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**Economic and Social Commission for Western Asia (ESCWA)**

# **Country Background Paper Multidimensional Poverty in Tunisia**



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## **Acknowledgments**

This paper has been prepared by the Multidimensional Poverty Team of the Economic Development and Globalization Division (EDID) of ESCWA. The team members are Khalid Abu-Ismail, Bilal Al-Kiswani, Dina Armanious, Verena Gantner, Sama El-Haj Sleiman, Ottavia Pesce, and Maya Ramadan. It serves as a country background paper to the Arab Multidimensional Poverty Report, a joint publication by the League of Arab States, ESCWA, UNICEF and Oxford Poverty and Human Development Initiative. The team members are grateful to Sabina Alkire and Bilal Malaeb from OPHI for their technical advice and collaboration on the construction of the regional Arab Multidimensional Poverty Index, which we apply in this paper using the household level data from the Tunisia MICS (2011).

## 1. Introduction

- 1.1. Tunisia is a lower middle-income country<sup>1</sup> in North Africa. **Error! Reference source not found.** shows some of the main socio-economic indicators for Tunisia. The Human Development Index (HDI) – a measure of basic human development achievements in a country – for Tunisia in 2014 was 0.72, which puts the country in the high human development category, positioning it 97<sup>th</sup> out of 188 countries and territories. In terms of money metric poverty, 15.2% of the population were below the national poverty line in 2015 (the most recent year for which data is available).

**Table 1: Main socio-economic indicators for Tunisia**

Indicators	Value (2015 unless otherwise indicated)
Population	11,273,661
GDP (current US\$)	US\$ 43.2 billion
GNI per capita, Atlas method (current US\$)	US\$ 3,930
Human Development Index (HDI) <sup>2</sup>	0.725
Life expectancy at birth	75 years
Expected years of schooling	14.6 years
Mean years of schooling	7.1
GNI p.c. (2011 PPP\$)	US\$ 10,249
Human Development 2014 rank	97 <sup>th</sup> (over 188 countries)
Gender Development Index	0.904
Inequality adjusted HDI	0.562
GINI coefficient	35.8 (2010)
Poverty headcount ratio at national poverty lines (% of population)	15.2% (2015)
Gross enrolment ratio (primary)	114.2% (2015)

Sources: for population, GDP, GNI p.c., Gini Index, poverty headcount, gross enrolment ratio: World Bank World Development Indicators data accessed October 2017. For HDI, life expectancy, expected years of schooling, mean years of schooling, gender development index and inequality adjusted HDI: UNDP Human Development Reports accessed October 2017.

- 1.2. The objective of the present paper is to provide in-depth analysis of the prevalence, distribution (geographical and by gender among other household socio-economic characteristics), and severity of multi-dimensional poverty in Tunisia. It is one of ten country profiles prepared by ESCWA as background papers for the Arab Multidimensional Poverty Report<sup>3</sup> making use of the new Multidimensional Poverty Index proposed for the Arab States (Arab MPI).

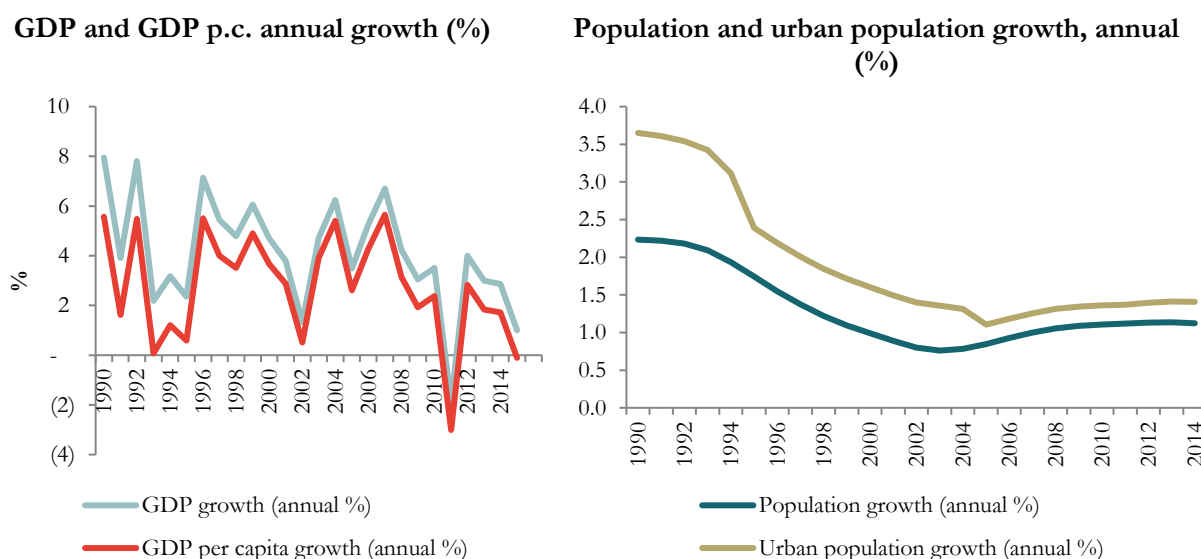
<sup>1</sup> Country classification corresponds to the World Bank standards for the fiscal year 2017 as follows: lower middle-income economies are those with a GNI per capita, calculated using the World Bank Atlas method, between \$1,026 and \$4,035; upper middle-income economies are those with a GNI per capita between \$4,036 and \$12,475; high-income economies are those with a GNI per capita of \$12,476 or more (World Bank).

<sup>2</sup> The HDI is a summary measure for assessing long-term progress in three basic dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living. A long and healthy life is measured by life expectancy. Knowledge level is measured by mean years of education among the adult population, which is the average number of years of education received in a life-time by people aged 25 years and older; and access to learning and knowledge by expected years of schooling for children of school-entry age. The standard of living dimension is measured by GNI per capita. [http://hdr.undp.org/sites/all/themes/hdr\\_theme/country-notes/TUN.pdf](http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/TUN.pdf)

<sup>3</sup> Arab Multidimensional Poverty Report was launched in September 2017 as a joint publication of the League of Arab States' Council for Council of Arab Ministers for Social Affairs, the Economic and Social Commission for Western Asia (ESCWA), the United Nations Children's Fund (UNICEF), and Oxford Poverty and Human Development Initiative (OPHI).

- 1.3. As shown in Figure 1, Tunisia showed on average positive growth rates, facilitated by a stable macro-economic setting and a stepwise liberalization of investments and trade before the revolution in 2011 (IMF, 2016). In 2011, the revolution caused the GDP growth rate to drop. GDP growth recovered immediately after the revolution, but further internal and external shocks caused another decline in the growth rate after 2012.
- 1.4. The right chart of **Error! Reference source not found.** shows that the population growth of the total as well of the urban population is slowing down. Given the low fertility rate and the increased life expectancy, Tunisia could be considered a country that completed demographic transition. The urban population growth has been slowing down starting in the 1990s and only recently started to grow again. Urban areas in Tunisia are mainly located in the coastal towns such as Tunis, Sfax, or Nabeul and have a high population density (UNECA, 2017)

**Figure 1: GDP, GDP p.c. and population growth (%)**



Source: World Bank (2017)

## 2. Methodology and Data

- 2.1. Multi-dimensional poverty indices measure multiple deprivations in basic services and capabilities, such as poor health, lack of education or illiteracy, and lacking access to safe drinking water. The multi-dimensional poverty approach complements monetary measures of poverty by considering these multiple deprivations and their overlap. The conceptual framework of multidimensional poverty measures draws from Sen's capability approach which states that development is realised not only through increased incomes and share in assets, but also through people's increased capabilities to lead lives that they have reason to value. Sen contends that capability deprivation is a more complete measure of poverty than income as it captures the aspects of poverty which may get lost or hidden in aggregate statistics (Sen 1985, 1999). In recent years, this conceptual framework was translated into practice to measure household poverty through the Multidimensional Poverty Index (MPI).

- 2.2. The methodology of the MPI is based on the Alkire-Foster (AF) Method offering a comprehensive methodology for counting deprivation and analysing multidimensional poverty. The AF-methodology builds on the Foster-Greer-Thorbecke poverty measure, but it considers multiple dimensions. The AF-methodology includes two steps: first, it identifies the poor using a dual cut-off approach and “counting” the simultaneous deprivations that a person or a household experiences across the different poverty indicators. And the second step is to aggregate this information into the adjusted headcount ratio (or MPI value) which can be decomposed and disaggregated geographically, by socio-economic characteristics, and by indicator.
- 2.3. Under the first step, to identify multidimensionally poor people, the AF-methodology uses a dual cut-off identification approach. The first cut-off sets a deprivation threshold for each indicator which determines whether a household or a person is considered as deprived or non-deprived in the respective indicator. After the cut-offs have been applied for each indicator, the deprivations of each person in all indicators are counted to calculate a deprivation score for that household or person. Weights are assigned to the indicators which reflect a normative value judgement to assess the relative importance of a given indicator as compared to the other indicators in constructing the deprivation score for a household or person. As a result, the deprivation score is a weighted sum of all deprivations. The second cut-off (the poverty cut-off) is set at a value say 20% or 30% against which the deprivation score is compared to in order to define and distinguish multidimensionally poor (those whose deprivation score is equal to or more than the poverty cut-off) from non-poor (whose deprivation score falls below the poverty cut-off).
- 2.4. In the aggregation step of the AF Method, two indices are calculated; the headcount ratio and intensity of poverty. The headcount ratio (H) is the proportion of multidimensionally poor people to the total population. The headcount ratio is a useful measure to learn about the incidence of poverty, but it is insensitive to increases in the number of deprivations a poor person is deprived in. However, utilizing the information on the number of deprivations that poor people experience, the intensity of poverty can be calculated. The intensity of poverty (A), is the average deprivation score that multidimensionally poor people experience. The product of the poverty headcount and poverty intensity is the MPI, which “adjusts” the headcount for the average intensity of poverty that poor people experience.
- 2.5. The use of Multidimensional Poverty Index (MPI) to describe the application of AF Method was coined with the Global MPI launched in 2010 by OPHI and the United Nations Development Program (UNDP). However, the Global MPI has a major shortcoming: it is not very effective in capturing the less severe forms of poverty that characterise many Arab middle-income countries such as Jordan, Egypt or Morocco and thus underestimates the prevalence of less severe forms of multidimensional poverty. However, the AF-Method offers flexibility and it can be tailored to a variety of situations by selecting different dimensions, indicators of poverty within each dimension, and poverty cut offs.
- 2.6. In order to capture a broader spectrum of level and intensity of deprivation that better reflects the conditions of Arab countries, ESCWA and OPHI proposed an Arab MPI with two different levels: poverty and acute poverty. The Arab MPI is composed of three dimensions and twelve indicators. The education dimension has two indicators: school attendance and years of schooling. The health dimension includes three indicators: nutrition, child mortality, and early pregnancy combined with female genital mutilation. The living standard indicators are: access to electricity, improved sanitation facility, safe drinking water, clean cooking fuel, having suitable floor and roof, no overcrowding, and minimum assets of information,

mobility, and livelihood (the deprivation cut-offs for the Arab MPI are presented in Table 2). Each of these indicators has two associated deprivation cut-offs, one reflects the deprivation of acute poverty which is similar (but not identical) to the global MPI. And the other, a higher cut-off denoting a slightly higher standard to measure poverty which is inclusive of acute poverty. While the cut offs usually vary across indicators for acute poverty and poverty, in case of the aggregate score for identifying a poor household, the cut off is the same. A household is considered acutely poor or poor if its total level of deprivation (total of weighted deprivations in all indicators or deprivation score) is higher than one-third of the total possible deprivation ( $k=33.3\%$ ). Similar to the Global MPI, the Arab MPI assigns equal weights to the three dimensions (one third), and indicators within each dimension are equally weighted. To obtain the set of multidimensionally poor people only, all information of deprivation of non-poor persons is censored from the data. Thus, the focus of the MPI measure is purely on the profile of the multidimensionally poor people and the indicators/dimensions in which they are deprived.

- 2.7. The MPI can be decomposed by population sub-groups, such as sub-national regions, or any socio-economic characteristic of a household that is available from the data. Another feature of the MPI is that it can be decomposed to show how much each indicator contributes to poverty. Furthermore, the MPI can also give insight into the percentage of people that are deprived in multiple indicators, but below the poverty cut-off. This percentage of the population is considered vulnerable to poverty. In the case of the Arab MPI, population whose deprivation score is between 20-33.3% is considered as vulnerable to poverty. On the other side of the scale, the MPI can also give insight into how many people are deprived in for example more than half of all the weighted indicators. This percentage share of the population is considered to be in severe poverty. In the Arab MPI, poor people who are deprived in 50% or more of the indicators are considered as severely poor.
- 2.8. The results of this study are based on data from the Multiple Indicator Cluster Survey (MICS), a survey conducted by countries with the support of UNICEF<sup>4</sup>. The survey for Tunisia, conducted in 2011, covers 38,861 individuals. It provides data on education, health and working status for all members of the household; nutrition status of children and women; child mortality; housing conditions (availability of safe drinking water, sanitation facilities, electricity, etc.); and information on ownership of assets (refrigerator, motorbike, cattle, radio, TV etc.

**Table 2: Deprivation definitions and indicator weights**

Dimension	Indicator	Acute poverty if	Poverty if	Weight
Education	Years of Schooling	No household member has completed primary schooling <sup>5</sup> .	No household member has completed secondary schooling.	1/6
	School Attendance	Any child of primary school age is not attending school.	Any school-age child is not attending school <b>or</b> is 2 years or more behind the right school grade.	1/6
Health	Child Mortality	Any child less than 60 months has died in the family during the 59 months prior to the survey.	Same as acute poverty	1/9

<sup>4</sup> For more information see [www.mics.unicef.org](http://www.mics.unicef.org)

<sup>5</sup> According to UNESCO guidelines, the definition of primary schooling and secondary schooling is country-specific. In Tunisia, primary education consists of 6 years of schooling, lower Secondary education consists of 3 years of schooling (secondaire), and upper Secondary education consists of 4 years (lycee). The entry age for children into primary education is at 6 years.

	Child/adult Nutrition	Any child (0-59 months) is stunted (height for age < -2) <i>or any adult is malnourished (BMI &lt; 18.5).</i> <sup>6</sup>	Any child (0-59 months) is stunted (height for age < -2) <b>or</b> any child is wasted (weight for height < -2) <i>or any adult is malnourished (BMI &lt; 18.5).</i>	1/9
	FGM/Early Pregnancy	A woman less than 28 years old got her first pregnancy before 18 years old <i>and has undergone a female genital mutilation (FGM).</i> <sup>7</sup>	A woman less than 28 years old either got her first pregnancy before being 18 years old <i>or has undergone a female genital mutilation (FGM).</i>	1/9
Living Conditions	Electricity	Household has no electricity.	Same as acute poverty	1/21
	Sanitation	Household sanitation is not improved, according to MDG guidelines, <b>or</b> it is improved but shared with other household.	Same as acute poverty	1/21
	Water	Household does not have access to safe drinking water, according to MDG guidelines, <b>or</b> safe drinking water is 30-minutes roundtrip walk or more away from home.	Household does not have piped water into dwelling or yard.	1/21
	Floor/Roof	Floor is earth, sand, dung or roof is not available <b>or</b> made of thatch, palm leaf or sod	Floor is earth, sand, dung, rudimentary (wood planks/bamboo/reeds/grass/canes), cement floor (not slab or tiles/asphalt strips) <b>or</b> roof is not available <b>or</b> made of thatch, palm leaf, sod, rustic mat, palm, bamboo, wood plank, cardboard.	1/21
	Cooking Fuel	Household cooks with solid fuels: wood, charcoal, crop residues <b>or</b> dung <b>or</b> no food is cooked in the household.	Household cooks with solid fuels: wood, charcoal, crop residues or dung <b>or</b> no food is cooked in the household <i>or does not have a separate room for cooking</i> <sup>8</sup> .	1/21
	Overcrowding	Household has 4 or more people per sleeping room.	Household has 3 or more people per sleeping room.	1/21
	Assets	Household has either not access to information <b>or</b> has access to information <b>but</b> no access to easy mobility <b>and</b> no access to livelihood assets. <sup>9</sup>	Household has either less than two assets for accessing information, <b>or</b> has more than one information asset <b>but</b> less than two mobility assets <b>and</b> less than two livelihood assets.	1/21

<sup>6</sup> Anthropometric measurements were only collected for children under 5 years and were not measured for women 15-49 years. Accordingly, household will be deprived if at least one child is undernourished in the household.

<sup>7</sup> No data were collected in Tunisia concerning FGM; accordingly, early pregnancy/FGM indicator depends only on age at first birth. For that reason, the two levels of this indicator are identical.

<sup>8</sup> The survey data does not include information if a separate room is used for cooking. Thus, the indicator is the same for both poverty and acute poverty.

<sup>9</sup> The assets of **Information** are: phone (mobile or fixed), radio, TV, computer. The assets of **Mobility** are: bicycle, motorbike, motorboat, car, truck or animal wheel cart. The assets of **Livelihood** are: refrigerator, agricultural land, AC, water heater, livestock (at least one cattle or at least one horse or at least two goats or at least two sheep, or at least 10 chickens).



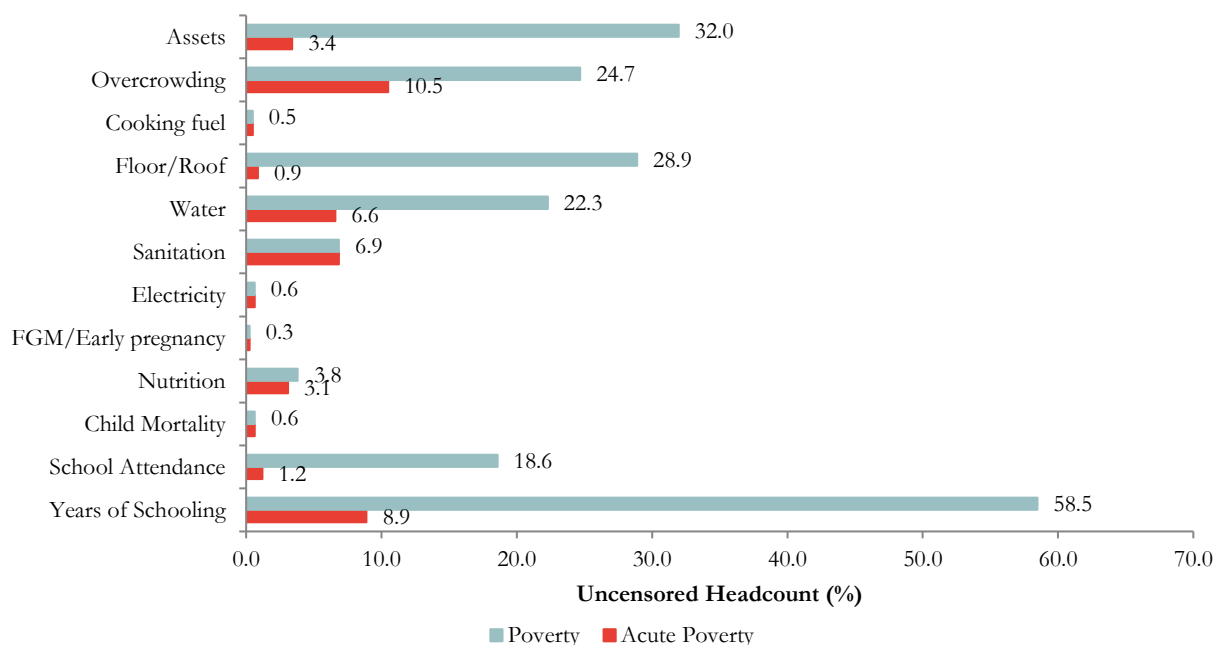


### 3. Poverty Analysis

#### 3.1. Incidence of Deprivation in the indicators of the Arab MPI

3.1.1. First, we examine the prevalence of deprivation among the Tunisian population in each of the Arab MPI indicators using the poverty and acute poverty respective cut-off points as shown in Figure 2. This percentage share is also called the uncensored (or raw) headcount ratio, as it considers the deprivations of the total population before identifying the poor.

**Figure 2: Incidence in Deprivation for each Indicator (% of population)**



3.1.2. At acute poverty, the highest deprivation incidence is found in overcrowding (10.50%), followed by years of schooling (8.9%), and in the sanitation (6.9%) and water (6.6%) indicator.

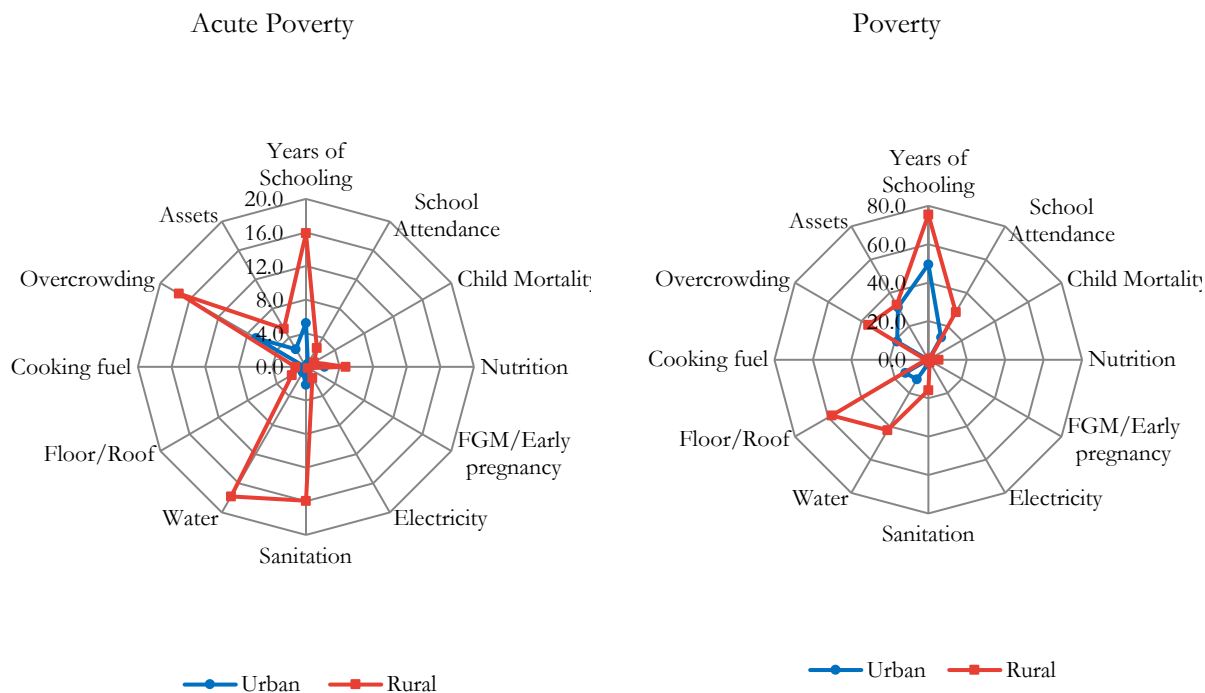
3.1.3. Moving to poverty, the picture changes. Over half of the population (58.5%) is deprived in years of schooling, followed by assets (32.0%) and the floor/roof (28.9%) indicator. The headcount ratio of the indicators cooking fuel, sanitation, electricity, early Pregnancy, and child mortality is the same for both levels of poverty as definition of them does not change.

3.1.4. **Error! Reference source not found.** The indicators that show a particularly large jump in headcount when looking at poverty relative to acute poverty are years of schooling, assets and floor/roof. While acute poverty defines deprivation in years of schooling as when no household member has completed primary education, poverty defines it as when no household member has completed secondary education. This difference drives a large jump in the indicator between the two levels, implying that Tunisia has a significant gap in secondary education. The uncensored headcount ratio of the second indicator of the education dimension, school attendance, also shows a large increase when moving from acute poverty, which considers only the attendance of children in the primary school age, to poverty. Considering all children in school age (from 6-18 years), the uncensored headcount ratio increases to 18.7% which implies that more children in secondary school age are not attending school or lagging two grades behind the school grade appropriate for their age.

3.1.5. Figure 4 disaggregates the uncensored headcount ratios by urban and rural population. The biggest differences in headcount deprivation between urban and rural population at acute poverty are found

in water, sanitation and years of schooling. The differences in the uncensored headcounts between rural and urban population are stark. For example, at poverty cut-off 13.7% of the urban population are deprived in the floor/roof indicator, 58% of people in rural areas are. Likewise, while only 11.8% of the urban population is deprived in water, 42.3% of the rural population are. These stark differences highlight the large inequality in access to resources between rural and urban areas in Tunisia. Although Tunisia made great progress in improving access to water and sanitation in the past decades (see UNDP, 2013) the regional variations in access to water and sanitation, especially in rural areas, remains as a significant challenge to be addressed.

**Figure 3: Deprivation by indicator (% of population) at Acute Poverty and Poverty by urban and rural areas**



3.1.6. At poverty, the biggest differences in headcount deprivation between urban and rural population are in floor/roof, water and years of schooling. Again, the rural population is significantly more deprived than the urban. The incidence of deprivation in years of schooling in rural areas is particularly high, affecting 75.4% of the rural population. However, the incidence is also high among the urban population (49.6%). These data suggest that years of schooling should be a priority area of intervention for poverty-reduction strategies in Tunisia.

### 3.2. Incidence of Censored Deprivation in each of the 12 indicators

3.2.1. **Error! Not a valid bookmark self-reference.** **Error! Reference source not found.** compares the incidence of uncensored and censored deprivations. As we saw above, the uncensored headcount ratios give the percentage of population who is deprived in an indicator regardless of their multidimensional poverty status. While the censored headcount ratio measures the proportion of the population who is identified as multidimensionally poor, according to the selected poverty (and acute poverty) cut-off point (set here at  $k=33.3\%$ ), and deprived of each of the indicators. By definition, the uncensored headcount ratio of an indicator is equal to or higher than the censored headcount of that indicator (Alkire et al. 2015). Assessing the difference between censored and uncensored headcount ratios allows the assessment of the extent of overlap between deprivation and multidimensional poverty.

**Table 3: Uncensored and Censored Deprivation Headcount Ratio**

<i>Indicator</i>	<b>Acute Poverty</b>		<b>Poverty</b>	
	% of total population deprived in...	% of multidimensionally poor people <i>and</i> deprived in...	% of total population deprived in...	% of multidimensionally poor people deprived in...
<i>Years of Schooling</i>	8.90	0.56	58.47	17.47
<i>School attendance</i>	1.20	0.27	18.59	14.02
<i>Child mortality</i>	0.64	0.08	0.64	0.28
<i>Nutrition</i>	3.09	0.26	3.82	1.73
<i>FGM/Early pregnancy</i>	0.27	0.03	0.27	0.15
<i>Electricity</i>	0.63	0.11	0.63	0.53
<i>Sanitation</i>	6.87	0.36	6.87	4.03
<i>Water</i>	6.60	0.40	22.29	7.80
<i>Floor/roof</i>	0.87	0.03	28.89	11.18
<i>Cooking fuel</i>	0.49	0.15	0.49	0.40
<i>Overcrowding</i>	10.50	0.43	24.69	9.06
<i>Assets</i>	3.41	0.27	31.97	8.43

3.2.2. Table 3 shows that at acute poverty, the incidence of deprivation in the censored headcount is below 1% for all indicators. This is not surprising considering that the Acute MPI is designed to capture deprivations in developing countries. As Tunisia is considered a country of high human development, the strict deprivation thresholds of the Acute Poverty measure do not capture the more moderate forms of poverty prevalent in the Tunisian context.

3.2.3. At poverty the censored headcount ratios are higher. However, for most of the indicators, the censored headcount ratios are still much lower than the uncensored headcount ratio which shows that not only multidimensionally poor people suffer from a deprivation in this indicator, but also people that are not identified as poor. The difference is especially large in the indicators years of schooling, water, floor/roof, overcrowding, and assets.

### 3.3. Headcount, Intensity and MPI

3.3.1. In Tunisia, a very low percentage (0.61%) of the total population suffers from acute poverty, while a much higher share of the population (17.8%) suffers from poverty (Table 4). The intensity of poverty – the average proportion of indicators in which poor people are deprived – is high at both levels: 42.8% for acute poverty and 42.0% for poverty. This means that the poor suffer from a relatively high level of deprivation.

3.3.2. While poverty headcount is significantly higher in rural<sup>10</sup> than in urban areas, the intensity of deprivation varies only slightly between rural and urban areas, and more significantly for poverty. This means that while people in rural areas are significantly more likely to be poor (53 times more likely at acute poverty, 3.2 times more likely at poverty), poor people in rural areas are not much more likely to be intensely deprived (deprived in a large number of indicators) than poor people in urban areas.

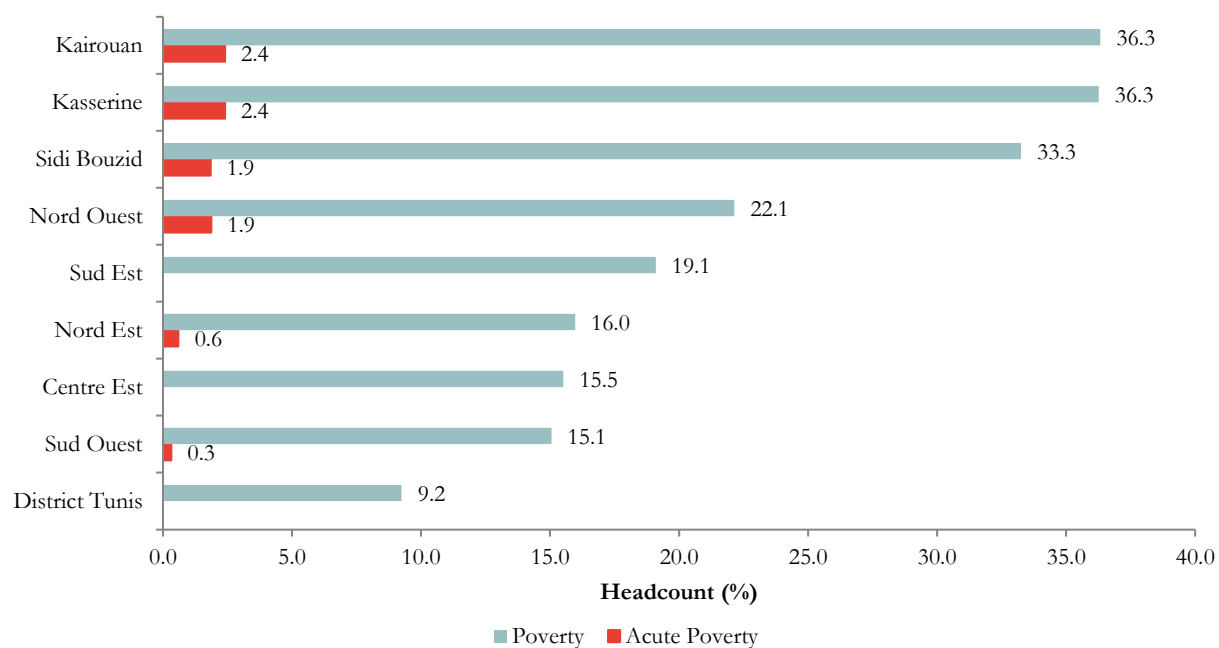
<sup>10</sup> The definition of rural and urban areas follows the national definitions used in the survey and therefore changes from country to country.

**Table 4: Poverty headcount, intensity and MPI at national level and by urban and rural areas**

Acute poverty			
	Headcount (%)	Intensity (%)	Poverty value
Total	0.6	42.8	0.0026
Urban	0.03	42.2	0.0001
Rural	1.7	42.8	0.0074
Poverty			
	Headcount (%)	Intensity (%)	Poverty value
Total	17.8	42.0	0.0746
Urban	10.2	39.6	0.0404
Rural	32.3	43.4	0.1401

3.4. As shown in Figure 4, the capital Tunis, the Central East and Southern East areas are the least affected by poverty, while inner areas such as Kasserine and Kairouan have the highest pockets of poverty.<sup>11</sup> In Kairouan and Kasserine, 36.3% of the population is poor and 2.4% are acutely poor. The capital Tunis is the least affected by poverty, but still 9.2% of its population are in poverty. These findings are in line with literature on Tunisia that highlights the wide disparity between Tunisia's inland and its more developed coastal areas, which has existed since French colonial times – see for example Boughzala and Tilli Hamdi, 2014.

**Figure 4: Poverty headcount in Tunisia governorates (%) at Acute Poverty and Poverty**



3.5. Table 5 shows the distribution of the national population and of poor people across Tunisia. The last two columns of the table calculate the ratio of poor over the share of national population for each governorate. Governorates with a ratio above 1 carry a disproportionate share of multidimensionally

<sup>11</sup> The MICS 2011 Survey was designed to provide statistically significant estimates at the national level, in urban and rural areas, in the 5 major regions of the country (District de Tunis, Nord Est, Nord-Ouest, Centre Est, Sud Est, Sud-Ouest) and the three governorates Kasserine, Sidi Bouzid, Kairouan. (MDCI, INS, and UNICEF 2013)

poor people relative to their share of national population. At both levels, Kasserine has the highest ratio of poor over share of population. At the other hand of the scale, the capital Tunis has the lowest ratio.

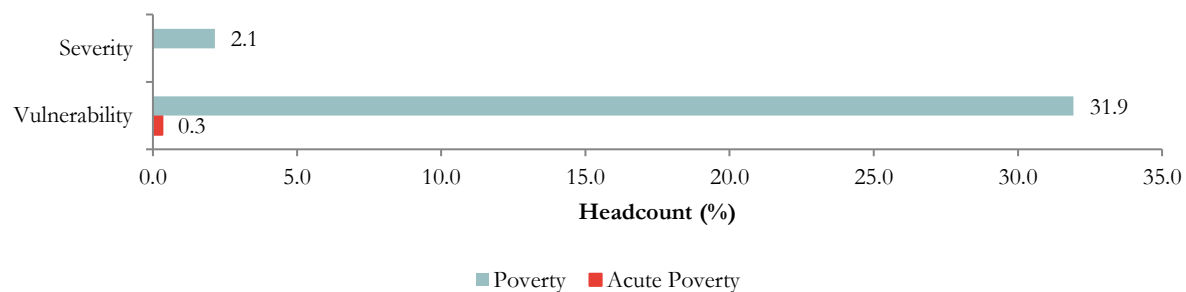
Table 5: Population and headcount poverty shares by area

	Share of survey population (%) (1)	Share of acutely poor population (%) (2)	Share of poor population (%) (3)	2/1	3/1
Tunis	24.7	0.0	12.9	0.0	0.5
Nord Est	14.5	14.5	13.1	1.0	0.9
Nord Ouest	10.9	33.8	13.6	3.1	1.3
Centre Est	21.9	0.0	19.2	0.0	0.9
Kasserine	5.3	21.3	10.9	4.0	2.1
Kairouan	4.4	17.5	9.0	4.0	2.1
Sidi Bouzid	3.3	10.1	6.2	3.1	1.9
Sud Est	9.7	0.0	10.5	0.0	1.1
Sud Ouest	5.3	2.9	4.5	0.5	0.9

3.6. Following OPHI's definition, individuals are 'vulnerable to poverty' when they are deprived in 20% – 33.33% of weighted indicators. Individuals are defined as in 'Severe Poverty' when they are deprived in 50% or more of the indicators. As shown in **Error! Reference source not found.**, only 0.1% of the Tunisian population are severely poor at acute poverty. At poverty, the number is also rather small at 2.1%.

3.7. At acute poverty, the share of population that is vulnerable to fall into acute poverty is 0.3% of the population. However, moving to poverty, a far larger share of the Tunisian population - 31.9% - is vulnerable to falling into poverty. This means that in addition to the 17.8% of the multidimensionally poor population, an almost additional one third of the population is vulnerable to becoming multidimensionally poor.

Figure 5: Vulnerable and severely poor population at acute poverty and poverty definitions (%)



- 3.8. The percentage contribution of each of the three dimensions to the overall Multidimensional Poverty Index<sup>12</sup> is a useful summary indicator<sup>13</sup>. As shown in Figure 6, education contributes to more than half

<sup>12</sup> Refer to the technical note of the Human Development Report 2014 for a complete explanation of how the percentage contribution of each dimension is calculated.

<sup>13</sup> Refer to Introduction

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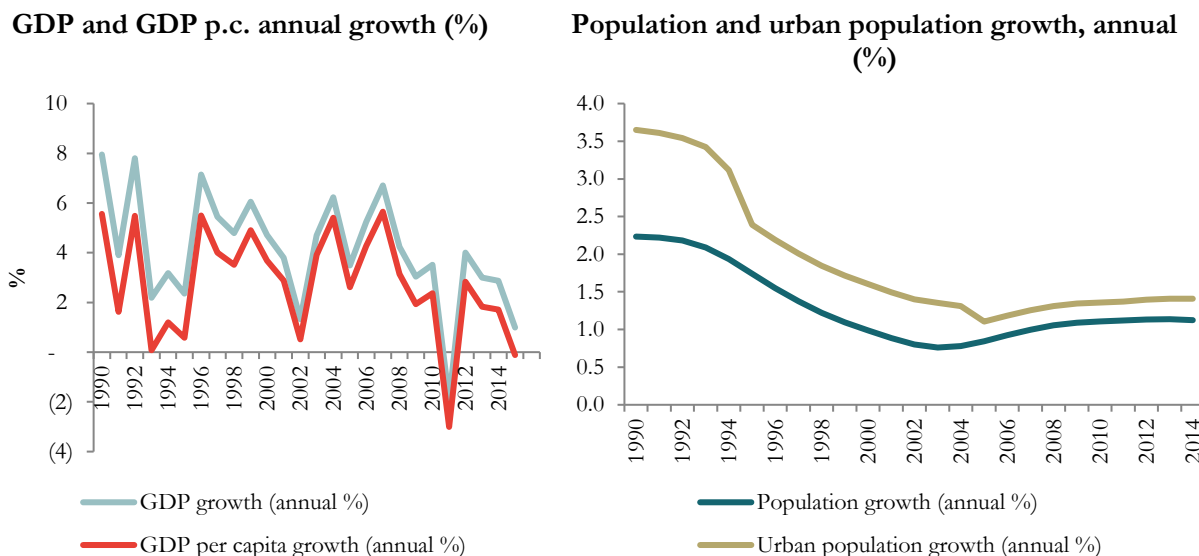
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Human Development 2014 rank	97 <sup>th</sup> (over 188 countries)
Gender Development Index	0.904
Inequality adjusted HDI	0.562
GINI coefficient	35.8 (2010)
Poverty headcount ratio at national poverty lines (% of population)	15.2% (2015)
Gross enrolment ratio (primary)	114.2% (2015)

Sources: for population, GDP, GNI p.c., Gini Index, poverty headcount, gross enrolment ratio: World Bank World Development Indicators data accessed October 2017. For HDI, life expectancy, expected years of schooling, mean years of schooling, gender development index and inequality adjusted HDI: UNDP Human Development Reports accessed October 2017.

- 1.2. The objective of the present paper is to provide in-depth analysis of the prevalence, distribution (geographical and by gender among other household socio-economic characteristics), and severity of multi-dimensional poverty in Tunisia. It is one of ten country profiles prepared by ESCWA as background papers for the Arab Multidimensional Poverty Report making use of the new Multidimensional Poverty Index proposed for the Arab States (Arab MPI).
- 1.3. As shown in Figure 1, Tunisia showed on average positive growth rates, facilitated by a stable macro-economic setting and a stepwise liberalization of investments and trade before the revolution in 2011 (IMF, 2016). In 2011, the revolution caused the GDP growth rate to drop. GDP growth recovered immediately after the revolution, but further internal and external shocks caused another decline in the growth rate after 2012.
- 1.4. The right chart of **Error! Reference source not found.** shows that the population growth of the total as well of the urban population is slowing down. Given the low fertility rate and the increased life

expectancy, Tunisia could be considered a country that completed demographic transition. The urban population growth has been slowing down starting in the 1990s and only recently started to grow again. Urban areas in Tunisia are mainly located in the coastal towns such as Tunis, Sfax, or Nabeul and have a high population density (UNECA, 2017)

**Figure 1: GDP, GDP p.c. and population growth (%)**



Source: World Bank (2017)

## 2. Methodology and Data

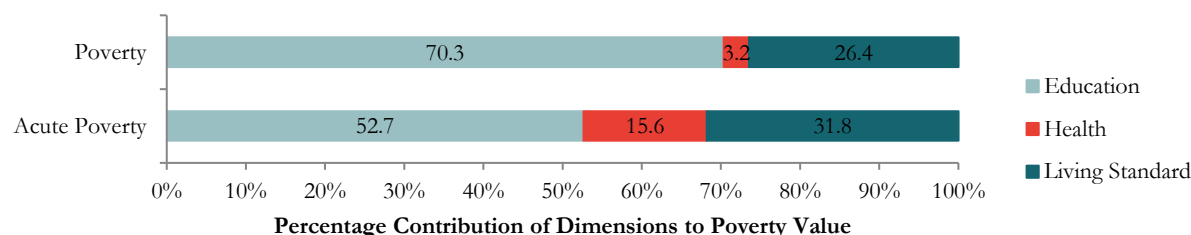
- 2.1. Multi-dimensional poverty indices measure multiple deprivations in basic services and capabilities, such as poor health, lack of education or illiteracy, and lacking access to safe drinking water. The multi-dimensional poverty approach complements monetary measures of poverty by considering these multiple deprivations and their overlap. The conceptual framework of multidimensional poverty measures draws from Sen’s capability approach which states that development is realised not only through increased incomes and share in assets, but also through people’s increased capabilities to lead lives that they have reason to value. Sen contends that capability deprivation is a more complete measure of poverty than income as it captures the aspects of poverty which may get lost or hidden in aggregate statistics (Sen 1985, 1999). In recent years, this conceptual framework was translated into practice to measure household poverty through the Multidimensional Poverty Index (MPI).
- 2.2. The methodology of the MPI is based on the Alkire-Foster (AF) Method offering a comprehensive methodology for counting deprivation and analysing multidimensional poverty. The AF-methodology builds on the Foster-Greer-Thorbecke poverty measure, but it considers multiple dimensions. The AF-methodology includes two steps: first, it identifies the poor using a dual cut-off approach and “counting” the simultaneous deprivations that a person or a household experiences across the different poverty indicators. And the second step is to aggregate this information into the adjusted headcount ratio (or MPI value) which can be decomposed and disaggregated geographically, by socio-economic characteristics, and by indicator.

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- 2.3. Under the first step, to identify multidimensionally poor people, the AF-methodology uses a dual cut-off identification approach. The first cut-off sets a deprivation threshold for each indicator which determines whether a household or a person is considered as deprived or non-deprived in the respective indicator. After the cut-offs have been applied for each indicator, the deprivations of each person in all indicators are counted to calculate a deprivation score for that household or person. Weights are assigned to the indicators which reflect a normative value judgement to assess the relative importance of a given indicator as compared to the other indicators in constructing the deprivation score for a household or person. As a result, the deprivation score is a weighted sum of all deprivations. The second cut-off (the poverty cut-off) is set at a value say 20% or 30% against which the deprivation score is compared to in order to define and distinguish multidimensionally poor (those whose deprivation score is equal to or more than the poverty cut-off) from non-poor (whose deprivation score falls below the poverty cut-off).
  - 2.4. In the aggregation step of the AF Method, two indices are calculated; the headcount ratio and intensity of poverty. The headcount ratio (H) is the proportion of multidimensionally poor people to the total population. The headcount ratio is a useful measure to learn about the incidence of poverty, but it is insensitive to increases in the number of deprivations a poor person is deprived in. However, utilizing the information on the number of deprivations that poor people experience, the intensity of poverty can be calculated. The intensity of poverty (A), is the average deprivation score that multidimensionally poor people experience. The product of the poverty headcount and poverty intensity is the MPI, which “adjusts” the headcount for the average intensity of poverty that poor people experience.
  - 2.5. The use of Multidimensional Poverty Index (MPI) to describe the application of AF Method was coined with the Global MPI launched in 2010 by OPHI and the United Nations Development Program (UNDP). However, the Global MPI has a major shortcoming: it is not very effective in capturing the less severe forms of poverty that characterise many Arab middle-income countries such as Jordan, Egypt or Morocco and thus underestimates the prevalence of less severe forms of multidimensional poverty. However, the AF-Method offers flexibility and it can be tailored to a variety of situations by selecting different dimensions, indicators of poverty within each dimension, and poverty cut offs.
  - 2.6. In order to capture a broader spectrum of level and intensity of deprivation that better reflects the conditions of Arab countries, ESCWA and OPHI proposed an Arab MPI with two different levels: poverty and acute poverty. The Arab MPI is composed of three dimensions and twelve indicators. The education dimension has two indicators: school attendance and years of schooling. The health dimension includes three indicators: nutrition, child mortality, and early pregnancy combined with female genital mutilation. The living standard indicators are: access to electricity, improved sanitation facility, safe drinking water, clean cooking fuel, having suitable floor and roof, no overcrowding, and minimum assets of information, mobility, and livelihood (the deprivation cut-offs for the Arab MPI are presented in Table 2). Each of these indicators has two associated deprivation cut-offs, one reflects the deprivation of acute poverty which is similar (but not identical) to the global MPI. And the other, a higher cut-off denoting a slightly higher standard to measure poverty which is inclusive of acute poverty. While the cut offs usually vary across indicators for acute poverty and poverty, in case of the aggregate score for identifying a poor household, the cut off is the same. A household is considered acutely poor or poor if its total level of deprivation (total of weighted deprivations in all indicators or deprivation score ) is higher than one-third of the total possible



of total deprivation at both levels of poverty. At poverty, it even contributes more than two thirds to poverty. As the contribution of education increases when moving from acute poverty to poverty, the contribution of health decreases. .

**Figure 6: Contribution of dimensions to acute poverty and poverty value (%)**



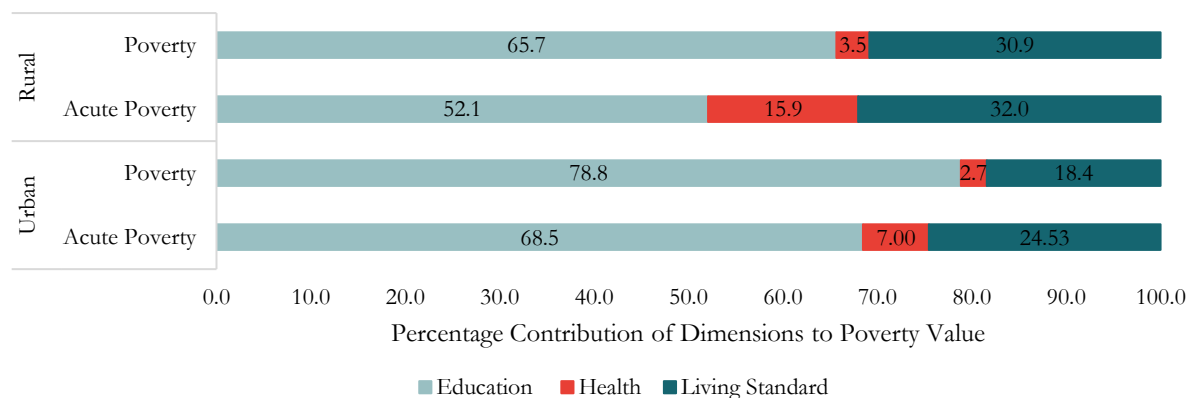
3.9. Looking at the contribution of dimensions by rural and urban areas in Figure 7, we observe that, at both levels, the contribution of education to poverty is higher in urban areas, while those of health and living standards are higher in rural areas. This highlights again the need to account for spatial priorities of development with focus on rural areas.

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deprivation ( $k=33.3\%$ ). Similar to the Global MPI, the Arab MPI assigns equal weights to the three dimensions (one third), and indicators within each dimension are equally weighted. To obtain the set of multidimensionally poor people only, all information of deprivation of non-poor persons is censored from the data. Thus, the focus of the MPI measure is purely on the profile of the multidimensionally poor people and the indicators/dimensions in which they are deprived.

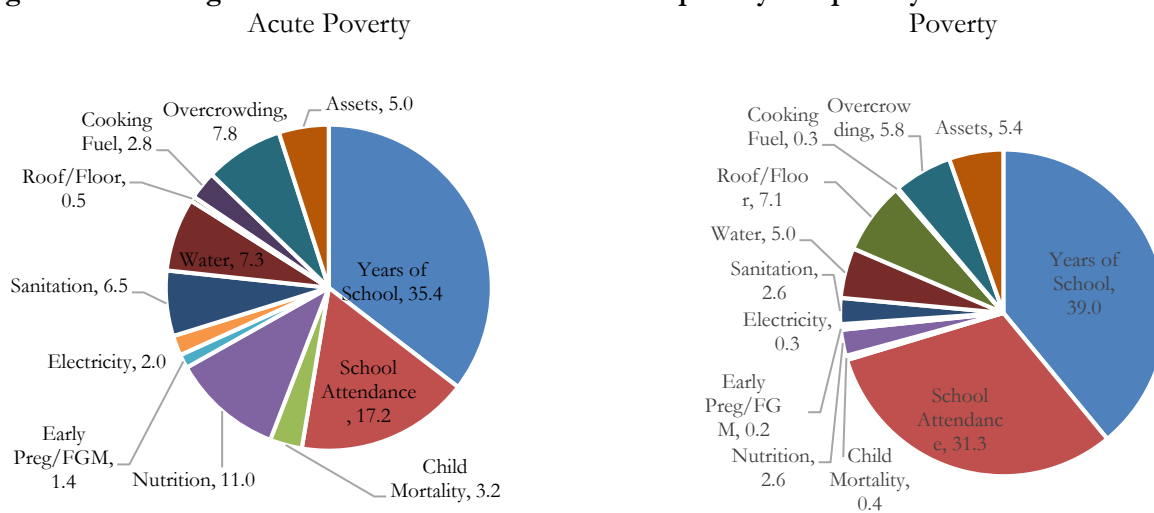
- 2.7. The MPI can be decomposed by population sub-groups, such as sub-national regions, or any socio-economic characteristic of a household that is available from the data. Another feature of the MPI is that it can be decomposed to show how much each indicator contributes to poverty. Furthermore, the MPI can also give insight into the percentage of people that are deprived in multiple indicators, but below the poverty cut-off. This percentage of the population is considered vulnerable to poverty. In the case of the Arab MPI, population whose deprivation score is between 20-33.3% is considered as vulnerable to poverty. On the other side of the scale, the MPI can also give insight into how many people are deprived in for example more than half of all the weighted indicators. This percentage share of the population is considered to be in severe poverty. In the Arab MPI, poor people who are deprived in 50% or more of the indicators are considered as severely poor.
- 2.8. The results of this study are based on data from the Multiple Indicator Cluster Survey (MICS), a survey conducted by countries with the support of UNICEF. The survey for Tunisia, conducted in 2011, covers 38,861 individuals. It provides data on education, health and working status for all members of the household; nutrition status of children and women; child mortality; housing conditions (availability of safe drinking water, sanitation facilities, electricity, etc.); and information on ownership of assets (refrigerator, motorbike, cattle, radio, TV etc. for more details on the composition of the dimensions.

**Figure 7: Contribution of dimensions to acute poverty and poverty by rural and urban areas (%)**



3.10. Figure 8 shows the percentage contribution of each indicator to acute poverty and poverty. Years of schooling makes the highest percentage contribution to poverty in Tunisia at both levels, followed by school attendance. This means that education should be a priority area for poverty-reduction interventions in the country. At acute poverty, nutrition is the indicator that makes the third largest contribution, followed by overcrowding, water and sanitation. This confirms that efforts to improve access to water and sanitation and improved living standards should be continued.

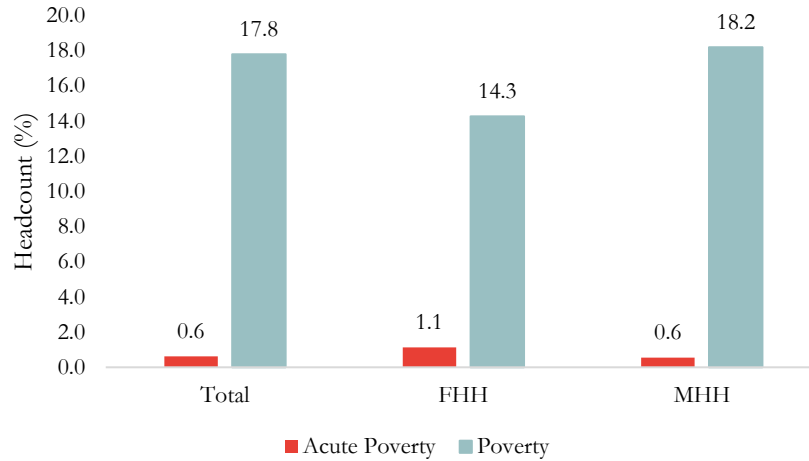
**Figure 8: Percentage Contribution of indicators to acute poverty and poverty.**



#### 4. Inequality in Deprivation

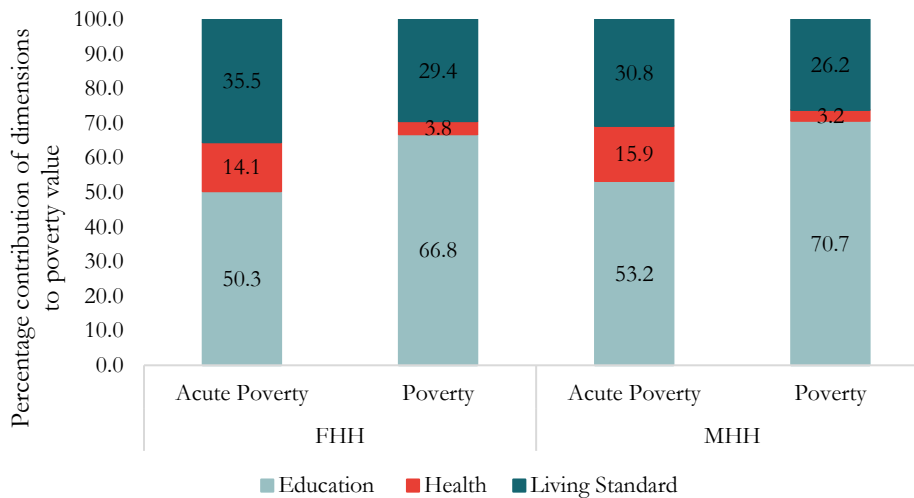
4.1. Figure 9 shows the difference in incidence of poverty between male-headed households (MHH) and female-headed households (FHH). In Tunisia, FHH have a lower incidence of poverty but a higher incidence of acute poverty.

**Figure 9: Poverty headcount by gender of household head (%)**



4.2. Figure 10 shows the contribution of each dimension to the overall poverty value by gender of the household head. Education makes a larger contribution to poverty in MHHs than in FHHs at both levels of poverty. Living standards, on the other hand, makes a larger contribution to poverty in FHHs at both levels.

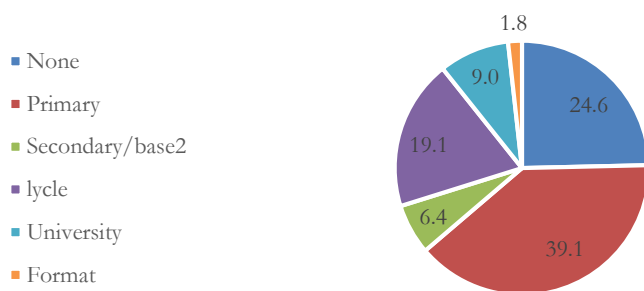
**Figure 10: Contribution of each dimension to poverty and acute poverty by gender of the household head (%)**



4.3.

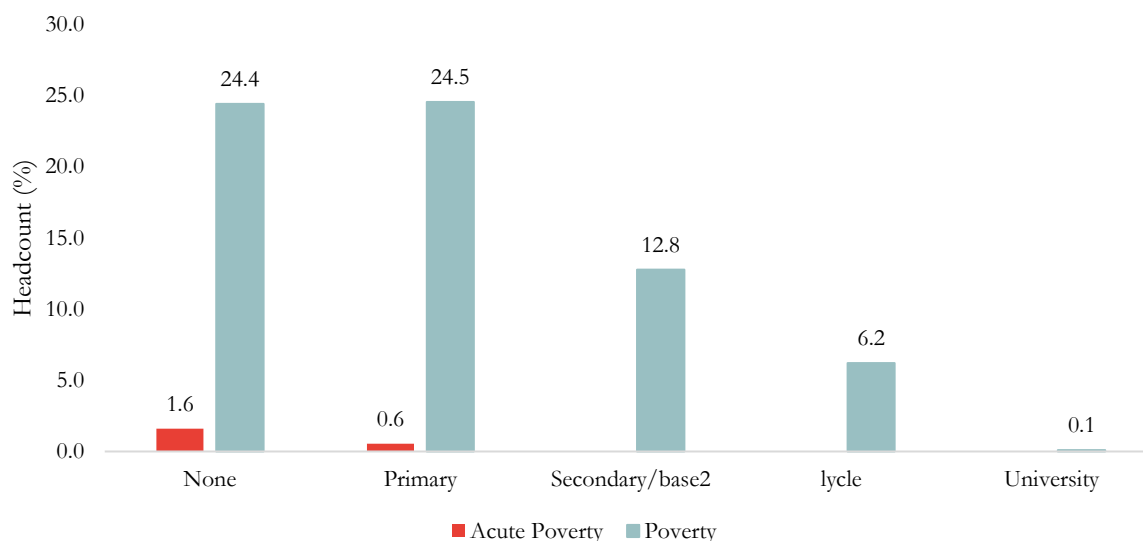
4.4. Figure 11 shows the distribution of households (HHs) by education of the head of household. In 24.6% of HHs in Tunisia, the head of household has less than primary education. While this is higher than most countries examined in North Africa, it still exposes a large gap in primary education. Overall, only 34.5% of households in Tunisia are headed by someone with more than primary education.

**Figure 11: Education level of household head across overall population**



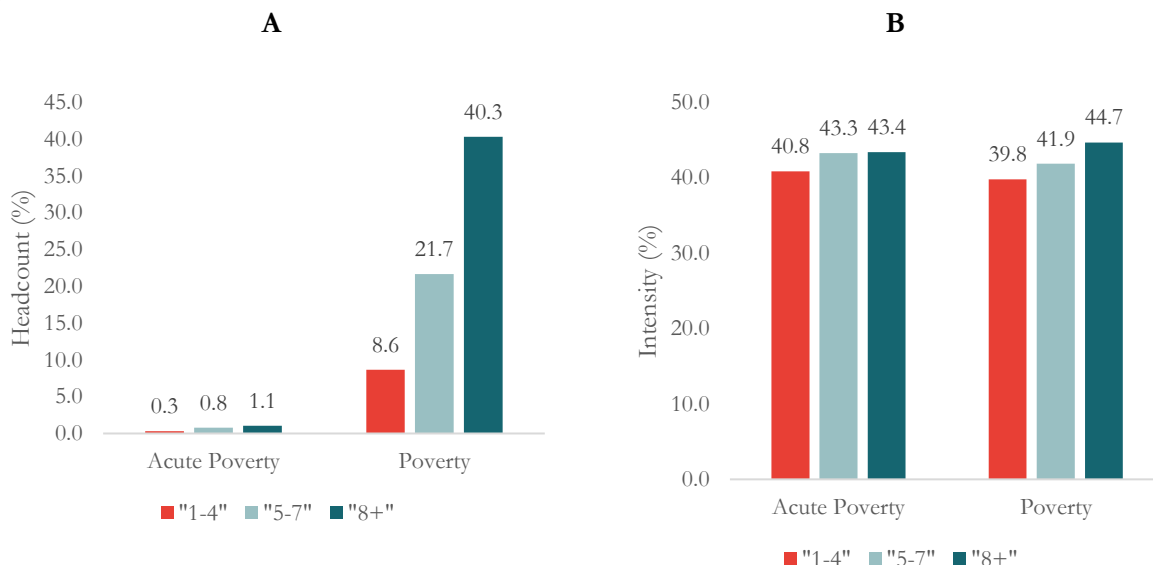
4.5. As shown in Figure 12, multidimensional poverty decreases as the education of the head of household increases, in particular when going from primary to secondary education and beyond. While there are virtually no households with a head educated above primary who are in acute poverty in Tunisia given the low prevalence of acute poverty, the narrative changes when moving from acute poverty to poverty. The poverty headcount is at around 24%, regardless if the head of the household has received primary education or not. At poverty, also heads who received higher than primary education are affected by poverty: 12.8% of people in a household whose head has secondary education are considered poor, and 6.2% of the population live in a house where the head has higher than secondary education.

**Figure 12: Poverty headcount at acute poverty and poverty by education of household head (%)**



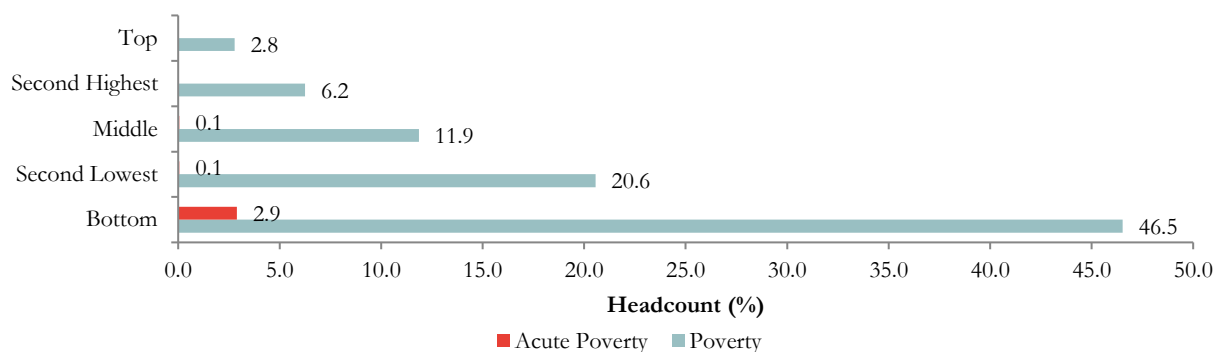
4.6. As shown in **Error! Reference source not found.3**, larger households (with more members) are significantly more likely to be poor at both levels of poverty, and the intensity of their poverty is likely to be higher (especially for households with more than 8 members). At poverty for example, households with more than 8 members are 4.7 times more likely to be poor than households with 1-4 members. The impact of household size is larger on the poverty headcount than on the intensity of poverty. The intensity of poverty does not change widely between larger households at the acute poverty level. However, moving to poverty reveals that households with more than 8 members are on average deprived in 44.7% percent of all possible deprivations. Smaller households (1-4 members) are only deprived in 39.8% of all possible deprivations.

**Figure 13: Poverty headcount (A) and intensity (B) for acute poverty and poverty by household size (%)**



- 4.7. The survey also provides information about the Wealth Index (WI) of each household, which is an indicator of the economic wellbeing and living standards of a household. The WI measures the household's ownership of assets and the housing characteristics. As shown in
- 4.8. Figure 144, this information allows us to map the incidence of poverty across the different wealth quintiles. While it is expected for poverty to have a different incidence on population in different wealth quintiles due to the overlap between the MPI and the WI, the ratio is high: households in the bottom quintile (poorest) are almost 17 times more likely to be poor than those in the top quintile (richest). The prevalence of acute poverty among the top and second highest quintiles of the population in Tunisia is not statistically significant different from zero.

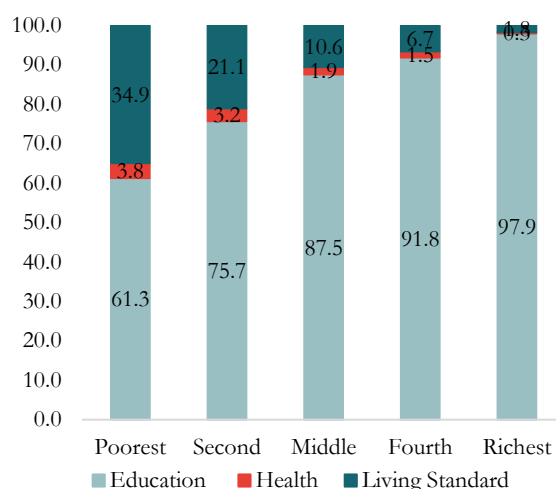
**Figure 14: Poverty headcount (%) by wealth quintiles**



- 4.9. As shown in **Error! Reference source not found.**, the contribution of living standards to overall deprivation declines as the wealth of the household increases at poverty. This is expected as the WI overlaps with some of the indicators of the living standards dimension (for example assets ownership). As the contribution of living standards goes down with wealth, it is interesting to look at which dimension, education or health, fills the gap more. At poverty the education dimension is by far the

one which increases its contribution the most when going from the bottom to the top quintile. This shows that deprivation in education affects significantly even households in the richest wealth quintiles in Tunisia. For acute poverty, similar trend is observed but given the low prevalence of acute poverty the number of observations is small to report the percentage contribution with statistic significance.

**Figure 15: Contribution of dimensions to multi-dimensional poverty by wealth quintiles**



## 5. Policy Considerations

- 5.1. In Tunisia, a very low percentage (0.6%) of the total population suffers from acute multidimensional poverty, while a relatively high share of the population (17.8%) suffers from multidimensional poverty. The intensity of poverty – the average proportion of indicators in which poor people are deprived – is high at both levels: 42.8% for acute poverty and 42.0% for poverty. This means that the poor suffer from a relatively high level of deprivation. This implies that poverty-reduction strategies in Tunisia should tackle a variety of challenges at the same time.
- 5.2. Geographical disparities in the distribution of poverty among the regions of Tunisia are significant, with areas far from the coast more affected by poverty. Poverty-reducing strategies in the country will need to target these spatial disparities. While acute poverty is extremely low in the wealthiest part of Tunisia (the capital Tunis), poverty is higher, affecting 9.2% of the Tunis population.
- 5.3. While only 4.3% of the population are vulnerable to falling into acute poverty, 31.9% of Tunisians are vulnerable to falling into poverty. This highlights the need for policies to prevent people from falling into poverty.
- 5.4. At acute poverty, the large percentages of deprivation among the population are found in overcrowding (10.5%) and in years of schooling (58.5%) at poverty in Tunisia suggesting that poverty reduction strategies should focus on reducing deprivation in these policy domains.
- 5.5. Differences in the impact of poverty in rural and urban population in Tunisia are striking, in particular in water, sanitation, years of schooling and floor/roof. This calls for policies targeting rural development and inclusion. Increasing access to water and sanitation in rural areas should continue to be a priority.
- 5.6. When looking at the percentage contribution to poverty, years of schooling makes the highest contribution at both levels, followed by school attendance. This means that education should be a priority area for poverty-reducing interventions in the country.

- 5.7. Inequality in multidimensional poverty between the highest and lowest wealth quintiles in Tunisia is sharp, suggesting a considerable gap in access to resources and capabilities between rich and poor households. Households in the bottom quintile are 17 times more likely to be multidimensionally poor than those in the top quintile. This suggests that policies should aim to reduce inequality among different strata of society in Tunisia.

## 6. Technical appendix

**Table 1: Standard Errors and Confidence Intervals for multidimensional poverty indices using acute poverty definition by urban and rural areas**

		Value	Standard error	95% confidence interval	
<b>Headcount</b>	Total	0.6	0.0363	0.5408	0.6831
<b>Intensity</b>	Total	42.8	0.3738	42.0309	43.5014
<b>MPI</b>	Total	0.003	0.0002	0.0023	0.0029
<b>Headcount</b>	Urban	0.0	0.0082	0.0166	0.0489
<b>Intensity</b>	Urban	42.2	2.1730	37.9438	46.4916
<b>MPI</b>	Urban	0.000	0.0000	0.0001	0.0002
<b>Headcount</b>	Rural	1.7	0.1043	1.5184	1.9274
<b>Intensity</b>	Rural	42.8	0.3792	42.0403	43.5320
<b>MPI</b>	Rural	0.007	0.0005	0.0065	0.0083

**Table 2: Standard Errors and Confidence Intervals for multidimensional poverty indices using poverty definition by urban and rural areas**

		Value	Standard error	95% confidence interval	
<b>Headcount</b>	Total	17.8	0.2252	17.3414	18.2241
<b>Intensity</b>	Total	42.0	0.0886	41.7874	42.1348
<b>MPI</b>	Total	0.075	0.0009	0.0728	0.0765
<b>Headcount</b>	Urban	10.2	0.2366	9.7306	10.6580
<b>Intensity</b>	Urban	39.6	0.1279	39.3567	39.8582
<b>MPI</b>	Urban	0.040	0.0009	0.0385	0.0422
<b>Headcount</b>	Rural	32.3	0.4464	31.4189	33.1689
<b>Intensity</b>	Rural	43.4	0.1128	43.1609	43.6030
<b>MPI</b>	Rural	0.140	0.0019	0.1363	0.1439

**Table 3: Standard Errors and Confidence Intervals for poverty headcount using acute poverty definition by different household characteristics**

		Value	Standard error	95% confidence interval	
<b>Gender of the Head of Household</b>	Female	1.1	0.1826	0.7746	1.4904
	Male	0.6	0.0347	0.4853	0.6215
<b>Education of the Head of Household</b>	None	1.6	0.1233	1.3578	1.8413
	Primary	0.6	0.0499	0.4552	0.6508
	Secondary/base2	0.0	(omitted)	0.0000	0.0000
	lycle	0.0	(omitted)	0.0000	0.0000
	University	0.0	(omitted)	0.0000	0.0000
	Format	0.0	(omitted)	0.0000	0.0000
<b>Household Size</b>	"1-3"	0.3	0.0385	0.2442	0.3953
	"4-7"	0.8	0.0607	0.6618	0.8998
	"8+"	1.1	0.1382	0.7867	1.3284



<b>Wealth Quintile</b>	Poorest	2.9	0.1732	2.5506	3.2295
	Second	0.1	0.0205	0.0100	0.0902
	Middle	0.1	0.0258	0.0071	0.1081
	Fourth	0.0	(omitted)	0.0000	0.0000
	Richest	0.0	(omitted)	0.0000	0.0000

**Table 4: Standard Errors and Confidence Intervals for poverty headcount using poverty definition by different household characteristics**

		<b>Value</b>	<b>Standard error</b>	<b>95% confidence interval</b>	
<b>Gender of the Head of Household</b>	Female	14.3	0.6399	13.0017	15.5102
	Male	18.2	0.2398	17.7092	18.6491
<b>Education of the Head of Household</b>	None	24.4	0.4901	23.4635	25.3846
	Primary	24.5	0.4132	23.7361	25.3558
	Secondary/base2	12.8	0.8040	11.1909	14.3425
	lycle	6.2	0.3327	5.5594	6.8636
	University	0.1	0.0378	0.0185	0.1668
	Format	5.1	0.7351	3.6384	6.5200
<b>Household Size</b>	"1-3"	8.6	0.2474	8.1590	9.1288
	"4-7"	21.7	0.3478	20.9762	22.3396
	"8+"	40.3	0.9753	38.4205	42.2438
<b>Wealth Quintile</b>	Poorest	46.5	0.5928	45.3640	47.6878
	Second	20.6	0.5538	19.4742	21.6451
	Middle	11.9	0.4643	10.9448	12.7651
	Fourth	6.2	0.3443	5.5714	6.9208
	Richest	2.8	0.2666	2.2513	3.2964

**Table 5: Standard Errors and Confidence Interval for uncensored deprivation headcount of MPI indicators using the acute poverty definition**

	<b>Value</b>	<b>Standard error</b>	<b>95% confidence interval</b>	
<b>Years of Schooling</b>	8.9	0.1472	8.6136	9.1905
<b>School attendance</b>	1.2	0.0564	1.0944	1.3155
<b>Child Mortality</b>	0.6	0.0412	0.5583	0.7197
<b>Child Nutrition</b>	3.1	0.0894	2.9106	3.2609
<b>FGM/Early Pregnancy</b>	0.3	0.0266	0.2142	0.3187
<b>Electricity</b>	0.6	0.0409	0.5508	0.7112
<b>Sanitation</b>	6.9	0.1307	6.6118	7.1242
<b>Water</b>	6.6	0.1283	6.3438	6.8466
<b>Floor/Roof</b>	0.9	0.0480	0.7748	0.9628
<b>Cooking Fuel</b>	0.5	0.0362	0.4219	0.5638
<b>Overcrowding</b>	10.5	0.1584	10.1879	10.8089
<b>Assets</b>	3.4	0.0938	3.2272	3.5950

**Table 6: Standard Errors and Confidence Interval for uncensored deprivation headcount of MPI indicators using the poverty definition**

	<b>Value</b>	<b>Standard error</b>	<b>95% confidence interval</b>	
<b>Years of Schooling</b>	58.5	0.2551	57.9690	58.9689
<b>School attendance</b>	18.6	0.2014	18.1975	18.9870
<b>Child Mortality</b>	0.6	0.0413	0.5600	0.7219
<b>Child Nutrition</b>	3.8	0.0992	3.6227	4.0115
<b>FGM/Early Pregnancy</b>	0.3	0.0267	0.2149	0.3197
<b>Electricity</b>	0.6	0.0411	0.5540	0.7151
<b>Sanitation</b>	6.9	0.1309	6.6090	7.1221
<b>Water</b>	22.3	0.2154	21.8671	22.7116
<b>Floor/Roof</b>	28.9	0.2346	28.4280	29.3477
<b>Cooking Fuel</b>	0.5	0.0360	0.4164	0.5577
<b>Overcrowding</b>	24.7	0.2232	24.2557	25.1308
<b>Assets</b>	32.0	0.2414	31.4960	32.4423

**Table 7: Standard Errors and Confidence Intervals for poverty headcount using acute poverty definition by Governorate**

	<b>Value</b>	<b>Standard error</b>	<b>95% confidence interval</b>	
<b>District Tunis</b>	0.0	(omitted)	0.0000	0.0000
<b>Nord Est</b>	0.6	0.1074	0.3911	0.8121
<b>Nord Ouest</b>	1.9	0.2236	1.4385	2.3150
<b>Centre Est</b>	0.0	(omitted)	0.0000	0.0000
<b>Kasserine</b>	2.4	0.2702	1.8771	2.9363
<b>Kairouan</b>	2.4	0.2749	1.8647	2.9424
<b>Sidi Bouzid</b>	1.9	0.2242	1.4117	2.2907
<b>Sud Est</b>	0.0	(omitted)	0.0000	0.0000
<b>Sud Ouest</b>	0.3	0.0918	0.1441	0.5039

**Table 8: Standard Errors and Confidence Intervals for poverty headcount using poverty definition by Governorate**

	<b>Value</b>	<b>Standard error</b>	<b>95% confidence interval</b>	
<b>District Tunis</b>	9.2	0.4079	8.4435	10.0427
<b>Nord Est</b>	16.0	0.5733	14.8475	17.0948
<b>Nord Ouest</b>	22.1	0.6534	20.8547	23.4160
<b>Centre Est</b>	15.5	0.6088	14.3171	16.7038
<b>Kasserine</b>	36.3	0.8113	34.6712	37.8515
<b>Kairouan</b>	36.3	0.8402	34.6782	37.9718
<b>Sidi Bouzid</b>	33.3	0.8038	31.6787	34.8296

<b>Sud Est</b>	19.1	0.6972	17.7304	20.4635
<b>Sud Ouest</b>	15.1	0.5691	13.9416	16.1724

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