Population Ecumene Census Division Cartographic Boundary File, Reference Guide

Census year 2006

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Population Ecumene Census Division Cartographic Boundary File, Reference Guide

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What's new?

- The 2006 Population Ecumene Census Division Cartographic Boundary File has an ecumene mask file that is separate from the census division boundary file.

- The internal lakes constitute a separate file from the accompanying boundary files.

- All boundary files are available for download from the Statistics Canada website.

- *2006 Standard Geographical Classification, Volume II: Reference Maps* are available free of charge from the Statistics Canada website as a complementary product to the 2006 Boundary Files.

Table of contents

1. About this guide

This reference guide is intended for users of the 2006 Population Ecumene Census Division Cartographic Boundary File. The guide provides an overview of the files, the general methodology used to create them, and important technical information for users.

Technical specifications in Section 5 include system requirements, installation instructions, record layouts, and item descriptions.

Geographic terms and concepts found throughout the text are described in Appendix A: Glossary. More details can be found in the *2006 Census Dictionary* (Catalogue no. 92-566-XWE). Supplementary information is provided in the appendices.

This reference guide does not provide details on specific software packages that are available for use with the 2006 Boundary Files. Users are advised to contact the appropriate software vendor for information.

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2. Overview

The 2006 Population Ecumene Census Division Cartographic Boundary File

The 2006 Population Ecumene Census Division Cartographic Boundary File delineates Canada's population ecumene. Ecumene, a word derived from the Greek root oixos meaning inhabited and nenon meaning space, is a term used by geographers to indicate 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 purposes.

The use of a population ecumene facilitates the display of data. By effectively masking non-ecumene areas of Canada, it restricts the display of population characteristics to those areas where population is sufficiently concentrated.

The population ecumene is constructed by selecting dissemination blocks that have a minimum population density of 0.4 persons per square kilometre (about one person per square mile). To enable the population ecumene to be used for small-scale thematic mapping, the detailed ecumene limits are generalized so that, where appropriate, small, separate ecumene pockets are aggregated to form larger areas. There is at least one ecumene pocket (polygon) in every census division.

The 2006 Population Ecumene Census Division Cartographic Boundary File is available in ArcInfo® shapefile format, Geography Markup Language (GML) format and MapInfo® tab file format. The file may be downloaded free of charge from the Statistics Canada website (www.statcan.ca). See the technical specifications in section 5 for more details on record layouts and file formats.

Figure 2.1 shows how a map of Canada appears when the population change between 2001 and 2006 is displayed only within the population ecumene.

Figure 2.1 Canadian population change between 2001 and 2006, mapped by the population ecumene
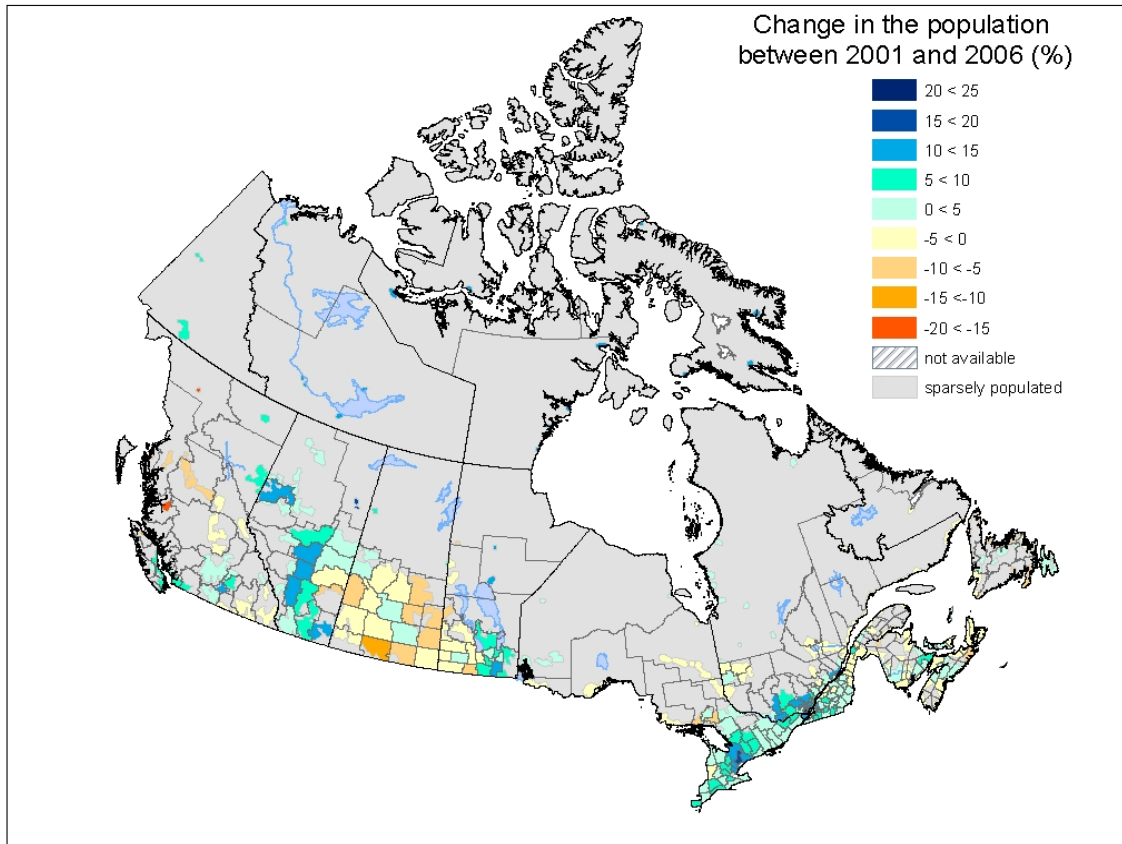
Reference date

The geographic reference date is a date determined by Statistics Canada to finalize the geographic framework for which census data are collected, tabulated and reported. The reference date for the geographic area boundaries in digital and cartographic boundary files is January 1, 2006.

3. How to use this product

Purpose of the product

The population ecumene is designed to allow users to thematically map data. By effectively masking non-ecumene areas of Canada, it enables users to display data only where population is concentrated (where there are ecumene pockets). Data that describes population characteristics can be assigned to and displayed within the ecumene permitting a more accurate representation.

Content

The 2006 Population Ecumene Census Division Cartographic Boundary File consists of four files: an ecumene mask file; a census division boundary file; a province/territory boundary file; and a hydrography (major internal lakes) file.

1. **The ecumene mask file**

    The ecumene file is a mask consisting of pockets (polygons). Every polygon contains a Boolean value — either 1, being in the ecumene or 0, those sparsely populated areas that are outside the ecumene. There is at least one ecumene pocket in every census division of Canada.

2. **The census division boundary file**

    The census division boundary file is a layer of polygons for each census division. Each census division polygon contains a unique identification code (the CDUID) and a name as an attribute. This file allows the display of census division boundaries on a map of the population ecumene.

3. **The province/territory boundary file**

    The province/territory boundary file consists of polygons for each province. Each province/territory polygon has a unique identification code (the PRUID) and a name as an attribute. In addition, both English and French names, together with their abbreviations, are included as attributes. This boundary file is provided solely for displaying provincial and territorial boundaries on a map of the population ecumene.

4. **The hydrography (major internal lakes) file**

    New to this product, the major lakes are included as a separate file. The file contains no attributes as it is provided for reference purposes only.

Figure 3.1 through 3.5 provide a visual representation of how these different layers are built up to provide a complete map. This map provides an accurate visual representation of the spatial distribution of population characteristics within Canada.

Figure 3.1 How the layers combine to create a complete map

Map layer: census divisions   **Appearance after layer added**
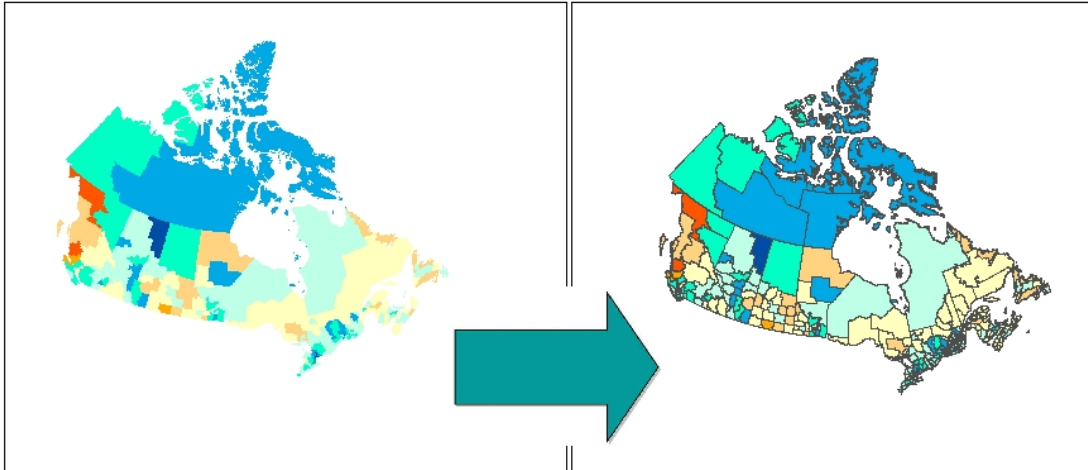
Figure 3.2 Adding the ecumene mask to display data only within the ecumene

Map layer: ecumene mask   **Appearance after layer added**
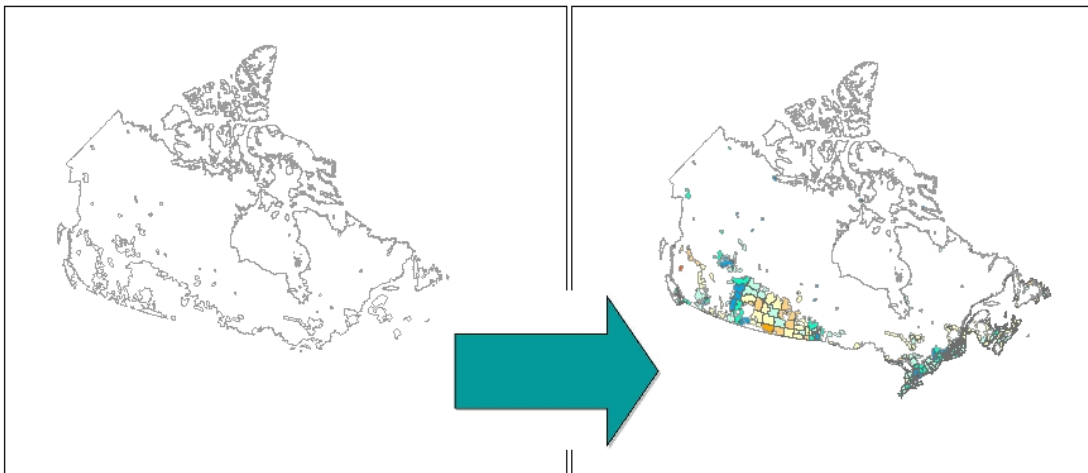
Figure 3.3 Add the supplementary hydrography for reference

Map layer: major lakes   **Appearance after layer added**
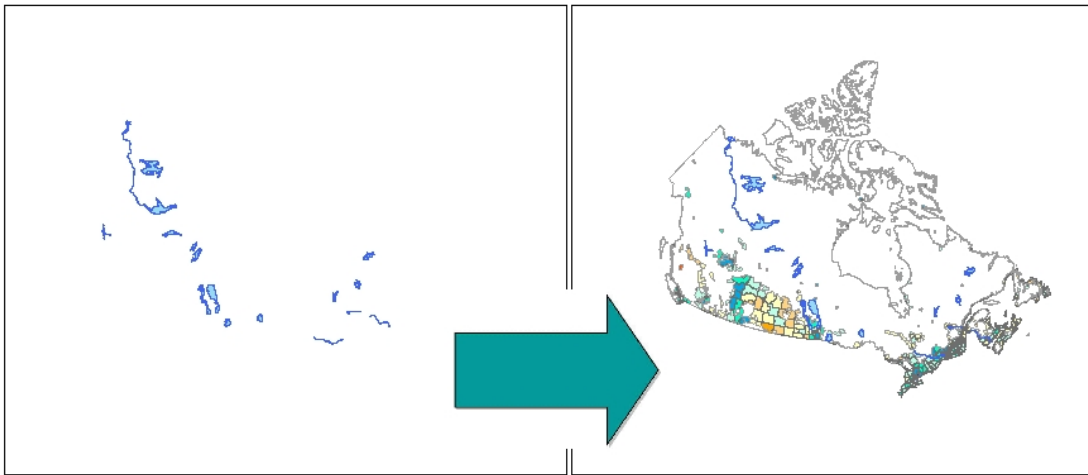
Figure 3.4 Adding the census division boundaries for reference

Map layer: census division   **Appearance after layer added**
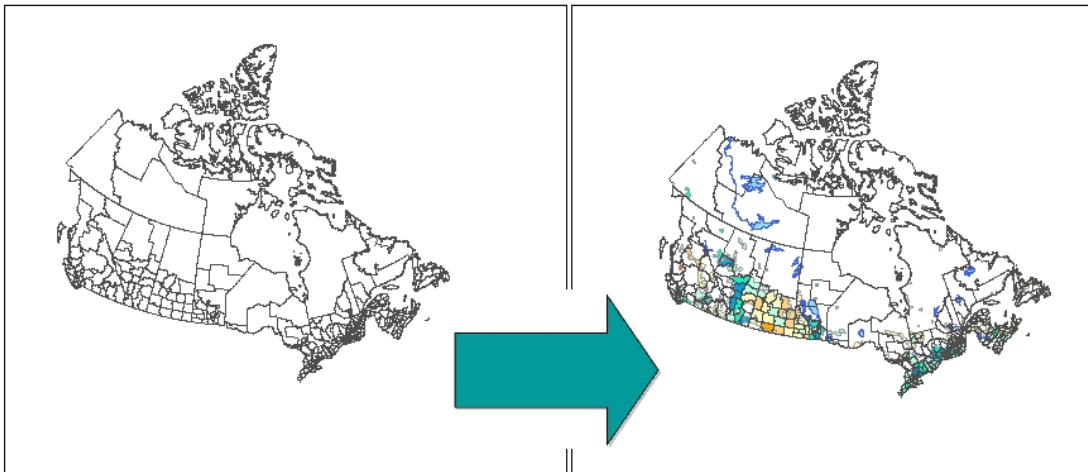
Figure 3.5 Adding the provincial / territorial boundaries for reference

Map layer: provinces / territories   **Appearance after layer added**
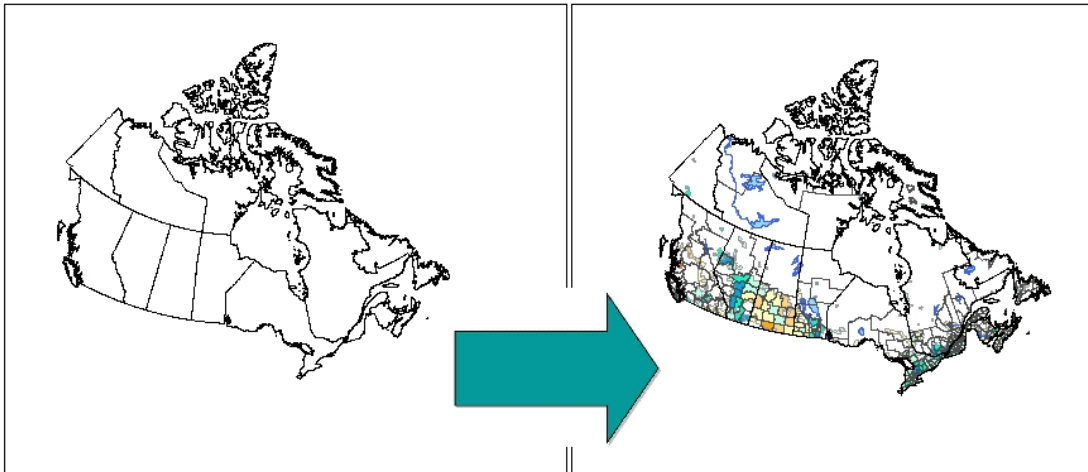
The use of an ecumene mask is particularly recommended for dot and choropleth maps. If an ecumene is not applied to dot maps, the dots may be randomly spread over the spatial extent of a unit. This approach defeats the main attributes of dot mapping (i.e., showing correct location, extent and density of various characteristics). Similarly, one of the inherent limitations of choropleth maps is that the statistical distribution is assumed to be homogeneous or uniformly spread over each unit area, and is consequently represented by a single tone or colour covering the entire unit. Using an ecumene limits the display to only those areas where population is found and results in a more accurate depiction of the spatial distribution of data.

Limitations

The data used to create the 2006 Population Ecumene Census Division Cartographic Boundary File are based on source data with a wide range of scales. Maps produced from this source will not be precise if plotted at a larger scale than the scale of the source material used in its creation.

The 2006 population ecumene, together with the surrounding shoreline and major internal lakes, is generalized to render it suitable for cartographic display at a small scale (1:20,000,000 to 1:25,000,000). Because of this generalization, the position of the boundaries and shorelines are not compatible with the 2006 Census Cartographic Boundary Files, Road Network File or Road Network and Geographic Attribute Files. Similarly, the product does not support cadastral, surveying or engineering applications.

Comparison with other products

- Due to the extensive generalization and the use of a different generalized coastline, the 2006 Population Ecumene Census Division Cartographic Boundary File is not compatible with other 2006 Census Boundary File products or other spatial files.
- Due to the changes in boundaries and the use of a different generalized coastline, the 2006 Population Ecumene Census Division Cartographic Boundary File is not compatible with the 2001 Census Boundary File products or other spatial files.

Comparison to the 2001 Population Ecumene

The 2006 Population Ecumene Census Division Cartographic Boundary File is derived in the same fashion as the 2001 ecumene, using the dissemination block. However, there are a few significant changes worth noting. The coastline and the large interior lakes are generalized using the hydrography created for the 2006 Census Cartographic Boundary Files.

In 2001, census division boundaries were integrated into the ecumene pockets of the mask. In the 2006 product, the mask is separate from the census division layer to facilitate thematic mapping.

The census division boundaries within the 2006 Population Ecumene Census Division Cartographic Boundary File are updated to reflect boundary changes and are not compatible with the census division boundaries contained in the 2001 Population Ecumene Census Division Cartographic Boundary File.

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 purpose and usage, as well as specific quality elements pertaining to lineage, positional accuracy, attribute accuracy, logical consistency and completeness. This information is provided to users for all spatial data products disseminated for the census.

Lineage

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

The geographic area boundaries, names, codes, and the relationships among the various geographic levels are found on Statistics Canada's Spatial Data Infrastructure. The data for administrative areas are updated using information from provincial and territorial sources. The data for statistical areas are updated using the results of the previous census and input from users.

Creation of the 2006 Population Ecumene Boundary Files

The Spatial Data Infrastructure (SDI) is the source for all 2006 Boundary File products, including the data for the 2006 Population Ecumene Census Division Cartographic Boundary Files. Primary data manipulation of the product layers included preserving the geographic hierarchy of attributes inherent within a geography. This data manipulation included copying source data to a production environment and the joining of hierarchical geographic attributes. The final data treatment was an output of various file formats supported by Geographic Information System (GIS) software.

Creation of the 2006 Cartographic Boundary Files

The 2006 Cartographic Boundary Files were created using the 2006 Digital Boundary Files and a set of hydrographic features from the National Geographic Database. The hydrographic features included coastal features (e.g., oceans, bays), the Great Lakes, and the St. Lawrence River. These data were used to remove from the digital boundary files that portion of the geographical area within these major coastal water features.

Additional formatting

The files were transformed from Lambert conformal conic projection into latitude / longitude coordinates. Finally, the files were verified, translated into French and English versions and appropriately labelled.

The files were converted into three output formats (ArcInfo® [.shp], Geography Markup Language [.gml] and MapInfo® [.tab]).

Ecumene mask

The ecumene mask file was created by using the land area and the population count to calculate the population density of each dissemination block. Every block was then classified as either being an ecumene block (meeting the population density criteria of 0.4 or more persons per square kilometre) or being a non-ecumene block (those with a population density below 0.4 persons per square kilometre). The resulting ecumene outline was smoothed so as to be useful for small scale mapping.

Coastal features

The coastal features were created by selecting water features exterior to Canada's land mass from the National Geographic Database's hydrographic reference layers. These reference data were sourced from the National Topographic Data Base (1:50,000 and the 1:250,000 maps) and the Digital Chart of the World. This included polygon features forming the Pacific, Atlantic and Arctic oceans, as well as the Beaufort and Labrador seas and all related channels, straits, passages, inlets and bays including Hudson Bay and James Bay. In addition, features forming the Great Lakes, Lake of the Woods and the St. Lawrence Seaway were also included. The coastal features were further generalized from those disseminated in the cartographic boundary files produced for 2006. Additional small islands and bays were removed to make the files appropriate for use in small-scale mapping.

The coastal features were then generalized by removing all islands smaller than 100,000 square metres except when the islands accounted for the only land area for geographic areas or when they were intersected by road arcs found on the road network file.

Inland water

The inland water file was created by selecting water features from the National Geographic Database's hydrographic reference layers. These reference data were sourced from the National Topographic Data Base (1:50,000 and the 1:250,000 maps) and the Digital Chart of the World. Each feature was assigned a rank based on its size and/or cultural importance. The largest and most important features have lower rank values. Only those features with the lowest rank are included with the ecumene boundary files.

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 product after all transformations.

The boundaries are derived from the Spatial Data Infrastructure. The data in the Spatial Data Infrastructure are stored in double precision. This precision allows features that are next to each other on the ground to be placed in the correct position on the map, relative to each other, without overlap. However, the absolute positional accuracy of the features in the database varies depending on the source of the features.

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

Attribute accuracy

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

As noted under Lineage, the attributes (names, types and codes) for all geographic areas displayed on the maps are sourced from the Spatial Data Infrastructure. The names and types for administrative geographic areas have been updated from the 2001 Census using source materials from provincial and territorial authorities.

The attribute data associated with the polygons in the boundary files were independently verified against the data in the Spatial Data Infrastructure and found to be accurate.

Logical consistency

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

In each boundary file, all geographic areas have been verified to have a unique identifier that is valid for the 2006 Census.

Boundaries found in this product are consistent with those found in other spatial products produced as part of the suite of 2006 Census products.

The hydrographic data files were specially created for the boundary files to enable thematic mapping at a national scale.

The land area for geographic areas present in GeoSuite may not be consistent with that computed from the cartographic boundary files. This is because the water features used in the creation of the cartographic boundary files are based on a set of hydrographic features that was created for thematic mapping.

Topological consistency

Topological consistency describes the correctness of the explicitly encoded topological characteristics of a dataset.

This product was checked to ensure that the polygons were consistent with the geographic units being represented. Very small polygons and slivers (resulting from the integration of different layers of information) were removed.

The ecumene boundary mask file was verified to ensure that every census division contained an ecumene pocket.

Consistency with other products

Due to extensive generalization, the boundaries in the various files of this product are not consistent with the 2006 Census Cartographic Boundary Files, the 2006 Census Road Network File nor the 2006 Census Road Network and Geographic Attribute File.

Completeness

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

Each boundary file contains the complete set of geographic areas for that level of the geographic hierarchy.

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

5. Technical specifications

Software formats

Boundary Files for the 2006 Census are available for download from the Statistics Canada website in the following formats:

- ArcInfo® format version 9.0
  File extension: .shp

- Geography Markup Language version 2.1.2
  File extension: .gml

- MapInfo® format version 8.0
  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.

Some of the 2006 Boundary Files contain attributes with accented characters. These characters can be seen in UNIX and Windows® versions of ArcInfo® and MapInfo®. They were tested on desktop versions of ArcGIS® 9.0 and MapInfo® 7.0, 8.0 and 8.5.

Geographic representation

The 2006 Boundary Files are available on the Statistics Canada website in the following geographic representation:

Datum:	NAD 83
Coordinates:	Latitude / Longitude

To ensure calculations are relevant (e.g., to calculate land area), it is recommended that the latitude/longitude coordinates be transformed to an appropriate map projection.

Record layouts and item/field descriptions

1. Province and Territory

The Province and Territory Boundary Files contain the boundaries of all 10 provinces and three territories. 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.

Table 5.1.1 Record layouts — 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®.
genCartographic Boundary	MultiPolygon Property Type	Shape geometry; specific to Geography Markup Language.
PRUID	char (2)	Uniquely identifies a province or territory.
PRNAME	char (100)	The province or territory name.
PRENAME	char (100)	The province or territory name in English.
PRFNAME	char (100)	The province or territory name in French.
PREABBR	char (10)	The English abbreviation of the province or territory name.
PRFABBR	char (10)	The French abbreviation of the province or territory name.

2. Census division

The Census Division Boundary Files contain the boundaries of all 288 census divisions. A census division is an administrative area which is a component of the Standard Geographical Classification and is comprised of census subdivisions. Census division 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 or territorial level and the municipality (census subdivision).

Table 5.2.1 Record layouts — 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®.
genCartographic Boundary	MultiPolygon Property Type	Shape geometry; specific to Geography Markup Language.
CDUID	char (4)	Uniquely identifies a census division (composed of the 2-digit province/territory code and the 2-digit census division code).
CDNAME	char (100)	The census division name.
CDTYPE	char (3)	The type of census division (see Domain).
PRUID	char (2)	Uniquely identifies a province or territory.
PRNAME	char (100)	The province or territory name.

Domain

The following is a list of the types associated with census divisions.

Census division / Division de recensement (CDR)
County / Comté (CT)
County (CTY)
District (DIS)
District municipality (DM)
Management board (MB)
Municipalité régionale de comté (MRC)
Regional district (RD)
Region (REG)
Regional municipality (RM)
Territoire équivalent (TÉ)
Territory / Territoire (TER)
United counties (UC)

3. Population ecumene mask

The population ecumene mask files contain polygons for each ecumene and non-ecumene pocket in Canada.

Table 5.3.1 Record layouts — 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®.
genCartographic Boundary	MultiPolygon Property Type	Shape geometry; specific to Geography Markup Language.
ECUID	char (10)	Uniquely identifies an ecumene polygon.
ECUMENE	char (1)	A one digit Boolean value of "1" for ecumene and "0" for out of ecumene (sparsely populated)

4. Supplementary hydrographic layers

The supplementary hydrographic layers are provided to allow for the mapping of inland water, Great Lakes, and the St. Lawrence River. The hydrographic layers were created to be used in conjunction with the boundary files. The record layout in Table 5.4.1 below is for interior water bodies (polygons) and interior rivers (polygons).

Table 5.4.1 Record layouts — 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®.
genCartographic Boundary	MultiPolygon PropertyType	Shape geometry; specific to Geography Markup language.
HYDROUID	double (11)	Uniquely identifies a water feature.
WATER	char (1)	A one digit Boolean value of "1" for water and "0" for land

Appendix A: 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 **m**etropolitan area and census agglomeration **i**nfluenced **z**one (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 **m**etropolitan area and census agglomeration **i**nfluenced **z**one (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 B: Hierarchy of standard geographic units for dissemination, 2006 Census
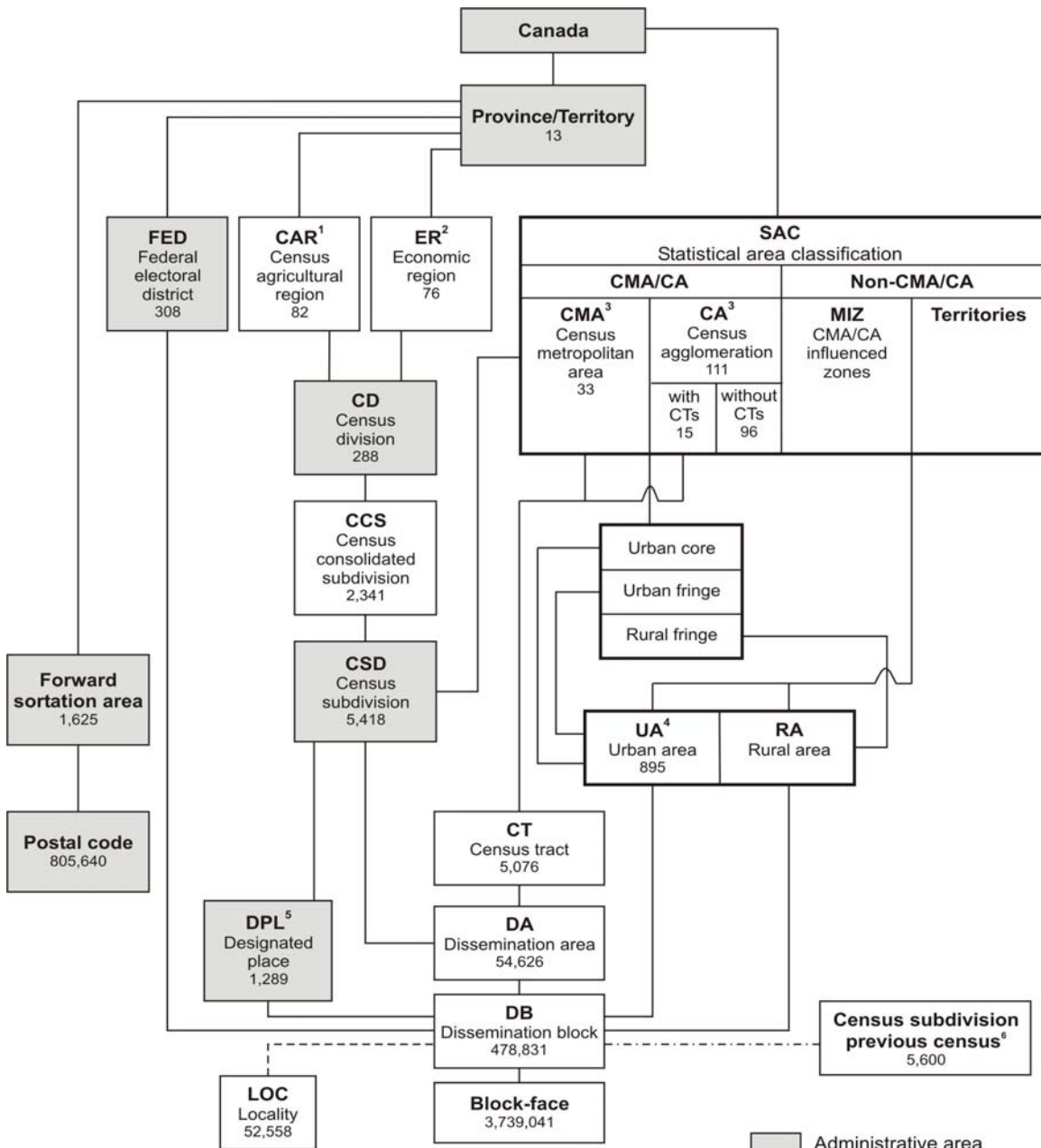
1. Census agricultural regions in Saskatchewan are composed of census consolidated subdivisions.
2. Economic regions are composed of complete census divisions except for one CD in Ontario.
3. One CMA and three CAs cross provincial boundaries.
4. Five UAs cross provincial boundaries.
5. Designated places respect CSD boundaries, but do not cover the total area of CSDs.
6. For the 2006 Census, a best fit linkage is created between the 2001 CSDs and 2006 DBs to facilitate historical data retrieval.

Appendix C: Geographic units by province and territory, 2006 Census

Geographic unit	Canada 2001	Canada 2006	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)	301[1]	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	288	11	3	18	15	98	49	23	18	19	28	1	2	3
Census consolidated subdivision	2,446	2,341	89	68	43	151	1,008	316	127	300	77	156	1	2	3
Census subdivision (CSD)	5,600	5,418	377	113	100	276	1,294	585	297	984	453	836	35	37	31
CSD dissolutions (January 2, 2001 to January 1, 2006)	340	...	9	0	0	0	282	5	7	29	4	4	0	0	0
CSD incorporations (January 2, 2001 to January 1, 2006)	...	158	5	0	2	1	100	4	6	11	5	24	0	0	0
Designated place	1,261	1,289	182	0	49	167	83	88	58	159	262	240	1	0	0
Census metropolitan area	27	33	1	0	1	2	6[2]	15[2]	1	2	2	4	0	0	0
Census agglomeration (CA)	113	111	3	2	4	5[2]	26[2]	28[2]	3	7[2]	12[2]	22	1	1	0
CA with census tracts	16	15	0	0	0	1	3	4	0	0	3	4	0	0	0
CA without census tracts	94	96	3	2	4	4[2]	23[2]	24[2]	3	7[2]	9[2]	18	1	1	0
Census tract	4,798	5,076	46	0	88	99	1,289	2,136	168	105	491	654	0	0	0
Urban area	913	895	32	7	36	32[2]	226[2]	260[2]	38[2]	58[2]	107[2]	95	1	3	5
Locality	52,291	52,558	2,445	964	3,924	3,450	12,617	10,905	2,349	3,898	3,472	7,708	363	173	290
Dissemination area	52,993	54,626	1,062	292	1,633	1,439	13,408	19,177	2,152	2,431	5,357	7,471	78	84	42
Dissemination block	478,707	478,831	8,199	3,251	14,656	14,864	108,751	126,244	30,421	51,729	65,071	52,808	1,261	967	609
Block-face	3,764,232	3,739,041	78,376	26,190	154,564	132,873	835,458	942,567	198,063	361,069	507,859	473,418	11,888	11,620	5,096
Forward sortation area	1,595	1,625	35	7	76	110	415	522	64	48	150	189	3	3	3
Postal code	758,658	805,640	10,378	3,157	25,313	57,355	202,972	269,676	23,943	21,541	76,924	112,904	942	506	29

… not applicable

1. Federal electoral districts (1996 Representation Order).

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

Appendix D: 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 will be embedded within the name. Standardizing the names of the files should facilitate the storage of compressed files, all having the 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 D.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	ecu
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 D.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	if geographic reference date is 2005
06	if geographic reference date is 2006

Next character: file format

a	ArcInfo® shapefile (.shp)
g	Geography Markup Language (GML) file (.gml)
m	MapInfo® TAB file (.tab)

Final two characters: language

_e	English
_f	French

Example of the use of the file naming conventions

The 2006 Population Ecumene Census Division Cartographic Boundary File with English attributes in MapInfo® format: gecd000e06m_e.zip

Appendix E: Unique identifiers consistent with other geography products

Unique identifiers are codes that uniquely identify a geographic area within Canada. Data from different files (but for the same geographic area) can be joined or related based on the unique identifier. For example, the data in GeoSuite can be mapped on the Census Subdivision Boundary Files using the CSDUID as the field by which the two data sets can be related.

The following are the unique identifiers for geographic areas:

Geographic area	Unique identifier	Code composition
Province/Territory	PRUID	2-digit province code
Federal electoral district	FEDUID	(2-digit province code) and (3-digit federal electoral district code)
Census metropolitan area/Census agglomeration	CMAUID	3-digit census metropolitan area/census agglomeration code Where there are no census metropolitan areas/census agglomerations, this code is NULL.
Census tract	CTUID	(3-digit census metropolitan area/census agglomeration code) and (7-character census tract name) Where there are no census tracts, this code is NULL.
Urban area	UAUID	4-digit urban area code Where there are no urban areas, this code is NULL.
Economic region	ERUID	(2-digit province code) and (2-digit economic region code)
Census division	CDUID	(2-digit province code) and (2-digit census division code)
Census subdivision	CSDUID	(2-digit province code) and (2-digit census division code) and (3-digit census subdivision code)
Census agricultural region	CARUID	(2-digit province code) and (2-digit census agricultural region code)
Census consolidated subdivision	CCSUID	(2-digit province code) and (2-digit census division code) and (3-digit census consolidated subdivision code)
Designated place	DPLUID	(2-digit province code) and (4-digit designated place code) Where there are no designated places, this code is NULL.
Dissemination area	DAUID	(2-digit province code) and (2-digit census division code) and (4-digit dissemination area code)
Dissemination block	DBUID	(2-digit province code) and (2-digit census division code) and (4-digit dissemination area code) and (2-digit dissemination block code)

Appendix F: 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. This release of the Digital Boundary Files and Cartographic Boundary Files, along with the Road Network File is the first step in delivering a harmonized international street network by 2008.

Example of 2006 Cartographic Boundary 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="">
      <gml:coordinates>
              -141.0180733154725,41.710962713086914
              -52.61940853657461,83.13550246107124
          </gml:coordinates>
    </gml:Box>
  </gml:boundedBy>
  <gml:featureMember>
    <CensusDivision fid="C2006_CU_1001">
      <cdUid>1001</cdUid>
```

Example of 2006 Cartographic Boundary File dataset in GML format, continued

```
    <cdname>Division No.  1</cdname>
    <cdtype>CDR</cdtype>
    <prUid>10</prUid>
    <prname>Newfoundland and Labrador / Terre-Neuve-et-Labrador</prname>
    <genCartographicBoundary>
      <gml:MultiPolygon srsName="EPSG:4269">
        <gml:polygonMember>
          <gml:Polygon>
            <gml:outerBoundaryIs>
              <gml:LinearRing>
                <gml:coordinates decimal="." cs="," ts=" ">
                                      -52.91716828729011,48.17028332239032
                                      -52.91835603519344,48.17145986823297
                                      -52.918777759830405,48.171578478287124
                                      ... etc ...
                                      -52.91601315715167,48.164553385989805
                                      -52.91650044679079,48.165336294715274
                              </gml:coordinates>
              </gml:LinearRing>
            </gml:outerBoundaryIs>
          </gml:Polygon>
        </gml:polygonMember>
        <gml:polygonMember>
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            <gml:outerBoundaryIs>
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                                      -52.91451916467797,47.65523744797423
                                      ... etc ...
                                      -52.91437732682155,47.65317923406241
                                      -52.914421146647115,47.65328639495161
                              </gml:coordinates>
              </gml:LinearRing>
            </gml:outerBoundaryIs>
          </gml:Polygon>
        </gml:polygonMember>
      </gml:MultiPolygon>
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 </gml:featureMember>
 <gml:featureMember>
  <CensusDivision fid="C2006_CU_1002">
    <cdUid>1002</cdUid>
    <cdname>Division No.  2</cdname>
    <cdtype>CDR</cdtype>
                ... etc...
  </CensusDivision>
 </gml:featureMember>
</wfs:FeatureCollection>
```

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    (ii)   upon written notice of termination by the Licensee at any time, and such termination shall take effect thirty (30) days after the receipt by the Licensor of such notice; or
    (iii)   upon mutual agreement of the parties.

6.2   Upon termination of this Agreement, for whatever reason, the Licensee's rights under section 3 shall immediately cease; and all obligations of the Parties which expressly or by their nature survive termination shall continue in full force and effect subsequent to and notwithstanding such termination, until they are fully satisfied or by their nature expire. For greater clarity, but without restricting the generality of the foregoing, the following provisions survive termination of this Agreement:
                    - section 5 (representations, warranties, indemnities)

6.3   Notwithstanding subsections 6.1 and 6.2 above, the Licensee may continue to use the Data for the purpose of completing orders of Derived Products made before the termination date of this Agreement

6.4   Notwithstanding the termination of this Agreement, all agreements entered into by the Licensee in the exercise of its rights under section 3 thereof prior to such termination and all obligations imposed therein shall continue in full force and effect subject to their terms.

7.0   GENERALITIES

7.1   Applicable Law
        This Agreement shall be construed and enforced in accordance with, and the rights of the parties shall be governed by, the laws of Ontario and Canada, as applicable.

7.2   Entirety of Agreement
        This Agreement hereto constitute the entire agreement between the parties with respect to its subject matter. This Agreement may only be amended in writing, signed by both parties, which expressly states the intention to amend this Agreement.

7.3   Alternate Dispute Resolution
        If a dispute arises concerning this Agreement, or if a proposed modification of any term of this Agreement cannot be agreed between the parties, the parties shall attempt to resolve the matter first by negotiation.

        If the parties have not succeeded in negotiating a resolution, then they shall jointly submit the dispute to a mutually accepted mediator. If the parties cannot agree on an acceptable mediator, then either party may submit the dispute to binding arbitration.

        The arbitral tribunal shall be governed by the UN Commercial Arbitration Code (the "Code"), referred to in the Commercial Arbitration Act, R.S.C 1985, c. C-4.6, and judgment upon the award rendered by the arbitral tribunal may be entered in any court having jurisdiction over the matter.

        The arbitral tribunal shall consist of one arbitrator chosen by the parties.
        Subject to the Code, the parties agree that the award and determination of the arbitral tribunal shall be final and binding on both parties, shall be without right of appeal and shall be the exclusive remedy between the parties regarding any claims, counterclaims, issues or disputes presented to the arbitral tribunal.

Costs

The Parties shall bear the costs of the mediation equally, except that each party shall bear its own personal costs of the mediation.

The costs of the arbitral tribunal's fees and expenses shall be shared equally by the parties. The parties shall bear their own personal costs except that the losing party shall pay all costs, fees, levies and taxes arising from and necessitated by the enforcement of the arbitral tribunal's award, including, without limitation, registration, enforcement charges or other judicial levies or costs.

7.4   No Joint Venture

The Parties expressly disclaim any intention to create a partnership, joint venture or joint enterprise. The Parties acknowledge and agree that nothing contained in this Agreement nor any acts of any party shall constitute or be deemed to constitute the parties as partners, joint ventures or principal and agent in any way or for any purpose. No Party has the authority to act for, or to assume any obligation or responsibility on behalf of the other Party. The relationship between the Parties is intended to be, and shall at all times be construed as that of licensor and licensee.

7.5   No Waiver

No condoning, excusing or overlooking by the Licensor of any default by the Licensee, at any time or times, in performing or observing any of the Licensee's obligations hereunder, will operate as a waiver, renunciation, surrender of or otherwise affect the rights of the Licensor in respect of any continuing or subsequent default. No waiver of these rights will be inferred from anything done or omitted by the Licensor, except by an express waiver in writing.

7.6   Order of Precedence

If there is a conflict or ambiguity between this Agreement proper and any schedules thereto, the interpretation consistent with this Agreement proper (taking into consideration the statements in the recitals and headings) shall prevail and apply, notwithstanding any wording to the contrary in the applicable schedule.

7.7   Notices

The Licensor assumes no obligation or liability whatsoever for the provision of updates to the Data or the provision of notices in relation thereto to the Licensee.

ANY USE WHATSOEVER OF THIS DATA PRODUCT SHALL CONSTITUTE YOUR ACCEPTANCE OF THE TERMS OF THIS AGREEMENT.

For further information please contact:
Licensing Services
Marketing Division, Statistics Canada
R.H. Coats Building, 9th floor, section A
Ottawa, Ontario K1A 0T6, Canada
E-mail: licensing@statcan.ca
Telephone: 613-951-1122
Fax: 613-951-1134

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