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Australian Bureau of Statistics

Information Paper

1996 CENSUS OF POPULATION AND HOUSING

SOCIO-ECONOMIC INDEXES FOR AREAS

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SOCIO–ECONOMIC INDEXES FOR AREAS

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- For further information on methodology please contact Paul Schubert on Canberra 02 6252 7339.

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APPENDIXES

1. INTRODUCTION

This publication describes five summary measures, or indexes, derived from the 1996 Census of Population and Housing to measure different aspects of socio-economic conditions by geographic areas.

The 1996 Population Census provides information on a broad range of social and economic aspects of the Australian population. Nearly fifty questions of social and economic interest are asked in the Census. People using Census data are often interested not just in these items taken one at a time, but in an overview or summary of a number of related items. Statistical techniques can be used to provide such summaries and the indexes presented in this publication are one type of measure.

A measure of socio-economic disadvantage was first produced by the ABS from the 1971 Census. The Socio-Economic Indexes for Areas (SEIFA), in their present form, were first produced in 1990 and consisted of five indexes formed from the 1986 Census data. In 1994, five indexes were produced from the 1991 Census data using essentially the same methodology as in 1990. They have now been constructed from the 1996 Census using essentially the same methodology once again.

This information paper describes the indexes and illustrates their possible uses. The approach for the construction of the indexes is outlined with a discussion of the limitations concerning their use. The socio-economic indexes which are available are described, and information is provided on how they can be obtained.

2. THE INDEXES

2.1 DESCRIPTION OF THE INDEXES

There are five indexes described in this information paper. They relate to socio-economic aspects of geographic areas. Each index summarises a different aspect of the socio-economic conditions in an area. The indexes have been obtained by summarising the information from a variety of underlying social and economic variables, each index using a different set of underlying variables.

The five indexes are:

- Urban Index of Relative Socio-Economic Advantage
- Rural Index of Relative Socio-Economic Advantage
- Index of Relative Socio-Economic Disadvantage
- Index of Economic Resources
- Index of Education and Occupation

All the indexes (including the Index of Relative Disadvantage) have been constructed so that relatively advantaged areas (e.g. areas with many high income earners) have high index values. For the Index of Relative Disadvantage this means that relatively disadvantaged areas have relatively low index numbers.

The first three indexes listed above—the advantage and disadvantage indexes—are general socio-economic indexes. They summarise variables related to the economic and social characteristics of families and households, as well as personal education qualifications and occupation.

There are two *Indexes of Relative Socio-Economic Advantage*, one for urban areas and one for rural areas.

The urban index covers areas in urban centres with a population of 1,000 and over, and the rural index covers the remaining areas of Australia. The urban/rural split is considered necessary because major structural differences were found in the relationships between socio-economic variables related to advantage for the urban and rural areas.

The variables underlying both Indexes of Relative Socio-Economic Advantage are indicators of relative socio-economic well being (e.g. high income, tertiary education, skilled occupations).

A higher score on one of the Indexes of Relative Advantage indicates that an area has attributes such as a relatively large proportion of households with high incomes or a trained workforce. Conversely, a lower score on the index indicates that an area has a smaller proportion of households with high incomes, employees in skilled occupations, etc.

In most cases, an area that has a high score on the Index of Relative Socio-Economic Advantage will also have a high score on the Index of

Relative Socio-Economic Disadvantage. However, it is possible for an area to contain two quite extreme groups; for example, inner city areas in the process of redevelopment. Such an area could have a low score on the Index of Disadvantage (because of the large proportion of low income households) and a high score on the Index of Advantage (because of the high income households).

The Index of *Relative Socio-Economic Disadvantage* is derived from attributes such as low income, low educational attainment, high unemployment and jobs in relatively unskilled occupations.

To maintain consistency with the other indexes, the higher an area's index value for the Index of Relative Disadvantage, the less disadvantaged that area is compared with other areas. For example, an area that has an Index of Relative Disadvantage value of 1200 is less disadvantaged than an area with an index value of 900.

High scores on the Index of Relative Disadvantage occur when the area has few families of low income and few people with little training and in unskilled occupations. Low scores on the index occur when the area has many low income families and people with little training and in unskilled occupations.

The Index of Relative Socio-Economic Disadvantage covers all areas in Australia.

The *Index of Economic Resources* reflects the profile of the economic resources of families within the areas. The Census variables which are summarised by this index reflect the income and expenditure of families, such as income and rent and home ownership. Additionally, variables which reflect non-income assets, such as dwelling size and number of cars, are also included. The income variables are specified by family structure, since this affects disposable income.

This index excludes education and occupation variables because they are not directly related to economic resources. It also misses some assets such as savings or equities which, although relevant, could not be included because the information was not collected in the 1996 Census.

A higher score on the Index of Economic Resources indicates that the area has a higher proportion of families on high income, a lower proportion of low income families, more households purchasing or owning dwellings and living in large houses. A low score indicates the area has relatively large proportions of households on low incomes and living in small dwellings.

The Index of Education and Occupation is designed to reflect the educational and occupational structure of communities. The education variables in this index show either the level of qualification achieved or whether further education is being undertaken. The occupation variables classify the workforce into the Australian Standard Classification of

2.1 DESCRIPTION OF THE INDEXES—*continued*

Occupations (ASCO) major groups and the unemployed. This index does not include any income variables.

An area with a high score on this index would have a high concentration of persons with higher education or undergoing further education, with people being employed in the higher skilled occupations, rather than being labourers or unemployed. A low score indicates an area with concentrations of either persons with low educational attainment or unskilled or unemployed people.

Appendix A lists the variables summarised by the five indexes. The method for deriving the indexes is briefly described in Section 3, 'Derivation of the Indexes'. Appendix B contains a more detailed description of this method. Factors to be taken into account when interpreting the indexes are discussed in Section 4, 'Comments and caveats on the interpretation of the indexes'.

2.2 AVAILABLE GEOGRAPHIC AREAS

The five index scores are available for a number of different geographic areas, namely:

- Collection District (CD)
- Statistical Local Area (SLA)
- Legal Local Government Area (LGA)
- Statistical Sub-division (SSD)
- Statistical Division (SD)
- Postal Area (POA)

The smallest area for which the indexes are available is the *Collection District* (CD). A CD is roughly equivalent to a small group of suburban blocks in urban areas. In urban areas it comprises on average about 250 dwellings, while in rural areas it usually contains fewer. In 1996 there were 34500 CDs throughout Australia.

Based on the scores for CDs, scores have also been calculated for aggregated geographical areas (SDs, SSDs, SLAs, LGAs, POAs). The index scores for these aggregated areas were formed by taking the weighted average, using population counts from the 1996 Census, across all CDs in the larger geographic area.

Legal Local Government Area (LGA) is a type of spatial unit which represents the whole geographical area of responsibility of an incorporated Local Government Council. LGAs do not cover the whole of Australia.

Statistical Local Areas are for the most part legal LGA based. In special cases, where a LGA is much larger and more populous than the general run of LGAs (as in the City of Brisbane), or where there are no local government authorities (as in the ACT), the administrative areas have been subdivided to form areas roughly equivalent in extent and

2.2 AVAILABLE GEOGRAPHIC AREAS—*continued*

population. SLAs cover, in aggregate, the whole of Australia without gaps or overlaps.

Statistical Subdivisions consist of one or more SLAs and *Statistical Divisions* consist of one or more SSDs. SSDs do not cross State or Territory boundaries except in the case of the Other Territories SSD. Both SSDs and SDs cover Australia without gaps or overlaps.

For more detail on any of the above geographic classifications, refer to 'Statistical Geography: Volume 1 – Australian Standard Geographical Classification (ASGC)' (ABS Catalogue No. 1216.0).

Postal Areas are formed by aggregating whole CDs that fall within the physical boundaries of an Australia Post postcode on a best fit basis. Postal areas exclude non-mappable Australia Post postcodes e.g. post office box postcodes, some postcodes which are delivery routes which are also covered by other postcodes (a situation which often occurs in rural areas), and some postcodes which, because of the application of the 'best fit' principle, do not get a CD allocated to them.

Index values for regions other than POA, SD, SSD, LGA or SLA may also be derived. These values are based on the index score of the CDs which make up the region. Each CD score is multiplied by its Census population count and divided by the total regional population count. The overall region score is then the addition of each of these (population) adjusted CD values. Population counts by CD have been provided with the index scores to enable weighted index scores to be calculated for user-defined regions.

Because CDs are rather small, it is possible for index values at the CD level to be distorted by unusual characteristics. Further details are contained in section 4.4. Therefore, indexes for CDs are provided in order to construct indexes for larger geographic areas, at which level the index values will be more stable. They are not intended to be used for comparison of individual CDs.

2.3 DISTRIBUTION OF THE INDEX VALUES

To enable easy recognition of high and low scores, the index scores have been standardised to have a mean of 1000 and a standard deviation of 100 across all CDs in Australia. In practice, this means that around 95% of index scores are between 800 and 1200.

Several tables of summary statistics have been provided in Appendix C to help give an intuitive understanding of the indexes; that is, what is a high value and what is a low value.

In both the SEIFA96 product itself and in the tables in Appendix C, the distribution of index values has been summarised by using *quantiles* or *percentiles*. Quantiles denote a point in the distribution of index values below which a specified percentage of index values fall. Quantiles which divide the distribution of index values into ten equal parts are commonly referred to as deciles; quantiles which divide the distribution of index values into four equal parts are commonly referred to as quartiles, with

2.3 DISTRIBUTION OF THE INDEX VALUES—*continued*

the 50% quartile also known as the median. Quantiles which divide the distribution of index values into five equal parts are known as quintiles.

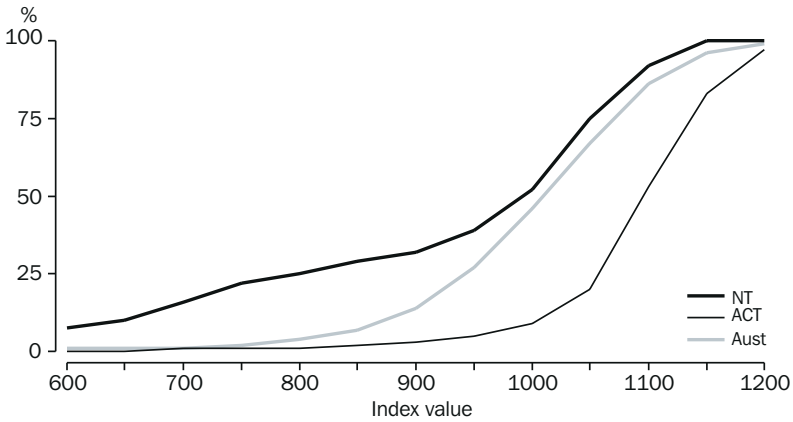
For example, the 10% quantile for a State gives the cutoff below which 10% of the index values for that State lie. To illustrate this, reproduced below is an excerpt from table 1 in Appendix C. Highlighted is the 10% quantile for the Index of Relative Socio-Economic Disadvantage for CDs in NSW, or 879. This means that one-tenth of CDs in NSW have a score on the Index of Relative Socio-Economic Disadvantage below 879. Similarly, the 50% quantile or median for the Index of Relative Socio-Economic Disadvantage for CDs in WA is 1011. This means that fifty-percent of CDs in WA have a score on the Index of Relative Socio-Economic Disadvantage below 1011.

SUMMARY DATA FOR CD LEVEL INDEX OF RELATIVE SOCIO-ECONOMIC DISADVANTAGE

		Quantile				
State	*Average*	*10%*	*25%*	*50%*	*75%*	*90%*
NSW	1 006	879	946	1 015	1 077	1 129
VIC	1 015	897	962	1 028	1 079	1 121
QLD	983	877	932	988	1 039	1 085
SA	982	837	927	997	1 059	1 108
WA	1 000	879	949	1 011	1 067	1 112
TAS	974	854	918	983	1 042	1 090
NT	922	650	799	994	1 051	1 091
ACT	1 086	1 004	1 058	1 096	1 134	1 170
AUST	**1 000**	**878**	**944**	**1 010**	**1 069**	**1 117**

The distributions of index scores are generally similar across the States. Most noticeable are the different distributions observed for the Northern Territory and the Australian Capital Territory. The graph below shows the comparison of Index of Relative Disadvantage values for the NT, ACT and Australia. For example, consider the 50% quantile or median point. This is the cutoff point below which 50% of index values lie. For CDs in Australia the 50% quantile for the Index of Relative Disadvantage is 1010, for CDs in NT it is lower at 994, while for CDs in ACT it is higher at 1096.

INDEX OF RELATIVE DISADVANTAGE



2.3 DISTRIBUTION OF THE INDEX VALUES—*continued*

It is important to understand that the indexes are 'ordinal measures' and not 'interval measures'. That is, using the indexes to order areas (e.g. CDs, SLAs, etc.) is meaningful but other arithmetic relationships between index values are not meaningful. For example, a CD with a score of 1200 is not necessarily twice as advantaged as a CD with a score of 600. Similarly, the socio-economic difference between two CDs with index values of 800 and 900 is not necessarily the same as the difference between two CDs with index values of 1050 and 1150. Therefore, the indexes should be used only for ordering CDs and not for analyses which aim to somehow quantify socio-economic conditions.

2.4 APPLICATIONS OF THE INDEXES

There are a number of ways the indexes can be used, such as targeting areas for business or services, demographic profiling, strategic planning, allocation of funds, design of sample surveys, and social or economic research.

It is important that the most appropriate index is chosen for each application. The variables that contribute to each index should be considered when deciding which index to use. For example, if a user is interested in finding areas of disadvantage for allocation of services, they will probably want to use the Index of Relative Disadvantage. On the other hand, if a user wanted to identify areas containing relatively high proportions of people with low levels of educational qualifications or unskilled jobs, then the Index of Education and Occupation should be used. A full list of the variables included in each index is provided in Appendix A.

Some examples of uses of the indexes are described below.

2.4.1 Uses in research/data analysis

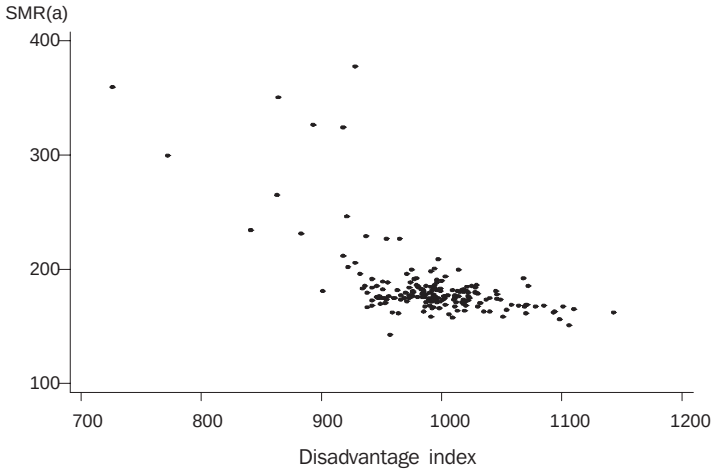
The indexes may be useful for modelling or explaining behaviour in other variables. In some studies it is desirable to determine if socio-economic factors are influencing a variable of interest. The researcher may also be interested in reducing the number of variables in the analysis. In such cases, one or more of the indexes can be used as a summary of a range of socio-economic factors.

Example

A health researcher may be investigating mortality rates of different areas across Australia. A standardised mortality ratio (SMR) may be calculated for each statistical subdivisions across Australia. The SMR for each subdivision is compared with a value of 100 for Australia.

A number of different factors may be examined to see if there is any association with the SMR. For example, the Index of Relative Socio-Economic Disadvantage could be calculated for each statistical subdivision and plotted against the SMR, as has been done in the graph below.

MORTALITY VARIATION AMONG STATISTICAL SUBDIVISIONS



(a) Standardised Mortality Ratio

2.4.1 Uses in research/data analysis—*continued*

The graph shows that more highly disadvantaged areas (those with lower index values) tend to have higher mortality rates, although the relationship does not seem to be particularly strong. To gain a more complete understanding of the relationship, researchers might investigate separately the relationship between statistical subdivisions with high SMRs and statistical subdivisions with low SMRs. For example, statistical subdivisions could be divided into those with index values above 900 and those with index values below 900 and separate graphs plotted to understand more fully relationships between socio-economic disadvantage and mortality rates.

2.4.2 Targeting areas for services

The indexes are of interest in their own right as summaries of area characteristics. Areas with different index values have different socio-economic characteristics. This information can be used by itself or in conjunction with other information to assist in determining the allocation of services. Those intending to use the indexes in this way are strongly advised to be aware of the limitations of the indexes described in Section 4, 'Comments and caveats on the interpretation of the indexes'.

Example

A government agency responsible for funding of aged care facilities wants to ensure resources go to those localities which need them most. It decides to allocate funds to areas with low ratios of existing aged care places to population aged 70 and over.

In reviewing the allocation of funding over the last few years, the agency wants to check that relative socio-economic disadvantage localities have been given adequate funding.

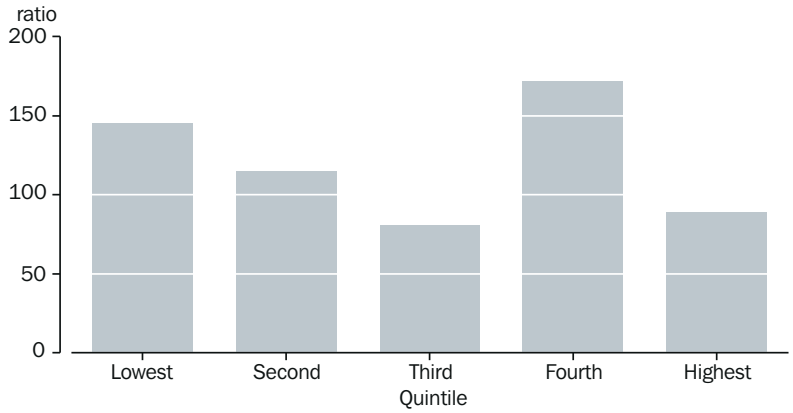
Statistical Local Areas (SLAs) across Australia could be divided into Index of Relative Disadvantage quintiles (quantiles which divide the distribution of index values into five equal parts), and the ratio of

2.4.2 Targeting areas for services—*continued*

existing aged care places to population aged 70 and over could be calculated for each quintile. For example, the lowest quintile would contain the 20% of SLAs in Australia with the lowest disadvantage index values.

The graph below displays the average ratio of aged care places to population aged 70 and over for each quintile. While there are differences between the quintiles, there appears to be no systematic bias in aged care place funding with respect to socio-economic disadvantage. For example, the ratio of aged care places to aged population does not increase steadily from lowest quintile to highest quintile.

AGED CARE PLACES, per population aged 70 and over



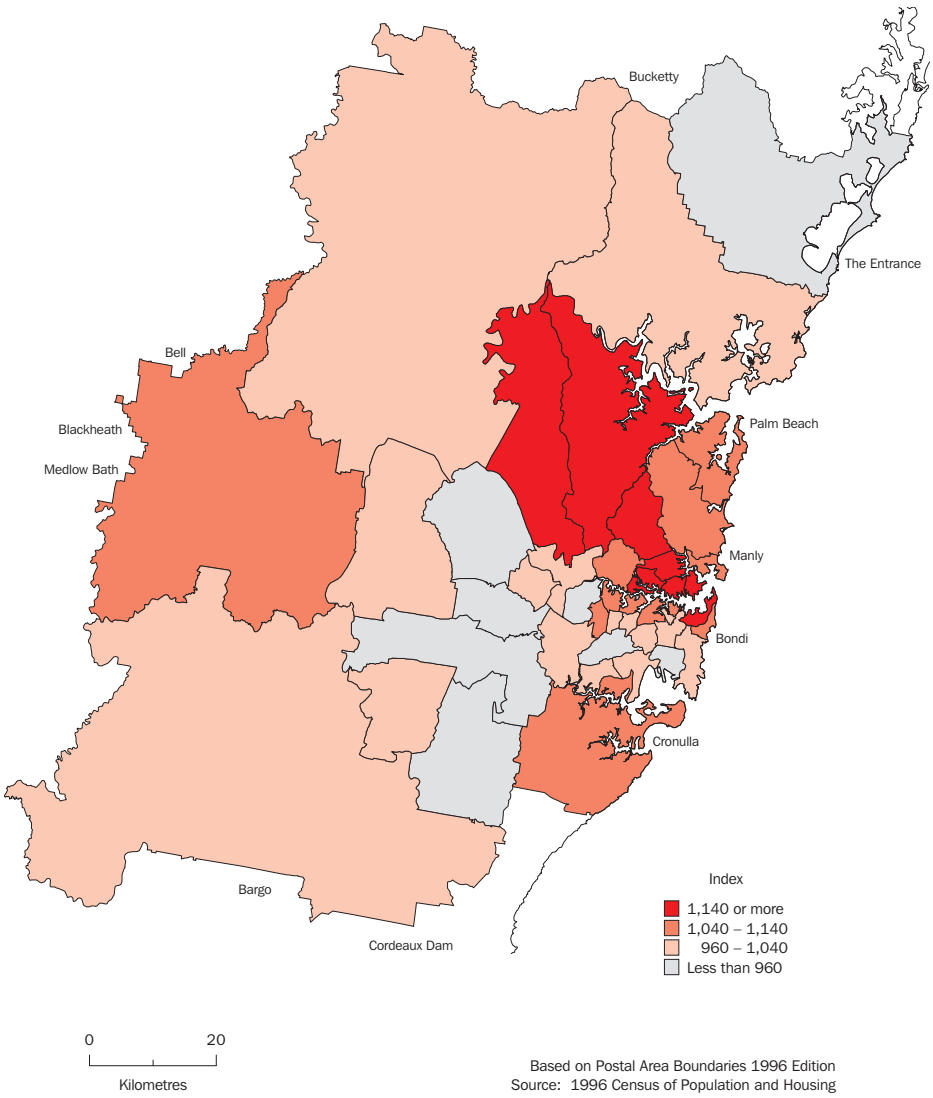
2.4.3 Targeting areas for business

Businesses might use the indexes to assist with marketing and strategic planning. The indexes might be used simply as summaries of area characteristics. Information from the geographical indexes will be useful for making business decisions, such as siting outlets and targeting promotion campaigns. The indexes are also useful for consumer research.

Example

A retail organisation wants to establish a chain of boutiques to sell designer-label women's clothing in Sydney and needs to know where to locate the shops. The Urban Index of Relative Socio-Economic Advantage could be sorted to list the most highly ranked Statistical Local Areas (SLAs) within the Sydney metropolitan area. Mapping the location of the ranges of these index values within Sydney will help pinpoint a suitable locality for the boutiques.

URBAN INDEX OF ADVANTAGE, SYDNEY 1996—STATISTICAL LOCAL AREAS



3. DERIVATION OF THE INDEXES

3.1 INTRODUCTION

Many aspects of the socio-economic profile of a community cannot be measured directly but there may be several variables which are recognised as contributing to a particular dimension. Often a single composite of these variables—an index—which reflects the population profile of these variables is required to aid social and economic investigations.

Principal Component Analysis is a technique which is often used to summarise a large number of related variables. A socio-economic index can be derived using principal component analysis when a range of variables related to the socio-economic factor of interest are used in the analysis. The resulting index measures what is common to the variables included in the analysis.

This section gives a brief description of the process that was followed to derive the indexes. A more detailed description is given in Appendix B.

3.2 CHOOSING THE VARIABLES

The initial variables for each index were subjectively selected from the information available from the 1996 Census. Variables included for the preliminary analysis were those considered to be related to the subject of each of the five indexes. For example, low income was thought to be one variable that would be related to socio-economic disadvantage. Therefore, the variable 'Percentage of families with income less than $15,600' was one of the variables considered for inclusion in the Index of Relative Disadvantage. Similarly, occupation variables such as 'Percentage of employed persons classified as Professionals' were initially included in the Index of Education and Occupation.

When the indexes in their current format were first produced using data from the 1986 Census, comment on the lists of variables for each index were sought and obtained from several academics and research institutions around Australia. Their advice resulted in the removal of some variables, and the addition (where data were available) of others. Similar initial variables were adopted for the 1991 and 1996 indexes, with some minor changes to the variables, especially those underlying the Rural Index of Socio-Economic Advantage and the Index of Economic Resources. See Appendix B for further details on these changes.

The finest level at which complete Census data are disseminated is the Census Collection District (CD), which corresponds to the workload of one census collector. In 1996 there were 34,500 CDs throughout Australia. By calculating an index at the CD level, an index at any broader level can be obtained by combining the constituent CD index scores. Thus the CD was chosen as the appropriate level for analysis.

The data on the initial input variables were analysed to ensure that particular socio-economic aspects were not over-represented in the analysis as this would lead to an index weighting unreasonably highly on this aspect. For example, in the *Index of Relative Disadvantage*, the variable 'Percentage of employed persons classified as Labourers &

3.2 CHOOSING THE VARIABLES—*continued*

Related Workers' was omitted from the final index as this aspect was covered by the inclusion of male and female 'Labourers & Related Workers' variables.

3.3 PRINCIPAL COMPONENT ANALYSIS

Principal component analysis was used in the construction of the Socio-Economic Indexes for Areas. Principal Component Analysis essentially achieves three things:

- based on the variables considered for each index, it creates a 'raw index score' for each CD for each index;
- it gives the contribution (called the 'weight') of each initial variable to the raw index score; and
- it eliminates variables with a low correlation with the index.

3.4 PRODUCING INDEXES FROM RAW SCORES

To allow for easy recognition of high and low scores, the raw index scores produced by Principal Component Analysis have been standardised to have a mean of 1000 and a standard deviation of 100 across all CDs in Australia. In practice, this means that around 95% of index scores are between 800 and 1200.

Scores for areas larger than CDs have been calculated by weighting together constituent CD scores, using the CD population size for weighting. It must be noted that these scores are CD weighted averages and are similar but not quite the same as those that would have been produced if the Principal Component Analysis had been carried out separately on the larger geographic areas.

3.5 VALIDATION

Socio-economic well-being is not a simple, nor well defined concept. Given the need to choose which variables to include and exclude, and the need to interpret the meaning of the summary variables resulting from the analysis, it was clearly necessary to scrutinise the final indexes carefully to ensure that they provided a valid measure and behaved as expected. The main validation exercises carried out on the final indexes were to:

- check that variables and their weights make sense;
- compare the indexes with the 1991 indexes;
- use local subjective knowledge to rank some CDs, and to study extreme CDs; and
- compare the indexes with data from other sources.

These validation exercises resulted in improvements to the methodology and helped to ensure the final scores are valid and consistent with other sources of information. See Appendix B for more detail on these validation exercises.

4. COMMENTS AND CAVEATS ON THE INTERPRETATION OF THE INDEXES

4.1 CHOICE OF VARIABLES FOR EACH INDEX

The indexes which have been produced depend upon the variables that were analysed using Principal Component Analysis. Different underlying variables would result in different final indexes; the indexes presented in this paper are just five of the many that could be derived from the Census variables. Other indexes could be developed which focus on particular social conditions. The choice of an index depends on the socio-economic aspect of interest, and the underlying variables which represent those aspects most precisely.

Indexes produced using Principal Component Analysis can be affected if some socio-economic aspects are over or under-represented in the variables being analysed. Over-representation was dealt with using the procedures described in Appendix B. However, if variables relating to an important aspect of a socio-economic dimension under consideration are absent from a particular index, users should be aware that the index cannot completely represent that aspect of socio-economic advantage or disadvantage. Consequently, the indexes described in this paper do not provide good measures for all social conditions. They were derived as good overall indexes, but should be used in conjunction with other information that relates to the topic of interest. For example, the age structure of the population is not used directly in any of the indexes. Thus, if the topic of interest relates to the health needs for infant care, or for the aged, specific data on that segment of the population should be used in addition to the indexes.

4.2 SOCIO-ECONOMIC DIMENSIONS NOT REPRESENTED IN THE INDEXES

Users of the indexes should examine the constituents of the indexes (see Appendix A) to ascertain whether they are appropriate to their problem or analysis. However, there are three factors in particular which the indexes do not represent well, and which should be noted.

Firstly, the indexes contain only limited aspects of wealth. While income and expenditure are represented, aspects such as inherited wealth, savings, indebtedness, and property values are not included. These aspects were not included as details on them were not collected by the Census. This affects the Index of Economic Resources more seriously than the other indexes.

Secondly, family structure (number of income earners, number of parents, number of dependents, etc.) is not strongly represented in the indexes though it does appear to some extent in the Index of Economic Resources. As a consequence, the indexes will perform relatively poorly at distinguishing between different family types directly.

Thirdly, access to infrastructure such as schools, community services, shops and transport are not represented by the indexes. These variables are considered to be integral to the concept of advantage or disadvantage. For example, rapidly growing outer suburban areas may suffer from a locational disadvantage situation rather than a socio-economic disadvantage.

4.3 UNDERSTANDING THE INDEXES

The indexes produced by Principal Component Analysis depend solely on the linear relationship between variables. It is quite probable however, that the socio-economic conditions in an area are not related to the variables in the analysis in a purely linear fashion. As a result, the indexes are 'ordinal measures' and not 'interval measures'. That is, using the indexes to order the CDs is meaningful but other arithmetic relationships between index values are not meaningful. For example, a CD with an index value of 1200 does not have twice the well being of a CD with an index value of 600. Similarly, the socio-economic difference between two CDs with index values of 800 and 900, is not necessarily the same as the difference between two CDs with index values of 1050 and 1150.

The indexes reflect the socio-economic well being of an area, rather than that of individuals. They were calculated at the CD level, and therefore reflect CD characteristics. Because all people within a CD are not identical, the index scores for a CD do not directly apply to individuals within that CD but rather the scores reflect the way that people group together in CDs. Hence it is possible for a relatively advantaged person to be resident in a CD which may have a low score on some or all of the indexes. Thus it is not appropriate to make inferences regarding a particular individual on the basis of the index scores.

The degree of heterogeneity within a CD influences the index score of that CD; the more homogeneous CDs tend towards the extreme index scores. That is, those CDs which have large proportions of households with similar characteristics, will tend to have the lowest or highest index scores.

Partly because of this, the interpretation of the index values is more straightforward for areas which have extreme values (i.e. very high or very low index values). For example, it is usually easy to see why a CD which is in the top (or bottom) 5% of index values has that status. In contrast, areas with mid-range index values tend to contain a broader mix of people and households. As a consequence, it is more difficult to draw strong comparisons between two mid-ranked CDs (for example, between a CD just below the average on the index (just below 1000), and another CD just above the average).

4.4 AREAS WITH NO INDEX VALUES

For confidentiality reasons and to ensure the indexes are meaningful, the data for some CDs has been withheld and is not available at any of the locality levels. These excluded CDs have one or more of the following characteristics:

- populations smaller than or equal to 10;
- 5 people or fewer employed;
- more than or equal to 70% of families not responding to the Census questions on family income;

4.4 AREAS WITH NO INDEX VALUES—*continued*

- more than or equal to 70% of people not responding to any of the Census questions on occupation, labour force status, type of educational institution, and qualifications;
- more than 20% of dwellings are non-private; or
- off-shore and migratory CDs.

In total about 1% of Australian CDs fell in one of the above categories. The Australian mean and standard deviation were calculated without using these CDs.

4.5 LIMITATIONS OF CENSUS DATA

There are a number of features of the Census data used to construct the indexes, which can affect the usefulness of the indexes. Users should therefore be aware of the following:

- The variables included in analysis are limited to those for which data is collected by the Census. Ideally, an indicator of a socio-economic factor should include all measures of relevance to that factor. However, the Census does not obtain any information relating, for example, to wealth, and access to infrastructure such as schools, community services, transport and shops. The indexes cannot therefore purport to summarise these facets of socio-economic well being.
- Missing data are a further impediment to index construction. Although non-response to individual Census items is overall quite low, it does vary between CDs. It is possible that item non-response rates correlate directly with socio-economic disadvantage. Where possible, non-response for a variable has been dealt with by redefining the population associated with the variable, to include only those persons who answered the relevant questions. This approach implicitly assumes that non-respondents within a CD resemble respondents within that area, with respect to the characteristics measured by the variables.
- All variables pertaining to families and dwellings, in contrast to persons, are based on data from occupied private dwellings. Persons in non-private dwellings (e.g. motels, boarding houses, hospitals, refuges) are therefore 'under-represented'.
- The Census tables on social and economic aspects of the population are based on people's place of enumeration and not their usual residence, i.e. the population is classified to CDs according to where they were spending the night at the time of the Census. Although the Census is timed to attempt to capture the typical situation, holiday resort areas such as the Gold Coast may show a large enumeration count compared with the usual residence count.

4.6 COMPARISON WITH THE 1991 CENSUS

It is important that the index scores from the 1996 Census should not be compared directly to the indexes based on the 1991 Census. The index values for CDs are standardised to have a mean of 1000 across Australia and the difference between the scores of an area in 1991 and 1996 does not represent the change of socio-economic conditions in the

4.6 COMPARISON WITH THE 1991 CENSUS—*continued*

area. Also, since the indexes are not interval measures (see Section 4.3 above) the difference between the index scores of two areas in 1996 cannot be compared to the difference in 1991 to show whether the gap between the socio-economic conditions of the two areas is narrowing or widening.

Boundaries of CDs in some areas have changed between Censuses. The actual number of CDs in Australia has increased from 31,401 in 1991 to 34,500 in 1996. Consequently, the boundaries of the higher geographic areas such as SLA and LGA may not be comparable. Approximately 77% of 1996 CDs in Australia are comparable within a 10% dwelling limit to the 1991 CDs.

Some of the occupation variables in the 1996 indexes are different from those used in the 1991 indexes. This is because the occupation variables are based on the Australian Standard Classification of Occupations (ASCO). ASCO has undergone revision between the 1991 and 1996 Censuses.

Some of the variables involving income have changed slightly. The Census collects this information in ranges rather than in single dollar values. The income ranges used to define variables in 1996 were chosen, as far as possible, to create new variables in 1996 referring to the same proportion of the population as had been the case in 1991. For example, in 1991 approximately 13% of families had an income less than $16,000 and in 1996, the same proportion of families had an income less than $15,600. For a complete listing of 1996 Census variables and for 1996 classifications and their definitions, refer to the *1996 Census Dictionary* (Cat. No. 2901.0)

In general, the differences described above are not major in terms of their impact on the rankings of CDs, and for all practical purposes in terms of using the indexes to rank CDs, the 1996 indexes can be viewed as an update of the 1991 indexes.

5. DATA AVAILABILITY

SEIFA96, on CD-ROM, is available for each complete State/Territory or Australia. The five indexes are provided for CD, SLA, LGA, SSD, SD and Postal Area levels. SEIFA96 is available as either a 'stand alone' product or as a 'CDATA96 Add-on Datapak'.

The SEIFA96 'stand alone' product is a Windows95 or Windows NT software package which provides a fully-documented user-friendly interface to the indexes. The 'stand alone' enables users to display selected indexes for any standard or customised geographic area, aggregate areas of interest and print a report. It provides on-line help in addition to a hard copy user guide.

The 'CDATA96 add-on' is suitable for use by those who have access to CDATA96. This option enables users to access and manipulate the indexes through the powerful functions within CDATA96 for area selection, mapping, graphing and display of information.

An order form and Licence Conditions for both 'stand alone' and 'add-on' SEIFA96 are provided at the back of this publication. Alternatively, special index data sets for particular areas can be obtained on a range of media from ABS Information Consultancy or Statistical Consultancy Services in your State/Territory ABS office. Our Statistical Consultants will also be able to provide assistance with using the indexes for various applications or, if necessary, designing other indexes to meet specific needs.

For users who are interested in data on specific census variables, CDATA96 contains both the Basic and Time Series Community Profiles for all geographic areas and covering most topics on the Census form. Further small area data are available from the Integrated Regional Database (IRDB) which provides access to ABS data from a wide range of social and economic data collections, including Population Census, Estimated Resident Population, Monthly Population Survey, Business Register, Agricultural Census, Manufacturing Census, Retail Census, Building Activity Survey, and many other collections. Two sets of data are available, one at SD level and above, the other at SLA level and above. The IRDB allows users to export data directly into CDATA and thematically display the data alongside Census information.

If you are interested in the above products or services, your first point of contact in all circumstances should be the inquiry staff of your State/Territory office of the Australian Bureau of Statistics. Contact numbers are shown at the back of this Information Paper.

APPENDIX A VARIABLES UNDERLYING SOCIO-ECONOMIC INDEXES

In this Appendix, we list the variables considered for inclusion in the various indexes. The variables are grouped by the value of their weight to indicate the contribution of each variable to the index.

The first two groups list those variables which have been included in the final indexes whilst the second group lists those variables which were excluded from the indexes as a result of the analysis.

Index of Relative Socio-Economic Disadvantage

weight between 0.2 and 0.3

Persons aged 15 and over with no qualifications (%)
Families with income less than $15,600 (%)
Families with offspring having parental income less than $15,600 (%)
Females (in labour force) unemployed (%)
Males (in labour force) unemployed (%)
Employed Females classified as 'Labourer & Related Workers' (%)
Employed Males classified as 'Labourer & Related Workers' (%)
Employed Males classified as 'Intermediate Production and Transport Workers' (%)
Persons aged 15 and over who left school at or under 15 years of age (%)
One parent families with dependent offspring only (%)
Households renting (government authority) (%)

weight between 0.1 and 0.2

Persons aged 15 and over separated or divorced (%)
Dwellings with no motor cars at dwelling (%)
Employed Females classified as 'Intermediate Production & Transport Workers' (%)
Employed Females classified as 'Elementary Clerical, Sales & Service Workers' (%)
Employed Males classified as 'Tradespersons' (%)
Persons aged 15 and over who did not go to school (%)
Aboriginals or Torres Strait Islanders (%)
Occupied private dwellings with two or more families (%)
Lacking fluency in English (%)

dropped initial variables

Dwellings with 1 or no bedrooms (%)
Employed Females classified as 'Tradespersons' (%)
Employed Persons classified as 'Tradespersons' (%)
Employed Females classified as 'Intermediate Clerical, Sales & Service Workers' (%)
Employed Persons classified as 'Intermediate Clerical, Sales & Service Workers' (%)

Index of Relative Socio-Economic Disadvantage—continued

Employed Males classified as 'Elementary Clerical, Sales & Service Workers' (%)
Employed Persons classified as 'Elementary Clerical, Sales & Service Workers' (%)
Employed Persons classified as 'Labourers & Related Workers' (%)
Employed Persons classified as 'Intermediate Production, Transport Workers' (%)
Households in improvised dwellings (%)
Households renting (non-government authority) (%)
Recent migrants from non-English speaking countries (%)

Urban Index of Socio-Economic Relative Advantage

weight between 0.3 and 0.5

Families with income greater than $77,999 (%)
Employed Males classified as 'Managers or Administrators' (%)
Employed Persons classified as 'Professionals' (%)
Persons aged 15 and over with degree or higher (%)

weight between 0.2 and 0.3

Employed Females classified as 'Managers or Administrators' (%)
Employed Males classified as 'Associate Professionals' (%)
Dwellings with 4 or more bedrooms (%)
Persons aged 15 and over at CAE or university (%)

weight between 0.1 and 0.2

Employed Females classified as 'Advanced Clerical & Social Workers' (%)
Employed Males classified as 'Advanced Clerical & Social Workers' (%)
Employed Females classified as 'Associate Professionals' (%)
Dwellings with 3 or more cars (%)
Households owning dwellings (%)
Average number of bedrooms per person
Households owning or purchasing dwellings (%)

dropped initial variables

Families with offspring having parental income greater than $77,999 (%)
Households purchasing dwelling (%)
Persons aged 15 and over with trade or 'other' qualification (%)
Person s aged 15 and over who are still at school (%)
Persons aged 15 and over at TAFE (%)
Employed Persons classified as 'Managers or Administrators' (%)
Employed Males classified as 'Professionals' (%)
Employed Females classified as 'Professionals' (%)
Employed Persons classified as 'Associate Professionals' (%)
Employed Males classified as 'Intermediate Clerical, Sales and Service Workers' (%)
Employed Persons classified as 'Advanced Clerical and Social Workers' (%)

Rural Index of Socio-Economic Relative Advantage

weight between 0.3 and 0.4

Employed Males classified as 'Professionals' (%)
Employed Males classified as 'Associate Professionals' (%)
Persons aged 15 and over with degree or higher (%)

weight between 0.2 and 0.3

Households purchasing dwelling (%)
Employed Females classified as 'Professionals' (%)
Employed Females classified as 'Advanced Clerical & Social Workers' (%)
Employed Females classified as 'Associate Professionals' (%)
Employed Males classified as 'Intermediate Clerical, Sales and Service Workers' (%)
Persons aged 15 and over with trade or 'other' qualification (%)
Persons aged 15 and over at CAE or university (%)
Families with income greater than $77,999 (%)

weight between 0.1 and 0.2

Persons aged 15 and over at TAFE (%)
Employed Males classified as 'Advanced Clerical & Social Workers' (%)

dropped initial variables

Families with offspring having parental income greater than $77,999 (%)
Households owning dwellings (%)
Households owning or purchasing dwellings (%)
Dwellings with 3 or more motor cars (%)
Dwellings with 4 or more bedrooms (%)
Average number of bedrooms per person
Persons aged 15 and over who are still at school (%)
Employed Females classified as 'Managers or Administrators' (%)
Employed Males classified as 'Managers or Administrators' (%)
Employed Persons classified as 'Managers or Administrators' (%)
Employed Persons classified as 'Professionals' (%)
Employed Persons classified as 'Associate Professionals' (%)
Employed Persons classified as 'Advanced Clerical & Social Workers' (%)

Index of Economic Resources

weight between 0.2 and 0.4

Households owning or purchasing dwelling (%)
Dwellings with 4 or more bedrooms (%)
Families with family structure other than two parent or single parent with dependent offspring or consisting of a couple only, and income greater than $77,999 (%)
Families consisting of a two parent family with dependent offspring, and income greater than $77,999 (%)
Families consisting of a couple only, and with income greater than $62,399 (%)
Families consisting of a single parent with dependent offspring, with income greater than $31,199 (%)
Mortgage greater than $1,300 per month (%)
Rent greater than $249 per week (%)

weight between 0 and 0.2

Households purchasing dwelling (%)
Households owning dwelling (%)
Dwellings with 3 or more motor cars (%)
Average number bedrooms per person

weight between -0.2 and 0

Households in improvised dwellings (%)
Households renting (government authority) (%)
Households renting (non-government authority) (%)
Dwellings with 1 or no bedrooms (%)
Rent less than $74 per week (%)
Families consisting of a single parent with dependent offspring, with income less than $15,600 (%)

weight between -0.3 and -0.2

Families consisting of a couple only, and with income less than $15,600 (%)
Families with family structure other than two parent or single parent with dependent offspring or consisting of a couple only, and income less than $26,000 (%)
Families consisting of a two parent family with dependent offspring, and income less than $26,000 (%)
Dwellings with no motor cars (%)

dropped initial variables

Households who are group households (%)

Index of Education and Occupation

weight between 0.2 and 0.4

Employed Males classified as 'Professionals' (%)
Employed Females classified as 'Professionals' (%)
Persons aged 15 and over at CAE or university (%)

weight between 0 and 0.2

Employed Males classified as 'Associate Professionals' (%)
Employed Females classified as 'Advanced Clerical & Social Workers' (%)
Employed Males classified as 'Advanced Clerical & Social Workers' (%)
Employed Males classified as Intermediate Clerical, Sales & Service Workers' (%)

weight between -0.2 and 0

Employed Females classified as 'Tradespersons' (%)
Employed Males classified as 'Tradespersons' (%)
Employed Females classified as 'Elementary Clerical, Sales & Service Workers' (%)
Employed Females classified as 'Intermediate Production & Transport Workers' (%)

weight between -0.4 and -0.2

Employed Males classified as 'Intermediate Production & Transport Workers' (%)
Employed Females classified as 'Labourer & Related Workers' (%)
Employed Males classified as 'Labourer & Related Workers' (%)
Males (in labour force) unemployed (%)
Females (in labour force) unemployed (%)
Persons aged 15 and over who left school at or under 15 years of age (%)
Persons aged 15 and over with no qualifications (%)

dropped initial variables

Persons aged 15 and over with degree or higher (%)
Persons aged 15 and over who are still at school (%)
Persons aged 15 and over at TAFE (%)
Persons aged 15 and over with trade or 'other' qualification (%)
Persons aged 15 and over who did not go to school (%)
Persons (in labour force) unemployed (%)
Employed Persons classified as 'Professionals' (%)
Employed Females classified as 'Associate Professionals' (%)
Employed Persons classified as 'Associate Professionals' (%)
Employed Persons classified as 'Labourer & Related Workers' (%)
Employed Persons classified as 'Tradespersons' (%)
Employed Females classified as 'Managers or Administrators' (%)
Employed Males classified as 'Managers or Administrators' (%)
Employed Persons classified as 'Managers or Administrators' (%)

Index of Education and Occupation—continued

Employed Persons classified as 'Advanced Clerical & Social Workers' (%)
Employed Females classified as 'Intermediate Clerical, Sales & Service Workers' (%)
Employed Persons classified as 'Intermediate Clerical, Sales & Service Workers' (%)
Employed Males classified as 'Elementary Clerical, Sales & Service Workers' (%)
Employed Persons classified as 'Elementary Clerical, Sales & Service Workers' (%)
Employed Persons classified as 'Intermediate Production and Transport Workers' (%)

APPENDIX B DERIVATION OF THE SOCIO-ECONOMIC INDEXES FOR AREAS

Background

A measure of socio-economic disadvantage was first produced by the ABS from the 1971 Census, using a statistical technique known as Principal Component Analysis. Since then indexes have been produced from the 1976 and 1981 Censuses, specifically to reflect educational disadvantage and were based on Census variables which had been found to be correlated with educational achievement. However, evaluation indicated that although these indexes were derived to measure educational disadvantage, they could also be useful as a general socio-economic index.

In many circumstances, a single socio-economic index may be too broad to be useful in a particular analysis or survey design and for this reason the ABS developed a group of indexes from the 1986 Census. This group was made up of two general indexes (an Index of Relativ e Advantage and an Index of Relative Disadvantage) and two more specific indexes. Separate indexes for urban and rural areas were derived for the general Index of Relative Socio-Economic Advantage, when it became apparent there were major structural differences in the relationships between socio-economic variables for these two areas. The specific indexes were an index of economic resour ces and an index of education and occupation. The same five indexes were constructed in 1991 and 1996 with some minor changes in variables and procedures. A description of the derivation of the indexes follows.

Methodology—Principal Component Analysis

Many aspects of the socio-economic profile of a community cannot be measured directly but there may be several variables which are recognised as contributing to a particular dimension. Often a combination of these variables, or an index, which reflects the population profile of these variables is required to aid social and economic investigations. Principal Component Analysis is a technique which is often used to summarise a large number of related variables. By conducting a Principal Component Analysis on a range of variables related to the socio-economic factor of interest, a socio-economic index can be derived.

The main aim of Principal Component Analysis is to reduce a large number of related variables to a new set of (uncorrelated) components, which are ordered so that the first few components explain most of the variation present in the original variables. To use the Principal Component Analysis technique, a number of underlying variables are measured on each of the population units. The correlation or covariance matrix of these variables is then analysed, in order to extract the underlying factors or components from them.

Each principal component is a linear combination of the original variables, and is independent of the other components. As well as producing a set of principal components, the Principal Component Analysis technique sorts them. Thus it is possible to talk of the first principal component, the second principal component, and so forth. The

Methodology—Principal Component Analysis—*continued*

first principal component is usually the most important one. It is the linear combination of the original variables which best summarises the variance in the original data. Subsequent principal components are linear combinations of the original variables, which form the best summary of the variance remaining in the data, after allowing for the previous principal components.

For each of the five indexes, a set of relevant original variables was chosen and in each case, the first principal component has provided the socio-economic measure. The first component was appropriate in each case because the variable loadings and the correlations between the variables and the component, identified a clear socio-economic dimension.

Once the linear combination of variables that compose a principal component is known, a score can be calculated for each CD. The linear combination, in effect, specifies a weight for each of the original variables. The component score for a CD can be calculated by applying the appropriate weight to the value of each variable for the CD, and then adding up the weighted values. These scores can then be used to distinguish between CDs and to rank them.

There were several other equally important stages in the production of these indexes. The first stage involved choosing and refining the list of variables to be analysed using Principal Component Analysis. Then, after conducting the Principal Component Analysis the indexes were scaled to have an average value of 1000 and were checked to ensure that they were indeed reflecting the desired socio-economic aspects of each area. Each of these stages is discussed in the following sections.

Methodology—choosing the variables

In deriving an index, Principal Component Analysis is being used to find a combination of variables to act as a summary measure. It is drawing out what is common to these variables. It is therefore important to ensure that sufficient variables to represent all aspects of a particular socio-economic indicator are included.

The initial variables for each index were selected from the information available from the 1996 Census. The variables were chosen subjectively, based on experience with the earlier indexes. Variables pertaining to family income, educational attainment, unemployment, occupation, marital status, household occupancy, Aboriginality and migrant status were included in the analysis. All variables which were chosen had to satisfy the criterion of face validity (i.e. they seem to conform to what intuition might dictate). When the variables were considered for the 1986 indexes, comment on the lists of variables was obtained from several academics and research institutions around Australia. Their advice resulted in the removal of some variables, and the addition (where data were available) of others.

Most of the variables for the 1986 indexes have been retained for the 1991 and 1996 indexes. Changes were made to the initial variables for the Index of Economic Resources and Indexes of Advantage to improve

Methodology—choosing the variables—*continued*

the family income by family structure variables, to add new variables on households owning or purchasing their dwelling, and to include family as well as parental incomes. These variables were considered relevant to economic resources and relative socio-economic advantage.

It is equally important to ensure that particular socio-economic aspects are not over-represented in the analysis, as this would lead to an index weighting unreasonably highly on this aspect. An extreme example would be the inclusion of the same variable twice in the analysis. To avoid such over-representation, the correlations of the initial input variables were examined. If any two of the variables had a very high correlation, only one of the pair was retained for the Principal Component Analysis.

It is also important that only variables which are well-related to the general thrust of the index are included. Variables which correlate poorly with the index do little but add to the variability of the index. These variables are not related to the main thrust of the index, and can make the index unnecessarily sensitive to small changes in the population over time. Therefore, after the first Principal Component Analysis, those variables which had low correlations with the index were excluded. The Principal Component Analysis was then repeated to produce the final index.

All the variables used in the analysis were expressed as ratios or percentages (e.g. as a percentage of persons aged 15 years or more, as a percentage of males in the employed labour force, etc.) to make the measurements comparable between CDs. When deriving the principal components, the correlation matrix for the variables was used. Using correlations rather than covariances in the Principal Component Analysis gives equal prominence to all variables, so that variables with a large range of values do not dominate the indexes.

Selecting variables for the Indexes of Relative Socio-Economic Advantage and Disadvantage

A single general socio-economic index will often fail to identify an area with two quite extreme groups. For example, an inner city area might contain both pensioner households and double income households with no children. Thus it might have high proportions of both relatively advantaged and disadvantaged households. It was therefore decided to produce two indexes: an Index of Relative Socio-Economic Advantage and an Index of Relative Socio-Economic Disadvantage. In this way groups of concentrated need can be identified even if they are mixed with a group of wealthy individuals, or vice versa.

Because major structural difference had been found in the relationships between socio-economic variables related to advantage for the urban area and the rural area, the Index of Relative Advantage was split into two: an urban index and a rural index. CDs were defined as urban or rural using the 1996 Population Census definition of 'Section of State'. Thus the Urban Index of Relative Advantage was based on all CDs in urban centres with a population of 1000 and over. The Rural Index of Relative Socio-Economic Advantage was based on all remaining CDs.

Selecting variables for the Indexes of Relative Socio-Economic Advantage and Disadvantage—*continued*

A preliminary Principal Component Analysis was conducted on the variables chosen to be in the Indexes of Advantage and Disadvantage, producing an overall general socio-economic index. Variables which correlated negatively with the overall index were assigned to the Index of Relative Disadvantage. The Index was then derived by carrying out Principal Component Analysis for this set of variables only, excluding any unnecessary variables using the procedures described in the previous section.

The Urban and Rural Indexes of Advantage were derived by first conducting a preliminary Principal Component Analysis in urban and rural areas separately on the variables chosen to be in the Indexes of Advantage and Disadvantage, producing general urban and general rural socio-economic indexes. Variables which correlated positively with these overall indexes were assigned to the Urban Index of Advantage and Rural Index of Advantage. Principal Component Analysis was then carried out on these sets of separate variables, excluding any unnecessary variables using the procedures described in the previous section.

Selecting variables for the specific indexes

The Index of Economic Resources was derived by doing the Principal Component Analysis on variables which reflect the profile of the economic resources of families within CDs, such as income and rent and mortgage variables. Additionally, variables which reflected non-income assets, such as dwelling size and number of cars were also included. The income variables were specified by family structure since this affects disposable income. Unnecessary variables were excluded from the initial list using the same procedures as other indexes.

The Index of Education and Occupation includes variables which are related to the educational and occupational structure of communities. This index is derived by the same procedures as the other indexes.

Producing the indexes from the raw scores

To allow for easy recognition of high and low scores, the CD level index scores have been standardised to have a mean of 1000 and a standard deviation of 100.

Scores for areas larger than CDs can be calculated by weighting together constituent CD scores. Scores have been produced for Statistical Divisions (SDs), Statistical Subdivisions (SSDs), Legal Local Government Areas (LGAs), Statistical Local Areas (SLAs) and Postal Areas (POAs), using the CD population size for weighting. It must be noted that these scores are CD weighted averages and are not quite the same as those that would have been produced if the Principal Component Analysis had been carried out separately on the larger geographic areas.

Validation

The derivation of socio-economic indexes is subjective in nature, as socio-economic well-being is not a simple, nor well defined concept. Given the need to choose which variables to include and exclude, and the need to interpret the meaning of the summary variables resulting from the analysis, it was clearly necessary to scrutinise the final indexes carefully, to ensure that they provided a valid measure and behaved as

Validation—*continued*

expected. Validation has been a very important part of the derivation of the indexes.

One important check on the indexes is whether the variables and their weights make sense. After each Principal Component Analysis, the first principal component was examined to see if it was summarising the input variables adequately. In all cases the final indexes were explaining about 30% of the variability in the underlying input variables—a good indication that some common underlying factor was being identified and summarised. The weights of the variables in each index also displayed face validity, ie they made intuitive sense (high income has a high weight, while low income or unemployment have low or negative weights; purch asing a dwelling has a higher weight than renting a dwelling; high rent has a higher weight than low rents; tertiary education has a higher weight than leaving school at 15 and so forth).

The indexes were further validated using local subjective knowledge. In each state, several CDs were identified which covered the full range of index values (from low to high status). These CDs were independently assessed and graded using local subjective knowledge and direct observation of the CDs. The gradings assigned subjectively corresponded closely with the rankings provided by the index values.

In 1991, one of the problems associated with the rankings of the Rural Index of Advantage was that a local knowledge based approach ranked some CDs much lower than the index ranking suggested. Investigation showed that this was a result of one or more of the following :

- a high percentage of people not stating their income, education and/or occupation;
- a small percentage of people employed; and/or
- a large percentage of people not in the labour force (variables used in the indexes exclude those not in the labour force).

The solution to that problem was to exclude CDs which have highly unstable variables due to the sparsity of responses to the Census. It was therefore decided to exclude from the Principal Component Analysis those CDs with one or more of the following characteristics :

- populations smaller than or equal to 10;
- 5 people or fewer employed;
- more than or equal to 70% of families not responding to the Census questions on family income;
- more than or equal to 70% of people not responding to any of the Census questions on occupation, labour force status, type of educational institution, and qualifications;
- more than 20% of dwellings are non-private; or
- off-shore and migratory CDs.

Validation—*continued*

In total about 1% of Australian CDs fell in one of the above categories. The Australian mean and standard deviation were calculated without using these CDs. When aggregating areas to a higher level the index values for these CDs are excluded from the weighted average.

The validation also suggested a problem with the inclusion of the variable 'Percentage of Persons classified as Managers or Administrators' in the Rural Index of Relative Socio-Economic Advantage. This variable was at first considered as an advantage variable when Principal Component Analysis was performed for all CDs in Australia, but in the rural areas (where many managers/administrators were farmers) the variable, along with another three variables, was found to be negatively correlated with the Rural Index of Advantage. This suggested the Principal Component Analysis for determining advantage variables should be performed separately for the urban and rural areas. The validation of the Rural Index of Advantage also suggested that there was too much emphasis placed on the occupation related variables. To counteract this problem two income variables were added to the index. The derivation method was amended and the analysis was rerun, and subsequently the negatively correlated variables were dropped from the index.

The top and bottom ranked CDs in each state were also examined using local subjective knowledge. The characteristics which caused them to have such extreme index values all made intuitive sense. They tended to be homogeneous CDs, i.e. ones with uniform characteristics throughout the CD. High values related to high income, home ownership and professional employment or trade qualification. CDs with low index values tended to be characterised by low car ownership, unemployment or unskilled jobs, relatively lower educational achievements and low incomes.

The indexes were then compared to the indexes obtained from the 1991 Census. The top and bottom ranked CDs and SLAs in each state compared favourably between 1991 and 1996.

Finally, additional data sources were used to validate the index scores. Data from the current 1993-94 ABS Household Expenditure Survey (HES) was used to compare (HES) income and mortgage expenditure information, with index scores from the Index of Economic Resources. As expected, the data showed slight increases in income and mortgage payments as the index values increased. 1996 Labour Force Survey data was used to try to find relationships between the Index of Education and Occupation and various fine level occupation groups. As expected, low index values were correlated with areas with higher proportions of the unskilled occupation groups and above average values with areas with higher proportions of the skilled occupation groups.

APPENDIX C AVERAGE AND QUANTILE INDEX VALUES

These tables give the average index values and a range of quantiles for the geographic areas Collection District (CD), Statistical Local Area (SLA) and Postal Area (POA) in each State and in A ustralia. Quantiles denote a point in the distribution of index values below which a specified percentage of index values fall. Quantiles which divide the distribution of index values into ten equal parts are commonly referred to as deciles (the 10% and 90% decile are given); quantiles which divide the distribution of index values into four equal parts are commonly referred to as quartiles, with the 50% quartile also known as the median (the 25%, 50% and 75% quartiles are given in this appendix).

The distribution of index values in tables 1–3 refer to different types of spatial unit. Because index scores of SLAs and Postal Areas are formed by taking the weighted average of index values of the CDs in the area, their values depend on the distribution of population weights across the CDs.

TABLE 1 SUMMARY DATA FOR CD LEVEL INDEXES

	Average	*10%*	*25%*	*Quantile 50%*	*75%*	*90%*
			INDEX OF RELATIVE SOCIO-ECONOMIC DISADVANTAGE			
NSW	1 006	879	946	1 015	1 077	1 129
VIC	1 015	897	962	1 028	1 079	1 121
QLD	983	877	932	988	1 039	1 085
SA	982	837	927	997	1 059	1 108
WA	1 000	879	949	1 011	1 067	1 112
TAS	974	854	918	983	1 042	1 090
NT	922	650	799	994	1 051	1 091
ACT	1 086	1 004	1 058	1 096	1 134	1 170
AUST	**1 000**	**878**	**944**	**1 010**	**1 069**	**1 117**
			URBAN INDEX OF RELATIVE SOCIO-ECONOMIC ADVANTAGE			
NSW	1 003	891	932	984	1 062	1 154
VIC	1 009	903	942	995	1 066	1 142
QLD	980	884	921	964	1 028	1 101
SA	978	869	916	967	1 031	1 109
WA	1 017	905	944	999	1 078	1 160
TAS	970	873	913	959	1 027	1 090
NT	956	864	903	955	1 006	1 055
ACT	1 094	970	1 024	1 082	1 153	1 240
AUST	**1 000**	**890**	**932**	**983**	**1 057**	**1 139**
			RURAL INDEX OF RELATIVE SOCIO-ECONOMIC ADVANTAGE			
NSW	1 011	894	936	998	1 076	1 150
VIC	1 017	908	949	1 008	1 077	1 136
QLD	982	860	907	973	1 048	1 111
SA	995	885	925	977	1 048	1 135
WA	976	856	898	972	1 038	1 111
TAS	1 019	906	952	1 010	1 076	1 143
NT	937	800	851	934	1 010	1 071
ACT	1 138	978	1 035	1 178	1 236	1 260
AUST	**1 000**	**879**	**927**	**990**	**1 063**	**1 132**
			INDEX OF ECONOMIC RESOURCES			
NSW	1 009	881	935	998	1 079	1 158
VIC	1 008	906	952	1 004	1 062	1 120
QLD	984	879	927	979	1 039	1 096
SA	977	862	920	978	1 037	1 097
WA	1 011	892	951	1 014	1 079	1 137
TAS	966	875	919	965	1 019	1 064
NT	914	690	767	948	1 028	1 078
ACT	1 075	941	1 025	1 081	1 138	1 205
AUST	**1 000**	**884**	**937**	**995**	**1 061**	**1 128**
			INDEX OF EDUCATION AND OCCUPATION			
NSW	1 011	892	941	1 000	1 079	1 156
VIC	1 016	894	947	1 006	1 084	1 157
QLD	971	869	909	960	1 025	1 094
SA	982	860	914	973	1 046	1 127
WA	990	873	921	975	1 055	1 129
TAS	965	845	895	951	1 032	1 111
NT	979	814	922	1 003	1 054	1 096
ACT	1 123	1 054	1 082	1 116	1 164	1 218
AUST	**1 000**	**880**	**929**	**989**	**1 066**	**1 144**

TABLE 2 SUMMARY AREA DATA FOR SLA LEVEL INDEXES

	Average	*10%*	*25%*	*Quantile 50%*	*75%*	*90%*
			INDEX OF RELATIVE SOCIO-ECONOMIC DISADVANTAGE			
NSW	993	932	956	981	1 019	1 081
VIC	1 013	952	981	1 009	1 044	1 077
QLD	994	910	949	992	1 045	1 081
SA	979	908	942	978	1 018	1 052
WA	990	934	963	987	1 017	1 051
TAS	968	925	933	953	1 002	1 029
NT	963	758	921	998	1 047	1 075
ACT	1 088	1 016	1 067	1 098	1 123	1 146
AUST	**1 000**	**924**	**957**	**994**	**1 045**	**1 093**
			URBAN INDEX OF RELATIVE SOCIO-ECONOMIC ADVANTAGE			
NSW	982	933	944	961	986	1 057
VIC	992	933	951	973	1 017	1 072
QLD	991	910	937	972	1 037	1 090
SA	972	912	927	961	994	1 083
WA	999	939	953	972	1 017	1 108
TAS	955	906	922	949	963	1 035
NT	945	853	907	955	1 005	1 031
ACT	1 101	1 011	1 046	1 085	1 155	1 228
AUST	**995**	**921**	**944**	**971**	**1 036**	**1 108**
			RURAL INDEX OF RELATIVE SOCIO-ECONOMIC ADVANTAGE			
NSW	1 012	919	943	984	1 068	1 143
VIC	1 039	938	984	1 033	1 092	1 136
QLD	1 016	895	934	1 006	1 074	1 153
SA	986	914	933	963	1 014	1 101
WA	971	892	917	960	1 015	1 070
TAS	1 035	951	984	1 031	1 073	1 117
NT	986	863	917	969	1 064	1 107
ACT	1 160	1 007	1 134	1 183	1 209	1 242
AUST	**1 011**	**911**	**941**	**995**	**1 066**	**1 129**
			INDEX OF ECONOMIC RESOURCES			
NSW	980	919	939	959	1 002	1 084
VIC	997	943	957	983	1 027	1 075
QLD	998	913	945	988	1 044	1 093
SA	958	907	926	950	985	1 028
WA	981	920	947	978	1 015	1 056
TAS	958	915	935	952	984	1 019
NT	946	749	891	982	1 035	1 075
ACT	1 075	974	1 018	1 087	1 122	1 176
AUST	**992**	**917**	**943**	**980**	**1 035**	**1 094**
			INDEX OF EDUCATION AND OCCUPATION			
NSW	987	923	941	957	1 006	1 100
VIC	998	933	954	980	1 020	1 089
QLD	985	887	921	968	1 039	1 110
SA	956	887	918	941	968	1 063
WA	962	906	925	940	966	1 085
TAS	946	891	903	928	956	1 007
NT	1 005	891	968	1 019	1 069	1 091
ACT	1 121	1 063	1 095	1 121	1 162	1 199
AUST	**992**	**903**	**931**	**966**	**1 045**	**1 122**

TABLE 3 SUMMARY AREA DATA FOR POSTAL AREA LEVEL INDEXES

	Average	*10%*	*25%*	*Quantile 50%*	*75%*	*90%*
			INDEX OF RELATIVE SOCIO-ECONOMIC DISADVANTAGE			
NSW	997	917	948	992	1 046	1 109
VIC	1 014	936	977	1 014	1 053	1 095
QLD	973	902	936	970	1 011	1 047
SA	988	901	943	987	1 036	1 084
WA	995	920	964	999	1 035	1 077
TAS	969	874	924	960	1 010	1 075
NT	949	741	897	978	1 038	1 056
ACT	1 092	1 031	1 077	1 094	1 122	1 137
AUST	**995**	**913**	**952**	**994**	**1 042**	**1 088**
			URBAN INDEX OF RELATIVE SOCIO-ECONOMIC ADVANTAGE			
NSW	1 000	925	947	972	1 043	1 133
VIC	1 003	926	950	985	1 042	1 120
QLD	971	906	928	957	1 000	1 061
SA	976	889	928	957	1 009	1 089
WA	1 004	930	949	979	1 048	1 155
TAS	960	907	923	946	1 001	1 047
NT	941	878	884	956	994	1 009
ACT	1 097	1 042	1 063	1 081	1 139	1 173
AUST	**993**	**918**	**942**	**972**	**1 034**	**1 110**
			RURAL INDEX OF RELATIVE SOCIO-ECONOMIC ADVANTAGE			
NSW	1 011	914	941	990	1 070	1 143
VIC	1 023	917	954	1 014	1 078	1 138
QLD	989	884	914	973	1 049	1 110
SA	1 002	905	932	978	1 039	1 159
WA	987	887	924	974	1 033	1 114
TAS	1 026	932	963	1 013	1 068	1 128
NT	980	849	897	972	1 055	1 148
ACT	1 175	1 049	1 086	1 187	1 260	1 283
AUST	**1 007**	**905**	**938**	**991**	**1 064**	**1 134**
			INDEX OF ECONOMIC RESOURCES			
NSW	996	912	938	975	1 043	1 125
VIC	997	925	952	985	1 037	1 081
QLD	972	902	931	966	1 004	1 052
SA	971	901	928	962	1 012	1 063
WA	991	911	951	984	1 037	1 091
TAS	963	895	921	958	999	1 050
NT	928	759	849	922	1 028	1 038
ACT	1 072	987	1 040	1 085	1 110	1 134
AUST	**987**	**908**	**939**	**975**	**1 029**	**1 086**
			INDEX OF EDUCATION AND OCCUPATION			
NSW	995	904	936	966	9 053	1 131
VIC	996	916	948	983	1 030	1 105
QLD	948	874	901	930	983	1 049
SA	966	878	918	950	1 004	1 078
WA	965	894	922	946	986	1 075
TAS	948	857	900	929	975	1 063
NT	984	871	941	994	1 041	1 064
ACT	1 129	1 075	1 091	1 124	1 151	1 191
AUST	**979**	**893**	**926**	**960**	**1 019**	**1 103**

APPENDIX D SEIFA96 ORDER FORM AND LICENCE CONDITIONS

Socio-Economic Indexes For Areas 96

ORDER FORM

Socio-Economic Indexes for Areas 96 (SEIFA96) are groupings that provide a comprehensive profile of the Australian people. These groupings reveal where the affluent (as opposed to just high income earning) live; where the disadvantaged (as opposed to the unemployed) live and where the highly skilled and educated (as opposed to the degree-holding people) live. Using data from the 1996 Census of Population and Housing, five indexes have been constructed to summarise the social and economic conditions of Australia by geographic area. Each index has been obtained by summarising the information from a variety of underlying social and economic variables, each index using a different set of underlying variables.

1) Urban Index of Advantage — an indicator of well-being, containing items such as high income, tertiary education, home ownership and skilled occupations;
2) Rural Index of Advantage — makes the distinction between being advantaged in the city and being advantaged in the country, looking at characteristics related specifically to rural areas;
3) Index of Disadvantage — focuses on low income earners, relatively lower educational attainment, high unemployment, rented dwellings and people lacking fluency in English;
4) Index of Economic Resources — highlights what could be called disposable income, focusing on economic resources of a household including family income, housing status and car ownership; and
5) Index of Education and Occupation — provides specific rankings based on educational background and type of occupation.

The minimum requirements to run SEIFA96 are:

- 486 based PC — or higher — a Pentium is recommended
- Windows 95 or Windows NT
- CD-ROM Reader — Quad speed or better recommended
- At least 16 mb RAM
- At least 25 mb of free hard disk space

To order SEIFA96 fill in the details below, read and sign the licence agreement or MOU in Appendix A, retain a copy and mail, fax or contact your State Office. (Contact details are provided within this publication.)

Australian Bureau of Statistics
PO Box 10
Belconnen 2616

LICENSEE DETAILS

Name: Mr / Ms / Mrs / Dr /

Organisation:

Department: (if applicable)

Section: (if applicable)

Title:

Address: Street:

Suburb: State: Post Code:

Telephone: ( ) Fax: ( )

Other Phone/ Pager: E-mail Address:

Other Contact(s):

ORDERING DETAILS

Geography	Per copy price	Number of Stand Alone copies	Number of Concurrent Accesses*
Australia	$2,500		
New South Wales	$1,750		
Victoria	$1,750		
Queensland	$1,750		
South Australia	$1,250		
Western Australia	$1,250		
Tasmania	$1,000		
Northern Territory	$1,000		
Australian Capital Territory	$1,000		

**Use the right hand boxes to specify how many concurrent accesses of SEIFA96 you want to purchase to run over a network. Use the left hand boxes to specify how many stand alone copies of SEIFA96 you require. If you specify network accesses you will receive one copy of the product. If you specify 3 stand alone copies of the product you will receive 3 physical copies of the Product. Please note there is no difference in price between a licence for a concurrent access to the Product through a network, and a licence for a stand alone copy of the Product.*

Please indicate for each copy of SEIFA96 how it will be used:

as an add-on to CDATA96 ☐

as a product independent of CDATA96 ☐

as both ☐

Multiple copies/concurrent accesses

If you purchase multiple stand alone copies or multiple concurrent accesses of SEIFA96 at the same time you are entitled to the following discounts:

2–5 copies/concurrent accesses	20% discount
6 + copies/concurrent accesses	30% discount

Note:

- A licence for SEIFA96 will have to be purchased per access point and per stand alone copy of the Product. For example, a client with a standalone + 2 access points will be delivered with 1 physical Socio-Economic Indexes For Areas 96 product and permitted to network the 2 accesses. Thus they are actually purchasing 3 licences and would be eligible for discount of 20% while receiving one physical product.
- Only single legal entities or single government agencies purchasing multiple copies are eligible for discounts.

PAYMENT DETAILS

Please debit my

American Express ☐ Bankcard ☐

Mastercard ☐ Visa ☐

To the value of: ☐

Card Number: ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

Expiry Date: ☐

Name on Card: _____

Signature: _____

or

My crossed cheque/ purchase order for [ ] , payable to the Australian Bureau of Statistics, Collector of Public Monies, is attached to this order form.

or

Please raise an invoice on the basis of my Official Order number:

Accounts address if different to the contact / delivery address you specified earlier:

Billing Contact: _____

Title: _____

Address: Street: _____

Suburb: _____ State: _____ Post Code: _____

Telephone: ( ) _____ Fax: ( ) _____

LICENCE AGREEMENT

You MUST read and sign the licence agreement or MOU accompanying this order form to obtain this product.

This order form and the attached licence agreement are legal documents for the purpose of software licensing and contractual arrangements. A copy of this order form and licence agreement/MOU will be returned to you when signed by the Commonwealth's representative.

OFFICE USE: Serial No(s) Supplied:
Date:

LICENCE CONDITIONS FOR ALL PURCHASERS, EXCLUDING COMMONWEALTH GOVERNMENT

SEIFA96 cannot be made available until this Licence Agreement is executed and returned to the ABS.

LICENCE AGREEMENT

This Licence Agreement is entered into between the Commonwealth of Australia represented by the Australian Bureau of Statistics (called 'Us', 'We' or 'Our' as appropriate) and the Licensee (called 'You' or 'Your' as appropriate).

1. Interpretation

(a) 'ABS' means the Australian Bureau of Statistics;

(b) 'Concurrent Access Points' means the total number of:
(i) standalone computers identified in the column titled "Number of Stand Alone Copies" in the Order Form; and/or
(ii) single computer terminals on a computer network or other items of equipment capable of simultaneously viewing, interpreting, processing, manipulating or otherwise accessing the Product identified in the column titled "Number of Concurrent Accesses" in the Order Form;

(c) 'Licence Agreement' means the Order Form and this Attachment;

(d) 'Licensee' means the legal person specified in the Order Form as the Licensee;

(e) 'Licensed Access Area' means the computer network(s), business unit(s), department(s), office(s), or other part(s) of the Licensee's organisation for which the Product is licensed under this Licence Agreement, as specified in the Order Form;

(f) 'Product' means the components of Socio-Economic Indexes For Areas 96 (SEIFA96) product as requested by You on the Order Form comprising:
(i) a CD–ROM/s containing 1996 Census statistical data files, specially constructed indexes, SEIFA96 application software;
(ii) a User Manual and Information Paper

(g) 'Order Form' means the Order Form annexed to this Attachment.

2. Permitted Uses

2.1 In return for payment by You to Us of the Licence Fee, We grant You a non-transferrable, non-exclusive licence to use the Product on the terms and conditions set out in this Licence Agreement.

2.2 The Licence Fee is exclusive of any taxes, duties or charges payable in respect of this Licence Agreement or the Product.

2.3 The licence granted to You gives You certain limited rights to use the Product and any rights not specifically granted in this Licence Agreement are reserved to the ABS. You are licensed to:

(a) use the Product in the Licensed Access Area on the Concurrent Access Points;

(b) produce hard copies from the Product for Your internal use only;

(c) export 1996 Census statistical data from the Product for Your internal use with other software packages, but only if:

(i) all copies of the data are labelled with the same copyright notice as the Product; and

(ii) the amount of data exported amounts to a fair dealing for news reporting, research, study or review as defined in the Copyright Act 1968; and

(d) use the Product in the provision of consultancy services to Your clients, but only if:

(i) data reproduced from the Product is used for the sole purpose of supporting conclusions in a report or document;

(ii) data from the Product does not exceed ten percent of the report or document; and

(iii) the total amount of data from the Product used in the report or document does not exceed five hundred data items as determined by Us.

2.4 If You are a library, You may allow Your registered users to use the Product on the same basis as You. It is Your responsibility to ensure that Your registered users are aware of the terms and conditions of this Licence Agreement and conform to them. A breach of this Licence Agreement by a registered user will have the same effect as a breach by You.

2.5 You must treat the Product as private and confidential to us and must take all reasonable measures to protect the Product from unauthorised use, reproduction, distribution or publication.

2.6 You must not disclose the Product to any person, or use the Product for any purpose, except in accordance with this Licence Agreement.

3. Uses Not Permitted

3.1 Except as specifically allowed in this Licence Agreement, You may not:

(a) export any data or software from the Product, or incorporate the Product or any part of the Product in any other software package;

(b) copy or use the Product;

(c) rent, lease, sublicense, lend, sell, assign, transfer or in any way commercially exploit the Product, any product or service derived from the Product, or any rights granted in this Licence Agreement;

(d) alter, decompile, disassemble, reverse engineer or otherwise dispose of the Product; or

(e) remove the copyright notice on the Product without the prior written permission of the owner of the intellectual property rights in the relevant components of the Product as set out in subclause 7.1;

4. Licence Fee

4.1 The fee payable for the use of the Product is set out in the Order Form. You must pay this fee in order to be granted the rights set out in this Licence Agreement.

4.2 You must not increase the number of Concurrent Access Points on which the Product is used above the number specified in the Order Form without Our prior written permission.

4.3 We may grant You rights to an increased number of Concurrent Access Points subject:

(a) to the payment of an additional fee at the ABS recommended retail price current at time of purchase of those additional accesses; and/or

(b) to additional conditions.

5. Duration of Licence

5.1 This Licence Agreement is effective from the day You receive the Product, and continues in force unless terminated.

5.2 The Licence Agreement will terminate automatically without notice from Us if You fail to comply with any provision of this Licence Agreement.

5.3 On termination, You agree to return to Us the Product and all copies of the Product in Your possession, power or control and You shall cease to use the Product. We may request You to certify You have done so.

6. Delivery

6.1 We will do our best to deliver the Product to You at the address nominated on the Order Form within 10 working days of receipt by Us of the correctly completed Order Form.

7. Intellectual Property Rights

7.1 You acknowledge that the intellectual property rights, including copyright, in the Product are owned by the Commonwealth represented by the Australia Bureau of Statistics.

7.2 Copyright notices appearing on the Product, or on information displayed by or printed from the Product, shall not be removed.

7.3 You must endorse on all items produced by You from the Product a statement acknowledging that the items were produced from a Product supplied by the ABS and acknowledging ownership of the intellectual property rights of the components of the Product as set out in subclause 7.1.

7.4 You may quote statistical data contained in the Product providing:

(a) the ABS is cited as the source of the data;

(b) no analysis or transformation of the data is attributed to the ABS;

(c) the terminology used is the same as that used by the ABS in describing the data; and

(d) the quoted statistical data is used only for purposes of fair dealing for news reporting, research, study or review as defined in the Copyright Act 1968.

8. Limitation of Liability

8.1 Subject to subclause 9.3, We do not warrant that the Product is free of errors and We shall not be in any way liable for any loss, damage or injury suffered by You or any other person consequent upon the use or possession of the Product or the existence of errors in the Product.

8.2 You agree to indemnify Us in respect of all liability for loss, damage or injury which may be suffered by any person in connection with this Licence Agreement or use of the Product.

8.3 Subject to conditions or warranties implied by law which are incapable of exclusion, restriction or modification or where to do so is illegal or would render any provision of this Licence Agreement void:

(a) no condition or warranty is given and no representation is made by Us in relation to the quality, fitness for any purpose or any other aspect of the Product; and

(b) our liability to You for a breach of any condition or warranty is limited to, at Our discretion, the replacement of the Product, the repair of the Product or the payment of the cost of replacing or repairing the Product.

8.4 The provisions of this condition shall survive the expiration or earlier termination of this Licence Agreement.

8A. Year 2000 Compliance

8A.1 We have endeavoured to ensure that the software or hardware used in the creation of the Product accurately perform the functions of date/time values from, into and between the years 1999 and 2000 and leap year calculations and intervals of time described by two or four digits, however We do not warrant that all materials used in creating the Product accurately perform those functions.

8A.2 We advise You against using the Product with any software or hardware which do not accurately perform the functions referred to in subclause 8A.1 (in this clause 8A referred to as "non compliant materials").

8A.3 We will not be liable for any loss or damage to You caused as a result of You using the Product with any non compliant materials.

9. Support and Updates

9.1 We will provide the following support free of charge:

(a) 'Help Desk' support accessible by telephone between the hours of 9am and 5pm Canberra time (Monday to Friday excluding public holidays in the ACT); and

(b) the Product will contain on-line help.

9.2 We will provide additional support, on request, and subject to payment for services at Our normal consultancy rates applicable at the time of your request.

9.3 We will replace the compact disk component of the Product free of charge if You notify Us within 30 days of Your receipt of the Product that the compact disk component is defective.

10. General

10.1 This Licence Agreement represents our entire understanding and agreement regarding the product and supersedes any prior proposal, representation or agreement, written or oral. This Licence Agreement may be modified only by agreement in writing signed by You and Us.

10.2 Failure or delay by Us in enforcing any provision of the Licence Agreement does not mean that We no longer regard that provision as binding. A waiver by Us of a provision of this Licence Agreement shall not constitute a waiver of any other breach of the Licence Agreement.

10.3 You may not assign, either in whole or in part, the benefit or burden of this Licence Agreement without the prior written consent of the ABS.

10.4 If any of the provisions of this Licence Agreement should to any extent be held by a Court to be invalid or unenforceable, the remaining provisions of this Licence Agreement shall not be affected and shall remain in full force and effect.

10.5 This Licence Agreement shall be governed by, and construed in accordance with, the laws of the Australian Capital Territory and the parties agree to submit exclusively to the jurisdiction of the courts of that Territory.

11. Address all correspondence to:

Australian Bureau of Statistics
Population Census Electronic
Product Development
PO Box 10
Belconnen ACT 2616

Telephone: (02) 6252 5934
Facsimile: (02) 6252 8508

Signed on behalf of the Commonwealth of Australia by:

Signature: _____ Please Print Name: _____

in the presence of:

Signature: _____ Please Print Name: _____

Date: _____

Signed on behalf of the licensed user by:

Signature: _____ Please Print Name: _____

in the presence of:

Signature: _____ Please Print Name: _____

Date: _____

MEMORANDUM of UNDERSTANDING FOR COMMONWEALTH GOVERNMENT PURCHASERS ONLY

SEIFA96 cannot be made available until this Memorandum of Understanding (MOU) is executed and returned to the ABS.

If you are a Commonwealth Government purchaser, you are required to sign this MOU. You are not required to sign the Licence Agreement.

MEMORANDUM of UNDERSTANDING

This Memorandum of Understanding is entered into between the Australian Bureau of Statistics (called 'Us', 'We' or 'Our' as appropriate) and the Licensee (called 'You' or 'Your' as appropriate).

1. Interpretation

   (a) 'ABS' means the Australian Bureau of Statistics;

   (b) 'Concurrent Access Points' means the total number of:

      (i) standalone computers identified in the column titled "Number of Stand Alone Copies" in the Order Form; and/or

      (ii) single computer terminals on a computer network or other items of equipment capable of simultaneously viewing, interpreting, processing, manipulating or otherwise accessing the Product identified in the column titled "Number of Concurrent Accesses" in the Order Form;

   (c) 'Fee' means the fee referred to in clause 4 of this Attachment;

   (d) 'Memorandum of Understanding' means the Order Form and this Attachment;

   (e) 'Product' means the components of Socio-Economic Indexes For Areas 96 (SEIFA96) product comprising:

      (i) a CD-ROM/s containing 1996 Census statistical data files, specially constructed indexes, SEIFA96 application software;

      (ii) a User Manual and Information Paper.

   (f) 'Licensee' means the Department or Agency specified in the order form as the Licensee;

   (g) 'Order Form' means the Order Form annexed to this Attachment;

2. ermitted Uses

2.1 In return for payment by You to Us of the Fee, You may use the Product on a non-transferrable, non-exclusive basis and in accordance with this Memorandum of Understanding.

2.2 The Fee is exclusive of any taxes, duties or charges payable in respect of this Memorandum of Understanding or the Product.

2.3 This Memorandum of Understanding gives You certain limited rights to use the Product and any rights not specifically granted in this Memorandum of Understanding are reserved to the ABS. You may:

   (a) use the Product on the Concurrent Access Points;

   (b) produce hard copies from the Product for Your internal use only;

   (c) export 1996 Census statistical data from the Product for Your internal use with other software packages, but only if:

      (i) all copies of the data are labelled with the same copyright notice as the Product; and

      (ii) the amount of data exported would, if You and Us were separate legal entities, be a fair dealing for news reporting, research, study or review as defined in the Copyright Act 1968; and

   (d) use the Product in the provision of consultancy services to Your clients, but only if:

      (i) data reproduced from the Product is used for the sole purpose of supporting conclusions in a report or document;

      (ii) data from the Product does not exceed ten percent of the report or document; and

      (iii) the total amount of data from the Product used in the report or document does not exceed five hundred data items.

2.4 You must treat the Product as private and confidential to Us and must take all reasonable measures to protect the Product from unauthorised use, reproduction, distribution or publication.

2.5 You must not disclose the Product to any person, or use the Product for any purpose, except in accordance with this Memorandum of Understanding.

3. Uses Not Permitted

3.1 Except as specifically allowed in this Memorandum of Understanding, You may not:

(a) export any data or software from the Product, or incorporate the Product or any part of the Product in any other software package;

(b) copy or use the Product;

(c) rent, lease, sublicense, lend, sell, assign, transfer or in any way commercially exploit the Product, any product or service derived from the Product;

(d) alter, decompile, disassemble, reverse engineer or otherwise dispose of the Product; or

(g) remove the copyright notice on the Product without the prior written permission of the owner of the intellectual property rights in the relevant components of the Product as set out in subclause 7.1;

4. Fee

4.1 The fee payable for the use of the Product is set out in the Order Form. You must pay this fee in order to be granted the rights set out in this Memorandum of Understanding.

4.2 You must not increase the number of Concurrent Access Points on which the Product is used above the number specified in the Order Form without Our prior written permission.

4.3 We may grant You rights to an increased number of Concurrent Access Points subject:

(a) to the payment of an additional fee at the ABS recommended retail price current at time of purchase of those additional accesses; and/or

(b) to additional conditions.

5. Duration of Memorandum of Understanding

5.1 This Memorandum of Understanding is effective from the day You receive the Product, and continues in force unless terminated.

5.2 The Memorandum of Understanding will terminate automatically without notice from Us if You fail to comply with any provision of this Memorandum of Understanding.

5.3 On termination, You agree to return to Us the Product and all copies of the Product in Your possession, power or control and You shall cease to use the Product. We may request You to certify You have done so.

6. Delivery

6.1 We will do our best to deliver the Product to You at the address nominated on the Order Form within 10 working days of receipt by us of the correctly completed Order Form.

7. Intellectual Property Rights

7.1 You acknowledge that the intellectual property rights, including copyright, in the Product are owned by the Commonwealth represented by the Australian Bureau of Statistics.

7.2 Copyright notices appearing on the Product, or on information displayed by or printed from the Product, shall not be removed.

7.3 You must endorse on all items produced by You from the Product a statement acknowledging that the items were produced from a Product supplied by the ABS and acknowledging ownership of the intellectual property rights of the components of the Product as set out in subclause 7.1.

7.4 You may quote statistical data contained in the Product providing:

(a) the ABS is cited as the source of the data;

(b) no analysis or transformation of the data is attributed to the ABS;

(c) the terminology used is the same as that used by the ABS in describing the data; and

(d) the quoted statistical data is used only for purposes of news reporting, research, study or review.

8. Limitation of Liability

8.1 Subject to subclause 9.3, We do not warrant that the Product is free of errors and We shall not be in any way liable for any loss, damage or injury suffered by You or any other person consequent upon the use or possession of the Product or the existence of errors in the Product.

8A. Year 2000 Compliance

8A.1 We have endeavoured to ensure that the software or hardware used in the creation of the Product accurately perform the functions of date/time values from, into and between the years 1999 and 2000 and leap year calculations and intervals of time described by two or four digits, however We do not warrant that all materials used in creating the Product accurately perform those functions.

8A.2 We advise You against using the Product with any software or hardware which do not accurately perform the functions referred to in subclause 8A.1 (in this clause 8A referred to as "non compliant materials").

8A.3 We will not be liable for any loss or damage to You caused as a result of You using the Product with any non compliant materials.

9. Support and Updates

9.1 We will provide the following support free of charge:

(a) 'Help Desk' support accessible by telephone between the hours of 9am and 5pm Canberra time (Monday to Friday excluding public holidays in the ACT); and

(b) the Product will contain on-line help.

9.2 We will provide additional support, on request, and subject to payment for services at Our normal consultancy rates applicable at the time of your request.

9.3 We will replace the compact disk component of the Product free of charge if You notify Us within 30 days of Your receipt of the Product that the compact disk component is defective.

10. General

10.1 This Memorandum of Understanding represents our entire understanding and agreement regarding the Product and supersedes any prior proposal, representation or agreement, written or oral. This Memorandum of Understanding may be modified only by agreement in writing signed by You and Us.

10.2 You may not assign, either in whole or in part, the benefit or burden of this Memorandum of Understanding without the prior written consent of the Australian Bureau of Statistics.

10.3 This Memorandum of Understanding is not intended to be legally binding, but is intended to operate as an administrative arrangement between You and Us.

11. Address all correspondence to:

Australian Bureau of Statistics
Population Census Electronic
Product Development
PO Box 10
Belconnen ACT 2616

Telephone: (02) 6252 5934
Facsimile: (02) 6252 8508

Signed on behalf of the Australian Bureau of Statistics by:

Signature: _____ Please Print Name: _____

in the presence of:

Signature: _____ Please Print Name: _____

Date: _____

Signed on behalf of the licensed user by:

Signature: _____ Please Print Name: _____

in the presence of:

Signature: _____ Please Print Name: _____

Date: _____

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