Workshop “Fundamentals of Mexico Multidimensional Poverty Measurement”

4th International High-level Meeting of the Multidimensional Poverty Peer Network (MPPN)

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Introduction to Mexican Multidimensional Poverty Measure

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Content

- A human rights approach
- Background and legal framework review
- Building the methodology
- Methodology to measure poverty in Mexico
- Recent results
- Examples and uses for public policy
- Accessing the poverty measurement code & databases
- Multidimensional poverty measure at the municipality level

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A human rights approach
Recognised social rights

“To guarantee a full exercise of social rights established in the Mexican Constitution, to ensure social development of all persons”
All persons will enjoy the human rights recognized by the Constitution and by the international treaties signed by the Mexican government, as well as the guarantees for their protection, and this exercise may not be restricted or suspended except in those cases and under those conditions established by the Constitution.

(...) 

All authorities, within the scope of their responsibilities, have the obligation to promote, respect, protect and guarantee human rights in accordance with the principles of universality, interdependence, indivisibility and progressiveness.

* After Constitutional Reform, June 2011.
Poverty is a denial of human rights

- Legal guarantees to protect people
- Obligatory regulations to all governemental orders

Human rights principles:
- Inalienables
- Indivisibles
- Interdependent
- Non-expirable

Human rights

Social, Economic, Political, Civil, and Cultural Rights
Observation units: individuals

Human rights owners

- Main actors
- They must use all available mechanisms to demand compliance

A society who recognises and takes responsibility as human rights owner is an empowered society
Related principles

Methodology

Unit of analysis
- Individuals: human rights owners
- Universal principle

Relevant dimensions
- Constitutional rights

Thresholds
- Legal regulations
- At least one deprivation
- Indivisibility principle

Weights
- All dimensions are equally important
- Interdependency principle

Functionality
- Adding (validity, reliability)

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Implications of the social rights approach

1. Dimensional decomposability

2. Population decomposability

3. Comparability across time

Identification of groups with social disadvantages

- Federal
- State
- Municipality
- Place of residence

- Children and adolescents
- Indigenous people
- Elder people
- Gender
- People with disabilities

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What does overcoming poverty mean in people’s life-conditions

Well paid jobs with benefits

School attendance and universal basic educational coverage

Enough food for everybody (quantity, quality and variety)

Water, drainage, electricity and appropriate conditions for cooking

Health care demand

Formal jobs and security against accidents, illness or life cycle stages (pregnancy, old age)

Enough space for housing members, appropriate housing conditions (roofs, walls, floors)

Complementary indicators

Effective access of social rights

System of indicators of social development with human rights approach

Minimum housing conditions

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Mexican multidimensional poverty measure
Background and legal framework review
Background

- Social Development Law establishes the main characteristics that poverty measurement should comply:
  - To make visible the link between social programs & the measurement of poverty for public policy purposes.
  - To include eight dimensions: income, educational gap, access to health services, access to social security, quality of dwelling, access to housing basic services, access to food and social cohesion.
  - Measurement should be periodic, for the whole country and for states every 2 years and at municipality level every 5 years.
Building the methodology
A new methodology. How?
Discussions, criteria & design of data sources

2006
Consultation with experts

2007
Five methodological proposals
MCS-ENIGH Design

2008
Discussion and international seminars

2009
Presentation (December)

• Julio Boltvinik
• Satya Chakravarty
• James Foster, Sabina Alkire
• David Gordon
• Rubén Hernández and Humberto Soto

Building the methodology

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Information sources


Larger sample, information for all states

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Methodology to measure poverty in Mexico
What are the main features of the new methodology?

- Education
- Health
- Social Security
- Housing
- Basic services
- Food access

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Poverty Measurement

- **Extreme poverty**: Below the Minimum Economic Wellbeing Line (MEWL)
- **Moderate**: Between the MEWL and Economic Wellbeing Line (EWL)
- **Non-poor and non-vulnerable**: Above the EWL

**Deprivations**
- Social rights

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A person is considered to be poor if he/she has at least one social deprivation and an income below the Economic Wellbeing Line.
Recent results
Poverty estimates: Mexico, 2014

- Non poor and non vulnerable: 20.5% (24.6 million)
- Vulnerable due to income: 7.1% (8.5 million)
- Poor: 46.2% (55.3 million)
  - Average number of deprivations: 2.3

- Vulnerable due to social deprivation:
  - Moderate poor: 36.6% (43.9 million)
    - Average number of deprivations: 1.9
  - Extreme poor: 9.5% (11.4 million)
    - Average number of deprivations: 3.6
  - 26.3% (31.5 million)
    - Average number of deprivations: 1.8

Source: CONEVAL based on MCS-ENIGH 2014.
Economic wellbeing, 2014

Income below EWL [53.2%]

Income below MEWL [20.6%]

Source: CONEVAL based on MCS-ENIGH 2014.
<table>
<thead>
<tr>
<th>Social Deprivations, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Educational gap</strong></td>
</tr>
<tr>
<td>[18.7%]</td>
</tr>
<tr>
<td><strong>Access to health services</strong></td>
</tr>
<tr>
<td>[18.2%]</td>
</tr>
<tr>
<td><strong>Access to social security</strong></td>
</tr>
<tr>
<td>[58.5%]</td>
</tr>
<tr>
<td><strong>Quality of dwelling</strong></td>
</tr>
<tr>
<td>[12.3%]</td>
</tr>
<tr>
<td><strong>Access to housing basic services</strong></td>
</tr>
<tr>
<td>[21.2%]</td>
</tr>
<tr>
<td><strong>Access to food</strong></td>
</tr>
<tr>
<td>[23.4%]</td>
</tr>
</tbody>
</table>

Source: CONEVAL based on MCS-ENIGH 2014.
Poverty by state, 2014

Source: CONEVAL based on MCS-ENIGH 2014.
Extreme poverty by municipality, 2010

Source: CONEVAL based on MCS-ENIGH 2010 and 2010 Census.
a) Municipalities with 75% or more of their population in poverty

b) Municipalities that accumulate half of the population in poverty

Total municipalities
1,003

Total municipalities
190

Source: CONEVAL based on MCS-ENIGH 2010 and 2010 Census.
Examples and uses for public policy
Poverty for different populations, 2014 (Percentage)

*The indigenous criteria is if people speak or not an indigenous language.
Source: CONEVAL based on MCS-ENIGH 2014.
What policies should be pursued?

Economic Policies:
- Economic growth
- Job creation

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What policies should be pursued?

Social Policies:
- Health
- Education
- Housing
What policies should be pursued?

Targeted policies

- Social Programs for the population in poverty

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What policies should be pursued?

Universal policies
- Social Security
- Education for all
- Access to health services
- Economic growth

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Accessing the poverty measurement code & databases
The programming code and databases used to calculate poverty in Mexico can be easily accessed by the public through the CONEVAL website: www.coneval.org.mx

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Accessing the database & code

From the main menu on the front page select “Medición de la Pobreza”
Accessing the database & code

Select “Programas de cálculo y bases de datos 2010, 2012 and 2014”
Program codes and databases are available for Stata, SPSS, and R software. Data corresponds to 2010, 2012, or 2014.

Select the year and program code you wish to download.
Mexican multidimensional poverty measure at municipality scale
Poverty dimensions
(General Law on Social Development, article 36)

- Income
- Educational gap
- Access to health services
- Access to social security
- Access to food
- Housing quality and spaces
- Access to basic housing services
- Degree of social cohesión

Information from INEGI (Mexican statistical office)

Periodicity
- States: 2 years
- Municipality: 5 years

The first measurement at municipality scale was on 2010, in progress 2015
The multidimensional methodology of poverty measure allows to answer the questions: how many?, who?, where?

Locate population in poverty status is an important property of multidimensional methodology.

CONEVAL has measured national, state, metropolitan and municipal poverty, with rural or urban aggregation and by size of locality.

Estimations of poverty in state and municipal level constitute a essential tool for public policy strategies.
Example: municipalities that accumulate more than half people in poverty status, Mexico, 2010

One common feature of these municipalities is that all are urban localities and belong to one of 59 national metropolitan areas.

Fuente: estimaciones del CONEVAL, con base en el MCS-ENIGH 2010 y la muestra del Censo de Población y Vivienda 2010.
Contains information to measure multidimensional poverty

It is not possible to get accurate estimations at municipal level

Direct estimation:
- Educational gap
- Access to health services
- Quality and spaces of dwelling
- Access to basic services in dwelling

Indirect estimation:
- Access to social security
- Access to food
- Current per capita income

Combination through small area estimation techniques

Information sources

MCS-ENIGH 2010

Survey from Census 2010

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Research process

There are papers and texts dealing with identification and measurement of multidimensional poverty

There are works which discuss techniques for estimation in small areas

Nevertheless, in 2009 there were no available methodologies for estimate multidimensional poverty using small areas techniques

Methodology 2010 (2009 – 2011)

Methodology 2015 (2014 – 2016)
Methodology 2010

CONEVAL invited national and international poverty and statistical experts.

CONEVAL organized seminars and workshops concerning small area estimation techniques. These methods combine information from a survey (in our case the MCS-ENIGH) with census information.

There were five small area estimation methods.

Seminars and workshops

Statistical experts

Proposals
Methodology 2010

Methodologies exploration

Five methodologies (research with El Colegio de México)

Implementation

EBP and Bayesian
CONEVAL explored and implemented:
• Income: hierarchical logistic (mixed logistic) and a combination of a multinomial model
• Food and social security access: hierarchical logistic models

Methodological and precision criteria
• EBP: more accurate, nevertheless none of the above met the methodological criteria
• Generalization: (CONEVAL) EBP y ELL (Elbers et al.) for measure multidimensional poverty (6 social lacks and income)

Outcome: measurement of multidimensional poverty at municipality scale, 2010

Universities
Iowa State, US
UNAM/UAM, Mexico
SouthHampton, UK
University of Newcastle, UK
ITAM, Mexico
Carlos III, Spain

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Coordinated research with the University Program of Development Studies (PUED) of the National Autonomous University of Mexico (UNAM)

Bayesian model (BM)
- Jointly estimates three variables: income, lack of food access and social security lack access, the rest of the social lacks are calculated directly from census data

Empirical best predictor (EBP)
- EBP is based in Molina and Rao method (2010) for estimate total current per capita income
- In addition, independent estimation of quadrants of poverty percentages with a multinomial model

Elbers, Lanjouw and Lanjouw (ELL)
- Based in the methodology used in 2010

UNIVERSITIES
ITAM, Mexico
University of SouthHampthon, UK
Freie Universität Berlin
UP Chiapas, Mexico
Carlos III, Madrid, Spain

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Some basic references

Small Area Estimation
J. N. K. Rao
WILEY SERIES IN SURVEY METHODOLOGY

Small area estimation of poverty indicators
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Abstract
This paper describes some of the research lines of the European project SAMPLE and presents the results of an application to the estimation of poverty indicators in Spanish provinces by the use of a Fay-Herriot model.

Keywords: EBLUP, Fay Herriot model, poverty indicators, small area estimation, survey on income and living conditions.

AMS Subject classifications: 62P99, 62B15.

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From the analysis of the results obtained and the development in small areas estimation techniques, CONEVAL has proposed to consider heteroscedasticity extension to EBP methodology.

CONEVAL developed a study with academics from UNAM.

- Jointly estimates three variables: income, lack of food access, and social security lack access.

Concurrently, CONEVAL worked on:

- Conceptual and operative improvements on income estimation models.
- Estimate the lack of access to food and social security through logistic regression models and discriminant analysis.

Integration of the six social deprivations and income.

Goal: multidimensional poverty measure at municipality scale 2015

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Research agenda

- Estimation in smaller than municipality
- Estimation of social deprivation indexes through small area estimation methods
- Mean square error estimation considering different sources of error (design and model)
- Explore further insights on small area estimation methods (v.gr. Hierarchical and Bayesian)
- Model explicitly poverty change in small areas

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Examples of uses in public policy

**National Crusade Against Hunger**

- **Participation of all 17 Federal Ministries**
- **Target Population**
  - People in extreme poverty and food deprivation
  - Around 400 municipalities were selected according to extreme poverty and food deprivation indicators (number and %)
- **Aim**
  - Progressive eradication of every poverty dimensions and achievement of full exercise of social rights

**Fund for Social Infrastructure at the State and Municipality Levels (FAIS, FISMDF)**

- **Financial priority to overcome poverty dimensions**
- **Allocation of the fund based on indicators of extreme poverty (number of people and average deprivations)**

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All MPI indicators included in census database

Yes

MPI direct estimates at any geographic scale

No

Combine survey and census data: Small Area Techniques

EBP methods for count variables

Bayesian methods
Gracias
Thank you
Merci
Contact information

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