MIGRATION ESTIMATES
USER'S GUIDE

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MIGRATION ESTIMATES FROM TAX RECORDS
FOR CENSUS DIVISIONS/CENSUS METROPOLITAN AREAS

INTRODUCTION

This report presents migration estimates by census division (CD) and/or by census metropolitan area (CMA). Five-year comparisons as shown on our printed standard tables enable users to see the pattern of movement by Canadians, as well as immigration and emigration flows to and from Canada. The data tables are updated on a yearly basis. Migration estimates by CMA are available since 1992-93.

SECTION I -- THE DATA

Data Source

The migration estimates are derived from a comparison of addresses from individual income tax returns for two consecutive years. The period of reference extends from April of one year to April of the following year. A summary of the methodology is provided later in this document.

For the most current data release in October 2013, migration data for 2011 – 2012 were derived by comparing addresses supplied on personal income tax returns filed in the spring of 2011 and 2012.

Timeliness

Migration estimates are available by census division from 1976-77 (and by census metropolitan area from 1992-93). Data on international migration and on internal migration are normally available from 15 to 18 months after the income tax deadline.

The international migration data exclude net temporary emigrants, returning emigrants and non-permanent residents who did not file an income tax return.

An Outline of the Methodology

The data developed from the taxation records are estimates of migration flows between census divisions or census metropolitan areas by gender and broad age groups (under 18, 18 to 24, 25 to 44, 45 to 64 and 65 and over). Starting with 2011-2012 migration estimates are produced for 2011 census division boundaries For 2006-07 through 2010-11 migration, estimates are produced for 2006 census division boundaries. For 2001-02 through 2005-06 migration, estimates are produced for 2001 census division boundaries. For 1996-97 through to 2000-01, estimates are produced for 1996 census division boundaries. From 1992-93 through to 1995-96, the data were produced for 1991 census division boundaries. For the 1986-87 through 1991-92 periods, the census division boundaries corresponded to those defined in the 1986 Census. For the years 1981-82 to 1985-86, the boundaries used are those defined in the 1981 Census and in the previous years the 1976 census boundaries are used.

Migration flows for census metropolitan areas are available since 1992-93, and the boundaries of the 26 CMAs are based on 1991 Census definitions for the period 1992-93 to 1995-96. CMA boundaries based on the 1996 Standard Geographic Coding (SGC) were used in the creation of 1996-97 to 2000-01 estimates. Beginning with 2001-02, CMA boundaries are based on 2001 SGC. The CMAs of Kingston (Ontario) and Abbotsford-Mission (British Columbia) were introduced with this new SGC system. Therefore, the 2001-02 to 2005-06, migration data are available for a total of 28 CMAs. For the 2006-07 to 2010-11 period, CMA boundaries are based on 2006 SGC. The CMAs of Moncton (N.B.), Barrie (Ont.), Brandford (Ont.), Guelph (Ont.), Peterborough (Ont.), and Kelowna (B.C.) were introduced with the 2006 SGC system. Therefore, migration data for that period are available for a total of 34 CMAs. For the 2011-12 estimates, CMA boundaries are based on 2011 SGC. No new CMA has been introduced with the 2011 SGC therefore migration data are available for a total of 34 CMAs.

The development of these data involves four main steps:

1) Geocoding of tax records;
2) Estimation of non-filing dependents of taxfilers, by age group and gender;
3) Identification of the number, age group and gender of migrant taxfilers; and
4) Adjustment for the population not covered by the Canada Revenue Agency Taxation system.

Step 1 ─ Geocoding

The geographic coding of census divisions and census metropolitan areas on the tax records is done primarily on the basis of the **Postal Code**, which is part of the mailing address. In some cases, other pieces of information were used in place of a missing **Postal Code**. Since the 1989 tax files, over 99% of the records could be assigned a census division code.

Step 2 ─ Estimation of Dependents

Since the source file has no direct information on the number and characteristics of nonfiling dependents, this information must be imputed. Up to the 1987-88 period, this was based on the relationship between the dollar value of the total personal exemptions claimed and the number of dependents. A reference table was established relating an estimate of the average number of dependents by age group and gender to filers in a given age-gender-marital status-total personal exemption class. This table was produced each year using a sample file of taxfilers containing information on the exact number of dependents and their relationship to the filer in addition to the characteristics of the filer. Other demographic information such as gender ratios and the age distributions of husbands and wives were also used to distribute dependents by age and gender.

The current system uses the estimation of taxfilers' dependents from the T1 family file (T1FF). The family system creates families by linking all filing family members together and estimates non-filing members from information on the taxfilers' returns,[1] based on such information as deductions/tax credits for dependents. For example, the family system imputes a non-filing spouse wherever a filer has declared him/herself married but was not linked with a filing spouse.[2]

Step 3 ─ Migrant Taxfilers and Dependents

The main source file used contains the basic demographic and geographic information on each taxfiler (and dependent) and covers approximately 95% of the total population. The migrant taxfilers are identified by comparing current and previous census divisions or census metropolitan areas of residence.

Taxfilers' non-filing dependents are assumed to have the same migration behaviour as that of the filer to whom they are assigned.

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[1] See report "Description of the Methodology Used to Create Migration Data from Tax Records" updated by Judy Reid, Small Area and Administrative Data Division: February 1998.
[2] See Lucaciu, Daniela and Harris, Shelley, "Overview of T1FF Processing", SAADD: 1999.

Step 4 ─ Coverage Correction

The final step in the estimation process is an adjustment for coverage, done by age and gender at the census division/census metropolitan area level. Population estimates by CD/CMA are used to create coverage ratios. For migration estimates up to 2000-01, provincial adjustment ratios were used in place of the CD/CMA ratio in the few cases where coverage was abnormally high or low, Beginning with 2001-02 migration data, high and low coverage were identified with a new methodology and a Canadian adjustment ratio was used in place of the CD/CMA ratio. Starting with 2006-2007 migration data, adjustment ratios use the CD/CMA ratio.

The adjustment ratios are applied to the counts of out-migrants derived in Step 3 to obtain an estimate of total migration. The basic assumption is that the population not covered by the taxation system has the same migration rate as that covered by it.

The estimates of international migration are prorated to agree with provincial estimates provided by the Demography Division of Statistics Canada.

Data Quality

Based on a detailed evaluation of the estimates for the intercensal period of 1986-91, a number of observations can be made regarding migration estimates for Census divisions:

> (a) Overall, the estimates of migration are of good quality. It is, however, difficult to make exact comparisons to other annual estimates of migration flows at the census division level. The estimates of net migration have been used to produce population estimates and these have been compared to the 1991 Census counts. The average absolute difference for 1991 was 2.3%. In 12 of 182 cases (6%)[3] the deviation exceeded 5% and in 3 cases, the deviation exceeded 10% (this does not include Quebec census divisions). These deviations are smaller than those obtained from other estimation methodologies and indirectly indicate the quality of the net migration data. It has not been possible to do much evaluation of the flow data.

> (B) In addition to the estimates of migration based on tax records, Demography Division of Statistics Canada also produces estimates of interprovincial migration which are based on Child Tax Benefit records. The concepts underlying these estimates differ from the concepts used in the tax-based estimates. More specifically, the Child Tax Benefit data estimates monthly moves while the tax data tracks annual moves.

No comparable study has yet been done to examine the CMA coverage.

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[3] Montgomery, March 1993: p 15

Availability of Data

Migration estimates are available by census division from 1976-77, and by census metropolitan area from 1992-93.

For the 1976-81 period, no preliminary migration flows between census divisions were calculated. Adjustments were not made at the international level although evaluations indicated the estimates of international migration were too low.

For the period from 1981-82 to 1984-85, migration estimates from tax records were produced twice a year, the first time using a preliminary tax file from the Canada Revenue Agency (available with a 6-9 month time delay) and the second with a more complete tax file (available with a 12-15 month time delay). Because the differences between the two sets of estimates were not large, beginning with the 1985-86 estimates, only one series of estimates was produced. The final file has been used since 1985-86.

Beginning with the 1981-82 estimates, the data on immigration and emigration have been prorated to make them consistent with the most currently available estimates produced at the provincial level by Demography Division of Statistics Canada.

SECTION II -- THE DATA TABLES

Number of Tables

There are four standard data tables. The tables provide a five-year comparison of migration:

Table A: By Province of Origin/Destination
Table B: By Age Group
Table C: By Type of Migration and Gender
Table D: Flows by Census division of Origin/Destination, or by CMA/non-CMA of Origin/Destination

Note: A five-year comparison is not always possible for census divisions due to boundary changes over time.

Data Table Contents

Table A ─ By Census Division or Census Metropolitan Area of Origin and of Destination

Each page of this table highlights flows: in, out and net flows for a specific province, a specific census division (CD) or any one of the 34 census metropolitan areas (CMAs), including non-CMA areas for each province.

Provincial totals provided include intraprovincial migration.

Tables B and C ─ Age Group, Type of Migration, and Gender

Both Tables B and C list in, out and net migration for the highlighted CD or CMA for a five-year period. Table B shows migration by age group while Table C shows migration by type (interprovincial, intraprovincial and international) and by gender.

Provincial totals provided include intraprovincial migration.

Table D ─ Flows by Census Division/Census Metropolitan Area of Origin/Destination

Table D gives details of the flows for a particular CD or CMA. A list is given of the CDs or CMAs with which the selected CD or CMA exchanged any people. The flows are ranked in the table by net migration. The flows for the past five years are shown on the printed tables, though the ranking is according to the most recent period.

SECTION III -- GLOSSARY OF TERMS

Age

Is calculated as of December 31 of the reference year (i.e., tax year minus year of birth).

Census division (CD)

Group of neighbouring municipalities joined together for the purposes of regional planning and managing common services (such as police or ambulance services). These groupings are established under laws in effect in certain provinces of Canada. For example, a census division might correspond to a county, *une municipalité régionale de comté* or a regional district. In other provinces and the territories where laws do not provide for such areas, Statistics Canada defines equivalent areas for statistical reporting purposes in cooperation with these provinces and territories.

Census metropolitan area (CMA)
Area consisting of one or more neighbouring municipalities situated around a core. A census metropolitan area must have a total population of at least 100,000 of which 50,000 or more live in the core.

Dependent
For the purpose of these databanks, dependents are the non-filing members of a family. We do not attempt to measure dependency in any way, but are able to identify certain non-filing family members, and include these in the total counts of people in a given area.

Emigration
Movement from an area in Canada to another country.

Gross migration flow
Sum of the number of migrants between two geographic areas. It is obtained by adding the number of in-migrants to the number of out-migrants.

Index
Is a comparison of the variable for the given area with either the province (province = 100) or with Canada (Canada = 100).

Immigration
Movement to an area in Canada from another country.

In-migration
Movement to a census division or census metropolitan area from elsewhere inside or outside Canada.

Internal migration
Movement between two census divisions or census metropolitan areas within Canada. Internal migration is divided in two categories: interprovincial and intraprovincial migration.

International migration
Movement between an area in Canada and another country. International migration is

divided in two categories: immigration and emigration.

Interprovincial migration
Movement between census divisions or census metropolitan areas located in two different provinces. The province of departure is the "province of origin" and the province of arrival is the "province of destination".

Intraprovincial migration
Movement between two census divisions or census metropolitan areas located within the same province. The CD/CMA of departure is the CD/CMA of "origin" and the CD/CMA of arrival is the CD/CMA of "destination".

Median
Is the middle number in a group of numbers.

Migration
Movement between two geographic areas during the period covered by the estimates. Within Canada, the geographic area of reference is the census division or the census metropolitan area. Other countries are considered as one geographic area.

Net migration
Difference between the number of in-migrants and the number of out-migrants.

Out-migration
Movement out of a census division or census metropolitan area to elsewhere inside or outside Canada.

Taxfiler
Most taxfilers are people who filed a tax return for the reference year and were alive at the end of the year. Starting with the 1993 tax year, those taxfilers who died within the tax year and who had a non-filing spouse had their income and their filing status attributed to the surviving spouse.

SECTION IV – GEOGRAPHY

The data are available for census divisions and census metropolitan areas. The mailing address at the time of filing is the basis for the geographic information in the tables.

The following table shows the coded designators for each level of geography, as well as a brief description of each.

Table 1		
Level of Geography	**Name**	**Description**
41	**Census Metropolitan Area**	There are 34 CMAs in the 2011 databanks: 001, St. John's, Newfoundland and Labrador 205, Halifax, Nova Scotia 305, Moncton, New Brunswick 310, Saint John, New Brunswick 408, Saguenay, Québec 421, Québec, Québec 433, Sherbrooke, Québec 442, Trois-Rivières, Québec 462, Montréal, Québec 505, Ottawa-Gatineau (Québec part) 505, Ottawa-Gatineau (Ontario part) 521, Kingston, Ontario 529 Peterborough, Ontario 532, Oshawa, Ontario 535, Toronto, Ontario 537, Hamilton, Ontario 539, St-Catharines-Niagara, Ontario 541, Kitchener-Cambridge-Waterloo, Ontario 543, Brantford, Ontario 550, Guelph, Ontario 555, London, Ontario 559, Windsor, Ontario 568, Barrie, Ontario 580, Greater Sudbury, Ontario 595, Thunder Bay, Ontario 602, Winnipeg, Manitoba 705, Regina, Saskatchewan 725, Saskatoon, Saskatchewan 825, Calgary, Alberta 835, Edmonton, Alberta 915, Kelowna, British Columbia 932, Abbotsford-Mission, British Columbia 933, Vancouver, British Columbia 935, Victoria, British Columbia

21	**Census Division**	The 2011 databanks contain 293 Census Divisions.

Data in many forms

Statistics Canada disseminates data in a variety of forms. In addition to publications, both standard and special tabulations are offered. Data are available on the Internet, compact disk, diskette, computer printouts, microfiche and microfilm and magnetic tape. Maps and other geographic reference materials are available for some types of data. Direct online access to aggregated information is possible through CANSIM, Statistics Canada's machine-readable database and retrieval system.

How to obtain more information

Inquiries about these data and related statistics or services should be directed to:

Client Services
Demography Division
Statistics Canada
Main Building, First Floor
Ottawa, Ontario K1A 0T6
Telephone: (613) 951-2320
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