

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 only 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.

Timeliness

Migration estimates are available by Census Division from 1976-77 (and by Census Metropolitan Area from 1992-93). Preliminary data on international migration and final data on internal migration are normally available from 15 to 18 months after the income tax deadline. Final data on international migration are produced 12 to 15 months after the preliminary data. Note that only the international portion of the migration figures are subject to revision.

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 the 1996-97 data, estimates are produced for 1996 Census Division boundaries. For 1992-93 through to 1995-96, the data were produced for 1991 Census Division boundaries. For the 1986-87 through 1991-92 period, 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 only since 1992-93, and the boundaries of the 26 CMAs are based on 1991 Census definitions for the period 1992-93 to 1995-96. Beginning with the 1996-97 estimates, the CMA boundaries are based on 1996 Standard Geographic Coding.

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 Revenue Canada-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 non-filing 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.

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 Shelley Harris, "Overview of T1FF Processing", SAADD: 1994.

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. In a few cases where coverage is abnormally high or low, provincial adjustment ratios are used in place of 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 produced by the Demography Division of Statistics Canada.

Previous to the 1996-97 estimates, only immigrants and emigrants were counted as international flows. International migration (starting with the 1996-97 data) now also contains:

- i) returning Canadians (people who have previously filed a tax return in Canada and are now re-entering the country);
- ii) non-permanent residents entering or leaving 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.

³ Montgomery, March 1993: p 15

- (b) A potential source of error in the data results from using the postal code as the geographic identifier. Clearly, some persons use third party mailing addresses which may result in spurious migration. There may also be a problem in small Census Divisions since postal codes may cut across Census Division boundaries and the allocation of postal codes to Census Divisions may involve some mis-assignment.
- (c) 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.

Availability of Data

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 Revenue Canada (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. Two data series are produced to accommodate data updating done by Demography Division.

1. *Preliminary Estimates* (15-18 month time lag). The international component is prorated to the preliminary estimates of international migration provided by Demography Division; and
2. *Final Estimates* (27-33 month time lag). The international component is prorated to the final estimates of international migration provided by Demography Division, while the counts of internal migration remain unchanged.

Each of the above estimates is identified in any tabulations by using the letters "P" (preliminary) and "F" (final).

SECTION II -- THE DATA TABLES

Number of Tables

There are four standard data tables, each with 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. This five-year comparison was not possible for Quebec nor for some Census Divisions in British Columbia due to major Census Division boundary changes beginning in 1992-93, and based on 1991 Census Divisions, and again in 1996-97 based on 1996 Census Divisions. For these areas, comparable data are provided according to the old boundaries up to and including 1991-92 or 1995-96, and according to the new boundaries since 1996-97.

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 26 Census Metropolitan Areas (CMAs), including non-CMA areas for each province. Thus the flows between the provinces, as well as between CDs and CMAs are shown. The name of the CD or CMA for which the table is reporting appears in the upper left corner, along with the CD/CMA number and the province in which it is located. The first row of column one lists a province or territory as origin (with the given CD/CMA as destination). The second row lists the province or territory as destination (with the given CD/CMA as origin). The third row shows the net migration for the given CD/CMA with the province or territory. This is done for each province or territory.

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 gives the age groups of migrants. Table C shows migration by "type": interprovincial, intraprovincial and international migration (see glossary) and also gives the figures for type of migration by gender.

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

For each Census Division or Census Metropolitan Area, Table D gives details of the flows for that CD or CMA. That is, a list is given of the CDs or CMAs with which the selected CD or CMA exchanged any people. Note that the major 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

Census Division (CD)

Refers to the general term applying to counties, regional districts, regional municipalities and five other types of geographic areas made up of groups of Census Subdivisions. In Newfoundland, Manitoba, Saskatchewan and Alberta, the term describes areas that have been created by Statistics Canada in cooperation with the provinces as an equivalent for counties.

Census Metropolitan Area (CMA)

The general concept of Census Metropolitan Areas (CMA) is one of a very large urban area together with adjacent urban and rural areas which have a high degree of economic and social integration with that urban 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.

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.

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.

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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
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Statistics Canada
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Ottawa, Ontario
K1A 0T6

Phone: (613) 951-9720

Fax: (613) 951-4745

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LIST OF DATA PRODUCTS AVAILABLE

The Small Area and Administrative Data Division of Statistics Canada tabulates statistical data derived from administrative records - most notably, the taxfile. The resulting demographic and socio-economic databanks available are listed in the table below, along with their identifying product number and the usual release dates.

Product name	Product number	Release date
RRSP Contributors	17C0006	November
RRSP Contribution Limits (Room)	17C0011	December
Canadian Savers	17C0009	November
Canadian Investors	17C0007	November
Canadian Investment Income	17C0008	November
Canadian Taxfilers	17C0010	November
Charitable Donors	13C0014	December
Neighbourhood Income and Demographics	13C0015	July
Economic Dependency Profiles	13C0017	July
Labour Force Income Profiles	71C0018	July
Families	13C0016	July
Seniors	89C0022	August
Migration Estimates	91C0025	August
Postal Area Profiles	89C0021	September

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