User

Department of Statistics (DOS) Jordan

Partner

Infograph

Challenge

Run a census at a national level for the first time using a digital system.

Solution

A modern GIS system addressing needs of all users, from planning to enumeration, processing and dissemination.

Results

Reduction of a 2 year process to 2 months with improved data accuracy and speed of delivery of vital data to stakeholders.

Geospatial Tools in Enumeration: Jordan Case Study

In 2015, Jordon took a geospatial digital approach to its census, and the outcomes were astounding. The Kingdom's Department of Statistics (DOS) reduced a two-year-long process to just two months, improving data accuracy, speeding the delivery of vital data to stakeholders, and safeguarding millions of records of sensitive personal information.

Challenge

Every ten years, the DOS gathers census data to formulate and improve diverse national programs such as economic development, agriculture, and healthcare. The government welcomed the modernization of its census processes and hoped that doing so would produce accurate and up-to-date statistical data and information. Census data is an important and essential tool for making evidence-based decisions and intelligent planning. Furthermore, the 2015 census project represented a major step forward in Jordan's digital transformation that would move it closer to its vision of becoming a regional technology hub.

The DOS was faced with the challenge of running a census at a national level for the first time and using a digital system to do it. By the time the DOS completed the Population and Housing Census 2015, it had collected census data for 9.5 million citizens. More than twenty thousand surveyors had participated in the largest statistical project in the kingdom's history.

Solution

How did they do it? In the digital world, all projects begin with data. The DOS needed good data to set the data groundwork for a well-run enumeration operation. In cooperation with governmental agencies and local private companies, the department procured aerial images and created a current and accurate basemap. Using GIS, DOS digitized census blocks and created data layers that delineated collection areas on a map.

The department acquired more than twenty-three thousand high-spec HP tablets that enumerators would use to capture survey data. Staff prepared the tablets with aerial imagery, census blocks, building points, routes, and the survey form. They also synchronized the tablets with the operation's server and added census applications to them.

The census application's rules-based workflow ensured that the correct questions were asked, no questions would be missed, and correct data was collected. Survey data was not stored on the tablets but synced back to the server. The application communicated with a central server in Amman via the tablet's 3G communications. Thus, the system could cross-check the validity of information in real time during the survey.

In previous censuses, fraud was a concern, including the altering of data before it was reported. To address the problem, administrators devised another workflow for data security. Once surveyors left their assigned areas, the application suspended access to the system by the surveyor. Furthermore, automated processes controlled the amount of data feeds emitted by surveyors and stored data in an Oracle® DBMS geodatabase. The method secured data against corruption and manipulation. DOS administrators reported that the digital solution inspired more trust from citizens because it was modern and that they perceived it to be less susceptible to inaccurate reporting.

The DOS usually outsources census field survey labor and hired twenty thousand surveyors and two thousand field managers for the 2015 operation. Because the department had deployed easy-to-use mobile apps, workers needed only a little training before going into the field. Assigning work areas to so many people is a geospatial problem, so, again, GIS proved useful. It defined surveyors and assigned

Field app in pre-enumeration phase

them to designated census blocks, thereby avoiding survey duplication and wasted effort. Other time savers were apps that showed surveyors their assigned work areas along with routes that would help them collect the data in sequence.

Results

The ArcGIS platform made managing data collection a smooth process. It provided census operations managers with tools to control and monitor human resources, material, and time. The approach produced better data quality and turned it around faster than ever before.

Jordan's census project was further marked by its extensive use of GIS throughout all phases, including operations planning, fieldwork management and monitoring, and data proliferation throughout the kingdom. It also provided an online infrastructure for spatial data dissemination and analysis that included tools for analyzing data about the population's economic, social, and demographic characteristics.

The ArcGIS platform, the project's cornerstone software, integrated with Microsoft® Windows 10 and the HP® tablet to enable mobile capabilities. The platform also processed data and disseminated key statistics. The DOS completed its operations in record time and was publishing 2015 census results about three months after the fieldwork had been completed, compared with the 2004 census results that took one and a half years to publish.

Most importantly, e-census data provided via the ArcGIS platform provides analysts and decision makers with a simple, intuitive means to get answers to their inquiries.

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