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*Draft Research Report*

**Potential versus Actual HDIs:  
The Case of Pakistan**

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*January 2, 2021*

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# **Potential versus Actual HDIs: The Case of Pakistan**

## **Abstract**

This research is an attempt to develop HDI and IHDI for Pakistan at national and sub-national levels to estimate the percentage losses due to inequalities in the HDI dimensions. Education, Health and Standard of Living indicators are aggregated at the level of Primary Sampling Units (PSUs) to estimate the intra-district inequalities. The use of standard UNDP-HDI indicators is not feasible due to non-availability of relevant data at district or provincial levels. Thus, attempt is made to develop the best proxies for the components of HDI using district representative household datasets of Pakistan Social and Living-Standard Measurement Survey (PSLM) for the years 2010-11, 2012-13 and 2014-15.

The estimated magnitudes of HDI are quite close with the UNDP global estimates for Pakistan, despite the differences in the methodology and varying component indicators. The magnitudes of national HDIs estimated in this research are 0.52, 0.55 and 0.56 respectively for the years 2011, 2013 and 2015, while the corresponding global estimates are 0.50, 0.54 and 0.55.

However, lower magnitude of IHDI are estimated in this research as compared with the global estimates. This fact indicates that higher level of inequality exists in the component indicators considered in this study for HDI components.

The findings of this research are useful for regional planning in terms of resource allocation and prioritizing development alternatives. Information regarding unequal distribution in regions or dimension would facilitate targeted intervention for reduction of inequality.

JEL Classification: O15, D63

Keywords: HDI, Inequality Adjusted Human Development Index (IHDI) , District, Pakistan

## 1. PREFACE

The Human Development Index (HDI) of the United Nations Development Programme (UNDP) was created in 1990 to re-emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country or a region, and not economic growth alone. Thus, the HDI draws the attention of policy makers away from the usual economic statistics. Highlighting internal or regional disparities with the help of HDIs has raised the national discourse in many countries regarding the development priorities and resource allocation. It opens the debate on how countries/regions with the same level of income per person can end up with different human development outcomes.

However, the HDI is an average measure of basic human development achievements and like all averages, it masks inequality in the distribution of human development across the population. Consequently, the Inequality-adjusted Human Development Index (IHDI) which captures the distributional dimension in human development, was introduced and published in the 2010 UNDP Global Human Development Report “*The Real Wealth of Nations: Pathways to Human Development*”. The constituents of Human Development Index (HDI) viz., income, education and health are adjusted for inequalities in attainments across the population. For the year 2018, Pakistan is ranked 152 out of 189 countries with HDI magnitude of 0.560 but falls to 0.386 when adjusted for inequalities; a loss of 31 percent (Human Development Report, 2019).

According to technical notes of UNDP-HDR (2019)<sup>1</sup>, “the IHDI accounts for inequalities in HDI dimensions by “discounting” each dimension’s average value according to its level of inequality”. Thus, when there is no inequality across population with respect to dimensions of human development, the IHDI equals the HDI but falls below the HDI as inequality rises. In this sense, the IHDI is the actual level of human development (taking into account inequality), while the HDI can be viewed as an index of the “potential” human development that could be achieved if there was no inequality. The “loss” in potential human development due to inequality is the difference between the HDI and the IHDI.

This study quantifies this loss by developing the HDIs and IHDI in case of Pakistan both at national and sub-national levels. The dataset of Pakistan Social and Living-standard Measurement (PSLM) surveys for the years 2010-11, 2012-13 and 2014-15 are used in this study. PSLM is a district representative survey which enumerates more than 75000 households across four provinces of Pakistan.

## 2. HDI COMPONENTS

In the context of Pakistan, various attempts have been made to estimate sub-national HDIs. UNDP-Pakistan for its first National Human Development Reports 2003 (UNDP-Pakistan, 2003) estimated National, Provincial and Districts’ HDIs for the year 1998. Due to non-availability of relevant data at regional level, Pakistan NHDR used some proxies for income and health components. Jamal and Khan (2007) updated sub-national HDIs for the year 2005 by using

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<sup>1</sup> [http://hdr.undp.org/sites/default/files/hdr2019\\_technical\\_notes.pdf](http://hdr.undp.org/sites/default/files/hdr2019_technical_notes.pdf)

standard UNDP global HDI indicators for the health and education components. However, they were also not able to use a better proxy for regional income. Both studies used agriculture and manufacturing value-added as a measure of the income of regions/districts. Thus, the income component was underestimated due to non-representation of the service sector which is a major source of income in various parts of the country. Further, information on sectoral (agriculture and manufacturing) value added were based on various unauthentic supply-side sources. Recently, UNDP Pakistan published Pakistan Human Development Report 2017 (UNDP-Pakistan, 2017) which also provides estimates of national and sub-national HDIs. However, they also used some proxies or indicators of living standard for income component of HDI instead of using regional income.

As described, the use of standard UNDP-HDI indicators/components is not possible due to non-availability of relevant data at sub-national levels; these studies used various proxies for education, health and the standard of living components of HDI. Exhibit 2.1 furnishes a comparative view of alternate indicators for HDI components, while the indicators for HDI components which are considered for this study are listed in the Exhibit 2.2. Sub-Sections which follow provide brief descriptions of the indicators considered for this study.

Exhibit – 2.1 Alternate Indicators Used for Estimating HDIs			
	<b>Global HDR</b>	<b>Pakistan HDR 2003</b>	<b>Pakistan HDR 2017</b>
Education	Mean years of schooling Expected years of schooling	Literacy ratio Enrolment ratio	Mean years of schooling Expected years of schooling
Health	Life expectancy	Immunization rate Infant survival ratio	Immunization rate Satisfaction with health facility
Standard of Living	GNI per capita (PPP \$)	District-wise GDP per capita (PPP\$):  Based on cash value of crop output and the manufacturing value-added at district level	Electricity Drinking water Sanitation Housing Structure Household fuel Household assets
Source: Reproduced from UNDP-Pakistan, 2017			

### **2.1 Knowledge (Education) Index**

The adult literacy and enrolment rates with respect to population of age cohort 5-24 years are included in this HDI dimension which respectively represent stock and flow measures in the educational attainment. It is worth to highlight that till 2009, the knowledge/education dimension of human development for global HDIs has been measured by these two variables (adult literacy rate and combined primary, secondary and tertiary gross enrollment ratio).

Relevant information regarding both of these measures are available in PSLM district representative surveys. The adult literacy is defined for this study as the “Proportion of population aged 15 years and older who is able with understanding to both read and write in any language”, while the enrollment component is estimated as the “proportion of children in the age cohort 5-24 years who are currently attending any formal educational institutions out of all children in this age cohort”.

These indicators are transformed by using 100 percent as a maximum and 0 percent as a minimum for school enrollment and literacy rate. As described in the UNDP-HDR technical notes, these natural goalposts act as the ‘aspirational goal’ and ‘natural zones’ respectively. The formula of geometric mean is applied to develop composite index for education.

Exhibit - 2.2					
Component Indicators of Human Development Indices Used in this Study					
National Estimates					
		2011	2013	2015	
<b>Access to Knowledge:</b>					
Education	Adult Literacy Rate	54.62	56.86	56.66	
	Enrollments in 5-24 Years Age Cohort	52.25	54.20	54.31	
<b>Long and Healthy Life:</b>					
Child Health	Child Immunization – Children 0-60 months	28.52	29.39	29.21	
	Child Delivery at Hospitals/Nursing Homes	42.06	49.38	54.90	
Maternal Health	Prenatal Care – Pregnant Women Last Three Years	63.52	68.73	73.20	
	Had Tetanus Injection – Pregnant Women Last Three Years	68.71	72.43	75.37	
	Postnatal Care – Pregnant Women Last Three Years	28.15	28.68	28.87	
<b>Living Standard: [Percentage of Households]</b>					
	Adequate Roof Structure	27.80	28.14	29.96	
	Adequate Walls	72.21	76.19	79.15	
	Access to Safe Drinking Water	86.82	88.18	86.46	
	Availability of Adequate Sanitation Facilities	66.30	71.01	73.44	
	Use of Adequate Fuel	35.45	38.35	41.44	
	Access to Electricity	91.37	93.22	93.45	
	Availability of Mobile or Landline Phone Facility	80.50	89.22	91.75	
Source: Values are derived from PSLM 2010-11, 2012-13 and 2014-15 datasets.					

## 2.2 Health Index

Health outcome indicators such as life expectancy at birth, infant and maternal mortality rates etc., should be considered to evaluate long and healthy life of population. However, non-availability of data has restricted the choice. For this study, the dimension of health is represented by some proxies of mother and children health care. Polio vaccination of children under the age of five according to vaccination card or through polio campaign and the child delivery at hospitals are used to represent child health, while three indicators are considered to assess the maternal health status; pre and post-natal care and the proportion of mothers who had tetanus toxoid injections during the previous pregnancy.

Again, all chosen indicators for the health component are relative proportions or percentages and thus have natural goalposts (minimum and maximum) in order to transform the indicators expressed in different units into indices between 0 and 1. Here also, a geometric average of the chosen indicators is taken for composite health index.

## 2.3 Standard of Living Index

Although PSLM reports monthly or annual income of each family member of household aged 10 years and above; nonetheless, the reported income might be biased downward due to the fact that the majority of the economically active population is not in a salaried remuneration but is either self-employed or works in farms or other family business. Thus, non-salaried respondents provide

guesses regarding annual or monthly income. Therefore, it is preferred to follow UNDP-Pakistan (2017) approach which uses various household facilities/amenities to assess standard of living. Adequate housing is represented through RCC/RBC roofing and walls constructed with burned bricks or blocks. In terms of utilities, access to electricity, availability of safe (piped water, hand pump, tube well and covered well) drinking water, availability of adequate (flush system) sanitation facilities and possession of telephone (landline or mobile) are included in this HDI dimension. Use of adequate fuel (natural gas, kerosene oil, electricity) for cooking is also considered important for assessing the status of household standard of living. Geometric average of these indicators is computed to form a composite index of household living standard.

### **3. Methodology for Aggregating Dimensions of Human Development**

Substitutability among component indicators is an important issue in the context of composite indexing like HDI. This situation is not suitable in most cases where a minimum of all components is required for a combined index. The issue of substitutability may be resolved to some extent by taking geometric mean of the components indicators instead of using arithmetic averages. Starting from 2010, the UNDP Human Development Index did switch to this mode of calculation for combining component indicators of HDI. UNDP argues that it better reflects the non-substitutable nature of the statistics being compiled and compared. According to UNDP (2010)<sup>2</sup>:

“The geometric mean reduces the level of substitutability between dimensions [being compared] and at the same time ensures that a 1 percent decline in say life expectancy at birth has the same impact on the HDI as a 1 percent decline in education or income. Thus, as a basis for comparisons of achievements, this method is also more respectful of the intrinsic differences across the dimensions than a simple average”.

Consequently, this study also follows this approach and HDI and individual components are estimated by taking geometric means<sup>3</sup>.

IHDI is based on a distribution-sensitive class of composite indices proposed by Foster, Lopez-Calva, and Szekely (2005), which draws on the Atkinson (1970) family of inequality measures. It is computed as a geometric mean of geometric means, calculated across the population for each dimension separately. Specific steps to estimate the IHDI for this study are outlined below.

At step one; indicators are developed by aggregating information at the sub-district level (Primary Sampling Unit (PSU) – Villages and Urban Circles). Inequality in the underlying distribution for each indicator is estimated using the Atkinson (1970) inequality measure  $A$  with the aversion parameter equal to one. Accordingly,

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<sup>2</sup> Visit UNDP site: <http://hdr.undp.org/en/statistics/faq/>

<sup>3</sup> It is however worth to mention that arithmetic average is applied to from the knowledge/education sub-index for the global HDIs.

$$A = 1 - \frac{g}{\mu} \quad (1)$$

where  $g$  is the geometric mean,  $\mu$  is the arithmetic mean of the distribution in the variable of interest ( $X$ ); more specifically,

$$A_x = 1 - \frac{\sqrt[n]{X_1, \dots, X_n}}{\bar{X}}$$

where  $\{X_1, \dots, X_n\}$  denotes the underlying distribution in the indicator  $X$  and  $n$  refers to the number of geographical units (here PSUs).  $A$  is computed for each indicator ( $X$ ) aggregated at PSU (sub-district) level.

At the second stage, indicators are first developed by aggregating information at district level and then are adjusted for inequality in the distribution across the intra-district population. Thus, district-wise<sup>4</sup> inequality adjusted indicators ( $I_x^*$ ) are obtained by multiplying district human development indicators ( $I_x$ ) with  $(1 - A_x)$ , where  $A_x$  is estimated through equation 1. Thus,  $I_x^*$  estimates the value of indicators after adjusting potential loss due to the underlying distribution and is defined as;

$$I_x^* = (1 - A_x) * I_x \quad (2)$$

The dimensional composite indices for education, health and standard of living are developed at the third stage by applying the following formula of geometric mean. Here  $k$  denotes the dimension of human development, while  $n$  refers to the number of indicators in each dimension.

$$\bar{I}_k = \sqrt[n]{\prod_{i=1}^n I_{xi}^*} \quad (3)$$

Thus  $\bar{I}_k$  is the  $k^{\text{th}}$  dimension composite index which represents the geometric mean of the relevant inequality-adjusted development indicators ( $I_x^*$ ). Finally, IHDI is developed by taking the geometric mean of three composite dimensions indices.

$$IHDI = \sqrt[3]{\bar{I}_{Education} + \bar{I}_{Health} + \bar{I}_{Standard\ of\ Living}} \quad (4)$$

#### 4. Estimates of Potential and Actual Human Development Indices

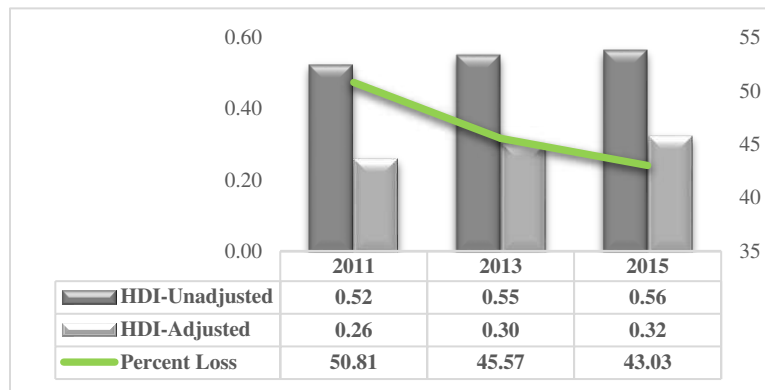
The national and provincial HDIs and IHDI for the years 2011, 2013 and 2015 are summarized in Exhibits 4.1 and 4.2, while district wise information are furnished in the appendix (Table A.1.1

<sup>4</sup> For provincial and national HDIs, average of district's Atkinson value ( $A_x$ ) for each variable ( $X$ ) are used to estimate equation 2.

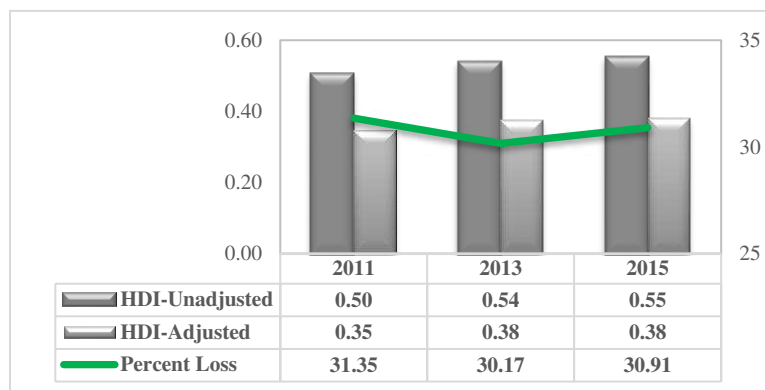


though Table A.4.3). The Exhibit 4.1 also reproduces the values of HDI and IHDI from the global UNDP Human Development Reports.

Exhibit – 4.1  
Human Development Indices – Pakistan  
Estimated for this Research from PSLM Household Data:



Reproduced from UNDP Human Development Reports:



Sources: UNDP Human Development Reports, Various Issues  
PSLM Datasets, 2010-11, 2012-13 and 2014-15

Due to differences in the methodology and varying component indicators, global HDI and the estimates of this study are not strictly comparable; however as revealed in the Exhibit 4.1, the differences are not substantial. For instance, the estimated magnitude of national HDI for the year 2015 is 0.5597 which is quite close with the global estimates of 0.55 (UNDP, Human Development Report 2016). Both estimates place Pakistan in the medium level of human development category. Similar patterns are observed for the years 2011 and 2013 where quite close estimates are obtained. Pakistan however, was placed in the low level of human development category in these years. It may be thus somewhat argued that this research provides HDI estimates which are quite comparable with the global HDIs. It is worth mentioning that the estimates of HDIs published in the Pakistan Human Development Report (2017) are significantly high; the estimated HDI which is furnished in the report is 0.681 for the year 2015.

On the contrary, the magnitudes of “loss” in HDIs are quite large as compared with the global estimates. The IHDI, estimated by this study are 0.26, 0.30 and 0.32 for the years 2011, 2013 and 2015 respectively, while comparative figures of global IHID estimates are 0.35, 0.38 and 0.38. Therefore, the magnitudes of losses due to inequality in HDI indicators are significantly high as compared with the global IHID estimates. The phenomenon however, is quite understandable due to two obvious reasons; first proxy indicators are used in this study to develop HDI instead of indicators used for global estimates and thus the underlying distribution or inequality are not comparable. For instance, this research uses seven indicators of standard of living for the income dimension of HDI instead of using per capita GNP/GNI. Similarly, various proxies are used for health dimension instead of using life expectancy. Second, the geographical unit (population) to measure inequality is not identical. This study measures inequality across primary sampling units, while the global estimates consider different criteria to measure underlying distribution<sup>5</sup>.

A provincial inter-temporal scenario regarding the growth patterns in the estimated magnitudes of HDIs is portrayed in the Exhibit 4.2 which furnishes annualized growth rate in the estimated HDIs. Few observations emerge. Barring Sindh province, around 2 percent annualized growth is observed during the study period (2011-2015). The Exhibit clearly reveals disappointed performance of Sindh province; declining trend in the period 2011-2013 and only 1 percent growth in the period 2013-2015. In contrast, KPK performance is quite satisfactory with around 2.5 percent annualized growth during the study period.

Exhibit – 4.2  
Annualized Growth Rate in HDI Magnitude  
[Percentages]

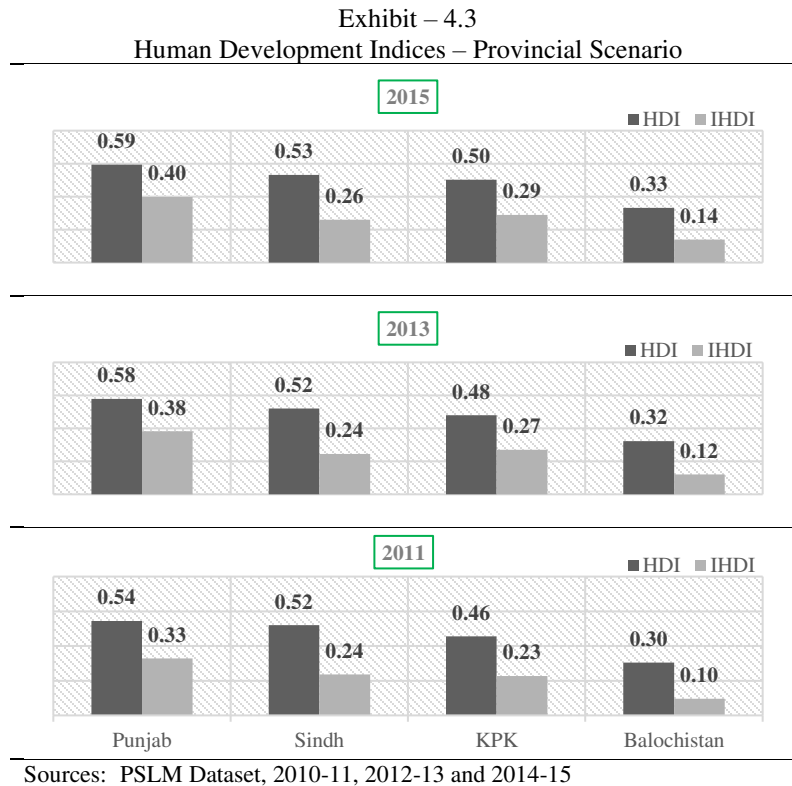


Sources: Estimated from PSLM Datasets, 2010-11, 2012-13 and 2014-15.

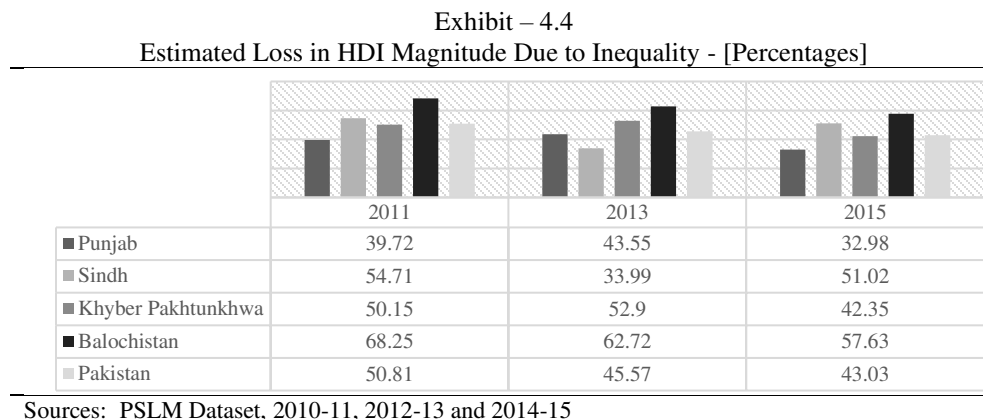
The provincial ranking in terms of the level of human development is unsurprising and it is according to a priory expectation. According Exhibit 4.3 which furnishes provincial HDIs and IHDI, the highest level of human development is estimated for Punjab with the HDI magnitudes of 0.59, 0.58 and 0.54 respectively for the years 2011, 2013 and 2015. Balochistan possess the lowest rank with the values around 3 for these years.

<sup>5</sup> A full account of data sources used for estimating inequality globally is available at <http://hdr.undp.org/en/statistics/ihdi/>

According to the UNDP classification, Sindh, KPK and Balochistan provinces are placed in the ‘Low Human Development’ category as the estimated HDI values are less than 0.55 for these provinces. The estimated HDIs for Punjab province indicate the medium level of human development; however, for the year 2011 the estimated Punjab HDI is also less than 0.55 and thus the province was in the category of low level of human development in the year 2011.



The Exhibit 4.3 also furnishes magnitudes of estimated IHIDs, while the information regarding the percentage loss in HDI due to inequality are portrayed in the Exhibit 4.4.



Relatively larger magnitudes of losses are observed in Balochistan and Sindh provinces as revealed in the Exhibit 4.4; which indicates higher levels of inequality in the indicators of human development. In contrast, the extent of inequality in the human development indicators is

relatively low in Punjab and KPK provinces. For instance, percentage losses due to inequality are 33 and 42 respectively for Punjab and KPK in the year 2015, while comparative figures are 51 and 58 for Sindh and Balochistan provinces respectively.

To observe extreme values of losses and hence level of inequality, quintiles are developed after ranking districts according to the magnitudes of percentage loss. Exhibits 4.5 and 4.6 furnish information of districts which are placed in the highest and lowest quintiles respectively in the year 2015. The lowest (18) magnitude of percentage loss is estimated for Islamabad, while districts of Punjab with percentage losses less than 25 include; Gujrat, Sialkot, Gujranwala, Lahore, Mandi Bahauddin and Sheikhpura. Barring provincial capitals of Sindh and Balochistan (Karachi and Quetta), no district is appeared in the category of lowest quintile. Districts of KPK which are formed in the lowest quintile include; Haripur, Peshawar, Mardan, Swat, Malakand, and Charsadda.

Exhibit – 4.5					
Estimated Loss of Selected Districts – 2015					
[Lowest Quintile in Terms of Percent Loss]					
	Districts	Human Development Index [HDI]	Inequality Adjusted HDI [IHDI]	Loss in HDI	Percent Loss
	Islamabad	0.76	0.62	0.14	18.35
Punjab	Gujrat	0.70	0.57	0.14	19.51
	Sialkot	0.69	0.54	0.14	20.55
	Gujranwala	0.7	0.55	0.15	21.21
	Lahore	0.77	0.59	0.17	22.54
	Mandi Bahauddin	0.61	0.46	0.15	23.93
	Sheikhpura	0.65	0.48	0.17	25.97
	Rawalpindi	0.69	0.49	0.19	28.15
	Hafizabad	0.58	0.41	0.17	28.98
	Narowal	0.52	0.35	0.17	32.09
	Nankana Sahib	0.62	0.42	0.21	33.11
	Attock	0.61	0.39	0.22	35.57
	Kasur	0.56	0.36	0.20	35.66
	T.T. Singh	0.53	0.34	0.19	36.56
Sindh	Karachi	0.72	0.46	0.26	36.17
KPK	Haripur	0.62	0.47	0.15	24.73
	Peshawar	0.63	0.47	0.16	24.83
	Mardan	0.56	0.39	0.17	30.03
	Swat	0.48	0.32	0.16	33.32
	Malakand	0.56	0.37	0.19	33.32
	Charsadda	0.53	0.35	0.18	34.53
Balochistan	Quetta	0.52	0.34	0.19	35.60

Source: Estimated from PSLM Data, 2014-15

According to Exhibit 4.6 which place districts in the category of highest quintile in terms of percentage loss, majority of districts belong to Balochistan province (16 out of 28), while no district of Punjab province is appeared in this group of percentage losses. Districts of Balochistan which show extremely high (more than 70) percentage of loss include; Barkhan, Kohlu, Sibbi, Sheerani, Zhob, Musakhel, Loralai, Bolan/ Kachhi, Lasbela and Chagai.

Exhibit – 4.6 Estimated Loss of Selected Districts – 2015 [Highest Quintile in Terms of Percent Loss]					
	Districts	Human Development Index [HDI]	Inequality Adjusted HDI [IHDI]	Loss in HDI	Loss (%)
Sindh	Umer kot	0.27	0.09	0.18	65.55
	Thatta	0.30	0.08	0.22	73.76
	Sujawal	0.29	0.07	0.22	74.88
	Tharparkar	0.2	0.05	0.15	76.61
KPK	Shangla	0.27	0.10	0.17	64.47
	Tor Ghar	0.13	0.05	0.09	65.20
	Kohistan	0.15	0.03	0.12	80.29
Balochistan	Killa Saifullah	0.24	0.08	0.16	65.30
	Awaran	0.14	0.05	0.09	65.79
	Khuzdar	0.24	0.08	0.16	66.46
	Nushki	0.25	0.08	0.17	67.59
	Nasirabad/ Tamboo	0.24	0.08	0.16	68.07
	Kharan	0.19	0.06	0.13	69.91
	Barkhan	0.25	0.07	0.18	72.02
	Kohlu	0.17	0.04	0.12	73.54
	Sibbi	0.32	0.08	0.24	74.91
	Sheerani	0.16	0.04	0.12	75.61
	Zhob	0.31	0.07	0.23	76.38
	Musakhel	0.2	0.05	0.15	76.88
	Loralai	0.24	0.05	0.19	77.45
	Bolan/ Kachhi	0.24	0.05	0.19	79.25
Lasbela	0.34	0.07	0.27	79.99	
Chagai	0.18	0.03	0.14	81.48	

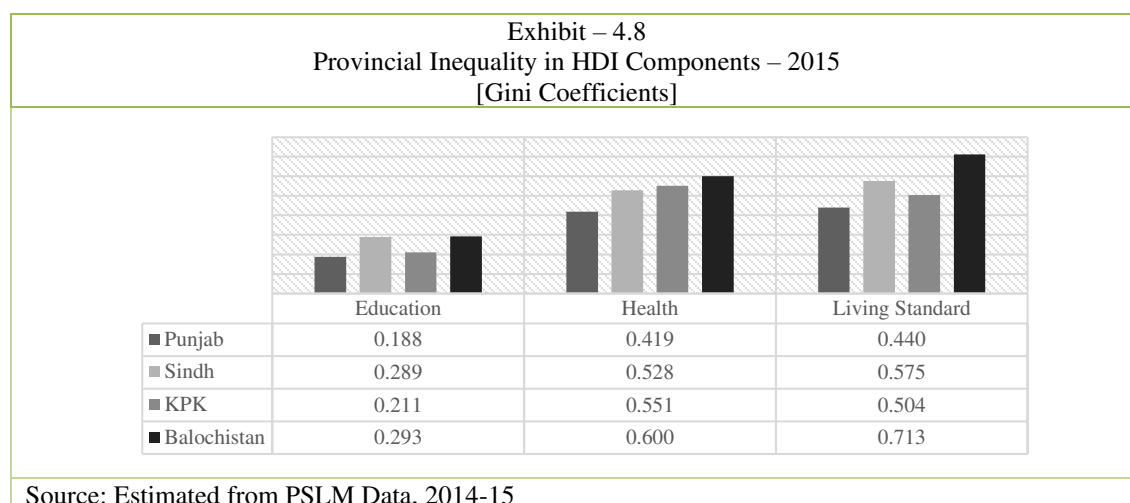
Source: Estimated from PSLM Data, 2014-15

The Exhibit also confirms that four districts (Umer kot, Thatta, Sujawal, and Tharparkar) of Sindh and three (Shangla, Tor Ghar and Kohistan) districts of KPK province are part of high percentage losses and thus higher inequality level in human development indicators.

Extent of provincial inequality in the individual indicators are useful to get an idea regarding the sources of inequality. Exhibit 4.7 furnishes inequalities in the indicators as measured through Gini coefficients for the year 2015. The provincial scenario in terms of Gini for HDI components (Education, Health and Living Standard) is portrayed in the Exhibit 4.8. Moreover, the district wise Gini coefficient for HDI components for the year 2015 are also furnished in the Appendix (Exhibit A.5.1 through A.5.4).

Comparatively higher inequality levels (Gini coefficients) of both indicators of education (adult literacy and enrollment rates) are estimated for Sindh and Balochistan provinces as compared with Punjab and KPK. It is also observed that the magnitudes of Gini coefficients related to adult literacy rate are higher than the enrollment rate irrespective of provinces.

Exhibit – 4.7 Estimated Inequality in HDI Indicators – 2015 [Gini Coefficient]				
	Punjab	Sindh	KPK	Balochistan
Adult Literacy Rate	0.225	0.315	0.268	0.317
Enrollments in 5-24 Years Age Cohort	0.172	0.280	0.176	0.287
Child Immunization	0.512	0.842	0.664	0.874
Child Delivery at Hospitals/Nursing Homes	0.199	0.296	0.367	0.372
Prenatal Care	0.153	0.311	0.333	0.570
Had Tetanus Injections	0.564	0.533	0.627	0.559
Postnatal Care	0.340	0.400	0.406	0.566
Adequate Roof Structure	0.736	0.867	0.603	0.895
Adequate Walls	0.109	0.389	0.413	0.706
Access to Safe Drinking Water	0.064	0.154	0.282	0.438
Availability of Adequate Sanitation Facilities	0.226	0.495	0.244	0.737
Use of Adequate Fuel	0.694	0.689	0.790	0.861
Access to Electricity	0.057	0.140	0.059	0.235
Availability of Mobile or Landline Phone Facility	0.058	0.100	0.043	0.199



Source: Estimated from PSLM Data, 2014-15

Among the indicators considered for developing the health component, child immunization, having tetanus injection and postnatal care are relatively more unequal (higher Gini coefficients) as compared with the remaining indicators (child delivery at hospitals and prenatal care).

Inadequate roofing and use of inadequate fuel in the living standard component are extremely unequal as measured through Gini coefficients, while inequality levels in sanitation facilities are high in Sindh and Balochistan provinces.

The component wise provincial inequality picture highlights the worst situation prevailing in Sindh and Balochistan provinces in terms of unequal distribution (Exhibit 4.8). In all HDI components, the magnitudes of Gini coefficients are generally higher in these provinces as compared with Punjab and KPK. Education component is relatively equally distributed as Gini coefficients are less than 0.3 irrespective of provinces.

## 5. Concluding Remarks

This research provides national, provincial and district wise indices of human development (HDI) and inequality adjusted human development (IHDI) in the context of Pakistan. These indices reflect the potential and actual level of human development. The difference between these two is the human development cost which reflects the loss to human development due to inequality.

In the absence of data at sub-national levels to form standard indicators of human development used by UNDP for producing global estimates, best proxies for HDI components are developed by employing district representative household data of Pakistan Social and Living-Standard Measurement Survey (PSLM) for the years 2010-11, 2012-13 and 2014-15.

Fortunately, the estimated magnitudes of HDI are quite close with the UNDP global estimates for Pakistan, despite the differences in the methodology and varying component indicators. The magnitudes of national HDIs estimated in this research are 0.52, 0.55 and 0.56 respectively for the years 2011, 2013 and 2015, while the corresponding global estimates are 0.50, 0.54 and 0.55.

As expected, highest level of human development is estimated for Punjab with the HDI magnitude of 0.59 for the year 2015 followed by Sindh, KPK and Balochistan. Balochistan possess the lowest rank with the value of 0.33. Barring Punjab province, all provinces are placed in the 'Low Human Development' category according to the UNDP classification.

In contrast, this study estimated significantly higher magnitude of losses to human development due to inequality in the component indicators as compared with the global estimates. The phenomenon is however not surprising as varying indicators are used to develop HDIs and thus underlying distribution or inequality are not comparable. For instance, this research uses seven indicators of standard of living for estimating the income dimension of HDI instead of using only per capita GNP/GNI.

From policy perspective, this research facilitates public intervention by providing information regarding places (district, province) and dimension (indicators) where higher inequality causes reduction in the level of human development. For instance, child immunization in Sindh, KPK and Balochistan or sanitation facilities in Sindh and Balochistan provinces etc.

The findings of this research are thus useful for policy makers, regional planners and politicians. Relative position of districts of Pakistan in terms of both actual and potential human development may be easily evaluated and districts are ranked accordingly for distribution of resources. The estimated levels of inequalities in the component indicators enables targeted intervention for reducing inequalities. The magnitudes of HDIs and IHDI across districts may also be used as a criterion in determining the Provincial Financial Awards by the provincial governments.

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# **Appendix**

## **District wise Information**

Exhibit – A.1.1  
Estimated HDI and IHDI – 2015  
[Districts of Punjab Province]

Districts	Human Development Index [HDI]	Inequality Adjusted HDI [IHDI]	Loss in HDI	Loss (%)
Islamabad	0.76	0.62	0.14	18.35
Attock	0.61	0.39	0.22	35.57
Bahawalnagar	0.44	0.25	0.19	43.08
Bahawalpur	0.42	0.22	0.20	47.78
Bhakkar	0.39	0.22	0.17	44.63
Chakwal	0.58	0.36	0.22	38.04
Chiniot	0.48	0.25	0.22	47.29
D. G. Khan	0.41	0.18	0.23	56.74
Faisalabad	0.58	0.33	0.25	43.02
Gujranwala	0.70	0.55	0.15	21.21
Gujrat	0.70	0.57	0.14	19.51
Hafizabad	0.58	0.41	0.17	28.98
Jhang	0.45	0.26	0.18	41.38
Jhelum	0.63	0.38	0.25	39.28
Kasur	0.56	0.36	0.20	35.66
Khanewal	0.49	0.27	0.22	45.07
Khushab	0.50	0.29	0.21	41.33
Lahore	0.77	0.59	0.17	22.54
Layyah	0.51	0.29	0.21	42.35
Lodhran	0.43	0.22	0.22	50.25
Mandi Bahauddin	0.61	0.46	0.15	23.93
Mianwali	0.48	0.27	0.21	43.17
Multan	0.57	0.35	0.21	37.67
Muzaffargarh	0.41	0.21	0.20	48.55
Nankana Sahib	0.62	0.42	0.21	33.11
Narowal	0.52	0.35	0.17	32.09
Okara	0.54	0.33	0.21	38.79
Pakpattan	0.47	0.27	0.21	43.39
Rahim Yar Khan	0.41	0.21	0.20	48.57
Rajapur	0.33	0.13	0.20	60.53
Rawalpindi	0.69	0.49	0.19	28.15
Sahiwal	0.58	0.37	0.21	36.61
Sargodha	0.57	0.35	0.22	38.73
Sheikhupura	0.65	0.48	0.17	25.97
Sialkot	0.69	0.54	0.14	20.55
T.T. Singh	0.53	0.34	0.19	36.56
Vehari	0.46	0.29	0.18	38.15

Source: Estimated from PSLM Data, 2014-15

Exhibit – A.1.2  
Estimated HDI and IHDI – 2013  
[Districts of Punjab Province]

Districts	Human Development Index [HDI]	Inequality Adjusted HDI [IHDI]	Loss in HDI	Loss (%)
Islamabad	0.76	0.59	0.17	21.82
Attock	0.59	0.36	0.24	39.57
Bahawalpur	0.41	0.21	0.20	49.39
Bhakar	0.40	0.21	0.19	47.23
Bhawanagar	0.44	0.25	0.19	43.00
Chakwal	0.57	0.30	0.27	47.80
Chiniot	0.46	0.27	0.19	40.32
D.G Khan	0.38	0.15	0.23	60.52
Faisalabad	0.60	0.36	0.24	39.61
Gujranwala	0.70	0.57	0.13	18.92
Gujrat	0.70	0.58	0.13	17.93
Hafizabad	0.57	0.41	0.16	28.45
Jhelum	0.60	0.33	0.27	44.98
Jhang	0.38	0.19	0.19	49.59
Kasur	0.55	0.36	0.19	34.37
Khanewal	0.48	0.26	0.21	44.48
Khushab	0.48	0.24	0.24	50.13
Lahore	0.77	0.61	0.16	20.36
Layyah	0.45	0.25	0.20	44.92
Lodhreen	0.40	0.21	0.19	47.54
Mianwali	0.47	0.29	0.18	38.98
Mandi Bahauddin	0.60	0.45	0.15	25.01
Multan	0.53	0.29	0.24	44.93
Muzaffar Garh	0.39	0.19	0.20	50.41
Nankana Sahib	0.60	0.39	0.21	34.96
Narowal	0.48	0.31	0.17	35.63
Okara	0.53	0.34	0.18	34.88
Pakpatan	0.46	0.29	0.17	36.35
Rahim Yar Khan	0.35	0.19	0.17	47.66
Rajanpur	0.30	0.12	0.18	60.30
Rawalpindi	0.69	0.49	0.20	28.78
Sahiwal	0.54	0.33	0.21	39.10
Sarghoda	0.52	0.30	0.21	40.98
Sheikhupura	0.65	0.47	0.18	28.31
Sialkot	0.68	0.49	0.18	27.29
T.T Singh	0.52	0.34	0.18	34.82
Vehari	0.47	0.30	0.17	35.87

Source: Estimated from PSLM Data, 2012-13

Exhibit – A.1.3  
Estimated HDI and IHDI – 2011  
[Districts of Punjab Province]

Districts	Human Development Index [HDI]	Inequality Adjusted HDI [IHDI]	Loss in HDI	Loss (%)
Islamabad	0.77	0.59	0.18	23.29
Attock	0.55	0.29	0.26	46.59
Bahawalnagar	0.42	0.24	0.18	42.19
Bahawalpur	0.38	0.18	0.19	51.43
Bhakhar	0.37	0.17	0.20	53.43
Chakwal	0.62	0.38	0.24	38.43
Chiniot	0.41	0.19	0.22	54.04
D.G.Khan	0.33	0.12	0.21	64.39
Faisalabad	0.56	0.30	0.26	46.23
Gujranwala	0.69	0.52	0.18	25.36
Gujrat	0.67	0.48	0.19	28.25
Hafizabad	0.51	0.28	0.23	44.49
Jhelum	0.58	0.32	0.25	43.98
Jhang	0.37	0.19	0.19	49.77
Kasur	0.53	0.31	0.22	42.15
Khanewal	0.42	0.19	0.23	54.97
Khushab	0.49	0.27	0.23	45.96
Lahore	0.74	0.56	0.17	23.74
Layyah	0.39	0.20	0.19	48.64
Lodhran	0.36	0.18	0.19	51.34
Mandi Bahuddin	0.55	0.37	0.18	32.96
Mianwali	0.42	0.24	0.18	43.48
Multan	0.52	0.28	0.24	45.94
Muzaffar Garh	0.29	0.13	0.17	56.97
Nankana Sahib	0.56	0.34	0.22	38.71
Narowal	0.44	0.24	0.20	46.05
Okara	0.49	0.30	0.19	39.59
Pakpattan	0.40	0.23	0.17	42.53
RahimYar Khan	0.38	0.19	0.19	50.14
Rajanpur	0.26	0.09	0.17	66.45
Rawalpindi	0.65	0.41	0.24	37.01
Sahiwal	0.53	0.32	0.20	38.53
Sargodha	0.51	0.26	0.25	48.54
Sheikupura	0.61	0.40	0.21	34.85
Sialkot	0.63	0.44	0.19	29.93
T.T.Singh	0.52	0.28	0.25	47.32
Vehari	0.45	0.24	0.22	47.70

Source: Estimated from PSLM Data, 2010-11

Exhibit – A.2.1  
 Estimated HDI and IHDI – 2015  
 [Districts of Sindh Province]

Districts	Human Development Index [HDI]	Inequality Adjusted HDI [IHDI]	Loss in HDI	Loss (%)
Badin	0.31	0.14	0.16	53.24
Dadu	0.52	0.24	0.27	52.52
Ghotki	0.33	0.13	0.20	60.37
Hyderabad	0.54	0.33	0.20	38.11
Jacobabad	0.28	0.11	0.17	61.28
Jamshoro	0.48	0.20	0.28	58.22
Karachi	0.72	0.46	0.26	36.17
Kashmore	0.27	0.10	0.17	63.23
Khairpur	0.36	0.17	0.19	52.16
Larkana	0.45	0.27	0.18	39.22
Matiari	0.37	0.21	0.16	42.59
Mirpur Khas	0.40	0.16	0.24	61.08
Naushahro Feroze	0.50	0.26	0.23	46.72
Sanghar	0.38	0.17	0.21	54.49
Shahdadhkot	0.31	0.16	0.15	49.31
Shaheed Benazir Abad	0.41	0.18	0.23	56.00
Shikarpur	0.35	0.18	0.16	47.37
Sujawal	0.29	0.07	0.22	74.88
Sukkur	0.50	0.26	0.25	49.07
Tando Allah Yar	0.35	0.17	0.18	51.13
Tando Mohammad Khan	0.28	0.13	0.14	51.90
Tharparkar	0.20	0.05	0.15	76.61
Thatta	0.30	0.08	0.22	73.76
Umer kot	0.27	0.09	0.18	65.55

Source: Estimated from PSLM Data, 2014-15

Exhibit – A.2.2  
Estimated HDI and IHDI – 2013  
[Districts of Sindh Province]

Districts	Human Development Index [HDI]	Inequality Adjusted HDI [IHDI]	Loss in HDI	Loss (%)
Badin	0.29	0.11	0.17	60.23
Dadu	0.43	0.17	0.25	59.32
Ghotki	0.30	0.13	0.17	56.95
Hyderabad	0.66	0.39	0.27	41.32
Jacobabad	0.29	0.13	0.16	55.31
Jamshoro	0.41	0.18	0.23	55.46
Karachi	0.72	0.40	0.32	44.38
Kashmore	0.28	0.13	0.15	53.12
Khairpur	0.29	0.12	0.16	56.55
Larkana	0.48	0.27	0.21	44.14
Mir pur khas	0.40	0.12	0.28	70.02
Mitiari	0.44	0.24	0.20	45.36
Nawabsha	0.41	0.16	0.26	61.97
Nowshero Feroze	0.39	0.17	0.22	56.76
Sanghar	0.43	0.16	0.27	62.90
Shahdadkot	0.34	0.13	0.21	61.12
Shikarpur	0.34	0.15	0.20	57.39
Sukkur	0.46	0.23	0.24	51.26
Tando Allah Yar	0.40	0.18	0.21	53.99
Tando Mohd Khan	0.38	0.17	0.21	54.72
Tharparkar	0.23	0.07	0.16	70.30
Thatta	0.28	0.07	0.21	75.77
Ümer Kot	0.28	0.10	0.18	64.25

Source: Estimated from PSLM Data, 2012-13

Exhibit – A.2.3  
Estimated HDI and IHDI – 2011  
[Districts of Sindh Province]

Districts	Human Development Index [HDI]	Inequality Adjusted HDI [IHDI]	Loss in HDI	Loss (%)
Badin	0.30	0.10	0.20	66.48
Dadu	0.43	0.19	0.24	55.48
Ghotki	0.28	0.11	0.17	61.45
Hyderabad	0.66	0.41	0.25	37.59
Jacobabad	0.24	0.08	0.16	65.74
Jamshoro	0.41	0.17	0.24	59.67
Karachi	0.72	0.45	0.27	37.79
Kashmore	0.29	0.11	0.18	62.91
Khairpur	0.31	0.12	0.19	60.80
Larkana	0.47	0.23	0.24	50.45
Maitari	0.42	0.20	0.22	53.03
Mir Pur Khas	0.44	0.17	0.28	62.70
Nawabshah	0.39	0.17	0.22	57.16
Nowshero Feroze	0.43	0.20	0.23	53.25
Sanghar	0.37	0.16	0.21	56.56
Shahdadkot	0.37	0.19	0.19	50.07
Shikarpur	0.30	0.12	0.18	59.71
Sukkur	0.40	0.20	0.21	51.58
Tando Allah Yar	0.40	0.19	0.21	53.60
Tando Muda khan	0.28	0.10	0.18	65.21
Tharparkar	0.22	0.05	0.17	78.10
Thatta	0.28	0.07	0.21	75.66
Umer kot	0.35	0.12	0.23	65.19

Source: Estimated from PSLM Data, 2010-11

Exhibit – A.3.1  
Estimated HDI and IHDI – 2015  
[Districts of KPK Province]

Districts	Human Development Index [HDI]	Inequality Adjusted HDI [IHDI]	Loss in HDI	Loss (%)
Abbotabad	0.61	0.37	0.24	38.85
Bannu	0.42	0.20	0.22	52.43
Batagram	0.33	0.17	0.16	48.19
Buner	0.33	0.17	0.16	49.18
Charsadda	0.53	0.35	0.18	34.53
Chitral	0.37	0.17	0.20	53.24
D. I. Khan	0.38	0.19	0.19	49.74
Hangu	0.48	0.24	0.23	48.58
Haripur	0.62	0.47	0.15	24.73
Karak	0.40	0.20	0.21	51.51
Kohat	0.51	0.27	0.25	48.11
Kohistan	0.15	0.03	0.12	80.29
Lakki Marwat	0.36	0.15	0.22	59.46
Lower Dir	0.50	0.27	0.23	45.08
Malakand	0.56	0.37	0.19	33.32
Mansehra	0.51	0.30	0.21	41.70
Mardan	0.56	0.39	0.17	30.03
Nowshera	0.58	0.30	0.28	47.83
Peshawar	0.63	0.47	0.16	24.83
Shangla	0.27	0.10	0.17	64.47
Swabi	0.51	0.20	0.31	60.81
Swat	0.48	0.32	0.16	33.32
Tank	0.32	0.16	0.16	50.13
Tor Ghar	0.13	0.05	0.09	65.20
Upper Dir	0.26	0.09	0.16	64.15

Source: Estimated from PSLM Data, 2014-15



Exhibit – A.3.2  
Estimated HDI and IHDI – 2013  
[Districts of KPK Province]

Districts	Human Development Index [HDI]	Inequality Adjusted HDI [IHDI]	Loss in HDI	Loss (%)
Abbotabad	0.55	0.35	0.20	36.17
Bannu	0.37	0.16	0.21	56.86
Batagram	0.33	0.20	0.12	37.24
Bonair	0.38	0.22	0.15	40.22
Charsada	0.51	0.30	0.21	40.86
Chitral	0.34	0.16	0.18	53.78
D.I.Khan	0.32	0.12	0.19	60.93
Hangu	0.46	0.25	0.21	45.56
Haripur	0.58	0.41	0.17	29.13
Karak	0.37	0.17	0.20	53.86
Kohat	0.50	0.28	0.22	44.20
Kohistan	0.14	0.04	0.11	73.40
Lakki Marwat	0.33	0.16	0.17	50.93
Lower Dir	0.43	0.24	0.19	44.18
Malakand	0.55	0.37	0.18	32.65
Manshera	0.45	0.23	0.22	48.55
Mardan	0.54	0.29	0.25	45.80
Nowshera	0.56	0.34	0.22	38.89
peshawar	0.60	0.38	0.22	36.66
Shangla	0.27	0.11	0.16	58.09
Swabi	0.51	0.25	0.26	51.51
Swat	0.49	0.28	0.22	43.96
Tank	0.28	0.09	0.19	67.47
Torgarh	0.12	0.04	0.09	70.70
Upper Dir	0.29	0.09	0.21	70.94
Source: Estimated from PSLM Data, 2012-13				

Exhibit – A.3.3  
Estimated HDI and IHDI – 2011  
[Districts of KPK Province]

Districts	Human Development Index [HDI]	Inequality Adjusted HDI [IHDI]	Loss in HDI	Loss (%)
Abbotabad	0.59	0.36	0.23	39.01
Bannu	0.36	0.19	0.16	46.01
Batagram	0.33	0.11	0.23	67.77
Bonair	0.25	0.11	0.15	57.37
Charsada	0.49	0.29	0.20	40.95
Chitral	0.30	0.11	0.19	63.51
D.I.Khan	0.29	0.10	0.19	66.14
Hangu	0.42	0.21	0.21	49.37
Haripur	0.61	0.37	0.24	39.27
Karak	0.30	0.11	0.18	61.57
Kohat	0.46	0.24	0.22	48.24
Kohistan	0.09	0.02	0.07	83.18
Lakki Marwat	0.26	0.11	0.15	57.22
Lower Dir	0.48	0.28	0.21	42.70
Malakand	0.44	0.21	0.24	53.79
Manshera	0.42	0.16	0.26	62.00
Mardan	0.46	0.28	0.18	38.78
Nowshera	0.50	0.26	0.25	48.96
Peshawar	0.58	0.40	0.18	30.63
Shangla	0.27	0.10	0.17	62.29
Swabi	0.47	0.24	0.23	48.45
Swat	0.44	0.24	0.20	45.38
Tank	0.24	0.08	0.16	68.37
Upper Dir	0.32	0.11	0.21	65.91
Source: Estimated from PSLM Data, 2010-11				

Exhibit – A.4.1  
Estimated HDI and IHDI – 2015  
[Districts of Balochistan Province]

Districts	Human Development Index [HDI]	Inequality Adjusted HDI [IHDI]	Loss in HDI	Loss (%)
Awaran	0.14	0.05	0.09	65.79
Barkhan	0.25	0.07	0.18	72.02
Bolan/ Kachhi	0.24	0.05	0.19	79.25
Chagai	0.18	0.03	0.14	81.48
Dera Bugti	0.17	0.06	0.11	63.04
Gwadar	0.41	0.16	0.24	59.69
Harnai	0.17	0.07	0.10	61.58
Jaffarabad	0.18	0.09	0.10	53.13
Jhal Magsi	0.13	0.05	0.08	59.05
Kalat	0.28	0.10	0.18	63.03
Kharan	0.19	0.06	0.13	69.91
Khuzdar	0.24	0.08	0.16	66.46
Killa Abdullah	0.16	0.07	0.09	57.47
Killa Saifullah	0.24	0.08	0.16	65.30
Kohlu	0.17	0.04	0.12	73.54
Lasbela	0.34	0.07	0.27	79.99
Loralai	0.24	0.05	0.19	77.45
Mastung	0.35	0.15	0.20	56.72
Musakhel	0.20	0.05	0.15	76.88
Nasirabad/ Tamboo	0.24	0.08	0.16	68.07
Nushki	0.25	0.08	0.17	67.59
Pishin	0.28	0.13	0.14	51.63
Quetta	0.52	0.34	0.19	35.60
Sheerani	0.16	0.04	0.12	75.61
Sibbi	0.32	0.08	0.24	74.91
Washuk	0.15	0.05	0.09	63.10
Zhob	0.31	0.07	0.23	76.38
Ziarat	0.24	0.09	0.16	64.47

Source: Estimated from PSLM Data, 2014-15

Exhibit – A.4.2  
Estimated HDI and IHDI – 2013  
[Districts of Balochistan Province]

Districts	Human Development Index [HDI]	Inequality Adjusted HDI [IHDI]	Loss in HDI	Loss (%)
Awaran	0.18	0.07	0.11	62.83
Barkhan	0.24	0.08	0.17	68.65
Bolan/Kachhi	0.20	0.03	0.17	85.02
Chaghi	0.21	0.05	0.16	76.42
Dera Bugti	0.13	0.02	0.11	87.31
Gawadar	0.37	0.13	0.24	64.23
Harnai	0.25	0.08	0.17	69.52
Jaffarabad	0.25	0.10	0.15	59.95
Jhal Magsi	0.21	0.07	0.13	64.19
Kalat	0.32	0.10	0.21	67.37
Keych/Turbat	0.26	0.05	0.20	79.88
Kharan	0.24	0.05	0.19	78.45
Khuzdar	0.27	0.06	0.20	76.72
Kohlu	0.08	0.01	0.07	84.52
Lasbella	0.28	0.07	0.21	75.96
Loralai	0.22	0.09	0.13	60.53
Mastung	0.43	0.19	0.24	56.33
Musa Khel	0.12	0.04	0.08	65.68
Nasirabad	0.18	0.05	0.13	72.36
Nauski	0.32	0.08	0.24	75.87
Pashin	0.32	0.11	0.21	65.11
Qilla Abdullah	0.18	0.06	0.12	67.70
Qilla Saifullah	0.22	0.06	0.16	72.44
Quetta	0.53	0.23	0.29	55.80
Sheani	0.18	0.06	0.11	65.61
Sibbi	0.40	0.14	0.26	64.06
Washuk	0.15	0.06	0.10	62.54
Zhob	0.16	0.03	0.13	79.16
Ziarat	0.31	0.08	0.23	73.33

Source: Estimated from PSLM Data, 2012-13

Exhibit – A.4.3  
Estimated HDI and IHDI – 2011  
[Districts of Balochistan Province]

Districts	Human Development Index [HDI]	Inequality Adjusted HDI [IHDI]	Loss in HDI	Loss (%)
Awaran	0.22	0.05	0.16	76.08
Barkhan	0.16	0.03	0.14	83.30
Bolan/Kacchi	0.22	0.05	0.17	75.91
Chagi	0.17	0.03	0.14	80.84
Dera Bugti	0.06	0.01	0.05	87.75
Gwadar	0.33	0.10	0.23	68.44
Harnai	0.21	0.08	0.13	62.87
Jafarabad	0.17	0.06	0.11	66.14
Jhal Magsi	0.19	0.06	0.13	69.48
Kalat	0.30	0.09	0.21	70.26
Ketch/Turbat	0.26	0.07	0.19	72.64
Kharan	0.18	0.04	0.13	76.22
Khuzdar	0.27	0.06	0.21	78.96
Kohlu	0.14	0.02	0.12	88.37
Lasbilla	0.25	0.05	0.20	79.64
Lorali	0.16	0.03	0.13	83.57
Mastung	0.33	0.08	0.25	75.00
Musakhel	0.09	0.03	0.06	67.27
Nasirabad	0.20	0.05	0.15	76.90
Nushki	0.18	0.04	0.14	78.04
Panjgur	0.17	0.04	0.13	75.66
Pashin	0.22	0.06	0.16	71.51
Qillah abdullah	0.26	0.07	0.19	71.69
Qillah Saifuallah	0.17	0.02	0.15	88.57
Quetta	0.51	0.23	0.28	55.23
Sherani	0.16	0.04	0.12	74.08
Sibbi	0.48	0.11	0.37	76.44
Washuk	0.17	0.04	0.13	75.23
Zhob	0.22	0.04	0.18	80.74
Ziarat	0.20	0.07	0.13	66.88

Source: Estimated from PSLM Data, 2010-11

Exhibit – A.5.1  
Estimated Inequalities in HDI Components – 2015  
[Districts of Punjab Province]

Districts	Atkinson			Gini		
	Education	Health	Living Standard	Education	Health	Living Standard
Islamabad	0.015	0.218	0.011	0.091	0.334	0.073
Attock	0.021	0.409	0.134	0.112	0.418	0.246
Rawalpindi	0.006	0.271	0.092	0.061	0.357	0.169
Jhelum	0.007	0.454	0.130	0.068	0.461	0.242
Chakwal	0.013	0.322	0.233	0.090	0.400	0.349
Sargodha	0.026	0.326	0.262	0.129	0.348	0.403
Bhakkar	0.053	0.433	0.145	0.181	0.439	0.305
Khushab	0.039	0.306	0.251	0.145	0.356	0.397
Mianwali	0.034	0.329	0.231	0.136	0.364	0.383
Faisalabad	0.028	0.389	0.181	0.129	0.449	0.328
Chiniot	0.041	0.442	0.275	0.162	0.440	0.435
Jhang	0.036	0.272	0.250	0.149	0.363	0.418
T.T. Singh	0.030	0.199	0.217	0.130	0.335	0.384
Gujranwala	0.017	0.234	0.054	0.101	0.317	0.139
Hafizabad	0.025	0.253	0.138	0.121	0.360	0.270
Gujrat	0.013	0.168	0.077	0.085	0.260	0.196
Mandi Bahauddin	0.014	0.163	0.130	0.091	0.268	0.283
Sialkot	0.009	0.201	0.040	0.070	0.339	0.131
Narowal	0.007	0.183	0.099	0.064	0.337	0.251
Lahore	0.019	0.384	0.021	0.107	0.321	0.063
Kasur	0.091	0.201	0.229	0.138	0.325	0.377
Sheikhupura	0.019	0.202	0.136	0.103	0.327	0.256
Nankana Sahib	0.048	0.188	0.263	0.141	0.258	0.400
Okara	0.043	0.365	0.237	0.154	0.379	0.393
Sahiwal	0.067	0.255	0.286	0.190	0.294	0.438
Pakpattan	0.039	0.426	0.230	0.156	0.437	0.398
Vehari	0.055	0.252	0.291	0.188	0.347	0.443
Multan	0.057	0.373	0.259	0.179	0.378	0.343
Lodhran	0.054	0.437	0.290	0.173	0.480	0.450
Khanewal	0.038	0.385	0.252	0.154	0.441	0.416
D. G. Khan	0.138	0.542	0.421	0.273	0.509	0.505
Rajanpur	0.228	0.513	0.344	0.327	0.533	0.446
Layyah	0.025	0.318	0.259	0.120	0.381	0.394
Muzaffargarh	0.083	0.381	0.293	0.225	0.426	0.447
Bahawalpur	0.108	0.362	0.263	0.254	0.457	0.425
Bahawalnagar	0.074	0.319	0.199	0.203	0.395	0.350
Rahim Yar Khan	0.084	0.372	0.248	0.228	0.470	0.414

Source: Estimated from PSLM Data, 2014-15

Exhibit – A.5.2  
Estimated Inequalities in HDI Components– 2015  
[Districts of Sindh Province]

Districts	Atkinson			Gini		
	Education	Health	Living Standard	Education	Health	Living Standard
Jacobabad	0.207	0.495	0.255	0.328	0.494	0.401
Kashmore	0.295	0.510	0.352	0.342	0.488	0.476
Shikarpur	0.102	0.403	0.288	0.250	0.491	0.421
Larkana	0.037	0.334	0.148	0.154	0.411	0.286
Shahdadkot	0.090	0.405	0.213	0.215	0.476	0.382
Sukkur	0.086	0.507	0.331	0.228	0.518	0.415
Ghotki	0.163	0.572	0.352	0.271	0.561	0.495
Khairpur	0.145	0.386	0.348	0.226	0.455	0.434
Naushahro Feroze	0.059	0.404	0.332	0.152	0.465	0.447
Benazir Abad	0.094	0.497	0.345	0.177	0.553	0.468
Dadu	0.169	0.368	0.487	0.217	0.442	0.542
Jamshoro	0.221	0.327	0.540	0.295	0.419	0.529
Hyderabad	0.107	0.294	0.278	0.235	0.319	0.316
Tando Allah Yar	0.146	0.284	0.485	0.299	0.375	0.554
Tando M Khan	0.180	0.194	0.517	0.352	0.280	0.612
Matiari	0.077	0.199	0.380	0.224	0.271	0.494
Badin	0.108	0.322	0.540	0.264	0.383	0.611
Thatta	0.149	0.446	0.760	0.266	0.450	0.749
Sujawal	0.321	0.617	0.736	0.329	0.591	0.766
Sanghar	0.142	0.488	0.334	0.255	0.515	0.474
Mirpur Khas	0.185	0.542	0.507	0.300	0.546	0.589
Umer kot	0.130	0.653	0.409	0.275	0.623	0.545
Tharparkar	0.128	0.675	0.568	0.231	0.687	0.660
Karachi	0.040	0.475	0.049	0.146	0.498	0.126

Source: Estimated from PSLM Data, 2014-15

Exhibit – A.5.3  
Estimated Inequalities in HDI Components– 2015  
[Districts of KPK Province]

Districts	Atkinson			Gini		
	Education	Health	Living Standard	Education	Health	Living Standard
Chitral	0.017	0.490	0.134	0.098	0.527	0.299
Upper Dir	0.075	0.696	0.388	0.205	0.665	0.518
Lower Dir	0.034	0.434	0.255	0.119	0.452	0.366
Swat	0.053	0.242	0.191	0.162	0.368	0.339
Shangla	0.129	0.602	0.407	0.258	0.608	0.497
Buner	0.073	0.606	0.226	0.171	0.594	0.288
Malakand	0.010	0.277	0.121	0.073	0.407	0.231
Kohistan	0.264	0.832	0.575	0.312	0.742	0.633
Mansehra	0.033	0.481	0.227	0.126	0.397	0.363
Batagram	0.103	0.414	0.355	0.240	0.481	0.449
Abbottabad	0.019	0.352	0.301	0.109	0.376	0.414
Haripur	0.012	0.184	0.206	0.086	0.252	0.283
Tor Ghar	0.093	0.740	0.254	0.217	0.712	0.406
Mardan	0.018	0.356	0.121	0.108	0.365	0.274
Swabi	0.035	0.762	0.157	0.120	0.680	0.283
Charsadda	0.023	0.435	0.115	0.114	0.468	0.255
Peshawar	0.036	0.301	0.083	0.150	0.384	0.157
Nowshera	0.033	0.635	0.134	0.135	0.577	0.234
Kohat	0.080	0.517	0.360	0.202	0.461	0.422
Hangu	0.034	0.668	0.113	0.145	0.549	0.262
Karak	0.025	0.358	0.242	0.109	0.468	0.369
Bannu	0.023	0.437	0.271	0.117	0.524	0.428
Lakki Marwat	0.037	0.507	0.274	0.143	0.580	0.432
D. I. Khan	0.106	0.373	0.394	0.247	0.410	0.500
Tank	0.058	0.380	0.451	0.179	0.390	0.561

Source: Estimated from PSLM Data, 2014-15



Exhibit – A.5.4  
 Estimated Inequalities in HDI Components – 2015  
 [Districts of Balochistan Province]

Districts	Atkinson Value			Gini Coefficient		
	Education	Health	Living Standard	Education	Health	Living Standard
Quetta	0.036	0.357	0.103	0.138	0.432	0.218
Pishin	0.066	0.372	0.379	0.173	0.472	0.498
Killa Abdullah	0.113	0.367	0.478	0.238	0.471	0.590
Chagai	0.433	0.571	0.830	0.313	0.507	0.828
Nushki	0.052	0.619	0.366	0.184	0.533	0.460
Loralai	0.215	0.615	0.553	0.277	0.624	0.598
Barkhan	0.250	0.491	0.585	0.288	0.544	0.674
Musakhel	0.317	0.869	0.459	0.366	0.708	0.533
Killa Saifullah	0.011	0.513	0.224	0.087	0.593	0.393
Zhob	0.203	0.605	0.801	0.331	0.628	0.776
Sheerani	0.040	0.694	0.423	0.150	0.663	0.551
Sibbi	0.485	0.610	0.748	0.429	0.546	0.685
Harnai	0.530	0.316	0.462	0.399	0.382	0.568
Ziarat	0.161	0.578	0.629	0.276	0.577	0.649
Kohlu	0.327	0.681	0.520	0.360	0.651	0.581
Dera Bugti	0.226	0.363	0.733	0.298	0.397	0.716
Bolan/ Kachhi	0.360	0.607	0.781	0.395	0.600	0.804
Jaffarabad	0.065	0.415	0.364	0.201	0.478	0.473
Nasirabad	0.268	0.523	0.540	0.310	0.583	0.601
Jhal Magsi	0.187	0.269	0.466	0.287	0.374	0.571
Kalat	0.031	0.560	0.512	0.135	0.540	0.627
Mastung	0.036	0.220	0.640	0.147	0.357	0.697
Khuzdar	0.088	0.272	0.598	0.191	0.390	0.609
Awaran	0.111	0.335	0.421	0.216	0.420	0.551
Kharan	0.288	0.506	0.558	0.259	0.565	0.650
Washuk	0.115	0.384	0.470	0.247	0.493	0.585
Lasbela	0.559	0.625	0.807	0.429	0.625	0.687
Gwadar	0.047	0.566	0.430	0.149	0.474	0.556

Source: Estimated from PSLM Data, 2014-15