

**PAA Conference 2015 proposition:**

*Title:* A look at alternative ways to estimate emigration in Canada

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Short Abstract:

Developing accurate and timely estimates of emigration is essential for producing valid population estimates. Despite recommendations by the United Nations to establish a universal definition and implement uniform methods to measure international migration, not much progress has been made. Unlike immigration, there is no legal provision in Canada to maintain records for persons leaving the country or legal obligations to declare an emigration event to Canadian authorities. Therefore, estimates must be derived through secondary sources such as Canadian administrative files or immigration statistics from foreign countries. According to information from census coverage studies, emigration estimates in Canada have systematically been underestimated and appear to explain a major part of population estimates discrepancy with adjusted census. The aim of this paper is to assess the feasibility and efficiency of using new data sources and methods to produce enhanced official estimates of emigration in Canada.

## Long Abstract:

Developing accurate and timely estimates of emigration is essential for producing valid population estimates. Despite recommendations by the United Nations to establish a universal definition and implement uniform methods to measure international migration, not much progress has been made. Unlike immigration, there is no legal provision in Canada to maintain records for persons leaving the country or legal obligations to declare an emigration event to Canadian authorities. Therefore, estimates must be derived through secondary sources such as Canadian administrative files or immigration statistics from foreign countries. According to information from census coverage studies, emigration estimates in Canada have systematically been underestimated and appear to explain a major part of population estimates discrepancy with adjusted census. The aim of this paper is to assess the feasibility and efficiency of using new data sources and methods to produce enhanced official estimates of emigration in Canada.

Statistics Canada's Population Estimates Program must provide the federal government with population estimates influenced upward or downward by components such as births, deaths, immigration, temporary residents and emigration. Emigration estimates require a distinction between those persons establishing a permanent residence in another country (emigrants), those persons living temporarily abroad (net temporary emigrants), and finally the portion of emigrants who have returned to Canada (returning emigrants). Preliminary population estimates indicate that for the year ending June 30, 2014, 61,900 Canadians emigrated, 36,800 emigrants returned to Canada on a permanent basis and net temporary emigration stood at 18,400. Based on these three components, net emigration can therefore be estimated at nearly 43,500, a rate of 1.2‰. More than 80% of all emigrants (net) lived in Canada's three most populous provinces, Ontario, British Columbia and Quebec which consist of over 75% of the country's population as of July 2014.

Emigration and returning emigration, relatively rare events in Canada, are presently estimated in Canada using different data sources (administrative data, survey and Census) with important differences in concept and timeliness of data. Data from the US Office of Immigration Statistics are used to estimate emigrants to the U.S. and a combination of data from the Canada Child Tax Benefit (CCTB) program and the Income Tax files (T1FF) are used to derive the number of emigrants to other countries. The total number of child emigrants and returning emigrants are obtained using information from the CCTB which have to be adjusted for coverage since this program is not universal and also for the timeliness of data. Additional adjustments factors have to be applied to take into account the differential propensity to emigrate between children who are eligible for the CCTB and those who are not. Emigration ratio between adults and children is used to estimate the rate of emigration of adults to countries other than the US. The net change in population caused by temporary movements of emigrants (also called net temporary emigration) is currently estimated using two sources. First, the Reverse Record Check (RRC) survey, the most important census coverage study in Canada, to estimate the number of people who left the countries temporarily during an intercensal period and the census to estimate the number of persons who resided outside Canada at the previous census and who have since returned to the country.

Following each census, census coverage studies are carried out to measure census net undercoverage; these estimates are then used to adjust the Census population. To assure internal consistency of the estimation system, an error of closure is calculated and is defined as the difference between the population estimates on Census Day and the adjusted census population. From the information contained in the Reverse Record Check that measure the undercoverage, it is also possible to produce alternative estimates of various demographic components, which may serve as a benchmark to evaluate and often assess quality of official estimates. In the case of net emigration, the RRC figures show that official estimates in Canada were, for at least the last three intercensal periods systematically underestimated, between 20% and 50%, according to RRC lower and upper bound estimates.

The aim of this paper is first to provide a brief description of the current method to measure the three components needed to measure net emigration. In a second step, we will assess the quality of net emigration estimates over the last three intercensal periods by comparing them with estimates produced from the RRC survey. The last section of the paper will consist in a description of alternative methods to produce enhanced official estimates of emigration in Canada using new or existing data sources. The strength and limitation relative to these methods will be exposed. The first method that is explored in this paper consists to add an additional adjustment factor to the estimates produced by the current method using estimates of emigration coming from the RRC to inflate the number of emigrants by main region of origin of net emigration. The second method assessed will be the classical residual method which consists to survive a population from the first census forward to the next census. This method is commonly used to estimate emigration by the US Census Bureau Population Estimates Program for foreign born population and could also be used to estimate native emigration using data from other countries. A similar approach will be explored in this paper using the last three Canadian censuses. Recently, Statistics Canada has been looking to improve its usage of Canadian administrative data (Income tax and benefits, immigration, vital statistics) to start developing an administrative population census using complex record linkage techniques. Estimation of emigration and returning emigrants in Canada using this new data source will be also explored. The method with the smallest difference with the RRC estimates and reducing the most the error of closure for main regions of net emigration will be considered as the best. To compare methods, mean absolute percentage errors (MAPEs) for all main regions of emigration will be used to determine which method provides the most accurate estimates of net emigration according to key quality indicators.