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Aboriginal Well-being in Four Countries: An Application of the UNDP's Human Development Index to Aboriginal People in Australia, Canada, New Zealand, and the United States

Martin Cooke

Francis Mitrou

David Lawrence

Eric Guimond

Dan Beavon

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Introduction

In this chapter we develop a comparative analysis of Australia, Canada, New Zealand, and the United States. It is unclear just how the socio-economic and health status of Aboriginal people in these countries has changed in recent decades, and it remains generally unknown whether the overall conditions of Aboriginal people are improving and whether the gaps between Aboriginal people and other citizens have indeed narrowed. Utilizing the same approach as was developed in Chapter 2 we have analyzed our comparator countries to determine if there have been improvements or increasing problems in terms of the gaps between Aboriginalpeople and the non-Aboriginal populations during the decade 1990 to 2000.

It is well known that, on average, Aboriginal people in North America and Australasian countries have not shared the same high quality of life enjoyed by other citizens. The colonial histories of these countries are reflected in higher mortality, lower incomes and educational achievement, and higher rates of crime and victimization of Aboriginal people. However, important changes in the relationships between Aboriginal people and state structures have taken place in each of these countries in recent decades. In Canada, Australia, and New Zealand, there have been incremental moves toward more self-determination by Aboriginal peoples, including Aboriginal control over education and health service delivery. In the United States, Aboriginal affairs has occupied a less central place in national politics, but there have nonetheless been changes that have given Aboriginal peoples more control over program delivery in their own communities (Maaka and Fleras, 2005; Fleras and Elliott, 1992: 159; Cornell, 2004).

Nonetheless, it remains an open question as to whether the economic, social, and physical well-being of Aboriginal people has improved, and whether the gaps between Aboriginal people and other citizens have been reduced. In the Canadian

context, research using an adaptation of the UNDP's Human Development Index (HDI) has found that disparities between Registered Indians and other Canadians declined over the 1981–2001 period. However, progress was uneven and the gaps on some indicators widened (Cooke, Beavon, and McHardy, 2004). This paper extends that research to use the HDI methodology to investigate the well-being of Aboriginal people in Canada, Australia, New Zealand, and the US and to compare Aboriginal and non-Aboriginal people in terms of income, health, and educational attainment indicators between 1991 and 2001.

Background: Similarities and Differences

These four countries are often thought of as natural comparators due to their origins as mainly British colonies, their shared language, and the presence of sizeable indigenous populations (Lavoie, 2004). This is reflected in comparative studies of the politics of Aboriginal rights and the history of Aboriginal–state relations (Maaka and Fleras, 2005; Fleras and Elliot, 1992; Armitage, 1995), and of the health status of Aboriginal people (Kunitz, 1990; Trovato, 2001; Bramley, Hebert, Jackson, and Chassin, 2004). According to the UNDP's annual *Human Development Report*, these four countries are all among the world's most "highly developed" nations and differences among them in terms of average educational attainment, income, and general health are very slight (UNDP, 2003). They have similar colonial origins and broadly similar systems of state provision, characterized by minimal decommodification and an emphasis on market provision (Esping-Andersen, 1999).

All of these countries currently have minority Aboriginal populations as well as laws and institutions that apply only to Aboriginal people. At the time of arrival of Europeans, a similar approach was taken toward the people of these territories, including attempts to eradicate traditional ways of life and assimilate Aboriginal people into the settler culture, as well as paternalistic policies that were undertaken in order to "protect" them. Although the specific policies and circumstances of colonial rule differed, Aboriginal peoples in North America and Australasia were subject to military domination and were treated as both wards of the state or the Crown, and as a "problem" to be solved by assimilation into the European culture (Armitage, 1995: 9). Nonetheless, there were important differences in the conditions under which colonization occurred, and it is argued that these historical legacies continue to affect Aboriginal–state relations today (Armitage, 1995).

In North America, Europeans found a world in which there were many distinct cultures, spread across a vast continent, and connected by well-developed trade networks and political relationships (Kunitz, 1990). In Canada, Aboriginal people were economically important to settlers engaged in the fur trade. Military and economic relationships between some Aboriginal peoples and the Crown, and the drive to settle the West, resulted in a complex situation in which treaties were signed with some groups, but not others. The result of these historical dynamics

in Canada has been a fragmentation of the legal status of Aboriginal peoples and communities. Some Aboriginal people live on reserves—Crown lands held by Aboriginal communities and which have a special legal status. However, not all communities share this special status, and in some provinces there were no treaties signed between Aboriginal peoples and the Crown (Ponting and Gibbins, 1980: 23). First Nations people registered under the *Indian Act* ("Registered Indians") have a unique relationship to the Canadian state, which has a responsibility to provide services, particularly in reserve communities. This responsibility has been extended by the Supreme Court of Canada to include the Inuit. For other Aboriginal people, including the Métis, non-Status First Nations people, and others, health and social services are provincial responsibilities (Dow and Gardiner-Garten, 1998).[1]

In the US, the relationship between Aboriginal peoples and settlers was characterized by somewhat more conflict than in Canada. The *Treaty of Paris*, concluding the American Revolution, allowed the settlement of the West and marked the beginning of an eighty-year period of treaty-making between the government and various tribes. A reservation system has remained in the US, and treaty-based rights are an important basis for negotiation with the federal government. Tribes have been described as "domestic dependent nations," having at least formal sovereignty (Maaka and Fleras, 2005: 60). This government-to-government relationship for recognized tribes may facilitate greater Aboriginal control over services. Although the US is the only country of the four that does not have a universal public health system, the federal Indian Health Service (IHS) does provide primary health services in reservation communities, contributing to lower mortality among Aboriginal Americans (Kunitz 1990).

Australian Aboriginal people were also distributed across a continent, but social organization was generally at the tribal level, in hundreds of small groups with many different languages. Australia stands out as the only one of the four countries in which there were no treaties signed between the colonizers and Aboriginal peoples (Bienvenue, 1983). Kunitz (1990) argues that this has eliminated a legal basis for claims of compensation and services. The creation of the Commonwealth of Australia through the merger of separate colonies resulted in a Constitution that placed responsibility for social and health programmes for Aboriginal people at the state level until a 1967 referendum made Aboriginal affairs an area of Commonwealth jurisdiction (Lavoie, 2004).

When Europeans arrived in New Zealand, the Maori were a large population speaking related dialects and occupying a small total area relative to the other countries. It is argued that this put the Maori in a position from which colonization could be better resisted, and led to the signing of a single treaty, the *Treaty of Waitaingi*, between the Crown and all Maori *iwi* in 1840. This provided a different basis for relations between the Maori and the state than in the other countries (Armitage, 1995; Bienvenue, 1983; Kunitz, 1990). Andrew Armitage (1995) points out that colonization also occurred later in New Zealand than the other

Table 5.1: Aboriginal Population and Urbanization

	Population 2001	% of total Population	% living in urban areas
Australian Aboriginal and Torres Strait Islander	410,000	2.2	72.6%[1]
New Zealand Maori	526,281	14.1	83.0%[1]
Canadian Aboriginal Identity	976,305	3.3	49.1%
US American Indian or Alaska Native[2]	4,119,300	1.5	60.8%

Sources: ABS, 1998; Statistics Canada, 2003; Statistics New Zealand, 2001; US Census Bureau, 2000.
Notes: 1 Urbanization figures from 1996 census data; urban areas are defined as areas with populations of 1,000 or more in Canada, Australia, and New Zealand, and 2,500 or more in the US.
2 US figures are from 2000 census, others from 2001.

countries, and that a middle-class social reform movement had by then taken hold in England, shaping the organization of colonial affairs. As well, New Zealand is a unitary state in which services are provided to all citizens by the national government, rather than by provinces or states. This may have prevented the sorts of jurisdictional issues which have made political action more difficult for Aboriginal groups in Canada and Australia (Kunitz, 1990: 653).

The Changing Situation of Aboriginal People

There have been important demographic and political changes in the situation of Aboriginal people in recent decades. Although fertility and mortality remain higher than in non-Aboriginal populations, Aboriginal populations have largely undergone a demographic transition (Kunitz, 1990). There has also been an epidemiologic transition (Omram, 1971), in which immunization, improved sanitation, medical services, and transportation in remote communities have reduced infant mortality. However, diabetes, suicide, alcoholism, and violence now contribute significantly to the difference in mortality between Aboriginal and non-Aboriginal populations (Trovato, 2001).

Table 5.1 shows the sizes of the Aboriginal populations in these countries in 2001. Although they number over four million people, American Indians and Alaska Natives make up only about 1.5% of the American population. In relative terms, the Maori population is the largest, accounting for 14% of all New Zealanders. Just over 2% of Australians and 4.6% of Canadians identified themselves as Aboriginal people in 2001. About two percent of Canadians were registered under the *Indian Act*, roughly half of whom live in reserve communities.

Another important transition that has taken place in the social demography of Aboriginal people has been increased urbanization. As shown in **Table 5.1**, Australian Aboriginal people and the Maori are more urbanized than North American populations. In the last two decades, however, there has been more migration to Aboriginal communities from the city than in the other direction in Canada and Australia (Norris, Cooke, and Clatworthy, 2003; Taylor and

Bell, 1996). Taylor and Bell (1996) suggest this may be related to changing political and legal situations of Aboriginal people and communities. Broadly speaking, this includes greater political representation and self-determination and increased Aboriginal control over services in communities.

Aboriginal political movements in the late 1960s and 1970s contributed to important changes in the relationship between Aboriginal people and the state in the 1980s and 1990s. In Canada, Aboriginal rights were included in the *Constitution Act* of 1982, and the Royal Commission on Aboriginal Peoples reported on the poor socio-economic and health status of Aboriginal people, prompting an official apology from the Canadian government (Dow and Gardiner-Garten, 1998). The creation of the territory of Nunavut, the Nis'gaa treaty, and the Marshall decision regarding Aboriginal hunting and fishing rights, have been important in entrenching Aboriginal rights and improving the political representation of Aboriginal people in Canada. In the US, there have been fewer recent changes to the constitutional and legal status of Aboriginal peoples. However, in 1982, reservation communities were given taxation rights similar to those held by states, providing tribes with greater resources and contributing to increased control over local affairs (Maaka and Fleras, 2005: 61; Fleras and Elliott, 1992: 161).

In Australia, much of the impetus for future progress in equality for Aboriginal people began in the 1960s, with eligibility to vote in Commonwealth elections coming in 1962, and an equal pay ruling in 1965. A 1967 referendum gave the Federal Government specific power to make laws regarding Aboriginal people and resulted in the newly created Department of Aboriginal Affairs, giving Aboriginal issues representation at the national level (Bennett, 2004). In 1990 the Aboriginal and Torres Strait Islander Commission (ATSIC) was established to advise the government on Aboriginal affairs, and had some executive power with regard to decision making and spending on Aboriginal programs. ATSIC comprised elected regional Aboriginal representatives and government-appointed administration staff (Pratt and Bennett, 2004). The 1992 Mabo decision recognized the native title rights of Aboriginal Australians and overturned the premise that Australia was *terra nullius* (land owned by no one) when settled by Europeans (High Court of Australia, 1992). The subsequent *Native Title Act* paved the way for claims to land by Aboriginal groups. However, a major setback for the government representation of Aboriginal people occurred in March 2005 when ATSIC was formally abolished and many of its functions were transferred to mainstream agencies.

The *Treaty of Waitangi Act* is recognized as the founding document of New Zealand, and was amended in 1985 to strengthen the mandate of the Waitangi Claims Tribunal to hear claims of breaches of treaty. In 1993, the *Te Ture Whenua Maori*, or the *Maori Land Law Act* strengthened Maori land claims (Gilling, 1993). New Zealand is the only one of the four countries in which there are dedicated parliamentary seats for Aboriginal people, and the number of these seats was increased in 1995, a year in which there was also a number of large Maori land claims settled (Dow and Gardiner-Garten, 1998).

Scholars have suggested that the unique histories of these countries have resulted in different relations between Aboriginal people and the state, with implications for the health and well-being of Aboriginal people and their ability to mobilize state resources through political action. The Maori may fare relatively better partly because the *Treaty of Waitaingi* provides a basis for Aboriginal rights that apply to all Maori. The lack of treaties in Australia, it has been argued, weakens the political position of Aboriginal people in that country (Armitage, 1995; Bienvenue, 1983; Fleras and Elliott, 1992). Geographic and legal fragmentation of the Canadian Aboriginal population may contribute to heterogeneity in terms of health and socio-economic well-being, while recognition of US tribes as dependent but self-governing internal nations facilitates direct negotiation with the federal government (Maaka and Fleras, 2005: 60).

Empirically, some of these populations have been compared in terms of specific mortality measures. Australian Aboriginal people and Maori have been found to fare worse than North American Aboriginal populations in terms of life expectancy and cause-specific mortality (Kunitz, 1990; Trovato, 2001; Bramley et al, 2004). However, these populations have not been compared in terms of overall quality of life, including other dimensions of social and economic well-being. As well, despite the changing political and legal situations of Aboriginal people in these countries, it is unclear how the gaps between Aboriginal and non-Aboriginal people have changed in the past decade. Research using the HDI to measure the well-being of Canadian Registered Indians found that overall health, income, and education measures improved between 1981 and 2001 (Cooke et al., 2004). Disparities between Registered Indians and other Canadians remained, however, and progress in reducing them was uneven. It is unclear how the changes seen in Canada compare with those in similar countries and how North American and Australasian Aboriginal people compare in terms of overall quality of life. This paper explores these questions, applying the HDI methodology to compare the education, income, and overall health of these populations.

Methodology: The Human Development Index[2]

The HDI was developed to include dimensions other than national product in measurements of development (Hopkins, 1991; ul Haq, 2003). However, in the context of developing countries it is necessary for an index of well-being to balance theoretical completeness with the constraints of data availability. Therefore, *human development* was defined by the UNDP to include three broad and interrelated dimensions; an income sufficient for a minimal material standard of living, knowledge, which is necessary for full participation in society, and health, identified as a fundamental prerequisite to well-being (UNDP, 1990). Life expectancy, education, and income indicators are each placed on a scale between a theoretical minimum and maximum, and combined with equal weighting, to give an overall HDI score between zero and one, as shown in **Table 5.2** (page 94).

The Aboriginal populations examined in this paper include Australian Aboriginal and Torres Strait Islanders, New Zealand Maori, and American Indian and Alaska Native people. Two Canadian Aboriginal populations are included—those identifying themselves as having Aboriginal origins, and those registered under the *Indian Act of Canada*. These populations are compared to the non-Aboriginal populations in these countries, defined as the total national population, minus the Aboriginal population.

As with the previous applications of the HDI to sub-national populations, some changes had to be made to the HDI methodology in light of the available data. The education and income measures in this paper were taken from custom tabulations of 1991, 1996, and 2001 census data for Australia, Canada, and New Zealand, and from 1990 and 2000 census five % public use sample files for the US. Because of a lack of data on adult literacy or school enrolment in the censuses, we use the proportion that completed the equivalent of grade 9 or higher in the North American systems as a proxy for adult literacy (**Table 5.3** – page 94). Whereas our previous research used the population 20 and over with high school or higher education as a proxy for the gross enrolment ratios used in the UNDP publications (Beavon and Cooke, 2003; Cooke et al., 2004), this paper uses the proportion of the population aged 18 to 25 with secondary school or higher as a measure of the *flow* of knowledge into the population (**Table 5.3**). The UNDP's HDI methodology for comparing countries uses per capita GDP as a proxy for average individual income, and discounts GDP using the log formula in **Table 5.2**. We use median annual individual total income from census data. Following the UNDP, point estimates only are presented, as the census data are tabulated from very large samples. We are interested in the very general trends at the national level, rather than hypothesis tests of small differences.

Data Sources and Quality

Although censuses are the best source of time series data on these populations, there are some problems with the comparability between countries and between years. In the Canadian and Australian censuses, the Aboriginal population refers to people who identify themselves as having Aboriginal ethnicity. The Canadian Registered Indian population is identified by a separate question in the Census, and it is known that this population does not perfectly correspond to the Indian Register. The Canadian Census questions regarding ethnic origin and Aboriginal identity have changed somewhat between years, and the data may also be affected by the continued effects of a major 1985 legislative change to the *Indian Act* (Clatworthy, 2003; Guimond, Kerr, and Beaujot, 2004). The Maori population is defined in response to an ethnicity question that was changed in 1996, possibly affecting the comparability between years (Statistics New Zealand, 2005). The US Aboriginal population is defined using the "race" question, which also changed between 1990 and 2000, to allow multiple write-in responses (US Census Bureau,

Table 5.2: HDI Index Calculation

		Measure	Min.	Max.	Index Formula
Education Index	**Adult Literacy (1/3)**	Proportion 15 and older with grade 9 or higher education	0	100	$I_{Literacy} = \frac{X_{actual} - X_{\min}}{X_{\max} - X_{\min}}$
	Education (2/3)	Proportion 18–25 with high school or some post-secondary education	0	100	$I_{Education} = \frac{X_{actual} - X_{\min}}{X_{\max} - X_{\min}}$
Income Index		Median total income for those 15 and older	PPP $100	PPP $40,000	$I_{Income} = \frac{\log(X) - \log(X_{\min})}{\log(X_{\max}) - \log(X_{\min})}$
Life Expectancy Index		Life expectancy at birth	85 years	25 years	$I_{LEB} = \frac{X_{actual} - X_{\min}}{X_{\max} - X_{\min}}$
HDI					$I_{HDI} = \frac{\left[I_{LEB} + \left(\frac{1}{3}I_{Literacy} + \frac{2}{3}I_{Education}\right) + I_{Income}\right]}{3}$

Table 5.3: Educational Attainment Proxy Measures

	Adult Literacy Proxy	Gross Enrolment Proxy
Australia	1991, 1996: Proportion 15 or older that left school aged 15 years or older. 2001: Proportion 15 or older with highest education qualification year 9 or higher.	1991, 1996: Proportion 18–24 still in school or left school aged 18 or older. 2001: Proportion 18–24 still in school, or with highest educational qualification year 12 or equivalent
Canada	Proportion 15+ with grade 9 or higher educational attainment.	Proportion 18–24 with secondary school certificate, some college, trades or technical, or university.
New Zealand	Proportion 15+ with no school qualification	Proportion 18–24 with sixth form or higher qualification.
United States	Proportion 15+ with 9th grade or higher educational attainment	Proportion 18–24 with high school graduation, GED, or higher educational attainment.

2000b). Because we use self-reported ethnicity or race, these data are susceptible to the effects of changing patterns of ethnic identification observed in the US, Australia, and Canada (Guimond, 2003; Esbach, 1993; Taylor, 1998).

Other problems include a change in the Australian census education questions. Whereas the 1991 and 1996 data include the age at which the respondent left school, the 2001 data indicate the highest level of schooling completed (**Table 5.2**). Although this educational attainment measure is more comparable to the census measures in the other countries, it is not comparable with the previous

Australian measures of the age at school leaving. This may especially be the case for Aboriginal people, who have been found to complete school later, at least in Canada (Hull, 2005). In order to describe the 1991–2001 changes, we use the 1991 and 1996 age at school-leaving measures, extrapolating 2001 values and assuming that the non-Aboriginal Australian measures improved linearly between 1991 and 2001 and that the gap between Aboriginal and non-Aboriginal people remained constant between 1996 and 2001. We use the educational attainment measure to compare Australia to other countries in 2001.

Median annual income for those aged 15 and older with income was also taken from the census data. Whereas the other countries reported point estimates of income, the Australian and New Zealand census data provided fourteen income categories, requiring the calculation of a median from grouped data. Fortunately, the categories were of relatively small width, providing confidence in these median incomes. Income measures were converted to Purchasing Power Parity dollars (OECD, 2005). However, these adjustments for price and currency do not take into account higher prices in remote communities and census income measures do not incorporate traditional activities or those reporting no income.

The life expectancy estimates used are the best estimates that are available from official sources. Where the years for which these estimates were available do not correspond to census years, estimates were interpolated. In Canada, Statistics Canada estimates are only available for the Registered Indian population and are used for the total Aboriginal population (Rowe and Norris, 1985; Nault, Chen, George, and Norris, 1993; INAC, 2000). These are calculated from Indian Register data, and are subject to problems of under-reporting of deaths. Life expectancy for American Indians and Alaska Natives, adjusted for under-reporting of Indian race, were taken from Indian Health Service publications (IHS, 1994; 1997; 1998; 1999). New Zealand estimates were taken from official life tables (Statistics New Zealand, 1999; 2004). Estimates for Australia are from adjusted life tables published by the Australian Bureau of Statistics (1997, 2001).

Estimating Aboriginal life expectancy is difficult, and the accuracy of life tables can be influenced by the quality of recording of Aboriginal status within death registers and the total population counts. Resulting numerator–denominator bias can impact on life expectancy estimates, and changes in bias over time can impact gaps over time (Alwaji et al., 2003; Blakely et al., 2005). Aboriginal life tables calculated from vital statistics data and published by official sources have been used for all four countries, and where the estimate years did not correspond with the census years, they were linearly interpolated. Life expectancy estimates used for the Canadian Aboriginal population were for Registered Indians, the only population for which national estimates are available, and which represent about 57% of the Canadian Aboriginal population in the 2001 Census. For New Zealand, a change in the census ethnicity question affected the comparability of 1991 and later life tables. For this reason, we have not used the 1991 Aboriginal life tables for New Zealand, but have backcast the 1996 and 2001 data using linear extrapo-

Table 5.4: Life Expectancy at Birth, Years (Life Expectancy Index Score)

	Australia Non-Aboriginal	Aboriginal and Torres Strait Islander	Aboriginal–Non-Aboriginal Gap
1990/1	80.2 (.920)	59.6 (.577)	20.6 (.343)
1995/6	81.4 (.939)	59.4 (.573)	22.0 (.366)
2000/1	82.8 (.964)	59.6 (.576)	23.2 (.388)
	Canada Non-Aboriginal[1]	**Canadian Registered Indian**	**Gap**
1990/1	77.9 (.882)	70.6 (.760)	7.3 (.122)
1995/6	78.5 (.892)	72.2 (.787)	6.3 (.105)
2000/1	78.7 (.895)	72.9 (.798)	5.8 (.097)
	New Zealand Non-Aboriginal	**Maori**	**Gap**
1990/1[2]	76.4 (.856)	67.7 (.712)	8.7 (.144)
1995/6	78.0 (.883)	69.4 (.741)	8.6 (.142)
2000/1	79.6 (.910)	71.1 (.769)	8.5 (.141)
	United States Non-Aboriginal	**American Indian and Alaska Native**	**Gap**
1990/1	75.4 (.841)	70.2 (.753)	5.2 (0.88)
1995/6	76.2 (.854)	71.1 (.768)	5.1 (.086)
2000/1	76.6 (.859)	70.6 (.760)	6.0 (.099)

Notes

(1) Reliable life expectancy estimates for Canadian Aboriginal populations for these years are only available for the Registered Indian population. The non-Aboriginal population value for this indicator is therefore the total Canadian population, minus the Registered Indian population.

(2) 1990/1 life expectancy estimates for New Zealand are backcast from the later estimates, using linear extrapolation.

lation. The resulting 1991 estimates are similar to those published by Blakely et al. (2003), who identify some overestimation of Maori life expectancy within these tables. They report that although Maori life expectancy increased over the 1980s and 1990s, the gap with non-Maori, non–Pacific Islanders in New Zealand widened over the period, to nearly 10 years. As well, Hill et al.(2007) suggest the gap in life expectancy is around 13 years for Aboriginal Australians, compared with the gap of over 20 years estimated using official life tables. Note that using these revised estimates would not change the ranking of the countries presented below, nor seriously change the overall picture of changes in Aboriginal well-being in these countries. We therefore choose to use the original New Zealand life tables, which are centred on the census years and show a slightly narrowing life expectancy gap, and the original Australian figures, which provide a series of estimates over the period in which we are interested.

Results

In this section, the four countries are compared in terms of the gaps between Aboriginal and non-Aboriginal people in life expectancy, education, and income

indices over the 1990/1–2000/1 period. The gaps in the overall Aboriginal HDI scores are then compared. Lastly, we present adjusted Aboriginal HDI scores for these populations in 2000/1, and compare them to some countries in the *Human Development Report 2003* (UNDP, 2003).

Life Expectancy at Birth, 1991–2001

Table 5.4 shows the life expectancy in years for four Aboriginal populations, the total national populations, and the gap between Aboriginal and non-Aboriginal people. As expected from previous research, Australia stands out as having the widest gap in life expectancy with more than 20 years difference between Aboriginal and Torres Strait Islander people and other Australians, who had the highest life expectancies among the four countries. Estimated life expectancy at birth for Aboriginal Australians was the same at the beginning and the end of the period, at about 59 years, resulting in a growing gap in life expectancy.

The gap between Registered Indians and other Canadians declined to 5.8 years by 2001, the smallest gap among these four countries (**Table 5.4**). Maori life expectancy was 8.5 years less than other New Zealanders in 2001. This gap improved between 1996 and 2001, but note that the linear improvement over the entire period is an artefact of our extrapolation of the 1996–2001 trend back to 1991–1996. The gap between American Indians and Alaska Natives and other Americans remained roughly the same over the decade, at between 5.2 and 6.0 years.

Educational Attainment, 1991–2001

Table 5.5 (page 98) presents the scores on the two educational attainment measures. As described above, because of the incompatibility of 2001 Australian educational attainment with previous measures, we extrapolated the 1991–1996 measures forward, assuming that the Aboriginal–non-Aboriginal gap remained constant. This assumption was made because of the *increase* in the observed gap on both age at school-leaving indicators between 1991 and 1996, and is therefore somewhat conservative. The 2001* row presents the Australian educational attainment indicators that are comparable to those of the other countries.

All four countries had high values on the adult literacy proxy measures, and the gaps between Aboriginal and non-Aboriginal populations improved between 1991 and 2001. The Maori population had the lowest proportion with some basic school qualification, at about 57 percent in 2001, and the largest gaps between Aboriginal and non-Aboriginal people. However, these gaps declined considerably between 1991 and 2001, from 30 to 20 percentage points (**Table 5.5**). There was also a wide gap between the Canadian Registered Indian population and other Canadians, but as with the Maori, this population saw considerable improvement. In 2001, the Canadian Registered Indian and Australian Aboriginal populations had similar scores on this indicator, with 83% of the 15 and older population having attained primary school or higher. The total Canadian Aboriginal

Table 5.5: Educational Attainment Measures, 1990/1–2000/1

	Adult Literacy Proxy (2/3 weight)			*Gross Enrolment Proxy (1/3 weight)*			*Educational Attainment Index*		
	Non-Aboriginal	**Aboriginal**	**Gap**	**Non-Aboriginal**	**Aboriginal**	**Gap**	**Non-Aboriginal**	**Aboriginal**	**Gap**
Australia (Aboriginal and Torres Strait Islanders)									
1991	0.85	0.84	0.02	0.28	0.13	0.15	.659	.598	.061
1996	0.86	0.84	0.02	0.33	0.17	0.16	.686	.618	.068
2001	0.88	0.86	0.02	0.38	0.22	0.16	.713	.644	.069
2001*	0.91	0.83	0.07	0.69	0.31	0.38	.832	.659	.176
Canada (Registered Indians)									
1991	0.86	0.72	0.14	0.74	0.38	0.36	.826	.610	.216
1996	0.88	0.78	0.10	0.77	0.42	0.35	.843	.659	.184
2001	0.90	0.83	0.08	0.79	0.44	0.35	.866	.697	.169
Canada (Aboriginal Identity Population)									
1991	0.86	0.82	0.05	0.74	0.53	0.21	.826	.713	.113
1996	0.88	0.85	0.03	0.77	0.53	0.24	.843	.738	.105
2001	0.90	0.88	0.02	0.79	0.56	0.23	.866	.773	.093
New Zealand (Maori Identity)									
1991	0.65	0.35	0.29	0.54	0.27	0.28	.611	.325	.286
1996	0.70	0.45	0.25	0.63	0.37	0.27	.674	.421	.253
2001									
United States (American Indian and Alaska Native Race)									
1990	0.90	0.88	0.03	0.77	0.63	0.13	.857	.795	.062
2000	0.92	0.91	0.02	0.75	0.67	0.08	.83	.827	.036

Note: Australian 1991–2001 figures are calculated using age at school-leaving;
2001* figures calculated using educational attainment.

population scored somewhat higher, and the American Indian and Alaska Native population had the highest adult literacy proxy scores, at 91% in 2001.

Table 5.5 also presents the proportion of the population aged 18–25 with high school or higher education, our measure of the flow of education. On this indicator, the attainment of all of the Aboriginal populations improved considerably over the decade. However, this improvement did not keep pace with the increasing educational attainment among the non-Aboriginal populations, so nearly all of the countries saw these gaps widen.

By the end of the period, 31 percent of Aboriginal and Torres Strait Islander people aged 18–25 had the equivalent of high school or higher qualifications. This was somewhat lower than the Canadian Registered Indian population, which saw improvement between 1991 and 1996, but not between 1996 and 2001. However, because of the lower scores for the non-Aboriginal Australian population compared to non-Aboriginal Canadians, the gap was only slightly wider in Australia. Although young Aboriginal people in Australia and Canada were increasingly attaining secondary and higher education, they did not keep up with the increases among the non-Aboriginal populations. The gap between Maori and non-Maori was also large, but fairly stable over the period. In the US, where the Aboriginal population had the highest scores on this indicator, the gap narrowed, but this was due partly to a decline in the educational attainment of the non-Aboriginal population (**Table 5.5**).

Combining the two education measures using their respective weights results in an Educational Attainment Index score. Because of the falling gaps on the first indicator, and the two-thirds weight given it in the UNDP's methodology, most of the countries saw the gaps between Aboriginal and non-Aboriginal populations on the Educational Attainment Index fall over the decade. Australia may be an exception, and even with the conservative assumptions about the 1996–2001 gaps described above, the gap in this country increased slightly from 0.061 to about 0.069 (**Table 5.5**). Again, the gap between American Indians and Alaska Natives and other US citizens fell because of a decline in the index score for the non-Aboriginal population, combined with an improvement among the Aboriginal population.

Among Aboriginal populations, American Indian and Alaska Native people had the highest Educational Attainment Index scores in 2001, and the US had the smallest gaps between Aboriginal and non-Aboriginal people, while New Zealand had the largest gaps. The Canadian Registered Indian and Australia Aboriginal populations had fairly similar scores in 2001, and the total Canadian Aboriginal population had somewhat higher educational attainment.

Average Annual Income, 1990–2000

Although the educational attainment of Aboriginal people increased over the decade, real incomes tended to fall over the 1990–2000 period. Median annual incomes for those aged 15 and over with income are presented in **Table 5.6**. Note

Table 5.6: Median Annual Income, 2000 PPP$ (Income Index Score)

	Australia Non-Aboriginal	Aboriginal and Torres Strait Islander	Gap
1990/1	25,795 (.927)	16,283 (.850)	9,512 (.077)
1995/6	25,579 (.925)	15,337 (840)	10,242 (.085)
2000/1	21,767 (.898)	12,268 (.803)	9,499 (.095)
	Canada Non-Aboriginal	**Canadian Registered Indian**	**Gap**
1990/1	31,084 (.958)	15,226 (.839)	15,858 (.119)
1995/6	26,441 (.931)	14,035 (.825)	12,406 (.106)
2000/1	27,617 (.938)	14,824 (.834)	12,793 (.104)
	Canada Non-Aboriginal	**Canadian Total-Aboriginal**	**Gap**
1990/1	31,084 (.958)	19,970 (.884)	11 114 (.074)
1995/6	26,441 (.931)	16,931 (.857)	9,410 (.074)
2000/1	27,617 (.938)	18,713 (.873)	8,904 (.065)
	New Zealand Non-Aboriginal	**Maori**	**Gap**
1990/1	30,973 (.957)	23,936 (.914)	7,037 (.043)
1995/6	29,020 (.946)	22,838 (.906)	6,182 (.040)
2000/1	29,756 (.951)	23,024 (.908)	6,732 (.043)
	United States Non-Aboriginal	**American Indian and Alaska Native**	**Gap**
1990/1	19,372 (.879)	12,648 (.808)	6,724 (.071)
2000/1	21,050 (.893)	16,000 (.847)	5,050 (.046)

that for Australia, Canada, and New Zealand, real median incomes fell for the non-Aboriginal populations between 1990 and 2000. In Canada and New Zealand, incomes fell between 1990 and 1995, rising somewhat thereafter, whereas Australian median incomes declined even more steeply between 1995 and 2001.

The absolute gap between Aboriginal people and other Australians was nearly the same in 1990 and 2000, at about PPP$9,500. The real median annual incomes for Aboriginal and Torres Strait Islanders experienced roughly the same decline experienced by other Australians. Because of the logarithmic formula used to calculate the income index, the gap between Aboriginal and non-Aboriginal Australians in Income Index Scores grew, from 0.077 to 0.095.

The greatest absolute gap between Aboriginal and non-Aboriginal incomes was seen between Canadian Registered Indians and non-Aboriginal Canadians. However, this gap decreased from nearly PPP$16,000 to roughly PPP$13,000 between 1990 and 2000 (**Table 5.6**). Median annual incomes for the total Canadian Aboriginal population were considerably higher.

The Maori population had the highest annual median income of all of the Aboriginal populations in this study, at nearly PPP$24,000 in 1990. The gap between

Table 5.7: 1991–2001 Aboriginal Human Development Index Scores

	Australia Non-Aboriginal	Aboriginal and Torres Strait Islander	Aboriginal–Non-Aboriginal Gap
1990/1	.835	.675	.160
1995/6	.850	.677	.173
2000/1	.858	.674	.184
	Canada Non-Aboriginal	**Canadian Registered Indian**	**Gap**
1990/1	.886	.736	.152
1995/6	.889	.757	.132
2000/1	.900	.776	.124
	Canada Non-Aboriginal	**Canadian Aboriginal**	**Gap**
1990/1	.886	.786	.103
1995/6	.889	.794	.095
2000/1	.900	.815	.085
	New Zealand Non-Aboriginal	**Maori**	**Gap**
1990/1	.808	.650	.158
1995/6	.835	.689	.146
2000/1	.867	.728	.139
	United States Non-Aboriginal	**American Indian and Alaska Native**	**Gap**
1990/1	.859	.785	.074
2000/1	.872	.811	.061

Maori and other New Zealanders shrank slightly, to PPP$6,700 (**Table 5.6**). Because of the high absolute values, the gap in Income Index Scores was lowest in New Zealand, at about 0.043 in both 1990 and 2000. At the other extreme, the American Indian and Alaska Native population had the lowest annual income among the Aboriginal populations at PPP$12,600 in 1990. The income of the non-Aboriginal US population was also the lowest, at PPP$19,400. However, the incomes of American Aboriginal people improved much more that the rest of the American population, resulting in a decreasing gap in Income Index scores.

Human Development Index Scores, 1991–2001

As described in **Table 5.2** (page 94), the life expectancy, educational attainment, and income indices were calculated and combined into an overall Aboriginal HDI score. **Table 5.7** (page 101) presents overall HDI scores for each of the populations for 1981–2001. The Australian scores presented are calculated using the 1991–1996 age at school-leaving data, extrapolated to 2001. Overall, the HDI scores for Aboriginal people and Torres Strait Islanders fell slightly between 1991

Table 5.8: Selected International and Aboriginal HDI Scores, 2001

HDI Rank	Country	HDI Score
Countries with High Human Development		
1	Norway	.944
2	Iceland	.942
3	Sweden	.941
4	***Australia***	*.939*
5	Netherlands	.938
6	Belgium	.937
7	***United States***	*.937*
8	***Canada***	*.937*
9	Japan	.932
10	Switzerland	.932
13	United Kingdom	.930
16	Austria	.929
17	France	.925
19	Spain	.925
20	***New Zealand***	*.917*
23	Portugal	.896
30	Republic of Korea	.879
	U.S. American Indian and Alaska Native	*.877*
32	Czech Republic	.861
	Canadian Aboriginal Population	*.851*
34	Argentina	.849
42	Costa Rica	.831
43	Chile	.831
52	Cuba	.806
53	Belarus	.804
	Canadian Registered Indian	*.802*
54	Trinidad and Tobago	.802
55	Mexico	.800
Countries with Medium Human Development		
73	Saudi Arabia	.769
	New Zealand Maori	*.767*
75	Ukraine	.766
85	Philippines	.751
94	Dominican Republic	.737
103	Cape Verde	.727
	Australian Aboriginal and Torres Strait Islanders	*.724*
104	China	.721
105	El Salvador	.719
120	Egypt	.648

Source: Data from HDI table, p. 237-240 from "Human Development Report 2003" by UNDP (2003) by permission of Oxford University Press; Remaining data: Authors' Calculations

and 2001, despite some improvement between 1991 and 1996. As a result of the improvements in the HDI scores of the non-Aboriginal Australian population, the Aboriginal–non-Aboriginal gap in HDI scores increased fairly constantly, from 0.160 to 0.184 (**Table 5.7)**.

Both the Canadian Registered Indian population and the total Canadian Aboriginal population saw improvements in overall HDI scores in absolute terms and relative to other Canadians. Canadian Registered Indians had lower HDI scores than other Canadian Aboriginal people, but saw considerable improvement. The gap between Registered Indians and other Canadians fell from 0.152 to 0.124. The gap between the total Aboriginal population and other Canadians was much lower, falling from 0.103 to 0.085.

The greatest improvement in overall well-being was observed in the Maori population. Maori HDI scores increased from 0.650 to 0.729 over the decade, and the gap between Maori and non-Maori decreased from 0.158 to 0.139. However, some of the 1991–1996 increase is due to our assumptions about 1991 life expectancy. The US stands out for having the lowest overall gap between Aboriginal people and other citizens. The 1990 gap of 0.704 fell to 0.061 by 2000. As described above, however, some of this reduction is due to the lower attainment of non-Aboriginal Americans.

International Comparison, 2001

The discussion above used our proxies for the UNDP's measures in the calculation of Aboriginal HDI scores. However, some of those measures for the different populations are not strictly identical, as is the case with the educational measures for Australia. In this section, we present Aboriginal HDI scores for 2000–01. The Australian scores have been calculated using educational attainment. The index measures presented in **Table 5.8** are also adjusted by the ratio of the total national measures to those published in the UNDP's *Human Development Report*, to facilitate international comparison.

Table 5.8 presents these adjusted HDI scores of each of the study populations, along with those for selected countries from the 2003 *Human Development Report*. This table clearly shows the high rankings of the four countries among the countries with "high human development." The Canadian Aboriginal population and the American Indian and Alaska Native population would also rank within the top 50 countries of the world in terms of human development. The population of Canadian Registered Indians would rank somewhat lower, along with Trinidad and Tobago and Belarus and slightly higher than the Maori population, which would rank about 74th among countries in the *Human Development Report*. Australian Aboriginal and Torres Strait Islander people, however, would rank about 103rd, also among the countries classified by the UNDP as having "medium" levels of human development.

Discussion and Conclusions

Overall well-being, measured using our adaptation of the HDI methodology, improved among Aboriginal people in these four countries over 1991–2001. Life expectancy rose, except possibly amongst Australian Aboriginal people. Improvements in median income were less consistent, although a decline in income between 1991 and 1996 was experienced by non-Aboriginal as well as Aboriginal populations. Despite some improvements, the *gaps* between Aboriginal and non-Aboriginal people on several of these indicators increased. This is especially true for our measure of the flow of education, on which only the US did not experience a widening gap between Aboriginal and non-Aboriginal population, due partly to a decline in educational attainment among non-Aboriginal people in that country.

Aboriginal people in Canada and the US had higher levels of overall well-being than did Australian Aboriginal or Torres Strait Islanders or the Maori of New Zealand. In Canada, the gap in well-being was particularly large between Registered Indians and other Canadians, although the total Canadian Aboriginal population had higher levels of human development. New Zealand stands out for the rapid improvement in the well-being of the Maori, particularly on educational and income measures. While the situation in New Zealand might be characterized as poor but improving, the US had consistently high levels of human development among the Aboriginal population, and small gaps between Aboriginal and non-Aboriginal people. Gaps between Aboriginal and non-Aboriginal people are generally the largest in Australia, and may be growing wider.

Despite the changing political situation of Aboriginal people in these countries, there has not been uniform progress in reducing the disparities between Aboriginal and non-Aboriginal populations. The declining disparity in New Zealand may be related to the strong political representation of the Maori, as previous research suggests. Likewise, the low levels of well-being among Australian Aboriginal people and the increasing disparity may be related to the lack of treaties as a basis for Aboriginal–state relations. However, the relative education, health, and income levels attained by the Aboriginal people in these countries are affected by many complex policies and programs, as well as geographic, political, and economic factors that are impossible to fully explore here. This research only compares national averages, concealing a great degree of heterogeneity within Aboriginal populations. To understand the processes that have resulted in improvements in well-being among Aboriginal populations, future research needs to move toward examination of community and local-level contexts and the specific policies, programs, and economic circumstances that have led to these improvements.

Limitations of this study include some problems with data quality, as discussed above. The HDI has not been free from criticism (Castles, 1999; Henderson, 2000; Jolly, 2000). Of course, "well-being" or "quality of life" is much more complicated than can be captured in the index and its components. There are many other

aspects of overall well-being that are important, including the health of the environment and communities, and social and political freedoms. (Sen, 2003; Fukuda-Parr, 2003). These measures also do not consider linguistic survival and access to traditional activities and ways of life. However, the HDI's three broad dimensions do tell us something about the conditions in which people live, and are useful for monitoring the progress made in overcoming disparity.

Endnotes

1 For a discussion of the treaties, agreements and regulations that impact Aboriginal peoples in Canada see White, J.P. et al. 2004. *Permission to Develop: Treaties, Case Law and Regulations,* Toronto: Thompson Educational Publishing, Inc.

2 To facilitate international comparison, the Canadian measures used in this paper differ from those reported in previous versions of the Aboriginal HDI published by Indian and Northern Affairs Canada (Cooke et al., 2004).

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