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2011 Census and Geography Dissemination: Proposed directions

Federal–Provincial–Territorial Committee on Census of Population

September 23, 2009

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Outline

- Introduction
- Dissemination consultations
- Release strategy
- 2011 Census and geography products and services
- 2011 Census analysis
- 2011 Census dissemination: proposed directions
- Planned next steps and questions
- Contacts

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2011 Census
Release schedule and strategy (proposed)

Major releases by topics and variables

- Staggered from February 2012 to Winter 2013
- Other products available at release time and later in the cycle
- Primarily use Internet for the release of results

Promoted via

- *The Daily*
- 'Spotlight' section on the census web module
- Day of release announcements ('My account' subscribers)
- Online discussion forum (New)
- Media release meetings and FPT meetings
- Regional office advisory services and communications

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2011 Census
Web pages and navigation (proposed)

Census main page

- 'Spotlight' to stay
- Links to 2001, 2006 and 2011 censuses of population
- 2011 Census quick links
- 'Features'

Navigation and searching

- 'Search 2011 Census data' enhanced
- Navigation by product type and release topic

2011 Census
Standard data products (proposed)

2006 product	Proposed status
Population and dwelling counts	Keep for 2011
Highlight tables	Keep for 2011
Topic-based tabulations (TBTs)	Keep for 2011
Census trends	Keep for 2011 (more marketing)
Profiles:	
2006 Community profiles	Keep for 2011
Aboriginal population profile	Keep for 2011
Census tract (CT) profiles	Keep for 2011 (more marketing)
Cumulative profile and release components	Keep for 2011
Profile for Dissolved Census Subdivisions	Keep for 2011
Federal electoral district (FED) profile	Keep for 2011
Profile for Statistical Area Classification	Keep for 2011

2011 Census
Standard data products

2006 product	Proposed status
Profiles (continued):	
Special interest profiles	(More marketing)
Print profiles ($)	Discontinued in 2011; data are available in the cumulative profile and release components.
Public use microdata files (PUMFs)	Keep for 2011 (Individual and hierarchical files)
Aboriginal Peoples of Canada CD-ROM	Investigating CD-ROM format discontinuation in 2011. Information to be available on-line
Portrait of Official-language Communities in Canada DVD-ROM	Investigating DVD-ROM format discontinuation in 2011. Information to be available on-line

2011 Geography Spatial and Attribute information products

2006 product	Proposed status
Postal Code Conversion File	Keep for 2011
Postal Code by Federal Ridings File (2003 Representation Order)	Keep for 2011
Road Network File	Keep for 2011
Road Network and Geographic Attribute File	Keep for 2011
Boundary files (13 different levels of geography) – Digital and cartographic	Keep for 2011
Geocoding (user-defined geographies)	Keep for 2011
Mapping	Keep for 2011
Custom retrievals	Keep for 2011
Geographic Attribute File	Keep for 2011
GeoSuite	GeoSuite data to be made available in other products
GeoSearch	Discontinued, but a new interactive mapping tool will be available

2011 Geography Reference products

2006 product	Proposed status
Geography Catalogue	Keep for 2011
Reference guides	Keep for 2011
Working paper series	Keep for 2011
Illustrated Glossary	Keep for 2011
Interim list of changes to municipal boundaries	Keep for 2011
Reference maps	Keep for 2011
Thematic maps	Fewer static maps in 2011, but a new interactive mapping tool will be available

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2011 Census Analysis Release Strategy

- Post-release day articles
  - More analysis released subsequently
  - Published through Statistic Canada's Corporate Publications (e.g., Canadian Social Trends, Education Quarterly, Perspectives on Labour and Income)
  - Continuous releases throughout much of census cycle
- Additional topic-based fact sheets could be published post-release day
  - For example, a fact sheet on immigrant labour market outcomes could follow the Labour release

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Proposed directions for 2011

Day of Release shorter analytical components in more digestible pieces

Investigation the feasibility of user-defined tables

- Complement topic-based tabulations
- From a predetermined list, users can
  - select variables
  - specify standard geographies

Census data / geography product integration

- Interactive mapping tool (NEW in 2011)
  - Links to reference maps
  - Links to selected 2011 Census Internet tables
  - Interactive thematic mapping option

Dissemination – Census and Geography products

- Print and CD-ROM formats discontinued

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Research Paper

Geography Working Paper Series

Urban Perspectives and Measurement

by Henry A. Puderer

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Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

Although not the intended purpose, the array of municipal types that has evolved has a natural ordering reflecting the urban-rural continuum. As a result many Canadians perceive an implicit urban-rural dichotomy based on municipal types.

In the early 1900s the demarcation between urban and rural was clear. Urban was comprised of cities, towns and villages regardless of size and rural was the rest. This perception was a product of the time when "going to town" meant hitching up the horse and buggy and going to the nearest city, town or village to get your provisions.

Until the 1950s, as part of the national census, Statistics Canada explicitly defined urban based on three municipal types (city, town and village). All other types were considered rural. This uncomplicated approach was consistent with the view that urban and rural distinctions were mirrored in the municipal structure and their types.

As the use of the automobile expanded, the distinction between urban and rural municipal types became less clear as development leaped over the municipal limits of cities and towns. The closest village could be by-passed in favour of the larger town further away which offered more choice in goods and services. The urban status of smaller villages and towns was in doubt. The clear distinction previously associated with municipal type was disappearing, and the administrative perspective of urban and rural was increasingly insufficient to properly describe the Canadian landscape.

Statistics Canada no longer explicitly uses municipal types to describe the urban-rural continuum. However, the information required to segment the urban-rural continuum to differing degrees of detail depending on the analytical needs of the user is available.

2.2 The "Form" Perspective

When we refer to the form perspective we are talking about physical form – what you can see on the ground. The bricks and mortar attributes relating to physical form include population concentration, population density and land use (e.g. residential, commercial, industrial, transportation network development, farming, and open space). The values of these attributes are perceived as being opposites at either end of the continuum. The urban end has high population concentration and density, intensive transportation development, residential, commercial and industrial land use but little if any farming and open space, and the land use is for the most part fixed, with little opportunity for change. Rural is the opposite.

The form perspective began to be widely accepted after World War II and was in part a reaction to the limitations of the administrative perspective. Aspects of the form perspective were slowly introduced into the administrative approach over the 1950s and 1960s.

By the 1970s, Statistics Canada no longer explicitly included any administrative considerations in the definition of urban. At that time a statistical approach based only on form was introduced. This methodology essentially identifies areas with a population concentration of at least 1,000 and a minimum population density of at least 400 per square kilometre as urban. All other areas

2.3 The "Functional" Perspective

The functional perspective is more abstract than the form perspective in the sense that you cannot see the settlement limit as easily and because it can include what in the form perspective would be both urban and rural areas. The functional perspective is based on linkages between where a person lives and where they work, shop, access health care, recreate, what can be called a person's activity space. When the activity spaces of many people are aggregated a socially and economically integrated area can be defined. This is referred to as a "functional area".

These functional urban areas include a central urban core and highly integrated outlying areas that can extend beyond a single municipality and often includes more than one adjacent incorporated area. In general, the larger the central urban core, the stronger its influence over surrounding areas and the larger the functional area.

In practice the functional perspective is the basis for defining metropolitan areas or large urban centres in many countries including Canada. The interaction between the outlying areas and the central urban core and the intensity of this interaction is measured using the relationship between where a person lives and works. In this context, the functional area is perceived as the main labour market of these large urban centres.

In Canada, this approach has been used since the 1970s to define large and small functional urban centres respectively called Census Metropolitan Areas (CMAs) and Census Agglomerations (CAs) - a CMA has a core of at least 50,000 while a CA has a core of at least 10,000 (see www12.statcan.ca/english/census06/reference/dictionary/geo009a.cfm).

2.4 Combination Perspectives

As with social, economic and demographic issues the urban-rural landscape is complicated and diverse. When confronted with these issues it is common practice to cross-classify various socio-economic measures to gain insight and a better perspective rather than trying to address the situation using only one measure. This approach is not as common when dealing with geographic concepts. Nonetheless, there are examples where different perspectives have been combined. Fundamentally, this results in using a cross-classification of geographic concepts.

A number of examples can be found within census releases. There are tables cross-classifying urban areas with municipalities and urban areas with CMA and CA. In fact, in the latter case a further refinement of the urban and rural areas within CMA/CAs is often used to highlight the differences: urban core – the central urban area of a CMA or CA; urban fringe – the urban areas outside the core but within the CMA or CA; and rural fringe – the rural areas within the CMA or CA.

One of the more recent combinations involves the use of Census Metropolitan Influenced Zones (MIZ). MIZ is an extension of the CMA/CA concept to better show the influence of metropolitan accessibility on non-metropolitan areas. Statistics Canada has combined the MIZ classification

In the absence of a definitive one size fits all perspective of the urban-rural continuum, Statistics Canada has sought to ensure that users have at their disposal various options to define the urban-rural dichotomy or an urban-rural continuum that suits their specific analytical and policy related needs. The options available provide significant flexibility and users are encouraged to define their own construct of urban that best serves their analytical needs. Users should contact their nearest Statistics Canada Regional Office, if needed, for additional clarification and for guidance on what data is available or could be produced.

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Research Paper

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Defining and Measuring Metropolitan Areas: A Comparison Between Canada and the United States

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Table of contents

1.0 Introduction

This paper is divided into two parts. The first part (section 2) is descriptive and gives background and context to the rationale behind the current methodology used to define metropolitan areas in Canada. The second part (section 3) of this paper compares the Canadian methodology for delineating metropolitan areas with the methodology used in the United States.

2.0 Defining metropolitan areas: evolution of a concept, model and measurement[1]

2.1 Historic review

Statistics Canada defined metropolitan areas for the first time as part of the 1941 Census – called Greater Cities. They were defined as cities with a minimum population of 50,000 along with satellite communities that had a close economic relationship with the central city.

The term census metropolitan area (CMA) appears in the 1951 Census. As in 1941, a CMA is defined as a city with a minimum population of 50,000 along with parts of fringe municipalities with a close economic, social and geographic relationship with the central city. The CMA had a total population of at least 100,000.

For the 1956 Census, the CMA definition was unaltered except that the fringe was delineated using whole municipalities.

For the 1961 and 1966 Censuses, the criteria became more explicit for the delineation of a CMA. Specifically:

1. A principal city (often the central and largest city) with a population of at least 50,000;
2. Municipalities completely or partly in the urban core defined as the principal city and the adjacent fringe having a population density of 1,000 persons per square mile;
3. Adjacent municipalities outside the urban core where at least 75% of the resident labour force worked in non-agricultural activities;
4. A total population of 100,000 or more.

For the 1971 Census, the concept of the main labour market was introduced to define a CMA. The CMA was the territory where a significant number of workers were able to travel from their place of residence to a work place in the urban core on a daily basis. Although the data to support this approach were collected as part of the 1971 Census, they were not available for 1971 Census CMA delineation. So transition criteria were used. Previous census criteria were combined to define the urban core (i.e., the continuously built-up area) of a CMA – an area having a population density of 1,000 per square mile and a population of at least 100,000. In place of commuting data, whole municipalities were added if they were within 20 miles of the urban core limit if they met two criteria:

1. The percentage of the resident labour force employed in primary activities was smaller than the national average.
2. The population growth of the municipality over the period 1956 to 1966 exceeded the CMA growth rate.
3. If only one of the above but not both were met, then a municipality was still included if connected to the urban core via a major highway.

1. Additional details on the material presented in this section can be obtained from the following: *Census metropolitan area/census agglomeration program: a review, 1941-1981*, Grafton Ross, Geography Working Paper No. 8, Catalogue no. 99-978; *2001 Census Dictionary*, Statistics Canada, 2002, Catalogue no. 92-378-XPE.

2.4 Measurement

As the CMA model evolves, so does the **measurement,** specifically the measurement of the urban core and the hinterland. Essentially, the core is defined on the basis of morphology measures, whereas the hinterland is defined using relational measures.

In the absence of documentation on the criteria used, it is not clear exactly how the CMA was measured prior to 1961. However, since the final delineations are available and since the CMA prior to 1961 was essentially the urban core, it is possible to make a very good inference, especially since the urban criteria are documented. In this instance, the start point was an administrative measure: a city of at least 50,000 along with adjacent whole or part cities. Whether the adjacent area was determined by negotiation with the cities or whether a density measure was applied is not known. What is known is that the administrative/city approach was retained to define the core with a decision to include whole cities by 1956.

With the 1961 and 1966 Censuses, this urban measurement approach is explicit in the criteria to delineate the urban core: a city of 50,000 plus the adjacent fringe where a density of 1,000 per square mile is attained. By 1971, the administrative/city requirement has been dropped and a strict statistical measurement is being used, namely the urban area (an area with a minimum of 1,000 people and a density of 1,000 persons per square mile) where the urban area population is at least 100,000. The statistical approach has been maintained to the present census with minor changes to support metric conversion (now 400 persons per square kilometre) and a change in the unit of measure to define urban areas (from the census collection unit to the block).

As noted in section 2.1 Historic review, measurement of the hinterland started with the 1961 Census. From 1961 through to 1971, although the specifics differed slightly, measurement of the hinterland used stock data – municipal population growth rates and characteristics of the labour force. From the 1976 Census until now, the spatial relationship between municipality of residence and municipality of work has been used. As with the urban core, minor changes have occurred. For example, in 1986 the threshold for forward commuting increased from 40 to 50%. This change reflects a number of inputs: imputation for non-response to the place of work data, 50% approaches the national average for out commuting and 50% reflects a majority linkage.

2.5 Impact of the criteria

As noted in section 2.3, the CMA methodology in Canada is concerned with three elements: the core, the hinterland and mergers. The methodology is comprised of seven criteria (or rules). The first defines the core. The next three criteria (forward commuting, reverse commuting and spatial contiguity) are used to define the hinterland of the core. Criteria five and six (historic comparability and manual adjustments) are employed to handle peculiar situations that occur from time to time. The seventh criterion is concerned with the merger of an adjacent CA with a CMA (see Statistics Canada website for a more detailed description of the 2001 Census criteria: http://www12.statcan.ca/english/census01/Products/Reference/dict/geo009.htm).

This section assesses the impact of each of the CMA delineation criteria. The impact of each criterion is expressed in terms of the percentage of the CMA population accounted for by the criterion[3]. By stepping through the methodology in this manner, the intent is to help facilitate the making of international comparisons and the subsequent discussion with reference to the development of guiding principles.

3. Use of population counts for this comparison is overly simplistic since the impact on the characteristics of the population or economic implications of areas added are not taken into account.

Figure 2.5.2 Census metropolitan area population — Percentage urban core

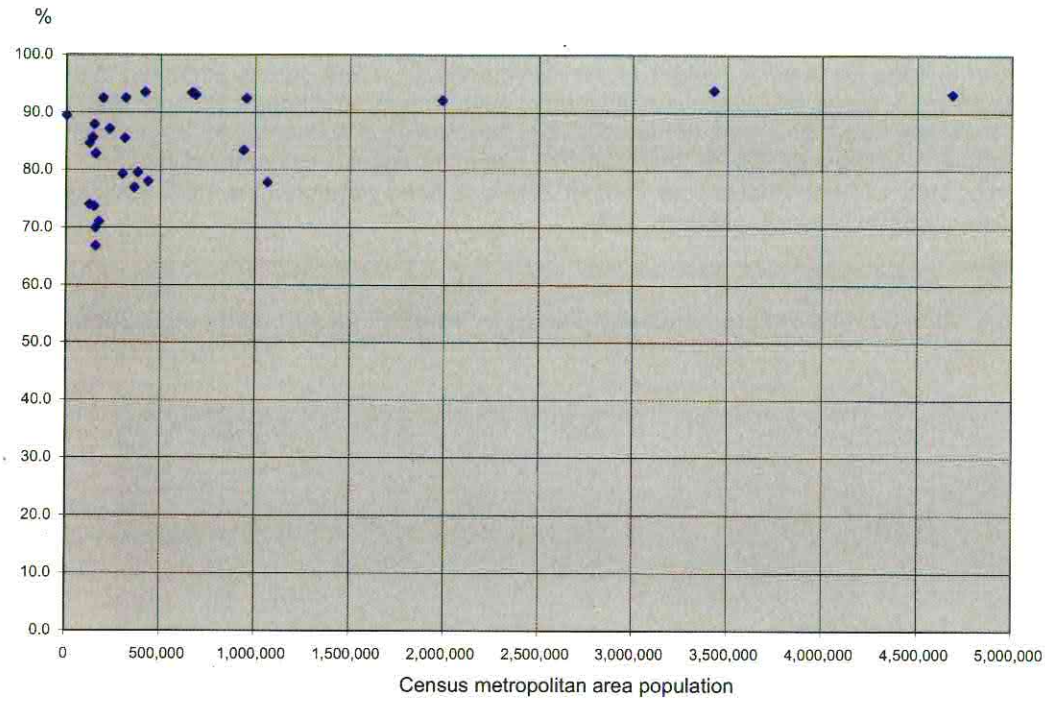


Figure 2.5.3 Census metropolitan area population — Percentage urban core, rule 1

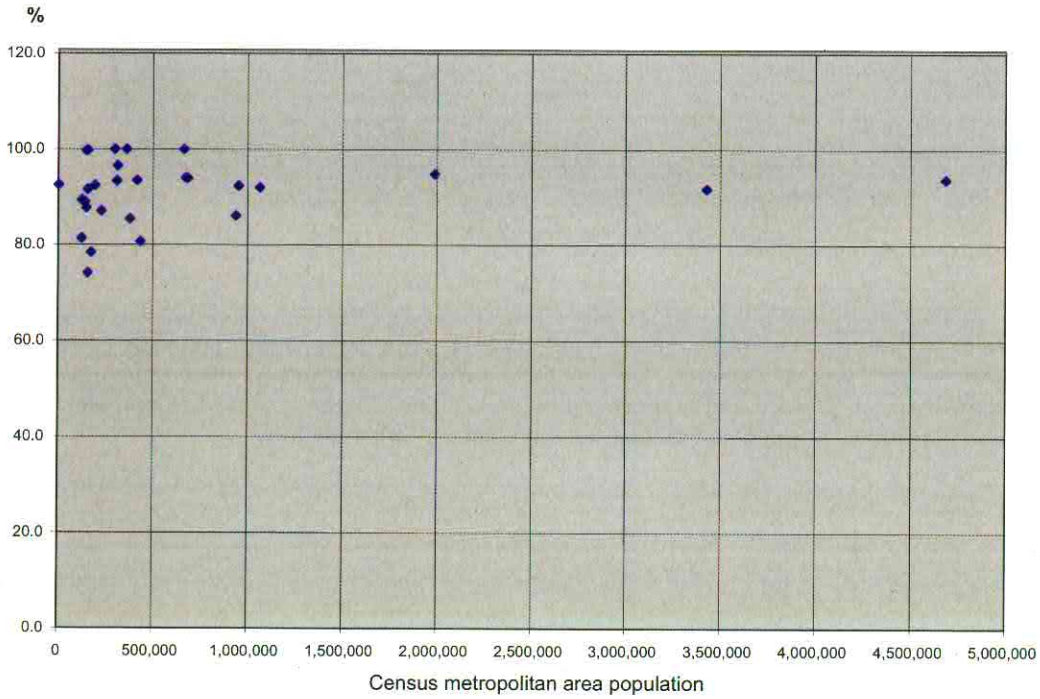
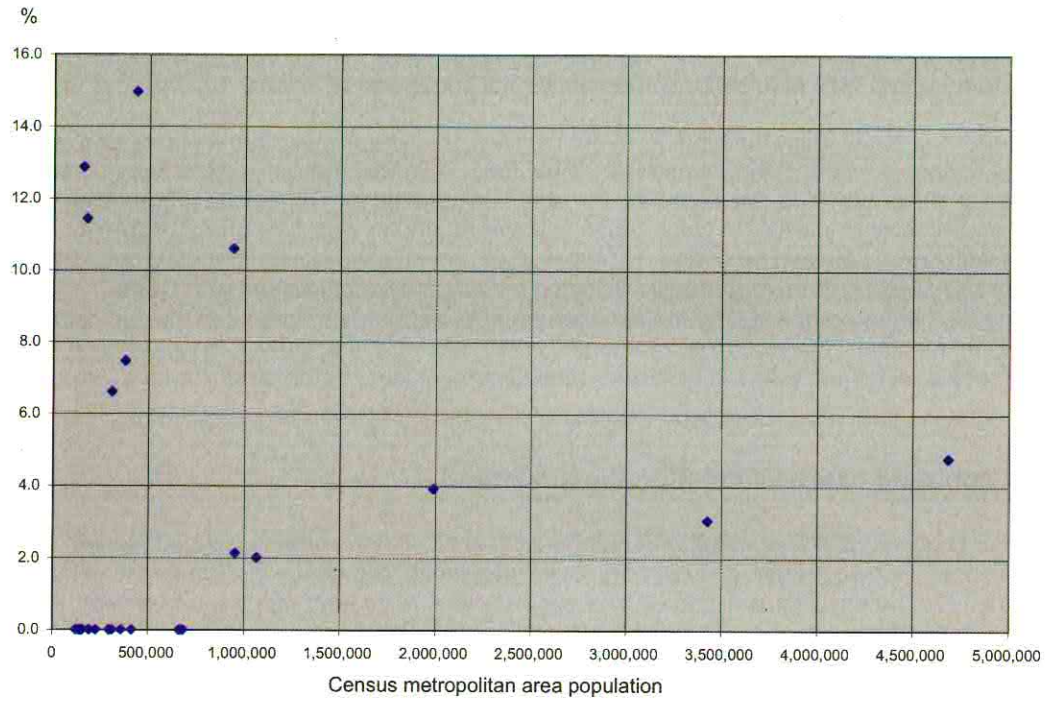


Figure 2.5.5 Census metropolitan area population — Percentage mergers



2.6 Measurement questions

2.6.1 The urban area

The urban area is the start point. For a metropolitan area to be delineated, there must be an urban area. In Canada, urban areas are currently defined based on population and density criteria calculated for a mix of geographic building blocks over censuses since 1976.

Although there have been questions raised about whether population is the best measure, this has not been the focus of discussions since there is a general acceptance of this measure. This is based on the assessment that if an alternative measure like dwelling counts, employment or a combination were used there would not be significant difference in the end results. However, there are some urban area measurement questions that can have an impact on CMA identification.

With the introduction of the block[4] at a national level during the 2001 Census, urban area precision differences are evident between existing delineations and block based delineations. A complete reworking of the urban area delineations using the block would result in the splitting of some existing urban areas and could result in the splitting of some CMAs.

As well, as urban areas have expanded over the years, some have grown into one another. Historical delineations have been retained, but there are questions about whether or not these are still appropriate for delineating the urban area and if commuting data should also not be used to validate urban area delineation.

4. A block is an area formed by the intersection of roads and the boundaries of geographic areas used to disseminate census data.

2.6.4 Thresholds for commuting data

The commuting thresholds required for forward (40%) and reverse commuting (25%) were originally selected so that the CMA delineated in 1976 closely approximated those delineated previously based on stock data that characterized metropolitan areas. A minor adjustment followed to account for changes to the place of work data processing procedures: the forward threshold was increased to 50%. Part of the rationale supporting the 50% threshold was its intuitiveness and clarity as an indicator of linkage with the urban core. Subsequent investigations have also noted that this is close to the national average for workers who work outside of their municipality of residence (the national average is 47%).

An aspect not directly assessed although implied is the question of using a single measure to define the hinterland in the first instance and the selection of thresholds in the second instance. The ideal would be to have multiple measures besides the commuting data to examine their degree of correlation in the first instance and to select a commuting threshold in the second that reflects the totality. Alternatively, if these alternative measures were available and met the pragmatic requirements to support a national statistical programme, then some combined measure could be considered.

2.6.5 Non-metropolitan differentiation

Although the assessment of the threshold value is an ongoing effort, there is a recognition that we are dealing with a continuum where selection of a threshold value has an arbitrariness when used to classify metro from non-metro. For this reason, the census **m**etropolitan area and census agglomeration **i**nfluenced **z**one (MIZ) was introduced as part of the 2001 Census. MIZ is a concept that geographically differentiates the area of Canada outside census metropolitan areas (CMAs) and census agglomerations (CAs). Municipalities (census subdivisions - CSDs) outside CMAs and CAs are assigned to one of four categories according to the degree of influence (strong, moderate, weak or no influence) that the CMAs and/or CAs have on them.

Municipalities are assigned to a MIZ category based on the percentage of their resident employed labour force that has a place of work in the urban core(s) of CMAs or CAs. CSDs with the same degree of influence tend to be clustered. They form **zones** around CMAs and CAs that progress through the categories from 'strong' to 'no' influence as distance from the CMAs and CAs increases reflecting the continuum of the distance decay model (see Figure 2.6.5.1). Together, CMA, CA and MIZ form the Statistical Area Classification (SAC).

Categories:

1. Strong MIZ: more than 30% of the municipality's residents commute to work in any CMA or CA.
2. Moderate MIZ: from 5% to 30% of the municipality's residents commute to work in any CMA or CA.
3. Weak MIZ: from 0% to 5% of the municipality's residents commute to work in any CMA or CA.
4. No MIZ: fewer than 40 or none of the municipality's residents commute to work in any CMA or CA.

In Canada, there is no one geographic building block that satisfies all four of the above attributes. Currently, the geographic building block is the municipality. This geography is definitely relevant but it is not consistent or stable and scale could be better. As a consequence, both longitudinal and cross-sectional comparability can be compromised from time to time. Currently, work is in progress examining the potential of using dissemination areas (introduced as part of the 2001 Census) as the geographic building block. On the surface this would appear to be a better choice in terms of consistency, stability and scale but falls far short of the mark with respect to relevance (see Table 2.6.6.1).

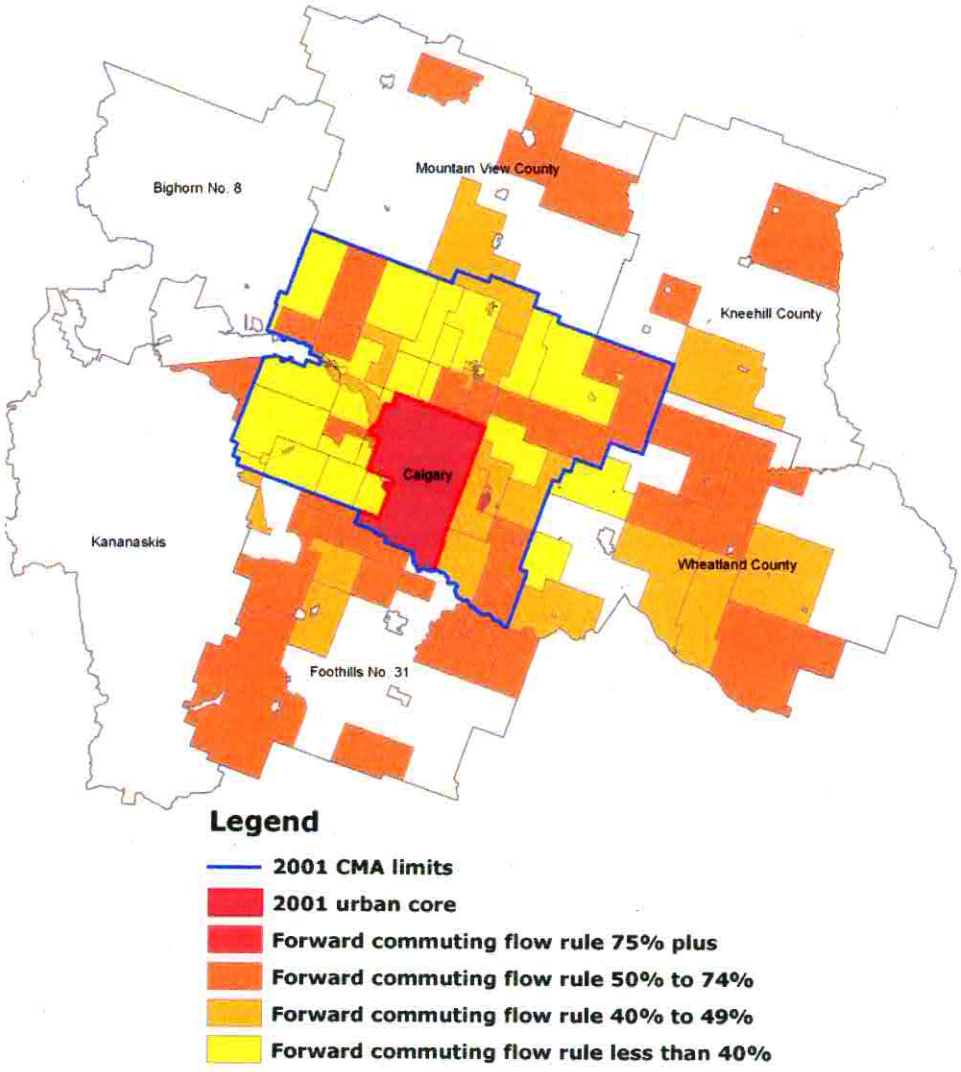
Table 2.6.6.1 Comparison of geographic areas available as census metropolitan area building blocks

Attributes	Census division (county)	Census subdivision (municipality)	Dissemination area (standard output area)
Number	288	5,600	52,993
Ratio to CMA and CA	2:1	40:1	380:1
Limit changes (1996 to 2001)	12 (4%)	2,459 (44%)	...
Mean area	31,292	1,609	170
Standard deviation	425,917	454,654	165
Coefficient of variation	1,361	28,257	97

... not applicable

However, the complexity of geographic association with the urban core may also increase as the building block decreases in size. The maps below present some initial research investigating the potential of using the dissemination area (DA) as the building block. In the two examples below, the land area and population with the CMAs of Québec and Calgary decreased by 32.7% / 2.54% and 12.7% / 2.7%, respectively (see Figure 2.6.6.1 and Figure 2.6.6.2). Québec is the prototypical case where use of the DA as the building block results in a contraction of the limit decreasing the over bounding associated with use of the CSD as the building block. The Calgary example, however, is quite different, with discontinuity and over and under bounding when assessed using the DA. This illustrates the added complexity that can be associated with smaller geographic building blocks.

Figure 2.6.6.2 Calgary census metropolitan area using the dissemination area as a building block



2.6.7 Updates

The Statistical Area Classification (SAC) is recompiled every ten years following the decennial census and applied to the mid-decade census. Updates to limits are done following the mid-decade census to reflect changes to CSDs and new entrants also are supported following each census with the delineation and calculation of urban core and total CA populations. Given the scale of the building block, this is a sufficient update cycle since too few CSDs would cross the threshold values to warrant more frequent updates. This may not be the case if a DA building block were used.

3.1 Model

General elements	United States	Canada
Components	Form (physical) and function (hinterland).	Same

The large population nucleus, the form component, is modelled as the continuously urbanized or built-up area. Both countries use the delineations from their most recent census to define.

The integration of associated communities is the functional component modelled as a daily urban system using the relationship between place of residence and place of work (often termed commuting data).

General elements	United States	Canada
Structure/scope	Part of a broader hierarchy to reflect settlement and activity patterns. ▪ Combined metropolitan statistical areas. Includes two core based statistical areas (CBSAs): • metropolitan statistical areas; ▪ large metropolitan statistical areas may have sub-centres identified called metropolitan divisions • micropolitan statistical areas; and a residual category • outside CBSAs.	Very similar. • Census metropolitan areas (CMAs) • Census agglomerations (CAs) and • Census Metropolitan Area and Census Agglomeration Influenced Zones (MIZ). The MIZ classification explicitly models the urban-rural continuum. See section 2.6.5.

In the United States, there is no explicit modelling to reflect the urban-rural continuum within the standard. However, research is in progress and there are classifications in use such as the county-based United States Department of Agriculture Economic Research Service's urban influence codes.

In the United States, intra-metropolitan differentiation is part of the standard with criteria to define 'metropolitan divisions'. Also, metropolitan areas can be combined to form what I see as 'metropolitan regions'. No similar criteria are included in Canada.

General elements	United States	Canada
Geographic building blocks	Counties, an administrative area and the primary division of most states, is used as the building block to form metropolitan areas and has consistently been the geography of choice for delineating metropolitan areas. (A municipal based standard is also defined for the New England states).	Census subdivisions, an administrative area and the third level of government representing incorporated cities, towns, villages and rural municipalities, is used as the building block to form metropolitan areas and has consistently been the geography of choice for delineating metropolitan areas.

3.2 Criteria and measurement

General elements	United States	Canada
Population nucleus or core	The large population nucleus (or core) is defined according to the criteria used by the U.S. Bureau of the Census to define urban areas. The criteria used delineate cores with a population density of 1,000 people per square mile (ppsm) and includes more-or-less contiguous territory with a density of at least 500 ppsm with a total population of at least 2,500. The building block is the block or groups of blocks called block groups. Urban areas of at least 50,000 are called urbanized areas and urban areas with populations of at least 2,500 to 49,999 are called urban clusters.	Largely the same approach. The urban core is defined according to the criteria used by Statistics Canada to define urban areas. After accounting for metric measurement, the same density threshold is used in Canada but a total population of 1,000 is required. Urban areas from the previous census are retained and contiguous blocks that meet the density threshold are added.

The approaches to define urban areas are very similar in many respects but there are also significant procedural differences. The impact of these differences has not been quantified but in my opinion these differences would have a minimal impact on the delineation of metropolitan areas between the two countries with one possible exception. In the United States there are criteria that determine when an urbanized area should be split. In Canada, large urban areas (50,000 or more) retain their historic limits at the point of contact (in a sense they are split by default) and consequently continue to be urban cores for individual CMAs. Given the limited extent of urbanization in Canada relative to that in the United States at the moment, this is not necessarily a source of great difference in the delineation of metropolitan areas between the two countries. However, if the American urban area criteria were applied in Canada there is the potential that the urban areas supporting the CMAs of Hamilton, Toronto and Oshawa could merge into one urban area and as result support one CMA.

General elements	United States	Canada
Population thresholds	Metropolitan area - an urbanized area (a population of at least 50,000). Micropolitan area - an urban cluster with a population of at least 10,000 but less than 50,000.	Census metropolitan area - an urban area with a population of at least 50,000 but a total population of at least 100,000. Census agglomeration - an urban area with a population of at least 10,000 but less than the CMA thresholds.

Comparison of the population thresholds is interesting. Prior to the 2006 Census, an urban core of at least 100,000 was required for a CMA in Canada. For the 2006 Census, this was changed as described above and is consistent with the threshold required previously in the United States for urbanized areas. As well, during the last formal review of the standard in the United States, one option presented was to raise the minimum population for a metropolitan area to 100,000.

As noted above in section 2.6.2, the revision to the CMA population thresholds was based on a review of functionality within CMAs and CAs. This study took as its inspiration an article by Calvin Beale, entitled 'Poughkeepsie's Complaint or Defining Metropolitan Areas', published in January 1984 in *American Demographics*.

For the 2006 Census, the number of CMAs has increased from 27 (2001 Census) to 33. Two of the six would have been added had the threshold remained at 100,000. So the impact of change

In the United States, the 25% threshold reflects the national average of workers whose county of work is different than their county of residence. Likewise in Canada, the forward commuting threshold reflects the national average and a clear intuitive threshold at 50%. The reverse threshold reflects the calibration made in 1976 relative to the 1971 CMAs and has been retained, given the lesser prominence of reverse commuting as a determining factor. Recent trends indicate however that reverse commuting is becoming more of a factor in the delineation of the hinterland and may warrant a revisit (percentage of CSDs linked to urban core increased from 1.5% in 2001 to 4.9% for 2006).

The difference in commuting thresholds used is related to the difference in the size of the geographic building blocks. On the surface, it would seem that the forward commuting thresholds selected are equivalent, relative to the geographic building blocks used. In Canada, forward commuting accounts for linking about 20% of the CSDs. However, a direct comparison of commuting percentage thresholds is complicated by the fact that the place of work question is different between the two countries. Essentially, with a no fixed place of work option in the Canadian question, percentages calculated are on average 7.5% lower than would be the case if the question were structured as in the United States. This could in turn increase the average out-commuting and require a reassessment of the percentage threshold.

In both countries, spatial contiguity is a requirement when delineating the hinterland. As well, the absolute magnitude of the commuting exchange is used to decide linkage in the event of an association with more than one urban area.

General elements	United States	Canada
Mergers	Two adjacent CBSAs are merged if the central county (counties) of one CBSA meet the commuting requirements to the central county (counties) of the other CBSA.	A CA is merged with a CMA if the total forward commuting interchange between the CA and CMA is equal to at least 35% of the employed labour force living in the CA. CA with CA merging and CMA with CMA merging are not supported. CA identity is not retained except for identifying the urban core as a secondary urban core within the CMA.

The procedures used in the United States to determine when merging of CBSAs should take place are consistent with metropolitan area hinterland rules and the rules for combining metropolitan areas. The criteria used are the most appropriate, since merging results in the creation of a single CBSA.

In Canada, the current criteria reflect a process that is in transition to define an increasingly more complex urban structure as evident by the changes in the methodology governing mergers and consolidation of metropolitan areas since the 1986 Census. Application of the American merger criteria to the CAs in the Toronto CMA would not result in mergers using the 50% forward commuting threshold, although some would be merged using a 25% threshold.

combination criteria could result in the consolidation (combining) of the CMAs of Oshawa and Hamilton with the Toronto CMA. With an employment interchange of 60%, Oshawa would be combined without local consultation. With an employment interchange of 21%, Hamilton would be combined if supported locally.

General elements	United States	Canada
Grandfathering	No	Yes. Accounts for about 10% of the CSDs included in CMAs.
Updating	Until 2009, a new CBSA is designated if a city that is outside of a CBSA has a Census Bureau population estimate of 10,000 or more for two consecutive years or a Census Bureau special census count of 10,000 or more. Until 2009, a new CBSA is designated if a Census Bureau special survey results in the delineation of a new urban area of 10,000 or more outside of an existing CBSA. For these new CBSAs, hinterland delineation will be made using 2000 Census commuting data until 2007. The geographic extent of all CBSAs is to be assessed in 2008, using commuting data from the Census Bureau's American Community Survey. These data will be used to define hinterlands for new 2008 and 2009 CBSAs. CBSAs are not reclassified between decennial censuses.	Recognition of new CMAs and CAs and adjustment for CSD boundary changes takes place every five years prior to next census based on data from the previous census. Calibration of hinterland limits occurs every 10 years for the mid-decade census using commuting data from the decennial census.
Naming criteria	The United States will include up to three names in the CBSA, metropolitan divisions or combined CBSA. The approach is similar for all three entities and will include the names of principal cities in decreasing order of population size. Combined CBSAs will also include state names, will be unique and may use a regional name if appropriate. Local opinion is sought for naming combined CBSAs. There are four criteria for defining principal cities. The first criterion essentially ensures that a CBSA will be named relative to the largest incorporated place or designated place within the CBSA. The other three criteria establish conditions for the second and third name and ensure that the names of additional places are significant places in terms of population size or as employment centres.	In Canada, the name of the urban area is used to name CMAs and CAs. In general, this is also the name of the historic central CSD which, in most instances, is also the most populous of the component CSDs. This convention has been used since the 1971 Census; however, a number of names that do not follow this convention have been grandfathered.

Statistics Canada is carefully reassessing its approach to naming CMAs and CAs and is considering adopting criteria similar to the United States practice. Use of the single name was favoured by Statistics Canada in the past because of its simplicity and stability over time (no change as component CSD populations changed or component CSD structure was modified). The downside of this approach has been confusion of the CMA and CA with the central CSD and the subsequent association of CMA and CA data to the central CSD and ignoring the other component CSDs. Statistics Canada would like to minimize this confusion and is therefore considering a change to the naming convention as one way to improve upon the existing situation.

particularly in the west, were excluded when using the county as the building block. However, the criteria used in the United States have been changed since 1990 and no longer use density criteria in combination with commuting data to delineate the hinterland. In short, the cumulative effect is difficult to assess without empirical data to measure the impact of these differences.

7. **Merger** criteria differ and as a result have an impact on national and individual comparisons. As noted above in the Toronto example, CA merger would not take place using the American criteria. There are eleven other CMAs in Canada where CA merger takes place. Nationally this adds over 700,000 persons to CMAs or about 4%.

8. **Sub-centers (metropolitan divisions)** are not defined in Canada. This does not directly impact either national data comparability or individual metropolitan area comparability between the two countries, but it does hide metropolitan complexity in Canada and does restrict this level of comparability.

9. **Consolidation or combining of metropolitan areas** is in part reflected in the merger criteria used in Canada. As a result, although CAs would not be included in individual CMAs using the American criteria, they would in many instances be included under the combining criteria. The interplay of these two aspects of the methodologies means that in Canada individual CMAs would be smaller if the American methodology were adopted but would be reflected in part using the combining criteria which begins to delineate metropolitan regions. However, the exclusion of CMA to CMA mergers of consolidation in Canada means there is currently no direct off-the-shelf comparability for these delineations between Canada and the United States.

10. There are three groups of comparisons of **Canadian CMAs with United States metropolitan statistical areas** (see Table 3.3.1). Despite the measurement questions, the first group can be compared one for one. The second group has CA mergers. Whether or not these would be mergers when applying United States criteria has not been verified but, based on assessment of the Toronto CMA, likely not. Therefore the best comparison is with combined statistical areas. The third group is like the second except that in this group, CMA with CMA linking could be a possibility. These CMAs need to be carefully assessed in order to generate an appropriate comparison. The shaded CMAs have the potential of becoming part of a consolidated metropolitan region in order to generate an area comparable to a United States equivalent.

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