

Canadian Historical Census Geography Boundaries

A data rescue, migration, and
digitization project

Presented by: Amber Leahey, Data and GIS
Librarian, Scholars Portal, Ontario Council of
University Libraries



Census of Canada



Statistics
Canada

Statistique
Canada

[Français](#)

Search website



Information for... ▾

Browse by subject

Browse by key resource

About StatCan

Canada.ca

[Home](#) → Census Program

Census Program

The Census Program provides a statistical portrait of the country every five years. The 2016 Census Program includes the Census of Population and the Census of Agriculture. For upcoming release dates, refer to the [2016 Census Program release schedule](#).



◀ Item
2 of 5 ▶

▶ Play

Find latest data from the 2016 Census

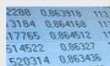
Place name:

- ☒ Search 2016 Census Profile
- ☐ Search all 2016 Census data, analysis and maps

Search



Census of Agriculture



Census Datasets





DESCRIPTION

TABULATION

ANALYSIS



ODESI (Click to View Categories)

Agriculture

Business and Financial

Census of Population

CANADA

2011

2006

2001

1996

1991

1986

1981

1976

1971

1951

1941

1931

1921

1911

1901

1891

1881

1871

Census of Canada

Metadata

Variable Descri

Demographic

Education an

In school

Over 20, t

Over 20, t

Deaf and

Blind

Unsound mind

Family

Family Head

Father

Households and Geography

Household Head

Mother

Spouse

Weight

1665-1871

Dataset: Census of Canada, 1871

Variable read: Over 20. unable to read

DESCRIPTION

TABULATION

ANALYSIS



Dataset: Census of Canada, 1871

Province: Categories

Over 20, unable to read: Categories

Type: Column percentage

Province	Ontario	Quebec	New Brunswick	Nova Scotia	Total
Over 20, unable to read					
Yes	95.0	87.8	90.8	92.4	92.0
No	5.0	12.2	9.2	7.6	8.0
Total	100.0	100.0	100.0	100.0	100.0
N=	26,020	16,557	9,743	9,961	62,281

Copyright (c) Canadian Historical Mobility Project

is of the study before applying the
near no responsibility for the analysisiz toujours consulter les procédures
ée. Tous les résultats nécessitent une

Census Geography in Canada

Census Division

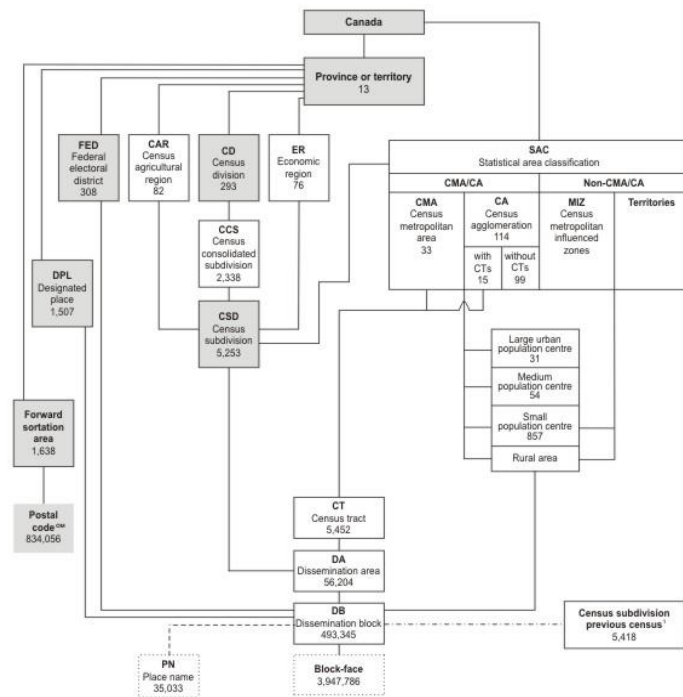
Census Tracts

Enumeration Area / Dissemination Area

Census Metropolitan Area

Population Centre

New for 2016 - Aggregate Dissemination Area



1. A best fit linkage is created between the previous census CSDs and the current census dissemination blocks to facilitate historical data retrieval.

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

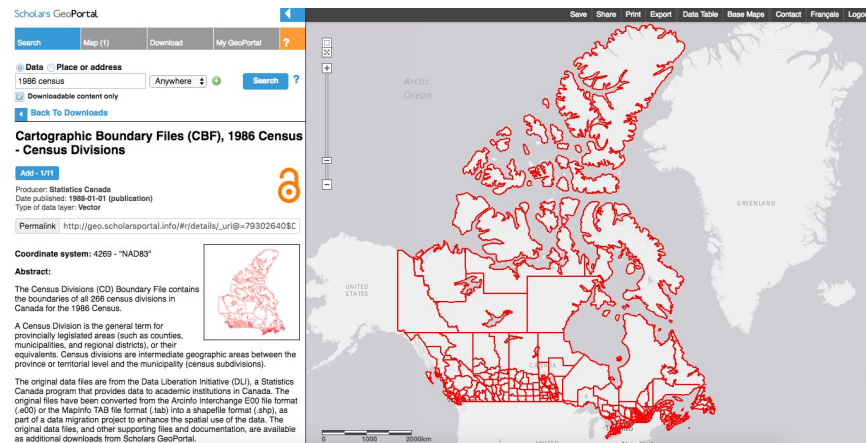
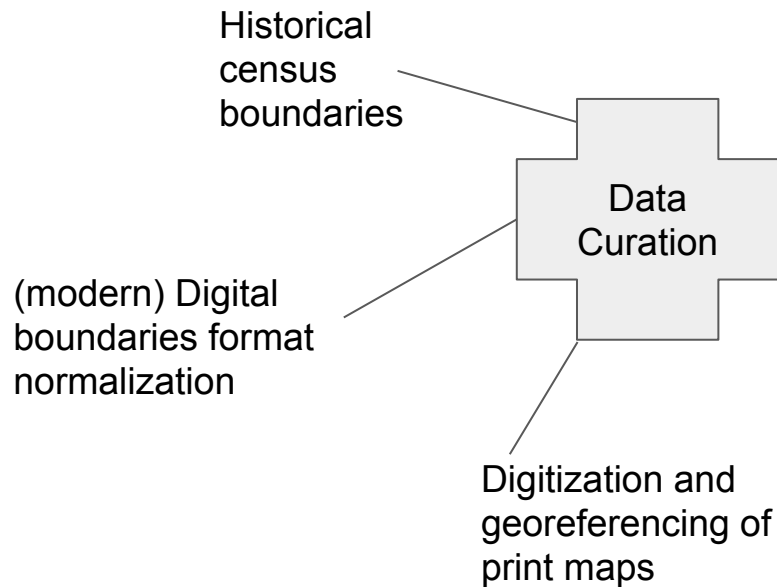
Historical GIS Projects

- Historical Atlas of Canada - historical maps, census districts
- Canadian Century Research Infrastructure (CCRI) - census districts, sub-districts 1911-1951
- Historical GIS Partnership Project (HGIS)
- Various other digitization projects in libraries:
 - Ontario Historical Topographic Maps Project <http://ocul.on.ca/topomaps>
 - Ontario County Maps Project
<http://utoronto.maps.arcgis.com/apps/webappviewer/index.html?id=8cc6be34f6b54992b27da17467492d2f>
 - Census boundaries, etc. <http://geo.scholarsportal.info> “census”

Access and preservation challenges

- Access to historical census data and geography is dispersed
- No central portal or access point for historical Canadian census (all outputs)
- Quality varies (digital scans, microfilm, fiche, paper degradation / destruction, etc.)
- No comprehensive inventory of maps, publications, digital data, for use by researchers
- Government websites only makes available data back to 1996, limited still
- Loss of the Depository Services Program (DSP) (2013), move away from print publications changed the needs and requirements for access and preservation in libraries (public & academic) around government information

Project Overview



Inventory

CENSUS BOUNDARIES		2011		2006		2001		1996		1991		1986	1981	1976	1971	1966	1961	1956	1951	1946	1941	1931	1921	1911	1901	1891	1881	1871	1861	1851
Boundary Type	ID	CBF	DBF	CBF	DBF	CBF	DBF	CBF	DBF	CBF	DBF																			
Census Agricultural Regions	CAR	F	F	F	F	F																								
Crop Reporting Districts	CRD																													
Agricultural Ecumene	ECA	F		F		F																								
Census Consolidated Subdivisions	CCS	F	F	F	F	F		F	F																					
Census Divisions	CD	F	F	F	F	F		F	F						**															
Population Ecumene	ECU			F		F																								
Census Subdivisions	CSD	F	F	F	F	F		F	F																					
Census Metropolitan Areas/Census Agglomerations	CMA	F	F	F	F	F		F	F																					
Census Tracts	CT	U	F	U	F	U	F	U	F	U	U	U	U	U	U		T		U											
Provincial Census Tract	PCT																													
Designated Places	DPL	F	F	F	F	F		F	F																					
Designated Place Parts	DPP					F																								
Enumeration Areas	EA							F	F							STC														
Dissemination Areas	DA	F	F	F	F	F																								
Dissemination Blocks	DB	F	F	F	F		F																							
Economic Regions	ER	F	F	F	F	F																								
Federal Electoral Districts	FED	F	F	F	F	F		F	F																					
Forward Sortation Areas	FSA	F	F	F	F	F	F	F				U																		
Provinces & Territories	PR	F	F	F	F	F		F	F																					
Urban Areas	UA			F	F	F		F	F																					
Population Centre	PC	F	F																											

Additional Spatial Datasets

Road Network Files	RNF	F		F		F																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													</
--------------------	-----	---	--	---	--	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----

In Scholars GeoPortal	
Located and converted to .shp, but not in GeoPortal	
Probably exists digitally in some form (not located)	*need to review
Pretty sure not produced in digital form	
Urban only (most Canadian cities)	U
Toronto only	T
French version available as well	F
Statistics Canada producing - not yet received	STC
Exists in MDL holdings (not digital), inventory required	

** available here but needs work: <http://data.library.utoronto.ca/content/spatial-and-geographic-reference-files>

Data Migration

- E00 to shape file format
- Beyond data format conversion:
 - NAD 83
 - Dissolving features
 - Integer ID fields
 - Automation and scripts
 - Metadata

Sustainability of Digital Formats: Planning for Library of Congress Collections

[Introduction](#) | [Sustainability Factors](#) | [Content Categories](#) | [Format Descriptions](#) | [Contact](#)

[Format Description Categories >>](#) [Browse Alphabetical List](#)

ESRI ArcInfo interchange file (E00)

[Table of Contents](#) [Back](#)

- [Identification and description](#)
- [Local use](#)
- [Sustainability factors](#)
- [Quality and functionality factors](#)
- [File type signifiers](#)
- [Notes](#)
- [Format specifications](#)
- [Useful references](#)

Format Description Properties

- ID: fdd000291
- Short name: E00
- Content categories: dataset, gis
- Format Category:
- Other facets:
- Last significant FDD update: 2011-09-07
- Draft status: Partial

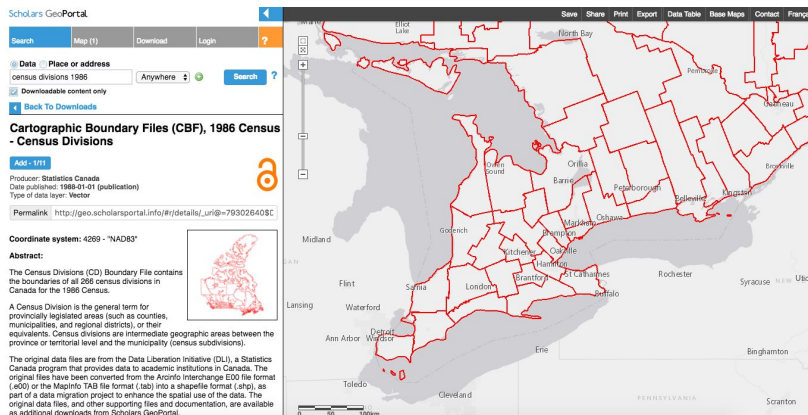
Identification and description

Full name	ESRI ArcInfo interchange file (E00)
Description	ESRI ArcInfo interchange file (E00) is a proprietary ESRI file format intended to support the transfer between ESRI systems of different types of geospatial data used in ESRI software. The format uses a basic ASCII representation and was designed to be robust for transfer rather than efficient for direct processing. Export functions in ESRI software assemble all the data and definition files relevant to a particular coverage, grid, or TIN (triangulated irregular network) into a single logical file. Because E00 was developed when capacity for physical transfer was often a limiting factor (e.g. using floppy disks), the logical file may be broken into a sequence of physical files. E00 was not designed as a publication or distribution format, although it has been used for that purpose. For many years, it was the only reliable way to exchange data between ESRI systems; as of 2011, there are effective tools for conversion and exchange in binary form without requiring conversion to ASCII and back.

Digital Census Boundaries

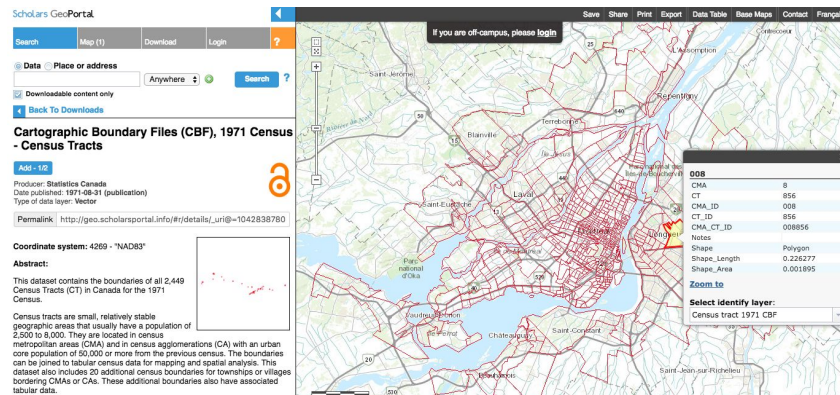
Large scale mapping

Census Divisions, 1986 Census - S. Ontario

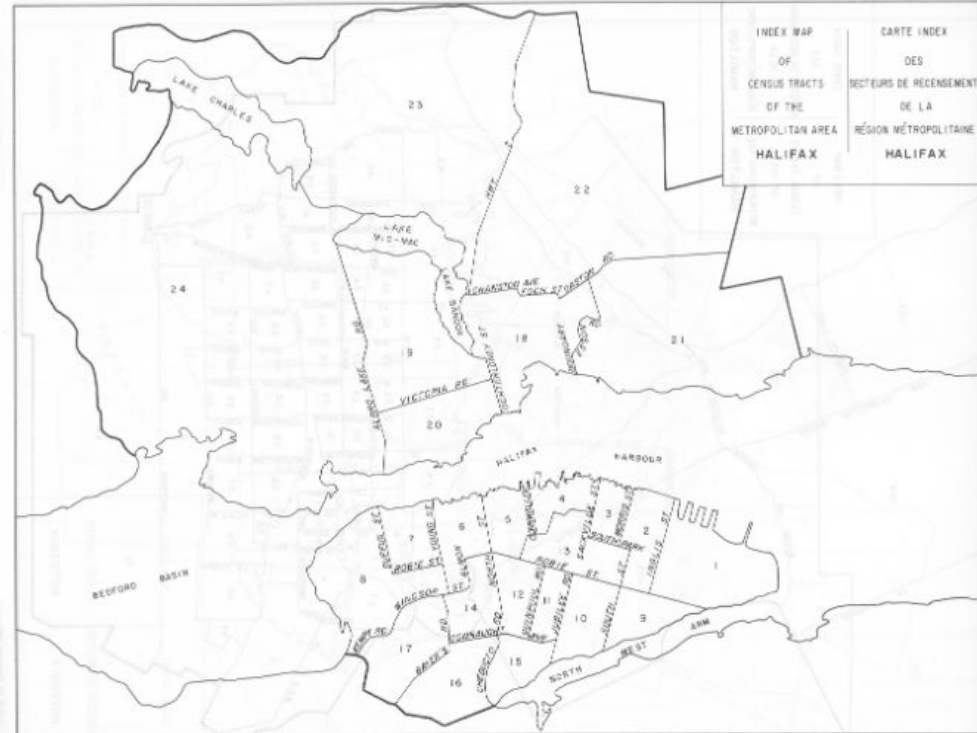


Small neighbourhood-level mapping

Census Tracts, 1971 Census - Montreal, QC



Digitization and scanned maps

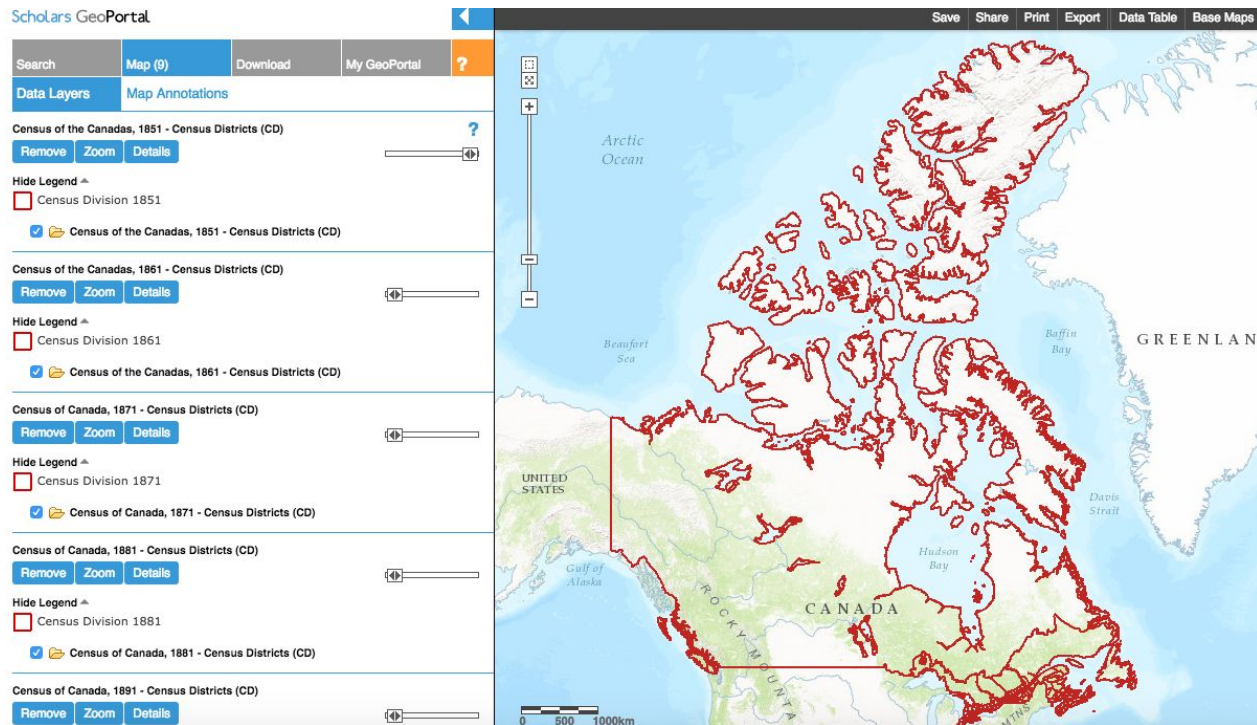


Georeferencing



Progress to date

1851-1951 Census Districts, Census Divisions, Census Subdivisions



Scholars GeoPortal

Search Map (1) Download Login ?

④ Data Place or address
1961 Anywhere Search ?

Downloadable content only

Back To Results

Census of Canada Boundary Files, 1961 Census - Census Tracts (CT)

Remove Zoom

Producer: Statistics Canada
Date published: 2011-02-18 (creation)
Type of data layer: Vector

Permalink: http://geo.scholarsportal.info/#/details/_uri@=8730326838

Coordinate system: 4269 - "NAD83"

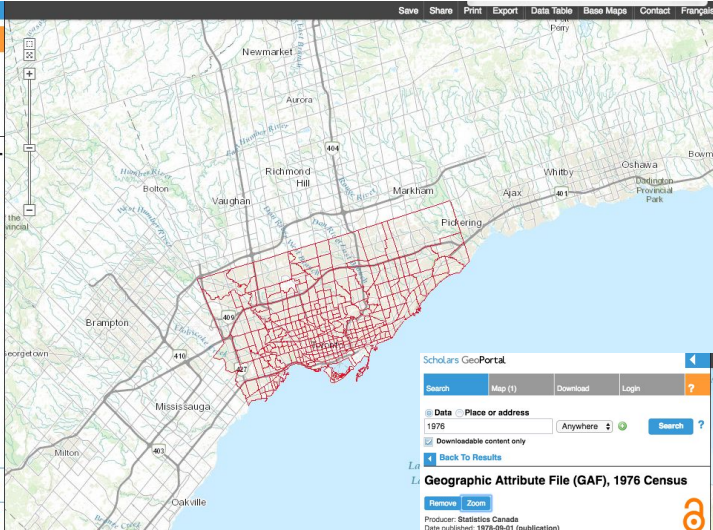
Abstract:
This dataset contains the boundaries of all 301 Census Tracts (CT) in Toronto, Ontario, Canada for the 1961 Census.

Census tracts 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 from the previous census.

The shapefiles were created by the University of Toronto's Map and Data Library, using data from the original printed 1961 maps.

Metadata Information +

Resource Identification Information +



1961 Census Tracts (Toronto)

1971-2016 (varying geographies)

Scholars GeoPortal

Search Map (1) Download Login ?

④ Data Place or address
1978 Anywhere Search ?

Downloadable content only

Back To Results

Geographic Attribute File (GAF), 1976 Census

Remove Zoom

Producer: Statistics Canada
Date published: 1978-09-01 (publication)
Type of data layer: Vector

Permalink: http://geo.scholarsportal.info/#/details/_uri@=324813696_

Coordinate system: 4269 - "NAD83"

Abstract:
The Geographic Attribute File is a dataset that contains census geographic information at the Enumeration Area level for all of Canada for the 1976 census. Each record includes geographic coordinates, population and dwelling counts, land area, names, unique identifiers, and geographic codes for linkages with other census boundaries.

The original dataset is available from Statistics Canada as a text file (.txt). For viewing in Scholars GeoPortal, the dataset was converted from this original format into a Shapefile format using the point coordinates available for each record. Each point is the population centre of an Enumeration Area.

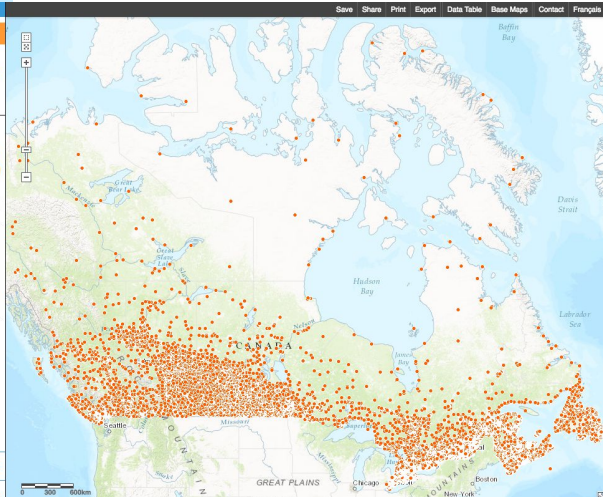
The original data, and other supporting files and documentation, are available as additional downloads from Scholars GeoPortal.

Additional Documentation

- Geographic Attribute File Reference Guide, 1978

Metadata Information +

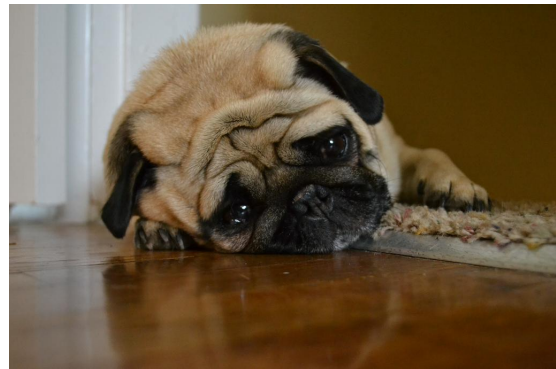
Resource Identification Information +



Missing census years

- Gaps include:
 - No boundaries for 1976, 1966
 - Census Tracts 1961
 - Enumeration areas for 1971, 1981, 1986 ([1971 EAs](#) released today by Statistics Canada! yay!)

And many many more...



Budgeting for future work

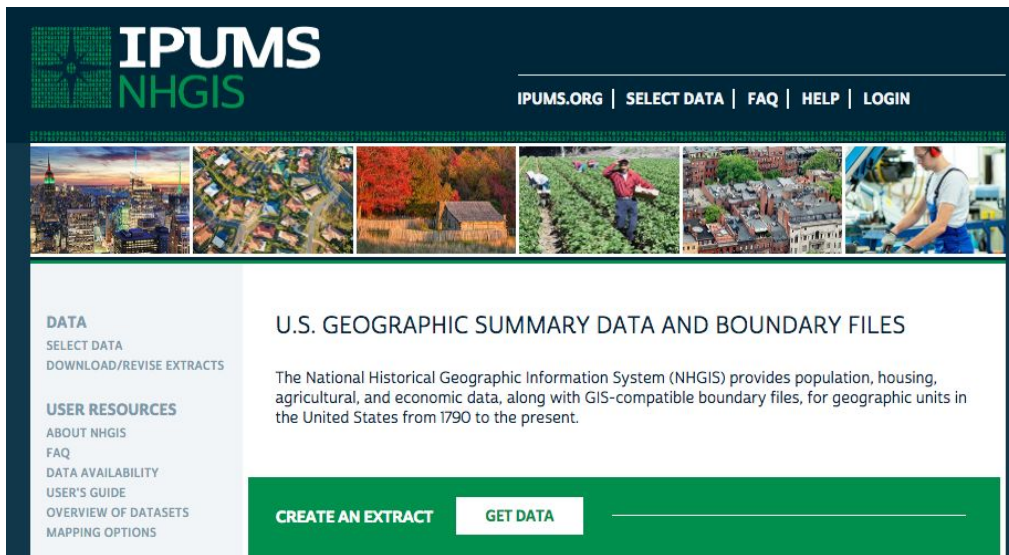
- Complete the inventory; merge existing inventories
 - Digital boundaries (new)
 - Internet Archive (new)
 - Map and Data Library's print reference maps
- Identification of gaps
- Sample digitization and georeferencing work
 - 1981 EAs for Toronto
- Proposal for funding

Issues and challenges

- Few resources and funding opportunities available for us
- The amount of potential work is a bit overwhelming, difficult to stay motivated due to long-term projections
- Requires collaboration, coordination nationally for infrastructure and expertise
- Students leave, turnover causes inconsistent work, etc.

Opportunities

- Wouldn't it be nice!?
- Think of all the happy researchers ...



The screenshot shows the IPUMS NHGIS website. The header features the IPUMS NHGIS logo on the left and navigation links (IPUMS.ORG | SELECT DATA | FAQ | HELP | LOGIN) on the right. Below the header is a row of six small images: a city skyline, a suburban neighborhood, a rural house, a person in a field, a city street, and a person working. The main content area is divided into two columns. The left column contains links for DATA (SELECT DATA, DOWNLOAD/REVISE EXTRACTS) and USER RESOURCES (ABOUT NHGIS, FAQ, DATA AVAILABILITY, USER'S GUIDE, OVERVIEW OF DATASETS, MAPPING OPTIONS). The right column features the heading "U.S. GEOGRAPHIC SUMMARY DATA AND BOUNDARY FILES" and a paragraph describing the NHGIS system. At the bottom, there is a green bar with two buttons: "CREATE AN EXTRACT" and "GET DATA".

IPUMS NHGIS

IPUMS.ORG | SELECT DATA | FAQ | HELP | LOGIN

DATA
SELECT DATA
DOWNLOAD/REVISE EXTRACTS

USER RESOURCES
ABOUT NHGIS
FAQ
DATA AVAILABILITY
USER'S GUIDE
OVERVIEW OF DATASETS
MAPPING OPTIONS

U.S. GEOGRAPHIC SUMMARY DATA AND BOUNDARY FILES

The National Historical Geographic Information System (NHGIS) provides population, housing, agricultural, and economic data, along with GIS-compatible boundary files, for geographic units in the United States from 1790 to the present.

CREATE AN EXTRACT **GET DATA**



Partners and collaborators

- Scholars Portal, OCUL
- OCUL Geo Community
- University of Toronto Libraries
- University of Waterloo Library
- Western University Library
- Statistics Canada

Thank you!

Questions?

<http://geo.scholarsportal.info>

Amber Leahey amber.leahey@utoronto.ca