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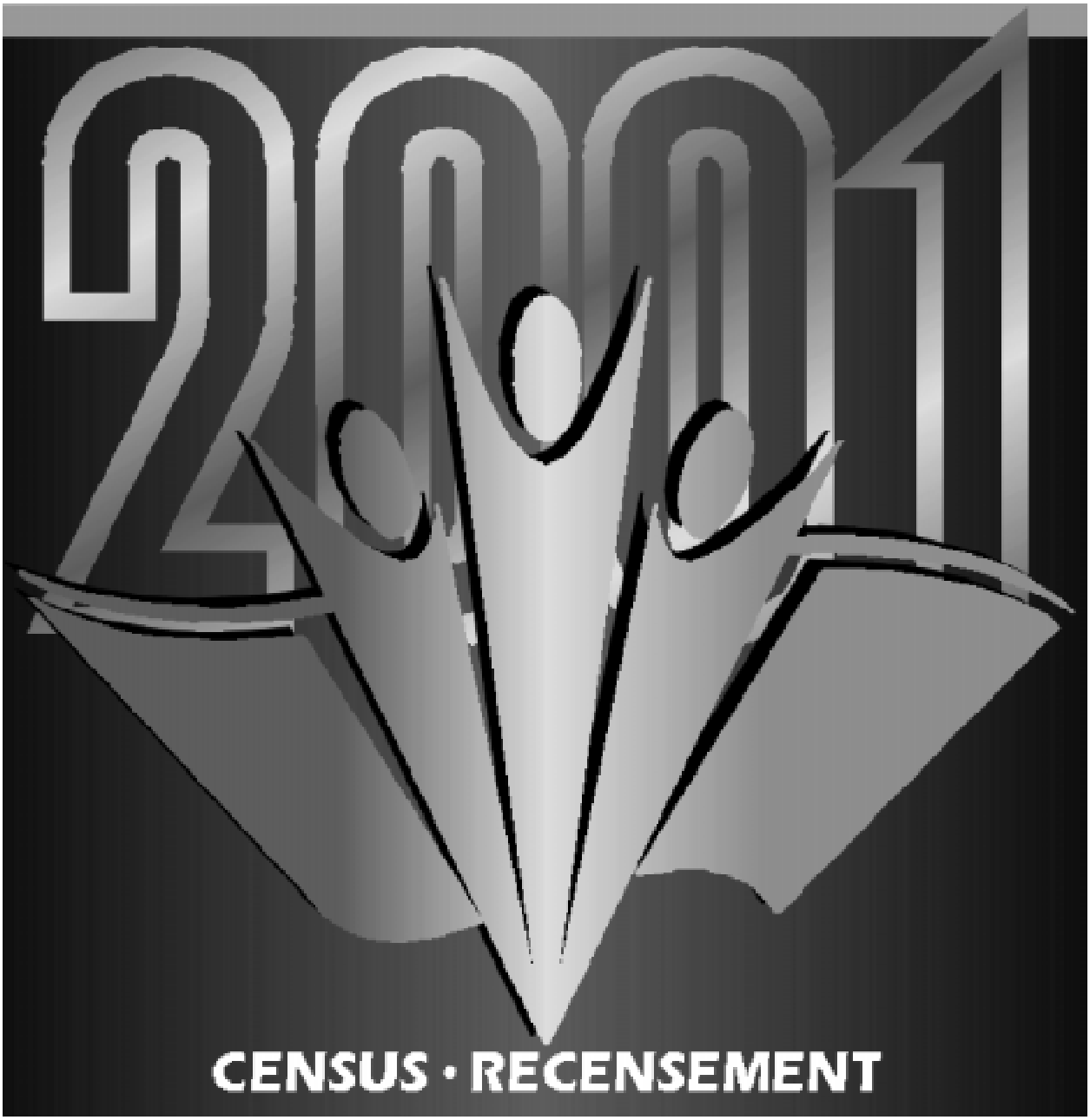
2001 Census Consultation Geography Supplement



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Note of Appreciation

Canada owes the success of its statistical system to a long-standing cooperation involving 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.

Preface

This *Geography Supplement* augments the Geography section of the *2001 Census Consultation Guide*, Catalogue No. 92-125-GPE. It provides additional information to help users contribute ideas and suggestions to Statistics Canada regarding the geographic content of the 2001 Census.

If you wish to make your views known, please submit a letter or written brief to:

Pamela White
Manager
2001 Census Content Determination Project
Statistics Canada
3-B4 Jean Talon Building
Tunney's Pasture
Ottawa, Ontario
K1A 0T6

Tel.: (613) 951-6994
Fax: (613) 951-9300
Internet: consultation2001@statcan.ca

Your comments should be received by the 2001 Census Content Determination Project by September 30, 1997.

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Introduction

Additional information on geography topics is supplied in this supplement to assist users in responding to the questions asked in the *2001 Census Consultation Guide* since some of the changes proposed for the 2001 Census require more in-depth explanation and discussion than could be provided in the guide.

Funding for the 2001 Census

An important objective of the consultation process is to identify the geographic requirements of users so that funding decisions can be taken in full knowledge of both the costs and the benefits of making these changes.

Census Metropolitan Areas

Points for discussion from the 2001 Census Consultation Guide:

- Should the entry criterion for census metropolitan areas (CMAs) be lowered from a population of 100,000 to one of 50,000?
- Is the census subdivision (CSD) still a reasonable building block for CMAs?
- CMAs are updated in terms of their place-of-work data every ten years. With the availability of five-year interval place-of-work data, should they be updated every five years?
- Should the historical continuity criteria be reviewed?

Background

The concept of census metropolitan areas (CMAs) and census agglomerations (CAs) originated from geographic and economic studies showing a strong relationship between the densely populated and highly commercial urban core and the fringe areas served by the urban core. As metropolitan areas have changed and grown over time in Canada, some have developed merged cores and some have cores emerging in what were once fringe or suburban locations. These transformations indicate commercial and residential growth patterns over time, and are especially prevalent in Canada's major metropolitan areas such as Toronto and Vancouver.

Commuting flows

The challenge for Statistics Canada is to develop a spatial measure which best reflects the socio-economic integration of urban and rural fringe areas with the urban core. The place-of-work variable is used as the measure for socio-economic integration. As a result, locations (census subdivisions) are included or excluded from the census metropolitan area/census agglomeration (CMA/CA) based on directional commuting flows between residential and place-of-work locations. Currently, if a directional flow of 50% into the urban core occurs or if 25% of the working population in the CSD come from the urban core, the census subdivision is included in the CMA/CA.

In the past, a value of 50% has been a logical criteria on which to base the decision to include a census subdivision (CSD) in a CMA/CA since it indicates that the majority of that CSDs employed workforce is commuting to work in the urban core of one CMA.

Users have not always accepted these thresholds. Some have suggested the need to lower the values, others to increase them. Lower values could increase the size of the CMA/CA, whereas higher values would reduce the size. In either case, changing the values would affect historical comparability.

The growing incidence of home-based workers and those having no fixed place-of-work location, such as travelling sales persons and contract workers, are not included in the total percentage of workers travelling to a specific urban core. The results from the 1996 Census place-of-work question will indicate changing trends in commuting distances, working from home and those without a fixed work place. Depending on the trends, it may be necessary to review the criteria used to define CMAs/CAs.

Historical comparability

The relationship between the urban core and the surrounding urban and rural areas of CMAs and CAs is not static over time. As changes occur in the number and nature of employment opportunities in the core, or as the size of the urban core or the transportation system is altered (for example, new or modified highways, increased or improved public transit), the relationship between the urban core and its hinterland changes.

Statistics Canada reflects these changes when CMAs and CAs are revised so that policy and programs can be developed and evaluated using information based on relevant and current geographic areas. However, by changing or updating spatial units, problems can be created for those who need to compare trends over time for fixed geographic units. Consequently, Statistics Canada applies rules that help preserve historic comparability. For example, when the historical comparability rule is applied to delineating CMAs and CAs that have census tracts, census subdivisions (municipalities) within a CMA or CA are retained even if the commuting flows no longer meet the required percentage. For the 1996 Census, 33 of the 518 census subdivisions (CSDs) within CMAs were kept because of this rule. As well, the census tracts within these 33 municipalities were also retained.

Historical comparability is also maintained by retaining traditional urban cores when the cores of separate CMAs touch. This approach is taken even though there may be indications that the strength of the links among the core municipalities have altered, suggesting a need to revise the urban core limits. For instance, the urban cores of the Hamilton and Toronto CMAs touch as do the urban cores of the Toronto and Oshawa CMAs. The urban cores of the CMAs of Hamilton and St. Catharines – Niagara are likely to be the next example of this situation.

Update cycle

Historically, updates to CMAs and CAs have only been made every 10 years following the decennial census. With the availability of place-of-work data, should changes be considered every five years?

Entry criterion for census metropolitan areas

Statistics Canada uses a core threshold size of 100,000 to delineate a CMA while the United States Bureau of the Census uses a threshold population level of 50,000. If Canada adopted a 50,000 threshold, the number of CMAs would increase from 25 to 49.

Such a change could have considerable impact on users, as well as on Statistics Canada. At the same time, such a change in threshold might adversely affect users who have developed policies linked to the existing definition of a CMA. However, as the need to harmonise concepts becomes more desirable, this is one of the issues that must be addressed.

A classification system for CMAs could be developed to separate the major CMAs (those being 100,000 plus in population) from those CMAs meeting the lower threshold and serve as a transition approach for research based on a smaller size CMA geography.

PCMAs and PCAs

In 1986, Statistics Canada developed two new geographical areas: the primary census metropolitan area (PCMA) and the primary census agglomeration (PCA). These new areas are components of consolidated CMAs and CAs. However, users have not embraced these changes. Statistics Canada plans to modify the hierarchy for 2001 and eliminate PCMAs and PCAs. Under this proposal, a

consolidated CMA (CCMA) would contain one CMA and one or more CAs. For example, what is now known as the Toronto CMA would become the Toronto CCMA under this proposal and the Toronto PCMA would be the Toronto CMA.

Consolidated CAs – the "small numbers" problem

Under current delineation rules, a CA may be consolidated with another CA if the total commuting interchange between the two CAs is equal to at least 35 percent of the employed labour force living in the smaller CA. For 1996, this occurred only once when, in Ontario, the CA of Wallaceburg was consolidated with the CA of Chatham. Due to the low frequency of occurrence and the volatility of the concept, it is proposed for 2001 that CAs be ineligible for consolidation with other CAs and that the CCA category also be eliminated from the hierarchy for 2001.

CMAs: Summary of Issues

Geography	Issue	2001 Proposal
Census Metropolitan Area (CMA)	Commuting flows	Maintain existing thresholds for CMAs and consolidated CMAs (CCMAs) but explore impact of changed criteria if there is sufficient user demand.
	Historical comparability	Maintain existing approach for 2001 whereby census subdivisions (CSDs) are retained within the CMA and tracted census agglomeration (CA) even if commuting flow has declined below threshold; retain unique urban cores even if two urban cores now touch; explore implications of changing approach for 2006.
	Update cycle	Update for 2001; explore subsequent updating for 2006.
	Entry criterion for CMAs	Maintain 100,000 for 2001; for 2006, explore the implications of adopting a 50,000 threshold.
		Potential for 2006: consider a classification system based on size (e.g., 100,000 CMAs and 50,000 to 99,999 CMAs) should interest by users be strong enough to warrant further research in the area of changed threshold criteria.
Consolidated CMA (CCMA)	Confusion re: primary CMA (PCMA) and primary CA (PCA)	Drop PCMA and PCA terminology.
Consolidated CA (CCA)	Need for CCAs	Drop CCAs for 2001.

Municipal Amalgamations (Census Subdivisions)

Points for discussion from the 2001 Census Consultation Guide:

- Considerable boundary changes have occurred as a result of the amalgamation of municipal boundaries (census subdivisions). How will historical comparability be maintained?

Background

Census subdivisions (CSDs), for the most part, represent the municipalities of Canada. As such, they reflect the local level of government and are one of the most meaningful spatial areas for disseminating census data. Over the past 10 years, an increasing trend for municipalities to amalgamate has been observed, as provincial governments seek out efficiencies in their administration and service delivery.

This trend is, in fact, accelerating. For example, since the 1996 Census geographic reference date (January 1, 1996), 130 dissolutions have been recorded as a consequence of the amalgamation process, compared with a total of 230 dissolutions between 1991 and 1996.

Historical comparability

The following two options should be considered by users concerned with the loss of historical data caused by municipal amalgamations.

(1) Retain current rules. Only official CSDs with applicable boundaries as of January 1, 2001 will be included in the CSD program. User-generated tabulations using enumeration area (EA), urban area (UA) or census tract (CT) aggregations would be required to "best define" the population of a dissolved CSD. (Limitations to the data available using this option include possible data suppression, random rounding or imperfect representation of old CSD limits.) Users could also order a custom tabulation.

(2) Introduce selected historical CSDs to the Designated Place concept. Currently, designated places are sub-municipal areas defined by provincial governments and may offer a solution to the loss of important "community" data. Consideration would also have to be given to the type of output that would be disseminated and the expectations could vary depending on the size of the designated place (DPL) created. The impact on Statistics Canada from both a geography infrastructure and dissemination perspectives would have to be assessed.

Municipal Amalgamations: Summary of Issues

Geography	Issue	2001 Proposal
CSD	Historical comparability	Maintain limits only for official CSDs in existence as of the January 1, 2001 geographic reference date; refer users to data available by urban area or according to census tract or enumeration area aggregations, to approximate historical CSDs; or
		Add selected dissolved CSDs to the geography database infrastructure by means of the designated place concept.

Census Tracts

Points for discussion from the 2001 Census Consultation Guide:

- In 1996, Statistics Canada stopped splitting census tracts (CTs) when they reached a population of 8,000. Should this approach be continued for 2001?
- Should historical comparability be maintained or should the Census Tract Program be rebased to better match municipal planning units or neighbourhoods?
- Should national criteria be relaxed?
- Are current naming and coding conventions adequate?

Background

Census tracts (CTs) are small, permanent, intra-census metropolitan area/census agglomeration areas that are initially delineated by local committees in conjunction with Statistics Canada. CTs have been a geographic area since 1941 and have remained relatively stable since then, except for minor revisions during each census period.

Statistics Canada proposes to make changes to the CT program for 2001 to respond to several issues that have been raised since the 1996 Census. If the proposals described below are implemented, Statistics Canada may be in a position, with the participation of local committees, to adjust CT limits to better reflect local planning or other districts.

Census tract splits

For the 1996 Census, there were no census tract splits performed to handle the population growth in existing centres as of the 1991 Census. An analysis of the 1996 CT population figures shows that 286 CTs of a total of 4,223 CTs have populations over the recommended threshold of 8,000, including 47 CTs that have populations greater than 12,000. Toronto, Montréal and Vancouver have the greatest number of CTs above the maximum population threshold. The following table shows the number of CTs by CMA/CA that exceed the 8,000 population threshold:

1996 Census Tracts Surpassing the Maximum Population Threshold Criterion of 8,000 Persons

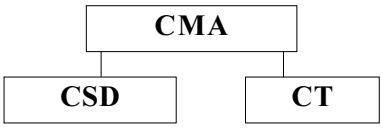
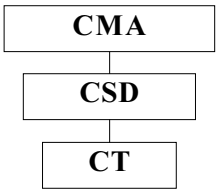
CMA/CA	8,000 to 9,999	10,000 to 11,999	12,000 and over	CMA/CA	8,000 to 9,999	10,000 to 11,999	12,000 and over
St. John's	1			Brantford	1	1	
Halifax	3			Guelph	1		
Saint John	1			London	4	2	
Chicoutimi – Jonquière	1			Windsor	4		
Québec	6	1	1	Barrie	2	1	
Sherbrooke	2	2		Thunder Bay	2		
Trois-Rivières	2			Winnipeg	3	1	
Montréal	26	11	16	Saskatoon	2		
Ottawa – Hull	12	3	1	Calgary	8	2	5
Kingston	2			Edmonton	5	3	1
Oshawa	3	2	1	Kelowna	2	1	1
Toronto	41	16	13	Kamloops	1		
Hamilton	2	2		Abbotsford	2		1
St. Catharines – Niagara	5			Vancouver	39	4	7
Kitchener	2			Victoria	2		
				Canada	**187**	**52**	**47**

Census tract/census subdivision relationship

Although census tracts (CTs) are not required to respect municipal (CSD) boundaries, the majority (94%) of CTs are nested within their respective CSDs (one or more CTs make up the CSD). This includes 99 CTs which have the same limits as a CSD. Of the 4,223 CTs, 253 currently straddle one or more CSDs. Of these, 73 CTs are comprised of two or more complete CSDs where CSDs are grouped together to meet the minimum CT population threshold.

It is proposed that CTs be adjusted to align with CSD boundaries. Census tracts would no longer straddle a CSD or include more than one CSD. The minimum population threshold would not be respected in cases where a CT comprises a single CSD with fewer than 2,500 population. With this adjustment, a CT would always be less than or equal to a CSD.

Hierarchy

Current	Proposed
	

Since most census tracts (CTs) nest within census subdivisions (CSDs), the impact on historical comparability is not likely to be a major issue. However, short term losses in CT stability where CTs straddled CSDs and where CTs included more than one CSD are likely to occur with this change to CT delineation. After the realignment, future shifts to CTs would occur only as a result of CSD boundary changes.

Alignment to physical features

Statistics Canada proposes to realign census tract (CT) boundaries so that, wherever possible, they follow addressable features (roads) found in the Street Network File (SNF). At present, over 45% of CTs in SNF-covered areas have some portion of their boundaries which do not follow physical features.

Approximately 10% of CTs have no clear alternative features that the boundaries could follow, while 35% of CTs have boundaries that could be adjusted to follow SNF features. Under this proposal, it is understood that alignment to census subdivision (CSD) boundaries will also occur, resulting in many CT boundaries that will not align with SNF features (to the extent that CSD boundaries do not follow physical features).

It is proposed that census tract (CT) boundaries be adjusted to align to SNF features, with the primary objective being to align as many boundaries as possible to addressable features. This realignment would be done in co-operation with the municipalities affected.

Census Tracts: Summary of Issues

Geography	Issue	2001 Proposal
CT	Large population CTs (greater than or equal to 8,000)	Reinstate program to split CTs.
	CTs not aligned with CSDs	Align CTs to respect CSDs.
	CTs not aligned with SNF features	Align CTs to SNF features, wherever possible.

Urban/Rural

Points for discussion from the 2001 Census Consultation Guide:

- Should there be greater sub-classification of urban core, urban fringe and rural fringe areas (for example, retail centres versus suburbs)?
- Should the concept of edge cities and/or employment nodes be developed?
- Do we need further geographic differentiation of rural Canada? For example, we could extend the current Census Metropolitan Area concept to define zones of metropolitan influence, and/or incorporate elements of north and south (for example, "remote North") in the definition of rural areas.

Background

Statistics Canada defines urban areas (UAs) as a population concentration of 1,000 people with a density of at least 400 persons per square kilometre based on the previous census population counts. All territory outside urban areas is considered rural. Taken together, urban and rural areas cover all of Canada.

Within CMAs and CAs, central and peripheral urban areas are identified. The central urban area is the large urban area or urban core around which a CMA or CA is delineated. Peripheral urban areas within a CMA or CA, called urban fringe, are those urban areas which are not contiguous with the urban core. The rural fringe is all the territory within the CMA or CA not classified as urban core or urban fringe.

These definitions have been applied with minor variations since the 1976 Census.

Approach

In the past, this approach to defining "urban/rural" worked well to measure the social and economic impact of urbanization at the national, regional and provincial levels and for large CMAs. There have, however, been indications that the simple urban/rural dichotomy, even with the urban core, urban fringe and rural fringe variant within CMAs and CAs, is no longer sufficient. It has been argued that important differences in the social and economic well-being of Canadians are masked by the current urban/rural dichotomy and, consequently, a better classification that reflects the urban/rural continuum is required.

There have been many suggestions to address this "area gap". For example, there are suggestions to provide greater differentiation within the urban core by dividing the current urban core into "old core" and "suburbs" or delineating "edge cities". The classification of urban fringe areas as dormitory communities or employment centres has been put forward. Interest in increased rural differentiation has been even greater. Some users have argued that it is no longer adequate to define rural as a residual of urban thereby grouping together such diverse areas as the rural fringe with northern remote areas.

Revision/segmentation of "rural" areas

Increasingly data users have indicated that there is insufficient differentiation of the area which Statistics Canada defines as "rural".

Currently, the rural areas found within CMA/CAs (rural fringe), outside CMA/CAs but within close proximity and in northern remote rural areas are all grouped together under the same definition.

Users wish to segment this rural mass to more adequately reflect the social and economic well-being of Canadians living in different rural areas.

In the same way that commuting flow is used as a means of determining which CSDs should be included in CMA/CAs, measures could be used to assess the degree of influence or "pull" which the metropolitan areas exert on the surrounding rural areas.

Metropolitan influence zones

One approach being investigated by Statistics Canada to differentiate rural areas, identifies census subdivisions (CSDs) outside of metropolitan areas on the basis of the percentage of the employed labour force living in these areas that work in CMAs or CAs. A four-category sub-classification has been developed (strong, moderate, weak and no metropolitan influence) to further classify non-metropolitan Canada.

CMA
CA
Non-CMA/CA
- Strong metropolitan influence zone
- Moderate metropolitan influence zone
- Weak metropolitan influence zone
- No metropolitan influence zone

Initial results indicate that this metropolitan influence zone (MIZ) classification does reveal significant differences in the social and economic condition of Canadians by spatial area.

North/south dimension

A second means of segmenting rural areas would be to divide the geographic areas into north and south. Statistics Canada is currently researching a series of characteristics which would define a boundary above which a northern classification would apply. Some of the factors used in this study include climate, vegetation, agriculture, population and accessibility.

Geographic classification as a variable on the census database

A third option to improve users' understanding of the social and economic well-being of Canadians would be to change how the geographic labels are managed. The traditional geographic classification approach determines the categories to the enumeration areas (EAs). Another approach would be to develop a series of variables that would be associated with the dwelling or population and which could then be cross-tabulated like other census variables.

This approach could be applied to all levels of geography classification such as urban/rural, north/south, and so on.

Urban/Rural: Summary of Issues

Geography	Issue	2001 Proposal
Urban	Intra-CMA and CA differentiation	Maintain existing approach (urban core, urban fringe and rural fringe) for 2001 but research alternatives (old core, suburbs, edge cities) if sufficient interest.
Rural	Increased rural differentiation, to better reflect the urban/rural continuum	Potential to implement the metropolitan influence zone and north/south concept given sufficient user interest.
Urban/rural	Variable approach	Potential to implement geographic designations as variables given sufficient user interest.