How well is Punjab Progressing in Human Development? A District Wise Analysis

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Punjab has been one of the leading states of the Indian union and has always been the reference point for academics and policy makers in the context of development policy discourses. In recent years, however, the Punjab economy has been under serious economic crises and began to slip down in the per capita income ranking across Indian states. Its ranking fell from the first position in 1991-92 to sixth in 2009-10 and further fall to 15th position in 2017-18. Indeed, given the ever rising water, air and soil pollution, the state is witnessing a huge and increasing burden of communicable and non-communicable diseases. This study is an attempt to analyze the status of human development of Punjab in comparison with all Indian states and UTs and its districts since 1991. The study found that Punjab's HDI increased from 1991 to 2001, but after that there is a significant decline in the overall HDI of the state. Furthermore, district wise results reveal that, in 2017, there were profound difference among the districts in HDI scores which reflect great inter-district inequality.

Introduction

With shift in the development paradigm from 'growth only' to 'growth with sustainable human development', the canvas of development discourse has widened considerably over the years across the world (Sen, 1998). Hag and Sen emphasized in the first Human Development Report published by United Nations Development Programme (UNDP) in 1990 that the real wealth of the nation is its people and the purpose of development is to create an environment for people to enjoy long, healthy and creative lives (UNDP, 1990). However, this idea of development discourse is not new as it has been articulated in different ways by Aristotle, Smith, Ricardo, Marx and Mill (Chaurasia, 2019). Indeed, the concept of development with people at the centre has repeatedly been obscured by the development framework that concentrates on expansion of output of the social and economic production system and creation of wealth. The people centred development argues that expansion of the output and creation of wealth is only a means towards higher human well-being. It is and should not be just the end of development (UNDP, 2016a; Figueroa, 2014). The base of human development lies in recognizing improvement in the living standard of all people in the economy and society (Soubbotina, 2004; Neumayer, 2012; Sahadudheen, 2014). In this study an attempt has been made to study the pattren, trends, and growth of human development in Punjab.

Human development accounting involves a systematic examination of a wealth of information about how human beings in each society live, including

their state of education and health care, among other variables (Sen, 2000). There are many methods of measuring human development i.e. Physical Quality of Life Index (POLI) developed by Morrish David Morris in the 1970s, based on basic literacy, infant mortality, and life expectancy, all equally weighted on a 0 to 100 scale, Quality of Life Index (QLI), and Human Development Index (HDI). But except for HDI, all the other methods are complex in nature. The HDI was designed by Pakistani economist Mahbub-ul-Haq and Indian economist Amartya Sen in 1990 and the UNDP (agency of United Nations Organization, UNO) brought out the first global Human Development Report in 1990. HDI is helpful in providing a pathway to changes in development levels over time and for comparing development levels in different countries. The HDI is a composite index focusing on three basic dimensions of human development: to lead a long and healthy life, measured by life expectancy at birth; the ability to acquire knowledge, measured by mean years of schooling and expected years of schooling; and the ability to achieve a decent standard of living, measured by per capita GNI in terms of Purchasing Power Parity (PPP). The HDI sets a minimum and a maximum level for each dimension, called goalposts, and each country is able to show where it stands in relation to these goalposts, expressed as a value between 0-1 (Haq, 1990; HDR, 1990; 2014; 2015; Kelley, 1991).

Data Sources and Methodology

Beginning with first stage, data from Global Data Lab has been used to compare the status of human development of Punjab among all the States and Union Territories (UTs) of India from 1990 to 2017 (GDL, 2018). To draw the same picture at the district level, HDI from 1991 to 2001 has been presented which has been taken from the Punjab Human Development Report, 2004, and to fill the data gap from 2001 to 2017, a HDI index has been constructed using the same methodology as used by UNDP (see UNDP, 2016b) To construct the district wise HDI three indicators has been used;

- 1. Health Index: Life Expectancy of Punjab 2016-17;
- 2. Standard of Living Index: Gross District Domestic Product (GDDP) 2016-17
- 3. Education Index: Adult Literacy Rate and Gross Enrolment Ratio;

The standard method of HDI (UNDP, 2016) has been applied to construct a district wise HDI. First, all variable were normalized using maximum and minimum values suggested by UNDP for each index and ranking have been done to observe the changing patterns of HDI across all districts of Punjab.

1. Life Expectancy Index = $\frac{Actual\ Value\ -\ Minimum\ Vale}{Maximum\ Value\ -\ Minimum\ Value}$

UNDP goal post maximum value 85 years and minimum value 0

2. Standard of Living Index = $\frac{\log Y Actual - \log Y Minimum}{\log Y Maxium - \log Y Minimum}$

UNDP goal post value \$75000 and minimum value \$100

- Education Index = 2/3 (Adult Literacy Index) + 1/3(Gross Enrolment Ratio)
 - Actual Value-Minimum Value Adult Literacy Index = Maximum Value – Minimum Value Actual Value – Minimum Value
 - Gross Enrolment Ratio = $\frac{Actual \ value}{Maximum \ Value Minimum \ Value}$

UNDP goal post maximum value 100 and minimum value 0

District wise HDI= $\sqrt[3]{LEI.II.EI}$

Analysis and Time Period

Basically, tabular technique of analysis has been used. It has been supported with various statistical techniques like percentages, ranking, growth rates, indexes etc. The analysis has been presented in maps & tables whereever required. The time period of study is mainly focused on 1990 to 2017 i.e. the period of post reforms in India. UNDP categorizes values of HDI as low category of HDI < 0.550, medium $0.550 \le \text{HDI} < 0.700$, high $0.700 \le \text{HDI} <$ 0.800 and very high category of HDI ≥ 0.800 .

Human Development in Punjab

Punjab has been one of the leading states of India and has always been the reference point for academics and policy makers in the context of development policy discourses. The Punjab economy has been under serious economic crises since the mid-1980s. This situation would lead to the standard Keynesian policy in the form of public investment. But the character of the state has been changing from that of a welfare state to a neo-liberal one (Gill, 2005; Shergill, & Kaur 2019). Consequently, Punjab slipped down in terms of per capita income ranking across major Indian states from first rank in 1991-92 to second rank in 1992-93, to sixth rank in 2009-10, 14th rank in 2013-14, rank 15th in 2014-15 and same rank in 2017-18 (Singh, 2016). With the huge investment in physical capital, Punjab continues to occupy top position in the three critical infrastructural elements: electricity, irrigation and road connectivity. Besides, agricultural production and crop productivity remained unparalleled relative to the rest of the country. But this development model has not attained the satisfactory results in the various indicators of human capital (Singh & Singh, 2006; GOP, 2016, 2015).

The State holds 21st position in literacy rate among Indian states and UT's in 2011. Moreover, the gap between rural and urban literacy rate and dropout rate are widening. The falling quality of school education from last few years in the state can be assessed from the latest report issued by NITI Aayog (2019) which reveals that Punjab stands at 18, even below from Bihar, in terms of quality education at school level. The state ranks 16th in gender empowerment ratio and 26th in the sex ratio which is lower than UP, Bihar, Rajasthan and many other states. So the state has not emerged as a leader in many aspects of well-being like literacy rate, enrollment ratio, sex ratio, birth rate, death rate and life expectancy (Gill, 2017; GOI, 2011). It is clear from the evidence that the development model of the state could not embed inclusive socio-economic development within the region. Therefore, the issue of development of human capital needs to be examined rigorously. In fact, economic prosperity of the state has not trickled down to every section of society because the emergence of economic inequalities are a major hindrance to achieving leading position in the ranking of HDI (Gill, Singh, & Brar, 2010; GOP, 2011; UNDP, 2005).

Indeed, rising health problems, particularly cancer, and increasing water, air and soil pollution, Punjab state is witnessing a huge and increasing burden of the communicable non-communicable diseases. These diseases have emerged as the major health concern for the masses in the State. In particular, the age group 35 to 65 years is becoming prey to these diseases which has resulted in the loss in their productive years. Punjab was also known by its healthy nature and people but this aspect is shrinking at huge level. Recently, NITI Aayog had come out with ranking of health index among all states and UT's where among the larger states, Punjab ranked 5th, even below Gujrat and Himachal Pradesh (NITI Aayog, 2019). Economic and social costs of diseases, particularly cancer, to society is enormous and runs into crores of rupees. These incorporate both direct cost to the families of the person with illness and indirect costs to society, due to reduced productivity (GOP, 2016).

Apart from the above mentioned, nowadays Punjab is seen to be facing 'multidimensional crises'. As many economists have pointed out, the cotton belt of Malwa region of Punjab is particularly facing severe health problems; farmers, and agricultural labourers are committing suicide; earlier from Doaba and now from Majha and Malwa regions, Punjabis are migrating abroad and such trends are causing a brain and capital drain from the State; colleges, universities, hospitals are suffering due to deficiency of staff, funds and equipment. The election promise of 'Har Ghar Nokari' (A job for every household) during the State elections of 2017 by the incumbent government raised hopes of youth but they are still waiting for jobs since then. Fifteen years have elapsed since the publication of the first Punjab Human Development Report in 2004 and despite Punjab undergoing much socio-economic transformation, no follow up study has been conducted in the State (GOP, 2004). To understand all these socio-economic transformations, there is a need to assess progress in human development, both empirically and critically (Singh & Goval, 2019; Goyal, 2019).

Table 1: Comparison of Punjab's HDI with all States and UTs of India

					%age	
					Growth	
					(1990-	Rank
States	1990	2000	2010	2017	2017)	2017
Kerala	0.540	0.592	0.715	0.770	42.6	1
Goa	0.546	0.608	0.736	0.753	37.9	2
Himachal Pradesh	0.475	0.583	0.667	0.716	50.5	3
Punjab	0.531	0.601	0.657	0.715	34.6	4

Sikkim	1	1		1		1	ı
Tamil Nadu 0.466 0.537 0.646 0.699 50.0 7 Mizoram 0.520 0.565 0.687 0.697 34.0 8 Maharashtra 0.490 0.552 0.643 0.689 40.6 9 Manipur 0.490 0.555 0.682 0.688 40.4 10 Jammu & Kashmir 0.489 0.523 0.640 0.679 38.9 11 Uttarakhand 0.621 0.623 0.640 0.676 8.9 12 Karnataka 0.440 0.513 0.605 0.675 53.4 13 Nagaland 0.526 0.517 0.661 0.671 27.6 14 Gujarat 0.466 0.524 0.606 0.665 42.7 15 Telangana 0.617 0.623 0.638 0.661 7.1 16 Arunachal Pradesh 0.433 0.499 0.638 0.661 7.1 18 Meghalaya 0.442	Sikkim	0.537	0.544	0.632	0.708	31.8	5
Mizoram 0.520 0.565 0.687 0.697 34.0 8 Maharashtra 0.490 0.552 0.643 0.689 40.6 9 Manipur 0.490 0.555 0.682 0.688 40.4 10 Jammu & Kashmir 0.489 0.523 0.640 0.679 38.9 11 Uttarakhand 0.621 0.623 0.640 0.676 8.9 12 Karnataka 0.440 0.513 0.605 0.675 53.4 13 Nagaland 0.526 0.517 0.661 0.671 27.6 14 Gujarat 0.466 0.524 0.606 0.665 42.7 15 Telangana 0.617 0.623 0.638 0.661 7.1 16 Arunachal Pradesh 0.433 0.499 0.638 0.653 50.8 17 Tripura 0.442 0.525 0.610 0.650 47.1 18 Meghalaya 0.452		0					
Maharashtra 0.490 0.552 0.643 0.689 40.6 9 Manipur 0.490 0.555 0.682 0.688 40.4 10 Jammu & Kashmir 0.489 0.523 0.640 0.679 38.9 11 Uttarakhand 0.621 0.623 0.640 0.676 8.9 12 Karnataka 0.440 0.513 0.605 0.675 53.4 13 Nagaland 0.526 0.517 0.661 0.671 27.6 14 Gujarat 0.466 0.524 0.606 0.665 42.7 15 Telangana 0.617 0.623 0.638 0.661 7.1 16 Arunachal Pradesh 0.433 0.499 0.638 0.653 50.8 17 Tripura 0.442 0.525 0.610 0.650 47.1 18 Meghalaya 0.452 0.472 0.618 0.648 43.4 19 Andhra Pradesh 0.4	Tamil Nadu			0.646	0.699	50.0	
Manipur 0.490 0.555 0.682 0.688 40.4 10 Jammu & Kashmir 0.489 0.523 0.640 0.679 38.9 11 Uttarakhand 0.621 0.623 0.640 0.676 8.9 12 Karnataka 0.440 0.513 0.605 0.675 53.4 13 Nagaland 0.526 0.517 0.661 0.671 27.6 14 Gujarat 0.466 0.524 0.606 0.665 42.7 15 Telangana 0.617 0.623 0.638 0.661 7.1 16 Arunachal Pradesh 0.433 0.499 0.638 0.653 50.8 17 Tripura 0.442 0.525 0.610 0.650 47.1 18 Meghalaya 0.452 0.472 0.618 0.648 43.4 19 Andhra Pradesh 0.420 0.473 0.579 0.643 53.1 20 West Bengal 0.	Mizoram	0.520		0.687	0.697	34.0	
Jammu & Kashmir 0.489 0.523 0.640 0.679 38.9 11	Maharashtra	0.490	0.552	0.643	0.689	40.6	9
Uttarakhand 0.621 0.623 0.640 0.676 8.9 12 Karnataka 0.440 0.513 0.605 0.675 53.4 13 Nagaland 0.526 0.517 0.661 0.671 27.6 14 Gujarat 0.466 0.524 0.606 0.665 42.7 15 Telangana 0.617 0.623 0.638 0.661 7.1 16 Arunachal Pradesh 0.433 0.499 0.638 0.653 50.8 17 Tripura 0.442 0.525 0.610 0.650 47.1 18 Meghalaya 0.452 0.472 0.618 0.648 43.4 19 Andhra Pradesh 0.420 0.473 0.579 0.643 53.1 20 West Bengal 0.437 0.501 0.573 0.633 44.9 21 Rajasthan 0.399 0.465 0.548 0.621 55.6 22 Assam 0.406	Manipur	0.490	0.555	0.682	0.688		10
Karnataka 0.440 0.513 0.605 0.675 53.4 13 Nagaland 0.526 0.517 0.661 0.671 27.6 14 Gujarat 0.466 0.524 0.606 0.665 42.7 15 Telangana 0.617 0.623 0.638 0.661 7.1 16 Arunachal Pradesh 0.433 0.499 0.638 0.653 50.8 17 Tripura 0.442 0.525 0.610 0.650 47.1 18 Meghalaya 0.452 0.472 0.618 0.648 43.4 19 Andhra Pradesh 0.420 0.473 0.579 0.643 53.1 20 West Bengal 0.437 0.501 0.573 0.633 44.9 21 Rajasthan 0.399 0.465 0.548 0.621 55.6 22 Assam 0.406 0.483 0.568 0.607 49.5 23 Chhattisgarh 0.555 <td>Jammu & Kashmir</td> <td>0.489</td> <td>0.523</td> <td>0.640</td> <td>0.679</td> <td>38.9</td> <td>11</td>	Jammu & Kashmir	0.489	0.523	0.640	0.679	38.9	11
Nagaland 0.526 0.517 0.661 0.671 27.6 14 Gujarat 0.466 0.524 0.606 0.665 42.7 15 Telangana 0.617 0.623 0.638 0.661 7.1 16 Arunachal Pradesh 0.433 0.499 0.638 0.653 50.8 17 Tripura 0.442 0.525 0.610 0.650 47.1 18 Meghalaya 0.452 0.472 0.618 0.648 43.4 19 Andhra Pradesh 0.420 0.473 0.579 0.643 53.1 20 West Bengal 0.437 0.501 0.573 0.633 44.9 21 Rajasthan 0.399 0.465 0.548 0.621 55.6 22 Assam 0.406 0.483 0.568 0.607 49.5 23 Chhattisgarh 0.555 0.557 0.573 0.605 9.0 24 Orissa 0.395	Uttarakhand	0.621	0.623	0.640	0.676	8.9	12
Gujarat 0.466 0.524 0.606 0.665 42.7 15 Telangana 0.617 0.623 0.638 0.661 7.1 16 Arunachal Pradesh 0.433 0.499 0.638 0.653 50.8 17 Tripura 0.442 0.525 0.610 0.650 47.1 18 Meghalaya 0.452 0.472 0.618 0.648 43.4 19 Andhra Pradesh 0.420 0.473 0.579 0.643 53.1 20 West Bengal 0.437 0.501 0.573 0.633 44.9 21 Rajasthan 0.399 0.465 0.548 0.621 55.6 22 Assam 0.406 0.483 0.568 0.607 49.5 23 Chhattisgarh 0.555 0.557 0.573 0.605 9.0 24 Orissa 0.395 0.453 0.536 0.599 51.6 25 Madhya Pradesh 0.403<	Karnataka	0.440	0.513	0.605	0.675	53.4	13
Telangana 0.617 0.623 0.638 0.661 7.1 16 Arunachal Pradesh 0.433 0.499 0.638 0.653 50.8 17 Tripura 0.442 0.525 0.610 0.650 47.1 18 Meghalaya 0.452 0.472 0.618 0.648 43.4 19 Andhra Pradesh 0.420 0.473 0.579 0.643 53.1 20 West Bengal 0.437 0.501 0.573 0.633 44.9 21 Rajasthan 0.399 0.465 0.548 0.621 55.6 22 Assam 0.406 0.483 0.568 0.607 49.5 23 Chhattisgarh 0.555 0.557 0.573 0.605 9.0 24 Orissa 0.395 0.453 0.536 0.599 51.6 25 Madhya Pradesh 0.403 0.456 0.538 0.598 48.4 26 Jharkhand 0.55	Nagaland	0.526	0.517	0.661	0.671	27.6	14
Arunachal Pradesh 0.433 0.499 0.638 0.653 50.8 17 Tripura 0.442 0.525 0.610 0.650 47.1 18 Meghalaya 0.452 0.472 0.618 0.648 43.4 19 Andhra Pradesh 0.420 0.473 0.579 0.643 53.1 20 West Bengal 0.437 0.501 0.573 0.633 44.9 21 Rajasthan 0.399 0.465 0.548 0.621 55.6 22 Assam 0.406 0.483 0.568 0.607 49.5 23 Chhattisgarh 0.555 0.557 0.573 0.605 9.0 24 Orissa 0.395 0.453 0.536 0.607 49.5 23 Madhya Pradesh 0.403 0.456 0.538 0.599 51.6 25 Madhya Pradesh 0.394 0.458 0.535 0.591 6.7 27 Uttar Pradesh	Gujarat	0.466	0.524	0.606	0.665	42.7	15
Tripura 0.442 0.525 0.610 0.650 47.1 18 Meghalaya 0.452 0.472 0.618 0.648 43.4 19 Andhra Pradesh 0.420 0.473 0.579 0.643 53.1 20 West Bengal 0.437 0.501 0.573 0.633 44.9 21 Rajasthan 0.399 0.465 0.548 0.621 55.6 22 Assam 0.406 0.483 0.568 0.607 49.5 23 Chhattisgarh 0.555 0.557 0.573 0.605 9.0 24 Orissa 0.395 0.453 0.536 0.599 51.6 25 Madhya Pradesh 0.403 0.456 0.538 0.598 48.4 26 Jharkhand 0.554 0.557 0.573 0.591 6.7 27 Uttar Pradesh 0.394 0.458 0.535 0.590 49.7 28 Bihar 0.375	Telangana	0.617	0.623	0.638	0.661	7.1	16
Meghalaya 0.452 0.472 0.618 0.648 43.4 19 Andhra Pradesh 0.420 0.473 0.579 0.643 53.1 20 West Bengal 0.437 0.501 0.573 0.633 44.9 21 Rajasthan 0.399 0.465 0.548 0.621 55.6 22 Assam 0.406 0.483 0.568 0.607 49.5 23 Chhattisgarh 0.555 0.557 0.573 0.605 9.0 24 Orissa 0.395 0.453 0.536 0.599 51.6 25 Madhya Pradesh 0.403 0.456 0.538 0.598 48.4 26 Jharkhand 0.554 0.557 0.573 0.591 6.7 27 Uttar Pradesh 0.394 0.458 0.535 0.590 49.7 28 Bihar 0.375 0.432 0.515 0.568 51.5 29 Union Territories	Arunachal Pradesh	0.433	0.499	0.638	0.653	50.8	17
Andhra Pradesh 0.420 0.473 0.579 0.643 53.1 20 West Bengal 0.437 0.501 0.573 0.633 44.9 21 Rajasthan 0.399 0.465 0.548 0.621 55.6 22 Assam 0.406 0.483 0.568 0.607 49.5 23 Chhattisgarh 0.555 0.557 0.573 0.605 9.0 24 Orissa 0.395 0.453 0.536 0.599 51.6 25 Madhya Pradesh 0.403 0.456 0.538 0.598 48.4 26 Jharkhand 0.554 0.557 0.573 0.591 6.7 27 Uttar Pradesh 0.394 0.458 0.535 0.590 49.7 28 Bihar 0.375 0.432 0.515 0.568 51.5 29 Union Territories Chandigarh 0.627 0.633 0.650 0.766 22.2 1 La	Tripura	0.442	0.525	0.610	0.650	47.1	18
West Bengal 0.437 0.501 0.573 0.633 44.9 21 Rajasthan 0.399 0.465 0.548 0.621 55.6 22 Assam 0.406 0.483 0.568 0.607 49.5 23 Chhattisgarh 0.555 0.557 0.573 0.605 9.0 24 Orissa 0.395 0.453 0.536 0.599 51.6 25 Madhya Pradesh 0.403 0.456 0.538 0.598 48.4 26 Jharkhand 0.554 0.557 0.573 0.591 6.7 27 Uttar Pradesh 0.394 0.458 0.535 0.590 49.7 28 Bihar 0.375 0.432 0.515 0.568 51.5 29 Union Territories Chandigarh 0.627 0.633 0.650 0.766 22.2 1 Lakshadweep 0.687 0.698 0.719 0.741 7.9 2 <td>Meghalaya</td> <td>0.452</td> <td>0.472</td> <td>0.618</td> <td>0.648</td> <td>43.4</td> <td>19</td>	Meghalaya	0.452	0.472	0.618	0.648	43.4	19
Rajasthan 0.399 0.465 0.548 0.621 55.6 22 Assam 0.406 0.483 0.568 0.607 49.5 23 Chhattisgarh 0.555 0.557 0.573 0.605 9.0 24 Orissa 0.395 0.453 0.536 0.599 51.6 25 Madhya Pradesh 0.403 0.456 0.538 0.598 48.4 26 Jharkhand 0.554 0.557 0.573 0.591 6.7 27 Uttar Pradesh 0.394 0.458 0.535 0.590 49.7 28 Bihar 0.375 0.432 0.515 0.568 51.5 29 Union Territories Chandigarh 0.627 0.633 0.650 0.766 22.2 1 Lakshadweep 0.687 0.698 0.719 0.741 7.9 2 Delhi (NCR) 0.572 0.660 0.707 0.737 28.8 3 <td>Andhra Pradesh</td> <td>0.420</td> <td>0.473</td> <td>0.579</td> <td>0.643</td> <td>53.1</td> <td>20</td>	Andhra Pradesh	0.420	0.473	0.579	0.643	53.1	20
Assam 0.406 0.483 0.568 0.607 49.5 23 Chhattisgarh 0.555 0.557 0.573 0.605 9.0 24 Orissa 0.395 0.453 0.536 0.599 51.6 25 Madhya Pradesh 0.403 0.456 0.538 0.598 48.4 26 Jharkhand 0.554 0.557 0.573 0.591 6.7 27 Uttar Pradesh 0.394 0.458 0.535 0.590 49.7 28 Bihar 0.375 0.432 0.515 0.568 51.5 29 Union Territories Chandigarh 0.627 0.633 0.650 0.766 22.2 1 Lakshadweep 0.687 0.698 0.719 0.741 7.9 2 Delhi (NCR) 0.572 0.660 0.707 0.737 28.8 3 Andaman & Nicobar I. 0.677 0.690 0.708 0.731 8.0	West Bengal	0.437	0.501	0.573	0.633	44.9	21
Chhattisgarh 0.555 0.557 0.573 0.605 9.0 24 Orissa 0.395 0.453 0.536 0.599 51.6 25 Madhya Pradesh 0.403 0.456 0.538 0.598 48.4 26 Jharkhand 0.554 0.557 0.573 0.591 6.7 27 Uttar Pradesh 0.394 0.458 0.535 0.590 49.7 28 Bihar 0.375 0.432 0.515 0.568 51.5 29 Union Territories Chandigarh 0.627 0.633 0.650 0.766 22.2 1 Lakshadweep 0.687 0.698 0.719 0.741 7.9 2 Delhi (NCR) 0.572 0.660 0.707 0.737 28.8 3 Andaman & Nicobar I. 0.677 0.690 0.708 0.731 8.0 4 Puducherry 0.713 0.724 0.744 0.730 2.4 <td>Rajasthan</td> <td>0.399</td> <td>0.465</td> <td>0.548</td> <td>0.621</td> <td>55.6</td> <td>22</td>	Rajasthan	0.399	0.465	0.548	0.621	55.6	22
Orissa 0.395 0.453 0.536 0.599 51.6 25 Madhya Pradesh 0.403 0.456 0.538 0.598 48.4 26 Jharkhand 0.554 0.557 0.573 0.591 6.7 27 Uttar Pradesh 0.394 0.458 0.535 0.590 49.7 28 Bihar 0.375 0.432 0.515 0.568 51.5 29 Union Territories Chandigarh 0.627 0.633 0.650 0.766 22.2 1 Lakshadweep 0.687 0.698 0.719 0.741 7.9 2 Delhi (NCR) 0.572 0.660 0.707 0.737 28.8 3 Andaman & Nicobar I. 0.677 0.690 0.708 0.731 8.0 4 Puducherry 0.713 0.724 0.744 0.730 2.4 5 Daman & Diu 0.646 0.660 0.678 0.699 8.2	Assam	0.406	0.483	0.568	0.607	49.5	23
Madhya Pradesh 0.403 0.456 0.538 0.598 48.4 26 Jharkhand 0.554 0.557 0.573 0.591 6.7 27 Uttar Pradesh 0.394 0.458 0.535 0.590 49.7 28 Bihar 0.375 0.432 0.515 0.568 51.5 29 Union Territories Chandigarh 0.627 0.633 0.650 0.766 22.2 1 Lakshadweep 0.687 0.698 0.719 0.741 7.9 2 Delhi (NCR) 0.572 0.660 0.707 0.737 28.8 3 Andaman & Nicobar I. 0.677 0.690 0.708 0.731 8.0 4 Puducherry 0.713 0.724 0.744 0.730 2.4 5 Daman & Diu 0.646 0.660 0.678 0.699 8.2 6 Dadra & N. Haveli 0.666 0.677 0.696 0.656	Chhattisgarh	0.555	0.557	0.573	0.605	9.0	24
Jharkhand 0.554 0.557 0.573 0.591 6.7 27 Uttar Pradesh 0.394 0.458 0.535 0.590 49.7 28 Bihar 0.375 0.432 0.515 0.568 51.5 29 Union Territories Chandigarh 0.627 0.633 0.650 0.766 22.2 1 Lakshadweep 0.687 0.698 0.719 0.741 7.9 2 Delhi (NCR) 0.572 0.660 0.707 0.737 28.8 3 Andaman & Nicobar I. 0.677 0.690 0.708 0.731 8.0 4 Puducherry 0.713 0.724 0.744 0.730 2.4 5 Daman & Diu 0.646 0.660 0.678 0.699 8.2 6 Dadra & N. Haveli 0.666 0.677 0.696 0.656 -1.5 7	Orissa	0.395	0.453	0.536	0.599	51.6	25
Uttar Pradesh 0.394 0.458 0.535 0.590 49.7 28 Bihar 0.375 0.432 0.515 0.568 51.5 29 Union Territories Chandigarh 0.627 0.633 0.650 0.766 22.2 1 Lakshadweep 0.687 0.698 0.719 0.741 7.9 2 Delhi (NCR) 0.572 0.660 0.707 0.737 28.8 3 Andaman & Nicobar I. 0.677 0.690 0.708 0.731 8.0 4 Puducherry 0.713 0.724 0.744 0.730 2.4 5 Daman & Diu 0.646 0.660 0.678 0.699 8.2 6 Dadra & N. Haveli 0.666 0.677 0.696 0.656 -1.5 7	Madhya Pradesh	0.403	0.456	0.538	0.598	48.4	26
Bihar 0.375 0.432 0.515 0.568 51.5 29 Union Territories Chandigarh 0.627 0.633 0.650 0.766 22.2 1 Lakshadweep 0.687 0.698 0.719 0.741 7.9 2 Delhi (NCR) 0.572 0.660 0.707 0.737 28.8 3 Andaman & Nicobar I. 0.677 0.690 0.708 0.731 8.0 4 Puducherry 0.713 0.724 0.744 0.730 2.4 5 Daman & Diu 0.646 0.660 0.678 0.699 8.2 6 Dadra & N. Haveli 0.666 0.677 0.696 0.656 -1.5 7	Jharkhand	0.554	0.557	0.573	0.591	6.7	27
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Chandigarh 0.627 0.633 0.650 0.766 22.2 1 Lakshadweep 0.687 0.698 0.719 0.741 7.9 2 Delhi (NCR) 0.572 0.660 0.707 0.737 28.8 3 Andaman & Nicobar I. 0.677 0.690 0.708 0.731 8.0 4 Puducherry 0.713 0.724 0.744 0.730 2.4 5 Daman & Diu 0.646 0.660 0.678 0.699 8.2 6 Dadra & N. Haveli 0.666 0.677 0.696 0.656 -1.5 7	Bihar	0.375	0.432	0.515	0.568	51.5	29
Lakshadweep 0.687 0.698 0.719 0.741 7.9 2 Delhi (NCR) 0.572 0.660 0.707 0.737 28.8 3 Andaman & Nicobar I. 0.677 0.690 0.708 0.731 8.0 4 Puducherry 0.713 0.724 0.744 0.730 2.4 5 Daman & Diu 0.646 0.660 0.678 0.699 8.2 6 Dadra & N. Haveli 0.666 0.677 0.696 0.656 -1.5 7		Ur	nion Terr	itories			
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Andaman & Nicobar 0.677 0.690 0.708 0.731 8.0 4 Puducherry 0.713 0.724 0.744 0.730 2.4 5 Daman & Diu 0.646 0.660 0.678 0.699 8.2 6 Dadra & N. Haveli 0.666 0.677 0.696 0.656 -1.5 7		0.687	0.698	0.719	0.741	7.9	2
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Puducherry 0.713 0.724 0.744 0.730 2.4 5 Daman & Diu 0.646 0.660 0.678 0.699 8.2 6 Dadra & N. Haveli 0.666 0.677 0.696 0.656 -1.5 7	Andaman & Nicobar						
Daman & Diu 0.646 0.660 0.678 0.699 8.2 6 Dadra & N. Haveli 0.666 0.677 0.696 0.656 -1.5 7	I.	0.677	0.690	0.708	0.731	8.0	4
Daman & Diu 0.646 0.660 0.678 0.699 8.2 6 Dadra & N. Haveli 0.666 0.677 0.696 0.656 -1.5 7	Puducherry	0.713	0.724	0.744	0.730	2.4	5
	·	0.646	0.660	0.678	0.699	8.2	6
India 0.428 0.493 0.581 0.639 49.3	Dadra & N. Haveli	0.666	0.677	0.696	0.656	-1.5	7
	India	0.428	0.493	0.581	0.639	49.3	

Source: https://hdi.globaldatalab.org/areadata/ accessed on 21/10/2018.

Human development in India remains comparatively low by global standards and there are considerable variations in human development across states/union territories, although there is some evidence of convergence. The decomposition of improvements in the HDI indicates that the progress in human development in the country has primarily been the result of progress in the education dimension whereas the contribution of the progress in the dimension of health or well-being has been the smallest (Gopalakrishna, & Rao, 2017; UNDP, 2017; Chaurasia, 2019).

The state level trends shows that, the overall HDI of India has improved from 0.428 in 1990 to 0.581 in 2010, still in the low category, and then managed to enter the high HDI category (0.639) by 2017. Kerala, Punjab and Maharashtra were the leaders among the Indian states. States like Bihar, U.P., Orissa and Assam recorded lower values of HDI. Among the better states, Kerala was ranked 1st with an index value of 0.770 followed by Goa with 0.753. Punjab was ranked 4th in 2017 with the index value of 0.715, which is lower than Himachal Pradesh (0.716) but higher than Sikkim (0.708) Haryana (0.700) and all remaining states. It has been found that, from 1990 to 2017 Punjab's human development grew by 45.3 per cent which is lower than Himachal Pradesh, Haryana, Taminadu, Karnataka, Arunachal Pradesh, Tripura, Andhra Pradesh, Rajasthan, Assam, Orissa, Bihar and even India as whole but slightly higher than many other states like, Gujarat, Goa, UP, West Bengal. Among all the states as well as the country as a whole, Kerala's position remains at the top while Punjab lags behind. It has been seen that in case of Punjab, index value improved by 8.2 percentage points from 1990 to 2000 whereas between 2000 and 2010 it increased by 8.3 percentage points but then from 2010 to 2017, the value was only 5.8 percentage points. Thus, in terms of human development this was a decade of stagnancy (Suryanarayana, et al. 2016).

Table 1 compared status and change in HDI among all sates and UTs, and Table 2 below explores the situation of whether improvement or decline in the value of HDI across different districts of Punjab. It can be observed from the Table 2 that in 1991 Punjab was in the lowest HDI category and managed to occupy medium category in 2001 but since then Punjab has remained in medium category. In other words, the overall value of human development index of Punjab has improved from 0.591 in 1991 to 0.667 in 2001 but it is significant to note that in the decade from 2001 to 2011 it has gone down from 0.667 to 0.643. Looking at the district level, in 1991 seven districts: Ludhiana, Jalandhar, Kapurthala, Amritsar, Ropar, Hoshiarpur and Gurdaspur recorded higher value of human development index than the aggregate value of HDI of Punjab and the remaining districts of Moga, Sangrur, Bathinda, Patiala, Faridkot and Firozepur and Ludhiana had lower values of HDI compared to state average. High value of HDI in Ludhiana and Jalandhar can be explained by high adult literacy rate, gross enrolment ratio, and high per capita income, as compared to other districts. However, Sangrur and Bathinda recorded HDI values lower than the state averages for adult literacy rate and gross enrollment ratio (Tiwana, Shergill, & Singh, 2018). After a decade (2001), out of 17 districts, fourteen districts: Ludhiana, Moga Bathinda, Fatehgarh Sahib, Kapurthala, Amritsar, Ropar, SBS Nagar, Jalandhar, Hoshiarpur, Patiala, Faridkot, Firozpur and Gurdaspur recorded above average value of HDI of Punjab. While three districts: Sangrur, Mansa and Muktsar, were below the State average. In the year 2011, out of 20 districts, 4 districts were below the State average and 16 were above. The number of districts below the state average had increased to exactly half in 2017 out of total 22 districts and remaining half had HDI value more than the average of State.

Table 2: Districts wise Status of HDI of Punjab since 1991

Districts	1991	2001	2011	2017	%age change 1991- 2017
Ludhiana	0.650	0.761	0.747	0.794	22.1
Moga		0.683	0.679	0.695	
Sangrur	0.534	0.654	0.666	0.669	25.2
Bathinda	0.539	0.740	0.658	0.659	22.2
Tarantarn			0.646	0.654	
SAS Nagar			0.701	0.653	
Fatehgarh Sahib		0.74	0.69	0.648	
Kapurthala	0.603	0.707	0.703	0.646	7.3
Amritsar	0.608	0.700	0.685	0.635	4.4
Ropar	0.623	0.751	0.675	0.629	0.9
SBS Nagar		0.707	0.707	0.627	
Jalandhar	0.610	0.708	0.738	0.618	1.3
Barnala			0.649	0.617	
Hoshiarpur	0.606	0.718	0.721	0.615	1.4
Patiala	0.589	0.697	0.695	0.607	3.0
Mansa		0.633	0.595	0.601	
Faridkot	0.573	0.698	0.642	0.599	4.5
Muktsar		0.651	0.633	0.572	
Firozpur	0.568	0.689	0.606	0.563	-0.8
Pathankot				0.538	
Fazilka				0.505	
Gurdaspur	0.612	0.723	0.673	0.503	-17.6
Punjab	0.591	0.667	0.643	0.620	4.9

Source: 1991 and 2001 HDI, taken from HDR 2004, and 2011 and 2016-17 have been calculated by author; some values are not given in the above table, because these districts are newly constructed. Barnala district created in 2006, Fatehgarh Sahib on 13 April 1992, Fazilka on 27 July 2011, Mansa on 13 April 1992, Moga on 24 November, 1995, Muktsar on 7 November, 1995, Pathankot on 27 July 2011, SAS Nagar on April 2006, SBS Nagar on 7 November, 1995, and Tarantarn district in 2006.

It has also been observed from the analysis that Ludhiana is approximately in the leading position in every indicator of human development and districts; Gurdaspur, Fazilka, Pathankot, Firozpur, Muktsar, Faridkot and Mansa are lagging behind. Although Punjab has improved a lot and shifted to the medium human development category from low category and after 1991 not even a single district of Punjab existed in lower human development category as indicated by the HDI. However, it is significant to note that not even a single district of Punjab state was placed in the category of very high human development. The analysis clearly points out that Punjab has made a significant improvement in

human development from 1991 to 2001 but after that status of human development declined, causing it to fall far behind when compared with states like Kerala and many different regions of the world. Furthermore, it clearly indicates that from 2011 to 2017, almost all districts in Punjab registered a decline in human development except Ludhiana and Moga districts, largely due to their high advantage of education and health indexes – see Table 3. Furthermore, one can observe great intra district divergence in terms of HDI and its sub indicators in Punjab.

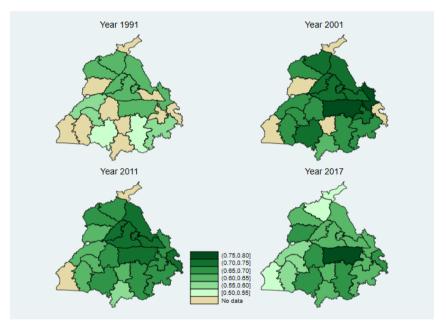


Figure 1: Status of HDI among all Districts of Punjab since 1991

Source: Author calculations based on above mentioned data sources.

As already highlighted in Table 2, Figure 1 elaborates the clear picture of district-wise status of human development in Punjab from 1991 to 2017. The maps illustrate that in 1991, out of 12 districts (whereas remaining 10 districts were newly created) two districts found HDI values ranging from 0.50 to 0.55, three districts found values ranging from 0.55 to 0.60 and remaining 7 ranging from 0.60 to 0.65. It is clear that there was no district whose HDI value is higher than 0.65. After a decade in 2001, out of the value of HDI of 17 districts, 1 district falls in the range of 0.6-0.65, 7 districts were in 0.65-0.70 category, and 7 were in 0.70-0.75 category and 2 districts were found in range of more than 0.75 HDI values. The situation of HDI was found to be declining in 2011, whereas out of 20 districts no district was found in higher category of HDI, 6 districts were in 0.70-0.75 category, 8 districts in 0.65-0.70 category, 5 districts

in 0.60-0.65 category and 1 district was found to be in 0.55-0.60 category. The status of HDI has drastically changed in 2017, out of 22 all districts, only 1 district was in high level of HDI category, 5 districts were found in 0.65-0.70 range, 10 districts fall in 0.60-0.65 range, 3 districts were in 0.50-0.55 category and remaining 3 were found in 0.50-0.55 i.e. lowest category of HDI.

Table 3: District-wise Comparison of HDI and its Components of Punjab (2017)

(2017)										
	Education		Health		Income					
Districts	Index	Rank	Index	Rank	Index	Rank	HDI	Rank		
Ludhiana	0.964	1	0.856	1	0.562	3	0.774	1		
Moga	0.839	3	0.735	3	0.511	8	0.680	2		
Sangrur	0.690	15	0.718	8	0.590	2	0.664	3		
Taran Tarn	0.755	10	0.683	10	0.523	7	0.646	4		
SAS Nagar	0.727	14	0.735	4	0.497	9	0.643	5		
Fategarh Sahib	0.757	9	0.649	13	0.538	4	0.642	6		
Kapurthala	0.781	6	0.632	15	0.526	6	0.638	7		
SBS Nagar	0.687	16	0.632	16	0.598	1	0.638	8		
Bathinda	0.826	4	0.770	2	0.381	18	0.623	9		
Jalandhar	0.642	18	0.683	11	0.528	5	0.614	10		
Roop Nagar	0.797	5	0.632	17	0.459	11	0.614	11		
Hoshiarpur	0.738	13	0.614	19	0.492	10	0.606	12		
Barnala	0.744	11	0.649	14	0.459	12	0.605	13		
Amritsar	0.924	2	0.580	21	0.402	16	0.599	14		
Patiala	0.776	7	0.597	20	0.447	14	0.592	15		
Faridkot	0.758	8	0.580	22	0.458	13	0.586	16		
Mansa	0.739	12	0.701	9	0.364	20	0.573	17		
Mukatsar	0.669	17	0.632	18	0.416	15	0.560	18		
Ferozpur	0.559	19	0.735	5	0.395	17	0.545	19		
Pathankot	0.512	21	0.735	6	0.367	19	0.517	20		
Fazilka	0.423	22	0.735	7	0.357	21	0.481	21		
Gurdaspur	0.528	20	0.683	12	0.297	22	0.475	22		
Punjab	0.720		0.680		0.461		0.609			

Source: Author's calculation by using various indicators mentioned in the methodology section. EI - Education Index, HI - Health Index and II - Income Index.

Human development indices do not reflect a uniform level of development in the field of health education and in terms of per capita income. Some districts are ahead in the field of education, some in health and others in per capita income. As Punjab is in the medium category of HDI since 2001 to 2017, which may be due to decreasing income of the state (as II is in low category of development, as evident from Table 3) but in EI and HI it is in medium category. Furthermore, out of a total of 22 districts of Punjab, 17 districts were in medium category, 4 districts were in low category, and only one was in the high HDI

category. It has also been noticed that among the 22 districts of Punjab, half (11) of the districts have an overall HDI which is higher than Punjab's HDI average (0.609) and the remaining half have an HDI which is below the State's HDI average. Ludhiana, Moga and Sangrur are the top three HDI rankers among all the districts of Punjab in 2017. Districts like Bhatinda rank good both in education index front (4th rank) and health index (2nd rank) but performed badly on income index front (18th rank). This is probably due to huge losses suffered in the farming sector on account of deteriorating land fertility caused by overexploitation of water and soil resources. Patiala and Amritsar district showed better results in only education index (7^{th} and 2^{nd} rank respectively) but they rank lower than the Punjab's average of both health and income indexes. The reason for high education index in these districts is probably because of the high number of literates owing to the existence of two state universities - Punjabi University in Patiala and GNDU in Amritsar. On income index, SBS Nagar tops the list, reason being high remittances from its overseas migrants; but on the other two fronts it has a medium ranking. Gurdaspur, Fazilka, Pathankot, Ferozpur, Muktsar and Mansa are the lowest ranking districts, whereas Gurdaspur, Fazilka, Ferozpur and Pathankot are on the international border and have major issues like terrorism, particularly in Gurdaspur and Pathankot. Mansa, Ferozpur and Fazilka are backward districts of Punjab due to of many reasons.

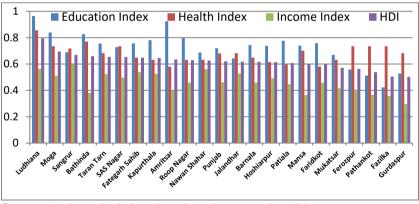


Figure 2: Comparison of HDI and its Components of Punjab (2017)

Source: Author calculations based on above mentioned data sources.

The profound difference among the districts in all three indexes reflect great inter-district inequality, as far as overall HDI is concerned. For instance, Figure 2 shows that Ludhiana is on the top in education and health index, but in income index Sangrur and Saheed Bhagat Singh Nagar districts are at the top and Mansa, Faridkot and Gurdaspur were lagging behind along with four newly created districts in all the parameters.

Conclusion

The achievement of economic growth nowadays is judged in terms of its real contribution to the quality of life and emphasis of all nations has shifted from 'quantity of growth' to 'structure and quality of growth' and human development is the right approach for this. While analyzing the achievement of human development of Punjab it has been observed that there was a significant improvement in human development from 1991 to 2001 but after that, it is on a declining path. Furthermore, district wise results reveal that, in 2017, out of total 22 districts of Punjab, 17 districts were in the medium category and out of the remaining 5 districts, 4 were in low and only 1 district was in the high HDI category. Half of 22 districts were below the average state HDI value while the remaining half were above.

Policymakers need to understand and acknowledge that this is the time when economic growth alone should not be seen as sole basis for development planning in Punjab, rather, a multi-dimensional approach encompassing health, education and other human development concerns should be given recognition in the development planning process of the state. However, the curtailment of public investment in health and education in recent decades, as suggested by various studies, led to worsening of the status of HDI in Punjab. Improvement in quality of life cannot be relied only on the private sector when secondary sector of the economy still has not been developed compared to other major states. At the same time, primary sector is growing less than the national average. Thus, government intervention is the need of the hour to improve the quality of life of people residing in the state. But why have we witnessed a declining trend in human development continually over the last past decades? There is a need of separate investigation to find the reasons behind this and also to critically assess viable policy implications for sustainable human development of the state.

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