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Income Distribution and Health Inequalities, Australia: 1977 to 1995

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Abstract

The paper draws on a recent Australian study of the health-income link as it evolved in over time. The study was based on microdata from four National Health Surveys over the 1977 to 1995 period. Important findings were that in all four surveys low-income people reported considerably poorer health than better off Australians, and that health inequalities increased over the past two decades despite income inequalities remaining virtually unchanged. The paper describes the methodological difficulties encountered, presents selected findings from the study, and interprets these drawing on earlier Australian and international studies.

Abbreviations and explanations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
Equivalent family income	Gross annual family cash income, accounting for differences in factors such as family size.
Family	Refers to an Income Unit, as defined by the ABS for the NHS-s
Low income group	Australians who fall into the two lowest quintiles of equivalent income.
Health	Refers to health in general for a particular population
Health status	Health as measured by some indicator (eg average number of non-minor conditions)
NHS	National Health Survey conducted by the ABS.
Self-reported health status	Health status as reported by survey respondents (ie not verified through clinical data)
SES	socioeconomic status

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1 Introduction¹

It is now generally accepted that a socioeconomic explanation of the health inequalities highlighted by the extensive international literature applies to all countries in the world – be they developing or developed like Australia. It is also accepted that a key reason for this apparent universality is that health inequalities in any country arise more from differences in *relative* incomes than from the absolute level of such incomes.

Despite Australia having recently been ranked 2nd amongst 191 countries in terms of ‘healthy life expectancy’ and 17th in terms of health inequalities (World Health Organisation, 2000), researchers are continuing to find significant differences between the health and mortality rates of Australia’s poorer and richer citizens (see for example Glover, Harris, and Tennant 1999). Several earlier Australian researchers searched for statistical associations between mortality and an index of socio-economic status (SES) based on geographic areas of residence. Unlike such earlier studies, this paper reports on the link between individual Australians’ health status and their families’ incomes over a period of nearly two decades.

The major study on which this paper is based analysed microdata from the four National Health Surveys (NHS) conducted by the Australian Bureau of Statistics (ABS) in 1977-78, 1983, 1989-90 and 1995. The surveys provide ‘snapshots’ of Australians’ health at the individual level, as well as information on a range of socioeconomic characteristics, such as the incomes and family types of those surveyed.

The paper reports on results concerning the extent of the health gap between low income and other Australians and on how this gap changed between 1977 and 1995. While studying the above in terms of *relativities* - ie low income people relative to better off Australians - we were also able to draw some conclusions about changes in the *absolute* level of some of the health measures adopted – ie had the health of Australians improved, deteriorated or remained unchanged over the nearly two decade long study period.

¹ This paper is based on an analysis of the National Health Surveys commissioned by the Department of Health and Aged Care. However, responsibility for the interpretation presented in this article rests with NATSEM. The complete report on the project is in Walker and Abello, 2000.

2 Methodology and related difficulties

In carrying out the low income-health project the methodological difficulties encountered occurred across three main disciplines: *micro data analysis* (the key issue being comparability across the four NHSs); *social sciences* (eg the question of the appropriate definition of the 'low income' group within the context of health inequalities); and *health economics* (eg the issue of the interpretation of self-reported data over a period of some two decades). A summary of these issues is presented below. Further details are in Walker (2000).

2.1 Data issues

The national health surveys are large surveys covering a very wide range of demographic, socioeconomic and health variables. As an example of the size of the NHSs, the 1995 survey involved Australia-wide interviews with some 23,800 non-institutionalised households, and obtained detailed information on 57,633 persons (see ABS 1996, p.1).

Because the NHSs exclude people living in institutions (eg in hospitals, prisons, nursing homes), respondents who were aged 70 years or over appeared to have - through the surveys - better health on average than younger age groups. The reason for this was that those really sick had moved into a hospital, hostel or nursing home, thus removing from the survey seriously ill or disabled Australians aged 70 years or over. As a consequence, in our study we only considered respondents between the ages of 0 and 69.

One important issue was the comparability of the four NHSs over time. Walker and Abello (2000) described the national health surveys in some detail and discussed how the income and health indicators that could be used were limited by the availability of variables that were comparable across the four NHSs. They also listed the limitations of the study due to the survey nature of the unit record files; the evolution of the NHS questions over time; the considerable demographic, social and economic changes that occurred over the 1977 to 1995 period; and the difficulties generally associated with 'self reported' health and income data (Chapter 3 and Appendices A and B).

As will be seen in Section 2.3, we focussed our analyses on non-trivial health conditions, so as to abstract - to the extent that this was possible - from the effects of the changes in respondents' awareness of health issues over the nearly two decade long study period. As an additional attempt to minimise the effects of changes in respondents' perceptions over time, we first compared changes in the health gaps (ie

health inequalities) *within* each survey year. This way the comparison concerned differences in the health of subgroups at a given point in time, and thus did not involve time-related changes in perceptions. We then checked that the measured year-by-year gaps were statistically significant and *compared* these *gaps* across the four surveys.

The definitions for two of the non-trivial illness categories, that is the ‘non-minor’ and ‘serious’ groupings for which examples will be presented in Section 3, were based on classifications developed by the Australian Institute of Health and Welfare (AIHW). We needed to modify these classifications somewhat so as to make the groupings comparable across the four surveys (see Walker and Abello 2000, Appendix B).

In our project we considered individuals’ health and incomes as ‘snapshots’ at four different points in time (1977, 1983, 1989 and 1995). However, another – and probably more appropriate – way of viewing incomes would have been to consider health status and incomes over the life-cycle. This is because people rarely retain the same level of health and income throughout their entire lives. Indeed, in general they have better health but lower incomes early in life.

Due to the lack of suitable longitudinal data it was not possible to consider lifetime health and incomes in the low income-health project. However, a recent study simulating Australians’ health and income over the life-cycle found that government health outlays led to redistribution over the entire lifetime from the affluent to the poorer, from those who lived relatively short lives to those who had longer lives, from those without children to those with larger families, and from men to women (Harding, Percival, Schofield and Walker 1999, abstract).

2.2 Measuring income

In our research we considered health within the context of families’ incomes. Although many other socioeconomic variables – such as education, occupation, the wealth accumulated by people, their neighbourhood and their degree of social isolation – have been shown to influence health, most of these factors were found to be inter-related. Income has been shown in earlier studies to be a good ‘summary indicator’ of socioeconomic status (see Walker and Abello 2000, Section 2.4).

On the unit record NHS files ‘income’ is presented in ranges of ‘gross personal annual income’ for the adults surveyed. Since data grouped into broad income ranges is unsuitable for computing either equivalent incomes, or income quintiles, the NHS income bracket information was first transformed into incomes in dollars.

Next, the income estimates were converted into *equivalent family incomes*, so as to account for differences in family size. We chose the equivalent income measure because it was better able to reflect families' relative living standards, and take account of shifts in underlying demographic trends (eg in the composition of family types).

Family income was obtained by adding up each adult's annual income within the family, and then allocating that 'total' to each family member (including children and parents without an income). Walker and Abello (2000) describe how equivalent (ie per person) family incomes were obtained from this 'total' in a way that was comparable across the four NHSs. The Australian population was then sorted by equivalent family income. Finally, it was divided into quintiles - that is into five equal groups from lowest to highest quintile groupings.

2.3 Measuring health status

Due to the richness of the variables collected within the NHSs, we had access to a range of possible health status indicators. After considerable experimentation regarding various indicators' ability to provide meaningful results, the following were chosen for further investigation within the low income-health project:

- average number of 'recent' conditions (ie illnesses, accidents and injuries, as defined in the NHSs);
- average number of 'non-minor' conditions, both long term and short term (see Section 2.1 for definition);
- the proportion of low income and other Australians without any 'long-term-non-minor' conditions (or with one, two or three or more such conditions);
- the average number of 'serious' conditions, both long-term and short term (see Section 2.1 for definition);
- the proportion of low income and other Australians with 'excellent' or 'poor' health – a perceived health indicator which OECD (1998, p. 19) showed to be a useful independent predictor of not only future health problems but also of mortality; and
- frequency of doctor visits, which are considered in the literature to be an indicator of health status – see for example Mathers and Schofield (1998, p. 180).

Our research focussed on non-trivial conditions, because we expected that people with such conditions would have sought medical help just as readily in 1977 than in 1995.

2.4 Statistical significance

One issue in this project was the question of the robustness of our estimates of the health gap between low income and other Australians (ie the level of statistical significance attached to such estimates). Because health was found to vary considerably with age, all health related findings reported in this paper are based on age standardised results. Age standardisation was carried out against the total Australian population in 1995.

We also carried out statistical tests of significance, and found that a high proportion of the study's key findings were robust, ie most were significant at a 'p level' of 0.001 or 0.01. In addition, we conducted sensitivity tests on the statistical significance of the results regarding the likely effects of the NHSs having been based on 'cluster sampling', rather than on 'random sampling' (Walker and Abello 2000, Appendix D).

Compared with mortality-based studies which relied on observation of statistical associations (Section 1), the chances that our findings were due to a statistical artefact were minimal. This is because in our research we used survey-based microdata – that is data based on individuals' and their families' health and income (see Walker 2000, Section 3).

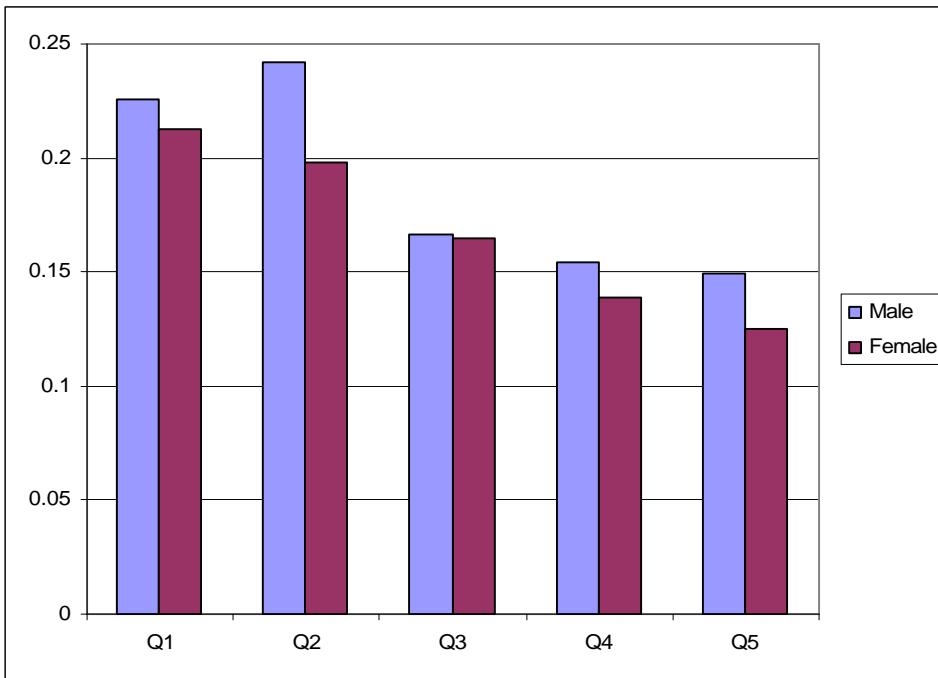
3 Key findings

3.1 Health status by income quintile

Earlier studies analysing the statistical links between *mortality* rates and geographic areas of residence found that there was a steady *gradient* across the rates for the various socioeconomic quintiles (for a brief review see Walker 2000, Section 2).

Examples drawn from the health-low income project in Figures 1 and 2 show the health to income patterns for short term 'serious' illnesses.

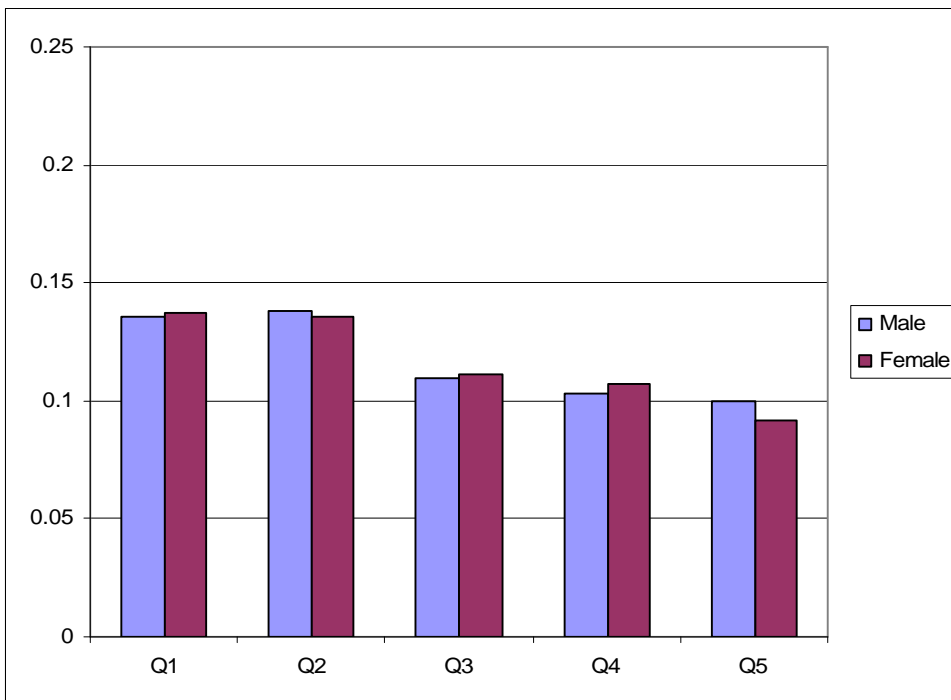
Figure 1: Average number of short term serious conditions, 0-69 year olds by gender and equivalent income quintile, 1995



Note: quintile 1 (Q1) is the lowest income group and quintile 5 the highest

Source: analyses carried out for the low income-health project

Figure 2: Average number of short term serious conditions, 0-69 year olds, by gender and equivalent income quintile, 1983



Note: quintile 1(Q1) is the lowest income group and quintile 5 the highest

Source: analyses carried out for the low income-health project

Both Figure 1 for 1995 and Figure 2 for 1983 indicate a pattern similar to the earlier work on death rates, in that the higher the income the lower is the number of per person short term serious illnesses on average. When using such health status indicators, we no longer observe a near linear downward 'gradient' as socio-economic status - approximated by income - rises. Nevertheless, both Figures 1 and 2 show a clearly marked difference between the average number of short term serious illnesses reported by people in the two lowest quintiles and the average number for the three highest quintiles.

The *similarities* between our illness-based findings and the research on death-to-socioeconomic links can be explained by the conclusion of earlier studies that 'premature death' tends to be preceded by poorer health (Walker 2000, Section 2). In other words, since the majority of people die of ill health, deaths and illnesses follow a similar pattern when plotted against SES (or a proxy for SES, such as income).

The key *difference* was the replacement of a near 'linear gradient' pattern for death with something more like a 'step-function'. This difference is likely at least in part to be due to the 'number of illnesses' indicator accounting for co-morbidities. Thus, although some people die having only one serious illness while others die from a number of illnesses, statistics on mortality rates are not able to distinguish between such cases. By contrast, our health indicators based 'average number of illness' do account for comorbidities - ie they take into account the number of illnesses people have.

This 'step-function' like pattern means that, from a health point of view, the bottom 40 per cent of Australians (when ranked by income) are disadvantaged compared with the top 60 per cent of the population. For this reason in our study we refer to the two lowest quintiles as the Low income group, and the three top quintiles as the Better off, or Other group. Reasons for this choice, and a discussion as to the meaning of classifying 40 per cent of the citizens of a relatively rich nation like Australia - with reasonably equal income distribution - as Low income, can be found in Walker (2000, Section 4.3).

Other important patterns emerging from a closer examination of Figures 1 and 2 relate to the way *health patterns changed over time*. The changes shown in the Figures are not unique to 'serious' illnesses. Indeed, they are typical of the patterns observed with all of the health indicators studied (Section 2.3).

Although trend patterns will be examined further in Section 3.2, a couple of points emerging from Figures 1 and 2 are worth noting at this stage. First, the *average number of illnesses*, per person, *increased* considerably between 1983 and 1995. For example while quintile 3 people suffered 0.11 short term serious conditions in 1983 on average, this number increased to 0.17 by 1995 - an *rise of 55 per cent*. While averages of the order of 0.1 and 0.2 seem small, it is worth noting that most

Australians do not suffer from serious illnesses. Thus the average number of serious illnesses for the relatively small group with at least one such illness will be very much higher. Also, because the averages apply to all 14 million Australians aged between 0 and 69 years, a small change in these averages will affect a large number of persons (see examples for 'non-minor' conditions in Section 3.2)

Second, Figures 1 and 2 show that the health gap between Low income and other Australians increased over time. As will be seen in Table 1 (Section 3.2), the average number of short term serious illnesses reported by the Low income group was 0.14 in 1983 compared with 0.11 for the Better off group, giving a gap of 0.031. For 1995, the corresponding averages (or means) were 0.22 and 0.15, leading to a *more than doubling of the health gap* (at 0.068) between 1983 and 1995.

3.2 Trends in health inequalities

Below we briefly review the low income-health study's findings in relation to changes in the health gap between Low income and Better off Australians over the 1977 to 1995 period. So as to minimise the effects of changes in respondents' perceptions over time, first we assessed changes in the health gap *within* each survey year. We then checked that the measured gaps were statistically significant before comparing these across the four surveys. We found that the patterns were more pronounced for the more tightly specified disease categories.

Table 1 summarises the results for the most tightly specified grouping, that is 'serious' conditions (short and long term). It illustrates the difficulties encountered when attempting to make comparisons across the four NHSs. While 'serious' conditions were available in the 1995 and 1989 surveys both under the short and long term classifications, in the 1983 survey there was only data on short term conditions, and in the 1977 survey only on long term conditions. Table 1 thus presents trends for *all* serious illnesses between 1989 and 1995, for *long term* serious illnesses between 1977 and 1995 and for *short term* serious conditions between 1983 and 1995.

By studying the pattern in the health gap across all three parts of the Table, a clear upward trend emerges. That is, the health gap was greater in 1995 than in any other year. Because the 1977 survey was the least comparable, we have greater confidence in the results obtained for *short term conditions* across the 1983, 1989 and 1995 surveys. For these conditions the *gap increased* from around *29 per cent in 1983 to 45 per cent by 1995*. In other words, while in 1983 Low income people experienced a 29 per cent higher number of short term serious conditions on average than other Australians, by 1995 they experienced a 45 per cent higher number of short term serious illnesses.

Table 1: Ave number of serious conditions per person, 0-69 year olds, by simplified equivalent income quintile (adjusted for age differences)

	Low income 1		Other Australians 2		Mean difference 1 – 2	Mean difference (1 – 2)/2
	Mean	SE (mean)	Mean	SE (mean)	Difference in means	Difference in per cent
All persons						
Serious (short and long term)						
1995	0.493	0.007	0.341	0.004	0.152 ***	44.6
1989	0.369	0.005	0.260	0.003	0.109 ***	41.8
Long term serious						
1995	0.276	0.005	0.185	0.003	0.091 ***	49.4
1989	0.182	0.004	0.133	0.002	0.049 ***	36.9
1977	0.267	0.006	0.191	0.003	0.075 ***	39.4
Short term serious						
1995	0.219	0.004	0.151	0.003	0.068 ***	44.8
1989	0.187	0.004	0.127	0.002	0.060 ***	47.0
1983	0.135	0.003	0.105	0.003	0.031 ***	29.2

*** Mean difference is statistically significant at p level = 0.001

Table 1 also indicates that, based on respondents' self reported health status, the *average number of serious conditions* reported by both the Low income and the Other group *increased* over time. For example for Low income people with short term serious conditions it increased from 0.135 conditions in 1983 to 0.219 conditions by 1995 (or 62 per cent).

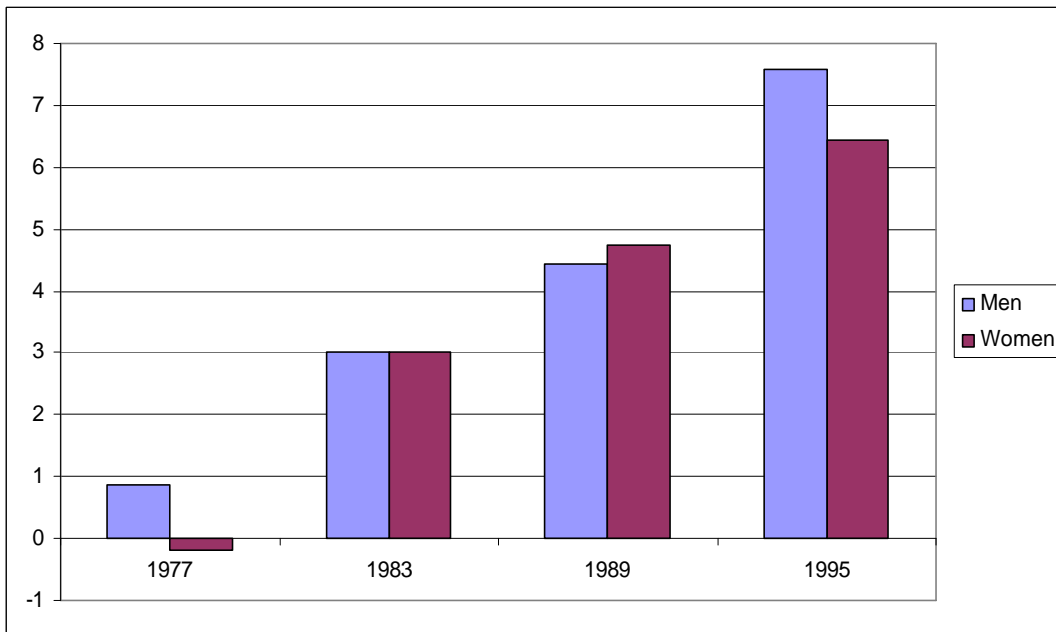
The above findings show that, by examining both short term and long term conditions simultaneously, and by adopting a methodology that abstracted as much as possible from shifts in respondents' perceptions over time (Section 2.1), we were able to observe a consistent widening in the health gap between rich and poor Australians over the nearly two decade long study period.

Similar health inequality trends were evident regardless of the health indicator used. From amongst the indicators studied – see Section 2.3 – we charted two below: doctor visits and the proportion of Australians who did not have any non trivial illnesses.

Figure 3 illustrates how the gap in the frequency of doctor visits between Low income and Better off Australians increased over the period. It shows that while in 1977 the frequency of doctor visits of Low income and Better off Australians was nearly equal, by 1995 such visits became over six per cent more frequent for the Low income group. Although not apparent from our analyses, other researchers found that – despite visiting their doctors more often – Australians with a low

socioeconomic status used health services in a way that was less likely to result in prevention, or to lead to early detection of diseases (see for example Turrell, Oldenburg, McGuffog, and Dent, 1999, p.33).

Figure 3: Difference in number of weeks since last doctor visit between Better off and Low income 0-69 year olds*, by gender, 1977 to 1995 (age standardised)



* The Low income group comprises Quintiles 1 and 2, and the Better off group Quintiles 3, 4 and 5.

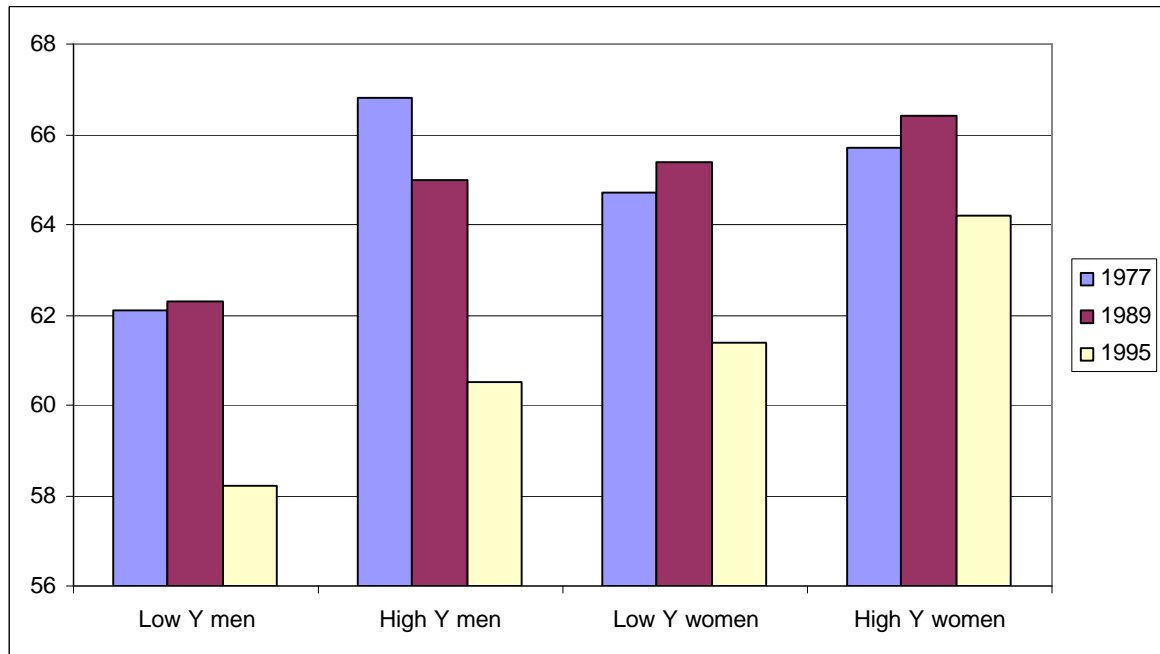
Using yet another health indicator, Figure 4 shows how the proportion of Australians without any chronic (ie long term) 'non-minor' illnesses declined over time. Because the analyses were age standardised, this latter finding suggests a *general deterioration in the health of Australians between 1977 and 1995*.

In Figure 4 we plotted the proportion of people without any chronic 'non-minor' illnesses, by gender, for both the Low income and the Better off groups. Three important conclusions emerged. First, *for all groups, the 'disease free' proportion of the population declined* over the study period. Second, with the exception of Better off men in 1977, a higher proportion of the 0-69 year old female population was 'disease free' than of the 0-69 year old male population. Third, the health inequality between Low income and Better off men was generally greater than between Low income and Better off women.

Although not apparent from Figure 4, our analyses suggest that, Australia-wide, the gap in terms of the 'disease free' proportion between Low income and other Australians remained virtually unchanged over time. It was the gap between the proportions of people with *several* chronic 'non minor' illnesses that increased – thus

leading to the upward trend in the health gap in terms the 'average number of illnesses' indicator, as shown in Figures 1 and 2.

Figure 4: Trend in the proportion of 0-69 year olds without any chronic 'non-minor' illnesses, by income group* and gender, 1977 to 1995 (age standardised)



* Low Y refers to Quintiles 1 and 2, and High Y to Quintiles 3, 4 and 5

Figure 4 also allows us to illustrate how the apparently small changes observed over time in the 'average number of illnesses' indicators affect a very large number of Australians (Section 3.1). When aggregated to the total population level, the 1995 shares in Figure 4 amount to close to 60 per cent. This means that in 1995 around 60 per cent of Australians did not report any chronic 'non-minor' illnesses. Consequently, some 40 per cent of Australians had at least one such illness, of which around 27 per cent reported one chronic 'non-minor' condition, close to 9 per cent two conditions, and around 3 per cent three or more conditions.

Our analyses indicated that the 1995 nationwide per person average number of chronic 'non-minor' illnesses was 0.55. Walker (2000, Section 4.2) calculated that, had the average number of chronic 'non-minor' conditions been 0.1 higher in that year, this would have been equivalent to shifting 10 per cent of Australia's 14 million 0 to 69 year old population— that is 1.4 million persons – from having no non-trivial chronic illnesses to having one such illness.

This increase of 0.1 represents a less than 20 per cent change. Consequently, the above example shows that *a less than 20 per cent change in the average number of chronic 'non-minor' illnesses has the potential to affect around a million and a half Australians.*

3.3 Trends in income inequalities

An important question is whether a possible widening in income inequalities may have been a key contributing factor to the widening health gap described in Section 3.2. Although our low income-health project did not cover examination of the trends in income inequalities, we were able to draw on earlier research to address this topic.

In a number of developed countries the general trend toward the widening of the income gap between rich and poor has been attenuated by governments increasing social benefits to low income earners. For Australia analyses by Harding (1997, p.347) suggest that, after taking account of such compensating policies, the inflation adjusted trend income of Australian families over the 1982 to 1993-94 period remained virtually unchanged. A more recent study found that the Gini coefficient for the equivalent disposable family incomes of all people in Australia fell from 0.302 in 1982 to 0.291 in 1995-96. Since this coefficient would have a value of 0 if income was completely equally distributed across the Australian population (and a value of 1 if one person had all of Australia's income), these results indicate a slight reduction in inequality Australia-wide over the 1982 to 1995-96 period (NATSEM 1999). This trend appears to have continued beyond 1995, since ABS (1999, p.3) found that "the degree of inequality in income distribution of all income units remained almost unchanged between 1994-95 and 1997-98".

One example of compensation by government concerns Australia's low income aged who, between 1970 and 1998, saw the age pension increase by some 70 per cent in real terms, compared with only a 40 per cent increase in real male average weekly earnings (King, Walker and Harding 1999, p.7 and NATSEM 1998). Another example concerns children. In this respect NATSEM (1999) concluded that the Australia-wide decline in inequality over the 1982 to 1995-96 period was concentrated among families with dependent children. The decline in inequality for this group was significantly greater than the Australian average - the Gini coefficient falling from 0.282 in 1982 to 0.264 in 1995-96. Much of this was attributed by NATSEM (1999) to the major increases in support that successive governments provided to low income families with children. Nevertheless, as will be seen in Section 4.1, our analyses still identified low income families with dependent children as being particularly vulnerable when health was also taken into consideration.

Overall, previous research suggests that the *increases in health inequalities* reported in this paper occurred over a period when *income inequalities* remained *virtually unchanged*. This finding supports the observation by earlier researchers that low income is only a proxy for the complex interactions that lead to poorer health among the socially disadvantaged.

4 Possible explanations and concluding comments

Although it was beyond the scope of our study to statistically analyse the determinants of the health gap, or the reasons for the widening of that gap, in this Section we make use of earlier Australian and international research, as well as of observed changes in the characteristics of the people from the NHSs, to propose likely explanations for our findings.

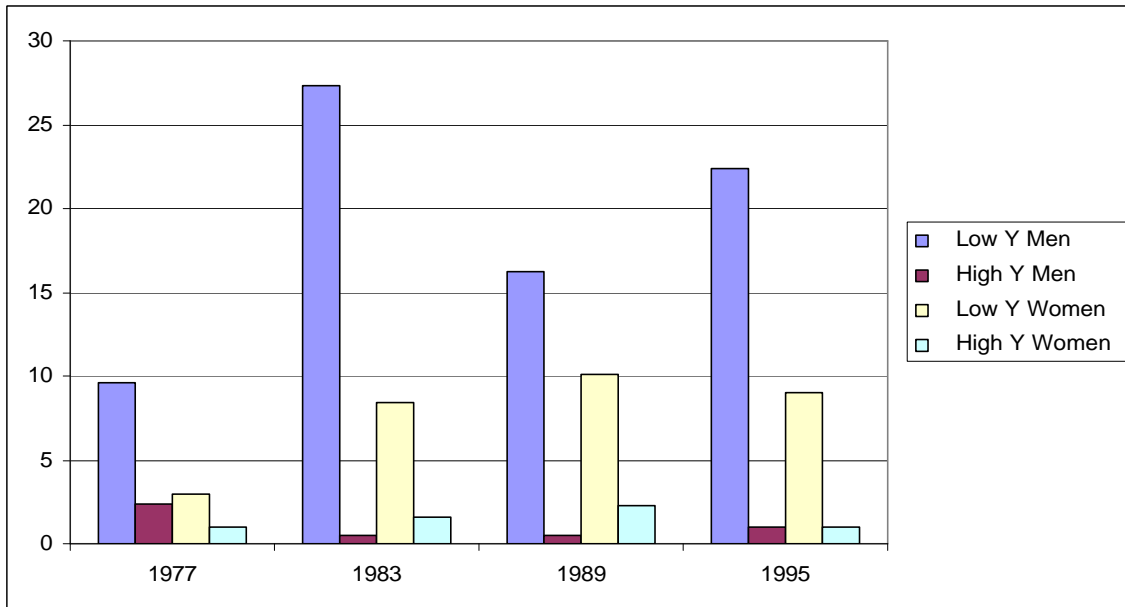
4.1 Social, economic and health characteristics of Low income and Other Australians

Differences in the characteristics of people falling into the various quintiles may provide explanations for some of our findings. Such characteristics are detailed in Walker and Abello (2000, Chapter 5 and Appendix F). Issues of particular relevance to this paper are, differences in:

- *age structures*, with a significantly higher proportion of 0-14 year olds and 65-69 year olds in the Low income group (the highest proportion of 0-14 year olds being in Quintile 2); a much higher proportion of 15-24 year olds in Quintile 1 than in any other Quintile; and a much higher proportion of 25-44 year olds in the Better off group than in the Low income group;
- reliance on *government support*, with – in 1995 – around 70 per cent of Quintile 1 persons relying mainly on government for their income, the shares declining to 50 per cent for Quintile 2 and to 18, 5 and 3 per cent for Quintiles 3, 4 and 5 respectively, and the Low income group containing a very high proportion of sole parent families; and
- *labour market vulnerability*, with unemployment fluctuating between 10 and 27 per cent for Low income working age men over the period, while remaining under 3 per cent for the Better off group. Figure 5 illustrates how most of the *fluctuation in the general unemployment rate* – around 6 per cent in 1977 and 1989, 10 per cent in 1983 and 8 per cent in 1995 – was mainly *absorbed by Low income men*. This labour market vulnerability reflected the low level of education of people in the two lowest quintiles, with close to 70 per cent not having any post secondary qualifications, compared with only around 35 per cent in Quintile 5;
- *different lifestyles*, with Low income people responding less readily to ‘healthy lifestyle campaigns’ –eg smoking more, being more overweight and exercising less than Better off Australians. There were differences within the Low income group as well, such as Quintile 1 people exercising more in 1995 than the

Australian average, and Quintile 2 people exercising less, or Quintile 1 people smoking and drinking more than Quintile 2 people.²

Figure 5: **Distribution of unemployed persons by gender and income groups, 20-64 years, 1977, 1983, 1989 and 1995** (per cent)



Source: Walker and Abello 2000, Table F.4,

All the above differences will interact in a complex fashion in affecting people's health. For example, the health effects of lower incomes and greater reliance on government in Quintile 1 may have been more or less offset by the higher number of illnesses of children in Quintile 2, and by the lower number of illnesses within the post-secondary student-age 15-24 year olds in Quintile 1 – hence the very similar 'average number of conditions' found for the two lowest quintiles.

Also, lower levels of education and scarce and less secure jobs are likely reasons for greater reliance on government by Low income people. Finally, for those with secure jobs, higher stress levels became the norm in the latter part of the study period due to considerable increases in the number of hours worked each week (Healy 2000). However, since most people with secure jobs fell into the Better off group, the health effects of additional stress may have been offset – at least to some extent - by this group adopting healthier lifestyles.

Overall, key conclusions from the low income health study were that although Australia's welfare system covered most of the 40 per cent of Australians with poorer health (ie the Low income group), *Quintile 2 families with dependent children* seemed *particularly vulnerable* in terms of their poor health relative to other Australians. This

² The figures for lifestyle differences have been computed from the 1995 NHSS especially for this paper.

conclusion is based on Quintile 2 containing the highest proportion of 0-14 year olds out of all quintiles, and on Quintile 2 people having as poor health on average as the Quintile 1 group, despite their higher incomes. In this context it is worth remembering that while one half of Quintile 2 people relied mainly on government for their income, those working within the other half of that quintile make up Australia's 'working poor'.

4.2 Changes in health status over time

The finding in this paper that, regardless of the indicator used, the health of Australians deteriorated over time, is likely to seem counter-intuitive to many. Due to factors such as continued breakthroughs in medical technology and heightened awareness and responsiveness of people to health issues, Australians tend to believe that the health of Australians improved significantly over the past two decades. The statistics show that many stopped smoking, adopted healthier eating habits and took up regular exercise. They also show that the population had access to improved immunisation schemes and to cancer and other screening programs. In addition, health expenditures continued to rise as a share of GDP, suggesting improvements in – and/or more frequent usage of – medical services.

However, there is considerable support for our findings in the international literature. For example, other Australian researchers who used different data bases and different analytical methods reported similar findings - see for example Mathers (1999), McCallum (1999) and Taylor and Salkeld (1996). Also, Walker and Abello (2000, Chapter 6) refer to similar findings in other developed countries, such as the UK and Finland. For example, using longitudinal data, Dunnell (1995, p.15) concluded for Great Britain that “the extra years of life gained ... were “extra years with disability, not extra years of healthy life”. While both in Great Britain and in Australia there were improvements in some areas (eg due to less older adults smoking), the trend in the opposite direction tended to dominate (more people being overweight/obese). Walker and Abello (2000, Chapter 6) discuss several likely reasons for the generally upward trend in the number of serious illnesses in the NHSs.

Reflecting the extreme complexity in the way numerous factors impact on people's health, a recent Australian study concluded that socioeconomic differences in health were evident at every stage of the life course – birth, infancy, childhood, adolescence and adulthood. They also concluded that the relationship existed irrespective of how socioeconomic status and health were measured (Turrell et al, 1999 p.33). Mathers (1995, p.42) noted the importance of parental attitudes in affecting the health of their children. He offered two possible explanations for the poorer health of low income children: the direct effect of disadvantaged material circumstances (a 'poverty-

related environment') and the indirect effect of the parents' poorer health on their children (whether through genetic impairment, worse prenatal maternal environment, increased risk of accidental injury or infectious agents).

4.3 Widening of health inequalities

The finding that health inequalities between the bottom 40 per cent and top 60 per cent of Australians increased over the study period – at a time when income inequality changed little – may seem less counter-intuitive, but also invites some discussion.

Because income has been shown to be a good summary indicator of socioeconomic status (Section 2.2), it seemed tempting for some to assume that there is a direct link between income and health and that this link may be manipulated by governments for purposes of reducing health inequalities. However, had this been correct, then we would have expected our research to show no change in health inequalities (in line with the relative stability of income inequalities over much of the study period).

The complexity of the health-SES link (Section 4.2) suggests that it is a combination of a variety of factors (genetic, demographic and socio-economic) that leads to poorer health. However, one partial explanation for the increase in the health gap of 0-69 year old Australians - at a time of little change in income inequalities - could be the strong upward trend in the rate of unemployment over the 1977 to 1995 period (Walker and Abello 2000, Appendix F). This is because the increases in the general unemployment rate were mainly absorbed by Low income people (Section 4.1). Other possible explanations link to greater job insecurity and increased family breakdowns. With regard to this latter factor, our study found that the proportion of 'married with dependant' families declined considerably between 1977 and 1995, the decline being particularly dramatic for Quintile 2 (Walker and Abello, 2000, Chapter 5).

4.4 Concluding comments

Although the trends identified in our research may be of concern to Australians, it is worth noting that in a recent international study Australia was ranked 17th amongst 191 countries in terms of health inequalities, and 2nd in terms of 'healthy life expectancy' (Section 1). This latter ranking suggests that, while in Australia the proportion of lives lived with disability increased over time, this increase occurred *more slowly* than in most of the other countries studied by the World Health Organisation. In relation to the former ranking, the general conclusion is that

Australia is doing well amongst other countries, but that improvements are clearly possible.

Areas for future improvement identified recently by the Minister for Health and Aged Care included the health of Aboriginal and Torres Straight Islander people, rural health, and – in disease specific areas - diabetes and mental health (particularly depression).³ Our research suggests that improvements could also come from narrowing health inequalities between Australians in the bottom 40 per cent of the income scale and those in the top 60 per cent. But as we saw in Section 4.2, due to the complexity of the income-health link the best way to achieve such improvements is not clear.

So what interventions had governments experimented with internationally, and which ones turned out to be promising?

Some countries, like Canada, are currently experimenting with ‘early years’ interventions (McCain and Mustard 1999). Such countries are drawing on the success of earlier and experimental US programs. Tomison and Wise (1999, p.7) reviewed the literature regarding the relatively small, experimental, but highly influential Perry Preschool project in the US, which followed predominantly African-American three to four year olds up to their 27th birthday. These authors noted that researchers had reported that, as adults, the Perry graduates showed better social competence (in terms of criminality, use of welfare services, family structure and career) than a matched group of non-participants. They also reported on a cost-benefit analysis which showed that, by age 27, *for every dollar* taxpayers *spent* on the Perry program, there was a subsequent *saving of over seven dollars* (in terms of lower costs of welfare, health, crime fighting and the jail system) Another often quoted successful early intervention program is the Head Start project, also in the US.

Other countries, such as Sweden, put emphasis on making work places more stress free, and yet others, such as the UK, are considering intervening at the local community level (King’s Fund, 1999). Yet again, a recent UK government report on health inequalities included amongst its three crucial recommendations that a high priority should be given to the health of families with children (Acheson 1998). Some have also noted the importance of considering distributional differences in health conditions across socioeconomic classes – rather than following the past practice of basing health research on societal averages (Gwatkin, 2000).

World Health Organisation (2000, overview) suggests that intervention may be also worthwhile at the level of nations’ *health systems*. This is based on that report’s finding that much of the health inequalities within and between countries arose from

³ Speech by the Commonwealth Minister for Health and Aged Care, 22 June 2000.

differences in the health systems of the 191 countries studied. However, earlier research found that factors such as genetics, health risk factors and quality of health services could only *explain about half* of the inequalities observed in health status or death rates - see for example Marmot 1998. Thus it is not clear that the earlier findings fully support the World Health Organisation (2000) conclusions.

Finally, it is worth noting that the focus of health experimentation internationally was not the reduction of within country income inequalities per se. This was because of the recognition that the health-SES link developed gradually over the life-cycle through a complex set of interactions, and thus a simple intervention involving the 'topping up' of the income of the disadvantaged was unlikely to result in significant improvements in health.

Overall, research of the kind reported in this paper highlights the importance of considering health within studies of socioeconomic disadvantage. It also highlights the inadequacy of currently available analytical techniques to tackle the complexities of the way a very wide range of factors interact as 'disadvantage' develops over the life-cycle. Although we are only at the beginning in the research phase in the health-socioeconomic inequality area, it seems that the way ahead could involve the expansion and sometimes combination of traditional methodologies across disciplines such as microdata analysis, social sciences and health economics. It could also involve the development of a capacity to analyse the way in which key variables impact on individuals over their life-cycles. Research underway within NATSEM, which aims to model the health-income link within its dynamic microsimulation model (King, Baekgaard and Robinson, 1999), may go some way in this direction.

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