

# **Methodology for Multidimensional Poverty Measurement in Mexico An Executive Version**

**Consejo Nacional de Evaluación  
de la Política de Desarrollo Social**

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## Introduction

The purpose of this document is to present the most relevant characteristics of the methodology adopted by the Consejo Nacional de Evaluación de la Política de Desarrollo Social (CONEVAL) to measure multidimensional poverty. The first section presents the regulations of the Ley General de Desarrollo Social (LGDS) regarding poverty measurement as well as some related concepts. The second describes the fundamental characteristics of the methodology for multidimensional poverty measurement, from the concept and definition of poverty, to the process of identifying poor people and aggregation of indicators. The third section provides general criteria for defining the indicators associated to the wellbeing space, social deprivation and the degree of social cohesion, whereas the last section presents some final considerations.

It is important to mention that this is an executive summary of the original, and larger, document, whose English version can be obtained at CONEVAL website. In Spanish, the multidimensional poverty methodology can be seen at the Diario Oficial de la Federación (DOF)<sup>1</sup> and at CONEVAL website.<sup>2</sup>

## The LGDS and the concept of poverty

The LGDS stipulates that the guidelines and criteria issued by CONEVAL for defining, identifying and measuring poverty are mandatory to any Mexican institution that executes social development programs; that it must be estimated every two years for the states of Mexico and every five for the municipalities; that CONEVAL should use information generated by the Instituto Nacional de Estadística y Geografía (INEGI), and that the measurement should include, at least, the following eight indicators: current per capita income; educational gap; access to health services; access to social security; quality and spaces of the dwelling; access to basic services in the dwelling; access to food, and the degree of social cohesion.

To fulfill these regulations, the multidimensional poverty measurement adopted by CONEVAL conceives poverty in terms of three analytical spaces: social rights, economic wellbeing and the territorial context where the population interacts.

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<sup>1</sup> Diario Oficial de la Federación (Official Gazette of the Federation) at [http://www.dof.gob.mx/nota\\_detalle.php?codigo=5146940&fecha=16/06/2010](http://www.dof.gob.mx/nota_detalle.php?codigo=5146940&fecha=16/06/2010) . Published on June 16<sup>th</sup>, 2010.

<sup>2</sup> [www.coneval.gob.mx](http://www.coneval.gob.mx)

## **Social rights and economic wellbeing**

The approach of poverty supported on human rights is based on the recognition of human rights as “...the expression of the needs, values, interests and goods that, because of their urgency and importance, have been considered fundamental and common to all human beings” (Kurczyn and Gutiérrez, 2009: 3-4). All Mexicans should enjoy a set of rights deemed essential for human dignity; these rights are included either in the Constitution or have been signed and ratified by Mexico in several international conventions and pacts that protect them. According to these conventions, countries must create the mechanisms that will progressively allow full and universal access to human rights. Therefore, anybody that does not exercise at least one of her social rights is considered socially deprived.

On the other hand, the fundamental objective of the wellbeing approach is to identify the conditions that limit people’s freedom to develop fully. This assumes that every person, given her circumstances and preferences, develops the set of capabilities that define the range of life options she may choose. If these options do not allow her to have acceptable living conditions within her society, the individual is considered deprived in the wellbeing space.

## **The territorial context**

The LGDS, by incorporating social cohesion among the indicators for the measurement of poverty, recognizes the importance of contextual factors, which can only be measured at a territorial scale. Hence, it is necessary to complement the poverty measurement approach with the third analytical space, which will register the phenomena unfolding in the social interaction space, as is the case of social cohesion. However, given its relational nature, social cohesion is not considered as an intrinsic dimension of poverty at the individual or household level.

## Methodology for multidimensional poverty measurement

### Defining multidimensional poverty

Deprivation in any of the spaces imposes a series of specific limitations that violate the freedom and dignity of people, but simultaneous deprivation in both spaces (social rights and economic wellbeing) considerably worsens their situation. Being constitutional rights, any social deprivation should be considered of primary concern; however, for public policies purposes, priority should be given to socially deprived people who also have low income. This is the rationale for the following definition of multidimensional poverty:

**A person is considered to be multidimensional poor when the exercise of at least one of her social rights is not guaranteed and if she also has an income that is insufficient to buy the goods and services required to fully satisfy her needs.**

### Identifying population in poverty

According to Sen (1976), any poverty measurement methodology should address two problems: the identification of poor people and the aggregation of poor people into a summary measure. According to CONEVAL's methodology, these problems are solved in three stages. The first identifies if a person is socially deprived, that is, if she is deprived in any of the following six indicators: educational gap, access to health services, access to social security, quality and spaces of the dwelling, access to basic services in the dwelling and access to food. In the second stage we identify whether or not that person's income is sufficient to satisfy her needs. Finally, a person is identified as multidimensional poor if she is socially deprived and has insufficient income.

### Choosing the relevant dimensions

The methodology includes all the constitutive dimensions of poverty the law makers pointed out in article 36 of the LGDS, except for social cohesion, as we explained above. In order to identify the

population in poverty, and according to the conceptual framework, these dimensions are divided into two spaces:

- The social rights space includes food, health, education, social security and housing, which are measured through the six indicators of deprivation.
- The economic wellbeing space, which is measured by the indicator of current per capita income that is compared with a poverty line that defines a minimum amount of monetary resources required to satisfy people's basic needs.

## Identifying deprivations

In order to identify the population deprived in terms of each indicator, some criteria were adopted that are appropriate to each space. The *economic wellbeing space* identifies the population with an income insufficient to acquire the goods and services required to satisfy its needs. The *social rights space* identifies the population with at least one social deprivation in the indicators associated with this space. The number of social deprivations of a particular person is called the social deprivation index.

The current income of the household has been adjusted so as to reflect the differences in the household's composition (according to its size, the age of the members and other characteristics). In order to identify the population with insufficient income, the wellbeing threshold and the minimum wellbeing threshold have been established. The wellbeing threshold makes it possible to identify the population that does not have sufficient resources to acquire the necessary goods and services to satisfy its needs (food and non-food). The minimum wellbeing threshold makes it possible to identify the population that, even when using all of its income to purchase food, cannot acquire enough of it to ensure adequate nutrition.

On the other hand, there are two steps to identify deprivation in the space of social rights:

1. *Identification of deprivation for specific indicators.* For each of the six social indicators a dichotomous variable is generated that makes it possible to determine whether a person is deprived in the corresponding dimension. These indicators take the value one when an individual is deprived, and zero otherwise.
2. *Social deprivation index.* This index is constructed for each person as the sum of the six indicators associated with social deprivation. According to the suggestions made by Gordon (2007), CONEVAL will carry out statistical procedures to verify that the social deprivation index is valid, reliable and additive.

As mentioned above, since we are talking of human rights, a person is socially deprived when the value of the social deprivation index is greater than zero, that is to say, when she is deprived in at least one of the six indicators. This cutoff point ( $C=1$ ) is called the *deprivation threshold*.

There is also an *extreme deprivation threshold* ( $C^*$ ), which makes it possible to identify the population living in *extreme multidimensional poverty*. The Executive Commission of CONEVAL decided to determine the value of  $C^*$  as three, which means that the person suffers from at least half the total deprivations she might have.

### Combining income and the social deprivation index

According to the definition of multidimensional poverty, it is necessary to consider simultaneously both spaces in order to identify the multidimensional poor population. To do so, the classification method illustrated in Figure 1 is used.

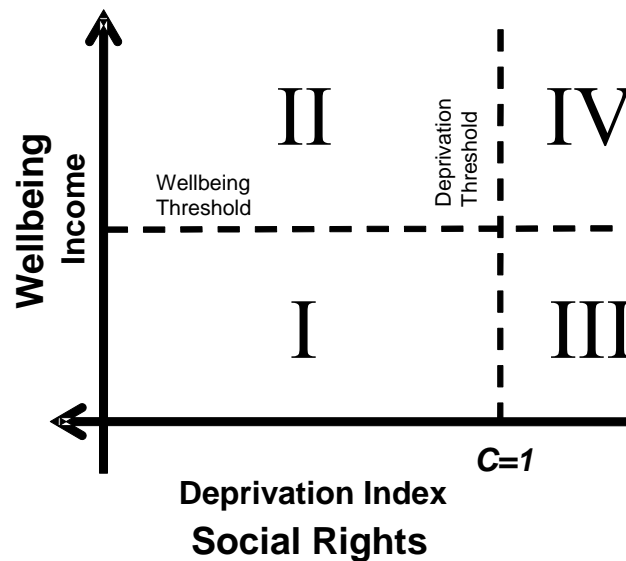


Figure 1. Population in multidimensional poverty

The vertical axis of Figure 1 represents the space of economic wellbeing, which is measured by people's income. The wellbeing threshold makes it possible to differentiate whether or not people have sufficient income.

The horizontal axis represents the space of social rights, measured through the social deprivation index. Unlike the usual presentation in Cartesian graphs, the population located to the left of this axis shows more deprivations than those to the right. Likewise, given that people who show at least one social deprivation are considered socially deprived, the value of the deprivation threshold is one.

According to this figure, once her income and social deprivation index are determined, any person may be classified in one, and only one, of the following quadrants:

- I. *Multidimensional poor.* People with an income below the wellbeing threshold and with one or more social deprivations.
- II. *Vulnerable due to social deprivation.* Socially deprived people with an income higher than the wellbeing threshold.
- III. *Vulnerable due to income.* Population with no social deprivations and with an income below the wellbeing threshold.
- IV. *Not multidimensional poor and not vulnerable.* Population with an income higher than the wellbeing threshold and with no social deprivations.

Among the multidimensional poor, it is possible to identify the population in extreme multidimensional poverty by combining the minimum wellbeing threshold and the extreme deprivation threshold ( $C^*=3$ ), as shown in Figure 2.

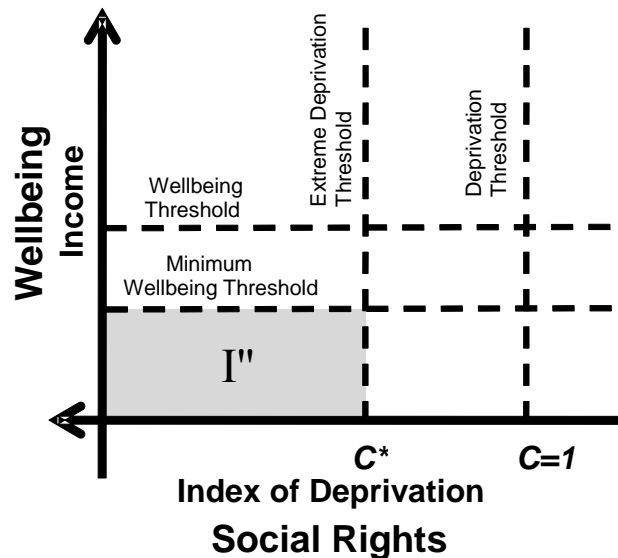


Figure 2. Population in extreme multidimensional poverty



This figure locates in quadrant I of Figure 1 the subset of multidimensional poor people who define quadrant I'. This subquadrant represents the population living in *extreme multidimensional poverty*, since they have an income that is so low that, even if spent entirely on food, they could not buy the necessary nutrients for a healthy life; additionally, they exhibit at least three of the six social deprivations. The population in multidimensional poverty that is not extreme multidimensional poor represents the population in *moderate multidimensional poverty*.

## Aggregating poor people

### Incidence of poverty

The headcount ratio of multidimensional poverty refers to the percentage of the total population, or from a specific population group, that exhibits some sort of economic or social deprivation. It fulfills the following three characteristics:

- first, it enables determining the percentage of the population in poverty and the number of people in that condition;
- second, it is a well known poverty measure that is easily interpretable;
- third, it makes it possible to decompose national poverty so that the contribution of states and municipalities in determining it can be shown.

### Depth of poverty

Two types of measures of depth of poverty are reported: one having to do with the wellbeing space and the other directly related to the social deprivation index. With respect to the wellbeing space, CONEVAL adopted the measure developed by Foster, Greer and Thorbecke (1984). It provides a measure of the depth of poverty that is given by the average distance from the income of the population with an income under the wellbeing threshold, to that threshold.

As for the social deprivation index, the depth of the deprivation is reported through the average number and proportion of social deprivations. This indicator is calculated for the four following groups:

the population in multidimensional poverty; the population in extreme multidimensional poverty; the population with an income above the wellbeing threshold and that is socially deprived, and the population group that is socially deprived.

## **Intensity of poverty**

Alkire and Foster (2007) proposed an aggregated multidimensional poverty index to sort out the limitations of incidence measures. The index is calculated as the product of the headcount ratio and the average proportion of social deprivations among the multidimensional poor. It can be shown that these indexes are sensitive to changes in social deprivation among the multidimensional poor, which make them decomposable by dimension. CONEVAL will estimate three measures of intensity of poverty:

1. *Intensity of multidimensional poverty.* The headcount ratio times the average proportion of social deprivations among the population in multidimensional poverty.
2. *Intensity of extreme multidimensional poverty.* The product of the headcount ratio and the average proportion of social deprivations among the extreme multidimensional poor.
3. *Intensity of deprivation among the socially deprived.* The product of the headcount ratio and the average proportion of social deprivations among the population that is socially deprived.

## **Social cohesion**

Since social cohesion is the only indicator associated with the territorial context included in article 36 of the LGDS, measurement of this space will be carried out through the following four indicators of social cohesion: 1) the Gini Index; 2) the degree of social polarization in states or municipalities; 3) the ratio of total income among the population in extreme multidimensional poverty and the population group that is not multidimensional poor nor vulnerable, 4) the social networks perception index, which will only be calculated at the state level.

## Criteria for defining poverty indicators<sup>3</sup>

### Measuring the wellbeing space

The measurement of the wellbeing space is based on the following components: the wellbeing thresholds, built up from the market baskets, and the income of the households.

On one hand, two basic baskets were defined, one for food and one for non-foods. Both allow to make calculations at the urban and rural level. Based on these basic baskets, the wellbeing threshold (equal to the sum of the costs of both the food and non-food baskets) and the minimum wellbeing threshold (equal to the cost of the food basket only) are determined.

On the other hand, for the definition of income to use, and according to the Canberra Group (2001) and the International Labour Organization (ILO) (2003), total current income is comprised of the sum of payments made to members of the household, including monetary and non-monetary resources, and incorporating labor income, income from self-owned businesses, capital gains, transfers, income from cooperatives, the value assigned to auto-consumption, in-kind payments or gifts and an estimation of the imputed rent for the dwelling.

The definition of income was adjusted in order to adequately reflect the resources available to households to satisfy their needs. In the first place, only payments and in-kind gifts received more than once a year will be considered, given the randomness and frequency with which they occur. Moreover, given that imputed rent is not fungible and so households cannot make use of it to satisfy needs, this item was excluded from the definition of income. Likewise, in order to compare the income levels of households with different demographic compositions, current income is adjusted by adult equivalent scales, as well as for economies of scale. The above mentioned criteria make it possible to identify those households whose adjusted total per capita current income is lower than the value of the wellbeing threshold or the value of the minimum wellbeing threshold.

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<sup>3</sup> For more specific details about the construction of indicators and the formulas see the extended version of this document, specifically the appendixes. Available at [www.coneval.gob.mx](http://www.coneval.gob.mx)

## Social deprivation indicators

One fundamental component in defining social deprivation indicators consists in setting the thresholds that determine whether a person is deprived in any specific dimension. For that reason, specific methodological criteria were established; they are as follows:

1. Apply legal norms, if they exist.
2. Apply specific criteria defined by experts of specialized public institutions in the field of each deprivation indicator.
3. Apply criteria based on statistical analysis.
4. The Executive Committee of CONEVAL shall determine the threshold, after taking into consideration the opinion of experts.

Since the six social deprivation indicators are dichotomic, they take the value one when a person shows an specific deprivation and zero otherwise.

## Educational gap

In order to define the threshold for this dimension, CONEVAL consulted the Instituto Nacional para la Evaluación de la Educación (INEE), the agency in charge of evaluating education in Mexico. INEE proposed CONEVAL to use the Norma de Escolaridad Obligatoria del Estado Mexicano (NEOEM), according to which the population meeting any of the following criteria are considered educationally deprived:

- For people aged three to fifteen years old. When they lack mandatory basic education and are not attending a formal educational center.
- For people born before 1982. If they do not meet the minimum mandatory basic education level that prevailed at the time they should have attended elementary school.
- For people born from 1982 onwards. If they have not completed the minimum current mandatory basic education requirement (secondary school).

## **Access to health services**

The Constitution establishes that all Mexicans have the right to the protection of their health. In terms of the Ley General de Salud (LGS), this Constitutional norm addresses the right for everybody to be enrolled in the Sistema Nacional de Protección en Salud. Thus, any family or individual who is not covered by a social security institute, or that does not have any other mechanism of health protection, should be enrolled in this system. On the basis of these regulations, a person is considered to be deprived of access to health services when she is not enrolled in or entitled to receive medical services from any institution offering them, including the Seguro Popular, from any social security public institute or from private medical services.

## **Access to social security**

In Mexico, social security is established in Article 123 of the Constitution. That article specifies the minimum social coverage that must be granted to any worker and his family. The Ley del Seguro Social (LSS) stipulates that the goal of social security is to guarantee the right to health care, medical assistance, protection of subsistence means and those social services needed for individual and collective wellbeing.

This law establishes two ways of accessing social security: one mandatory and a venue which allows for voluntary enrollment. Based on these considerations, the population deprived of access to social security is defined using the following criteria:<sup>4</sup>

- For those who are economically active, it is considered that they are not deprived in this dimension if, through their job, they enjoy the benefits established in the law.
- For non paid workers and for workers on their own, given the voluntary nature of enrollment in the system, they are considered to have access to social security when they receive medical services as a job benefit or when they are actually voluntarily enrolled and when, in addition, they bear a retirement investment plan.
- For the general population, people are considered to have access when they benefit from a retirement program or pension or when one of their relatives has access to social security.

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<sup>4</sup> In contrast to other dimensions, in which the population suffering a deprivation is identified, given the various sources of access to social security contemplated in the legislation, this indicator will register the population not exhibiting deprivation to simplify the exposition of the criteria.

- In the case of people in retirement ages (sixty five years or older), people are considered to have access to social security if they benefit from a social pension program for senior citizens.
- The population not meeting any of the above criteria is considered deprived due to access to social security.

## **Quality and spaces of the dwelling**

Article 4 of the Constitution establishes the right of all families to live in a suitable dwelling. However, the specifications for the minimum requirements of a suitable and proper house are not defined in either the Constitution or the Ley de Vivienda. Therefore, CONEVAL requested the Comisión Nacional de Vivienda (CONAVI) for an opinion regarding this issue. CONAVI suggested that there is deprivation due to lack of quality and spaces of the dwelling if one or more of the following criteria hold:

- If the dwelling has dirt floor.
- If the roof of the dwelling is made of cardboard sheets or waste.
- If the walls of the dwelling are made of mud or daub and wattle; reed, bamboo or palm tree; cardboard, metal or asbestos sheets; or waste.
- The ratio of people per room is greater than 2.5 (overcrowding).

## **Access to basic services in the dwelling**

As to this indicator, CONAVI proposed to identify the following four sub-dimensions: access to drinking water, availability of drainage services, electricity and type of fuel for cooking. According to these criteria people living in dwellings with at least one of the following characteristics are considered to be deprived of basic services in the dwelling:

- Water is obtained from a well, river, lake, stream, or truck; or, piped water is carried from another dwelling or gotten at a public faucet or hydrant.
- There is no drainage service, or the drainage is connected to pipes leading to a river, lake, sea, ravine or crack.
- There is no electricity.
- Wood or coal with no chimney are used for cooking or heating food inside the dwelling.

## **Access to food**

In order to provide a measure to evaluate the progress made towards fulfilling the right to food, the methodology incorporates the concept of food security. According to FAO (2006), food security includes the access to enough food to live an active and healthy life at any time. Food security scales evaluate aspects such as worrying over lack of food, changes in the quality or quantity of food, or even hunger experiences. The scale recognizes four possible levels of food insecurity: severe food insecurity, moderate food insecurity, mild food insecurity and food security. For poverty measurement purposes, CONEVAL considers that a person is deprived due to lack of access to food when she presents moderate or severe food insecurity.

## **Social cohesion**

Given the complexity of concepts associated with social cohesion, several alternatives were explored during the process of defining the methodology. Based on these alternatives, CONEVAL established that a suitable and measurable indicator of social cohesion can be built from data on income inequality or social breadths. If it is recognized that inequality can be manifested in various spheres of social life, the greater social disparities in education, housing, health care or food are, the more polarization exists, which, in turn, would tend to reinforce poverty.

Given the diversity of concepts and approximations involved in this dimension, it was decided to rely on the proposal made by Boltvinik (2007) for measuring the degree of social cohesion in the territorial space. Accordingly, social cohesion will be measured at the municipal and state levels through four indicators: 1) economic inequality (the Gini coefficient); 2) the proportion of income of the population living in extreme multidimensional poverty relative to the income of the population not living in multidimensional poverty and not vulnerable; 3) social polarization, and 4) social networks.

## Some final considerations

Mexico is the first country whose normative framework created the legal basis for adopting a poverty measurement that recognizes its multidimensional nature. Therefore, the methodology for poverty measurement presented in this document has been developed based on the stipulations of the legal framework of the Mexican State, especially the LGDS.

By assigning to CONEVAL the task of evaluating social policies and programs and defining the criteria for poverty measurement, the LGDS establishes poverty measurement as a fundamental element of social development evaluation.

The multidimensional poverty measurement adopted by CONEVAL conceives poverty in terms of three spaces: social rights, economic wellbeing and the territorial context. A society that, through its laws, recognizes the existence of a social contract that aims to guarantee its entire population access to social and human development, reinforces its political commitment to achieve the goal that social rights and wellbeing, both associated with the universal and inalienable principles of human dignity and individual freedom, may become actual living conditions and that they are not mere social aspirations. The methodology presented here aims to make a contribution towards this goal.

By combining the three spaces in the official measurement of poverty, CONEVAL provides a powerful tool for evaluating social policy. The wellbeing space, measured through household income, offers a framework for the analysis of the central role economic policy plays in determining the population's standard of living.

The social rights space provides a useful tool for analyzing actual achievements and remaining challenges towards fully exercising social rights, especially on those aspects that the LGDS establishes as constitutive of poverty. The adoption of this approach makes it possible to evaluate the progress of social policies and programs, for the population as a whole and, especially, for the poor or deprived people.

Taking into consideration the territorial context space in poverty measurement makes it possible to analyze the effect of the phenomena and problems of communities and localities on the range of life options individuals have. This feature allows examining the relationships between poverty and mechanisms of social inclusion, as well as seeking sustainable social development. Likewise, given that information will become available at the state and municipal scales, it will be possible to identify and monitor regional gaps in social development over time.



This framework leads to the recognition and identification of population groups with needs that are not only specific, but also heterogeneous and of varying magnitudes. So, the deprivation indicators can be calculated for different population groups; in addition, they can be compared across time and they provide a technically rigorous, but flexible scheme, to fit the specific targets of different social development programs.

It is important to emphasize the commitment of the Mexican State to ensuring universal exercise of social rights. That is why the identification of people presenting one or more social deprivations is an especially important element of this methodology. Nonetheless, in order to guide public policy, it is also necessary to recognize that deprivations and needs are different for different groups and that, some individuals, families, population groups and regions require immediate, timely and efficient attention, due to their very low income and the large number of deprivations they present.

This methodology should be understood as a first step in the analysis of social gaps in Mexico; we should mention that data limitations lead to some challenges that should still be worked out. Even though for poverty measurement purposes CONEVAL has incorporated all the indicators specified in article 36 of the LGDS, the complexity of the problem of social development demands to deepen the analysis of each dimension, incorporating aspects such as the quality of services, as well as other aspects that have a direct influence on the quality of life of the population, like discrimination or access to social infrastructure.

CONEVAL should also promote the collection of more and better information about the various elements that make it possible to evaluate social policy, not only at a state and municipal scale, but also at the local one, in order to provide decision makers with the elements needed to design results oriented public policies.

This points to the necessity that CONEVAL continues working on the development of a National System of Social Indicators that goes beyond poverty indicators and that includes the whole set of social rights in its broadest sense. This would make it possible to enhance CONEVAL recommendations with regards to social policy.

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