

The Unchanging Profile of Development: A Historical Study of the Punjab 1961–2008

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In recent years, the importance of historic events in the socioeconomic development of countries has emerged as an important area of research. There is a growing interest in determining the impact of historic events and conditions such as colonial rules, institutions, and factor endowments on the economic and social circumstances of countries today. Furthermore, the levels of development in the early decades of newly independent territories can have long term effects on the progress of those regions [Nunn (2007, 2009); Olsson and Hibbs (2005); Acemoglu, Johnson, and Robinson (2001); Engerman and Sokoloff (2000); La Porta, *et al.* (1998)].

For Pakistan, studies on development mainly focus on the prevailing social and economic conditions of the state with no focus on past performances and initial conditions. Such analyses can only provide an overview of the present situation, but they cannot provide sufficient insights about changes in the development patterns over time. A longitudinal analysis can assist in understanding several aspects of development such as whether the social welfare status of a region has improved, worsened or remained stagnant over time, how have the regions within Pakistan performed relative to each other and what are the causes for their differential performances, how important are initial conditions and can these initial human and social capital endowments be the driving forces for development? Moreover, such an analysis can also assist in verifying if the urban centers have had positive spillovers on the peripheral regions.

This paper aims to examine the spatial patterns of development in Punjab over the past five decades. The intention is to study the importance of initial conditions in the development process, and explore the contributing factors which may provide the necessary push to break away from the low development trap. Furthermore, in the course of the paper, the questions raised in the last paragraph will be addressed as part of the analysis on the districts of Punjab. A development index will be created which will serve as a proxy for the level of development and assist in gauging development levels over space and time. The first section of the paper deals with the creation of an index and the selected methodology, in the second section, the index is applied to attain development

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rankings of the districts followed by an in-depth analysis of the regions. The last section will highlight the main conclusions of the study and very briefly suggest the possible future trajectory of provincial policies to overcome underdevelopment at the district level.

For a very long time, development was regarded as a unidimensional concept which could be measured by personal income or per capita product [Muro, *et al.* (2009)]. It was assumed that economic growth would automatically trickle down to the masses and if the benefits could not be passed on to the poor, then the government would intervene and play its redistributive role [Hicks and Streeten (1979)]. However, over time, several countries like Pakistan were forced to accept that growth did not translate into prosperity for the masses, in fact, it came at the cost of rising income inequality and deteriorating social indicators. William Easterly (2001) considered Pakistan's social backwardness as startling—a paradox of decent economic growth rates and abysmal human indicators.

A new direction in economics emphasises on the need to achieve development as a goal in itself and not as a byproduct of the growth process. If meeting basic human needs and expanding people's choices and capabilities is the goal, then the appropriate measure of human welfare should be based on the quality of life of people and not their income levels. The human development index (HDI), developed by the UNDP, takes into account wellbeing, knowledge and standard of living. Even though the HDI is the most widely applied index for measuring welfare, it has been criticised for its narrow selection of variables, application of equal weights to all components and simplistic methodology [Stanton (2007)]. In response to these criticisms, researchers have developed more dynamic multidimensional instruments of measurement. The purpose is to effectively capture the true status of development across regions and so more variables from different sectors are included in the measurement process. The development index created in this paper is based on the more recent literature on human development on Pakistan. The state of development at the earliest point of analysis, that is 1961, will be considered to be indicative of the initial conditions prevailing in Punjab. The political economy of Pakistan will be discussed from time to time to serve as a backdrop for the ongoing discussion of human development and social wellbeing of the people.

1.1. Data Sources and Choice of Indicators

To construct a development index over time, the availability of a consistent time series data source becomes a crucial requirement. Moreover, to capture the conditions prevailing at a time back in history becomes even trickier. In the early years of Pakistan's independence, very few datasets and reports were compiled regularly. The Pakistan Census Reports and the Punjab Development Statistics are some of the earliest reports produced which are representative at the district and tehsil levels. The first nationwide population census was conducted in 1951 and from then onwards it was carried out every decade. This paper will use the district census reports of Punjab for the years of 1961, 1981 and 1998.¹ The 1998 census is the last national census that has been conducted by the Population Census Organisation. To extend the analysis to the next decade, this paper

¹The 1971 district census reports comprise of a very limited selection of variables (mostly population statistics), and therefore cannot be used for the construction of the development index.

will use the Multiple Indicator Cluster Survey (MICS 2007-08) for Punjab conducted by the Punjab Bureau of Statistics. The first MICS survey was conducted nationwide in the year 2003-04 in collaboration with UNICEF. MICS (2007-08) is a cross-sectional micro-level dataset which consists of 91,075 households and 592,843 listed members, moreover it has information for about 70 indicators at the Tehsil level.

To fully capture the level of development across Punjab variables from a wide spectrum of sectors must be selected. When deciding the selection of indicators, this paper will mostly follow the literature and the considerations it takes into account. [Jamal and Khan (2003); Jamal (2001); Ghaus, *et al.* (1996)]. There are two approaches to determine development; one is to focus on the consequences of development in a region, known as the output approach. For example, to measure the progress of the health sector's initiative against the polio disease, the number of children affected each year by polio can be used as an indicator of the effectiveness of the health policy. The other approach is to study the inputs that go into development such as the number of polio vaccinations done each year by the health department [Ghaus, *et al.* (1996); Hicks and Streeten (1979)]. A combination of both approaches is not uncommon in the literature as certain variables regardless of which approach they belong to are considered important in assessing development. This paper will mostly rely on the input approach due to the dearth of historic data on variables measuring the outcomes of development policies, however, output variables such as literacy rates will also be included in the analysis. Following the approach adopted by Ghaus, *et al.* (1996) the following sectors will be considered: education, health and housing characteristics. A total of sixteen variables have been selected for the creation of the index.

Education

About half of the variables employed in the development index stem from the area of education. Enrolment rates reflect the perception of people towards education, as well as the access to it. Gross enrolment rates at the primary, secondary and tertiary level are included to determine the prevalence of education in each time period. Gender wise gross enrolment rates are determined by taking the number of students enrolled in different levels (regardless of their age) and expressing them as a percentage of the corresponding eligible age group population for each level of education.² Literacy rates measure cumulative effectiveness of the education policy in the previous years and therefore should be included as a measure of human development. The literacy rate used is for males and females aged 10 years and above.

Health

To determine the accessibility and therefore utilisation of health facilities for this study, the selection of variables is primarily determined by their availability in the early data sources. Three variables have been implemented in the index: hospitals per 10,000 population, beds per 10,000 population and patients treated as a percentage of total population.³ Information on patients treated and total hospitals and dispensaries in a

²Age bracket for each level of education: Primary (5 to 9 years), Secondary (10–14 years), Tertiary (15–24 years).

³Patients treated is an output measure and reflects the utilisation of health facilities. It has been widely used in the literature, which is why it is being included in this paper.

district for the years of 1981 and 1998 has been taken from Punjab Development Statistics (PDS) 1981 and 2000, as it was not available in the population censuses. However, for the year 1961, information on hospital beds could not be obtained, therefore this variable has not been included in the index for this year.

Housing

Adequate shelter is a key determinant of the quality of life. To measure the conditions at the household level, five variables have been selected. The first measure is the percentage (%) of population with inside water connections. Having access to water is not just a basic human necessity but can also serve as a proxy for the provision of public services. Unfortunately, this variable is missing in the 1961 census. Average household (HH) size and the number of rooms per housing unit reflect the level of congestion in a household. Large households often tend to be strained on resources and are therefore considered to be poorer. The number of rooms in a house estimates if there is sufficient accommodation available for the residents. Percentage of houses with brick walls⁴ (*pakka walls*) and the percentage of houses with strong roofs⁵ (*pakka roofs*) are included to capture the housing conditions and financial welfare of people living in that household.

2. METHODOLOGY

Different techniques have been adopted in the literature to study development. Some commonly used techniques are the Z-sum technique, the taxonomic distance technique and the factor analysis technique.

The Z-sum technique converts raw data into standardised scores with a zero mean distribution. The technique creates a Z-score by summing the scores of all the indicators for each district and these scores provide a source point for comparison, higher scores imply greater development of a region.⁶ A major shortcoming of this technique is that it gives equal weights to all the indicators [Wasti and Siddiqui (2008); Ghaus, *et al.* (1996)]. In the real world, all social factors do not hold the same importance to people and an index that arbitrarily adopts equal weights cannot accurately gauge the level of human development.

The Taxonomic distance measures (TD) the Euclidean distance between the highest standardised value of an indicator in a particular district with the standardised values of all the other districts for that indicator.⁷ A lower taxonomic distance for a region implies a higher level of development. This technique has two drawbacks, firstly, like the Z-sum technique, the taxonomic distance also assigns equal weights to all the variables. Secondly, this technique is sensitive to outliers and can therefore represent a skewed order of rankings [Wasti and Siddiqui (2008); Ghaus, *et al.* (1996)].

⁴Walls made out of bricks/blocks/stones and are cement bonded.

⁵Reinforced Concrete and Cement (R.C.C), Reinforced Brick and Cement (R.B.C), girder/beam and baked bricks.

⁶The $(Z\text{-sum})_j = \sum_{i=1}^n Z_{ij}$.

where $Z_{ij} = (X_{ij} - X_i) / S_i$, n = number of indicators, X_i = mean value of i th indicator, S_i = standard deviation of the i th indicator, X_{ij} = value of the i th indicator in the j th district.

⁷ $(TD)_j = [\sum_{i=1}^n (Z_{ij} - Z^*_i)^2]^{1/2}$ where Z^*_i is the highest standardised value of the i th indicator in all the regions. Z_{ij} is described in footnote 6.

Factor Analysis (FA) is a technique that is well-established and frequently applied in studies examining multidimensional phenomena such as development, poverty, deprivation, etc. [Jamal (2009); Wasti and Siddiqui (2008); Jamal and Khan (2003); Ghaus, *et al.* (1996), Aldeman and Dalton (1971)]. This technique transforms all the correlated variables into a smaller number of uncorrelated factors called principal components. These components are a linear combination of the variables. The FA technique consolidates the data such that it is structured around the covariance structures of the variables.

$$X_i = a_{i1}F_1 + a_{i2}F_2 + a_{i3}F_3 + \dots + a_{ij}F_j \quad \dots \quad \dots \quad \dots \quad \dots \quad (1)$$

- X_i represents the indicator or attribute
- a_{ij} represents the factor loading and represents the proportion of the variation in X_i which is accounted for by the j th factor
- $\sum a_{ij}$ is equivalent to the multiple regression coefficient in regression analysis (communality)
- F_j represents the j th factor or component

[Ghaus, *et al.* (1996)]

The factors or clusters generated by the principal component analysis are represented with descending order of importance. The first component explains the greatest the amount of variation in the data and the last component explains the least variation. Usually, the first few components are sufficient for determining majority of the variation in the data.⁸ Once the factors have been determined, every district is ascribed a score on the principal component by applying the factor loading as a weight, and multiplying the score with the standardised values of the variables [Jamal (2009)].

$$(FS)_i = \sum_n e_{ij} * Z_j \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (2)$$

- $(FS)_i$ is the factor score of the k th district and the j th factor
- e_{ij} is the factor loading of j th factor and i th indicator
- Z_j is the standardised value of the i th indicator

Furthermore, weighted factor scores (WFS) are computed from the FA technique in the following manner:

$$(WFS)_i = \sum_k e_j * (FS)_{kj} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (3)$$

Where e_j is the eigenvalue of the factor j and captures the proportion of variation (weight) in the data which is being explained by the factor j . A higher WFS represents greater development, therefore these scores can be used as an index for ranking the districts according to their development levels [Ghaus, *et al.* (1996)].

The development index (DI) created in this paper will be based on the FA technique due to its sophistication and application in the literature. This does not imply that FA is the most effective technique for such an analysis, however, it serves the purpose for this study. To establish the robustness of the results obtained from FA, the development rankings of the districts from FA are compared to the rankings obtained from the Z-sum and TD techniques. The following correlations are obtained:

⁸Varimax rotation has been applied in the factor analysis.

Table A

Correlation Matrix for DI Rankings

	Factor Analysis Scores			
	1961	1981	1998	2008
Z-Sum	0.97	0.99	0.99	0.99
TD	0.98	0.95	1.00	0.98

The high correlations between the results demonstrate the robustness of the FA technique. The factor loadings showing the load of each indicator for different factors are given in Appendix Table 1. The eigenvalues determine the amount of variation in the total sample explained by each factor. The communality measures the percentage of variance in a variable explained by all the factors collectively. Variables loaded in the first factor are the most important as they capture the greatest source of disparity in development across districts.

2.1. Development Profile of Punjab

To conduct an extensive analysis of Punjab, the province will be divided into four regions, namely North, Center, West and South, according to the boundaries adopted by Cheema, *et al.* (2008). In the study, the authors give historic, socioeconomic, cultural and linguistic grounds for the distribution of districts into separate regions. In the colonial era, the northern and central regions of Punjab had better human capital endowments and therefore these regions were able to benefit from the colonisation process. Due to high literacy levels in the north, this region has gained from greater access to government employments, army recruitments and remittances from migrant labour. The centre has emerged as the most industrialised region in the province and has seen the greatest rise in income levels over the past decades [Cheema, *et al.* (2008)]. The western and southern regions are characterised by higher levels of poverty and income inequality. The strong feudal set-up in the south and tribal structures in the western districts have continued to downplay the process of modernisation in these regions, which is why these districts stand out as socially and economically detached regions of Punjab. [Cheema, *et al.* (2008)]. A graphical depiction of the districts according to regions is given in Figure 1 in the Appendix.

In the 1990s, the number of districts in Punjab increased from 19 (in the sixties) to 35. To study the changing patterns of development over time, the original district boundaries must be maintained. Therefore, the new districts created after 1961 have been merged back to their previous districts. The rest of the discussion is structured such that the span of forty-eight years is divided into three periods: 1961 to 1981, 1981 to 1998 and 1998 to 2008. Each period will be discussed separately in the backdrop of the ongoing political, economic and social conditions.

2.2. The Early Decades: 1961–1981

This period is marked by the changing political regimes, the fall of Bengal and mixed economic policies. The focus of this paper is on the socioeconomic impact of this period and therefore, it will only briefly touch upon the main events that take place in the

two decades. The military rule of General Ayub Khan (1958–68) was a period of high GDP growth rates, political stability, rapid growth in private investment and the green revolution. The green revolution resulted in expanding food and grain productions and self-sufficiency of food in West Pakistan [Bhatia (1990)]. The focus of the government narrowed on the availability of food but ignored the basic needs of education and health [Zaidi (2009)]. Zulfikar Ali Bhutto reigned over most of the seventies and brought about a socialist regime in Pakistan, after East Pakistan claimed self-determination. This was an era of slow annual growth rates, rising budget deficits, increasing inflation, extensive nationalisation and growing migration of skilled workers abroad [Zaidi (2009)]. Social sectors reforms were introduced and all educational institutions were nationalised. The purpose was to increase access to and reduce the cost of education, however, little attention was directed towards the quality of education [Zaidi (2009)]. Although, limited funds were allocated to education, enrolments at the tertiary level did improve [Kardar (1987)]. Expansion of health facilities was undertaken in the socialist era and the number of basic health units increased countrywide. However, poor funding subverted the health projects, and with the population growth rate at 3 percent per annum the state struggled to effectively provide the masses with basic health and education facilities [Noman (1988)].

From Appendix Figure 2, the graphical patterns of district rankings for each decade can be observed. An important assumption made in this paper is that the stock of human and social capital in the year 1961 indicates the initial conditions of the regions and to an extent reflects how endowed the regions are in terms of development.⁹ In 1961, the northern and central regions dominate the top 20 and middle 40 percent of the socially developed districts in Punjab. There is a clear north-south division such that the entire southern and western (excluding Mianwali) regions of Punjab lie in the bottom 40 percent of the development scale. Alternatively, in Appendix Table 3, the percentage distribution of populations for all four regions are presented according to development quartiles, and majority of the population of the southern and western areas falls in the lowest development quartiles. Mianwali is the only district in the western Punjab that does not fall in the least developed range of districts, this may be due to the fact that Mianwali is more comparable to Sargodha (in the centre) than Muzaffargarh (in the west) in terms of primary and secondary enrolment levels, and housing statistics. However, poor tertiary enrolments are almost a stark contrast to the rest of the education statistics of Mianwali. Sahiwal is a district in the central region which compares more closely with Multan and Bahawalpur from the South, than Lahore and Faisalabad in the centre. The inadequacy of shelter in Sahiwal can be drawn from the fact that Sahiwal has less than 10 percent houses with pakka walls in 1961; Multan, Bahawalpur and Bahawalnagar share similar statistics when it comes to shelter. The primary and secondary enrolment levels are very low for Sahiwal in the 1960s, and the enrolment rates actually decline further in the 1980s. The DI rankings of districts change over the two decades, however, there are no significant changes in the DI groupings of top, middle and bottom districts in 1961 and 1981. The enrolment rates for secondary and tertiary education show an upward trend

⁹Rodrik (1994) discusses the importance of initial conditions in the context of Korea and Taiwan, and a socioeconomic development index derived from factor analysis and created by Alderman and Morris (1967) is referred by Rodrik to determine the initial conditions prevailing in the two countries. This paper makes a similar assumption and employs the 1961 development index for estimating the initial conditions of Punjab.

in the 1980s. However, on the downside average household size for Punjab increased from 5.4 to 6.2 persons per household.

Large cities and urban centres are often expected to have positive spillovers on the nearby regions, however, this cannot be said for Lahore. Lahore holds a privileged position in Punjab due to its sound social and economic statistics, Sheikhpura and Sahiwal despite being in close proximity to Lahore, do not show much improvement in their social indicators over the two decades. Figures 3 and 4 represent the spatial patterns of the districts according to the mean levels of development and standard deviations from the mean for each decade. The development levels of the districts in the eighties are less spread out compared to the sixties and majority of the districts in 1981 lie within one standard deviation below the index mean. This could also imply that during this period most of the districts in Punjab could not benefit from the growth process and development took place in pockets.

2.3. Islamisation and the Return of Democracy: 1981–1998

The democratic regime of Bhutto ended abruptly when General Zia-ul-Haq imposed a martial law in 1977. This was the dawn of the longest military regime in the history of Pakistan. Zia sought legitimacy under the banner of Islam and strategically took advantage of the Soviet-Afghan war by channelling aid and military funds into Pakistan. During Zia's regime, the country saw rising economic growth rates, industrial growth, high worker remittances and private investment. The nationalisation undertaken in Bhutto's era was reversed and so the private sector thrived [Bhatia (1990)]. However, human capital development was neglected, growth of enrolment at the primary level failed to accommodate the population growth levels. The governing elite and feudal setup disregarded education as a constructive social investment [Kardar (1987)]. Similar to the military regime in the sixties, Zia's government also overspent on defense and squeezed the funds from the social sectors. The expenditure on education fell from 2.1 percent in the mid-seventies, to 1.2 percent in 1982-83 meanwhile the population rate peaked at 3.1 percent per annum [Noman (1988)]. After the marital law, a series of short lived democratic regimes followed. The nineties are marred by slow GDP growth rates, rising inflation, large fiscal deficits and external debts, structural adjustment programmes, dwindling remittances and rising poverty levels [Zaidi (2009); Gera (2007)]. The political instability resulted in inconsistent government policies and therefore discouraged investment and fuelled capital flight. In the midst of the political and economic turmoil, social sector development also suffered. The Social Action Program (SAP) adopted in 1993 by the Pakistan's People's Party (PPP) aimed to improve living standards by investing in education, basic health, family planning, rural access to water supply and sanitation among other areas of development [Gera (2007)]. Despite the good intentions, the program could not realise sufficient improvements in the social indicators, however, it did accomplish some milestones. The high growth in primary enrolments for females (8.6 percent per annum) and males (7.7 percent per annum) in the 1990s is attributed to the Social Action Program [Gera (2007)]. Under the Peoples Party, spending on education peaked at 2.7 percent of the GDP and 0.8 percent of the GDP on health in 1996-97 [*Economic Survey* (2000-2001)]. The Muslim League alternated short governance regimes with the Peoples Party in the 1990s, although neither of the

governments could effectively follow their economic strategies, the allocation of expenditures on the social sectors of health and education were always greater in the Peoples Party regimes [*Economic Survey* (Various Issues)].

In the period of 1981-98, the top districts of Punjab (Rawalpindi, Jhelum, Lahore, Gujrat) consistently perform better and maintain their positions as the most developed districts. Faisalabad picked up in the period of 1961 to 1981 and rose from below mean levels of development (Figure 2) in 1961 to the fifth ranked district of Punjab in 1981. Faisalabad holds its position in the district rankings throughout 1981 to 1998 and undergoes growth in the enrolment of females across all education levels and expansion in access to water at the household level. Over the period of 1981 to 1998, Bahawalpur shows progress in its development indicators and enters the category of the middle ranked¹⁰ districts of Punjab. Bahawalpur's progress can be attributed to the improvement of most of its indicators in all three sectors. Mianwali on the other hand slips down in its ranking as it undergoes an 11 percent increase in average household size and deteriorating housing statistics, this indicates inadequate provision of shelter and therefore deteriorating living conditions.

Furthermore, during this period the population distributions for the regions (Appendix Table 3) spread over a wider range of development quartiles, smudging the north-south divide. The population in the centre and southern districts spread over the development quartiles in a more even manner, similarly, the population in the northern districts is no longer restricted to the top development quartile. As Multan's population expands, its statistics in the area of shelter deteriorate at a much faster rate than in other areas of development. The availability of water declines by a staggering figure of 45 percent and the prevalence pakka roofs also declines. Although enrolment levels rise in Multan, but the growth in literacy levels for Multan is much slower than the average growth in literacy of the province. Rahim Yar Khan is one of the least developed districts of Punjab and ranks amongst the bottom three districts in all decades except 1998. Even though the development levels in Rahim Yar Khan remain below mean, but in 1998 the district shows overall improvement in development statistics and moves up in the ranking order.

2.4. The Unplanned Development: 1998-2008

In 1998, Pakistan tested its nuclear devices and as a consequence faced economic sanctions by the developed countries. Pakistan's third military coup led by General Pervaiz Musharraf followed in 1999, and the economy continued to stumble on a slow growth path. However, everything changed after September 2001, Pakistan became an ally of the United States in the war against terror and as a result economic sanctions were removed, loans were rescheduled and aid started to flow in once again [Zaidi (2009)]. The economy turned around as growth rates started to rise, the fiscal deficit reached its lowest in two decades, exports crossed the \$10 billion mark and remittances started flowing in [Zaidi (2009)]. However, there was no clear strategy to sustain this growth, and eventually the growth rates started to taper off. The policies focused on stabilisation as opposed to dynamism and contractionary fiscal policies were mostly pursued. Private fixed investments remained stagnant and the manufacturing sector declined as the domestic goods failed to compete with cheaper imports from China [Zaidi (1999)]. The

¹⁰Middle 40 percent districts in Appendix Table 2.

focus on human development also remained unsatisfactory as the expenditure on education as a percentage of GDP approximated around 2 percent, and that on health was less than 1 percent for the entire period. The greatest success of the policy makers was in increasing the primary enrolment levels of students and decreasing the gender gap at this level. The private sector participation in the education and health sectors also increased and in the year 2007-08 the share of private institutions stood at about 33 percent of the total educational institutions [*Economic Survey* (2007)]. The number of educational institutions and healthcare centres increased in the period of 1998-2008, however, little importance has been given to improving the quality of service delivery in these sectors [Zaidi (2009)].

In the last decade of 1998-2008 a new district from the centre region of Punjab has emerged from the middle ranks and made it into the top districts. Sialkot joins the ranks of Rawalpindi, Jhelum and Gujrat as one of the most developed districts of Punjab. Sialkot's greatest achievement is in improving its education and housing statistics, the literacy rates for males and females have increased by 17 and 35 percent over the decade, similarly, living conditions have improved as the housing structures have shifted away from mud walls and roofs to concrete constructions. Development in Sialkot has occurred on the back of small scale manufacturing and the district is emerging as a thriving local market for exports. However, the neighbouring districts of Sialkot have not benefited much from any spillovers, Sheikhpura and Gujranwala fall in the middle 40 percent of the district rankings and remain on a slow path to development. Lahore district, the capital of Punjab has declined in the level of development relative to other districts and is no longer in the top twenty percent. Part of the reason why Lahore's ranking has declined is the massive influx of population from other districts and slow growth of resources per person. Although Lahore is better off than most districts in terms of availability of large public hospitals and treatments of patients, it has seen slow annual growth rates in literacy and enrolment levels at the secondary and tertiary level as compared to the average growth rates for the province.

Unfortunately, even for the final decade, as you move from the northern to the southern districts, the level of development continues to decline. In 1998, the district rankings shuffle such that the entire west, most of south and some centre districts fall in the category of least developed districts. Bahawalpur is the only district in the south that qualifies for the middle tier of development. However, in 2008, Bahawalpur falls back in the bottom group of districts, this is mainly due to deteriorating statistics in health indicators, slow enrolment growth rates at the secondary education level and large average household sizes. Mianwali moves back to the middle 40 percent (after slipping down in development ranking in 1998) of the developed districts as adequate shelter and water becomes more readily available to the people, similarly the literacy levels show improvements, especially for females.

In 2008, a north-south divide re-emerges and the 1961 patterns are seen once again. With the changing population dynamics, the population distributions of regions according to development quartiles for 2008 differ slightly from those of 1961 (see Appendix Table 3). The northern and western districts' population distributions are almost identical to their 1961 counterparts. The population in the centre districts remains evenly distributed across the quartiles and return to their initial distribution of 1961, majority of the centre's population now lies in the second quartile as opposed to falling in the first quartile in 1998.

For the southern districts, majority of the population has been upgraded from the bottom quartile (1961) to the third quartile in 2008. Nonetheless the western and southern districts consistently turn up as the least developed districts in Punjab.

3. CONCLUSIONS AND POLICY SUGGESTIONS

Punjab is considered to be Pakistan's most developed and prosperous province, yet little attention is paid to the disparities entrenched within the vast expanse of Punjab. In this study, an inter-temporal analysis of the spatial patterns of development has been conducted to determine how the different districts have performed over the past fifty years. From the results it can be established that there is a clear north-south divide within Punjab, such that the northern and north-central districts consistently display higher development levels in comparison with the western and southern districts of Punjab. However, this does not imply that development did not take place in the lagging regions. To the contrary, all indicators¹¹ across all the districts have shown positive growth over the past five decades. The differences across districts are a result of the variant rates at which development took place.

Five indicators¹² surface as most important in determining the development rankings of the districts as they repeatedly appear in the first factors (factor loading matrices) from factor analysis. Based on the implicit interconnectedness of the education and housing variables, some stimulating assumptions can be drawn. Pakka walls generally indicate financial wellbeing, and from our results it appears that households that can afford to have pakka walls are also more likely to send their children to school. Tempting as this inference may be, this relationship may not necessarily follow the above mentioned direction and this study is limited in establishing such a causality; the purpose is to highlight the possible relationship between the two seemingly independent indicators as a topic of interest for future research.

The patterns of unequal development remain fairly consistent over the entire period and the significance of initial conditions can follow from these unchanging trends. As already mentioned, the level of development reflected in the 1961 development rankings is assumed to mirror the social and economic welfare status of the people in the early period after independence. Regions with better indicators in the early decades continue to perform better till today. Although the trends show that the initial conditions persisted for most districts, it does not necessarily imply that the initial conditions are the main driving force of development. The significance of history and initial conditions is an important area of study in economic history and studies have highlighted the correlations of historic events on the long term economic development of countries. However, a limitation of those studies, which is shared by this study, is that the causality established is mostly suggestive and the mechanisms through which historic conditions/events affect development remain unclear. There is a dearth of studies on Pakistan that evaluate the significance of initial conditions on the country's prevailing economic circumstances. This study is perhaps the first of its kind and it intends to provide a stepping stone for further research in this area.

¹¹Although health facilities have grown in absolute numbers, but when district population levels are taken into account there is a negative growth in the health indicators.

¹²Female primary enrolment rate, female secondary enrolment rate, female literacy rate, male literacy rate, and percentage of households with pakka walls.

As this paper draws attention to the unchanging patterns of development across Punjab, it could provide some basic insights for the future development policies at the provincial level. So far it appears that the state maintains development levels that imitate the initial endowments of the districts and therefore to some extent it maintains the general level of inequality across regions. The high population levels impinge enormously on the state resources and unless the investments in human capital surmount the population constraint, progress cannot be achieved. The need is to identify the weaknesses at the district-level and adopt strategic and financial policies that can thrust the districts forward and accelerate the development process. Decision making at the district level is necessary to ensure effective allocation and disbursement of resources. However, with power should come responsibility, and a system of strict accountability must also be installed at the district and provincial level.

APPENDIX

Table 1

Factor Loading Matrices from Factor Analysis: 1961, 1981, 1998 and 2008

Variable	Factor Loading Matrix-1961				Communality
	Factor 1	Factor 2	Factor 3	Factor 4	
Secondary Enrol. Rate Male	0.3439	0.1183	0.073	-0.0974	0.1471
Primary Enrol. Rate Female	0.3435	0.1228	0.0524	-0.1127	0.1485
Literacy Rate Female	0.3399	-0.1485	-0.0059	-0.0591	0.1411
Literacy Rate Male	0.337	0.0997	0.0644	-0.1464	0.1491
% of HH with 'Pakka' Walls	0.3343	0.0095	-0.1589	-0.1421	0.1573
Secondary Enrol. Rate Female	0.3177	-0.2401	-0.0185	0.1286	0.1755
Primary Enrol. Male	0.3082	0.2525	0.0769	-0.1367	0.1833
Rooms per H. Unit	0.2368	0.4124	-0.0176	-0.2487	0.2883
Patients Treated	-0.047	-0.1829	0.7008	-0.2665	0.5978
Hospitals per 10,000 population	-0.1004	0.2889	0.6367	0.1367	0.5176
% of HH with 'Pakka' Roofs	0.0528	-0.4712	0.149	-0.164	0.2739
Avg. HH size	0.096	0.3693	0.097	0.6714	0.6058
Tertiary Enrol. Rate Male	0.2607	-0.3008	0.0429	0.4184	0.3353
Tertiary Enrol. Rate Female	0.2805	-0.2856	0.1608	0.3053	0.2793
Eigenvalues	7.7444	2.4240	1.4416	0.9072	
Proportion	0.5532	0.1731	0.103	0.0648	

Variable	Factor Loading Matrix-1981				Communality
	Factor 1	Factor 2	Factor 3	Factor 4	
Secondary Enrol. Rate Female	0.3461	0.0848	-0.0278	-0.1031	0.1384
Tertiary Enrol. Rate Female	0.3444	0.0526	-0.0797	-0.1573	0.1525
Primary Enrol. Rate Female	0.3243	0.233	0.0275	-0.0072	0.1603
Literacy Rate Male	0.2916	-0.2308	0.0761	0.26	0.2117
Literacy Rate Female	0.2985	-0.2551	-0.1452	0.0763	0.1811
% of HH with 'Pakka' Walls	0.2763	-0.3394	0.025	0.0571	0.1954
Hospital Beds per 10,000 pop.	0.2407	-0.3619	-0.0806	-0.2354	0.2508
Patients Treated	0.2179	-0.3105	-0.1839	-0.3655	0.3113
Secondary Enrol. Rate Male	0.2724	0.3627	0.1243	-0.0243	0.2218
Tertiary Enrol. Rate Male	0.2851	0.3368	-0.0013	-0.1328	0.2124
Primary Enrol. Rate Male	0.249	0.3191	0.1989	-0.228	0.2554
% HH with Inside Water Connections	-0.017	0.2437	-0.5711	0.1672	0.4138
Hospitals per 10,000 Population	-0.0075	-0.2358	0.5174	-0.0201	0.3238
Avg. HH size	-0.0509	0.1137	0.4854	-0.0748	0.2567
% of HH with 'Pakka' Roofs	0.1919	0.0096	-0.0187	0.6222	0.4244
Rooms per H. Unit	0.2081	0.0047	0.1986	0.4556	0.2903
Eigenvalues	7.8453	2.8187	2.0184	1.6372	
Proportion	0.4903	0.1762	0.1261	0.1023	

Variable	Factor Loading Matrix - 1998				Communality
	Factor 1	Factor 2	Factor 3	Factor 4	
Primary Enrol. Rate Female	0.3152	0.0567	-0.1527	-0.1507	0.1486
Literacy Rate Female	0.3128	-0.0988	-0.1274	-0.1572	0.1485
Secondary Enrol. Rate Male	0.3054	-0.1093	-0.1214	0.1878	0.1552
Literacy Rate Male	0.2994	0.1461	-0.2588	-0.0377	0.1794
Primary Enrol. Rate Male	0.2916	0.213	-0.2426	0.0136	0.1894
Tertiary Enrol. Rate Female	0.2839	-0.3054	0.0895	0.0858	0.1892
Secondary Enrol. Rate Female	0.2783	-0.2864	-0.0398	-0.0231	0.1616
% of HH with 'Pakka' Roofs	0.2715	-0.1308	0.1798	0.2023	0.1641
% of HH with 'Pakka' Walls	0.2597	0.1201	0.2038	-0.3391	0.2384
Tertiary Enrol. Rate Male	0.2267	-0.4139	0.1314	0.1288	0.2566
Avg. HH. size	0.1365	0.495	-0.16	0.3387	0.4040
Rooms per H. Unit	0.2574	0.2841	-0.2626	-0.0927	0.2245
Hospitals per 10,000 Population	0.0703	0.3942	0.509	0.0992	0.4293
Hospital Beds per 10,000 pop.	0.1772	0.2208	0.4435	-0.0509	0.2794
% HH with Inside Water Connections	0.129	0.0089	0.2514	-0.6378	0.4867
Patients Treated	0.2154	-0.0167	0.3251	0.439	0.3451
Eigen Values	9.021	2.131	1.909	1.4703	
Proportion	0.5638	0.1332	0.1193	0.0919	

Variable	Factor Loading Matrix – 2008				
	Factor 1	Factor 2	Factor 3	Factor 4	Communality
Literacy Rate Male	0.3128	-0.0033	0.1136	-0.0044	0.1108
Secondary Enrol. Rate Male	0.3121	-0.0401	-0.0238	0.0714	0.1047
Literacy Rate Female	0.3063	-0.0847	-0.1125	0.193	0.1509
Secondary Enrol. Rate Female	0.3015	0.0628	0.1912	-0.122	0.1463
Primary Enrol. Rate Female	0.2976	-0.1861	0.1042	0.0234	0.1346
% of HH with 'Pakka' Walls	0.2864	-0.1954	-0.0949	0.1754	0.1599
Tertiary Enrol. Rate Female	0.2857	0.0039	-0.2905	0.0327	0.1671
% of HH with 'Pakka' Roofs	0.2798	-0.0808	-0.0602	0.2639	0.1581
Rooms per H. Unit	0.2774	-0.1142	0.0412	-0.2035	0.1331
Tertiary Enrol. Rate Male	0.2224	0.1884	-0.4632	-0.1802	0.3319
Patients Treated	0.1897	0.4037	0.1738	0.0148	0.2294
Hospital Beds per 10,000 pop.	0.1294	0.383	-0.4737	-0.0694	0.3926
Avg. HH Size	0.1746	0.1671	0.3872	-0.6176	0.5898
Primary Enrol. Rate Male	0.274	-0.2187	0.2867	0.0106	0.2052
Hospitals per 10,000 Population	0.0443	0.4166	0.3513	0.6139	0.6758
% HH with Inside Water Connections	-0.0536	-0.5481	-0.0546	0.0588	0.3097
Eigenvalues	9.7198	2.0680	1.355	0.8224	
Proportion	0.6075	0.1293	0.0847	0.0514	

Table 2

Development Index Rankings for Punjab: 1961, 1981, 1998 and 2008

1961		1981	
DI	Districts	DI	Districts
1	3.01 Rawalpindi	1	4.22 Gujrat
2	2.94 Jhelum	2	2.20 Lahore
3	2.59 Lahore	3	1.96 Rawalpindi
4	1.24 Gujrat	4	0.97 Jhelum
5	0.74 Attock	5	0.15 Faisalabad
6	0.72 Gujranwala	6	0.13 Sialkot
7	0.65 Sialkot	7	-0.24 Sargodha
8	0.09 Sargodha	8	-0.32 Attock
9	-0.10 Faisalabad	9	-0.33 Gujranwala
10	-0.41 Mianwali	10	-0.35 Mianwali
11	-0.48 Jhang	11	-0.55 Sheikhpura
12	-0.74 Sheikhpura	12	-0.63 Jhang
13	-0.94 Bahawalpur	13	-0.73 Multan
14	-1.13 Bahawalnagar	14	-0.81 Bahawalpur
15	-1.23 Sahiwal	15	-0.87 Sahiwal
16	-1.37 Multan	16	-0.96 Bahawalnagar
17	-1.64 Muzaffargarh	17	-1.06 Rahim
18	-1.93 Rahim Yar Khan	18	-1.29 Dera
19	-2.00 Dera Ghazi Khan	19	-1.49 Muzaffargarh
	0.94 Top 20%		0.48 Top 20%
	-0.69 Bottom 40%		-0.62 Bottom 40%
	1.66 Max-Min Ratio		1.35 Max-Min Ratio

1998			2008		
	DI	Districts		DI	Districts
1	4.55	Rawalpindi	1	4.1	Rawalpindi
2	2.50	Jhelum	2	3.1	Jhelum
3	2.28	Lahore	3	1.7	Gujrat
4	1.16	Gujrat	4	1.4	Sialkot
5	0.88	Faisalabad	5	1.3	Attock
6	0.35	Attock	6	1.0	Lahore
7	0.21	Gujranwala	7	1.0	Faisalabad
8	0.12	Sialkot	8	0.9	Gujranwala
9	-0.01	Bahawalpur	9	0.3	Sargodha
10	-0.09	Sargodha	10	-0.2	Mianwali
11	-0.60	Sheikhupura	11	-0.5	Sheikhupura
12	-0.63	Mianwali	12	-0.8	Sahiwal
13	-0.81	Bahawalnagar	13	-1.0	Multan
14	-1.11	Rahim Yar Khan	14	-1.4	Bahawalpur
15	-1.23	Jhang	15	-1.4	Jhang
16	-1.57	Sahiwal	16	-1.5	Bahawalnagar
17	-1.75	Multan	17	-2.3	Muzaffargarh
18	-2.006	Dera Ghazi Khan	18	-2.5	Rahim Yar Khan
19	-2.25195	Muzaffargarh	19	-3.2	Dera Ghazi Khan
	0.99	Top 20%		1.33	Top 20%
	-0.62	Bottom 40%		-0.75	Bottom 40%
	1.49	Max-Min Ratio		1.78	Max-Min Ratio

Table 3

Population Distribution of Regions According to DI Quartiles

DI Quartiles	1961			
	North	Center	West	South
Top Quartile	100	25.1	0	0
Second Quartile	0	46.5	29.7	0
Third Quartile	0	14.3	0	29.5
Bottom Quartile	0	15.3	70.3	70.5
Total	100	100	100	100

DI Quartiles	1981			
	North	Centre	West	South
Top Quartile	74.2	39.3	0	0
Second Quartile	25.8	35.4	26.9	0
Third Quartile	0	20.3	0.0	62.3
Bottom Quartile	0	5.0	73.1	37.7
Total	100	100	100	100

DI Quartiles	1998			
	North	Centre	West	South
Top Quartile	80.9	44.8	0.0	0.0
Second Quartile	19.1	27.9	0.0	12.8
Third Quartile	0	7.9	24.5	34.7
Bottom Quartile	0	19.4	75.5	52.5
Total	100	100	100	100

DI Quartiles	2008			
	North	Centre	West	South
Top Quartile	100	15.6	0	0
Second Quartile	0	54.1	29.3	0
Third Quartile	0	23.6	0.0	63.4
Bottom Quartile	0	6.7	70.7	36.6
Total	100	100	100	100

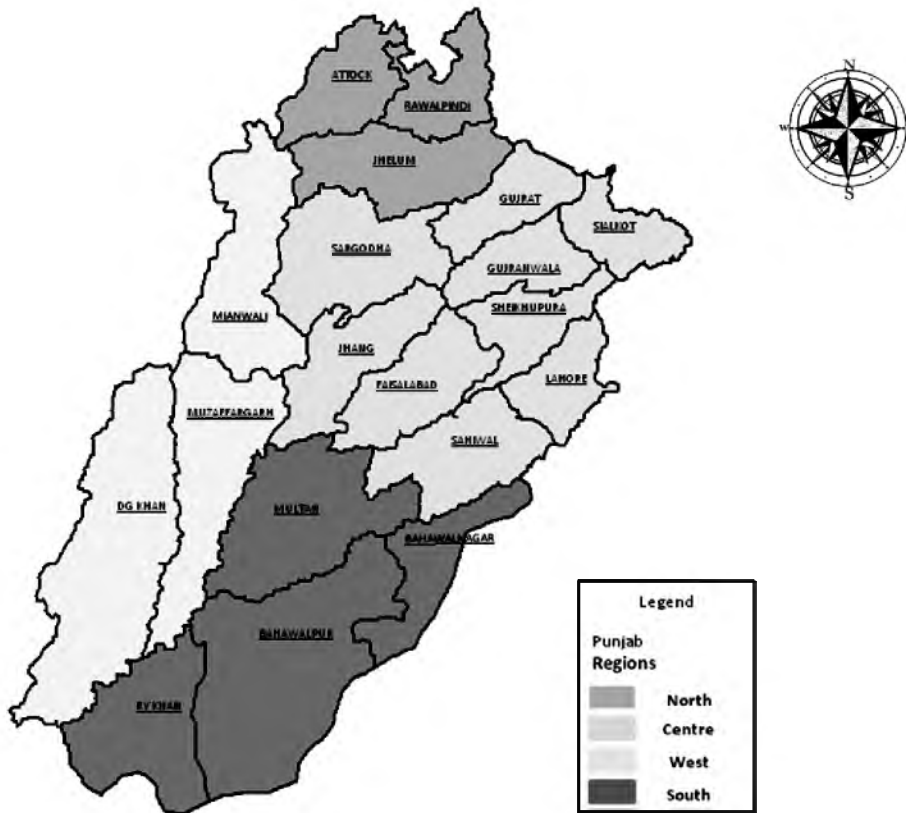


Fig. 1. Map of Punjab: Regional Division

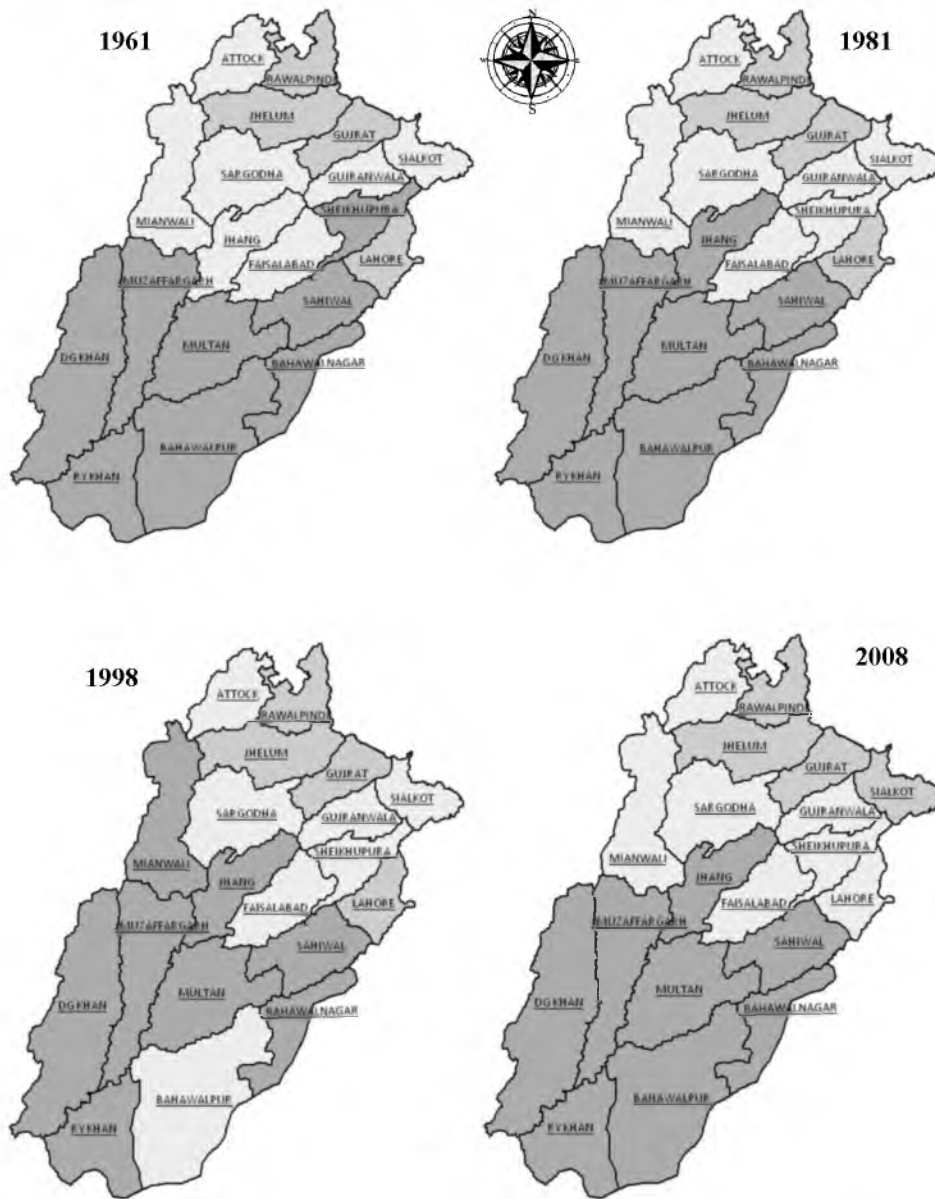
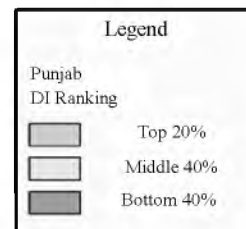


Fig. 2. Distribution of Districts—Top, Middle and Bottom Order for Punjab: 1961, 1981, 1998 and 2008



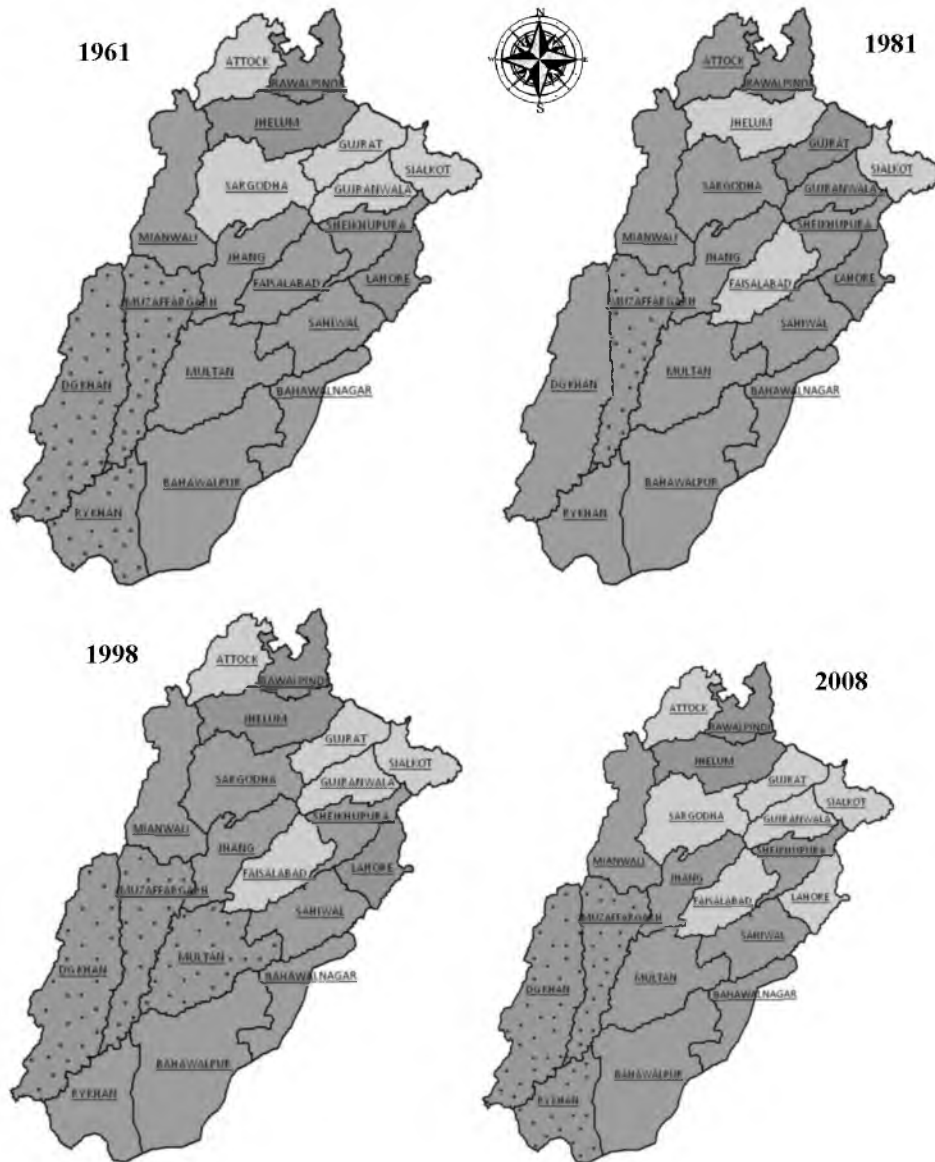
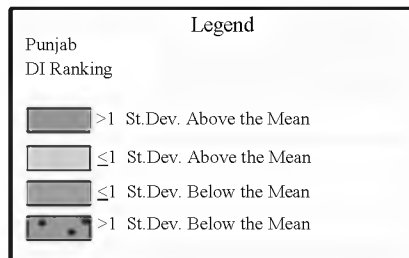


Fig. 4. Standard Deviations from the DI Mean Levels for Punjab: 1961, 1981, 1998 and 2008



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