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Road Network File, Reference Guide

Census year 2011



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Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

What's new?

- The 2011 Census Road Network File includes updates that were made using the following provincially-sourced data: Digital Road Atlas (DRA) in British Columbia, Ontario Road Network (ORN) in six census divisions in Ontario (Halton, Hamilton, Ottawa, Peel, Toronto and Waterloo). Yukon, Northwest Territories and Nunavut now contain information that was updated using territory-sourced data. The result of this effort is improvement in the positional accuracy of the road network.
- The 2011 Census Road Network File contains information such as street arc unique identifier, street name, type, direction, address range, rank and class. As well, the unique identifier, name and type for each side of a street arc (where applicable) are included for the following geographic levels:
 - province/territory
 - census subdivision
 - census metropolitan area/census agglomeration
- The road network file is available as a national file.

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1. About this guide

This reference guide is intended for users of the 2011 Census Road Network File. The guide provides an overview of the file, the general methodology used to create it, and important technical information for users.

This reference guide does not provide details on specific software packages that are available for use with the 2011 Census Road Network File. Users are advised to contact the appropriate software vendor for information.

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2. Overview

The 2011 Census Road Network File depicts the digital road line coverage for Canada and contains information such as street arc unique identifier, street name, type, direction, address range, rank and class. As well, the unique identifier, name and type for each side of a street arc (where applicable) are included for the following geographic levels:

- province/territory
- census subdivision
- census metropolitan area/census agglomeration

The road network file is available as a national file.

How to cite this guide

Road Network File, Reference Guide, 2011 Census. Statistics Canada Catalogue no. 92-500-G.

How to cite this product

Road Network File, 2011 Census. Statistics Canada Catalogue no. 92-500-X.

3. About this product

Purpose of the product

The Road Network File can be used with Geographic Information System (GIS) applications to display road network, address ranges and geographic area correspondence. Geographic area identifiers permit linkage of statistical data to the geographic areas identified in the road network file.

The Road Network File can also be used to create custom geographic areas by providing reference for delineating areas specific to users' interest. The 2011 Census Road Network File is positionally consistent with the suite of 2011 Census geography boundary files, which provide additional geographic context.

The 2011 Census Road Network File should be used in conjunction with the 2011 suite of geography products.

Definitions and concepts

Geographic terms and concepts are briefly defined in the glossary (Appendix A). More details can be found in the *2011 Census Dictionary*, to be released February 8, 2012. Supplementary information is provided in the appendices.

Content

The Road Network File is comprised of street arcs depicting the national road network and includes attribute information such as street arc unique identifier, name, type, direction, address range, rank and class (where available). As well, the unique identifier, name and type for each side of a street arc are included for the following geographic levels:

- province/territory
- census subdivision
- census metropolitan area/census agglomeration

General methodology

The National Geographic Database (NGD) is a joint Statistics Canada-Elections Canada initiative to develop and maintain a national road network database which serves the needs of both organizations. The focus of the NGD is the continual improvement of quality and currency of road network coverage using updates from provinces, territories and local sources. The native file used for the creation of the road network file resides on Statistics Canada's Spatial Data Infrastructure and was derived directly from data stored in the NGD environment.

Creation of the 2011 Census Road Network File

The Road Network File was created from a source file consisting of all streets, highways and other road segments maintained on Statistics Canada's Spatial Data Infrastructure (SDI). The native file was copied into a File Geo Database to facilitate geo-processing (e.g., projecting, joins, transforming and verification operations). The spatial component of the file was reprojected from Lambert Conformal Conic into latitude and longitude coordinates, North American Datum of 1983 (NAD83) using the ArcGIS® ArcCatalog (Feature-Project) tool. Additional attribute information (i.e., province/territory, census subdivision and census metropolitan area/census agglomeration attributes) were then joined to the spatial component at the road segment level (see Table 4.1). The resulting File Geo Database, containing both the spatial and attribute content, was verified against the source files maintained on the Spatial Data Infrastructure.

The file was verified for spatial and attribute content, translated into French and English versions, and appropriately named according to the file naming convention (see section 4). Final data processing consisted of the conversion from the File Geo Database format, using FME[®] (Safe Software), into the following file formats supported by Geographic Information System (GIS) software: ArcInfo[®] (.shp), Geography Markup Language (.gml), and MapInfo[®] (.tab) file formats.

The ArcInfo[®], Geography Markup Language and MapInfo[®] files were compressed into WinZip[®] files (file extension .zip) and made available for download from the Internet.

Limitations

Statistics Canada maintains road network file information to support the census and other Statistics Canada activities. The relative position of road network features is important in maps created for reference purposes; therefore, relative positional accuracy takes precedence over absolute positional accuracy. The Road Network File does not contain street information required for route optimization. For example, data on one-way streets, dead-ends and other street obstacles are not included in the Road Network File. Consequently, this file is not recommended for engineering applications, emergency dispatching services, surveying or legal applications.

The Road Network File contains road arcs with either address ranges sourced from field observation, administrative data source, imputed address ranges, or no address ranges.

The limitations of the Road Network File should be recognized for uses other than the mapping, analysis and retrieval of census data.

Comparisons to other products/versions

Differences between the 2011 Census Road Network File and previous versions of the Road Network File are:

- The 2011 Census Road Network File contains additional roads, street names, address ranges and road class
- The 2011 Census Road Network File is compatible with the suite of 2011 Census Geography products
- The 2011 Census Road Network File does not necessarily follow 2006 Census boundaries.

The 2011 Census Road Network File includes updates that were made from the following provincially-sourced data: Digital Road Atlas (DRA) in British Columbia, Ontario Road Network (ORN) in six census divisions in Ontario (Halton, Hamilton, Ottawa, Peel, Toronto and Waterloo). Yukon, Northwest Territories and Nunavut now contain updated territory-sourced data. The result of this effort is improved positional accuracy.

Using with other products

When considering using the 2011 Census Road Network File, users should be aware of the compatibility of this file with other similar files. While road network files are available for download on the Internet from other websites, they may not be consistent with Statistics Canada files.

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 the 2011 Census, the geographic reference date is January 1, 2011.

4. Technical specifications

Record layouts and data descriptions

The following table identifies and briefly describes the selected attributes comprising the content of the 2011 Census Road Network File.

Table 4.1 2011 Census Road Network File record layout

Attribute name	Data type	Description
NGD_UID	Integer (10)	Unique identifier of the arc
NAME	Character (50)	Street name associated with the arc
TYPE	Character (6)	Street type associated with the arc
DIR	Character (2)	Street direction associated with the arc
AFL_VAL	Character (9)	Civic address found on the left-hand side of the arc at the FROM node
ATL_VAL	Character (9)	Civic address found on the left-hand side of the arc at the TO node
AFR_VAL	Character (9)	Civic address found on the right-hand side of the arc at the FROM node
ATR_VAL	Character (9)	Civic address found on the right-hand side of the arc at the TO node
CSDUID_L	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), left-hand side of arc
CSDNAME_L	Character (55)	Census subdivision name, left-hand side of arc
CSDTYPE_L	Character (3)	Census subdivisions are classified according to designations adopted by provincial/territorial or federal authorities, left-hand side of arc
CSDUID_R	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), right-hand side of arc
CSDNAME_R	Character (55)	Census subdivision name, right-hand side of arc
CSDTYPE_R	Character (3)	Census subdivisions are classified according to designations adopted by provincial/territorial or federal authorities, right-hand side of arc
CMAUID_L	Character (3)	Uniquely identifies a census metropolitan area/census agglomeration, left-hand side of arc
CMANAME_L	Character (100)	Census metropolitan area or census agglomeration name, left-hand side of arc
CMATYPE_L	Character (1)	Census metropolitan area or census agglomeration type, left-hand side of arc
CMAUID_R	Character (3)	Uniquely identifies a census metropolitan area/census agglomeration, right-hand side of arc
CMANAME_R	Character (100)	Census metropolitan area or census agglomeration name, right-hand side of arc
CMATYPE_R	Character (1)	Census metropolitan area or census agglomeration type, right-hand side of arc
PRUID_L	Character (2)	Uniquely identifies a province or territory, left-hand side of arc
PRNAME_L	Character (55)	Province or territory name, left-hand side of arc
PRUID_R	Character (2)	Uniquely identifies a province or territory, right-hand side of arc
PRNAME_R	Character (55)	Province or territory name, right-hand side of arc
RANK	Character (1)	Street rank
CLASS	Character (2)	Identifies the different types of street features.

Attribute domain values

Representation of unknown or no value

The null value is used to represent values of the street's name, type, direction and address range that are either missing or non-existent.

The null value is also used for geographic unique identifier, name and type to indicate that it is outside of Canada, or inside Canada but not applicable.

Street type

This indicates the street type associated with the arc.

Table 4.2 Street type

Type	Description	Type	Description	Type	Description
N/A	not applicable	CERCLE	Cercle (F)	END	End (E)
< Null >	no type	CH	Chemin (F)	ESPL	Esplanade (E)
ABBEY	Abbey (E)	CHASE	Chase (E)	ESTATE	Estates (E)
ACCESS	Access (E)	CIR	Circle (E)	EXPY	Expressway (E)
ACRES	Acres (E)	CIRCT	Circuit (F)	EXTEN	Extension (E)
AIRE	Aire (E)	CLOSE	Close (E)	FARM	Farm (E)
ALLEY	Alley (E)	COMMON	Common (E)	FIELD	Field (E)
ALLÉE	Allée (F)	CONC	Concession (E)	FOREST	Forest (E)
AUT	Autoroute (F)	CÔTE	Côte (F)	FRONT	Front (E)
AV	Avenue (F)	COUR	Cour (F)	FSR	Forest service road (E)
AVE	Avenue (E)	COURS	Cours (F)	FWY	Freeway (E)
BAY	Bay (E)	COVE	Cove (E)	GATE	Gate (E)
BEACH	Beach (E)	CRES	Crescent (E)	GDNS	Gardens (E)
BEND	Bend (E)	CREST	Crest (E)	GLADE	Glade (E)
BLOC	Bloc (F)	CRNRS	Corners (E)	GLEN	Glen (E)
BLOCK	Block (E)	CROFT	Croft (E)	GREEN	Green (E)
BLVD	Boulevard (E)	CROIS	Croissant (F)	GRNDS	Grounds (E)
BOUL	Boulevard (F)	CROSS	Crossing (E)	GROVE	Grove (E)
BOURG	Bourg (F)	CRSSRD	Crossroads (E)	HARBR	Harbour (E)
BRGE	Barrage (F)	CRT	Court (E)	HAVEN	Haven (E)
BROOK	Brook (E)	CTR	Centre (E)	HEATH	Heath (E)
BYPASS	By-pass (E)	DALE	Dale (E)	HGHLDS	Highlands (E)
BYWAY	Byway (E)	DELL	Dell (E)	HILL	Hill (E)
C	Centre (F)	DESSTE	Desserte (F)	HOLLOW	Hollow (E)
CAMPUS	Campus (E)	DIVERS	Diversion (E)	HTS	Heights (E)
CAPE	Cape (E)	DOWNS	Downs (E)	HWY	Highway (E)
CAR	Carré (F)	DR	Drive (E)	ÎLE	île (F)
CARREF	Carrefour (F)	DRPASS	Droit de passage (F)	IMP	Impasse (F)
CDS	Cul-de-sac (E)	ÉCH	Échangeur (F)	INLET	Inlet (E)

Table 4.2 Street type (continued)

Type	Description	Type	Description	Type	Description
ISLAND	Island (E)	PL	Place (E)	SENT	Sentier (F)
KEY	Key (E)	PLACE	Place (F)	SIDERD	Sideroad (E)
KNOLL	Knoll (E)	PLAT	Plateau (E)	SQ	Square (E)
LANDNG	Landing (E)	PLAZA	Plaza (E)	ST	Street (E)
LANE	Lane (E)	POINTE	Pointe (E)	STROLL	Stroll (E)
LANEWY	Laneway (E)	PORT	Port (E)	SUBDIV	Subdivision (E)
LINE	Line (E)	PROM	Promenade (F)	TERR	Terrace (E)
LINK	Link (E)	PT	Point (E)	THICK	Thicket (E)
LKOUT	Lookout (E)	PTWAY	Pathway (E)	TLINE	Townline (E)
LMTS	Limits (E)	PVT	Private (E)	TOWERS	Towers (E)
LOOP	Loop (E)	QUAI	Quai (F)	TRACE	Trace (E)
MALL	Mall (E)	QUAY	Quay (E)	TRAIL	Trail (E)
MANOR	Manor (E)	RAMP	Ramp (E)	TRNABT	Turnabout (E)
MAZE	Maze (E)	RANG	Rang (F)	TRUNK	Trunk (E)
MEADOW	Meadow (E)	RD	Road (E)	TSSE	Terrasse (F)
MEWS	Mews (E)	RDPT	Rond point (F)	VALE	Vale (E)
MONTÉE	Montée (F)	REACH	Reach (E)	VIA	Via (E)
MOOR	Moor (E)	RG	Range (E)	VIEW	View (E)
MOUNT	Mount (E)	RIDGE	Ridge (E)	VILLAS	Villas (E)
MTN	Mountain (E)	RISE	Rise (E)	VILLGE	Village (E)
ORCH	Orchard (E)	RLE	Ruelle (F)	VISTA	Vista (E)
PARADE	Parade (E)	ROUTE	Route (F)	VOIE	Voie (F)
PARC	Parc (F)	ROW	Row (E)	WALK	Walk (E)
PASS	Passage (E)	RTE	Route (E)	WAY	Way (E)
PATH	Path (E)	RTOFWY	Right of way (E)	WHARF	Wharf (E)
PEAK	Peak (E)	RUE	Rue (F)	WOOD	Wood (E)
PINES	Pines (E)	RUIS	Ruisseau (F)	WYND	Wynd (E)
PK	Park (E)	RUN	Run (E)		
PKY	Parkway (E)	SECTN	Section (E)		

Street direction

Street direction can be used in conjunction with street name and type to identify common street elements (e.g., Elm ST S versus Elm ST W or Elm ST). Street direction has no relation to the direction the street arc was digitized.

Table 4.3 Street direction

Street direction	Street description	Street direction	Street description
< Null >	no type	O	Ouest
E	East / Est	S	South / Sud
N	North / Nord	SE	South East / Sud-est
NE	North East / Nord-est	SO	Sud-ouest
NO	Nord-ouest	SW	South West
NW	North West	W	West

CSDTYPE_L and CSDTYPE_R

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

CSDTYPE	CSD description	CSDTYPE	CSD description
< Null >	not applicable	RCR	Rural community / Communauté rurale
C	City / Cité	RDA	Regional district electoral area
CC	Chartered community	RG	Region
CG	Community government	RGM	Regional municipality
CN	Crown colony / Colonie de la couronne	RM	Rural municipality
COM	Community	RV	Resort village
CT	Canton (municipalité de)	S-É	Indian settlement / Établissement indien
CU	Canton unis (municipalité de)	SA	Special area
CV	City / Ville	SC	Subdivision of county municipality / Subdivision municipalité de comté
CY	City	SÉ	Settlement / Établissement
DM	District municipality	SET	Settlement
HAM	Hamlet	SG	Self-government / Autonomie gouvernementale
ID	Improvement district	SM	Specialized municipality
IGD	Indian government district	SNO	Subdivision of unorganized / Subdivision non organisée
IM	Island municipality	SV	Summer village
IRI	Indian reserve / Réserve indienne	T	Town
LGD	Local government district	TC	Terres réservées aux Cris
LOT	Township and royalty	TI	Terre inuite
M	Municipality / Municipalité	TK	Terres réservées aux Naskapis
MD	Municipal district	TL	Teslin land
MÉ	Municipalité	TP	Township
MU	Municipality	TV	Town / Ville
NH	Northern hamlet	V	Ville
NL	Nisga'a land	VC	Village cri
NO	Unorganized / Non organisé	VK	Village naskapi
NV	Northern village	VL	Village
P	Parish / Paroisse (municipalité de)	VN	Village nordique
PE	Paroisse (municipalité de)		

CMATYPE_L and CMATYPE_R

Census metropolitan area or census agglomeration type.

CMATYPE	CMA description
B	Census metropolitan area (CMA)
D	Census agglomeration (CA) that is not tracted
K	Census agglomeration (CA) that is tracted
< Null >	not applicable (outside of CMA or CA)

PRUID_L and PRUID_R

Uniquely identifies a province or territory.

PRUID	Province or territory name
10	Newfoundland and Labrador/Terre-Neuve-et-Labrador
11	Prince Edward Island/Île-du-Prince-Édouard
12	Nova Scotia/Nouvelle-Écosse
13	New Brunswick/Nouveau-Brunswick
24	Quebec/Québec
35	Ontario
46	Manitoba
47	Saskatchewan
48	Alberta
59	British Columbia/Colombie-Britannique
60	Yukon
61	Northwest Territories/Territoires du Nord-Ouest
62	Nunavut
< Null >	not applicable (outside of Canada)

RANK

Rank is a value assigned to a street arc to facilitate the selection of streets.

Street rank code	Street rank description
1	Trans-Canada Highway (Transport Canada)
2	National Highway System (Transport Canada) (not rank 1)
3	Major Highway (not rank 1 or 2)
4	Secondary Highway, Major Street (not rank 1, 2, or 3)
5	All other streets (not rank 1, 2, 3 or 4)

CLASS

A code that identifies the different types of street features.

Street class code	Street class description
10	Highway
11	Expressway
12	Primary highway
13	Secondary highway
20	Road
21	Arterial
22	Collector
23	Local
24	Alley/Lane/Utility
25	Connector/Ramp
26	Reserve/Trail
27	Rapid transit
28	Planned
29	Strata
80	Bridge/Tunnel

Software formats

The Road Network File is available for download from the Statistics Canada website in the following formats:

- ArcInfo®
File extension: .shp
- Geography Markup Language (GML) 3.1.1
File extension: .gml
- MapInfo®
File extension: .tab

System requirements

Not applicable

File extension and accented character information

The ArcInfo®, Geography Markup Language and MapInfo® files are compressed into WinZip® files (file extension .zip).

A XML schema file (.xsd) is included to describe and validate the structure and content of the .gml files.

The street names in the Road Network File contain accented characters. They were successfully tested on desktop versions of ArcGIS 9.3.1 and MapInfo® 11.0.1.

Geographic representation

The Road Network File is available on the Statistics Canada website in the following geographic representation:

Datum:	NAD83
Coordinates:	Longitude/Latitude

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

The geographical coordinate system is the primary locational reference system for the earth. This system provides for the unique statement of location for features such as points, lines and polygons.

Users of the Census Road Network Files can transform the files into the representation that best satisfies their needs knowing the effects these representations have on angles, areas, distances and direction. Users have the option to choose the best projection in concert with the maps 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 having 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

g projection of file is Geographic (latitude/longitude)

Next three characters: primary geographic level of file/type of file

rnf road network file

Next three numbers: geographic code of coverage

000 Canada

Next character: file type

r road network 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 the 2011 Census, the geographic reference date is January 1, 2011.

11 geographic reference date is 2011

Next character: file format

a ArcInfo® (.shp)
g Geography Markup Language (.gml)
m MapInfo® (.tab)

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.

Road layer

The data in the road layer were derived from Statistics Canada's Spatial Data Infrastructure environment based on a copy of the National Geographic Database. The National Geographic Database is a spatial database that contains the road network in Canada, as well as street attributes (name, type, direction, address ranges and class).

Road information was incorporated from a variety of sources, including provincial datasets, municipal maps and field observation. The timeliness of the National Geographic Database varies from region to region depending on the source data.

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.

Absolute positional accuracy

Absolute positional accuracy describes the degree to which the position of features in a geographic database reflects their true position on the ground (i.e., the closeness of reported coordinate values to values accepted as true).

The 2011 Census Road Network File includes updates that were made using the following provincially-sourced data: Digital Road Atlas (DRA) in British Columbia, Ontario Road Network (ORN) in six census divisions in Ontario (Halton, Hamilton, Ottawa, Peel, Toronto and Waterloo). Yukon, Northwest Territories and Nunavut now contain updated territory-sourced data. The result of this effort is the improvement of positional accuracy.

The information present in the Spatial Data Infrastructure road layer was developed for the purposes of statistical analysis and census operations. The absolute position of roads on the Spatial Data Infrastructure varies with the source files and documents used to build and maintain the database. Therefore, the road layer is not suitable for high precision measurement applications such as engineering, property transfers, or other uses that might require highly accurate measurements of the earth's surface.

Absolute positional accuracy is not a requirement for census processes.

Relative positional accuracy

Relative positional accuracy describes the degree to which the position of features in a geographic database reflects their true ground relationships.

For the National Geographic Database, relative positional accuracy is important. A road must appear in the proper position relative to other roads and physical features; however, no formal assessment of relative positional accuracy has been undertaken.

Attribute accuracy

Attribute accuracy refers to the accuracy of quantitative attributes and the correctness of non-quantitative attributes. No explicit testing for attribute accuracy is done; however, results from internal operations suggest a high degree of accuracy.

During maintenance operations data entry goes through a data control to ensure proper association of a specific attribute to a specific geometric feature. This includes the association as well as its accuracy.

The class attribute is not updated on a regular basis, as such quality checks are not performed to verify its accuracy.

Logical consistency

Logical consistency refers to the fidelity of relationships among all variables in a dataset. For example, a street arc that does not have a street name should not have a street type.

Consistency with other products

The position of the arcs in the 2011 Census Road Network File is not necessarily consistent with previous versions of boundary and road network files as a result of updates made using provincially and territorially sourced data.

Topology checks were performed with the road network file and 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.

XY Resolution: 0.000000001 degrees
XY Tolerance: 0.000000008983153 degrees

Completeness

Completeness refers to the presence or absence of features, their attributes and relationships. Many new road features that were not previously found on Statistics Canada road network files have been added to the National Geographic Database in order to create a more complete road layer and are present on this version of the road network file. Increased geocoding rates indicate an improvement to the completeness of the road network file.

Table 5.1 Number of road features in the 2011 Census Road Network File

National level	Number of arcs	Arc length (kilometres)	Number of arcs with full address range on at least one side
With street name	1,581,337	712,631	1,136,937
Without street name	392,595	614,031	0
Canada	1,973,932	1,326,662	1,136,937

Note: arc length was calculated in Lambert Conformal Conic Projection.

Appendix A Glossary

Adjusted counts

'Adjusted counts' refer to previous census population and dwelling counts that were adjusted (i.e., recomputed) to reflect current census boundaries, when a boundary change occurs between the two censuses.

Block-face

A block-face is one side of a street between two consecutive features intersecting that street. The features can be other streets or boundaries of standard geographic areas.

Block-faces are used for generating block-face representative points, which in turn are used for geocoding and census data extraction when the street and address information are available.

Cartographic boundary files

Cartographic boundary files (CBFs) contain the boundaries of standard geographic areas together with the shoreline around Canada. Selected inland lakes and rivers are available as a supplementary layer.

Census agricultural region

Census agricultural regions (CARs) are composed of groups of adjacent census divisions. In Saskatchewan, census agricultural regions are made up of groups of adjacent census consolidated subdivisions, but these groups do not necessarily respect census division boundaries.

Census consolidated subdivision

A census consolidated subdivision (CCS) is a group of adjacent census subdivisions. Generally, the smaller, more densely-populated census subdivisions (towns, villages, etc.) are combined with the surrounding, larger, more rural census subdivision, in order to create a geographic level between the census subdivision and the census division.

Census division

Census division (CD) is the general term for provincially legislated areas (such as county, *municipalité régionale de comté* and regional district) or their equivalents. Census divisions are intermediate geographic areas between the province/territory level and the municipality (census subdivision).

Census metropolitan area and census agglomeration

A census metropolitan area (CMA) or a census agglomeration (CA) is formed by one or more adjacent municipalities centred on a population centre (known as the core). A CMA must have a total population of at least 100,000 of which 50,000 or more must live in the core.

A CA must have a core population of at least 10,000. To be included in the CMA or CA, other adjacent municipalities must have a high degree of integration with the core, as measured by commuting flows derived from previous census place of work data.

If the population of the core of a CA declines below 10,000, the CA is retired. However, once an area becomes a CMA, it is retained as a CMA even if its total population declines below 100,000 or the population of its core falls below 50,000. Small population centres with a population count of less than 10,000 are called fringe. All areas inside the CMA or CA that are not population centres are rural areas.

When a CA has a core of at least 50,000, it is subdivided into census tracts. Census tracts are maintained for the CA even if the population of the core subsequently falls below 50,000. All CMAs are subdivided into census tracts.

Census metropolitan influenced zone

The census **metropolitan influenced zone** (MIZ) is a concept that geographically differentiates the area of Canada outside census metropolitan areas (CMAs) and census agglomerations (CAs). Census subdivisions that are outside CMAs and CAs within provinces are assigned to one of four categories according to the degree of influence (strong, moderate, weak or no influence) that the CMAs or CAs have on them. The CSDs in the territories but outside CAs are assigned a separate category.

Census subdivisions (CSDs) within provinces are assigned to a MIZ category based on the percentage of their resident employed labour force that commutes to work in the core(s) of CMAs or CAs. CSDs with the same degree of influence tend to be clustered. They form zones around CMAs and CAs that progress through the categories from 'strong' to 'no' influence as distance from the CMAs and CAs increases. As many CSDs in the territories are very large and sparsely populated, the commuting flow of the resident employed labour force is unstable. For this reason, CSDs that are outside CAs in the territories are assigned a separate category that is not based on their commuting flows.

Census subdivision

Census subdivision (CSD) is the general term for municipalities (as determined by provincial/territorial legislation) or areas treated as municipal equivalents for statistical purposes (e.g., Indian reserves, Indian settlements and unorganized territories).

Census tract

Census tracts (CTs) are small, relatively stable geographic areas that usually have a population of 2,500 to 8,000 persons. They are located in census metropolitan areas and in census agglomerations that had a core population of 50,000 or more in the previous census.

A committee of local specialists (for example, planners, health and social workers, and educators) initially delineates census tracts in conjunction with Statistics Canada. Once a census metropolitan area (CMA) or census agglomeration (CA) has been subdivided into census tracts, the census tracts are maintained even if the core population subsequently declines below 50,000.

Coordinate system

A coordinate system is a reference system based on mathematical rules for specifying positions (locations) on the surface of the earth. The coordinate values can be spherical (latitude and longitude) using angular units of measure such as degrees, minutes and seconds or planar (Universal Transverse Mercator) using linear units such as metres.

Cartographic boundary files, digital boundary files, representative points and road network files are disseminated in latitude/longitude coordinates.

Core, fringe and rural area

The terms 'core,' 'fringe' and 'rural area' replace the terms 'urban core,' 'urban fringe' and 'rural fringe' for the 2011 Census. These terms distinguish between population centres (POPCTRs) and rural areas (RAs) within a census metropolitan area (CMA) or census agglomeration (CA).

A CMA or CA can have two types of cores: the core and the secondary core. The core is the population centre with the highest population, around which a CMA or a CA is delineated. The core must have a population (based on the previous census) of at least 50,000 persons in the case of a CMA, or at least 10,000 persons in the case of a CA.

The secondary core is a population centre within a CMA that has at least 10,000 persons and was the core of a CA that has been merged with an adjacent CMA.

The term 'fringe' includes all population centres within a CMA or CA that have less than 10,000 persons and are not contiguous with the core or secondary core.

All territory within a CMA or CA that is not classified as a core or fringe is classified as rural area.

Datum

A datum is a geodetic reference system which includes an ellipsoid and an origin against which the latitude and longitude of all other points on the earth's surface are referenced. A datum may often be associated with a particular ellipsoid (mathematical reference model of the earth).

Designated place

A designated place (DPL) is normally a small community or settlement that does not meet the criteria established by Statistics Canada to be a census subdivision (an area with municipal status) or a population centre.

Designated places are created by provinces and territories, in cooperation with Statistics Canada, to provide data for submunicipal areas.

Digital boundary files

Digital boundary files (DBFs) portray the boundaries used for 2011 Census collection and, therefore, often extend as straight lines into bodies of water.

Dissemination area

A dissemination area (DA) is a small, relatively stable geographic unit composed of one or more adjacent dissemination blocks. It is the smallest standard geographic area for which all census data are disseminated. DAs cover all the territory of Canada.

Dissemination block

A dissemination block (DB) is an area bounded on all sides by roads and/or boundaries of standard geographic areas. The dissemination block is the smallest geographic area for which population and dwelling counts are disseminated. Dissemination blocks cover all the territory of Canada.

Economic region

An economic region (ER) is a grouping of complete census divisions (CDs) (with one exception in Ontario) created as a standard geographic unit for analysis of regional economic activity.

Ecumene

Ecumene is a term used by geographers to mean inhabited land. It generally refers to land where people have made their permanent home, and to all work areas that are considered occupied and used for agricultural or any other economic purpose. Thus, there can be various types of ecumenes, each having their own unique characteristics (population ecumene, agricultural ecumene, industrial ecumene, etc.).

Federal electoral district

A federal electoral district (FED) is an area represented by a member of the House of Commons. The federal electoral district boundaries used for the 2011 Census are based on the 2003 Representation Order.

Geocoding

Geocoding is the process of assigning geographic identifiers (codes or x,y coordinates) to map features and data records. The resulting geocodes permit data to be linked geographically to a place on the earth.

Households, postal codes and place of work data are linked to block-face representative points (coordinates) when the street and address information is available; otherwise, they are linked to dissemination block (DB) representative points. In some cases, postal codes and place of work data are linked to dissemination area (DA) representative points when they cannot be linked to DBs. As

well, place of work data are linked to census subdivision representative points when the data cannot be linked to DAs.

Geographic code

A geographic code is a numerical identifier assigned to a geographic area. The code is used to identify and access standard geographic areas for the purposes of data storage, retrieval and display.

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. For the 2011 Census, the geographic reference date is January 1, 2011.

Land area

Land area is the area in square kilometres of the land-based portions of standard geographic areas. Land area data are unofficial and are provided for the sole purpose of calculating population density.

Map projection

A map projection is the process of transforming and representing positions from the earth's three-dimensional curved surface to a two-dimensional (flat) surface. The process is accomplished by a direct geometric projection or by a mathematically derived transformation.

The Lambert conformal conic map projection is widely used for general maps of Canada at small scales and is the most common map projection used at Statistics Canada.

National Geographic Database

The National Geographic Database (NGD) is a shared database between Statistics Canada and Elections Canada. The database contains roads, road names and address ranges. It also includes separate reference layers containing physical and cultural features, such as hydrography and hydrographic names, railroads and power transmission lines.

Place name

'Place name' provides name and location information on local place names. It also includes selected records of active and retired geographic areas as well as names from the Canadian Geographic Names Database.

'Place name' refers to the set of names that includes census subdivisions (municipalities), designated places and population centres, as well as the names of some local places.

Population centre

A population centre (POPCTR) has a population of at least 1,000 and a population density of 400 or more persons per square kilometre, based on the current census population count. All areas outside population centres are classified as rural areas. Taken together, population centres and rural areas cover all of Canada.

Population centres are classified into three groups, depending on the size of their population:

- small population centres, with a population between 1,000 and 29,999
- medium population centres, with a population between 30,000 and 99,999
- large urban population centres, with a population of 100,000 or more

Population centre population includes all population living in the cores, secondary cores and fringes of census metropolitan areas (CMAs) and census agglomerations (CAs), as well as the population living in population centres outside CMAs and CAs.

Population density

Population density is the number of persons per square kilometre.

Province or territory

'Province' and 'territory' refer to the major political units of Canada. From a statistical point of view, province and territory are basic areas for which data are tabulated. Canada is divided into 10 provinces and 3 territories.

Reference map

A reference map shows the location of the geographic areas for which census data are tabulated and disseminated. The maps display the boundaries, names and unique identifiers of standard geographic areas, as well as major cultural and physical features, such as roads, railroads, coastlines, rivers and lakes.

Representative point

A representative point is a coordinate point that represents a line or a polygon. The point is centrally located along the line, and centrally located or population weighted in the polygon.

Representative points are generated for block-faces, as well as for selected geographic areas – province/territory (PR), federal electoral district (FED), economic region (ER), census division (CD), census metropolitan area/census agglomeration (CMA/CA), census subdivision (CSD), population centre (POPCTR), designated place (DPL), census tract (CT), dissemination area (DA) and dissemination block (DB).

Households, postal codes and place of work data are linked to block-face representative points when the street and address information is available; otherwise, they are linked to dissemination block (DB) representative points. In some cases, postal codes and place of work data are linked to dissemination area (DA) representative points when they cannot be linked to DBs. As well, place of work data are linked to census subdivision (CSD) representative points when the data cannot be linked to DAs.

Road network file

The road network file (RNF) contains roads, road names, types, directions, address ranges and road ranks for the entire country. Address ranges are dwelling-based.

Rural area

Rural areas (RAs) include all territory lying outside population centres (POPCTRs). Taken together, population centres and rural areas cover all of Canada.

Rural population includes all population living in the rural areas of census metropolitan areas (CMAs) and census agglomerations (CAs), as well as population living in rural areas outside CMAs and CAs.

Spatial Data Infrastructure

The Spatial Data Infrastructure (SDI) is an internal maintenance database that is not disseminated outside of Statistics Canada. It contains roads, road names and address ranges from the National Geographic Database (NGD), as well as boundary arcs of standard geographic areas that do not follow roads, all in one integrated line layer. The database also includes a related polygon layer consisting of basic blocks (BB; basic blocks are the smallest polygon units in the database, and are formed by the intersection of all roads and the arcs of geographic areas that do not follow roads), boundary layers of standard geographic areas, and derived attribute tables, as well as reference layers containing physical and cultural features (such as hydrography, railroads and power transmission lines) from the NGD.

The SDI supports a wide range of census operations, such as the maintenance and delineation of the boundaries of standard geographic areas (including the automated delineation of dissemination blocks and population centres), and geocoding. The SDI is also the source for generating many geography products for the 2011 Census, such as cartographic boundary files and road network files.

Spatial data quality elements

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 the lineage, positional accuracy, attribute accuracy, logical consistency and completeness. This information is provided to users for all spatial data products disseminated for the census.

Standard Geographical Classification

The Standard Geographical Classification (SGC) 2011 is Statistics Canada's main classification of geographic areas in Canada. It is designed to classify statistical information by geographic areas. The classification consists of four levels: geographical regions of Canada, provinces and territories, census divisions (such as counties and regional municipalities) and census subdivisions (such as municipalities). The four geographic levels are hierarchically related; a seven-digit code is used to show this relationship.

Statistical Area Classification

The Statistical Area Classification (SAC) groups census subdivisions according to whether they are a component of a census metropolitan area, a census agglomeration or a census metropolitan influenced zone (MIZ). The MIZ classifies all CSDs in provinces and territories that are outside census metropolitan areas and census agglomerations.

The Statistical Area Classification is a variant of the Standard Geographical Classification (SGC). Census subdivisions (CSDs) form the lowest level of the classification variant. The next level consists of individual census metropolitan areas (CMAs), census agglomerations (CAs) and census metropolitan influenced zones (MIZs). The highest level consists of three categories that cover all of the land mass of Canada:

- census metropolitan areas
- census agglomerations
- outside census metropolitan areas and census agglomerations.

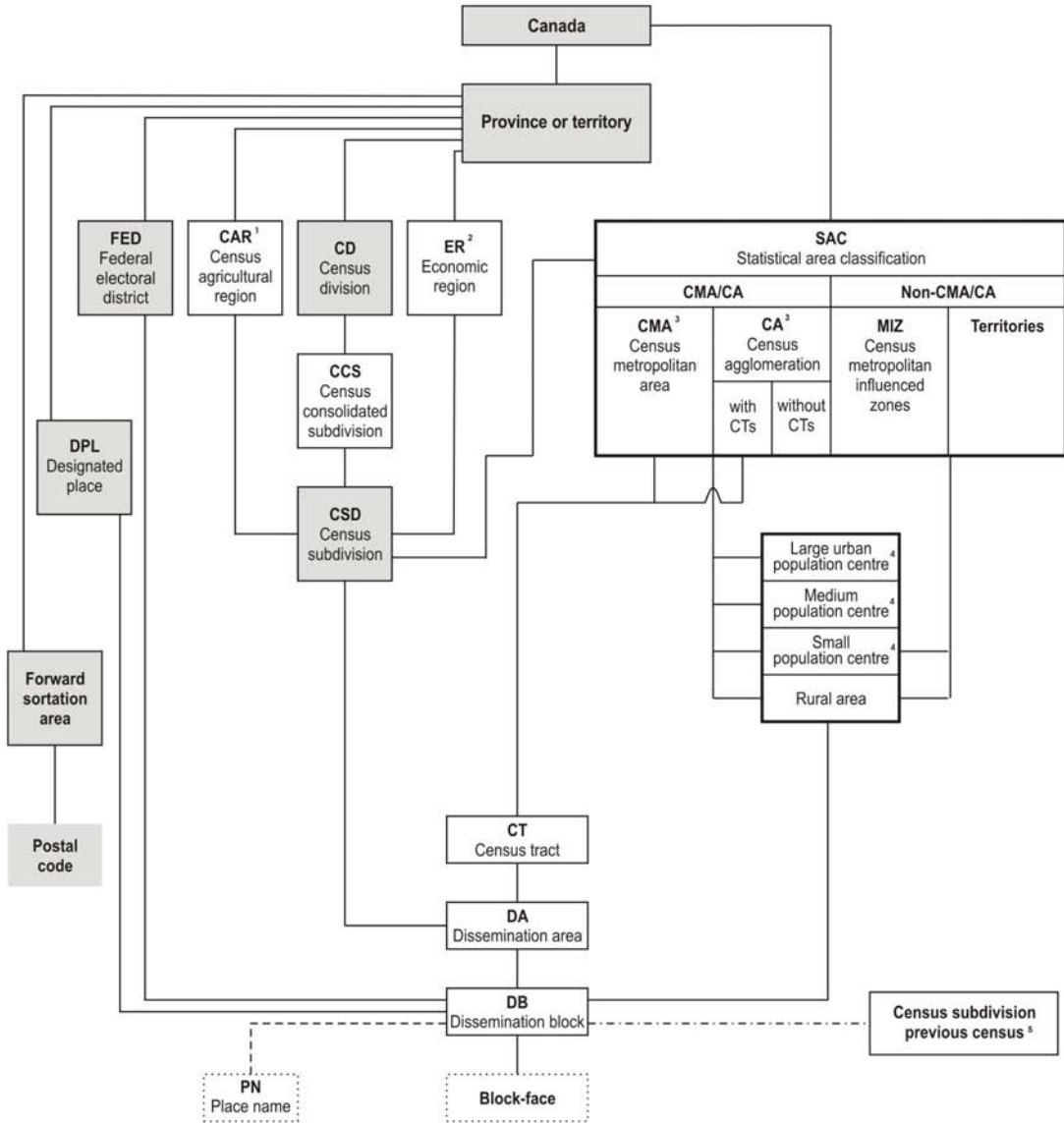
The SAC provides unique numeric identification (codes) for these hierarchically-related geographic areas. It was established for the purpose of reporting statistics.

Thematic map

A thematic map shows the spatial distribution of one or more specific data themes for selected geographic areas. The map may be qualitative in nature (e.g., predominant farm types) or quantitative (e.g., percentage population change).

Appendix B Hierarchy of standard geographic units for dissemination, 2011 Census

Figure B.1 Hierarchy of standard geographic units for dissemination, 2011 Census



1. Census agricultural regions in Saskatchewan are composed of census consolidated subdivisions.
2. Economic regions are composed of complete census divisions except for one CD in Ontario.
3. One CMA and three CAs cross provincial boundaries.
4. Five population centres (POPCTRs) cross provincial boundaries.
5. A best fit linkage is created between the previous census CSDs and the current census dissemination blocks to facilitate historical data retrieval.

- Administrative area
- Statistical area
- Polygon
- Representative point
- Best fit linkage
- Linkage using point-in-polygon process

Sources: Statistics Canada, 2011 Census of Population; Canada Post Corporation, May 2011.

Appendix C Geographic units by province and territory, 2011 Census

Table C.1 Geographic units by province and territory, 2011 Census

Geographic unit	Canada 2006	Canada 2011	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
Federal electoral district (2003 Representation Order)	308	308	7	4	11	10	75	106	14	14	28	36	1	1	1
Economic region	76	76	4	1	5	5	17	11	8	6	8	8	1	1	1
Census agricultural region	82	82	3	3	5	4	14	5	12	20	8	8	0	0	0
Census division	288	293	11	3	18	15	98	49	23	18	19	29	1	6	3
Census consolidated subdivision	2,341	2,338	89	68	43	151	1,005	316	126	300	77	153	1	6	3
Census subdivision (CSD)	5,418	5,253	376	113	99	273	1,285	574	287	959	435	743	37	41	31
CSD dissolutions (January 2, 2006 to January 1, 2011)	221	...	3	0	1	6	13	13	13	26	19	126	0	1	0
CSD incorporations (January 2, 2006 to January 1, 2011)	...	56	2	0	0	3	4	2	3	1	1	33	2	5	0
Census metropolitan area	33	33	1	0	1	2	6 ¹	15 ¹	1	2	2	4	0	0	0
Census agglomeration (CA)	111	114	3	2	4	5 ¹	25 ¹	28 ¹	4	7 ¹	16 ¹	21	1	1	0
CA with census tracts	15	15	0	0	0	1	3	4	0	0	3	4	0	0	0
CA without census tracts	96	99	3	2	4	4 ¹	22 ¹	24 ¹	4	7 ¹	13 ¹	17	1	1	0
Census tract	5,076	5,452	47	0	93	102	1,371	2,273	173	109	573	711	0	0	0
Place name	21,411	35,033	1,836	709	3,138	2,679	6,985	8,091	1,839	2,687	3,117	3,528	195	153	76
Dissemination area	54,626	56,204	1,071	293	1,645	1,454	13,622	19,964	2,179	2,467	5,711	7,582	68	98	50
Dissemination block	478,831	493,345	8,732	3,573	15,842	15,415	109,455	132,777	30,471	51,610	66,332	55,529	1,359	1,492	758
Block-face	3,739,041	3,947,786	81,868	27,050	155,484	135,411	842,992	1,003,813	201,005	362,238	525,180	577,975	13,036	15,612	6,122
Forward sortation area	1,625	1,638	35	7	77	111	418	526	64	48	153	190	3	3	3
Postal code	805,640	834,056	10,878	3,316	27,852	58,617	212,162	276,844	24,568	21,923	80,948	115,435	968	516	29

... not applicable

1. Census metropolitan areas and census agglomerations crossing provincial boundaries are counted in both provinces, and, therefore, do not add up to the national total.

Sources: Statistics Canada, 2011 Census of Population; Canada Post Corporation, May 2011

Appendix D Census subdivision types by province and territory, 2011 Census

Table D.1 Census subdivision types by province and territory, 2011 Census

Census subdivision type		Canada	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
		5,253	376	113	99	273	1,285	574	287	959	435	743	37	41	31
C	City / Cité	6	...	...	...	4	...	2	...	...	...	...	...	...	...
CC	Chartered community	3	...	...	...	...	...	...	...	...	...	...	...	3	...
CG	Community government	4	...	...	...	...	...	...	...	...	...	...	...	4	...
CN	Crown colony / Colonie de la couronne	1	...	...	...	...	...	...	...	1	...	...	...	...	...
COM	Community	33	...	33	...	...	...	...	...	...	...	...	...	...	...
CT	Canton (municipalité de)	45	...	...	...	...	45	...	...	...	...	...	...	...	...
CU	Canton unis (municipalité de)	2	...	...	...	...	2	...	...	...	...	...	...	...	...
CV	City / Ville	2	...	...	...	...	...	2	...	...	...	...	...	...	...
CY	City	149	3	2	...	4	...	46	9	16	17	49	1	1	1
DM	District municipality	52	...	...	...	...	...	...	...	...	...	52	...	...	...
HAM	Hamlet	36	...	...	...	...	...	...	...	...	...	...	2	10	24
ID	Improvement district	7	...	...	...	...	...	...	...	...	7	...	...	...	...
IGD	Indian government district	2	...	...	...	...	...	...	...	...	...	2	...	...	...
IM	Island municipality	1	...	...	...	...	...	...	...	...	...	1	...	...	...
IRI	Indian reserve / Réserve indienne	961	3	4	25	18	27	139	75	168	81	419	...	2	...
LGD	Local government district	2	...	...	...	...	...	...	2	...	...	...	...	...	...
LOT	Township and royalty	67	...	67	...	...	...	...	...	...	...	...	...	...	...
M	Municipality / Municipalité	3	...	...	...	...	...	3	...	...	...	...	...	...	...
MD	Municipal district	76	...	...	12	...	...	...	...	...	64	...	...	...	...
MÉ	Municipalité	619	...	...	...	...	619	...	...	...	...	...	...	...	...
MU	Municipality	54	...	...	...	...	...	54	...	...	...	...	...	...	...
NH	Northern hamlet	11	...	...	...	...	...	...	...	11	...	...	...	...	...
NL	Nisga'a land	1	...	...	...	...	...	...	...	...	...	1	...	...	...
NO	Unorganized / Non organisé	137	...	...	...	...	96	16	10	2	...	...	4	6	3
NV	Northern village	11	...	...	...	...	...	...	...	11	...	...	...	...	...
P	Parish / Paroisse (municipalité de)	150	...	...	...	150	...	...	...	...	...	...	...	...	...
PE	Paroisse (municipalité de)	179	...	...	...	...	179	...	...	...	...	...	...	...	...
RCR	Rural community / Communauté rurale	4	...	...	...	4	...	...	...	...	...	...	...	...	...
RDA	Regional district electoral area	158	...	...	...	...	...	...	...	...	...	158	...	...	...
RG	Region	1	1	...	...	...	...	...	...	...	...	...	...	...	...

Table D.1 Census subdivision types by province and territory, 2011 Census (continued)

Census subdivision type		Canada	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nvt.
RGM	Regional municipality	4	...	...	3	...	...	...	...	...	...	1	...	...	...
RM	Rural municipality	413	...	...	...	...	...	...	117	296	...	...	...	...	...
RV	Resort village	40	...	...	...	...	...	...	...	40	...	...	...	...	...
S-É	Indian settlement / Établissement indien	28	...	...	...	...	6	5	4	1	4	3	5	...	...
SA	Special area	3	...	...	...	...	...	...	...	...	3	...	...	...	...
SC	Subdivision of county municipality / Subdivision municipalité de comté	28	...	...	28	...	...	...	...	...	...	...	...	...	...
SÉ	Settlement / Établissement	13	...	...	...	...	...	...	...	...	...	...	13	...	...
SET	Settlement	13	...	...	...	...	...	...	...	...	...	...	...	10	3
SG	Self-government / Autonomie gouvernementale	4	...	...	...	...	...	...	...	...	...	...	4	...	...
SM	Specialized municipality	5	...	...	...	...	...	...	...	...	5	...	...	...	...
SNO	Subdivision of unorganized / Subdivision non organisée	92	92	...	...	...	...	...	...	...	...	...	...	...	...
SV	Summer village	51	...	...	...	...	...	...	...	...	51	...	...	...	...
T	Town	743	277	7	31	13	...	88	51	147	108	14	3	4	...
TC	Terres réservées aux Cris	8	...	...	...	...	8	...	...	...	...	...	...	...	...
TI	Terre inuite	12	...	...	...	...	12	...	...	...	...	...	...	...	...
TK	Terres réservées aux Naskapis	1	...	...	...	...	1	...	...	...	...	...	...	...	...
TL	Teslin land	1	...	...	...	...	...	...	...	...	...	...	1	...	...
TP	Township	207	...	...	...	...	...	207	...	...	...	...	...	...	...
TV	Town / Ville	15	...	...	...	14	...	1	...	...	...	...	...	...	...
V	Ville	222	...	...	...	...	222	...	...	...	...	...	...	...	...
VC	Village cri	8	...	...	...	...	8	...	...	...	...	...	...	...	...
VK	Village naskapi	1	...	...	...	...	1	...	...	...	...	...	...	...	...
VL	Village	550	...	...	...	66	45	11	19	266	95	43	4	1	...
VN	Village nordique	14	14

... not applicable

Source: Statistics Canada, 2011 Census of Population.

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