Leaving no one behind: adopting a systematic approach of using small area estimation for SDG monitoring

Colombia’s Experience

October 4th, 2021
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**Comprehensive approach to ensure leave no one behind**

- Identify who is being left behind.
- Identify the reason why this happens
- Identify effective measures to address the cause
- Monitor and measure progress

**Dissaggregated data**

The SDG indicator metadata have required disaggregations defined for each one: sex, age, disability, geographic location, ethnicity, educational level, income level, among others.

**Differential and Intersectional approach**

A necessary approach to make visible the forms of discrimination against groups considered different by a majority. Having this data allows the generation of public policies for the care and protection of the rights of these populations.

**Identifying and understanding inequalities** requires more detailed data than the national level.
2.1. Small Area Estimation to calculate Income Poverty

**Context**

The Data4Now initiative aims to contribute to the “leave no one behind” principle of the 2030 Agenda by fostering the use of methods and tools that improve the opportunity, coverage and quality of data through collaboration, technical support, and information exchange,

To count with disaggregated data with a greater number of people for better decision-making, while achieving SDG 1 “End poverty in all its forms everywhere”, DANE is leading a joint proposal with other entities to predict Income Poverty at the municipal level, annually, through techniques of small areas estimation.

**Expected outcome:**

A model that combines traditional and non-traditional sources of information to annually predict income-based poverty at the municipal level.

It will also allow to obtain other products such as poverty maps at the municipal level and methodological documents that feeds decision-making based on evidence.
1.1. By 2030, end all forms of poverty for all people everywhere, currently measured as people living on less than $1.25 a day.
1.2. By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions, according to national definitions.

1a. Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions.

1b. Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions.
2.3. Small Area Estimation to calculate Income Poverty

Matching of information sources (Input for estimation)

Deterministic matching using type and ID number from different sources of information:

- The **National Population and Housing Census of 2018 (CNPV)** counts the resident population and gathers sociodemographic information for planning, management and public policy decision-making at the national, territorial and local levels.

- The **Great Integrated Household Survey (GEIH)** is a survey that gathers information on people's employment conditions, demographic characteristics and sources of income.

- The **More Families in Action (FA)** and **Youth in Action (JA)** are conditional cash transfer programs.

- The **Statistical Register of Labor Relations (RELAB)** contains information on the income of employed persons with social security contributions. The PILA is the main Administrative Registry of the statistical operation.

- The **Identification System for Potential Beneficiaries of Social Programs (Sisbén IV)** classifies the population according to their living conditions and income.

- The **Integrated Enrollment System (SIMAT)** contains information on students and official and unofficial schools in the country.

Income information is retrieved from all data sets, except SIMAT, from which information on students in unofficial educational venues is retrieved.

2.4. Small Area Estimation to calculate Income Poverty

Integration protocol between data sets

1. Clean and standardized integration keys: type and ID number in the data set.
   - Standardize type and ID numbers between information sources
   - Guarantee numbers with valid fields
   - Treat and debug of duplicates

2. Integration key quality analysis using BR.
   - Cross between bases and BR
   - Match rate analysis

3. Retrieval of document types for the secondary databases FA, JA, RELAB, SISBEN IV, SIMAT.
   - Cross by type and number
   - Cross by number and validate with first name and first surname
   - Retrieval of ID document types from records with the same names

   - Cross by type and number with original type of secondary base
   - Cross by type and number with of documents taken from BR. (Only if the previous step did not cross)

2.5. Small Area Estimation to calculate Income Poverty

Next steps

After consolidating the final database (matching the seven sources of information), the steps to follow will be:

1. Choice of thematically correct variables for training and estimation of the final model.

2. Estimation of the model to predict income poverty at the municipal level.

3. Elaboration of products (documents, outputs, maps).
3.1. Small Area Estimation to calculate Family Planning indicators

Context

Montevideo Consensus on Population and Development (August 2013):

- Regional framework for the implementation of the Cairo International Conference on Population and Development Programme of Action (1994).
- Includes more than 120 actions on 8 priority issues.
- Specifically, this project focused on 2 objectives:
  - O6: Prevalence rate of use of contraceptive methods by women according to type of methods (modern and traditional)
  - O7: Proportion of women of childbearing age meeting their family planning needs with modern methods

Multi-Stakeholder Partnerships + 2030 Agenda data needs = Family Planning Indicators:

- Use of Small Area Estimation Methodology, with DHS 2015 and 2018 Census.
- Dissagregated by geographical areas at the municipal level.
- SDG 3 - SDG 5 and O6 & O7 of Montevideo Consensus.
3.2. Small Area Estimation to calculate Family Planning indicators

Context

3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births.

3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.

3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes.

5.1 End all forms of discrimination against all women and girls everywhere.

5.6 Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences.

5.a Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws.
3.3. Small Area Estimation to calculate Family Planning indicators

Methodology

**Two sources were used:**

1. Demographic and Health Survey (DHS) of 2015  
   - Equation Estimation
2. National Population and Housing Census (NPHC) of 2018  
   - DHS equation coefficients becomes probability prediction over the Census

**Methodology:**

1. Filtered the databases considering only the valid cases for estimating the desired indicators: only women of childbearing age were considered for this project.
2. Modified the available databases (DHS 2015 and NPHC 2018) to make them comparable and process the indicators.
3. Applied direct estimates (dependent variable):
   - Use of the variable “current use of what type of method” to obtain a dichotomous variable for the women who indicate that they are currently using traditional contraceptive methods.
   - A new variable was created to identify those women who were using modern methods.

4. Applied Indirect estimates were used based on generalized linear mixed models at the individual level, due to a loss of precision of direct estimators when not all disaggregations are taken into account in the statistical operation
   - The covariates used were obtained from the census included: urbanization, education, age groups, qualitative housing deficit (material of the floors, walls and housing), access to public services, overcrowding, previous live-born children, civil union.

5. Estimation of standard errors
3.5. Small Area Estimation to calculate Family Planning indicators

Outcomes

<table>
<thead>
<tr>
<th>Total demand of contraceptives %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less or equal to 82%</td>
</tr>
<tr>
<td>From 82.1% to 85%</td>
</tr>
<tr>
<td>From 85.1% to 87%</td>
</tr>
<tr>
<td>From 87.1% to 90%</td>
</tr>
<tr>
<td>Higher than 90%</td>
</tr>
</tbody>
</table>

Map 1: Total demand of contraceptives %

- Less or equal to 82%
- From 82.1% to 85%
- From 85.1% to 87%
- From 87.1% to 90%
- Higher than 90%
3.6. Small Area Estimation to calculate Family Planning indicators

Outcomes

Total demand of modern contraceptives %

- Less or equal to 70%
- From 70.1% to 80%
- From 80.1% to 85%
- From 85.1% to 90%
- Higher than 90%
3.7. Small Area Estimation to calculate Family Planning indicators

Outcomes

<table>
<thead>
<tr>
<th>Unmet need for contraception %</th>
<th>Less or equal to 5%</th>
<th>From 5.1% to 8%</th>
<th>From 8.1% to 10%</th>
<th>From 10.1% to 15%</th>
<th>Higher than 15%</th>
</tr>
</thead>
</table>

For outcomes, the maps illustrate the distribution of unmet need for contraception across different regions, with color coding indicating the percentage range.
4. Conclusion

**Innovation** through the use of **new technologies** and **methods**

**Exchange of knowledge and capacity building through Multi-Stakeholder partnerships**

**Timely, reliable, quality and disaggregated data**

**Equity and inclusion emphasis** to leave no one behind
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