Assessing the landscape for discovery and access to historical Canadian census data

Graeme Campbell[1], Katie Cuyler[2] and Alex Guindon[3]

Abstract

The Canadian census is a primary source of information about Canada and the people who live there, and this information is used by researchers, the private sector, public servants and residents. However, access to Canadian census data is fragmented and inconsistent, with no single source of Census data for all census years, or in all census data formats. This is a barrier to research, making systematic analysis, discovery, and reuse difficult. This article provides an overview of the current landscape of Canadian census portals by data format. It includes an analysis of the coverage and usability of census portals and demonstrates the outstanding need for a single comprehensive access point for Canadian census data.

Keywords

Canadian census, data discovery, data access, inventory

Introduction

The census is a primary source of information about a country and the people who live there, and an important knowledge infrastructure used by researchers, the private sector, public servants and residents. However, access to Canadian census data is fragmented and inconsistent, making systematic analysis, discovery, and reuse difficult. Accessing historical Census of Canada data requires sleuthing and specialized knowledge about databases hosted by many institutions, projects and portals; each providing access to only some census years with incomplete content. There is no single source of Census data for all census years or in all census data formats. This difficulty of census search and access presents a barrier to research exploration. This overview includes an analysis of the coverage and usability of census portals and demonstrates the outstanding need for a single comprehensive access point for Canadian census data.

Background

The first colonial population count, or census, in the territory now known as Canada, was of colony inhabitants in New France in 1665-66 (Statistics Canada, 2015). This was followed by an inconsistent string of French or British colonial censuses until Confederation in 1867 and the enactment of the *Census Act, 1870* that mandated censuses be taken every ten years (Statistics Canada, 2015). Since then, censuses have been conducted at regular intervals, with the exception of 2011, when the long form census was temporarily replaced with the voluntary National Household Survey (Statistics

Canada, 2024, November 26). Census data is the most long standing comprehensive primary source of demographic information about the social, economic, and cultural aspects of the population that has lived in Canada and the previous French and British colonies from the late 1600s to today.

Diverse products make up the corpus of available Canadian census information, including statistical tables, microdata, maps, geospatial data and analytical reports. These products have been published in several formats such as print publications, CD-ROMs and electronic files. There is also a variety of accompanying and reference documentation useful for census research, such as survey questionnaires and enumerator instructions. The access points (which we also call "portals" in this article) to census products are varied in terms of the types of content and census years that they host. This is largely because of the technologies and digital file formats used to collect and disseminate the census over time, as well as the different objectives each portal had for collecting and analyzing census data. These varied access points make it difficult to conduct analyses with individual census data types longitudinally, or in a systematic way.

The types of organizations creating, supporting, and hosting census portals tend to be government entities, universities, academic libraries, research groups, and community organizations. The current census access landscape is largely the result of how these hosting organizations and research projects have operated historically, with current challenges arising due to some portals having limited resources or lacking a mandate for long term content maintenance, or because they have been developed independently of the other projects.

The authors of this paper were co-investigators on the Canadian Census Data Discovery Partnership (CCDDP), a Social Sciences and Humanities Research Council (SSHRC) Partnership Development Grant funded initiative. The CCDDP has been working to improve discoverability of census data and access to Canadian census information by comprehensively inventorying census resources and making this inventory available as an open access database. As CCDDP co-investigators, the authors are building upon knowledge gained through the work of the partnership to create the overview of the current landscape of Canadian census portals detailed within this paper.

Scope

All the portals included in this paper were initially identified in an early phase of the CCDDP project where a comprehensive list of sources of Canadian census data was created. Since there are numerous access points and some degree of redundancy between them, there was a need to establish criteria to define the scope of this review. As such, instead of attempting an exhaustive inventory of portals to Canadian census information, this investigation included portals matching one or more of the following four primary types: (1) portals created and hosted by institutions with legislative responsibility for creating and providing access to census content, such as Statistics Canada and Library and Archives Canada; (2) portals of non-government projects that provide unique access to census data; (3) portals which provide improved organization to existing census content; and (4) portals most commonly relied upon within an academic, research setting. For instance, we excluded genealogical research sites.

Organization

To facilitate information retrieval and better organize this review, census portals assessed herein are listed by content type.

- Census returns (household and individual information as collected through enumeration)
- Census publications (official government text-based publications issued after each census)
- Aggregate data (added up census data organized by theme and/or geography)
- Microdata (raw data observed or collected directly from a specific unit of observation – individual, family, household)
- Census maps and digital spatial data (digital spatial data are computer files meant to be used with a geographic information system (GIS); for the census, they are mainly boundary files of geographic census units)

Each section starts with a brief definition of the type of materials covered. Every section also includes a summary table that presents the main characteristics of the reviewed portals, such as census years covered, type of access, file formats, etc. This is followed by a short description of each portal. An alternative presentation of the section summary tables, as an alphabetical list of all portals inventoried, is included in Appendix A. This paper concludes with an introduction to the CCDDP.

Census returns

The Census of Population returns comprise the information collected about individuals and households by the census program through its enumerators or self-enumeration. While early censuses often only enumerated households, from 1851 onwards, information was consistently collected for each individual as well (Hillman, 1981, p. viii).

There are strict prohibitions on viewing and disclosing census information after it is collected, but generally these rules cease to apply 92 years following the census year (see sections 17 and 18 of the *Statistics Act*, RSC 1985, c. S-19 for more information). As a result, the returns from 1931 are the most recently released to the public.

In addition to the resources mentioned in this section, some other projects listed in the Microdata section also provide census returns for specific periods. Returns for some of the earliest pre-Confederation censuses may also be found via provincial archives, such as those of Nova Scotia or Prince Edward Island, or on microfilm, as indexed by Library and Archives Canada's Early census and related documents, 1640 to 1945 database or by Hillman's *Catalogue of Census Returns on Microfilm 1666-1881*. For the purposes of our assessment, we only included resources that were national in scope, provided digital online access to census returns, and were not primarily intended for genealogical researchers.

Website/Portal	Creator	Access	Coverage	Formats	Host Type
Héritage	Canadiana/CRKN	Public	17th-19th centuries (selected)	PDF, JPEG	Non-profit
Census Search	Library and Archives Canada	Public	1825-1931	PDF, JPEG, CSV*, and XML*	Government

Table 1: Characteristics of Census Returns Portals

*Search results can be downloaded in different formats.

Héritage

The Canadian Research Knowledge Network (CRKN) is a network of member institutions from the academic, research, and government and public library sectors, with a mandate that includes supporting "the digital infrastructure required to preserve and access critical Canadian content" (CRKN, 2024a). One way the CRKN provides this support is through Héritage, a collection of over 40 million digitized pages of historical archival documents, re-hosted and made publicly available by the CRKN in a Trustworthy Digital Repository (CRKN, 2024b).

A selection of census returns are found in Héritage, most often as images digitized from microforms. While Héritage does not have an advanced search interface, it provides keyword searching of document metadata and full text where available, and advanced search operators are available to refine search results. The census materials are not bundled together for easy browsing, but you can find many of them by searching for "census" or "recensement" in the title field. Included are the census returns from Lower Canada/Canada East 1825, Manitoba and Red River 1831-1870, Upper Canada/Canada West 1841-1861, the City of Victoria 1891, and several digitized reels of *Dépôt des papiers publics des colonies; état civil et recensements, Série G 1 : Recensements et documents divers*, containing records from the general censuses of French colonies back to the 17th century. Census records from the Department of Indian Affairs and parish registers from Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, and Quebec are also available.

Héritage's content is freely available to the public, and users can download individual pages in JPEG or PDF format, and entire documents as PDFs.

Library and Archives Canada

Library and Archives Canada (LAC)'s primary online historical census data resource is accessed through Census search, a tool for searching and exploring census returns. Coverage includes the returns from the decennial census for the Dominion of Canada between 1871 and 1931, the 1870 Census of Manitoba, the 1906 Census of the Northwest Provinces, the 1916 and 1926 Censuses of the Prairie Provinces, and various pre-Confederation censuses of New Brunswick, Nova Scotia, Ontario (Canada West), Prince Edward Island, and Quebec (Lower Canada, Canada East) back to

1825. Digitized copies of the returns are hosted online by LAC, and new census years are added as they become available as per section 18.1 of the [Statistics Act](#). A variety of [earlier census and related documents](#) from 1640 to 1945 are also available, either digitally or on microform, though they are not currently indexed by personal name like those included in the Census search.

LAC's Census search has basic and advanced search interfaces, allowing users to search by census year, geographic region, and various personal attributes of enumerated individuals (e.g. name, year of birth). Matches are associated with digitized pages from enumeration records, which can then be freely downloaded in JPEG or PDF format. Search results can also be exported in different formats, including CSV and XML, allowing users to review and analyse custom datasets based on their own search criteria, including many (but not all) variables and up to 5000 rows.

LAC also identifies historical documents and publications related to each census year, like the published volumes of aggregate statistics and instructions to enumerators, in LAC's physical holdings or in digital format, with some often hosted by Canadiana or the Government of Canada Publications (GCP) Directorate. LAC also provides lists of districts and subdistricts for each historical census directly on their website as HTML content.

Census publications

Originally, the principal historical method of communicating Census of Canada information was in print publications. The practice of publishing the collated census results of multiple provinces in printed volumes stretches back before Confederation to at least the 1851-52 *Census of the Canadas* and continued post Confederation up until 1951. Starting in 1956, the bound volumes issued previously were replaced by a series of reports that could be bound or consolidated by other means (Canada, 1959, p. 79), and this practice continued until 2006, which was the last year for which the results of the census were published in print format (Statistics Canada, 2019, p. 5), though Statistics Canada continues to issue publications online in HTML and PDF formats that contain analyses of the results of the Census and supporting documentation.

The publications themselves comprise mostly aggregate data tables and contextual information based on the government's own analysis of the census returns. As such, their contents vary from year to year based on differences in census questionnaires, geographical coverage, and the analytical aims of the government. While the scope and detail of the published analysis generally increased over time, some of the earlier census years also include publication volumes presenting aggregate data from previous census years (e.g. 1871), providing multi-year comparisons (e.g. 1871, 1931), or additional analysis of specialized topics and subjects (e.g. 1911, 1931).

Comprehensive holdings of printed Census of Canada publications can be found at various government, academic, and public libraries in large part due to historical distribution and release of these materials via the Government of Canada's Depository Services Program (DSP), though following the termination of the DSP's distribution program and depository library agreements in 2014, there is no guarantee that access to these physical materials will be maintained in the future. In more recent years, significant efforts have been made through various library and government

initiatives to further digitize and expand access to these publications allowing them to be more easily findable and reused.

Website/Portal	Creator	Access	Coverage	Formats	Host Type
Canadiana	Canadiana / CRKN	Public	18th-19th centuries (selected)	PDF, JPEG	Non-profit
Government of Canada Publications	Government of Canada Publications Directorate	Public	1851-2021	PDF	Government
HathiTrust Digital Library	HathiTrust / various academic institutions	Public / Organizational membership	1861-1941*	PDF, JPEG, TIFF, EPUB**, and plain text	Non-profit / Academic
Internet Archive	Internet Archive / various institutions	Public	1870-2006	PDF, daisy, EPUB, and plain text	Non-profit
Statistics Canada website	Statistics Canada	Public	1996-2021	PDF	Government

Table 2: Characteristics of census publications portals

*The Census of Canada publications available through the HathiTrust Digital Library are only those they have verified to be in the public domain.
**EPUB downloads are available for subscribers only.

Canadiana

[Canadiana](#) is another digital collection hosted and made publicly available at no charge by CRKN in a Trustworthy Digital Repository. It contains nearly 20 million digitized pages of historical publications (CRKN, 2024b). Canadiana includes some published census volumes from the 19th century, although they are not conveniently grouped together for easy discovery and perusal. Of particular interest are digitized versions of a few publications reporting data aggregated from pre-1851 censuses, such as *A census of the population of the province of New Brunswick in the year 1840*, *Statistics of the population of the British colonies in North America for the year 1833*, and the *Recensement de la ville de Québec pour 1716*.

There is no advanced search interface for Canadiana, but it provides keyword searching of document metadata and full text, and a variety of search operators can be used to refine search results to

locate census publications (e.g. searching by title for "census", "recensement" or "population"). Canadiana's content is freely available to the public, and users can download individual pages in JPEG or PDF format, and entire documents as PDFs.

Government of Canada Publications

The [Government of Canada Publications](#) (GCP) catalogue contains a comprehensive collection of the most recent born-digital census publications issued by Statistics Canada, digitized copies of historical Census of Canada publications from Confederation to 2006, and digitized census publications from former colonies prior to joining Confederation back to the 1851 Census of the Canadas. These publications are acquired and hosted by the GCP Directorate of Public Services and Procurement Canada, and the catalogue and metadata are also maintained by them. Publications are available in PDF format and are downloadable without charge. There is a basic and an advanced search interface, but at present only publication metadata are indexed, not full text. Census publications are not easily browsed in the GCP catalogue in a way that would ensure users have a comprehensive view of what is available within each year, so it is better to use the advanced search interface.

HathiTrust Digital Library

HathiTrust is a consortium of academic and research libraries that collaborates on services and programs including the [HathiTrust Digital Library](#) (HDL), which rehosts digital publications contributed by member libraries in a Trustworthy Digital Repository (CRL, 2011). Access to the many digitized publications in the HDL that fall within the public domain are freely available to the public. Items deemed to be in copyright cannot be read or downloaded, but their full text can be searched in a variety of ways, including through the HDL's discovery interface. As a result, while there are hundreds of Census of Canada publications preserved in the HDL, only a fraction are available to be downloaded and viewed, namely those from the pre-Confederation years to the middle of the 20th century. There are basic and advanced search interfaces that index publication metadata and full text, and notably, the database attempts to collocate census publications by year, which is a useful feature. While anyone can view the full text of individual publications in the public domain online, only individual pages can be downloaded in PDF, JPEG, TIFF or plain text formats. Users at HathiTrust member institutions are able to download complete items in those formats and as EPUBs, and also have access to other services, including text and data mining.

Internet Archive

The [Internet Archive](#) (IA) is an American nonprofit organization that hosts a significant collection of freely downloadable digitized Census of Canada publications from the pre-Confederation years to 2006 on its website. These publications have been contributed through the digitization efforts of various institutions at various times and levels of comprehensiveness. The IA has a very active expanding catalogue of publications, but acquisitions to a large extent are driven by what contributing organizations want to digitize. Publications can be downloaded without charge in a variety of formats, including PDF, plain text, daisy, and EPUB. Like the GCP catalogue, there are basic and advanced search interfaces, and it can be a challenge to browse for the publications of specific census years. Since the metadata for IA items comes from heterogeneous sources, systematically searching using its metadata fields is also difficult. However, an important advantage over the GCP search interface is that users can also search the full text of items in the IA catalogue.

Statistics Canada website

The [Statistics Canada website](#) is a primary hosting and distribution channel for Statistics Canada-produced publications, aggregate data, public use microdata, and survey and data collection information produced for public consumption. As such, it is updated as new information becomes available and is the principal source for the most recently published Census of Canada information. Census of Canada products form only part of the information available on the Statistics Canada website, and while census information can be accessed through the site's primary search and browse interfaces, a separate subsite is also provided for each census year. The subsite for the most recent census can be accessed through a link in the Statistics Canada website's main menu and is divided into three sections: Census of Population, Census of Agriculture, and Census engagement. Archived subsites for previous census years back to 1996 are linked to from the main landing pages for the censuses of population and agriculture respectively.

While the Statistics Canada website is not an access point for the digitized historical census publications, hundreds of analytical publications related to the Census of Population and Census of Agriculture from about the year 2000 onwards can be found there and are freely downloadable. The 2006 census year was also the last year for which a set of printed census publications was issued, after which the results of the census were published exclusively online as one of the aforementioned subsites. These subsites effectively collocate information within each census year, and from 2011 onwards, they are what is issued in place of sets of printed Census of Canada publications. While individual census tables and documents for each year may be rehosted elsewhere, the 2011, 2016, and 2021 Census of Canada subsites are not replicated elsewhere except where they have been preserved by various initiatives such as the [Government of Canada Web Archive](#).

In addition to analytical publications, the Statistics Canada website also provides access to census reference materials back to the 1996 Census of Canada. These materials include information concerning how the census is carried out, changes from the last census, census terminology, sampling and weighting procedures, educational kits, and guides to assist users with interpretation of published census products. Geographic reference materials are also provided, including boundary files and reference maps for various levels of census geography, road network files, correspondence files for previous versions of certain census geographies, and documentation for these materials. Reference materials for pre-1996 censuses can be found on some of the other portals described in this paper, such as the GCP and IA sites, but the scope of what is available varies.

Non-confidential Census of Canada information products distributed via the Statistics Canada website fall under the [Statistics Canada Open Licence](#) (Statistics Canada, 2024, July 26), which currently allows for their royalty-free use, reproduction, and redistribution, subject to certain user responsibilities.

Aggregate data

This section deals with portals that present census data in aggregate form, essentially data tables. These tables are either "born-digital" or, for older censuses, have been extracted from print publications via optical character recognition (OCR) or other techniques. Although most of the tables were originally published by Statistics Canada as part of the census releases, some sites (like

UNI·CEN) have reformatted the tables to enhance their standardization. Many of the sites listed in this section seek to supplement the data offering from Statistics Canada by providing a single access point to data collected from multiple censuses. Others, like the Canadian Census Analyser, aim to provide a very sophisticated filtering and downloading system that allows users to produce finely customized tables. Finally, some sites, like the Canadian Historical Geographic Information System and the Community Data Program, provide interactive maps that allow geographic exploration of the data.

Website/Portal	Creator	Access	Coverage	Formats	Host Type
Abacus	University of British Columbia	Public	1665-2016	IVT, CSV, Excel	Academic
Canadian Census Analyzer at CHASS	Data Centre, Faculty of Arts & Science, University of Toronto	Subscription	1961-2021	Text, HTML, CSV, Excel, SAS, and SPSS	Academic
Canadian Century Research Infrastructure	Consortium of research groups from 8 universities	Public	1911-1951	Excel	Academic
Canadian Historical Geographic Information System (CHGIS)	The Canadian Peoples (TCP) project / Historical GIS Lab, University of Saskatchewan	Public	1851-1921*	CSV	Academic
Community Data Program	Community Data Program	Subscription	2006-2021*	IVT	Non-profit
Odesi	Scholars Portal	Public	1665-2021	IVT, CSV	Academic
Statistics Canada website	Statistics Canada	Public	1981-2021*	CSV, XML, and IVT	Government
UNI·CEN	UNI·CEN	Public	1951-2021	DTA, CSV, DBF	Academic

Table 3: Characteristics of aggregate data portals

Coverage is not comprehensive for all years.

Abacus

Abacus is a data repository shared by several universities from British Columbia (Simon Fraser University, University of Northern British Columbia, University of Victoria) and hosted by the University of British Columbia. It is based on an instance of the Dataverse platform and holds public and restricted data from various organizations such as Statistics Canada, the Inter-university Consortium for Political and Social Research (ICPSR), DMTI, and the Linguistic Data Consortium. Of relevance to this article, it includes aggregate data from censuses ranging from 1665 to 2016. The census data tables are publicly downloadable and available in Beyond 20/20 (IVT), CSV and sometimes Excel (XLSX) formats. The collection is extensive and appears to include most data tables published by Statistics Canada as well as census-related reference publications.

Although users cannot strictly limit their search to the collection of census tables, there is a sub-collection (a "dataverse") for all Statistics Canada materials with an open license, which include aggregate and geospatial data plus reference publications. Within this sub-collection, one can either do a keyword search or browse the contents using the provided "Keyword term" filters ("2001 Census of Canada", for instance). An "Advanced search" menu also allows for field-level keyword searches and is based on the metadata describing the various datasets.

Canadian Census Analyser at CHASS

The Canadian Census Analyser, developed by the Computing in the Humanities and Social Sciences (CHASS) data centre at the University of Toronto, is a bilingual tool that provides access to census profiles, i.e. statistical portraits of different census geographic units going from the enumeration area (EA) level to the provincial and national levels. Coverage spans 1961 to 2021, including the 2011 National Household Survey. This aggregate data (from the profiles) is available in multiple formats including text, HTML, CSV, Excel, SAS and SPSS. Content is hosted locally and updated as new census data becomes available, but access is only available to users at subscribing universities. One of the most important features of the Census Analyzer is the ability to filter data by profile variable and by specific geographic units (for instance, one can indicate exactly what census tracts are required). The Census Analyser does not provide a search tool but instead relies on a sophisticated set of browsing and filter features that allow users to precisely determine what years, geographic units, and variables they want from the census profiles.

Canadian Century Research Infrastructure (CCRI)

The CCRI project was developed by a multi-institutional research collaboration between eight Canadian universities that used the census returns to create microdata for the five decennial censuses covering the first half of the 20th century (1911-1951) (see the microdata section below for more details). The research team also created spatial boundary files at the census division and census subdivision levels for all five censuses. The CCRI project was active between 2003 to 2009 and its website and datasets are hosted by the University of Alberta. Copies of the datasets are also held at the Université du Québec à Trois-Rivières (UQTR).

CCRI scanned selected tables from the published census volumes (for the 1911 to 1951 period) and then used OCR software to extract the data and produce Excel files. CCRI also conducted a series of validation tests on the extracted data and added some annotation to the tables to indicate

correction to typographical errors for instance. In total 23 tables were selected, covering topics such as population, religion, dwellings and origin. The tables present data at the census division and census subdivision levels. CCRI also created PDF files that provide the full name of the variables in French and English. The files are not directly available on the website of the project, but are publicly downloadable from the [CCRI dataverse hosted by Borealis](#) along with geospatial data files created by the project. The aggregate data files are also findable through Odesi (see below) and downloadable from the associated [Census of Population dataverse in Borealis](#)[4].

Canadian Historical Geographic Information System (CHGIS)

The data available on the [CHGIS website](#), hosted by the Historical GIS Lab at the University of Saskatchewan, was produced by [The Canadian Peoples (TCP)](#) project, itself based at the University of Guelph and composed of researchers from several Canadian universities and research teams. CHGIS offers selected aggregate census data tables from 1851 to 1921. It also provides geospatial data, which is described in the census maps and geospatial data section below. Note that the data presented for the 1851 and 1861 pre-confederation censuses only covers Lower and Upper Canada (currently the provinces of Quebec and Ontario). The data tables were obtained by performing OCR on digitized versions of the printed census volumes available from GCP and IA.

The digitized tables are available in Excel format and can be freely downloaded from the website. Users can download a zipped file containing all tables for a given census year (the total number of tables varies from one to six depending on the census year). The website also allows users to view the data for a specific census subdivision[5]. This can be done in three different ways: 1) through a browsing feature that allows them to select the subdivision from a list that can be filtered by province and by census year; 2) through a simple search interface where they can enter the name of the subdivision and select the year and province; and 3) by using an interactive map that shows the boundaries of each census subdivision for every census. The available documentation includes a detailed description of the methodology used to digitize the files, explains what corrections to the original data were performed, and describes the various table formats that were created. A second document presents the list of all variables available for each table.

Community Data Program

The [Community Data Program](#) (CDP) is a member-funded, community non-profit organization that provides access to publications and data to facilitate community development initiatives by its members, which include community non-profits, educational institutions, and local governments. The data provided is intended to inform program and policy planning and implementation. Census data is one of the types of data made available for this purpose. The CDP rehosts and makes available reference publications and aggregate data from the 2006-2021 censuses. Access to publications and data from the censuses is incomplete and has been curated by CDP to serve the needs of their members. The Data purchase and access working group (DPAWG), which is made up of representatives from member organizations, meets regularly to identify data needs and to acquire data products for the program. Data within the portal can be searched by topic, data source (census year and theme), data provider, title, geography, or year, but while the search interface is public, access to complete items and downloading of IVT files are restricted to members.

Odesi

Odesi is a search engine and discovery portal for statistical data developed and funded by the Ontario Council of University Libraries (OCUL) and maintained by Scholars Portal. Content is hosted on the Borealis (Dataverse) platform, also maintained by Scholars Portal, and includes datasets from various organizations such as Canadian opinion polling firms and ICPSR. The database is continuously updated as new data tables and microdata files become available[6]. More importantly from our perspective, it includes an extensive number of aggregate data tables (and microdata files, as described below) from the Canadian Census of Population, going back to the pre-confederation censuses, covering the period from 1665 to 2021. Aggregate data is available in Beyond 20/20 format (IVT) and occasionally in CSV and tab-delimited formats. Odesi provides a sophisticated search interface that allows searching files by title, author, variable, series, keyword and abstract. The search can be limited to specific collections (like the census) and filtered by year. The datasets are coded using the Data Description Initiative (DDI) metadata schema. In addition to the search features, users can also choose to browse the different collections, including the census. Browsing the census collection will present the data per census year and broken down by census topics (for the more recent censuses). Both the search tool and the census data itself are open to the general public.

Statistics Canada website

As described above, Statistics Canada provides free public access to aggregate data products hosted and published on its website and is updated with each cycle of the Census of Canada. The years covered vary by access point. As already mentioned, there are Census of Population subsites available from 1996 onwards, with all but the most recent censuses marked as archived content. Through the website's main data search interface and the Census Datasets search interface, content is available back to the 1981 census, though most is from 1991 onwards. Other census-related tools on the site have their own unique time period coverages. The newer Census Profile Web Data Service and Census Program Data Viewer mediate access to content from the 2016 census forward.

The main data interface can be searched by keyword and filtered by subject or level of geography. There is also a convenient filter specifically limiting all results just to the Census of Population, but one could also limit results similarly using the "Survey or statistical program" filters. Of the approximately 3000 Census data products findable through this method, almost all are aggregated products, with most being data tables. There are also community or regional profiles, thematic maps, and data visualization products. The Census Datasets search interface is available through the main Census of Population subsite, which also includes a search interface for Census Profiles. It is possible to search or browse these two types of content back to 1996 as well.

Using the Statistics Canada website's site search, the data search interface, or one of the census-specific interfaces is mainly a matter of personal preference, as one should be able to find the same Census of Population aggregate data tables through a variety of methods. These tables may be somewhat fixed or may allow users to customize the view of the data by selecting the variables and/or variable values to display. There are often a variety of download options, including the extent to which the table and associated metadata are included, and formats like comma or tab-separated values, XML, or Beyond 20/20.

Unified Infrastructure for Canadian Census Research (UNI·CEN)

UNI·CEN, a project from Western University, includes publicly released univariate aggregate data tables at seven levels of geography: Canada, provinces and territories, census metropolitan areas, agglomerations, divisions, subdivisions, and tracts[7]. Currently, the aggregate data tables are available for the 1951–2021 censuses, but the project aims to add census data for the 1851 to 1951 period soon, adapting census division and subdivision data digitized and disseminated by the CCRI and The Canadian Peoples Project (TCP). The census boundary files are available for all censuses from 1851 to 2021. The original source files have been modified to standardize attribute tables and metadata, including the handling of geographic identifiers. UNI·CEN is currently working on producing additional resources such as a comprehensive database of census questions covering the 1851 to 2021 period, geographic concordance tables to link equivalent geographic units across censuses, and geographic and postal code lookup tables.

Access to UNI·CEN data is currently available in two places, with plans for additional access points. First, the aggregate data tables and boundary files can be freely downloaded from the UNI·CEN Dataverse in the Borealis repository. Second, the UNI·CEN Canadian Neighbourhood Change Explorer 1951–2021, developed in partnership with Esri Canada, Inc., and launched in March 2024, is a freely-available visualization tool allowing users to explore and compare, through a map interface, selected longitudinally available census data harmonized to 2021 census tract boundaries. Future plans include access via the Scholars GeoPortal platform and through a web portal that is still in development.

Microdata

Microdata is data observed or collected directly from a specific unit of observation. Microdata from Statistics Canada usually comes in one of the two file types, Public Use Microdata Files (PUMF) and master files (Statistics Canada, 2022). PUMFs, as their name indicates, are meant to be accessible to the public. In those files, different techniques have been applied to maintain the respondents' confidentiality. For instance, some of the variables are suppressed or categories are collapsed and, importantly, data is not generally available at fine geographic levels. Master files, on the other hand, contain the complete data (all answers from all respondents) as collected from the census but are not publicly accessible. A network of Research Data Centres (RDCs) has been created to allow vetted researchers to analyse these datasets in a secure environment.

Website/Portal	Creator	Access	Coverage	Formats	Host Type
Abacus	University of British Columbia	Public	1971-2021	SPSS, STATA, SAS, CSV, TAB	Academic
Canadian Census Analyzer at CHASS	Data Centre, Faculty of Arts & Science, University of Toronto.	Subscription	1971-2016	CSV and text	Academic
CCRI	Consortium of research groups from 8 universities.	Public	1911 & 1921*	SPSS	Academic
IMPQ	Research teams from UQTR, UQAC U de M. Portal hosted by the CIEQ.	Public (account required)	1852-1911	CSV	Academic
Odesi	Scholars' Portal	Public	1871 to 1911**, 1971-2021	R, SPSS, STATA, SAS, CSV, TAB	Academic
PRDH	Université de Montréal	Public	1831 (QC) 1852 & 1881	SPSS & STATA	Academic
Research Data Centres	Research Data Centres	Mediated / Subscription	1911-2021	SAS, SPSS, STATA, CSV and text	Government / Academic
Statistics Canada website	Statistics Canada	Public	1991-2021	CSV and text	Government

Table 4: Characteristics of microdata portals

*Additional microdata created by CCRI from 1921-1951 is available mediated through RDCs.

** These are population samples digitized by several research groups such as CCRI.

Abacus

Abacus (described in the aggregate data section) includes the various microdata files (PUMFs) created by Statistics Canada for the censuses from 1971 to 2021. They can be downloaded as TAB and CSV files and, in most cases, syntax files for SPSS, SAS and Stata are available. The associated documentation (cobebooks, user guides, etc.) is also available. All files are freely downloadable.

Canadian Census Analyser at CHASS

The Canadian Census Analyser (mentioned above in the aggregate data section) also provides access to PUMFs from 1971 to 2016. Users can also download subsets of the standard PUMFs via a sophisticated filtering system (based on the SDA set of programs) allowing for variable and case selection via a browsing and filtering interface. Data can be downloaded as text or CSV files, with accompanying codebooks and syntax files for SAS, SPSS, STATA, DDI and SDA. Content is hosted locally by the service and updated as new census data becomes available, but access is only available to users at subscribing universities.

Canadian Century Research Infrastructure (CCRI)

For a general description of the CCRI project, see the aggregate data section.

The microdata consists of samples of the population (5% for the 1911 census, 4% for the 1921 census and 3% for the 1931, 1941 and 1951 censuses). The 1911 and 1921 data can be freely downloaded directly from the CCRI website in SPSS format and is also hosted in the CCRI Dataverse hosted in Borealis and discoverable through Odesi. Data access for all five census years is available for researchers with approved projects via the Statistics Canada RDC network (see below). The spatial data files for all the census years covered by the project (boundary files for the various census geographic units) can be downloaded from Scholars GeoPortal. The Centre interuniversitaire d'études québécoises (CIEQ) at UQTR's (one the CCRI's collaborating universities) Échantillon de la population canadienne en 1911 also provides a tool with a sophisticated faceted search engine to explore the 1911 census microdata and the complete collection of geospatial data files created by the project.

Infrastructure intégrée des microdonnées historiques de la population du Québec (IMPQ)

The IMPQ project links data from the province of Quebec civil records – specifically, records of marriage from 1621 to 1914; records of births and deaths between 1621 and 1849; and births and deaths recorded in the regions of Saguenay and Lac Saint-Jean before 1914 – with the complete (not sampled) microdata from seven Canadian censuses held between 1852 and 1911.

The portal features a search engine that allows faceted search based on the various census fields (last name, first name, age, profession, religion, etc.) and many criteria can be combined. Geographic coverage is limited to Québec City, Trois-Rivières, and the Saguenay, Lac-Saint-Jean, Côte-Nord, and Gaspésie regions of the Province of Québec. There are two tiers of access to IMPQ data, both of which require registration through the creation of an online account. Registration for the public portal is available to anyone and allows users to search for and download data in Excel format from the IMPQ's census microdata. Users can also choose to view the census records individually or grouped by households. Digitized versions (PDF files) of the census returns are also available. Access to the IMPQ's Quebec civil records data and to the links between them and the

census are only available to registered researchers, who must confirm their institutional affiliation and show that their use of the data will be for research purposes.

IMPQ is a partnership between research groups at the Université du Québec à Chicoutimi, Université de Montréal and the UQTR. The research portal and data are hosted by UQTR. While the three collaborating research groups are still active, there is no mention of recent additions to the database or changes to the research portal.

Odesi

Odesi (mentioned in the aggregate data section above) also allows users to explore and download PUMFs for the Census of Population from 1971 to 2021. The microdata files created by the CCRI project for the 1911 census (see above) are also discoverable in Odesi. Also available are microdata datasets for samples of the population created by various research teams[8] for the 1871, 1881, 1891 and 1901 censuses.

The data files themselves are in the Census Dataverse hosted on Borealis. Users can download complete microdata files or extract specific variables. Odesi has sophisticated search and browse functions described above, and microdata files can be downloaded in several formats, including R, SPSS, STATA, SAS, CSV and tab-delimited. Odesi is continuously updated as new content becomes available.

Programme de recherche en démographie historique (PRDH)

The PRDH, based at Université de Montréal, created sets of microdata for the 1831 census of Quebec, and the 1852 and 1881 censuses of Canada based on the microfilmed copies of the census returns. The dataset for the 1831 census of Quebec includes 100% of the population. For 1852, the dataset is a random sample representing 20% of the population in the surviving census returns (27% of the manuscripts returns were lost before they could be microfilmed). The 1881 dataset represents 100% of the population. In addition to the data files, some textual documentation is included. The content is entirely hosted on the PRDH website, and while access is free and public, users must first register to create an online account.

The microdata for all three (1831, 1852, and 1881) censuses can be downloaded from the PRDH website in SPSS format, with syntax files available for the 1831 and 1881 censuses. The microdata for the 1831 Census of Quebec is additionally downloadable in STATA format. The 1852 and 1881 databases can also be searched online via one of two data browsers that allow users to search for, view, and download PDF versions of the digitized microfilmed returns. Each browser allows users to search based on characteristics of individuals, families, birthplace, religion, etc. The PRDH is still active but appears to now be focused on the study of Quebec demography.

Research Data Centres (RDCs)

Statistics Canada RDCs are physically located within academic or government institutions and are jointly managed by Statistics Canada and host organizations. RDCs provide secure, non-public access to Statistics Canada microdata master files. Data users are required to attain a security clearance, complete mandatory training, and swear or affirm the Oath of Office and Secrecy to Statistics

Canada. Work with data must occur on site, and only vetted analysis, not raw data, can be taken out of the centre or published.

Holdings include a variety of survey and administrative data, including the Census of Population for every ten years from 1911-1951 and every five years from 1971-2021. Note that only a 20% sample, and not the master file, is available for the 2011 Census of Population, but the master file is available for the 2011 National Household Survey, which replaced the long-form census that year. Notably unique about RDC access is the availability of linked sets of microdata, including those linking censuses of population with a number of other Statistics Canada microdata sources. The number of datasets available to researchers grows as new products become available. A complete listing of data available in the RDCs can be found on the Statistics Canada website.

Statistics Canada website

PUMFs for the Census of Population and the 2011 National Household Survey produced by Statistics Canada are hosted and made freely downloadable from the Statistics Canada website from the most recent census back to 1991. There is no search interface, but all available files are hyperlinked from a single index page. "Individuals" files are available for 1991-present, "Hierarchical" files from 2006 forward, and "Families" and "Households and housing" files from 1991-2001. Each downloadable zip file includes the data itself in CSV or text format, documentation, and license agreements. The use of Statistics Canada PUMFs is governed by the Statistics Canada Open Licence (Statistics Canada, 2024, November 8).

Census maps and digital spatial data

This section presents the main sites providing access to maps or geospatial data files related to the Canadian census. In addition to thematic maps presenting visual representations of selected census variables or topics, Statistics Canada produces a series of reference maps that outline the boundaries of geographic units used to collect and organize the census data. The term "digital spatial data" refers to machine readable files that provide users with the ability to visualize and analyse data through the use of Geographic Information Systems (GIS) software. Although these files were produced by Statistics Canada for recent censuses, the equivalent files for older censuses were created by various research groups or nonprofit organizations by scanning and georeferencing the original paper maps.

Website/Portal	Creator	Access	Coverage	Formats	Host Type
Abacus	University of British Columbia	Public	1971-2016	SHP, Mapinfo, geojson, e00	Academic
Canadian Historical Geographic Information System (CHGIS)	The Canadian Peoples (TCP) project / Historical GIS Lab, University of Saskatchewan	Public	1851-1921	GDB	Academic
Scholars GeoPortal	Scholars Portal, Ontario Council of University Libraries (OCUL)	Public	1901-2021*	SHP	Academic
Statistics Canada website	Statistics Canada	Public	2001-2021	SHP, GML, GDB, TAB, PDF	Government
UNI·CEN's Dataverse	UNI·CEN	Public	1851-2021**	GDB, geojson, SHP	Academic

Table 5: Characteristics of census maps and digital spatial content portals

*1916, 1926 and 1946 (Prairie provinces), 1945 (NL) and 1956 to 1976 (Canada) are missing.
**1956 to 1981 are missing

Abacus

Abacus (described in more details in the aggregate data section) has a collection of census geospatial files originally created by Statistics Canada that covers the period from 1971 to 2016. It includes street networks files as well as cartographic boundary files[9] (CBFs) and digital boundary files[10] (DBFs). The files are available in multiple formats including SHP, Mapinfo, e00, and geojson. Associated documentation is also provided. All files are publicly downloadable.

Canadian Historical Geographic Information System (CHGIS)

This section only reviews the geospatial data made available by the CHGIS. For a more complete description of the project, see the entry for CGHIS in the aggregate data section of the article above.

Under the umbrella of TCP project, researchers from CHGIS at the University of Saskatchewan along with the Centre interuniversitaire d'études québécoises (CIEQ) at Université Laval (www.cieq.ca) created a series of boundary files at the census subdivision level for every census year covered by the project (from 1851 to 1921 inclusively). The data consists of one large geodatabase (GDB) that includes layers for each census year. The file is available to the public under a Creative Commons

Open Data license and can be downloaded from the CGHIS website. Unique identifiers were created for each census subdivision allowing the boundary files to be joined to the data tables created by TCP (see aggregate data section for more information on those tables). The available documentation describes the methodology used to create the boundary files and the unique identifiers. It also includes complete metadata and description of the attribute tables. Finally, the document provides a detailed description and methodological notes for each series of boundary files (each census year).

Scholars GeoPortal

Scholars GeoPortal is a project supported the OCUL, which provides a large collection of geospatial products (vector data, orthophotographs, aerial images, etc.) from various levels of government (municipal, provincial, federal) and from the collections of Ontario university libraries.

The portal is probably the most complete source of historical Canadian census geospatial files as it includes an extensive collection of census boundary files (in addition to other spatial datasets such as road network files and geographic attribute files) covering a period from 1851 to 2021[11], although there are still a few gaps in the coverage and not all geographic levels are present for all census years. The files were originally created by several entities such as Statistics Canada, the CCRI project (for the 1911 to 1951 censuses)[12], the Historical Atlas of Canada Online Learning Project and the University of Toronto Map and Data Library (Allen & Leahey, 2018). In 2015, a project led by Scholars Portal and the University of Toronto Map and Data Library managed to gather the very dispersed and heterogeneous collection of boundary files, convert them to a current file format (shapefile) and create associated metadata. For recent years (1991 onward), the portal provides both the CBFs and the DBFs created by Statistics Canada.

The Scholars GeoPortal website provides a sophisticated search interface that allows users to look for datasets by keyword, place name or subject category (including "Census and administrative boundaries"), or by drawing a rectangular area of interest on the interactive map. Search criteria can also be combined. Once a dataset has been selected, it can be visualized as a map or downloaded in shapefile format. All census datasets are publicly available. Scholars GeoPortal is an ongoing project, and new datasets are being added as they become available.

Statistics Canada website

The Census geography section of Statistics Canada's website is the main resource for geographic reference products (illustrated glossary, reference guides, catalogue, working papers, etc.), thematic and reference maps, attribute information products (correspondence file and tools to explore the census geography) and geospatial products including boundary files and road network files. This collection is limited to recent censuses, from 2001 onward. The GeoSuite product can be used to navigate between the different geographic units and obtain lists of sub-units (along with basic data) corresponding to a larger geographic unit.

The Maps subsection of the website includes both reference maps that display some of the census geographic units and thematic maps that provide a cartographic view of certain census variables. The reference maps are mostly available at the census tract, federal electoral district and dissemination area levels in PDF format. Also included in this section is an interactive mapping

application called GeoSearch that allows users to locate reports and datasets corresponding to the various census geographic units.

The boundary files include CBFs and DBFs as well as Intercensal Census Subdivision Boundary Files (covering certain years between censuses) and are publicly available for download in various formats such as shapefile (SHP), Geography Markup Language (GML), File Geodatabase (GDB), and MapInfo (TAB). In 2021, Statistics Canada also added support for API-based mapping services (ESRI REST and Web Mapping Service (WMS)). There is no search engine, and access to the various documents is simply done by navigating the links and making selections (geographic unit, file format, year, etc.). All files are hosted locally and are publicly accessible.

Unified Infrastructure for Canadian Census Research (UNI·CEN)

The UNI-CEN research group (described in more detail in the aggregate data section above) produced an extensive series of harmonized census boundary files to facilitate their use across time. According to UNI-CEN documentation, the team created a reformatted version of all publicly available census boundary files – originating mainly from Statistics Canada, TCP, CCRI, and Scholars GeoPortal. The harmonized files have standardised attribute table fields, consistent shorelines, are projected to the same coordinate system and are available in several modern file formats, namely SHP, GDB and geojson. The files go back to very early censuses (1851) and are available at several geographic levels including, for the large majority of census years, census subdivision, census division and province.

In addition to the census boundary files, UNI-CEN produced a comprehensive series of harmonized spatial files for the Federal Electoral Districts (FED) going back to 1867. These can be used to map census data as Statistics Canada started to release profiles for FEDs in 1961. Moreover, for the period covering the 1991 to 1951 censuses, UNI-CEN compiled FED data from Donald Blake's profiles created for his PhD thesis and profiles created by the CCRI.

The geospatial files are not directly available on UNI-CEN's website, but are rather hosted on the project's dataverse in Borealis. From there, users can either do a generic keyword search or use the advanced search screen to interrogate the various metadata fields. From the main screen, they can also explore the data by using several types of filters such as time period, geographic unit, data type and keyword term. All files are publicly downloadable, and detailed documentation is also available in the dataverse.

Overall summary

Although we do not claim that this inventory of portals giving access to Canadian census content is comprehensive – we have excluded genealogy sites for instance – it gives a good picture of what is available to researchers and the larger public. The two following tables present a breakdown by type of access and host type. Note that some portals (Abacus, Canadian Census Analyser, etc.) appear in more than one content-type category and thus are counted more than once.

Portals by content type		Access type		
		Public	Subscription*	Mixed
Census returns	2	2	0	0
Publications	5	4	0	1
Aggregate data	8	6	2	0
Microdata	8	6	2	0
Maps and spatial data	5	5	0	0
Total	28	23	4	1
Percentage	100%	82%	14%	4%

Table 6: Portals by access type

*Includes mediated access and organization membership

Of all the analysed websites, the vast majority (82%) provide public access to its content. The few subscription-based portals – the CDP for aggregate data, the RDCs for microdata and the Census Analyser that has both aggregate and microdata – offer significant added value in terms of data packaging or user assistance and thus must charge to cover the cost of those services. On the other hand, all the portals that give access to census returns and maps & digital spatial data (and all but one that offer census publications) make their content publicly and freely available. Overall, we can say that, although discovering and using census data may be difficult given the fragmented landscape discussed in this paper, at least most of the products are freely available.

Portals by content type		Host type			
		Academic	Government	Non-profit	Mixed
Census returns	2	0	1	1	0
Publications	5	0	2	2	1
Aggregate data	8	6	1	1	
Microdata	8	7	0	0	1
Maps and spatial data	5	4	1	0	0
Total	28	17	5	4	2
Percentage	100%	61%	18%	14%	7%

Table 7: Portals by host type

This breakdown by host type shows the importance of academic initiatives, spearheaded by research groups or academic units, in providing and enhancing access to census data, and even creating derived products. Of the 28 portals examined, 17 (or 61%) are the outcome of university-led initiatives. These projects offer a necessary complement to the government-based portals (18%), by providing researchers with a large selection of tools or products that facilitate the exploration of census data by date or geography. It is also interesting to note that non-profit organizations – namely Internet Archive, Canadiana and HathiTrust (which is categorized under mixed as it is also academic) – play an important role in giving access to census publications, especially those from historical censuses.

Conclusion

In response to the fragmented context of access to census materials described in this paper, the authors joined other collaborators from Canadian Universities, Statistics Canada and LAC, to form the Canadian Census Data Discovery Partnership (CCDDP). The CCDDP's main goal is to provide a

single point of access to all census materials at the item level (individual tables or documents) going back to the very first pre-Confederation censuses.

The first phase of the project – which is nearly completed at the time of writing – consisted of the creation of a comprehensive, bilingual (French and English), and item-level inventory of all census publications. The next objective was to provide a searchable database allowing researchers to identify tables or publications by subject or geography across time. A searchable prototype database, tentatively called the Census Discovery Portal, is currently under development.

The landscape of census information access is complex. While much of the current and historical information is available online in digital formats, it is held in numerous online locations, which vary in the type of information they host, the time period covered, the way they describe and provide access to the content, the type of organization supporting them, their attitude towards preservation, and their general user base. Navigating this often-confusing network of resources was an important motivation for the CCDDP to inventory the content hosted at multiple online locations and provide a single point of access using consistent metadata. Looking to the future, one of the CCDDP's greatest challenges will be how to approach sustainability, that of the growth of the inventory as new Canadian censuses are completed, that of the maintenance of the census discovery portal, and that of the metadata, which points to multiple online resources that each have their own site information architecture that may change over time.

While identifying an expansive number of census data portals, which provide invaluable access to census data, this paper highlights gaps and areas for improvement. Ideally researchers would have access to the entire corpus of census data in a variety of formats, consistent across census years. However, with this ideal not in existence, works like this paper, and the inventory created by the CCDDP, seek to improve discoverability of the currently available data. Specifically, we hope that this paper presents a well-organized map of the Canadian census landscape, allowing librarians and researchers to locate the best sources of information for their specific needs whether those are defined by type of data, historic period, or format type. Also, by clarifying what is available, and making it more discoverable, we think that gaps in content and data formats will be more readily apparent, and thus more data can be created and made available to fill these gaps.

Reference list

Allen, J., & Leahey, A. (2016, Spring/Summer). Improving access to digital historical census boundaries in Canada. *ACMLA Bulletin*, 153, 44-50. https://doi.org/10.31235/osf.io/eacs5

Canada. Dominion Bureau of Statistics. (1959). *Current publications: Dominion Bureau of Statistics, 1959*. https://perma.cc/NC7Q-AGPU

Cooper, A. & Jadon, V. (2023, September). Spotlight: Odesi MarkIt! Program: A collaborative curation model for data. *Scholars Portal Newsletter*. https://perma.cc/P9R8-4KXX

CRKN. (2024a). *About CRKN*. https://perma.cc/N745-63SN

CRKN. (2024b). *Canadiana collections*. https://perma.cc/63BL-8X78

CRL. (2011). *HathiTrust audit report 2011*. https://perma.cc/3VPC-NPZ9

Hillman, Thomas A. (1981). *Catalogue of census returns on microfilm 1666-1881*. Public Archives Canada.

Statistics Canada. (2015, December 30)*. History of the census of Canada*. https://perma.cc/JH4P-6HQ4

Statistics Canada. (2019, August 7). *100 years and counting: More than a century of censuses in Canada*. https://perma.cc/8X2D-NTNF

Statistics Canada. (2022, November 30). *DLI survival guide*. https://perma.cc/8S4A-FAJX

Statistics Canada. (2024, July 26). *Statistics Canada open licence*. https://perma.cc/5NF8-6KUH

Statistics Canada. (2024, November 8). *Census of population: Public use microdata files*. https://perma.cc/WNX7-L6JT

Statistics Canada. (2024, November 26). *100 years of the Canadian census*. https://perma.cc/VJ74-9MXJ

Appendix A: Alphabetical List of Census Portals

Website / Portal	Creator	Content Type	Access	Coverage	Formats	Host Type
Abacus	University of British Columbia	a) Aggregate data b) Microdata c) Maps and Digital Spatial	Public	a) 1665-2016 b) 1971-2021 c) 1971-2016	a) IVT, CSV, Excel b) SPSS, STATA, SAS, CSV, TAB c) SHP, Mapinfo, geojson, e00	Academic
Canadiana	Canadiana / CRKN	Publications	Public	18th-19th centuries (selected)	PDF, JPEG	Non-profit
Canadian Census Analyzer at CHASS	Data Centre, Faculty of Arts & Science, University of Toronto.	a) Aggregate data b) Microdata	Subscription	a) 1961-2021 b) 1971-2016	a) Text, HTML, CSV, Excel, SAS, and SPSS b) CSV and TXT	Academic
Canadian Century Research Infrastructure	Consortium of research groups from 8 universities.	a) Aggregate data b) Microdata	Public	a) 1911-1951 b) 1911 & 1921*	a) Excel b) SPSS	Academic
Canadian Historical Geographic Information System (CHGIS)	The Canadian Peoples (TCP) project / Historical GIS Lab, University of Saskatchewan	a) Aggregate data b) Maps and Digital Spatial	Public	a) 1851-1921 b) 1851-1921	a) CSV b) GDB	Academic
Census Search	Library and Archives Canada	Returns	Public	1825-1931	PDF, JPEG, CSV**, and XML**	Government
Community Data Program	Community Data Program	Aggregate data	Subscription	2006-2021***	IVT	Non-profit
Government of Canada Publications	Government of Canada Publications Directorate	Publications	Public	1851-2021	PDF	Government
HathiTrust Digital Library	HathiTrust / various academic institutions	Publications	Public / Organizational membership	1861-1941****	PDF, JPEG, TIFF, EPUB*****, and plain text	Non-profit / Academic

Website / Portal	Creator	Content Type	Access	Coverage	Formats	Host Type
Héritage	Canadiana / CRKN	Returns	Public	17th-19th centuries (selected)	PDF, JPEG	Non-profit
IMPQ	Research teams from UQTR, UQAC U de M. Portal hosted by the CIEQ.	Microdata	Public (account required)	1852-1911	CSV	Academic
Internet Archive	Internet Archive / various institutions	Publications	Public	1870-2006	PDF, daisy, EPUB, and plain text	Non-profit
Odesi	Scholars Portal	a) Aggregate data b) Microdata	Public	a) 1665-2021 b)1871-1911******, 1971-2021	a) IVT, CSV b) R, SPSS, STATA, SAS, CSV, TAB	Academic
PRDH	Université de Montréal	Microdata	Public	1831 (QC) 1852 & 1881	SPSS & STATA	Academic
Research Data Centres	Research Data Centres	Microdata	Mediated / Subscription	1911-2021	SAS, SPSS, STATA, CSV and text	Government / Academic
Statistics Canada website	Statistics Canada	a) Publications b) Aggregate data c) Microdata d) Maps and Digital Spatial	Public	a) 1996-2021 b) 1981-2021*** c) 1991-2021 d) 2001-2021	a) PDF b) CSV, XML, and IVT c) CSV and TXT d) SHP, GML, GDB, TAB, PDF	Government
Scholars GeoPortal	Scholars Portal, Ontario Council of University Libraries (OCUL)	Maps and Digital Spatial	Public	1901-2021***	SHP	Academic
UNI·CEN	UNI·CEN	a) Aggregate data b) Maps and Digital Spatial	Public	a) 1951-2021 b) 1851-2021***	a) DTA, CSV, DBF b) GDB, geojason,SHP	Academic

*Additional microdata created by CCRI from 1921-1951 is available mediated through RDCs.
**Search Results can be downloaded in different formats
***Coverage is not comprehensive for all years
****The Census of Canada publications available through the HathiTrust Digital Library are only those they have verified to be in the public domain.
*****EPUB downloads are available for subscribers only.
******These are population samples digitized by several research groups such as CCRI.

Endnotes

[1] Graeme Campbell is the Open Government Librarian at Queen's University Library. He can be reached by email: graeme.campbell@queensu.ca.

[2] Katie Cuyler is the Open Publishing & Government Information Librarian at the University of Alberta Library. She can be reached by email: katie.cuyler@ualberta.ca.

[3] Alex Guindon is the GIS and Data Services Librarian at Concordia University Library. He can be reached by email: alex.guindon@concordia.ca

[4] Borealis (https://borealisdata.ca/) is a research data repository based on the Dataverse platform, supported by Canadian universities and hosted by Scholars Portal and the University of Toronto Libraries.

[5] Note that the statistics are presented as text on a web page and cannot be downloaded in a spreadsheet format.

[6] The update process is under the responsibility of the *Odesi Markit program!*, managed by a group of Ontario-based universities members of OCUL. For more information, see Cooper and Jadon (2023)

[7] These are various geographic units used by Statistics Canada, for a detailed description see this illustrated glossary (https://www150.statcan.gc.ca/n1/pub/92-195-x/92-195-x2021001-eng.htm).

[8] The research teams include the Canadian Historical Mobility Project from York University (1871 census), the 1891 Canadian Census Project Guelph University and The Canadian Families Project from the University of Victoria.

[9] Cartographic Boundary Files (CBFs) portray the boundaries of standard geographic areas, together with the shoreline around Canada. Selected inland lakes and rivers are available as supplementary layers.

[10] Digital boundary files (DBFs) depict the full extent of the boundaries of standard geographic areas established for the purpose of disseminating census data, including the coastal water area.

[11] This information is based on the GeoPortal Census Boundaries Inventory (https://tinyurl.com/ya2prxvt) a non-published working document produced by the managers of the GeoPortal, last updated on August 2, 2023.

[12] The CCRI geospatial files are also available from the project's dataverse (https://borealisdata.ca/dataverse/CCRI) on Borealis.