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Author(s):	Khadija Ikram[*, ^]; Ghulam Mohey-ud-din[**,^]
Author Email (s);	[*] khadija.ib@gmail.com; [**] dr.moheyuddin@urbanunit.gov.pk
Author Organization:	[^] The Urban Unit, Government of Punjab

Is Economic Growth Inclusive in Punjab, Pakistan? A District Level Assessment Using the Composite Index[1]

Dr. Ghulam Mohey-ud-din[2]
Khadija Ikram[3]

Abstract:

With the increase in economic development and urbanization, countries around the world are facing challenges of income inequality, poverty accumulation and other intra-regional disparities. As a result, there has been a shift from 'pro-poor growth' to 'inclusive growth', where the former mainly focuses on poor segments of the population gaining from growth, while the latter incorporates greater equity concept across a broader segment of the population. Globally, Pakistan is positioned at 52nd position, out of seventy-nine countries, which were ranked as per Inclusive Growth and Development Index 2017. However, there is an absence of a comprehensive tool for tracking inequalities at provincial and/or sub-regional level in Pakistan. Taking this gap into account, the paper aims to construct a composite Inclusive Growth Index (IGI) for the districts of Punjab, incorporating six overarching dimensions including (i) economic, (ii) amenities, (iii) gender equity and financial inclusion, (iv) human development (v) governance and (vi) sustainability. A tentative list of indicators, for each dimension, have been selected after detailed literature review and exploring available series of existing frameworks. Following the OECD's Handbook of Composite Indices, the study uses min-max approach for normalizations of indicators followed by the weighted aggregation using Principal Component Analysis (PCA) for assigning of weights to indicators in each dimension in the composite index. The paper ranks the districts as outperforming, average performing and lagging districts to provide a comparative study of inclusive growth among them and to highlight the performance of districts on each dimension of the index.

Keywords: Inclusive Growth, Inclusive Development, Composite Index, Principal Component Analysis, Punjab – Pakistan

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[2] Urban Economist, The Urban Sector Planning and Management Services Unit (the Urban Unit), Lahore
[3] Research Associate, The Urban Sector Planning and Management Services Unit (the Urban Unit), Lahore (Corresponding author: khadija.ib@gmail.com)

Introduction:

Although provincial poverty has probably fallen over the past few years as per provincial surveys and reports, mainly due to advancement in technological solutions and progress in industrial and agricultural sectors, the inequality and poverty within the province has tended to increase. For instance, real incomes of some districts in Pakistan such as Dir (KPK) and Badin (Sindh) decreased between the 1990s and 2002, despite of the gains in agricultural output at the provincial and national levels (Dorosh & Malik, 2006). Similarly, the variation in poverty, Human Development Index (HDI) and other social development indicator between districts are indicative of regional disparities in Pakistan. Even though the country is advancing in terms of economic development, scholars believed that the benefits of the growth does not necessarily 'trickle down' to the most disadvantaged groups. This has led to call for deeper understanding of the determinants of growth in order to ensure higher degree of inclusiveness. Globally, Pakistan is positioned at 52nd position, out of seventy-nine countries, which were ranked as per Inclusive Growth and Development Index 2017 (World Economic Forum, 2017). However, there is an absence of a comprehensive tool for tracking inequalities and social exclusion at provincial and/or sub-regional level in Pakistan. Measuring inclusive growth at lower level offers the potential for a holistic approach for addressing inequality challenges, by highlighting the links between economic and social policy. For instance, investing in employment policies will not only improve the living standard of an individual but it will also help in increasing the aggregate economic growth (Lee, 2018). Existing measures of economic growth including Gross Domestic Product (GDP) fail to recognize the contribution of other social factor which triggers growth process. In these circumstances, scholars have directed their attention towards inclusive growth concept of the development as it builds links across policy areas to reduce poverty and inequality.

Structural changes and devolution programs have led to the emergence of different tiers of provincial government, i.e. division, district, tehsil, and union council, as important economic actors who are given new powers and responsibilities to undertake the challenges of poverty alleviation. The urban areas and metropolitan cities are driving growth in a country, however most of the inequalities are visible in those areas. This has led the policymakers to deliberate on cities' inclusive growth; whether they are meeting the demand of the wider population or not. Focusing on lower levels, offers an advantage of developing and testing new approaches for a specific local context, with the successful ones then scaled-up to other areas (Lee &

Sissons, 2016). Although, local policymakers often have limited powers to directly address growth, a country needs all its key political actors to contribute to the efforts of achieving inclusive growth. Globally, the Inclusive Growth agenda has already started to impact urban and regional policy areas. The most developed province of Pakistan, Punjab has also developed its Punjab Growth Strategy 2018 in line with the vision of inclusive growth (Planning & Development , 2015). However, the main challenge here is to make sure that Inclusive Growth does not become a buzzword, which implies that although many pre-existing policies adopt the IG agenda, it is not translated into outcomes and does not have an impact (Lee N. , 2018). Thus, creation of a statistical framework to measure inclusive growth is necessary at Punjab district level to compare the extent of inclusive growth and to assess the impact of the measures undertaken for social inclusion.

With this background in mind, the paper aims to construct a composite Inclusive Growth Index (IGI) for 36 districts of Punjab, incorporating six overarching dimensions which are (i) economic dimension, (ii) amenities dimension, (iii) gender equity and financial inclusion dimension, (iv) human development dimension (v) governance dimension and (vi) sustainability dimension. The study will help to measure if economic growth is inclusive in Punjab districts or not, by ranking districts as outperforming, average performing and lagging districts to provide a comparative study of inclusive growth among them and to determine which are districts are high priority areas for government interventions. The estimation of IGI will also demonstrate which particular dimensions of inclusive growth is driving the index in any districts. The rest of the paper is arranged into four sections, where Section II will review the existing approaches to measure inclusive growth and show how this informed the selection of dimensions of the inclusive growth index. Section III details the design of the inclusive growth index and outlines the selected indicators within the index. Sections IV will present the results and discussion of this research, followed by concluding remarks in Section V.

1. Literature review:

This section reviews how the existing scholarship defines the concept of inclusive growth and explains how the development of the inclusive growth index has been informed by the existing approaches to measuring inclusive growth.

The initial debates on the concept growth and its relationship with poverty and inequality have been dominated by the works of Kuznets (1995) who highlighted the inverted "U' function between inequality and growth and argued that trickle-down effect of development and growth can lead to poverty reduction. However, in light of prevalence situation, inequalities continue to persist in advance countries despite their strong economic growth (Vellala & Chattopadhyay, 2016). As a result, another significant concept 'Pro-Poor Growth' appeared later on, which is defined as 'the difference between the poverty reduction associated with any particular growth spell and the poverty reduction had growth been equally distributed', , focusing on the conditions under which the poorest benefit (Lee N. , 2018) However, since the beginning of the 1990s, countries around the world still faced increasing challenges of income inequality, poverty accumulation and other intra-regional disparities, despite the increase in economic development and urbanization. The critiques argued that pro-growth concept was relatively narrow, and the focuses on poor while ignoring the population just above the poverty line (Lee N. , 2018). As a result, there has been a shift in debates from 'pro-poor growth' to an alternative approach termed as the 'inclusive growth', where the former mainly focuses on poor segments of the population gaining from growth, while the latter incorporates greater equity concept across a broader segment of the population (Vellala & Chattopadhyay, 2016).

The concept was incorporated into the Sustainable Development Goals (UN, 2016), while in 2016, the Organisation for Economic Co-operation and Development (OECD) also launched an "Inclusive Growth in Cities" programme in 2016 for promoting higher degree of inclusive economic growth. However, despite its popularity, this concept does not have a universal definition. The Asian Development Bank (ADP) defines inclusive growth as growth which ensures equal access to new economic opportunities for all segment of the society, thus emphasizing the social welfare component (Ali & Son, 2007). While the IMF argues that inclusive growth promotes gender equality and sustainable development, along with reducing corruption, improving governance and promoting the use of financial instruments by less wealthy households (Loungani, 2017). According to OECD, inclusive growth "creates opportunities for all segments of the population and distributes the dividends of this growing prosperity, in both monetary and non-monetary terms, fairly among the whole society" (OECD, 2014).

Numerous scholars have also tried to measure Inclusive Growth using various models, approaches, theories and strategies for development. The major three main approaches are: 1) single indicator approach, 2) dashboard indicators approach and 3) the composite index approach. LSE Growth Commission uses single indicator approach, where measure median household income is taken as the indicator to explain GDP growth (Aghion, et al., 2013). On the other hand, ADB's Framework of Inclusive Growth follows the dashboard indicator approach, covering 35 indicators which falls under five dimensions, which are (i) growth, productive employment and economic infrastructure; (ii) income poverty and equity, including gender equity; (iii) human capabilities; and (iv) social protection (McKinley, 2010). Similarly, a dashboard measuring inclusive growth performance for the 109 countries was developed by the World Economic Forum (WEF), which monitors twelve indicators, based on three overarching dimensions i.e. i) growth and development, ii) inclusion and iii) intergenerational equity and sustainability (World Economic Forum, 2017). Pakistan has been ranked at 52nd position as compared to 108 other countries. However, this report includes a very broad range of factors and the data for some of these factors are not measured at regional or local level in Pakistan, which makes it difficult to be used to the purpose of this study.

The last major approach to measure inclusive growth is by constructing a composite index. Shearer et al created a composite index, based on three dimension which are: i) growth, ii) prosperity and iii) inclusion to monitor 100 US metropolitan cities performance (Shearer, John NG, & Friedhoff, 2016). A Metro Monitor was also developed to keep track of inclusive growth in different years, based on nine indicators to measure inclusive growth. Aggarwal examines the inclusive growth of various states in India, based on Inclusive Development Index (IDI), which is divided into two dimensions i.e. i) process of growth and ii) outcome of growth. Similarly, another study measures the level of inclusive growth across 15 Indian states, based on six dimensions which are i) economic, ii) amenities, iii) human development, iv) gender equity & financial inclusion, v) sustainability and vi) governance (Vellala & Chattopadhyay, 2016). In Pakistan, there has been relatively little work to develop frameworks to directly measure the inclusive growth index (IGI) in Punjab, which gives enough scope for detailed investigation. The review of conceptual and empirical literature provides some guide to range of factors that can be included in the inclusive growth index in Punjab.

2. Methodology:

Consistent with the definition and measurement approach of inclusive growth index adopted by Vellala & Chattopadhyay (2016), this study aims to assess the inclusiveness of growth at 36 districts of Punjab. It includes 17 indicators, which were selected on the basis of requirement of the framework and the availability and reliability of data at local level. Few changes were made in the original framework so that it can be substantiated and measured at district level of Punjab. Firstly, for economic dimension, income-MPCE indicator was replaced by estimated per capita Median HH Income indicator. Secondly, as district-wise GNI per capita is not reported in Pakistan, the UNDP report (2017) for developing Pakistan Human Development Index used the living standard dimension of the global Multidimensional Poverty Index (MPI). Similar proxy is applied in this study. However, the indicators included in living standard dimension of MPI are already being covered by the Amenities dimension of the selected framework, thus, these indicators have been dropped to avoid repetition. Thirdly, life expectancy indicator in human development dimension was replaced by two indicators, which are 'child immunisation rates (aged 12 to 23 months)' and 'self-reported satisfaction with healthcare facility (BHUs)'. These were also used in UNDP report 2017 for Pakistan Human Development Index as a proxy for life expectancy indicator, which is not measured in Pakistan at district level. Lastly, for sustainability dimension, two proxy indicators are used, i.e. "proportion of forest cover" indicator, which is an Sustainable Development Goal (SDG) indicator and 'concentration of flouride (mg/l) in water' which is an indicator used in United Nation (UN) Global Drinking Water Quality Index 2004 (UNEP, 2007).

In addition to this, the selected indicators had different connotations, meaning some have positive relationship with IG and will denote higher level of IG performance with higher score, while other display an opposite relationship where a lower value may denote higher performance level. For instance, higher value of Infant Mortality Rate (IMR) will contribute to lower performance of districts on ensuring inclusive growth. Thus, a sign of positive and negative was given to each indicator to indicate hypothesized relation with the inclusive growth. A complete list of indicators along with their associated hypothesized relationship and data sources is listed in the table below.

Table 1: Building blocks of the Inclusive Growth Index (IGI)

Dimensions	Indicators	Hypothesized Relationship	Source
Economic Dimension	Median HH Income (Per Capita)	positive	PSLM 2019-20 (est.)
	Employment rate	positive	Census 2017 (est.)
	Poverty	negative	MICS 2017-18
Amenities Dimension	Percentage of households with source of lighting: Electricity	positive	PSLM 2019-20
	Percentage of households with improved source of drinking water	positive	PSLM 2019-20
	Percentage of households with toilet facility	positive	PSLM 2019-20
	Percentage of households with Pucca (roof and wall using improved materials)	positive	PSLM 2019-20
	Metalled Roads Length (Actual) (kilometers)	positive	Punjab PDS 2019
Gender equity & financial inclusion Dimension	Proportion of women in labour working force	positive	Census 2017 (estimated)
	Proportion of female population that has ever attended school	positive	PSLM 2019-20
	Percentage of households where at least one member owns or has an account in a bank, post office or national saving center	positive	MICS 2017-18
Human Development Dimension	Literacy Rate	positive	PSLM 2019-20
	Immunization	negative	PSLM 2019-20
	Percentage distribution of household satisfaction with health facilities (BHUs)	positive	PSLM 2019-20
	Infant Mortality Rate (IMR)	negative	MICS 2017-18
Governance Dimension	Per capita allocation of development expenditure	positive	Punjab ADP 2018 (estimated)
Sustainability Dimension	Crime rate	negative	Punjab PDS 2019 (est.)
	Proportion of forest area	positive	Punjab PDS 2019 (est.)
	Water quality (fluoride mg/l)	negative	Urban Unit database

Following the OECD's Handbook of Composite Indices (OECD, 2008), the study uses min-max approach for normalizations of indicators followed by the weighted aggregation using Principal Component Analysis (PCA) for assigning of weights to indicators in each dimension in the composite index, which offers an advantage of using indicators with different metrics (e.g. mortality rates and length of roads) to be put on the same scale for comparison purposes. Data against these indicators was retrieved from secondary sources including national and provincial reports such as Pakistan Social and Living Standards Measurement (Bureau of Statistics, 2019-20), Punjab Multiple Indicator Clusters Survey (BOS Punjab, 2017-18), Population Census 2017 and the Urban Unit database (The Urban Unit, 2015).

Kaiser-Meyer-Olkin (KMO) and Barlett test were applied to validate the factor analysis for statistical accuracy, using the following formula:

$$KMO = \frac{\sum_{i \neq j} r_{ij}^2}{\sum_{i \neq j} r_{ij}^2 + \sum_{i \neq j} u_{ij}^2} \quad (1)$$

where r_{ij} is simple correlation and u_{ij} is partial correlation.

$$Barlett\ test = \frac{(N-k)\, ln(S_p^2) - \sum_i^k (n_i - 1) ln(S_i^2)}{1 + \frac{1}{3(k-1)} \left(\sum_{i=1}^k \frac{1}{(n_i - 1)} - \frac{1}{N-k} \right)} \quad (2)$$

For standardization of data, actual data was converted into z-score for each indicator which was then multiplied by their respective weights to obtain the value of each indicator, expressed as a value between 0 and 1. Then, all the values are aggregated to get the composite index. Following formula was applied for the standardisation of data:

$$Normalized\ Indicator = \frac{\text{Actual Value} - \text{Minimum Value}}{\text{Maximum Value} - \text{Minimum Value}} \quad (3)$$

$$Normalized\ Indicator = \frac{\text{Actual Value} - \text{Maximum Value}}{\text{Minimum Value} - \text{Maximum Value}} \quad (4)$$

For the variables which were hypothesized to contribute positively to inclusive growth were normalised using equation 3 whereas those indicators which were on negative scale were normalised using equation 4.

3. Results and Findings:

This section reports the main findings of the study and the resultant ranking of each districts of Punjab as per the Inclusive Growth Index (IGI). The figure below shows the correlation between all the variables included in the index. After conducting the statistical test, two indicators, i.e. poverty denoted by POV and proportion of female population that has ever attended school denoted by SCH were dropped because they were highly correlated.

Figure 1: Correlation between variables

	INC	EMP	POV	RW	ELEC	WAT	TOI	ROAD	WOM	SCH	BANK	LIT	IMM	SAT	IMR	DEV	CRI	FOR	FLO
INC	1.00																		
EMP	0.26	1.00																	
POV	-0.75	-0.23	1.00																
RW	0.58	0.53	-0.73	1.00															
ELEC	0.53	0.53	-0.67	0.91	1.00														
WAT	0.05	0.55	-0.18	0.47	0.38	1.00													
TOI	0.71	0.24	-0.73	0.56	0.55	0.14	1.00												
ROAD	-0.08	0.02	-0.02	0.14	0.05	0.04	-0.11	1.00											
WOM	-0.13	-0.12	0.36	-0.27	-0.25	-0.01	-0.36	-0.05	1.00										
SCH	0.71	0.28	-0.95	0.67	0.62	0.19	0.80	0.02	-0.36	1.00									
BANK	0.37	0.23	-0.59	0.37	0.39	0.10	0.57	-0.21	-0.58	0.59	1.00								
LIT	0.72	0.12	-0.93	0.57	0.52	0.06	0.76	-0.01	-0.31	0.96	0.56	1.00							
IMM	0.37	-0.35	-0.44	-0.04	-0.11	-0.25	0.28	-0.11	-0.04	0.41	0.38	0.54	1.00						
SAT	0.35	0.29	-0.16	0.19	0.43	-0.10	0.31	-0.23	0.02	0.19	0.13	0.13	-0.15	1.00					
IMR	-0.45	0.27	0.41	0.03	0.06	0.19	-0.39	-0.10	-0.06	-0.45	-0.04	-0.48	-0.36	-0.01	1.00				
DEV	0.28	0.24	-0.21	0.09	0.12	0.03	0.25	-0.12	0.14	0.25	0.16	0.27	-0.02	0.12	-0.33	1.00			
CRI	0.22	0.53	-0.09	0.05	0.09	0.15	0.17	-0.21	0.08	0.16	0.26	0.12	-0.14	0.25	-0.01	0.80	1.00		
FOR	0.27	-0.57	-0.29	-0.03	-0.10	-0.27	0.15	0.00	0.08	0.21	-0.15	0.36	0.45	-0.21	-0.49	-0.14	-0.48	1.00	
FLO	-0.32	-0.01	0.15	0.08	0.02	0.10	-0.29	0.35	-0.04	-0.16	-0.17	-0.12	-0.03	-0.39	0.25	0.14	0.03	-0.15	1.00

Then Principal Component Analysis (PCA) was conducted to determine weights of indicators, followed by KMO and Bartlett's Test. The results of these tests satisfy the pre-requisites which are considered acceptable within statistical literature. KMO measures a value greater than 0.5 for composite index, ensuring sampling adequacy for PCA. Similarly, Bartlett's Test of Sphericity is significant at 0.00 level of significance showing that PCA can be applied to this dataset.

Table 2: Results of KMO and Barlett's test

Test		Composite Inclusive Growth Index
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.606
Bartlett's Test of Sphericity	Approx. Chi-Square	402.958
	Sig.	0.000

Source: Authors' calculation using PCA

As per OECD handbook for composite index (OECD, 2008), following conditions were used to extract first five components for assigning weights:

1. Drop all factors with eigenvalues below 1.0 (Kaiser criterion)
2. Retain all factors that together explain 75%–80% of the variance

Figure 2: Selection of Eigen Values

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	4.82384	1.63848	0.2838	0.2838
Comp2	3.18537	1.13237	0.1874	0.4711
Comp3	2.05299	0.452056	0.1208	0.5919
Comp4	1.60094	0.177119	0.0942	0.6861
Comp5	1.42382	0.487944	0.0838	0.7698
Comp6	0.935874	0.171853	0.0551	0.8249
Comp7	0.764021	0.189582	0.0449	0.8698
Comp8	0.574439	0.20073	0.0338	0.9036
Comp9	0.373709	0.075454	0.022	0.9256
Comp10	0.298255	0.051918	0.0175	0.9431
Comp11	0.246337	0.022429	0.0145	0.9576
Comp12	0.223908	0.033228	0.0132	0.9708
Comp13	0.19068	0.063812	0.0112	0.982
Comp14	0.126867	0.032217	0.0075	0.9895
Comp15	0.094651	0.046498	0.0056	0.995
Comp16	0.048153	0.012002	0.0028	0.9979
Comp17	0.036151	.	0.0021	1

Table 3 below list down the finalized indicators and their respective weightages calculated from the factor score generated through PCA analysis, following the step-by-step approach given in OECD handbook for composite index (OECD, 2008)

Table 3 Weightage as per Principal Component Analysis (PCA)

Dimensions	Indicators	Indicators Weights	Dimension Weights
Economic Dimension	Median HH Income (Per Capita)	2.1%	9.5%
	Employment rate	7.5%	
Amenities Dimension	Percentage of households with source of lighting: Electricity	12.5%	41.5%
	Percentage of households with improved source of drinking water	6.5%	
	Percentage of households with toilet facility	4.1%	
	Percentage of households with Pucca (roof and wall using improved materials)	13.6%	
	Metalled Roads Length (Actual) (kilometers)	4.9%	
Gender equity & financial inclusion Dimension	Proportion of women in labour working force	3.5%	7.4%
	Percentage of households where at least one member owns or has an account in a bank, post office or national saving center	3.9%	
Human Development Dimension	Literacy Rate	3.1%	14.2%
	Immunization	3.4%	
	Percentage distribution of household satisfaction with health facilities (BHUs)	3.2%	
	Infant Mortality Rate (IMR)	4.5%	
Governance Dimension	Per capita allocation of development expenditure	9.1%	9.1%
Sustainability Dimension	Crime rate	8.8%	18.2%
	Proportion of forest area	5.3%	
	Water quality (fluoride mg/l)	4.1%	

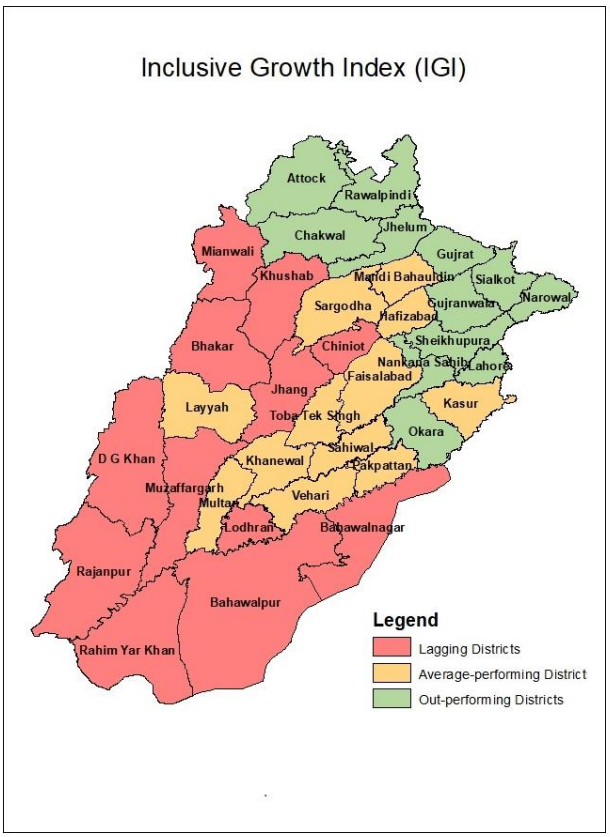
After assigning weights, a composite index and resultant ranking of each districts of Punjab as per the Index, is presented in Table 4.

Table 4: Inclusive Growth Index and District Ranking

Districts	Composite Index Score	Rank	Quartile
Lahore	1.00	1	Top quartile including outperforming districts
Gujrat	0.99	2	
Rawalpindi	0.98	3	
Chakwal	0.96	4	
Attock	0.92	5	
Sialkot	0.91	6	
Jhelum	0.88	7	
Sheikhupura	0.86	8	
Narowal	0.85	9	
Gujranwala	0.85	10	
Okara	0.82	11	
Nankana Sahib	0.81	12	
Mandi Bahauddin	0.80	13	Middle quartile including average performing districts
Kasur	0.80	14	
Sahiwal	0.80	15	
TT Singh	0.79	16	
Pakpattan	0.78	17	
Faisalabad	0.77	18	
Vehari	0.75	19	
Sargodha	0.72	20	
Hafizabad	0.70	21	
Multan	0.69	22	
Layyah	0.67	23	
Khanewal	0.65	24	
Lodhran	0.64	25	Bottom quartile including lagging districts
Bahawalpur	0.64	26	
Khushab	0.61	27	
Jhang	0.60	28	
Chiniot	0.58	29	
Bahawalnagar	0.57	30	
RY Khan	0.57	31	
Bhakkar	0.46	32	
Muzaffargarh	0.43	33	
Mianwali	0.42	34	
DG Khan	0.26	35	
Rajanpur	0.00	36	

The map below shows the dispersion of Inclusive growth in Punjab. It can be observed that central and northern districts of Punjab such as Lahore, Gujrat and Rawalpindi are scoring high on Inclusive Growth Index, while districts falling in South Punjab such as Rajanpur, Dera Ghazi Khan and Muzaffargarh are lagging behind.

Figure 3: Spatial Mapping of IGI



For deeper analysis of districts' performances, table 5 was constructed to demonstrate the disaggregation of IGI index into seven dimensions. It can be observed that high ranking of districts does not necessarily indicates good performances in all the dimensions. For instance, Lahore is a top ranked district for inclusive growth, however it is performing poorly in sustainability dimension, and thus targeted interventions should be introduced for improving the overall score of Lahore.

Table 5: District performance in each dimension of IGI

Districts Ranking	Districts	Economic Dimension	Amenities Dimension	Gender Equity & Financial Inclusion Dimension	Human Development Dimension	Governance Dimension	Sustainability Dimension
1	Lahore	0.07	0.20	0.03	0.07	0.05	0.02
2	Gujrat	0.05	0.20	0.02	0.06	0.00	0.08
3	Rawalpindi	0.05	0.17	0.02	0.08	0.01	0.09
4	Chakwal	0.03	0.19	0.02	0.07	0.00	0.09
5	Attock	0.04	0.18	0.01	0.07	0.00	0.10
6	Sialkot	0.05	0.19	0.03	0.07	0.00	0.06
7	Jhelum	0.03	0.19	0.01	0.06	0.00	0.10
8	Sheikhupura	0.06	0.19	0.02	0.05	0.00	0.06
9	Narowal	0.02	0.20	0.03	0.07	0.00	0.07
10	Gujranwala	0.05	0.20	0.01	0.06	0.01	0.06
11	Okara	0.05	0.19	0.01	0.05	0.00	0.06
12	Nankana Sahib	0.05	0.19	0.02	0.05	0.00	0.05
13	Mandi Bahauddin	0.05	0.19	0.02	0.04	0.01	0.06
14	Kasur	0.05	0.19	0.02	0.04	0.00	0.06
15	Sahiwal	0.05	0.19	0.01	0.05	0.01	0.06
16	TT Singh	0.04	0.18	0.02	0.06	0.00	0.07
17	Pakpattan	0.05	0.18	0.02	0.04	0.00	0.06
18	Faisalabad	0.05	0.19	0.01	0.05	0.00	0.05
19	Vehari	0.05	0.17	0.02	0.04	0.00	0.05
20	Sargodha	0.04	0.18	0.01	0.04	0.01	0.04
21	Hafizabad	0.05	0.17	0.02	0.04	0.00	0.06
22	Multan	0.04	0.18	0.01	0.04	0.01	0.06
23	Layyah	0.04	0.14	0.01	0.05	0.00	0.08
24	Khanewal	0.02	0.17	0.02	0.04	0.00	0.06
25	Lodhran	0.04	0.18	0.02	0.03	0.01	0.05
26	Bahawalpur	0.02	0.17	0.01	0.03	0.01	0.07
27	Khushab	0.02	0.17	0.01	0.04	0.00	0.07
28	Jhang	0.04	0.17	0.01	0.03	0.00	0.06
29	Chiniot	0.04	0.16	0.01	0.03	0.00	0.06
30	Bahawalnagar	0.04	0.15	0.01	0.03	0.00	0.06
31	RY Khan	0.03	0.15	0.01	0.03	0.00	0.07
32	Bhakkar	0.02	0.15	0.01	0.03	0.00	0.05
33	Muzaffargarh	0.02	0.14	0.01	0.02	0.00	0.07
34	Mianwali	0.02	0.12	0.02	0.05	0.00	0.06
35	DG Khan	0.00	0.06	0.01	0.05	0.01	0.07
36	Rajanpur	0.00	0.03	0.02	0.04	0.00	0.06

The findings of the composite index for inclusive growth have been validated with the findings of other major studies conducted by the Government of Pakistan and the United Nations. The best performing and the worst performing districts of Punjab districts in the Inclusive Growth Index (IGI) are also listed as best and worst performing districts in other performance indices, which are Human Development Index (United Nations, 2017) and Multidimensional Poverty Index (Government of Pakistan, 2015), thus validating the robustness of the composite index. The table 4 below shows the top five best and worst performing districts.

Table 6: Top five best & worst performing districts as per IGI, HDI & MPI

Dimensions	Top 5 best performing districts	Top 5 worst performing districts
Inclusive Growth Index (IGI)	Lahore, Gujrat, Rawalpindi, Chakwal, Attock	Bhakkar, Muzaffargarh, Mianwali, DG Khan, Rajanpur
Human Development Index 2017	Lahore, Gujrat, Rawalpindi, Sialkot, Jhelum	Bhakkar, Muzaffargarh, DG Khan, Rajanpur, Rahim Yar Khan
Multidimensional Poverty Index 2015	Lahore, Rawalpindi, Chakwal, Attock, Jhelum	Muzaffargarh, DG Khan, Rajanpur, Rahim Yar Khan, Bahawalpur

Comparison with these well-known composite indexes validates the robustness of the Inclusive Growth Index (IGI. A detailed heat matrix for both national indexes is provided in the Appendix A.

4. Conclusion:

The study has developed a composite Inclusive Growth Index for 36 districts of Punjab, which demonstrates that inclusive growth is lagging in districts of Bhakkar, Muzaffargarh, Mianwali, DG Khan and Rajanpur. These are also listed among the poor performing states in the human development index (HDI) and multidimensional poverty index (MPI), hence more targeted investments are required in strengthening them. Moreover, by disaggregating composite score into its seven thematic dimension, we can learn about the differential performances of districts in different sector. For example Rawalpindi has greater success in human development dimension, hence the pattern of its education and health sectors should be investigated and applied to other districts. Differing experience of different districts can facilitate policymakers for spatial policy learning.

For future research, the study can be scaled up to cover all districts of Pakistan, for developing a common framework and promoting mutual learning through contextualized benchmarking. Given the multidimensional nature of this phenomenon, other thematic areas contributing to inclusive growth should also be explored such as impact of fiscal redistribution, inflation, technological advancement, informal employment on inclusive growth. The indicator

framework may require adjustments in future as new research and indicators in the field of inclusiveness become available.

References

Aghion, P., Besley, T., Browne, J., Caselli, F., Lambert, R., Lomax, R., . . . Reenen, J. v. (2013). *Investing for Prosperity: Skills, Infrastructure and Innovation.* LSE Growth Commission, Institute for Government.

Ali, I., & Son, H. H. (2007). *Measuring Inclusive Growth* . Asian Development Bank.

BOS Punjab. (2017-18). *Multiple Indicator Clustor Survey (MICS).* Bureau of Statistics (BOS) Government of Punjab.

Bureau of Statistics (BOS). (2017). *Population Census.* Bureau of Statistics (BOS), Government of Pakistan.

Bureau of Statistics. (2019-20). *Pakistan Social and Living Standards Measurement (PSLM).* Government of Punjab.

Dorosh, A., & Malik, S. (2006). *Transitions Out of Poverty: Drivers of Real Income Growth for the Poor in Rural Pakistan.* International Association of Agricultural Economists Conference.

Forum, W. E. (2017). *The Inclusive Growth and Development Report* .

Government of Pakistan. (2015). *Pakistan Multidimensional Poverty Index.* The Government of Pakistan.

Kuznets, S. (1995). *Economic growth and income inequality.* American Economic Review.

Lee, N. (2018). *Inclusive Growth in Cities: a sympathetic critique.* LSE International Inequalities Institute (III) .

Lee, N., & Sissons, P. (2016). *Inclusive growth? The relationship between economic growth and poverty in British cities.* Environment and Planning A: Economy and Space.

Loungani, P. (2017). *The Power of Two: Inclusive Growth and the IMF.* Leibniz Information Centre for Economics.

McKinley, T. (2010). *Inclusive Growth Criteria and Indicators: An Inclusive Growth Index for Diagnosis of Country Progress.* ADB Sustainable Development Working Paper Series.

OECD. (2008). *Handbook on Constructing Composite Indciators: Methodology and User Guide.* European Commision, Organization for Economic Co-operation.

OECD. (2014). *All On Board: Making Inclusive Growth Happen.* Paris.

Planning & Development . (2015). *Punjab Growth Strategy 2018: Accelerating economic growth and improving social outcomes.* Government of Punjab.

Shearer, R., John NG, A. B., & Friedhoff, A. (2016). *Metro Monitor. Tracking growth, propperity and inclusion in the 100 largest U.S. Metropolitan Areas.* The Brookings Institution. Mrtropolitan Policy Program .

The Urban Unit. (2015). *Punjab Spatial Strategy (PSS) 2047.* The Urban Unit, Planning and Development Department, Government of Punjab.

UN. (2016). *New Urban Agenda.* New York: United Nations.

UNEP. (2007). *Global Drinking Water Quality Index Development and Sensitivity Analysis Report.* United Nations Environment Programme (UNEP) Global Environment Monitoring System/Water Programme.

United Nations. (2017). *Pakistan Human Development Index.* United Nations Development Programme (UNDP).

Vellala, P. S., & Chattopadhyay, U. (2016). *The development of composite index for exclusive economic growth: An Indian perspective.* International Journal of Economic Perspectives.

World Economic Forum. (2017). *The Inclusive Growth and Development Report.* The Insight Report.

Appendix-A:

Districts Ranking	Districts	Inclusive Growth Index (IGI)	Pakistan Human Development Index 2017 (UN)	Pakistan Multidimensional Poverty Index 2015
1	Lahore	1.00	0.877	0.017
2	Gujrat	0.99	0.795	0.078
3	Rawalpindi	0.98	0.871	0.032
4	Chakwal	0.96	0.792	0.056
5	Attock	0.92	0.786	0.041
6	Sialkot	0.91	0.834	0.059
7	Jhelum	0.88	0.829	0.035
8	Sheikhupura	0.86	0.738	0.093
9	Narowal	0.8540	0.748	0.118
10	Gujranwala	0.850	0.769	0.064
11	Okara	0.82	0.705	0.185
12	Nankana Sahib	0.81	0.74	0.11
13	Mandi Bahauddin	0.80	0.716	0.147
14	Kasur	0.80	0.714	0.095
15	Sahiwal	0.80	0.691	0.14
16	TT Singh	0.79	0.748	0.107
17	Pakpattan	0.78	0.66	0.189
18	Faisalabad	0.77	0.782	0.086
19	Vehari	0.75	0.655	0.2
20	Sargodha	0.72	0.728	0.166
21	Hafizabad	0.70	0.705	0.152
22	Multan	0.69	0.718	0.173
23	Layyah	0.67	0.729	0.214
24	Khanewal	0.65	0.699	0.189
25	Lodhran	0.64	0.659	0.23
26	Bahawalpur	0.64	0.645	0.273
27	Khushab	0.61	0.706	0.2
28	Jhang	0.60	0.682	0.196
29	Chiniot	0.58	0.657	0.199
30	Bahawalnagar	0.57	0.63	0.244
31	RY Khan	0.57	0.625	0.289
32	Bhakkar	0.46	0.628	0.255
33	Muzaffargarh	0.43	0.584	0.338
34	Mianwali	0.42	0.645	0.239
35	DG Khan	0.26	0.535	0.351
36	Rajanpur	0.00	0.506	0.357