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Abstract

The extent of income poverty and its socio-demographic composition are examined using all ABS income surveys conducted over the period 1982 to 2004. There has been some increase in the proportion of the population in poverty, particularly since 1997, but of more note are the substantial changes in the socio-demographic composition of those in poverty. Compared with the start of the sample period, persons in poverty at the end of the period were much more likely to be older, in families without dependent children, holding post-school qualifications and/or foreign-born. In part, these changes reflect broader changes in the composition of the population. However, changes in the risks of poverty associated with different characteristics have also produced large changes in the composition of the poor, and have in some cases counteracted or reversed effects of demographic change. Specifically, the risk of poverty has increased for the elderly, non-dependent youth, single people, foreign-born persons and those without post-school qualifications, and it has decreased for sole parent families and residents of Queensland, the ACT and the Northern Territory.

1. Introduction

While there exists considerable Australian research documenting the extent of poverty – albeit with some variance in poverty measures employed by researchers – there has been comparatively little attention given to the investigation of the socio-demographic composition of poverty, and more particularly how this has evolved over recent decades. Yet this line of inquiry has the potential to provide valuable information on the identities of the income-poor and on trends in the incidence of poverty, information which can, for example, potentially challenge assumptions underpinning social policy formulation.

Hence the motivation for the current study, which draws on the public-release unit record files from the eleven ABS income surveys conducted over the period 1982 to 2004 to investigate the socio-demographic characteristics of persons in poverty. Specifically, I describe changes in the extent of poverty in the Australian community, and in the socio-demographic composition of those in poverty. I then consider the sources of the changes in the characteristics of the poor, identifying the roles played by broader changes in the socio-demographic composition of the population and by changes in the risks of poverty associated with socio-demographic characteristics. For example, growth in the proportion of the poor who are elderly can derive from growth in the proportion of the population that is elderly and can also derive from growth in the likelihood of poverty for elderly people.

The concept of poverty adopted for this study is one of relative socio-economic disadvantage, whereby the poverty threshold is a function of the income distribution. Specifically, the core analysis focuses on a half-median-income definition of the poverty threshold, which has been widely adopted internationally. The rationale for the relative concept of poverty is that absolute deprivation – inability to sustain life – is not a significant feature of developed economies. As such, poverty is usually conceived as a situation of relative deprivation. Nonetheless, arguments may still be mounted for adopting an absolute standard that, while not at the minimum level required for survival, maintains the same purchasing power over time. Consequently, in describing changes in the extent of poverty, I consider several relative and absolute poverty measures in order to provide a more complete depiction of the evolution of the extent of poverty over the 1982-2004 period.

As with all research into poverty, it is to be expected that inferences will be sensitive to poverty definition and approach to measurement. However, compared with studies of absolute numbers in poverty, the study of changes in the composition of poverty is perhaps less

susceptible to debate over the definitional and measurement issues that have given rise to much disagreement about the extent of poverty in Australia in recent years.[1] The concern of this study is with changes in the characteristics of those persons who occupy the 'lower end' of the income distribution. Inferences on compositional change are likely to be less sensitive to the precise criteria used to define 'lower end' – that is, the definition of poverty – than are inferences on the total number of people in poverty at a point in time. This contention is indeed supported by the examination of sensitivity of estimates to poverty definition that is undertaken in this study (reported in the Appendix), and it is also consistent with the finding by de Vos and Zaidi (1997) that estimated trends over time in the composition of the poor are much less sensitive to the equivalence scale adopted than are point-in-time estimates.

The plan of the paper is as follows. Section 2 describes the data and poverty measure. Section 3 reports estimates of poverty rates, while the socio-demographic characteristics of persons in poverty are described in Section 4. The role played by changes in population structure in producing the compositional changes in poverty is considered in Section 5, which presents a decomposition of compositional changes into 'population structure' and 'within-group poverty rate' components . Section 6 then investigates changes in the relative risks of poverty associated with characteristics by estimating models of the probability of poverty in each of the survey periods. Section 7 concludes.

2. Data and definitions

2.1 Data

The data comprise unit record files from ABS income surveys conducted in 1982, 1986, 1990, 1994-95, 1995-96, 1996-97, 1997-98, 1999-2000, 2000-01, 2002-03 and 2003-04.[2] The first three surveys were conducted over a two-month period in the December quarter of the year, while the last eight surveys were each conducted over twelve-month periods. The data files

[1] See, for example, Saunders (2005) for a recent discussion of the Australian debate on the definition and measurement of poverty in Australia.

[2] In 2005, the ABS reissued the public-release unit record data for the surveys conducted between 1994 and 1998 with revised population weights and revised estimates of annual income for some respondents. See ABS (2005) for details. The reissued data files are used in this study.

contain household-level information on household composition, dwelling type and household income, and individual-level information on personal characteristics, including age, country of birth, marital status, family type, educational attainment, labour force status and income by source, both in the survey week and the preceding financial year (i.e., 1981-82, 1985-86, 1989-90, 1993-94, 1994-95, 1995-96, 1996-97, 1998-99, 1999-2000, 2001-02 and 2002-03).

The population examined comprises all persons resident in private dwellings in Australia.[3] The unit of analysis is the individual – that is, equal weight is given to each member of the population. Unit record data are in fact only provided in the data sets for persons aged 15 years and over. However, family information for each respondent includes the number of dependent children in each of several age ranges, which I use to create 'artificial' person records for children under 15 years. Each person for whom an artificial record is created is assumed to have been born in Australia and have no post-school qualifications, and is randomly assigned a sex. Due to top-coding of children numbers in some of the unit record files, to ensure consistency across all surveys, a family maximum of four is imposed on the number of children under the age of 15 years.[4] The ABS supplies population weights with the public-release unit record files, reflecting the stratification of the sample by region of residence and the benchmarking of the age, sex and household composition of the sample to population estimates derived from the most recent census. These weights are used in all of the analysis.

2.2 Poverty Measure

Measuring poverty is a task fraught with controversy. Even accepting a focus on *income* poverty, the definition of income, the time period over which income is measured, the definition of the 'income unit' (group of people deemed to share income), the appropriate adjustments of income for income unit characteristics (equivalence scale), the treatment and

[3] The last eight surveys exclude military personnel residing in private dwellings, while the first three surveys include such persons as well as persons residing in 'special' dwellings, defined as accommodation provided by educational institutions, hospitals, short-stay caravan parks, etc. It is not possible to identify these individuals in the first three surveys. There are consequently slight differences in populations examined between the earlier and later surveys.

[4] Approximately one per cent of families have four or more children under 15 years of age.

measurement of housing costs, sample inclusion/exclusion rules, and the definition of poverty itself, are among the many points of contention.[5] Nonetheless, aside from briefly considering the effects of variations in poverty definition and 'income unit' definition, sensitivity of estimates to alternative approaches is not explored in this paper. Rather, a single 'core' approach is taken that draws as much as possible on accepted (international) practice for the measurement of poverty.

The income variable for all of the analysis is the annual disposable income of the income unit of each individual, adjusted for differences in 'need' across income units using the modified OECD scale. An income unit comprises a single person or a couple, along with any dependent children. The income of an individual's income unit – adjusted for income unit size and composition – will generally be a better measure of the individual's access to financial resources than will be personal income.[6] Likewise, although the data sets contain information on weekly income, annual income is likely to better reflect access to financial resources, since current weekly income may be temporarily high or low.[7]

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[5] For detailed discussion of poverty measurement issues in the Australian context see, for example, Johnson (1996) , Greenwell *et al.* (2001) and Saunders and Bradbury (2006).

[6] An alternative to income-unit income is household income, which may sometimes be a better indicator of the financial resources to which an individual has access. A further advantage of household income is that the modified OECD equivalence scale was conceived as a scale for the adjustment of household income rather than income-unit income. However, the decision to examine income-unit income is motivated by the ABS restriction of household size to a maximum of six persons for the pubic-release versions of the last three survey data files. Since many large households have multiple income units, household income estimates are more-affected by this restriction than are income-unit income estimates (which are nonetheless still affected). Estimates are presented in Appendix Table 4 that examine sensitivity of inferences on compositional change to the use of household income instead of income-unit income. Results are largely qualitatively insensitive to this variation, so the decision has little practical significance for this study.

[7] Concerns have been raised about the comparability of annual income across the ABS income surveys (e.g., Siminski et al 2003 and Saunders and Bradbury 2006). Primary concern focuses on the 1994-95 and 1995-96 surveys, for which it is argued income of some welfare recipients is under-reported (even after ABS adjustments contained in the reissued data). Given the primary focus of this study is on the totality of change over the sample period, the annual income variable would still seem preferable. Nonetheless, estimates for the 1993-95 period should be interpreted with some caution.

There are several significant inconsistencies across the surveys in relation to income that have been addressed in producing the income measure used in this study. First, the definition of an income unit changed after 1990. The maximum age of a dependent child was 20 years up until 1990 and was 24 years thereafter. Consequently, dependent children aged 21-24 years are treated as separate income units after 1990 to be consistent with the earlier surveys. Second, while income unit income is explicitly reported in the data sets, the ABS method of derivation of this data item from personal income information changed over time. For example, up until 1990, personal income of dependent children was not counted as part of income unit income. I therefore manually construct income unit income from personal income records for all income units. The third main inconsistency is that the 1982 survey did not allow business and investment income to be negative, resulting in some income units having higher recorded gross annual income than actual. To ensure consistency, total gross income has been obtained for all surveys by first constraining business and investment income to be non-negative and then summing across all income sources. Finally, the surveys from 1986 report income tax payable for each individual's annual income, allowing calculation of disposable income, but this information is not recorded for the 1982 survey. Consequently, income tax payable for the 1981-82 financial year has been imputed based on the tax rules in place in that year.[8]

The modified OECD equivalence scale that is used to adjust income unit income for 'need' assigns a weight of 1 to the first adult, 0.5 to each other adult and 0.3 to each child in the family. 'Equivalised' income is obtained by dividing income unit income by the sum of the income unit weights – for example, income is divided by 2.1 for a family of two adults and two children. The developers of the scale (Hagenaars *et al.* 1994) define children as persons under the age of 14 years, implying older dependent children are treated as other adults. None of the ABS income surveys permits identification of the number of children under the age of 14 years for all families because they either report the number aged 10-14 years, or the

[8] Details are available from the author on request.

number aged 13-14 years. Consequently, in this study children are defined to be persons under the age of 15 years.[9]

The core poverty measure is one of relative poverty, whereby an individual is defined to be in poverty if income unit annual disposable 'equivalised' income is less than half the median income unit annual disposable 'equivalised' income. The half-median poverty threshold has been widely used in international poverty research (e.g., OECD 2005). In the description of the extent of poverty presented in Section 3, poverty rates for two alternative definitions of relative poverty, as well as two definitions of 'absolute' poverty, are presented to provide a more complete picture of poverty trends over the 1982 to 2004 period.

The additional relative poverty measures comprise a 60 per cent of median income measure, which is the standard that has been adopted by Eurostat (see, for example, Eurostat 2005), and the Henderson poverty line, a poverty standard specific to Australia which was first produced for 1966 (Henderson *et al.* 1970) and has since been updated by the Melbourne Institute of Applied Economic and Social Research (2007). Associated with the Henderson poverty line is an equivalence scale, described in Henderson *et al.* (1975), which I use in place of the modified OECD scale for the Henderson poverty line estimates. The 'absolute' measures of poverty are absolute in the sense that the real value of the poverty threshold is held constant over time, at 50 per cent of 1981-82 median income for the first measure, and at 60 per cent of 1981-82 median income for the second measure. Thus, they are base-year relative poverty measures held constant in real terms.[10]

The surveys from 1994-95 onward were conducted at more frequent intervals than the earlier surveys, but they also contain smaller sample sizes. As a response to the reduced precision of estimates obtained from the surveys conducted from 1994-95, consecutive-year data sets have been pooled together. Specifically the following surveys have been pooled together: 1994-95 and 1995-96; 1996-97 and 1997-98; 1999-2000 and 2000-01; and 2002-03 and 2003-04.

[9] This is the approach taken by the ABS in its publications (e.g., ABS 2003), but other Australian researchers have applied alternative definitions of a child in producing equivalence scales. For example, Harding et. al. (2001) define a child to be any person classified as a dependent child, which in the ABS surveys after 1990 includes full-time students up to 24 years of age if they are residing with their parents.

[10] All of the poverty thresholds in each year are reported in Appendix Table 2.

Note, however, that pooling occurs only *after* the poverty status of each individual has been determined based on the distribution of income in the relevant survey year. This avoids the problem that income growth over time will lead to systematically greater poverty rates in the earlier of the year-pairs.

In terms of sample selection restrictions, the only restriction imposed on the data is that persons with zero income unit annual disposable income are dropped from the sample, resulting in the exclusion of approximately 1 per cent of observations (inclusive of children) in each survey.[11]

3. Rates of Poverty

Graphs of poverty rates over the 1981-2003 period are presented in Figures 1 and 2. Considering first the core half-median measure of poverty, the proportion of the population in poverty grew from 11.1 per cent in 1981-82 to 12.9 per cent in 2001-03, a statistically significant increase. This arose via a steady increase between 1981-82 and 1993-95, a substantial drop between 1993-95 and 1995-97, and a reasonably steep increase between 1995-97 and 2001-03. The '60 per cent of median income' poverty measure naturally produces higher poverty rate estimates, although it is striking that a 20 per cent increase in poverty threshold increases the poverty rate by approximately 80 per cent. This is likely to derive from the level at which income support payments are set, such that many income support recipients are above half-median income but below 60 per cent of median income. Despite the large difference in poverty rates at a point in time, the proportionate change over the full period is quite similar for the two poverty measures, in both cases increasing by approximately 15 per cent.

The Henderson relative poverty measure produces poverty rates comparable to the 60 per cent of median income measure. Although the change over the full period is quite similar to the other two relative poverty measures, the Henderson measure shows a substantial decline in

[11] Appendix Table 1 provides details on the number of observations with no income unit income in each survey, as well as the total number of observations in each data set. Observations with missing income do not arise in the data because the ABS imputes missing values. With the exception of the 1982 survey data, it is not possible determine which incomes have been imputed. The ABS has not provided details on the number of imputed cases or the imputation methods used.

poverty between 1995-97 and 2001-03 that is in stark contrast to the increase evident for the other two poverty measures. Such a contrast is not unexpected. The Henderson relative poverty line is based on national accounts data, takes no account of changes in household composition (which affect *equivalent* income) and depends on the *mean* of a measure of income rather than its median. The equivalence scale employed also differs considerably from the modified OECD scale. As has been argued by other authors (e.g., Saunders 1996), there are good reasons for not basing assessments of poverty incidence on the Henderson measure. The estimates are presented here primarily because of the (historical) widespread use of the Henderson poverty line in Australia, to facilitate comparison with internationally accepted relative poverty measures.

Figure 2 shows that, consistent with growth in real incomes over the 22-year period, absolute poverty fell substantially, especially after 1993-95. The rise in relative poverty is therefore not due to a real decline in the incomes of low-income persons; rather, it has derived from the failure of incomes of low-income persons to keep pace with growth in the median income.

How do these estimates compare with those obtained by other researchers? In general, comparisons are made difficult by differences in measures, time periods, populations, and various other factors. Saunders and Bradbury (2006) produce poverty estimates for each of the seven ABS income surveys conducted between 1994 and 2003. The most comparable estimates from their study are for annual disposable household income of the full population, with income adjusted for household size using the modified OECD equivalence scale and the half-median income poverty threshold adopted. Their estimates have the poverty rate decreasing from approximately 12.4 per cent in 1993-94 to approximately 10.7 per cent in 1994-95, and thereafter increasing somewhat steadily over the remaining survey years, to be approximately 12.9 per cent in 2001-02. Allowing for the effects of combining survey years, their estimates correspond quite closely to those reported in Figure 1.

Figure 1: Relative poverty

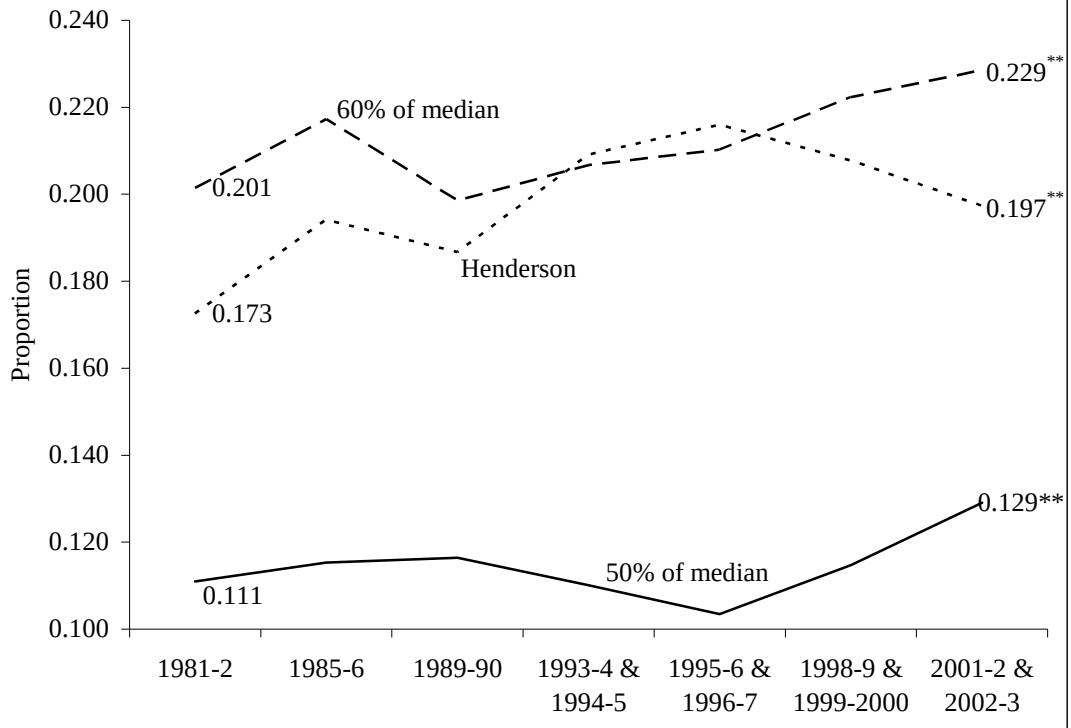
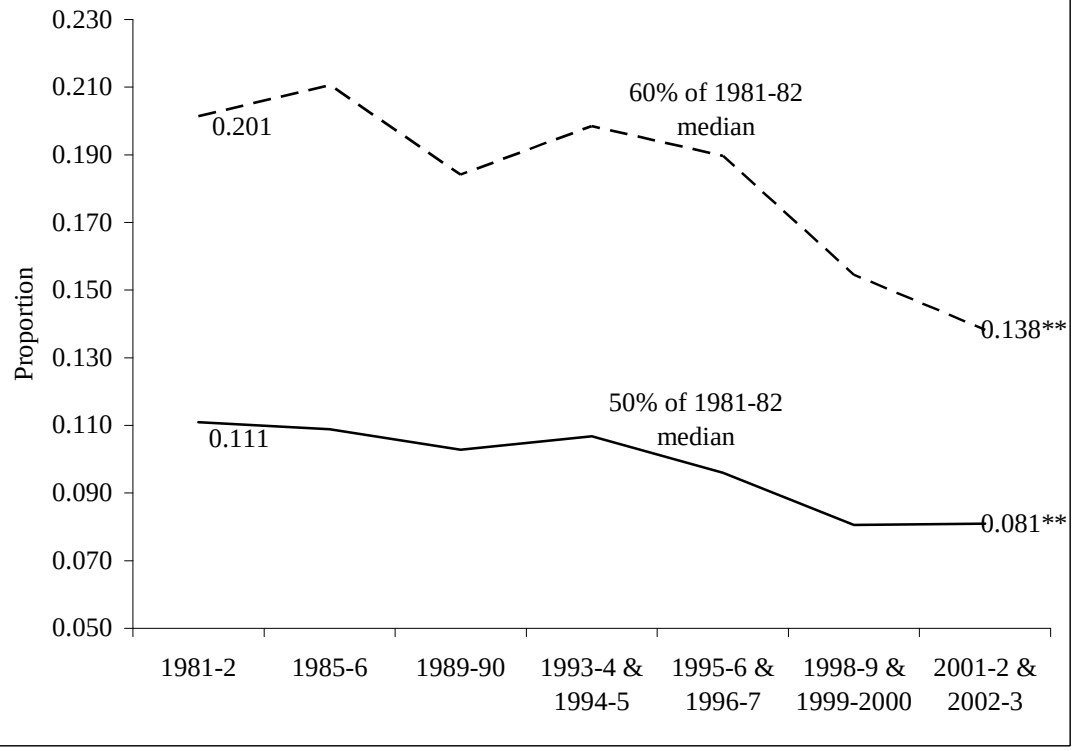


Figure 2: Absolute poverty



Note: ** indicates the change in the poverty rate over the full period is significant at the 5 per cent level, based on 1000 bootstrap samples.

Harding *et al.* (2001) report poverty rate estimates for five of the ABS income surveys conducted between 1989-90 and 1999-2000. While they primarily focus on a half-*mean* income poverty measure and the Henderson equivalence scale, they also present estimates using the half-median poverty measure and the modified OECD equivalence scale. They obtain poverty rate estimates of 9.8 per cent in 1989-90, 9.2 per cent in 1994-95, 9.2 per cent in 1995-96, 9.6 per cent in 1997-98 and 10.1 per cent in 1999-2000, which are approximately two percentage points lower than the estimates obtained in this study. Reasons for this divergence from the current study (and Saunders and Bradbury 2006) are unclear. Potential factors include the examination by Harding *et al.* of weekly income rather than annual income, and their treatment of dependent children aged 15-24 years as children rather than adults for the purposes of applying the modified OECD scale.

Saunders (2004), using the 1998-99 ABS household expenditure survey and a half-median measure of income, reports a poverty rate of 13.6 per cent, which is approximately 2 percentage points higher than obtained in this study for the comparable period. It is not clear whether this reflects the different data source or other methodological differences, since only limited details on methods are provided by the author. King (1997) estimates poverty rates of 12.5 per cent in 1973 and 16.7 per cent in 1996 using the Henderson poverty line. The 1996 figure is significantly lower than the estimate obtained in the current study using the Henderson poverty line, but King's 1996 estimate was in fact based on 1990 income survey data.

Table 1 presents poverty rates estimates for the measures presented in Figures 1 and 2 broken down by sex. Poverty rates are consistently higher for females, but the gap has varied over time. For our core poverty measure, the female poverty rate was 1.4 percentage points higher than the male poverty rate in 1981-82, 2.9 percentage points higher in 1989-90, 0.8 percentage points higher in 1993-95 and 1.4 percentage points higher in 2001-03. Correspondingly, over the period as a whole, the percentage-point increase in relative poverty was identical for males and females. However, the decrease in absolute poverty among males was only two-thirds that among females.

Table 1: Rates of poverty by sex

	1981-2	1985-6	1989-90	1993-4 & 1994-5	1995-6 & 1996-7	1998-9 & 1999-2000	2001-2 & 2002-3	Change over full period
Females								
50% of median	0.118	0.121	0.131	0.114	0.105	0.120	0.136	0.018**
60% of median	0.226	0.238	0.224	0.227	0.226	0.238	0.242	0.016**
Henderson	0.189	0.209	0.209	0.225	0.230	0.221	0.209	0.019**
50% of 1981-82 median	0.118	0.114	0.112	0.111	0.097	0.082	0.082	-0.035**
60% of 1981-82 median	0.226	0.232	0.209	0.219	0.204	0.166	0.147	-0.080**
Males								
50% of median	0.104	0.109	0.102	0.106	0.102	0.110	0.122	0.018**
60% of median	0.176	0.196	0.172	0.186	0.195	0.206	0.215	0.038**
Henderson	0.155	0.179	0.164	0.193	0.202	0.194	0.186	0.030**
50% of 1981-82 median	0.104	0.104	0.093	0.103	0.095	0.079	0.080	-0.025**
60% of 1981-82 median	0.176	0.190	0.159	0.178	0.175	0.142	0.130	-0.047**

Note: ** indicates statistical significance of the change at the 5 per cent level, based on 1000 bootstrap samples.

Table 2 shows a consistent ordering of poverty rates by family type across the sample period, from couples without dependent children at the low end to sole parent families at the high end. However, there are substantial differences in changes in poverty rates by family type. Sole parent families have experienced a large decline in the proportion in poverty since 1981-82, while couples without dependent children have experienced an increase in the proportion in poverty. The changes for these two family types are primarily concentrated on the 1989-90 to 1993-95 period, when the sole parent poverty rate dropped from 41.1 per cent to 25.7 per cent and the poverty rate among couples without dependent children rose from 4.9 per cent to 6.2 per cent. Indeed, after 1993-95, the poverty rate rose slightly for sole parent families. A further notable change over the sample period is the large increase in single-person poverty, particularly after 1995-97. By 2001-03, the poverty rate of single persons was almost equal to the poverty rate of sole parent families.

Table 2: Relative poverty rates by family type

	1981-2	1985-6	1989-90	1993-4 & 1994-5	1995-6 & 1996-7	1998-9 & 1999-2000	2001-2 & 2002-3	Change over full period
Couple, dep. children	0.081	0.085	0.071	0.076	0.068	0.068	0.075	-0.006**
Couple	0.042	0.045	0.049	0.062	0.054	0.055	0.065	0.023**
Sole parent	0.410	0.413	0.411	0.257	0.229	0.246	0.270	-0.141**
Single person	0.172	0.187	0.214	0.187	0.187	0.221	0.257	0.086**

Notes: Poverty measure is 50 per cent of median income. ** indicates statistical significance of the change at the 5 per cent level, based on 1000 bootstrap samples.

4. Socio-demographic characteristics of persons in poverty

The poverty rates broken down by family type in Table 2 provide a preliminary indication that substantial changes in the characteristics of those in poverty have occurred over the 22-year period. Such changes in characteristics are considered more fully in Table 3, which uses the information available in the income surveys to describe the socio-demographic characteristics of persons in poverty. A number of striking changes over the period are indeed evident.

First, while the full-period change in the female share of poverty is not significant, there has been considerable dynamism in the female poverty share over the 1981-2003 period. The proportion female increased from 53 per cent in 1981-82 to 57 per cent in 1989-90, falling to 52 per cent in 1993-95 and subsequently rising slightly to 53 per cent in 2001-03.

With respect to family type, consistent with the evidence presented in Table 2, single persons accounted for one-third of those in poverty in 1981-82, but by the end of the sample period they represented 46 per cent of the poor. Couples without dependent children also increased their share of those in poverty, from 8 per cent to 14 per cent. Persons in sole parent families dropped from 21 per cent to 16 per cent of the poor, while persons in couple families with dependent children dropped from 38 per cent of persons in poverty in 1981-82 to only 24 per cent in 2001-03. The increase for single persons and decrease for couple families with dependent children is sustained over the entire 22-year period, but the decrease for sole parent families and increase for couples without dependent children occurred almost entirely between 1989-90 and 1993-95.

To some extent connected to the changing family type structure of the poor, the age structure of those in poverty also changed markedly over the two-decade period. The age profile of the poor increased, with particularly large changes evident for the youngest and oldest age groups. In 1981-82, 30 per cent of the poor were under 15 years of age and 6 per cent were over 65 years of age. By 2001-03, 18 per cent of the poor were under 15 years of age and 16 per cent were over 65 years of age. Most – but not all – of this change occurred prior to 1993-95.

The place of birth of respondents cannot be classified in a consistent manner across the surveys other than by whether the individual was born in Australia. Classified in this way, the income surveys show that the proportion of those in poverty born outside Australia has grown markedly. In 1981-82, 19 per cent of the poor were foreign-born, and in 2001-03, 27 per cent

were foreign-born. In contrast to the changes in the age structure, most of the increase in the proportion of the poor born overseas has occurred since 1993-95.

Table 3: Socio-demographic composition of poverty – Proportion in each group

	1981-2	1985-6	1989-90	1993-4 & 1994-5	1995-6 & 1996-7	1998-9 & 1999-20	2001-2 & 2002-3	Change over full period
Female	0.533	0.524	0.567	0.522	0.512	0.529	0.534	0.001
Age group								
0-14	0.298	0.272	0.247	0.223	0.206	0.188	0.180	-0.118**
15-20 - dependent	0.045	0.052	0.051	0.046	0.048	0.056	0.043	-0.002
15-20 - not dependent	0.147	0.160	0.144	0.167	0.160	0.130	0.125	-0.022**
21-24	0.092	0.072	0.079	0.090	0.099	0.085	0.086	-0.006
25-34	0.125	0.122	0.107	0.111	0.114	0.107	0.103	-0.022**
35-44	0.092	0.092	0.095	0.105	0.104	0.108	0.102	0.010*
45-54	0.064	0.067	0.067	0.079	0.081	0.091	0.095	0.031**
55-64	0.075	0.077	0.083	0.085	0.078	0.099	0.108	0.033**
65+	0.062	0.085	0.128	0.095	0.110	0.137	0.158	0.096**
Family type								
Sole person	0.339	0.349	0.388	0.389	0.422	0.456	0.459	0.120**
Sole parent	0.206	0.189	0.213	0.153	0.154	0.168	0.159	-0.047**
Couple	0.080	0.089	0.100	0.138	0.128	0.121	0.138	0.059**
Couple, dep. Children	0.376	0.374	0.298	0.319	0.297	0.255	0.244	-0.132**
Foreign-born	0.190	0.213	0.215	0.207	0.228	0.250	0.268	0.078**
Educational attainment								
No post-school qual.	0.838	0.847	0.807	0.794	0.783	0.781	0.740	-0.098**
'Other' post-school qual.	0.141	0.134	0.163	0.156	0.163	0.157	0.193	0.052**
Bachelor's degree	0.020	0.019	0.031	0.050	0.054	0.062	0.067	0.046**
State of residence								
NSW	0.358	0.352	0.357	0.365	0.340	0.351	0.353	-0.004
Vic	0.235	0.244	0.226	0.229	0.242	0.243	0.250	0.015*
Qld	0.182	0.176	0.183	0.193	0.186	0.194	0.184	0.001
SA	0.081	0.083	0.092	0.074	0.084	0.071	0.075	-0.006
WA	0.093	0.091	0.089	0.093	0.098	0.095	0.097	0.004
Tas	0.029	0.035	0.032	0.026	0.025	0.028	0.026	-0.003
NT or ACT	0.022	0.020	0.022	0.021	0.025	0.017	0.015	-0.007**
Reside in capital city	-	-	0.593	0.585	0.560	0.609	0.592	-

Note: Poverty measure is 50 per cent of median income. * and ** indicate change is significantly different from zero at the 10 per cent and 5 per cent levels, respectively, based on 1000 bootstrap samples.

Classifying persons into one of three educational attainment groups – bachelor's degree or higher; other post-school qualification; and no post-school qualifications (which includes children) – reveals a sizeable increase in the proportion of those in poverty who hold post-school qualifications. In 1981-82, 2 per cent of the poor held bachelor's degrees and 14 per cent held other post-school qualifications. In 2001-03, 7 per cent of the poor were degree-holders and 19 per cent were holders of other post-school qualifications. Nonetheless, poverty remained predominately confined to the less-educated, who still accounted for three-quarters of the poor in 2001-03.

The geographic location of poverty can only be considered in a cursory fashion using the publicly-released unit record files for the income surveys. The only location information that can be consistently identified across all surveys is state of residence. For the surveys conducted from 1990, information is also available on whether the respondent resides in a capital city. Changes in the geographic composition of poverty are not large, but the changes are nonetheless statistically significant for Victoria, which increased its poverty share, and for the territories, which decreased their poverty share.[12]

5. Effects of changes in the characteristics of the population

Changes to the socio-demographic composition of poverty are the product of changes to the socio-demographic composition of the population and relative changes in poverty rates within each socio-demographic group. Table 4 identifies these distinct components of compositional change for the full period, using the fact that the proportion of persons in poverty that are in socio-demographic group *i* in year *t* can be expressed as:

$$s_{i,t}^{pov} = s_{i,t}^{pop}\left(\frac{PR_{i,t}}{\sum_{j=1}^{J} s_{j,t}^{pop} PR_{j,t}}\right) \qquad (1)$$

where $s_{i,t}^{pop}$ is the proportion of the population in group *i* in year *t* and $PR_{i,t}$ is the poverty rate of group *i* in year *t*. The term $\sum_{j=1}^{J} s_{j,t}^{pop} PR_{j,t}$ is the aggregate poverty rate in year *t*, expressed as the weighted average of the poverty rates of the J demographic groups, one of which is group *i*. Note that the *J* groups are mutually exclusive and comprehensive; i.e., $\sum_{j=1}^{J} s_{j,t}^{pop} = 1$. For example, if the focus is on the proportion of those in poverty in a particular age group, then J is equal to the number of age groups distinguished.

Replacing year-*t* population shares with the population shares prevailing in year *m* produces a counterfactual poverty share for group *i*:

[12] Appendix Table 4 shows that inferences on state and territory changes are not robust to examination of household income in place of income-unit income.

$$s_{i,t}^{pov}\left(t_{s^{pop}}=m\right)=s_{i,m}^{pop}\left(\frac{PR_{i,t}}{\sum_{j=1}^{J}s_{j,m}^{pop}PR_{j,t}}\right) \quad (2)$$

which is the poverty share of group *i* in year *t* when the population shares are at year-*m* levels. In panel (A) of Table 4, estimates are based on the counterfactual obtained in 2002-03 when 1981-82 population shares prevail. Put another way, this counterfactual involves 1981-82 population shares and 2002-03 within-group poverty rates. The change due to change in group population shares ('population structure') is given by $s_{i,02/3}^{pov}-s_{i,02/3}^{pov}\left(t_{s^{pop}}=81/2\right)$ and the change due to change in the 'within-group poverty rate' is given by $s_{i,02/3}^{pov}\left(t_{s^{pop}}=81/2\right)-s_{i,81/2}^{pov}$. In panel (B), estimates are based on the counterfactual obtained in 1982 when 2003 population shares prevail. The change due to change in group population share is given by $s_{i,81/2}^{pov}\left(t_{s^{pop}}=02/3\right)-s_{i,81/2}^{pov}$ and the change due to change in the group poverty rate is given by. $s_{i,02/3}^{pov}-s_{i,81/2}^{pov}\left(t_{s^{pop}}=02/3\right)$.[13]

It is evident that changes to the socio-demographic structure of the population account for some of the compositional changes for those in poverty, having sizeable impacts on all aspects of the socio-demographic composition of poverty other than the female share of poverty. Specifically, population structure changes have acted to decrease the proportion of those in poverty aged under 25 years, increase the proportion aged over 35 years, increase the proportion in sole parent families, increase the proportion in couple families without dependent children, decrease the proportion in families with dependent children, increase the proportion holding post-school qualifications, increase the proportion foreign-born and increase the proportion residing in Queensland.

While changes to the characteristics of the population have played an important role in explaining changes to the composition of poverty, it is equally evident that changes in within-group poverty rates (relative to the aggregate) are also important. Within-group poverty rate

[13] It is perhaps helpful to emphasise that the decomposition undertaken here is not focused on the role of changes in population characteristics in affecting the aggregate poverty rate, but rather their role in affecting the socio-demographic *composition* of those in poverty.

changes have acted to substantially increase the poverty shares of persons aged 21-24 years, persons aged over 65 years, single persons, immigrants and persons residing in Victoria, and to decrease the poverty shares of persons aged under 15 years, persons in sole parent families, persons in couple families with dependent children, and persons residing in Queensland. Indeed, for all characteristics other than educational attainment, within-group poverty rate changes appear to play a more important role than population structure changes in affecting the composition of poverty.

Table 4: Sources of changes in the socio-demographic composition of persons in poverty

		(A)		(B)	
	Actual change	Population structure	Within-group poverty rate	Population structure	Within-group poverty rate
Female	0.001	0.004	-0.003	0.004	-0.003
Age group					
0-14	-0.118	-0.037	-0.082	-0.048	-0.070
15-20 - dependent	-0.002	0.012	-0.014	0.018	-0.020
15-20 - not dependent	-0.022	-0.039	0.017	-0.034	0.012
21-24	-0.006	-0.049	0.043	-0.033	0.027
25-34	-0.022	-0.001	-0.022	0.000	-0.023
35-44	0.010	0.021	-0.011	0.025	-0.015
45-54	0.031	0.031	0.000	0.032	-0.001
55-64	0.033	0.018	0.016	0.016	0.018
65+	0.096	0.043	0.053	0.024	0.072
Family type					
Sole person	0.120	0.004	0.117	0.002	0.119
Sole parent	-0.047	0.038	-0.084	0.063	-0.110
Couple	0.059	0.028	0.031	0.020	0.039
Couple, dep. Children	-0.132	-0.069	-0.063	-0.084	-0.049
Foreign-born	0.078	0.036	0.042	0.031	0.047
Educational attainment		0.000	0.000	0.000	0.000
No post-school qual.	-0.098	-0.073	-0.025	-0.071	-0.027
'Other' post-school qual.	0.052	0.027	0.025	0.024	0.028
Bachelor's degree	0.046	0.047	0.000	0.047	-0.001
State of residence					
NSW	-0.004	-0.015	0.011	-0.018	0.014
Vic	0.015	-0.013	0.028	-0.014	0.029
Qld	0.001	0.033	-0.032	0.037	-0.036
SA	-0.006	-0.011	0.004	-0.011	0.004
WA	0.004	0.010	-0.006	0.010	-0.006
Tas	-0.003	-0.005	0.001	-0.005	0.002
NT or ACT	-0.007	0.000	-0.007	0.000	-0.007

Note: Socio-demographic composition of the population is reported in Appendix Table 3.

6. Changes in relative risks of poverty of socio-demographic groups

Table 4 shows that changes to the composition of those in poverty derive from both changes in the socio-demographic composition of the population and changes in poverty rates within each group. The table does not, however, isolate the changes in the effects associated with specific characteristics on the likelihood of being in poverty. Partly this is because the focus is on the composition of those in poverty rather than the absolute risk of being in poverty. However, it is also because the change in the poverty rate of a particular population group could in part be due to (changes in) other socio-demographic characteristics of that group. For example, the -0.003 effect of the change in the female within-group poverty rate on the proportion of the poor that is female may partly derive from changes in female educational attainment, rather than simply derive from a 'being female' effect.

Table 5 presents results of analysis of implications of characteristics for risk of poverty, reporting mean marginal effects estimates obtained from Probit models of the probability of being in poverty.[14] Focusing on *changes* in effects on risk of poverty, we see that, holding all else constant, there are significant relative increases in the risk of poverty for (non-dependent) persons aged 15-24 years or over 55 years, for single persons, immigrants and persons with no post-school qualifications; and there are significant decreases in the risk of poverty for sole parent families and residents of Queensland and the territories. The estimate for the interaction term 'single and aged 65+' also increases over the sample period. This estimate is negative in both the start- and end-years, implying that in both years the adverse effects associated with being elderly are smaller for single persons, or equivalently, that the adverse effects associated with being single are smaller for the elderly. As such, the 0.04 increase in this estimate over the sample period implies this attenuating effect is smaller at the end of the period than at the start.

[14] All explanatory variables are dummies and reported marginal effects are in fact mean effects of changing explanatory variables from 0 to1 (evaluated over all members of the estimation sample). Various interactions between explanatory variables were experimented with but, except for the included interaction term 'single and aged 65+', were generally not statistically significant and are therefore not included in the reported specification.

Table 5: Probit estimates of mean marginal effects on the probability of being in poverty

	1981-2	1985-6	1989-90	1993-4 & 1994-5	1995-6 & 1996-7	1998-9 & 1999-2000	2001-2 & 2002-3	Change over full period
Female	0.004	-0.002	0.011**	0.002	0.000	0.005	0.006**	0.002
Age group (35-44 years omitted)								
0-14	0.028**	0.027**	0.026**	0.021**	0.016**	0.012	0.015**	-0.013
15-20 - dependent	0.011	0.026*	0.024**	0.008	0.012	0.019*	0.005	-0.006
15-20 - not dependent	0.225**	0.248**	0.239**	0.385**	0.377**	0.281**	0.323**	0.097**
21-24	0.029**	0.052**	0.063**	0.090**	0.102**	0.070**	0.091**	0.062**
25-34	0.009	0.022**	0.006	0.003	0.005	-0.005	0.007	-0.003
45-54	0.015*	0.031**	0.022**	0.012	0.009	0.012	0.019**	0.004
55-64	0.065**	0.085**	0.100**	0.081**	0.061**	0.083**	0.096**	0.031**
65+	0.080**	0.050**	0.103**	0.080**	0.086**	0.101**	0.113**	0.033*
Family type (Couple with dep. children omitted)								
Sole person	0.053**	0.034**	0.073**	0.048**	0.062**	0.103**	0.111**	0.058**
Sole parent	0.308**	0.306**	0.329**	0.173**	0.158**	0.182**	0.198**	-0.110**
Couple	-0.067**	-0.071**	-0.066**	-0.049**	-0.047**	-0.056**	-0.061**	0.006
Foreign-born	0.037**	0.048**	0.057**	0.039**	0.043**	0.054**	0.070**	0.033**
Educational attainment (Degree omitted)								
No post-school qual.	0.051**	0.071**	0.056**	0.039**	0.042**	0.055**	0.075**	0.024**
'Other' post-school qual.	0.020*	0.032**	0.018*	0.010	0.009	0.011	0.039**	0.020
State of residence								
Vic	-0.009**	-0.007	-0.017**	-0.016**	-0.002	-0.009*	-0.003	0.006
Qld	0.017**	0.008	-0.004	-0.010**	-0.007	-0.004	-0.017**	-0.034**
SA	-0.009**	-0.006	-0.001	-0.020**	0.003	-0.018**	-0.012**	-0.003
WA	0.001	-0.004	-0.020**	-0.015**	-0.006	-0.012**	-0.011**	-0.012*
Tas	0.002	0.024**	0.016**	-0.019**	-0.006	0.004	-0.003	-0.006
NT or ACT	-0.021**	-0.028**	-0.040**	-0.044**	-0.026**	-0.044**	-0.060**	-0.039**
Reside in capital city	-	-	-0.014**	-0.023**	-0.034**	-0.015**	-0.025**	-
Single and aged 65+	-0.070**	0.017	-0.008	-0.058**	-0.054**	-0.048**	-0.030**	0.039**
No. of observations	42284	22586	39470	35637	36517	33179	52365	

* and ** indicate estimate is significantly different from zero at the 10 per cent and 5 per cent levels, respectively.

The changes in effects identified in Table 5 imply that the relative within-group changes in poverty rates identified in Table 4 for children aged under 15 years, couples and Victorian residents derive from other characteristics of these groups. For example, the increase in the poverty rate of couples without dependent children may derive from changes to the age, education and foreign-born composition of persons in this family type, and from changes in the risks of poverty associated with these characteristics. The probit analysis also uncovers significant changes in effects associated with some characteristics that do not translate to corresponding effects of a change in the within-group poverty rate on the composition of poverty. This applies to the effects associated with being aged 15-20 years (and non-dependent), not holding any post-school qualifications and with residing in the ACT or the Northern Territory. For example, Table 5 shows that not holding post-school qualifications is associated with a relative increase in the risk of poverty over the sample period, yet Table 4

shows that the change in the poverty rate among those with no post-school qualifications has acted to *decrease* the poverty share of this education group. Thus, the increase in the relative risk of poverty for this education group is outweighed in Table 4 by changes in other characteristics, and/or changes in the risk of poverty associated with other characteristics, of persons in this education group.

7. Conclusion

This study has sought to take a relatively long view on the extent and socio-demographic incidence of poverty in Australia. It spans a period not considered by previous research, and furthermore addresses the problems of lack of comparability of poverty estimates at different points in time from different studies by applying a consistent approach to the investigation of poverty across all of the years examined. While there are legitimate points of contention on the definition and measurement of poverty, the emphasis of this study is on changes over time in poverty and the demographic composition of those in poverty, both of which are less sensitive to the particular measure of poverty adopted than are absolute levels at a point in time.

Adopting a half-median poverty standard, it is found that there has been some increase in the proportion of the population in poverty, particularly after 1997. However, the change is not large. Of more note are the substantial changes in the socio-demographic composition of those in poverty. Compared with the start of the sample period, persons in poverty at the end of the period were much more likely to be older, without dependent children, holding post-school qualifications and/or foreign-born, and somewhat more likely to live in Victoria. In part, these changes reflect broader changes in the composition of the population. However, this is not the primary driver of the changing face of poverty in Australia. Rather, the risk of poverty has changed substantially for the different socio-demographic groups. Specifically, the risk of poverty has increased for the elderly, non-dependent youth, single people, foreign-born persons and those without post-school qualifications, and it has decreased for sole parent families and residents of Queensland, the ACT and the Northern Territory. These are significant developments and have clear implications for the targeting of future public policy seeking to alleviate socio-economic disadvantage.

Appendix

Appendix Table 1: Number of observations with zero incomes and total number of observations

Survey year	No annual IU income	Total observations	Per cent of persons with no annual IU income
1982	422	42706	0.99
1986	263	22849	1.15
1990	293	39763	0.74
1994-95	233	17981	1.30
1995-96	198	18087	1.09
1996-97	179	18867	0.95
1997-98	197	18026	1.09
1999-2000	225	16791	1.34
2000-01	208	16821	1.24
2002-03	339	24584	1.38
2003-04	314	28434	1.10

Note: *IU* – income unit.

Appendix Table 2: Poverty thresholds in each year (June 2003 prices)

Financial year	50% of median	60% of median	Henderson
1981-82	9725.06	11670.07	24150.90
1985-86	9851.83	11822.19	24878.85
1989-90	10006.38	12007.65	25429.35
1993-94	10071.55	12085.86	25866.21
1994-95	9888.50	11866.19	26386.72
1995-96	9896.30	11875.56	26609.62
1996-97	10063.27	12075.92	26885.13
1998-99	10677.67	12813.21	27861.88
1999-2000	10963.07	13155.69	28531.54
2001-02	11404.53	13685.44	29001.58
2002-03	11545.49	13854.58	28529.46

The 50%-median and 60%-median poverty thresholds are for a single person. The Henderson poverty threshold is for a couple with two children, with one member of the couple in the labour force.

Appendix Table 3: Socio-demographic composition of the population – Proportion in each group

	1981-2	1985-6	1989-90	1993-4 & 1994-5	1995-6 & 1996-7	1998-9 & 1999-20	2001-2 & 2002-3	Change over full period
Female	0.503	0.499	0.505	0.505	0.504	0.506	0.507	0.004
Age group								
0-14	0.257	0.243	0.235	0.219	0.215	0.205	0.200	-0.057**
15-20 - dependent	0.040	0.044	0.050	0.051	0.053	0.055	0.052	0.012**
15-20 - not dependent	0.043	0.052	0.044	0.035	0.031	0.030	0.030	-0.012**
21-24	0.085	0.067	0.062	0.057	0.053	0.050	0.051	-0.034**
25-34	0.160	0.164	0.162	0.159	0.157	0.154	0.149	-0.011**
35-44	0.130	0.144	0.152	0.156	0.157	0.157	0.154	0.024**
45-54	0.101	0.097	0.107	0.125	0.131	0.139	0.140	0.039**
55-64	0.092	0.090	0.084	0.085	0.086	0.093	0.103	0.011**
65+	0.093	0.099	0.104	0.114	0.115	0.117	0.121	0.027**
Family type								
Sole person	0.219	0.215	0.211	0.230	0.234	0.237	0.230	0.012**
Sole parent	0.056	0.053	0.060	0.065	0.070	0.078	0.076	0.020**
Couple	0.209	0.229	0.238	0.245	0.244	0.254	0.273	0.064**
Couple, dep. Children	0.516	0.504	0.490	0.460	0.453	0.431	0.420	-0.096**
Educational attainment								
No post-school qual.	0.732	0.731	0.690	0.698	0.683	0.660	0.624	-0.107**
'Other' post-school qual.	0.227	0.219	0.244	0.217	0.226	0.234	0.247	0.020**
Bachelor's degree	0.041	0.050	0.065	0.085	0.091	0.105	0.129	0.087**
Foreign-born	0.187	0.191	0.198	0.204	0.212	0.212	0.218	0.031**
State of residence								
NSW	0.352	0.346	0.343	0.339	0.338	0.336	0.336	-0.015**
Vic	0.263	0.262	0.254	0.251	0.250	0.251	0.249	-0.014**
Qld	0.157	0.162	0.169	0.181	0.183	0.186	0.191	0.034**
SA	0.089	0.087	0.086	0.082	0.080	0.079	0.078	-0.011**
WA	0.088	0.090	0.096	0.095	0.097	0.099	0.098	0.010**
Tas	0.029	0.028	0.026	0.026	0.026	0.025	0.024	-0.004**
NT or ACT	0.023	0.025	0.025	0.027	0.026	0.024	0.024	0.000
Reside in capital city	-	-	0.612	0.617	0.614	0.617	0.615	

Appendix Table 4: Sensitivity of changes in socio-demographic composition of poverty to income measure and poverty definition, 1981-82 to 2001-03

	Poverty threshold 50% of median income		Poverty threshold 60% of median income	
	IU income	HH income	IU income	HH income
Change in poverty rate	0.018**	0.014**	0.027**	0.024**
Change in socio-demographic composition of poverty – Change in proportion in each group				
Female	0.001	-0.007**	-0.029**	-0.018**
Age group				
0-14	-0.118**	-0.123**	-0.080**	-0.079**
15-20 - dependent	-0.002	0.005**	0.006**	0.006**
15-20 - not dependent	-0.022**	0.007**	-0.013**	0.004**
21-24	-0.006**	-0.002	-0.009**	-0.007**
25-34	-0.022**	-0.043**	-0.013**	-0.025**
35-44	0.010**	0.010**	0.013**	0.017**
45-54	0.031**	0.036**	0.031**	0.036**
55-64	0.033**	0.032**	0.021**	0.016**
65+	0.096**	0.078**	0.043**	0.034**
Family type				
Sole person	0.120**	0.106**	0.026**	0.049**
Sole parent	-0.047**	-0.016**	-0.025**	0.013**
Couple	0.059**	0.075**	0.085**	0.060**
Couple, dep. Children	-0.132**	-0.165**	-0.086**	-0.122**
Foreign-born	0.078**	0.071**	0.072**	0.059**
Educational attainment				
No post-school qual.	-0.098**	-0.079**	-0.080**	-0.065**
'Other' post-school qual.	0.052**	0.036**	0.040**	0.027**
Bachelor's degree	0.046**	0.043**	0.040**	0.038**
State of residence				
NSW	-0.004	-0.007**	-0.001	-0.006*
Vic	0.015**	-0.001	-0.002	0.003
Qld	0.001	0.007**	0.003	0.007**
SA	-0.006**	0.005**	-0.004**	-0.005**
WA	0.004**	-0.006**	0.007**	0.003
Tas	-0.003**	0.004**	-0.002	-0.002
NT or ACT	-0.007**	-0.002**	-0.002*	0.000

Notes: *IU* – Income Unit; *HH* – Household.

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