UN52SC Side Event: Modernization of Statistical Systems with GIS

Linda Peters lpeters@esri.com
Agenda

- Introduction/Overview
- UAE – The Federal Competitiveness and Statistics Centre (FCSC)
  - HE Mohammad Hassan
- Australia – Australian Bureau of Statistics (ABS)
  - Mr. Martin Brady for Alexis McIntyre
- Colombia - National Administrative Department of Statistics (DANE)
  - Ms. Sandra Liliana Moreno Mayorga
- Esri technology demonstrations:
  - SDMX – Adam Pfister
  - Data Dissemination – Kate Hess
- UN GGIM – Mr. Greg Scott
- Open Q/A
- Close
GIS Is Organizing the World’s Geographic Knowledge

Creating Building Blocks for Shared Understanding
GIS

Provides a Process and Framework . . .

. . . for Creating and Applying Geographic Knowledge Widely

. . . Understanding Precedes Action
GIS Hubs Are Transforming Communities
Engaging People, Organizations and Stakeholders In Community Initiatives

Empowering Citizens with GIS Capabilities

Improving Citizen Participation . . .
. . . Collaborating Around Common Interests
Spatial Modeling and Analytics
Advancing Science and Creating New Insights

- Spatiotemporal analysis
- Suitability Modeling
- Spatial Machine Learning
- Natural Language Processing
- Object Extraction
- Deep learning
- 3D Object Classification
- Multi-dimensional
- Object Detection In Video
- Time-Series Forecasting

Open source data science ecosystem

Integrating Open Data Science and Tools

Leveraging Technical and Scientific Innovations

ArcGIS
- Pro
- Notebooks
- Python & R

3D Cities
Vehicle Tracking
Real-Time / IoT
Object Detection
AI and Machine Learning
Geoprocessing
Spatial Stats
Object detection
Deep learning
HE Mohammad Hassan

FCSC: The Federal Competitiveness and Statistics Centre
FCSC live presentation/demonstration

https://geostat.fcsa.gov.ae/gisportal/home/
Q/A – FCSC UAE
Mr. Martin Brady
for Alexis McIntyre

ABS: Australian Bureau of Statistics
Geospatial enablement of official statistics

Martin Brady
for Alexis McIntyre
Director – Geospatial Solutions
February 2021

Australian Bureau of Statistics
Informing Australia’s important decisions
Who, what, when, where
Global Statistical Geospatial Framework

INPUT
- Geospatial
  - Fundamental data
  - Supplementary data
  - New data sources
- Statistical
  - Censuses
  - Surveys
  - Administrative data records
  - Big data and other sources

PRINCIPLES
- Accessible & usable
- Statistical and geospatial interoperability
- Common geographies for dissemination of statistics
- Geocoded unit record data in a data management environment
- Use of fundamental geospatial infrastructure and geocoding

KEY ELEMENTS
- Standards and Good Practices
- National Laws and Policy
- Technical Infrastructure
- Institutional Collaboration
- Integration
- Harmonised and standardised information
- Interoperability
- Comparability
- Analysis
- Decision making
- Diffusion
GSGF
5 Principles

1. Use of fundamental geospatial infrastructure and geocoding
2. Geocoded unit record data in a data management environment
3. Common geographies for the dissemination of statistics
4. Statistical and geospatial interoperability
5. Accessible and usable
GSGF 5 Principles

1. Use of fundamental geospatial infrastructure and geocoding
2. Geocoded unit record data in a data management environment
3. Common geographies for the dissemination of statistics
4. Societal and geospatial interoperability
5. Accessible and usable
Health – At risk populations: age distribution

These interactive maps examine the geographic distribution of people who are aged 60 years and older, 70 years and older, and 80 years and older as at 30 June 2020 (projected), by Statistical Area Level 2 (SAL2) of residence. These age groups are considered to be at a higher risk from COVID-19, however, other health factors may affect a person’s risk.

Other age range divisions are available from the source data, and may be used to derive additional maps and analyses. The population data are projections and should be used with the understanding of the Conditions of use explained by Australian Institute of Health and Welfare (AIHW).

Source: Department of Health

**Persons 60 years and older**

<table>
<thead>
<tr>
<th>Number of persons resident</th>
<th>Percentage of population</th>
</tr>
</thead>
<tbody>
<tr>
<td>3501 - 10,000</td>
<td>38.9%</td>
</tr>
<tr>
<td>2,501 - 3,500</td>
<td>16.7%</td>
</tr>
<tr>
<td>1,801 - 2,500</td>
<td>15.2%</td>
</tr>
<tr>
<td>1,001 - 1,800</td>
<td>12.6%</td>
</tr>
<tr>
<td>0 - 1,000</td>
<td>11.0%</td>
</tr>
</tbody>
</table>
Health – At risk populations: health conditions

Range of chronic health conditions across several age groups by Statistical Area Level 2 (SAL2) of residence. These groups are considered by the WHO to be at a higher risk from COVID-19 and these maps can be used in conjunction with local or expert knowledge to provide insights into the geographic spread of these conditions.

Underlying data is currently being prepared for publication on the ABS website (cat. 4364.6.55.001). Other age range divisions and health conditions are available from the source data and may be used to derive additional maps and analyses.

Source: Data modelled from National Health Survey 2017-18

Persons 70 years and over with three or more chronic health conditions

Number of persons:
- Over 1000
- 501 - 1000
- 201 - 500
- 101 - 200
- 0 - 100
Economy – Weekly payroll jobs in Australia

This interactive map examines the percentage change in payroll jobs between the week ending 14 March 2020 (the week Australia recorded its 100th confirmed COVID-19 case) and the week ending 30 January 2021, by Statistical Area Level 3 (SA3) of jobholder’s residence. The map provides indicative information on the economic impacts of COVID-19. This map was last updated on 19 February 2021.

Other information on payroll jobs (for example, changes in total wages paid by State & Territory) is available from the source data, and may be used to derive additional maps and analyses.

Source: Weekly Payroll Jobs and Wages in Australia

Week ending 30 January, 2021

Change in number of jobs (%) since 14 March
- 5.1% or more increase
- 2.6 - 5.0% increase
- 0.1 - 2.5% increase
- No change
- 0.1 - 2.5% decrease
- 2.6 - 5.0% decrease
- 5.1 - 7.5% decrease
- 7.6% or more decrease
Global Statistical Geospatial Framework

**PRINCIPLES**
- Accessible & usable
- Statistical and geospatial interoperability
- **Common geographies for dissemination of statistics**
- Geocoded unit record data in a data management environment
- Use of fundamental geospatial infrastructure and geocoding

**KEY ELEMENTS**
- Standards and Good Practices
- National Laws and Policy
- Technical Infrastructure
- Institutional Collaboration
- Integration
- Harmonised and standardised information
- Interoperability
- Comparability
- Analysis
- Decision making
- Diffusion

**INPUT**
- Geospatial
- Statistical
  - Fundamental data
  - Supplementary data
  - New data sources

**OUTPUT**
- Censuses
- Surveys
- Administrative data records
- Big data and other sources
Framework of statistical areas

- Enable the publication and analysis of statistics that are comparable and spatially integrated
- Help to manage confidentiality

ASGS updated five yearly, aligned to Population Census

- Provide a balance between stability and relevance to the changing underlying geography
Confidentiality protection with ASGS

- Standard data suppression and category collapsing mechanisms are generally used in the ABS
- Population Census use data perturbation due to volume of data released for small areas and detailed statistical classifications
- Several additional processes are used where risks of geographic differencing exists:
  - mapping, identification and suppression
  - randomised reallocation
Small area data and visualisation is useful for policy and decision makers, particularly when it is timely.

National statistical offices need to invest in geospatially enabling data and put in place the technical infrastructure to use the data.

A common geography is very useful for this process, particularly a statistical geography.

The Global Statistical Geospatial Framework will assist with this process.
End
Sandra Moreno

DANE: National Administrative Department of Statistics
COVID-19 Vulnerability Index Geovisor

Modernization of Statistical Systems with GIS

Sandra Liliana Moreno
Geostatistics Directorate
National Administrative Department of Statistics
Colombia
General Context

Interinstitutional group

- Provide statistical information and build tools.
- Facilitate decision-making for the line ministries to create the adequate policies within the COVID-19 emergency.

Vulnerability to COVID-19

- Age and comorbidity conditions that represent greater frailty in patients who acquire COVID-19.
- Population: older than 60 years; comorbidities; cohabitation conditions.

Vulnerability index

- Construction of the index from the identification and selection of 13 variables.
- Sources: 2018 National Population and Housing Census, and administrative records.
- Groups generated by k-means method.
Per block Vulnerability Geovisor

Geovisualization platform, generated from development in MapBox, in which it is possible to identify, by census block in urban areas of the country's municipalities, both vulnerability and other associated variables of interest. The geospatial inputs and applied symbologies were developed in GIS software (Esri ArcGIS)

http://visor01.dane.gov.co/visor-vulnerabilidad/
Geovisualization of vulnerability

- Groups by levels of vulnerability at the block level.
- Multidimensional poverty measure per block.
- Associated variables: elderly population and facilities.
- Displaying the mobility index dynamically over time.
- Diagrams and filters by territorial levels.
- Enable layers, transparencies, and 3D views.
- Video tutorial, methodological note and shapefile download.
Q/A – DANE Colombia
Esri Technical demo: SDMX
Adam Pfister
Esri Technical demo: SDMX
Esri Technical demo: Dissemination
Kate Hess
Greg Scott  
UNGGIM Secretariat

Subcommittee
1. Subcommittee on Geodetic (formerly IGO on Global Geodetic Reference Frames)

Expert Groups
1. Expert Group on the Integration of Spatial and Geospatial Information
2. Expert Group on Land Administration and Management

Working Groups
1. Working Group on Geospatial Information and Services for Disasters
2. Working Group on Policy and Legal Frameworks for Geospatial Information Management
3. Working Group on Marine Geospatial Information

Past Working Groups
1. Working Group on Development of a Statement of Ethical Principles for the Management of Geospatial Information
2. Working Group on Trends in National Institutional Arrangements in Geospatial Information Management
3. Working Group on Global Fundamental Geospatial Data Themes

Working Group of the IAEG-SDGs
Working Group on Geospatial Information
Open Q/A
Please put questions in the chat window
This Past Year... Your Work In Responding to the COVID-19 Pandemic Is Showing the Power of GIS,

Creating Global Understanding

and Mobilizing Collaborative Action . . .

Everywhere
Thank you

For more information statistics@esri.com
or contact lpeters@esri.com