Australian Population Association

Indigenous SEIFA – revealing the ecological fallacy

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Abstract

The Australian Bureau of Statistics Census-based Socio-Economic Index for Areas (SEIFA) scores are the most widely used general measure of socio-economic status. They are the only readily available measure of SES at a small area level. As an area-based measure, the common assumption is that if used at a small area level, the populations or households in each area are relatively homogeneous in their SES characteristics.

This paper demonstrates that at least for the Indigenous population this is a spurious assumption. Stratifying SEIFA scores by Indigenous and non-Indigenous households in each area shows that Indigenous populations suffer a high level of social and economic disadvantage regardless of whether they live in high or low SES areas.

This has significant implications when planning and delivering services targeting minority populations with a high level of need, especially urban areas, where it is assumed that Indigenous populations are relatively well off compared with their rural and remote counterparts.

The paper also questions the way in which SEIFA scores should be used for developing resource allocation models and suggests that a better stratification of SEIFA may significantly improve accuracy and utility of SEIFA when used for this purpose.

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Recently there has been considerable debate about the failure of the policies of self-determination and self-management and a revival of the concept of assimilation as a means to improve the health, economic and social conditions of Australia's Indigenous population. Commonly used statistics used to demonstrate this policy failure are the relatively high SEIFA scores associated with major urban areas compared with those for remote Indigenous communities. A significant proportion of the Indigenous population of each state live in these urban areas, and if they share the SES implied by SEIFA scores for these areas, then they have significantly better SES than those living in rural and remote regions.

For example, Keith Windshuttle, in an article in The Australian in March 2004 cited the following evidence.

> *"The Australian Bureau of Statistics shows clearly that, in suburban Australia, there is now an Aboriginal middle class (population 18,000). Even at lower socio-economic levels, in urban regions the majority of Aboriginal adult males have jobs and the majority of Aboriginal children complete school. In the remote communities and towns, where Coombs's policies have prevailed, these statistics are completely reversed." Keith Windshuttle, The Australian, March 1 2004.*

Measures of socio-economic wellbeing used for this sort of assessment are often based on the characteristics of where people live, that is, if they live in high socio-economic areas they are assumed to have high socio-economic status.

The intention of this paper is to explore the most commonly used general measure of socio-economic status (SEIFA) and ways this measure can be modified to more accurately assess the socio-economic status of Indigenous peoples, especially in major urban areas.

The Socio-economic Indexes For Areas (SEIFA) have been the most widely used measures of socio-economic status since they were first derived by the Australian Bureau of Statistics using the 1991 Population and Housing Census results. Since the 1991 Census, Indexes have been produced for all subsequent Censuses.

The SEIFA indexes are used widely by social researchers and policy makers for determining patterns of social disadvantage, identifying high areas of need and for resource allocation. As a general rule, other domain specific socio-economic measures such as mortality rates show a strong correlation with mortality rates increasing with decreasing socio-economic status (Figure 1).

Figure 1

Queensland Mortality 2000-2002 by SEIFA index of disadvantage (indirect age standardised rate/ratios)
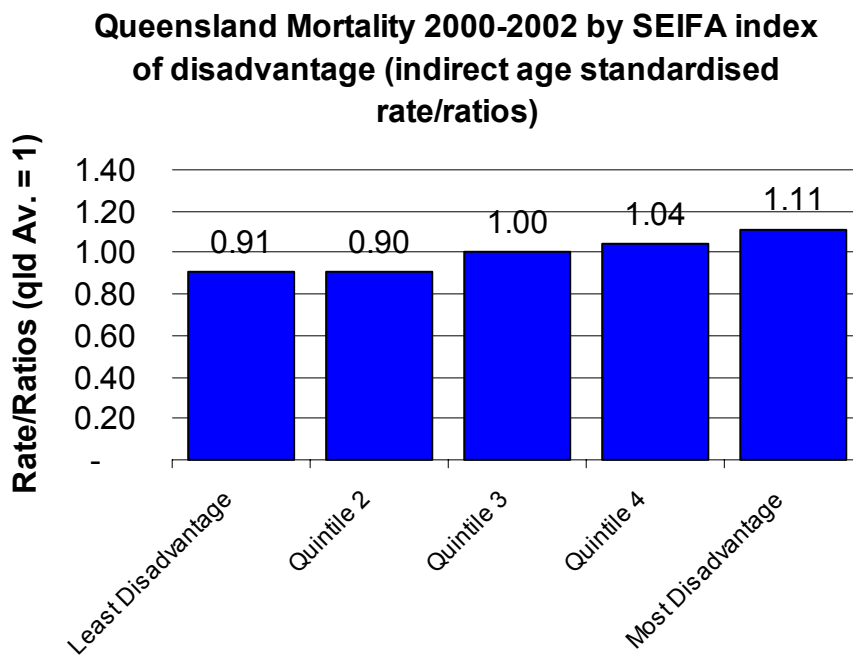
SEIFA scores are derived for each collection district (a block of about 200 households) by combining a selection of variables collected in the Census such as housing status, occupation type, income, employment status and levels of completed education. For the 2001 Population and Housing Census a new index has been developed which combined the old indices of socio-economic index of disadvantage and socio-economic index of advantage into an index of socio-economic advantage/disadvantage.

While there has been some criticism of the SEIFA indices in the past, for example, the indices do not include a measure of capital assets or there is some age bias in the selected variables, they have proved over time to be a good general overall measure of socio-economic status and the only nation-wide measure available at a small area level.

When developing SEIFA indices, a single score is derived for each collection district. This invites the common assumption that the population of an area has similar socio-economic characteristics.   Given the small population size of collection districts, at face value this would appear to be a valid assumption as often there is considerable homogeneity of populations at suburban level, a geographical level significantly larger than most collection districts.

However, in many areas there are likely to be small sub-groups of populations which have characteristics that may be quite different from the overall population they live among. Thus the concept of the ecological fallacy, that is, making assumptions about individuals or minority populations from the characteristics of the overall population of an area is a common problem.

This ecological fallacy is often exaggerated by the common practice of averaging SEIFA scores to larger geographic areas such as Local Government Areas or

regions. Potentially, the larger the geographical area, the greater the risk of creating an ecological fallacy as there is more likely to be a greater variation in socio-economic status the larger the geographic entity.

Methodology

In March 2004, the Office of Economic and Statistical Research (Qld Treasury) and the Queensland Department of Aboriginal and Torres Strait Islander Policy (DATSIP) commissioned the Australian Bureau of Statistics to undertake further analysis of SEIFA scores. The aim was to test the validity of the overall SEIFA scores of an area as being a true representation of all the population of an area, in particular, Indigenous populations. The methodology used was to take the same weights developed for the overall SEIFA index of advantage/disadvantage, but generate a separate score for Indigenous households compared with non-Indigenous households in each area.

The new Index of social advantage/disadvantage was used, as the index of SEIFA disadvantage, which was previously used as the preferred index included Indigenous status as one of the determining variables.

Because of the relatively small number, and sometimes absence of Indigenous households in many collection districts, and a minimum requirement of 10 households required to generate a valid score, Statistical Local Areas (SLAs) were used as the primary geographical entity for analysis. Of the 483 SLAs in Queensland, 42 SLAs had an insufficient number of Indigenous households to generate an Indigenous score (mainly urban SLAs) and another 8 SLAs had an insufficient number of non-Indigenous households to generate a non-Indigenous score (all Aboriginal and Torres Strait Islander designated communities).

Where scores were absent, scores were imputed by applying the average Indigenous score of an area derived from SLAs with known Indigenous scores but with similar characteristics. The total enumerated Indigenous count for those SLAs with missing Indigenous SEIFA scores was 698 persons. A similar method was used to generate missing non-Indigenous scores. Of those SLAs missing non-Indigenous SEIFA scores the total enumerated count of non-Indigenous persons was 75.

Results

Figure 2 places each Indigenous score in rank order with the corresponding non-Indigenous SEIFA score for the same area. With the exception of one SLA, in the other 482 SLAs non-Indigenous scores were all above the Indigenous score for the same area. Moreover, many of the non-Indigenous scores for the designated Aboriginal and Torres Strait Islander communities were among the highest in the State. This is not surprising considering most non-Indigenous people residing in these communities are providing professional services.
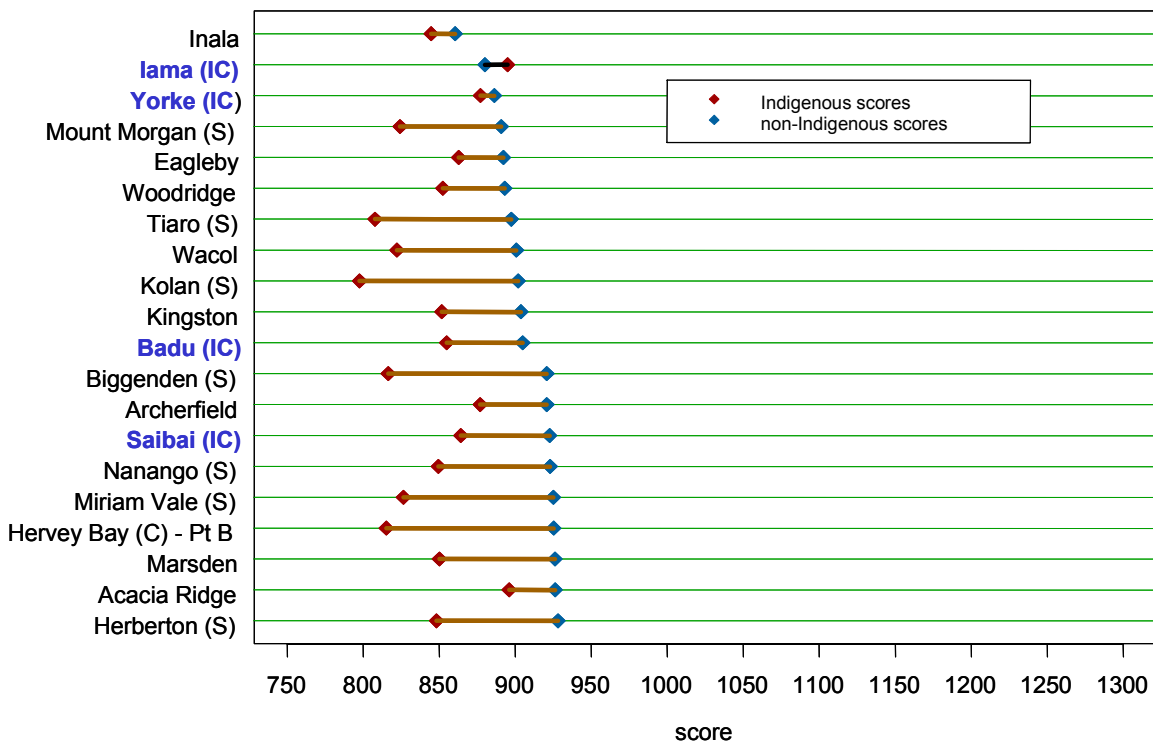
FIGURE 2

Indigenous/non-indigenous relative scores ranked by Indigenous scores
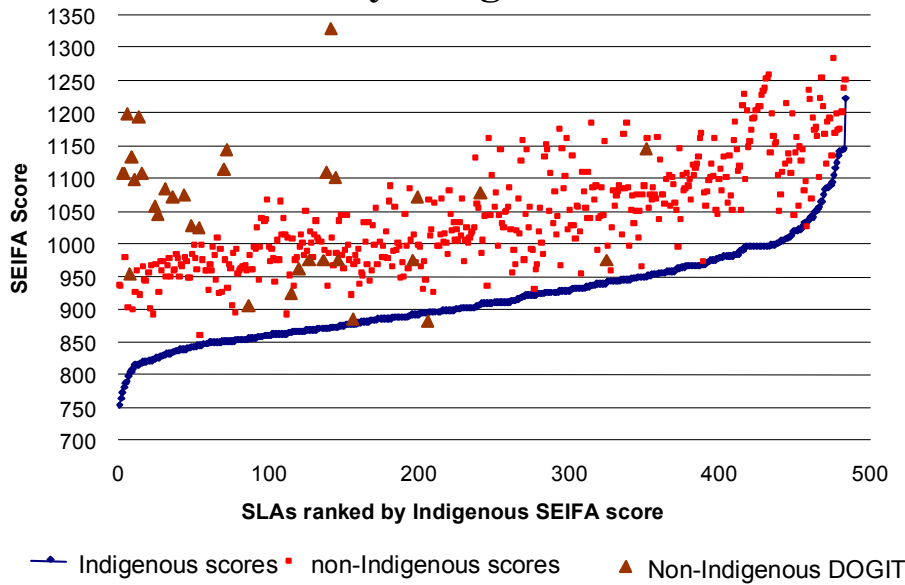
Even in areas which have extremely low non-Indigenous SEIFA scores such as the Brisbane suburb of Inala and the Local Government Area of Mount Morgan, the Indigenous SEIFA scores were significantly lower again in these areas (Figure 3).
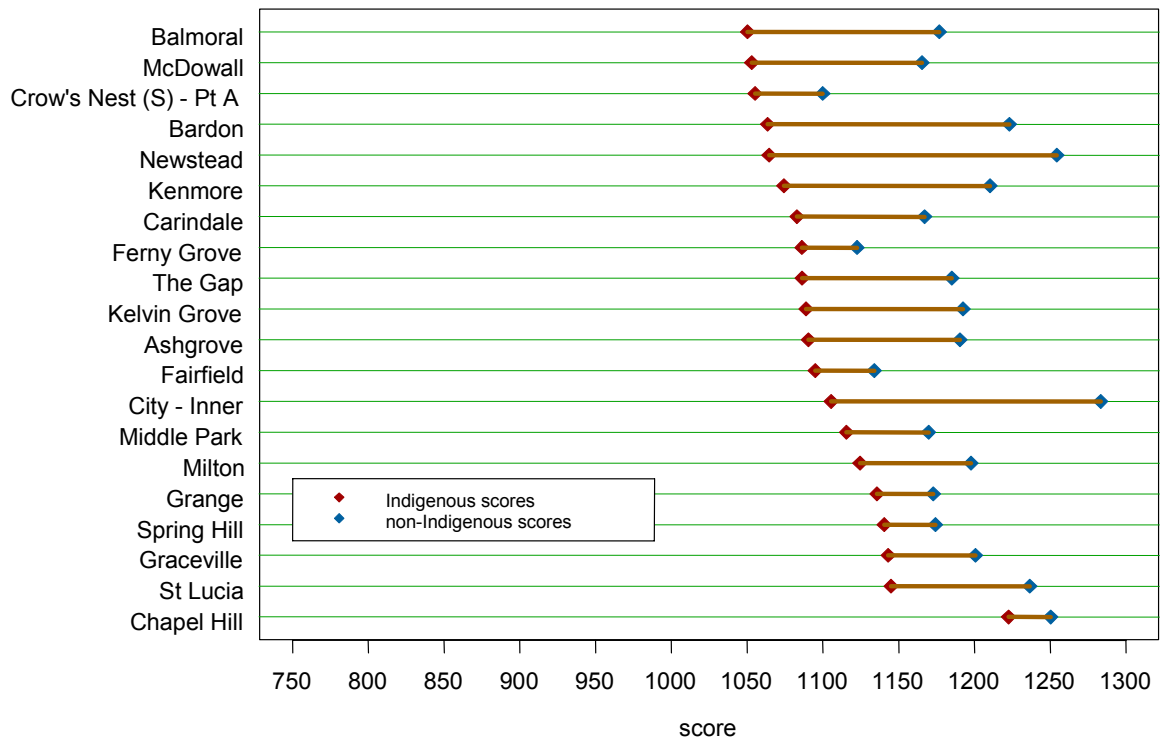
FIGURE 3
Bottom 20 non-Indigenous SLA scores and comparative Indigenous scores

With one exception, the top 20 Indigenous SEIFA scores are in Brisbane (Figure 4). However, these without exception have small Indigenous populations with the top 20 Indigenous SLAS accounting for only 0.66% of the total Indigenous population. Again the non-Indigenous scores for these areas were all higher than the Indigenous scores.

FIGURE 4
Top 20 Indigenous SLA scores and comparative Indigenous scores

In the Standard SEIFA index of advantage/disadvantage, all the designated Indigenous communities have extremely low overall SEIFA scores all of which fall into the hundred bottom collection districts in Queensland.

Figure 5 shows the bottom 20 SLA scores for the Indigenous SEIFA. Although there is still bias toward low scores in the Aboriginal and Torres Strait Islander communities, extremely low Indigenous scores are evident in areas which are not characterised by large numbers or percentages of Indigenous population.

FIGURE 5
Bottom 20 SLA Indigenous scores and the comparative non-Indigenous scores
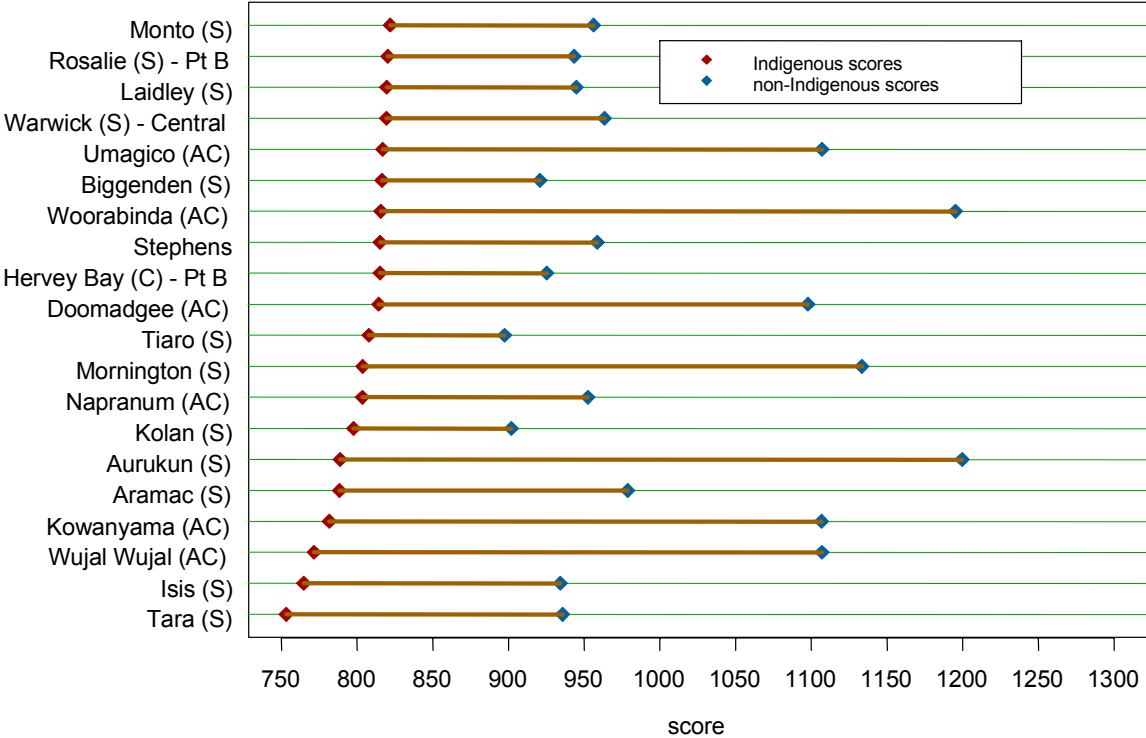

Thus the commonly held perception that living conditions and SES are significantly worse in Indigenous communities can start to be questioned. Moreover, it begins to question how well Indigenous people are faring regardless of whether they are living in communities where self-management and self-determination are the dominant paradigm compared with areas such as Brisbane and other major urban areas where the Windshuttle preferred model of assimilation has been prominent.

When used for the purposes of determining resource allocation, a common technique is to group SEIFA scores into quintiles or deciles as a summary SES measure. Figure 6 dramatically illustrates the differences in the SES distribution of the Indigenous population in Queensland depending whether it is based on where indigenous people live or on an Indigenous-specific score.

FIGURE 6

## Queensland – population distribution by SEIFA advantage/disadvantage decile
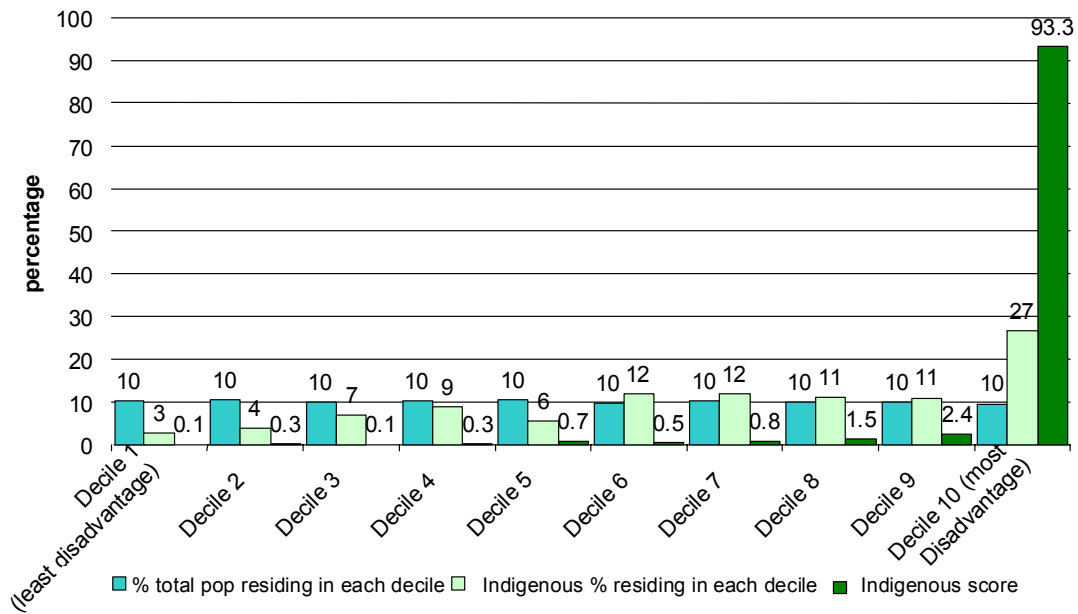
For example 29% of the Indigenous population in Queensland live in Decile 1-5 areas or areas where 50% of the non-Indigenous population are least disadvantaged (Figure 6). In contrast, using Indigenous specific scores, only 1.5% of the Indigenous population have a true 1-5 decile scores. To put it into numerical context, of the approximately 126,000 Indigenous people in Queensland, less than 2,000 could be described as middle class or better, even though 35,000 reside in middle class areas.

The patterns are little different in Brisbane where 46% of the Indigenous population live in Decile 1-5 areas compared with 71% of the non-Indigenous population (Figure 7). However, only 5.4% of Brisbane's Indigenous population have Decile 1-5 scores and nearly 80% have Decile 10 scores. This compares with 6% of Brisbane's non-Indigenous population having Decile 10 scores.

FIGURE 7

Major cities ARIA – Queensland – population distribution by SEIFA advantage/disadvantage decile
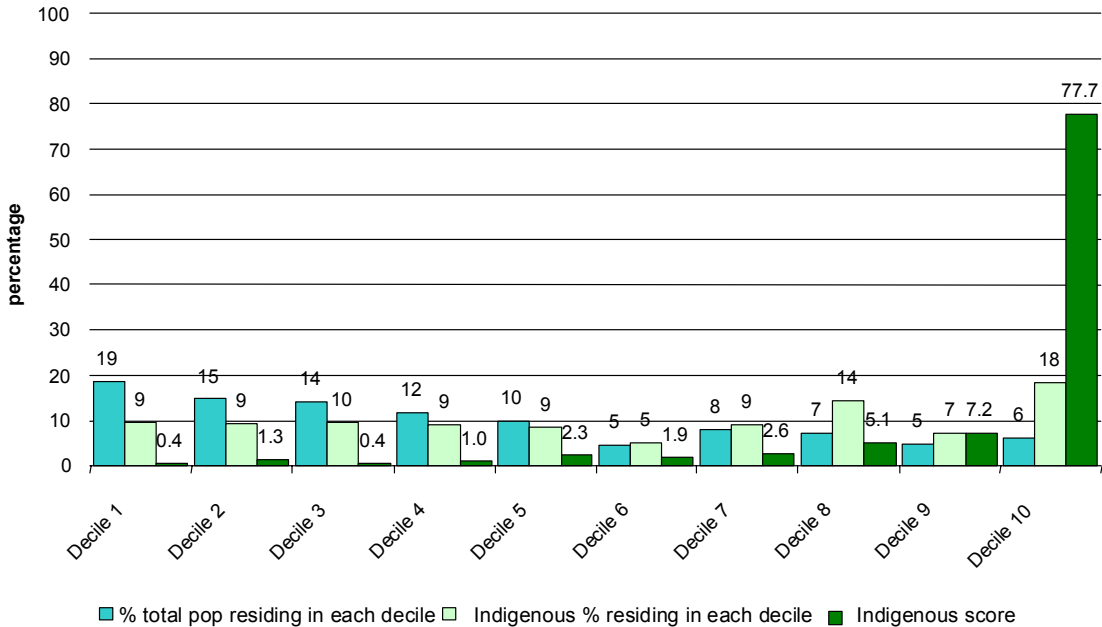
Conclusions

This research shows that using general population area-based measures of SES for small population sub-groups, especially Indigenous populations, can be misleading and grossly under-estimate the level of Indigenous disadvantage, especially in urban areas where Indigenous populations may be numerically large but proportionally small.

Moreover, it potentially has major implications of established models of service delivery to Indigenous populations in urban areas. The analysis shows that if you are Indigenous, whether you live in a high SES or low SES area, your level of disadvantage and need for specialised services and support is much more likely to be higher than the population you live among.

This work may also call into question the use of SEIFA for other resource allocation purposes. For example, the Commonwealth model for resource allocation for private schools is based on the general SES measure for each geographical area from which students are drawn. It assumes that households with students attending private schools have the same SES score as the households they live among.

This may not necessarily be the case. A similar methodology to that used for the Indigenous SEIFA could be used by stratifying households with children at school into two groups, those with a child/children attending a private school and those with a child/children attending a public school. If there is a significant difference in

SEIFA scores between the two groups or between the private school group and the overall SEIFA scores, it may bring into question the assumption of the resource allocation model of SES homogeneity within areas.

Despite these identified shortcomings, SEIFA remains an essential and most useful tool for assessing relative levels of SES. However, the above research results seriously question some of the underlying assumptions made when SEIFA has been used in the past, especially the concept of SES homogeneity within small areas from which scores are derived and used.