Indigenous disadvantage in an historical perspective: the evidence of the last thirty years

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Abstract

Australia's Indigenous population has, since the British settlement in the eighteenth century, been marginalized in all aspects of life. Since 1967, when a successful referendum changed the constitution to emancipate the Aboriginal people in the face of the law, many initiatives have surfaced and many policies have been developed to assist in improving living standards and socio-economic outcomes of the Indigenous people. However, the Indigenous population as a group continues to experience many significant disadvantages from birth to death compared to the non-Indigenous population. A large body of literature has accumulated evidence on this disadvantage as well as on the success and otherwise of government policies and programs designed to improve the Indigenous outcomes and the impediments and facilitators of change. Most research on the Indigenous disadvantage, however, has been handicapped by both the lack of long-term historical data on Indigenous outcomes as well as the practical difficulties of collecting data from the Indigenous population which accounts only for around three per cent of the population. In this paper we make a two-fold contribution to this literature. First, instead of using one or a few select indicators to assess progress in reducing the Indigenous disadvantage, we use the Human Development Index (HDI) – a well-established index measuring three fundamental areas of human development: long life, access to knowledge which shapes the human capital, and the standard of living – to provide a multi-faceted indicator of disadvantage. Second, rather than using just the most recent (but quality-improved) data, such as the National Aboriginal and Torres Strait Islander Social Survey), we utilize all Census enumerations available at the individual level, starting with the 1981 Census. This approach allows us to consider the evolution of the Indigenous disadvantage over a much longer time frame than current evaluations. Using simple analytical tools we investigate a number of questions regarding the Indigenous disadvantage as measured by the HDI. We also provide a simple calculation of the time over which the disadvantage is likely to disappear conditional on the trends over the last three decades.

Keywords: Indigenous disadvantage, Closing the Gap; Census of Population and Housing

JEL codes: C43 - Index Numbers, C81 - Methodology for Collecting, Estimating, and Organizing Microeconomic Data; Data Analysis, I15 - Health and Economic Development, I25 - Education and Economic Development, J15 - Economics of Minorities, Races, and Immigrants; Non-labour Discrimination, J24 Human capital formation;

1) Introduction

Australia's Indigenous population has, since the British settlement in eighteen century, been marginalized in all aspects of life. Dispossession of land, population displacement, prejudice in everyday life and outright discrimination have, over the subsequent generations, resulted in Indigenous Australians being disadvantaged to the extreme and denied the chance to share in the benefits of one of the wealthiest nations in the world. The federation of 1901 brought a legal formalization of the control over the Indigenous people through restrictive and punitive legislations (such as the Western Australian Aborigines Act 1905 which paved the way for forcible removal of children and internment of adults). Such situation persisted for much of the twentieth century. In fact, Indigenous people were not even enumerated during the national censi until 1971.

The symbolic (and legal) turning point was the 1967 National Referendum, which was successful and granted full citizenship rights to the Aboriginal peoples. Thus, for the first time in 200 years, the Indigenous people were emancipated in the face of the law. Over the next decades issues such as Indigenous cultural identity, continuing covert and overt racial discrimination, or the land rights, have been periodically used as a platform for the Indigenous activism and development of government policies. However, the Indigenous population as a group continues to experience many significant disadvantages from birth to death compared to the non-Indigenous population. One of the first data-based analyses – the 1975 National Population Inquiry (National Population Inquiry (1975, p. 45)) – has stated that:

> "[Aborigines] probably have the highest growth rate, the highest birth rate, the highest death rate, the worst health and housing and the lowest educational, occupational, economic, social and legal status of any identifiable section of the Australian population".

The next forty years, however, have not brought much improvement. As recently as in 2009, there has been a media description of the aspects of life of Indigenous Australians as being worse than in some Third World countries (Sharp and Arup (2009)).

Over that time, Governments have devised many initiatives to reduce this disadvantage. For example, there were at least six key Indigenous employment policies developed since the 1967 referendum: the National Employment Strategy for Aborigines, which commenced in 1977 and

the establishement in the same year of the Community Development Employment Projects scheme, the Working Nation initiatives operating from 1994 to 1996, Indigenous Employment Policy operating from 1999, and the replacement of the Job Network with the Job Services Australia in 2009. Discussion and reviews of some of these policies can be followed in studies by Norris (2001), Dockery and Milsom (2007) and Gray, Hunter and Lohoar (2012), among others. Recently, a more focussed analysis by Hunter and Gray (2012) has argued that successful employment policies not only need to address the appropriate segment of the Indigenous labour market (i.e. either demand or supply side) but also need to account for "[t]he complex reality of Indigenous people and their families" (p. 157).

While addressing the long-standing disadvantage of the Indigenous people is a socially-correct as well as a morally imperative policy in the modern society that takes into account equity outcomes, one should not dismiss, however, pure economic criteria. A recent modelling work by Access Economics (2008) has reported that just by converging by 2026 on three indicators of inequality of Indigenous Australians (life expectancy, Indigenous labour force participation rate and Indigenous labour productivity) real GDP could be 1 per cent higher than otherwise in 2029 (or around $10 billion in 2008). Access Economics also states that "since the increase in GDP is larger than the forecast increase in the total population, national living standards for all Australians would increase. There are therefore clear economic benefits from government action to reduce Indigenous disadvantage" (Access Economics (2008, p. iv).

It is in this context of the limited success of previous policies that in 2008 the Rudd Government approached the issue of the persistent Indigenous disadvantage as a multi-faceted problem which required development of policies along the major building blocks of a successful society: child mortality and life expectancy, early childhood education, children's reading, writing and numeracy skills, attainment of secondary education or its equivalent and employment outcomes.

The speech delivered by the Prime Minister of Australia, the Hon Kevin Rudd MP on 13 February 2008, officially titled "Apology to Australia's Indigenous Peoples" but generally referred to as the "Sorry Speech", commited the nation to reduce gaps between Indigenous and non-Indigenous outcomes in the above-mentioned areas. These gaps were established by referring to real-world evidence and the PM has identified concrete policy objectives: within a decade to halve the gap in literacy, numeracy and employment outcomes and opportunities for indigenous Australians, and, within a generation, to close the gap between Indigenous and non-Indigenous life expectancy.

Over the years, a large body of literature has accumulated evidence on this disadvantage, the successes and otherwise of government policies and programs designed to improve the Indigenous outcomes, and the impediments and facilitators of change. Most research on the Indigenous disadvantage has been, however, handicapped by both lack of long-term historical data on Indigenous outcomes as well as the practical difficulties of collecting data from the Indigenous population which accounts only for around three percent of Australia's population.

In this paper, we utilize publically available Census unit record data files to investigate the long-term trends in Indigenous disadvantage. However, rather than focusing on one or a few selected indicators we propose to use the methodology developed for the Human Development Index (HDI) – a well-established index measuring three fundamental areas of human development: long life, access to knowledge which shapes the human capital, and the standard of living (United Nations Development Programme (1990)). The major advantage of using this approach is that, unlike traditional single-variable measures which track changes over time, it only uses dimensionless index to trace the evolution of disadvantage over time. It, thus, frees the analysis from the plethora of data-related problems, such as the impact over time of the self-identification on the enumeration of a relevant population.

The plan of the rest of the paper is as follows. In the next section we discuss HDI and how it can be applied to measuring Indigenous disadvantage. We also discuss the data required for the calculations and some of the most important data issues impacting on this analysis. The following section presents the results of our calculations and discusses some of the main features of the calculated HDI for the sub-populations. Given that our analysis includes the HDI for both Indigenous and non-Indigenous populations we also provide a simple calculation of the time over which the disadvantage is likely to disappear conditional on the trends over the last three decades. The final section provides some comments on possible extensions of analytical work in this area.

2) Human Development Index as a measure of disadvantage

The Human Development Index has been developed by economists Mahbub ul Haq and Amartya Sen in 1990 and publicised by the United Nations Development Programme (UNDP) which now publishes an annual ranking of countries alongside a detailed report. From the outset, however,

the value of the HDI was seen as not just a ranking alternative to the GDP-based ladders but as an empirically grounded tool for discussions on development trends and policies. The composition of the index was chosen to elavate the importance of health and education to the same level as economic growth.

The HDI measures the outcomes in three fundamental aspects of human development: a long life, access to education and an income level. The components of HDI in its current implementation are:

(i) a long and helthy life is measured by life expectancy at birth,
(ii) education is measured by a composite index of the expected years of schooling for a school-age child and the mean years of prior schooling for adults aged 25 and older,
(iii) income is measured by purchasing-power-adjusted per-capita Gross National Income as a proxy for standard of living.

Each component is normalized to zero-one interval with pre-specified minima (e.g. zero for minimum years of schooling and 20 years for life expectancy) and maxima observed in the time covered by calculations of the HDI. The HDI index is then calculated as a geometric mean of its components (for more details see Klugman, Rodriguez and Choi (2011), United Nations Development Programme (2013)).

Over the years, the HDI has become a widely used single-number measure of human development, even though, the concept of human development is much more complex than the three indicators represented in the HDI. It has become accepted both in cross-country comparisons and in charting progress over time. Its relatively modest data requirements also contribute to the widespread acceptance and ease of calculation. In fact, the latest report of the United Nations Development Programme presents the HDI for 195 countries.

Its simplicity, however, has also found some critics. For example, Harttgen and Klasen (2010) derived the HDI at the household level which opens the door for modifying the HDI with an inequality measure. Many criticisms have also been levelled at the arbitrary combination of the three components of the HDI and, in particular, their equal weighting (see, for example, Ravallion (1997)). Other characteristics of the HDI, such as the focus on only three dimensions of development and exclusion of important aspects such as human rights or political participation, have also been discussed in the literature. Some drawbacks of the HDI have also led to extensions being incorporated by the UNDP over the years. For example, one of the

variants of the HDI being presented by the UNDP is a Gender Inequality Index, which includes gender-based disadvantage in the labour market participation rate, reproductive health (based on maternal mortality and reproductive health) and empowerment (measured by women's representation in the political system).

The HDI has also evolved over time. Its first implementation included adult literacy as a measure of access to knowledge. Being a qualitative indicator (illiterate or literate) it presented a very limited scope for discrimination in educational achievement. The current version of the HDI relies on a combination of average years of schooling and expected years of schooling which opens up the index to the variations over time.

Similarly, the early versions of the HDI included Gross Domestic Product (GDP) as the measure of access to goods and services. In a modern world which is much more interconnected through international trade and movement of factors of production, the exclusion of international transfers, such as foreign workers' remittances or repatriated profits, was considered to be increasingly limiting the adequacy of GDP as an income measure. The switch to Gross National Income (GNI) allowed for a more accurate measurement of the country's economic resources.

There were also changes to the methodology underlying the construction of the HDI. One of the more obvious was the replacement of the pre-specified income maximum with a data-dependent cap. This change not only prevented the index from bunching up as countries approached the previous limit but also allowed for further impact of additional incomes still being able to influence human development, albeit at a diminishing rate. It also ensured that the three components of the HDI varied in similar ranges which improved the overall index.

The HDI was, from the outset, designed to be readily adaptable to alternative groupings of entities. Provided the relevant data are available, the basic methodology behind the index is equally valid at a sub-national level for comparisons among different subpopulations as at the national level for cross-country comparisons. And because the HDI includes aspects of life other than income it is informative in revealing how policy and personal choices affect human development differences.

Given the close links between human development components and the targets of the Closing the Gap strategy, it is useful, therefore, to consider the HDI as another tool in the assessment of progress in eliminating Indigenous disadvantage. The HDI is not a replacement for the indicators

of progress in meeting the targets of this strategy and is not designed to be an official yardstick of such progress. However, due to the paucity of available data on Indigenous outcomes an index such as HDI can serve a useful role in extending our understanding of the dynamics of the Indigenous disadvantage over time and add to the evidence-based discussions on the Indigenous disadvantage.

3) Data issues

The major contribution of this paper lies in the utilization of all the publically available Census unit record files in the analysis of the Indigeneuos disadvantage – starting with the 1981 Census fo Population and Housing. While the official report of the Prime Minister strives to present the evidence from the latest data available, we have taken the unusual step of looking backwards. One clear advantage of such an approach is the ability to analyse change over much longer period of time with the effects of factors such as previous policies or socio-economic changes in the society being fully worked through the society and the economy. The major disadvantage lies in the lack of consistent data on components since even the Census concepts, defintions and published information change from time to time. While a fuller data appendix is available on request, it is sufficient here to identify a few key data-related issues.

Since the Census data does not include information on life expectancy, we have utilized a number of sources ranging from National Population Inquiry (1975), through various editions of the Austrlia's Health from the Australian Institute of Health and Welfare to ABS demographic publications and dedicated publications such as *Life expectancy and mortality of ATSI people, 2011*. Many of these publications contained partial information on life expectancy such as only one state. This data deficiency was dealt with by using state enumerations of the Indigenous and non-Indigenous populations from each Census as weights in calculating life expectancy for Australia as whole.

The expected years of schooling refers to the number of years of study a child entering education can expect in her or his life. The aim of this variable is to capture the development of the country's education system and whata it can offer to the new generation. It is estimated from data on enrolments by age at all levels of education and population of school age for each level of education. Since these data refer to the potential maximum outcomes, we have utilized

official data for Australia on the expected years of schooling in the United Nations Development Programme database.

The mean years of schooling utilized in the construction of the HDI refers to the school experiences of adults aged 25 years and over. While the United Nations Development Programme database also contains this data, our objective of deriving the index seperately for the Indigenous and non-Indigeneous populations necessitated using Census files. In particular, we have used the combination of the educational attainement and the age left school to estimate the mean years of schooling.

Finally, instead of the Gross National Income utilized at the national level calculations of the HDI, we have again used the Census ranges to derive individual income. To allow comparisons over the thrirty years from 1981 to 2011 we have expressed income in 2005 prices.

4) Results

4.1) Indigenous disadvantage as measured by the Human Development Index

The results of our calculations of the separate HDI for non-Indigenous and Indigenous populations are presented in Table 1 and Figure 1. Tehh calculations of the HDI for males and females in both sub-populations are presented in Table 2 and Figure 2. For comparison, we have also included the UNDP estimates of the HDI for Australia. Based on these calculations a number of observations can be made.

First, while the HDI for the non-Indigenous population tracks the UN-derived index for Australia quite closely, there is a substantial gap between the HDI for the Indigenous population and the HDI for the non-Indigenous population. However, the index for the non-Indigenous population does appear to move closer to the HDI for the non-Indigenous population.

Second, the separate indices for males and females reveal noticable differences in their profiles, In particular, while the index for non-Indigenous males is consistently higher than the index for females, the revese is true for the indices calculated for the Indigenous males and females.

Table 1: Human Development Index calculated for Non-Indigenous and Indigenous populations

Year	UN estimate (total population)	Non-Indigenous population	Indigenous population
1981	0.857	0.814	0.617
1986		0.842	0.691
1991	0.880	0.863	0.733
1996		0.877	0.767
2001	0.914	0.906	0.793
2006	0.929	0.922	0.817
2011	0.936	0.935	0.840

Table 2: HDI calculated for Non-Indigenous and Indigenous populations, by sex.

Year	UN estimate (total population)	Non-Indigenous males	Non-Indigenous females	Indigenous males	Indigenous females
1981	0.857	0.825	0.802	0.602	0.632
1986		0.850	0.834	0.667	0.716
1991	0.880	0.868	0.858	0.715	0.751
1996		0.882	0.873	0.757	0.777
2001	0.914	0.908	0.904	0.780	0.807
2006	0.929	0.925	0.920	0.805	0.831
2011	0.936	0.939	0.932	0.829	0.851

Third, the calculations also reveal that the gap between non-Indigenous males and females is slowly narrowing over time, the same cannot be said about the gap between the indices for Indigenous males and females. In fact the gap has been increasing during the first half of the eighties, followed by a decade of catching up to be again increasing in the next decade. The period since 2006 has seen the gap reduced to the level oberved in 1996.

In summary, the HDI calculated for the non-Indigenous and Indigenous subpopulations reveal that over the last thirty years noticable gains have been made in the human development of the Indigenous population. In fact, while the overall HDI for Australia has been growing at an annualized rate of 0.3 per cent and the HDI for the non-Indigenous population has increased at 0.5 per cent per year from 1981 to 2011, the HDI for the Indigenous populations has increased at an average rate of 1.2 per cent.

Figure 1: Profiles of the HDI for total Non-Indigenous and Indigenous populations

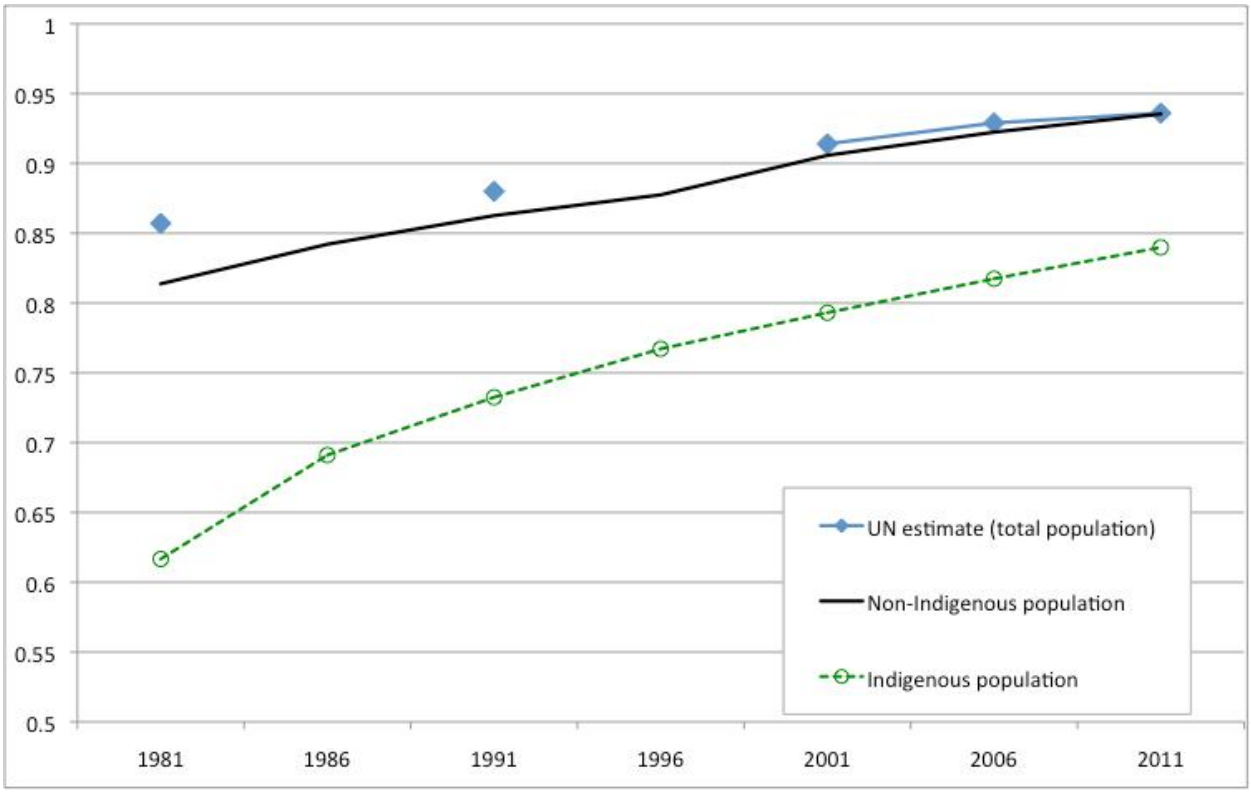
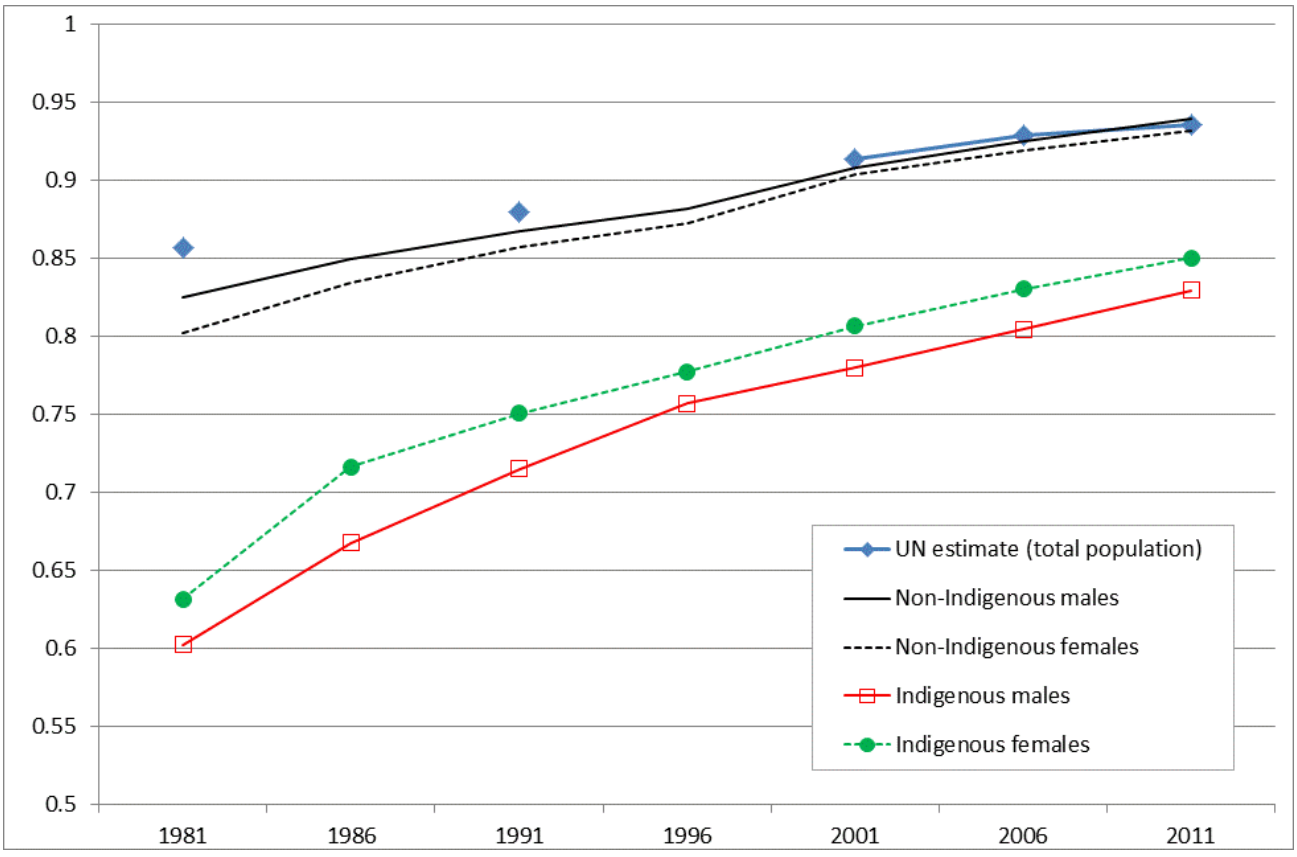


Figure 2: Profiles of the HDI for Non-Indigenous and Indigenous populations, by sex



4.2) Indigenous disadvantage in an international perpective

An instructive lesson in the extent of the Indigenous disadvantage can be learned from putting the HDI discussed above in an international context. While Australia as a country has been ranked either as the premier country or in the top two countries in each decade since 1980, the results presented in Tables 3 and 4, indicate that there is a big gap in the human development achievements of Indigenous males and females.

As indicated earlier, non-Indigenous males are ranked above non-Indigenous females. In the international context, this means that the human development of males can be placed between that of Canada and Northern America at the beginning of the 80s and just after the top-ranked Norway in 2011. For non-Indigenous females the progress has been from just above the eight-placed Netherlands at the beginning of our sample to just below the fourth position of the Northern America.

For the Indigenous females, the HDI index suggests that in 1980 their HDI was between Panama and Venezuela ranked at positions 45 and 46, respectively. In 2011, their position has moved around ten places to be between Europe and Cyprus. Indigenous males, were the lowest placed of our population sub-groups with the result for 1980 placing them between Jamaica (ranked 50^{th}) and Mexico (ranked 51^{st}). In 2011 the outcome for Indigenous males has improved to be between Hungary (ranked 41^{st}) and Barbados (ranked 42^{nd}).

An interesting look at these results is a comparison of the Indigenous population as whole with the HDI ladder. Thus, if the Indigenous population was a separate country it would be ranked in 1981 at position 50, just below Costa Rica and ahead of Jamaica. The progress in human development over the next three decades would have elevated the Indigenous population to be placed just after Estonia (ranked 38^{th}) and ahead of Slovakia. These outcomes give some credence to the comparisons often made in the media of the Indigenous life as being not of the first world standards enjoyed by other Australians. The evidence provided by our calculations of the HDI indicate, however, that improvement is possible.

Table 3: Top 20 countries based on the HDI, 1980 to 2011

Rank	Country /Grouping	HDI	Rank	Country /Grouping	HDI	Rank	Country /Grouping	HDI	Rank	Country /Grouping	HDI	Rank	Country /Grouping	HDI
1980			**1990**			**2000**			**2006**			**2011**		
Australian total population														
1	Australia	0.857	1	Australia	0.880	1	Norway	0.922	1	Norway	0.951	1	Norway	0.953
2	USA	0.843	2	USA	0.878	2	Australia	0.914	2	Australia	0.929	2	Australia	0.936
3	N'rn America	0.842	3	N'rn America	0.877	3	USA	0.907	3	USA	0.926	3	USA	0.936
4	Canada	0.825	4	Canada	0.865	4	N'rn America	0.906	4	N'rn America	0.925	4	N'rn America	0.933
5	Switzerland	0.818	5	Norway	0.852	5	Sweden	0.903	5	Ireland	0.912	5	Netherlands	0.921
6	New Zealand	0.807	6	Netherlands	0.842	6	Netherlands	0.891	6	New Zealand	0.909	6	Germany	0.919
7	Norway	0.804	7	Switzerland	0.840	7	Canada	0.887	7	Canada	0.908	7	New Zealand	0.918
8	Netherlands	0.799	8	Japan	0.837	8	New Zealand	0.887	8	Sweden	0.907	8	Ireland	0.915
9	Sweden	0.792	9	New Zealand	0.835	9	Belgium	0.884	9	Germany	0.905	9	Sweden	0.915
10	Denmark	0.790	10	Sweden	0.823	10	Switzerland	0.882	10	Netherlands	0.905	10	Switzerland	0.912
11	Japan	0.788	11	Belgium	0.817	11	Ireland	0.879	11	Iceland	0.904	11	Canada	0.910
12	Oceania	0.781	12	Denmark	0.816	12	Japan	0.878	12	Switzerland	0.901	12	Japan	0.910
13	Israel	0.773	13	Iceland	0.815	13	Iceland	0.871	13	Japan	0.900	13	Korea	0.907
14	Iceland	0.769	14	Israel	0.809	14	Germany	0.870	14	Denmark	0.895	14	Iceland	0.905
15	Finland	0.766	15	Germany	0.803	15	Denmark	0.869	15	Belgium	0.888	15	Hong Kong	0.904
16	Brunei D.	0.765	16	Finland	0.801	16	Israel	0.865	16	Israel	0.887	16	Denmark	0.901
17	Belgium	0.764	17	OECD	0.800	17	Luxembourg	0.861	17	Finland	0.886	17	Israel	0.899
18	OECD	0.756	18	Austria	0.797	18	France	0.853	18	Korea	0.882	18	Belgium	0.897
19	UK	0.748	19	Oceania	0.797	19	OECD	0.849	19	Slovenia	0.882	19	Austria	0.894
20	Austria	0.747	20	Luxembourg	0.796	20	Austria	0.848	20	France	0.881	20	Singapore	0.894

Table 4: Position of non-Indigenous and Indigenous males and females in the HDI ranking of countries, 1980 to 2011

Rank	Country /Grouping	HDI	Rank	Country /Grouping	HDI	Rank	Country /Grouping	HDI	Rank	Country /Grouping	HDI	Rank	Country /Grouping	HDI
1980			**1990**			**2000**			**2006**			**2011**		
Australian Non-Indigenous males														
3	N'rn America	0.842	3	N'rn America	0.877	2	Australia	0.914	3	USA	0.926	1	Norway	0.953
	Australia	0.825		Australia	0.868		Australia	0.908		Australia	0.925		Australia	0.939
4	Canada	0.825	4	Canada	0.865	3	USA	0.907	4	N'rn America	0.925	2	Australia	0.936
Australian Non-Indigenous females														
7	Norway	0.804	8	Japan	0.837	4	N'rn America	0.906	4	N'rn America	0.925	4	N'rn America	0.933
	Australia	0.802		Australia	0.858		Australia	0.904		Australia	0.920		Australia	0.932
8	Netherlands	0.799	9	New Zealand	0.835	5	Sweden	0.903	5	Ireland	0.912	5	Netherlands	0.921
Australian Indigenous females														
45	Panama	0.634	34	Slovakia	0.754	33	Cyprus	0.808	35	U. Arab Emir.	0.831	34	Europe	0.853
	Australia	0.632		Australia	0.751		Australia	0.807	36	Australia	0.831		Australia	0.851
46	Venezuela	0.629	35	Korea	0.749	34	Europe	0.805	36	Malta	0.830	35	Cyprus	0.849
Australian Indigenous males														
50	Jamaica	0.612	40	Croatia	0.716	43	Kuwait	0.781	40	Lithuania	0.806	41	Hungary	0.830
	Australia	0.602		Australia	0.715		Australia	0.780	41	Australia	0.805		Australia	0.829
51	Mexico	0.598	41	Hungary	0.714	44	Poland	0.778	41	Bahrain	0.802	42	Barbados	0.824

4.3) When will the Indigenous disadvantage be eliminated?

As we indicated earlier, the time profiles of the calculated HDI for all four sub-populations show a distinct upward trend. This suggests that one can attempt a calculation of the time required for equalization of the indices for the Indigenous and non-Indigenous sub-populations. Table 5 lists the estimates of the fittted trend lines to the time profiles of the HDI for each sub-population. These estimates confirm the viaul impression one can get from Figure 2 that the improvement in the Indigenous indices are ocurring at a faster rate than the improvement in the non-Indigenous indices. For example, the slope of the trend line for non-Indigenous males is just over half as big as the slope of the trend line for Indigenous males.

Based on these estimated trend lines, we calculate that for the Indigenous males the equality in the human development, as measured by the HDI, can be expected in 2039, while for females the equality of their HDI can be expected two years later in 2041. These results can be put in perspective by recalling that similar time frames have been used by Access Economics in 2008 when calculating the economic loss due to lower labour market participation and life expectancy of the Indigenous population.

Table 5: Estimates of trend lines fitted to the profiles of HDI for non-Indigenous and Indigenous males and females, 1980 to 2011

	Non-Indigenous males		**Indigenous males**		**Non-Indigenous females**		**Indigenous females**	
	Fitted trend lines							
	Coefficient	T-ratio	Coefficient	T-ratio	Coefficient	T-ratio	Coefficient	T-ratio
time trend	0.0038	30.9	0.0073	10.7	0.0043	17.8	0.0067	8.4
constant	-6.70	-27.3	-13.81	-10.2	-7.74	-16.0	-12.65	-8.0
	Basic diagnostics of the trend lines							
Adj. R-square	0.994		0.994		0.994		0.921	
SEE	0.994		0.994		0.994		0.021	
Std.dev.(HDI)	0.041		0.080		0.047		0.075	
LM(1)	1.15		0.88		0.55		0.04	
DW	2.36		0.89		1.75		1.33	

Notes:

1. The critical values of the t-distribution are: 2.89 at 1% level, 2.67 at 5% level.
2. Adj. R-square is the adjusted regression coefficient of determination ($\overline{R}^2$).
3. SEE is the standard error of the regression, while Std.dev.(HDI) is the standard deviation of the HDI variable.
4. LM(1) is the LM tests for serial correlation of order one. The critical value at 1% level is 2.57.
5. DW is the Durbin-Watson test for serial correlation.

5) Conclusions

In this paper we have presented our attempt at evaluating progress in reducing the Indigenous disadvantage over the last thirty years. We have employed the Human Development Index, which captures three essential aspects of human well-being – a long and healthy life, access to eduacation and a decent standard of living. Our calculations have been based on the Census data – the only data source which provides information on all Australians. In order to provide a historical pictures our analysis utilized all publically available Census releases since 1981.

The results indicate that the Indigenous population lags significantly behind the non-Indigenous population in the aspects of life contributing to the human development index. On the positive note, the gap over the last thirty years has narrowed substantially and the long-term evidence suggests that the improvement in the Indigenous HDI are occuring at a rate more than twice the rate for the non-Indigenous HDI.

One possible extension of this work is to being into the picture other data sets containing information on the Indigenous population, such as the National Aboriginal and Torres Strait Islander Surveys, to build up a time series suitable for regression-based analysis of the links between Indigenous disadvantage and economic variables.

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