study area is located between 28° 43' N to 33° 12' N latitudes and 76° 47' E to 81° 02' E longitudes. These states together cover an area of about 109156 km^2 supporting a population of 16.95 million in 2011. These states account for about 3.32 per cent of the total geographical area and about 1.40 per cent of the total population of India. About 80.81 per cent people (Himachal Pradesh 82.80 per cent, Uttarakhand 78.83 per cent) are literate in the study area in 2011. While, male- female literacy rate in the study area is 88.46 per cent and 72.97 per cent, respectively. The sex ratio in the study area is 967 (Himachal Pradesh 972, Uttarakhand 963). About 20.13 per cent population of the study area (Himachal Pradesh 10.03 per cent, Uttarakhand 30. 23 per cent) resides in urban areas. Net sown area remains low i.e. 29.79 per cent in the study area with almost equal

percentages in both the states. Only 14.50 per cent of total agricultural area (Himachal Pradesh 13.13 per cent, Uttarakhand 15.66 per cent) of the study region is under irrigation.

Database and Methodology

The present study is entirely based on secondary sources of data collected from Directorate of Census Operations, Directorate of Economics and Statistics and Department of Health and Family Welfare of the states of Himachal Pradesh and Uttarakhand for the years 1971, 1991 and 2011. The spatial disparities in the levels of socio-economic development have been examined at district level in the study area. Further, the level and pattern of disparities in socio-economic development in the study area have been examined with respect to 16 indicators namely, total literacy rate (x_1), female literacy rate (x_2), male literacy rate (x_3), urbanization (x_4), total work participation rate (percentage of workers to total population) (x_5), male work participation rate (percentage of male workers to total male population) (x_6), female work participation rate (percentage of female workers to total female population) (x_7), sex ratio (x_8), total health institutes/10000 persons (x_9), total institutional beds/10000 persons (x_{10}), road density (km/100 km^2) (x_{11}), student-teacher ratio (number of students per teacher) (x_{12}), net irrigated area (per cent) (x_{13}), net sown area (per cent) (x_{14}), irrigation intensity (per cent) (x_{15}) and cropping intensity (per cent) (x_{16}). In order to examine the disparity in socio-economic development at district level, Z scores have been computed. Further composite Z score has been calculated by summing up the Z scores of all the indicators and divided by the number of indicators. Similarly, year-wise and variable-wise coefficient of variation (CV) has been calculated to find out variation in the development of different variables. Choropleth

technique has been applied to show the spatial variations in the level of development. Bar graphs have also been prepared to interpret the results.

To maintain homogeneity in the administrative units for the analysis of trend and pattern of regional disparities, the districts of 1971 have been taken as base districts and the newly carved out districts of Census year 1991 and 2011 have been merged in the districts of base year, such as (i) if the newly created districts in 1991 and 2011 have been fully carved out from a single district, these have been merged with the parent district of 1971 and (ii) if the newly created districts have been carved out from multiple parent districts, the district contributing for more than 50 per cent administrative area of the new district has been considered as parent district to merge the new district.

Results and Discussion
Areas of High Level of Socio-economic Development

Districts recording composite Z score value more than 1.00 have been included in this category of areas. Only Lahul & Spiti district of Himachal Pradesh has recorded high level of development in 1971 (Fig. 1). This highly developed district has accounted for 22.24 per cent area and 0.67 per cent population of Himachal Pradesh. While this district accounts for 11.42 per cent area and 0.32 per cent of total population of the study area. This district has performed exceptionally well in health sector by recording 5.93 and 5.64 Z scores in availability of healthcare institutes and institutional beds, respectively (Table 1). It has been due to the fact that the district has lowest population (23,538 persons) among all the districts in 1971 in the state. Similarly, it has recorded high Z scores in total work participation rate (2.75), male work

participation rate (2.84) and female work participation rate (2.87) with respect to other districts (Table 1). The progress in these sectors has resulted high level of socio-economic development in Lahul & Spiti district in 1971.

However, in 1991 and 2011, the category of high level of development has disappeared from the study area (Fig. 2 and 3). It is evident that Lahul & Spiti district has recorded less values of Z score in urban population (-1.33), teacher-student ratio (-2.62), female work participation rate (1.91), cropping intensity (-1.29) in 1991 than in 1971 (Table 2). Similarly, in 2011, the Z score value for the indicators of urban population (-1.39), road density (-0.33), work participation rate (2.38) and cropping intensity (-1.58) has further declined with respect to 1991 (Table 3). Although Lahul & Spiti district has recorded little improvement in road density in 1991 with respect to 1971 and institutional beds in 2011 with respect to 1991, yet the district could not attain higher position it had in 1971. The district on the whole has witnessed decline in composite Z scores values from 1.07 in 1971 to 0.82 in 1991 and further downward to 0.66 in 2011 (Table 4).

Areas of Moderate Level of Socio-economic Development

This category includes the districts registering the composite Z score value ranging between 0.00 and 1.00. Excluding Chamba and Lahul & Spiti districts of Himachal Pradesh and Haridwar district of Uttarakhand all other districts of the study area has witnessed a moderate level of socio-economic development in 1971 (Fig. 1). In 1991, leaving aside Kullu and Chamba districts of Himachal Pradesh and Uttarkashi and Haridwar districts of Uttarakhand, all other districts of study area have witnessed moderate level of development
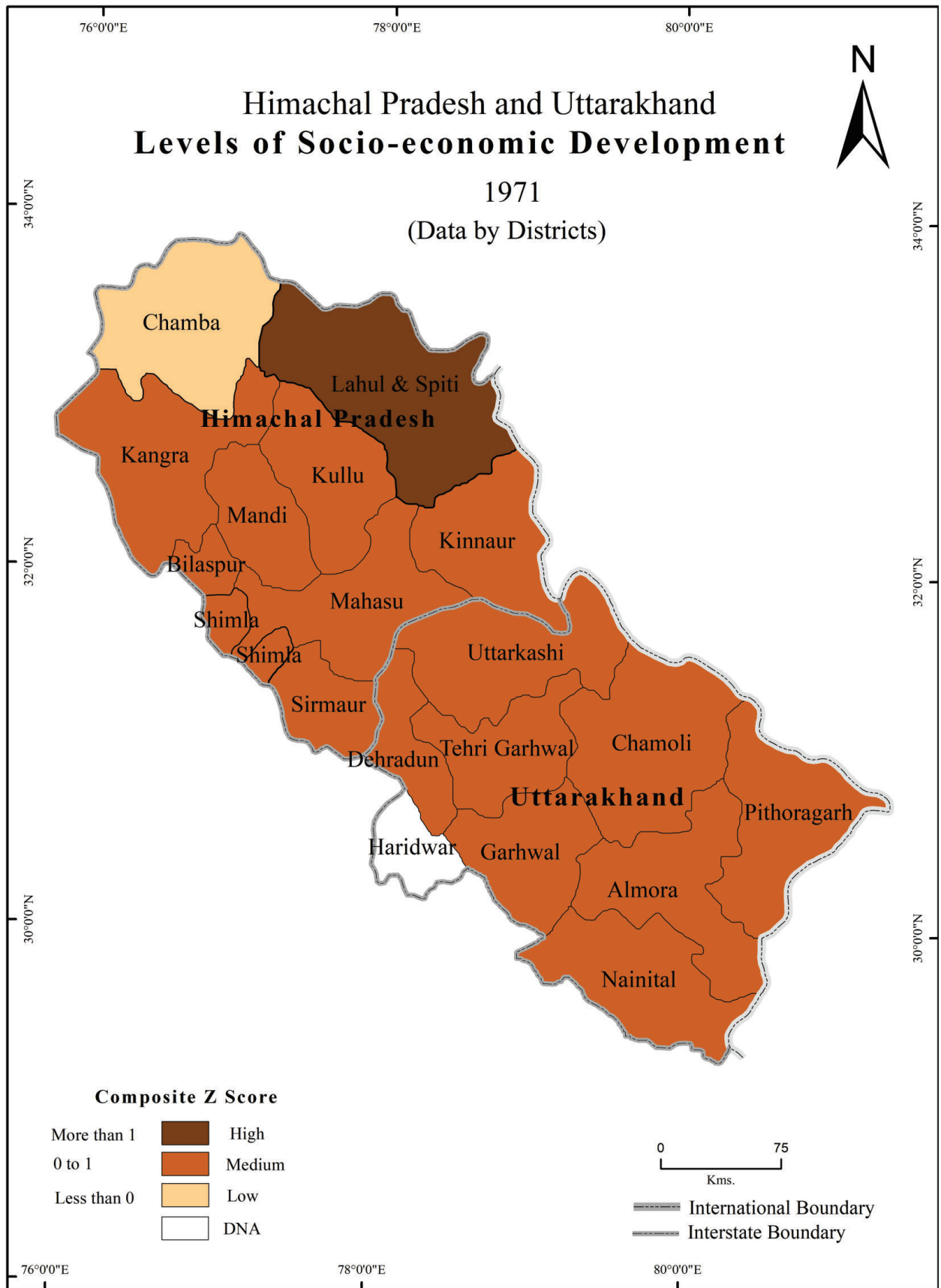
Fig. 1

Table 1
Himachal Pradesh and Uttarakhand: Indicator-wise Z Score among the Districts (1971)

District/State	Indicator-wise Z Score																Total
	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9	x_{10}	x_{11}	x_{12}	x_{13}	x_{14}	x_{15}	x_{16}	
Bilaspur	0.69	0.66	0.91	-0.75	0.58	-0.68	1.11	1.12	0.32	0.10	0.10	-0.69	-	-0.64	-	1.53	4.36
Chamba	-0.68	-0.47	-0.63	-0.59	0.56	1.23	0.42	0.54	0.26	0.22	-0.28	-0.67	-	-1.37	-	0.71	-0.75
Kangra	1.15	1.19	1.29	-0.82	-0.60	-1.52	-0.15	1.55	-0.17	0.10	-0.16	0.23	-	-0.77	-	1.43	2.75
Kinnaur	0.19	-0.35	0.76	-1.04	2.37	2.46	2.49	-0.14	1.58	0.56	-0.27	-0.65	-	-1.55	-	0.13	6.53
Kullu	-0.14	-0.34	0.16	-0.70	1.30	1.28	1.31	0.85	0.10	-0.41	-0.25	-0.62	-	-1.37	-	0.71	1.87
Lahul & Spiti	0.26	-0.35	0.78	-1.04	2.75	2.84	2.87	-1.02	5.93	5.64	-0.33	-0.75	-	-1.59	-	-1.04	14.96
Mahasu	0.29	0.17	0.52	-0.82	1.17	1.04	1.45	0.15	0.32	1.75	-0.18	-0.30	-	-1.16	-	0.81	5.20
Mandi	0.48	0.30	0.82	-0.47	0.49	-0.01	0.77	0.78	-0.07	-0.35	-0.07	-0.19	-	-0.81	-	0.96	2.62
Shimla	1.25	1.22	1.25	0.90	0.15	0.65	-0.08	-0.67	0.37	-0.28	0.35	-0.32	-	-0.49	-	0.92	5.21
Sirmaur	-0.14	-0.11	-0.09	-0.53	0.75	1.93	0.30	-0.76	0.26	0.32	-0.05	-0.42	-	-1.04	-	1.31	1.75
Himachal Pradesh	**0.34**	**0.19**	**0.58**	**-0.59**	**0.95**	**0.92**	**1.05**	**0.24**	**0.89**	**0.77**	**-0.11**	**-0.44**	-	**-1.08**	-	**0.75**	**4.46**
Almora	0.22	-0.24	1.02	-0.72	0.42	-0.81	1.00	2.13	-0.19	0.06	-0.20	-0.20	-	-	-	-	2.50
Chamoli	0.25	-0.42	1.31	-0.79	2.15	0.50	2.82	1.94	0.39	-0.12	-0.32	-0.79	-	-1.23	-	-	5.69
Dehradun	1.76	1.83	1.57	1.83	0.06	0.46	-0.27	-1.55	0.83	2.16	-0.17	-0.65	-	-0.94	-	-	6.92
Garhwal	0.61	0.22	1.34	-0.66	1.01	-0.98	1.78	2.77	0.17	0.38	-0.20	-0.42	-	-0.19	-	-	5.84
Haridwar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nainital	0.60	0.57	0.60	0.31	-0.05	0.27	-0.32	-1.22	-0.11	1.10	-0.19	-0.19	-	-0.48	-	-	0.88
Pithoragarh	0.60	0.06	1.38	-0.81	0.54	-0.79	1.12	1.61	0.92	0.80	-0.29	-0.69	-	0.38	-	-	4.82
Tehri Garhwal	-0.64	-0.86	0.13	-1.00	1.56	-0.11	2.25	3.49	-0.02	-0.25	-0.24	-0.68	-	-1.02	-	-	2.62
Uttarkashi	-0.37	-0.74	0.19	-0.79	2.64	2.43	3.42	-1.39	0.58	-0.44	-0.31	-0.80	-	-	-	-	4.43
Uttarakhand	**0.38**	**0.05**	**0.94**	**-0.33**	**1.04**	**0.12**	**1.47**	**0.98**	**0.32**	**0.46**	**-0.24**	**-0.55**	-	**-0.58**	-	-	**4.21**
Study Area	**0.36**	**0.12**	**0.76**	**-0.46**	**0.99**	**0.52**	**1.26**	**0.61**	**0.61**	**0.61**	**-0.17**	**-0.49**	-	**-0.83**	-	**0.75**	**4.33**

Source: Compiled by Authors

Himachal Pradesh and Uttarakhand
Levels of Socio-economic Development
1991
(Data by Districts)

Chamba

Lahul & Spiti

Himachal Pradesh

Kangra

Kullu

Mandi

Kinnaur

Bilaspur

Mahasu

Shimla

Shimla

Sirmaur

Uttarkashi

Dehradun

Tehri Garhwal

Chamoli

Uttarakhand

Pithoragarh

Haridwar

Garhwal

Almora

Nainital

Composite Z Score

More than 1		High
0 to 1		Medium
Less than 0		Low
		DNA

0   75
Kms.

International Boundary
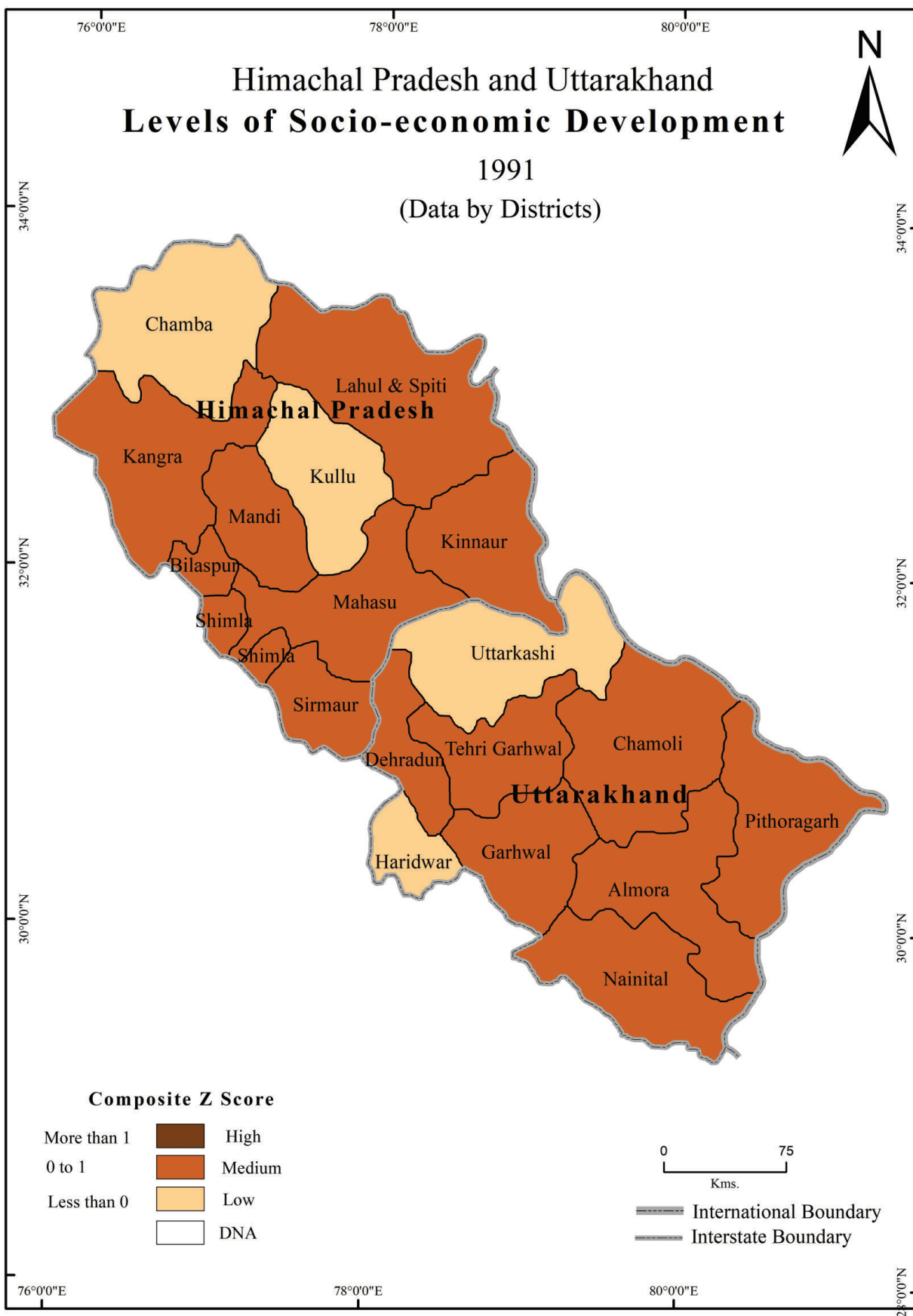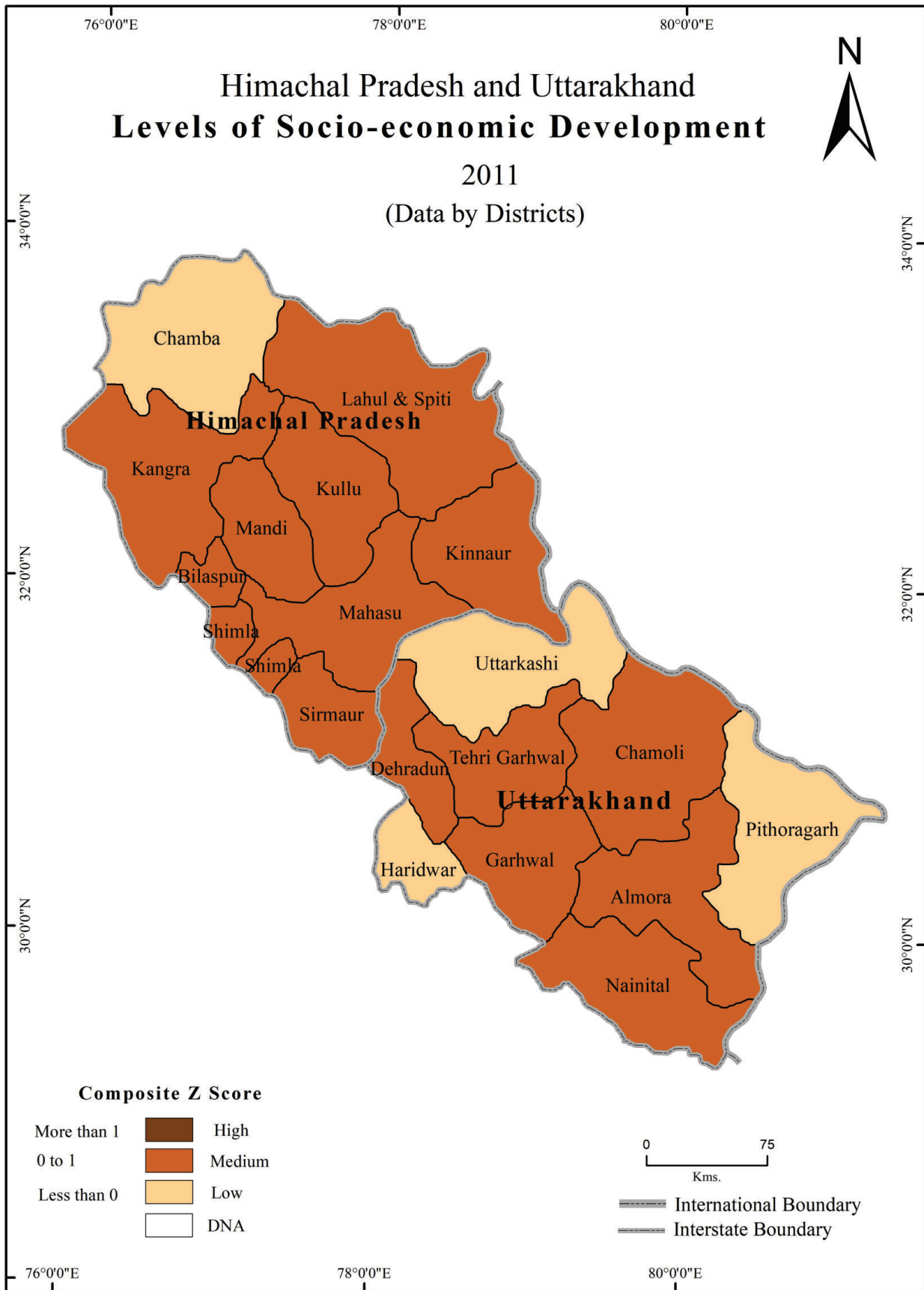Interstate Boundary

Fig. 2

Fig. 3

Table 2

Himachal Pradesh and Uttarakhand: Indicator-wise Z Score among the Districts (1991)

District/State	Indicator-wise Z Score																Total
	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9	x_{10}	x_{11}	x_{12}	x_{13}	x_{14}	x_{15}	x_{16}	
Bilaspur	1.22	1.27	1.14	-0.99	0.82	-0.56	0.68	1.52	0.03	1.03	0.04	-1.92	-1.10	-0.62	-0.48	1.01	3.11
Chamba	-0.35	-0.43	-0.33	-0.87	1.35	0.72	0.81	0.66	0.25	2.31	-0.15	-1.67	-1.01	-1.32	-0.48	0.10	-0.40
Kangra	1.56	1.65	1.48	-0.89	-0.26	-1.03	1.02	1.82	-0.33	0.61	-0.06	-0.02	-0.86	-0.62	-0.48	0.95	4.54
Kinnaur	0.60	0.38	0.65	-1.33	1.86	2.10	0.85	-0.84	2.54	2.50	-0.26	-1.88	0.37	-1.50	-0.48	-0.56	5.00
Kullu	0.35	0.17	0.45	-0.91	1.26	0.72	0.72	0.19	-0.37	0.38	-0.27	-1.30	-1.21	-1.31	-0.48	0.49	-1.12
Lahul & Spiti	0.49	0.14	0.63	-1.33	3.54	4.10	1.91		5.26	3.71	-0.30	-2.62		-1.54	-0.48	-1.29	12.23
Mahasu	0.94	0.91	0.87	-0.94	0.88	0.74	0.33	0.02	0.15	0.84	0.04	-1.74	-0.66	-0.84	-0.48	0.35	1.43
Mandi	0.90	0.82	1.04	-0.90	0.96	-0.40	0.78	1.70	-0.13	1.36	-0.05	-1.55	-0.94	-0.74	-0.48	0.68	3.07
Shimla	1.03	0.98	0.98	-0.10	1.35	0.99	0.72	0.62	0.74	3.39	-0.11	-1.80	-1.20	-1.06	-0.48	-0.07	5.97
Sirmaur	0.13	0.16	-0.07	-0.73	1.08	1.08	0.42	-0.18	0.19	1.49	-0.07	-1.62	1.62	-1.02	-0.48	0.84	2.84
Himachal Pradesh	**0.69**	**0.61**	**0.68**	**-0.90**	**1.29**	**0.84**	**0.82**	**0.61**	**0.83**	**1.76**	**-0.12**	**-1.61**	**-0.55**	**-1.06**	**-0.48**	**0.25**	**3.67**
Almora	0.62	0.24	1.31	-0.95	1.15	-1.46	1.23	2.90	0.17	0.05	-0.18	0.16	-1.07	-0.74	0.44	0.34	4.21
Chamoli	0.79	0.29	1.47	-0.79	1.13	-1.08	1.11	1.54	0.42	-0.07	-0.28	1.44	-1.13	-1.34	0.16	-0.28	3.37
Dehradun	1.38	1.44	1.14	1.71	-0.54	0.08	-0.92	-1.05	-0.14	0.50	-0.14	-0.41	-0.15	-0.92	0.08	0.25	2.31
Garhwal	1.08	0.84	1.51	-0.61	0.12	-2.01	0.45	2.46	0.73	0.12	-0.17	0.75	-1.10	-0.93	0.19	-0.02	3.42
Haridwar	-0.10	-0.05	-0.37	0.54	-1.21	0.03	-1.57	-1.00	-0.96	-0.95			0.30	0.24	0.21	-0.08	-4.98
Nainital	0.47	0.46	0.31	0.65	0.01	0.37	-0.44	-0.62	-0.38	-0.03	-0.18	0.45	0.92	-0.48	0.14	0.40	2.07
Pithoragarh	0.64	0.16	1.26	0.48	1.34	-0.74	1.22	1.25	0.40	0.05	-0.28	0.76	-1.11	-1.18	0.18	0.37	4.79
Tehri Garhwal	-0.09	-0.57	0.66	-0.99	0.91	-1.46	1.02	2.43	0.07	-0.62	-0.21	1.42	-0.96	-1.00	0.46	0.21	1.27
Uttarkashi	-0.18	-0.74	0.38	-0.90	1.64	0.26	1.20	0.16	0.31	-0.17	-0.30	-1.28	-0.82	-1.40	0.27	-0.02	-1.58
Uttarakhand	**0.51**	**0.23**	**0.85**	**-0.1**	**0.5**	**-0.67**	**0.37**	**0.9**	**0.07**	**-0.13**	**-0.22**	**0.41**	**-0.57**	**-0.86**	**0.24**	**0.13**	**1.65**
Study Area	**0.6**	**0.42**	**0.76**	**-0.5**	**0.89**	**0.08**	**0.59**	**0.75**	**0.45**	**0.81**	**-0.17**	**-0.6**	**-0.56**	**-0.96**	**-0.12**	**0.19**	**2.66**

Source: Compiled by Authors

Table 3
Himachal Pradesh and Uttarakhand: Indicator-wise Z Score among the Districts (2011)

District/State	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9	x_{10}	x_{11}	x_{12}	x_{13}	x_{14}	x_{15}	x_{16}	Total
Bilaspur	1.43	1.39	1.37	-1.02	1.48	0.91	1.01	0.94	-0.59	0.23	0.00	-1.27	-1.13	-0.69	-1.20	1.07	3.95
Chamba	0.01	-0.01	0.13	-1.00	1.82	1.47	1.18	1.02	-0.61	0.47	-0.23	-1.15	-1.17	-1.33	-1.20	0.14	-0.47
Kangra	1.64	1.67	1.48	-1.00	0.55	0.19	0.29	1.62	-0.94	0.38	-0.07	-1.05	-0.90	-0.68	-1.20	1.12	3.12
Kinnaur	1.09	0.84	1.18	-1.39	3.10	3.82	1.61	-1.44	1.31	2.95	-0.31	-1.38	0.29	-1.51	-1.20	-1.18	7.78
Kullu	0.88	0.78	0.94	-0.86	2.42	2.45	1.44	0.37	-1.01	0.07	-0.27	-1.04	-1.28	-1.31	-1.20	-0.15	2.23
Lahul & Spiti	0.76	0.53	0.99	-1.39	2.38	2.24	1.47	-0.21	4.05	4.91	-0.33	-1.86	1.36	-1.54	-1.20	-1.58	10.59
Mahasu	1.27	1.22	1.16	-0.41	1.19	1.60	0.38	-0.55	-0.80	0.56	0.02	-1.04	-0.60	-0.88	-1.20	0.45	2.37
Mandi	1.11	1.05	1.14	-1.04	1.91	1.26	1.33	1.33	-0.82	0.37	0.01	-1.25	-1.06	-0.79	-1.20	0.76	4.11
Shimla	1.43	1.36	1.37	-0.02	1.36	1.47	0.65	-0.03	-0.38	2.64	-0.09	-1.27	-1.36	-1.11	-1.20	-0.76	4.07
Sirmaur	0.67	0.71	0.54	-0.79	1.32	1.56	0.61	0.01	-0.73	0.42	-0.12	-1.25	-0.46	-1.06	-1.20	0.83	1.07
Himachal Pradesh	**1.03**	**0.95**	**1.03**	**-0.89**	**1.75**	**1.70**	**1.00**	**0.31**	**-0.05**	**1.30**	**-0.14**	**-1.26**	**-0.63**	**-1.09**	**-1.20**	**0.07**	**3.88**
Almora	0.86	0.65	1.14	-1.01	0.71	-1.08	0.90	2.92	-0.39	0.58	-0.23	-0.58	-1.08	-0.93	1.28	0.32	4.04
Chamoli	0.97	0.78	1.29	-1.10	0.55	-1.38	0.82	2.21	-0.89	-0.25	-0.32	-1.35	-1.26	-1.30	1.21	-0.06	-0.05
Dehradun	1.30	1.35	1.11	1.69	-0.96	-0.32	-1.21	-0.22	-1.06	-0.10	-0.03	-0.04	-0.10	-1.07	0.15	-0.20	0.30
Garhwal	1.06	0.95	1.30	-0.48	-0.26	-1.51	0.07	2.74	0.03	1.28	-0.16	-0.52	-1.19	-1.10	1.02	-0.29	2.94
Haridwar	0.00	0.12	-0.18	0.65	-1.42	-0.68	-1.61	-0.55	-1.23	-0.14	-0.03	0.56	1.16	0.18	-0.17	-0.48	-3.80
Nainital	0.63	0.68	0.48	0.68	-0.55	-0.22	-0.77	0.15	-1.05	0.09	-0.09	0.45	0.24	-1.19	0.53	0.69	0.75
Pithoragarh	0.84	0.67	1.08	-0.58	-0.05	-1.19	0.14	1.22	-0.47	0.29	-0.29	-1.04	-1.24	-1.23	0.64	0.08	-1.12
Tehri Garhwal	0.40	0.23	0.79	-0.76	0.41	-1.10	0.60	2.36	-0.22	-0.13	-0.21	-0.61	-1.05	-1.04	1.11	-0.28	0.51
Uttarkashi	0.32	0.02	0.77	-0.98	0.70	-0.58	0.71	0.60	-0.45	0.19	-0.31	-0.24	-1.06	-1.42	0.72	-0.28	-1.30
Uttarakhand	**0.71**	**0.61**	**0.86**	**-0.21**	**-0.1**	**-0.9**	**-0.04**	**1.27**	**-0.64**	**0.2**	**-0.18**	**-0.37**	**-0.62**	**-1.01**	**0.72**	**-0.06**	**0.25**
Study Area	**0.87**	**0.78**	**0.94**	**-0.55**	**0.83**	**0.4**	**0.48**	**0.79**	**-0.34**	**0.75**	**-0.16**	**-0.82**	**-0.63**	**-1.05**	**-0.24**	**0.01**	**2.07**

Source: Compiled by Authors

Table 4
Himachal Pradesh and Uttarakhand: District-wise
Composite Z Score (1971-2011)

State/District	Composite Z-score		
	1971	1991	2011
Bilaspur	0.31	0.19	0.25
Chamba	-0.05	-0.03	-0.03
Kangra	0.20	0.28	0.20
Kinnaur	0.47	0.31	0.49
Kullu	0.13	-0.07	0.14
Lahul & Spiti	1.07	0.82	0.66
Mahasu	0.37	0.09	0.15
Mandi	0.19	0.19	0.26
Shimla	0.37	0.37	0.25
Sirmaur	0.12	0.18	0.07
Himachal Pradesh	**0.32**	**0.23**	**0.24**
Almora	0.21	0.26	0.25
Chamoli	0.44	0.21	0.00
Dehradun	0.53	0.14	0.02
Garhwal	0.45	0.21	0.18
Haridwar	-	-0.36	-0.24
Nainital	0.07	0.13	0.05
Pithoragarh	0.37	0.30	-0.07
Tehri Garhwal	0.20	0.08	0.03
Uttarkashi	0.37	-0.10	-0.08
Uttarakhand	**0.32**	**0.10**	**0.02**
Study Area	**0.31**	**0.17**	**0.13**

Source: Compiled by Authors

(Table 4; Fig. 2). Hence, number of districts in this category has declined to 15 in 1991 from 16 in 1971. However, due to the improvements in Z score values recorded by Kullu district of Himachal Pradesh in 2011 mainly related to total work participation rate (2.42), male work participation rate (2.45), female work participation rate (1.44), total literacy rate (0.88), female literacy rate (0.78) and male literacy rate (0.94) than to 1991, the district again has joined the category of moderate level of development in 2011 (Table 3; Fig 3). On the other hand, in 2011, Pithoragarh district of Uttarakhand has slipped down to the areas of low level of development by recording -0.07 composite Z scores in 2011 as compared to 0.30 in 1991 (Fig. 3). Hence, the number of districts in this category remained same as it has been in 1991. Thus, moderately developed districts have comprised 82.36 per cent area of the study area in 1971, which has decreased to 79.47 per cent and 76.40 per cent in 1991 and 2011, respectively. Similarly, these districts have accounted for 96.16 per cent population of study area in 1971, which declined to 83.14 per cent and 79.45 per cent in 1991 and 2011, respectively. Thus, the share of area and population under areas of moderate level of development has continuously decreased from 1971 to 2011 in the study area.

Areas of Low Level of Socio-economic Development

This category of development includes the districts recording composite Z score value less than 0.00. In 1971, Chamba district of Himachal Pradesh has been the only district in the study area that has registered low level of development and has remained as such throughout the study period (Fig.1, 2 and 3). Backwardness in literacy rate due to inadequate availability of schools, lack of transportation

services, backwardness in agriculture and very low level of urbanization have been some of the reasons that resulted low values of composite Z score of -0.05 in 1971 and -0.03 in 1991 and 2011 (Table 4). This less developed district comprises 12.08 per cent area of Himachal Pradesh and 6.20 per cent area of the study region as a whole.

In 1991, Kullu district of Himachal Pradesh having 9.88 per cent area and 5.84 per cent population of Himachal Pradesh has also joined this category of low level of development. It has been due to the fact that Kullu district recorded less Z score values in urban population (-0.91), total work participation rate (1.26), male work participation rate (0.72), female work participation rate (0.72), sex ratio (0.19), number of health institutes (-0.37), student-teacher ratio (-1.30) and cropping intensity (0.49) in 1991 with respect to 1971. Hence, in 1991 this district has shifted down to this category from the areas of moderate level of development in 1971.

Uttarkashi and Haridwar districts of Uttarakhand comprising 19.40 per cent area and 19.34 per cent population of Uttarakhand have also joined this category in 1991 and remained in it till 2011. Uttarkashi district has recorded very low values of Z scores in urbanization, work participation rates of total, male and female and in indicators of agricultural development such as net irrigated area, net sown area and cropping intensity both in 1991 and 2011. As a result, it remained in areas of low development as it has recorded composite Z score values of -0.10 in 1991 and -0.08 in 2011 (Table 4). Similarly, Haridwar district also remains in this category due to poor performance in literacy rate, work participation rates, sex ratio, indicators of health and cropping intensity as it recorded composite Z scores -0.36 in 1991 and -0.24 in 2011 (Table4).

In 2011, Pithoragarh district of Uttarakhand is the new entry in this category of areas of low level of development. This district has recorded low Z score values in urban population (-0.58), total work participation rate (-0.05), male work participation rate (-1.19), female work participation rate (0.14), health institutes (-0.47), student-teacher ratio (-1.04), net irrigated area (-1.24) and net sown area (-1.23) in 2011 with respect to 1991. The decline in the composite Z score values from 3.00 in 1991 to -0.07 in 2011 has pushed this district in areas of low level of socio-economic development in 2011 (Fig. 3; Table 4).

The less developed districts comprise 6.20 per cent area of the study region in 1971, which has increased to 20.52 per cent and 23.59 per cent in 1991 and 2011, respectively. Similarly, these districts have accounted for 3.50 per cent population of study area in 1971, which has increased to 16.85 per cent and 20.54 per cent in 1991 and 2011, respectively. Thus, the percentage of area and population falling in category of low level of socio-economic development is continuously increasing since 1971.

Temporal Variations in Indicators of Socio-Economic Development

Indicator-wise magnitude of disparities in socio-economic development in the years 1971, 1991 and 2011 has been presented in this part of the study by calculating coefficient of variation (Fig. 4). Higher the value of coefficient of variation more is the level of disparities and vice versa. The coefficient of variation in literacy rate is 22.00 per cent in 1971. It has slightly decreased to 21.60 per cent in 1991 and phenomenally decreased to 6.02 per cent in 2011. It indicates that with the passage of time the disparities in the level of literacy have significantly decreased in the study area. The pace of decrease remains higher

in between 1991 and 2011 than during 1971 and 1991. Similar trends have also been noticed in the male and female literacy rates (Table 5). The coefficient of variation in the level of urbanization in the study area is 131.18 per cent in 1971 which has declined to 98.57 per cent in 1991 and 97.28 per cent in 2011. It suggests improvements in the level of urbanization in the study area.

Striking variation (57.75 per cent) in female work participation rate has been observed in 1971 against 23.83 per cent in total work participation and 12.04 per cent in male work participation rates. However, in case of female work participation, the value of coefficient of variation has declined to 32.88 per cent in 2011 from 57.75 per cent in 1971. Similarly, in case of total work participation rate, coefficient of variation has declined to 19.58 per cent in 2011 from 22.83 per cent in 1971. Contrarily, in case of male work participation the value of coefficient of variation has increased to 14.52 per cent in 2011 from 12.04 per cent in 1971. The study highlights that inter-district variations in work participation rate of females have reduced drastically, while in case of males, such disparities have increased during the study period.

The coefficient of variation in sex ratio is 13.20 per cent in 1971 which further declined to 8.51 per cent in 2011, suggesting improvements in sex ratio in the study area during the study period. The availability of health services has witnessed a fluctuating trend during the study period. In 1971, the coefficient of variation in availability of health institutes is 77.09 per cent which declined to 75.78 per cent in 1991 and again increased to 102.00 per cent in 2011. Similarly, in 1971, the coefficient of variation in availability of health institutional beds is about 79.00 per cent which declined to 58.02 per cent in 1991 and again

increased to 66.83 per cent in 2011. The study suggests that the health infrastructure has not increased at par with the growth of population in two Himalayan states. Disparities in road density have registered a decreasing trend, as coefficient of variation declined to 64.97 per cent in 2011 from 86.11 per cent in 1971, on account of increase in road length. Similarly, the coefficient of variation in student-teacher ratio has decreased to 50.07 per cent in 2011 from 93.38 per cent in 1971, suggesting improvements in student-teacher ratio during the study period.

Among the indicators of irrigation development, the coefficient of variation has declined slightly (1.44 percentage points) in respect to net irrigated area and irrigation intensity (2.57 percentage points) suggesting minor development of irrigation facilities during 1991-2011. On the other hand, coefficient of variations has increased from 71.75 per cent in 1971 to 78.12 per cent in 2011 in case of net sown area and from 14.40 per cent in 1971 to 15.02 in 2011 in case of cropping intensity. Thus, the study reveals that the agricultural development remained sluggish during the study period in the study area.

Trend of Disparities in Socio-economic Development

The study reveals that states of Himachal Pradesh and Uttarakhand have witnessed varying trends in the levels of disparities during the study period. In 1971, the coefficient of variation in the levels of socio-economic development of Himachal Pradesh is 53.49 per cent against 49.96 per cent recorded by Uttarakhand, suggesting low level of disparities in Uttarakhand with respect to Himachal Pradesh. In 1991, the coefficient of variation has declined to almost same level in both the states of Uttarakhand (37.13 per cent) and Himachal Pradesh (37.59 per cent). But in
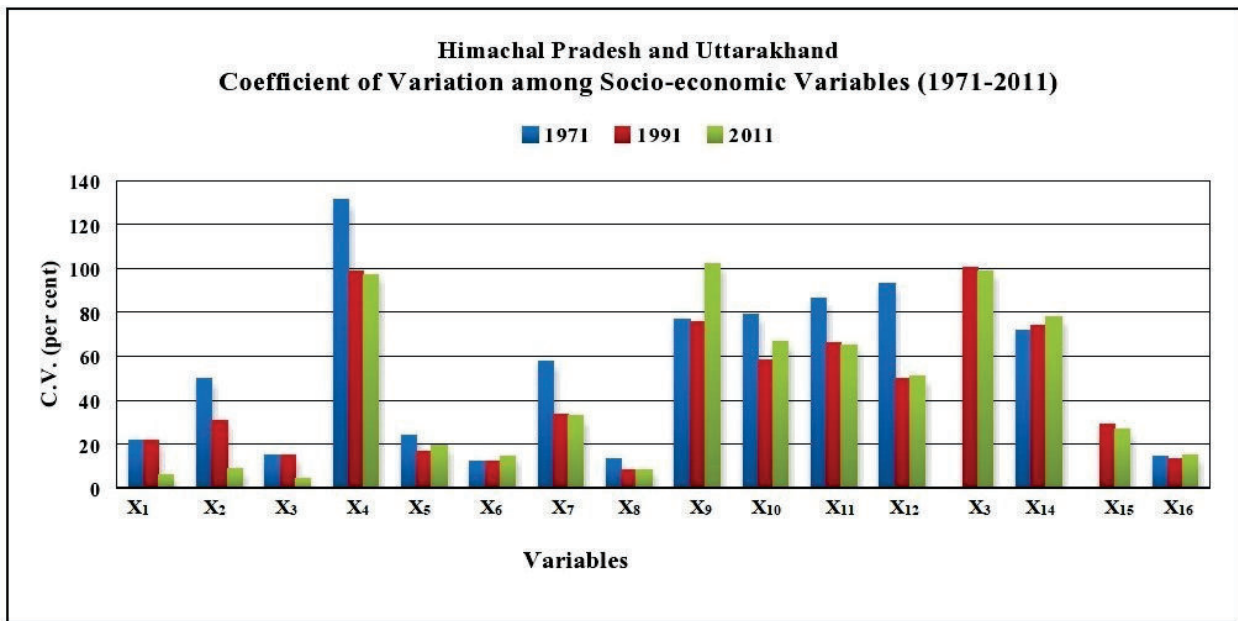
Fig. 4

Table 5
Himachal Pradesh and Uttarakhand: Coefficient of Variation among
Indicators of Socio-economic Development (1971-2011)

Indicators	Coefficient of Variation (Per cent)		
	1971	1991	2011
Total Literacy Rate	22.00	21.60	6.02
Female Literacy Rate	49.96	30.97	8.89
Male Literacy Rate	14.95	15.19	4.39
Urban Population	131.18	98.57	97.28
Total Work Participation Rate	23.83	16.70	19.58
Male Work Participation Rate	12.04	12.18	14.52
Female Work Participation Rate	57.75	33.35	32.85
Sex Ratio	13.20	8.11	8.51
Total Health Institutes/10000 Persons	77.09	75.78	101.92
Total Institutional Beds/10000 Persons	79.00	58.02	66.83
Road Density (km/100 km^2)	86.11	66.18	64.97
Student-Teacher Ratio	93.38	49.59	51.07
Net Irrigated Area (per cent)	-	100.21	98.77
Net Sown Area (per cent)	71.75	73.75	78.12
Irrigation Intensity (per cent)	-	29.07	26.70
Cropping Intensity (per cent)	14.40	13.15	15.02

Source: Compiled by Authors

2011, the coefficient of variation has been found to be stagnant i.e. about 37.64 per cent in the state of Himachal Pradesh, while in case of Uttarakhand it has declined to 30.89 per cent. Thus, the state of Uttarakhand has witnessed more decline in coefficient of variation in comparison to Himachal Pradesh, suggesting more equality in the level of socio-economic development than Himachal Pradesh during the study period. In case of study area as a whole, the coefficient of variation, has declined from 53.33 per cent in 1971 to 43.46 per cent in 2011, suggesting a decrease in the levels of disparities in socio-economic development in the study area.

Conclusions

The states of Himachal Pradesh and Uttarakhand having almost similar geo-graphical characteristics have witnessed different levels of socio-economic develop-ment during the study period. In 1971, Lahul & Spiti and Chamba districts of Himachal Pradesh have recorded high and low level of socio-economic development, respectively, while whole of the state of Uttarakhand has registered moderate level of development. In 2011, along with Chamba district of Himachal Pradesh, Haridwar, Pithoragarh and Uttarkashi districts of Uttarakhand have also witnessed low level of development due to multi-sectoral backwardness. In fact, Chamba district of Himachal Pradesh has remained in this category throughout the study period. At state level, both the states are at par in levels of socio-economic development in 1971. Afterwards however, both the states have witnessed declining trends in development. The composite Z score recorded by Himachal Pradesh falls from 0.32 in 1971 to 0.24 in 2011. While, composite Z score recorded by Uttarakhand declines from 0.32 in 1971 to 0.02 in 2011. Thus, trend of reduction in develop-ment is sharper in Uttarakhand state than Himachal Pradesh. The study, therefore, reveals that the state of Himachal Pradesh is relatively more developed than Uttarakhand in 2011. The study highlights that male work participation rate, availability of health institutions, net sown area and cropping intensity have recorded an increase in coefficient of variation, suggesting enhance-ment of disparities in these indicators during the study period. While, all other variables have witnessed a fall in coefficient of variation thereby revealing a reduction in the levels of disparities with time. Maximum decline has been noticed in case of student-teacher ratio followed by female literacy rate and urban population. On the other hand, maximum increase in disparities has been noticed in availability of health institutions followed by net sown area and male work participation rate. Finally, the study identifies that health services, agricultural sector and work participation of males are the thrust areas that require planned development with special focus on the backward districts of the study area.

References

Asif. 2015. Level of agricultural and socio-economic development in Rohilkhand Region of Uttar Pradesh: a micro level analysis. *Annals of the National Association of Geographers, India,* 29 (2): 101-110.

Devi, S. and Rajeshwari. 2016. Availability and accessibility of healthcare infrastructure in Haryana and Gujarat: A comparative analysis. *Punjab Geographer,* 12: 43-62.

Ganaie, S.A., Bhatt. M.S. and Parry, J.A. 2014. Spatial variation in the level of agricultural and socio-economic development in Jammu and Kashmir: a district level analysis. *Agricultural Economics and Research Review,* 27 (1):119-126.

Lipchitz, G. 1986. Divergence or convergence in regional inequality-consumption variables vs policy variables: the Israeli case. *Geograpfiska Annaler,* 68 (1): 13-20.

Radhika, P.K., Prabhakaran, P., George, J.K. and Parambath, G.S. 2016. Mapping regional disparities in human development: the case of erstwhile Andhra Pradesh. *Procedia Technology,* 24: 1843-1850.

Rajalakshmi, K. 2013. Growing regional disparities in India's development. I*nternational Journal of Educational Research and Technology,* 4 (3): 47-55.

Sadaf and Munir, A. 2015. Spatial analysis of regional development: a block-wise study of Faizabad District. *National Geographic Journal of India,* 61 (4): 321-332.

Sharma, P.K. 2016. Regional disparities in socio-economic development in Thar Desert. *International Journal of Research in Geography,* 2 (3): 1-10.

Singh, A.K. and Kumara. 2016. Analysis of micro level disparities in healthcare infrastructure in Allahabad District, Uttar Pradesh, India. *The Journal of Bengal Geographers,* 5 (4): 37-50.

Nem Raj, Assistant Professor,
Email: nemrajhpu1994@gmail.com
(Author for Correspondence)
Department of Geography,
Govt. College Naura,
District Kangra (Himachal Pradesh).

Dr. B.R. Thakur, Assistant Professor

Puran Chand, Senior Research Fellow,
Department of Geography,
Himachal Pradesh University,
Shimla (Himachal Pradesh).

punjab
geographer