

# A Multidimensional Poverty Analysis: Evidence from Lebanese Data

Ahmad Ashaal, Ahmed Bakri

**Abstract:** Traditionally, empirical studies on poverty have relied on income and monetary indicators to identify the poor in the population. Specifically, the poor are defined as those people whose income is below a certain threshold, normally set at a certain percentage of the average or median income of the society. A variety of alternative approaches have been put forward to overcome such critiques. However, the adoption of a broader set of information relating, for instance, to the ownership of consumer goods or to the access to various goods and services, raises the complex issue of deriving measures of standard of living that are of a multidimensional nature. The approach we propose aims at developing multidimensional measures of poverty at the level of Lebanon, using information contained in the first wave of the Lebanese component of the Statistics on Income and Living Conditions. Along the lines suggested by other studies, we have derived deprivation indices on the basis of direct, non-monetary standard of living indicators. As a second step, the relationship between income and non-income indicators of poverty in Lebanon has been investigated, in order to examine to what extent alternative, multidimensional measures could be combined with income to better identify the poor. Our results confirm the common finding that income-indicators are able to measure poverty only to a certain degree. This study appears to be particularly relevant for the Lebanese case. Firstly, it provides empirical support to the opportunity of supplement income-based measures with additional non-monetary information, by showing to what extent the main results obtained for other countries may hold also for Lebanon. Secondly, an analysis of poverty based on information different from income may be particularly useful for a country such as Lebanon, where income data are not very reliable, because of underreporting and tax evasion problems.

## I. INTRODUCTION

Traditionally, empirical studies on poverty have relied on income and monetary indicators to identify the poor in the population. Specifically, the poor are defined as those people whose income is below a certain threshold, normally set at a certain percentage of the average or median income of the society. Two ways of poverty were considered:

The first was: Absolute poverty refers to a set standard which is consistent over time and between countries taking into consideration the per capita intake of calories and the minimum level of consumption. While the second: Relative poverty views poverty as socially defined and dependent on social context, where the economic conditions of different regions are compared. Hence relative poverty is a measure of income inequality. The capita income and the national

income are the two indicators of relative poverty. Income Poverty is defined by a case where "a family's income fails to meet a federally established threshold that differs across countries." In order to measure the income poverty, the poverty threshold (poverty limit or poverty line) was born which is "the minimum level of income deemed adequate in a particular country." (poverty threshold, 2016)

The approach used by LIS (The Luxembourg Income Study) is that of creating a relative poverty line based on the level and distribution of household disposable income in the total population. Households are classified as poor or non-poor on the basis of whether their income is lower or higher than the relative poverty line. (LIS Data, 2011). Even though these approaches are satisfactory, providing relatively simple and comparable measures of poverty, they also entail some limitations, as it has been highlighted by the scientific literature. Poverty is about not having enough money to meet basic needs including food, clothing and shelter. This view sees poverty largely in monetary terms. However poverty is much more than just not having enough money. The World Bank Organization describes poverty as "Poverty is hunger. Poverty is lack of shelter. Poverty is being sick and not being able to see a doctor. Poverty is not having access to school and not knowing how to read. Poverty is not having a job, is fear for the future, living one day at a time." (UNIDO, 2003). Moreover, Poverty is the general scarcity or the state of one who lacks a certain amount of material possessions or money. (Wikipedia) It is a multifaceted concept, which includes social, economic, and political elements. It is now widely recognized that poverty should be more properly conceptualized as a multidimensional phenomenon, related to the condition of exclusion from the life of society that some individuals experience because of a lack of resources. Accordingly, poverty does not simply imply the inability to satisfy some basic needs essential for physical survival, but rather the involuntary absence of material, social and cultural resources considered as necessary by the society as a whole.

A variety of alternative approaches have been put forward to overcome such critiques. However, the adoption of a broader set of information relating, for instance, to the ownership of consumer goods or to the access to various goods and services, raises the complex issue of deriving measures of standard of living that are of a multidimensional nature. The approach we propose aims at developing multidimensional measures of poverty at the level of Lebanon, using information contained in the first wave of the

Revised Manuscript Received on December 22, 2018.

Ahmad Ashaal, Lecturer at the Lebanese International University, Lebanon

Ahmed Bakri, Chairperson of Finance at the Lebanese International University, Lebanon



Lebanese component of the Statistics on Income and Living Conditions (explained below). Along the lines suggested by other studies, we have derived deprivation indices on the basis of direct, non-monetary standard of living indicators. As a second step, the relationship between income and non-income indicators of poverty in Lebanon has been investigated, in order to examine to what extent alternative, multidimensional measures could be combined with income to better identify the poor. **Our results confirm the common finding that income-indicators are able to measure poverty only to a certain degree.**

This study appears to be particularly relevant for the Lebanese case. Firstly, it provides empirical support to the opportunity of supplement income-based measures with additional non-monetary information, by showing to what extent the main results obtained for other countries may hold also for Lebanon. Secondly, an analysis of poverty based on information different from income may be particularly useful for a country such as Lebanon, where income data are not very reliable, because of underreporting and tax evasion problems.

As triggered in this research we have found it important to answer and justify how is poverty defined by key stakeholders in Lebanon? Who are considered poor by key stakeholders? Who are the poor Lebanese and the characteristics of typical poor households in Lebanon?

The answer to these questions and the findings should test and justify each of the following hypotheses:

H<sub>0</sub>: Poverty is related to income in Lebanon.

H<sub>1</sub>: Poverty in Lebanon is consumption related phenomenon.

H<sub>2</sub>: Poverty in Lebanon is conceptualized as a multidimensional phenomenon of deprivation.

## II. LITERATURE REVIEW

Literature on poverty offers many definitions, each highlighting the standpoint of its user (CAS, World Bank, 2015). An International Poverty Centre paper (Kakwani & Son, 2006) groups the various definitions into four categories, namely, those based on 'income or its proxy', 'material lack or want', 'capability deprivation' and 'multi-dimensional view of deprivation. It is however generally accepted that poverty is a denial of human rights that causes multi-dimensional deprivation for individuals and households.

The definition and measurement of poverty are issues debated both within the theoretical literature and the policy arena since different methodological choices affect the anti-poverty strategies and have relevant social, economic and political implications. The diversity of perspectives reflects the complexity of the phenomenon. Many theoretical works and empirical research have tackled the task of measuring poverty. Different approaches can be distinguished on the basis of the variables taken into account: income, actual consumption, access to goods and services or the capability to obtain them. Empirical research on poverty shows that different approaches provide different results about its size and evolution.

Traditional approaches to the measurement of poverty are unidimensional, since they are based on a single indicator, generally income or expenditure, showing the level of deprivation. These monetary measures separate the population between poor and non-poor through the identification of thresholds which can be "absolute" or "relative". According to the absolute approach, thresholds are defined on the basis of the amount of money necessary needed to secure a minimum standard of living. While these measures are widely used in the developing countries, they tend to be considered inadequate for the developed countries. In most developing countries, censuses do not collect income or expenditure information, so that small area poverty estimates are typically not available even for census years. To fill this gap, the World Bank has recently invested in a methodology for generating small-area poverty and inequality statistics, in which an imputation rule, estimated from a household survey, is used to calculate small area estimates from census data. (Deaton, 2004)

Different strategies put forward range from establishing an income poverty level, below which deprivation increases markedly to setting a cut-off point equal to a certain percentage of the deprivation index. An alternative solution proposes to combine income and standard of living information in order to identify the consistent poor in the population. In this approach, material deprivation and income poverty are viewed as two different measure of the same phenomenon. Individual are "consistently" poor when their income is below the poverty threshold and they also experience some form of deprivation. In some studies, the deprivation threshold is set at a level where the proportion of people considered deprived is the same as that of the income poor. A common finding from this literature is that the degree of overlapping between poverty and deprivation measures is far from being perfect. The latter is the approach adopted also in this paper, since it is coherent with the assumed definition of poverty as a low standard of living due to the lack of resources. Qualitative assessments are very useful survey instruments for identifying the characteristics of the poor and the extent of their deprivation. In contrast with the quantitative methods and conventional monetary approaches favored by officials and used in most household based surveys, qualitative methods are less concerned with mathematical precision. (Gisele Kamanou M. W.)

Poverty cannot be seen only in term of availability of essential goods, but other forms of deprivation emerge. Although income (as a one-dimensional measures) measures have some advantages, in term of easy of computation and comparability across countries, they also present some drawbacks, mainly related to the way income is usually measured. Firstly, components such as savings, investment incomes, and non-official incomes, benefits provided by the family or friends, home production as well as consumption of public services are not taken into account or are not very reliable. Accordingly, income provides only a partial description of the individual "command over resources". Secondly, income is an indirect measure of poverty since it

relates only to resources required to achieve well-being, not to the outcomes, the final conditions of the individual. Furthermore, reported income on which poverty measures are based is often affected by underestimation problems that throw doubts on the reliability of poverty analyses.

The HDI (Human Development Index) is a composite indicator of human development based on the arithmetic mean. It measures the average achievements in a country or geographical area in three basic dimensions:

1. Wellbeing (Life expectancy at birth in years)
2. Knowledge (Adult literacy rate% and combined gross enrolment ratio (%))
3. Standard of living (Gross Domestic Product per capita (PPP US\$)).

The main characteristic of this methodology is that it assumes a complete substitutability among the dimensions of human development: a deficit in one dimension can be compensated by a surplus in another.

While the HDI measures average achievement, the HPI (Human Poverty Index) measures deprivations. Unlike the popularity of the human development index (HDI), which combines income, health and education dimensions, and applies simple weighting mechanism for aggregation of the three dimensions, the HPI was far less successful in gaining attention of countries for policy dialogues. The HPI introduced by UNDP in the 1997, has been one of the first examples of nonmonetary composite index of poverty. (Pasquale De Muro, 2009)

The HPI is derived separately for developing countries (HPI-1) and a group of select high-income OECD countries (HPI-2) to better reflect socio-economic differences and also the widely different measures of deprivation in the two groups. (Human Poverty Index, 2016). The human poverty index has significant limitations. In particular it doesn't register a lack of political freedom, in ability to participate in decision making, lack of personal security, inability to participate in the life of a community and threats to sustainability and intergenerational equity. (Jolly, 1997)

Building on these shortcomings, during the last decades traditional unidimensional approaches have been questioned and alternative, multidimensional approaches have been put forward. No one indicator alone can capture the multiple aspects that constitute poverty. It reflects deprivations in very rudimentary services and core human functioning for people across 104 countries. Multidimensional methods allow the researchers to consider several aspects of both material and social deprivation in explaining poverty and living conditions. The 2010 HDR (Human Development Report) introduced the Multidimensional Poverty Index (MPI), which identifies multiple deprivations in the same households in education, health and standard of living. The education and health dimensions are based on two indicators each while the standard of living dimension is based on six indicators. (Malik, 2013) All of the indicators needed to construct the MPI for a household are taken from the same household survey. The indicators are weighted, and the deprivation scores are computed for each household in the survey. A

cut-off of 33.3 percent, which is the equivalent of one-third of the weighted indicators, is used to distinguish between the poor and non-poor. If the household deprivation score is 33.3 percent or greater, that household (and everyone in it) is multidimensional poor. Households with a deprivation score greater than or equal to 20 percent but less than 33.3 percent are vulnerable to or at risk of becoming multidimensional poor. Due to a lack of relevant data, the MPI has not been calculated for this country.

There is a shift towards understanding poverty as a multidimensional phenomenon and one might argue that while exclusion from the life of society is one of the important dimensions for poverty analysis, a broader range of dimensions must be considered. (Hick, 2012) The main guiding principle for welfare aggregate is to make it comprehensive enough to capture important dimensions of wellbeing, while being attentive to concerns about measurement error.

Consequently, poverty should be best treated as multidimensional and non-monetary indicators should complement monetary ones in order for measurement procedures to offer a correct identification of poor people. Direct indicators can provide a better description of the income-poor, explaining the different kinds of deprivation they may experience. Accordingly, they may serve to better identify poor individuals by integrating the income information. These direct indicators can be used as an alternative basis for the measurement of poverty, focusing directly on the standard of living in terms of insufficient quantity of the usual goods and services, rather than of insufficient resources enjoyed. Despite these advantages, poverty measures which incorporate information from various indicators have also some drawbacks, mainly concerning the difficulties in managing the multidimensionality and the use of non-monetary variables.

### III. METHODOLOGY

When poverty is conceptualized as the occurrence of various cumulative deprivations, it should be measured through the "aggregation" of the different hardship factors experienced by the individuals. Accordingly, measuring multidimensional poverty at Lebanon's level first involves the construction of deprivation indices which incorporate the information provided by several indicators of deprivation. These indices are derived on the basis of specific hypotheses relating to:

- The selection of the indicators to be considered
- The definition of a weighting structure for each item
- The aggregation of the indicators
- The identification of a threshold which separates deprived and non-deprived individuals.

All of these issues should be carefully considered in the development of a multidimensional poverty measure in Lebanon. The first step in the building of a summary measure of poverty concerns the selection of the appropriate indicators. Obviously, the choice depends on the data availability, but the variables considered affect the type of poverty we want to



analyze.

In this work, we select **10 indicators** from the original dataset, on the basis of their relation with the individual deprivation condition for Lebanese poor people. These items cover different life domains, enabling us to identify a range of deprivation dimensions. By adopting a social and relative definition of poverty, we do not consider only “necessities” for the inclusion in the deprivation index, but a wider set of goods identifying the common society’s living standard.

Furthermore, we use both objective and subjective indicators, even though a number of theoretical issues can be raised when subjective items are considered. Finally, to account for the possible influence of preferences and tastes in shaping the Lebanese individual status of deprivation, we choose to consider as a signal of personal disadvantage only those goods whose absence is due to an “enforced lack”. Once a set of deprivation items has been selected, their aggregation into a multidimensional index implies choosing an adequate weighting structure. Different weights have been used by the literature, even though no clear theoretical justification can be provided for none of them. Some studies apply equal weighting for each item. Other studies develop their indices of deprivation by aggregating the variables on the basis of their relative frequencies.

At this point it is worth to note that there is considerable controversy in the literature about the opportunity to aggregate all the indicators in a single overall deprivation index to maintain separate the different dimensions of poverty. Finally, the identification of deprived people requires the definition of a threshold, issue that arises several theoretical and empirical problems.

An analysis of the Housing and Population Database using the “Unsatisfied Basic Needs” (UBN) method resulted in ranking the different Lebanese districts according to the degree of satisfaction of basic needs. This said methodology selected eleven indicators for classification of districts, grouped into the following four major fields: (UNDP)

- Housing and housing-related indicators;
- Access to water and sewerage;
- Education and education-related indicators; and
- Income-related indicators.

The threshold for each indicator should be pointed out that the acceptable minimum degree of satisfaction for a specific basic need differs from one country to another, and even between households in the same country. This minimum depends on several elements: the surrounding environment and circumstances; social traditions; cultural orientation and habits; and other factors. Thus, the definition of the lower limit, or the threshold, for each indicator involves a degree of personal judgment that could vary from one person to another.

National poverty headcount ratio is the percentage of the population living below the national poverty lines (Wikipedia contributors, 2016). National estimates are based on population-weighted subgroup estimates from household surveys. Poverty headcount ratio among the population is

measured based on national poverty lines. Lebanon has a unique national poverty line or separate poverty lines for rural and urban areas that reflect the differences in the cost of living or sometimes to reflect differences in diets and consumption baskets. According to the UN data the national poverty headcount was 28.6 % in Lebanon. It decreases to reach 27% in 2012. (UN data). Poverty estimates at national poverty lines were computed from household survey data collected from nationally representative samples of households in Lebanon. These national poverty lines reflect local perceptions of the level and composition of consumption or income needed by the Lebanese people to be non-poor.

Although deeply constrained by data limitations in Lebanon, the MPI reveals a different pattern of poverty than income poverty, as it illuminates a different set of deprivations. In order to measure multidimensional poverty it is necessary to define the threshold measures of severe deprivation of basic human need for that know as the dimensions of MP: health, education, and standard of living. These are measured using many indicators mainly 10. These indicators can be chosen appropriate to the society and situation of Lebanon. The MPI assesses poverty at the individual level. It uses the person (or household) as a unit of analysis. The only indicators for which individual level data can be available for all household members are years of education and the living standard variables which naturally apply to all household members.

### A. Steps in measuring MPI:

The goal of this research is to set out a new method for measuring poverty not applied in all countries. There are three steps needed to be taken in measuring poverty. These steps are:

- Defining an indicator of welfare in Lebanon
- Establishing a minimum acceptable standard of that indicator to separate the poor from the non-poor (the poverty line) in Lebanon.
- Generating a summary statistic to aggregate the information from the distribution of this welfare indicator relative to the poverty line.

This means that the indicators differ systematically from traditional indicators constructed from the same data. If the household is deprived in at least one third of the ten indicators shown above then all individuals in this household are considered as poor. "The cutoff for poverty ( $k$ ) is 33.33%, the global index identifies them as ‘MPI poor’, and the extent of their poverty is measured by the number of deprivations they are experiencing". ((OPHI), 2016) . In other words, the variable  $k$  reflects the sum of weighted indicators in which a household must be deprived in order to be considered multidimensional poor. As  $k$  increase, the number of households who will be considered poor goes down, while the intensity of deprivations in any poor household goes up. Logically, If we report two values for  $k$ :  $k = 3$  and  $k = 2$ . When  $k = 3$ , a person has to be deprived in at least the equivalent of 30 percent of the weighted indicators (two to six indicators) in order to be considered multidimensional poor. This

amounts to six asset indicators or two health or education indicators. If we choose instead

cutoff value  $k = 2$  then all poor people must be deprived in at least 20 percent of the weighted indicators (two to four indicators).

**Table 1:** MPI indicators weights

Dimension	Indicator	Deprived if...	Relative Weight
Education	Years of schooling	No household members has completed 5 years of schooling	1/6
	Child school attendance	Any school aged child is not attending school up to the age at which they would complete class 8	1/6
Health	Child mortality	Any child has died in the household	1/6
	Nutrition	Any adult or child for whom there is nutritional information is malnourished	1/6
	Electricity	The household has no electricity	1/18
Living Standard	Improved sanitation	The household sanitation is not improved or it is improved but shared with other household	1/18
	Safe drinking water	The household does not have access to safe drinking water or safe drinking water is more than 30 minutes roundtrip	1/18
	Flooring	The household has dirt, sand or dung floor	1/18
	Cooking fuel	The household cook with dung, wood or charcoal	1/18
	Assets	The household doesn't own more than one radio, TV, telephone, bike, motorbike or refrigerator and doesn't own a car or truck	1/18

## B. Dimensions in Details:

### 1) Health:

Yet the capability to live a long and healthy life is a basic capability. We use two health indicators that are related to standard health indicators.

**a) Child mortality (16.7%):** If a child of any age has died in the household.

The death of a child is a total health functioning failure – one that is direct and tragic, and that influences the entire household. Such child deaths are preventable, being caused by infectious disease or diarrhea; child malnutrition also contributes to child death. However given the absence of health functioning information on household members, it provides at least rudimentary information on health

functioning. In the MPI all household members are considered to be deprived if there has been at least one observed child death (of any age) in the household. It is fundamental to note that this indicator differs from the standard mortality statistics. The standard under-five mortality rate is the number of deaths of children 0-5 years per 1000 children born alive. Our estimate can be either higher or lower than the mortality rate because it counts as deprived all people in households with a child death and not the actual children that died and it depends on the distribution of child mortality in the population and the size of the households with child mortality. We consider as non-deprived households where no one was interviewed on mortality.

**b) Nutrition (16.7%):** If any adult or child in the household is malnourished.

It is a direct indicator of functioning. " *Child malnutrition impacts cognitive function and contributes to poverty through impeding individuals' ability to lead productive lives.* " (2015). For children, malnutrition can have life-long effects in terms of cognitive and physical development. Adults or children who are malnourished are also susceptible to other health disorders; they are less able to learn and to concentrate and may not perform as well at work. In the MPI all household members are considered to be deprived in nutrition if at least one undernourished person is observed in the household. The standard measures refer to the percentage of undernourished population. In our measure they refer to those identified as multidimensional poor and who live in a household where at least one member is undernourished. Our estimate can be either higher or lower than the standard nutritional indicator because it counts as deprived people who are not undernourished themselves but in a household where somebody else is and it depends on the distribution of malnutrition in the population and the size of the households with malnourishment. We consider as non-deprived people in households where no one was measured.

For the nutritional indicator, in DHS countries, if nutritional information for women and children in the household was missing and these were households with applicable members (that is with children and/or women), we consider the household as missing this indicator. Otherwise, we used the available information. Similarly, for child mortality, households that had applicable members who did not respond to the mortality question are considered to be missing this information; otherwise the household is considered non-deprived.

### 2) Education:

**a) Years of schooling (16.7%):** If no household member has completed five years of schooling. Years of schooling acts as a proxy for the level of knowledge and understanding of household members. While years of schooling is an imperfect indicator because it does not capture both the quality of education and the level of knowledge attained. All household members benefit from the abilities of a literate person in the household, regardless of each person's actual level of education. If we observe at least one member with five or

more years of education then, regardless of the number of other members with missing data, we classify the household as non-deprived. If more than 1/3 of the household members have missing information on years of education, and the people for which we observe the years of education

have less than five years, the household is given a missing value in this indicator. If we have information of 2/3 (or more) of household members, and these report less than five years of education, the household will be classified as deprived.

**b) Child enrolment (16.7%):** If any school-aged child is out of school in years 1 to 8. Once again, school attendance does not capture completion, quality of schooling, or skills. But it is the best indicator possible to indicate whether or not school aged children is being exposed to a learning environment. When a child is not in school, the household's current and future knowledge and abilities are reduced. Note that households with no school-aged children are considered non-deprived. Hence incidence of deprivation in this indicator will reflect the demographic structure of the household and country as well as the educational attainments.

If all school-aged children in a household have missing information in school attendance, that value is considered missing. As long as we have information for one of the children in the household, the household will be classified as non-deprived or deprived depending on whether that child is reported to be attending school or not.

### 3) *Standard of living:*

**a) Drinking water (5.6%):** If the household does not have access to clean drinking water, or clean water is more than 30 minutes' walk from home. Access to safe drinking water serves directly to satisfy the need of hydration and hygiene (hygiene is also facilitated by the access to improved sanitation and flooring material).

**b) Sanitation (5.6%):** If the household's sanitation facility is not improved (according to the MDG guidelines) or it is improved but shared with other households.

**c) Cooking fuel (5.6%):** If the household cooks with wood, charcoal or dung. Clean cooking fuel prevents respiratory diseases, which are a leading cause of preventable death, and contributes to a healthy home environment.

**d) Assets (5.6%):** If the household does not own more than one of: radio, TV, telephone, bicycle or motorbike, and does not own a car or tractor. The set of considered assets are directly linked to the ability to communicate with other people, to be mobile, and even to have access to safe food. The assets indicator considers a household as non-deprived if it has more than one of any of these items: TV, radio, telephone, refrigerator, motorcycle, and bicycle or if it has a car or truck. If there are any of these missing, then we assume that the household does not have this asset. The indicator takes a missing value only if there is missing information for all the seven assets.

**e) Electricity (5.6%):** If the household has no electricity. Electricity is fundamental to pursue a number of activities. It allows lighting, which in turn allows people to be

independent during the night time. Power also enables a wide range of work and leisure activities ranging from refrigeration to drilling to blending, sewing, and so forth. Electricity is also usually a safer means of lighting.

**f) Flooring (5.6%):** If the household has dirt, sand or dung floor.

"Whenever the household had missing information on water, electricity, toilet, cooking fuel or flooring, this household is excluded from the computation of the poverty measure." (Nawar, 2014)

### C. Data collection methods:

In the aim of collecting data needed to conduct our analysis, samples of Lebanese houses in Ali Nahri town were contacted. In the first phase, a very well structured questionnaire was constructed based on the questionnaires used in previous researches and which included the key variables and dimensions of MPI (Multi-dimensional Poverty Index). In the second phase, questionnaires were distributed to 100 houses in Ali Nahri town and nearby region. Since using a postal questionnaire was not possible and to ensure validity and reliability of our data, all questionnaires were delivered by hand and filled by us. The data was collected during September – January 2017.

Finally, we have adopted a systematic, constant comparison strategy in addition to standard statistical analysis to analyze the quantitative data collected with the help of Microsoft excel.

All surveys collect household and respondent characteristics to serve as key background indicators for comparing data and viewing trends among countries and over time.

Household characteristics include the household composition (how many people per household and their ages), educational attainment of household members, and school attendance ratios. Data on housing characteristics are also collected, including availability of electricity, water and sanitation facilities, as well type of flooring material and cooking fuel. Surveys also assess ownership of various durable goods, such as radio, television, refrigerator, bicycle, car and telephone. Wealth is a household characteristic that often has a large effect on health. DHS separates all interviewed households into five wealth quintiles to compare the influence of wealth on various population, health and nutrition indicators. Also of childhood mortality are calculated using survey data in order to get the Under-five mortality – the probability of dying before the fifth birthday. Surveys collect height and weight measurements, allowing for an analysis of nutritional status (stunting, wasting and underweight) for children as well as underweight and overweight for women using indicators like: initial breastfeeding, breastfeeding status, and iodization of household salt...etc. (The DHS Program, 2008)

Even a very large sample may give biased estimates for poverty measurement if the survey is not random, or if the data extracted from it have not been corrected for possible biases, such as due to sample stratification. A random sample requires that each person in the population, or each sub-group in a

stratified sample, have an equal chance of being selected.

#### IV. FINDINGS

In the case of Lebanon, the rarity of accurate statistical data related to poverty determinants in Lebanon –such as poverty line, poverty gap and headcount index- renders the process of poverty measurement, and the determination of the

characteristics of the poor and their profile, a relatively difficult task. Nevertheless, several attempts have been made during the past few years to quantify the prevalence of poverty in the country. Information on poverty is very limited, though work has recently taken-off with contributions made by the Government, the World Bank and UNDP. First, when measuring poverty in a country like Lebanon on the basis of GDP which is the weakest method since the GDP in recent years has grown steadily, despite fluctuations grow up. In 2006, *the growth rate was 0.6% and increased in 2008 to reach a high of 9.3%*. (WEO data,IMF). Also the case of the *GDP per capita at PPP was USD 15,330.96 in 2010, an increase of 7.45% compared to USD 14,267.87 in 2009* (ECR). Also, this can be not logic when poverty is measured on the basis of international dollar. The dollar scale in today is not based on a rational basis; most of the population in Lebanon by up individual income to two dollars or three dollars, or even five dollars a day, is still suffering poverty, and it cannot cover the basic expenses for food, shelter, health and education. This comes with the increase in *the consumer spending from 290000 LBP billion in 2004 till over 400000 LBP billion in 2015*. (TRADINGECONOMICS, 2017). When it is determined by the poverty threshold dollar a day, estimating the levels of poverty becomes just a matter of arithmetic, calculated indicators of poverty automatic starting of the dollar assumption in the day, and then the information included in the attractive tables showing a decline in national poverty levels with the twenty-first century. These predictions on poverty based on an assumed rate of growth in per capita income, which includes a reduction equal to it, and in line with the poverty levels. The framework is built on dollars hypothesis day has no meaning; it moved away from the study of the facts of real life, with the absence of a study of household food and shelter expenses, social and health services, estimating poverty indicators in the framework established by the World Bank becomes just a matter of arithmetic. The income-related component of the *Living Conditions Index (LCI) (51.6) is noteworthy and indicative of the significance of the methodology used to measure poverty*. (United Nations Children's Fund, 2014)

The LCI (Fig. 3) showed that *24.6% of households were deprived as of 2004*. Isolating the income-related indicator showed that *51.6% of households were income-deprived* (Fares & Kukrety, 2016). The 2007 UNDP study also measured inequality, using the Gini coefficient at *0.37 for nominal consumption and 0.36 % for real consumption*. This is comparable to the average of MENA countries, which is 0.37 and that of Latin American countries, which is 0.55.

Poor Lebanese households have struggled with managing their expenses in light of the stagnation of their incomes and the increase in prices of essential commodities. Food was reported as the main expense by poor Lebanese households and it comprises about 35–50% of their annual expenditure. It is the second most important expense for the refugee population, who mentioned rent for accommodation as their biggest and priority expenditure. The prices of basic food items (such as sugar, rice, oil, etc.) in the study areas appear to have increased by more than 20% since the reference year. Needless to say, that this increase in prices of the main expense for the poor can have serious implications for their household economies. (Fig. 4)

Based on a 2007 UNDP study, around 25% of the Lebanese population lives below the upper poverty line of USD 4 a day and 8% of which is under the lower poverty line of USD 2 a day. Based on this 2004 survey, an upper poverty line of \$4/person/day and a lower (extreme) poverty line of \$2.40/person/day were defined for Lebanon. This requires an immediate review in the changed context of Lebanon. This study found that poor Lebanese households are typically characterized by low incomes; work in the informal labor market in agriculture, construction and service sectors; depend on markets for meeting their basic needs and are therefore highly exposed to the fluctuations in market systems; have low levels of formal education; are dependent on others on a regular basis for survival, live in poor neighborhoods with poor infrastructure and weak services, and are perceived as poor by the community.

Most households reported that their annual household income has remained unchanged in the past five years. However, some households pointed out that their annual incomes have reduced by 25–30% since 2010. In discussions, *respondents stressed that life was a struggle in the reference year too, as they did not have regular and well-paid jobs*. (Issam Fares I. f., 2016)

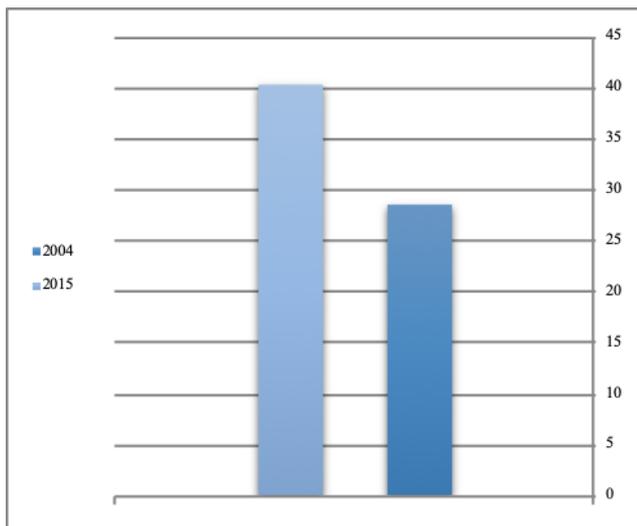
This meant that they had to constantly look for work to ensure a steady flow of income to meet their regular expenses. In most cases, poor households were engaged in short-term and seasonal work. However, all respondents stressed that higher competition in the labor market means that work opportunities have shrunk in the past few years, which has meant that they are less able to negotiate wages and work conditions. A review conducted by UNOCHA predicts that 220,000 to 324,000 more Lebanese could lose their jobs in the near future due to the increase in supply of labor. *The new report found that less than 5 percent of people in Lebanon were unable acquire enough food to meet their daily minimum dietary energy requirements between 2012 and 2014, which is considered low* (Sidahmed, 2015).

According to the tables' data: Lebanon's healthcare expenditures grow to reach \$3.74B. In 2015, Pharmaceutical sales are expected to grow marginally from \$1.59B in 2014 to \$1.60B in 2015. As for healthcare expenditures, they are projected to rise from \$3.7B in 2014 to \$3.74B in 2015. (Blominvest Bank, 2015). Also, the new report found that less than 5 percent of people in Lebanon were unable acquire enough food to meet their daily

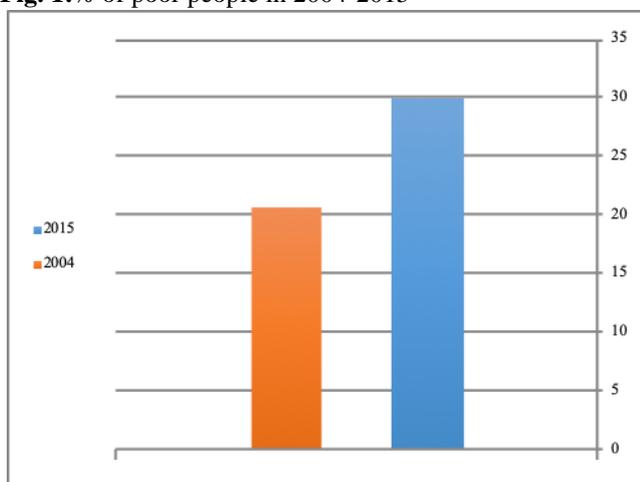
minimum dietary energy requirements between 2012 and 2014, which is considered low. (Sidahmed, 2015)

**Table 2:** Lebanon poverty related findings for 2004-2015

Year	2004	2015
% of non-poor	71.4	59.7
% of poor people	28.6	40.3
extremely poor 2.4\$/day	8	30
% of average poor people 4\$/day	20.6	10.3
number of individuals who live in very poor condition 7\$/day	2.2	4.3
number of individuals who live in low conditions 8\$/day	17.3	25.5
number of individuals who live under poverty line	1.1 million	2.37 million



**Fig. 1:** % of poor people in 2004-2015



**Fig. 2:** % of extremely poverty people in 2004-2015

Poor households in Lebanon tend to be reliant on seasonal and inconsistent daily labor in the informal sector, have low levels of education, large amounts of debt and high dependency ratios

Lebanon suffers from a poverty data gap as the last poverty survey, called the Living Conditions and Household Budget Survey, was conducted by the Government of Lebanon and UNDP in 2004. As per the money-metric (income poverty) World Bank measurement of \$2.40 as the lower and \$4.00 for the upper poverty line, 8% of Lebanese are extremely poor and 29% are poor. Food was the main expense comprising 35% to 50% of their total monthly expenses; health at 20%;

and education the third at 15%. Debt repayment and housing costs took up 10% to 15% of their monthly expenses with debt rates higher in the winter when labor opportunities are scarcer. Women reported receiving less years of education, having less mobility, and occupying lower-paying, usually informal jobs more extreme coping strategies are employed, such as taking exploitative, low-paying work; taking children out of school; and selling productive assets to pay for basic needs and rent. (Fares & Kukrety, 2016)

It is estimated that more than 50% of Lebanese are not formally covered by any health insurance (Health indicators, 2015) and out-of-pocket payments are especially hard on the poor households who for financial reasons usually do not seek medical care until it is too late for outpatient treatment. From data related to fall 2014 in Lebanon, Bekaa where 38% (World Bank, 2016) of people are poor, households reported mostly having to purchase food on credit (59%), borrow food (42%), and are spending from their own savings (37%). The LCHBS highlighted that 28.6% of the population lived below the poverty line, of which 8% were extreme poor in the year of the survey. (Fares & Kukrety, 2016)

The global united nations have adopted 2 poverty lines i.e. Lebanon: the first one is the extreme poverty line, set at 2US\$/person/day, equivalent to 60 US\$/person/month. The extreme poverty line reflects the cost of basic food needs. The other threshold is the poverty line, set at 4 US\$/person/day, or 120 US\$/person/month, which reflects the cost of minimal food and non-food livelihood requirements. Even though extreme poverty and food insecurity are often associated with hunger and malnutrition in developing countries; overweight and micronutrient deficiencies are other manifestations of poverty and food insecurity.

We cannot forget that due to the Syrian crisis, over half a million Syrian refugees reside thus 170,000 Lebanese have been pushed into poverty. (Kiana Davis, 2014). Based on a multidimensional poverty index, 49% of households in North Lebanon and 45% in the Bekaa Valley were deprived of health services in 2004 (UNDP, 2008)

**Table 3:** GDP per capita and basics expenditure (2004-2015)

Year	2004	2015	change
Population (million)	3.9	5.9	increase 2
GDP per capita (\$)	5438	11,157	increase 5719
GDP per capita, PPP (\$)	10768	18,277	increase 7509
Health expenditures from (%GDP)	6.82	7.82	increase 1
food expenditure (%GDP)	19.87	20.56	increase 0.6899999999
Education expenditure (%GDP)	7.68	12.4	increase 4.72

**Table 4:** change in CPI 2004-2015

Year	2004	2015	Change
CPI	1.7	-0.7	decrease 2.4
housing, water, electricity, gas & other fuels % of CPI	25.70%	28.50%	increase 0.028

Transportation	7%	13.10%	increase	0.061
Education	7%	5.90%	decrease	0.011
clothing and footwear increase yearly % of CPI	20%	36.77%	increase	0.1677
clothing and footwear	4%	6.20%	increase	0.022
Foods and Non-Alcoholic Beverages %CPI	19.90%	25%	increase	0.051

**Table 5:** Indexes and Household size in Lebanon 2004-2015

Year	2004	2015	Change
Household Sizes	5	4.23	Decrease 0.77
Unemployment	7.9	6.4	Decrease 1.5
GNI per capita (2011 PPP\$)	12,152	16,509	Increase 4357
HDI	0.73	0.769	Increase 0.039

**Table 6:** health, education and Living standards indicators in Lebanon (2004-2015)

Year	2004	2015	Change
Life Expectancy at Birth	76.8	79.3	increase 2.5
Expected Years of Schooling	13.3	13.8	increase 0.5
Mean Years of Schooling	7.4	7.9	increase 0.5
Illiteracy	22	6.1	decrease 15.9
School Non-Enrollment	4.11	11.11	increase 7
Under 5 Mortality	1.41	1	decrease 0.41
Adult Mortality	1.845	1.579	decrease 0.266
Infant maternal/1000	1.259	0.862	decrease 0.397
Malnutrition	32	15	decrease 17
Electricity Deficiency	4.2	5	increase 0.8
Sanitation No Access	0.5	7	increase 6.5
Drinking Water No Access	47.45	19.3	decrease 28.15
Floor Not Good	33	21	decrease 12
	0.4	12	increase 11.6

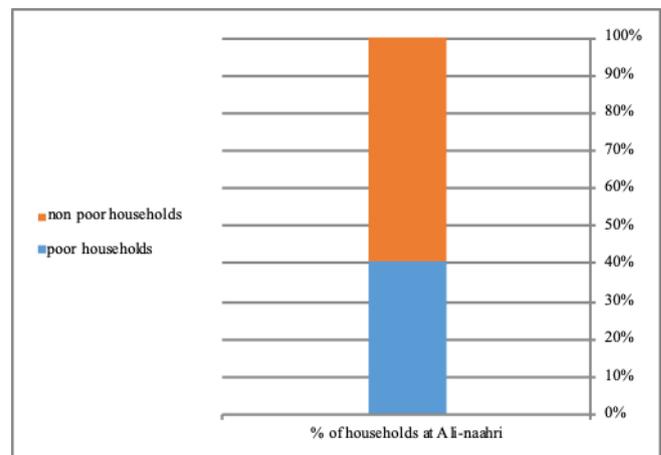
**A. Ali-Nahri Case:**

Missing values are a common problem of household surveys. Whenever a household had missing information for all its members in an indicator, it was excluded from the computation. However, if there was missing information for only some of its members, we have used the available information as much as possible. Specifically, we proceeded as follows. For the indicator on years of education, if we observe at least one member with five or more years of education then, regardless of the number of other members with missing data, we classify the household as non-deprived. If more than 1/3 of the household members have missing information on years of education, and the people for which we observe the years of education have less than five years, the household is given a missing value in this indicator. If we have information of 2/3 (or more) of household members, and these report less than five years of education, the household will be classified as deprived. For the child school attendance indicator, if all school-aged children in a household have missing information in school attendance, that value is

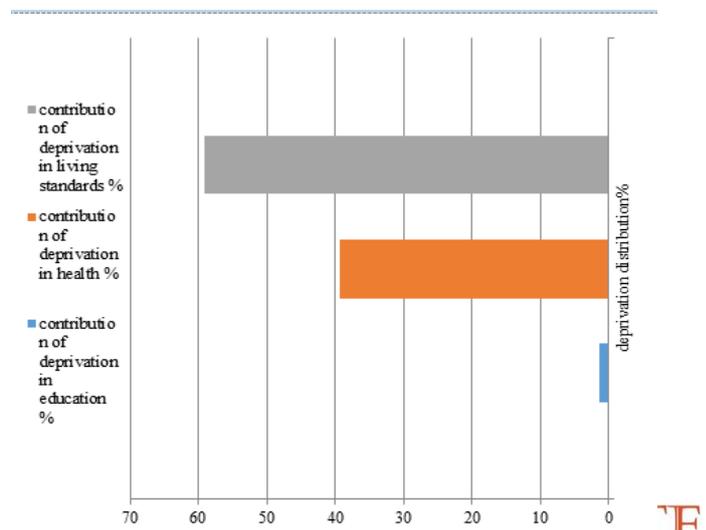
considered missing. As long as we have information for one of the children in the household, the household will be classified as non-deprived or deprived depending on whether that child is reported to be attending school or not. After applying this survey in Ali-Nahri with some conditions (houses without children, Syrian refugees and all non-Lebanese households members) were excluded the data below was considered:

**Table 7:** calculations of MPI and contribution of deprivation in Ali nahri

Column1	Column2
sum of MPI non-poor households at Ali nahri	59
total HH for survey	100
% of poor people at Ali nahri	41
total population included (person)	454
poor population(person)	193
Poor population (H) (%)	43
Severe poor households (%)	13
Intensity (A) %	45
MPI=H x A (%)	19.13
contribution of deprivation in education %	1.5
contribution of deprivation in health %	39.35
contribution of deprivation in living standards %	59.15
total %	100



**Fig. 3:** Poor and non poor households in Alinahri



**Fig. 4:** Deprivation contribution for MPI indicators in Alinahri

**V. DISCUSSION AND ANALYSIS**

Poverty is not a new phenomenon in Lebanon. Many studies highlight that poverty existed in Lebanon before 2010. Years of unrest, political stalemate and slowing down of economic growth has meant that households have lived in poverty for a long time. Few efforts have been made at the national level to assess poverty in the country, and these have

produced significantly different results owing to the difference in the methodologies used. The most recent poverty survey is the Living Conditions and Household Budget Survey (LCHBS) that was conducted a decade ago, in 2004. It uses money metric indicators to define poverty. The LCHBS highlighted that 28.6% of the population lived below the poverty line, of which 8% were extreme poor in the year of the survey. Unfortunately, these aggregate statistics do not uncover the real picture. Lebanon suffers from a poverty data gap as the last poverty survey, called the Living Conditions and Household Budget Survey, was conducted by the Government of Lebanon and UNDP in 2004. As per the money-metric (income poverty) World Bank measurement of \$2.40 as the lower and \$4.00 for the upper poverty line, 8% of Lebanese are extremely poor and 29% are poor. (Sarah Al-Jamal, Rachel Eichholz, April 2016)

In 2004, economic poverty – represented in the decrease in income compared to the high cost of living and the lack of adequate or gainful employment – is still the most important force of poverty and deprivation in Lebanon. ( Republic of Lebanon Ministry of Social Affairs, 2004)

The World Bank estimates that poverty increased by 4 percentage points in 2013, and the labor supply will rise by about 50 percent by end-2014, with a pronounced impact on unskilled labor, youth and women. (IMF country report, 2014)

The percentage change 11.7% of population in Lebanon becomes poor from 2004-2015. Despite the GDP per capita (PPP or \$) increases in Lebanon between 2004 and 2015, the poverty percentage increases instead of decreasing in the case of depending on GDP per capita as an indicator for poverty rates in Lebanon. They go in same direction instead of the opposite one logically.

The percentage of expenditure from GDP increases at the same time in all (health, food and education) by overall 7.41 % for those 3 sections. We can consider a decrease in the CPI between 2004 and 2015 where it is 1.7 in 2004 and decreases till -0.7 in 2015. although all percentages of housing, water, electricity, gas & other fuels % of CPI, clothing and footwear increase yearly % of CPI and Foods and Non-Alcoholic Beverages %CPI by about 32% in 2015.

CPI can explain the causes that lead the 11% of people to poverty in 2015 because as the CPI decrease the poverty rate increases because the 11% of people were unable to buy their needs due to the increase in their prices. It is clearly unrelated relation between unemployment rate and poverty rates in

Lebanon. At the time the unemployment rate decreases by 1.5 between these two years the poverty rates remain increasing in high speed. The education indicators explained in the table above (years of schooling, illiteracy and child enrolment rate) all went a good direction in 2015 where the years of schooling and child enrollment rate increased. Also the illiteracy rate decreased n about 15.9% between the years 2004 and 2015.

The same thing for the mortality rates where Lebanon achieved great decrease in these rates in all their parts (under 5, infant or maternal). A clear decrease in the mortality rate from 32 /1000 births in 2004 to 15/1000 births in 2015. But we cannot ignore the decrease of rates of nutrition in Lebanon, in the level of obesity where in 2015 11% of children are obese and about 5 % are malnourished. This can be due to bad food systems used at home (unhealthy food) and the deficiency of calories needed by these 5% to survive and reach the minimum level of calories needed. Here have not been any nutrition surveys by the government in Lebanon for decades and the statistics may not represent the entire picture.

The sanitation in Lebanon is a real problem. In the previous 2 years we considered many problems that appear in Lebanon related to sanitation and garbage. This is the government's responsibility to sign contracts in order to improve the sanitation network (public) for the households. Most of the households use open that are bad for nature and thus affects other sectors in people's life (increase number of diseases and deaths due to pollution and bad nutrition)

Moreover, the access to water that seems to increase between 2004 1nd 2015, but we cannot ignore the increase in water pollution level .the increase in rate of access to water may be explained by the increase in the number of households using fertilizers in 2015(due to technology). This on the other side may increase the household consumption at the level of water fertilizing. Poor households in Lebanon are primarily concentrated in the informal sector, working in precarious and seasonal jobs that earn wages below or dangerously close to the lower poverty threshold of \$2.40/person/day. Medical emergencies prior to 2010 appear to have played a bigger role in pushing most households into poverty. The conflict in Syria has exacerbated the problem by increasing competition for unskilled jobs, thus negatively affecting annual household incomes of poor Lebanese households. Food is the main expense for all poor households comprising approx. 20.56% (Fares & Kukrety, 2016) or about 35–50% (UNDP) of the total expenditure; expenditure on health 37.34 (Ministry of Public Health, 2015)and education are in the range of 12.4% - 5.86% (Mikhael, 2015) each; with debt repayment and housing costs (including rent, electricity and water) forming the other major expense for most households. In 2009, the MICS 3 survey results showed that 56% of children under five-years of age, had been engaged in four or more activities that promote early learning and school readiness with their parents or another household member over 15 years of age. Girls were more likely (58%) than boys (54%) to have had this level of exposure. And the average number of activities household



members engages in with the child was 4. (Dr. Maral, 2013)The first step is to identify a minimal nutrition requirement for healthy living, usually defined in terms of minimal caloric requirements. This nutritional threshold is typically estimated to ensure that it is consistent with local tastes and consumption patterns. "Malnutrition has not been identified as a critical issue in Lebanon. Obesity, however, is of increasing concern, among children" (WHO, 2010)where 10.9% of children are obese particularly. Prices have risen and income has decreased. The way this household has coped, which has been found to be typical throughout the country, is to cut expenses and take out loans to compensate where needed. (Fares & Kukrety,

2016)Lebanon faced 75% increase in life necessities conditions needed for the individual between 2004 and 2011. The health and education services have always been weak in Lebanon and with the added pressure on them due to the Syrian crisis; these services are extremely stretched now.

An estimated 2% of children aged 5-14 years were involved in child labor between 2002 and 2011. Many children work in hazardous conditions in the informal sector, including agriculture, metalwork and crafts, fishing, rock-cutting and tobacco cultivation, especially in remote areas 216 The adult literacy rate (percentage of persons aged 15 and over who can read and write) was 90% between 2007 and 2011. The primary school net enrolment ratios between 2008 and 2011 was 94% for males 93% for females while the secondary school net enrolment ratio during 2008-2011 for males was 71% and for females was 79%. (Trading Economics 2013)

According to the World Bank, 79% of the population had access to the potable water network in 2009 with only 7.6 and 13 hours/day in the summer and winter seasons respectively. Water is permanently available during winter in 45.5% of the residences that depend on the public network, and is only always available during the summer for 21.2% of residences. (GoL 2004, 2013)

According to World Bank figures, 98% of the population has access to improved sanitation facilities; with 87% of the rural population have access. Around 93% of the population has access to electricity. Electric power consumption in 2010 was 3,475.62 kWh per capita. However, power shortages are very frequent throughout the country and the country generates just 13 terawatt hours of electricity per year. (World Bank, 2013) Winter months are also the time when household expenses are the highest for Lebanese. According to the seasonal calendar, the winter months starting from September onwards are the most difficult, when expenses are higher because of school fees, the need for warm clothing, heating, fuel, and the prices of essential commodities (fruit, vegetables, eggs etc.) tend to increase seasonally.

Over the years, the cost of bread has remained static; however in discussions people indicated that the size/number of loaves or the weight of a bag of bread has progressively reduced. With low incomes and the higher cost of essential commodities, Lebanese poor households are effectively faced with a situation in which their purchasing power has

progressively declined, thus making an already difficult situation worse for them. (Fares & Kukrety, 2016). Lebanon is one of the countries of acceptable nutritional level and is classified as one of the countries of low level regarding the indicators of stunting and underweight and of medium level regarding the indicator of wasting which is slightly more than 5%. However, the rate of exclusive breast-feeding is low, not exceeding 24.7% of children under the age of four months and 7.6% between the ages of 4 and 5 months, while only 2.6% breastfed till end of the first year. Around 23% children under 4 months of age also start consuming complimentary food, while 44% are on bottle usage.

Poor households work extremely hard, take extreme risks and use all possible support systems to meet the most basic needs for survival. This is the strongest indicator of their agency and the fact that they have not given up – they continue to make sincere efforts to move out of the desperate situations that they are in. Over the past five years, most households has experienced a 26% decline in their annual income, which now stands close to the lower poverty line in Lebanon of \$2.40/person/day. The main reason for this decline in income is the injury of the main income earner in the household, who worked as a truck driver. Poverty line of \$4/person/day in 2010 and now has faced significant decline since then due to the injury of the main breadwinner and no access to a social safety net or disability payment.

The best figures on poverty in the country come from a previous study which indicated that the number of poor people in Lebanon increased by at least 5% and that more than 30% of the population, or about 1.2 million Lebanese, lives on less than \$4 per day. Furthermore, the proportion of individuals living on less than \$2.4 per day increased to close to 9% of the total Lebanese population, or about 340,000 people. (Khouri, 2008) In 2006, the Comparative Mapping of Living Conditions<sup>13</sup> between 1995 and 2004 was conducted using a Living Conditions Index (LCI), comprised of a Housing Index, Water and Sewage Index, Education Index, and an Income-related Index<sup>8</sup>. The LCI showed that 24.6% of households were deprived as of 2004. Isolating the income-related indicator showed that 51.6% of households were income-deprived.

The most recent poverty study of Lebanese in Lebanon, and the most commonly used one for a poverty profile of Lebanon, is the 2007 national report, 'Poverty, Growth and Income Distribution in Lebanon' by the UNDP and MOSA (UNDP) Relying on the expenditure data from the 2004/05 National Survey (World Bank's programmatic work in Lebanon, 2015), the study uses a money-metric poverty measure and determines a national poverty line based on household expenditures. This study established a lower poverty line of \$2.40/person each day and an upper poverty line of \$4.00/person each day for Lebanon. Using these poverty lines, 28.6% of Lebanese households were found to be poor and of these, 8% were considered extremely poor or below the lower poverty line.

#### **A. Interpretation of Ali-Nahri Case:**

The interpretation for the Ali-Nahri case in the table above

is straightforward: in this society 43 per cent of people are MPI poor. According to the MPI, this means that they are in acute poverty. They are deprived at least either a) all the indicators of a single dimension or b) a combination across dimensions such as being in a household with a malnourished person, no clean water, a dirt floor and un-improved sanitation.

The poor in this case are deprived in 45 per cent of the weighted indicators. The MPI represents the share of the population that is multidimensional poor adjusted by the intensity of the deprivation suffered. This adjustment is necessary because if we only look at H we merely know that 43 per cent of the population in Ali-Nahri is poor. But are they all equally poor? Are they deprived in 100 per cent of all

the considered deprivations? In this society, they are not. This is what contribution of deprivation explains.

Depending on our data, the deprivation is mostly at the living standards level (59.15%) then health indicator (39.35%) and at last the education level (1.5%). According to water dimension (living standards), most people have access to water but not potable water or it may take for the more than 30 minutes to get water. Electricity is available for all despite the daily disruption that varies in some households. Moreover, some houses are poor is improved sanitation networks which leads them to be deprived from this indicator. The absence of "health insurance" in about 40% of households was the problem of most of these houses can affect the health indicators used in MPI.

If there was a society with 43 per cent poor people and all of them were deprived in all the indicators, then A would be 1, and thus the MPI would equal H. Alternatively, if there was a society where 100 per cent of people were poor, then the MPI would be equal to A.

A different but related way of interpreting the MPI is to say that it reflects **the proportion of weighted deprivations that the poor experience in a society out of all the total potential deprivations that the society could experience**. If everyone was deprived in all the considered indicators in a society the MPI would be 100 per cent. If, as in the example, the 43 per cent of people who are poor were deprived in all the considered indicators, the MPI would be 43 per cent. However, because they are on average deprived in 45 per cent of the weighted indicators, that society is deprived in 45 per cent of the total potential deprivations it could experience overall.

### VI. CONCLUSION

MPI still have many weaknesses points that should be solved in order to decrease the gap between the poverty calculations and the real picture. The MPI can be broken down to show a vivid picture of people living in poverty, both across countries, regions and the world and within countries by ethnic group, urban/rural location, or other key household characteristics. It is the first international measure of its kind, and offers a valuable complement to income poverty

measures because it measures deprivations directly. The MPI can be used as an analytical tool to identify the most vulnerable people, show aspects in which they are deprived and help to reveal the interconnections among deprivations. This enables policy makers to target resources and design policies more effectively. Other dimensions of interest, such as work, safety, and empowerment, could be incorporated into the MPI in the future, as data become available. OPHI is currently conducting research to collect and analyses internationally comparable data on these 'missing dimensions' of poverty. Despite being conditioned by data, the chosen dimensions are vitally important. First of all, they have intrinsic and instrumental value: health and education can both be valuable in themselves as well as instrumental to many other vital outcomes. Similarly, although the living standard variables are resources, they provide an imperfect proxy for the basic amenities of housing and services and general purpose assets which are identified as important in the MDGs, in participatory exercises and in human rights. Thus, the MPI uses any available information on all members of each household in order to identify all household members as poor or not. "Using overall household achievements to identify each person as poor, despite its limitations, allows for interaction, smoothing and mutual sharing within the household, and can create policy efficiencies" (Sabina Alkire; Maria Emma Santos)

Lebanon is in need of living conditions assessment methodologies that are localized and tailored to the country's specific needs and idiosyncrasies. Several local researchers have developed a Living Conditions Index (LCI) and Urban Deprivation Index (UDI) that should be used to develop a more comprehensive poverty line, rather than use one that is based on outdated data.

### VII. RECOMMENDATION

It is well considered that the conflict in Syria has exacerbated the problem by increased competition for unskilled jobs thus negatively affecting annual household incomes of the poor and increases the prices more and more especially for food products. Thus, social protection in Lebanon is in need of reform in order to functionally address preexisting and more recent emergent needs. The informal sector is excluded from any kind of social insurance. Instead of being universal and based on risks faced in different stages of the lifecycle, social protection efforts in Lebanon comprise a few programs that are not well-funded or well-coordinated.

While existing programs provide much needed support to the poor, more should be done to prevent households from falling into poverty and to lift them out when they do. For this to happen, a more comprehensive package of services in line with the Social Protection Floor needs to be available. All policies and programs should be consolidated under one strategy that helps to mitigate shocks and is reactive to households that fall under the poverty line.

Updated poverty data is also needed to gain a better understanding of the nature and structural causes of poverty, as well as to reassess the poverty line, and to know where the poor are

concentrated. Moreover, stricter enforcement of the labor market in terms of maintaining the minimum wage and ensuring appropriate contracts and NSSF contributions is also needed to help the poor escape poverty.

Civil society also has a role to play to create awareness of the importance of a comprehensive social protection package and should work to strengthen existing programs and resilience-building activities through SDCs.

United Nations and international agencies should take leadership to create a social protection floor that protects the poor in times of crisis but also provides an equal start in life to the future generation in Lebanon. Similarly, the outreach of existing social protection initiatives can be improved through supporting a proactive approach to include the poor in the programs. For these initiatives to happen, adequate resources must be allocated by donor agencies to strengthen the social protection system in Lebanon.

In order to match people's own determination and efforts to move out of poverty, it is important that the poor, regardless of their social and legal status, are protected from risks at different stages of their life cycle. This will not only support poor households to cope with the impacts of poverty, but it will also stem the intergenerational transfer of poverty by providing all residents with an equal start in life. A social protection floor can help with this objective. A social protection floor is an outcome-oriented approach that takes into account national conditions, priorities and institutions. It comprises four nationally defined guarantees: All residents must have access to a defined set of essential healthcare services; All children should enjoy minimum income security through transfers in cash or kind aiming at facilitating access to essential goods and services, such as nutrition, education and care; Those in the active age groups unable to earn sufficient income in the labor market should enjoy minimum income security through transfers in cash or kind aiming at facilitating access to essential goods and services, such as nutrition, education and care; All residents in old age and with disabilities should enjoy minimum income security through pensions/transfers in-kind that guarantee access to essential goods and services.

Although the Lebanese government has not officially committed to setting up a social protection floor, elements of a social protection floor already exist in the country with the NSSF, ENPTP and other health service-related programs. A well thought out strategy and action plan to incrementally build a social protection floor must be initiated.

**APPENDIX**

**Calculation of the MPI** :( Equation 1:MPI)

**H:** Percentage of people who are MPI poor  
(Incidence of poverty)

$$H = q/n$$

**q** Is the number of people who are multidimensional poor and  
**n** is the total population.

**MPI= H x A** **A:** Average intensity of MPI poverty across the poor (%)  
(Alkire, 2011)

$$\frac{\sum_{i=1}^n ci(k)}{q}$$

**Ci (k)** is the censored deprivation score of individual **i**

**q** is the number of people who are multidimensional poor.

Calculating the Multidimensional Poverty Index								
Household Data								
	Households and their sizes						Indicator weights	
	Household No	Size	Household No.	Size	Household No	Size		
	1	4	2	7	3	5	4	4
Dimensions and indicators								
Education								
No one has completed five years of education	0		1		0		1	5/3 or 1.67
At least one school-age child not enrolled in school	0		1		0		0	5/3 or 1.67
Health								
At least one member is malnourished	0		0		1		0	5/3 or 1.67
One or more children have died	1		1		0		1	5/3 or 1.67
Living conditions								
No electricity	0		1		1		1	5/9 or 0.56
No access to clean drinking water	0		0		1		0	5/9 or 0.56
No access to adequate sanitation	0		1		1		0	5/9 or 0.56
House has dirt floor	0		0		0		0	5/9 or 0.56
Household uses "dirty" cooking fuel (dung, firewood or charcoal)	1		1		1		1	5/9 or 0.56
Household has no car and owns at most one of: bicycle, motorcycle, radio, refrigerator, telephone or television	0		1		0		1	5/9 or 0.56
Weighted count of deprivation, c (sum of each deprivation multiplied by its weight)	2.22		7.22		3.88		5.00	
Is the household poor (c ≥ 3)?	No		Yes		Yes		Yes	
Multidimensional poverty headcount (H)	0.80	80						
	5555	.5						
	6	55						
		6						
Intensity (breadth) of deprivation	0.56	56						
	25	.2						
		5						
Multidimensional poverty index (MPI)	0.45							
	3125							

**Fig. 5:** Hypothetical Example Calculations (MPI)

Author	Survey Year	Indicators of Poverty Used	Main Findings
Mission IFRED (1961)	1960	Income-based indicators	Fifty percent of population below poverty line



## A Multidimensional Poverty Analysis: Evidence from Lebanese Data

Schemeil (1976)	1973-75	Income-based indicators	Twenty-two percent of population below poverty line.
UN-ESCWA (1995)	1993	Income-based criteria used for defining poverty	Twenty-eight percent of poverty and 7.5% of extreme poverty. Poverty was concentrated in Beka'a and North Lebanon regions. Higher poverty rates among agricultural workers.
MoSA and UNDP (1998)	1996	Living Conditions Index based on Unsatisfied Basic Needs	214,000 households or 32.1% of households live below the satisfaction threshold.
UNDP (2004)	Summary		Share of low income population declined from 50% in 1959–1960 to 22% in 1973–1974 and increased again to 52% in 1994–1995.
Gaspard (2004)	Summary	Income-based indicators and the use of Gini for inequality	Income-based Gini declined from 0.5 in 1960 to 0.44 in 1997. Gini based on expenditure declined from 0.51 in 1951 to 0.47 in 1997.

UNDP (2008)	2004-05	Income-based indicators of poverty	28.5% of poverty and 8% of extreme poverty in 2004/2005. The Gini coefficient was about 0.361. Large regional disparities in headcount poverty rates with the North, South and Beka'a being the poorest. Poverty was highest, deepest and most severe for illiterate and unemployed individuals. Agricultural, self-employed and non-salaried workers were more likely to be poor. Using backward and forward simulations, extreme poverty was shown to decline from 10% in 1997 to eight percent in 2004/2005, but increasing afterwards to 8.4% in 2007.
CAS	2011-12	Household consumption-based indicators	Data to be analyzed once the large non-response bias has been addressed.
World Values Survey, the Arab Barometer and the Survey on Financial Capability	2010-13	Well-being indicators and Income-based indicators	About 30–32% of population estimated to be poor using subjective well-being questions and income information (measured in different ways in different surveys).
World Bank (2013e)	2012-14	Consumption-based indicators	Syrian crisis is estimated to increase poverty among the Lebanese population by 170,000 people by 2014 with existing poor being pushed deeper into poverty

**Fig.3:** survey history in Lebanon and the indicators used(World Bank, 2015)

**Table 8:** Micro survey applied in AliNahri (MPI indicators)

Place Name	Ali Nahri		
Household Size			
	Children	Adults	
Education	Number of members completed primary school	At least one child not enrolled in school (grade 1 to 8)	
	1 and more	Yes	
	0	No	
Health	Number of malnourished members	Number of died children	
	1 and more	1 and more	
	0	0	
Living	Electricity access	yes	No

Condition	Assets	
	Radio	No   1 and more
	TV	No   1 and more
	Non mobile telephone	No   1 and more
	Computer	No   1 and more
	Refrigerator	No   1 and more
	Mobile	No   1 and more
	Watch	No   1 and more
	Bike	No   1 and more
	Motor	No   1 and more
	Car	No   1 and more
	Tractor	No   1 and more
	Water	
Main source of drinking water for members in household	Piped Water	Piped into dwelling
		Piped to yard/plot
		Piped to neighbor
	Dug well	Protected Well
		Unprotected Well
	Water from Spring	Protected Spring
		Unprotected Spring
Rainwater		
Tanker Truck		
Bottled Water		
Other Sources		
Main source of water used by household for other purposes(washing or cooking)	Piped Water	Piped into Dwelling
		Piped to Yard/Plot
		Piped to Neighbor
	Dug Well	Piped Tab/Standpipe
		Protected well
	Water from Spring	Unprotected well
		Protected Spring
	Unprotected Spring	
Rainwater		
Tanker Truck		
Bottled Water		
Other sources		
Time it take to get water and come back	Less than 30 minutes	More than 30 minutes
Sanitation		
Water available for washing hands	yes	No
Presence of soap, detergent or other cleaning agent at the place of hand washing	yes	No
Cooking fuel		
Electricity		
LPG		
Natural gas		
Biogas		
Coal		
Charcoal		
Wood		
Straw/grass		
Animal dung		
Floor of the household		
Natural floor	Earth/Sand	
	Dung	
Rudimentary floor	Wood Planks	
	Palm	
Finished floor	Parquet or Polished Wood	
	Asphalt Strips	
	Ceramic Tiles	
	Cement	
	Carpet	
Roof of the household		
Natural roof	No Roof	
	Palm Leaf	
	Sod	
Rudimentary roof	Rustic Mat	
	Palm	
	Wood	
	Card Board	
Finished roof	Metal	



	Wood
	Cement Fiber
	Ceramic Tiles
	Cement
	Roofing Shingles
Exterior walls	
Natural wall	Sand
	Dung
Rudimentary wall	Wood planks
	Palm
Finished wall	Polished Wood
	Asphalt Strips
	Ceramic Tiles
	Cement

**REFERENCES:**

- Government of Lebanon and the United Nations. (2014, december 15). LEBANON CRISIS RESPONSE PLAN 2015-16 brochure. Retrieved from data.unhcr.org: file:///C:/Users/Alfa-2010/Downloads/4-LCRP\_Brochure\_eng.pdf
- Republic of Lebanon Ministry of Social Affairs. (2004). Development of Mapping of Living Conditions in Lebanon. Lebanon: MOSA and UNDP.
- (OPHI), O. P. (2016, December). OPHI Country Briefing December 2016. Retrieved September 2016, from www.ophi.org.uk : file:///C:/Users/Alfa-2010/Downloads/CMR.pdf
- Abla, Z., Karaki, A., & Sweidan, N. D. (2013). The 2013 Lebanon Millennium Development Goals report. Lebanon: United Nations Development Programme and the Council for Development.
- Alkire, M. E. (2011). The Multidimensional Poverty Index (MPI). TRAINING MATERIAL FOR PRODUCING NATIONAL HUMAN DEVELOPMENT REPORTS.
- Blominvest Bank. (2015, Febraury 18). Lebanon's Healthcare Expenditures. Retrieved from Blominvest Bank:The Research Blog: http://blog.blominvestbank.com/lebanons-healthcare-expenditures-to-r each-3-74b-in-2015/
- CAS,World Bank. (2015). Measuring poverty in Lebanon using 2011 HBS. Lebanon: cas.com.
- Deaton, A. T. (2004). The World Bank Economic Review. USING CENSUS AND SURVEY DATA TO ESTIMATE POVERTY AND INEQUALITY FOR SMALL AREAS.
- Dr. Maral, T. (2013, september 4). Children in Lebanon. Retrieved from Central Administration of Statistics: http://www.cas.gov.lb/index.php/en/ statistics-in-focus-en
- ECR. (n.d.). Lebanon. Retrieved from ECR: https://www.euromoneycountryrisk.com/Wiki/Lebanon#Economic-Ov erview
- Fares, I., & Kukrety, N. (2016). Poverty, Inequality and Social Protection in Lebanon. Lebanon: Oxfam/AUB.
- Foster, B. (1998).
- Gisele Kamanou, M. W. (2004). CHAPTER VI. STATISTICAL ISSUES IN MEASURING POVERTY FROM NON-HOUSEHOLD SURVEYS SOURCES . World Bank.
- Gisele Kamanou, M. W. (n.d.). CHAPTER VI. STATISTICAL ISSUES IN MEASURING POVERTY FROM NON-HOUSEHOLD SURVEYS SOURCES . Retrieved from unstats.un.org: http://unstats.un.org/unsd/methods/poverty/pdf/Chapter-6.pdf
- GoL 2004. (2013, Sempتمبر 20). LEBANON ECONOMIC AND SOCIAL IMPACT ASSESSMENT OF THE SYRIAN CONFLICT. LEBANON: http://documents.worldbank.org/.
- Health, Lebanese Republic Ministry of Public. (2015, 10 3). Health indicators. Retrieved from Lebanese Republic Ministry of Public Health: http://www.moph.gov.lb/ar/Media/view/4303/2/health-indicators
- Hick, R. (2012). On 'Consistent' Poverty. London: Centre for Analysis of Social Exclusion.
- Human Development Report. (2015). Work for human development Briefing note for countries. Lebanon: UNDP.
- Human Poverty Index. (2016, september 28). Retrieved september 28, 2016, from Wikipedia The Free Encyclopedia: https://en.wikipedia.org/w/index.php?title=Human\_Poverty\_Index&ol did=741554397

- IMF country report, N. 1. (2014, July ). ARTICLE IV CONSULTATION—STAFF REPORT PRESS RELEASE. Lebanon: International Monetary Fund IMF.
- Issam Fares, I. f. (2016, April). Poverty Inequality. Retrieved from www.aub.edu.lb/ifi: https://www.aub.edu.lb/ifi/publications/Documents/research\_reports/2 0160426\_poverty\_inequality.pdf
- Issam Fares, I. o. (2016). Poverty, Inequality and Social Protection in Lebanon. Beirut: Oxfam and AUB University.
- Jolly, R. (1997). Human Development Report. New York: Oxford University Press, Inc.
- Kakwani, N., & Son, H. H. (2006). NEW GLOBAL POVERTY COUNTS. Brazil: UNDP.
- Khouri, R. a. (2008, 10). Now News. Retrieved september 2016, from now.mmedia.me: https://now.mmedia.me/lb/en/commentaryanalysis/poor\_lebanon
- Kiana Davis, H. G. (2014, 9 5). The Dire State of Food Security in the Syrian Refugee Crisis. Retrieved from The Hunger-Undernutrition blog: http://www.hunger-undernutrition.org/blog/usaid/
- LIS Data. (2011, 3). Poverty Lines and Poverty Rates. Retrieved from lisdatacenter: http://www.lisdatacenter.org/wp-content/uploads/2011/03/C3-2-6-2-se lf-teaching-spss.pdf
- LIS Data Center. (2010, July 3). Lab Session Exercises Summer Workshop 2010. Retrieved from Luxembourg Income Study Center: http://www.lisdatacenter.org/wp-content/uploads/2011/03/C3-2-self-te aching-spss.pdf
- Malik, K. (2013). Human Development Report 2013:The Rise of the South:Human Progress in a Diverse World. United Nations Development Program UNDP.
- Mercedes de Onis, David Brown, Monika Blössner and Elaine Borghi. Organizations and individuals involved in generating the joint estimates on child malnutrition United Nations Children's Fund Tessa Wardlaw, Holly Newby, David Brown, Xiaodong Cai. (2015). Levels & Trends in Child Malnutrition. UNICEF-WHO-The World Bank Joint Child Malnutrition Estimates.
- micro DHS survey conducted by Marwa Tlais with the help of Association Nabad for Development (1 2017).
- Mikhael, M. (2015). How were Lebanese Households Allocating Their Pay checks in 2012. Beirut,Lebanon: BLOMINVEST BANK s.a.l. .
- Ministry of Public Health. (2015, 10 13). Health Indicators. Retrieved september 2016, 28, from Republic of Lebanon Ministry of Public Health: http://www.moph.gov.lb/en/Media/view/4303/2/health-indicators
- Nawar, A.-H. (2014, May). MULTI-DIMENSIONAL POVERTY INDEX AND TACKLING INTERLOCKING DEPRIVATIONS IN THE ARAB STATES. Retrieved september 2016, from International Policy Centre for Inclusive Growth: http://www.ipc-undp.org/pub/IPCWorkingPaper125.pdf
- Pasquale De Muro, M. M. (2009). Composite Indices for Multidimensional Development and Poverty:An Application to MDG Indicators . Roma: Pasquale De Muro University of "Roma Tre".
- Sabina Alkire; Maria Emma Santos. (2013). OPHI WORKING PAPER:Measuring Acute Poverty in the Developing World. OPHI.
- Samad, Z. A. (2008). Millennium Development Goals. Lebanon: UNDP,WHO,ILO,UNESCO,UNICEF,.
- Santos, S. A. (2010, 11). Human Development REsearch Paper 2010/11:Acute Multidimensional Poverty: A New Index for Developing Countries. Oxford University: UNDP.
- Sarah Al-Jamal,Rachel Eichholz. (April 2016). POVERTY AND SOCIAL PROTECTION IN LEBANON. Lebanon: AUB's Issam Fares Institute for Public Policy and International Affairs in partnership with Oxfam.
- Sidahmed, M. (2015, June 5). Malnutrition soars in region, Lebanon rate remain low. Retrieved from greenarea: http://greenarea.me/en/65807/malnutrition-soars-in-region-lebanon-rat e-remain-low/
- Sidahmed, M. (2015, june 5). Malnutrition soars in region, Lebanon rates remain low. Retrieved from The Daily Star Lebanon: http://www.dailystar.com.lb/News/Lebanon-News/2015/Jun-05/30064 0-malnutrition-soars-in-region-lebanon-rate-remain-low.ashx
- The DHS Program. (2008). Retrieved september 2016, from USAID: http://dhsprogram.com/Topics/Nutrition.cfm
- THE WORLD BANK. (2000). REPUBLIC OF LEBANON POVERTY REVIEW. Lebanon: MIDDLE EAST AND NORTH



- AFRICA Human Development Group (MNSHD) .
44. Trading Economics 2013. (n.d.). Total enrollment - primary (% net) in Lebanon. Retrieved from Trading Economics 2013: <http://www.tradingeconomics.com/lebanon/total-enrollment-primary-percent-net-wb-data.html>
  45. TRADINGECONOMICS. (2017). Lebanon Consumer Spending. Retrieved from tradingeconomics: <http://www.tradingeconomics.com/lebanon/consumer-spending>
  46. UN data. (n.d.). Poverty headcount ratio at national poverty lines for Lebanon. Retrieved from UN data the World Information: [http://data.un.org/Data.aspx?d=WDI&f=Indicator\\_Code%3ASLPOV.NAHC](http://data.un.org/Data.aspx?d=WDI&f=Indicator_Code%3ASLPOV.NAHC)
  47. UN, E. a. (2014). Measuring Multidimensional Poverty in the Arab Region. Expert Group Meeting. Beirut: ESCWA.
  48. UNDP. (2008, April 7). Mapping of Human Poverty and Living Conditions in Lebanon 2004. Retrieved from UNDP in Lebanon: <http://www.lb.undp.org/content/lebanon/en/home/library/poverty/mapping-of-human-poverty-and-living-conditions-in-lebanon-2004.html>
  49. UNDP. (n.d.). Lebano Report:MDGs indicators. Retrieved from www.Undp.org: [http://www.undp.org/content/dam/lebanon/docs/MDG/Publications/MDG\\_en.pdf](http://www.undp.org/content/dam/lebanon/docs/MDG/Publications/MDG_en.pdf)
  50. UNDP. (n.d.). Mapping of Living Conditions in Lebanon. Retrieved from <http://www.undp.org.lb/>: <http://www.undp.org.lb/programme/pro-poor/poverty/povertyinlebanon/molc/executive.htm>
  51. UNDP, M. o. (n.d.). mapping of living conditions in Lebanon:Unsatisfied Basic Needs Method. Retrieved from www.undp.org: <http://www.undp.org.lb/programme/pro-poor/poverty/povertyinlebanon/molc/methodological/C/basicsneed.htm>
  52. UNIDO. (2003, december 5). GENERAL CONFERENCE, TENTH SESSION. Retrieved from UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION: [https://www.unido.org/fileadmin/import/19592\\_SRTEnglishSummary.pdf](https://www.unido.org/fileadmin/import/19592_SRTEnglishSummary.pdf)
  53. United Nations Children's Fund. (2014). 2013 JOINT Nutrition Assessment Syrian Refugees in LEBANON. Lebanon: UNICEF.
  54. United Nations Children's Fund. (2014). Nutrition Assessment Report for Syrian Refugees in Lebanon 2013. Lebanon: Unicef.
  55. WEO data,IMF. (n.d.). Lebanon. Retrieved from econstats: <http://www.econstats.com/weo/V002.htm>
  56. WHO. (2010). nutrition.
  57. WHO. (2010). World health statistics 2010. Retrieved from World Health Organization 2010: [http://www.who.int/whosis/whostat/EN\\_WHS10\\_Full.pdf?ua=1](http://www.who.int/whosis/whostat/EN_WHS10_Full.pdf?ua=1)
  58. Wikipedia contributors. (2016, december 4). poverty threshold. Retrieved from The Free Encyclopedia wikipedia: [https://en.wikipedia.org/wiki/Poverty\\_threshold](https://en.wikipedia.org/wiki/Poverty_threshold)
  59. Wikipedia, c. (2017, January 3). Poverty. (T. F. Wikipedia, Producer) Retrieved from Wikipedia, The Free Encyclopedia: <https://en.wikipedia.org/w/index.php?title=Poverty&oldid=758094532>
  60. Wikipediacontributors. (2016, december 24). Head count ratio. Retrieved from Wikipedia, The Free Encyclopedia: [https://en.wikipedia.org/w/index.php?title=Head\\_count\\_ratio&oldid=756483452](https://en.wikipedia.org/w/index.php?title=Head_count_ratio&oldid=756483452)
  61. World Bank. (2013, 2 1). Lebanon Data. Retrieved from The World Bank: <http://data.worldbank.org/country/lebanon?display=map>
  62. World Bank. (2015). Measuring poverty in Lebanon using 2011 HBS. Lebanon: CENTRAL ADMINISTRATION OF STATISTICS (CAS),World Bank.
  63. World Bank. (2016, august 12). poverty rates in Lebanon. Retrieved from Al Akhbar: <http://www.al-akhbar.com/node/263043>
  64. World Bank. (n.d.). Poverty headcount ratio at national poverty lines. Retrieved from The World Bank Group: <http://data.worldbank.org/indicator/SI.POV.NAHC?end=2015&start=2015&view=map>
  65. World Bank's programmatic work in Lebanon. (2015). Measuring poverty in Lebanon using 2011 HBS. Lebanon: CENTRAL ADMINISTRATION OF STATISTICS (CAS) AND WORLD BANK.