

Projections of Aboriginal Families and Households in Canada

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Abstract

This paper describes a new module that will project families and households by Aboriginal status using the Demosim microsimulation model. The methodology being considered would assign a household/family headship status annually to each individual and would use the headship rate method to calculate the number of annual families and households by various characteristics and geographies associated with Aboriginal populations.

Keywords: Aboriginal, family, household, microsimulation, population projections

1. Introduction

1.1 Background

In November 2013, Aboriginal Affairs and Northern Development Canada (AANDC) commissioned Statistics Canada's Demography Division to study the possibility of preparing projections of Aboriginal families and households using the Demosim microsimulation model, which is capable, among other things, of producing population projections for Aboriginal and non-Aboriginal populations in Canada. These projections of Aboriginal families and households will prove useful in such activities as developing policies relating to housing needs on Indian reserves and determining the future number of lone-parent Aboriginal families in Canada, families that are considered more vulnerable to poverty.

This paper has two main sections. In the first section, we provide a detailed description of the characteristics of the families and households that we want to project in order to meet AANDC's needs, as well as an explanation of what we mean by Aboriginal and non-Aboriginal families and households. In the second section, we outline the methodology that we plan to use in projecting families and households with Demosim.

2. Projected characteristics and definitions of Aboriginal families and households

Before developing a strategy for producing projections of Aboriginal families and households, we should define the contents of those projections. First, we discuss the characteristics that we want to project for families, and we provide a definition of Aboriginal family. We then do the same for households.

2.1 Definition of Aboriginal family

Before defining the term 'Aboriginal family,' we should mention that the concept of family used in this projection exercise is the census family.² Whenever we use the term 'family' in this paper, we mean 'census family.'

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² In the census, a census family is defined as a married couple (with or without children of either or both spouses), a couple living common-law (with or without children of either or both partners), or a lone parent (of any marital

One of the most complex elements in projecting Aboriginal families is to devise a satisfactory definition of Aboriginal family. For the current purposes and for consistency with past projections of Aboriginal families, we accepted without modification the definitions used by AANDC in the most recent Aboriginal family projection exercises (Clatworthy 2006 and 2012). Hence, an Aboriginal family can be defined on the basis of two criteria: inclusion in the Indian Register; and self-reported Aboriginal identity of the persons present in the family. In both cases, the information is available from censuses and the National Household Survey (NHS).³ Using this information, we can establish four subdefinitions of Aboriginal family: (1) Registered Indian family, (2) non-registered First Nations family, (3) non-registered Métis family, and (4) non-registered Inuit family. We can also use this information to define a non-Aboriginal family.

The definition of a Registered Indian family is as follows:

- (1) A Registered Indian family is a family in which the lone parent, in the case of a lone-parent family, or one of the two spouses, in the case of a couple family, is a Registered Indian.

If a family is not a Registered Indian family, we then check the family's Aboriginal identity, which yields three possible definitions:

- (2) A non-registered First Nations family is a family in which the lone parent or one of the two spouses is a non-registered First Nation.
- (3) A non-registered Métis family is a family in which the lone parent or one of the two spouses is a non-registered Métis.
- (4) A non-registered Inuit family is a family in which the lone parent or one of the two spouses is a non-registered Inuk.⁴

If a family does not meet any of these four definitions, it is considered a non-Aboriginal family. The table below provides a few statistics on the number of Aboriginal and non-Aboriginal families in Canada.

Table 2.1-1
Number of Aboriginal and non-Aboriginal families in Canada, 2001, 2006 and 2011

Type	Year		
	2001	2006	2011
Aboriginal	314,200	394,200	477,600
Non-Aboriginal	8,056,900	8,502,700	8,911,900
Total	8,371,100	8,896,900	9,389,500

Sources: Author's calculations based on the 2001 and 2006 censuses and the 2011 NHS. The data are not adjusted for net undercoverage of families.

2.2 Family characteristics to be projected

The family characteristics to be projected, which were selected in consultation with AANDC, are as follows:

1. Province/territory of residence – (1) Atlantic, (2) Quebec, (3) Ontario, (4) Manitoba, (5) Saskatchewan, (6) Alberta, (7) British Columbia, (8) Yukon, (9) Northwest Territories, and (10) Nunavut

status) with at least one child living in the same dwelling. "Children" in a census family include grandchildren living with their grandparent(s) but with no parents present (Statistics Canada 2011).

³ A person who has Registered Indian status is a person who in the census or the NHS reported being registered under the *Indian Act* in Canada. A person of Aboriginal identity is a person who in the census or the NHS reported belonging to at least one Aboriginal identity group, that is, First Nation, Métis or Inuit.

⁴ In the case of mixed couples, we assign a single identity to the family at random, taking into account the size of each Aboriginal identity group.

2. Place of residence – (1) on reserve, (2) in Inuit Nunangat, (3) in a census metropolitan area (CMA) off reserve and outside Inuit Nunangat, and (4) non-CMA off reserve and outside Inuit Nunangat
3. Type of cohabitation – (1) couple family, and (2) lone-parent family by sex of parent
4. Aboriginal category of family – (1) Registered Indian family, (2) non-registered First Nations family, (3) non-registered Métis family, (4) non-registered Inuit family, and (5) non-Aboriginal family.

2.3 Definition of Aboriginal household

It should be noted that, for this projection exercise, we are interested only in private households,⁵ since the population projections that will form the basis of the household projections specifically do not include persons living in collective households.

For these household projections, we do not attempt to define explicitly what an Aboriginal household is. Rather, we try to classify households on the basis of whether they are composed of (1) at least one Registered Indian, (2) no Registered Indians but at least one Métis, (3) no Registered Indians or Métis but at least one Aboriginal member, and (4) non-Aboriginal members only.⁶ By classifying households in this way, we can identify which households have at least one Aboriginal member. We consider such households Aboriginal. The table below provides some statistics on the number of households with at least one Aboriginal member in Canada in 2001, 2006 and 2011.

Table 2.3-1
Number of Aboriginal and non-Aboriginal households in Canada, 2001, 2006 and 2011

Type	Year		
	2001	2006	2011
Aboriginal	422,700	535,000	666,600
Non-Aboriginal	11,140,200	11,902,500	12,654,700
Total	11,562,900	12,437,500	13,321,300

Sources: Author's calculations based on the 2001 and 2006 censuses and the 2011 NHS. The data are not adjusted for net undercoverage of households.

2.4 Household characteristics to be projected

As in the case of family projections, the household characteristics to be projected were selected in consultation with AANDC. These characteristics, which are different from the family characteristics because they are designed to meet different data requirements, are as follows:

1. Province/territory of residence – (1) Atlantic, (2) Quebec, (3) Ontario, (4) Manitoba, (5) Saskatchewan, (6) Alberta, (7) British Columbia, (8) Yukon, (9) Northwest Territories, and (10) Nunavut
2. Place of residence – (1) on reserve, (2) in Inuit Nunangat, (3) in a census metropolitan area (CMA) off reserve and outside Inuit Nunangat, and (4) non-CMA off reserve and outside Inuit Nunangat
3. Household size – (1) one person, (2) two to five people, and (3) six people or more
4. Indicator of the presence of Aboriginal individuals – (1) at least one Registered Indian, (2) no Registered Indians but at least one Métis, (3) no Registered Indians or Métis but at least one Aboriginal member, and (4) no Aboriginal members
5. Indicator of the presence of at least one person under age 19.

3. Proposed methodology for projecting families and households with Demosim

⁵ According to the *Census Dictionary* (Statistics Canada 2007) and the *National Household Survey Dictionary* (Statistics Canada 2011), “private household” refers to a person or a group of persons (other than foreign residents) who occupy a private dwelling and do not have a usual place of residence elsewhere in Canada.

⁶ We decided to use these four categories since AANDC has specific data requirements for Registered Indian and Métis households.

Before describing the proposed methodology, we should point out some of the Demosim projection model's features. Demosim is a microsimulation model for producing population projections. One of its major advantages is that it projects a very large number of characteristics of individuals compared with cohort component projection models. Family and household projections benefit from this wealth of variables.

Demosim is a case-based model, which means that each individual in the population is projected one at a time independently of each other. It therefore, includes little interaction between the individuals being projected; as a result, they do not interact in such a way as to form families or households during the projection.⁷ Consequently, the strategy for projecting families and households will have to be implemented at the individual level.

The proposed methodology for projecting families is the same as the methodology for projecting households. From here on, therefore, we refer primarily to households to avoid needless repetition. The few elements that are specific to family projections are covered in a separate section.

It should also be noted that family projections and household projections are carried out independently of each other, and that there is no internal consistency between the two at the individual level. It will therefore be impossible to produce results that combine family and household characteristics.

3.1 Proposed household projection methodology

The methodology that we plan to use for projecting households involves identifying household heads during the projection by applying headship rates that will be disaggregated by various characteristics. When we identify a household head during the projection, we simultaneously identify a household (1 head = 1 household). This method, which has been in use for decades (United Nations 1973), is known as the headship rate method. The general formula is as follows:

$$\text{Headship rates} = \frac{\text{Number of household heads}}{\text{Population}}$$

The way this works in Demosim is that, on a fixed date each year, we assign a household headship status to each person being projected. The probability of being a household head will depend on each person's characteristics. When a person is assigned headship status, we simultaneously assign the person's household characteristics: household size, Aboriginal presence indicator, and indicator of the presence of at least one minor. This will make it possible to obtain a number of households for all the required characteristics.

3.2 Parameters

At this point, we explain how headship rates are calculated and applied in Demosim. Three series of parameters will be used to calculate the probability that a person will have of being a household head in a given year: (1) the base headship rates, (2) the rates of annual variation, and (3) the household net undercoverage rates.

The first series of parameters we calculate is the base headship rates. We used data from the 2011 NHS to calculate these rates. The first step is to identify a head for each household in the survey. The head is chosen at random from the set of persons who reported being household maintainers in the NHS; there can be up to five maintainers in a household. Headship rates are then calculated for each combination of required characteristics: province/territory, place of residence, household size, Aboriginal presence indicator, and indicator of the presence of at least one

⁷ When computers become sufficiently powerful, Demosim could become a time-based model (simultaneous projection of the entire population). The base population in such a model would include relationships between individuals and, consequently, families and households. With such a model, it would be possible to project individuals as well as families and households simultaneously.

person under age 19.⁸ For application purposes, all the headship rates calculated were disaggregated to take account of the characteristics projected by Demosim: age group, Aboriginal identity, Registered Indian status and marital status.

The second series of parameters consists of rates of annual variation, which, if so desired, can be used to vary the headship rates over time on the basis of past trends. We used data from the 2001 and 2006 censuses and the 2011 NHS to analyze past trends. We considered two periods in identifying trends, 2001 to 2011 and 2006 to 2011. These analyses show that, after the composition of the population's characteristics is taken into account, the trends in headship rates are minor. In fact, much of the change in headship rates is due to changes in the composition of the population, changes that are already captured in the population projections on which the household projections are based.

The third series of parameters consists of household net undercoverage rates. As is the case for individuals, some households are missed by the census/NHS (undercoverage), and others are counted more than once (overcoverage). The sum of these two phenomena yields household net undercoverage. Using coverage studies, we can calculate household net undercoverage rates by the household head's age group, province/territory and household size. These rates are considered in the projection for the purpose of adjusting the base headship rates.

By combining the three series of parameters, we can calculate each individual's probability of being a household head at any time.

3.3 Additional information about family projections

As noted previously, the strategy for projecting families is the same as the strategy for projecting households. Nevertheless, there remain some differences. For example, in the case of a couple family, the family head (or reference person) is chosen at random from the spouses, while in the case of a lone-parent family, the choice is made deterministically, as the lone parent is always the family head. In addition, in the calculation of family headship rates, gender is always taken into consideration so that the sex of the parent in lone-parent families can be determined. Lastly, the undercoverage rates used in the case of families are disaggregated by the age and sex of the family head and by the family's type of cohabitation.

4. Conclusion

To conclude, we should point out that the headship rate method has both advantages and disadvantages. Its main advantage is that it takes account of changes in population composition (age, sex, marital status, etc.) and population growth, two key factors in the evolution of the number of families and households. On the other hand, it does not take into consideration characteristics not projected by Demosim which may influence family and household formation, such as individuals' labour force status and income, the housing situation, socio-economic circumstances and lifestyle preferences. The method of projecting Aboriginal families and households presented in this paper could be used to project other family and household characteristics by adjusting the parameters accordingly. For example, the number of immigrant or visible minority families and households could be projected, and results could be produced for other geographies, such as CMAs.

⁸ Some combinations were not considered because the samples were too small. For example, for on-reserve populations, we consider only three Aboriginal presence indicators: at least one Registered Indian, no Registered Indians but at least one Aboriginal member, and no Aboriginal members. In Inuit Nunangat, we consider only two indicators: at least one Inuk, and no Inuit; we do not take the presence of persons under age 19 into account in the parameters.

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