

**Measuring the Well-Being of Aboriginal People:
An Application of the United Nations' Human Development Index
to Registered Indians in Canada, 1981–2001**

by

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Abstract

A modification of the United Nations' Human Development Index (HDI) is used to compare the educational attainment, average annual income, and life expectancy of Registered Indians and other Canadians using 1981–2001 Census data. Although the gap in overall HDI scores between these two populations declined somewhat during the period, large disparities remain. The gap in real average annual income widened during the period, and this was particularly the case for Registered Indian males. Although HDI scores for men and women in the general Canadian population became more similar between 1981 and 2001, gender disparities in the Registered Indian population widened, with Registered Indian women having considerably higher educational attainment and life expectancy than their male counterparts. Differences in well-being between those living on and off reserve decreased slightly during the period, but considerable differences remained in 2001.

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1. Introduction

In 1990, the United Nations introduced its *Human Development Report*, which included a new definition and measure of development, the Human Development Index (HDI). Since then, Canada has scored at or near the top of the United Nations Development Programme's (UNDP) rankings of countries by their HDI scores. Despite Canada's high ranking on the HDI, it is clear that not all Canadians share these high average levels of well-being, and that Aboriginal Canadians in particular have long been identified as generally having poorer health outcomes, lower educational attainment, and lower average incomes than other Canadians (Kendall 2001). In spite of the Royal Commission on Aboriginal Peoples and the efforts of Aboriginal organizations to bring public attention to the social conditions faced by First Nations, Inuit, and Métis people in Canada, public opinion has not reflected an awareness of these inequalities. Ponting (2000) has found a general decline in awareness of Aboriginal affairs by Canadians between 1976 and 1998. A 1996 public opinion poll has also found that nearly half of Canadians believed that the standard of living on reserves was as good or better than the Canadian average. In the same poll, 83% of Canadians interviewed believed conditions for Aboriginal people were either improving or staying the same (Insight Canada 1996).

In Canadian public policy debates, interest in the economic and social well-being of Aboriginal people is often framed in terms of public expenditures. The Royal Commission on Aboriginal Peoples has quantified the high cost of the poverty of Aboriginal people as being due to underutilised human resources and foregone productivity, as well as the remedial costs that have been incurred in attempts to remedy inequalities and to compensate for past and present injustices. The Commission recommended an increase in annual spending of between one and a half and two billion dollars for five years. In addition, they proposed that medium term increases in spending on human resource and institutional development, improvement in economic and living conditions, and structural changes to the land claims and treaty processes would lead to long-term benefits for Aboriginal communities, and, ultimately, to reduced public costs (RCAP 1996, 56). On the other hand, critics on the right generally see public expenditures on programs for Aboriginal people as, at best, ineffective, and, at worst, responsible for maintaining a system of dependency on transfers that prevents development through reducing incentives for innovation or enterprise (eg. Richards 1995).

What appears to be missing from both public awareness of the conditions in which Aboriginal people live, and the public policy discussions about the efficacy of expenditures, is some measure of whether conditions have improved over time

relative to average Canadian levels. One of the successes of the *Human Development Report* has been the presentation of socio-economic data in a form that would not only be used by specialists, but would also become part of the public discourse. There have been several studies describing the social conditions of Aboriginal people, including health (e.g., Bobet 1989), education, and labour force outcomes (e.g., Mendelson and Battle 1999; DIAND 1995), in addition to the background research done for the RCAP. However, there has not been a systematic attempt to describe the changes in the relative well-being of Aboriginal people and other Canadians in a single, easily understood set of indicators. Simply put, it is not clear whether the differences in the average standard of living of these two populations have in fact narrowed or increased over time. In an earlier paper we used the HDI methodology to measure the relative disparity between Registered Indians and other Canadians in life expectancy at birth, educational attainment, and average income using 1996 data (Beavon and Cooke 2003). This paper extends that application of the HDI to the census years 1981 to 2001, with the aim of identifying whether there has been an improvement in the relative position of Registered Indians, or if the disparities in income, education, and life expectancy have increased over time.

2. The Human Development Index and Other Social Indicators

In the immediate post-war period, "development" was equated with economic growth and progress measured by increased real per capita GDP or GNP. However, it has been increasingly recognized in international development studies that improvements in GNP do not really capture quality of life, and that not all aspects of development are adequately measured by national production or consumption. The incorporation of indicators of social development, as well as of economic progress, into composite social indicators has been the subject of considerable effort since the late 1960s. Noll (1996) writes that interest in social indicators developed in the United States) in the political climate of the late 1960s and early 1970s) as tools for social policy development. Composite indicators were later used by international organizations such as the Organization for Economic Cooperation and Development (OECD), the World Bank, and the United Nations for measuring progress in less developed countries.

These indices have included measures of health and education, as well as various economic indicators, in an effort to present a better description of the overall "well-being" of a population. For example, one index for measuring international development, the Physical Quality of Life Index (Morris 1979), was an effort to create a better measure of well-being by combining infant mortality, life expectancy, and literacy in a single index. Other composites such as the Economic and Social

Rank Index (Sivard 1991), includes more indicators of health and education in addition to GNP per capita. The group Redefining Progress has established a Genuine Progress Indicator, which reduces real GNP by the costs associated with social programs, crime, environmental degradation, and other "negative goods." The result is a "composite index of sustainable economic welfare" expressed in real dollars (CCSD 1996; Cobb et al. 2000). Other indices include the Fordham Index, which includes sixteen socio-economic indicators, among them infant mortality, teen suicide, average weekly earnings, high school drop-out rates, and poverty among the elderly (CCSD 1996); the Index of Social Progress combines forty-four indicators across eleven subject areas (Estes 1984).

Although research into the development of social indicators declined with the rise of conservative governments in Europe and North America, interest has returned since the mid-1980s (Noll 1996). This may well be due to the effectiveness of composite indicators for policy development and for various forms of advocacy. Well-designed composite measures can provide reliable time-series data in a way that is easily comprehended by non-specialists. They are able to give broader assessments of the general welfare of a population, and may be able to identify unintended consequences of policy changes. For social activists, including anti-poverty organizations and community groups, the application of summary indicators can be a powerful tool for demonstrating real changes in well-being, and for moving public opinion and policy makers. In this respect, they may be particularly useful in identifying consequences of funding reductions and program cancellations (CCSD 1996).

Of course every indicator of well-being entails a judgement about what is socially desirable and undesirable, and what constitutes "development" or "progress." In the area of international development, the United Nations' Human Development Index has become one of the most widely accepted indicators. The HDI is based on a definition of human development that is characterized by the UNDP as "an expansion of choices" (UNDP 1990, p. 10). Three aspects of well-being comprise the HDI: health, knowledge, and access to material goods. These three dimensions are identified by the UNDP as necessary for the making of meaningful choices by individuals, which requires reasonable levels of health and longevity, literacy and some level of education, and a minimal level of material well-being. Of course, this definition of development is not perfect, and the UNDP has made minor changes in the index from year to year. The 1996 *Human Development Report* reminds the reader that:

The concept of human development is much deeper and richer than what can be captured in any composite index or even a detailed set of statistical indicators. Yet it is useful to simplify a complex reality and that is what the HDI sets out to do. It is a composite index of achievements in basic human capabilities in three fundamental dimensions: a long and healthy life, knowledge, and a decent standard of living. Three variables have been chosen to represent these three dimensions: life expectancy, educational attainment, and income. (United Nations 1996, 29–30)

As well as capturing three dimensions that are fundamental to the United Nations' concept of "Human Development," the HDI's relatively modest data requirements allow the index to be calculated for developing countries) for which reliable data are often lacking. Thus, it represents something of a balance between the use of a single indicator, such as per capita GDP, and the more complex indices that may be difficult to consistently apply to all countries or regions.

As one might expect, the UNDP has been criticized for including some indicators in its index while excluding others. Some writers have argued that the composite HDI offers little additional information over national product, already widely-used as a measure of development, and cite a high overall correlation between countries' GDP or GNP and their HDI scores as evidence of the redundancy of the index (McGillivray 1991). Others argue that the HDI is too restrictive and should include measures of environmental health, crime, and other aspects of overall well-being (Saith and Harris-White 1999). The weighting scheme and the quality of some of the particular measures used in the index have also been critiqued (Saith and Harris-White 1999; Chowdhury 1991; Rao 1991).

In the international context, the lack of a perfect relationship between national product and HDI scores points to the utility of composite measures. Although there is a high overall correlation between the two, some countries have been able to attain fairly high levels of health and education despite low levels of national income, while others have failed to translate high levels of income into commensurate levels of human development. In the United States, the Fordham Index and the Genuine Progress Indicator have been used to show declining social welfare since the 1970s despite increasing GNP (CCSD 1996). The 1990 *Human Development Report* suggests the use of the HDI in identifying the policy choices that affect how national income translates, or fails to translate, into broader human development (UNDP 1990, p. 10).

Although the HDI was developed for international comparisons, it has been used to generate comparisons of various sub-national populations, such as Indian states and Chinese provinces (Kumar 1996; UNDP 1997). Although this paper describes an application of the HDI to populations identified by the census ethnicity questions, and not by geography, the index can still be useful for examining the changes in the relative well-being of these two groups over time. Future refinements may include developing regionally-specific measures, and perhaps community-level development measures, as tools by which policymakers in Aboriginal, federal, and provincial governments could identify policies and models of development that could lead to substantial improvement in community well-being.

3. The HDI Methodology¹

The UNDP methodology for calculation of the HDI involves calculating three separate sub-indices; life expectancy, educational attainment, and GDP, which are combined to form the Human Development Index (UNDP 2000). Each of these sub-indices is essentially a measure of the distance between the actually achieved scores and theoretical minimum and maximum scores. To account for the diminishing marginal utility of income, the UNDP currently uses a log formula to discount GDP per capita in the calculation of the GDP index (UNDP 2000). The Human Development Index can be summarized by:

$$\text{Equation 1: } I_{HDI} = \frac{\left[I_{LEB} + \left(\frac{1}{3} I_{LIT} + \frac{2}{3} I_{GER} \right) + I_{GDP} \right]}{3}$$

where I_{LEB} is the life expectancy index, I_{LIT} is the adult literacy index, I_{GER} is the gross enrolment index, and I_{GDP} is the per capita GDP index. Each of the three sub-indices are given equal weight in the Human Development Index, which will have a positive value, to a maximum of 1.0.

¹ Although we briefly describe the constructions of the indices here, the UNDP methodology, as well as the particular data issues involved in the calculation of the index for the Canadian Aboriginal populations in this report, is described in an unpublished technical paper available from the authors.

4. Data Sources and Definitions

The two populations of interest in this report are the Registered Indian population and the reference population. The Registered Indian population includes those who are registered under the Indian Act of Canada (who are therefore of particular interest because of special federal responsibilities defined by the Act) and through treaties and agreements. The reference population includes those Canadians who are not registered, and includes both non-registered First Nations, Inuit and Métis people, as well as non-Aboriginal people.² The item on the census questionnaire that is used to indicate whether the respondent is a Registered Indian has changed somewhat between censuses (Statistics Canada 1998). While there is little choice but to use these data as they are, it is important to remember that they may not be completely comparable.

The data used for calculation of the educational attainment and income indices in this report are from the 1981, 1986, 1991, 1996, and 2001 Censuses, provided by Statistics Canada in the form of custom tables classified by ethnicity. The measures used to calculate the educational attainment index for Registered Indians and other Canadians are not the same as those used to calculate the HDI as presented in the UNDP's *Human Development Report*. Since 1995, the UNDP methodology has used two educational attainment measures; the adult literacy rate and the gross combined primary, secondary, and tertiary enrolment ratio. Because of difficulty in obtaining these data classified by ethnicity, two measures derived from the census highest level of schooling variable are substituted. The proportion of the population fifteen years and older that had attained grade nine or better is substituted for the adult literacy rate; and the proportion of the population nineteen years and older that had attained a high school diploma/technical/ post-secondary education with or without a high school diploma is used as a proxy for the gross enrolment ratio.

² In this paper we use the terms "reference population" and "other Canadians" interchangeably to refer to Canadians who are not Registered Indians.

The proxy for average individual income used by the UNDP, per capita GDP, is replaced by the average income from all sources as reported in the census. However, although the Census average income is usually calculated for only the population aged fifteen and over with income, these figures are adjusted to include the entire population with and without income in the denominator. The Aboriginal population is both younger than the general Canadian population and has a greater proportion reporting no income, thus, comparing only those with incomes may obscure real differences. This adapted average annual income is adjusted by the Consumer Price Index (CPI) of Statistics Canada (2000) and discounted according to the log formula currently used by the UNDP.

The estimates of life expectancy at birth for Registered Indians are taken from a series of projections of the Registered Indian population produced by Statistics Canada for Indian and Northern Affairs Canada (Rowe and Norris 1985; Nault et al. 1993; Norris, Kerr, and Nault 1995; DIAND 1998; Verma, Michalowski, and Gauvin 2003). For years in which separate life expectancies for those living on and off reserve were not available in published reports, the gap is estimated by assuming that the average reduction in the gap seen between 1991 and 2001 also occurred between 1981 and 1991. The reference population life expectancies have been estimated by adjusting the total Canadian life expectancies (Statistics Canada 1984, 1990, 1995, 1998) to account for the Registered Indian population. Because the Canadian life expectancy for 2001 had not yet been published at the time of this writing, it was assumed that the improvement in Canadian life expectancy at birth that occurred between 1991 and 1996 occurred as well between 1996 and 2001.

5. Results: Overall Trends in HDI Scores

It appears that the overall gap between the two populations has decreased in the past two decades, especially since 1986. Table 1 presents the HDI and component measures for the Registered Indian and reference populations. The gap in HDI scores between Registered Indians and other Canadians was reduced from 0.18 in 1981 to 0.12 in 2001. While both populations improved in terms of human development between 1981 and 2001, gains have been greater for the Registered Indian population.

Table 1
HDI and Component Measure Scores, Registered Indians and Reference Population, 1981–2001

Indicator	Population	1981	1986	1991	1996	2001
Life Expectancy at Birth (years)	Registered Indians	65.7	67.5	70.6	72.2	72.9
	Reference	75.6	76.2	77.9	78.5	78.7
Life Expectancy Index	Registered Indians	0.678	0.708	0.760	0.786	0.799
	Reference	0.843	0.853	0.881	0.891	0.896
Proportion completed High School or higher ¹	Registered Indians	0.330	0.341	0.456	0.514	0.567
	Reference	0.597	0.618	0.680	0.717	0.754
Proportion completed Grade 9 or higher ²	Registered Indians	0.597	0.628	0.721	0.781	0.825
	Reference	0.802	0.829	0.863	0.881	0.903
Educational Attainment Index	Registered Indians	0.508	0.533	0.633	0.692	0.739
	Reference	0.733	0.759	0.802	0.826	0.853
Average Annual Income (Year 2000 Constant Dollars) ³	Registered Indians	6,840	6,795	8,243	8,887	10,094
	Reference Population	16,554	18,132	20,072	19,989	22,489
Income Index	Registered Indians	0.694	0.693	0.725	0.737	0.759
	Reference Population	0.841	0.856	0.873	0.873	0.892
HDI Score	Registered	0.626	0.644	0.706	0.739	0.765
	Reference	0.806	0.823	0.852	0.863	0.880

Notes:

¹The proportion completed high school or higher is estimated by the ratio of the population with a secondary school graduation certificate, some post-secondary or trades education, or some university with or without degree, to the population aged 19 years and over.

²The proportion completed grade nine is the population aged 15 years and over who completed grade nine or higher, divided by the total population aged 15 years and over.

³The average annual income is the average income from all sources, for the total population with or without income, for the year before the census enumeration. The income values were converted in year 2000 constant dollars using Statistics Canada Consumer Price Index.

Sources: Statistics Canada Census Data custom tabulations; Statistics Canada 1984, 1990, 1995, 1998; Rowe and Norris 1985; Nault et al. 1993; Norris, Kerr, and Nault 1995; DIAND 1998; Verma, Michalowski and Gauvin 2003; Authors' calculations.

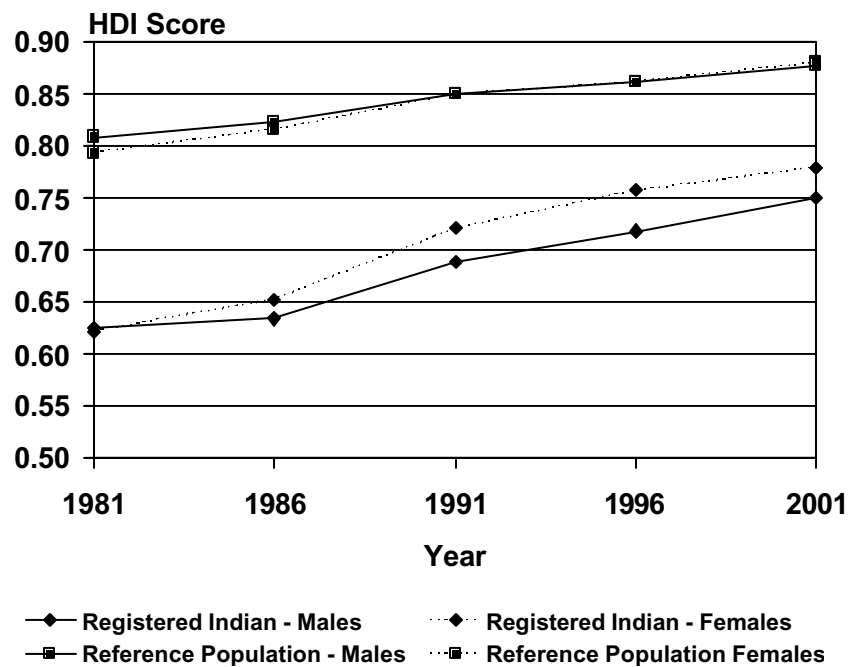
In examining each of the sub-indices, we can see which particular components of the overall HDI Registered Indians made the most gains, relative to other Canadians. The educational attainment of Registered Indians) measured by the proportion of the population with higher than grade nine education and the proportion with high school or better) improved considerably. Table 1 shows that the gap in educational attainment between Registered Indians and other Canadians was reduced from 0.23 in 1981 to 0.11 in 2001. However, there was no real improvement in the gap during the first five years of this period. Registered Indians have also experienced a greater increase in life expectancy at birth than have other Canadians during the period. Registered Indian life expectancy has increased by 7.2 years, from 65.7 years in 1981 to 72.9 years in 2001. The life expectancy of other Canadians increased 3.1 years, from 75.6 to 78.7 years (Table 1).

Although there have been substantial gains made by Registered Indians in life expectancy and education, the 1981–2001 period saw much less progress in terms of average annual income. The gap between Registered Indians and other Canadians actually increased by roughly two thousand constant year 2000 dollars between 1981 and 1991. Calculated from the figures in Table 1, the gap in income was \$9,714 in 1981 and \$11,829 in 1991. While there was some improvement between 1991 and 1996, this was due to a decrease in average annual income among the reference population, and income for Registered Indians was still about \$11,102 less than for other Canadians in 1996. The average annual income for Registered Indians did improve over the entire 1981–2001 period, from \$6,840 to \$10,094, but remained well below the level experienced by other Canadians.

6. Gender Differentials

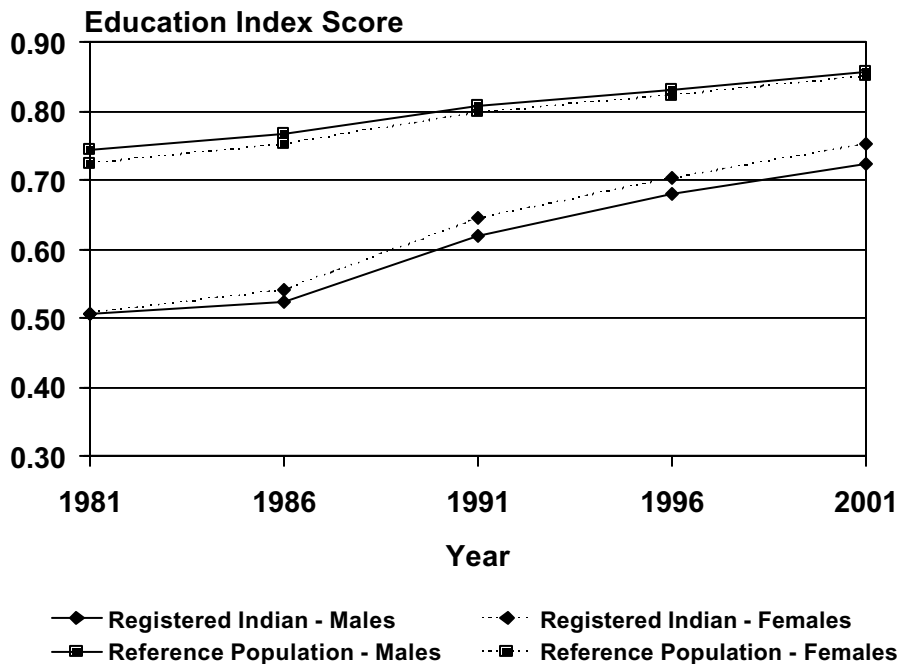
The HDI and sub-index scores were calculated separately for males and females in order to examine gender differentials in achievement by Registered Indians and other Canadians. Figure 1 presents the overall HDI scores, by gender, for the two populations. While the HDI scores of both populations increased between 1981 and 2001, the different patterns experienced by Registered Indians and other Canadians are immediately obvious. For the reference population, males had higher HDI scores than females from 1981 until 1996 when both sexes had an HDI score of 0.86. On the other hand, Registered Indian females scored slightly higher than their male counterparts in 1981 and this gap increased throughout most of the period. In 2001, Registered Indian women had an HDI score of 0.78, whereas Registered Indian men scored only 0.75 on the composite HDI.

Figure 1
HDI Scores, Registered Indians and Reference Population, Males and Females, 1981–2001



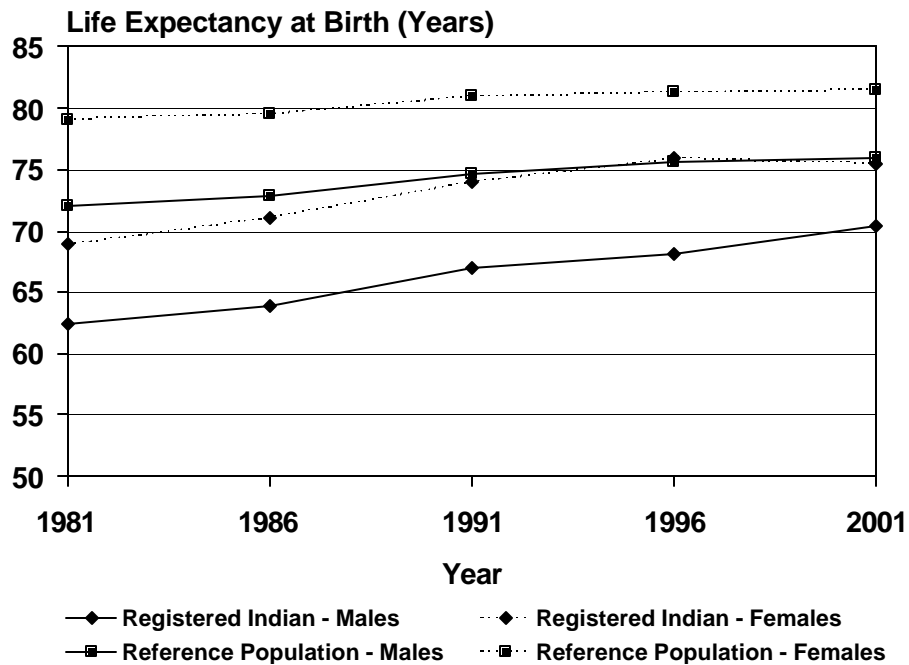
While the gender differentials in overall HDI scores are striking, it is important to examine the sub-indices individually. Figure 2 shows the Education Index scores for males and females in the Registered Indian and reference populations. Clearly, the Education Index contributes to the relative advantage that Registered Indian women have over Registered Indian men in the overall HDI. The gap between Registered Indian men and Registered Indian women increased slightly from practically no difference in 1981 to 0.03 in 2001. On the other hand, reference population men had a score that was about 0.02 higher than reference population women in 1981, this advantage had decreased to nearly zero by 2001.

Figure 2
Educational Attainment Index Scores, Registered Indians and Reference Population, Males and Females, 1981–2001



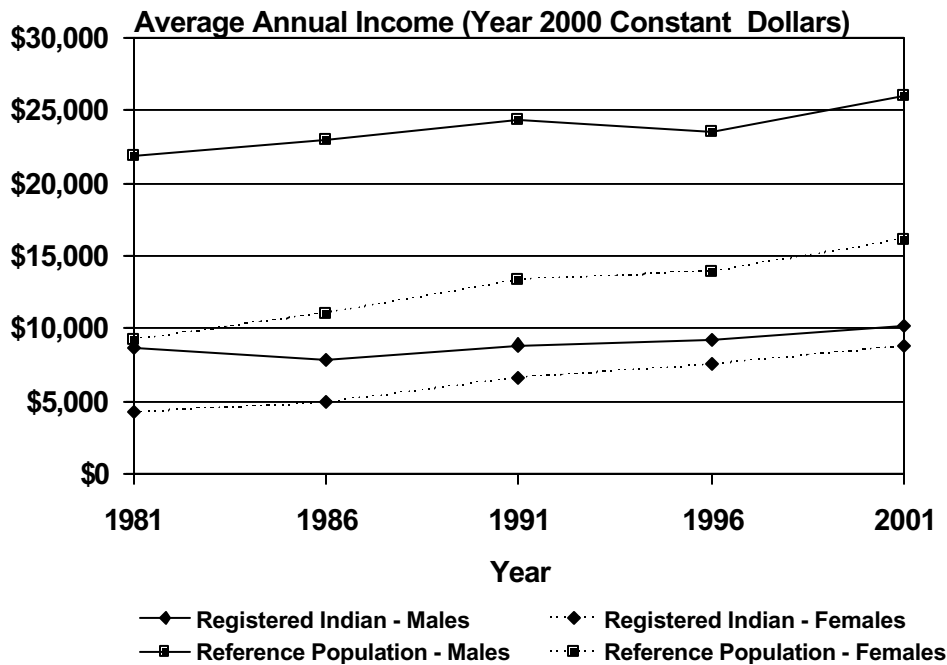
In developed countries it is typical for women to have a longer life expectancy than men, as is the case among Registered Indians and other Canadians. However, in the reference population, the difference between the life expectancy of females and males decreased from 7.1 years to 5.5 years during the period, as shown in Figure 3. In the Registered Indian population, on the other hand, the gap between males and females widened from 6.5 years in 1981 to 7.7 years in 1996. This gap decreased between 1996 and 2001, but this is due to a decrease in life expectancy of Registered Indian women. Note that this decline is very probably an artefact of the data, rather than a real decline, and may be the result of the addition of a large number of C-31 registrant women to the Registered Indian population between 1986 and 1996, leading to artificially high life expectancy estimates for these years.

Figure 3
Life Expectancy at Birth, Registered Indians and Reference Population, Males and Females, 1981–2001



As we have seen, Registered Indians experienced uneven improvement in average annual income, relative to the reference population, during the 1981–2001 period. As Figure 4 shows, the incomes of both Registered Indian and reference population males appear to have been affected) more than were the incomes of females) by downturns in the Canadian economy during the 1990s. While the average income of Registered Indian males increased only \$1,668 during the entire 1981–2001 period, from \$9,180 in 1981 to \$10,849 in 1996, Registered Indian women experienced an increase from \$4,553 in 1981 to \$9,395, improving the gender gap in income among Registered Indians. Registered Indian men continue to have considerably higher incomes than do Registered Indian women, but the gender disparity in income among Registered Indians was less than that experienced in the general Canadian population, which was still more than \$10,618 as reported in the 2001 census.

Figure 4
Average Annual Income, Registered Indians and Reference Population, Males and Females, 1981–2001

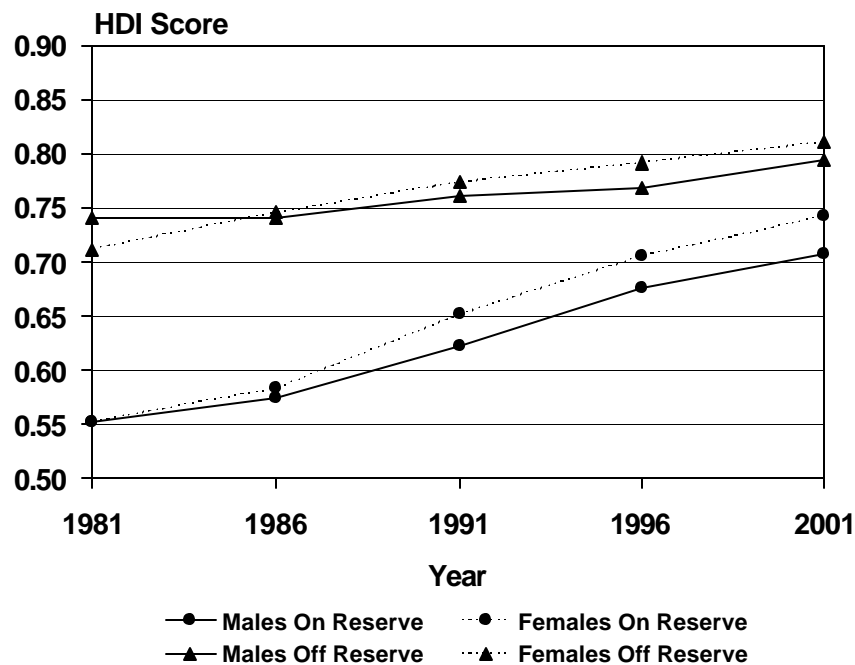


Although it may be encouraging that Registered Indian men and women, and reference population women, seem to have experienced increases in income despite the recession of the early 1990s, this effect could, to some extent, be due to the more marginal labour force positions occupied by members of these groups compared to those occupied by non-Registered Indian men, making the condition of the general economy less important to their incomes. It may also reflect a sectoral segregation of reference population women in tertiary industries that may have been less affected than manufacturing or heavy industry. The decreasing disparity between Registered Indian women and men appears to be a positive development, yet it remains to be seen if the incomes of Registered Indian women will continue to improve, or if their incomes will converge with those of Registered Indian men and remain at the latter's low level.

7. On- and Off-Reserve Differentials

Although the average level of well-being – as measured by the HDI scores of Registered Indians living in both reserve communities and non-reserve areas – appears to be improving, those living on reserve communities continue to have lower scores on the HDI and its sub-indices. Figure 5 shows the HDI scores for male and female Registered Indians living on and off reserve for the 1981–2001 period. Among males, the gap in the HDI scores of those living on and off reserve declined somewhat from 0.19 in 1981 to 0.08 in 2001. Among females, the on- and off-reserve gap declined similarly from 0.16 to 0.06.

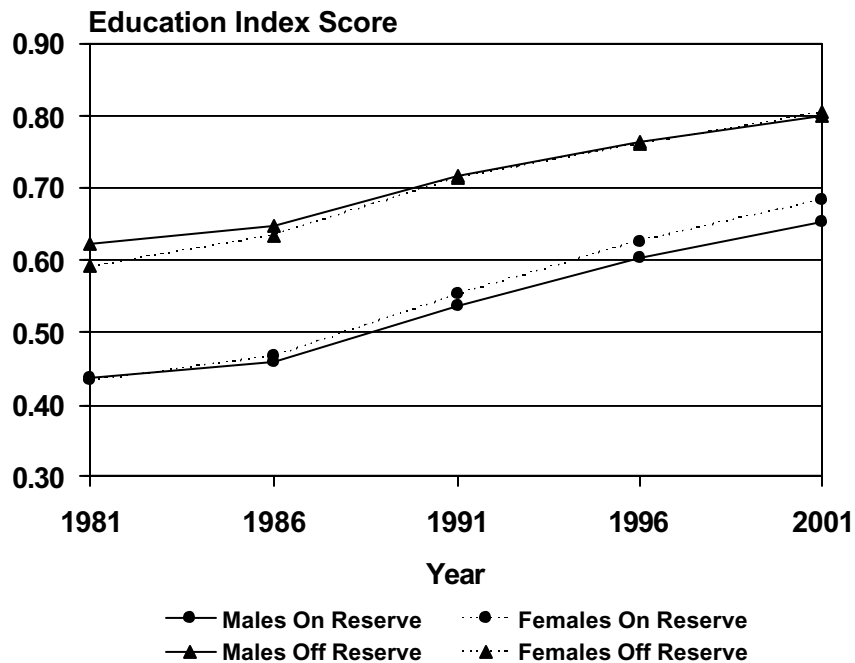
Figure 5
HDI Scores, Registered Indian Males and Females, On and Off Reserve, 1981–2001



For both on- and off-reserve populations, the advantage experienced by Registered Indian women over men appears to have increased during the period. In 1981, males living off reserve had higher HDI scores than off-reserve women. Throughout the period the average HDI score of off-reserve women improved, so that by 1996 they had a 0.13 advantage over men. Among reserve residents, the HDI scores of men and women were nearly identical in 1981, but by 2001 the index score for on-reserve women was 0.04 higher than that of on-reserve men. At least when measured by the composite HDI, it appears as though the gap in well-being between those living on and off reserve had decreased, while differences between males and females are widening somewhat, particularly among Registered Indians living in reserve communities.

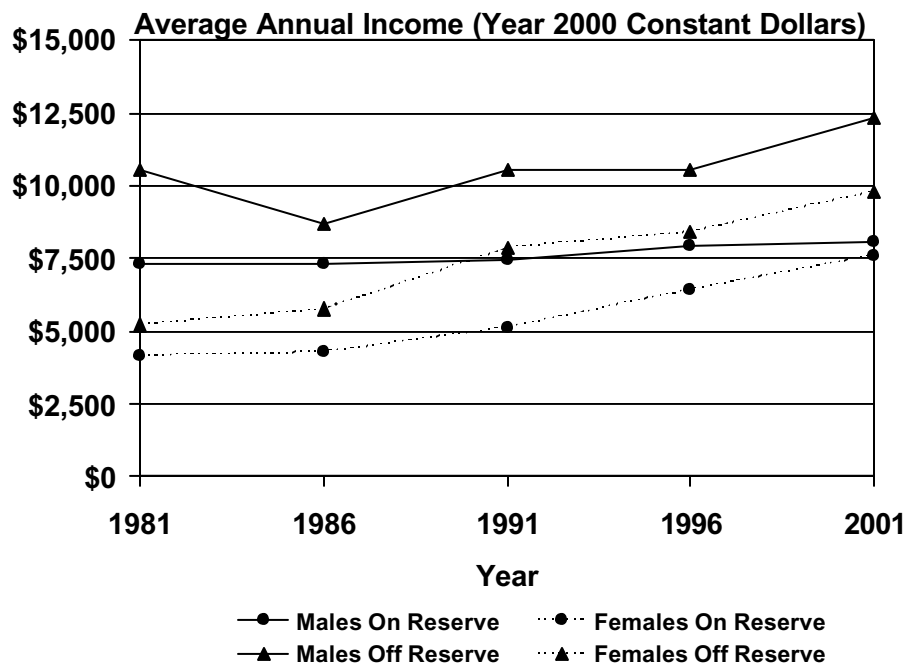
As with the overall HDI, there seems to have been some reduction in the gap in educational attainment between those living on reserve and those in off reserve areas. As shown in Figure 6, the gap between female Registered Indians living off reserve and females living on reserve had increased between 1981 and 1986, yet it was reduced from 0.16 to 0.12 between 1981 and 2001. Similarly, the difference in Education Index scores for males living on and off reserve was reduced from 0.19 in 1981 to 0.14 in 2001. The differences in educational attainment of males and females living off reserve decreased throughout the period, with males having an advantage of 0.03 in 1981 to practically zero in 1996 and 2001. However, among those in reserve communities, the educational attainment of females improved more than that of males and the gender gap widened. In 1991 males had a negligible advantage, but by 1996 the Educational Attainment Index score of women was 0.03 higher than that of men.

Figure 6
Educational Achievement Index Scores, Registered Indian, Males and Females, On and Off Reserve, 1981–2001



Although there was improvement in the educational attainment of Registered Indians of both sexes, living on and off reserve between 1981 and 2001, it is more difficult to find evidence of an improvement in income over the same period. As Figure 7 shows, males living off reserve had higher average incomes than other Registered Indians throughout the period. However, the average annual income of males living off reserve changed little over the entire period, and decreased slightly between 1981 and 1996 from \$11,300 to \$11,280. Although annual incomes had risen to \$13,215 by 2001, particularly noticeable is the reduction in income in the 1980s. Male Registered Indians living in reserve communities did not experience the same decrease in income between 1981 and 1986 as men living off reserve, but they saw relatively little gain with average incomes among on-reserve males, rising only from \$7,857 in 1981 to \$8,651 in 2001.

Figure 7
Average Annual Income, Registered Indian, Males and Females, On and Off Reserve, 1981–2001



Female Registered Indians experienced a greater increase in average annual income than did men over the entire period, and this was greatest for those women living off reserve. In 2000 dollars, their average annual income increased from \$5,572 to \$10,487 between 1981 and 2001. Females living on reserve, who had the lowest income of all groups throughout the period, had an increase of only about \$3,703 between 1981 and 2001 (Figure 7). The gap in average annual income between Registered Indians living on and off reserve increased between 1981 and 2001 for both Registered Indian men and Registered Indian women. For Registered Indian men, the gap between those living on and off reserve increased from about \$3,443 in 1981 to about \$4,565 in 2001. The \$1,130 advantage that off-reserve women had over women living on reserve in 1981 increased to just over \$2,340 by 1996.

While the average annual income of males living on reserve remained fairly constant between 1981 and 2001, the improvement in incomes of women living on reserve meant that the gender gap incomes among the on-reserve population closed substantially during the period to under \$500. On the other hand, a large gap remains between men and women living off reserve, although it did close somewhat from \$5,728 in 1981 to \$2,730 in 2001.

8. Discussion

In general, the HDI scores for Registered Indians have improved between 1981 and 2001, and the disparity between Registered Indians and other Canadians in HDI scores seems to have decreased. However, Registered Indians continue to have shorter life expectancy, lower educational attainment, and lower average annual incomes than do other Canadians, and the gap in average annual incomes actually increased during this period. Furthermore, improvements have not taken place in the same way for men and women, or for those living on and off reserve. Although differences between men and women have been generally decreasing for Canadians who are not registered under the Indian Act, some gender differences have increased for Registered Indians. While Registered Indians living on and off reserve have experienced improvements in well-being as measured by the HDI methodology, the disparity between those living in reserve communities and those living off reserve remains. In particular, the difference in annual income between Registered Indians living on and off reserve widened between 1981 and 2001, despite the lack of improvement in the incomes of Registered Indian men living off reserve throughout most of the 1980s and 1990s. These widening gaps raise serious questions about the degree to which the overall improvement in well-being has been distributed throughout the Registered Indian population.

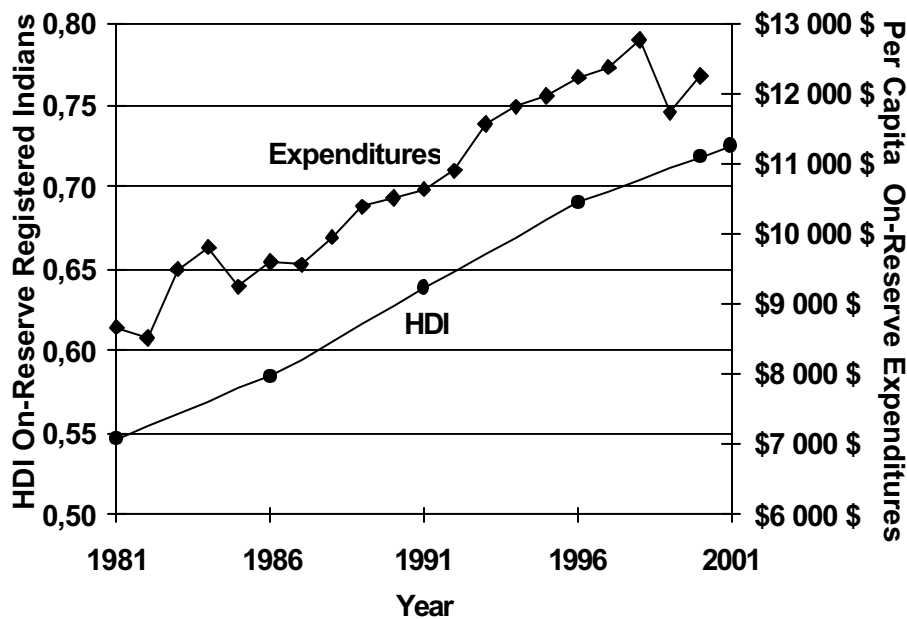
It is worth comparing the changes in federal expenditures to the changes in Registered Indian HDI scores during the 1981–2001 period. Federal programs and transfers specifically for Aboriginal people are delivered through a variety of agencies, including Health Canada, Industry Canada, CMHC, and others, as well as through some provincial programs (DIAND 1993). However, the bulk of these programs is delivered through Indian and Northern Affairs Canada and is targeted to Registered Indians living on reserve. DIAND's Program Two expenditures include most of INAC's administered programs directed to on-reserve Registered Indians, as well as a small percentage of Inuit programs and land claims settlement. As

such, Program Two expenditures comprise the item listed in the *Public Accounts of Canada* that most closely corresponds to INAC's expenditures on programs for Registered Indians on reserve.³

Figure 8 shows the increase in these per capita expenditures, in constant 2000 dollars, with the increase in the on-reserve HDI scores during this period. Although both spending and well-being increased over the 1981–2001 period, this is, by itself, insufficient evidence to conclude that the increase in well-being of on-reserve Registered Indians has been due to public spending. The change and stability in the average achievement on the indicators included in the HDI must be interpreted in light of the changing social, demographic, and economic situation of Aboriginal people within the context of a changing Canadian society and economy. The full discussion of the reasons and implications of the changes in well-being among the populations included in this study deserves attention that is beyond the scope of this paper. Relating expenditures to well-being requires more than the five data points available in our HDI series, and better data on expenditures than are available from *Public Accounts*. However, it is possible to conclude that while federal spending on transfers to Registered Indians on reserve has increased, so has average well-being on reserve, as measured by the Human Development Index.

³ DIAND Program Two expenditures also include expenditures on programs delivered to the Inuit, as well as claims, and as such it is not an ideal measure of transfers to Registered Indians on reserve. However, it is the *Public Accounts* line that is the closest approximation.

Figure 8
On-Reserve HDI Scores and DIAND Program Two Expenditures, 1981-2001



Notes: Expenditure data are total budgetary Program Two expenditures, which includes claims as well as Indian and Inuit programming. Expenditure information has been calculated on a 3-year average, and adjusted by the CPI to 2000 Dollars.

Sources: 1981-1999 Registered Indian population INAC (2003) Basic Departmental Data 2002; Expenditures from Receiver General of Canada (2003) Public Accounts of Canada, Vol. II Part I; HDI Scores from authors' calculations from Census data.

Improved health on reserve, rising educational attainment, and increases in income may be due more to economic and social factors than federal spending, not the least of which may be the efforts of communities themselves without government assistance. It is also possible that the increase in well-being has occurred in spite of the increased spending rather than because of it. This is the position that would likely be taken by conservatives who would cite the depressing effects of dependency on transfers as removing the impetus for real economic development. Testing either of these possibilities would require the development of models which would be able to estimate what would have happened had this spending not taken place, to isolate other factors, and to define the precise causal links between spending and improved income, education, and health outcomes. This would require better data than we have been able to obtain, but would seem to be an important direction for future research. Still, the pattern of increasing well-being does suggest

the possibility that, in keeping with the RCAP recommendations, increases in federal spending may be able to improve the social and economic conditions of Aboriginal people.

There are other factors besides INAC's expenditures that have likely affected HDI scores, particularly those of off-reserve women. One of the patterns found here is an increase in the income and educational attainment of Registered Indian females compared to Registered Indian males. The increase has been greatest for off-reserve women, which suggests that this may be at least partially due to the 1985 changes to the Indian Act. Bill C-31 has resulted in the addition of more than 100,000 women and their children to the Indian Register between 1985 and 1996 (Clatworthy et al. 1997). Most of these women were residing off reserve at the time of their reinstatement, and continued to do so after regaining Registered Indian status. Bill C-31 women tend to be older and may have had different educational and workforce experiences than other Registered Indian women, which may have contributed to the changes in the average levels of education and income in the Registered Indian population after 1986.

Migration between on- and off-reserve locations could also lead to possible changes in the composition of the population in these locations, if migrants differentially move on the basis of their education, income, or health. Norris, et al (2003) and Clatworthy (1996) have found that between 1986 and 1996 there has been a net flow of migrants from off-reserve areas to reserve communities, although there has also been migration in the opposite direction. While there is no reliable evidence that migrants in either direction differ in terms of educational attainment, such a factor could, in the future, lead to a "brain drain" or "gain" situation. Similarly, interprovincial migration in search of employment could improve the well-being of Registered Indians in Canada. While there does not presently appear to be large net interprovincial migration of Registered Indians (Clatworthy 1996), future application of the HDI methodology to individual provinces and territories would be a useful refinement.

Finally, these indicators of well-being are averages based on individual-level data that do not represent the experiences of particular communities. While the Registered Indian population is divided between those living on and off reserve, individual communities may have health, income, and education outcomes that are considerably different than these averages. Increases in the average individual level of attainment on these measures should not lead us to the conclusion that the well-being of reserve communities has, necessarily, seen similar improvements.

We may cautiously conclude that there was improvement in the relative well-being of Registered Indians between 1981 and 2001. However, the continuing disparities and the lack of improvement in the incomes of Registered Indian males, in particular, are of concern. If the changes found here are real and they do represent improvements in people's health, incomes, and education, these improvements have not occurred at a rate that will see the standards of living of Registered Indians converge with that of other Canadians in the near future. The disparities between those living in reserve communities and those living off reserve have decreased somewhat, although the gaps between men and women suggests that there may be increasing disparity within the Registered Indian population.

Throughout this paper, we have used the term "well-being" to refer to the overall welfare of a population, in a way more or less synonymous with the UNDP's "human development." While the UNDP's Human Development Index is a widely used indicator of general quality of life, it cannot provide a complete picture of what would be commonly meant by well-being in people's day-to-day lives. The HDI is limited to three coarse socio-economic indicators, and is not able to address subjective or qualitative dimensions of well-being. Spirituality, relationships with family, freedom and human rights, the preservation of culture, and other aspects of well-being are not easily quantifiable, but are important to individuals and communities. Despite its limitations, the HDI does show that there are important and continuing differences in the average achievement of Registered Indians and other Canadians in life expectancy, income, and educational attainment. While these do not capture well-being in its entirety, they do represent important issues for research and policy.

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