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# Census Forward Sortation Area Boundary File, Reference Guide



Census year 2016

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Canada

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## Table of contents

<b>What's new?</b> .....	<b>4</b>
<b>1. About this guide</b> .....	<b>5</b>
<b>2. Overview</b> .....	<b>6</b>
How to cite this guide .....	6
How to cite this product.....	7
Acknowledgements .....	7
<b>3. About this product</b> .....	<b>8</b>
Purpose of the product .....	8
Content.....	8
General methodology.....	8
Comparisons to other products/versions.....	11
Using with other products.....	11
Reference dates .....	12
<b>4. Technical specifications</b> .....	<b>13</b>
Record layout and data descriptions .....	13
Software formats .....	14
File extension and accented character information .....	14
Geographic representation.....	14
File naming convention .....	15
<b>5. Data quality</b> .....	<b>16</b>
Lineage.....	16
Sources .....	16
Positional accuracy .....	16
Attribute accuracy.....	16
Logical consistency.....	17
Completeness .....	17
<b>Appendices</b> .....	<b>19</b>

# Census Forward Sortation Area Boundary File, Reference Guide

This reference guide is intended for users of the 2016 Census Forward Sortation Area Boundary File. The guide provides an overview of the file, the general methodology used to create it, and important technical information for users.

## What's new?

- The 2016 Census Forward Sortation Area Boundary File portrays the boundaries of 1,620 forward sortation areas derived from postal codes<sup>OM</sup> captured from the 2016 Census of Population questionnaires.
- 2016 Census Forward Sortation Areas are constructed using the 2016 Census dissemination area geography.
- Manual editing of the polygons to improve aesthetic appearance of the boundary file was eliminated by using the 2016 dissemination area geography in order to more accurately reflect 2016 Census respondent reported information.

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OM. Postal code is an official mark of Canada Post Corporation.

## 1. About this guide

This reference guide does not provide details on specific software packages that are available for use with the 2016 Census Forward Sortation Area Boundary 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.

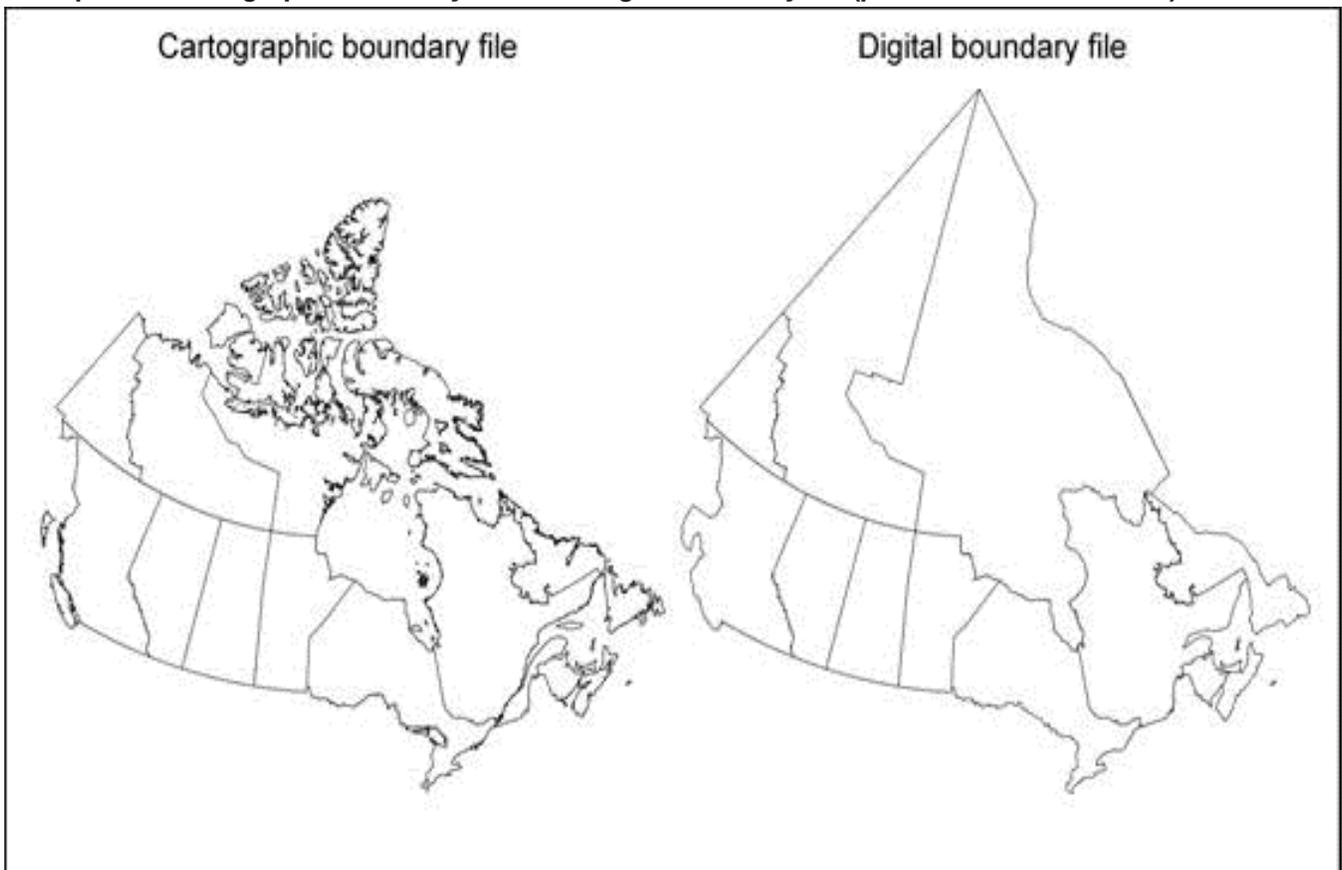
## 2. Overview

The 2016 Census Forward Sortation Area (FSA) Boundary File depicts the boundaries of 1,620 forward sortation areas (identified by the first three characters of the postal code<sup>OM</sup>) derived from postal codes<sup>OM</sup> captured from the 2016 Census of Population questionnaires.

Through analysis of the postal codes<sup>OM</sup> reported by census households, a single FSA was assigned to each dissemination area based on the most frequently reported FSA for the dissemination area. Unreported dissemination areas were assigned an FSA based on proximity to reported dissemination area in the same province or territory or nearest Canada Post Corporation delivery installation.

The 2016 Census FSA Boundary File provides a framework for mapping and spatial analysis. It is available in two types: cartographic and digital. The cartographic boundary file depicts the 2016 FSAs with the shoreline of the major land mass of Canada and its coastal islands. The digital boundary file depicts the full extent of the 2016 FSAs, including the coastal water area. Figure 2.1 illustrates an example of cartographic and digital boundary files in Lambert conformal conic projection.

**Figure 2.1**  
**Example of a cartographic boundary file and a digital boundary file (provinces and territories)**



### How to cite this guide

*Census Forward Sortation Area Boundary File, Reference Guide, 2016 Census.* Statistics Canada Catalogue no. 92-179-G.

## **How to cite this product**

*Census Forward Sortation Area Boundary File, 2016 Census.* Statistics Canada Catalogue no. 92-179-X.

## **Acknowledgements**

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### 3. About this product

#### Purpose of the product

The purpose of the 2016 Census Forward Sortation Area (FSA) Boundary File is to provide a spatial representation of forward sortation areas as reported by census respondents and to facilitate the linkage of 2016 Census data. The 2016 Census FSA Boundary File can be used with the suite of 2016 Census Boundary Files and the 2016 Census Road Network File, which provides additional reference for mapping.

This product is based upon reported postal codes<sup>OM</sup> rather than the postal code<sup>OM</sup> assigned to the address by Canada Post Corporation. As a result, they should be interpreted as places where respondents reported a postal code<sup>OM</sup> other than the one assigned by Canada Post Corporation.

Other differences may arise from the methodology used to delineate the FSA boundaries. As described in Section 5, [Data quality](#), the method used for this product relies on the 2016 Census responses, while those of Canada Post Corporation's are a result of the assignment of postal codes<sup>OM</sup> for use as a delivery mechanism.

#### Content

The 2016 Census FSA Boundary File contains boundaries for 1,620 FSAs. In total, census respondents reported 1,641 FSAs, 21 of which are not represented given the methodology described in Section 5, [Data quality/Completeness](#). The 1,620 FSAs portrayed in the boundary file cover the entire country.

A breakdown of the number of FSAs by province and territory is provided below.

**Table 3.1**  
**Number of forward sortation areas by province and territory**

Province or territory	Forward sortation areas
Newfoundland and Labrador	35
Prince Edward Island	7
Nova Scotia	77
New Brunswick	110
Quebec	413
Ontario	513
Manitoba	66
Saskatchewan	48
Alberta	153
British Columbia	189
Yukon	3
Northwest Territories	3
Nunavut	3
<b>Canada</b>	<b>1,620</b>

#### General methodology

The 2016 Census FSA Boundary File contains the boundaries of 1,620 FSAs derived from postal codes<sup>OM</sup> captured from 2016 Census questionnaires. By analysing the postal codes<sup>OM</sup> reported by census households, a single FSA was assigned to each dissemination area (most often the FSA reported by the largest number of census households). FSA polygons were formed by a single dissemination area and or groupings of dissemination areas.

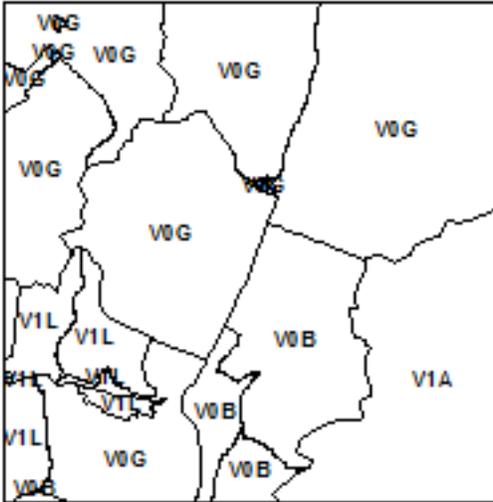
For the census, the postal code<sup>OM</sup> is captured for all households from the address provided by respondent or confirmed by information on the front page of the 2016 Census questionnaire.

## Creation of the 2016 Census FSA Digital Boundary File

### Step 1: Initial assignment of FSAs to dissemination areas

Data for FSAs was extracted from the 2016 Census respondent information for each household. These households were associated to the dissemination area geographic code in which they are located. Counts of FSAs reported by households were tabulated for each dissemination area. These FSA counts were then ranked within the individual dissemination area establishing a dominant or most frequently reported FSA within the dissemination area.

**Figure 3.1**  
Assignment of FSAs to dissemination areas



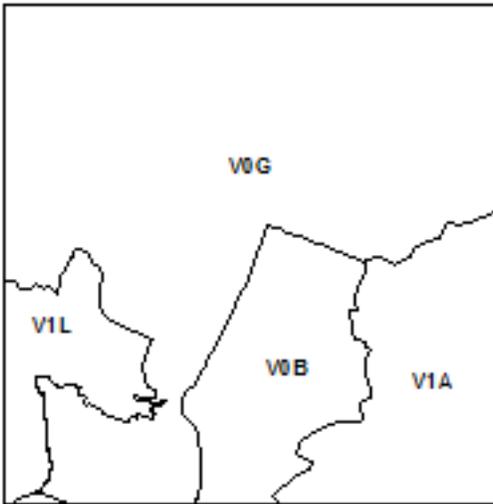
### Step 2: Creation of the initial FSA polygon layer

FSA to dissemination area data was then joined to the basic block native file used to create the 2016 Census Boundary file products (digital and cartographic) using the unique geographic code identifier for each dissemination area.

### Step 3: Creation of FSAs

Based on the relationship between dissemination area and FSA, dissemination areas were aggregated and dissolved (using basic blocks) in order to create FSA polygons.

**Figure 3.2**  
**Creation of Census Forward Sortation Areas**



**Step 4: Unassigned dissemination areas**

Unassigned dissemination areas that did not have an FSA reported from the 2016 Census due to zero population, were assigned an FSA based on their nearest neighbouring dissemination areas FSA within the appropriate province or territory. That is, unassigned dissemination areas were assigned an FSA based for the most part on the longest arc shared between the unassigned dissemination area and its neighbouring dissemination areas.

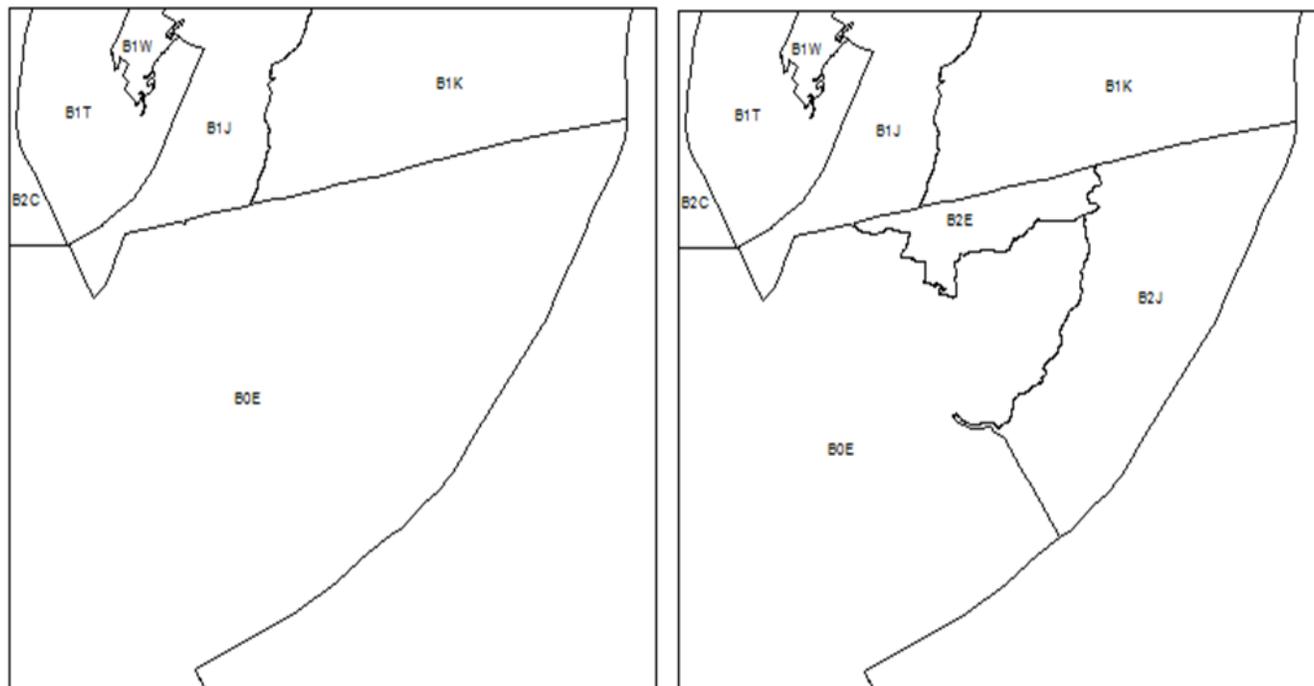
**Figure 3.3**  
**Assignment of census forward sortation areas to unassigned dissemination areas**



**Step 5: Addition of missing FSAs reported by households in the Census**

There were 15 FSAs that were formed by the aggregation of dissemination blocks and added to the boundary file.

**Figure 3.4**  
**Addition of missing census forward sortation areas**



### Limitations

The positional accuracy of the 2016 Census FSA Boundary File does not support cadastral, surveying, digitizing or engineering applications.

The FSAs contained within this product are those reported by census respondents. The postal code<sup>OM</sup> provided by a respondent may not be the same postal code<sup>OM</sup> as the one assigned to their dwelling by Canada Post Corporation. Therefore, calculating a provincial population and dwelling count by grouping FSAs will not necessarily yield the same count as the one provided in the provincial or territorial population and dwelling counts table.

The product was created to support the analysis of data from the 2016 Census of Population. It may not be adequate for other purposes, especially if users are interested in business postal codes<sup>OM</sup> or linking information from other administrative sources.

The geographic data used to create the file were obtained from several sources having a wide range of scales. Boundary files will not be precise if plotted at a larger scale than the scale of the source material used in their creation. Maps created from the boundary file should not be used to determine the precise location of boundaries. The boundary file is not intended to serve as a legal or cadastral representation of 2016 Census FSAs.

### Comparisons to other products/versions

The 2016 Census FSA Boundary File is compatible with other Statistics Canada spatial data products such as the 2016 Census Road Network File and 2016 Census Boundary Files. The 2016 Census FSA Boundary File is not compatible with the 2011 Census FSA Boundary File.

### Using with other products

When considering using the 2016 Census FSA Boundary File, users should be aware of the compatibility of this file with those that are available from other sources. They may not be consistent with Statistics Canada files.

## Reference dates

Postal codes<sup>OM</sup> were determined to be applicable for the 2016 Census if they appeared on Canada Post Corporation's Address Lookup File in May 2016, the month of the census. However, postal codes<sup>OM</sup> provided by the respondents were considered acceptable if they were found in the file from Canada Post Corporation within the six months leading up to the census. This is consistent with the effort to represent the FSA and the postal code<sup>OM</sup> whenever they could be considered as being in use at the time of the census.

## 4. Technical specifications

### Record layout and data descriptions

The following table identifies and briefly describes the selected attributes comprising the content of the 2016 Census Forward Sortation Area Boundary File.

**Table 4.1**  
**2016 Census Forward Sortation Area Boundary File record layout**

Attribute name	Data type	Description
FID	Object ID (4)	Specific to ArcGIS®
Shape	Geometry	Specific to ArcGIS®
DigitalBoundary CartographicBoundary	MultiPolygon PropertyType	Shape geometry; specific to Geography Markup Language
CFSAUID	Character (3)	Uniquely identifies a forward sortation area (composed of three alphanumeric characters)
PRUID	Character (2)	Uniquely identifies a province or territory
PRNAME	Character (55)	Province or territory name

### Attribute domain values

#### Province and territory unique identifier (PRUID)

The following is a list of province and territory unique identifiers and their associated name.

#### PRUID Province or territory name

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

#### Census Forward sortation area unique identifier (CFSAUID)

The following is a list of province and territory unique identifiers and the first letter of the FSAs associated with that province or territory within the FSA Boundary File.

## PRUID FSA first letter

10	A
11	C
12	B
13	E
24	G, H, J
35	K, L, M, N, P
46	R
47	S
48	T
59	V
60	Y
61	X
62	X

## Software formats

The 2016 Census Forward Sortation Area Boundary File is available in the following formats.

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

## File extension and accented character information

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

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

The 2016 Census Forward Sortation Area Boundary File contains attributes with accented characters. They were successfully tested on desktop versions of ArcGIS® 10.2.2 MapInfo® 12.0 and FME Data Inspector 2015.1.

## Geographic representation

The 2016 Census Forward Sortation Area Boundary File is available on the Statistics Canada website in the following geographic representation:

- Projection: Lambert conformal conic
- False easting: 6200000.000000
- False northing: 3000000.000000
- Central meridian: -91.866667
- Standard parallel 1: 49.000000
- Standard parallel 2: 77.000000
- Latitude of origin: 63.390675

- Linear unit: metre (1.000000)
- Datum: North American 1983 (NAD83)
- Prime meridian: Greenwich
- Angular unit: degree
- Spheroid: GRS 1980.

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

Users of the 2016 Census Road Network File can transform the file into the representation that best satisfies their needs, knowing the effects of these representations on angles, areas, distances and direction. Users have the option to choose the best projection in concert with the map's objectives.

### File naming convention

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

Each file name has 13 characters. All letters are in lower case to maintain consistency.

**First character:** projection of file

- l - projection in Lambert conformal conic

**Next three characters:** primary geographic level of file

- fsa - forward sortation area

**Next three numbers:** geographic code of coverage

- 000 - Canada

**Next character:** file type

- a - digital boundary file
- b - cartographic boundary file

**Next two numbers:** geographic reference date

The geographic reference date is a date determined by Statistics Canada for the purpose of finalizing the geographic framework for which census data are collected, tabulated and reported. For the 2016 Census, the geographic reference date is January 1, 2016.

- 16 - geographic reference date is 2016

**Next character:** file format

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

**Final two characters:** language

- \_e - English
- \_f - French

## 5. Data quality

Spatial data quality elements provide information on the fitness-for-use of a spatial database by describing why, when and how the data are created, and how accurate the data are. The quality elements include an overview 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.

### 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.

For boundary file creation, spatial and attribute information were extracted from the Statistics Canada's Spatial Data Infrastructure. A File Geo Database environment was used to facilitate geo-processing (e.g., projecting, joins, transforming and verification operations).

### Sources

The product was derived from the 2016 Census postal code<sup>OM</sup> variable and the 2016 Census Boundary files which were derived from the National Geographic Database. The postal code<sup>OM</sup> is captured for all households from the address information provided or accepted by the respondent on the front page of the census questionnaire. For the 2016 Census, held on May 10, 2016, some census questionnaires contained a pre-printed postal code<sup>OM</sup> that the respondents could either accept or correct; however, other census questionnaires did not contain a pre-printed postal code<sup>OM</sup> and respondents were asked to provide a postal code<sup>OM</sup> by writing it on the questionnaire. These reported postal codes<sup>OM</sup> were processed through a series of edit operations that identified missing or invalid responses and replaced them with a valid response to produce the 2016 Census postal code<sup>OM</sup> variable. At the end of this process, a final postal code<sup>OM</sup> was associated with each census household.

### Positional accuracy

Positional accuracy refers to the absolute and relative accuracy of the positions of geographic features. Absolute accuracy is the closeness of the coordinate values in a dataset to values accepted as or being true. Relative accuracy is the closeness of the relative positions of features to their respective relative positions accepted as or being true. Descriptions of positional accuracy include the quality of the final file or product after all transformations.

The Spatial Data Infrastructure is not fully 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., forward sortation areas) or on which they are based (e.g., dissemination areas). 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 (e.g., Census forward sortation area unique identifier).

The attribute data associated with the polygons in the 2016 Census FSA Boundary File are derived from postal codes<sup>OM</sup> captured from the 2016 Census of Population questionnaires. Edit procedures verify that a reported postal code<sup>OM</sup> was valid and consistent with neighbouring postal codes<sup>OM</sup>. Postal codes<sup>OM</sup> which failed these checks were imputed, thus ensuring that 100% of the reported postal codes<sup>OM</sup> were valid postal codes<sup>OM</sup> according to Canada Post Corporation as of the postal code<sup>OM</sup> reference month.

It is important to note that postal codes<sup>OM</sup> were not verified against Canada Post Corporation's address information, merely that the postal code<sup>OM</sup> was considered valid by Canada Post Corporation.

## Logical consistency

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

Boundaries found in this product are compatible with those found in other spatial products produced as part of the suite of 2016 Census Geography products. FSA boundaries are derived for the most part from the dissemination area geography of the 2016 dissemination area boundaries and as such are inherently consistent with those features.

The FSA Boundary File is derived from the 2016 Census responses and not from address-based data from Canada Post Corporation. Whole dissemination areas are assigned only one FSA in the FSA Boundary File. Furthermore, since whole dissemination areas are assigned one and only one FSA, the population and dwelling counts derived by aggregating dissemination areas assigned to an FSA will not match the aggregations based on each household's reported FSA.

## Consistency with other products

Topology checks were performed with the road network file and the FSA boundary file to measure the degree of integration amongst these products. The results indicated the degree of integration was within the default tolerance parameters as defined below.

XY Resolution: 0.000005 metres

XY Tolerance: 0.00001 metres

The 2016 Census Forward Sortation Area Boundary File is not necessarily compatible with files available from other sources.

## 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.

The product contains boundaries for 1,620 FSAs. In total, 1,641 FSAs were reported by at least one household in the 2016 Census.

A reported FSA may not be represented in the 2016 Census FSA Boundary File, includes cases where the FSA may not be the most frequently reported on any dissemination area or an FSA may not have appeared in the Census Respondent information.

It is important to note that in the digital boundary file and cartographic boundary file, a 2016 FSA may be depicted by more than one polygon. In the digital boundary file, there are some 2016 FSAs that have two or more parts (See Table A1 Forward Sortation Area in multipart, 2016 Census for list of FSA in multiple parts). The cartographic boundary file contains additional polygons as a result of removing the coastal water area from the digital boundary file, thus creating several polygons for one 2016 FSA.

Below is a list of the twenty-one forward sortation areas which are not included in the boundary file because they were not the dominant FSA in a dissemination area.

E2R

G1A

H4T

H4Y

H4Z

H5A

H5B

K1A

L5S

L5T

L9E

M5K

M5L

M5W

M5X

M7A

M7Y

S4M

T6N

V7X

V7Y

## 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 areas for dissemination, 2016 Census [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) in the *Dictionary, Census of Population, 2016*.

See Table 1.1 Geographic areas by province and territory, 2016 Census [http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/tab/t1\\_1-eng.cfm](http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/tab/t1_1-eng.cfm) in the *Dictionary, Census of Population, 2016*.

See Table 1.5 Census subdivision types by province and territory [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), 2016 Census in the *Dictionary, Census of Population, 2016*.

See Table A1 Forward Sortation Area in multipart, 2016 Census