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Preliminary 2006 Census Metropolitan Area and Census Agglomeration Delineation

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TABLE OF CONTENTS

Abstract ii

1. Introduction 1

2. Delineation methodology 1

3. Highlights of the preliminary delineation of 2006 census metropolitan areas and census agglomerations 1

4. Final 2006 census metropolitan areas /census agglomerations and component census subdivisions..... 6

5. Conclusion..... 6

6. Acknowledgements 6

7. Maps and census subdivision component listings..... 7

Appendix A: Census Metropolitan Area and Census Agglomeration

Abstract

This working paper describes the preliminary 2006 census metropolitan areas and census agglomerations and is presented for user feedback. The paper briefly describes the factors that have resulted in changes to some of the census metropolitan areas and census agglomerations and includes tables and maps that list and illustrate these changes to their limits and to the component census subdivisions.

1. Introduction

Geography Division has completed the delineation of the preliminary 2006 census metropolitan areas (CMA) and census agglomerations (CA).

The preliminary 2006 census metropolitan area and census agglomeration delineation is based on the following:

- the final 2001 census subdivision (CSD) boundaries (the municipal boundaries as of January 1, 2001);
- commuter flows and labour force data extracted from the 2001 Census place of work (POW) variable; and,
- the current rules for census metropolitan area and census agglomeration delineation (including the revised census agglomeration-to-census metropolitan area promotion criteria¹).

Each preliminary 2006 census metropolitan area and census agglomeration is represented by a map and a table that lists its component census subdivisions. The maps and tables also show the newly included and excluded census subdivisions. Users should consult the tables and maps for the census metropolitan area or census agglomeration of interest.

Geography Division has also completed the delineation of the preliminary 2006 Statistical Area Classification. A test file is now available from Geography Division. It assigns all 5,600 2001 census subdivisions to a Statistical Area Classification based primarily on day time commuting flows extracted from the newly released 2001 Census Place of Work data and uses the 2006 delineation rules.

2. Delineation methodology

Census metropolitan areas and census agglomerations are delineated using adjacent municipalities (census subdivisions) as building blocks. These census subdivisions are included in a census metropolitan area or census agglomeration if they meet at least one of the delineation rules. The rules are ranked in order of priority. A census subdivision obeying the rules for two or more census metropolitan areas or census agglomerations is included in the one for which it has the highest ranked rule. If the census subdivision meets rules that have the same rank, the decision is based on the population or the number of commuters involved. A census metropolitan area or census agglomeration is delineated to ensure spatial contiguity. Please refer to Appendix A of this document for a detailed description of the current delineation rules.

3. Highlights of the preliminary delineation of 2006 census metropolitan areas and census agglomerations

Preliminary 2006 census metropolitan areas and census agglomerations

The number of census metropolitan areas and census agglomerations is increased from 140 for the 2001 Census to 144 in the preliminary 2006 delineation. The following table lists the changes.

¹ See Appendix A

Table. Summary of the preliminary 2006 census metropolitan area/census agglomerations

	2001	Changes	Preliminary 2006 delineation
Total CMAs	27		33
Total CAs with CTs	19		15
Total CAs without CTs	94		96
Total CMA/CAs	140		144
CAs promoted to CMA status		6	
CAs entering CT programme		2	
Retired CAs		2	
New CAs		7	
Merged CAs		1	

Revised census agglomeration-to-census metropolitan area promotion criteria

As of March 2003 census agglomerations (CAs) are no longer required to have an urban core population count of 100,000 to be promoted to the status of a census metropolitan area. Instead, census agglomerations will assume the status of a census metropolitan area if it has attained a total population of at least 100,000 and an urban core of 50,000 or more.

Under the old rule (100,000 urban core population count) three census agglomerations would have been promoted to the census metropolitan area status for the 2006 Census: Guelph, Barrie and Kelowna.

Six 2001 census agglomerations are promoted to the census metropolitan area status under the revised census agglomeration-to-census metropolitan area promotion criteria (total area population of at least 100,000 and an urban core population of 50,000 or more) and the results of the preliminary 2006 delineation. (Table on following page)

Census Agglomerations entering the Census Tract programme

Census tracts (CTs) are small, relatively stable geographic areas that usually have a population of 2,500 to 8,000. They are located in census metropolitan areas and in census agglomerations with an urban core population of 50,000 or more in the previous census. The 2006 Census Tract Programme will add two Census Agglomerations: Fredericton, New Brunswick and Chilliwack, British Columbia.

Table. 2001 census agglomerations promoted to preliminary 2006 census metropolitan area status.

Name	2001 total area population		Urban core population	Previous promotion rule	Revised promotion rule
	based on the final 2001 CMA/CA delineation	based on the preliminary 2006 CMA/CA delineation			
Barrie	148 480	148 840	129 963	X	X
Brantford	86 417	118 086	86 417		X
Guelph	117 344	117 344	106 920	X	X
Kelowna	147 739	147 739	108 330		X
Moncton	117 727	118 678	90 359		X
Peterborough	102 423	110 876	73 303		X

New census agglomerations

Based on the final 2001 Urban Area population counts seven (7) new census agglomerations were delineated.

Table. New census agglomerations for 2006

2006 CA code	Preliminary 2006 census agglomeration name
005	Bay Roberts, Nfld.Lab.
329	Miramichi, N.B.
531	Centre Wellington, Ont.
533	Ingersoll, Ont.
820	Okotoks, Alta.
828	Canmore, Alta.
920	Salmon Arm, B.C.

Please refer to the tables and maps for each of the new census agglomerations for the listing of the preliminary component census subdivisions.

Retired census agglomerations

The census agglomerations of Labrador City and Gander, Newfoundland and Labrador are retired for 2006 due to a decline in their respective 2001 Census urban core population counts. They are now below the required minimum of 10,000.

Merged adjacent census metropolitan areas and census agglomerations

The 2001 census metropolitan area of Sherbrooke and the 2001 census agglomeration of Magog are merged since the commuting interchange between the census metropolitan area and census agglomeration is equal to at least 35% of the employed labour force living in the census agglomeration, based on the 2001 Place of Work (PoW) data. The census subdivisions formerly assigned to the 2001 census agglomeration of Magog are assigned to the preliminary 2006 census metropolitan area of Sherbrooke.

Changed boundaries and component census subdivisions

As in the past the most significant changes to the census metropolitan area/census agglomeration delineations occur when the decennial Place of Work (PoW) data becomes available and are used in the delineation process for the next quinquennial update (with the exception of major municipal restructuring). These changes can be expressed in terms of the changes to the component census subdivisions and the criteria by which census subdivisions are included.

The table below provides an overview of the scope of the changes from 2001 to the preliminary 2006 census metropolitan area and census agglomeration delineation.

Table. Changes from 2001 to the preliminary 2006 census metropolitan area/census agglomeration delineation

		Number of CSDs		Diff	
		Final 2001	Preliminary 2006		
Status					
CMA		471	529	58	
CA	Tracted	96	98	2	
	Non-Tracted	428	436	8	
Total		995	1,063	68	

Please refer to the tables and maps for each census metropolitan area and census agglomeration for the changes in the component census subdivisions in each case.

Changed inclusion criteria

Census metropolitan areas and census agglomerations are delineated using adjacent municipalities (census subdivisions) as building blocks. These census subdivisions are included if they meet at least one of the census metropolitan area/census agglomeration rules. The rules are ranked (1 to 6) in the order of priority: The tables listed below provide brief summaries and general indications of change from 2001 to the preliminary 2006 delineations. Users should review and consult the table and map for the census metropolitan area or census agglomeration of interest.

Criteria	Delineation rule
1	urban core
2	forward commuting flow
3	reverse commuting flow
4	spatial contiguity
5	historical comparability
6	manual intervention

Table Changes to the number of census subdivisions included under each rule

Type	Criteria	Number of CSDs		Percentage change
		Final 2001	Prelim. 2006	
CMA	1	295	340	15%
	2	84	85	1%
	3	7	26	271%
	4	50	19	-62%
	5	34	59	74%
	6	1	0	-100%
CA	1	299	324	8%
	2	128	105	-18%
	3	7	36	414%
	4	75	40	-47%
	5	11	12*	9%
	6	4	17**	325%
Total		995	1063	

* Tracted census agglomerations only.

** Invoked in order to maintain spatial coherence.

The fourfold increase (from 14 to 62) in the number of census subdivisions assigned to a census metropolitan area or census agglomeration under the reverse commuting flow rule (rule #3) is due to the increase in reverse commuting trends within some census metropolitan areas or census agglomerations:

- thirty four (34) census subdivisions are newly assigned into a census metropolitan area or census agglomeration
- twenty one (21) census subdivisions are reassigned from another criteria to rule #3
- seven (7) census subdivisions retain a rule #3 criteria from 2001.

The decrease in the number of census subdivisions delineated to a census metropolitan area or census agglomeration under the spatial contiguity rule (rule #4) can be attributed to following types of changes:

- twenty five (25) census subdivisions retain a rule #4 criteria from 2001.
- thirty four (31) census subdivisions are newly delineated into a preliminary 2006 census metropolitan area or census agglomeration under rule #4
- three (3) census subdivisions are reassigned from another 2001 criteria rule to rule #4
- sixty one (61) census subdivisions are reassigned from criteria rule #4 in 2001 to another rule for the preliminary 2006 delineation

Please refer to the tables and maps for each census metropolitan area and census agglomeration for the changes in the delineation criteria in each case

4. Final 2006 census metropolitan areas /census agglomerations and component census subdivisions

The delineation of the final 2006 census metropolitan areas and census agglomerations will reflect the cumulative changes in the census subdivision structure and boundaries from January 2, 2001 to January 1, 2006 and corresponding adjustments to the place of work dataset to account for any census subdivision changes. The final 2006 census metropolitan area and census agglomeration delineations are expected to be available by mid-2006.

5. Conclusion

The intent of this working paper is twofold: to describe for users the preliminary 2006 census metropolitan areas and census agglomerations; and to encourage feedback concerning these preliminary 2006 delineations. Comments, suggestions or inquires should be directed to Geography Division at the address provided at the beginning of this working paper.

6. Acknowledgements

This working paper is the culmination of the work of several individuals in the Geography Division. The dedicated work of Joanne Bertrand on the preliminary delineation is recognized. Contributions by Linda McCormick, Henry Puderer, Simon Riopel, Alex von Schilling, Natalie Tessier, Hugo Larocque and Carolyn Weiss are acknowledged.

Appendix A: Census Metropolitan Area and Census Agglomeration

Modified on June 19, 2003

Part A – Plain Language Definition

Area consisting of one or more adjacent municipalities situated around a major urban core. To form a census metropolitan area, the urban core must have a population of at least 100,000. To form a census agglomeration, the urban core must have a population of at least 10,000.

Part B – Detailed 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. A census agglomeration will be promoted to a census metropolitan area if it has a total population of at least 100,000, of which 50,000 or more live in the urban core. 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

Remarks:

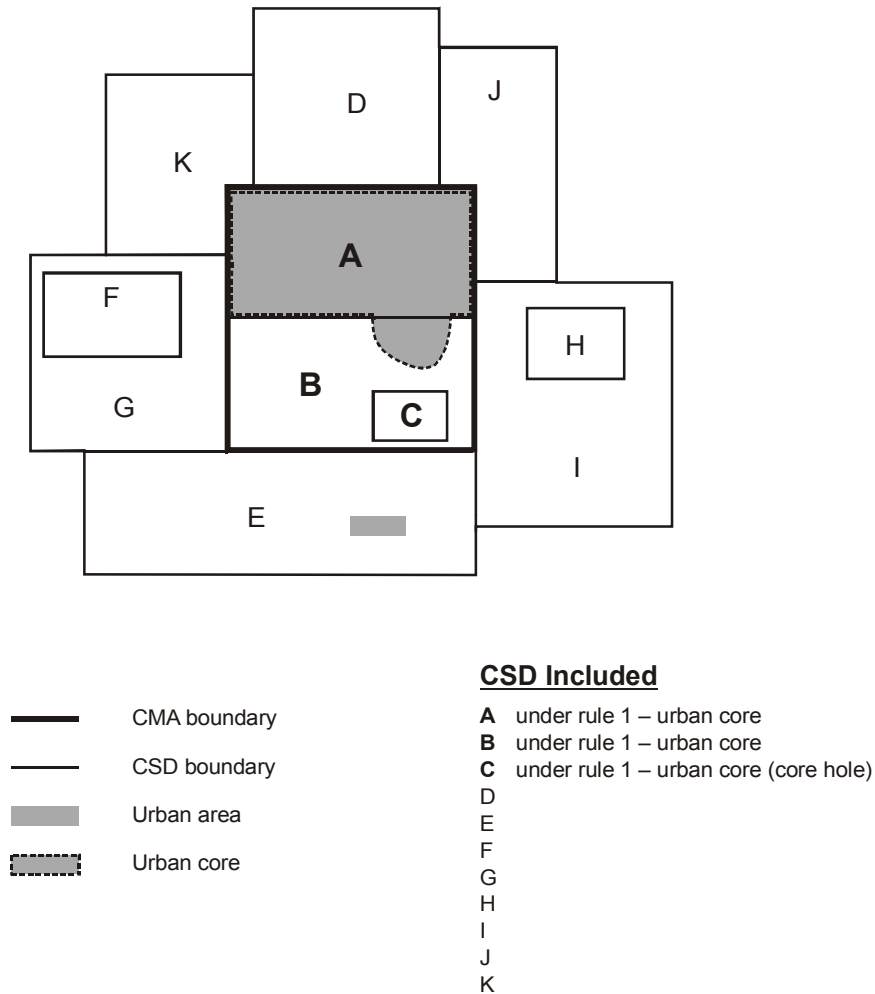
Delineation Rules for CMAs and CAs

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 25, CSDs A, B and C are included in the CMA or CA because of the urban core rule. CSD C is a core hole.

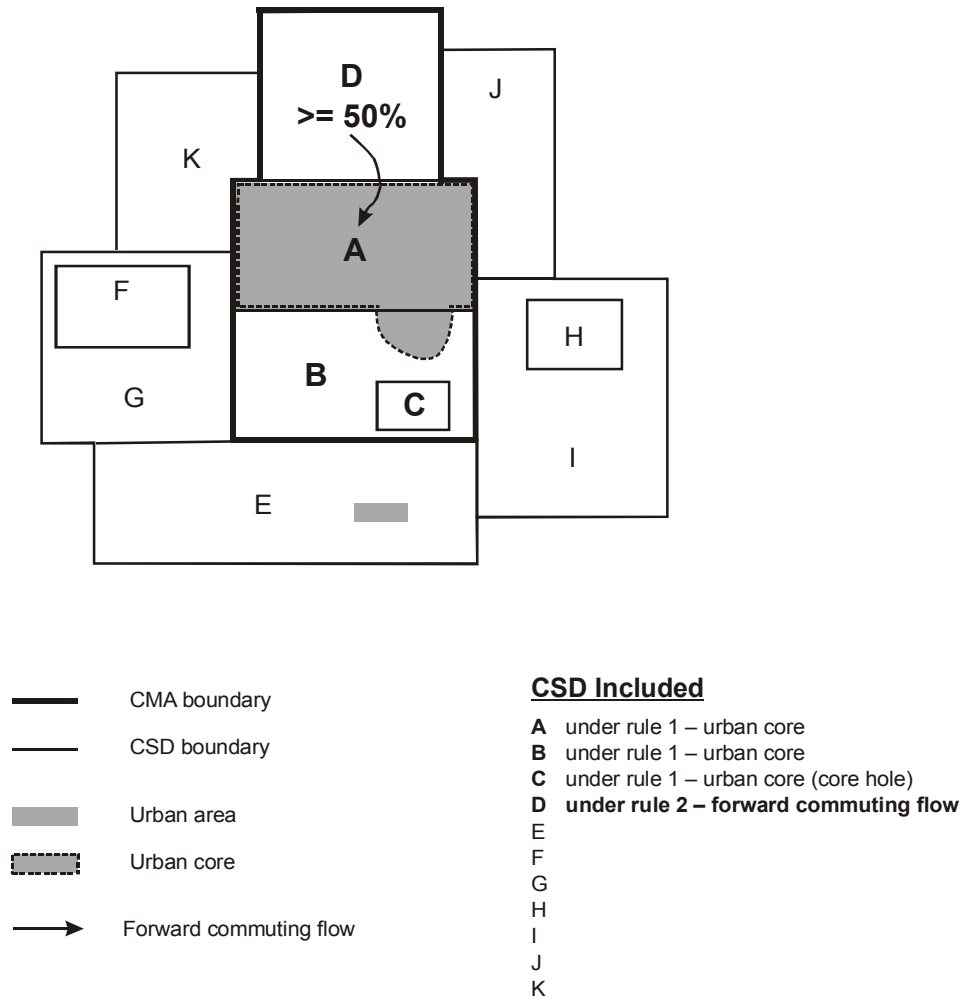
Figure 25. The Urban Core Rule



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).

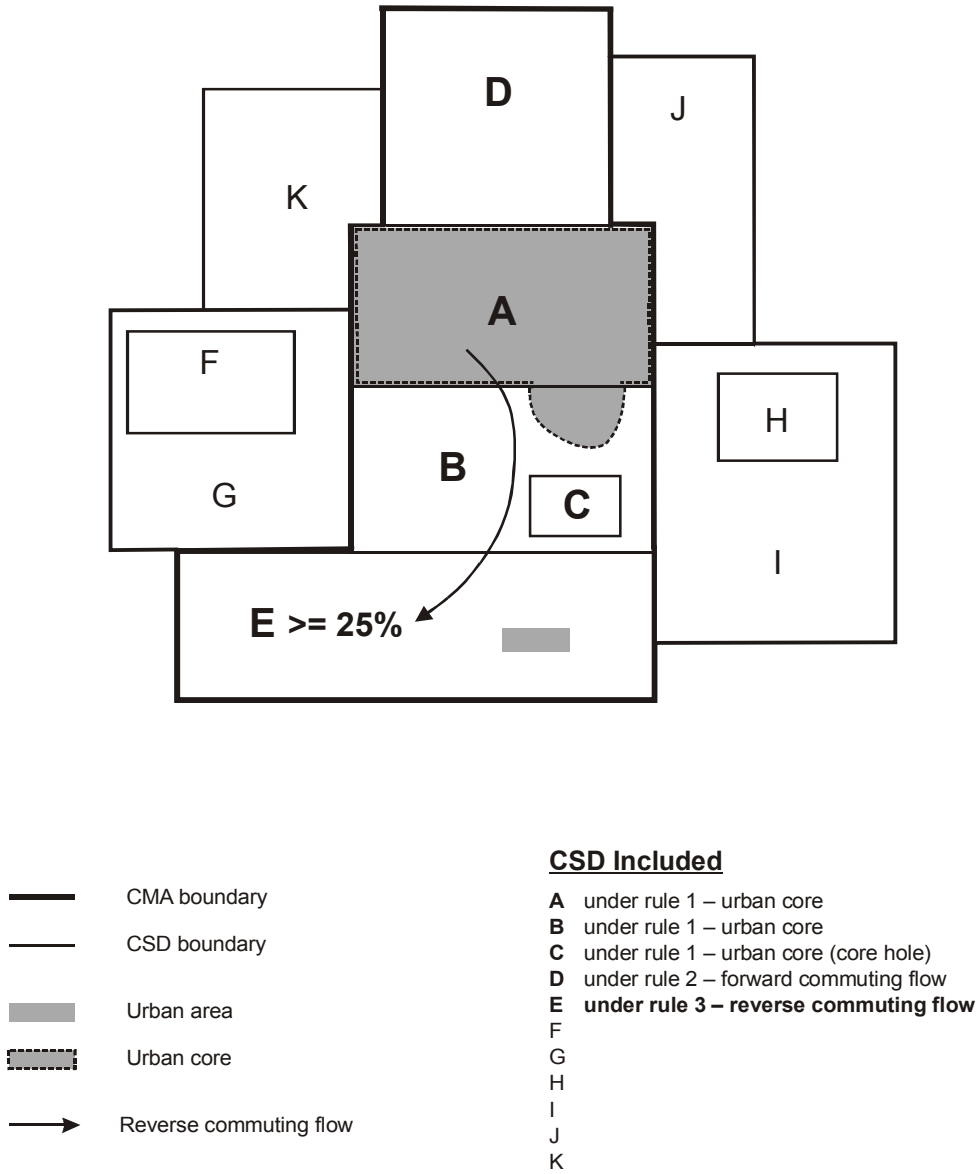
Note: For CMA and CA delineation purposes, a **delineation urban core** is created respecting CSD limits. For a CSD to be included in the delineation urban core, at least 75% of a CSD’s population must reside within the urban core. In Figure 26, CSD A is part of the delineation urban core since its entire 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 26. The Forward Commuting Flow Rule



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 27, at least 25% of the employed labour force working in CSD E lives in CSD A (see Note for Rule 2).

Figure 27. The Reverse Commuting Flow Rule



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.

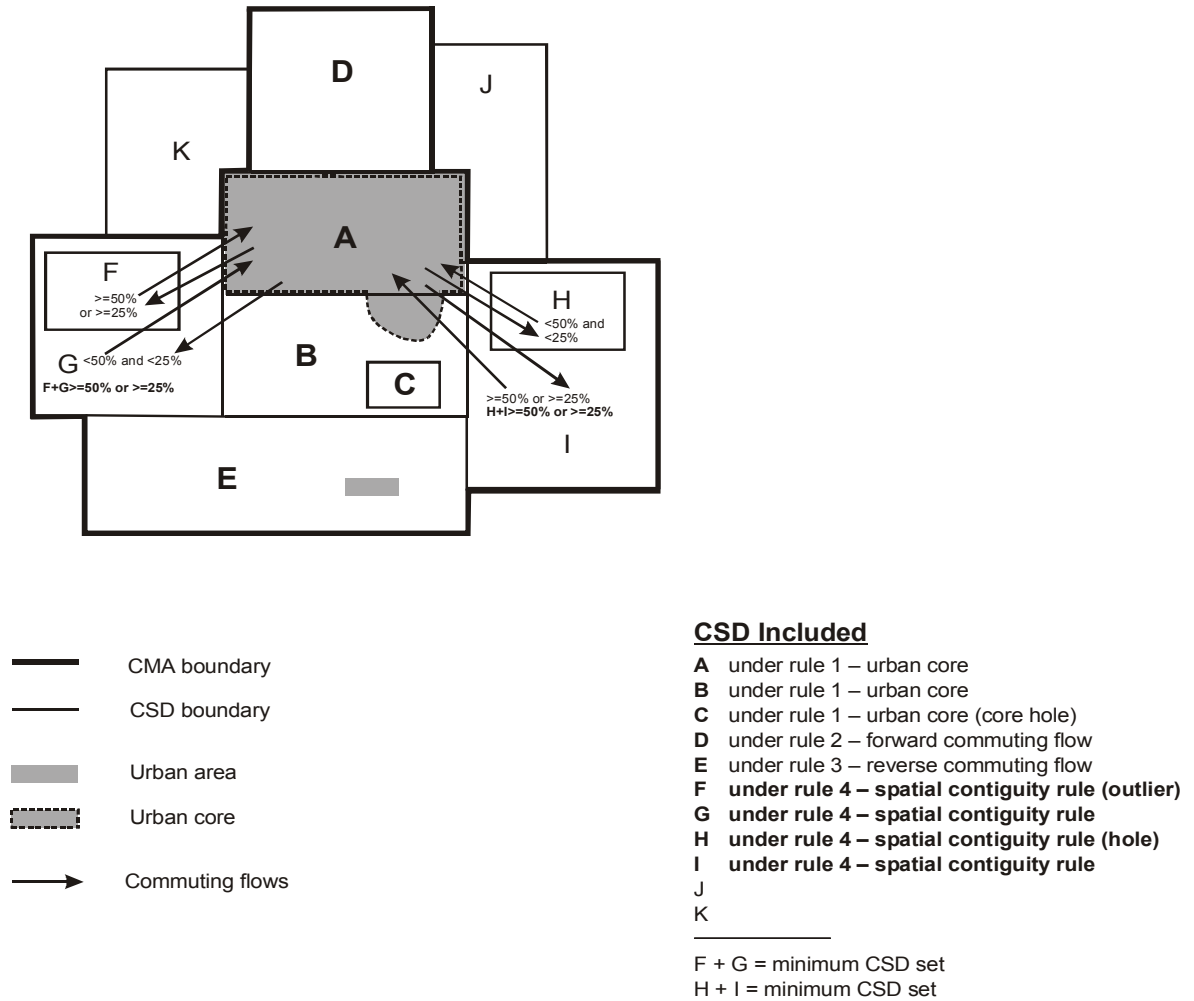
Two situations can lead to inclusion or exclusion of a CSD in a CMA or CA for reasons of spatial contiguity. Specifically these are:

Outlier – A CSD (F in Figure 28) with sufficient commuting flows (either forward or reverse) is enclosed by a CSD (G in Figure 28) 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 28) with insufficient commuting flows (either forward or reverse) is enclosed by a CSD (I in Figure 28) 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.

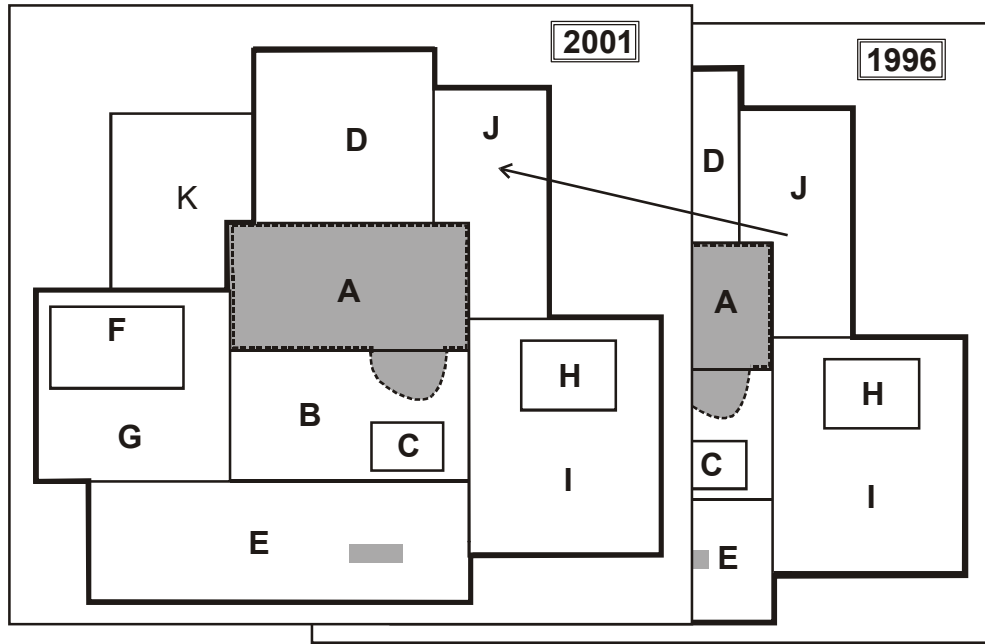
Figure 28. The Spatial Contiguity Rule



Note: CSD F (outlier) has sufficient flows – either $\geq 50\%$ forward or $\geq 25\%$ 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 $\geq 50\%$ forward or $\geq 25\%$ reverse commuting flows.

5. **The Historical Comparability Rule:** To maintain historical comparability for CMAAs 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 29.

Figure 29. The Historical Comparability Rule



CSD Included	
—	CMA boundary
—	CSD boundary
■	Urban area
- - -	Urban core
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.

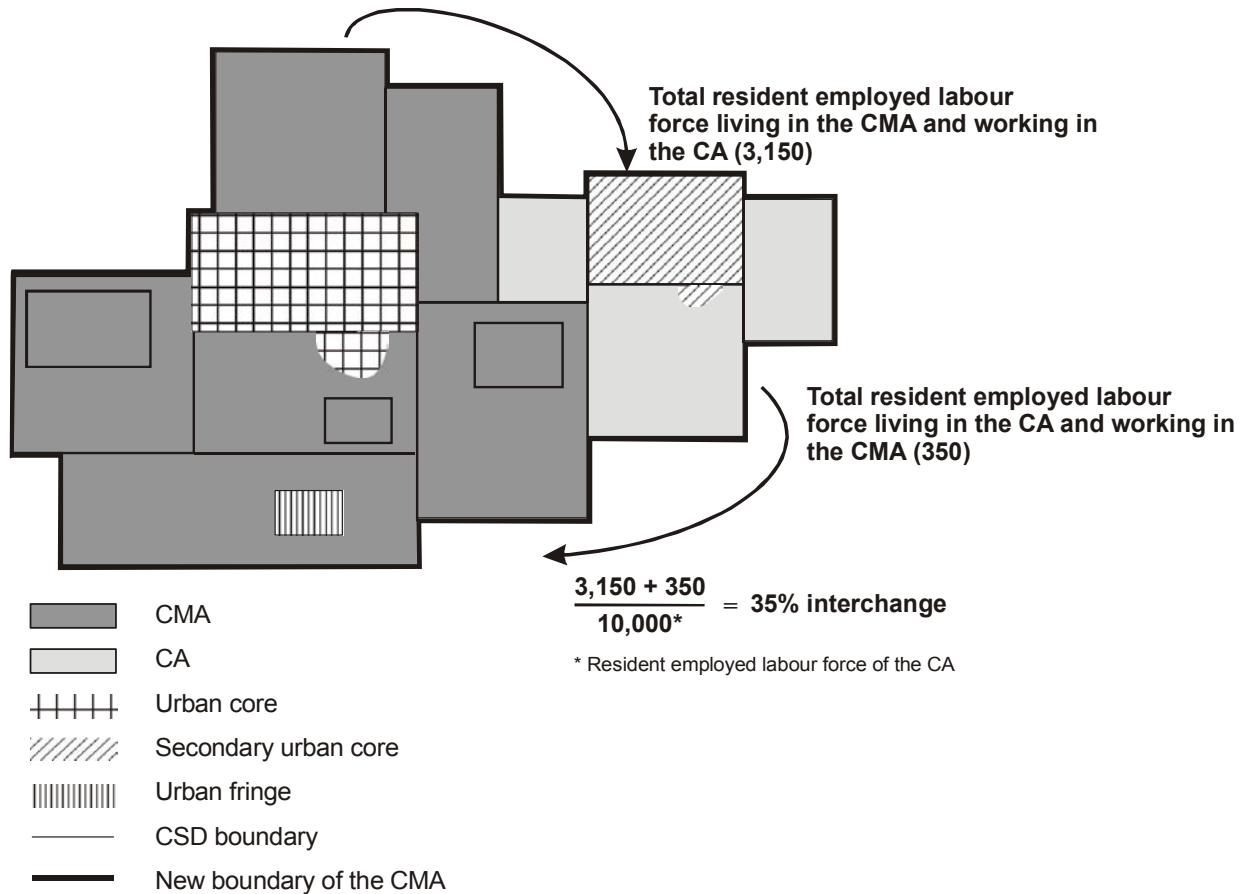
7. **Merging Adjacent CMAs and CAs:** A CA adjacent to a CMA can be merged with the CMA if the total percentage commuting interchange between the CA and CMA is equal to at least 35% of the employed labour force living in the CA, based on place of work data from the decennial census. The total percentage 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 30. Example of a Merged Census Metropolitan Area and 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.Lab.)
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.)

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