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Road Network and Geographic Attribute File, Reference Guide

Census year 2006



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Road Network and Geographic Attribute File, Reference Guide

Census year 2006

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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 2006 Road Network and Geographic Attribute File replaces the 2001 Skeletal Road Network File as a comprehensive road network.
- This 2006 Census spatial information product now includes the following levels of geography which are attached to each side as an attribute of the arc: province/territory, census metropolitan area/census agglomeration, census subdivision and census tract.
- The attribute "RB_UID" provides a unique identifier for every arc, replacing the "ARC_ID" and "SOURCE" attributes.
- Road rank is presented as one attribute with four categories.
- Geography Markup Language (GML) format version 2.1.2 available.

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1. About this guide

This reference guide is intended for users of the 2006 Road Network and Geographic Attribute File. The guide provides an overview of the file, the methodology used to create it, and important technical information for users.

Section 4, Data quality gives a description of the various steps in the creation of the 2006 Road Network and Geographic Attribute File. This section also provides information to evaluate the suitability of the data for a particular use.

Technical specifications in section 5 include system requirements, installation instructions, record layout, and item descriptions. See Appendix B for file sizes.

Geographic terms and concepts found throughout the text are described in Appendix C: Glossary.

This reference guide does not provide details on specific software packages that are available for use with the 2006 Road Network and Geographic Attribute 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, either 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.

Abbreviations

- CCOG – Canadian Council on Geomatics
- DCW – Digital Chart of the World
- EC – Elections Canada
- GML – Geography Markup Language (OGC)
- NGD – National Geographic Database
- NRCan – Natural Resources Canada
- NRN – National Road Network (NRCan)
- NTDB – National Topographic Database
- OGC – Open Geospatial Consortium
- RNF – Road Network File
- RNGAF - Road Network and Geographic Attribute File
- SDI – Spatial Data Infrastructure
- SNF – Street network files (pre-2001)
- STC – Statistics Canada
- USBC – United States Bureau of Census

2. Overview

This guide covers the content, coverage and quality of the 2006 Road Network and Geographic Attribute File created from the road layer coverage in Statistics Canada's digital geographic database, the Spatial Data Infrastructure. The file reflects the Spatial Data Infrastructure road layer content as it existed on January 1, 2006.

The Spatial Data Infrastructure road layer was constructed as a tool to support data collection and dissemination of the Census of Population. Both road features and geographic attributes were selected from this database to create the 2006 Road Network and Geographic Attribute File. This file represents the road network for the 2006 Census and is the base for 2006 geographic products and services.

The 2006 Road Network and Geographic Attribute File contains information such as road name, type, direction, address range and road rank. Address ranges are mostly dwelling-based and occur mainly in large urban centres of Canada. Also included on each side of every road arc are identification names and codes for the following levels of geography:

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

The 2006 Road Network and Geographic Attribute File provides digital line coverage for Canada. There are 14 standard files:

- Canada
- 10 provinces and three territories

The 2006 Road Network and Geographic Attribute File's digital coordinates are in latitude/longitude based on the North American Datum of 1983 (NAD83). The standard product is available in ArcInfo® (.shp), Geography Markup Language (.gml) and MapInfo® (.tab) formats. See technical specifications (section 5) for more details on record layouts and file formats.

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 geographic reference date for the 2006 Census is January 1, 2006.

3. How to use this product

Purpose of the product

The 2006 Road Network and Geographic Attribute File is a geographic reference product and geocoding tool for use with the 2006 Census geographic and data products.

It is recommended that the 2006 Road Network and Geographic Attribute File be used as a basis for the retrieval of 2006 Census data for user-defined areas. Users can define their custom areas based on roads within the file. Road arcs within the 2006 Road Network and Geographic Attribute File correspond to the 2006 geographic frame, which facilitates the geocoding process. For information on custom area creation and geocoding services, please contact the National Inquiries line at 1-800-263-1136 or infostats@statcan.ca.

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 navigation and reference purposes; therefore, relative positional accuracy takes precedence over absolute positional accuracy. The 2006 Road Network and Geographic Attribute 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 file. Consequently, this file is not recommended for engineering applications, emergency dispatching services, surveying or legal applications.

The 2006 Road Network and Geographic Attribute File contains road arcs with either “true” address ranges, imputed address ranges, or no address ranges. Imputed address ranges are not meant to replace true address ranges for any purpose other than address geocoding. Thus, if the files are to be used for computer-aided dispatch or similar purposes (that require an address to be matched to a block or street), it may be necessary to supplement the file with local knowledge by updating existing true addresses and replacing imputed addresses.

The limitations of the 2006 Road Network and Geographic Attribute File should be recognized for uses other than the mapping, analysis and retrieval of census data. See section 4, Data quality, for information related to the effective use of this file.

General methodology

The 2006 Road Network and Geographic Attribute File is based on road network components extracted from Statistics Canada’s Spatial Data Infrastructure. The Spatial Data Infrastructure serves as the current and dynamic database maintaining Geography Division’s geographic frame over time. Changes to the geographic frame result from events such as road network updates and municipal boundary changes. The resulting database serves as an input to the development of query tools, dissemination products and various mapping applications. The Spatial Data Infrastructure is the source for all 2006 Census dissemination geographic units, geography products and geocoding services.

Content

This product contains information such as road name, type, direction, address range and road rank. Address ranges are dwelling-based and occur mainly in large urban centres of Canada. Also included on each side of every road arc are identification names and codes for the following four levels of geography:

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

Comparisons to the 2001 Skeletal Road Network File

Differences between the 2006 Road Network and Geographic Attribute File and the 2001 Skeletal Road Network Files are:

- The 2006 Road Network File contains additional roads, road names and address ranges.
- RB_UID replaces ARC_ID as the attribute which uniquely identifies road arcs.
- Levels of geography now included as an attribute of each road arc: province/territory, census metropolitan area/census agglomeration, census subdivision and census tract.
- Third format available: Geographic Markup Language (GML) version 2.1.2.
- The 2006 Road Network and Geographic Attribute File is not compatible with 2001 Census Geography products. See section 4, Data quality, Consistency with other products, for more details.

4. 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 road attributes (name, type, direction, and address ranges). The National Geographic Database was originally built from four main data sources:

- Statistics Canada Street Network Files
- National Topographic Database 1:50,000 and 1:250,000 maps
- Digital Chart of the World 1:1,000,000 maps
- Elections Canada road data

Additional road information was incorporated from a variety of other sources, including municipal maps and road data from private companies. However, the timeliness of the National Geographic Database varies from region to region depending on the source data. Table 4.1 provides details on the distribution of road arcs by source.

Table 4.1 Road arc counts and summed length values by data source

| Source | Number of arcs | Arc length (kilometres) |
|--|------------------|-------------------------|
| Elections Canada | 889,639 | 855,209 |
| Statistics Canada | 458,732 | 106,526 |
| Other | 203,356 | 127,642 |
| Municipal | 190,044 | 76,194 |
| National Topographic Base 1: 50,000 | 106,084 | 96,399 |
| National Topographic Database 1: 250,000 | 21,709 | 64,130 |
| Total | 1,869,564 | 1,326,100 |

Source: Spatial Data Infrastructure (SDI), June 2006.

Described below are the steps taken to incorporate data from various sources into the 2006 Road Network and Geographic Attribute File:

The 1996 Street Network Files

In census metropolitan areas and larger census agglomerations, the 1996 Street Network Files from Statistics Canada were the primary data source. These files were created from various source maps at different scales, and maintained by the Statistics Canada Geography Division over more than twenty-five years. They contained road names, address ranges and a rich set of road arcs. The maps used to build and maintain these files had varying scales and different vintages. Therefore, the quality of its geometry varies from place to place in terms of absolute positional accuracy.

Information within the 2006 Street Network Files was updated, enhanced, and incorporated into the National Geographic Database during a build phase. Features that were not roads were removed. Streets were geometrically adjusted (i.e., rubber sheeted) to match the superior positional precision of the NTDB. The format of address ranges was not changed, except the type of the values was changed from character to numeric. In most cases, road names in all upper case letters were converted to names in upper and lower case. The length of the field that contains the road names was also increased to accept full names instead of abbreviations.

National Topographic Database

The National Topographic Database, produced by Natural Resources Canada, has a stable and precise geometry and a standardized road classification scheme. In the more densely populated parts of Canada, its scale is 1: 50,000, while in the more northern and sparsely populated areas the scale is 1: 250,000. Unlike the Street Network Files, the NTDB contains no civic address range or road name information. The NTDB served as the source of the road network for most of southern Canada, outside of census metropolitan areas and large census agglomerations that were covered by the SNFs and Elections Canada data.

The NTDB geometry is the adopted standard for the National Geographic Database. All spatial data used in the creation of the NGD were vertically adjusted (rubber sheeted) and edge matched to approach the largest scale NTDB geometry.

Digital Chart of the World

The Digital Chart of the World is a 1: 1,000,000 scale digital map, built primarily for aeronautical charts. It was used in the database to add road geometry to the sparsely populated portion of Canada, mainly in the north. It does not contain road names or address ranges.

Elections Canada Geographic Database

In 1993, Elections Canada started to compile their Geographic Database, using data from the Street Network Files, National Topographic Database and Digital Chart of the World. Paper maps were created for areas not covered by the SNFs and distributed to the Elections Canada returning officers who added the road names with information from the field. Elections Canada updated the road network with new roads and added the road names but not address ranges.

Due to the addition of new roads, the resulting geometry does not always match the initial NTDB geometry. Wherever more recent Elections Canada data would improve the quality and quantity of road information, it was added to the Statistics Canada Street Network Files to form the National Geographic Database. The content derived from Elections Canada is primarily new roads and road names. These were left in the format used by Elections Canada, with upper and lower case letters, accents, road type and direction, but no civic address ranges.

Other sources

In addition to digital maps from other federal, provincial, municipal and licensed private sources, portions of the National Geographic Database contain information from Elections Canada Returning Officers (maps for the 38th General Election, held in the summer of 2004), Statistics Canada Regional Offices (1996 Enumeration Area Collection maps), data from Statistic Canada's 2001 Census, and other materials prepared by private companies, such as PLANET, which originates from the New Brunswick real property information system.

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 information present in the Spatial Data Infrastructure road layer is provided for the purposes of statistical analysis and census operations only. The absolute position of roads on the SDI varies with the source files and documents used to build and maintain the database. Therefore, the SDI 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.

During the build phase, the road layer was rubber sheeted to match the position of those on the NTDB (which was used for reference purposes). After the build, the rubber sheeting process was applied to the materials used to maintain and improve the content of the road network. It is therefore expected that these geometrically matched arcs will have a positional accuracy similar to the corresponding reference data used during development of the database. It should be noted that the reference source selected for different geographic areas depended on a variety of factors such as population size, geographic location (urban or rural) and the availability of NTDB/DCW data. For example, in major urban centres 1:50,000 NTDB data were generally used as the reference data. As a result, in these areas, roads that were geometrically matched have a positional accuracy similar to roads on the NTDB data (i.e., approx. ± 10 metres). In areas that used 1:250,000 NTDB and DCW reference data, the positional accuracy of roads that were geometrically matched is approximately ± 300 metres (NTDB) and between $\pm 2,100$ and $\pm 4,300$ metres (DCW), respectively.

The positional accuracy of arcs that could not be matched because they were not present in the reference data is not measured. These arcs were digitized on screen from paper maps annotated by Elections Canada's returning officers and Statistics Canada's regional officers. Although accurate in their attribute information and their relative position in relation to other features, the absolute positional accuracy of these roads is unknown.

Absolute positional accuracy is not a requirement for electoral and 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.

During the build phase, the dataset was thoroughly tested for relative positional accuracy. The road network was overlaid onto the hydrographical, power line and railroad layers.

Attribute accuracy

Attribute accuracy refers to the accuracy of quantitative attributes and the correctness of non-quantitative attributes. Two road attributes were tested for accuracy: road name (name) and road address range ('ADDR_FM_LE', 'ADDR_TO_LE', 'ADDR_FM_RG', 'ADDR_TO_RG'). Road address range considers the completeness of addressing on individual arcs.

Road name

During the build phase, every effort was made to insure a proper transfer and association of a specific attribute (i.e., name, type, direction, and address range) to a specific geometric feature. This includes the association as well as its accuracy.

Measures on number of road name and address range attributes have been presented in Table 4.2.

Road address range

Two tests were conducted to determine the attribute accuracy of address features on the base. First, the results from the current version of the Spatial Data Infrastructure were compared to the previous version of the Spatial Data Infrastructure within the National Geographic Database in order to identify any increases or decreases in the number of addressable roads and block-faces. Secondly, a check was run on the 2001 addresses to determine which 2006 geographic area they fell into, then those same addresses were compared to the 2006 geographic area derived using a 2001/2006 correspondence file.

Logical consistency

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

During the build phase, the National Geographic Database dataset was thoroughly tested for logical consistency. Any violations of logical consistency were corrected, and 100% of the data are logically consistent.

Node-line-area relationships satisfy topological requirements as specified in the ArcInfo[®] data model.

Consistency with other products

The position of the arcs in the 2006 Road Network and Geographic Attribute File is generally consistent with the 2006 Road Network File, 2005 Road Network File and 2006 Cartographic and Digital Boundary Files, but is not necessarily consistent with those of the 2001 Cartographic Boundary Files or the 2001 Road Network and Skeletal Road Network Files.

Completeness

Completeness refers to the presence or absence of features, their attributes and relationships. Many new road features that were not previously found on earlier digital files at Elections Canada and Statistics Canada have been added to the National Geographic Database in order to create a more complete NGD road layer for all of Canada.

Roads

Many roads not present in the 2001 Skeletal Road Network File product were added to the 2006 Road Network and Geographic Attribute File in order to improve nation-wide coverage. Table 4.2 shows the number of road arcs on the 2006 Road Network and Geographic Attribute File.

Table 4.2 Number of road arcs in the 2006 Road Network and Geographic Attribute File

| National level | Number of arcs | Arc length (kilometres) | Number of arcs with full address range on at least one side |
|-------------------|------------------|-------------------------|---|
| With road name | 1,462,249 | 688,757 | 1,054,937 |
| Without road name | 407,315 | 637,342 | 11 |
| Canada | 1,869,564 | 1,326,099 | 1,054,948 |

Source: Spatial Data Infrastructure (SDI), June 2006.

5. Technical specifications

Software formats

The 2006 Road Network and Geographic Attribute File is available for download from the Statistics Canada website in the following formats:

- ArcInfo® version 9.0
File extension: **.shp**
- Geography Markup Language (GML) version 2.1.2
File extension: **.gml**
- MapInfo® version 7.0
File extension: **.tab**

Installation instructions

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

An additional template (.tem) file is included with the Geography Markup Language files for use with the Java Unified Mapping Platform (JUMP) free GIS data viewer.

The road names in the 2006 Road Network and Geographic Attribute File contain accented characters. These characters can be seen in UNIX and Windows® versions of ArcInfo® and MapInfo®. They were tested on desktop versions of ArcGIS® 8.3 and 9.0 and MapInfo® 7.0 and 7.8. The accents were also visible in ArcInfo® 8.01 in UNIX. To preserve accents, ArcToolbox™ is recommended for imprinting files into the desktop version of ArcGIS® 9.0.

Data descriptions and record layouts

Geographic representation

The 2006 Road Network and Geographic Attribute File is available for download from the Statistics Canada website in the following geographic representation:

Datum: NAD 83
Coordinates: Latitude / Longitude

Record layout and item/field descriptions

Table 5.1 Road Network and Geographic Attribute File record layout — ArcInfo® (.shp), Geography Markup Language(.gml) and MapInfo® (.tab) files

| Attribute name | Data type | Description |
|----------------|---------------|--|
| FID | Object ID (4) | Specific to ArcInfo® |
| Shape | Geometry | Specific to ArcInfo® |
| Centreline | PropertyType | Shape geometry; specific to Geography Markup Language files |
| RB_UID | number (11) | Unique identifier of the arc. |
| NAME | char (43) | Road name associated with the arc. |
| TYPE | char (6) | Road type associated with the arc. |
| DIRECTION | char (2) | Road direction associated with the arc. |
| ADDR_FM_LE | number (11) | Civic address at the FROM node, left-hand side of arc. |
| ADDR_TO_LE | number (11) | Civic address at the TO node, left-hand side of arc. |
| ADDR_FM_RG | number (11) | Civic address at the FROM node, right-hand side of arc. |
| ADDR_TO_RG | number (11) | Civic address at the TO node, right-hand side of arc |
| PRUID_LE | char (2) | Province or territory code, left-hand side of arc. |
| PRNAME_LE | char (51) | Province or territory name, bilingual, left-hand side of arc. |
| PRENAME_LE | char (25) | Province or territory name, in English, left-hand side of arc. |
| PRFNAME_LE | char (25) | Province or territory name, in French, left-hand side of arc. |
| PRUID_RG | char (2) | Province or territory code, right-hand side of arc. |
| PRNAME_RG | char (51) | Province or territory name, bilingual, right-hand side of arc. |
| PRENAME_RG | char (25) | Province or territory name, in English, right-hand side of arc. |
| PRFNAME_RG | char (25) | Province or territory name, in French, right-hand side of arc. |
| CSDUID_LE | char (7) | Census subdivision unique identifier, left-hand side of arc (composed of the 2-digit province/territory code, the 2-digit census division code, and the 3-digit census subdivision code). |
| CSDNAME_LE | char (51) | Census subdivision name, left-hand side of arc. |
| CSDTYPE_LE | char (3) | Census subdivision type, left-hand side of arc. |
| CSDUID_RG | char (7) | Census subdivision unique identifier, right-hand side of arc (composed of the 2-digit province/territory code, the 2-digit census division code, and the 3-digit census subdivision code). |
| CSDNAME_RG | char (51) | Census subdivision name, right-hand side of arc. |
| CSDTYPE_RG | char (3) | Census subdivision type, right-hand side of arc. |
| CMAUID_LE | char (3) | Census metropolitan area and census agglomeration unique identifier, left-hand side of arc. |
| CMANAME_LE | char (31) | Census metropolitan area or census agglomeration name, left-hand side of arc. |
| CMAUID_RG | char (3) | Census metropolitan area and census agglomeration unique identifier, right-hand side of arc. |
| CMANAME_RG | char (31) | Census metropolitan area or census agglomeration name, right-hand side of arc. |

Table 5.1 Road Network and Geographic Attribute File record layout — ArcInfo® (.shp), Geography Markup Language(.gml) and MapInfo® (.tab) files
(continued)

| Attribute name | Data type | Description |
|----------------|-----------|--|
| CTUID_LE | char (10) | Census tract unique identifier, left-hand side of arc (composed of 3-digit CMA/CA code followed by the 7 character CTNAME). |
| CTUID_RG | char (10) | Census tract unique identifier, right-hand side of arc (composed of 3-digit CMA/CA code followed by the 7 character CTNAME). |
| RANK | char (1) | Road rank. |

Source: Spatial Data Infrastructure (SDI), June 2006.

Attribute domain values

Road name

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

Road type

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

Table 5.2 Road type

| Type | Description | Type | Description | Type | Description |
|----------|---------------|--------|----------------|--------|------------------|
| < Null > | no type | EXPY | Expressway (E) | PINES | Pines (E) |
| ABBEY | Abbey (E) | EXTEN | Extension (E) | PLACE | Place (F) |
| ACCESS | Access (E) | FARM | Farm (E) | PL | Place (E) |
| ACRES | Acres (E) | FIELD | Field (E) | PLAT | Plateau (E) |
| ALLÉE | Allée (F) | FOREST | Forest (E) | PLAZA | Plaza (E) |
| ALLEY | Alley (E) | FWY | Freeway (E) | PT | Point (E) |
| AUT | Autoroute (F) | FRONT | Front (E) | PVT | Private (E) |
| AV | Avenue (F) | GDNS | Gardens (E) | PROM | Promenade (F) |
| AVE | Avenue (E) | GATE | Gate (E) | QUAY | Quay (E) |
| BAY | Bay (E) | GLADE | Glade (E) | RANG | Rang (F) |
| BEACH | Beach (E) | GLEN | Glen (E) | RG | Range (E) |
| BEND | Bend (E) | GREEN | Green (E) | REACH | Reach (E) |
| BLVD | Boulevard (E) | GRNDS | Grounds (E) | RIDGE | Ridge (E) |
| BOUL | Boulevard (F) | GROVE | Grove (E) | RTOFWY | Right of Way (E) |
| BROOK | Brook (E) | HARBR | Harbour (E) | RISE | Rise (E) |
| BYPASS | By-pass (E) | HAVEN | Haven (E) | RD | Road (E) |
| BYWAY | Byway (E) | HEATH | Heath (E) | RDPT | Rond Point (F) |
| CAMPUS | Campus (E) | HTS | Heights (E) | ROUTE | Route (F) |
| CAPE | Cape (E) | HGHLDS | Highlands (E) | RTE | Route (E) |

Table 5.2 Road type (continued)

| Type | Description | Type | Description | Type | Description |
|--------|----------------|---------|-------------|--------|-----------------|
| CAR | Carre (F) | HWY | Highway (E) | ROW | Row (E) |
| CERCLE | Cercle (F) | HILL | Hill (E) | RUE | Rue (F) |
| CHASE | Chase (E) | HOLLOW | Hollow (E) | RLE | Ruelle (F) |
| CH | Chemin (F) | IMP | Impasse (F) | RUIS | Ruisseau (F) |
| CIR | Circle (E) | ISLAND | Island (E) | RUN | Run (E) |
| CIRCT | Circuit (F) | KEY | Key (E) | SECTN | Section (E) |
| CLOSE | Close (E) | KNOLL | Knoll (E) | SENT | Sentier (F) |
| COMMON | Common (E) | LANDING | Landing (E) | SIDERD | Sideroad (E) |
| CONC | Concession (E) | LANE | Lane (E) | SQ | Square (E) |
| CRNRS | Corners (E) | LANEWY | Laneway (E) | ST | Street (E) |
| CÔTE | Côte (F) | LMTS | Limits (E) | STROLL | Stroll (E) |
| COUR | Cour (F) | LINE | Line (E) | SUBDIV | Subdivision (E) |
| CRT | Court (E) | LINK | Link (E) | TERR | Terrace (E) |
| COVE | Cove (E) | LKOUT | Lookout (E) | TSSE | Terrasse (F) |
| CRES | Crescent (E) | LOOP | Loop (E) | TLINE | Townline (E) |
| CROFT | Croft (E) | MALL | Mall (E) | TRACE | Trace (E) |
| CROIS | Croissant (F) | MANOR | Manor (E) | TRAIL | Trail (E) |
| CROSS | Crossing (E) | MAZE | Maze (E) | TRNABT | Turnabout (E) |
| CRSSRD | Crossroads (E) | MEADOW | Meadow (E) | VALE | Vale (E) |
| CDS | Cul-de-sac (E) | MEWS | Mews (E) | VIEW | View (E) |
| CTR | Center (E) | MONTÉE | Montée (F) | VILLGE | Village (E) |
| DALE | Dale (E) | MOUNT | Mount (E) | VILLAS | Villas (E) |
| DELL | Dell (E) | ORCH | Orchard (E) | VISTA | Vista (E) |
| DIVERS | Diversion (E) | PARADE | Parade (E) | VOIE | Voie (F) |
| DOWNS | Downs (E) | PARC | Parc (F) | WALK | Walk (E) |
| DR | Drive (E) | PK | Park (E) | WAY | Way (E) |
| ÉCH | Échangeur (F) | PKY | Parkway (E) | WHARF | Wharf (E) |
| END | End (E) | PASS | Passage (E) | WOOD | Wood (E) |
| ESPL | Esplanade (E) | PATH | Path (E) | WYND | Wynd (E) |
| ESTATE | Estates (E) | PTWAY | Pathway (E) | ... | ... |

... not applicable

Source: Spatial Data Infrastructure (SDI), June 2006.

Road direction

The arc direction is not the geographic direction of the road feature, but a description used to identify it. A two character code is related to the arc when the feature is a single or multiple lane addressable street.

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

Table 5.3 Road direction

| Code | Description |
|------|-----------------------|
| Null | No type |
| E | East / Est |
| N | North / Nord |
| NE | North East / Nord-est |
| NO | Nord-ouest |
| NW | North West |
| O | Ouest |
| S | South / Sud |
| SE | South East / Sud-est |
| SO | Sud-ouest |
| SW | South West |
| W | West |

Source: Spatial Data Infrastructure (SDI), June 2006.

Civic addresses (ADDR_FM_LE, ADDR_TO_LE, ADDR_FM_RG, ADDR_TO_RG)

A zero "0" is used when an address does not exist or is not known. This applies to all of the following:

ADDR_FM_LE:

The civic address of the road feature found on the left-hand side of the arc at the FROM node.

ADDR_FM_RG:

The civic address of the road feature found on the right-hand side of the arc at the FROM node.

ADDR_TO_LE:

The civic address of the road feature found on the left-hand side of the arc at the TO node.

ADDR_TO_RG:

The civic address of the road feature found on the right-hand side of the arc at the TO node.

Provinces and territories

See glossary (Appendix C) for definition.

Table 5.4 provides the name and corresponding province code in English and French for all provinces and territories.

Table 5.4 Province/Territory code and name in both official languages

| Province code | Province/Territory name | English name | French name |
|---------------|---|---------------------------|---------------------------|
| 10 | Newfoundland and Labrador / Terre-Neuve-et-Labrador | Newfoundland and Labrador | Terre-Neuve-et-Labrador |
| 11 | Prince Edward Island / Île-du-Prince-Édouard | Prince Edward Island | Île-du-Prince-Édouard |
| 12 | Nova Scotia / Nouvelle-Écosse | Nova Scotia | Nouvelle-Écosse |
| 13 | New Brunswick / Nouveau-Brunswick | New Brunswick | Nouveau-Brunswick |
| 24 | Quebec / Québec | Quebec | Québec |
| 35 | Ontario | Ontario | Ontario |
| 46 | Manitoba | Manitoba | Manitoba |
| 47 | Saskatchewan | Saskatchewan | Saskatchewan |
| 48 | Alberta | Alberta | Alberta |
| 59 | British Columbia / Colombie-Britannique | British Columbia | Colombie-Britannique |
| 60 | Yukon Territory / Territoire du Yukon | Yukon Territory | Territoire du Yukon |
| 61 | Northwest Territories / Territoires du Nord-Ouest | Northwest Territories | Territoires du Nord-Ouest |
| 62 | Nunavut | Nunavut | Nunavut |

Source: Spatial Data Infrastructure (SDI), June 2006.

Table 5.5 Count by province left/right identifier

| Province left identifier | Arc count | Province right identifier | Double count ¹ |
|---|-----------|---|---------------------------|
| Newfoundland and Labrador / Terre-Neuve-et-Labrador | 39,188 | Newfoundland and Labrador / Terre-Neuve-et-Labrador | 0 |
| Prince Edward Island / Île-du-Prince-Édouard | 13,095 | Prince Edward Island / Île-du-Prince-Édouard | 0 |
| Nova Scotia / Nouvelle-Écosse | 77,282 | Nova Scotia / Nouvelle-Écosse | 0 |
| New Brunswick / Nouveau-Brunswick | 66,437 | New Brunswick / Nouveau-Brunswick | 0 |
| Quebec / Québec | 1 | New Brunswick / Nouveau-Brunswick | 1 |
| Quebec / Québec | 417,705 | Quebec / Québec | 0 |
| Quebec / Québec | 12 | Ontario | 12 |
| Quebec / Québec | 10 | null (U.S.A.) | 0 |
| Ontario | 11 | Quebec / Québec | 11 |

Table 5.5 Count by province left/right identifier (continued)

| Province left identifier | Arc count | Province right identifier | Double count ¹ |
|--|------------------|--|---------------------------|
| Ontario | 471,272 | Ontario | 0 |
| Manitoba | 98,972 | Manitoba | 0 |
| Manitoba | 29 | Saskatchewan | 29 |
| Manitoba | 4 | null (U.S.A.) | 0 |
| Saskatchewan | 80 | Manitoba | 80 |
| Saskatchewan | 180,399 | Saskatchewan | 0 |
| Saskatchewan | 41 | Alberta | 41 |
| Saskatchewan | 9 | null (U.S.A.) | 0 |
| Alberta | 112 | Saskatchewan | 112 |
| Alberta | 253,853 | Alberta | 0 |
| British Columbia / Colombie-Britannique | 236,688 | British Columbia / Colombie-Britannique | 0 |
| British Columbia / Colombie-Britannique | 37 | null (U.S.A.) | 0 |
| Yukon Territory / Territoire du Yukon | 5,944 | Yukon Territory / Territoire du Yukon | 0 |
| Northwest Territories / Territoires du Nord-Ouest | 5,810 | Northwest Territories / Territoires du Nord-Ouest | 0 |
| Nunavut | 2,548 | Nunavut | 0 |
| null (U.S.A.) | 14 | Quebec / Québec | 0 |
| null (U.S.A.) | 6 | Manitoba | 0 |
| null (U.S.A.) | 5 | British Columbia / Colombie-Britannique | 0 |
| Total | 1,869,564 | | 286 |

1. Road arcs that straddle provincial boundaries are counted in both provinces, and therefore do not add up to the national total.

Source: Spatial Data Infrastructure (SDI), June 2006.

Census subdivision

See glossary (Appendix C) for definition.

Table 5.6 summarises and provides the code for all census subdivision types.

Table 5.6 Census subdivision type

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

... not applicable

Source: Spatial Data Infrastructure (SDI), June 2006.

Census metropolitan area/census agglomeration

See glossary (Appendix C) for definition.

The following table provides a comprehensive list of census metropolitan areas/census agglomeration by unique identifier, tracted/nontraced. Tracted denotes containing census tracts.

Table 5.7 Census metropolitan area/census agglomeration: unique identifier, name, tracted/non-tracted

| Census metropolitan area / census agglomeration unique identifier | Census metropolitan area / census agglomeration name | Tracted |
|---|--|---------|
| 001 | St. John's | YES |
| 005 | Bay Roberts | NO |
| 010 | Grand Falls-Windsor | NO |
| 015 | Corner Brook | NO |
| 105 | Charlottetown | NO |
| 110 | Summerside | NO |
| 205 | Halifax | YES |
| 210 | Kentville | NO |
| 215 | Truro | NO |
| 220 | New Glasgow | NO |
| 225 | Cape Breton | NO |
| 305 | Moncton | YES |
| 310 | Saint John | YES |
| 320 | Fredericton | YES |
| 328 | Bathurst | NO |
| 329 | Miramichi | NO |
| 330 | Campbellton | NO |
| 335 | Edmundston | NO |
| 403 | Matane | NO |
| 404 | Rimouski | NO |
| 405 | Rivière-du-Loup | NO |
| 406 | Baie-Comeau | NO |
| 408 | Saguenay | YES |
| 410 | Alma | NO |
| 411 | Dolbeau-Mistassini | NO |
| 412 | Sept-Îles | NO |
| 421 | Québec | YES |
| 428 | Saint-Georges | NO |
| 430 | Thetford Mines | NO |
| 433 | Sherbrooke | YES |
| 437 | Cowansville | NO |
| 440 | Victoriaville | NO |
| 442 | Trois-Rivières | YES |
| 444 | Shawinigan | NO |
| 446 | La Tuque | NO |
| 447 | Drummondville | YES |

Table 5.7 Census metropolitan area/census agglomeration: unique identifier, name, tracted/non-tracted (continued)

| Census metropolitan area / census agglomeration unique identifier | Census metropolitan area / census agglomeration name | Tracted |
|---|--|---------|
| 450 | Granby | YES |
| 452 | Saint-Hyacinthe | NO |
| 456 | Joliette | NO |
| 459 | Saint-Jean-sur-Richelieu | NO |
| 462 | Montréal | YES |
| 465 | Salaberry-de-Valleyfield | NO |
| 468 | Lachute | NO |
| 480 | Val-d'Or | NO |
| 481 | Amos | NO |
| 485 | Rouyn-Noranda | NO |
| 501 | Cornwall | NO |
| 502 | Hawkesbury | NO |
| 505 | Ottawa - Gatineau | YES |
| 512 | Brockville | NO |
| 515 | Pembroke | NO |
| 516 | Petawawa | NO |
| 521 | Kingston | YES |
| 522 | Belleville | YES |
| 527 | Cobourg | NO |
| 528 | Port Hope | NO |
| 529 | Peterborough | YES |
| 530 | Kawartha Lakes | NO |
| 531 | Centre Wellington | NO |
| 532 | Oshawa | YES |
| 533 | Ingersoll | NO |
| 535 | Toronto | YES |
| 537 | Hamilton | YES |
| 539 | St. Catharines - Niagara | YES |
| 541 | Kitchener | YES |
| 543 | Brantford | YES |
| 544 | Woodstock | NO |
| 546 | Tillsonburg | NO |
| 547 | Norfolk | NO |
| 550 | Guelph | YES |
| 553 | Stratford | NO |
| 555 | London | YES |
| 556 | Chatham-Kent | NO |
| 557 | Leamington | NO |
| 559 | Windsor | YES |
| 562 | Sarnia | YES |
| 566 | Owen Sound | NO |
| 567 | Collingwood | NO |

Table 5.7 Census metropolitan area/census agglomeration: unique identifier, name, tracted/non-tracted (continued)

| Census metropolitan area / census agglomeration unique identifier | Census metropolitan area / census agglomeration name | Tracted |
|--|---|----------------|
| 568 | Barrie | YES |
| 569 | Orillia | NO |
| 571 | Midland | NO |
| 575 | North Bay | YES |
| 580 | Greater Sudbury / Grand Sudbury | YES |
| 582 | Elliot Lake | NO |
| 584 | Temiskaming Shores | NO |
| 586 | Timmins | NO |
| 590 | Sault Ste. Marie | YES |
| 595 | Thunder Bay | YES |
| 598 | Kenora | NO |
| 602 | Winnipeg | YES |
| 607 | Portage la Prairie | NO |
| 610 | Brandon | NO |
| 640 | Thompson | NO |
| 705 | Regina | YES |
| 710 | Yorkton | NO |
| 715 | Moose Jaw | NO |
| 720 | Swift Current | NO |
| 725 | Saskatoon | YES |
| 735 | North Battleford | NO |
| 745 | Prince Albert | NO |
| 750 | Estevan | NO |
| 805 | Medicine Hat | YES |
| 806 | Brooks | NO |
| 810 | Lethbridge | YES |
| 820 | Okotoks | NO |
| 825 | Calgary | YES |
| 828 | Canmore | NO |
| 830 | Red Deer | YES |
| 833 | Camrose | NO |
| 835 | Edmonton | YES |
| 840 | Lloydminster | NO |
| 845 | Cold Lake | NO |
| 850 | Grande Prairie | NO |
| 860 | Wood Buffalo | NO |
| 865 | Wetaskiwin | NO |
| 905 | Cranbrook | NO |
| 913 | Penticton | NO |
| 915 | Kelowna | YES |
| 918 | Vernon | NO |

Table 5.7 Census metropolitan area/census agglomeration: unique identifier, name, tracted/non-tracted (continued)

| Census metropolitan area / census agglomeration unique identifier | Census metropolitan area / census agglomeration name | Tracted |
|---|--|---------|
| 920 | Salmon Arm | NO |
| 925 | Kamloops | YES |
| 930 | Chilliwack | YES |
| 932 | Abbotsford | YES |
| 933 | Vancouver | YES |
| 934 | Squamish | NO |
| 935 | Victoria | YES |
| 937 | Duncan | NO |
| 938 | Nanaimo | YES |
| 939 | Parksville | NO |
| 940 | Port Alberni | NO |
| 943 | Courtenay | NO |
| 944 | Campbell River | NO |
| 945 | Powell River | NO |
| 950 | Williams Lake | NO |
| 952 | Quesnel | NO |
| 955 | Prince Rupert | NO |
| 960 | Kitimat | NO |
| 965 | Terrace | NO |
| 970 | Prince George | YES |
| 975 | Dawson Creek | NO |
| 977 | Fort St. John | NO |
| 990 | Whitehorse | NO |
| 995 | Yellowknife | NO |
| NULL | residual area | NO |

Source: Spatial Data Infrastructure (SDI), June 2006.

Census tract

See glossary (Appendix C) for definition.

Road rank

Each arc within the 2006 Road Network and Geographic Attribute File has been ranked according to the following criteria:

Rank 1 – The Trans-Canada highway as identified using road names and the Confederation Bridge to Prince Edward Island.

Rank 2 – Major/primary highways

Rank 3 – All other highways based on type code or name not already part of rank 2.

Rank 4 – All remaining road arcs.

The following table provides the total number of roads by rank for each province/territory.

Table 5.8 Road rank by province/territory

| Province/Territory | Rank 1 | Rank 2 | Rank 3 | Rank 4 | Total |
|---------------------------|---------------|---------------|---------------|------------------|------------------|
| Newfoundland and Labrador | 677 | 1,600 | 3,117 | 33,794 | 39,188 |
| Prince Edward Island | 263 | 482 | 1,598 | 10,753 | 13,096 |
| Nova Scotia | 600 | 4,908 | 5,351 | 66,423 | 77,282 |
| New Brunswick | 731 | 6,527 | 3,994 | 55,185 | 66,437 |
| Quebec | 2,314 | 18,151 | 13,140 | 384,148 | 417,753 |
| Ontario | 3,943 | 17,496 | 9,302 | 440,554 | 471,295 |
| Manitoba | 1,124 | 5,528 | 5,398 | 87,041 | 99,091 |
| Saskatchewan | 1,412 | 11,298 | 5,160 | 162,800 | 180,670 |
| Alberta | 1,352 | 11,343 | 9,862 | 231,449 | 254,006 |
| British Columbia | 2,449 | 7,387 | 3,449 | 223,445 | 236,730 |
| Yukon | 0 | 728 | 8 | 5,208 | 5,944 |
| Northwest Territories | 0 | 373 | 3 | 5,434 | 5,810 |
| Nunavut | 0 | 46 | 0 | 2,502 | 2,548 |
| Total¹ | 14,865 | 85,867 | 60,382 | 1,708,736 | 1,869,850 |
| National total | 14,865 | 85,784 | 60,381 | 1,708,534 | 1,869,564 |

1. Road arcs that straddle provincial boundaries are counted in both provinces, and therefore do not add up to the national total.

Appendix A: Spatial file naming conventions

For the 2006 Census, spatial product file names for files disseminated to clients follow a spatial file naming convention. The geographic area and code, file type, geographic reference date, software type and language are embedded within the name. Standardizing the names of the files should facilitate the storage of compressed files, all having extension .zip.

Each file name is 13 characters in length, which meets the requirements of ArcInfo[®]'s and MapInfo[®]'s limitations for file name sizes. All alphabetic characters are in lower case to maintain consistency.

First character: projection of file

| | |
|---|--|
| g | if projection is Geographic (latitude/longitude) |
| l | if projection is Lambert conformal conic |

Next three characters: primary geographic area of file

Table A.1 Spatial file naming conventions — geographic area of file

| Geographic area/product | English file | French file |
|--|--------------|-------------|
| National/provincial | pr_ | pr_ |
| Federal electoral district | fed | cef |
| Economic region | er_ | re_ |
| Census division | cd_ | dr_ |
| Census subdivision | csd | sdr |
| Census agricultural region | car | rar |
| Census consolidated subdivision | ccs | sru |
| Census metropolitan area/census agglomeration | cma | rmr |
| Census tract | ct_ | sr_ |
| Urban area | ua_ | ru_ |
| Designated place | dpl | ld_ |
| Dissemination area | da_ | ad_ |
| Dissemination block | db_ | id_ |
| Population ecumene | ecu | eco |
| Population ecumene national/provincial | epr | epr |
| Population ecumene census division | ecd | edr |
| Agricultural ecumene | eca | eca |
| Road network file | rnf | frr |
| Road network and geographic attribute file | rgf | frg |
| International boundary files (part of mainland U.S.A. and Alaska as well as Greenland) | int | int |
| Supporting hydrography (Great Lakes, St. Lawrence River, oceans, etc.) | hy_ | hy_ |

Next three numbers: geographic code of coverage

Table A.2 Spatial file naming conventions — geographic code of coverage

| National, provincial and territorial coverages | |
|---|---------------------------|
| 000 | Canada |
| 010 | Newfoundland and Labrador |
| 011 | Prince Edward Island |
| 012 | Nova Scotia |
| 013 | New Brunswick |
| 024 | Quebec |
| 035 | Ontario |
| 046 | Manitoba |
| 047 | Saskatchewan |
| 048 | Alberta |
| 059 | British Columbia |
| 060 | Yukon |
| 061 | Northwest Territories |
| 062 | Nunavut |

Next character: file type

- a if digital boundary file, detailed coverage for large-scale mapping excluding hydrographic coverage
- b if cartographic boundary file, detailed coverage for small-scale mapping
- c if detailed interior lakes hydrographic coverage (polygon)
- d if detailed interior rivers hydrographic coverage (line)
- e ecumene
- f if detailed interior lakes hydrographic coverage – closure lines (line)
- g cartographic boundary file, generalized for desktop mapping
- h additional cartographic international boundary coverage and hydrographic coverage of Great Lakes, St. Lawrence River and surrounding oceans
- l if detailed interior islands (part of hydrographic coverage [polygon])
- r road network files (RNFs)

Following 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. For the 2006 Census, the geographic reference date is January 1, 2006.

- 05 geographic reference date is 2005
- 06 geographic reference date is 2006

Next character: file format

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

Final two characters: language

| | |
|----|---------|
| _e | English |
| _f | French |

Example of the use of the file naming convention

The 2006 Road Network and Geographic Attribute File for Newfoundland and Labrador with English attributes in GML format: grgf010r06g_e.zip

Appendix B: File names, 2006 Road Network and Geographic Attribute File

Table B.1 File name and sizes — 2006 Road Network and Geographic Attribute File

| Geographic area | File name ArcInfo® | File size KB | File name GML | File size KB | File name MapInfo® | File size KB |
|---------------------------|-----------------------|-----------------|-------------------|-----------------|-----------------------|-----------------|
| Canada | grgf000r06a_e.zip | 223,698 | grgf000r06g_e.zip | 279,563 | grgf000s06m_e.zip | 122,578 |
| Newfoundland and Labrador | grgf010r06a_e.zip | 4,847 | grgf010s06g_e.zip | 6,069 | grgf010s06m_e.zip | 2,690 |
| Prince Edward Island | grgf011r06a_e.zip | 2,021 | grgf011s06g_e.zip | 2,513 | grgf011s06m_e.zip | 1,026 |
| Nova Scotia | grgf012r06a_e.zip | 8,487 | grgf012s06g_e.zip | 10,494 | grgf012s06m_e.zip | 5,018 |
| New Brunswick | grgf013r06a_e.zip | 7,385 | grgf013s06g_e.zip | 9,119 | grgf013s06m_e.zip | 4,313 |
| Quebec | grgf024r06a_e.zip | 44,360 | grgf024s06g_e.zip | 54,984 | grgf024s06m_e.zip | 26,431 |
| Ontario | grgf035r06a_e.zip | 56,404 | grgf035s06g_e.zip | 70,094 | grgf035s06m_e.zip | 31,803 |
| Manitoba | grgf046r06a_e.zip | 11,934 | grgf046s06g_e.zip | 14,999 | grgf046s06m_e.zip | 5,831 |
| Saskatchewan | grgf047r06a_e.zip | 25,659 | grgf047s06g_e.zip | 32,312 | grgf047s06m_e.zip | 11,661 |
| Alberta | grgf048r06a_e.zip | 28,115 | grgf048s06g_e.zip | 35,144 | grgf048s06m_e.zip | 15,322 |
| British Columbia | grgf059r06a_e.zip | 32,416 | grgf059s06g_e.zip | 40,682 | grgf059s06m_e.zip | 16,897 |
| Yukon | grgf060r06a_e.zip | 870 | grgf060s06g_e.zip | 1,096 | grgf060s06m_e.zip | 520 |
| Northwest Territories | grgf061r06a_e.zip | 818 | grgf061s06g_e.zip | 1,027 | grgf061s06m_e.zip | 478 |
| Nunavut | grgf062r06a_e.zip | 172 | grgf062s06g_e.zip | 201 | grgf062s06m_e.zip | 118 |

Appendix C: Glossary

Adjusted counts

'Adjusted counts' refer to previous census population and dwelling counts that were adjusted (i.e., recompiled) 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 urban 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 large urban area (known as the urban core). A CMA must have a total population of at least 100,000 of which 50,000 or more must live in the urban core. A CA must have an urban 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 central urban area, as measured by commuting flows derived from census place of work data.

If the population of the urban 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 urban core falls below 50,000. The urban areas in the CMA or CA that are not contiguous to the urban core are called the urban fringe. Rural areas in the CMA or CA are called the rural fringe.

When a CA has an urban 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 urban core subsequently falls below 50,000. All CMAs are subdivided into census tracts.

Census metropolitan area and census agglomeration influenced zone

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

Census subdivisions (CSDs) are assigned to a MIZ category based on the percentage of their resident employed labour force that has a place of work in the urban 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.

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. They are located in census metropolitan areas and in census agglomerations with an urban 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 urban 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) or planar (such as Universal Transverse Mercator).

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

Datum

A datum is a geodetic reference system that specifies the size and shape of the earth, and the base point from which the latitude and longitude of all other points on the earth's surface are referenced.

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 an urban area.

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 2006 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 2006 Census are based on the 2003 Representation Order.

Geocoding

Geocoding is the process of assigning geographic identifiers (codes) to map features and data records. The resulting geocodes permit data to be linked geographically.

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 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 2006 Census, the geographic reference date is January 1, 2006.

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.

Locality

'Locality' (LOC) refers to the historical place names of former census subdivisions (municipalities), former designated places and former urban areas, as well as to the names of other entities, such as neighbourhoods, post offices, communities and unincorporated places.

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.

The NGD was created in 1997 as a joint Statistics Canada/Elections Canada initiative to develop and maintain a national road network file serving the needs of both organizations. The active building of the NGD – that is, integrating the files from Statistics Canada, Elections Canada and Natural Resources Canada – occurred from 1998 to 2000. Thereafter, Statistics Canada and Elections Canada reconciled their digital boundary holdings to the new database's road network geometry so that operational products could be derived.

Since 2001, the focus of the NGD has been on intensive data quality improvements, especially regarding the quality and currency of its road network coverage. There has been considerable expansion of road names and civic addresses ranges, as well as the addition of hydrographic names. Priorities were determined by Statistics Canada and Elections Canada, enabling the NGD to meet the joint operational needs of both agencies in support of census and electoral activities.

Place name

'Place name' refers to the set of names that includes current census subdivisions (municipalities), current designated places and current urban areas, as well as the names of localities.

Population density

Population density is the number of persons per square kilometre.

Postal code

The postal code is a six-character code defined and maintained by Canada Post Corporation for the purpose of sorting and delivering mail.

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 three 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 codes 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 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, dissemination blocks, dissemination areas, census subdivisions, urban areas and designated places.

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 representative points when the data cannot be linked to DAs.

Road network file

The road network file (RNF) contains roads, road names, address ranges and road ranks for the entire country. Most commonly, address ranges are dwelling-based and are mainly available in the large urban centres of Canada.

Rural area

Rural areas include all territory lying outside urban areas. Taken together, urban and rural areas cover all of Canada.

Rural population includes all population living in the rural fringes 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), formerly known as the National Geographic Base (NGB), 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, dissemination areas and urban areas), and geocoding. The SDI is also the source for generating many geography products for the 2006 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) is Statistics Canada's official classification for three types of geographic areas: provinces and territories, census divisions (CDs) and census subdivisions (CSDs). The SGC provides unique numeric identification (codes) for these hierarchically related geographic areas.

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, a census metropolitan area and census agglomeration influenced zone (strong MIZ, moderate MIZ, weak MIZ or no MIZ), or the territories (Yukon Territory, Northwest Territories and Nunavut). The SAC is used for data dissemination purposes.

Thematic map

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

Urban area

An urban area has a minimum population concentration of 1,000 persons and a population density of at least 400 persons per square kilometre, based on the current census population count. All territory outside urban areas is classified as rural. Taken together, urban and rural areas cover all of Canada.

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

Urban core, urban fringe and rural fringe

'Urban core, urban fringe and rural fringe' distinguish between central and peripheral urban and rural areas within a census metropolitan area (CMA) or census agglomeration (CA).

'Urban core' is a large urban area around which a CMA or a CA is delineated. The urban 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 urban core of a CA that has been merged with an adjacent CMA or larger CA is called the 'secondary urban core'.

'Urban fringe' includes all small urban areas within a CMA or CA that are not contiguous with the urban core of the CMA or CA.

'Rural fringe' is all territory within a CMA or CA not classified as an urban core or an urban fringe.

Urban population size group

The term 'urban population size group' refers to the classification used in standard tabulations where urban areas are distributed according to the following predetermined size groups, based on the current census population.

| | | |
|---------|----------|---------|
| 1,000 | to | 2,499 |
| 2,500 | to | 4,999 |
| 5,000 | to | 9,999 |
| 10,000 | to | 24,999 |
| 25,000 | to | 49,999 |
| 50,000 | to | 99,999 |
| 100,000 | to | 499,999 |
| 500,000 | and over | |

Tabulations are not limited to these predetermined population size groups; the census database has the capability of tabulating data according to any user-defined population size group.

Appendix D: Geography Markup Language (GML)

Scope

The Geography Markup Language (GML) is an XML encoding for the modelling, transport and storage of geographic information including both the spatial and non-spatial properties of geographic features. This specification defines the XML Schema syntax, mechanisms, and conventions that:

- Provide an open, vendor-neutral framework for the definition of geospatial application schemas and objects;
- Allow profiles that support proper subsets of GML framework descriptive capabilities;
- Support the description of geospatial application schemas for specialized domains and information communities;
- Enable the creation and maintenance of linked geographic application schemas and datasets;
- Support the storage and transport of application schemas and datasets;
- Increase the ability of organizations to share geographic application schemas and the information they describe.

United States Bureau of Census (USBC) Partnership – TIGER/GML

Statistics Canada has committed to working with the United States Bureau of the Census (USBC) to ensure cross-border consistency in our products, and foster the development and application of a common, North American data model.

Like the United Kingdom Ordnance Survey and the United States Bureau of the Census, Statistics Canada has chosen to disseminate data in the Open Geospatial Consortium standard Geography Markup Language (GML) format. This standard allows organisations to achieve maximum compatibility not only of format but eventually of content. In partnership with USBC, Statistics Canada is committed to providing a harmonized North American street network file by 2008.

Example of 2006 Road Network and Geographic Attribute File dataset in GML format

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<wfs:FeatureCollection xmlns:c2006="http://geodepot.statcan.ca/2006"
xmlns:ogc="http://www.opengis.net/ogc"
xmlns:gml="http://www.opengis.net/gml"
xmlns:wfs="http://www.opengis.net/wfs"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="http://geodepot.statcan.ca/2006">
  <gml:boundedBy>
    <gml:Box srsName="EPSG:4269">
      <gml:coordinates>-141.00133294347273,60.000015192925005 -
123.8469079612411,68.93866263164622</gml:coordinates>
    </gml:Box>
  </gml:boundedBy>
  <gml:featureMember>
    <RoadSegment fid="C2006_RF_3239787">
      <rbUid>3239787</rbUid>
```

Example of 2006 Road Network and Geographic Attribute File dataset in GML format (continued)

```

<name>Teslin</name>
<type>CRES</type>
<addrFmLe>103</addrFmLe>
<addrToLe>125</addrToLe>
<addrFmRg>100</addrFmRg>
<addrToRg>146</addrToRg>
<pruidLe>60</pruidLe>
<prnameLe>Yukon Territory / Territoire du Yukon</prnameLe>
<prnameLe>Yukon Territory</prnameLe>
<prfnameLe>Territoire du Yukon</prfnameLe>
<pruidRg>60</pruidRg>
<prnameRg>Yukon Territory / Territoire du Yukon</prnameRg>
<prnameRg>Yukon Territory</prnameRg>
<prfnameRg>Territoire du Yukon</prfnameRg>
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<csdnameLe>Watson Lake</csdnameLe>
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<csduidRg>6001003</csduidRg>
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<centreline>
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    <gml:coordinates decimal="." cs="," ts=" " >-
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-128.7114620412846,60.07052476756945 -128.7113919437467,60.0695205069788
</gml:coordinates>
  </gml:LineString>
</centreline>
</RoadSegment>
</gml:featureMember>
<gml:featureMember>
  <RoadSegment fid="C2006_RF_3239788">
    <rbUid>3239788</rbUid>
    <name>Liard</name>
    <type>DR</type>
    ... etc ...
  </RoadSegment>
</gml:featureMember>
</wfs:FeatureCollection>

```


Appendix E: National Road Network (NRN), GeoBase

In order to continue improving the quality and relevance of our spatial infrastructure, Statistics Canada has initiated a long term project in partnership with Elections Canada to migrate the Road Network File to the Department of Natural Resources' National Road Network (NRN) model in time for the 2011 Census of population. Additional agreements with provincial and territorial stakeholders are in the process of being negotiated and will become a source of GPS compliant data with more accurate and timely attribute information. A preliminary version of the GPS compliant Road Network File based on the NRN model, including data provided by our provincial/territorial partners, could be available as early as spring 2008.

The Department of Natural Resources' National Road Network (NRN) is available free of charge from the GeoBase web portal. <http://www.geobase.ca/>.

National Road Network (NRN) - Description¹

The GeoBase portal offers access to over 1 million kilometres of accurate up-to-date centerline road network data. The National Road Network, Canada, Level 1 (NRNC1) is the representation of a continuous accurate centerline for all non-restricted use roads in Canada (5 metres or more in width, drivable and no barriers denying access).

The primary data source of NRNC1 was produced with field driven Differential Global Positioning System (DGPS) technology. Additional sources, such as existing accurate photogrammetric provincial and municipal data, were also integrated and updated. During the initial acquisition of the NRN data, efforts were made to utilize and update as much existing authoritative 'closest to source' centerline road data as was possible.

Natural Resources Canada (NRCan), in partnership with several provinces, managed and produced the first version of the NRN. Initial data collection of the NRN was undertaken in the summer of 1999 and was completed in 2005.

The Canadian Council on Geomatics (CCOG) commissioned the Ontario Ministry of Natural Resources and Natural Resources Canada to work together in defining the NRNC1 Standards and Specifications and data model. These documents were then presented for final review and approval to all authoritative data-producing stakeholders throughout Canada. By working together, a consensus was reached in defining the first version of the NRNC1.

The resulting model of the NRN is based on Linear Referencing System (LRS) concepts. This approach allows for the management of geometric representation separate from the attribute information (referred to as an "event" in LRS). However, it is important to note that in order to satisfy the greatest number of road network data users, the data has also been modelled and will be distributed as a conventional road network.

One of the most important features of the NRN data is that each Road Element and each Event (Attribute) will contain a universally unique identifier (UUID), referred to as the NID. The importance of NIDs is quite significant. It will allow users of GeoBase-NRN data to receive, manage and introduce road network changes over time. NIDs will primarily be used to manage changes.

1. Source: Department of Natural Resources, <http://www.geobase.ca/geobase/en/data/nrnc1.html>.

End-use licence agreement for Statistics Canada's Road Network and Geographic Attribute File, 2006 Census

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