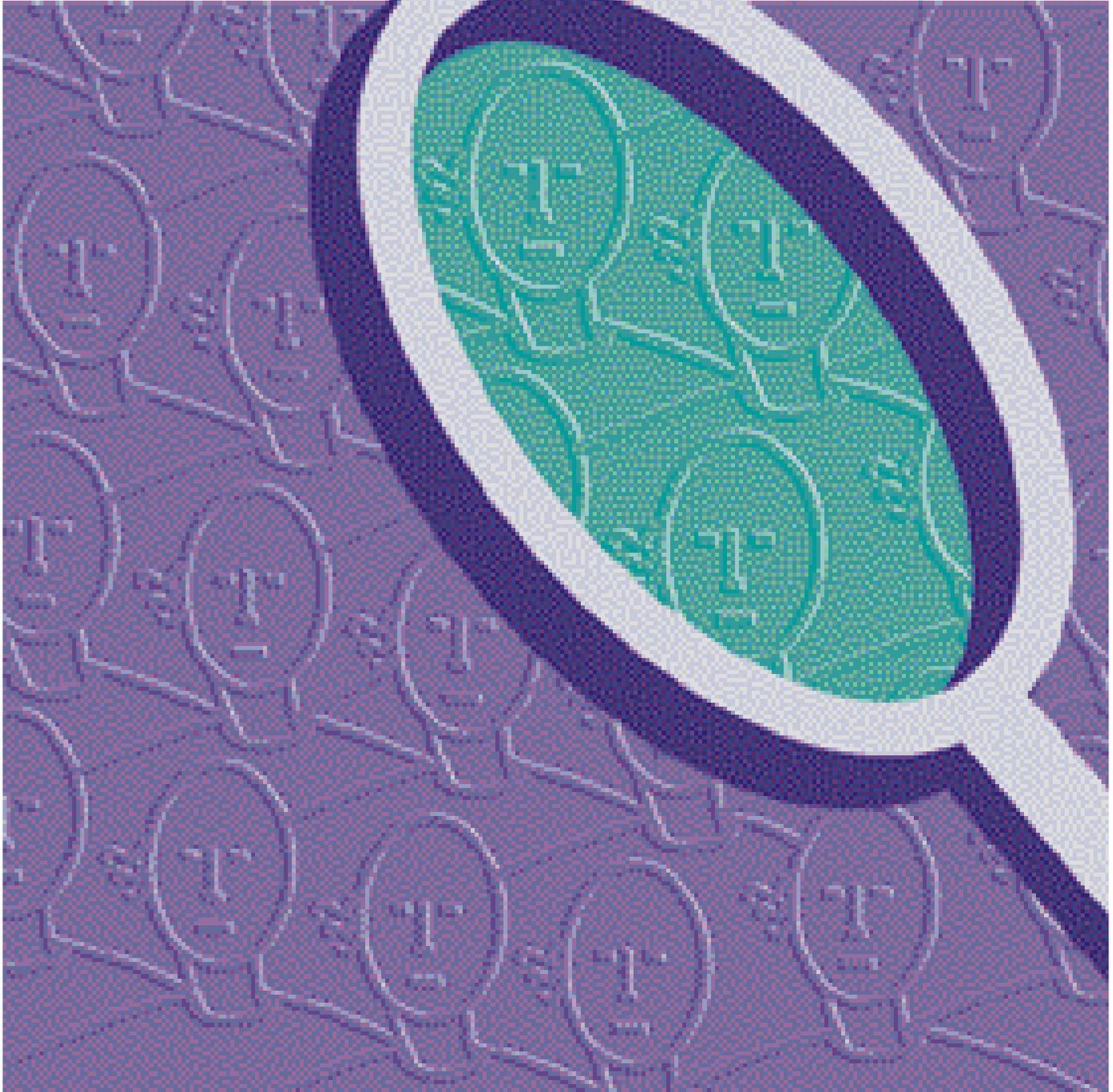




Catalogue No. 82F0082XCB

# Health Regions 2000

Boundaries, Geographic Information  
and Population Estimates



Statistics Canada  
Statistique Canada

Canada

# Health Regions 2000

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# Health Regions 2000

## 1 Overview

Provincial governments have been challenged in recent years to make their health care delivery systems more efficient. Major restructuring, notably regionalization of provincial health care, has given more autonomy to regional levels of government. In fact, most provinces have legislated regional health boards or health authorities, although the powers and functions of these boards vary considerably.

Health regions<sup>1</sup> are defined by provincial governments as the areas of responsibility for regional health boards (i.e., legislated) or as regions of interest to health care authorities.

In 1998, Statistics Canada, together with the Canadian Institute for Health Information and the Advisory Council on Health Info-Structure (Health Canada), consulted stakeholders across Canada to identify current and future needs for health information. These consultations identified a need for comprehensive and comparable sub-provincial data. In response to this need, health regions were investigated as an alternative geographic unit for disseminating health information.

This report provides an overview of health regions in Canada, along with sources and methodologies for developing and understanding the health region data linkage and digital boundary files, geographic attributes, and population estimates.

### 1.1 Summary of health regions

Generally, health regions represent the area of jurisdiction for provincial health authorities. This is the case for the regions of Newfoundland, New Brunswick, Manitoba and Alberta included on the *Health Regions – 2000* CD-ROM.

In each of the remaining six provinces, there is more than one set of boundaries for health regions. These different levels of health regions were examined to determine the most comparable unit for a national health region geography.

In Prince Edward Island, Nova Scotia and Saskatchewan, some of the hospital boards or health administrative areas have relatively small population size. For statistical purposes, health regions have been defined by these provinces' ministries of health, making these regions more comparable with those in other provinces.

In Prince Edward Island, the two regions represented on the *Health Regions – 2000* CD-ROM split the province into urban and rural regions based on population density

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<sup>1</sup> "Health region" refers to a geographic unit defined by a provincial health ministry. It usually represents the area of responsibility for a regional health board or authority. In Saskatchewan, health regions are called "health districts" and "service areas"; in Ontario, "district health councils" and "public health units".

by municipalities. These are not strictly aggregations of the five administrative health regions legislated in the province.

In Nova Scotia, health regions are called ‘zones’ and represent aggregations of the nine District Health Authorities.

In Saskatchewan, 33 Health Districts have been regrouped into 11 Service Areas.

Quebec is divided into 18 *régions socio-sanitaires*, which are subdivided into 169 *Centres locaux de services communautaires (CLSC)*.

In Ontario, there are two levels of health regions, District Health Councils and Public Health Units – both are included in the *Health Regions - 2000* CD-ROM. These regions are not hierarchically related, so Public Health Units do not always “roll-up” to District Health Councils.

Of the two levels of “health region” in Ontario, PHUs seem to best fit the generic definition. For this reason, some researchers may choose it for cross-national comparative purposes. DHCs, on the other hand, deal with many health care system concerns and would be useful for comparisons relating to these issues. Ultimately, it is up to researchers to determine which health region to analyze, based upon their particular needs and interests.

The health geography of British Columbia is complex. For administrative purposes, the province has defined regional Health Boards and Community Health Councils. In addition, specialized services within the ministry of health use their own boundaries. For analytical purposes, there are 83 local health areas that aggregate to 20 health regions. The boundaries of these analytical areas generally coincide with health boards. In fact, these 20 health regions include four regions (Simon Fraser (08), Burnaby (17), Vancouver (16) and Richmond (19)) which are frequently grouped into the two health boards of Simon Fraser/Burnaby and Vancouver/Richmond.

In the north, each territory is equivalent to one health region due to the relatively small populations.

The following table presents an overview of health regions in Canada, by province, along with sub-regions when necessary.

**Table 1: Health regions in Canada**

Province	Health regions	Units	Other regions/ sub-regions	Units
Newfoundland 10 <b>Nfld.</b>	Community Health Regions	<b>6</b>		
Prince Edward Island 11 <b>P.E.I.</b>	Health Regions (CCHS)	<b>2</b>	Health Regions	5
Nova Scotia 12 <b>N.S.</b>	Health Regions (Zones)	<b>6</b>	District Health Authorities	9
New Brunswick 13 <b>N.B.</b>	Health (Hospital) Regions	<b>7</b>		
Quebec 24 <b>Que.</b>	<i>Régions socio-sanitaires (RSS)</i>	<b>18</b>	<i>Centres locaux de services communautaires</i>	169
Ontario * 35 <b>Ont.</b>	Public Health Units <sup>2</sup>	<b>37</b>	District Health Councils <sup>3</sup>	<b>16</b>
Manitoba 46 <b>Man.</b>	Health Regions	<b>12</b>		
Saskatchewan 47 <b>Sask.</b>	Service Areas	<b>11</b>	Health Districts	33
Alberta 48 <b>Alta.</b>	Health Regions	<b>17</b>		
British Columbia 59 <b>B.C.</b>	Health Regions	<b>20</b>	Local Health Areas	83
Yukon Territory 60 <b>Y.T.</b>	Entire territory	<b>1</b>		
Northwest Territories 61 <b>N.W.T.</b>	Entire territory	<b>1</b>		
Nunavut 62 <b>NU</b>	Entire territory	<b>1</b>		
<b>Canada total</b>		<b>139</b>		

\* Both levels of geography for Ontario are included in the files described in this document.

<sup>2</sup> A Public Health Unit (PHU) is an official health agency established by a group of urban and rural municipalities to provide a more efficient community health program, carried out by full-time, specially qualified staff. PHUs administer health promotion and disease prevention programs. Ontario Government website, "Your Community: Health Services, Public Health Units", <http://www.gov.on.ca/health>, accessed on July 21, 2000.

<sup>3</sup> District Health Councils (DHCs) are advisory, health planning organizations. They make recommendations on resource distribution and provide advice on integration of health services in their community. DHCs were developed in the belief that community members can best determine local health needs and priorities. Ontario Government website, "Your Community: Health Services, District Health Councils", <http://www.gov.on.ca/MOH>, accessed on July 21, 2000.

## 2 Digital boundary and correspondence files

The link between 1996 Census geographic areas and health regions was built from information collected from the provincial health ministries, BC Stats and Alberta Treasury.

As a starting point, the Health Statistics Division contacted members of the National Population Health Survey Advisory Committee to obtain information on each province's health region boundaries. The provincial contacts provided maps, digital boundaries, and when possible, 1996 Census geo-code linkage to health regions.

### 2.1 Health regions and standard geography

For the most part, health regions can be described as groupings of counties (census divisions) or municipalities (census subdivisions). This is especially true in the Atlantic provinces, Quebec, and Ontario (with minor exceptions in northern Ontario). In the western provinces, health regions are less likely to follow census division or census subdivision boundaries.

The following table provides a count, by province, of census subdivisions that fall in more than one health region.

**Table 2: Census subdivisions linked to more than one health region**

Province	Number of census subdivisions split by health region boundaries
Newfoundland	3
Ontario - Public Health Units (PHU)	6
Manitoba	4
Saskatchewan	21
Alberta	19
British Columbia	15

Because health region boundaries do not always conform to those established for municipalities, a correspondence to enumeration areas (EA) was developed for a common base geographic unit (see Section 2.3.2, Correspondence files).

An EA is the area canvassed by a census representative, and the smallest unit for which census data are reported. There were 49,361 EAs delineated for the 1996 Census, covering the entire landmass of Canada. The number of dwellings in an EA varies from a minimum of 125 in rural areas to a maximum of 440 in large urban areas.<sup>4</sup>

<sup>4</sup> Statistics Canada. 1996 Census Dictionary, Catalogue no. 92-351-XPE, February 1997.

The relationship between EAs and health regions is not perfect. In several cases, EAs actually straddle health region boundaries. For further information, see Section 2.4.2, which describes the limitations of the enumeration area-to-health region (EA-to-HR) correspondence files.

## **2.2 Sources**

The Atlantic provinces provided health region definitions in terms of their component municipalities or counties. These definitions were provided in a variety of formats, and were then related to 1996 census subdivisions.

Quebec provided a complete database from which the census subdivision components of *regions socio-sanitaires* were extracted.

Ontario supplied the census subdivision components of district health councils and public health units. A supplemental EA linkage was also provided, only for those health regions that deviated from census subdivision boundaries.

The Manitoba Ministry of Health, Alberta Treasury, and BC Stats provided digital EA link files relating census geography to health regions.

Saskatchewan provided the census subdivision components of the provincial health regions, along with digital boundaries that were used by Statistics Canada to assign the EA to HR link.

## **2.3 Methodology**

The information and files collected were used to create a provincial series of digital boundary files, a national health region (HR) boundary file, and EA-to-HR correspondence files.

### **2.3.1 Digital boundary files**

*GeoSuite*, a 1996 Census geographic reference product, provided the national correspondence between census subdivisions (CSD) and enumeration areas (EA), which are tied to the 1996 Census EA digital boundary file. Provincial files linking EAs to health regions were matched with the 1996 Census final EA codes to validate the codes and to ensure completeness.

The various definitions of health regions, provided by the provinces, were linked to this national file. For all provinces, the EA link to HR was tied to the 1996 Census EA digital boundary file, and the component EAs were “rolled up” to produce the health region boundaries. As a result, health region boundaries in *Health Regions - 2000* respect 1996 EA boundaries in all provinces.

In Saskatchewan, the digital boundary file provided by the province was also used to assign EAs in cases where CSDs were split by health regions.

### **2.3.2 Correspondence files**

The EA-to-HR correspondence files were created by extracting fields from the attribute tables of the digital boundary files for the health regions of each province.

The correspondence files include the 7-digit 1996 *Standard Geographic Classification* (SGC) code, also referred to as the unique identifier for the census subdivision (csduid). A separate file provides the CSD name and CSD type for each of these codes.

Health region codes used in the final EA-to-HR correspondence files are those provided by the provincial contacts. These are usually 2-digit numeric codes. For provinces not providing a numeric code for health regions, a 2-digit code was assigned. In Ontario, public health units are identified by a 4-digit code. For consistency across provinces, this code was truncated to the last two digits. Once a 2-digit code was in place for all health regions, it was expanded to a unique 4-digit health region code by adding the standard 2-digit provincial code.

The official names of the health regions were also provided by the provincial contacts.

## **2.4 Limitations**

### **2.4.1 Digital boundary files**

Health region digital boundaries have been derived from Statistics Canada's 1996 Enumeration Area Digital Cartographic File (DCF). They do not represent the legal limits of health regions and do not have the positional accuracy to support cadastral, surveying or engineering applications.

Because these boundaries are based on the EA-to-HR correspondence files, users should refer to the limitations of these files as described in section 2.4.2.

For additional information about the spatial limitations of the EA digital boundary file from which this health region boundary file was produced, refer to the *1996 Census Digital Boundary Files and Digital Cartographic Files*, Statistics Canada Catalogue nos. 92F0029XDE, 92F0030XDE and 92F0032XDE to 92F0040XDE.

### **2.4.2 Correspondence files**

The accuracy of the enumeration area-to-health region (EA-to-HR) linkage depends on the degree to which EA boundaries respect health region boundaries. In the western provinces, many health regions do not neatly correspond to EA limits. For instance, in Alberta,<sup>5</sup> 47 EAs fall into more than one health region. The correspondence files described in this documentation provide a single health region link for every enumeration area. Wherever possible, the provinces supplied their EA-to-HR link files. This ensured the most accurate association between EAs and health regions, as well as consistency with provincial data coding.

### **2.5 Postal code linkage to health regions**

Postal codes are used wherever possible as a geographic locator for health data records. Postal code conversion tools are used to assign standard geographic areas (e.g., enumeration area codes) to these records.

The Postal Code Conversion File (PCCF) is produced by the Geography Division of Statistics Canada. It is a digital file that provides a correspondence between the six-character postal codes and Statistics Canada's standard geographic areas for which census data and other statistics are produced.

A tool called the Postal Code Conversion File Plus (PCCF+) has been developed by the Health Statistics Division specifically for health data coding. PCCF+ is an automated system based on the Postal Code Conversion File and the Postal Code Population Weight File produced by the Geography Division. PCCF+ is now available to purchasers of the PCCF. For the July 2000 version of PCCF+ and updates thereafter, the latest health region codes are provided in the geo-coded output file. These codes reflect the enumeration area-to-health region link presented on the *Health Regions – 2000* product.

### **2.6 Changes to health region geography**

The health region boundaries described in this document are based on 1996 Census geography. Any changes received prior to January 1, 2000 have been incorporated into this product (*Health Regions - 2000*) using the *1996 Census Digital Boundary Files* and *Digital Cartographic Files*, Statistics Canada Catalogue nos. 92F0029XDE, 92F0030XDE and 92F0032XDE to 92F0040XDE.

Health region boundaries are subject to change from adjustments to municipal limits, amalgamations, and periodic provincial revisions. To keep up with these changes,

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<sup>5</sup> A detailed list is available in digital or hard copy, upon request. Users should be aware of these limitations when referencing health region boundaries.

updates to digital boundaries and related correspondence files will be implemented annually. The provincial contacts are asked to provide changes as they occur.

The same health region boundaries contained in *Health Regions - 2000* have been used in the sample design for the Canadian Community Health Survey. Future boundary changes may cause adjustments to the survey collection and dissemination process, or sample revisions for future survey cycles.

### 3 Geographic attributes

Geographic attributes include land area, population density, and the proportion of population in urban areas for each health region.

#### 3.1 Methodology

##### 3.1.1 Land area

Health regions are usually made up of complete census subdivisions. However, there are several regions in the western provinces where they do not entirely follow census subdivision boundaries (i.e., defined at the enumeration area level). For this reason, health region land area was produced using a combination of “land area” data available at the census subdivision level and “polygon area” produced at the EA level.

*Land area: Used for census subdivisions (CSD) that fall entirely within a single health region. Land area was assigned from the GeoSuite Variable “CSDArea” as described below.*

##### CSD Area definition from GeoSuite Professional:

Land area refers to the area in square kilometres of the land-based portions of the census geographic areas.

Land area is manually calculated using a digital planimeter and paper maps. Only discernible bodies of water are excluded. Land area measurements for census subdivisions are aggregated to obtain the land areas for other geographic areas (census metropolitan areas/census agglomerations, primary census metropolitan areas/primary census agglomerations, census consolidated subdivisions, census divisions, economic regions, provinces/territories, and Canada). Measurements are done separately for urban areas, designated places and census tracts. Land area data are not available for enumeration areas or federal electoral districts. Measurements for the geographic areas reflect the boundaries that were in effect January 1, 1996 (the geographic reference date for the 1996 Census). All measurements are unofficial and are provided for the sole purpose of calculating population density.

The CSDs were then summed to determine the total land area for these health regions.

*Polygon area: Used for CSDs that are split into more than one health region.*

In these cases, the CSD parts were assigned a polygon area. Based on the 1996 Census Boundary File, the area was calculated by summing the polygon areas for the enumeration areas (EAs) that roll up to make each CSD part. This figure is a *total*

area figure and has not been adjusted to account for bodies of water, as this information does not exist at the EA level.

Both the split (polygon area) and complete CSD (land area) components were then summed to produce land area for the applicable health regions.

### 3.1.2 Population density

Density values for each health region were calculated using 1996 Census population counts. For each health region, the total 1996 population was divided by the land area, as outlined above.

### 3.1.3 Urban population

The proportion of population in urban areas for each health region was calculated in two ways.

**UrbanA** population is a combination of the three variables: urban core, urban fringe, and rural fringe. This corresponds to the definition of census metropolitan areas/census agglomerations (CMA/CA). Thus, the percentage population shown in urbanA is the percentage population residing in CMA/CAs.

**UrbanB** population is also a combination of three variables: urban core, urban fringe, and urban area outside CMA/CA. In this case, the percentage population of urbanB is the percentage of the population residing in an urban area, whether it is inside or outside a defined CMA/CA.

The following definitions are taken from the *1996 Census Dictionary*, Statistics Canada Catalogue no. 92-351-XPE.

The census metropolitan areas (CMA) and census agglomerations (CA) are delineated using the same conceptual base. The overall concept for delineating these geographic areas is one of a large urban area (known as the urban core) together with adjacent urban and rural areas (known as urban and rural fringes) that have a high degree of social and economic integration with this urban area.

A CMA has an urban core population of at least 100,000, based on the previous census. Once an area becomes a CMA, it is retained as a CMA even if the population of its urban core declines below 100,000. A CA has an urban core population of at least 10,000, based on the previous census. However, if the population of the urban core of a CA declines below 10,000, the CA is retired.

The urban core, urban fringe and rural fringe distinguish between central and peripheral urban and rural areas within a census metropolitan area (CMA), or census agglomeration (CA).

Urban core is a large urban area around which a CMA or a CA is delineated. The urban core must have a population (based on the previous census) of at least 100,000 in the case of a CMA, or between 10,000 and 99,999 in the case of a CA.

Urban fringe is the urban area within a CMA or CA that is not contiguous to the urban core.

Rural fringe is all territory within a CMA or CA not classified as urban core or urban fringe.

### **3.2 Limitations**

For information about the limitations of the 1996 Census Boundary Files, refer to the *1996 Census Digital Boundary Files and Digital Cartographic Files*, Statistics Canada Catalogue nos. 92F0029XDE, 92F0030XDE and 92F0032XDE to 92F0040XDE.

## 4 Population estimates

In summary, the population estimates for all the health regions in the *Health Regions - 2000* product were prepared as follows. First, the 1996 population estimates were based on the 1996 Census, adjusted for net undercoverage. Secondly, for non-census years, the Census-based population estimates were adjusted for changes in the population, primarily using administrative data. Lastly, subprovincial/subterritorial population estimates were controlled to sum to the population estimates at the provincial/territorial level prepared by Statistics Canada.

### 4.1 Statistics Canada methodology

For health regions in all provinces/territories<sup>6</sup> except for Quebec and British Columbia, the method is that of Statistics Canada, described below. These estimates are based on census data and on population estimates by census division (CD) produced by Demography Division.

#### 4.1.1 Population universe

The population included in these estimates is based on the 1991 and 1996 Census of Canada. The universe, therefore, corresponds to the census universe, which includes Canadian citizens and landed immigrants with a usual place of residence in Canada (or abroad on a Canadian Forces base, attached to a diplomatic mission or aboard merchant vessels) and non-permanent residents. For a complete description of the census universe, refer to the *1996 Census Dictionary*, Statistics Canada Cat. no 92-351-XPE.

Census data are adjusted to take into account net census undercoverage and incompletely enumerated Indian reserves. Components of population change occurring between census day and July 1, 1991 or 1996 were also taken into account.

#### 4.1.2 Method for deriving demographic estimates by health regions

Population estimates at the census division (CD) level are produced annually by Demography Division, using the component method, which accounts for changes in the number of births and deaths, as well as intraprovincial, interprovincial and international migration. The CD population estimates are prorated to the provincial population estimates.

Demographic estimates by health region are derived from these estimates using the following steps:

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<sup>6</sup> The population estimates for health regions in Alberta prepared by Statistics Canada differ from those of Alberta Health and Wellness which are based principally on Alberta's health care file. The differences in these estimates are shown in Appendix 2. Work is under way to try to reconcile these differences.

#### *Calculation of conversion factors:*

Health Statistics Division has created a file linking enumeration areas (EAs), census subdivisions (CSDs) and census divisions (CDs) for each health region.

The 1996 Census population by CDs (EAs or CSDs in case of split CDs) was adjusted for late changes in geography and for partially enumerated Indian reserves to ensure EAs added up to the CD.

In cases where health regions split CDs, the proportion of population in each CD split is used to derive 'conversion factors' in order to allocate the CD level estimate to the appropriate health region.

#### *Application of conversion factors to CD demographic estimates:*

Conversion factors were applied to CD population estimates for 1995 to 1997 allowing conversion of CD population estimates into HR population estimates. The same approach used to obtain the total population estimates was used to establish age and sex estimates by HR.

A description of the methodology used to obtain the demographic estimates by CD appears in Appendix 1.

### **4.1.3 Evaluation of the method**

To assess the quality of demographic estimates by HR, two evaluations were performed. First, an estimate was produced for July 1, 1996 with a postcensal CD demographic estimate based on the *1996 Census* which was compared with the 1996 Census counts. This comparison indicated that the conversion factors were providing results comparable with the census counts by HR.

Second, the same method was also used to generate estimates for 1996 by HR from a postcensal CD estimate based on the *1991 Census*. The results were compared with the actual 1996 counts as derived from the 1996 Census, thereby allowing an evaluation of the accuracy of the method over a five-year period. The results indicated that the methodology adequately accounted for the demographic changes.

For more information on the method used to produce health region estimates, contact Daniel Larrivée of the Demography Division of Statistics Canada at (613) 951-0694 or e-mail [daniel.larrivee@statcan.ca](mailto:daniel.larrivee@statcan.ca) .

## 4.2 Provincial methodologies

For health regions in Quebec and British Columbia, the administrative files used for adjusting the 1996-based population estimates for non-census years differ from those used by Statistics Canada in the description above. For these two provinces, the health region population estimates were supplied by the Institut de la statistique du Québec and BC Stats.

### 4.2.1 Quebec

For information on the methodology used to derive the health region population estimates in Quebec, for 1995 to 1997, contact the Institut de la statistique du Québec, Direction des statistiques sociodémographiques at (418) 691-2406 or e-mail [demographie@stat.gouv.qc.ca](mailto:demographie@stat.gouv.qc.ca).

### 4.2.2 British Columbia

The methodology used by British Columbia to derive small area populations by gender and age group is divided into two parts.

A Regression Approach, specifically the **Difference-Correlation Method (DCM)**, is the primary method underlying the sub-provincial population estimates. A secondary method, known as **Proportional Allocation (PA)**, is also used to estimate the population for certain classes of areas. Both these methods use information derived from a set of indicators obtained from administrative files that are symptomatic of regional population changes.

In essence, the British Columbia small area population estimation model works as follows. Beginning with the most recent federal census (in this case the 1996 Census of Canada), each region's share of provincial population is adjusted up or down according to the current share of the provincial total of a weighted combination of residential hydro connections and/or Old Age Security recipients. Estimates of the population living in municipalities along with that portion of the population living outside the municipality but within the regional district (i.e., unorganized area), are controlled at the provincial level by a British Columbia population estimate prepared by Statistics Canada. Regional district population estimates are derived by summing the municipal and unorganized area population estimates. Local health areas are also controlled at the provincial level, and in order to ensure consistency, the local health area population estimates within each

regional district are then tied to the regional district population estimates.<sup>7</sup>

Detailed information about the methodology used for estimating the age/gender distribution of small area population in British Columbia can be found in two documents on the BC Stats website [www.bcstats.gov.bc.ca](http://www.bcstats.gov.bc.ca): “Generalized Estimation System (GES)”, December 1998, and “Estimating the Age/Gender Distribution of Small Area Populations in British Columbia”, April 1994.

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<sup>7</sup> BC Stats. Generalized Estimation System (GES), Small Area Population Estimation Methodology. Ministry of Finance and Corporate Relations, December 1998.

## **5 Product description**

### **5.1 Digital boundary files**

Health region digital boundary files and images are available on the main menu of *Health Regions - 2000* under « Boundaries ». Health region boundaries are presented in a national file, as well as provincial/territorial files. The national view contains the health regions described in Table 1 of the overview. Ontario is the only province for which two levels of health regions (PHU, DHC) are provided (provincial files only).

#### **5.1.1 File formats**

All digital health region boundaries in the *Health Regions - 2000* product are available in two formats: ARC/INFO® EXPORT and MapInfo®, Version 5.0 for Windows. The coordinates are in latitude/longitude.

The extension of the ARC/INFO® EXPORT files is E00. In MapInfo® for Windows, a self-extracting executable (EXE) is provided. This file expands to provide the four files, with different extensions, for each province. The four extensions are: TAB, DAT, ID, and MAP.

#### **5.1.2 Image formats**

All digital images of health region boundaries in the *Health Regions - 2000* product are available in two formats: JPG and PDF.

### **5.2 Correspondence files**

Correspondence files are available on the main menu of *Health Regions - 2000* under « Data ».

#### **5.2.1 Record layout**

The enumeration area-to-health region (EA-to-HR) correspondence files provided in the *Health Regions - 2000* product are available in Microsoft® Excel97 format for each province and for the northern territories. The record layout of the files is shown in the following table.

**Table 3: Health region-to-enumeration area file layout**

Variable name	Comments
eauid	(enumeration area unique code) PR-FED-EA (province, federal electoral district, enumeration area)
csduid	( <i>Standard Geographical Classification</i> [SGC] code) PR-CD-CSD (province, census division, census subdivision)
pr-hruid	(health region code) PR-HR (province, health region) unique ID
hrname	(health region name)
pr-subuid*	(other health region code)
subname*	(other health region name)
eapop96	(unadjusted 1996 Census population count)

\* These fields apply to the Ontario file only.

In addition to the provincial and territorial files, a *national* EA-to-HR correspondence file is also included in the product (national.xls). The file is in Microsoft® Excel97 format and provides a list of the 49,361 enumeration areas in Canada, and their corresponding health region codes. The file consists of two spreadsheets. The first is the national list that includes public health units (PHUs) for Ontario. The second is a list that contains only district health councils (DHCs) of Ontario. The record layout of both these spreadsheets is shown in the following table.

**Table 4: National health region-to-enumeration area file layout**

Variable name	Comments
eauid	(enumeration area unique code) PR-FED-EA (province, federal electoral district, enumeration area)
csduid	( <i>Standard Geographical Classification</i> [SGC] code) PR-CD-CSD (province, census division, census subdivision)
pr-hruid	(health region code) PR-HR (province, health region) unique ID
hrname	(health region name)
eapop96	(unadjusted 1996 Census population count)

### 5.3 Geographic attributes

Geographic attributes are available on the main menu of *Health Regions - 2000* under « Data ».

#### 5.3.1 Record layout

The geographic attribute and CSD name files provided in the *Health Regions - 2000* product are available in Microsoft® Excel97 format. The record layouts of the files are as follows:

**Table 5: Land area file layout (Area.xls)**

The land area file has two worksheets. The first contains data at the national level, while the second contains data for Ontario District Health Councils (DHCs).

National worksheet	Ontario DHC worksheet	Comments
prhuid	hruid	health region code
hrname	dhcname	health region name
area in square km	area in square km	land and polygon area
eapop96	eapop96	unadjusted 1996 counts
density	density	eapop96/area in square km
urbanApop	urbanApop	urban core, urban fringe, and rural fringe in CMA/CA
%pop urbanA	%pop urbanA	urbanApop/eapop96
urbanBpop	urbanBpop	urban core, urban fringe, and urban area outside CMA/CA
%pop urbanB	%pop urbanB	urbanBpop/eapop96

**Table 6: CSD names file layout (Csdname.xls)**

Variable name	Comments
csduid	( <i>Standard Geographical Classification</i> [SGC] code) PR-CD-CSD (province, census division, census subdivision)
csdname	(census subdivision name)
csdtype	(census subdivision type)

The following table provides the definition of census subdivision types as described in the *1996 Census Dictionary*, Statistics Canada Catalogue no. 92-351-XPE.

**Table 7: Census subdivision types**

Census subdivision type	Definition
BOR	Borough
C	City – Cité
CC	Chartered Community
CM	County (Municipality)
COM	Community
CT	Canton (Municipalité de)
CU	Cantons unis (Municipalité de)
DM	District Municipality
HAM	Hamlet
ID	Improvement District
IGD	Indian Government District
LGD	Local Government District
LOT	Township and Royalty
M	Municipalité
MD	Municipal District
NH	Northern Hamlet
NT	Northern Town
NV	Northern Village
P	Paroisse (Municipalité de)
PAR	Parish
R	Indian Reserve – Réserve indienne
RC	Rural Community
RGM	Regional Municipality
RM	Rural Municipality
RV	Resort Village
S-E	Indian Settlement – Établissement indien
SA	Special Area
SCM	Subdivision of County Municipality
SET	Settlement
SM	Specialized Municipality
SRD	Subdivision of Regional District
SUN	Subdivision of Unorganized
SV	Summer Village
T	Town
TI	Terre inuite
TP	Township
TR	Terres réservées
UNO	Unorganized – Non organisé
V	Ville
VC	Village cri
VK	Village naskapi
VL	Village
VN	Village nordique

## 5.4 Population estimates, 1995-1997

Population estimates, 1995-1997 are available on the main menu of *Health Regions - 2000* under « Data ».

### 5.4.1 Record layout

The population estimates in the *Health Regions - 2000* product, are available in Microsoft® Excel97 and PDF format. The PDF file (Summary.pdf) is a summary of the information contained in the Excel spreadsheet (Pop9597.xls). The record layout of the Excel file is as follows:

**Table 8: Health regions, by five-year age groups and sex, July 1, 1995-1997 (Pop9597.xls)**

The population estimates file has six worksheets. The first three contain data at the national level (one for each year), while the last three contain data for Ontario District Health Councils (DHCs – one for each year).

National and Ontario (DHC) worksheets	Comments
<i>Health regions, by five-year age groups and sex, July 1, 1995 (1996, 1997)</i>	
Code	Health region code
Name	Health region name
Sex	1 = male, 2 = female
Total	Health region total population
0, 1-4 to 85-89, 90+	Five-year age groups
<i>% distribution of health regions, by five-year age groups and sex, July 1, 1995 (1996, 1997)</i>	
Code	Health region code
Name	Health region name
Sex	1 = male, 2 = female
Total	Health region total population
0, 1-4 to 85-89, 90+	Five-year age groups

## **6 Documentation**

This documentation is available on the main menu of the *Health Regions – 2000* CD-ROM under « Documentation ».

## **APPENDICES:**

### **Appendix 1      Demographic estimates by census division (CD) for July 1, 1991 and 1996**

The CD population estimates for July 1, 1991 and 1996 are based on the 1991 and 1996 Census counts, respectively. (The 1991 Census counts are retrieved according to the geographical boundaries as defined for the 1996 Census.) Census counts are adjusted for net census undercoverage, incompletely enumerated Indian reserves, and early enumeration. Population aging and component-based growth are applied to bring the adjusted figures forward to July 1.

#### **Intercensal estimates by CD for July 1, 1992 to 1995**

Based on the July 1, 1991 estimates, the components of demographic change were used to prepare the 1992 to 1995 postcensal estimates. The components, which include births, deaths, and intraprovincial, interprovincial and international migration (immigration, total emigration and non-permanent residents), are available on an annual basis. The following equation illustrates the component method as applied to prepare the total population estimates.

$$P_{t+1} = P_t + B - D + I - E + N + RNP$$

where:

$P_{t+1}$  = postcensal population estimate at time t+1;

$P_t$  = population estimate at time t;

B = number of births for the period (t, t+1);

D = number of deaths for the period (t, t+1);

I = number of immigrants for the period (t, t+1);

E = net number of total emigrants for the period (t, t+1);

N = net internal migration (interprovincial and intraprovincial) for the period  
(t, t+1);

RNP = net change in non-permanent residents for the period (t, t+1).

The estimates of population by age and sex were prepared using a variation of the above equation, called the cohort-component method, in which the population is aged from year to year and the components are tabulated according to age/sex cohorts.

Once the 1991-based postcensal population estimates are available for 1996, the error of closure is calculated by comparing them with the 1996 Census based estimate. The error of closure is then distributed linearly to the postcensal population estimates from 1992 to 1995. Thus, each set of annual estimates is essentially adjusted by 1/5 of the error of closure.

### **Postcensal estimates for CDs as of July 1, 1997**

The postcensal estimate for July 1, 1997 was also prepared using the component method and was based on the demographic estimates for July 1, 1996.

Since the error of closure cannot be calculated until the 2001 Census counts are available, such components are not included for estimates after 1996.

### **Data sources used to estimate components**

#### *Births and Deaths*

The number of births and deaths for 1995, 1996 and 1997 are available from the Health Statistics Division.

#### *Immigration*

The number of immigrants at the provincial and territorial level is derived from the landed immigrant files provided by Citizenship and Immigration Canada.

The provincial and territorial estimates of the number of immigrants by sex and broad age group are distributed by CD using counts derived from Canada Customs and Revenue Agency personal income tax files, as processed by the Small Area and Administrative Data Division (SAADD). The counts within each age group are broken down by single-year-of-age using the appropriate provincial or territorial distributions.

#### *Total emigration*

Total emigration is comprised of emigrants, returning emigrants and the net variation of persons living temporarily abroad. It corresponds to the annual net number of persons who have left Canada. Data from Canada Customs and Revenue Agency's (CCRA) Child Tax Benefits files are used to estimate emigrants and returning

emigrants. Some adjustments were done to compensate for the absence of universality in the CTB program.

Data from the Reverse Record Check (RRC), the most important of the Census Coverage Error Studies, are used to estimate the net change in the number of persons temporarily living abroad. To produce postcensal estimates, annual change is extrapolated using information from the 1991 and 1996 RRC.

The provincial and territorial estimates of the total number of emigrants by sex and broad age group are distributed by CD using counts derived from CCRA's personal income tax files, as processed by the Small Area and Administrative Data Division (SAADD). The counts within each age group are broken down by single-year-of-age using the appropriate provincial or territorial distributions.

#### *Interprovincial migration*

The total number of interprovincial migrants and the distribution by sex and broad age group are drawn directly from Canada Customs and Revenue Agency personal income tax files (as processed by SAADD). The estimates are derived from changes of addresses on personal income tax returns as processed by the Small Area and Administrative Data Division. The counts within each age group are broken down by single-year-of-age using the appropriate provincial or territorial distributions.

#### *Intraprovincial migration*

As with interprovincial migration, the counts (totals, sex and broad age group) of intraprovincial migrants are drawn from Canada Customs and Revenue Agency personal income tax files. The broad age group categories are broken down by five-year age group using mobility data from the 1996 Census. The five-year age groups are broken down by single-year-of-age using Sprague multipliers.

#### *Non-permanent residents (NPRs)*

Provincial and territorial estimates of the number of non-permanent residents are produced by the Demography Division using several files from Citizenship and Immigration Canada.

The 1996 Census counts of NPRs by CDs are used to distribute the provincial and territorial estimates of non-permanent residents.

For more information, refer to catalogue no. 91-213-XPB, *Annual Demographic Statistics 1999*, p.192.

**Appendix 2 Comparison of population estimates for health regions in Alberta by source, 1995-1997**

HR Code	Health Region (HR) Name	1995			1996			1997		
		Demography Division, STC	*Alberta Health	% diff.	Demography Division, STC	*Alberta Health	% diff.	Demography Division, STC	*Alberta Health	% diff.
4801	Chinook RHA	143,439	143,778	-0.24	145,450	144,595	0.59	147,198	145,700	1.02
4802	Palliser RHA	85,761	84,312	1.69	86,900	85,546	1.56	88,126	86,718	1.60
4803	Headwaters RHA	69,274	65,315	5.71	71,179	67,055	5.79	72,873	69,193	5.05
4804	Calgary RHA	825,149	816,238	1.08	845,283	833,291	1.42	873,351	860,267	1.50
4805	RHA #5	51,862	50,607	2.42	52,824	51,297	2.89	53,530	51,644	3.52
4806	David Thompson RHA	178,263	175,534	1.53	181,469	177,433	2.22	185,201	180,184	2.71
4807	East Central RHA	103,744	102,017	1.66	103,872	102,040	1.76	104,426	102,674	1.68
4808	Westview RHA	88,505	84,024	5.06	89,437	85,831	4.03	90,827	87,783	3.35
4809	Crossroads RHA	38,736	38,534	0.52	39,004	38,492	1.31	39,539	38,862	1.71
4810	Capital Health Authority	777,895	785,319	-0.95	783,177	784,738	-0.20	794,051	791,614	0.31
4811	Aspen RHA	87,503	80,517	7.98	88,223	80,598	8.64	88,744	80,903	8.84
4812	Lakeland RHA	107,870	105,341	2.34	108,400	105,197	2.95	110,219	106,158	3.68
4813	Mistahia RHA	84,038	82,515	1.81	85,898	84,806	1.27	87,016	86,222	0.91
4814	Peace RHA	20,718	20,094	3.01	21,193	20,052	5.38	21,512	20,002	7.02
4815	Keeweenok RHA	22,984	24,677	-7.37	23,565	25,001	-6.09	23,984	25,338	-5.65
4816	Northern Lights RHA	36,930	36,442	1.32	37,151	36,633	1.39	38,656	38,332	0.84
4817	Northwestern RHA	17,214	17,119	0.55	17,638	17,753	-0.65	17,951	18,784	-4.64
	<b>Total</b>	<b>2,739,885</b>	<b>2,712,383</b>	<b>1.00</b>	<b>2,780,663</b>	<b>2,740,358</b>	<b>1.45</b>	<b>2,837,204</b>	<b>2,790,378</b>	<b>1.65</b>

\* Alberta uses the Alberta Health Care Insurance Plan (AHCIP) Registry when determining health region population estimates. Population estimates are a count of the registrants active on June 30 of each fiscal year since 1994, as seen from December 31 of that year.