



Educational Disparity and Multivariate Analysis: A Case Study of Uttarakhand State

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Abstract

The literacy index of Uttarakhand according to government records is 80.38% (Government Education Portal). The study is based on the district wise male-female enrollments in government schools at different levels, with an objective to assess the status of awareness and education among the people. The parameters chosen were number of schools, total male and female enrollments in the year 2014 – 2015. The study also proved as a source of analyzing the awareness about female education and development. The Composite Index method has been implemented for categorizing the districts on the basis of varied variables.

Key Words – Composite Index, Variables, Development, Enrollment

Introduction

The CI is a statistical method and tool that brings together different indexes, data, equities in order to create singular values to assess the status and performance. The method is used in different fields, including commerce, economics, demographics and even geographical study. Geographers mostly deal with multi dimensional spaces that become the basis of further analysis. The need to understand multiple dimensions through a simplified form is thus a commonly encountered problem which is frequently handled by a process of aggregation of different dimensions to form composite indices. The well-known Human Development Index (HDI) developed by the United Nations Development Programme (UNDP) is an example of such an overall index combining indicators of health, education and income. Other examples are Physical quality of life index (Ram, 1982), Logistics Performance Index (LPI) by World Bank, etc.

Composite Index is calculated using indices or variables that determine composite index value.

According to the European Commission's first state-of-the-art report (Saisana and Tarantola 2002, p. 5), composite indicators are 'based on sub-indicators that have no common meaningful unit of measurement and there is no obvious way of weighting these sub- indicators'. Freudenberg (2003, p. 5) identifies composite indicators as 'synthetic indices of multiple individual indicators'. Another potential definition provided by the OECD's first handbook for constructing composite indicators (Nardo et al. 2005, p. 8) is that a composite indicator 'is formed when individual indicators are compiled into a single index, on the basis of an underlying model of the multi-dimensional concept that is being measured'. This list of definitions could continue indefinitely.



In order to study the formal region with respect to Literacy, the regionalization of districts in Uttarakhand state is carried out followed by the CI analysis. Regional delineation is the first step in the preparation of any regional development plan to ensure tentative operational area of planning. Together, the composite index method and regionalization determine the status of development in a region, the scope of improvisation and possible methods to carry out for significant progress.

Literacy is one of the most important indicators to decide the quality of a country. According to the Uttarakhand School Education Portal 2014-2015 statistics, the average male literacy rate was 87.83% and the average female literacy rate is 67.56%. Uttarakhand, the 27th state of India lies in the arms of Himalayas. The state is branched into Garhwal and Kumaon region. The Garhwal region constitutes of Dehradun, Chamoli, Rudraprayag, Haridwar, Pauri Garhwal, Tehri and Uttarkashi. Whereas the Kumaon Region constitutiong of, Almora, Bageshwar, Chamba, Nainital, Pithoragarh and Udham Singh Nagar. In terms of education, Uttarakhand ranks 10th in the country. (NITI Ayog, 2015 Reports)

Both the regions have their own regional language, Garhwali and Kumauni respectively. Students who enroll in institutions are taught both in the regional language, mother tongue and official language. Government schools under Sarv Siksha Abhyaan as well as running under the state government have enrollments from all over the state. The study includes enrollment data that thoroughly examines the status of government schools in terms of the male female students from every district in Uttarakhand.

The capital city, Dehradun is known as the school capital of India and highly influences the education quality and literacy of the state. After determining the region wise status of the districts at different levels, the planning clearly simplifies and made more efficient.

Data Base and Methodology

The study is based on both primary and secondary source of data. Source for the primary source of data includes the UK Government Education Portal. To understand the condition and factors affecting enrollment process, some teachers, teaching in these schools from different districts were interviewed. The government schools from all over the state were put in the sample space and taken up for analysis.



The method for calculating composite index requires statistical calculation. Since the nature of data varies, it is important to standardize its value in order to make them comparable. These standardized values are then summed up to calculate the gross value and divided by the number of indicators chosen to obtain the composite index value. The first step is the selection of variables or indicators followed by the collection of data. Using statistical formulas, the mean, deviation and standard deviation of the data is done. Using these values, the standardized value is calculated. Formula used for standardized value is

$$z = \frac{x - \mu}{\sigma} \text{ Where, } \mu = \text{mean, } \sigma = \text{standard deviation.}$$

By summing up the standardized value, the gross value is obtained which is divided by the number of indicators in order to extract the composite index value of different regions for analysis.

Study Area

The study is conducted in the state of Uttarakhand that stretches 28° 44' to 31° 28' North Latitude and 77° 35' to 81° 01' East longitude. Considering the division of districts as the base regionalization in order to study the academic status of the state. The state has both government and private schools. For the study the government schools from both the Kumaon and Garhwal region have been selected.

The school level has been sub divided into primary, junior and senior criteria. The primary schools constitute of classes from 1st to 5th while junior that of classes 6th to 8th and finally the senior section comprises the grades from 9th to 12th. On this basis, the study has been conducted at three levels.

Discussions

The status of enrollments and number of schools of the primary, junior and senior schools have been shown in Table1, Table2 and Table3 respectively. These depict the district wise data collected from 2014-2015 censuses.

The data of primary schools shows that the highest number of primary schools is in Pauri district, which is part of the Gharwal Mandal (Table1). The region enjoys the priority of development due to which there is decline in migration to cities and as a result, the number of enrollments in government schools has gone up. Pauri has 1828 schools that constitute its 13



tehsils and 15 development blocks. While Pauri leads in terms of the highest number of primary schools, Udham Singh Nagar has the highest number of male and female enrollments.

The primary schools also have *Anganbadi* facility for children below 5 years of age which is a boost for number of enrollments. In order to increase the number of enrollments, the fee has been cancelled and amenities like Mid Day Meal have been introduced to create awareness among people about benefits of government schools.

On intervieweing the teachers from, primary schools it was observed that primary schools have been witnessing lower enrollments since the past one decade, reason being migration from villages and attraction towards the English Medium schools. Although, during the pandemic families have returned back to the villages and the enrollments have comparatively increased.

Table 1 – District wise number of primary schools and male – female enrollments

Districts	Total Number of Schools	Total Number of Male Enrollment	Total Number of Female Enrollment
Almora	1619	14959	17346
Bageshwar	703	6843	8598
Chamoli	1097	11222	12325
Champawat	617	7498	8924
Dehradun	1397	22532	24038
Haridwar	1185	41711	43083
Nainital	1263	19445	21193
Pauri	1828	16640	17744
Pitthoragarh	1373	10776	12646
Rudraprayag	673	7225	8052
Tehri	1721	18668	20382
Udham Singh Nagar	1298	37684	41282
Uttarkashi	917	12218	1218
Total	15691	227421	236831

In the junior school category, the numbers of schools have reduced by 10,792 along with the total number of male female enrollments. (Table2) While the schools are upgraded in terms of labs and academic facilities another factor is the rural lifestyle affecting the enrollments. The teachers from these schools state that girls at this age are often married of while the boys drop out. The



enrollments are generally lower in backward areas of, Bageshwar, Chamoli, Champawat and Rudraprayag. These are the remote districts of Uttarakhand.

Other than the social and cultural factors, government facilities also affect the enrollment rate. Despite knowing about the high rates of migration towards the city areas there is lack of initiatives from the government. If the rate of migration reduces, eventually the enrollment will go higher.

Districts	Total Number of Schools	Total Number of Male Enrollment	Total Number of Female Enrollment
Almora	301	11670	14170
Bageshwar	159	4781	5894
Chamoli	319	7903	9055
Champawat	143	5293	6503
Dehradun	651	11758	13783
Haridwar	530	13080	16179
Nainital	426	11757	13791
Pauri	457	11323	12201
Pitthoragarh	384	8334	9838
Rudraprayag	187	5062	5481
Tehri	500	12873	14425
Udham Singh Nagar	503	16962	22487
Uttarkashi	339	5898	7543
Total	4899	126694	151350

Table 2 – District wise number of junior schools and male – female enrollments

The mountains also have migrants from Nepal. These people live a nomadic life. At times they are enrolled in the schools but later drop out as they move to different places in the state. Similarly the labor that migrates in the state from different states moves within regions on the basis of the work they get. These factors also result in the decline of enrollments.

Highest number of senior schools is in the capital city Dehradun. (Table 3) Despite the lower number of junior schools, the senior schools witness a spike. The reason being, migration of people from rural areas to urban areas. This results in the increase in urban population and hence



the people who migrate enroll their children to the government schools in cities. There are also students who switch from private schools to government schools, considering its value for money and the facilities provided by government.

Some senior schools constitute of classes from 6th to 12th and classified as Inter College. These schools are nearer to the primary schools rather than the junior schools. Thus an amalgamation from primary and junior schools is observed in these schools which are another reason for higher number of both schools and enrollments. While Dehradun witnesses the highest male enrollments, Udham Singh Nagar has the highest female enrollment.

Table 3 – District wise number of senior schools and male – female enrollments

Districts	Total Number of Schools	Total Number of Male Enrollment	Total Number of Female Enrollment
Almora	329	26864	26624
Bageshwar	118	10200	10120
Chamoli	237	16195	15333
Champawat	129	9676	9257
Dehradun	455	62265	44344
Haridwar	250	54100	49636
Nainital	303	33725	31634
Pauri	422	29534	27923
Pitthoragarh	258	20249	17907
Rudraprayag	147	10742	10337
Tehri	324	24977	25688
Udham singh nagar	318	55653	50383
Uttarkashi	149	13713	13060
total	3439	367893	332246

Further calculations conclude the level of development with respect to the enrollments. In terms of the primary schools Bageshwar, Champawat and Rudraprayag have the highest value of composite Index after categorizing the values on a comparable level. (Table 4) While, Almora, Haridwar, Pauri, Tehri, Udham Singh Nagar and Pauri lay in the moderate category.

Dehradun, Chamoli, Nainital and Pitthoragarh fall into the category of lowest development.

The analysis of junior schools shows that the highest level of composite index are occupied by,



the same districts as the primary schools and an additional district Udham Singh Nagari. In the moderate level lies, Almora, Dehradun, Haridwar, Uttarkashi and Tehri. While, Pitthoragarh, Chamoli and Nainital again fall into the category of lowest development along with, Pauri.

Finally, for the senior schools, the highest level is occupied by the maximum number of districts including, Bageshwar, Champawat, Dehradun, Haridwar, Rudraprayag and Udham Singh Nagar. Districts in the moderate level of development include, Chamoli, Pauri and Uttarkashi. In the lowest level lies, Almora, Nainital, Tehri and Pithoragarh.

Districts	Composite Index Value Of Primary Schools	Composite Index Value Of Junior Schools	Composite Index Value Of Senior Schools
Almora	1.37	0.46	0.25
Bageshwar	2.13	0.71	1.13
Chamoli	0.69	0.23	0.53
Champawat	2.37	0.79	1.12
Dehradun	0.89	0.30	1.63
Haridwar	1.47	0.49	1.06
Nainital	0.31	0.10	0.35
Pauri	1.95	0.65	0.56
Pitthoragarh	0.86	0.29	0.34
Rudraprayag	2.23	0.74	1.02
Tehri	1.67	0.56	0.25
Udham Singh Nagar	1.51	0.50	1.22
Uttarkashi	1.51	0.50	0.90

Table 4 =District Wise Composite Index Value for Different School Levels

Conclusions

The highest level of composite index value for the study is observed in 3 districts including, Bageshwar, Champawat and Rudraprayag that have obtained the highest value of composite index in all the three levels of schooling. While the least record has been set by, Pitthoragarh and Nainital that falls in the lowest strata every time. The remaining districts remain moderate in the all together conclusion. (Table 4)

While the rural areas lack in the status of enrollments due to migration, lack of development and backwardness of the regions. In the urban areas, the growth of English medium, day boarding and other boards' schools have created magnetism to attract students.



There are districts that have higher female enrollments than males which is a sign of progress and proof that families are well aware about educating their girl child. For the senior secondary examination in 2015, the percentage of females was 49% while for secondary examination, 49.33% (UK Board Portal)

Individually, Champawat holds the best record for enrollments and education awareness with an average value of 1.42 while Nainital with 0.25 has the worst performance.

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