Integration of Statistical and Geospatial Information in Central America

Séptima Sesión
UN-GGIM: Americas
Project Purpose

To integrate statistical and geospatial information in Central America, building upon the regional efforts of the:

- Pan American Institute of Geography and History (PAIGH)
- United Nations Statistics Division (UNSD)
- United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM)
- Regional Committee of the United Nations Committee of Experts on Global Geospatial Information Management for the Americas (UN-GGIM: Americas)
- United Nations Economic Commission for Latin America and the Caribbean (ECLAC)
Project Objectives

- **Partnership** - Coordinate and develop collaboration between the seven countries of Central America
- **Planning** - Develop a plan for the integration of statistical and geospatial information in Central America that can be utilized for future integration projects
- **Innovation** - Identify problems and priorities of the region and methods to analyze and display integrated statistical and geospatial information
- **Integration** - Conduct technical workshops and create integrated statistical and geospatial products to inform decision makers
Project Assumptions

Geospatial Base and Data Structure

• This project builds on the work done as part of the Statistical and Geospatial Framework for the Americas (MEGA)
Project Participants

- The Statistical Institute of Belize
- Ministry of Natural Resources, Land and Surveys Department
- National Geographic Institute (IGN) of Costa Rica
- National Institute of Statistics and Census
- Directorate-General for Statistics and Census
- National Records Center
- National Geographic Institute
- National Institute of Statistics
- National Property Management System
- National Institute of Statistics
- Nicaraguan Institute of Territorial Studies
- Central Bank of Nicaragua
- National Institute of Development Information of Nicaragua
- National Geographic Institute - Tommy Guardia
- National Institute of Statistics and Census
Project Support

Co-led by:
❖ UN-GGIM: Americas – Paloma Merodio Gomez/Gabriela Garcia Seco
❖ U.S. National Section of PAIGH – Deirdre Dalpiaz Bishop/Paul Riley

Supported by:
❖ National Institute of Statistics and Geography (INEGI)
❖ UN Economic Commission for Latin America and the Caribbean (ECLAC)
❖ National Administrative Department of Statistics (DANE)
❖ U.S. Census Bureau
With the advent of the COVID-19 Pandemic, the technical project team made the decision to set aside its’ work on education to focus on how they could assist decision makers in Central America with their response to COVID-19

Esri Humanitarian/Health Response Program - the technical project team established an ArcGIS Online Organization, that provides the project with:
• A private and public space for the team to work collaboratively
• The ability to centralize the data and information needed for the project
• The ability to provide meaningful and timely information
• Access to ArcGIS Online - Access will be provided for up to 15 technical users

Vulnerability to COVID-19

Building on the work of DANE’s development of a Vulnerability Index for Columbia, the technical project team began work on the development of a Vulnerability Index.

What is Vulnerability?

Physical, economic, social, environmental or institutional susceptibility or fragility that a community has to be affected or suffer adverse effects in the event that a dangerous physical event occurs. (UNGRD & IEMP, 2016)*

What is Vulnerability to COVID-19?

Conditions of age and comorbidity that result in a greater susceptibility to contracting COVID-19

Vulnerability to COVID-19

Who are most likely to be vulnerable to COVID-19?

Those in a population that, due to demographic characteristics and health conditions, may have more chance of complications if they contract COVID-19

❖ Population
  ➢ Over 60
  ➢ Living in overcrowded conditions
  ➢ Older populations living with younger family members

❖ Population with Health Conditions
  ➢ Heart Disease
  ➢ Respiratory Illnesses
  ➢ Diabetes
  ➢ Obesity
  ➢ Cancer
Vulnerability Index Variables

At the time of the construction of the index, 13 variables were identified for analysis and the calculation of the Vulnerability Index

<table>
<thead>
<tr>
<th>Data Elements</th>
<th>Vulnerability Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population Data</strong></td>
<td></td>
</tr>
<tr>
<td>Population Age 60 and over</td>
<td>✓</td>
</tr>
<tr>
<td>Population Density (Overcrowding)</td>
<td>✓</td>
</tr>
<tr>
<td>Population Density (Number of people per house)</td>
<td>✓</td>
</tr>
<tr>
<td>Access to Public Water</td>
<td>✓</td>
</tr>
<tr>
<td>Access to Public Sanitation (Sewage)</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Health Data - Health Conditions</strong></td>
<td></td>
</tr>
<tr>
<td>Asthma</td>
<td>✓</td>
</tr>
<tr>
<td>Heart Disease (stroke, heart attack, etc.)</td>
<td>✓</td>
</tr>
<tr>
<td>Diabetes</td>
<td>✓</td>
</tr>
<tr>
<td>Cancer</td>
<td>✓</td>
</tr>
<tr>
<td>Immune System</td>
<td>✓</td>
</tr>
<tr>
<td>Respiratory System</td>
<td>✓</td>
</tr>
<tr>
<td>Hypertension</td>
<td>✓</td>
</tr>
<tr>
<td>Obesity</td>
<td>✓</td>
</tr>
</tbody>
</table>
## Vulnerability Index Data Structure

Data structure is harmonized with the MEGA and the MEGA has been expanded to accommodate the additional variables.

### Table: Vulnerability Index Data Structure

<table>
<thead>
<tr>
<th>Data Element</th>
<th>Field Name</th>
<th>Alias</th>
<th>Data Type</th>
<th>Size</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geographical level 1 (Country)</td>
<td>NV1_CD</td>
<td>CDD_NV1</td>
<td>Text</td>
<td>3</td>
<td>ISO 3166 code for country (See Annex 3 of MEGA).</td>
</tr>
<tr>
<td>Geographical level 2 (second level of the Administrative Political division)</td>
<td>NV2_CD</td>
<td>CDD_NV2</td>
<td>Text</td>
<td>3</td>
<td>Identifier code to the administrative territorial entity level 3.</td>
</tr>
<tr>
<td>Geographical level 3 (Third Level of the Administrative Political Division)</td>
<td>NV3_CD</td>
<td>CDD_NV3</td>
<td>Text</td>
<td>4</td>
<td>Identifier code to the administrative territorial entity level 3.</td>
</tr>
<tr>
<td>Geographical level 4 (Fourth Level of the Administrative political division or statistical entity)</td>
<td>NV4_CD</td>
<td>CDD_NV4</td>
<td>Text</td>
<td>10</td>
<td>Identifier code to the administrative territorial/ statistical entity level 4.</td>
</tr>
<tr>
<td>Geographical level 5 (Fifth Level of the Administrative political division or statistical entity)</td>
<td>NV5_CD</td>
<td>CDD_NV5</td>
<td>Text</td>
<td>10</td>
<td>Identifier code to the administrative territorial/statistical entity level 5.</td>
</tr>
<tr>
<td>Integrated Level 5 Code</td>
<td>NV5_CDD_IN</td>
<td>CDD_IN</td>
<td>Text</td>
<td>10</td>
<td>Primary key: NV1_CD, NV2_CD, NV3_CD, NV4_CD, NV5_CD fields integration.</td>
</tr>
<tr>
<td>Level 5 Name</td>
<td>NV5_NAME</td>
<td>NAME</td>
<td>Text</td>
<td>30</td>
<td>Assigned name to the administrative territorial entity level 5. (Statistical name if applicable).</td>
</tr>
<tr>
<td>Level 5 rtributed Area</td>
<td>NV5_AREA</td>
<td>SURFACE</td>
<td>Double</td>
<td>10</td>
<td>Total area of the level 5 administrative territorial statistical entity measured in square kilometers.</td>
</tr>
<tr>
<td>Population Density</td>
<td>DENS</td>
<td>DENS</td>
<td>Double / float</td>
<td></td>
<td>Ratio between the number of census population and the area in square meters.</td>
</tr>
<tr>
<td>Population from 0 to 9 years old</td>
<td>G_EDAD_0_9</td>
<td>G_EDAD_0_9</td>
<td>Double / float</td>
<td></td>
<td>Proportion of people from 0 to 9 years old.</td>
</tr>
<tr>
<td>Population of people from 10 to 19 years old</td>
<td>G_EDAD_10_19</td>
<td>G_EDAD_10_19</td>
<td>Double / float</td>
<td></td>
<td>Proportion of people from 10 to 19 years old.</td>
</tr>
<tr>
<td>Population of people from 20 to 29 years old</td>
<td>G_EDAD_20_29</td>
<td>G_EDAD_20_29</td>
<td>Double / float</td>
<td></td>
<td>Proportion of people from 20 to 29 years old.</td>
</tr>
<tr>
<td>Population of people from 30 to 39 years old</td>
<td>G_EDAD_30_39</td>
<td>G_EDAD_30_39</td>
<td>Double / float</td>
<td></td>
<td>Proportion of people from 30 to 39 years old.</td>
</tr>
<tr>
<td>Population of people from 40 to 49 years old</td>
<td>G_EDAD_40_49</td>
<td>G_EDAD_40_49</td>
<td>Double / float</td>
<td></td>
<td>Proportion of people from 40 to 49 years old.</td>
</tr>
<tr>
<td>Population of people from 50 to 59 years old</td>
<td>G_EDAD_50_59</td>
<td>G_EDAD_50_59</td>
<td>Double / float</td>
<td></td>
<td>Proportion of people from 50 to 59 years old.</td>
</tr>
<tr>
<td>Population Age 60 and over</td>
<td>G_EDAD_60</td>
<td>G_EDAD_60</td>
<td>Double / float</td>
<td></td>
<td>Percentage of people over 60.</td>
</tr>
<tr>
<td>Households in overcrowded rooms</td>
<td>HAC_CUATOS</td>
<td>HAC_CUATOS</td>
<td>Double</td>
<td></td>
<td>Proportion of households in overcrowded rooms.</td>
</tr>
<tr>
<td>Households in overcrowded dorms</td>
<td>HAC_DORMIT</td>
<td>HAC_DORMIT</td>
<td>Double</td>
<td></td>
<td>Proportion of households in overcrowded dorms.</td>
</tr>
<tr>
<td>Households of high intergenerational risk</td>
<td>H_RIES_JA</td>
<td>FORAJA</td>
<td>Double</td>
<td></td>
<td>Proportion of households at high intergenerational risk (generational households made up of adults over 40 years of age and population in most contiguous age group (between 20 and 29 years old).</td>
</tr>
<tr>
<td>Households at medium intergenerational risk</td>
<td>H_RIES_M</td>
<td>FORAM</td>
<td>Double</td>
<td></td>
<td>Proportion of households at medium intergenerational risk (generational households made up of adults over 20 years of age and population in the second most contiguous age group (between 30 and 59 years old).</td>
</tr>
<tr>
<td>Access to Public Water</td>
<td>VB_ACU</td>
<td>VB_ACU</td>
<td>Short integer</td>
<td></td>
<td>Housing with access to the public aqueduct service.</td>
</tr>
<tr>
<td>Access to Public Sanitation (Sewage)</td>
<td>VC_ALC</td>
<td>VC_ALC</td>
<td>Short integer</td>
<td></td>
<td>Housing with access to public sewer service.</td>
</tr>
<tr>
<td>Hypertension</td>
<td>P_GRU_1</td>
<td>P_GRU_1</td>
<td>Double / float</td>
<td></td>
<td>Proportion of people diagnosed with hypertension, hypertensive heart disease, hypertensive kidney disease, hypertensive cerebral disease, secondary hypertension.</td>
</tr>
<tr>
<td>Obesity</td>
<td>P_GRU_2</td>
<td>P_GRU_2</td>
<td>Double / float</td>
<td></td>
<td>Proportion of people diagnosed with obesity.</td>
</tr>
<tr>
<td>Diabetes</td>
<td>P_GRU_3</td>
<td>P_GRU_3</td>
<td>Double / float</td>
<td></td>
<td>Proportion of people diagnosed with diabetes, insulin-dependent diabetes mellitus, non-insulin dependent diabetes mellitus, diabetes mellitus associated with malnutrition, other specified diabetes mellitus, diabetes mellitus, unspecified.</td>
</tr>
</tbody>
</table>
Vulnerability Index Workshop

Hosted a virtual workshop

❖ This workshop was conducted in two sessions and both sessions were approximately 2 hours long

➢ Session 1 – was held on July 9, 2020, and was a theoretical session in which the methodology and calculations used to build the vulnerability index were discussed

➢ Session 2 – was held on July 16, 2020, and was a practical session in which the adaptation of the methodology, calculations, scope, and limitations for each country were discussed and participants broke into small virtual groups and had an opportunity to apply the vulnerability index methodology to their own data variables

❖ 43 participants represented all of the countries in Central America
Vulnerability Index Workshop Products

❖ Workshop products in Spanish and English include:

✓ Video recordings of each session of the workshop
✓ Vulnerability Index Notebook tutorial video
✓ Vulnerability Index Notebook users guide

❖ All products will be available on the technical project website with links on the UN-GGIM: Americas website
Vulnerability Index Preliminary Results

Índice de Vulnerabilidad Honduras

Índice de Vulnerabilidad Guatemala

Índice de Vulnerabilidad El Salvador

UN-GGIM: Americas
Vulnerability Index Preliminary Results – Costa Rica

Variables:
- PGRU2 a PGRU7
- Sistema circulatorio
- Sistema respiratorio
- Obesidad
- Diabetes
- Cáncer
- Acceso a alcantarillado (VB_ACU)
- Acceso a acueducto (VB_ACU)
- Habitantes por cuarto (HAC_CUARTOS)
- Densidad de población (DENSI)
- Población de 60 años y más (G_EDAD_60_PORC)
- Índice de pobreza (P_POBR)
Vulnerability Index Preliminary Results – Costa Rica

UN-GGIM: Americas
Thank You for your attention!