

THE IMPACT OF THE UNDER-REPORTING OF VITAL EVENTS UPON EPIDEMIOLOGICAL AND  
DEMOGRAPHIC MEASURES OF THE MANITOBA REGISTERED INDIAN POPULATION:  
AN EXERCISE IN DATA QUALITY.

by

DARCY MCGREGOR

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**The Impact of the Under-Reporting of Vital Events Upon Epidemiological and  
Demographic Measures of the Manitoba Registered Indian Population:  
An Exercise in Data Quality**

**BY**

**Darcy McGregor**

**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of  
Manitoba in partial fulfillment of the requirement of the degree  
of  
MASTER OF ARTS**

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## ABSTRACT

In order for the various levels of government, the biomedical research community, and Aboriginal leadership to more carefully assess the needs of the Canadian Aboriginal population they must have an accurate picture of its demographic and epidemiological characteristics. Researchers of Aboriginal health have often used various data sources without a full appreciation of the flaws inherent in the data. This thesis examines the effect of the under-reporting of vital events upon one such data source, namely the Indian Register, and subsequent ramifications for the epidemiological and demographic analysis of the Manitoba Status Indian population. The study compares the magnitude of the problem for the aggregate of six bands from 1979 through 1983 with further differentiation into sex, residential and regional categories. Each of these populations was adjusted for the late- and under-reporting of vital events in order to obtain a corresponding set of population data for comparison purposes. The principal methodologies employed include direct and indirect standardization of mortality rates, life table analysis of mortality, and analysis of fertility and reproduction. These analyses reveal a preponderance of both birth and death reporting problems associated with the off-reserve populations although all populations were affected to some degree. Demographic and epidemiological calculations for all populations were affected to an extent depending upon the magnitude of the reporting problems and the age strata in which they were concentrated. Mortality rates tended to be inflated as a result of reporting problems.

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## CHAPTER 1

### INTRODUCTION AND LITERATURE REVIEW

The demographic compositions of Canadian Aboriginal populations are not well known or documented. While there is no scarcity of data concerning the populations, the data sources upon which analyses and inferences must be based have been increasingly scrutinized and criticized over the last two decades. Epidemiologists and demographers alike have used the various data sources in their research, often without a full appreciation of the flaws inherent in the data (Sugerman et al, 1993; Sugerman & Lawson, 1993; Snipp, 1986; Frost et al, 1992). These data quality issues must be addressed, especially if the research results are to be considered in program and policy planning, implementation, and evaluation. Implications of these for planning and programming employment, housing, social assistance, education, and health care delivery are especially profound.

Issues pertaining to the health of the Canadian Aboriginal populations are prominent among the interests of various levels of government, the biomedical research community, as well as Aboriginal leadership. In order for these parties to more carefully assess the needs of the populations they must have an accurate picture of demographic and epidemiological characteristics (e.g. population size and age/sex structure, mortality, fertility, and residential distribution). Several authors have mentioned the need for more reliable, meaningful data concerning the Aboriginal population (Mao et al., 1992:350; Piche & George, 1973: 367; Cook, 1980:3). As well, various studies indicate that this population is not as healthy as the general Canadian population (e.g. Mao et al., 1986; Young, 1992; Mao et al., 1992; Morrison et al., 1986; Evers & Rand, 1982). As of 1993

the infant mortality rate among Aboriginal infants had decreased but was still 1.7 times that of the larger population. Suicide rates, especially for ages 15 through 24 are five to eight times greater than the national rates (Lemchuk-Favel, 1996). Mortality rates in general tend to be higher for every age group and category. The need for accurate, reliable data concerning the Aboriginal population in Canada is clear.

Two major problem areas complicate the task of the researcher of Aboriginal health. The first of these is associated with the seemingly straightforward problem of defining the population of interest. The second area includes problems of a methodological nature. Each source of information concerning Canada's Aboriginal population has its own inherent advantages and disadvantages. Nevertheless, lack of synchrony between data resources confound methodological considerations as well as interpretations of results.

**A Note on Terminology:** For this analysis the Canadian "Aboriginal" population will include all descendents of the original inhabitants of what is now Canada. This includes those groups designated by the Canadian government as Indian, Metis and Inuit. The primary focus of the research will be specifically the Status or Registered Indian population and this designation is described below.

## **PROBLEMS FACED BY THE RESEARCHER OF ABORIGINAL HEALTH**

### **Problem I: Defining the Registered Indian Population:**

A first stage in any demographic or epidemiological investigation involves a definition of the population of interest and herein lays the first problem confronted by the

researcher of Aboriginal health. The problem has its roots in the very nature of ethnic identity. How is the Status "Indian" defined? Unfortunately when it comes to the definition of an Indian one notes the blurring of legislative and biological meanings. As will become clear the "Status" Indian definition is based substantially upon legislative and legal criteria rather than upon biological or sociological criteria. Another difficulty encountered in defining the Indian population is related to the ever-changing nature of the definition. From its legislative origins to the present day the Status Indian population has changed not only in real demographics but also as a simple result of changes in definition.

#### **Who is a Status Indian?:**

The population of interest for this research is the Status or Registered Indian population of Manitoba. In 1962, Ferd Owl attempted to address the question of "Who and what is an American Indian"? The answer to this question was long and complex and displayed a large number of labels that are applied to people of Native descent. The question is equally appropriate, and the results as complicated, if it is asked of the Canadian Indian. Snipp (1986:237) comments on the difficulty of analyzing a phenomenon such as ethnic identity. What criteria must an individual meet in order to be considered a member of Canada's Status Indian population? To be brief, if an individual meets the criteria embodied in government legislation (in its original and/or revised forms) then that individual is considered a "Status", "Treaty" or "Registered" Indian. The individual's name and unique treaty number is recorded upon a band-organized list and then, he or she is granted treaty or legislative rights and privileges that are not available to "non-Status" Indians, other individuals of Aboriginal ancestry, or non-Indians.

Presently these rights and privileges include, but are not restricted to, access to post-secondary education assistance, uninsured health benefits, and hunting, fishing and trapping rights. In many respects therefore the "Indian" population has been defined in large part by the Canadian government and not by Canadian Aboriginals themselves. As a consequence it is incorrect to assume that this "legislatively-defined population" is a realistic portrayal of Canada's Aboriginal population. Instead it is an attempt by the Canadian government to define a service population (Isfeld,1997). This will become ever more apparent through an illustration of the government legislation related to the Canadian Aboriginal.

Another aspect of the problem has already been alluded to and concerns the consequences of the ever-changing nature of the Status Indian definition. Government legislation concerning Canadian Aboriginals has periodically changed over time and so has the definition of an "Indian". As a result the Indian Register has undergone changes as well. This has had the effect of essentially changing the size and characteristics of the population. For example, the impact of Section 12 (and the resulting enfranchisements) of the Indian Act of 1951 would be most felt by young to middle-aged women and their children. Depending on government legislation individuals may gain or lose Indian Status. This continuous change in legislation therefore leads to changes in the nature of the Indian population as defined by the Department of Indian and Northern Affairs Canada (INAC). Halli, Trovato and Driedger (1990) have commented on the difficulty of describing a population that can gain and lose members simply through changes in the legal status of individuals. In order to illustrate the legislative and ever-changing nature

of the Indian definition it is necessary to briefly examine the government legislation pertaining to it.

### **Government Legislation in the Beginning:**

The first statutory definition of an "Indian" was set forth in 1850 through the Act for the Better Protection of the Lands and Property of the Indians in Lower Canada. An Indian was defined as:

1. First - All persons of Indian blood, reputed to belong to the particular Body or Tribe of Indians interested in such lands, and their descendents.
2. Secondly - All persons intermarried with any such Indians and residing amongst them and the descendants of all such persons.
3. Thirdly - All persons residing among such Indians, whose parents on either side were or are Indians of such Body or tribe, or entitled to be considered as such; and
4. Fourthly - All persons adopted in infancy by any such Indian, and residing in Village or upon the lands of such Tribe or Body of Indians, and their Descendents (Frideres, 1998: 20).

It is important to note the biological, cultural and inclusive nature of this definition. With time the definition of who is to be considered an Indian has narrowed in scope and become increasingly legislative or legal to the exclusion of biological or cultural considerations (Frideres, 1998). This can be illustrated by comparing the four points above to the "Indian definition" outlined much later in the Indian Act of 1951. Section 11 of the Indian Act outlined inclusionary guidelines for Registered Indian Status. According to this legislation the following individuals were eligible for Indian Status:

- (a) Anyone who, on May 26 1874 was.....considered to be entitled to hold, use or enjoy the lands and other immovable property belonging to or appropriated to the use of the various tribes, bands, or bodies of Indians in Canada.

- (b) Is a member of a band,
  - (i) for whose use and benefit, in common, lands have been set apart since May 26 1874, have been agreed by treaty to be set apart, or
  - (ii) that has been declared by the governor in Council to be a band....
- (c) Is a male person who is a direct descendent in the male line of a male person described in paragraph (a) or (b).
- (d) Is the legitimate child of,
  - (i) a male person described in paragraph (a) or (b), or
  - (ii) a person described in paragraph (c).
- (e) Is the legitimate child of a female person described in paragraph (a),(b) or (d).
- (f) Is the wife or widow of a person who is entitled to be registered by virtue of paragraph (a), (b), (c), (d), or (e).

Two important observations are apparent in a comparison of the two legislative definitions. First, in 101 years the criteria used by the government to define an Indian changed drastically. Secondly, the changes have been at the expense of any cultural or biological considerations. From an inclusive definition focusing on land, residence, biology and relationships the legislation has moved to a focus upon treaty and legitimacy with a clear bias towards males. The patrilineal bias is as unmistakable as the change from biological and cultural considerations to legal and legislative ones. Section 12 of this same piece of legislation can further illustrate the ever-changing and legislative nature of the Indian definition. Increasingly complex guidelines were presented concerning who was not considered an Indian and who could be "enfranchised" or stripped of their Indian Status.

**Enfranchisement:**

Enfranchisement is a term given to the process by which an individual may voluntarily give up their Indian Status or have it legally removed. The beginnings of this



process came with the 1850 *Act for the Better Protection of the Lands and Property of the Indians in Lower Canada*; the same document that first attempted to define the Indian. An amendment to this legislation in 1851 was the first to make the distinction between Status and non-Status Indians. Not only were white males excluded from living with Indians, but the provision also excluded white males married to Indian women from obtaining legal status as Indians (Leslie & Maguire, 1978). The 1857 *Act to Encourage the Gradual Civilization of the Indian Tribes in the Canadas* was the first to provide for the voluntary surrender of Indian status and band membership (INAC, 1991). Other amendments to the legislation regarding enfranchisement were made periodically. A few of the most significant changes included:

**1876:** The *British North American Act* - presented the original incarnation of the modern *Indian Act*. This *Act* detailed the removal of Status from Indian women and their children if they married a non-Status man.

**1880:** Amendment - allowed the automatic enfranchisement of any individuals that gained a university degree.

**1933:** Amendment - further empowered the government to order the enfranchisement of individuals as it saw fit (INAC, 1991).

**1951:** *Indian Act* - involuntary enfranchisement provisions were retained, including those that discriminated against Aboriginal women.

**1985:** *Bill C-31* Amendment - allowed Aboriginal people who had been voluntarily or involuntarily enfranchised under the discriminatory provisions of the *Indian Act* to apply for reinstatement of their Indian Status.

Enfranchisements reached a peak of 13,760 between the period 1948 and 1968 primarily due to the tabling of the *Indian Act* of 1951 (Frideres, 1998: 25). This large

number was likely a result of two things. First, new provisions allowed for the enfranchisement of more individuals than previously. Secondly, with the establishment of the Indian Register and Office of the Registrar the entire registration process, while becoming exceedingly complex also became more efficient. The Department of Indian Affairs was able to apply a greater number of eligibility rules and other regulations to the incoming applications for Indian Status (INAC, 1991). Some of the enfranchisements were processed voluntarily upon application to Indian Affairs in order that Indians and their minor unmarried children might be privy to certain perceived privileges, for example voting rights. Others were enfranchised as a direct result of the sexually discriminatory provisions in Section 12 of the *Indian Act*. For example, an Indian woman (and her children) could have her Status revoked if she married other than a Status Indian man. The process of enfranchisement further illustrates the difficulty involved in defining the Canadian Indian. Complex legislative guidelines decided who could no longer be called Indian. These guidelines also changed often, allowing for the enfranchisement of more and more individuals, until the passing of *Bill C-31* in 1985.

#### **Bill C-31:**

The latest changes to the *Indian Act* were enacted in 1985 with the passing of *Bill C-31*. The changes were introduced for the following reasons: a) the elimination of sexually discriminatory registration criteria; b) provisions for restoration of Status and band membership; c) provision for first time registration of first generation descendents; d) elimination of enfranchisement provisions, and; e) provisions for transfer of control over band membership to band councils (Isfeld, 1997:31).

### **Summary: Defining the Registered Indian Population:**

In summary then, the definition of the Status/Registered Canadian Indian is legislative in nature and has undergone many significant changes. The first definition to be used was based primarily on biological attributes while later definitions became more narrow in scope and legal in context. Isfeld (1997:2) notes "...the term Indian is essentially a legal concept, developed over 100 years ago as a means of regulating the relationship between a colonial and an indigenous population". Therefore the "Indian" category has been and still is, defined and described by the European-Canadian majority and not by Canadian Aboriginals themselves. The resulting Status Indian population therefore may not be a realistic depiction of the Indian population, but rather an attempt by the Euro-Canadian government to define a serviceable population. Similarly Halli, Trovato, and Driedger (1990) note that, "A closer examination of the criteria employed in the legal definition of Indian.... reveals little or no overlap between these and either cultural and biological variables". Researchers carrying out epidemiological and demographic investigations of Canada's Aboriginal population have continued to use this Status Indian population when other data on Aboriginal ancestry is unavailable (Moffat et al., 1988).

It should also be noted here that the definition of an "Indian" might also be different depending on the data source being used. For example, the census tabulates those individuals whom have self-identified as Aboriginal. On the other hand, the Indian Register, which will be discussed in detail below, recognizes as Indians only those that meet the criteria and stipulations set forth by current government legislation. The First Nations and Inuit Health Branch (formerly the Medical Services Branch of Health and

Welfare Canada) also utilizes this definition. Unfortunately, there exists a paucity of literature pertaining to the potential consequences of using such data sources in the evaluation of native health and demography. The importance of recognizing these issues cannot be overstated. As Aboriginal people become more involved in managing their government and health care systems, it is crucial that all parties be able to accurately define those demographic and epidemiological parameters that aid in administrative decision-making.

### **Problem 2: Describing the Registered Indian Population**

Even after one is able to accurately define the Aboriginal population in Canada it is still often difficult to describe this population. This leads us to the second major problem associated with the study of Aboriginal health. Different data sources are often not directly comparable, transposable or mutually transparent. Several authors have noted the importance of accurately characterizing the Aboriginal population (Signer & Locatelli, 1980:7; Cook, 1980:3). The ramifications of not doing so could be very serious. A study carried out by Frost et al. (1992) indicates that the lower cancer incidence observed in Native Americans compared to Caucasians is partially due to racial misclassification. Similarly, Rosenberg et al. (1999) blame racial misclassification for the understated mortality rates exhibited for American Indians in the United States.

The primary sources of data concerning Canada's Aboriginal population are the Indian Register, the First Nations and Inuit Health Branch, as well as census and post-census surveys conducted by Statistics Canada. Each of these has its own advantages and disadvantages and the data obtained from one is often not comparable to the

corresponding data from another. The following is a brief description of these information sources and how useful or misleading they can be in Aboriginal research.

**Census:**

The census is carried out every five years by Statistics Canada. Data from the census includes information on age, sex, marital status, as well as cultural, socio-economic, family and household aspects. It is used for many purposes, from calculating population and migration projections to analyzing the impact of social programs. Information on the Aboriginal population of Canada derives from the responses to questions on ethnic origins and/or membership in an Aboriginal Band. Cross-tabulation of Aboriginal origin with demographic, social and economic data represents an important source of information on Registered Indian conditions (Boyd & Rosenberg, 1987:4). A multitude of limitations have been identified in the use of census data for the purpose of demographic and epidemiological analysis. Some of these are purely methodological problems while others are related to the lack of comparability of the census data from year to year and with other data sources. They include the problems of non-response to, and respondent error in the interpretation of, specific questions with consequent over- or under-enumeration, the very nature of the self-reporting process, and other miscellaneous difficulties.

**First Nations and Inuit Health Branch:**

The First Nations and Inuit Health Branch (FNIHB), previously the Medical Services Branch of the Department of Health and Welfare Canada, is assigned the task of administering the health of Canada's Aboriginal peoples. It is a good source of

information regarding births and deaths, primarily because the reporting takes place locally. It is also not very susceptible to the problem of late reporting (Murray, 1980:81). FNIHB data does have another outstanding advantage. Data are, conditional upon the adequacy of event reporting, subject to continuous updating. For example, if the department in 1979 became aware of a birth that occurred in 1977, then that birth would have been reallocated to the 1977 birth cohort in the database and the numbers amended in subsequent publications. Therefore, vital events data, given the passage of sufficient time for recovery of late-reported births and deaths, are considered to be quite accurate (Rokala, 1999: Personal Communication). Census data and Indian Register data are not continuously updated in this manner.

Still however, this data source is subject to some limitations. The most notable problem is the variation in coverage and collection procedures that one encounters from region to region across Canada. As far as coverage is concerned, in the Atlantic Provinces, Quebec, and Ontario field staff collect information for only those First Nations people living on reserves. On the other hand, for Manitoba, Saskatchewan, Alberta, British Columbia and the Yukon, data are obtained from the respective provincial and territorial databases and includes events that occurred both on the reserves and off (Lemchuk-Favel 1996:2). Other idiosyncrasies exist as well from region to region. For example, those communities in Quebec that are subject to the James Bay Agreement do not provide data to the FNIHB nor do those bands currently involved in the transfer of their own health care management. For the Pacific region data is unavailable for the years 1985 and 1986 (Lemchuk-Favel, 1996:4). Manitoba and Saskatchewan have a unique system. Births occurring among Aboriginals are tracked through the Provincial

Health Insurance Department. Lists of births are sent to the FNIHB to obtain a Medicare number and parents must register new births in order for the child to be covered by Medicare (Ram & Romaniuc, 1985:6).

While the above problems simply make it difficult to make regional comparisons there are other problems inherent in the FNIHB data. Boyd & Rosenberg (1987:26) outline several other problems not directly related to larger demographic and epidemiological analyses. Briefly, these include changes in the International Classification of Diseases (ICD), miscounting of medical resource usage on and off reserve, along with the aggregation of all data to larger regional levels. When all is said and done the database maintained by the FNIHB is a valuable source of information for use in demographic and epidemiological analyses, particularly because of the continuous updating process that they are subject to.

### **The Indian Register:**

The Indian Register is maintained by the Department of Indian and Northern Affairs Canada (INAC). It represents a list of all individuals who have been granted Indian Status through the provisions in the Indian Act. This is quite unlike the self-identification of ethnic origins that characterizes the census. Information recorded within the Register includes name, age, sex, marital status, band status, and occasionally information regarding religion and place of residence (Murray, 1980:72). Events such as births, deaths and marriages are also tracked. It is continuously updated and maintained throughout the year. The Indian Register was established in 1951 for administrative purposes along with the Office of the Registrar and was subsequently computerized in

1965. The Registrar is responsible for determining the eligibility of individuals for Indian Status. The Register is considered by some to be one of the most useful sources of demographic data available to the researcher of native health. It is used by INAC to supply population counts, the denominators in demographic and epidemiological analyses. Like the other information sources mentioned however, the Register has its own inherent limitations. The inconsistent reporting of vital events is the most serious problem associated with using the Indian Register as a source of demographic data. Data are often subject to lengthy reporting delays and in some cases events may never be reported at all. This is evident in the case of both deaths as well as births.

#### **Irregularities in the Reporting of Deaths:**

Mortality data is crucial to the examination of population health. One particular report suggests that the late reporting of deaths is the single largest problem associated with Indian Register data (INAC, 1993:6). In some instances it may take up to 3-5 years for a death to be reported (Boyd & Rosenberg, 1987:2; INAC, 1984:9). There are two methods by which INAC adjusts the Indian Register data in order to account for these instances. If both reporting dates and actual event dates are available then the researcher can simply reallocate the deaths to the year in which they occurred, thereby reducing the population count in that year and thereafter. One can also estimate the expected number of late-reported deaths in one year by extrapolating from previous trends. The under-reporting of deaths is also thought to contribute to Indian Register data problems. The procedures used by INAC to correct for this phenomenon are complex.