

Catalogue no. 92-143-G  
ISBN 978-0-660-06710-0

# Reference Maps and Thematic Maps, Reference Guide

## Census year 2016



Release date: November 16, 2016

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Statistique Canada

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## Standard table symbols

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- . not available for any reference period
- .. not available for a specific reference period
- ... not applicable
- 0 true zero or a value rounded to zero
- 0<sup>s</sup> value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
- <sup>P</sup> preliminary
- <sup>r</sup> revised
- X suppressed to meet the confidentiality requirements of the *Statistics Act*
- <sup>E</sup> use with caution
- F too unreliable to be published
- \* significantly different from reference category ( $p < 0.05$ )

Published by authority of the Minister responsible for Statistics Canada

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## Reference Maps and Thematic Maps, Reference Guide

The reference guide describes the content, general methodology and data quality for the reference and thematic maps.

### What's new?

- The Aggregate Dissemination Area Reference Maps (Catalogue no. 92-640-X) are available.
- The Census Tract Reference Maps, by Census Metropolitan Areas or Census Agglomerations (Catalogue no. 92-146-X) no longer portray Designated Places. As well, Population Centres are no longer portrayed by the sub-types 'Core', 'Secondary Core' or 'Fringe', only as Population Centre.
- Variation of some feature symbology has been incorporated into the reference maps to increase compliance with Common Look and Feel guidelines 2.0.
- The Dissemination Area Reference Maps by Census Tracts, for Census Metropolitan Areas and Census Agglomerations (Catalogue no. 92-147-X) are discontinued.
- The Dissemination Area Reference Maps by Non-tracted Census Agglomerations (Catalogue no. 92-148-X) are discontinued.
- The Dissemination Area Reference Maps by Census Subdivisions for Areas outside Census Metropolitan Areas and Census Agglomerations (Catalogue no. 92-145-X) are discontinued.

## 1. About this guide

The guide provides an overview of the maps, describes specific map content, the general methodology used to create the maps, information about data quality and information related to the 2016 Census standard geographic areas. It was prepared to accompany the reference and thematic maps, which include:

- National, Census Division and Census Subdivision Reference Maps (*Standard Geographical Classification [SGC]. Volume II. Reference Maps*; Catalogue no. 12-572-X). <http://www5.statcan.gc.ca/olc-cel/olc.action?ObjId=12-572-x&ObjType=2&lang=en&limit=0>
- Census Tract Reference Maps, by Census Metropolitan Areas or Census Agglomerations (Catalogue no. 92-146-X) <http://www5.statcan.gc.ca/olc-cel/olc.action?ObjId=92-146-x&ObjType=2&lang=en&limit=0>
- Aggregate Dissemination Area Reference Maps (Catalogue no. 92-640-X). <http://www5.statcan.gc.ca/olc-cel/olc.action?ObjId=92-640-x&ObjType=2&lang=en&limit=0>
- Thematic maps on various census themes (e.g., population; age and sex).

These maps are available for free download from the Statistics Canada website at [www.statcan.gc.ca](http://www.statcan.gc.ca).

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## 2. Overview

The maps are designed to provide spatial reference for census statistical data, enabling users to locate boundaries and relate data to physical locations.

Reference maps illustrate the location of the census standard geographic areas for which census statistical data are tabulated and disseminated. The maps display the boundaries, names and unique identifiers of census standard geographic areas, as well as selected roads, railroads, rivers and lakes.

Thousands of reference maps are available from the census. Given the diversity in size of census standard geographic areas, different map scales and map coverages are required to show the appropriate level of detail. Detailed descriptions of each series are provided in the Content section of this reference guide.

Census statistical data are disseminated for a variety of census standard geographic areas ranging from the national level down to the dissemination block. Figure 1.1 from the *Dictionary, Census of Population, 2016* ([http://ww12.statcan.gc.ca/census-recensement/2016/ref/dict/figures/f1\\_1-eng.cfm](http://ww12.statcan.gc.ca/census-recensement/2016/ref/dict/figures/f1_1-eng.cfm)), shows the hierarchy of standard geographic areas and indicates whether they are administrative or statistical.

Administrative areas include census subdivisions, census divisions, and provinces and territories. Statistics Canada established the Standard Geographical Classification (SGC) to organize these three types of geographic areas using a hierarchy of geographic codes. Statistical areas include aggregate dissemination areas, census tracts, population centres, census metropolitan and census agglomerations, census metropolitan influence zones and economic regions. Reference maps depict the boundaries of these census standard geographic areas and help users put census statistical data in a spatial context.

Reference maps are available in portable document format (PDF) from the Statistics Canada website at [www.statcan.gc.ca](http://www.statcan.gc.ca) for free download.

### How to cite this guide

*Reference Maps and Thematic Maps, Reference Guide, 2016 Census.* Statistics Canada Catalogue no. 92-143-G.

### How to cite this product

*Standard Geographical Classification (SGC). Volume II. Reference Maps, 2016 Census.* Statistics Canada Catalogue no. 12-572-X.

*Census Tract Reference Maps, by Census Metropolitan Areas or Census Agglomeration, 2016 Census.* Statistics Canada Catalogue no. 92-146-X.

*Aggregate Dissemination Area Reference Maps, 2016 Census.* Statistics Canada Catalogue no. 92-640-X.

### 3. About this product

#### Purpose of the product

The purpose of reference maps is to provide spatial reference for census statistical data, enabling users to locate boundaries and relate data in a spatial context.

A thematic map focuses on the spatial variability of a specific distribution or theme (such as population density or average annual income), whereas a reference map focuses on the location and names of features. Thematic maps normally include some location or reference information to help users familiarize themselves with the geographic area covered on the map.

#### Definitions and concepts

Geographic terms used on the maps are briefly defined in the *Dictionary, Census of Population, 2016* (Catalogue no. 98-301-X). <http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/index-eng.cfm>

#### Content

##### **National, Census Division and Census Subdivision Reference Maps (Standard Geographical Classification [SGC]. Volume II. Reference Maps; Catalogue no. 12-572-X)**

Four national maps are available, showing:

##### **1. Census Divisions**

This national map shows census division boundaries and unique identifiers within each province and territory, on a background of selected lakes and rivers. The map also lists census division names alphabetically and in order of census division code, by province and territory in the legend.

##### **2. Census Metropolitan Areas and Census Agglomerations**

This national map shows the general location of census metropolitan areas and census agglomerations within each province and territory, with larger dots designating census metropolitan areas and smaller dots designating census agglomerations. The map also lists census metropolitan area and census agglomeration names alphabetically and in order of unique identifiers, by province and territory in the legend.

##### **3. Census metropolitan influenced zones (MIZs), census metropolitan areas (CMAs) and census agglomerations (CAs) Statistical Area Classification**

This national map shows census subdivisions classified by colour according to the category of the Statistical Area Classification to which they are assigned. The categories include: component of a census metropolitan area and census agglomeration, component of a census metropolitan area and census agglomeration influenced zone (strongly influenced, moderately influenced, weakly influenced or not influenced), or component of the territories (Yukon, Northwest Territories and Nunavut).

##### **4. Economic Regions and Census Divisions**

This national map shows economic region and census division boundaries and unique identifiers within each province and territory. The map also lists economic region names and component census divisions by order of economic region unique identifier, by province and territory in the legend.

In addition, the following reference maps are also available:

##### **Census Division and Census Subdivision Reference Maps**

The series of 23 census division and census subdivision reference maps covers all of Canada, by province and territory. The maps show the boundaries, names and unique identifiers of census divisions (e.g., counties and regional districts) and census subdivisions (e.g., cities, towns, villages, other local municipal entities,

townships and Indian reserves). The maps also show the boundaries of census metropolitan areas and census agglomerations and list the census division, census metropolitan area and census agglomeration names and unique identifiers by province and territory in the legend.

### Index of Census Division and Census Subdivision Reference Maps

An index to the series of 23 census division and census subdivision maps shows the areas covered by each map. The index may be used as a reference to identify individual maps of interest within the series of 23 maps described above.

### Census Tract Reference Maps, by Census Metropolitan Areas or Census Agglomerations (Catalogue no. 92-146-X). (Release date: February 8, 2017)

The Census Tract Reference Maps, by Census Metropolitan Areas or Census Agglomerations cover all census metropolitan areas and census agglomerations in the census tract program. The maps show the boundaries and names of census tracts, and census subdivisions. As well population centres and rural areas within the census metropolitan area or census agglomeration are shown. Inset maps show detail for congested areas. The maps also display street network and other features such as railroads, rivers and lakes.

Every census tract is assigned a seven-character numeric 'name' (including leading zeros, the decimal point and trailing zeros). In order to uniquely identify each census tract within its corresponding census metropolitan area or census agglomeration, the census tract name must be preceded by the three-digit census metropolitan area and census agglomeration unique identifier. For example:

- **CT 0007.00 in the Census Metropolitan Area of Kingston (Ont.):** 5210007.00
- **CT 0007.00 in the Census Metropolitan Area of Vancouver (B.C.):** 9330007.00

There are 131 maps in this series. The maps vary in scale and size. The maximum map dimensions are approximately 86 cm by 61 cm (34 inches by 24 inches).

### Aggregate Dissemination Area Reference Maps (Catalogue no. 92-640-X)

The Aggregate Dissemination Area Reference Maps covers all of Canada. Each map displays the target ADA's boundaries on a white background. Surrounding ADAs are also displayed with their unique identifier (where space permits) on a grey background. Census subdivision boundaries and their official names (where space permits), selected place names and provincial and territorial boundaries are also shown. The maps display selected street network and other selected features such as railroads, rivers and lakes. The maps vary in scale. The maximum map dimensions are approximately 28 cm by 43 cm (11 inches by 17 inches).

### Thematic Maps

Thematic maps are available to provide a visual overview of census statistical data. They are available to accompany the following 2016 Census releases:

**Table 3.1**

#### 2016 Census theme and release date

2016 Census theme	Release date
Population and dwelling counts	8-Feb-17
Age and Sex	3-May-17
Families, households and marital status	2-Aug-17

### General methodology

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



To create maps, geographic boundaries, selected roads, railways and hydrographic features were retrieved from Statistics Canada's Spatial Data Infrastructure.

## Method of derivation

The Standard Geographical Classification Reference Maps were generated from digital geographic files using ArcGIS® Version 10.2, a geographic information system (GIS) software produced by Environmental Systems Research Institute (ESRI).

For SGC and CMA/CA maps, initial text placement of labels was automated. Interactive editing was then performed to improve label placement.

The Census Tract Reference Maps, by Census Metropolitan Areas or Census Agglomerations reference maps series was generated from digital geographic files using a generalized mapping system. This generalized mapping system was developed with ArcGIS® Version 10.0.

The Aggregate Dissemination Area Reference Maps are a first-time release generated from geographic files, developed using Python scripts using ArcGIS® Version 10.2. software.

## Limitations

Maps permit users to identify the location and boundaries of the census standard geographic areas. They should not be used for digitizing purposes or to determine the precise location of boundaries. They are not intended to serve as a detailed legal or cadastral representation of census standard geographic areas. The positional accuracy of information displayed on the map does not support cadastral, surveying, digitizing or engineering applications.

To be compliant with Common Look and Feel guidelines 2.0, accessible data is available as an alternative to viewing PDF maps.

## Comparison to other products/versions

The purpose of the reference maps is to provide spatial reference for census statistical data, enabling users to locate boundaries and relate the data to physical locations.

The reference maps contain geographic boundaries, unique identifiers and names applicable to the census and are consistent with those used in other standard geographic products.

## Using with other products

Information displayed on census reference maps such as boundaries, names and unique identifiers of standard geographic areas, roads, rivers and lakes are similar to those found in other census geography products.

## Reference date

The geographic reference date is a date determined by Statistics Canada to finalize the geographic framework for which 2016 Census statistical data are collected, tabulated and reported. The reference date for 2016 Census standard geographic areas is January 1, 2016. More specifically, the census reports data according to the geographic areas (e.g., municipalities and equivalents referred to as census subdivisions) that are in effect on January 1, 2016, provided that Statistics Canada receives the information on the changes by March 1, 2016 (see *Dictionary, Census of Population, 2016 – Geographic reference date* for more details, <http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/geo028-eng.cfm>)

## 4. Technical specifications

### Record layouts and data descriptions

Not applicable

### File specifications

The maps are available as portable document format (PDF) files.

### Software formats

The PDF maps are best viewed with Adobe Reader®.

### System requirements

Not applicable

### Installation instructions

Not applicable

### Geographic representation

Not applicable

### File naming convention

The 2016 Census Reference Maps follow a standard naming convention.

The naming convention for the **National Reference Maps (Standard Geographical Classification [SGC]), Volume II** is: census year-catalogue number-Canada code-MAPLETTER — where the census year is 2016, the catalogue number is 12572<sup>1</sup>, the code for a Canada map is 01, and the map letter for the CD map is Map A, the CMA and CA map is Map B, the SAC map is Map C and the ER map is Map D. For the purposes of the naming convention, the Index Map is labelled Map E.

The naming convention for the **Census Division and Census Subdivision Reference Maps (SGC)** is: census year-catalogue number-PRCODE-MAPNUMBER — where the census year is 2016, the catalogue number is 12572, the PRCODE for each province and territory is 10 to 62 as found in the SGC manual, and the map number, which is the numbers 01 to 23.

The naming convention for the **Census Tract Reference Maps, by Census Metropolitan Areas or Census Agglomerations** is: census year-catalogue number-CMA or CA UID-MAPNUMBER — where the census year is 2016, the catalogue number is 92146, the CMA or CAUID is the unique identifier and the map number is 00 for the main map, 01 for the first inset, 02 for the second inset, and so on.

The naming convention for the **Aggregate Dissemination Area Reference Maps** is: census year-catalogue number-ADAUID — where the census year is 2016, the catalogue number is 92640 and the 8 digit ADAUID.

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1. The hyphen has been deleted within each catalogue number.

## 5. Data quality

Data quality elements provide information on the fitness-for-use of data by describing why, when and how the data are created, and how accurate the data are. The quality elements include information on lineage, positional accuracy, attribute accuracy, logical consistency, consistency with other products and completeness. This information is provided to users for all geography data products disseminated for the census.

The map projection is Lambert Conformal Conic utilizing specific provincial parameters. Census metropolitan areas and census agglomerations which cross provincial boundaries use the projection parameters associated with the provincial part which is larger in terms of land area.

### Lineage

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

2016 Census statistical data are disseminated for a variety of census standard geographic areas ranging from the national level down to the dissemination block. Figure 1.1 from the *Dictionary, Census of Population, 2016* ([http://ww12.statcan.gc.ca/census-recensement/2016/ref/dict/figures/f1\\_1-eng.cfm](http://ww12.statcan.gc.ca/census-recensement/2016/ref/dict/figures/f1_1-eng.cfm)) shows the hierarchy of standard geographic units and indicates whether census standard geographic areas are administrative or statistical. Administrative areas include census subdivisions, census divisions, and provinces and territories. Statistics Canada established the Standard Geographical Classification (SGC) to organize these three types of census standard geographic areas using a hierarchy of standard geographic codes. Reference maps depict the boundaries of these census standard geographic areas and help users put census statistical data in a spatial context.

Geographic names refer to the names given to selected standard geographic areas. Named standard geographic areas include provinces and territories, economic regions, census divisions, census consolidated subdivisions, census subdivisions, census metropolitan areas, census agglomerations, populations centres and federal electoral districts. Although census tracts do not have alphabetic names, they do have numeric names consisting of seven characters, which include leading zeros, a decimal point and trailing zeros.

The maps show the official names of the provinces and territories. The sources of these names are the statutes of the respective provinces and territories. Some of the official names are bilingual.

The source of the geographic names of federal electoral districts is the 2013 Representation Order, Elections Canada.

For the census divisions and census subdivisions, the sources of the names and types are the provincial and territorial governments. Statistics Canada receives input from the provincial and territorial governments concerning all boundary, name and type changes to their respective municipal structures. The census reflects the administrative structure within provinces and territories that was in effect on the geographic reference date of the 2016 Census, January 1, 2016.

Census metropolitan area and census agglomeration names are usually based on that of the largest population centre(s) within the census metropolitan area or census agglomeration.

Information on the delineation criteria for 2016 Census standard geographic areas as well as the sources of geographic names is provided in the *Dictionary, Census of Population, 2016* (Catalogue no. 98-301-X, <http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/index-eng.cfm>.)

### 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 being true. Relative accuracy is the closeness of the relative positions of features to their respective relative positions accepted as being true.

All boundary layers used on the maps are stored in Statistics Canada's Spatial Data Infrastructure. The Spatial Data Infrastructure is not fully Global Positioning Systems (GPS)-compliant. However, every possible attempt is made to ensure that the census standard geographic area boundaries maintained in the Spatial Data Infrastructure respect the limits of the entities that they represent. 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 census standard geographic areas.

The national map showing the location of the census metropolitan areas and census agglomerations was produced using point symbols that were positioned to portray the areas' proximity to major hydrographic features and the Trans-Canada Highway.

### **Attribute accuracy**

Attribute accuracy refers to the accuracy of the quantitative and qualitative information attached to each feature (e.g., census subdivision name, unique identifier).

As noted under Lineage, the attributes (names, types and unique identifiers) for all census standard geographic areas are sourced from Statistics Canada's Spatial Data Infrastructure. The names and types of administrative census standard geographic areas have been updated for the census using source materials from provincial and territorial authorities.

### **Logical consistency**

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

On each reference map, all census standard geographic areas have been verified to have a unique identifier that is valid for the 2016 Census.

### **Consistency with other products**

The information displayed on census reference maps such as boundaries, names and unique identifiers of census standard geographic areas, roads, rivers and lakes are consistent with those disseminated within other census products.

### **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 criteria. There is a national coverage of census divisions, census subdivisions, economic regions and federal electoral district. The SGC map series display all these areas.

The base map features selected for display on the national maps include only selected rivers and lakes and the Trans-Canada Highway.

The Census Tract Reference Maps, by Census Metropolitan Areas and Census Agglomerations series contains all 35 census metropolitan areas and 14 census agglomerations that are part of the census tract program. For each census metropolitan area and census agglomeration, all census tracts are named.

The Aggregate Dissemination Area Reference Maps contains all 5,386 aggregate dissemination areas. Each map represents a single target ADA as well as surrounding ADAs outside the target area. Not all ADAs and CSDs are labelled outside the target ADA for map legibility reasons.

## Appendices

See definitions of the Geography universe from the *Dictionary, Census of Population, 2016*.

<http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/index-eng.cfm>

See Figure 1.1 Hierarchy of standard geographic area for dissemination, 2016 Census from the *Dictionary, Census of Population, 2016*. [http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/figures/f1\\_1-eng.cfm](http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/figures/f1_1-eng.cfm)

See Table 1.1 Geographic units by province and territory, 2016 Census from the *Dictionary, Census of Population, 2016*.

See Table 1.5 Census subdivision types by province and territory, 2016 Census from the *Dictionary, Census of Population, 2016*. [http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/tab/t1\\_5-eng.cfm](http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/tab/t1_5-eng.cfm)