Denominator Guidelines for Health Surveillance in First Nations Populations in Canada
Denominator Guidelines for Health Surveillance in First Nations Populations in Canada

Prepared by the Surveillance, Health Information Policy and Coordination Unit, First Nations and Inuit Health Branch, Health Canada
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Executive summary

Finding an appropriate denominator to calculate rates for First Nations health data has been a long-standing challenge. This report provides guidance to help health portfolio epidemiologists, analysts and researchers select the appropriate denominator for rate calculations. This guidance is based on a comparative analysis of three existing major data sources: Aboriginal Affairs and Northern Development Canada’s Indian Register, Health Canada’s Status Verification System and Statistics Canada’s Census.

This analysis led to the development of recommendations to identify the most appropriate source to use in given circumstances, and to generate awareness of the advantages and limitations associated with each option.

Recommendations

Indian Register

Use the Indian Register (IR) for calculating rates for the Registered Indian population on and/or off reserve. The adjusted IR is the preferred denominator option for Indian Act registrants.

Limitations
- Late reporting of births and deaths in unadjusted data; however, adjusted IR counts can provide a more complete picture of the Registered Indian population at the national and regional level.
- Community-level data are not available from the IR.
- Inability to systematically record mobility of the population moving on and off reserve.
- Access requires Aboriginal Affairs and Northern Development Canada (AANDC) permission which can take time.

Status Verification System

Use the Status Verification System (SVS) data when rates for those entitled to receive non-insured health benefits are required. The SVS provides the ideal denominator for the calculation of utilization rates of non-insured health benefits.

Limitations
- The SVS is a subset of data from the IR and late reporting of births and deaths is an issue. SVS data are not adjusted for late reporting.
- Like the Indian Register, information on moves on and off reserve is not updated regularly.

Census

Use census counts when data from other census variables serve as the numerator (education, labour, income, etc.). The census is the only population source for those who identify as First Nations but who are not registered with AANDC and ought to be used for denominators for this population. In addition, detailed census data are available for many First Nations communities.

Limitations
- The most significant limitation of this source is the exclusion of over 80,000 people living on a reserve that did not take part in the 2006 Census or who were missed in reserves that did participate. This is a particular concern for Ontario and Quebec and to some extent, Alberta.
- Data are based on self-identification of Status and First Nations identity.
- Data quality issues around the voluntary 2011 National Household Survey are not yet known.
- Data may be out of date as a census is conducted every five years and intercensal estimates of First Nations and Registered Indian populations are not available.

This report also calls attention to the need to improve the availability and quality of the denominator data from various sources.
Introduction

Health Canada’s First Nations and Inuit Health Branch (FNHIHB), together with its Regional Offices (formerly Regions and Programs Branch) are responsible for providing a variety of programs and services to on-reserve First Nations peoples. In an effort to provide information on the population the Branch serves, measure health outcomes, and make evidence-based decisions for program planning and policy development, rates of different types (immunization, pharmacy and dental service utilization etc.) must be calculated. Calculating rates for this population can be difficult, due to limitations in data sources to provide accurate and timely population estimates. The challenge of finding an appropriate denominator for these rates has been a long-standing issue. Each denominator data source for the on-reserve First Nations population has its strengths and limitations.

The purpose of this report is to provide guidance to those working in the health portfolio in the selection of an appropriate denominator for rate calculations by describing and comparing existing major data sources and outlining their uses and limitations. This report is based on materials presented at a national First Nations population denominator workshop, held in Ottawa in November 2010.

1 Appendix I contains some introductory information on rates. An example of denominator challenges associated with calculating an immunization rate for the on-reserve First Nations population is provided.

2 A list of workshop participants is provided at the end of this document.
An overview of terminology

Throughout this document, reference will be made to the following terms:

a) First Nations population: In this report, this term refers to “Indian peoples in Canada, both Status and non-Status”. It includes all those who self-identify as First Nations (or North American Indian) people. First Nations people are not necessarily “Registered” or “Status” Indians (see below).

b) Registered Indian or Status population: This term includes those registered under the Indian Act. While most people registered under the Act are First Nations, there is a small group that does not identify as First Nations but that has status nonetheless. More information on this group is provided in the Indian Register section. In this report, the terms “Status” and “Registered Indian” are both used. While the terms “First Nations” and “Registered” (or status) are sometimes used interchangeably in this report, they are two distinct and different terms referring to two different but potentially overlapping populations.

c) On reserve: In this report, “on reserve” includes individuals living on Crown land and other lands affiliated with First Nations operating under Self-Government Agreements. A list of on-reserve community types for 2006 Census purposes is included in Appendix II.

Many First Nations now prefer the term “First Nation community,” and no longer use “reserve.” While many of these communities are in rural and remote parts of the country, some are close to or within urban centres. The majority of Registered First Nations people live on a reserve.

d) Band: A band is a group of First Nations people “for whose collective use and benefit lands have been set apart or money is held by the Crown, or declared to be a band for the purposes of the Indian Act…” Each band has its own governing band council, usually consisting of one chief and several councillors… The members of a band generally share common values, traditions and practices rooted in their ancestral heritage. Today, many bands prefer to be known as First Nations.”

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4 Ibid.
5 Ibid.
FNIHB’s mandate

FNIHB supports the delivery of on-reserve public health and health promotion services in addition to providing some targeted services off reserve and in urban centres. Through the Non-Insured Health Benefits (NIHB) program it provides drug, dental and ancillary health services (vision care, medical supplies and equipment, medical transportation, and mental health intervention counseling) to Registered First Nations people and Inuit regardless of residence. FNIHB also provides primary care services on reserve in remote and isolated areas, where there are no provincial services readily available.

FNIHB undertakes many data activities. Some of these include:

1. Surveillance and reporting of the health of on-reserve First Nations people, regardless of whether or not they have status.

2. Planning and delivering health services and determining which First Nations people are eligible for non-insured health benefits. FNIHB is responsible for delivering a variety of programs, and different programs target slightly different populations. For example, some children and youth programs such as the Canada Prenatal Nutrition Program and Maternal Child Health focus on the on-reserve First Nations population. Non-insured health benefits are provided to Registered First Nations people living both on- and off- reserve. This group is made up mostly of First Nations people but also includes some Métis, Inuit and non-Aboriginal people. On the other hand, the Aboriginal Diabetes Initiative targets all Aboriginal people (First Nations, Métis and Inuit), regardless of where they live. Target population differences are important to bear in mind when choosing an appropriate denominator.
Major denominator data sources

Various data sources can be used to estimate the size of the on-reserve First Nations population and serve as denominators for national level rate estimates. This document focuses on the three most widely used and complete sources of data—the Indian Register, the Status Verification System and the Census. Each of these is discussed below and a summary, including associated limitations and other considerations, is presented in Appendix III.

1. Indian Register:

Background

The Indian Register (IR) compiled by AANDC is the official record of the Registered Indian population, living both on and off reserve. While these data are collected for administrative purposes the IR is not designed to enumerate the population or support epidemiologic analysis. Nonetheless, FNIHB often uses Indian Register data to provide the denominator for rate calculations because population estimates are available on a regular basis. Despite the limitations noted below, adjusted counts from the Indian Register can serve as a reliable source of denominator data for the on- and off-reserve Registered Indian populations.

It is important to remember that the Indian Register provides a count of those Registered under the Indian Act at the Band, regional and national level. The following population-related issues must therefore be considered when choosing this denominator source:

- The IR includes some people who are not First Nations by ancestry/identity but who have status. Most of these are non-First Nations women (approximately 15,000) who gained status through marriage (before 1985) to a First Nations man with status. In addition, some non-First Nations children have gained status through adoption but the number is estimated to be very small.
- As the IR provides a count of those who are registered under the Indian Act, it excludes people who identify as First Nations but who are not registered (the non-status First Nations population).
- The Indian Register cannot provide a count of the total on-reserve population as it excludes non-First Nations people without status who live on a reserve (in addition to excluding First Nations people without status, as mentioned above).

The population included in counts from the Indian Register is illustrated in Table 1.

Table 1 – Population covered by the Indian Register

<table>
<thead>
<tr>
<th></th>
<th>On reserve</th>
<th>Off reserve</th>
<th>Total, on and off reserve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered population</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Non-registered population</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Total population, registered and non-registered</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Note: A graphic representation of Indian Register data coverage is provided in Appendix V.

Limitations

a) Late registration of births and deaths: There is no legal obligation or incentive to provide updated birth and death information to the Indian Registrar. Information is usually updated on the reporting of a life event so there is often a lag of many years in the reporting of these events (especially for the off-reserve population). AANDC estimates that in recent years, nearly 70% of all births reported in any particular year actually occurred in a previous year. It is common

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4 Consideration was given to the inclusion of a discussion of other denominator data sources. However, because of the nature and extent of their limitations, the focus of this document is on the three most commonly used national level denominator data sources.

7 AANDC, personal correspondence, February 2011.
for children to be registered between the ages of one to five.\textsuperscript{6} In addition, individuals can remain on the IR for some time after they have died. This severely limits the value of the unadjusted IR counts for surveillance purposes (especially for the population aged 0–5 years, and more specifically for the population aged 0 to 1). Consequently, using the IR counts to calculate immunization coverage and perinatal or early childhood mortality rates can be problematic.

AANDC can provide adjusted counts that account for late reporting. However, this is a labour-intensive and complex process that is undertaken whenever AANDC commissions an updated set of Indian Register-based projections, usually every five years or so. In addition, adjusted data are not available at the Band level. Finally, the IR does not provide community level data. The finest detail at which IR data are available is at the Registry Group level.\textsuperscript{9}

b) Inability to systematically record mobility of the population moving on and off reserve: The Indian Register contains a field for place of residence (on or off reserve). However, this information is not always completely accurate. If mobility were random, unrecorded mobility would not be problematic, since moves in one direction would be balanced by moves in the opposite direction. However, mobility is not random as there have been more Registered First Nations moving onto reserves than leaving for each census since 1966.\textsuperscript{10} Individuals may move back and forth to and from reserve and this information may not be updated if a life event was not reported at the same time as the move. No information on the number of unreported moves is available. In addition, some people with status who have left the country may still be listed on the Indian Register.

c) Legal decisions impacting IR counts: On occasion, legal decisions result in the addition of new registrants. For example, in 1985, Bill C-31 was passed and the Indian Act was amended in an effort to remove gender discrimination from the rules for registration. Individuals could no longer gain or lose Indian status through marriage. Over time, about 117,000 people who had lost status have been "reinstated" through Bill C-31.\textsuperscript{11} The recent McIvor decision (Bill C-3) will ensure that eligible grandchildren of women who lost status through marrying non-Indian men will become entitled to registration under the Indian Act.\textsuperscript{12} Through the creation of the Qalipu Mi’kmaq First Nation Band in Newfoundland and Labrador in September 2011, approximately 23,000 people are expected to be added to the Indian Register by January 2012.\textsuperscript{13}

d) Access to IR data: Permission must be obtained from AANDC for every use of IR data and depending on the level of detail required, obtaining this permission can take time.

For additional information on the levels of geography and age groups for which unadjusted, projected and adjusted historical Indian Register data are available, please see Appendix IV.

Uses

While the unadjusted counts from the IR for the youngest and oldest age groups can be problematic because of late reporting of births and deaths, the adjusted Indian Register provides the preferred denominator option for those who are registered under the Indian Act. An exception would be for analyses of non-insured health benefits, for which Status Verification System would be a more appropriate choice (see next section).

\textsuperscript{6} Aboriginal Affairs and Northern Development Canada, Data quality notes accompanying Indian register requests.

\textsuperscript{7} A registry group is an administrative term applied to a group of Indian Register individuals who have membership in a particular Indian band, or, are descendants from members of that band. A band usually relates to only one registry group except in the following three cases: Six Nations of the Grand River band in the Ontario Region consists of 13 registry groups; Stoney band in the Alberta Region consists of three registry groups (Bearspaw, Chiniki and Wesley); and the Champagne and Aishihik First Nations band in the Yukon Region consists of two registry groups (Aishihik and Champagne).


\textsuperscript{11} Aboriginal Affairs and Northern Development Canada, McIvor v. Canada. www.aadnc-aandc.gc.ca/eng/1100100032434/1100100032434.

\textsuperscript{12} Aboriginal Affairs and Northern Development Canada, Qalipu Mi’kmaq First Nations Band. www.aadnc-aandc.gc.ca/eng/1319805325971/1319805372507.
2. Status Verification System:

**Background**

The Status Verification System (SVS) determines eligibility for non-insured health benefits from FNIHB. FNIHB updates the SVS weekly, using IR data from AANDC. The SVS lists all persons included on the IR who are residing in Canada, including those whose NIHB benefits are administered through self-government, pilot projects or contribution agreements. The population included in the SVS is shown in Table 2.

<table>
<thead>
<tr>
<th>Table 2 – Population covered by the Status Verification System</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>On reserve</strong></td>
</tr>
<tr>
<td>Registered population</td>
</tr>
<tr>
<td>Non-registered population</td>
</tr>
<tr>
<td>Total population, registered and non-registered</td>
</tr>
</tbody>
</table>

*Note: A graphic representation of SVS data coverage is provided in Appendix V.*

For an illustration of Indian Register and SVS population inclusions and exclusions, please see Appendix V.

**Limitations**

Since the SVS is based on data originating from the Indian Register, the SVS is subject to the same limitations of the IR concerning late reporting of births and deaths and migration (see above). While the IR counts are periodically adjusted for late reporting, the SVS counts are not.

**Uses**

Inasmuch as its purpose is to identify persons who are eligible for non-insured health benefits, the SVS provides the ideal denominator for the calculation of utilization rates of those benefits (subject to the late registrations and unrecorded mobility outlined above); it is possible to include or exclude persons who receive their benefits from their Bands, to match the numerator data being used.

3. Census:

**Background**

The census aims to enumerate the entire population of the country, and is the only source that addresses every combination of First Nations identity, status and residence.

While the Indian Register provides counts solely for those who are registered under the Indian Act, the census provides data based on two related but distinct concepts. In 2006, one census question asked if the individual was a Registered Indian as defined under the Indian Act. An additional question asked if the person was a North American Indian (or First Nations person to use more recent terminology). Counts combining these two concepts can be generated. For example, the first question alone would provide a count of the Registered Indian population. Combining the two questions can provide counts on, for example, the First Nations identity population that is Registered, the non-status First Nations population and the non-Aboriginal population that is registered under the Act. A summary of subpopulation data available from the census is provided in Table 3.

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14 The SVS also includes Inuit entitled to receive benefits. This information is provided to Health Canada by Inuit Land Claim Organizations. However, Inuit data can be excluded from those for the Registered Indian population at the request of the user.

15 Seven bands (Akwesasne 159, Nisga’a 671, 677, 678 and 679, Bigstone 478 and 458) administer such benefits directly; their members are still listed in the SVS, but they are flagged as ineligible to receive benefits directly from FNIHB. Members of all nine bands in the James Bay catchment area (081, 058, 057, 059, 061, 056, 060, 095 and 075) are covered under the James Bay Agreement, and so are not covered under the NIHB program unless they leave the area. Counts from the NIHb Annual Report exclude these people. However, these records are available through the SVS and can be included in counts upon request.

16 The Census figures in this report are for those who identified themselves only as First Nations people; the small number who identified as First Nations as well as Métis and/or Inuk are not included.

**Table 3 – Population covered by the Census**

<table>
<thead>
<tr>
<th></th>
<th>On reserve*</th>
<th>Off reserve</th>
<th>Total, on and off reserve</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First Nations person</td>
<td>Not a First Nations person</td>
<td>Total, First Nations and not First Nations</td>
</tr>
<tr>
<td>Registered population</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Non-registered population</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Total population, registered and non-registered</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* Limitations for the on-reserve population must be considered (see Limitations section).

While these two census questions can provide data for a number of subpopulations that the Indian Register cannot, census data can be problematic, especially for the on-reserve population.

**Limitations**

a) **Frequency:** The census is conducted every five years in First Nations and other communities across Canada. Postcensal estimates are prepared for each year after the most recent census based on births, deaths and net migration. These are corrected after the next census to produce intercensal estimates. These estimates are only produced for the total population of fairly large jurisdictions (provinces and territories, large urban centres, etc.). Intercensal estimates of the First Nations and Registered Indian populations are not published by Statistics Canada and are therefore not available for use.\(^\text{18}\)

b) **Non-participation of some reserves in the census:** In 2006, there were 22 incompletely enumerated First Nations communities that did not participate in the census as enumeration was not permitted, or it was interrupted before completion.\(^\text{19}\) The total population of these communities (including both First Nations and non-First Nations people) is estimated at 40,115 (see Table 4). These people are not included in Statistics Canada's published on-reserve census count of 342,865. The estimates are model-based, and since no reliable source exists to verify the assumptions used in the models, the estimates must be used with caution.

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\(^\text{18}\) Detailed information on the estimation process can be found at [www12.statcan.gc.ca/census-recensement/2006/ref/rp-guides/rp/ap-pa_2/p5-eng.cfm#toc5_4_1](http://www12.statcan.gc.ca/census-recensement/2006/ref/rp-guides/rp/ap-pa_2/p5-eng.cfm#toc5_4_1)

\(^\text{19}\) The number of incompletely enumerated reserves varies from census to census. Users must use caution when using the on-reserve Census data to make comparisons over time.
Table 4 – Population estimates of incompletely enumerated Indian reserves and settlements in the 2006 Census

<table>
<thead>
<tr>
<th>Province/Territory</th>
<th>Number of incompletely enumerated Indian reserves and settlements</th>
<th>Population estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newfoundland and Labrador</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Prince Edward Island</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Quebec</td>
<td>7</td>
<td>16,600</td>
</tr>
<tr>
<td>Ontario</td>
<td>10</td>
<td>15,392</td>
</tr>
<tr>
<td>Manitoba</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>1</td>
<td>739</td>
</tr>
<tr>
<td>Alberta</td>
<td>3</td>
<td>7,271</td>
</tr>
<tr>
<td>British Columbia</td>
<td>1</td>
<td>113</td>
</tr>
<tr>
<td>Yukon Territory</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Northwest Territories</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nunavut</td>
<td>n/a</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>22</strong></td>
<td><strong>40,115</strong></td>
</tr>
</tbody>
</table>

n/a = not applicable

Figures in Table 4 illustrate that incomplete enumeration was especially problematic in Ontario and Quebec. As the estimated number of people missed in First Nations communities is not included in Statistics Canada’s published counts, Registered Indian and First Nations population data in these provinces, and to some extent Alberta, should be used with caution.

c) Under-coverage of individuals living on reserves that did participate in the census: Data adjusted for under-counting are generated for 2001 and 2006, using the same methods as used for other municipalities. The net under-coverage population estimate for all participating reserves in Canada was 40,623 (standard error = 6,209). Combining the adjustments for non-participating reserves (40,115) and for net under-coverage on participating reserves (40,623) increases the estimated total reserve population that was missed to 80,738. This accounts for 24% of the reported total on-reserve population. It is important to note that while an estimate of the on-reserve population missed by the census (either through incomplete enumeration or under-coverage) is calculated by Statistics Canada, it is not included in any of the main tabulations published by the department. For these reasons and others, census counts for the on-reserve population with status are lower than those from the Indian Register (see Table 5).

d) **Self-identification of Status and First Nations identity**: This limitation is shared by every survey and the census. Some people who are not First Nations may report that they are First Nations. Others who are not registered under the *Indian Act* may state that they have status. The opposite may also be true—some people who are registered may not report themselves as such. Four Aboriginal questions are asked on the census (ethnic origin, Aboriginal identity, Registered or Treaty Indian, member of an Indian Band or First Nation), and these, along with others, help verify the various First Nations/Registered Indian responses.

e) **“Ethnic mobility”**: In recent years, the non-status First Nations (and especially the Métis) population has grown quickly. Part of this growth is due to a high birth rate. However, some growth can be attributed to many people identifying as First Nations who did not identify as such in previous censuses. The socio-economic characteristics of this group are different from those who have consistently reported First Nations identity. The impacts of ethnic mobility must be taken into consideration when looking at change over time.

f) **Replacement of the mandatory long-form Census with the voluntary 2011 National Household Survey**: In previous censuses, the questions used to determine the First Nations identity and Registered Indian populations came from the mandatory long form. For 2011, this was replaced with the voluntary National Household Survey. The impact of this change on data quality is yet to be determined.

g) **Other exclusions**: In addition to the above limitations, the census does not provide a count of the First Nations population living outside the country, those who are homeless or those in institutions such as hospitals, senior citizens homes, prisons, shelters, etc. on census day.

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**Uses**

The census is the only population source for those who identify as First Nations people who are not registered, and thus would have to be used for denominators for that population. It is also the only source for data at the community (or census subdivision) level. Detailed data are often available for a number of larger communities that took part in the census. Depending on the level of geography, counts for those in the youngest age groups may be more reliable than unadjusted counts from the Indian Register due to its limitation of late reporting of births. The ability of the census to provide data for the total population of a community and to show separate counts for First Nations and non-First Nations people in the community is important, especially in British Columbia where a significant proportion of the on-reserve population consists of non-Aboriginal people. In British Columbia in 2006, the census counted approximately 24,000 non-Aboriginal people living on a reserve (predominantly in urban centres). This group made up 32% of the total on-reserve population in the province.

The census provides the appropriate denominator when calculating proportions of other census variables (e.g., education, income, employment). Most of these types of variables come from the long form. However, the long form has been replaced by the 2011 National Household Survey questionnaire, which is voluntary and may therefore yield less accurate estimates in the future.

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22 Statistics Canada, through its community profile series, provides counts for the total on-reserve population and the on-reserve First Nations population. Users must ensure that they have selected the figures for the population that best suit their needs.

23 Data for communities with rates of global non-response of 25% or more are suppressed (the global non-response rate is the percentage of required responses left unanswered by the respondents). Data for communities with global non-response of 5–24% must be used with caution. While population and dwelling counts are available for communities of less than 40, no detailed characteristics (i.e.: age or sex breakdowns) are available.
Comparison of major data sources

Table 5 shows counts from each of the three main data sources and provides information on what sub-population data are available from each. The counts from the IR and SVS are similar, as are the off-reserve census and IR/SVS figures. However, there is a large difference between the Indian Register/SVS and Census counts for the on-reserve registered population as the census figure is 30% lower than the IR for roughly the same period. As previously mentioned, the census discrepancies may be much larger or smaller for sub-national jurisdictions.

The table also shows that, as previously mentioned, the census is the only source that can provide data for each of the subpopulations. More specifically, although counts are impacted by incomplete enumeration, it can provide data for the on-reserve non-status First Nations population and the total on-reserve population. As the IR and SVS are solely registration-based, they can only provide counts of Registered Indian people (living both on- and off-reserve).

Table 5 – Registered Indian and First Nations population counts by data source, May 2006

<table>
<thead>
<tr>
<th>Location</th>
<th>On reserve</th>
<th>Off reserve</th>
<th>All locations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indian Register</td>
<td>SVS</td>
<td>Census</td>
</tr>
<tr>
<td>Total Registered population</td>
<td>425,253</td>
<td>397,259</td>
<td>299,970</td>
</tr>
<tr>
<td>Registered non-Aboriginal population</td>
<td>NA</td>
<td>NA</td>
<td>2,635</td>
</tr>
<tr>
<td>Total First Nations population</td>
<td>NA</td>
<td>NA</td>
<td>300,755</td>
</tr>
<tr>
<td>First Nations population, registered</td>
<td>NA</td>
<td>NA</td>
<td>296,110</td>
</tr>
<tr>
<td>First Nations population, not registered</td>
<td>NA</td>
<td>NA</td>
<td>4,645</td>
</tr>
</tbody>
</table>

* The SVS total includes 2,650 people whose place of residence (on or off reserve) could not be determined.
NA = Not available
Recommendations

- Despite its limitations, the IR should be used for denominators for both the on- and off-reserve Registered Indian population. This recommendation is consistent with most of the opinions expressed at the November 2010 denominator workshop. While late reporting of births and deaths is a significant limitation of the unadjusted data, the adjusted IR counts provide the most complete picture of the Registered Indian population at the national and regional level. Community level data are not available from the IR.

- SVS data should be used when counts of those entitled to receive non-insured health benefits are required. As the SVS is a subset of data from the IR, late reporting of births and deaths is also a limitation of this data source.

- Census counts should be used where data from other census variables serve as the numerator (education, labour, income, etc.). The Census is the only source of data for the non-status First Nations population (on and off reserve) and the total on-reserve population (which includes status and non-status First Nations people and others). Detailed Census data are available for many First Nations communities. The most significant limitation of this source is the exclusion of over 80,000 people living on a reserve that did not take part in the 2006 Census or who were missed in reserves that did participate. In addition, data quality issues around the move to the voluntary 2011 National Household Survey are not yet known.

As there is no single data source sufficient for all analyses, priority should be given to improving the availability and quality of the denominator data from various sources. Efforts to improve the three main data sources discussed here and to develop others are ongoing. For example, the work of the British Columbia Tripartite partnership and Tripartite Data Quality and Sharing Agreement has led to the development of a First Nations Client file which yields higher quality estimates, although still only includes status First Nations individuals or those deemed eligible for status (e.g. infants born to status First Nations parents). In addition, increasing numbers of First Nations communities are taking part in the census. These data initiatives and others like them that serve to improve data quality and availability will ultimately result in more reliable and accurate sources of First Nations denominator data.
Appendix I: Example—denominator considerations for rate calculations

A rate is a descriptive statistic that provides an “at a glance” summary of the frequency of an event of interest. Converting crude numbers to rates facilitates comparisons between populations of different sizes. Each rate is based on a numerator and a denominator.

Usually, only one data source for the numerator (the number of events) for a given health indicator is available while there may be several denominator data sources (the population in which these events occurred). Some of these denominators may fit the numerator more closely than others. The following factors should be considered when determining which denominator data sources to use:

• The denominator should define the same population from which the events identified in its numerator arose.

• Numerator and denominator data should be easy to access and should be from comparable time periods.

Example

To calculate a measles, mumps and rubella (MMR) immunization rate for First Nations children living on reserve in a FNIH region, the numerator is the number of one year old First Nations children immunized for MMR living on reserve in the region. The denominator is the total number of one year old First Nations children living on reserve in the region during that same time period. More specifically:

\[
\text{MMR rate} = \frac{\text{number of 1 year old First Nations children immunized for MMR (living on reserve) in region X for time period Y}}{\text{total number of 1 year old First Nations children (living on reserve) in region X for time period Y}} \times 100
\]

An assessment of the strengths and weaknesses of each denominator data source must be made. Strengths of each source have been outlined elsewhere in this report. The limitations of using denominator data from both the Indian Register and the Census for this purpose are briefly summarized here.

Indian Register limitations

• A large number of births are not reported to the Indian Registrar until at least a year after the birth of a child. As a result, the denominator for one year olds is incomplete. Projected counts that adjust for late birth reporting are occasionally generated but they are not always available for the time period of interest. Using unadjusted data would overestimate the MMR immunization rate as the denominator would be artificially low.

• Some children may be registered in one region but living in another.

• Only those registered under the Indian Act are included in Indian Register counts. In the example above, a rate is required for the First Nations population in the region. Not everyone who is First Nations has status and not everyone who has status is a First Nations person. If there are many non-Status First Nations people living on a reserve in the region, using the IR as a denominator source may be problematic. The same would be true if there were many individuals with status who did not identify as First Nations people.

Census limitations

• Many First Nations communities did not take part in the Census and estimates of those living in these communities are not included in published tables from Statistics Canada. Some regions are more affected than others by non-participation (see Table 4).

• Census data are collected once every five years. These data may not be recent enough to provide an appropriate denominator.

• Some people living in First Nations communities that did take part in the census are not included in the published counts.

• Census counts of the First Nations population exclude those in institutions such as hospitals.

The strengths and limitations of each denominator data source must be thoroughly examined before a decision on which to use is made. Caveats associated with the data source must be considered when interpreting the final rate.
Appendix II: Community types included in the 2006 Census “on-reserve” definition

The following census subdivision (CSD) types are based on the legal definition of communities affiliated with First Nations or Indian bands (a census subdivision is roughly the equivalent of a community).

In the future, the Census on-reserve definition will not include any communities in the Yukon. For the NWT, there will be two on-reserve communities—Hay River Dene 1 and Salt Plains 195.

Indian reserve (IRI)—A tract of federally owned land with specific boundaries that is set apart for the use and benefit of an Indian band and that is governed by Aboriginal Affairs and Northern Development Canada (AANDC). Statistics Canada only recognizes the subset of Indian reserves that are populated (or potentially populated) as census subdivisions. For 2006, of the more than 2,900 Indian reserves across Canada, there are 1,095 Indian reserves classified as CSDs (including the 43 reserves added for 2006).

Indian settlement (SÉ)—A place where a self-contained group of at least 10 Indian (Aboriginal) persons resides more or less permanently. It is usually located on Crown lands under federal or provincial/territorial jurisdiction. Indian settlements have no official limits and have not been set apart for the use and benefit of an Indian band as is the case with Indian reserves. Statistics Canada relies on AANDC to identify Indian settlements to be recognized as census subdivisions, and their inclusion must be with the agreement of the provincial or territorial authorities. An arbitrary boundary is delineated to represent each Indian settlement as a census subdivision.

Indian government district (IGD)—Sechelt reserve lands in British Columbia. The Sechelt Indian Band Self-Government Act is a transfer by Her Majesty in right of Canada to the Sechelt Band in all Sechelt reserve lands, recognizing that the Sechelt Band would assume complete responsibility for the management, administration, and control of all Sechelt lands. The Sechelt Indian Government District Enabling Act (British Columbia) recognizes the district Council as the governing body of the Sechelt Indian Government District. The district Council may enact laws or by-laws that a municipality has power to enact under an Act of the province.

Terres réservées aux Cris (TC)—Parcels of land in Quebec set aside for the permanent residence of Cree First Nations of Quebec. Terres réservées aux Cris are adjacent to villages cris. The area of a village cri is set aside for the use of Cree bands, but members of Cree bands are not permanently residing there. Note that a village cri and its adjacent terre réservée aux Cris can have the same name, e.g., the village cri of Waswanipi and the terre réservée aux Cris of Waswanipi.

Terres réservées aux Naskapis (TK)—Parcels of land in Quebec set aside for the permanent residence of Naskapi First Nations of Quebec. Terres réservées aux Naskapis are adjacent to village Naskapi. The lone area of village Naskapi is set aside for the use of the Naskapi band, although its members do not reside there permanently.

Nisga’a village (NVL)—The four former bands of the Nisga’a Nation that became villages with the Final Land Claims Agreement of 1998 between the Nisga’a Nation, the Government of Canada and the Government of British Columbia. These include the villages of Gingolx, Gitwinksihlkw, Laxgalts’ap and New Aiyansh. Note that the Nisga’a village called New Aiyansh is delineated as two separate census subdivisions, which correspond to the former Indian reserves called Aiyansh 1 (currently unpopulated) and New Aiyansh 1.

Nisga’a land (NL)—Part of the territory whose title has been transferred to the Nisga’a Nation by the Final Land Claims Agreement of 1998 between the Nisga’a Nation, the Government of Canada and the Government of British Columbia. Together with the four Nisga’a villages (NVL), this territory makes up the Nisga’a Lands defined by the land claims agreement.

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Teslin land (TL)—A parcel of rural settlement land whose title has been transferred to the Teslin Tlingit Council by the Teslin Tlingit Council Land Claims Agreement of 1993 between the Teslin Tlingit Council, the Government of Canada and the Government of the Yukon.

Included in the Indian Register and 2006 Census “on reserve” counts are those living in the following northern communities selected by AANDC because they are affiliated with First Nations or Indian bands:

a) Northwest Territories: Déline, Tsiigehtchic, Fort Good Hope, Behchoko, Whati, Gameti, Wekweeti, Fort Liard, Fort Providence, Tulita, Fort McPherson, Kakisa, Trout Lake, Nahanni Butte, Jean Marie River, Fort Resolution, Lutselk’e, Detah, Wrigley, Colville Lake, Fort Smith, Fort Simpson

b) Yukon: Tagish, Ross River, Burwash Landing, Pelly Crossing, Beaver Creek, Old Crow, Johnsons Crossing, Carcross, Upper Liard, Haines Junction, Mayo

c) Saskatchewan: Denare Beach, Sandy Bay
## Appendix III: Major denominator data sources, populations and limitations

<table>
<thead>
<tr>
<th>Data source</th>
<th>Populations covered</th>
<th>Limitations</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian Register (IR)</td>
<td>Total Registered population, on and off reserve</td>
<td>• Data quality issues due to late reporting of births and deaths. Counts of those in the youngest age groups are especially problematic.</td>
<td>• Excluded are First Nations people who are not registered under the Indian Act.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• On/off reserve residency codes are often only updated when a life event is reported.</td>
<td>• Includes a small number of non-First Nations people that are registered under the Indian Act.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Excluded are First Nations people who are not registered under the Indian Act.</td>
<td>• Adjustments are made to the IR to correct for late reporting but adjusted figures may not be available for the period of interest.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Includes a small number of non-First Nations people that are registered under the Indian Act.</td>
<td>• Adjusted Band-level counts are not available.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Adjustments are made to the IR to correct for late reporting but adjusted figures may not be available for the period of interest.</td>
<td>• No community-level counts are available.</td>
</tr>
<tr>
<td>Status Verification System (SVS)</td>
<td>Total Registered population, on and off reserve, entitled to receive non-insured health benefits</td>
<td>• The SVS is a subset of the Indian Register so limitations/exclusions are the same as above for the IR.</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Census</td>
<td>1. Total registered population, on and off reserve</td>
<td>• Takes place only every 5 years with no intercensal estimates available for the First Nations or registered populations.</td>
<td>• In 2011, the voluntary National Household Survey replaced the mandatory census long form. There may be data quality issues and comparisons with census data from previous years may not be possible.</td>
</tr>
<tr>
<td></td>
<td>2. First Nations population registered and not registered, on and off reserve</td>
<td>• No count available for those in hospitals, prisons, living outside Canada, etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Total on-reserve population (First Nations people and others)</td>
<td>• Excluded from the published counts are those that in 2006 lived in 22 First Nations communities where enumeration was not permitted or was interrupted before it could be completed (approx. 40,115) and the 40,623 people that were not counted in First Nations communities that did take part in the census.</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix IV: Indian Register data availability

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age</td>
<td>Sex</td>
<td>Age</td>
</tr>
<tr>
<td>National</td>
<td>Single years of age</td>
<td>Yes</td>
<td>Single years of age</td>
</tr>
<tr>
<td>Regional</td>
<td>Single years of age</td>
<td>Yes</td>
<td>Single years of age</td>
</tr>
<tr>
<td>Band</td>
<td>Single years of age</td>
<td>Yes</td>
<td>Not available</td>
</tr>
<tr>
<td>Availability</td>
<td>Counts are available on regular basis, on request from AANDC.</td>
<td>Counts are available every 5 years or so, with the 2010–2034 series planned for release in summer 2012 (tentative).</td>
<td>Counts are updated when new projections are developed. Available on request from AANDC. Data for 1990–2009 period for release in summer 2012 (tentative).</td>
</tr>
</tbody>
</table>

Appendix V: Population coverage—Indian Register, Status Verification System (SVS) data and Census
Appendix VI: Workshop participants

Included below is a list of denominator workshop participants:

Debbie Arnold, Health Canada
Sharon Bartholomew, Public Health Agency of Canada
Kelly Bower, Health Canada
Trincy Buwalda, Health Canada
Stephen Cule, Public Health Agency of Canada
Michael Day-Savage, Health Canada
Serge Desrosiers, Health Canada
Rene Dion, Health Canada
Minh T. Do, Public Health Agency of Canada
Meghan D. Duncan, Health Canada
Geoff Dunkley, Health Canada
Ezzat Farzad, Health Canada
Sarah Fleming, Health Canada
Julie Fontaine, Health Canada
Victor Gallant, Public Health Agency of Canada
Pierre Gauvin, Aboriginal Affairs and Northern Development Canada
Neil Goedhuis, Health Canada
Corey Green, Health Canada
Chunli Gu, Health Canada
Maritia Gully, Public Health Agency of Canada
Agatha Hopkins, Health Canada
Ling Huang, Health Canada
Gayatri Jayaraman, Public Health Agency of Canada
Karin Johnson, Health Canada
Belinda Kasak, Health Canada
Lewinda Knowles, Health Canada
Dafna Kohen, Statistics Canada
Kristina Lalonde, Public Health Agency of Canada
Sean Mark, Health Canada
Eric McGregor, Aboriginal Affairs and Northern Development Canada
Deepa Menon, Health Canada
Joanne Nelson, Health Canada
Jennifer Pennock, Health Canada
Maureen Perrin, Public Health Agency of Canada
Mark Sagan, Health Canada
Kiri Shafto, Health Canada
Verran-Anne Singh, Health Canada
Robert Spasoff, University of Ottawa
Julie Stokes, Health Canada
Heather Tait, Health Canada
Shailee Tanna, Health Canada
Stephanie Totten, Public Health Agency of Canada
Michael Tjepkema, Statistics Canada
Joanne Tsang, Health Canada
Julie Vachon, Public Health Agency of Canada
Shelly Vik, Health Canada
Marie-Pierre Wallace, Health Canada
Luisa Wang, Health Canada
Shannon Waters, Health Canada
Guoliang Xi, Public Health Agency of Canada
Quiyang Yang, Public Health Agency of Canada

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