

**On the Human Development Index and Human Poverty Index
for Nigerian states, 2006-2009.**

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Abstract

Gross Domestic Product per capita (GDP per capita) is an indicator of the average standard of living of individual members of the population. Despite this importance of GDP per capita, economic theorist finds flaws and problems with this indicator since it only covers the financial side of human development. In this paper, we find the Human Development Index (HDI) and Human Poverty Index (HPI) which incorporates the main factors of human life for all 36 states of Nigeria, including the Federal Capital Territory (FCT), Abuja. We observe variation among states according to HDI and HPI.

1.0 Introduction

The Human Development Index (HDI) is a composite statistic used to rank countries by level of “Human development” and separate developed (high development), developing (middle development), and underdeveloped (low development) countries. HDI incorporates the main factors of human life such as health, education and income. Deprivation in these areas of human life is measured by calculating **Human Poverty Index (HPI)**. The origins of the HDI are to be found in the **United Nations Development Programme’s (UNDP)**. These were devised and launched by Haq [2] and he had the explicit purpose: “to shift the focus of development economics from national income accounting using the Gross Domestic Product Per Capita (GDP) an indicator of the average standard of living of individual members of the population (an increase in GDP per capita signifies national growth), to people centred policies. Haq [2] was sure that a simple composite measure of human development was needed in order to convince the public, academics, and policy-makers that they can and should evaluate development not only by economic advances, but also improvements in human well-being. Sen [5] provided the underlying conceptual framework and though he initially opposed Haq’s idea, he went on to help Haq develop the **Human Development Index (HDI)**. The HDI has since 1990 being used by the UNDP for its annual **Human Development Reports (HDR)**.

1.1 Criticisms of HDI

The HDI has been criticised on a number of grounds, including failure to include any ecological considerations, focusing exclusively on national performance and ranking, not paying much attention to development from a global perspective and based on grounds of measurement error of the underlying statistics and formula changes by the UNDP which can lead to severe misclassifications of countries in the categories of being a ‘low’, ‘medium’, ‘high’ or ‘very high’ human development country. Other criticisms include:

1. “HDR has lost touch with their original vision and the index fails to capture the essence of the world it seeks to portray”.
2. A “redundant” and a “reinvention of the wheel”, measuring aspects of development that have already been exhaustively studied.
3. Having an inappropriate treatment of income, lacking year-to-year comparability, and assessing development differently in different groups of countries.

A few authors have proposed alternative indices to address some of HDI’s shortcomings. However, of those proposed alternatives to the HDI, few have produced alternatives covering so many countries, and that no development index (other than, perhaps, Gross Domestic Product per capita) has been used so extensively – or effectively, in discussions and developmental planning as the HDI.

The UNDP has however gone through all these criticisms and has adequately noted the shortcomings and finally came up with an improvement in the methodology of calculating HDI ever since of which we will be adopting in our calculations of the HDI and HPI for Nigerian states including the Federal Capital Territory (FCT), Abuja.

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1.2 Concept of HDI and HPI

The HDI takes into account three basic dimensions of human development, namely, longevity, knowledge and decent standard of living. Longevity is measured by life expectancy at birth, knowledge is measured by a combination of the adult literacy rate and the combined primary, secondary, and tertiary gross enrolment ratio and standard of living by GDP per capita (PPP US\$). Here PPP stand for **Purchasing Power Parity** and is a criterion for an appropriate exchange rate between currencies when a representative basket of goods in two different countries cost the same. The three indices are calculated for longevity, knowledge and decent standard of living and HDI is calculated as average of these three indices.

The HPI for developing countries measures human deprivations in the three dimensions of human development as HDI i.e. longevity, knowledge and a decent standard of living. Deprivation in longevity is measured by calculating the percentage of people not expected to survive to age 40 years; deprivation in knowledge is measured by the percentage of adults who are illiterate; deprivation in a decent standard of living is measured by three variables: the percentage of people not having sustainable access to safe drinking water source; the percentage of people without access to health services and the percentage of children below the age of five who are underweight. Human poverty index for selected high-income **Organization for Economic Co-operation and Development (OECD)** countries includes social exclusion, in addition to the three dimensions in HPI for developing countries.

2.0 Data Source

The data sets used in this paper was obtained from the National Population Commission (NPC) of the 2006 Population and Housing Census conducted from March 21st – 27th 2006, but published in February 2009, see [3] and [4]. It was designed to collect information on the quantity and quality of the population and housing, under the following broad categories: demographic and social education, disability, household composition, economic activity, migration, housing and amenities. The primary mission of the 2006 census was to provide vital information for policy making, evidence-based planning and good governance. The 2006 Population and Housing Census, has been used as a bench mark for many reports and estimations on economic growth and human development.

Other sources of data are from various studies carried out by the UNDP in collaboration with the National Bureaus for Statistics (NBS) and other non-governmental and humanitarian organisations, MDGs and of course economic development committees set up by the Nigerian government to look into various methods for economic development since 2007.

Data set on age groups, sex and educational status was obtained from the 2006 census publication released in 2009 titled Priority Tables for the 2006 National Census by the National Population Commission (NPC). Data set containing information on the distribution of regular households by main source of water supply for domestic use was also obtained from the NPC Priority Reports for the 2006 Population Census.

Data set containing information on the GDP per capita in US Dollars – 2007, all of “The Nigerian Development Report” of the UNDP 2008-2009, where also sources of data used in this paper. Other sources of data used in this work are as itemised in the references.

3.0 Methodology

This section provides the methodology for calculating HDI and HPI. We start with the method for calculating HDI and explain how to calculate different indices used in the calculation of HDI. The calculations are exemplified by calculating HDI for Nigeria. We then discuss the methodology for calculating different indicators used in the calculation of HPI. Again these calculations are exemplified by calculating HPI for Nigeria. Different measures for explaining variation in poverty and development are discussed in Antony and Rao [1].

3.1 Method for calculating HDI

HDI is a composite index which combines economic and social factors to evaluate the development of a person, state or a country. There are three indices which are combined to give HDI and there are three steps to create this index:

1. Describing dimensions for HDI to include.
2. Describing indicators that capture these dimensions.
3. Describing the method for combining these indicators to get a single value which represents HDI.

A long and healthy life (Health index), being knowledgeable (Education index) and a decent standard of living (Income index) are the three dimensions proposed by United Nation Development Programme (UNDP) for calculating HDI. In our analysis, we use some specified indicators describe by UNDP which capture these three dimensions. These indicators are then normalized between 0 and 1 by constructing an index for each dimension. To create an index we use the following general formula.

$$Index = \frac{Actual\ value\ of\ X - Min\ of\ X}{Max\ of\ X - Min\ of\ X} \tag{1}$$

Where,

Actual value of X = value calculated from data for indicator X.

Min of X = minimum value that indicator X can obtain.

Max of X = maximum value that indicator X can obtain.

The minimum and maximum values for different indicators are proposed by UNDP and these are mentioned below.

Health Index

Life expectancy at birth is used as an indicator for long and healthy life. For calculating the health index we use the general formula. The UNDP uses 25 and 85 years as goal posts for health index. That is

$$Health\ Index = \frac{Life\ Expectancy - 25}{85 - 25} \tag{2}$$

The life expectancy calculation method is described in the appendix.

Education Index

The education index is an aggregate index derived from two indices. One is the adult literacy rate, that is, the literacy rate of the population of age 15 years and above. The other is the gross enrolment ratio which is obtained by combining primary, secondary and tertiary gross enrolment in age 6 to 14 years. These two indices are combined, giving two third weights to adult literacy and one third weights to gross enrolment, to obtain the education index. The following mathematical form is thus used to obtain the education index.

$$Education\ Index = \frac{2}{3} Adult\ literacy\ index + \frac{1}{3} Gross\ enrolment\ index \tag{3}$$

To calculate Adult Literacy Ratio (ALR) index and Gross Enrolment Ratio (GER) index, UNDP uses 0% and 100% values for minimum and maximum goal posts in these formulas. Hence

$$ALR\ Index = \frac{Adult\ literacy\ percentage - 0}{100 - 0} \tag{4}$$

and

$$GER\ Index = \frac{Gross\ enrolment\ percentage - 0}{100 - 0} \tag{5}$$

Income Index

To calculate income index, UNDP uses GDP per capita (PPP\$). The UNDP uses ‘adjusted per capita income for countries’ to calculate income index. The GDP per capita (PPP\$) is then transformed to log (GDP per capita (PPP\$)) because increases of income at lower levels have then greater impact on the income index. The UNDP uses minimum and maximum goal posts \$100 and \$40000 for the income index. The following formula is thus used to calculate the income index.

$$Income\ Index = \frac{\log(GDP\ per\ capita\ (PPP\$)) - \log(100)}{\log(40000) - \log(100)} \tag{6}$$

The GDP per capita in Nigerian currency, the Naira is calculated for each state of Nigeria and then multiplied by the average nominal exchange rate of US \$(2009) to obtain the GDP per capita in dollars. This is not exactly the same as GDP per capita (PPP\$). This can be known as GDP per capita converted to dollars. This will affect income index values but the variation among the values of income index for different states will be the same since this effect is constant for all 36 states and Abuja. Income index is then calculated for each state of Nigeria according to the following formula.

$$Income\ index = \frac{\log\ GDP\ per\ capita\ (\$) - \log(100)}{\log(40000) - \log(100)} \tag{7}$$

It is a known fact that costs of living in different states are different. But states with high cost of living also provide more opportunity for a person and mostly earning is also high in that state. This fact minimizes the difference of cost of living among different states. Also in calculation of income index we use logarithm (log) for values used in the formula that reduce the influence of higher values.

Human Development Index

After computing the above three indices, HDI is calculated as a simple average of these indices for each state of Nigeria. That is

$$HDI = \frac{Health\ index + Education\ index + Income\ index}{3} \tag{8}$$

3.2 Calculation of HDI for Nigeria

1. Life Expectancy Index

The life expectancy at birth for Nigeria is calculated by using a population of deaths and births within a time period of 3 years. A life table was derived which has since being used to evaluate the Life Expectancy at birth for Nigeria with fluctuations being observed over the years. Using this Life Table, we obtain life expectancy at birth as per methodology

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described in appendix I as 50.14 years for Nigeria. Therefore

$$\text{Life expectancy Index} = \frac{50.14 - 25}{85 - 25} = 0.419$$

2. Education Index

To calculate education index, we first calculate the Adult Literacy Ratio index and gross enrolment ratio index for Nigeria. We have total number of individual above age 15 is 81,695,493 and from these individuals, 51,249,228 are literate, see NPC (2006). Therefore,

$$\text{ALR} = \frac{51,249,228}{81,695,493} = 0.6273$$

Also the total numbers of individual between age group 6 to 14 is 31,563,078 and from these individual 21,348,455 are enrolled in school. Therefore

$$\text{GER} = \frac{21,348,455}{31,563,078} = 0.6764$$

Hence,

$$\text{Education index} = \frac{2}{3} \text{ALR} + \frac{1}{3} \text{GER} = \frac{2}{3} 0.6273 + \frac{1}{3} 0.6764 = 0.6437$$

3. Income Index

We calculate GDP per capita (\$) to calculate income index. For this purpose first GDP (Naira) as a whole is calculated and then divided by the total number of population. Then GDP per capita (Naira) is converted to GDP per capita (\$) according to average nominal exchange rate of 2009. Therefore for Nigeria we obtain GDP per capita (\$) as 1,156.82, See (Human Development Report Nigeria 2008 – 2009, Published for UNDP Nigeria), see [6]. Hence

$$\text{Income Index} = \frac{\log 1,156.82 - \log 100}{\log 40000 - \log 100} = 0.4086$$

Human Development Index

Finally to obtain Human development index we calculate an average of these three indices.

$$\text{HDI} = \frac{0.419 + 0.6437 + 0.4086}{3} = 0.4904$$

3.3 Method for Calculating HPI

The Human Poverty Index (HPI) measures deprivations in three dimensions of human development. These three dimensions of human life consist of longevity, knowledge and a decent standard of living. Deprivation in long and healthy life is denoted by P1 and calculated by the percentage of people not expected to survive to age 40. Lack of knowledge is denoted by P2 and calculated as the percentage of adults who are illiterate. Deprivation in decent standard of living, P3, is a composite measure in two dimensions of decent standard of living. These two dimensions are:

1. P3₁ which is calculated as percentage of people without access to safe drinking water.
2. P3₂ which is calculated as percentage of moderately and severely underweight children under 5 year’s age.

Then these two dimensions are combined in the following way to get P3.

$$P3 = \frac{P3_1 + P3_2}{2} \tag{9}$$

We calculate all these indicators from our data for all 36 states of Nigeria and Abuja the FCT. Finally Human Poverty Index is calculated from the following formula.

$$\text{HPI} = \left[\frac{P1^3 + P2^3 + P3^3}{3} \right]^{\frac{1}{3}} \tag{10}$$

3.4 Calculation of HPI for Nigeria

We calculate all the indicators for HPI. The following are the results we obtained from our calculations

P1 = percentage of people not expected to survive to age 40 years = 0.3130

P2 = percentage of adults who are illiterate = 0.2981

P3 = (P3₁ + P3₂)/2 = (0.6914 + 0.6360)/2 = 0.6637

Where

P3₁ = percentage of people without access to safe drinking water = 0.6914

P3₂ = percentage of moderately and severely underweight children < 5 years age= 0.6360

Finally we calculate HPI for Nigeria.

$$HPI = \left[\frac{1}{3} (P_1^3 + P_2^3 + P_3^3) \right]^{\frac{1}{3}} = \left[\frac{1}{3} (0.3130^3 + 0.2981^3 + 0.6637^3) \right]^{\frac{1}{3}} = 0.4884$$

4.0 Results and Discussions

For each state of Nigeria the index values for the three different components of human development is obtained as per methodology discussed in this paper. These three indices are Education, Health, and Income. From these three indices, HDI is obtained for all states of Nigeria. We also calculate all the indicators of HPI for all states of Nigeria and then calculate HPI for each state.

Table 1 contains education index, health index, income index and HDI for all states of Nigeria. The states are ranked according to the size magnitude of HDI. From this Table, we can observe that Rivers State is on first rank and the HDI value for this state is 0.6132. Yobe is on the 37th rank and the HDI value for this state is 0.2787.

Table 2 gives values of P1, P2, P3 and HPI for all states of Nigeria, including the FCT, Abuja. The states are also ranked according to HPI. Here, we can see that Ekiti is on the first rank and the HPI value for this state is 0.2168. Deprivation in human development is high in Kebbi and the HPI value for this state is 0.5152 and it is ranked 37th. The Federal Capital Territory, Abuja is among the first ten states according to HDI and HPI. The different indicators used to calculate HDI and HPI for all states of Nigeria are shown in Table 3 and Table 4.

Conclusion

We have calculated HDI and HPI for all 36 states of Nigeria and the FCT, Abuja and observe variation among states according to HDI and HPI. Ranking these states help us to compare the states according to both HDI and HPI. We found that HDI is highest in Rivers state and lowest in Yobe state while the HPI is highest in Kebbi state and lowest in Ekiti state. This implies that the relative socio-economic progress in terms of material wealth on the one hand and the human development on the other is highest in Rivers state and lowest in Yobe state. Also, there are more opportunities and choices most basic to human development in Ekiti state while these are denied in Kebbi state.

Appendix

FOR CALCULATION OF LIFE EXPECTANCY

Life expectancy is calculated from life table. Life table consist of different columns those are calculated as follows

1. Divide the population in different age groups and note the number of persons in each age group. Then calculate the age specific death rates for each age group by

$$\frac{\text{Number of Deaths in specific age group}}{\text{Number of persons alive in specific age group}}$$
2. Calculate width of the each age group interval that is the number of years in each age interval.
3. Calculate average proportion of the year lived by those who die. Generally it is assumed that on an average people will live 0.5 of the interval before death. So for each age group average proportion of the year lived by those who die is 0.5 But in some cases death does not occur uniformly across time within age groups. So for those aged under 1 we assume that the average proportion of the year lived by those who die is 0.1.
4. Calculate the probability of dying by the following formula

$$\frac{\text{Number of years in interval} * \text{age specific death rate}}{1 + \text{number of years in interval} * \text{age specific death rate}}$$
5. Calculate the probability of surviving by subtracting the probability of dying from one. (i.e. 1 – probability of dying)
6. Calculate number of persons alive at the start of the interval. This is a hypothetical population and considers 100,000 alive at age 0. Those alive at next age groups are multiplication of probability of surviving the previous interval and population alive at start of previous.
7. Calculate number of deaths during interval by Population alive at start of interval – population alive at start of next interval
8. Calculate number of person years lived through the interval by the following: Number of years in interval (number of persons alive at start of next interval + average proportion of year lived by those who die * number of deaths during interval)

Since at age 85+ everybody dies during the interval so an adjustment has to be made. Whatever is used as an estimate of the number of years lived has little impact on overall life expectancy; however, it is usual to use the following estimate:

$$L_{85+} = \frac{185}{M_{85+}}$$

9. Calculate total number of person years lived after the interval

This is the 'number of person years lived through the interval' column summed from the bottom.

10. Finally calculate Expectation of life that is the number of years a person aged x can be expected to live

$$\frac{\text{Total number of person years lived after the interval}}{\text{Number of person years alive at the start of the interval}}$$

More detail of the calculation of life expectancy with example is available on website of London Health Observatory.

Table 1: Education, Health and Income Indices along HDI for 36 States and Abuja (FCT) of Nigeria

Rank	Name of State	Education Index	Health Index	Income Index	Human Development Index
1	Rivers	0.847	0.333	0.660	0.6132
2	Akwa-Ibom	0.812	0.392	0.608	0.6040
3	Bayelsa	0.731	0.408	0.665	0.6014
4	Lagos	0.878	0.375	0.541	0.5979
5	Delta	0.788	0.447	0.525	0.5866
6	Ondo	0.777	0.425	0.472	0.5580
7	Abia	0.884	0.458	0.235	0.5256
8	Imo	0.897	0.425	0.236	0.5192
9	Ekiti	0.856	0.500	0.192	0.5161
10	FCT Abuja	0.758	0.358	0.418	0.5114
11	Cross River	0.743	0.483	0.300	0.5088
12	Nasarawa	0.550	0.433	0.418	0.4669
13	Enugu	0.845	0.458	0.188	0.4969
14	Katsina	0.523	0.458	0.383	0.4547
15	Benue	0.588	0.375	0.445	0.4695
16	Zamfara	0.355	0.408	0.558	0.4405
17	Niger	0.390	0.483	0.472	0.4485
18	Osun	0.803	0.483	0.101	0.4623
19	Oyo	0.738	0.450	0.172	0.4533
20	Edo	0.788	0.367	0.198	0.4509
21	Kano	0.538	0.433	0.321	0.4307
22	Anambra	0.891	0.358	0.082	0.4438
23	Kaduna	0.593	0.367	0.326	0.4286
24	Jigawa	0.456	0.375	0.384	0.4050
25	Kwara	0.611	0.433	0.194	0.4128
26	Sokoto	0.266	0.425	0.451	0.3808
27	Ebonyi	0.675	0.383	0.114	0.3906
28	Kogi	0.710	0.383	0.064	0.3856
29	Ogun	0.521	0.467	0.151	0.3796
30	Gombe	0.437	0.400	0.210	0.3488
31	Plateau	0.588	0.333	0.111	0.3441
32	Borno	0.265	0.458	0.278	0.3337
33	Kebbi	0.235	0.433	0.271	0.3129
34	Adamawa	0.492	0.358	0.123	0.3243
35	Taraba	0.476	0.392	0.058	0.3085
36	Bauchi	0.383	0.408	0.085	0.2920
37	Yobe	0.268	0.408	0.160	0.2787

Table 2: P1, P2, P3 and HPI for 36 States and Abuja (FCT) of Nigeria

Rank	Name of State	Percentage of People not expected to Survive to Age 40 yrs	Percentage of Adults Who are Illiterate	Percentage of People Deprived From Decent Standard of Living	Human Poverty Index
1	Ekiti	0.272	0.1314	0.2017	0.2168
2	Cross River	0.240	0.2046	0.2223	0.2232
3	FCT Abuja	0.252	0.2022	0.2269	0.2288
4	Akwa-Ibom	0.300	0.1223	0.2112	0.2336
5	Abia	0.306	0.1086	0.2073	0.2348
6	Imo	0.323	0.0859	0.2045	0.2427
7	Lagos	0.324	0.1055	0.2148	0.2466
8	Osun	0.295	0.1816	0.2383	0.2472
9	Enugu	0.299	0.1916	0.2453	0.2530
10	Delta	0.305	0.1826	0.2438	0.2536
11	Bayelsa	0.300	0.2246	0.2623	0.2659
12	Anambra	0.358	0.0924	0.2252	0.2686
13	Rivers	0.361	0.1082	0.2346	0.2732
14	Ondo	0.323	0.2132	0.2681	0.2754
15	Oyo	0.309	0.2487	0.2789	0.2811
16	Ogun	0.330	0.2369	0.2835	0.2885
17	Edo	0.355	0.2067	0.2809	0.2933
18	Nasarawa	0.279	0.3074	0.2932	0.2936
19	Kano	0.296	0.3369	0.3165	0.3174
20	Kaduna	0.316	0.3210	0.3185	0.3185
21	Kogi	0.364	0.2628	0.3134	0.3188
22	Katsina	0.306	0.3518	0.3289	0.3299
23	Ebonyi	0.360	0.3109	0.3355	0.3368
24	Benue	0.314	0.3597	0.3369	0.3380
25	Plateau	0.347	0.3522	0.3496	0.3495
26	Kwara	0.327	0.3707	0.3489	0.3498
27	Gombe	0.274	0.4569	0.3655	0.3801
28	Taraba	0.241	0.4786	0.3599	0.3843
29	Zamfara	0.238	0.4883	0.3634	0.3900
30	Adamawa	0.325	0.4482	0.3866	0.3930
31	Jigawa	0.342	0.4396	0.3908	0.3948
32	Bauchi	0.271	0.5288	0.3999	0.4259
33	Niger	0.241	0.5801	0.4106	0.4527
34	Sokoto	0.305	0.5809	0.4430	0.4699
35	Yobe	0.240	0.6523	0.4460	0.5023
36	Borno	0.265	0.6605	0.4628	0.5134
37	Kebbi	0.303	0.6497	0.4764	0.5152

Table 3: Indicators used for Human Development Index

Name of State	Adult Literacy (% aged 15 & above)	Gross Enrolment	Life Expectancy at Birth	Per Capita Income (\$)
Abia	0.8720	0.907	52.48	407.75
Adamawa	0.4965	0.483	46.48	209.34
Akwa-Ibom	0.8536	0.729	48.52	3,813.01
Anambra	0.8809	0.912	46.48	163.14
Bauchi	0.3847	0.380	49.48	166.82
Bayelsa	0.7489	0.696	49.48	5,388.02
Benue	0.6197	0.526	47.5	1,434.43
Borno	0.2617	0.272	52.48	529.52
Cross River	0.7721	0.686	53.98	604.58
Delta	0.7982	0.767	51.82	2,325.23
Ebonyi	0.6701	0.684	47.98	197.68
Edo	0.7790	0.805	47.02	327.62
Ekiti	0.8445	0.880	55	316.56
Enugu	0.8360	0.862	52.48	307.67
Gombe	0.4508	0.408	49	352.35
Imo	0.8906	0.909	50.5	412.32
Jigawa	0.4678	0.432	47.5	996.01
Kaduna	0.6054	0.568	47.02	707.00
Kano	0.5607	0.493	50.98	683.76
Katsina	0.5385	0.492	52.48	994.28
Kebbi	0.2381	0.228	50.98	508.50
Kogi	0.7153	0.699	47.98	147.01
Kwara	0.6071	0.620	50.98	320.21
Lagos	0.8770	0.879	47.5	2,554.98
Nasarawa	0.5530	0.543	50.98	1,226.65
Niger	0.3782	0.415	53.98	1,687.79
Ogun	0.7434	0.076	53.02	247.28
Ondo	0.7652	0.801	50.5	1,688.34
Osun	0.7953	0.818	53.98	183.07
Oyo	0.7324	0.749	52	280.29
Plateau	0.6166	0.532	44.98	194.57
Rivers	0.8631	0.814	44.98	5,210.69
Sokoto	0.2712	0.257	50.5	1,488.98
Taraba	0.4844	0.458	48.52	141.78
Yobe	0.2561	0.292	49.48	261.00
Zamfara	0.3608	0.343	49.48	2,834.38
FCT Abuja	0.7807	0.712	46.48	1,215.61

Table 4: Indicators used for Human Poverty Index

Name of State	Percentage of People Not Expected To Survive to Age 40 Years (P1)	Adult Illiteracy (% Aged 15 and above) P2	Percentage of People Without Access to Safe Drinking Water (P3 ₁)	Percentage of Under Weight Children Under 5 years of Age (P3 ₂)	P3 = Average of P3 ₁ and P3 ₂
Abia	0.306	0.1086	0.4583	0.4524	0.4554
Adamawa	0.325	0.4482	0.7490	0.6970	0.7230
Akwa-Ibom	0.300	0.1223	0.6256	0.4842	0.5549
Anambra	0.358	0.0924	0.6225	0.4477	0.5351
Bauchi	0.271	0.5288	0.8387	0.7915	0.8151
Bayelsa	0.300	0.2246	0.7590	0.4930	0.6260
Benue	0.314	0.3597	0.9152	0.7274	0.8213
Borno	0.265	0.6605	0.6057	0.7537	0.6797
CrossRiver	0.240	0.2046	0.7477	0.5094	0.6286
Delta	0.305	0.1826	0.7529	0.5038	0.6284
Ebonyi	0.360	0.3109	0.7720	0.5888	0.6804
Edo	0.355	0.2067	0.5510	0.5001	0.5256
Ekiti	0.272	0.1314	0.7639	0.4537	0.6088
Enugu	0.299	0.1916	0.6965	0.4650	0.5808
Gombe	0.274	0.4569	0.7551	0.7696	0.7624
Imo	0.323	0.0859	0.6444	0.4663	0.5554
Jigawa	0.342	0.4396	0.5633	0.7963	0.6798
Kaduna	0.316	0.3210	0.799	0.7580	0.7785
Kano	0.296	0.3369	0.7352	0.7646	0.7499
Katsina	0.306	0.3518	0.8142	0.8229	0.8186
Kebbi	0.303	0.6497	0.8725	0.7979	0.8352
Kogi	0.364	0.2628	0.7083	0.7443	0.7263
Kwara	0.327	0.3707	0.6685	0.6874	0.6780
Lagos	0.324	0.1055	0.3818	0.4996	0.4407
Nasarawa	0.279	0.3074	0.7973	0.7559	0.7766
Niger	0.241	0.5801	0.7269	0.7856	0.7563
Ogun	0.330	0.2369	0.4663	0.5562	0.5113
Ondo	0.323	0.2132	0.8337	0.5019	0.6678
Osun	0.295	0.1816	0.7745	0.4707	0.6226
Oyo	0.309	0.2487	0.8398	0.5057	0.6728
Plateau	0.347	0.3522	0.8640	0.6777	0.7709
Rivers	0.361	0.1082	0.5091	0.4702	0.4897
Sokoto	0.305	0.5809	0.8187	0.7990	0.8089
Taraba	0.241	0.4786	0.8706	0.7377	0.8042
Yobe	0.240	0.6523	0.7256	0.7472	0.7364
Zamfara	0.238	0.4883	0.8095	0.7989	0.8042
FCT Abuja	0.252	0.2022	0.3719	0.6194	0.4957

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