

COMPUTATION OF INDICES



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Computation of Indices

Chapter 3

3.1 Introduction

Measuring human development involves using specifically selected key variables or indicators of core dimensions of human development and aggregating them to create a summary index. In Chapter one, the concept of human development, the key factors affecting the human development and the conceptual and methodological framework for computing human development index (HDI) as envisaged by UNDP are discussed in detail. Since the main purpose of the DHDRs is to capture all the key dimensions affecting human development at the taluk and district levels, it was decided that instead of focusing on only three-dimensional HDI and preparing status reports like pilot DHDRs, the DHDRs should go beyond the conventional method and take into account all key human developmental parameters required for enhancing the wellbeing of the people at taluk and district levels. Accordingly, a broader approach and modified methodology was adopted for the DHDR exercise particularly from the view point of different dimensions of human development and choice of indicators, keeping in mind the data availability and the basic three dimensional framework of UNDP HDI.

Accordingly, the measurements of human development in the DHDRs are made broad-based and focus on all key taluk and district level human development issues affecting the well-

being of people. In order to facilitate comparative ranking and analysis across 176 taluks and 30 districts in the state, a common conceptual and methodological framework and uniform set of indicators with standardized definitions and data sources are taken into consideration. The indicators for computation of various indices are selected with the intention of standardizing information gathering, analysis and presentation and providing a comprehensive picture of human development at taluk and district levels. The following six measures of human development are considered for preparing the DHDR:

- ❖ Human Development Index (HDI),
- ❖ Gender Inequality Index (GII),
- ❖ Child Development Index (CDI),
- ❖ Food Security Index (FSI),
- ❖ Urban Development Index (UDI),
- ❖ Composite Taluk Development Index (CTDI).

As explained in the chapter one, the UNDP's three core dimensional conceptual and methodological framework namely health, education and standard of living and functional form are used for computation of dimensional indices and composite indices. A set of indicators are selected based on their contributions towards various dimensions of human development. While computing

A broader approach and modified methodology was adopted for the DHDR exercise particularly from the view point of different dimensions of human development and choice of indicators

dimension indices, the positive or negative contribution of each indicator is taken into account. The state-level method indices were computed by the Planning Department, Directorate of economics and Statistics Department, GOK separately to understand the position of the taluks within the district. The observed minimum and maximum values among taluks in the district are taken into account to understand position of the taluks and Districts among the 176 taluks and 30 Districts in the state. The DHDR mainly focuses on taluk and district-level indices only.

The index value in the case of positive indicator is computed on the basis of the following general formula:

$$\text{Component Index value} = \frac{\text{Actual Xi Value} - \text{Minimum Xi Value}}{\text{Maximum Xi Value} - \text{Minimum Xi Value}}$$

In the case of negative indicator, index value is computed using the following formula:

$$\text{Component Index value} = \frac{\text{Maximum Xi Value} - \text{Actual Xi Value}}{\text{Maximum Xi Value} - \text{Minimum Xi Value}}$$

For computing the dimension indices and composite index, the geometric mean is used. A Technical Note in the Annexure explains in detail the methodology adopted for computation of various indices.

This chapter focuses on the computation of the above six human development indices at taluk and district levels. Based on the findings, the taluks are ranked according to dimension indices and composite indices and the performance of taluks and districts on various human development indicators is analysed in depth from human development perspective.

The index value for each indicator was computed in the range between 0 and 1, 0 indicating lowest value and 1 indicating the highest value. Since the geometric mean has to be calculated, in the case of positive indicator, the minimum value is taken as 10 percent less than the observed minimum value in the taluk. Similarly, in the case of negative indicator, the maximum value would be taken as 10 percent more than the observed maximum value.

3.2 Human Development Index (HDI)

The district-wise status of human development in the state was assessed, for the first time, in Karnataka Human Development Report (KHDR) 1999. Udupi district was then treated as a part of undivided Dakshina Kannada district and hence, it did not have separate HDI. KHDR 2005 has, however, provided HDIs for Udupi district for both 1991 and 2001 based on the UNDP methodology. The Pilot Study of Udupi DHDR-2008 has estimated the dimension indices and HDI for 2006 following the same methodology.

Table 3.1 compares the trend in human development in Udupi district based on these estimates.

The HDI of Udupi district in 1991 was 0.659, which was 22 percent higher than the state average of 0.541. During the decade 1991-2001, the HDI of the district improved from 0.659 to 0.714 in 2001. While the state level decadal improvement in HDI was 20 percent, the decadal improvement in the district HDI was only eight percent. The gap between the district level and state level HDIs was narrowed down. Among then 27 districts in the state, Udupi ranked in HDI 2nd in 1991 and 3rd in 2001 (Appendix Table 5). Bengaluru urban ranked first and Dakshina Kannada ranked second in 2001. The HDI computed in the pilot Udupi-DHDR-2008 was 0.762, which was seven percent higher than KHDR-2005 estimate of HDI for the district. The analysis of the three core dimension indices in the table shows that Udupi district witnessed lower improvement in all dimensions of human

development compared to the state level indices. In spite of the lower improvement, the district remained ahead of most of the other districts in the state. It ranked first in health, second in education and fifth in income. In health and education, Udupi district was ranked higher than Dakshina Kannada. Only in income, Udupi had a lower rank than Dakshina Kannada district.

In the present DHDR, the HDI is computed based on a broader approach by taking into consideration key taluk level indicators. To compute HDI, 11 taluk level indicators are used covering the area of standard of living, health and education. The data required for computing these indicators are compiled from 2011 Census and documented secondary data from the Health and Education Departments of Udupi Zilla Panchayat. Table 3.2 shows the taluk level indicators considered for the three dimensions for the purpose of deriving taluk and district level HDIs.

Table 3.1
HDI and ITS Dimensions Indices of Udupi District and the State

Indicators	1991		2001		2006 Pilot DHDR
	District	State	District	State	
Health	0.685	0.618	0.713	0.680	0.798
Education	0.830	0.602	0.842	0.712	0.880
Income	0.463	0.402	0.588	0.559	0.608
HDI	0.659	0.541	0.714	0.650	0.762

Source: Karnataka Human Development Report-2005 and Udupi Pilot- DHDR 2008

Table 3.2
Taluk-wise values of HDI Indicators

Dimension	Indicators	Karkala	Kundapura	Udupi	District
Standard of Living	Percentage of Households having access to Cooking Fuel	23.69	27.78	44.18	35.14
	Percentage of Households having access to Toilets	88.02	79.94	91.55	87.21
	Percentage of Households having access to Drinking Water	22.58	16.66	34.07	26.4
	Percentage of Households having access to Electricity	89.21	88.21	94.01	91.27
	Percentage of houses having access to Pucca Houses	59.57	71.31	72.58	69.74
	Percentage of Non-agricultural Workers to Total workers	76.23	65.45	81.74	73.28
	Percapita income (in Rupee)	54906	38028	45623	44759
Health	Child (under 5 years) Mortality Rate r (per 1000 live births) in a yea	13	12	11	13
	Maternal Mortality Rate (per 100000 live births)	48	42	58	50
Education	Literacy Rate	86.7	81.63	89.32	86.24
	Combined Gross Enrolment in Primary and Secondary Education	99.06	98.19	103.85	100.89

Source: Census 2011 and DHFW and Education Departments

The comparative analysis of the data shows inter-taluk variations in performance and achievement in various indicators of standard of living, health and education dimensions of human development. The standard of living dimension has seven indicators. Besides conventional indicator of percapita income, which reflects the command over resources, it includes one more proxy indicator for income, namely, share of non-agricultural workers in total workforce and five indicators of the basic amenities such as access to modern cooking fuel, safe drinking water, electricity, pucca house

and toilet facilities. Without these basic amenities, the standard of living cannot be achieved. In the case of health dimension, the child mortality rate (CMR) and maternal mortality rate (MMR) are considered critical. In the same vein, the education dimension is measured by achievement in literacy rate and gross enrollment in primary and secondary schools.

The dimension indices for health, education and standard of living and HDI as composite index are calculated following UNDP computation methodology by taking into account

observed minimum and maximum values of these indicators among taluks within the district. The dimension indices and HDI computed for the district based on the observed minimum and maximum values of indicators at the district are shown in Table 3.3.

For analytical purpose, if the index value is above 0.750, it can be categorized as 'very good'; if it is in the range between 0.500 and 0.750, 'good', if it is between 0.300 and 0.500, 'average' and if below 0.300, 'poor'. The HDI for Udupi district works out to 0.674 and hence can be classified as 'good' in human development. Still it has a long way to catch up 'Very Good' status. The HDI for udupi district now computed is however lower than district HDI estimated in the Pilot Udupi- DHDR-2008, which was 0.762 and in the KHDR-2005 which was 0.714. The differences in the HDI values are mainly attributed to different indicators taken into account to measure the

three core dimensions of HDI in different studies. To some extent, it can also be due to the change in the computation methodology². Hence, they are strictly not comparable.

The HDI of Udupi district (0.674) is apparently driven by education index (0.898). The district has one of the highest adult literacy rates in the state and student enrolment ratios both at primary and secondary levels are almost 100 percent. Though the district has lowest CMR and MMR in the state, surprisingly Health index work out to 0.499, which indicate an "average" status³. The index value for standard of living is 0.683, which shows a 'good' status. The lower standard of living index is mainly due to lower achievement values in indicators like access to modern cooking fuel, access to safe drinking water and percapita income. It is important to note that in rural areas in Udupi district, most of the households historically depend on open wells for drinking water, which

The HDI for Udupi district works out to 0.674 and hence can be classified as 'good' in human development

Table 3.3
Taluk-wise Comparison of HDI and ITS Composition -2012

Taluk	Standard of Living		Health		Education		HDI Ranking	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank
Karkala	0.474	2	0.534	2	0.876	2	0.606	2
Kundapura	0.322	3	0.835	1	0.659	3	0.562	3
Udupi	0.931	1	0.516	3	1.000	1	0.783	1
District	0.683		0.499		0.898		0.674	

²KHDR-2005 and Pilot-Udupi DHDR-2008 have used: LEB for health dimension, adult literacy and combined Gross enrolment ratio for education dimension and GDP per capita income (PPS) for standard of living as measurable indicators.

³This is mainly because of the district MMR and CMR are not estimated based on weighted average of taluk values

HDI in Udupi taluk has the highest index value (0.783) showing 'very good' status in human development. Karkala has HDI of 0.606 and ranks second. Kundapura with HDI of 0.562 ranks the lowest

was not considered as safe drinking water under Census definition. Similarly most of the rural households still depend on traditional fuel like firewood for cooking.

The analysis of the data in the table also shows inter-taluk disparities in various dimensions of human development. In standard of living, the inter-taluk disparity is very wide. Udupi taluk which ranks first in standard of living has index value of 0.931, whereas Kundapura taluk, which ranks last, has index value of 0.322. The inter-taluk disparity in standard of living between Udupi taluk and Kundapura taluk works out to 66 percent. Even in the case of Karkala (0.474), which ranks second, the inter-taluk difference between it and Udupi taluk is 49 percent. Between Karkala and Kundapura, it is 32 percent. In standard of living, Udupi taluk is in 'very good status', while Kundapura and Karkala taluks are in 'average' status. The primary reasons for these differences are that Udupi taluk with Udupi City is more urbanized and has better industrial base, better basic amenities, higher proportion of non-agricultural workers and higher percapita income. As against this, Kundapura has more agricultural-based economy and has lowest percentage of non-agricultural workers and lowest percapita income among three taluks in the district. Karkala is relatively more industrialized than Kundapura. Both Karkala and Kundapura have standard of living indices below the district average. The wide inter-taluk disparities in living standard are a matter of concern.

In the case of health, Kundapura ranks first with index value of 0.835, while Karkala and Udupi taluks rank second and third with index values of 0.534 and 0.516 respectively. The inter-taluk variation between the highest ranked taluk and other taluks is very wide. It ranges from 36 to 38 percent. The difference between Udupi and Karkala taluks is only marginal; it is three percent. Though, Udupi taluk has better health infrastructure due to migrant population and emerging slums, it has lower health index compared to Kundapura and Karkala taluks. In the case of education, Udupi taluk ranks first, followed by Karkala and Kundapura. Inter-taluk disparity in education between Udupi and Karkala taluks is 12 percent and 34 percent in the case of Kundapura. These differences are mainly due to differences in literacy rates. Kundapura has the lowest literacy rate of 81.6 percent as against 86.7 percent in Karkala taluk and 89.3 percent in Udupi taluk. Interestingly, there is no positive correlation between standard of living and health and also education and health. There appears to be close relation between standard of living and education.

HDI in Udupi taluk has the highest index value (0.783) showing 'very good' status in human development. Karkala has HDI of 0.606 and ranks second. Kundapura with HDI of 0.562 ranks the lowest. Inter-taluk disparity in human development works out to 23 percent between Udupi and Karkala taluk and 28 percent between Udupi and

Kundapura taluks. The difference in HDI between Karkala and Kundapura works out to seven percent. The wide disparity in HDI between Udupi taluk and other two taluks is mainly due to more urbanization, better industrial base and better infrastructure in education in Udupi taluk.

3.2.1: HDI Status of SCs and STs

The status of human development among the SCs and STs has been attracting the attention of policy makers and planners as they are historically marginalized and deprived social groups. A number of empirical studies undertaken have revealed that the SC and ST groups have not reaped benefits from the mainstream development efforts of the state and consequently, no improvement took place in their well-being. With a view to understand and assess the human development status of SC and ST groups in the district, an attempt is made to compute separate HDIs for various social groups by taking into consideration 17 indicators of standard of living, two indicators of health and Combined gross enrolment in primary and secondary education to reflect the education dimension. The actual values of indicators selected for various social

groups are given in Table 7 in Appendix. The HDIs for various social groups by taking into consideration these parameters are computed following the UNDP methodology. The outcome of the computation is given in Table 3.4.

At the outset, it should be noted that the HDI for all groups in the district is higher than the one shown in Table 3.4 mainly because of more indicators considered for measuring the standard of living dimension of human development. Instead of 7 indicators, 17 indicators as proxy to standard of living are taken into account in this case. The comparison of the HDIs in the table clearly shows wide differences in the status of human development between SC/ST groups and others. The SCs have the lowest HDI of 0.244. The STs have slightly higher index of 0.260. The comparative HDI for others works out to 0.888. The HDI of SCs is 73 percent below the HDI of other social group. In the case of STs, the difference is 71 percent. The wide disparity in the human development status of SCs and STs on the one hand and other social groups on the other hand is mainly driven by the standard of living dimension.

The wide disparity in the human development status of SCs and STs on the one hand and other social groups on the other hand is mainly driven by the standard of living dimension

Table 3.4
HDI status of SCs and STs

Social Groups	HDI
SCs	0.244
STs	0.260
Others	0.888
All	0.839

In almost all the indicators chosen for computing HDI, the SCs and STs have significantly lower values. In health and education enrolment, the differences are only marginal. Compared to STs, the SCs have better health profile in terms of CMR and MMR. The existence of wide disparity in the status of human development of SCs/STs and other social groups in the standard of living clearly shows that in spite of various welfare interventions, there is no significant improvement in the living standard of these marginalized groups. The Government interventions have apparently played only significant role in improving the status of SCs and STs in health and education and bringing them on par with the other community.

3.3 Gender Inequality Index (GII)

The gender equality and empowerment is an essential dimension of human development. With growing international recognition of the importance of eliminating gender inequality and need for empowering women, UNDP introduced two gender development related measures in the 1995 Human Development Report: Gender-related Development Index (GDI) and the Gender Empowerment Measure (GEM). Since then, the GDI and GEM became the popular indices for measuring global gender inequality. There were, however, criticisms of GDI and GEM as measure of gender inequality particularly for their methodological and conceptual limitations. Since these indices did not fully capture the disparities women

faced, the UNDP introduced the Gender Inequality Index (GII) as a new measure of the gender inequalities in the 2010 Human Development Report. The new index is a composite measure which, according to the UNDP, captures the loss of achievement in human development due to gender inequality using three female related dimensions: reproductive health, empowerment, and labor market participation. As the index reflects inequality position, a value 0 indicates that women and men fare equally, and a value one shows the highest level of gender inequality in all measured dimensions.

Following the earlier approach of UNDP, KHDR 1999 and 2005 computed Gender related Development Index (GDI). The GDI of Udupi district was 0.644 in 1991, which increased to 0.704 in 2001. Udupi was ranked in GDI second in 1991 and third in 2005 among 27 districts in the state. The GDI of Udupi was significantly higher than the state average of 0.637 and the all-India GDI of 0.609 in 2001. As per the Pilot-UDHDR-2008, the GDI of Udupi district was 0.747. It has shown an improvement of 6 percent during the period between 2001 and 2006. The major contribution for gender improvement in the district came from health and education. The gender disparity in human development worked out as difference between the HDI and GDI was 1.97 percent.

As per the guideline of the Government for DHDRs, the new measure introduced by the UNDP namely GII should be used as a measure of gender

The GII for Udupi District works out to 0.034 and inter-taluk variation marginal

inequalities. Accordingly, the UNDP conceptual framework of three dimensional GII viz. reproductive health, empowerment and labour market participation was considered to measure gender inequality in the district. A set of three key taluk level indicators for each dimension were identified for computation of GII at taluk and district levels. Table 8 in Appendix shows taluk-wise values of various indicators chosen for measuring the three dimensions for computing GII. In order to ensure commonality and comparability, standardized definition and data sources are adopted as per the Government Guidelines. The data required are compiled mainly from 2011 Census and the District's Department of Health and Family Welfare.

Following the UNDP methodology, the GII was computed by aggregating across dimensions within each gender group using geometric mean. The geometric mean of dimension was calculated separately for women and men and aggregated using a harmonic mean across genders (for details, see

Technical Note on Methodology in the Annexure). The resultant GII captures the loss of achievement due to gender inequality in three dimensions: reproductive health, empowerment and employment market participation. The indicator data were compiled from secondary sources mainly from the departments concerned after thoroughly verifying their validity. The higher GII value shows the greater the discrimination and vice versa. The zero GII value shows perfect gender equality and the value of one shows perfect gender inequality. The GII is computed separately using taluk-level method as well as the state-level method.

District and Taluk-wise index values of GII and its dimensions computed based on district-level method are presented in Table 3.5.

The GII for Udupi district works out to 0.034 which clearly demonstrates minimal gender inequality in the district. The inter-taluk variation in gender inequalities is also found only marginal, showing similar pattern of gender equality in all taluks. The indicators' values in Table 8 in appendix

Table 3.5
Taluk-wise Gender Inequality Index (GII) and ITS Dimensions

Dimension	Reproductive Health		Empowerment		Labour Market		GII	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank
Karkala	0.720	3	0.601	2	0.475	2	0.039	3
Kundapura	0.765	1	0.589	3	0.461	3	0.033	1
Udupi	0.757	2	0.607	1	0.716	1	0.038	2
District	0.747		0.600		0.498		0.034	

Taluk-wise, Udupi taluk has the highest CDI value of 0.863 and ranks first. Kundapura ranks second with CDI value of 0.545. Karkala has the lowest CDI value of 0.414

clearly show that there are no significant gaps between male and female participation in education and employment market. Inter-taluk comparison shows that Kundapura taluk ranks first with GII value of 0.033 and has the lowest gender inequality. Udupi taluk ranks second with GII value of 0.038. Karkala, which ranks third with GII value of 0.039, has the highest gender inequality. The inter-taluk gap in gender inequality varies from 15 percent to 18 percent. In reproductive health, Kundapura taluk ranks first and Udupi, second. Karkala ranks last. In women empowerment and labour market participation, Udupi ranks first followed by Karkala and Kundapura ranks last. The women empowerment and the labour market participation are closely correlated.

3.4 Child Development Index (CDI)

Since today's children are the future generation of the nation, the development status of children is very important from human development perspective. The status of children refers to all round development: physical, mental, emotional and social developments. In Udupi district, children in the age group 0-6 years constitute about nine percent of the total population. Several positive developments have taken place in the district with reference to child health care, nutrition and education. The nuclear family and two or one child norm, pro-child attitude of parents, higher literacy of women and easy access to health care services – all these

contributed significantly to the well-being of the children in the district. Recognizing the critical importance of all-round development of children, the Central Government implemented Integrated Child Development Services (ICDS) program. It aims at physical and mental development of child of three months to six years. The project has set up in the district 1146 anganawadi centres to cater to the supplementary needs of pregnant women and children, their health care including vaccination and non-formal pre-school education.

Child Development Index (CDI) is a composite performance measure specific to children development. It comprises of three child development related dimensional indices: health, nutrition and education. The indicators for each dimension are selected based on their contribution to child well-being. They are given in Table 3.6.

The indicators selected for health and nutrition dimension are negative in nature; lower the value, better for children well-being status and vice versa. In the case of education, on the other hand, the indicators selected are positive in nature. They contribute positively towards child welfare. The CDI is the arithmetic average of three dimensional index values. The highest index value indicates better child development outcome. The computation of CDI is done separately following district-level and state-level methods. Table 3.7 compares the CDI and dimension index values for taluks and the district computed.

Table 3.6
Taluk-wise Values of CDI Indicators

Dimension	Indicators	Karkala	Kundapura	Udupi	District
Health	Child Mortality Rate	13	12	11	13
Nutrition	Percentage of Malnourished children	22.54	21.92	15.51	19.03
	Percentage of children born underweight	14.39	14.56	16.39	15.11
Education	Percentage of primary and secondary school children drop-out schools mainstreamed ⁵	10.00	20.00	59.15	52.33

Table 3.7
Taluk-wise CDI and ITS Compositions

Dimension	Nutrition		Health		Education		CDI	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank
Karkala	0.493	3	0.394	3	0.020	3	0.414	3
Kundapura	0.543	2	0.697	2	0.219	2	0.545	2
Udupi	0.671	1	1.000	1	1.000	1	0.863	1
District	0.706		0.685		0.864		0.670	

The CDI for the district works out to 0.670, which can be categorized as 'good'. Taluk-wise, Udupi taluk has the highest CDI value of 0.863 and ranks first. Kundapura ranks second with CDI value of 0.545. Karkala has the lowest CDI value of 0.414. Inter-taluk disparity in CDI is found to be very high; 37 percent between Udupi and Kundapura and 52 percent between Udupi and Karkala. Even between Kundapura and Karkala, it is 24 percent. Interestingly the ranking of taluks in all the three dimensions is same. Udupi has the highest index values in all three dimensions of child development. Karkala has the lowest indices for all three dimensions. Though the inter-

taluk disparity in the case of child education is found to be very high, it should be noted that all taluks have the lowest out-of-school and drop-out rates in the state.

3.5 Food Security Index

Food security is the physical access for all people at all times to enough food for an active and healthy life. Food security has thus three dimensions: Physical availability, economic access and social access. Availability of adequate quantity of food at all times is important. But equally important is economic access; people should have purchasing power to access the required quantity of food to him and

Udupi taluk the lowest in food availability and Kundapura the highest. In food accessibility Karkala the highest and Kundapura lowest. In food absorption Udupi highest, Karkala Lowest

family. It is also important to ensure social access to food particularly marginalized and poor section of the community. In spite of achieving self-sufficiency in food production and various initiatives to improve household food security in the country, the problem of chronic hunger and malnutrition continue at very high level. It is in this context, the Parliament passed the National Food Security Act, which provides an assured quota of subsidized food grains to 75 percent of rural household and 50 percent of urban households.

Recognizing the critical importance of food security from human development perspective, Food Security Index (FSI) was included in the DHDRs as one of the six human development indices to be computed. For computing FSI, three major parameters of household food security are considered. They are: Availability, Accessibility and Absorption. The indicators considered for measuring these parameters are the following:

- ❖ Accessibility (7 Indicators): Cropping intensity, Change in net area sown over 2001-2011, Per capita food grain production, Per capita forest cover, Irrigation intensity, Percentage of area degraded to total geographical area and percentage of leguminous crops in gross cropped area.
- ❖ Accessibility (6 Indicators): Percentage of BPL families, Per capita income, Percentage of non-agricultural workers to total workers, Average size of holdings, Percentage of agricultural labourers to total workers and Percentage of

villages having PDS outlets within village.

- ❖ Absorption (5 Indicators): Child mortality rate, Percentage of households with access to safe drinking water, Percentage of pregnant women with Anemia, Percentage of malnourished children and Female literacy rate.

The actual values computed for these indicators taluk-wise and for the district as a whole are shown in Table 10 in the Appendix. It may be noted that out of 18 indicators chosen, 12 are positive in contribution to food security and 6 are negative in their contribution. Taking into consideration their intrinsic nature, index values were computed in the range between 0 and 1. The dimensional index is the average value of all the indicators of that dimension. The composite FSI is the average of three dimension indices – availability, accessibility and absorption.

Table 3.8 presents index values of three dimensions of food security and the overall food security index for the taluks and district. The overall FSI for the district works out to 0.582. In food security, the district is lagging behind by 45 percent. Inter-taluk comparison shows that Udupi taluk ranks first with the index value of 0.711 followed by Karkala with index value of 0.624. Kundapura has the lowest FSI of 0.497. Inter-taluk variation in FSI is 30 percent between Udupi taluk and Kundapura and 12 percent between Udupi and Karkala taluks. Even compared to Karkala taluk, Kundapura has 20 percent gap in FSI.

Table 3.8
Taluk-wise FSI and ITS Dimension Indices

Dimension	Availability		Accessibility		Absorption		FSI	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank
Karkala	0.703	2	0.878	1	0.292	3	0.624	2
Kundapura	0.797	1	0.264	3	0.429	2	0.497	3
Udupi	0.443	3	0.688	2	1.000	1	0.711	1
District	0.625		0.572		0.549		0.582	

The analysis of dimensional indices demonstrates that the Udupi taluk has the lowest index in availability and Kundapura has the highest availability index. Kundapura has an agricultural based economy and Udupi has more industrial based and urban oriented economy. As against this, in food accessibility, Karkala ranks first, followed by Udupi taluk. Kundapura has the lowest index of 0.264. Inter-taluk disparity in food accessibility is very wide. In food absorption, on the other hand, Udupi taluk ranks the highest followed by Kundapura. Karkala has lowest index of 0.292. The FSI of Udupi taluk is apparently driven by absorption dimension. The inter-taluk gaps in food absorption are also found very wide.

3.6 Urban Development Index (UDI)

Udupi district has urban population of 334061, which constitutes 28.4 percent of the total population of the district. The comparative state level urban population is 38.7 percent. The district has one of the lowest percentages of

urban population in the state. While the rural population in the district witnessed decadal decline of seven percent, the decadal growth in urban population was 62 percent during 2001-11. Thus, the district is witnessing a rapid growth in urbanization. Urbanization being a driving force for economic development, it is an inevitable phenomenon. With the growing urbanization, the provision of basic urban services such as housing, safe drinking water, sewerage, drainage etc. poses a real challenge for well-being of people living in urban areas. Since growing numbers of people live in urban areas, the urban issues related to human development cannot be ignored.

Udupi district has four Urban Local Bodies (ULBs). Udupi City Municipal Council (CMC) is the head quarter of Udupi district with population of 1,44,960. Kundapura Town Municipal Council (TMC) is the second biggest town in the district is the head quarter of Kundapura taluk and has population of 30,444. Karkala TMC, the head

⁵As per the data made available by the District Education Department, the district and all taluks have the lowest drop-out in both primary and secondary education. However, the indicator value on mainstreaming of drop-out students provided by the SLCC, HDD, Planning Department has shown the lowest indicator values.

quarter of Karkala taluk has population of 25,800. Saligram is Town Panchayat (TP) with a population of 15,123.

With a view to evaluate the ULBs from human development perspective, the Government Guidelines for DHDR envisages construction of Urban Development Index (UDI) as a composite index of urban related human development indicators. Eleven essential urban development indicators were identified to compute composite UDI for each ULB. The data for these indicators were compiled from the 2011 Census, concerned ULBs and the Urban Cell of the Deputy Commissioner's (DC) office. The urban development indicators selected for computation of UDI and their actual values for each ULB are set out in Table 3.9.

The component indices and UDIs computed for the ULBs based on the maximum and minimum values of ULBs within the district are shown in Table 3.10.

At the outset, it should be noted that ULBs in Udupi districts are of different categories; Udupi ULB is a CMC, Kundapura and Karkala ULBs are TMCs and Saligrama is TP. Hence they cannot be ranked except in the case of Two TMCs. While comparing the relative position, the limitation of their comparability should be taken into account. Among ULBs, Udupi CMC has the highest UDI value of 0.851. It is in the category of 'very good' in regard to basic amenities and infrastructure related to human development. It has still development deficit of 15 percent

Table 3.9: Udupi District: Urban Development Indicators for ULBs

Indicators	Udupi CMC	Kundapura TMC	Karkala TMC	Saligrama TP
Percentage of urban population To Total population	25.75	7.60	11.90	2.60
Percentage of Households without own houses	1.00	4.28	22.38	7.66
Percentage of slum population To total urban population	5.01	17.80	5.70	5.72
Water supply (Percent of Households)	66.26	38.21	61.99	11.48
Sewerage/drainage (Percent)	50.40	25.60	40.12	15.54
No. of Hospital Beds per 1000 population	17	20	13	1
Growth Rate of own resource mobilization	23.00	19.00	37.00	8.00
Percapita expenditure on Development	5477	1142	1473	1950
Road km per sq.km	11.43	5.56	4.01	4.54
Crime rate per 10000 population	40	27	40	40
Road accidents per 10000 population	20	5	20	60

Table 3.10: Component Indices and UDI for ULBs

Indicators	Udupi CMC	Kundapura TMC	Karkala TMC	Saligrama TP
Percentage of Urban Population to Total	1.000	0.225	0.408	0.011
Percentage of households without own houses	1.000	0.861	0.095	0.718
Percentage of slum population to total urban population	1.000	0.122	0.953	0.951
Water Supply	1.000	0.499	0.924	0.021
Sewerage/ drainage	1.000	0.319	0.718	0.043
No. of Hospital Beds per 1000 population	0.843	1.000	0.634	0.005
Growth Rate of own resource mobilization	0.530	0.396	1.000	0.027
Percapita Expenditure on development	1.000	0.026	0.100	0.207
Road km per sq. km	1.000	0.250	0.051	0.119
Crime Rate per 10000 population	0.235	1.000	0.235	0.235
Road accidents per 10000 population	0.754	1.000	0.754	0.098
Urban Development Index (UDI)	0.851	0.489	0.499	0.217

in some dimensions such as health infrastructure, crime rate, road accidents and resource mobilization. Karkala and Kundapura TMCs are in 'average category' in terms of UDI. Among TMCs, Karkala TMC ranks first with UDI of 0.499. Kundapura TMC ranks second with UDI of 0.489, which is lagging behind Karkala TMC one percent in urban development. Saligrama TP, on the other hand, is in the worse position in terms of all basic urban service indicators. Its UDI is only 0.217

3.7 Composite Taluk / District Development Index (CTDI / DCDI)

The primary objective of DHDR is to focus on taluk level human development issues that enhance the quality of life at the grass root levels. In

the case of indicators which are critical for human development but cannot be quantifiable, it is important to go for proxy indicators to understand the position of human development in all its aspects. The Guidelines Document for Preparation of DHDRs has, therefore, identified and selected a broad set of 68 indicators affecting human development at taluk and district levels. All the indicators selected centered on the three core dimensions of human development viz. standard of living, health and education. These indicators are chosen taking into account demographic factors, livelihood and employment related factors, household assets, political participation, health including basic amenities such as electricity, water supply housing, and sanitation and education factors. While selecting indicators, availability and reliability of

data, commonality in information gathering and standardization in presentation and analysis to provide a comprehensive picture on human development at all 176 taluks and 30 districts in the state were taken into consideration.

The data for 68 indicators were collected taking taluk as the unit. The relevant data for all indicators were compiled from Census 2011 and from the relevant Government's Departments. The index values for indicators were computed by taking into account whether the indicators are positive or negative in order to make the index unidirectional. Following the UNDP methodological framework of three core dimension and HDI computation formula, the dimensional index values and composite CTDI values were

calculated. The actual values of 68 indicators at taluk and district levels used for computation are given in Table 12 in the Appendix. Table 3.11 provides the outcome of dimensional indices and CTDI values for different taluks and the district as a whole.

In the overall CTDI, Udupi taluk with index value of 0.718 ranks first, followed by Karkala with index value of 0.673. Kundapura with index value of 0.603 ranks the last. The disparity in CTDI values between Udupi and Kundapura taluks is 16 percent and Udupi and Karkala, 6 percent. The difference between Karkala and Kundapura is 10 percent. The District Composite Development index (DCDI) works out to 0.665. There is a development deficit of 34 percent at the district level. The analysis of dimensional index values

Table 3.11
Taluk-wise Dimension Index Values and CTDI/DCDI (District-level method)

Taluku	Karkala		Kundapura		Udupi		District
	Index	Rank	Index	Rank	Index	Rank	Index
Standard of living	0.622	2	0.586	3	0.721	1	0.714
Demography	0.693	1	0.477	3	0.575	2	0.753
Livelihood/Employment	0.678	1	0.531	2	0.459	3	0.689
Housing Assets	0.191	3	0.207	2	0.512	1	0.606
Participation	0.546	3	0.672	1	0.652	2	0.628
Health	0.646	1	0.569	3	0.614	2	0.734
Health	0.479	2	0.511	1	0.476	3	0.701
Sanitation	0.875	1	0.185	3	0.858	2	0.648
Drinking water	0.163	2	0.096	3	0.294	1	0.039
Education	0.752	2	0.655	3	0.819	1	0.761
CTDI/DCDI	0.673	2	0.603	3	0.718	1	0.665

shows that Udupi Taluk ranks first in standard of living and education. Karkala ranks first in health. Kundapura has the lowest rank in all the three dimension indices.

The disaggregated analysis of dimension indices, however, shows wide inter-taluk differences in the ranking based on component indices. In the standard of living, though Udupi taluk ranks first in dimension index value, it ranks third in livelihood and employment and second in demography and political participation. It ranks first only in household assets. As against this, Karkala ranks first in demography and livelihood and employment, while Kundapura ranks second in livelihood and employment and household assets and first in political participation. Similarly in health, though Karkala stands first in the dimension index value, it has the highest index value only in sanitation. In health component index, Kundapura ranks first, whereas in the case of water supply, Udupi taluk has the highest index value.

3.8 Concluding Remarks

The computation and analysis of various indices of human development at taluk level are fascinating and quite revealing. Six indices computed together provide a comprehensive view of human development at the grassroots level. The indices computed bring out disparities and the relative position of taluks in various dimensions of human development indices within the district. For any planning or policy to succeed, it must take into consideration disparities and relative position of taluks and districts in various dimensions of human development.

The overall performance based on the five indices shows that though Udupi district is considered progressive, all is not well from human development perspective. There are many grey areas, wherein the district has to catch up with the top ranking to achieve comprehensive human development.

There is a wide divergence in the ranking of taluks in different indices. Kundapura is lagging behind other two taluks in HDI, FSI and CTDI. Karkala lags in GII and CDI. Udupi is in the forefront in HDI, CDI and FSI. Inter-taluk differences in index values are also significantly high. The analysis of dimensional indices also shows wide inter-taluk disparities in almost all indices. The analysis of dimension indices shows no close correlation between them. In the case of HDIs, the taluks which have higher education index values have lower health index values. Similarly the taluks which have lower standard of living index values have higher education and health indices. In the case of GII, empowerment and labour market participation are not closely correlated. Implications emerge from this analysis is that all dimensions are equally important for comprehensive human development. The development of one dimension cannot autonomously take care of development of other dimensions, though sometimes theoretically such relation could be contemplated.

In the ultimate analysis, human development outcomes are a function of economic growth, social policies and right based poverty reduction strategies at taluk level. The six indices

Exept GII in almost all other index values, the district is below 0.700 and not in very good category.

In the overall CTDI, Udupi taluk with index value of 0.718 ranks first, followed by Karkala with index value of 0.673. Kundapura with index value of 0.603 ranks the last

clearly demonstrate that the taluks which perform better in these indices are also better in economic and social development outcomes. Udupi taluk is the top achiever in human development because it has more industries, higher scope for non-farm employment, higher urbanization and easy access to educational and health infrastructural facilities. As against this, Kundapura taluk is more agricultural based has the lowest rank in most of the indices. In the case of health and education, easy access to infrastructural facilities matters more than income. In the case of income, nearness to urban centres and major industries, scope for non-agricultural employment and diversification of agriculture apparently played a significant role. The observed inter-

taluk variance in various indices and in their components is thus more likely to be the consequence of these development factors.

The ranking of taluks and divergences between rankings based on these indices and in its components have, thus, serious implications for policy makers, while formulating strategies and allocating resources. They provide thrust areas for action programmes and policy interventions and also pointers for monitoring the programmes in terms of human development perspective. Similarly, it is important to recognize in the planning exercise, the human development deficits observed in various indices and disparities among the taluks.



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