Boundary Files, Reference Guide

Census year 2021

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Boundary Files, Reference Guide, Census year 2021

This reference guide is intended for users of the *2021 Census Boundary Files*. This guide provides an overview of the files, the general methodology used to create them, and important technical information.

What's new?

- Each boundary file now includes the Dissemination Geography Unique Identifier (DGUID) for geographic areas.

- Each boundary file contains only the information relative to its specific geographic level. A relationship file that allows linking all geographies to their higher levels is available. Users can download the *2021 Dissemination Geographies Relationship File* here.

- Due to methodology changes in the delineation of the census metropolitan areas and census agglomerations (CMA/CA) geographies, the "CMA/CA Boundary Files" and "Census Tract (CT) Boundary Files" will only be available February 9, 2022.

- As of 2020, all the boundaries maintained by Statistics Canada have been adjusted to the more current, accurate and consistent CanVec hydrographic features (Topographic Data of Canada – Natural Resources Canada), which comply with international geomatics standards seamlessly across Canada. Users can access the latest CanVec data here.

- The *2021 Census Boundary Files* are now available in File Geodatabase (.gdb), Esri® REST and Web Mapping Service (WMS) formats.

- The *2021 Census Boundary Files* are no longer available in MapInfo (.tab) format.

1. About this guide

This reference guide does not provide details on specific software packages that are available for use with the *2021 Census Boundary Files*. 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 and 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 *2021 Census Boundary Files* depict the boundaries of all standard geographic areas established for the purpose of disseminating census data. See "Figure 1.1, Hierarchy of standard geographic areas for dissemination, 2021 Census" from the *Dictionary, Census of Population, 2021*.

They contain information such as unique identifier (UID), name and type where applicable, as well as land area and province or territory unique identifier (PRUID). Each boundary file can be linked to all higher level geographic areas using its DGUID and the new *2021 Dissemination Geographies Relationship File*.

They are available for download or viewing in two types: cartographic and digital. Both cartographic and digital boundary files are portrayed in Lambert conformal conic projection (North American Datum of 1983 [NAD83]).

3. About this product

Purpose of the product

The purpose of the *2021 Census Boundary Files* 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, or social, economic and market research. Geographic unique identifiers permit linkage of statistical data to geographic areas depicted in the boundary files. Boundary files can also be used to create new geographic areas by combining standard geographic areas.

The boundary files are positionally consistent with the *2021 Road Network File*, which provides additional reference for geographic context for mapping applications.

Definitions and concepts

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

Content

Each *2021 Census Boundary File* contains the UID, DGUID, name and type where applicable, and land area of the geographic level the file represents. It also contains the PRUID. A *2021 Census Boundary File* is available for each of the following geographic areas:

- Provinces and territories (PRs)
- Census divisions (CDs)
- Federal electoral districts (2013 Representation Order) (FEDs)
- Census subdivisions (CSDs)
- Designated places (DPLs) (**available February 9, 2022**)
- Economic regions (ERs)
- Census agricultural regions (CARs)
- Census consolidated subdivisions (CCSs)
- Census metropolitan areas and census agglomerations (CMA/CAs) (**available February 9, 2022**)
- Census tracts (CTs) (**available February 9, 2022**)
- Population centres (POPCTRs) (**available February 9, 2022**)
- Dissemination areas (DAs)
- Dissemination blocks (DBs)
- Aggregate dissemination areas (ADAs)

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 focus 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 files resides on Statistics Canada's Spatial Data Infrastructure (SDI), which was derived directly from data stored in the NGD.

Creation of the *2021 Census Boundary Files*

Digital

For the digital boundary file creation, spatial and attribute information were extracted for each level of the geographic hierarchy. Primary data manipulation of the product layers included preserving the geographic hierarchy of the attributes inherent within a geographic level and ensuring spatial alignment between layers. The native files were copied into SDE feature datasets and stored as feature classes to facilitate geo-processing (e.g., projecting, joins, transforming and verification operations).

Cartographic

In contrast to digital boundary file creation, the spatial and attribute information for the cartographic boundary file creation were extracted at the lowest level of geography, the basic block. The spatial and attribute information of the hydrography component were extracted and the basic block and the hydrography spatial components were copied into a SDE feature datasets and stored as feature classes to facilitate geo-processing (e.g., projecting, joins, transforming and verification operations).

To create the cartographic boundary files, a subset of the full hydrography, the coastal layer was created. This subset of coastal hydrographic features was then used to erase the portions of the basic block that are covered by coastal waters.

Post-processing

Both the digital and cartographic files were verified for their 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 Shapefile, Geography Markup Language and File Geodatabase files were compressed into WinZip® files (file extension .zip) and made available for download from the Internet.

Limitations

The input data used to create the files was originally obtained from several sources having a wide range of scales. The *2021 Census Boundary Files* will not be precise if plotted at a larger scale than the scale of the source material used in their creation. Maps created from the boundary files should not be used to determine the precise location of boundaries.

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

Comparison to other products or versions

Each *2021 Census Boundary File* is compatible with other *2021 Census Boundary Files* and the *2021 Road Network File*. Boundary files are derived from the same native sources and the attributes found in each of the boundary files are compatible.

The *2021 Census Boundary Files* are similar but not necessarily consistent with the boundary files released prior to the 2021 Census.

The *2021 Census Boundary Files* can be linked to other 2021 Census data products using the UID and DGUID for each geographic area. The new *2021 Dissemination Geographies Relationship File* also allows the *2021 Census Boundary Files* to be linked to higher geographic levels through their DGUIDs.

Use with other products

When considering using the *2021 Census Boundary Files*, users should be aware of the compatibility of these files 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 census data are collected, tabulated and reported. The reference date for the geographic area boundaries in cartographic and digital boundary files is January 1, 2021.

4. Technical specifications

Record layout and data descriptions

Province and territory

Table 4.1
Record layout - Province and territory boundary files

Attribute name	Data type	Description
PRUID	Character (2)	Uniquely identifies a province or territory.
DGUID	Character (21)	Dissemination Geography Unique Identifier,[1]
PRNAME	Character (100)	Province or territory name.
PRENAME	Character (100)	Province or territory name in English.
PRFNAME	Character (100)	Province or territory name in French.
PREABBR	Character (10)	English abbreviation of the province or territory name.
PRFABBR	Character (10)	French abbreviation of the province or territory name.
LANDAREA	Number (12.4)	Land area of geographic area, in square kilometres (km^2).

1. For further information please refer to the "Dissemination Geography Unique Identifier (DGUID)" definition from the *Dictionary, Census of Population, 2021*.

For more information on provinces or territories, refer to the "Province or territory" definition from the *Dictionary, Census of Population, 2021.*

Census division

Table 4.2
Record layout - Census division boundary files

Attribute name	Data type	Description
CDUID	Character (4)	Uniquely identifies a census division (composed of the 2-digit province/territory unique identifier followed by the 2-digit census division code).
DGUID	Character (21)	Dissemination Geography Unique Identifier.[1]
CDNAME	Character (100)	Census division name.
CDTYPE	Character (3)	Census division type.
LANDAREA	Number (12.4)	Land area of geographic area, in square kilometres (km^2).
PRUID	Character (2)	Uniquely identifies a province or territory.

1. For further information please refer to the "Dissemination Geography Unique Identifier (DGUID)" definition from the *Dictionary, Census of Population, 2021*.

For more information on census divisions, refer to the "Census division (CD)" definition and "Census division types by province and territory, 2021 Census" table from the *Dictionary, Census of Population, 2021.*

Federal electoral district

Table 4.3
Record layout - Federal electoral district boundary files

Attribute name	Data type	Description
FEDUID	Character (5)	Uniquely identifies a federal electoral district (composed of the 2-digit province/territory unique identifier followed by the 3-digit federal electoral district code).
DGUID	Character (21)	Dissemination Geography Unique Identifier.[1]
FEDNAME	Character (200)	Federal electoral district name.
FEDENAME	Character (100)	The federal electoral district name in English.
FEDFNAME	Character (100)	The federal electoral district name in French.
LANDAREA	Number (12.4)	Land area of geographic area, in square kilometres (km^2).
PRUID	Character (2)	Uniquely identifies a province or territory.

1. For further information please refer to the "Dissemination Geography Unique Identifier (DGUID)" definition from the *Dictionary, Census of Population, 2021*.

For more information on federal electoral districts, refer to the "Federal electoral district (FED)" definition from the *Dictionary, Census of Population, 2021*.

Census subdivision

Table 4.4
Record layout - Census subdivision boundary files

Attribute name	Data type	Description
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).
DGUID	Character (21)	Dissemination Geography Unique Identifier.[1]
CSDNAME	Character (100)	Census subdivision name.
CSDTYPE	Character (3)	Census subdivisions are classified according to designations adopted by provincial/territorial or federal authorities.
LANDAREA	Number (12.4)	Land area of geographic area, in square kilometres (km^2).
PRUID	Character (2)	Uniquely identifies a province or territory.

1. For further information please refer to the "Dissemination Geography Unique Identifier (DGUID)" definition from the *Dictionary, Census of Population, 2021*.

For more information on census subdivisions, refer to the "Census subdivision (CSD)" definition and "Census subdivision types by province and territory, 2021 Census" table from the *Dictionary, Census of Population, 2021*.

Designated place (available February 9, 2022)

Table 4.5
Record layout - Designated place boundary files

Attribute name	Data type	Description
DPLUID	Character (6)	Uniquely identifies a designated place (composed of the 2-digit province or territory unique identifier followed by the 4-digit designated place code).
DGUID	Character (21)	Dissemination Geography Unique Identifier.[1]
DPLNAME	Character (100)	Designated place name.
DPLTYPE	Character (3)	Designated place type.
LANDAREA	Number (12.4)	Land area of geographic area, in square kilometres (km^2).
PRUID	Character (2)	Uniquely identifies a province or territory.

1. For further information please refer to the "Dissemination Geography Unique Identifier (DGUID)" definition from the *Dictionary, Census of Population, 2021*.

For more information on designated places, refer to the "Designated place (DPL)" definition and "Designated place types by province and territory, 2021 Census" table from the *Dictionary, Census of Population, 2021*.

Economic region

Table 4.6
Record layout - Designated place boundary files

Attribute name	Data type	Description
ERUID	Character (4)	Uniquely identifies an economic region (composed of the 2-digit province/territory unique identifier followed by the 2-digit economic region code).
DGUID	Character (21)	Dissemination Geography Unique Identifier.[1]
ERNAME	Character (100)	Economic region name.
LANDAREA	Number (12.4)	Land area of geographic area, in square kilometres (km^2).
PRUID	Character (2)	Uniquely identifies a province or territory.

1. For further information please refer to the "Dissemination Geography Unique Identifier (DGUID)" definition from the *Dictionary, Census of Population, 2021*.

Census agricultural region

Table 4.7
Record layout - Census agricultural regions boundary files

Attribute name	Data type	Description
CARUID	Character (4)	Uniquely identifies a designated place (composed of the 2-digit province or territory unique identifier followed by the 4-digit designated place code).
DGUID	Character (21)	Dissemination Geography Unique Identifier.[1]
CARENAME	Character (50)	The official census agricultural region English name.
CARFNAME	Character (50)	The official census agricultural region French name.
LANDAREA	Number (12.4)	Land area of geographic area, in square kilometres (km^2).
PRUID	Character (2)	Uniquely identifies a province or territory.

1. For further information please refer to the "Dissemination Geography Unique Identifier (DGUID)" definition from the *Dictionary, Census of Population, 2021*.

For more information on census agricultural regions, refer to the "Census agricultural region (CAR)" definition from the *Dictionary, Census of Population, 2021*.

Census consolidated subdivision

Table 4.8
Record layout - Census consolidated subdivision boundary files

Attribute name	Data type	Description
CCSUID	Character (7)	Uniquely identifies a census consolidated subdivision (composed of the 2-digit province/territory unique identifier followed by the 2-digit census division code and the 3-digit census consolidated subdivision code).
DGUID	Character (21)	Dissemination Geography Unique Identifier.[1]
CCSNAME	Character (100)	Census consolidated subdivision name.
LANDAREA	Number (12.4)	Land area of geographic area, in square kilometres (km^2).
PRUID	Character (2)	Uniquely identifies a province or territory.

1. For further information please refer to the "Dissemination Geography Unique Identifier (DGUID)" definition from the *Dictionary, Census of Population, 2021*.

For more information on census consolidated subdivisions, refer to the "Census consolidated subdivision (CCS)" definition from the *Dictionary, Census of Population, 2021*.

Census metropolitan area / Census agglomeration (available February 9, 2022)

Table 4.9
Record layout - Census metropolitan area/census agglomeration boundary files

Attribute name	Data type	Description
CMAUID	Character (3)	Uniquely identifies a census metropolitan area/census agglomeration.
CMAPUID	Character (5)	Uniquely identifies the provincial/territorial part of a census metropolitan area/census agglomeration in Canada (composed of the 2-digit province/territory unique identifier followed by the 3-digit census metropolitan area/census agglomeration code).
DGUID	Character (21)	Dissemination Geography Unique Identifier.[1]
CMANAME	Character (100)	Census metropolitan area or census agglomeration name.
CMATYPE	Character (1)	A one character field indicating whether the unit is a census metropolitan area, a tracted census agglomeration or a non-tracted census agglomeration.
LANDAREA	Number (12.4)	Land area of geographic area, in square kilometres (km^2).
PRUID	Character (2)	Uniquely identifies a province or territory.

1. For further information please refer to the "Dissemination Geography Unique Identifier (DGUID)" definition from the *Dictionary, Census of Population, 2021*.

For more information on census metropolitan area and census agglomeration, refer to the "Census metropolitan area (CMA) and census agglomeration (CA)" definition and "Census metropolitan area and census agglomeration types by province and territory, 2021 Census" table from the *Dictionary, Census of Population, 2021*.

Census tract (available February 9, 2022)

Table 4.10
Record layout - Census tract boundary files

Attribute name	Data type	Description
CTUID	Character (10)	Uniquely identifies a census tract within a census metropolitan area/census agglomeration (composed of the 3-digit census metropolitan area/census agglomeration unique identifier followed by the 7.2-character census tract name).
DGUID	Character (21)	Dissemination Geography Unique Identifier.[1]
CTNAME	Character (7)	Every census tract is assigned a 7.2-character numeric 'name' (including leading zeros, a decimal point and trailing zeros).
LANDAREA	Number (12.4)	Land area of geographic area, in square kilometres (km^2).
PRUID	Character (2)	Uniquely identifies a province or territory.

1. For further information please refer to the "Dissemination Geography Unique Identifier (DGUID)" definition from the *Dictionary, Census of Population, 2021*.

For more information on census tracts, refer to the "Census tract (CT)" definition from the Dictionary, Census of Population, 2021.

Population centre (available February 9, 2022)

Table 4.11
Record layout - Population centre boundary files

Attribute name	Data type	Description
PCUID	Character (4)	Uniquely identifies a population centre.
PCPUID	Character (6)	Uniquely identifies the provincial or territorial part of an population centre (composed of the 2-digit province or territory unique identifier followed by the 4-digit population centre unique identifier).
DGUID	Character (21)	Dissemination Geography Unique Identifier.[1]
PCNAME	Character (100)	Population centre name.
PCTYPE	Character (1)	Population centre type.
PCCLASS	Character (1)	Identifies whether a population centre is small, medium or large urban.
LANDAREA	Number (12.4)	Land area of geographic area, in square kilometres (km^2).
PRUID	Character (2)	Uniquely identifies a province or territory.

1. For further information please refer to the "Dissemination Geography Unique Identifier (DGUID)" definition from the *Dictionary, Census of Population, 2021*.
Note: The official abbreviation for Population Centre is POPCTR. However, due to attribute name length limitations for some GIS applications, PC is used to represent Population Centre.

For more information on population centres, refer to the "Population centre (POPCTR)" definition from the *Dictionary, Census of Population, 2021*.

Dissemination area

Table 4.12
Record layout - Census consolidated subdivision boundary files

Attribute name	Data type	Description
DAUID	Character (8)	Uniquely identifies a dissemination area (composed of the 2-digit province/territory unique identifier followed by the 2-digit census division code and the 4-digit dissemination area code).
DGUID	Character (21)	Dissemination Geography Unique Identifier.[1]
LANDAREA	Number (12.4)	Land area of geographic area, in square kilometres (km^2).
PRUID	Character (2)	Uniquely identifies a province or territory.

1. For further information please refer to the "Dissemination Geography Unique Identifier (DGUID)" definition from the *Dictionary, Census of Population, 2021*.

The digital boundary file contains the boundaries of all 57,936 DAs which combined cover all of Canada. The cartographic boundary file contains the boundaries of 57,932 DAs. DA 24690104 in Quebec as well as 35010386, 35010377 and 35010392 in Ontario fall completely in coastal water and are not included in the cartographic boundary file.

For more information on dissemination areas, refer to the "Dissemination area (DA)" definition from the *Dictionary, Census of Population, 2021*.

Dissemination block

Table 4.13
Record layout - Census agricultural regions boundary files

Attribute name	Data type	Description
DBUID	Character (11)	Uniquely identifies a dissemination block (composed of the 2-digit province/territory unique identifier followed by the 2-digit census division code, the 4-digit dissemination area code and the 3-digit dissemination block code).
DGUID	Character (21)	Dissemination Geography Unique Identifier.[1]
DBRPLAMX	Number (17.8)	Dissemination block representative point lambert X coordinate, in metres.
DBRPLAMY	Number (17.8)	Dissemination block representative point lambert Y coordinate, in metres.
LANDAREA	Number (12.4)	Land area of geographic area, in square kilometres (km^2).
PRUID	Character (2)	Uniquely identifies a province or territory.

1. For further information please refer to the "Dissemination Geography Unique Identifier (DGUID)" definition from the *Dictionary, Census of Population, 2021*.

For more information on dissemination blocks, refer to the "Dissemination block (DB)" definition from the *Dictionary, Census of Population, 2021*.

Below is a list of the 239 DBs which are not included within the cartographic boundary file. These DBs are located entirely within coastal waters and were therefore removed during the production of the cartographic boundary file.

Table 4.14
Dissemination blocks not included within the 2021 Census Dissemination Block Cartographic Boundary File - DBUID

Newfoundland and Labrador
10010503031
10010504001
10010520001
10010535028
10010556009
10010682008
10010714024
10010719015
10010750032
10020079021
10020079053
10020117005
10040108013
10040109013
10070483004
10070487003
10070519018
10070519027
10070549011
10070550003
10070550004
10080221016
Prince Edward Island
11020480009
11030303007
11030327016
11030327027
Nova Scotia
12010049007
12010049008
12010049009
12090838005
12090846021
12090846022

Table 4.14
Dissemination blocks not included within the 2021 Census Dissemination Block Cartographic Boundary File - DBUID

12090846023
12090846024
12090846025
12090846026
12090846027
12090846028
12090902005
12090980004
12090981004
12091023001
12120110001
12120122009
12170352018
12170352019
12170353005
12170355009
12170357004
12170358009
12170362009
12170374015
12170378014
12170389013
12170393016
12170395006
12170396012
12170397005
12170398001
12170399002
12170400004
12170403016
12170404019
12170405014
12170406019
12170415010
12170417023
12170420005
12170425009
12170426003
12170429029

Table 4.14
Dissemination blocks not included within the 2021 Census Dissemination Block Cartographic Boundary File - DBUID

12170432005
12170440003
12170443008
12170446005
12170449013
12170450010
12170451012
12170454020
12170458014
12170460022
12170461013
12170466012
12170469011
12170477013
12170480001
12170482007
12170485014
12170486003
12170491007
12170495007
12170495009
12170497009
12170517013
12170522009
12170528012
12170531004
New Brunswick
13010103018
13020056012
13020063004
13020072020
13020072021
13020072022
13080068033
13080139005
13140093012
13140162001
13140162003
13140181006
13150159001

Table 4.14
Dissemination blocks not included within the 2021 Census Dissemination Block Cartographic Boundary File - DBUID

13150166001
13150166005
13150170003
13150322021
13150326011
13150343013
13150347008
Quebec
24020064006
24020064012
24180040016
24180046016
24180055028
24180055030
24180063014
24180072018
24230066001
24230066014
24250187026
24250296011
24250300015
24250300017
24250300018
24250300019
24250300021
24340089017
24340089019
24340089021
24340089023
24370299011
24370308017
24380045028
24520099015
24520100018
24530073008
24530108023
24530124037
24530126014
24530126016
24530126018

Table 4.14
Dissemination blocks not included within the 2021 Census Dissemination Block Cartographic Boundary File - DBUID

24530126020
24590012045
24590012047
24590012049
24590012051
24590012053
24590012056
24590012057
24640228010
24650667005
24661242015
24663335023
24670307016
24690104001
24700067028
24700088041
24700151018
24710146015
24710189012
24710191014
24710191015
24710191017
24710191019
24710191021
24710194018
24710242019
24710244022
24970125025
Ontario
35010377001
35010386001
35010392001
35120346018
35120346019
35120371016
35120371019
35120392023
35204675005
35370813015
35380295018

Table 4.14
Dissemination blocks not included within the 2021 Census Dissemination Block Cartographic Boundary File - DBUID

35410146019
35420230022
35420255011
35430603026
35430612021
35430869046
35490201021
35510090001
35570420035
35580482046
35580482073
35580485003
35600296010
Manitoba
46230071033
British Columbia
59150871005
59153241016
59153569008
59153569009
59153576012
59153602005
59153663024
59153663026
59153663029
59153663032
59170331005
59170634010
59170648027
59170648032
59170654007
59170654009
59170654011
59170688001
59190305008
59190316002
59210260004
59210274010
59210274012
59230154032

Table 4.14
Dissemination blocks not included within the 2021 Census Dissemination Block Cartographic Boundary File - DBUID

59240212006
59240215009
59240260006
59240260010
59240264015
59260295042
59260424007
59260432012
59290165002
59290180014
59290199017
59430125042
Nunavut
62040062039

Aggregate dissemination area

Table 4.15
Record layout - Census consolidated subdivision boundary files

Attribute name	Data type	Description
ADAUID	Character (8)	Uniquely identifies an aggregate dissemination area (composed of the 2-digit province/territory unique identifier followed by the 2-digit census division code and the 4-digit aggregate dissemination area code).
DGUID	Character (21)	Dissemination Geography Unique Identifier.[1]
LANDAREA	Number (12.4)	Land area of geographic area, in square kilometres (km^2).
PRUID	Character (2)	Uniquely identifies a province or territory.

1. For further information please refer to the "Dissemination Geography Unique Identifier (DGUID)" definition from the *Dictionary, Census of Population, 2021*.

For more information on aggregate dissemination areas, refer to the "Aggregate dissemination area (ADA)" definition from the *Dictionary, Census of Population, 2021*.

Attribute domain values

Census division type (CDTYPE)

For information on census division types, refer to the "Census division type (CDTYPE), 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 metropolitan area and census agglomeration type (CMATYPE) (available February 9, 2022)

For information on census metropolitan area and census agglomeration types, refer to the "Census metropolitan area and census agglomeration type (CMATYPE), 2021 Census" table.

File specifications

Not applicable

Software formats

Boundary files for the 2021 Census are 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 *2021 Road Network 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 *2021 Road Network 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 *2021 Road Network File* contains attributes with accented characters. They were successfully tested on the desktop versions of ArcGIS® 10.5.1 and FME Data Inspector 2015.1.

Metadata

The downloadable compressed packages (.zip) include a metadata file (.xml) that describes and validates the structure and content of the *2021 Road Network File*.

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

Geographic representation

The *2021 Road Network File* is available on 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 that reflects the higher accuracy of geodetic surveying.

Users of the *2021 Road Network File* can transform the file into the representation that best satisfies their needs, knowing the effects of these representations on angles, areas, distances and direction. Users have the option to choose the best projection in concert with the map's objectives.

File naming convention

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

Each file name is 13 characters in length. All alphabetic characters are in lower case to maintain consistency.

First character: projection of file

- l - projection in Lambert conformal conic

Next three characters: primary geographic level of file

- pr_ - province/territory
- cd_ - census division
- fed - federal electoral district
- csd - census subdivision
- dpl - designated place
- er_ - economic region
- car - census agricultural region
- ccs - census consolidated subdivision
- cma - census metropolitan area/census agglomeration
- ct_ - census tract
- pc_ - population centre
- da_ - dissemination area
- db_ - dissemination block
- ada - aggregate dissemination area

Next three numbers: geographic code of coverage

- 000 - Canada

Next character: file type

- a - digital boundary file
- b - cartographic 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 are collected, tabulated and reported. For 2021 Census products, the geographic reference date is January 1, 2021.

- 21 - geographic reference date is 2021

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 quality elements include an overview of 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.

All data in the *2021 Census Boundary Files* were originally extracted from Statistics Canada's SDI.

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 values accepted as or being 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., CMA/CA). 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) that are stored within the NGD is considered when positioning the limits of the standard geographic areas.

Within the NGD, DB representative points were generated using ArcGIS® software in conjunction with their respective cartographic boundaries. The most detailed hydrography available was used in identifying cartographic boundaries and calculating representative points in Statistics Canada native format. Efforts were made to ensure that representative points do not fall in water, where possible. After geo-processing (e.g., projecting, appending, transforming and verification operations), the "2021 Dissemination Block Cartographic Boundary File" is converted into Shapefile (.shp), Geography Markup Language (.gml) or File Geodatabase (.gdb) files. These manipulations may have caused slight shifting of some of the underlying land features resulting in representative points falling in water.

Attribute accuracy

Attribute accuracy refers to the accuracy of the quantitative and qualitative attribute information attached to each feature (e.g., CSD name, UID).

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 *2021 Census Boundary Files* were verified against the data in the SDI and found to accurately reflect them.

Logical consistency

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

The *2021 Census Boundary Files* were verified against data in the NGD and found to be logically consistent.

In each boundary file, all geographic areas have been verified to have a UID and DGUID that is valid for the 2021 Census.

Consistency with other products

The position of the boundaries in the *2021 Census Boundary Files* is not necessarily consistent with previous editions of boundary files or road network files as a result of updates made using provincially and territorially sourced data.

Topology checks were performed with the *2021 Road Network File* and the *2021 Census Boundary Files* to measure the degree of integration amongst these products. The results indicated 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.

In both digital boundary files and cartographic boundary files, a geographic area may be depicted by more than one polygon. In the digital boundary files there are some geographic areas that have two or more parts. This is particularly the case for some CSDs. In cartographic boundary files, this is also due to having removed the coastal water area from the digital boundary files, thus creating several polygons for one geographic area. In the cartographic boundary files, this impacts only geographic areas that are situated in coastal areas.

Appendix

See Table 1.1, "Geographic areas by province and territory, 2021 Census," from the *Dictionary, Census of Population, 2021*.