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Flow and Stock Data on International Migration in Canada: Sources, Measurement Issues, and Quality

Submitted by Statistics Canada¹

Introduction

The objective of this paper is to describe Canada's major sources of flow and stock data on international migration and to provide a critical assessment of their adequacy and quality for use in a demographic accounting system and for scientific studies.

Statistics on both immigration and emigration form an integral part of Canada's demographic statistics. However, detailed data on the number, characteristics, and geographic distribution are available only for immigrants. They come from the two main sources of flow and stock data, as can be identified by the data collection systems. The stock data refer to the total population of international migrants in any given country at a particular point in time, and flow data refer to the number of people migrating to a country within any given time period.

Flow Data on Immigration

Statistics on immigrants come from administrative data which are captured by Citizenship and Immigration Canada (CIC). They are compiled from papers which every immigrant must present upon arrival in Canada or the documents related to the granting of landed immigrant status if the person is already in Canada as a non-immigrant. The latter includes students, documented visitors, temporary workers, persons on Ministers' permit, refugees, and illegal arrivals.

Immigrants

Canada uses a legal definition for an immigrant and the term used is "landed immigrant". Landed immigrants are persons who have received "lawful permission to come into Canada to establish permanent residence". (Citizenship and Immigration Canada, 1999). They also have the entitlement

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Working Paper No.8 page 2

to citizenship after 3 years. The corresponding statistics, therefore, relate to legal immigrants only. Thus, the immigration statistics do not include persons in Canada under other categories and Canadians (citizens and "permanent residents") who return to Canada, irrespective of their duration of stay abroad. The immigrants thus described belong to the category of long-term immigrants.

Other Categories (Non-permanent Residents, and Visitors)

Information is also captured/compiled on non-permanent residents (NPR). They consist of (1) work authorization holders (foreign workers and their dependents); (2) student authorization holders (foreign students and their dependents); (3) Minister's permit holders (persons who are allowed to stay in Canada on a temporary basis and their dependents); and (4) refugee status claimants and their dependents. Dependents are those born outside Canada and are residing with the permit/authorization holders (PH) and the refugee status. The refugee status claimants are persons who arrive in Canada and seek convention refugee status claimants. The first three groups are permit/authorization holders (PH). A person is considered a permit/authorization holder if he/she has at least one valid document to be admitted as foreign worker, or foreign student, or with Minister's permit for temporary stay in Canada and has not claimed refugee status (Larrivée, 1998).

In estimating the number of permit/authorization holders (PH), two basic rules are applied. First, the number of PHs is equal to the total number of persons covered by the document. Second, if a person has more than one valid permit/authorization, then the total number of persons and province of residence are taken from a permit/authorization with an effective date closest to the reference date. Third, province of residence is taken, in order, from (i) permit/authorization document; (ii) address file; (iii) Canada immigration centres where the applicant applied; and (iv) by proportional allocation when no information on province residence is not available (Larrivée, 1998).

A person is considered a refugee status claimant (RSC), if he/she has deposited a claim at a Canada Immigration Centre. The following rules are applied in estimating refugee status claimants (RSC). First, a person who is RSC is considered non-permanent resident (NPR) until he/she withdraws from the claim, or is deported, or becomes a landed immigrant. Since the claimant may leave the country or die (these events are recorded in the files), a two-year cut-off time is applied from the application for landing date (or the claim date if the claimant does not have an application yet). For refugee status claimants with an application for landing and with no identity papers, a 5-year cut off is applied, based on a recent decision by the Minister. Second, for the claims submitted under Bill C55 (January 1, 1989 to January 31, 1993), the number of RSCs is equal to number of persons covered by the claim; and for claims submitted under Bill C86 (from February 1, 1993) the number of RSCs is equal to number of claims (each claim represents one person). Third, province of residence of RSCs is taken, in order, from (i) address file; (ii) permit/authorization document; (iii) Canada immigration centre (where the claimant applied; and (iv) proportional allocation when no information on province of residence is available.

The NPRs can be referred to short-term or long-term immigrants, depending on the duration of stay or time limit, as defined in the UN recommendations (United Nations, 1998, p.10). The available data enable us to estimate both the flows (entries) and stocks of non-permanent residents.

In addition to NPRs, the records on inflows include temporary visitors. They are persons in Canada on a temporary basis not intending to work or study. They come on visitor permit and their information is compiled /collected by CIC.

Accessibility of Data

CIC publishes an annual report, entitled, Citizenship and Immigration Statistics, which contains statistics on landed immigrants. The 1996 report, published in 1999 provides data on landed immigrants, and their characteristics. Immigrants are categorized by sources: country of birth, country of citizenship, and country of last permanent residence. The variables included are: age groups and gender and marital status; month/year of landing; official languages; and extended occupation. The data are also given by province/territory of intended destination, and city of intended destination. The one notable omission in this report is the cross-classification of immigrants by educational qualifications. CIC actually compiles data on educational attainment of immigrants. More detailed data are available on both immigrants, and non-permanent residents in machine-readable form from the Electronic Information Management of CIC on special request.

Application of Immigration Statistics

The immigration statistics used for population estimates and projections include landed immigrants and non-permanent residents. For the preliminary population estimates, immigration data by the month of compilation rather than the month of arrival of the immigrant are used. Approximately, 8 months after the end of each calendar year the final immigration statistics by month of arrival become available. The difference between the preliminary and the final figures was found to be very small. The final figures are used for producing the final postcensal estimates. Furthermore, and more importantly, the immigration statistics are established by province of intended destination upon their arrival and not by provinces where they actually settle. For a very small number of immigrants, information on the province of destination is lacking. The small number of immigrants for whom the information on the province of destination is lacking is distributed proportionally.

Since 1991, non-permanent residents (NPR) form part of the population estimates. The four groups of NPR are estimated, as described earlier, from the various files relating to permit/ authorization holders, and refugee status claimants from Citizenship and Immigration Canada. Demography Division of Statistics Canada prepares quarterly and annual estimates of NPR which are used for preparing population estimates.

Quality of Data

The immigrant data obtained from CIC are considered reliable for purposes of preparing postcensal population estimates and projections in Canada. Since immigration is controlled by the government, and the selection of immigrants by various categories is carefully monitored, the recorded number of total immigrants by sex and age should be of high quality. However, the estimation of non-permanent residents (NPR) is a complex operation as noted earlier. A comparison of the number of NPRs with the data from the 1991 and 1996 censuses shows that the estimates from CIC files are higher than those from the two censuses. The NPR estimate from the CIC files as of July 1 in 1991 (395,077) was 26.3% higher than the census figure adjusted for net undercount (312,744). In 1996, however, the NPR estimate from the CIC files (242,309) was only 9.5% higher than that of the census adjusted figure of 221,246 (Larrivée, 1998). The NPR estimates remained fairly stable since 1996; they varied between 237,000 in 1998 and 260,000 in 2000 (Statistics Canada, 2001). A further comparison of the NPR estimate with the number of persons "out-of scope" in the 1996 Census reverse record check (RRC) showed that Demography Division overestimated the NPRs by about 8% (Larrivée, 1998). One reason for overestimating the NPRs is that the permit/authorization holders who leave the country before the expiry date cannot be traced.

Census Stock Data on Immigration

Canadian censuses provide the bulk of the stock data on immigration to Canada. The data collected can be classified as (a) lifetime immigration of the foreign born; (b) landed immigrant population by year of arrival; and (c) immigration from abroad during a specified period of time prior to the census date. An attempt is made here to briefly describe the census stock data on immigration.

Immigration of the Foreign Born and Landed Immigrant Population by Year of Immigration

In the 1996 Census, responses to four questions (Questions 13,14, 15, and 16) asked of a 20 percent sample of the population provide the basic data on country of birth, citizenship, and landed immigrant status of the population by year of immigration to Canada. The questions asked were the following:

- Q.13. Where was this person born?
- Q.14. Of what country is this person a citizen?
- Q.15. Is this person now, or has this person ever been, a landed immigrant?
- Q.16. In what year did this person first become a landed immigrant?

Question 13 has been a traditional question in all the decennial censuses from 1871, and in the quinquennial censuses of 1986 and 1996. Questions 14 and 16 have been asked in all the decennial censuses, from 1901, and in the quinquennial censuses of 1986 and 1996. Question 15 was asked for the first time in 1991, and then in 1996.

A landed immigrant is defined as "a person who has been granted the right to live in Canada permanently by immigration authorities" (Statistics Canada, 1999, p.25). Landed immigrants are also entitled to obtain citizenship after 3 years, and they belong to the long-term immigrant-category. Answers to question 13 by persons born outside Canada according to country of birth provide the information on the number of persons who have immigrated to Canada over the years and who still live in Canada on the census date (lifetime immigrants). The data collected on foreign-born population did not include temporary foreign residents until the 1991 Census. The countries of birth reported refer to the boundaries at the time of the census.

Responses to the question on citizenship provide the information on citizenship status of the total target population, including immigrants. The sum of the foreign born non-Canadian citizens (excluding non-permanent residents), and the naturalized Canadian citizens constitutes the immigrant population. Persons born outside Canada who are Canadian citizens by birth are excluded from the immigrant category. They were born outside Canada to Canadian parents who are included in the non-immigrant population, i.e., Canadian citizens by birth.

The landed immigrant status question, in conjunction with the citizenship question provides information on non-immigrant population (Canadian citizens by birth), the immigrant population (landed immigrants), and the non-permanent-residents (NPR). The NPRs consist of refugee claimants and holders of student authorizations, employment authorizations and Ministers' permits, as well as family members born abroad and living with them.

From the question on year of first immigration (the year landed immigrant status was <u>first</u> obtained), the information on the volume of immigration (for surviving immigrants) for specified past periods is obtained. Actual year of immigration data are available only for the 1981, 1986, 1991 and 1996 Censuses. Due to processing restrictions, the 1971 Census and earlier censuses provided only predefined periods of immigration. The question asked since the 1991 Census was the year of landing, that is, the year a person received his/her landed immigrant status. Prior to the 1991 Census, the

question asked was the year of immigration, the year in which the respondent first immigrated to Canada. There is a limitation to asking a year of landing question, as it does not capture the time of first arrival, or year or arrival. A growing number of immigrants now reside in Canada as non-permanent residents for several years before obtaining their permanent resident status. An additional variable, viz., age at immigration is derived based on year of immigration, year of birth, and an estimated month of immigration.

Age at immigration data were derived for the 1981, 1986, 1991, and 1996 Censuses. This variable is especially useful to distinguish between persons who immigrated as children and those who immigrated as adults.

There will be a new question on place of birth of parents in the 2001 Census. Although this question is not directly related to immigrants, it will provide information on "Second generation Canadians", i.e., children who were born in Canada whose parents were immigrants. The data that can be generated from this question will be useful to analyze socio-economic adjustment of the immigrant population and the economic situation of their children.

Migration from Abroad During a Specified Period

Data on immigration can also be obtained from the 1996 Census internal migration questions, "Where did this person live 1- year ago, that is, on May 14, 1995?". (Question 22); and "Where did this person live 5- years ago, that is, on May 14, 1991?". Since the one year mobility question was asked only in the 1991 and 1996 censuses, the immigration data for 1-year prior to the census are available only for these two censuses. Immigration data for 5-years prior to the census are available for the censuses, 1961, 1971, 1976, 1981, 1986, 1991 and 1996. Persons 1- year of age and over who were enumerated but lived outside Canada 1- year ago would be classified as immigrants during the 1- year period. Persons 5- years of age and over enumerated but lived outside Canada 5- years ago would be classified as immigrants during the 5- year period. Since the respondents were asked to write the name of the "country" of residence for both questions, the information on immigrants from these questions could be obtained by the country of residence 1- year ago, and 5- years ago.

Table 1. Census variables for Estimation of Immigrants since 1961.

	1961	1971	1976	1981	1986	1991	1996	2001
Country of birth	X	X	-	X	X	X	X	X
C. of resid. 5 years ago	X	X	X	X	X	X	X	X
C. of resid. 1 year ago	-	-	-	-	-	X	X	X
Citizenship	X	X	-	X	X	X	X	X
Landed immigrants	-	-	-	-	-	X	X	X
Period/date of immig.	X	X	X	X	X	X	X	X
Age at immigration	-	-	-	X	X	X	X	X
Place of birth of parents	-	X	-	-	-	-	-	X

Note: Data can be cross-tabulated by demographic, social and economic characteristics of the population.

Appraisal of the Data

The stock data collected from the questions on nativity, citizenship, landed immigrant status, and year/period of immigration provide information on "net lifetime immigration of the foreign born only, i.e., net immigration over the lifetime of the population enumerated". Foreign-born persons who returned to live abroad or who died prior to the census date are excluded. Surviving immigrants are counted only once even though they have moved to the country more than once in a lifetime.

The derivation of the immigrant population was slightly different in 1991 and 1996, compared with the earlier censuses. This was because of the addition of the new direct question on landed immigrant status, which was to identify the immigrant population since the census was expanded to include non-permanent residents. The response to the new question in conjunction with the citizenship question provided the total immigrant population (persons immigrating to Canada at the time of the census, or those who had ever been landed immigrants, including Canadian citizens by naturalization) as of the census date.

The stock of non-permanent residents (NPR), as defined earlier, was derived in the 1991 and 1996 censuses. The number of non-permanent residents was obtained by adding the persons who are not Canadian citizens by birth and those who answered "No" to the landed immigrant status question. According to the UN recommendations, the NPR population belongs to the category of either short-term or long-term immigrants. As discussed earlier, the number of NPR from census stock data is generally lower than that of the flow data from CIC due to high undercount of this group in the census and misclassification of the data. Comparison of the 1996 Census data on NPR with the data derived from the 1996 Census reverse record check (RRC) detected the following errors of misclassification: about 24% of enumerated NPRs were classified as immigrants on the retrieval base; 8% of enumerated NPRs were classified as non-immigrants on the retrieval base; 2% of enumerated immigrants were classified as NPRs on the retrieval base; and an undetermined proportion of enumerated non-immigrants were classified as NPRs (Larrivée, 1998).

The possibility of deriving the data on age at immigration from the censuses since 1981 makes the immigration stock data richer for analysis purposes. Further, comparison of census data on immigrant population by year of arrival with the corresponding flow data on immigrants collected at time of arrival, permits an estimation of the number of immigrants who have left the country (return migrants).

The data on the number of migrants from abroad from the 1- year and 5- year migration questions cover only the survivors of immigrants who arrived during the 1- year and 5- year periods prior to the census. Thus, the number of immigrants excludes those who died after immigration and those who returned to the country of origin during 1- year and 5- year periods. Also excluded are the immigrant children who were born during the 1- year and 5- year periods. However, unlike the data from Questions 13, 14, 15 and 16, the data from the 1- year and 5- year migration questions include the Canadian-born persons, foreign-born immigrants, and non-permanent residents.

The data on foreign born by country of birth will be available for almost all the countries in the world. The data were cross-classified by various demographic and socio-economic characteristics of the population which would permit detailed analysis of the characteristics of immigrants and the impact of immigration on the composition of the population.

Comparison With Flow Data

In comparing the stock data on immigrant population from the census, and the flow data on immigrants collected at the time of arrival by Citizenship and Immigration Canada (CIC), the following differences between the two data sources may be noted. Information on where immigrants come from may be obtained from data on "country of birth", "country of last permanent residence", and "country of citizenship". Unlike the stock data from census which identify the source of immigrants by country of birth or country of citizenship, the flow data are based on country of last permanent residence. Many immigrants come to Canada from countries other than their countries of birth or citizenship. Thus, there are difficulties in comparing data on country of origin based on different definitions of origin.

Data on the characteristics of immigrants pose another problem of comparability. With the exception of occupation, the flow data on immigrants refer to the characteristics at the time of migration. The census data, on the other hand, refer to the characteristics at the time of the census. The data on occupation of immigrants according to the flow data refer to "intended occupation" rather than to "actual" occupation at the time of leaving the country of previous residence.

Comparability of immigration data derived from the mobility question is affected by the difference in the time period used, as these data are available in census years (depending upon the census date) and not in calendar years. However, the landed immigrant data, available in calendar years, are comparable with the flow data. A comparison of the immigrant data from the 1996 Census with CIC data is presented in Table 2, indicating the effect of different factors on the difference between the flow and stock data. The 1996 Census Reverse Record Check (RRC) study on census coverage provided the needed data to make this comparison. It can be seen that the census data are lower than the CIC data. The difference between the two is due to (i) census undercount or missed information; (ii) deaths; (iii) emigration, including persons temporarily abroad; and (iv) sampling, response, and processing errors. Of these, the first three are the main factors which together, when adjusted, reduced the total difference from-17.4% to –3.6% for the five-year period (Table 2). The remaining difference between the two data sources may be attributed to other factors which affect the comparability of census stock data with flow data on immigrants. The comparison also shows that the census data require substantial adjustments to derive annual numbers of immigrants for population estimation purposes.

Table 2. Comparison of Data on Immigration from 1996 Census with CIC, Canada, 1991-1995

	Census		Difference (%)							
Year	Unadjusted		Adjusted for M and D	Adjusted for M,D and E	CIC	100*((2)- (6))/(6)	100*((3)- (6))/(6)	100*((4)- (6))/(6)	100*((5)- (6))/(6)	
(1)	(2)	(3)	(4)	(5)	(6)					
1991	177900	194801	195316	207485	230781	-22.9	-15.6	-15.4	-10.1	
1992	212695	232901	233518	248066	252842	-15.9	-7.9	-7.6	-1.9	
1993	211520	231614	232228	246696	255819	-17.3	-9.5	-9.2	-3.6	
1994	188865	206807	207355	220273	224415	-15.8	-7.8	-7.6	-1.8	
1995	181260	198480	199005	211404	212852	-14.8	-6.8	-6.5	-0.7	
1991-1995	972240	1064603	1067422	1133924	1176709	-17.4	-9.5	-9.3	-3.6	
Notes:	M = Missed p	M = Missed persons								
	D = Decease									
				emporarily abi						
	The rates applied were: missed: 9.50%; deceased: 0.29%; and emigrated and abroad: 6.84%.									
			•	g, for exampl	e, missed բ	opulation I	by the expe	ected popul	ation,	
	i. e., enumera	ated + miss	ed populati	ion.						
	(3) = (2) + ((2)									
	(4) = (2) + ((2) * (0.095 + 0.0029))									
	(5) = (2) + ((2) * (0.095 + 0.0029 + 0.684))									
	Citizenship and			· /·		, Census o	f 1996; and	d 1996 Cen	sus	
Technical 'F	Reports, Cove	rage (Catalo	ogue No. 92	2-370-XIE), Ta	ıble 7.3.					

A more serious limitation of the data is the differences in the reported and actual time of arrival of immigrants. A number of immigrants, especially asylum seekers and non-permanent residents, have obtained landed immigrant status after living in Canada for several months/years. The actual arrival of such people predates the time when they are recorded as immigrants. In the census, these persons were to report the year they received landed immigrant status and not the year they first took up residence in Canada. The integration of these persons begins at the time of arrival in Canada, not at the time they receive their landed immigrant status. Hence, the census does not fully capture the integration process/period of persons who have lived in Canada prior to obtaining resident status.

Other Stock Data Sources on Immigration

In addition to the Canadian census, there are four other potential data sources on the immigrant population in Canada. The first is the Longitudinal Immigration Database, which links immigration and taxation administrative records into a comprehensive source of data on the labour market behaviour of the immigrant population in Canada. The database currently covers the period 1980 to 1985, and will be updated annually. Secondly, a new data initiative is the Longitudinal Survey of Immigrants to Canada, which will be designed to improve understanding of how immigrants adjust to life in Canada. The proposal is to interview recent immigrants three times: six months, two years, and four years after immigrating to Canada, with a sample size of upwards of 20,000 recent immigrants. This design will allow researchers to conduct detailed analyses of the factors influencing how new immigrants adapt to life in Canada during the first few critical years in their new country. Thirdly, questions to identify immigrants are also asked on a number of Statistics Canada surveys: General Social Survey (GSS); Survey of Labour and Income Dynamics and the National Population Health Survey. Finally, the Metropolis Project designed to investigate the integration of immigrants and the

effect of immigration and diversity on urban areas. It is a six-year project, 1996-2002. This project was initiated by Citizenship and Immigration Canada and the Social Sciences and Humanities Research Council, and involves nine other federal departments including Statistics Canada. Under the Metropolis Project, four centres of Excellence (Montréal, Toronto, the Prairies and Vancouver) have been established to conduct research at various universities. These potential sources will be able to generate additional detailed data for in-depth analysis of international migration.

Other Data Sources on Outflows and Inflows

Data on outflows from Canada (emigration) are not collected. However, Demography Division of Statistics Canada estimates total emigration from Canada for population estimation purposes. It has three constituents: (i) the number of permanent emigrants; (ii) persons temporarily abroad; and (iii) the number of returning emigrants. A variety of techniques and data sources are used for estimating them. In 1998-1999, there were 54,606 permanent emigrants; 23,179 persons temporarily abroad; and 18,998 returning emigrants which amounted to a total emigration of 58,787 (Statistics Canada, Demography Division).

Emigration

In the absence of collecting emigration statistics, emigration is estimated from two data sources: (i) the Immigration and Naturalization Service (INS) of the U.S. Department of Justice; (ii) administrative data gathered in implementing the federal Child Tax Benefit Program (CTB) in Canada. The former source is used in estimating emigration to the United States, whereas the latter, gathered by the Customs and Revenue Agency (CCRA) is used in estimating emigration to all other countries (Statistics Canada, 2001, p. 209). Since CTB program is not universal and does not provide direct information on the number of adult emigrants, it is necessary to adjust the data from this source. The estimation method takes into account the following three adjustment factors: (i) the partial coverage of the program, that is persons not entitled to the CTB; (ii) the differential propensity to emigrate of children receiving benefits compared to those not covered; and (iii) the number of adults emigrating, based on the number of child emigrants (Statistics Canada, 2001, p. 209). Emigrants estimated by this method are persons leaving Canada who intend to remain abroad permanently (flow data on "long-term emigrants").

Canadians Living Temporarily Abroad

These are persons with no usual place of residence in Canada and are classified as "persons temporarily abroad". An estimate of net change in the number of persons living temporarily abroad is now taken into account in the Canadian population estimates. Data from the Reverse Record Check (RRC), the most important of the Census Coverage Error Studies, are used to estimate the net change in the number of persons living temporarily abroad (Statistics Canada, 2001, p. 209). Since the RRC is a sample survey, the statistics on persons temporarily abroad from this source are stock data.

Returning Emigrants

Returning emigrants are persons returning to Canada, after having previously been classified as emigrants. The flow data from the Child Tax Benefit files (CTB) are used in estimating returning emigrants (Statistics Canada, 2001, p. 209).

The data sources used for estimating emigration, comprising the three elements are subject to various deficiencies, thus causing errors in emigration estimates. Hence, these estimates are of lesser quality.

Working Paper No.8 page 10

The estimates of emigrants, persons temporarily abroad, and returning emigrants are available by age and sex.

Concluding Remarks

The assessment of Canada's major sources of flow and stock data on international migration reveals the following:

First, flow data on permanent immigration compiled by CIC are quite detailed and are reliable for preparing population estimates, projections, and migration analyses. These data represent only "legal" immigration and exclude illegal immigrants. Statistics on illegal immigrants are not available. Their number is not considered to be statistically significant. The landed immigrants, irrespective of the duration of stay, fall into the category of long-term immigrants. In order to comply with the U.N. recommendations, they have to be adjusted further to include non-permanent residents who stay in the country for one year or more. Secondly, the most notable gap is the absence of data on characteristics of emigrants and their destination. However, annual estimates of total emigration by age and sex are available for permanent emigration. Canadians temporarily abroad, and return migration of emigrants. Finally, the census stock data provide a rich time series on immigrants which are quite detailed and of high quality. Data on immigrants, foreign-born populations and naturalized citizens are available based on several questions relating to immigrant population. The crosstabulations of these data with the demographic and socio-economic characteristics can provide detailed data for analytical purposes. One notable limitation of the stock data, however, is that the information on "year of landing" is obtained instead of "year of arrival", and the variables refer to census date and not the time of migration.

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