Geography Working Paper Series

No. 2002-1

Census Metropolitan Areas and Census Agglomerations with Census Tracts for the 2001 Census

by

Peter Murphy and Henry Puderer

Geography Division
Statistics Canada

March 2002

Catalogue no. 92F0138MIE, no. 2002-1

ISSN 1481-174X
ISBN 0-662-31819-6

Aussi disponible en français

Geography Working Paper Series

The Geography Working Paper Series is intended to stimulate discussion on a variety of topics covering conceptual, methodological or technical work to support the development and dissemination of the division's data, products and services. Readers of the series are encouraged to contact the Geography Division with comments and suggestions. A list of titles appears at the end of this paper.

A paper version, catalogue no. 92F0138MPE, is available for $10.00 per issue. There is a shipping charge per issue for delivery outside Canada: CDN $6.00 to the United States and CDN $10.00 to other countries. All prices exclude sales tax. There is no charge for downloading the document yourself on the Internet (*http://www.statcan.ca*).

For inquiries about the working paper series, please contact:

Geography Division
Statistics Canada
Jean Talon Building, 3rd floor
Ottawa, Ontario K1A 0T6

Telephone: (613) 951-3889
FAX: (613) 951-0569
Internet: geohelp@statcan.ca

TABLE OF CONTENTS

ABSTRACT

A census metropolitan area (CMA) is a geographic area delineated around an urban core with at least 100,000 population. The CMA consists of one or more adjacent municipalities (census subdivisions) that are either part of the urban core or that meet additional delineation criteria such as commuting flow thresholds and spatial contiguity rules. The 2001 Census defines 27 CMAs, including two new ones—Kingston, Ontario and Abbotsford, British Columbia—which were promoted from census agglomerations. Census agglomerations (CAs) are conceptually the same as census metropolitan areas but they have a smaller urban core population that ranges from 10,000 to 99,999. When a CA has an urban core population of 50,000 or more, census tracts are delineated within the CA. For the 2001 Census, there are 19 CAs with census tracts, including three new ones—Drummondville and Granby in Quebec, and Medicine Hat in Alberta.

This working paper includes three maps for each CMA and CA with census tracts. The first map shows the census subdivision (CSD) components of the 1996 CMA/CA, the second shows the transition from 1996 to 2001 (with boundary changes highlighted), and the third map shows the CMA/CA as it is defined for the 2001 Census. Accompanying tables list the component census subdivisions and the criteria which they meet to be included in the CMA or CA. The paper describes various factors that can result in changes to the boundaries of CMAs and CAs. For the 2001 Census, municipal restructuring is the factor that has had the greatest impact on the boundaries of some CMAs and CAs.

In response to an increasing number of inquiries, the paper also briefly describes and compares the delineation criteria for metropolitan areas in the United States with those for census metropolitan areas in Canada. An indication is given of the impact on the Canadian CMA program if the American metropolitan area criteria were used.

Note: With this working paper, Statistics Canada is making available the tables and maps for each census metropolitan area and census agglomeration with census tracts for the 2001 Census. For each CMA and CA a file is provided in PDF (Portable document format) that can be viewed (in Acrobat Reader) or downloaded.

1. INTRODUCTION

A census metropolitan area (CMA) or a census agglomeration (CA) is formed by one or more adjacent municipalities (census subdivisions) centred on a large urban area known as the urban core. The census population count of the urban core is at least 10,000 to form a census agglomeration and at least 100,000 to form a census metropolitan area. To be included in the CMA or CA, other adjacent municipalities must have a high degree of integration with the central urban area, as measured by commuting flows derived from census place of work data. When a census agglomeration has an urban core of at least 50,000 based on census counts, it is subdivided into census tracts. Census tracts (CTs) are small, relatively stable geographic areas that usually have a population of 2,500 to 8,000.

Changes can occur to both the number and the boundaries of CMAs and CAs between censuses. These changes occur for a number of reasons.

- The methodology for defining a CMA/CA is altered.[1]
- Census agglomerations are promoted to CMA status if the urban core of the CA attains or exceeds a population of 100,000 according to the previous census.
- Legislated changes to the boundaries of component census subdivisions (cities, towns, villages, townships, rural municipalities, etc.) which are the building blocks of a CMA/CA can result in changes to the boundaries of a CMA/CA.
- Prior to each quinquennial (mid-decade census) the CMA/CA boundaries are revised using the place of work data from the decennial census.

In this working paper, the impact of each of the above factors, except the last, is reviewed with respect to the resulting changes to the **census metropolitan areas** and **census agglomerations with census tracts** for 2001. The last factor is excluded since it has no impact on the CMA/CA program for 2001. However, for the 2006 Census this factor is expected to have a significant impact on the boundaries of CMAs and CAs.

There has been an increasing number of inquires regarding how CMA delineation in Canada compares to delineation of metropolitan areas in the United States. Therefore, section 5 of this working paper includes a brief comparative analysis of the two methodologies along with an indication of the impact if the American metropolitan area criteria were used.

2. METHODOLOGY

For the 2001 Census, consolidated CMAs are no longer defined for dissemination purposes. As a consequence, primary CMAs and primary CAs are also no longer defined. However, the consolidation rule has been retained and incorporated into the CMA delineation methodology. As a result, there is no substantive change to methodology for defining CMAs and therefore, there is no change to the limits of CMAs as a consequence of this rule change. The consolidation of CAs has been discontinued. There is a minimal impact since the incidence of CA consolidation was minimal.[2]

3. CENSUS AGGLOMERATION PROMOTION

The 1996 Census urban core population counts for the census agglomerations of Kingston, Ontario and Abbotsford, British Columbia exceeded the CMA threshold of 100,000.[3] Therefore, for the 2001 Census, both Abbotsford and Kingston are census metropolitan areas. Similarly, the 1996 Census urban core population counts for three census agglomerations reached or exceeded the threshold of 50,000, which made them eligible for the census tract program. Thus, Granby and Drummondville, Quebec and Medicine Hat, Alberta become census agglomerations with census tracts for the 2001 Census. These

[1] See Appendix 1 for a description of the CMA/CA methodology applied to the 2001 Census.
[2] For a more detailed description of these changes to the methodology, see Appendix 1.
[3] According to the 1996 Census, the urban core for Abbotsford was 117,389, while Kingston's urban core was 107,229.

changes bring the total number of CMAs in Canada to 27 and the CAs with census tracts to 19, as defined by Statistics Canada. Table 1 shows the provinces with CMAs and CAs with census tracts as of January 1, 2001, the geographic reference date for the 2001 Census.

Table 1. Provinces with Census Metropolitan Areas and Census Agglomerations with Census Tracts for 2001 (as of January 1, 2001)

Province	Census Metropolitan Areas	Census Agglomerations with Census Tracts
Newfoundland and Labrador	St. John's	
Nova Scotia	Halifax	
New Brunswick	Saint John	Moncton
Quebec	Chicoutimi-Jonquière Montréal Ottawa – Hull (part) Québec Sherbrooke Trois-Rivières	Drummondville Granby Saint-Jean-sur-Richelieu
Ontario	Greater Sudbury Hamilton Kingston Kitchener London Oshawa Ottawa – Hull (part) St. Catharines – Niagara Thunder Bay Toronto Windsor	Barrie Belleville Brantford Guelph North Bay Peterborough Sarnia Sault Ste. Marie
Manitoba	Winnipeg	
Saskatchewan	Regina Saskatoon	
Alberta	Calgary Edmonton	Lethbridge Medicine Hat Red Deer
British Columbia	Abbotsford Vancouver Victoria	Kamloops Kelowna Nanaimo Prince George

4. CENSUS SUBDIVISION CHANGES

Changes to the boundaries of component census subdivisions (CSDs) between censuses can have an impact on the boundaries of CMAs and CAs. Historically, the impact has not generally been significant in terms of either the size of the geographic area affected or the population affected. However, this historical pattern has been broken for 2001 because of significant municipal restructuring in several provinces.[4]

[4] The term 'significant municipal restructuring' refers to the amalgamation of two or more adjacent municipalities into one new and larger municipality.

Table 2 shows the total changes to census subdivisions (municipalities) for Canada and each province and territory.

Table 2. Census Subdivision (CSD) Changes, January 2, 1996 to January 1, 2001

Province / Territory	1996 Census Number of CSDs	CSD Dissolutions since 1996	CSD Incorporations since 1996	2001 Census Number of CSDs	Net Change 1996 to 2001
Nfld.Lab.	381	…	…	381	0
P.E.I.	113	…	…	113	0
N.S.	110	14	2	98	-12
N.B.	283	12	4	275	-8
Que.	1,599	232	109	1,476	-123
Ont.	947	529	168	586	-361
Man.	298	3	3	298	0
Sask.	970	18	50	1,002	32
Alta.	467	18	3	452	-15
B.C.	713	83	186	816	103
Y.T.	35	1	1	35	0
N.W.T.	68*	…	…	37*	0
Nvt.	…	…	…	31*	0
CANADA	5,984	910	526	5,600	-384

… Not applicable.

* A new territory called Nunavut (Nvt.) came into effect on April 1, 1999. Nunavut includes 31 census subdivisions (CSDs) that were formerly the eastern portion of the Northwest Territories (N.W.T.).

Municipal restructuring has had the biggest impact on CMAs in Ontario. However, the restructuring of CSDs and the subsequent impact on CMAs has not been limited to Ontario. In all, six of the twenty-seven CMAs are affected significantly as a result of municipal restructuring: Halifax, Ottawa – Hull, Kingston, Greater Sudbury, London, and Windsor. An additional five CMAs have experienced minor changes in boundaries as a result of the usual CSD boundary changes that occur between censuses: Montréal, Chicoutimi-Jonquière, Sherbrooke, Thunder Bay and Winnipeg. The tables and maps in Appendix 2 provide a detailed comparison of the census subdivision components of the 2001 CMAs as of January 1, 2001 relative to their boundaries as of January 1, 1996.

Municipal restructuring has also affected CAs with census tracts. In Ontario and British Columbia, significant changes occurred to seven CAs: Belleville, Brantford, Peterborough and Sarnia in Ontario, and Kamloops, Nanaimo and Prince George in British Columbia. Three CAs have had minor changes: Moncton in New Brunswick, Guelph in Ontario, and Red Deer in Alberta. The tables and maps in Appendix 3 provide a detailed comparison of the census subdivision components of the 2001 CAs with census tracts as of January 1, 2001 relative to their boundaries as of January 1, 1996.

5. A COMPARISON OF THE CANADIAN AND AMERICAN METHODOLOGIES[5]

The general concept applied is the same in Canada and the United States, namely, a metropolitan area is an urban area or core of significant population size together with adjacent communities that have a high degree of social and economic integration with the urban core. In both instances, communities are

[5] Every ten years, the rules by which metropolitan areas are created in the U.S. are reviewed, with revised standards being established before the decennial census. This paper provides a comparative analysis for both the standards as applied during the nineties and those just announced for the period 2003 to 2010.

included as part of the metropolitan area because they are part of the urban core or because a specific level of a community's resident labour force has their place of work in the urban core.

Notwithstanding the similarity in the general concepts, there are differences in the details of application including how communities are defined, and the levels of commuting required. In general, these differences affect the extent of the metropolitan area, except one—the size of the urban core. This criterion determines whether or not there is a metropolitan area.

The Canadian criterion requires that the urban core have a population of at least 100,000 for a metropolitan area to exist. In contrast, for the period 1990 to 2000, the United States had two criteria to determine whether or not a metropolitan area existed. In the United States, a metropolitan area exists where there is either a city of 50,000 or more inhabitants, or a Census Bureau defined urban area, i.e., a population of at least 50,000 and a total metropolitan population of 100,000 (75,000 in New England). The Canadian approach is the more restrictive of the two. If the less restrictive 1990 to 2000 American criteria were applied, 16 census agglomerations would be classified as census metropolitan areas (see Table 3).[6]

The American standard for this decade (2000 to 2010) has been simplified and now requires only an urban area as defined by the Census Bureau. If the new American standard was applied in the Canadian context, all 19 census agglomerations (CAs) with an urban core of 50,000 (i.e., those CAs that are eligible for, or already qualified for, the census tract program) would be classified as census metropolitan areas (see Table 3).

[6] Bureau of the Census (1994), *Geographic Areas Reference Manual,* U.S. (Department of Commerce, Economics and Statistics Administration, Bureau of the Census) and Statistics Canada (1997), *1996 Census Dictionary*, Catalogue No. 92-351-XPE (Ottawa: Industry Canada).

Table 3. Impact of U.S. Criteria for Metropolitan Areas Applied to 1996 Census Agglomerations in Canada

Census Agglomerations (with at least 50,000 population at the 1996 Census)	1996 Population (in decreasing order of population)	1996 Urban Core Population	1996 Census, Largest Municipality Population	U.S. Criteria for Metropolitan Areas		
				1990 to 2000		2000 to 2010
				Municipality Population 50,000 or more	Urban Area Population 50,000 or more and Total Metropolitan Area Population 100,000 or more	Urban Core Population 50, 000 or more
Kelowna, B.C.	136,541	85,649	89,442	x	x	x
Barrie, Ont.	118,695	99,463	79,191	x	x	x
Cape Breton, N.S.	117,849	34,871	114,733	x		
Moncton, N.B.	113,491	86,541	59,313	x	x	x
Guelph, Ont.	105,420	96,231	95,821	x	x	x
Brantford, Ont.	100,238	84,764	84,764	x	x	x
Peterborough, Ont.	100,193	70,646	69,535	x	x	x
Belleville, Ont.	93,442	62,243	37,083			x
Sarnia, Ont.	86,480	79,204	72,738	x		x
Nanaimo, B.C.	85,585	72,675	70,130	x		x
Kamloops, B.C.	84,914	66,776	76,394	x		x
Sault Ste. Marie, Ont.	83,619	71,960	80,054	x		x
Fredericton, N.B.	78,950	48,233	46,507			
Saint-Jean-sur-Richelieu, Que.	76,461	65,887	36,435			x
Prince George, B.C.	75,150	66,314	75,150	x		x
Chatham, Ont.	67,068	43,409	43,409			
Chilliwack, B.C.	66,254	49,126	60,186	x		
Drummondville, Que.	65,119	54,215	44,882			x
North Bay, Ont.	64,785	53,422	54,332	x		x
Lethbridge, Alta.	63,053	63,053	63,053	x		x
Cornwall, Ont.	62,183	47,794	47,403			
Red Deer, Alta.	60,075	60,075	60,075	x		x
Shawinigan, Que.	59,851	49,306	18,678			
Granby, Que.	58,872	50,749	43,316			x
Charlottetown, P.E.I.	57,224	36,990	32,531			
Medicine Hat, Alta.	56,570	50,978	46,783			x
Vernon, B.C.	55,359	37,984	31,817			
Courtenay, B.C.	54,912	29,126	17,335			
Saint-Hyacinthe, Que.	50,027	45,732	38,981			
Total CAs that would qualify as CMAs using U.S. criteria				16	6	19

ACKNOWLEDGEMENTS

This working paper is the culmination of the dedicated work of several individuals in the Geographic Areas Section of Geography Division. The contributions of Joanne Bertrand, Cindy De Cuypere, Karole Kidd, Sylvia Schafer and Alex von Schilling are acknowledged.

REFERENCES

Statistics Canada (2002). *2001 Census Dictionary*, Catalogue No. 92-378-XIE (Ottawa: Industry Canada).

Appendix 1

Delineation Methodology for Census Metropolitan Areas and Census Agglomerations

Definition: A census metropolitan area (CMA) or a census agglomeration (CA) is formed by one or more adjacent municipalities centred on a large urban area (known as the **urban core**). The census population count of the urban core is at least 10,000 to form a census agglomeration and at least 100,000 to form a census metropolitan area. To be included in the CMA or CA, other adjacent municipalities must have a high degree of integration with the central urban area, as measured by commuting flows derived from census place of work data.

If the population of the urban core of a CA declines below 10,000, the CA is retired. However, once an area becomes a CMA, it is retained as a CMA even if the population of its urban core declines below 100,000. The urban areas in the CMA or CA that are not contiguous to the **urban core** are called the **urban fringe**. Rural areas in the CMA or CA are called the **rural fringe**.

When a CA has an urban core of at least 50,000 based on census counts, it is subdivided into **census tracts**. Census tracts are maintained for the CA even if the population of the urban core subsequently falls below 50,000. All CMAs are subdivided into census tracts.

Censuses: 2001, 1996, 1991, 1986, 1981, 1976, 1971, 1966, 1961, 1956, 1951, 1941

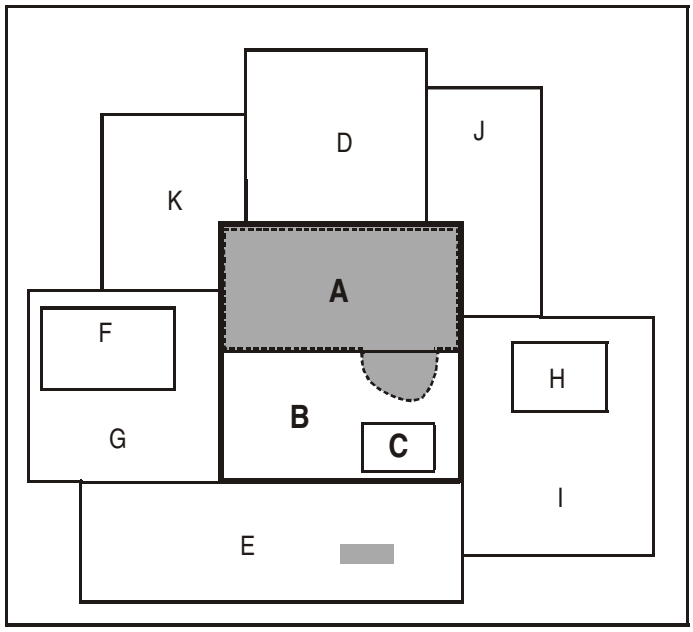
Delineation Rules for CMAs and CAs

A CMA or CA is delineated using adjacent municipalities (census subdivisions) as building blocks. These census subdivisions (CSDs) are included in the CMA or CA if they meet at least one of the following rules. The rules are ranked in order of priority. A CSD obeying the rules for two or more CMAs or CAs is included in the one for which it has the highest ranked rule. If the CSD meets rules that have the same rank, the decision is based on the population or the number of commuters involved. A CMA or CA is delineated to ensure spatial contiguity.

1. **The Urban Core Rule:** The CSD falls completely or partly inside the urban core.

   A **core hole** is a CSD enclosed by a CSD that is at least partly within the urban core and must be included to maintain spatial contiguity. In Figure 1, CSDs A, B and C are included in the CMA or CA because of the urban core rule. CSD C is a core hole.

Figure 1. The Urban Core Rule



CMA boundary

CSD boundary

Urban area

Urban core

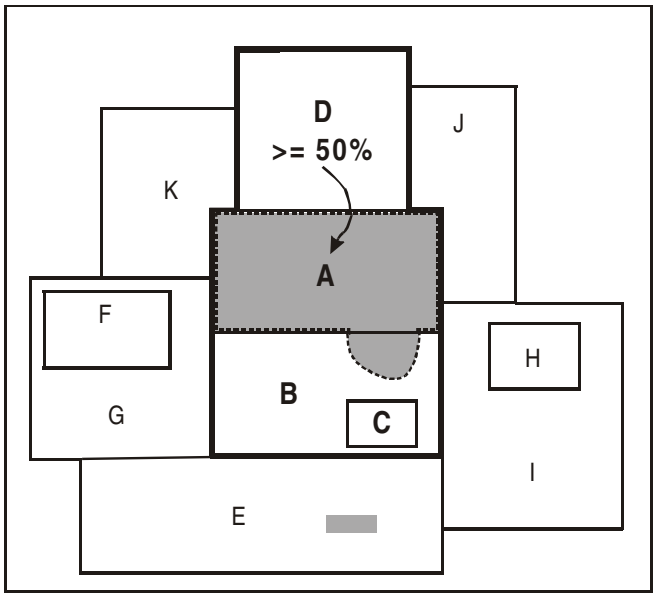
CSD Included

A under rule 1 – urban core
B under rule 1 – urban core
C under rule 1 – urban core (core hole)
D
E
F
G
H
I
J
K

2. **The Forward Commuting Flow Rule:** Given a minimum of 100 commuters, at least 50% of the employed labour force **living** in the CSD **works** in the delineation urban core (see following note), as determined from commuting data based on the place of work question in the last decennial census (1991 Census).

   Note: For CMA and CA delineation purposes, a **delineation urban core** is created respecting CSD limits. For a CSD to be included in the delineation urban core, at least 75% of a CSD's population must reside within the urban core. In Figure 2, CSD A is part of the delineation urban core since its entire population resides within the urban core. CSD B would also be part of the delineation urban core if at least 75% of its population resides within the urban core. For this example, we have assumed that less than 75% of the population of CSD B resides within the urban core; therefore, CSD B and its enclosed hole, CSD C, are not considered to be part of the delineation urban core.

Figure 2. The Forward Commuting Flow Rule



CMA boundary

CSD boundary

Urban area

Urban core

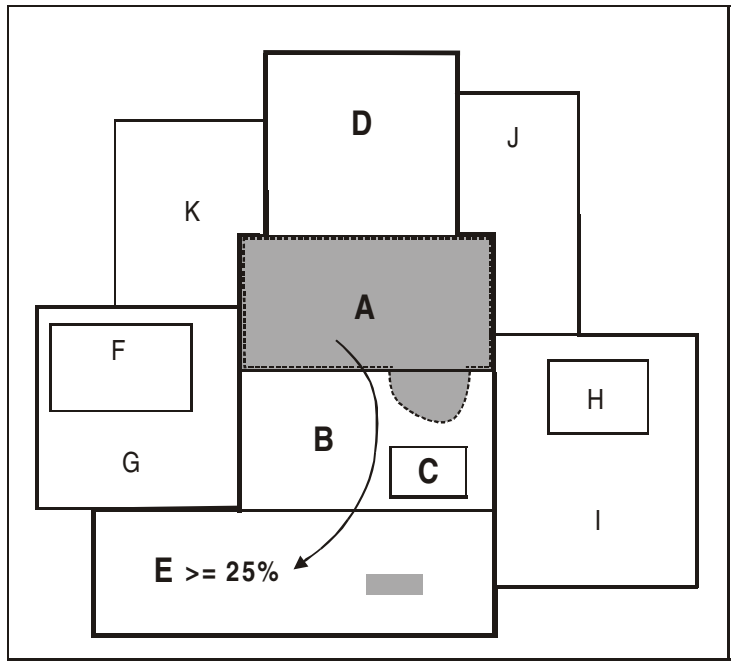
Forward commuting flow

CSD Included

A under rule 1 – urban core
B under rule 1 – urban core
C under rule 1 – urban core (core hole)
D **under rule 2 – forward commuting flow**
E
F
G
H
I
J
K

3. **The Reverse Commuting Flow Rule:** Given a minimum of 100 commuters, at least 25% of the employed labour force **working** in the CSD **lives** in the delineation urban core as determined from commuting data based on the place of work question in the last decennial census (1991 Census). In Figure 3, at least 25% of the employed labour force working in CSD E lives in CSD A (see Note for Rule 2).

Figure 3. The Reverse Commuting Flow Rule



CMA boundary

CSD boundary

Urban area

Urban core

Reverse commuting flow

CSD Included

A under rule 1 – urban core
B under rule 1 – urban core
C under rule 1 – urban core (core hole)
D under rule 2 – forward commuting flow
E **under rule 3 – reverse commuting flow**
F
G
H
I
J
K

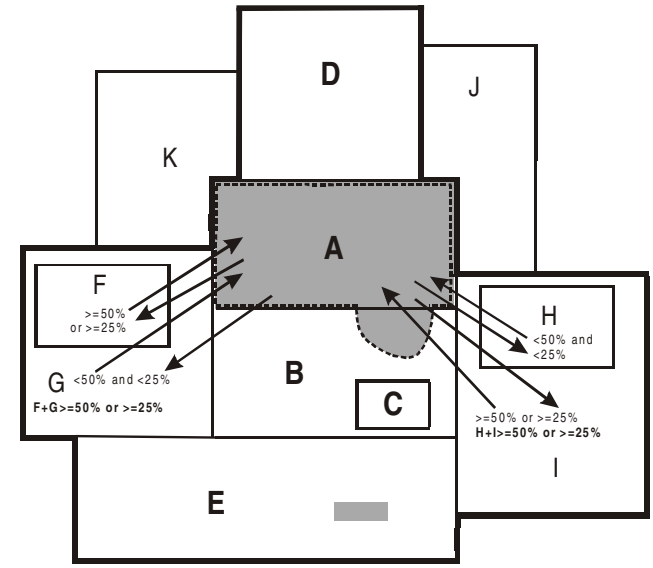
4. **The Spatial Contiguity Rule:** CSDs that do not meet a commuting flow threshold may be included in a CMA or CA, and CSDs that do meet a commuting flow threshold may be excluded from a CMA or CA.

   Two situations can lead to inclusion or exclusion of a CSD in a CMA or CA for reasons of spatial contiguity. Specifically these are:

   Outlier – A CSD (F in Figure 4) with sufficient commuting flows (either forward or reverse) is enclosed by a CSD (G in Figure 4) with insufficient commuting flows, but which is adjacent to the CMA or CA. When this situation arises, the CSDs within and including the enclosing CSD are grouped to create a minimum CSD set (F + G). The total commuting flows for the minimum CSD set are then considered for inclusion in the CMA or CA. If the minimum CSD set has sufficient commuting flows (either forward or reverse), then all of its CSDs are included in the CMA or CA.

Hole – A CSD (H in Figure 4) with insufficient commuting flows (either forward or reverse) is enclosed by a CSD (I in Figure 4) with sufficient commuting flows, and which is adjacent to the CMA or CA. When this situation arises, the CSDs within and including the enclosing CSD are grouped to create a minimum CSD set (H + I). The total commuting flows for the minimum CSD set are then considered for inclusion in the CMA or CA. If the minimum CSD set has sufficient commuting flows (either forward or reverse), then all of its CSDs are included in the CMA or CA.

Figure 4. The Spatial Contiguity Rule



CMA boundary

CSD boundary

Urban area

Urban core

Commuting flows

CSD Included

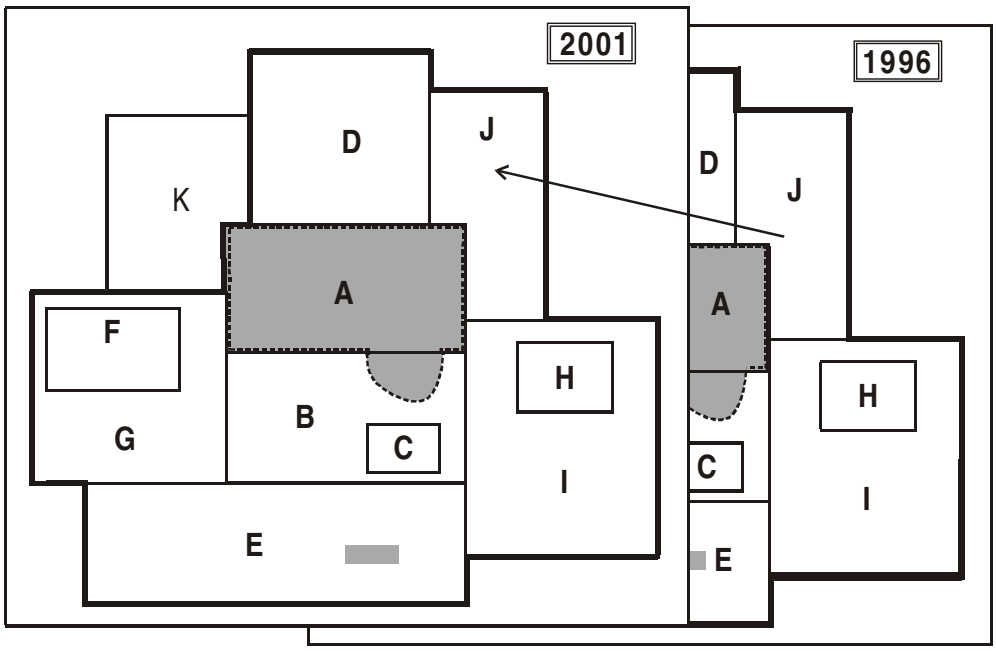
A under rule 1 – urban core
B under rule 1 – urban core
C under rule 1 – urban core (core hole)
D under rule 2 – forward commuting flow
E under rule 3 – reverse commuting flow
F under rule 4 – spatial contiguity rule (outlier)
G under rule 4 – spatial contiguity rule
H under rule 4 – spatial contiguity rule (hole)
I under rule 4 – spatial contiguity rule
J
K

F + G = minimum CSD set
H + I = minimum CSD set

Note: CSD F (outlier) has sufficient flows – either >=50% forward or >=25% reverse commuting flows.
CSD G has insufficient flows – has <50% forward and <25% reverse commuting flows.
CSD H (hole) has insufficient flows – has <50% forward and <25% reverse commuting flows.
CSD I has sufficient flows – either >=50% forward or >=25% reverse commuting flows.

5. **The Historical Comparability Rule:** To maintain historical comparability for CMAs and larger CAs (those with census tracts in the previous census), CSDs are retained in the CMA or CA even if their commuting flow percentages fall below the commuting flow thresholds (Rules 2 and 3). See Figure 5.

Figure 5. The Historical Comparability Rule



CMA boundary

CSD boundary

Urban area

Urban core

CSD Included

A under rule 1 – urban core
B under rule 1 – urban core
C under rule 1 – urban core (core hole)
D under rule 2 – forward commuting flow
E under rule 3 – reverse commuting flow
F under rule 4 – spatial contiguity rule (outlier)
G under rule 4 – spatial contiguity rule
H under rule 4 – spatial contiguity rule (hole)
I under rule 4 – spatial contiguity rule
J **under rule 5 – historical comparability**
K

An exception to the historical comparability rule is made in cases where CSDs have undergone changes to their boundaries, such as annexations. To determine whether to keep or exclude a CSD, place of work data are retabulated for the CSD with boundary changes, and a decision to include or exclude the CSD is made according to the previous rules.

6. **Manual adjustments:** A CMA or CA represents an area that is economically and socially integrated. However, there are certain limitations to the extent by which this ideal can be met. Since the CSDs that are used as building blocks in CMA and CA delineation are administrative units, their boundaries are not always the most suitable with respect to CMA and CA delineation. There are always situations where the application of the above rules creates undesirable outcomes, or where the rules cannot be easily applied. In these circumstances, a manual override is sometimes applied to ensure that the integrity of the program is retained. For example, in Sherbrooke CMA, the CSD of Compton Station, SD, which is in two parts, is included to maintain spatial contiguity.

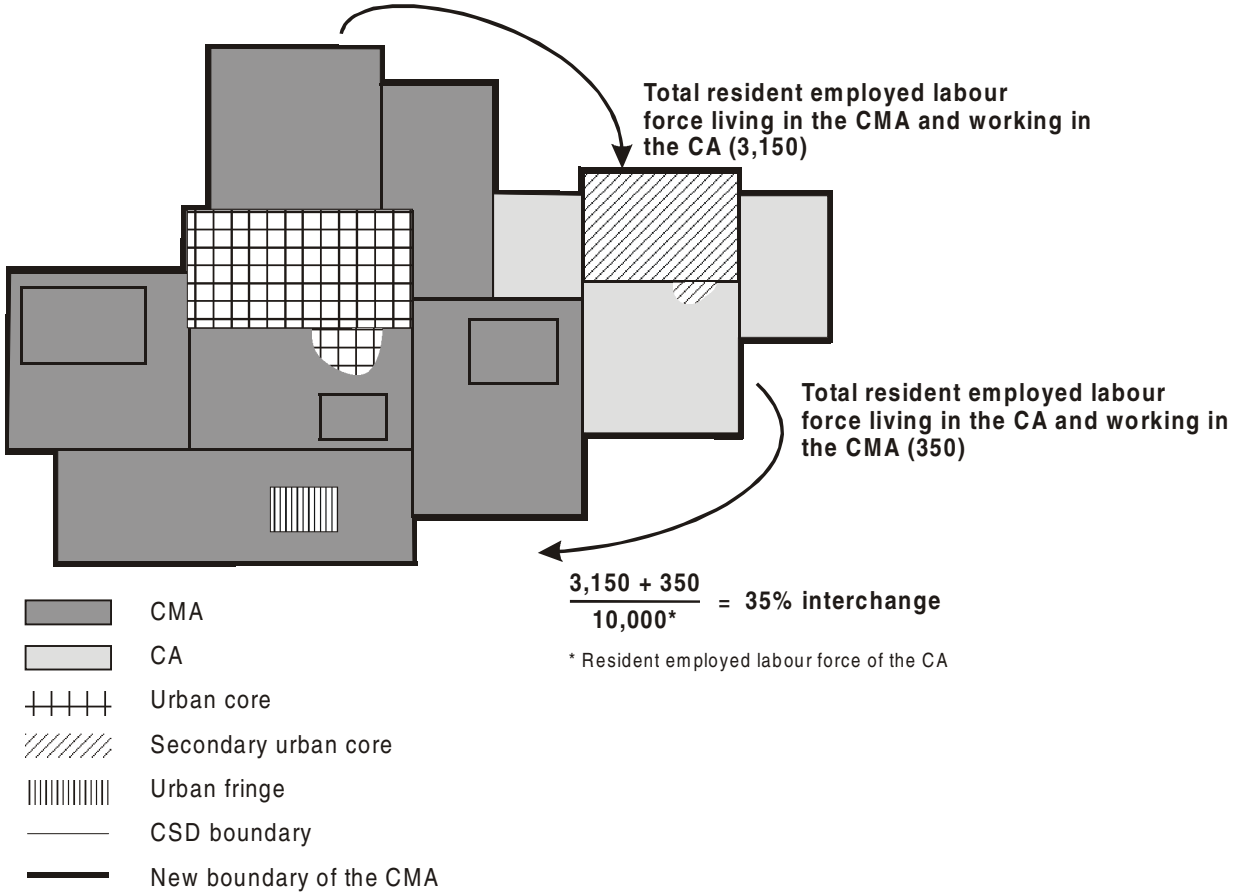
7. **Merging Adjacent CMAs and CAs:** A CA adjacent to a CMA can be merged with the CMA if the total percentage commuting interchange between the CA and CMA is equal to at least 35% of the employed labour force living in the CA, based on place of work data from the decennial census. The total percentage commuting interchange is the sum of the commuting flow in both directions between the CMA and the CA as a percentage of the labour force living in the CA (i.e., resident employed labour force).

$$\frac{\text{Total resident employed labour force living in the CA and working in the CMA} + \text{Total resident employed labour force living in the CMA and working in the CA}}{\text{Resident employed labour force of the CA}} \times 100\%$$

If more than one CA is adjacent to the same CMA, each CA is assessed separately with the CMA. Several CAs may be merged with one CMA. If the total percentage commuting interchange is less than 35%, the CMA and CA are not merged.

After a CA is merged with a CMA, the urban core of the former CA is called the **secondary urban core** of the CMA.

Figure 6. Example of a Merged Census Metropolitan Area and a Census Agglomeration



Names and Coding Structure

CMA and CA **names** are usually based on the principal urban area or census subdivision (as of the census reference date) within the CMA or CA. Each CMA and CA is assigned a three-digit **code** that identifies it uniquely in Canada. The first digit is the same as the second digit of the province code in which the CMA or CA is located. If a CMA or CA spans a provincial boundary, then the province code assigned represents the province with the greater proportion of urban core population. Codes for CMAs or CAs in the Yukon Territory and the Northwest Territories begin with the same digit as for those CMAs or CAs located in British Columbia. There are currently no CMAs or CAs in Nunavut.

CMA/CA Code	CMA/CA Name
001	St. John's CMA (Nfld.)
215	Truro CA (N.S.)
462	Montréal CMA (Que.)
995	Yellowknife CA (N.W.T.)

If data for provincial parts are required, it is recommended that the two-digit province code precede the CMA/CA code for those CMAs/CAs that cross provincial boundaries. For example:

PR-CMA/CA Code	CMA/CA Name
24 505	Ottawa – Hull CMA (Que.)
35 505	Ottawa – Hull CMA (Ont.)
47 840	Lloydminster CA (Sask.)
48 840	Lloydminster CA (Alta.)

Changes to the Number of CMAs and CAs for the 2001 Census

Two CAs from the previous census became CMAs: Kingston, Ontario and Abbotsford, British Columbia.

Seven new CAs were created: Amos, Que., Amherstburg, Ont., Caledon, Ont., Petawawa, Ont., Brooks, Alta., Squamish, B.C. and Parksville, B.C. However, the Amherstburg CA was then merged with the Windsor CMA due to its high commuting interchange with that CMA, and similarly the Caledon CA was merged with the Toronto CMA.

The 1996 CA of Strathroy merged with the CMA of London after the City of Strathroy amalgamated with the township of Caradoc to become the township of Strathroy – Caradoc, which is adjacent to the London CMA.

One CA (Smiths Falls, Ont.) was retired because the population of its urban core dropped below 10,000 in 1996.

Prior to 2001, adjacent CMAs and CAs that had sufficient commuting interchange to be merged (35% or more) were identified by the terms "primary census metropolitan area (PCMA)" and "primary census agglomeration (PCA)". The terms "consolidated census metropolitan area" and "consolidated census agglomeration" described the sum of the component CMAs and CAs. Census data were disseminated for these areas. These terms will **not** be used for the standard dissemination program for 2001. The *1996 Census Dictionary* (Catalogue No. 92-351-XIE) provides further details about these discontinued terms.

Additional information about changes to CMAs and CAs for the 2001 Census is available upon request from the Geography Division, Statistics Canada.

Data Quality

CMAs and CAs are statistically comparable because they are delineated in the same way across Canada. They differ from other areas such as trading or marketing areas, or regional planning areas

designated by regional authorities for planning and other purposes, and should be used with caution for non-statistical purposes.

The CSD limits used in CMA and CA delineation are those in effect on January 1, 2001 (the **geographic reference date** for the 2001 Census) and received by Statistics Canada before March 1, 2001. In addition, CMA and CA delineation uses commuting data based on the place of work question asked in the decennial census. Thus, the 2001 and 1996 CMAs and CAs are based on population and place of work data from the 1991 Census. The 1991 and 1986 CMAs and CAs were based on the data from the 1981 Census.

Users should be aware that the Canadian CMA/CA program differs from the **metropolitan statistical area** program in the United States. Although the delineation methodologies are similar, the entry point for the U.S. metropolitan area program is lower – any urban core of 50,000 or more would be recognized as a CMA in the U.S.

Changes Prior to the 2001 Census:

1996
- Two changes to CMA/CA delineation rules were implemented to preserve data comparability over time. CMAs could be consolidated with CAs, but they could not be consolidated with other CMAs. A primary census agglomeration (PCA) could not be retired from a consolidated CMA or CA (with census tracts at the previous census) even if its total commuting interchange percentage dropped below the consolidation threshold of 35%. Exceptions to this rule could occur due to changes in the physical structure of the urban areas used to determine the urban cores.
- Minimum sets of CSDs were used instead of the **census consolidated subdivisions** (CCSs) for evaluation in the spatial contiguity rule. Refer to the Spatial Contiguity Rule (point 4).

1986
- Introduction of the consolidated and primary CMA and CA concept.
- The forward commuting threshold was raised from 40% to 50% to control for differences in processing of the place of work data between 1971 and 1981.
- Introduction of the minimum of 100 commuters for forward and reverse commuting for both CMAs and CAs.
- Single CSD (component) CAs were permitted.

1981
- Commuting data based on the place of work question of the previous decennial census were used for the first time to delineate CAs. For both CMAs and CAs, the forward commuting threshold was 40% and the reverse commuting threshold was 25%.
- The minimum urbanized core population for CAs was raised from 2,000 to 10,000.
- CAs were eligible for census tracts if they had a CSD with a population of at least 50,000 at the time of the previous census. Single CSD (component) CAs could be created for subdivision into census tracts.

1976
- Commuting data based on the place of work question of the previous decennial census were used for the first time to delineate CMAs. The forward commuting threshold was 40% and the reverse commuting threshold was 25% for the CMAs.
- For CAs, see 1971.

1971
- CMAs were defined as main labour market areas, but were delineated according to alternate criteria based on the labour force composition, population growth rate and accessibility. At this time, the CMA of Saint John, N.B. was “grandfathered”.
- CAs were comprised of at least two adjacent municipal entities. These entities had to be at least partly urban and belong to an urbanized core having a population of at least 2,000. The urbanized core included a largest city and a remainder, each with a population of at least 1,000, and had a population density of at least 1,000 per square mile (386 persons per square kilometre).

1966
- See 1961.

1961 – CMAs were delineated around cities with a population of at least 50,000, if the population density and labour force composition criteria were met, and the total CMA population was at least 100,000.
– CAs were called major urban areas; see 1951.

1956 – See 1951.

1951 – The term “census metropolitan area” appeared for the first time. This term designated cities of over 50,000 having fringe municipalities in close geographic, economic and social relations, the whole constituting a unit of over 100,000.
– The concept of “major urban areas”, the forerunners to CAs, was introduced. The term designated urban areas in which the largest city had a population of at least 25,000 and fewer than 50,000.

1941 – Data were published for “Greater Cities”, i.e. those cities which have well-defined satellite communities in close economic relationship to them.

Appendix 2

FILENAMES FOR 2001 CENSUS METROPOLITAN AREAS – MAPS AND TABLES

This appendix lists the filenames for the maps and associated tables for each of the 27 census metropolitan areas (CMAs) established for the 2001 Census (see Table A2-3). The files are available from the Statistics Canada website at www.statcan.ca under Products and Services, Downloadable research papers, Geography working paper series.

For each CMA, the first map shows the CMA and its component census subdivisions (CSDs) for the 1996 Census. The second map shows the CMA boundaries for the 2001 Census and illustrates the CSD boundary changes that occurred between January 2, 1996 and January 1, 2001. The third map shows the CMA and its component CSDs as they exist for the 2001 Census.[7]

The accompanying table for each CMA gives the name, type and Standard Geographical Classification (SGC) code for each CSD shown on the maps. It includes the CSDs that were added, deleted or merged as a result of municipal restructuring. The table also shows the criterion for including each CSD in the 2001 CMA, according to the delineation rules for CMAs and CAs.

Table A2-1 below shows an index to the delineation criteria and Table A2-2 shows a summary for all CMAs of the number of census subdivisions by criteria for inclusion. Refer to Appendix 1 for a detailed description of the criteria.

Table A2-1. Index to Delineation Criteria for Including CSDs in CMAs or CAs

Criterion	Delineation Rule
1	In the urban core
2	Forward commuting
3	Reverse commuting
4	Spatial contiguity
5	Historical comparability
6	Manual adjustments
7	Merge of adjacent CMAs and CAs

[7] More detailed maps of the 2001 Census CMAs are available from the Statistics Canada website at www.statcan.ca. The Census Tract Reference Maps series covers each of the 27 CMAs (Catalogue No. 92F0145XIB). The maps show the boundaries and names of census tracts and census subdivisions, as well as the urban core, urban fringe and rural fringe of the CMAs.

Table A2-2. Number of Census Subdivisions (CSDs) by Criteria for Inclusion in Census Metropolitan Areas (CMAs), 2001 Census

CMA Name	Criterion 1 (in the urban core)	Criterion 2 (forward commuting)	Criterion 3 (reverse commuting)	Criterion 4 (spatial contiguity)	Criterion 5 (historical comparability)	Criterion 6 (manual adjustments)	Total Number of CSDs
Abbotsford	4	0	0	0	1	0	**5**
Calgary	2	1	0	5	1	0	**9**
Chicoutimi - Jonquière	3	7	0	0	0	0	**10**
Edmonton	23	1	0	0	11	0	**35**
Greater Sudbury	2	0	0	0	1	0	**3**
Halifax	4	0	0	0	0	0	**4**
Hamilton	3	0	0	0	0	0	**3**
Kingston	2	1	0	0	1	0	**4**
Kitchener	3	1	1	0	0	0	**5**
London	5	1	1	0	0	0	**7**
Montréal	89	14	1	3	2	0	**109**
Oshawa	3	0	0	0	0	0	**3**
Ottawa - Hull	6	7	0	0	0	0	**13**
Québec	29	12	0	0	3	1	**45**
Regina	1	1	1	10	4	0	**17**
Saint John	4	8	1	2	2	0	**17**
Saskatoon	1	0	0	23	0	0	**24**
Sherbrooke	8	3	1	2	0	1	**15**
St. Catharines - Niagara	8	1	1	0	0	0	**10**
St. John's	4	6	0	0	3	0	**13**
Thunder Bay	1	7	0	0	0	0	**8**
Toronto	21	2	0	0	1	0	**24**
Trois-Rivières	6	2	0	2	0	0	**10**
Vancouver	34	4	0	0	1	0	**39**
Victoria	18	1	0	3	1	0	**23**
Windsor	5	0	0	0	0	0	**5**
Winnipeg	3	6	0	2	0	0	**11**
TOTAL	**292**	**86**	**7**	**52**	**32**	**2**	**471**

Table A2-3. Filenames for 2001 Census Metropolitan Areas – Maps and Tables

Filename	CMA Name and Province
Abbots_E.pdf	Abbotsford, British Columbia
Calgar_E.pdf	Calgary, Alberta
ChiJon_E.pdf	Chicoutimi – Jonquière, Québec
Edmont_E.pdf	Edmonton, Alberta
GrtSud_E.pdf	Greater Sudbury, Ontario
Halifa_E.pdf	Halifax, Nova Scotia
HamiIt_E.pdf	Hamilton, Ontario
Kingst_E.pdf	Kingston, Ontario
Kitche_E.pdf	Kitchener, Ontario
London_E.pdf	London, Ontario
Montre_E.pdf	Montréal, Québec
Oshawa_E.pdf	Oshawa, Ontario
OttHul_E.pdf	Ottawa – Hull, Ontario
Quebec_E.pdf	Québec, Québec
Regina_E.pdf	Regina, Saskatchewan
SaintJ_E.pdf	Saint John, New Brunswick
Saskat_E.pdf	Saskatoon, Saskatchewan
Sherbr_E.pdf	Sherbrooke, Québec
StCaNi_E.pdf	St. Catharines – Niagara, Ontario
StJohn_E.pdf	St. John's, Newfoundland and Labrador
ThundB_E.pdf	Thunder Bay, Ontario
Toront_E.pdf	Toronto, Ontario
TroisR_E.pdf	Trois-Rivières, Québec
Vancou_E.pdf	Vancouver, British Columbia
Victor_E.pdf	Victoria, British Columbia
Windso_E.pdf	Windsor, Ontario
Winnip_E.pdf	Winnipeg, Manitoba

Appendix 3

FILENAMES FOR 2001 CENSUS AGGLOMERATIONS WITH CENSUS TRACTS – MAPS AND TABLES

This appendix lists the filenames for the maps and associated tables for each of the 19 census agglomerations (CAs) with census tracts, established for the 2001 Census (see Table A3-3). The files are available from the Statistics Canada website at www.statcan.ca under Products and Services, Downloadable research papers, Geography working paper series.

For each CA, the first map shows the CA and its component census subdivisions (CSDs) for the 1996 Census. The second map shows the CA boundaries for the 2001 Census and illustrates the CSD boundary changes that occurred between January 2, 1996 and January 1, 2001. The third map shows the CA and its component CSDs as they exist for the 2001 Census.[8]

The accompanying table for each CA gives the name, type and Standard Geographical Classification (SGC) code for each CSD shown on the maps. It includes the CSDs that were added, deleted or merged as a result of municipal restructuring. The table also shows the criterion for including each CSD in the 2001 CA, according to the delineation rules for CMAs and CAs.

Table A3-1 below shows an index to the delineation criteria and Table A3-2 shows a summary for all CAs of the number of census subdivisions by criteria for inclusion. Refer to Appendix 1 for a detailed description of the criteria.

Table A3-1. Index to Delineation Criteria for Including CSDs in CMAs or CAs

Criterion	Delineation Rule
1	In the urban core
2	Forward commuting
3	Reverse commuting
4	Spatial contiguity
5	Historical comparability
6	Manual adjustments
7	Merge of adjacent CMAs and CAs

[8] More detailed maps of the 2001 Census CAs are available from the Statistics Canada website at www.statcan.ca. The Census Tract Reference Maps series covers each of the 19 CAs with census tracts (Catalogue No. 92F0145XIB). The maps show the boundaries and names of census tracts and census subdivisions, as well as the urban core, urban fringe and rural fringe of the CAs.

Table A3-2. Number of Census Subdivisions (CSDs) by Criteria for Inclusion in Census Agglomerations (CAs) with Census Tracts, 2001 Census

CA Name	Criterion 1 (in the urban core)	Criterion 2 (forward commuting)	Criterion 3 (reverse commuting)	Criterion 4 (spatial contiguity)	Criterion 5 (historical comparability)	Criterion 6 (manual adjustments)	Total Number of CSDs
Barrie	3	0	0	0	0	0	**3**
Belleville	2	0	0	0	0	0	**2**
Brantford	1	0	0	0	0	0	**1**
Drummondville	3	2	1	0	0	0	**6**
Granby	2	0	1	0	0	0	**3**
Guelph	2	0	0	0	0	0	**2**
Kamloops	1	1	2	0	4	0	**8**
Kelowna	6	3	0	0	0	0	**9**
Lethbridge	1	0	0	0	0	0	**1**
Medicine Hat	3	0	0	0	0	0	**3**
Moncton	4	4	1	0	4	0	**13**
Nanaimo	7	2	0	0	0	0	**9**
North Bay	2	3	0	0	0	0	**5**
Peterborough	2	0	0	4	0	0	**6**
Prince George	1	4	0	1	0	0	**6**
Red Deer	1	0	0	0	0	0	**1**
Saint-Jean-sur-Richelieu	5	0	0	0	0	0	**5**
Sarnia	4	0	0	0	0	0	**4**
Sault Ste. Marie	2	2	0	2	0	0	**6**
TOTAL	**52**	**21**	**5**	**7**	**8**	**0**	**93**

Table A3-3. Filenames for 2001 Census Agglomerations – Maps and Tables

Filename	CA Name and Province
Barrie_E.pdf	Barrie, Ontario
Bellev_E.pdf	Belleville, Ontario
Brantf_E.pdf	Brantford, Ontario
Drummo_E.pdf	Drummondville, Québec
Granby_E.pdf	Granby, Québec
Guelph_E.pdf	Guelph, Ontario
Kamloo_E.pdf	Kamloops, British Columbia
Kelown_E.pdf	Kelowna, British Columbia
Lethbr_E.pdf	Lethbridge, Alberta
MedHat_E.pdf	Medicine Hat, Alberta
Moncto_E.pdf	Moncton, New Brunswick
Nanaim_E.pdf	Nanaimo, British Columbia
NorthB_E.pdf	North Bay, Ontario
Peterb_E.pdf	Peterborough, Ontario
PrincG_E.pdf	Prince George, British Columbia
RedDee_E.pdf	Red Deer, Alberta
StJeRi_E.pdf	Saint-Jean-sur-Richelieu, Québec
Sarnia_E.pdf	Sarnia, Ontario
SauStM_E.pdf	Sault Ste. Marie, Ontario

Geography Working Paper Series

Number

1993-1 ***A Comparison of Census Geographic Areas of Canada and the United States***, Carolyn Weiss, Michael Ratcliffe and Nancy Torrieri (November 1993)

1996-1 ***Whither Land Area? A Case for Retaining the Status Quo for the 1996 Census***, Carolyn Weiss (December 1996)

1998-1 ***Automated Land Area Tests for the 2001 Census: Preliminary Results Using the 1996 Digital Cartographic Files***, Carolyn Weiss and Augustine Akuoko-Asibey (April 1998)

2000-1 ***Census Metropolitan Area and Census Agglomeration Influenced Zones (MIZ) with Census Data***, Sheila Rambeau and Kathleen Todd (January 2000)

2000-2 ***Census Metropolitan Area and Census Agglomeration Influence Zones (MIZ): A Description of the Methodology***, Chuck McNiven, Henry Puderer and Darryl Janes (January 2000)

2000-3 ***Delineation of Canada's North: An Examination of the North–south Relationship in Canada***, Chuck McNiven and Henry Puderer (January 2000)

2000-4 ***Introducing the Dissemination Area for the 2001 Census: an Update***, Henry Puderer (June 2001)

2001-1 ***Geographic Structures as Census Variables: Using Geography to Analyse Social and Economic Processes,*** Robert Mendelson (March 2001)

2002-1 ***Census Metropolitan Areas and Census Agglomerations with Census Tracts, for the 2001 Census***, Peter Murphy and Henry Puderer (March 2002)