Catalogue no. 92-162-G
ISSN 1911-5768

Census Subdivision Boundary File, Reference Guide, 2023

Release date: July 12, 2023

Statistics Canada Statistique Canada

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Published by authority of the Minister responsible for Statistics Canada

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Census Subdivision Boundary File, Reference Guide, 2023

This reference guide is intended for users of the *2023 Census Subdivision Boundary File*. The guide provides an overview of the file, the general methodology used to create it, and important technical information.

What's new?

- Due to operational constraints, the census subdivision (CSD) updates for the province of New Brunswick dated January 1, 2023 are not yet completed and, as a result, a complete set of updates is not available in this year's product.
- The *2023 Census Subdivision Boundary File* portrays the boundaries of all 5,173 CSDs, which combined, cover all of Canada.
- The boundaries, names, and codes of CSDs reflect those in effect on January 1, 2023, the geographic reference date for this edition of the Census Subdivision Boundary File.

1. About this guide

This reference guide does not provide details on specific software packages that are available for use with the *2023 Census Subdivision Boundary File*. Users are advised to contact the appropriate software vendor for information.

This data product is provided ‘as-is’, and Statistics Canada makes no warranty, express or implied, including but not limited to, warranties of merchantability or fitness for a particular purpose. In no event will Statistics Canada be liable for any direct, special, indirect, consequential or other damages, however caused.

2. Overview

The *2023 Census Subdivision Boundary File* depicts the boundaries of all 5,173 CSDs, which combined, cover all of Canada. It contains the unique identifier (UID), name and type, as well as the UIDs, names and types (where applicable) of selected higher geographic levels.

The *2023 Census Subdivision Boundary File* is portrayed in Lambert conformal conic projection (North American Datum of 1983 [NAD83]). The *2023 Census Subdivision Boundary File* is available as a national file.

3. About this product

Purpose of the product

The purpose of the *2023 Census Subdivision Boundary File* is to provide a framework for mapping and spatial analysis, and to support Geographic Information System (GIS) applications used for land use and demographic studies, as well as social, economic and market research.

The *2023 Census Subdivision Boundary File* is positionally consistent with the *2023 Road Network File*, which provides additional reference for mapping.

Note: It is recommended that the "2021 Census Subdivision Boundary File" and the *2021 Road Network File* be used as a basis for the retrieval of 2021 Census data for user-defined areas. Users can define their custom areas based on the roads in the *2021 Road Network File*. Roads within the *2021 Road Network File* correspond to the 2021 geographic frame and therefore do not require additional boundary reconciliation work, which facilitates the geocoding process. For information on custom area creation and geocoding services, please contact us at 1-800-263-1136 or infostats@statcan.gc.ca.

Definitions and concepts

Geographic terms and concepts are briefly defined in the *Dictionary, Census of Population, 2021*.

Content

The *2023 Census Subdivision Boundary File* contains the UID, name and type of the geographic areas represented, as well as the UIDs, names and types (where applicable) of the following higher geographic levels:

- Provinces and territories (PRs)
- Census divisions (CDs)

General methodology

The National Geographic Database (NGD) is a joint Statistics Canada-Elections Canada initiative to develop and maintain a spatial database that serves the needs of both organizations. The main objective of the NGD is the continual improvement of quality and currency of spatial coverage using updates from provinces, territories and local sources. The source files used for the creation of the boundary file reside on Statistics Canada's Spatial Data Infrastructure (SDI), which was derived directly from data stored in the NGD.

Creation of the *2023 Census Subdivision Boundary File*

The *2023 Census Subdivision Boundary File* was created from the lowest level of geography maintained in the NGD. Primary data manipulation of the product file included preserving the geographic hierarchy of the attributes inherent within a geographic level. A copy of the source CSD boundary file in its original format was created to facilitate geoprocessing (e.g., joins, modifications and verification operations).

The file was verified for spatial and attribute content, translated into French and English, and appropriately named according to the file naming convention. Final data processing consisted of the conversion from the SDE feature dataset feature class format, using FME® (Safe Software), into the following file formats supported by Geographic Information System (GIS) software: Shapefile (.shp), Geography Markup Language (.gml) and File Geodatabase (.gdb).

The Esri® REST service and Web Map Service (WMS) were created and published using ArcGIS® Enterprise.

The Shapefile, Geography Markup Language and File Geodatabase files were compressed into WinZip® files (file extension .zip) and made available for download from the Statistics Canada website.

Limitations

The input data used to create the file was originally obtained from several sources having a wide range of scales. This boundary file will not be precise if plotted at a larger scale than the scale of the source material used in its creation. Maps created from the boundary file should not be used to determine the precise location of boundaries.

The positional accuracy of the file does not support cadastral, legal, surveying, digitizing or engineering applications.

Comparison to other products or versions

Differences between the *2023 Census Subdivision Boundary File* and previous versions of the CSD boundary file include:

- The *2023 Census Subdivision Boundary File* is compatible with the 2023 edition of the *Road Network File* as well as the 2023 edition of the *Interim List of Change to Municipal Boundaries, Status and Names*.
- The *2023 Census Subdivision Boundary File* is similar but not necessarily consistent with the suite of boundary files made available as a part of the 2021 Census geographic product line.

Use with other products

When considering using the *2023 Census Subdivision Boundary File*, users should be aware of the compatibility of this file with those that are available from other sources. They may not be consistent with Statistics Canada files.

Reference date

The geographic reference date is a date determined by Statistics Canada to finalize the geographic framework for which statistical data are collected, tabulated and reported. The geographic reference date for the *2023 Census Subdivision Boundary File* is January 1, 2023.

4. Technical specifications

Record layout and data descriptions

The following table identifies and briefly describes the selected attributes comprising the content of the *2023 Census Subdivision Boundary File*.

Table 4.1
Record layout – 2023 Census Subdivision Boundary File

Attribute name	Data type	Description
PRUID	Character (2)	Uniquely identifies a province or territory.
PRNAME	Character (100)	Province or territory name.
CDUID	Character (4)	Uniquely identifies a census division (composed of the 2-digit province or territory unique identifier followed by the 2-digit census division code).
CDNAME	Character (100)	Census division name.
CDTYPE	Character (3)	Census division type.
CSDUID	Character (7)	Uniquely identifies a census subdivision (composed of the 2-digit province/territory unique identifier followed by the 2-digit census division code and the 3-digit census subdivision code).
CSDNAME	Character (100)	Census subdivision name.
CSDTYPE	Character (3)	Census subdivisions are classified according to designations adopted by provincial/territorial or federal authorities.

Attribute domain values

Province and territory unique identifier (PRUID)

For information on province and territory unique identifiers, refer to the "Provinces and territories (PRUID), 2021 Census" table.

Census subdivision type (CSDTYPE)

Census subdivisions are classified according to designations adopted by provincial, territorial or federal authorities.

For information on census subdivision types, refer to the "Census subdivision type (CSDTYPE), 2021 Census" table.

Census division type (CDTYPE)

For information on census division types, refer to the "Census division type (CDTYPE), 2021 Census" table.

File specifications

Not applicable

Software formats

The *2023 Census Subdivision Boundary File* is available for download from the Statistics Canada website in the following formats:

- Shapefile
  File extension: .shp
- Geography Markup Language (GML) 3.1.1
  File extension: .gml
- File Geodatabase
  File extension: .gdb

The *2023 Census Subdivision Boundary File* is also available as map services from the Statistics Canada website in the following formats:

- Esri® REST service
- Web Map Service (WMS)

This reference guide does not provide details on specific software packages available for use with the *2023 Census Subdivision Boundary File*. Users should contact the appropriate software vendor for such information.

File extension and accented character information

The Shapefile, Geography Markup Language and File Geodatabase files are compressed into WinZip® files (file extension .zip).

The *2023 Census Subdivision Boundary File* contains attributes with accented characters. They were successfully tested in ArcGIS® desktop applications version 10.8.1, ArcGIS® Pro 2.8.2 and FME Data Inspector 2019.1®.

Metadata

The downloadable compressed packages (.zip) include a metadata file (.xml) that describes and validates the structure and content of the *2023 Census Subdivision Boundary File*.

The same metadata are applied to the Esri® REST service and Web Map Service (WMS).

Geographic representation

The *2023 Census Subdivision Boundary File* is available from the Statistics Canada website in the following geographic representation:

- Projection: Lambert conformal conic
- False easting: 6200000.000000
- False northing: 3000000.000000
- Central meridian: -91.866667
- Standard parallel 1: 49.000000
- Standard parallel 2: 77.000000
- Latitude of origin: 63.390675
- Linear unit: metre (1.000000)
- Datum: North American 1983 (NAD83)
- Prime meridian: Greenwich
- Angular unit: degree
- Spheroid: GRS 1980

The North American Datum of 1983 (NAD83) is an adjustment of the 1927 datum (NAD27) that reflects the higher accuracy of geodetic surveying.

Users of the *2023 Census Subdivision Boundary File* can transform the file into the representation that best satisfies their needs, knowing of the effects these representations have on angles, areas, distances and direction. Users have the option to choose the best projection in concert with display objectives.

File naming convention

Spatial product file names follow a file naming convention. The file projection, geographic level, geographic coverage, file type, geographic reference date, file format and language are embedded within the file name. Standardizing file names facilitates storage of compressed files, which will all have the .zip extension.

Each file name has 13 characters. All alphabetic characters are lowercase to maintain consistency.

First character: projection of file

- l – projection in Lambert conformal conic

Next three characters: primary geographic level of file

- csd – census subdivision

Next three numbers: geographic code of coverage

- 000 – Canada

Next character: file type

- a – digital boundary file

Next two numbers: geographic reference date

The geographic reference date is a date determined by Statistics Canada for the purpose of finalizing the geographic framework for which census data will be collected, tabulated and reported. The geographic reference date for the *2023 Census Subdivision Boundary File* is January 1, 2023.

- 23 – geographic reference date is 2023

Next character: file format

- a – Shapefile (.shp)
- f – File Geodatabase (.gdb)
- g – Geography Markup Language (.gml)
- s – Services (Esri® REST and Web Map Service [WMS])

Final two characters: language

- _e – English
- _f – French

5. Data quality

Spatial data quality elements provide information on the fitness for use of a spatial database by describing why, when and how the data are created, and how accurate the data are. The elements include an overview describing the purpose and usage, as well as specific quality elements reporting on lineage, positional accuracy, attribute accuracy, logical consistency and completeness. This information is provided to users for all spatial data products disseminated for the census.

Lineage

Lineage describes the history of the spatial data, including descriptions of the source material from which the data were derived, and the methods of derivation. It also contains the dates of the source material, and all transformations involved in producing the final digital files or map products.

For the *2023 Census Subdivision Boundary File* lineage information, please refer to the General methodology section.

Positional accuracy

Positional accuracy refers to the absolute and relative accuracy of the positions of geographic features. Absolute accuracy is the closeness of the coordinate values in a dataset to true values or values accepted as true. 'Relative accuracy' is the closeness of the relative positions of features to their respective relative positions accepted as or being true. Descriptions of positional accuracy include the quality of the final file or product after all transformations.

The NGD is not fully Global Positioning Systems (GPS)-compliant. However, every possible attempt is made to ensure that the standard geographic area boundaries maintained in the NGD respect the limits of the administrative entities that they represent (e.g., CD and CSD) or on which they are based (e.g., census metropolitan area or census agglomeration). The positional accuracy of these limits is dependent upon source materials used by Statistics Canada to identify the location of limits. In addition, due to the importance placed on relative positional accuracy, the positional accuracy of other geographic data (e.g., road network data and hydrographic data) that are stored within the NGD is considered when positioning the limits of the standard geographic areas.

Attribute accuracy

Attribute accuracy refers to the accuracy of the quantitative and qualitative information attached to each feature (such as population for a population centre, a street name, or a census subdivision name and code).

As noted under the General methodology section, the attributes (names, types and UIDs) for all standard geographic areas are sourced from Statistics Canada's SDI. The names and types of standard geographic areas have been updated using source materials from provincial, territorial and federal authorities.

The attribute data associated with the polygons in the *2023 Census Subdivision Boundary File* were verified against data in the SDI and found to accurately reflect them.

Logical consistency

Logical consistency describes the dependability of relationships encoded in the data structure of the digital spatial data.

The *2023 Census Subdivision Boundary File* was verified against data in the SDI and found to be logically consistent.

Consistency with other products

The position of the boundaries in the *2023 Census Subdivision Boundary File* is not necessarily consistent with previous editions of boundary files or road network files as a result of updates made using provincially, territorially and locally sourced data.

Topology checks were performed with the *2023 Road Network File* and the *2023 Census Subdivision Boundary File* to measure the degree of integration amongst these products. The results indicated that the degree of integration was within the default tolerance parameters, as defined below.

- Tolerance: 0.00001 metres
- Resolution: 0.000005 metres

Completeness

Completeness refers to the degree to which geographic features, their attributes and their relationships are included or omitted in a dataset. It also includes information on selection criteria, definitions used and other relevant mapping rules.

The *2023 Census Subdivision Boundary File* contains the complete set of standard geographic areas for this level of the geographic hierarchy. Users should be aware that individual CSDs may consist of two or more geographic parts.

Information about any census subdivision changes that were effective on or before January 1, 2023 reference date must have been received by Statistics Canada within a reasonable time in order to be integrated into the product.

Appendices

See Figure 1.1, “Hierarchy of standard geographic areas for dissemination, 2021 Census,” from the *Dictionary, Census of Population, 2021*.

See *Interim List of Changes to Municipal Boundaries, Status, and Names, Up to January 1st, 2023*.