

Official Statistics

User

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Challenge

Update procedures and work processes that respond more efficiently to the challenges of organizing fieldwork and data processing.

Solution

The agency uses GIS to manage procedures and automate work processes that simplify tasks.

Results

For the 2021 census data collection, INE has been developing web mapping applications that make relevant spatial data available to all enumerators and data collection managers.

INE Portugal Case Study

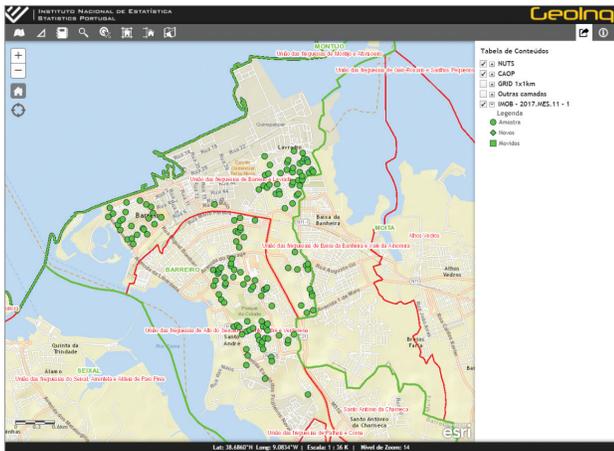
To prepare for the 2021 census, Instituto Nacional de Estatística Portugal (INE) initiated a work plan for creating the geospatial components of Portugal's census operation. The plan is built on the agency's location-based strategies established two decades previously, when INE first included GIS in its 2001 census. The agency realized that any data that links people, business, and the economy to a particular place offers a more complete understanding of social and economic issues. From then on, INE has been committed to making geospatial data an integral part of its work.

Today, geospatial data is present in most phases of INE's statistical production processes. The country's goal is that through the census, every statistical unit, person, household, dwelling, building, and business register will be geocoded.

In 2006, INE developed a spatial data infrastructure (SDI) that adds geospatial component to all phases of statistical production. The SDI is more than a sequence of mapping operations and census data dissemination. It is a continuous digital transformation program that makes it possible for INE to evolve its operations, meet changing demands for information, and stay current with society's technology expectations.

To understand Portugal's census program is to understand the European Union's (EU) census program. INE follows recommendations and standards set by the EU's statistical office, Eurostat. Agencies that follow the EU's General Guidelines of Statistical Activity have highly credible and authoritative data, thereby giving researchers confidence in the data for analysis. Furthermore, EU standards make it possible for Portugal to compare its statistics with those of other member states. Portuguese economists, for instance, can compare unemployment, housing, and other economic indicators with those of France.

When it comes to geo-enabling statistical production in Europe, two EU initiatives set the course. One is Eurostat's GEOSTAT, which defines the procedures for processing official statistics, including using generic statistical models that integrate geospatial data. The other is the European spatial data infrastructure (INSPIRE), a directive that state members follow to build the European network for sharing geospatial information. To make European data compatible, INSPIRE defined data standards for thirty-four spatial data themes such as transportation, utilities, and population. Each country builds these into their data models.



GeoINQ GIS web app

Challenge

In Portugal, INE works with the strategic body responsible for implementing the INSPIRE directive throughout the country. INE mainly works on developing INSPIRE's metadata and services. It has also built data themes for Portugal that are similar to INSPIRE's data themes.

Although EU initiatives prescribe the approach for developing geospatial data, it is Portugal's Census 2021 that drives the nation's integration of statistical and geospatial information. For instance, Portugal is updating procedures and work processes that respond more efficiently to the challenges of organizing fieldwork and data processing. INE also developed social survey processes for data sampling. The agency uses GIS to manage procedures and automate work processes that simplify tasks.

Solution

INE's geoinformation group manages the Buildings Geographic Database (BGE), which contains point-based data for all residential building units. INE uses this georeferenced data to generate tailor-made statistical products at different scales, such as a 1 km² grid map that includes a range of census attributes.

GIS is used to check the quality of three data types. The EAs are blocks having three-level structure (sections, subsections, and localities), which are integrated with official administrative boundaries. The Road Segments Network is street-line coverage at national and local levels. Data is edited with geometric and alphanumeric data submitted by municipalities. This is used for the delineation of the agency's geographic information referencing base (BGRI). Finally, GIS is used to check the aforementioned BGE building locations data. The agency's quality-control process increases the accuracy and consistency of every building's x,y coordinates and address.

All of Portugal's municipalities share their building permit information and completed-construction work data with INE via a web GIS platform. To check the data, the geoinformation group follows SDI quality-control procedures, which are predominantly GIS-based quality routines. To identify topological and attribute errors, the group uses ArcGIS software to check the data against orthoimagery and boundary data provided by Portugal's cadastral agency. They then make edits accordingly.

Results

The entire GIS is a hybrid system that includes ArcGIS and Oracle® as well as some open-source software. In addition, INE developed web mapping applications to help with data sampling, collection, and dissemination procedures. For the 2021 census data collection, INE has been developing web mapping applications that make relevant spatial data available to all enumerators and data collection managers.

Portugal is relying on GIS to help it efficiently execute the Portuguese 2021 Census and ensure the availability of quality information. However, the country's plans for its GIS extend years beyond the upcoming census. INE will use GIS to transition to a future census that will be based on administrative registers. In doing so, INE looks forward to decreasing the statistical burden on citizens, improving the frequency of outputs, and reducing collection costs associated with census operations.



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