Official Statistics

User

Statistics Canada (StatCan)

Partner

Esri Canada

Challenge

Mapping approximately 100 indicators at seven different levels of geography, ranging from provinces and territories to cities and neighborhoods.

Solution

Use of advanced, web-based data visualization tools and a new statistical dashboard – the Census Program Data Viewer (CPDV).

Results

The CPDV provides new ways to visually communicate statistical information and engage data users.

Case Study: Canada

Statistics Canada (StatCan) conducts a census every five years and runs approximately 350 active surveys on nearly all aspects of Canadian life. StatCan has made census data easier to view and understand through online interactive maps and dashboards. Census statistical information provides elected representatives, businesses, unions, nonprofit organizations, and citizens with a solid foundation for informed decision-making.

Challenge

Beginning with the 2001 Census of Population, StatCan introduced new ways to view census data with a series of data visualization tools, such as age pyramids. In 2011, the agency introduced the Focus on Geography Series. This tool presented data as tables, texts and maps that showed population, age and sex, language, etc. Canadians could also see how the population had changed over time. By the 2016 Census, StatCan had rolled out more advanced data visualization tools. These tools included a variety of interactive charts and a new statistical dashboard—the Census Program Data Viewer (CPDV), an advanced web-based data visualization tool.

Solution

The CPDV makes data easier to interpret. It shows basic geographic and sociodemographic data categorized by statistical indicators. Users can easily find statistical information about a geographic location using the thematic map. At a glance, users can compare statistical values for different locations and identify relationships between indicators.

The CPDV helps people answer fundamental questions related to places in Canada, including the following:

- What are the top five ethnic origins reported in each of the census metropolitan areas of Montréal, Ottawa–Gatineau, Toronto, Calgary, and Vancouver?
- What are the top ten municipalities where a language other than English or French is spoken most often at home?
- How does the average age for my municipality compare with that for my province, my territory or the nation?
- Is there a relationship between level of education and average income?

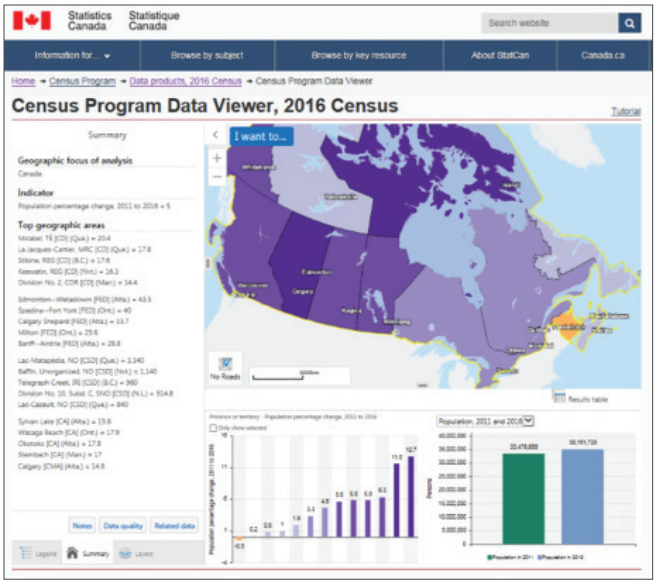
The CPDV is built using ArcGIS and Geocortex software. The platform's dashboard technology was used to feature a map that could display different levels of geography to show Canada's diversity at general and more detailed levels.

The platform has met StatCan's goals: it displays more than 5,000 geographic locations in a single chart and includes charting indicators that have extreme outliers (e.g., population changes). Corporate formatting standards can be applied to data so that the data is usable across the agency. The dashboard fits into the web template designed by the Government of Canada. The result is shown in figure 1.

The simplicity of the user experience conceals design complexities that are managed behind the scenes. For instance, developers followed an iterative process to make corrective changes as they encountered issues. They created a new data model that supported the efficient mapping and charting of an unlimited number of indicators. Using ArcGIS Online, the GIS team built a web application that helps enumerators use their tablets in the field to navigate through mazes of nameless streets. The app identifies EAs by area number and lays out a route to the location.

Results

For the 2016 Census, StatCan mapped approximately 100 indicators at seven different levels of geography, ranging from provinces and territories to cities and neighborhoods. The CPDV generated dynamic layers by joining indicator data to spatial features. Without geographic information system automation, StatCan staff would have had to build 700 individual data layers. Because of these dynamic layers,



Statistics Canada's Census Program Data Viewer is a dashboard that shows statistical indicators and locations.

the CPDV is capable of supporting approximately 5,000 users viewing the dashboard at any one time. In addition to the mapped indicators, an extra 400 indicators are used to generate charts.

As a member of the United Nations Statistical Commission, StatCan endorses the Fundamental Principles of Official Statistics, and built its census system accordingly. The agency also designed the CPDV to meet all Government of Canada standards for accessibility, interoperability, security and web usability. Its adaptive design enables users to view data on desktops, tablets, and smartphones.

The CPDV, along with other data visualization tools, provides new ways to visually communicate statistical information and engage data users. The system demonstrates the importance of statistics in the economic and social development of Canada.

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