The tide has risen and …
Trends in the spatial distribution of incomes 1986-2001

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The views expressed in this paper are those of the author and do not necessarily represent the views of the Minister for Family and Community Services nor the Department of Family and Community Services

Draft working paper: While these initial results may be cited, it is anticipated that the analysis will be subject to revision, in particular when ABS release data from the 2000-01 Survey of Income and Housing Costs. This will permit the re-estimation of income points for the 2001 Census data. Users should seek to verify whether or not a final version is available and use that in preference to this version.
Abstract
Research in the mid 1990s highlighted increased spatial earnings inequality, characterised by falling incomes in disadvantaged areas. Emerging from this work was a popular perception of ‘the rich getting richer and the poor poorer’. Analysis since then has extended and developed these themes, including highlighting a divide between incomes growth in the capitals and other locations. Using new data from the 2001 Census, this paper revisits these aspects to review what has happened more recently, and asks whether or not the conceptualisation derived from these earlier studies is still applicable.

A rising tide lifts all boats.
*John F Kennedy*

The distribution of the benefits of economic growth has been the subject of considerable debate, both in Australia and overseas. After the widespread distribution of gains of the growth in western economies in the 1950s and 1960s, the changes of the 1970s and 1980s gave rise to concerns of ‘jobless’ recoveries and growing polarisation and division with this inequality – leading to the establishment of an underclass. Importantly, these analyses suggested that not only was a small proportion of the population gaining disproportionate benefits, but this was at the cost of the wider society who were moving backwards – with falling earnings and incomes, and increasing gulfs between them and the labour market.

This paper does not seek to examine all of these issues. Rather, by consideration of one aspect – trends in regional income distribution – it asks whether the experience of the 1990s suggests that there is a need to reappraise some of the analytical frameworks around which much social analysis continues to be structured.

Previous studies
The work of Hunter and Gregory, typified by “The Macro Economy and the Growth of Ghettos and Urban Poverty in Australia” (Gregory and Hunter 1995), established much of the analysis and imagery still present in current discussions on spatial aspects of income distribution and employment. The key – and dramatic – finding of their research was that between 1976 and 1991 while the incomes of the 30 per cent of locations most highly ranked on the basis of their socio-economic status (SES) rose, the incomes of the remaining 70 per cent fell – with the largest absolute falls being for the bottom ranked locations. They reported that over this period, in the lowest five percent of areas, incomes fell, in 1995 prices, by $7,589 (23 per cent), while those in the highest ranked locations rose by $12,555 (23 per cent). A stark illustration of ‘the rich getting richer and the poor poorer’. This reported increasing inequality comprised two trends: falling incomes in low ranked SES locations over the period between 1976 and 1981, a trend which continued to 1986, and growing incomes at the top from 1981. These income trends were closely associated with changing patterns of labour market participation. These involved a movement away from relatively consistent employment to population ratios across locations to one where the ratio in low ranked locations was a fraction of the rate for highly ranked areas. Indeed by 1991 they report that the employment to population ratios for men ranged from below 40 per cent (for the bottom one percent of locations) to over 60 per cent for the top 10 per cent, and for women from just over 20 per cent to well over 50 per cent.

Census data were also used by Lloyd, Harding and Hellwig (2000) in a NATSEM discussion paper on trends in regional incomes between 1991 and 1996. The study found quite differentiated patterns of income, and income growth. Household incomes were highest in the capitals and lowest in small rural towns. In the intercensal period income growth ranged from just 0.26 per cent in major (non capital) urban areas to 3.55 per cent in rural areas. For capitals the growth was 2.0 per cent, with individual city rates varying between –2.3 for Adelaide to +8.8 per cent in Darwin.

A further study by NATSEM, this time using Australian Taxation Office postcode level data, formed the basis of their first *Income and Wealth Report* for AMP Ltd (NATSEM 2002). This study analysed trends in taxable income, and income tax paid over the period 1994-95 to 1998-99. The report concluded that average taxable incomes had increased by an average of 19 per cent over the period, but this had not been evenly distributed. In particular they identified a division between the stronger growing metropolitan areas and the lower growth non-metropolitan areas and highlighted the strong growth in incomes in the highest ranked 10 per cent of locations – 25 per cent relative to 16 per cent in the middle and lower income locations.

While, as highlighted by the authors, the data in this study pointed to stronger growth amongst the more affluent locations, it also showed very consistent rates of growth across locations – with a 16 per cent increase being recorded by the lowest 3 deciles of locations, 17 per cent in the next three and then 18 per cent in the seventh, 19 per cent in the eighth, before the stronger rates of 21 per cent in the ninth and 25 per cent for the highest decile. The overall growth rate in nominal taxable income of 18.6 per cent reported in the study represents a real increase of 10.9 per cent for the four year period.

Finally the first use of 2001 Census data to examine these questions was by Siminski and Norris (2003) for an article in the 2003 Australian Social Trends publication of the ABS “The geography of income distribution”. In this they report on trends in income between 1996 and 2001 using the ABS remoteness classification to describe the geography of outcomes. A feature of the analysis was to consider the implications of housing costs for relative outcomes by comparing both total income and income after housing costs have been deducted. They report that “prior to the removal of housing costs the prevalence of people in low income households tended to increase as remoteness increased … However, removing direct housing costs largely reverses this pattern, with the prevalence of low income households decreasing with increasing remoteness”. More generally the data in the article indicate that real equivalised gross income increased over the intercensal period by an average of 16.3 per cent. This varied between 14.7 per cent in remote areas and 17.1 per cent in major cities.

**The economic context**

The period under study – 1986 to 2001 – was one of varying economic circumstances. As illustrated in Figure 1 it commenced with the economy showing strong growth with declining unemployment and growing employment after the 1983 recession. Earnings, as measured by male full-time ordinary time earnings, after rising rapidly, but inconsistently, in the early 1980s, started to decline and continued to do so for the rest of the decade.

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1 One limitation of this approach is that it assumes that housing is a relatively homogenous commodity across households and locations. Rather, a very significant component of the price of housing is the locational amenity associated with the housing, which in itself can be a major outcome for households. It also ignores the extent to which trade-offs can occur between housing and non-housing costs – for example in the choice of a location accessible to employment or public transport, as opposed to higher private transport costs.
Figure 1: Key economic indicators

- **GDP**
  - Annual Change (%)
  - June 1982 to June 2002

- **Male FT OT Earnings**
  - Annual Real Change (%)

- **Full-Time Employment**
  - Annual Change (000)

- **Part-Time Employment**
  - Annual Change (000)

- **Total Unemployment**
  - Annual Change (000)

- **GDP**
  - Annual Change (%)

- **Male FT OT Earnings**
  - Annual Real Change (%)

- **Full-Time Employment**
  - Annual Change (000)

- **Part-Time Employment**
  - Annual Change (000)

- **Total Unemployment**
  - Annual Change (000)
In addition to this low real earnings growth the key distinguishing factor of the 1986-1991 period was the steepness of the decline in employment, and in particular full-time employment, associated with the recession of 1990-91.

This impact continued into the second intercensal period under study, with continuing falls in full-time employment and increases in unemployment up into 1993. While the middle of the period showed quite strong growth, including marked falls in unemployment, and strong increases in GDP, earnings remained relatively flat.

The strong growth in GDP continued into the third period – 1996-2001. It was initially accompanied by strong jobs growth – especially in the middle of the period - and falling unemployment, although both full time jobs growth and the decline in unemployment faltered in 2001, before again picking up. This period also saw quite strong earnings growth.

**Methodology**

The data for this study has been obtained from the 1986, 1991, 1996 and 2001 Censuses. The measure of income used is real gross equivalised household income. The equivalence scale used is the OECD revised scale – which gives a weight of 1 for the first person in the household, a weighting of 0.5 for a second and any subsequent adults and 0.3 for children – in this study classified as children aged 14 years and under. Income figures provided in the paper are for a 1.8 equivalent household – a couple with one child\(^2\). The CPI has been used to bring all estimates to June 2001 prices.

Importantly the estimates are all based upon ecological – or an aggregated population basis. That is, the estimate of income is an average for a location based upon the aggregate income of all households which are in this location which is then equivalised across these households on the basis of their average composition. The level of aggregation used is the Statistical Local Area – these are either local government areas – or subdivisions of these, and all data has been coded to the 1996 geographical structure for such areas.

As income data has been collected as income ranges, it has also been necessary to derive estimates for the means for these ranges in order to estimate total income.

Appendix A provides more detailed methodological notes.

As with similar research, adopting this style of approach has involved an inevitable set of compromises. Key amongst these are:

- The use of area based ecological estimates of income only permits trends between areas to be studied – and not within area changes.

- The Statistical Local Area can be thought of as a relatively coarse geographic classification, in particular relative to alternatives such as the Collector’s Districts used in other studies. Balanced against this is that, as these finer levels of classifications involve far fewer households, data for them are subject to much more significant levels of perturbation by ABS in order to maintain confidentiality, and matching locations becomes much more problematic over time. This type of restriction along with a more limited orientation to urban

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\(^2\) Equivalisation of income is important for two reasons. The first is to improve comparability between locations as household size varies considerably on this basis. The second is to control for changing household composition over time. One of the reasons that the Hunter and Gregory work may have identified larger numbers of locations with apparently falling incomes was that household income was used without equivalisation. As household size declined over the period of their study, no account was taken of the consequence of this. That is while they may well have seen declining incomes for some households no regard was had to the fact that the needs of households had declined as there were fewer residents. The critical nature of this is even more marked when the declining numbers of residents may affect household income – for example lower income support payments or fewer income earners. Appendix 3 discusses this in more detail.
populations, for example, resulted in the Hunter data set being reduced to around 8 million people – out of a total population of some 13 million.

- Gross income is not a good measure of income as it fails to take account of the impact of income tax; both in terms of its redistributive characteristics, at any point in time, and of overtime as average tax rates change.
  - It is also less well suited to equivalence scales as most equivalence scales are conceptually linked to consumption that is more accurately matched by income measures such as disposable income.

Some of these issues have been considered in more detail in earlier studies. Gregory and Hunter for example repeated portions of their analysis at both the CD and postcode levels and concluded, “The results suggest that the analysis conducted on CDs carries over to Post Codes and we can choose to work with the level of aggregation that is most convenient” (Gregory and Hunter 1996).

**Changes in income 1986 to 2001**

Over the period 1986 to 2001 it is estimated that real equivalised gross household average income increased from $47,104 per annum to $57,977 an increase of $10,873 (23.1 per cent).

The pattern of change in the income distribution which resulted in this growth is shown in Figure 2. Three drivers can be identified: a moving to the right of the peak of the distribution in successive surveys; an increasing number of individuals in the top income group; and a marked increase in the mean income amongst this group.

**Figure 2: Individual Income distribution 1986 to 2001**

The intercensal impact of these shifts, along with changes of household composition, on incomes are shown in Table 1.
Table 1: Mean equivalised gross real incomes 1996 to 2001

<table>
<thead>
<tr>
<th>Census Year</th>
<th>Real equivalised gross household average income</th>
<th>Intercensal change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>47,103.96</td>
<td>$</td>
</tr>
<tr>
<td>1991</td>
<td>49,144.78</td>
<td>2,040.82 4.3</td>
</tr>
<tr>
<td>1996</td>
<td>50,077.54</td>
<td>932.76 2.0</td>
</tr>
<tr>
<td>2001</td>
<td>57,976.97</td>
<td>7,899.43 16.8</td>
</tr>
</tbody>
</table>

(a) percentage growth figures using the 1986 income level as a base, rather than a compounding growth rate over the successive intercensal periods, are used in the graphs where the growth rates are stacked on each other.

While the 1986 to 1991, and 1991 to 1996, changes were a modest 4.3 per cent and 2.0 per cent respectively – a total increase of some $3,000 per annum, the rise between 1996 and 2001 was $7,900. This reflects a 15.7\(^3\) per cent growth rate in the five year period over the 1996 income level. This is, in comparison with earlier periods, an exceptionally strong result.

It is, however, not inconsistent with the strength of the economic growth shown in Figure 1, and with alternative estimates drawn from National Accounts and Taxation data; it is somewhat higher than has been suggested in recent ABS household surveys. Attachment B considers these comparisons in more detail.

Income by location

These overall trends in household income are broadly mirrored in the outcomes by locations, although, as shown in Figure 3, the range of outcomes is more compressed as the results are an average for all persons in a location. Of interest in these distributions is that the changes between 1986 and 1996 tend to be characterised by movements amongst the upper part of the distribution, while it is only the 2001 distribution which shows a major shift across almost all locations.

Figure 3: Distribution of population by SLA mean equivalised gross real income, 1986 to 2001

\(^3\) This level of growth is a little below the 16.3 per cent reported by Siminski and Norris. The difference in the estimate is likely to arise from the use of different mid points for income ranges and the use of different equivalence scales.
In addition to the strong shift in the mode of the distribution, the 2001 data reveal exceedingly strong growth in the population living in very high income locations – with the number and proportion of the population living in SLAs with a mean gross equivalised income of over $80,000 increasing fivefold in the five year period.

In interpreting these results it should be noted that as data are provided on an equivalised basis, adjustment needs to be made to understand the results for different household types. That is, the paper uses an equivalised base of 1.8 (couple with 1 child) as this is broadly consistent with the overall average equivalisation factor for the population which is in the range 1.7 to 1.8. To derive estimates for other households, the income for the base case should be divided by 1.8 and multiplied by the relevant equivalising factor. In the above case the $80,000 can be considered to equate to $44,400 for a single person (an equivalence of 1.0) and $106,700 for a couple family with three children (an equivalence of 2.4).

This changing distribution, however, only presents a snapshot of the distribution at particular points in time and does not address the experience of locations over time. That is, it provides no indication of whether those locations shown as being high income in 2001 are the same as those who were high income in 1986, nor what has happened to low income locations over time. It is these questions that serve as the focus for the major part of this paper.

Table 2 illustrates the relative position in the income distribution of locations (person weighted) in 1986 and 2001. For each SLA it cross tabulates the income decile within which it fell in 1986 and in 2001. A strong diagonal, that is, with locations being in the same decile in both periods, would suggest high levels of stability.

<table>
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<tbody>
<tr>
<td>Lowest</td>
<td>62.1</td>
<td>17.7</td>
<td>15.0</td>
<td>3.6</td>
<td>1.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.3</td>
<td>0.1</td>
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<td>2</td>
<td>23.9</td>
<td>32.7</td>
<td>21.7</td>
<td>9.4</td>
<td>8.8</td>
<td>1.2</td>
<td>2.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>3</td>
<td>10.2</td>
<td>26.4</td>
<td>31.3</td>
<td>9.3</td>
<td>7.6</td>
<td>12.8</td>
<td>2.3</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
</tr>
<tr>
<td>4</td>
<td>1.3</td>
<td>10.0</td>
<td>21.5</td>
<td>28.7</td>
<td>14.4</td>
<td>15.4</td>
<td>2.8</td>
<td>1.2</td>
<td>4.8</td>
<td>0.0</td>
</tr>
<tr>
<td>5</td>
<td>4.9</td>
<td>10.2</td>
<td>6.7</td>
<td>27.5</td>
<td>19.8</td>
<td>17.8</td>
<td>3.7</td>
<td>8.7</td>
<td>0.8</td>
<td>0.0</td>
</tr>
<tr>
<td>6</td>
<td>1.5</td>
<td>1.1</td>
<td>4.3</td>
<td>20.0</td>
<td>28.6</td>
<td>17.4</td>
<td>20.1</td>
<td>3.9</td>
<td>2.6</td>
<td>0.5</td>
</tr>
<tr>
<td>7</td>
<td>0.3</td>
<td>1.7</td>
<td>0.9</td>
<td>1.2</td>
<td>9.8</td>
<td>19.5</td>
<td>37.6</td>
<td>18.4</td>
<td>9.2</td>
<td>1.5</td>
</tr>
<tr>
<td>8</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.0</td>
<td>1.3</td>
<td>8.5</td>
<td>19.9</td>
<td>42.4</td>
<td>17.7</td>
<td>8.1</td>
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<tr>
<td>9</td>
<td>0.1</td>
<td>0.0</td>
<td>0.1</td>
<td>0.2</td>
<td>0.5</td>
<td>0.1</td>
<td>22.6</td>
<td>56.0</td>
<td>14.4</td>
<td></td>
</tr>
<tr>
<td>Highest</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1.3</td>
<td>2.7</td>
<td>22.5</td>
<td>73.5</td>
<td></td>
</tr>
</tbody>
</table>

While the table commences and finishes with such a strong diagonal, this is much less the case in the middle. This suggests that while there has been a reasonable amount of reshuffling in the middle, there has been a relatively high level of broad stability in rankings across the 15 year period, especially at the extremes.

Of those locations which were in the lowest 10 per cent in 1986, over 60 per cent were still at the bottom of the distribution in 2001. Of those 1986 ‘bottom’ locations which did improve their rankings, most only recorded income growth sufficient to raise themselves to the second or third bottom classifications.

The degree of stability was even more marked at the top. Almost three quarters of the locations that were in the top decile in 1986 were also in that decile in 2001, and of those that slipped in the rankings most only fell one classification – that is into the ninth decile.

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4 Percentage refers to the distribution of 1996 ranked locations in 2001. Column percentages may not add to 100%. This discrepancy arises because of the use of current population weighting in each year.
While in some cases the ranking of locations may have remained relatively steady this does not however mean that these results can necessarily be extrapolated to the current population living in the area. ABS report (ABS 2002b) that 24 per cent of the population stated that they had lived in a different SLA to that of their current residence five years prior to the 2001 Census, while only 51 per cent reported living at the same address and 14 per cent reported living at a different address within the same SLA.

**Trends in income by location**

The focus of the paper is on the distribution of the shifts in income seen in Table 1 and Figure 2 by location. Figure 3 shows the absolute change in real average equivalised gross income for locations ranked on the basis of their 1986 income level. In the graph finer, 5 percentile, groupings (‘vingtiles’) of person weighted locations are used.

The first feature, reflecting the results seen above, is the extent to which income growth between 1996 and 2001 dominates the changes over the period. Indeed for some of the groupings it accounts for almost 90 per cent of the total change in income received.

In addition, and in contrast to the findings of studies of earlier periods and some of the classifications considered elsewhere in this paper, all classifications show real income growth in each of the periods. That is, at this level of disaggregation, all groups of locations have increased their incomes in each of the intercensal periods over the past 15 years.

The pattern of these gains has varied in each of the three periods:

- **Between 1986 and 1991,** while there were clearly stronger income gains in the top three vingtiles, there is relatively little consistency in the pattern of growth across the other income bands.

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5 In this and subsequent charts, the width of the bars reflects the relative populations in each of the groupings. The variation in some charts, especially those based on deciles and vingtiles, is quite small and reflects relative population growth and at times some ‘lumpiness’ in allocation to categories.
• In the next period, that is between 1991 and 1996, while changes were the smallest of the three periods, they displayed a clear pattern, that of hollowing out. Strong gains were again recorded at the top of the distribution, especially for the highest vingtile. There was very little gain around the middle, but some growth was recorded at the bottom.

• The most recent period, in addition to dominating the overall picture, has its own quite distinct distribution with relatively flat increases up into the middle and then strongly increasing gains after that.

Overall the effect of this growth has been an increase in the equivalised real average gross income in the bottom vingtile from $34,000 to $42,700, and at the top from $70,300 to $93,500. As a result, the ratio of income of the top to bottom vingtiles increased from 2.07:1 to 2.19:1.

Understanding the effect of these changes on the distribution of income requires attention not just to the absolute level of changes, but also the relative change. This is shown in Figure 5.

This shows, in aggregate, a generalised ‘U’ pattern, with an emphasis on growth at the top. The lower part of the U pattern, which broadly encompasses the bottom to middle upper income groupings, emerges from the interaction of the relatively flat increases in income with the initial skew of the distribution. That is, the flat increases seen in Figure 4 represent a relatively high increase in income for low income locations, and a much lesser increase in the middle. At the top of the distribution the much stronger proportional rises in incomes dominate, creating the right hand side of the U and then continuing, with the top 20 per cent of locations in particular recording growth rates well above 25 per cent.

Taking these changes together, while it is clear that the richest locations have become richer faster than other areas, they have not been the only ones to benefit. The bottom 5 per cent of locations have also seen their incomes increase by over 25 per cent, and indeed most locations when grouped this way have seen gains of at least 20 per cent. The exceptions are some in the middle and lower middle of the distribution, but even here the pattern is not always consistent.

Figure 5: Relative Income Growth by 1986 Income Vingtile Ranking

Socio-economic status

While income is one means of measuring the relative standing of locations, broader measures of advantage and disadvantage are also available. One of these, Socio-Economic Status (SES) was the primary classification in the Gregory and Hunter work. In Australian analysis the most
commonly used measures are scales derived by ABS as Socio-Economic Indexes for Areas (SEIFA).

Figure 6 illustrates the relative outcomes for deciles of locations ranked by SES using the ABS ‘relative disadvantage’ SEIFA ranking of the location in 1996. In contrast to the above analysis, this graph shows little of the U shaped hollowing out – rather it suggests a relatively constant (but not always consistent) grade of increasing gains for higher ranked locations. Also, in contrast to the previous chart, it shows income losses in some years for some locations.

While in large part this pattern is likely to reflect the outcomes for these locations relative to their characteristics over time, the actual strength of movements may be influenced by the use of the 1996 SEIFA for classification. In effect this will tend to also rank locations on the basis of their experience over the 1986 to 1996 period, rather than just their initial underlying characteristics. That is, the decrease in income may be a causal factor in their low SES ranking, rather than their SES ranking being seen as explaining the income outcome.

Using this classification, the initial 1986 to 1991 period is marked by a relative constant rate of growth across all classifications, other than the lowest 15 per cent of locations and the very top. Indeed, the increase for the lowest three vingtiles was only around half the rate of most other locations and less than a quarter of that of the highest ranked location.

The pattern of the 1991-1996 period, while having a similar slope to the other periods, was marked by a reversion to the experience cited by Hunter and Gregory of real losses at the bottom and real gains at the top; that is, substantive real falls in incomes for those in the most disadvantaged 20 per cent of locations and real increases for the most advantaged.

The third period again saw the top gaining more strongly than the bottom. However, this was accompanied by strong gains at the bottom - around 12 per cent for each of the three bottom vingtiles. The ratio of growth between the top and bottom locations of 20.9:12.4, was much less extreme than the 8.0:1.5 in 1986-1991 and 4.7: −2.3 in 1991-96.

**Figure 6: Relative Income Growth by Socio-Economic Status**

![Graph showing relative income growth by socio-economic status](image)

**State and Territory**

Reflecting their different economic and social structures, the pattern of income change experienced by different states and territories also varied.
Across the period as a whole, income growth in NSW, which totalled 28.4 per cent, and which increased incomes from $47,700 to $61,250, outstripped that of all other states. It also saw NSW incomes rise above those of Victoria and the Northern Territory. In contrast Tasmania, which had in 1986 an average income of $43,200, only recorded a total growth of 10.7 per cent (a fraction above the 10.6 per cent recorded by the NT which had the lowest growth). This resulted in that state having a 2001 income of $47,800 – almost the same as that recorded by NSW 15 years earlier.

The pattern of growth over time showed very marked differences. The ACT, the Northern Territory and Tasmania had falling incomes between 1986 and 1991, while reasonable gains were made in NSW and to a lesser degree Queensland. Western Australia, and again to a lesser degree Queensland, were the beneficiaries of what was nationally the lower growth between 1991 and 2001, while the NT almost regained the losses it had made in the earlier period.

In all states and territories, however, the most substantial gains were made between 1996 and 2001. This was strongest in New South Wales – at 19.6 per cent, and in Victoria – where the 18.2 per cent increase accounted for 85 per cent of the State’s growth over the 15 year period. While the gain in Tasmania (10.2 per cent) was the lowest of any State or Territory, it accounted for 95 per cent of the State’s 15 year growth.

**Figure 7: Relative Income Growth by State**

![Figure 7: Relative Income Growth by State](image)

**Urban form**

Much of the recent analysis of income distribution trends has focused on the regional dimension of locations. As identified in the earlier literature, Harding has drawn attention to what she saw as a divide between metropolitan areas and non-metropolitan areas, while Siminski identified higher growth in the State Capitals.

To examine this question with this data an ‘urban form’ indicator has been used\(^6\)(Bray 2000). This was developed to classify SLAs on the basis of the main form of settlement in the area. It is

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\(^6\) This classification groups SLAs on the basis of the main urban form of each urban centre or locality within them in 10 categories comprising:

- the inner, middle and outer tiers of capital cities based on relative distance from the CBD
- areas identified by the ABS as urban centres or localities, which, while outside of the boundaries of the capitals, are within 75 kilometres (straight line) of the CBD;
a somewhat finer classification than has been used in some other studies, and has the added merit of providing some more detailed information on what is happening within the Capitals.

As shown in Figure 8, this greater detail provides a very important insight into incomes growth. This shows that the dominant geographic feature of income distribution over the period has been the performance of the inner suburbs of Capital Cities. (In this classification these are those SLAs within 1996 Capital City Statistical Divisions which account for the one third of the city’s population living closest to the CBD.)

Income in these inner urban locations has grown 50% faster than those in the second highest ranked locations – which are non-urban areas. Importantly, these locations aside, the growth rates of the balance of the capitals, as well as their surrounding areas, are broadly consistent with those of most other areas in Australia. This suggests that the capital city/rest of state division is a false dichotomy, with most urban Australians experiencing much the same rate of income growth as Australians outside the capitals.

Reflecting these patterns of growth, the pattern of absolute earnings has not changed all that substantially, other than in the inner suburbs of the capitals. The mean incomes in the five non-major urban location groupings fall, in 2001, into a very narrow band from $49,100 to $50,400. Those of major non-capitals and the surrounding zones of the capitals are $52,700 and $52,100 respectively, while moving through the rings of the capitals they increase from $57,400 to $61,300 and to $71,900.

Figure 8: Relative Income Growth by Urban Form

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- major non-capital city towns. (This comprises Wollongong, Newcastle, Geelong, Toowoomba, Gold Coast, Townsville, Cairns and Launceston);
- those other SLAs where most of the population live in a town of 40,000 or more;
- those where most of the population live in towns with 10,000 to 40,000 inhabitants;
- those where most of the population live in towns with populations of 2,000 to 10,000 persons;
- those where most of the population live in towns, villages and localities of less than 2,000 persons; and
- those locations where most people do not live in any type of urban centre or locality.
The growth of incomes within the inner rings of the Capitals would appear to be driven by two factors – the initial higher earnings in these locations, and the extent to which individuals with these earnings would have benefited from those factors which have delivered very strong income growth; and secondly urban redevelopment and the promotion of inner urban living. As such, a significant proportion of the increase may be as a result of compositional change in the population. To the extent there has been such movement of high earners into the inner suburbs this may have tended to underestimate the underlying strength of incomes growth for those in the middle and outer rings.

State and Urban form

While broadly reflecting the patterns which have emerged in the above analysis, many much more intricate movements are revealed when attention is given to the outcomes for different locations within states. These are illustrated in Figure 9.

Some of the major features are:

- The most consistent feature of these charts is that the higher levels of income growth in the inner cities are experienced fairly consistently across all states – although it is much more marked in the two largest capitals, Sydney and Melbourne.

- In contrast to the overwhelming impact of the 1996-2001 income changes relative to the other intercensal changes, small localities and non-urban areas in Western Australia gained most strongly during 1991-1996. A less strong echo of this is also seen in South Australia.

- Other than in Melbourne, in most of Victoria’s urbanised locations including towns of over 2,000, virtually all growth occurred in the 1996-2001 period. This was experienced also in the middle and outer areas of Canberra.

- A similar pattern is seen in Tasmania – but in this case it affected Launceston and small towns and non-urban locations. Tasmania is also marked by a very poor performance in the outer metropolitan zone of Hobart.

- In the Northern Territory the outcomes for locations of less than 2,000 people largely reflect the experience of small indigenous communities.
Figure 9: Relative Income Growth by State and Urban Form
**Other aspects**

Gregory and Hunter in their study of trends between 1976 and 1991 concluded that “The two most important contributing factors to the growth of income and employment inequality across neighbourhoods appear to be the proportion of residents who live in public housing and the proportion of 1976 residents who worked in manufacturing”. These two characteristics of locations are considered below.

In the analyses the 1986 relative concentration of public housing and manufacturing employment respectively, have been used to classify locations.

**Public Housing**

The role of the public housing sector both developed differently and evolved in different ways in various locations. In some locations it was constructed as part of slum clearance programs to rehouse working and other households, in other areas as part of general urban expansion and in others as housing constructed to meet the needs of developing manufacturing industries. Notwithstanding these differences it has generally evolved into housing which is primarily used by low income, welfare dependent, households. In June 2000 93.3 per cent of all public housing tenants were classified as having either low income or special needs (FaCS 2003a). Given these characteristics and indeed a set of broader concerns as to the location of this housing, the factors behind the Gregory and Hunter findings can be well understood.

Reflecting these different histories the concentration of public housing varies widely across Australia, both by state and areas within states. While, in 1986, 10 per cent of locations had 13 per cent or more of households renting from State Housing Authorities, over half of all locations had less than 3 per cent, and 20 per cent had less than one percent.

Notwithstanding the role of public housing analysis of income growth over the 1986-2001 period suggests that the question of its concentration may not be as significant an issue on the overall performance of locations as it was at the time of Gregory and Hunter’s work. This is true both of levels of income and of income growth rates which are shown in Figure 10.

**Figure 10: Relative income growth by concentration of public housing**
While mean incomes are lower in areas of higher concentrations of public housing, the extent of this is not great (from around $65,000 in the areas with the lowest concentration to $53,700 in those locations with the second highest concentration). Similarly, while growth rates are somewhat lower in the eighth and ninth deciles of concentration, and it might be considered that there is a weak but not always consistent downwards trend from the second decile, the magnitude of this is quite small.

The one anomaly within this data is those SLAs with the highest concentrations of public housing. Not only is the mean income of these locations closer to the middle of the income distribution than those locations with high, but not extreme concentrations, but so is their growth rate. It is probable that this is a result of the concentration of public housing in the inner urban areas of some state capitals.

**Manufacturing employment**

The second factor identified by Gregory and Hunter also shows some mixed results. As with public housing, there is considerable diversity in the extent to which locations rely upon manufacturing as a source of employment. In 1986, in the 10 per cent of locations where it was most important, it generated over a quarter of all jobs. In contrast, at the other extreme of the distribution, for the decile of locations with the lowest concentration, only six per cent or fewer jobs came from this sector.

The most significant feature of Figure 11, which shows income growth by the decile of concentration of manufacturing employment, is the difference in the experience for the 1986 to 1991, and 1996 to 2001 periods, and that over the period between 1991 and 1996. The pattern of income growth for the first two of these periods can be broadly characterised as being an inverse U, with lower rates of growth in those areas with very low concentrations of manufacturing and again for those with high concentrations, with the strongest growth occurring in locations with around 10 to 15 per cent of 1986 employment in these sectors. In contrast, 1991-96 has a marked inverse relationship, with a fall in mean incomes in those areas which had the highest concentration of manufacturing employment and income in these locations with relatively fewer jobs in this sector.

![Figure 11: Relative income growth by concentration of manufacturing employment](image-url)
This suggests that the distribution of incomes growth continues to remain sensitive to the level of manufacturing employment – and that the sector, and areas reliant upon it, are particularly sensitive to economic conditions.

**Aggregate distribution measures**

From the above analysis two characteristics emerge – that there have been real and significant income gains across most locations in Australia, and that the strongest gains have generally been experienced by those locations that already had the higher incomes. This latter would be expected to show up in increasing levels of inequality.

This indeed has been the case when analysis is undertaken looking at the change in the relative equality of income distribution between SLAs on the basis of their mean equivalised gross income. The extent and implications of this are considered below using some of the traditional approaches of Lorenz curves and single measures such as the Gini.

There are though two important qualifications on these results:

- Interpreting the result needs to be qualified by the fact that the data used in this analysis are gross income and no account has been taken of the impact of income taxation. As has been well documented, Australia’s progressive tax system has a significant redistributive effect, and the extent of this has varied over time. Johnson, Manning and Hellwig (1995) report, using the Gini co-efficient, and equivalised income, that the effect of income tax was to reduce inequality from 0.366 to 0.308 in 1981-82, from 0.346 to 0.290 in 1988-89 and from 0.352 to 0.296 in 1993-94.

- Increased inequality between locations could be either as a result of increasing polarisation of incomes across the population, or as a consequence of increasing polarisation in the pattern of settlement. These issues are not considered in this paper.

With these provisos Figure 12 presents the Lorenz curve for the distribution of equivalised mean gross incomes for SLAs, weighted by the population for 1986 and 2001. Only these two years are shown for the sake of clarity. (The two intermediate years have curves that fit between these two years.)

**Figure 12: Lorenz Curve 1986 and 2001**
While strict Lorenz dominance does not exist (the two curves intersect at the extremes of the distribution) the chart shows an overall outward shift in the income distribution. This is confirmed from the Gini coefficient – a measure particularly sensitive to shifts around the middle. This has increased from 0.103 in 1986 to 0.108 in 1991, 0.116 in 1996 and 0.129 in 2001.

Figure 12 shows a variation on the above curve – the generalised Lorenz Curve. This curve is useful in interpreting outcomes where changes in inequality are accompanied by changes in levels of income. In contrast to the Lorenz Curve itself it permits the absolute outcomes of the income distribution to be considered, as well as the relative results. In describing the application of this curve Deaton notes “If the generalised Lorenz curve in one period sits above the generalised Lorenz curve in another period …[this distribution] will be preferred by any equity respecting social welfare function” (Deaton 1997).

Using this approach the data suggest:
- 1991 and 1996 dominate over 1986, but neither dominates over the other; and
- 2001 dominates over each of the three preceding years.

This result suggests that while inequality may have increased over the period, the 2001 income distribution delivers higher social welfare.

**Figure 13: Generalised Lorenz Curve 1986, 1991, 1996 and 2001**

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**Labour market outcomes**

In addition to highlighting income changes, much of the earlier analysis of regional outcomes also considered changes in labour market outcomes. In particular, Gregory and Hunter drew

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7 The failure to achieve Lorenz dominance may be a consequence of the relatively small number of SLAs and their varying populations which cause quite some lumpiness in the Lorenz curve.

8 These values for the Gini Coefficient are very low in comparison with most measures of income distribution. This is because they are derived from the distribution of mean incomes of SLAs, and not the distribution of individual incomes which are much more dispersed. ABS has recently estimated the Gini for disposable equivalised household income at 0.310 in 1999-2000 (ABS 2003c).
attention to the extent to which Australia had moved from a situation of relatively constant rates of labour force engagement across locations to one where rates of participation were much lower, and rates of unemployment much higher, in disadvantaged locations.

These issues are briefly considered below. Three measures are shown, male and female employment to population ratios, and the unemployment rate. In each case locations are ranked on the basis of their 1986 income decile. In all cases a restricted age range has been used to construct the labour force data. This comprises men aged 20-65 years and women aged 20-55 years. This has been done to attempt to reduce the distortions introduced by part-time employment amongst students and changing patterns of education retention.

Figure 14, which shows female employment to population ratios indicates how these rates have continued to grow strongly across all locations. One feature of these data is however that the rates of economic participation have increased much less in the higher income locations, with this being most apparent between 1986 and 1991 and to a much lesser degree between 1996 and 2001.

Two possible explanations for this experience can be suggested:

• the polarisation in rates of participation is beginning to weaken; or

• employment to population ratios amongst higher income locations are beginning to reach their limits (without further changes to social and employment structures which might facilitate the achievement of work/life and work/family balance.)

Figure 14: Female employment to population ratio, rates and intercensal percentage point change by 1986 income decile

Amongst men, Figure 15, the trends in employment to population ratios are quite different to those of women. After falling between 1986 and 1991, a trend consistent with earlier periods, much more stability has entered into the series. In aggregate terms there has been little change in the movements at the top and the bottom of the income distribution. That is while the lowest income areas did not fall as steeply as the middle, and to a lesser degree the top, between 1986 and 1991, they had a stronger fall than the middle in the next intercensal period. Between 1996 and 2001 there was little change in any location.

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9 While a 20-59 year age grouping for women would have been preferred this was not easily available from Census data.
Figure 15: Male employment to population ratio, rates and intercensal percentage point change by 1986 income decile

Unemployment, which rose between 1986 and 1991 in all income groupings, fell in the other two intercensal periods. While the aggregate percentage point falls appear to have favoured the lower income areas these movements are off a much higher base. Overall however the relative performance of low income areas has been somewhat better, with the ratio of unemployment rates in the lowest and highest income locations falling from 2.95 to 2.53 over the period as a whole.

Figure 16: Unemployment rates and intercensal percentage point change

Conclusion

Evidence from the 2001 Census clearly suggests that the rising tide of economic growth over the 1990s has caused a marked – and extremely widespread - lifting of the income boats of Australians across most locations.

Between 1996 and 2001 equivalised gross incomes increased by 16.8 per cent, contrasted with just 2.0 per cent between 1991 and 1996, and 4.3 per cent between 1986 and 1991.

While income growth was generally stronger amongst higher income locations, a trend that tended to accentuate income inequality, it has not been possible to determine the degree to which this may be tempered by the impact of income tax which was not available from the data. In addition incomes in the lowest ranked locations increased by 25 per cent over the period, compared to around 20 per cent for middle ranked locations and 30 per cent at the top.
While incomes grew more rapidly in the capital cities, this was driven by very strong increases in the inner ring of these cities. In contrast, the experience of those living in the middle and outer suburbs was much the same as that of Australians living in regional towns and cities and non-urban areas.

The picture these data present suggests is that the experience of Australia in the 1990s, and in particular the second half of that decade, is quite different from that which emerged from earlier analysis which either predated this change, or has a more limited focus on the early 1990s and earlier decades.
Appendix C

Methodology

Data
Data have been drawn from the 1986, 1991, 1996 and 2002 ABS Censuses of Population and Housing as follows:

- 1986 and 1991 Income data - special extraction by ABS to provide data on 1996 boundaries
- 1996 Income data from the Basic Community Profile on CDATA96 for 1996 Census SLA boundaries
- 2001: all data have been extracted from the Collector District Basic Community Profiles. A concordance between 2001 CDs and 1996 SLA boundaries was derived through allocation of CDs to SLAs based upon CD centroid locations.

A small number of SLAs for which data are available for 1996, 2001 and some earlier years, did not have any identified populations by ABS in 1986. These have largely been excluded in analysis since the 1986 characteristics of the location have usually been used as the basis of classification of the location, and as the base from which change is measured. In addition a number of offshore and special SLAs have been omitted. In total 1,311 SLAs have been used. In 2001 72,008 people, some 0.4 per cent of the total population, have been excluded.

Derivation of Income
Census income data are collected in ranges for all persons aged 15 years and over. To estimate mean incomes by location ‘mid-points’ for these ranges were used. While some such mid-points have been published by ABS for some Censuses these have not been used. This for a number of reasons: they are not available for all Censuses while for others simple interval mid-points have been suggested. In addition, the points proposed by ABS are often medians, primarily to permit ranges to be aggregated across individuals for the construction of estimates of distribution using ranges, rather than for the calculation of average incomes.

For this study therefore mid-points were constructed independently from the continuous data available in the ABS Surveys of Income and Housing Costs (SIHC). To do this data in these surveys were adjusted using the CPI for variations in timing between the SIHC and the Census, then grouped into the income bands used for the Census. From this means were derived for each of these bands. The SIHC current income series was used in preference to the annual estimates.

These averages were then applied to the data available in the Census to derive, for each person with income data within a SLA the estimated mean income for the SLA.

Equivalised income was obtained by allocating this mean income to each person aged 15 years and over\(^\text{10}\) and then dividing this by an equivalisation factor based on: the number of households (as an estimate of the number of first persons in households) which were given a weighting of 1, the number of persons aged 15 years and over, less the number of households, which were given a weighting of 0.5 and the number of people aged under 15 who had a weighting of 0.3.

\(^{10}\) The Census asks the income question of all persons 15 years and over, this approach has been used to overcome the problem of non-response to the income question which would otherwise result in an underestimate of incomes.
Verification

Deriving estimates of mean equivalised gross income for SLAs in this manner requires a number of assumptions. While some of these affect the estimates for all SLAs at any one point in time, others may impact differentially upon SLAs depending upon their characteristics. This latter group include the application of total population mid-points for income bands within each SLA despite the fact that these may have different shapes to their income distribution which would suggest the choice of different mid points. In addition are questions such as the extent to which an SLA may have a large population within non-private dwellings, or have differentiated patterns of non-response to the questions in the Census.

It is largely not possible to avoid these assumptions but it is probable that to the extent they have been violated that the analytical approach in this paper will minimise potential distortions. That is, while it is possible that for some individual SLAs to have quite atypical distributions which may result in their outcomes being distorted, this is likely to be much less of a problem in this study where SLAs are further grouped together into the different classifications which have been used.

Figure 17: Comparison of Census and Survey Income Distributions

One aspect which can be verified is whether the use of the SIHC estimates for range mid-points is consistent given the relative shapes of the income distribution in these surveys and data reported in the Census. The results of these are shown above.

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11 Some adjustment has been made to mid-points used in the analysis to reflect initial results from the 1999-2000 SIHC.
In each case the SIHC data have been adjusted by CPI to the time of the Census and the population has been revised to match Census aggregates. Shown in brackets is the estimated mean value of income from the SIHC as a proportion of the Census estimated mean income. In deriving these estimates all negative incomes have been treated as zero.

The differences between the two series reflects both the extent to which the different shapes of the income distributions impact on the estimation of the mean and differences between changes in income and prices (since the CPI was used to estimate income changes) between the timing of the survey and the Census.
Appendix B

Validating 1996-2001 income growth

This paper reports increases in equivalised mean gross income of:

- 4.3 per cent between 1986 and 1991
- 1.9 per cent between 1991 and 1996; and

While, as discussed in the paper, the estimate of growth between 1996 and 2001 is a little below the estimate of 16.3 per cent in Siminski and Norris for the same period, the strength of this increase both relative to other measures of income, and to the changes in the other inter-censal period is marked. This appendix considers a number of other estimates to provide some context.

National Accounts

A number of different estimates of changes in income across the economy and population can be derived from the National Accounts.

Two are published as part of the ABS National Accounts series: these are GDP per capita; and Real Net National Disposable Income per capita (ABS 2003a). In addition Gross Disposable Income is available from the Household Income Account (ABS 2003b). Table 3 below shows the intercensal growth for these aggregates. In the case of Gross Household Disposable Income the results are shown both on a per capita basis and on an equivalised basis.

In interpreting these results it should be noted that the national accounts include the household, government and industry sectors and, depending upon shares of income, it can be expected that there will be variations between GDP growth and actual trends in household income. Similarly the measure of Gross Household Disposable Income contains a number of items – such as the value of imputed rent on owner occupied housing – that are not usually included in household income estimates and is net of tax.

Table 3: Estimated income growth – National Accounts

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<thead>
<tr>
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<tr>
<td>GDP per capita</td>
<td>7.8</td>
<td>10.7</td>
<td>14.1</td>
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<tr>
<td>Real Net National Disposable Income per capita</td>
<td>6.3</td>
<td>9.9</td>
<td>15.7</td>
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<tr>
<td>Gross Household Disposable Income per capita</td>
<td>1.7</td>
<td>4.4</td>
<td>12.6</td>
</tr>
<tr>
<td>Gross Household Disposable Income equivalised</td>
<td>1.8</td>
<td>3.7</td>
<td>12.1</td>
</tr>
</tbody>
</table>

Household Survey based estimates of income

Estimates of household income are usually obtained from ABS household surveys. The two main sources are the Household Expenditure Survey (HES) and the Survey of Income and Housing Costs (SIHC) also know at times as the Income Distribution Survey (IDS).

The timing of HES is not well matched with census timing, with HES surveys being conducted in 1984, 1998-99, 1993-94 and 1998-99; notwithstanding this it can still provide some insight into trends over time. Table 4 shows a series of estimates – real mean gross household income, estimated equivalised gross, and disposable household income (net of income tax) and real household expenditure on current goods and services.
Table 4: Estimated income and expenditure growth – Household Expenditure Survey

<table>
<thead>
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<th>Percentage growth in five years:</th>
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<tr>
<td>Real Average Gross Household Income(a)</td>
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</tr>
<tr>
<td>Real Average Equivalised Gross Household Income (b)</td>
<td>1.9</td>
</tr>
<tr>
<td>Real Average Equivalised Disposable Household Income (b)</td>
<td>–1.3</td>
</tr>
<tr>
<td>Real Average Household Expenditure (b)</td>
<td>–1.0</td>
</tr>
</tbody>
</table>

Source (a) ABS 2000 (b) Derived from ABS Cat No 6544.0.30 various years

While the SIHC tends to be the main source of data on the distribution of household incomes the series has been subject to major revisions by ABS (ABS 2003). As a consequence of these revisions they have yet to publish their estimates for 2000-01, and have only published very limited data for 1999-2000. From the one table they have released it would appear that real mean equivalised disposable income has increased between 1995-96 and 1999-2000 by 10.9 per cent. Other analysis suggests that between 1990 and 1995-96 it increased by 2.8 per cent (although this estimate is sensitive to assumptions concerning negative income) (FaCS 2003).

Taxation Data

Taxation data, while providing relatively high quality data on incomes, also has some limitations. In particular it is available only for individuals and hence it is not possible to estimate the impact of changes on a household basis. Data for the period 1995-96 to 1999-2000 indicate that gross taxable income increased in real terms by 14.3 per cent. (ATO 2002)

Summary

All the data sources clearly point to income growth being, in most cases very, much higher in the 1996–2001 period than in the two previous intercensal periods.

In particular the 15.7 per cent rate of income growth identified for the 1996-2001 period, while high relative to the earlier periods, is not inconsistent with other data sources.

The picture of relative growth in the earlier periods is a little mixed. While the National Accounts based data suggest that growth was higher in the second than the first period, the HES, while it presents data for a slightly different interval, suggest that growth in equivalised gross income was higher in the first period – a result consistent with the Census based analysis. This picture is however reversed if the more useful measure of disposable income is used.

This suggests that while the broad picture presented in the analysis seems to have some validity the use of concepts such as gross income, without taking account of the impact of taxation, may not only skew the distributional outcomes but may also fail to reflect trends in the levels of resources available to households.
The Impact of Equivalisation

The needs of households vary on a number of bases with the key one being the number of people living in the household. For example, if one household is known to have an income of $30,000 and another $35,000 this information is of relatively little value in comparing how well off they are. That is, the judgement would be quite different if say they both were a single person, or where the first household was a single person and the second was comprised of a couple with three children.

When conducting inter-household comparisons it is therefore important to take account of the differences in composition. This is true of both comparisons at a point in time, and over time when it is known changes in composition may be occurring.

In the period of this study the average size of households12 fell from 2.9 to 2.6 reflecting a wide range of social changes including smaller family sizes, increased sole parent families, more single person households, etc. As a result while household income increased by 15.4 per cent equivalised income, which takes account of this decrease, increased by 23.1 per cent.

Figure 18: Household size by SES decile13, 1986 to 2001

Not only was there a sustained fall in household size between each census, but the size of this fall varied between locations at different points along the Socio-Economic scale with the largest falls being recorded by the lower SES locations. Indeed over this period the differential in size by ranking has almost entirely disappeared.

The relative effects of using household income rather than equivalised income are shown in Figure 19. This details, in each of the intercensal periods, the growth in income by SES decile using the two approaches. These charts show that over each period, and in each SES decile, household income grew more slowly than equivalised income. Particularly striking is the difference in 1991-1996 where, if household income is used, there are very marked falls in income in each of the bottom five deciles and growth in the upper half of the distribution. In contrast falls, of a much lower magnitude, are recorded in only two deciles of locations if equivalised income is used.

12 Based on the ratio of population to the number of occupied private dwellings
13 Population weighted deciles. SES deciles have been used in this analysis to provide a measure which is relatively neutral to the two different income measures which have been used.
Less apparent in these charts is the aggregate effect of the more rapid fall in household size in the lower SES deciles which results in household income in these locations increasing overall at a much lower rate than equivalised income. The magnitude of this factor is shown in figure 20 which shows for each decile the rate of household income growth as a proportion of the rate of equivalised income growth. It indicates that, over the 15 year period, the growth in average household income in the lowest decile of locations was only 16.4 per cent of the growth that would have been measured if equivalised household income had been used. In contrast in the highest SES locations – where household size was already much lower, and fell more slowly – the growth in income shown by the household measure was equal to 86.3 per cent of the growth in equivalised income.14

That is, the relative income growth in low SES locations, which have been most affected by declining household size, is underestimated by a factor of five if simple gross household income

14 These data may represent the upper bound of such an effect. As the deciles used in this analysis are fixed over the period, and are based on the number of people living in the area at the beginning of the period the differential changes in the average number of inhabitants per household suggest relatively fewer low income households would be in the bottom decile at the end of the period than if there was no change in household size or if this change affected all areas equally. The magnitude of this effect would however be small.
is used rather than if the income of these households is adjusted to take account of the lesser needs of the smaller households which now live in them.

It is quite likely that the use of household rather than equivalised income is one of the main reasons for the very strong pattern of income change that was identified in the work of Gregory and Hunter. While it may well be, as they reported, that “for the bottom 70 per cent of CDs average household income has fallen in absolute terms and is lower in 1991 than in 1976”, a major reason for this fall may well be that these household had fewer people living in them – and hence lower needs, and possibly fewer earners or income support recipients, than they did at the earlier time period.

**Figure 20: Ratio of 1986-2001 income growth as measured on a household and equivalised income basis by SES decile**

This question was one of the various contentions in the debate between Gregory and Hunter, and Whiteford on this area of research. While Gregory and Hunter indicated that “It seems true, as we pointed out, that household size has fallen in poor areas … and therefore some of the widening of the inequality of household income across neighbourhoods is due to this effect” (Gregory and Hunter 1995b page 24) they also claimed that “Changes in household size do not change the story in any significant way. An analysis of changing household size may enrich the analysis and give us new insights. At this stage, however, we are not quite decided on what should be said about the welfare connotations of a smaller household size in poor areas. Does the fact that households have become smaller in poorer areas perhaps because of the concentration of sole parents – increase or reduce out concern as to the possible effects of falling income in poor neighbourhoods?” (Gregory and Hunter 1995b page 28).

On balance it seems probable that the magnitude of the effect identified by Gregory and Hunter is likely to have been very strongly overstated by the lack of equivalisation. It should though be noted that that other aspects of their analysis, including that into trends in employment and unemployment, are unaffected. What it may also suggest is that the income security system may have been more effective in minimising the impact of the structural adjustments to the economy than their analysis may have indicated.
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