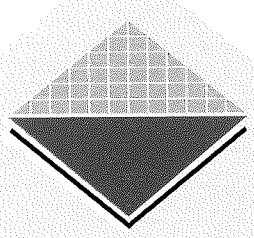
Private health insurance and community rating: who has benefited?

Deborah Schofield



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Deborah Schofield

Australian Institute of Health and Welfare
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Preface

This publication brings together information from a range of sources to identify the impact on different population groups of community rating for health insurance premiums. It was initially prepared for the Private Health Insurance Inquiry undertaken by the Productivity Commission and is being released to provide background information for community discussion on this issue.

Richard Madden
Director

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Some of the computer code used to undertake the analysis in this paper was written while the author was working at the National Centre for Social and Economic Modelling, University of Canberra.

1 Introduction

Community rating has played an important role in determining the way in which private health insurance policies can be marketed. The principles of community rating are established in the *National Health Act 1953*, which requires that funds accept all applicants, and that policies be offered at the same rate to all members, within membership categories.[1] The Act specifies that the premium for any given insurance table[2] not be discriminatory on the basis of age, race, sex, sexuality, health status, benefits claimed or family size within membership categories, irrespective of whether such factors influence health service use (Section 73 ABA and Part (m) of Schedule 1 of the *National Health Act 1953*). The effect of this restriction is that, if the average use of health services varies within or between any of these sociodemographic groups, then there will be some cross-subsidisation from those who use health services infrequently to those who use them frequently, within and between tables offered by the funds. (There is also some additional cross-subsidisation between funds through reinsurance arrangements which moderates the effect of a pooling of the elderly in a given fund.)

In this paper, the impact of community rating on the amount of benefits[3] received by particular subpopulations is examined. The subpopulations included in the analysis were those who might, on average, be expected to have quite different health service needs. The approach adopted was to determine which groups had the greatest health risks, and thus had been, on average, deriving the greatest benefit from their health insurance policies.

In addition, the impact of community rating on restricting the price of private health insurance premiums was estimated. This involved an estimation of the price of private health insurance for a range of subpopulations, including high health risk groups, in the absence of community rating.

The subpopulations included in the analysis were defined by age, income, family type, health status, sex, employment status and location of residence. The scope of the study was limited to include only individuals with hospital insurance.

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1 There have been two membership categories, singles and families.

2 An insurance table defines the services covered and benefits payable for a particular health insurance product.

3 Benefits were defined in this study as the average value of refunds to fund members for hospital expenses.

2 Data source and methodology

2.1 Data source

The data source used in the study was the 1989–90 National Health Survey (NHS) conducted by the Australian Bureau of Statistics (ABS 1990).

The NHS was selected because it provides the most recent information for Australia on private health insurance status, use of health services, and health status as well a wide range of socioeconomic characteristics, all of which were required for the analysis of the impact of community rating. The NHS confidentialised unit record file was created from a sample survey of about 55,000 persons and includes persons of all ages, but excludes persons in institutions such as nursing homes.

Most of the population characteristics selected to be included in the analysis were directly available as variables on the NHS. However, some had to be derived from other NHS variables. These included individual health insurance status and family income. These characteristics were defined as follows:

> *Individual health insurance status:* In the NHS, not all family members were recorded as having private health insurance, even where the contribution rate indicated that all family members were covered (for example, the two parents might be recorded as insured, but not the children). Accordingly, where families reported contributing at a family rate, the insurance cover was extended to all members of the family (except children with independent income).
>
> *Family income:* The definition of income provided on the NHS is annual gross income recorded for each person across 11 income ranges. Gross income includes regular income from all sources.

However, in this study, family rather than individual income was selected as it provides a better indication of available financial resources. To derive family income, the midpoint of each income range was calculated (as an estimate of each person's income) and the incomes for the reference person and spouse summed (as a measure of family income).

Although the NHS is a very rich data source, it does have some limitations for this type of analysis. In particular, it is now about 5 years out of date. [4] This is important as there has been a substantial decline in private health insurance membership over this time. However, other available data did not include the range of information required for this study (such as Private Health Insurance Administration Council (PHIAC) fund membership data). Accordingly, it was assumed that although fewer people were covered by hospital insurance in 1995–96 than in 1989–90, the insured in each subpopulation examined continued to have approximately the same risk of hospitalisation. This may be a reasonable assumption as, on average, the risk of hospitalisation is not a good indicator of holding private health insurance (Schofield 1996a).

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[4] More recent data will become available when the 1995 NHS is released in 1997.

2.2 Methodology

The scope of the study was limited to an examination of hospital benefits, as these represent about 75% of benefits paid out by private health insurance funds (unpublished PHIAC data 1995–96). Accordingly, only NHS records for persons with hospital insurance were included in the analysis. This reduced the data set to a total of about 27,000 records.

In order to determine the benefit derived from community rating, three measures of health risk associated with hospitalisation were examined. The first measure was the probability of hospitalisation. This simple measure was used as an indicator of the likelihood of the insured receiving a refund from his or her private health insurance fund.

The second measure was days spent in hospital over the previous year. This measure provided an indication of the frequency and duration of hospitalisation. Accordingly, fund members with the highest number of hospital days per year were considered to derive the greatest benefit from community rating and their health insurance membership.

The final measure was an estimate of private health insurance benefits received. This measure indicated the size of annual refunds to members of private health insurance funds following hospitalisation. It also was used to identify major beneficiaries, which were defined as groups which received more than average benefits.

The way in which each of these health risks was defined is described below.

Proportion of insured subpopulations hospitalised

The simplest measure of risk was the proportion of people in each analysis group who had been hospitalised. This was calculated as a probability of being hospitalised over a 12-month period. This measure was considered to be a broad risk indicator as it took no account of the number of times people were hospitalised or their length of stay.

Total annual hospital bed-days

A more sophisticated measure of risk was the total hospital bed-days used over a 12-month period for each subpopulation. To derive this measure, it was necessary to combine information from the NHS and external data sources to calculate the number of times people had been hospitalised over the year and their length of stay.

Unfortunately, information on the number of hospital admissions in one year for persons on the NHS unit record file was aggregated and could not be used in this study. Therefore, NHS data on hospital episodes aggregated across age groups was obtained from the ABS, and used to estimate the average number of hospital admittances in a year (for people who reported at least one hospital episode) (Table 2.1).

To determine length of stay, additional data were also required as this information on the NHS was grouped in four broad categories only.[5] Accordingly, data from the AIHW 1992–93 National Hospital Morbidity data collection of public and private hospital episodes were used to calculate the annual average length of stay for each of the four categories by age group (Table 2.2). The National Hospital Morbidity data collection was considered to be the best data source for this purpose because, in addition to person-level information on length of stay, it was more up to date, taking account of the decline in

[5] Information on length of stay was provided only for the most recent hospital episode and it was assumed that other hospital visits were for the same duration.

average length of stay between 1989–90 and 1992–93 (from 5.6 to 4.9 days per annum (AIHW 1996, p. 152)).

Table 2.1: Average number of hospital visits for persons hospitalised in a 12-month period, Australia, 1989–90

Age in years	Average hospital visits
0 to 4	1.31
5 to 14	1.24
15 to 24	1.27
25 to 34	1.28
35 to 44	1.27
45 to 54	1.38
55 to 64	1.42
65 to 74	1.52
75 and over	1.47

Source: NHS (ABS 1990).

Total hospital bed-days were then calculated for each person on the NHS by multiplying the average number of hospital visits by the average length of stay.

This approach did, however, have a number of limitations which should be noted. Firstly, the data was not updated to take account of rising hospital admissions (from 225 to 246 per 1,000 population (AIHW 1996, p. 152)), as the National Hospital Morbidity data collection did not contain sufficient information on the sociodemographic characteristics of patients for this task. Secondly, insured patients who chose to be admitted as public patients in public hospitals were not separately identified because the National Hospital Morbidity data were not considered reliable for this information and no alternative data source was available. Finally, average length of stay was calculated using data on both insured and uninsured patients. Accordingly, the results rely on the assumption that there is no significant difference in average length of stay between insured and uninsured patients within the age and length of stay categories in Table 2.2.

Table 2.2: Average length of hospital stay, Australia

Length of stay (NHS)	Average length of stay (AIHW)
Under 75 years	
1–6 days	1.96
7–13 days	8.99
14–29 days	18.87
1 month or more	82.16
Over 75 years	
1–6 days	2.36
7–13 days	9.43
14–29 days	19.26
1 month or more	90.45

Source: NHS (ABS 1990); AIHW 1992–93 National Hospital Morbidity data collection.

Insurance benefits received

The third measure was an estimate of the benefits received from health funds following hospitalisation. Benefits paid were defined as the cost refunded by the private health insurance funds for hospital and medical charges.

As the NHS lacked information on the benefits received by individuals from health insurance funds following hospital treatment, this information was obtained from PHIAC data. From this data source the value of health benefits for hospital treatment per bed-day for 1995–96 was derived and subsequently included in the NHS as an imputed value (Table 2.3).

Annual hospital benefits were then calculated by multiplying the total annual hospital bed-days by the average benefit per hospital bed-day.

This provides a broad estimate of health insurance benefits. It does not, however, take into account whether benefits might be greater per bed-day for some groups (as a result of different types of treatment or attendance at a public versus a private hospital).

Table 2.3: Average benefit per hospital bed-day, Australia, 1995–96

Area of expenditure	Total benefits paid ($'000s)	Total bed-days	Benefit per bed-day ($)
Public hospitals	383,787	–	–
Private hospitals	2,227,333	–	–
Medical	223,172	–	–
Total	**2,834,292**	**6,322,129**	**448**

Source: Compiled by AIHW from unpublished PHIAC data.

3 Estimating the benefits of community rating

As noted in Section 1, community rating provides different benefits to different subpopulations according to their relative risk of needing health services. That is, groups who, on average, use a relatively large number of health services derive a greater benefit from community rating than do groups who use relatively few services.

The measure of service use used in this study was the risk of being hospitalised, and benefits were an estimate of the amount refunded by private health insurance funds to reimburse members for the cost of hospital treatment. The difference in the probability of being hospitalised, the number of hospital bed-days and the associated insurance benefits paid were examined across different subpopulations—age, health status, family type, family income, labour force status, location of residence and sex[6]—and are described in the following sections.

3.1 Age

Analysis of the benefits received by fund members by age revealed that there was a marked increase in benefits as age increased. In terms of health risk, persons aged 75 years and over were about twice as likely to be hospitalised when compared with the average person with hospital insurance. When the benefits paid were examined, the elderly were found to attract between 4 and 6 times the benefits received when compared with the average ($2,110 for people aged 75 to 79, $2,920 for people aged 80 years and over and $469 respectively) (Table 3.1). The high rate of benefits received by the elderly results from a relatively higher number of hospital visits per year and a longer average length of stay (Tables 2.1 and 2.2), in addition to their higher risk of hospitalisation.

By contrast, people in almost all age groups under the age of 50 years attracted less than the average benefit, with the group attracting the smallest individual benefit being the 10 to 14 age group. This group received an estimated 25% of the average benefit.

It should be noted, however, that although the young people of today may be subsidising the health insurance of the elderly, they may also be the major beneficiaries towards the end of their own life cycle if community rating continues in its current form.

It is interesting to note that although the aged derive the greatest benefit from private health insurance, in 1990 they were the group least likely to be insured (Schofield 1996a). However, this pattern has changed since 1990 as a result of a more rapid decline in private health insurance coverage in the younger age groups. By 1995, people over the age of 55 years were more likely to be insured than people aged 15 to 34 years (Schofield et al. 1997).

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[6] All variables analysed were found to be significant predictors of individual health benefits within a series of univariate linear regression models, with the exception of location of residence.

Table 3.1: Hospital use and estimated benefits per annum, by age, Australia, 1989–90

Age in years	Probability of hospitalisation	Average hospital bed-days	Average benefits paid ($)
0 to 4	0.11	0.58	260
5 to 9	0.08	0.31	140
10 to 14	0.07	0.23	110
15 to 19	0.09	0.29	130
20 to 24	0.15	0.82	370
25 to 29	0.21	1.03	460
30 to 34	0.19	1.01	350
35 to 39	0.16	0.79	350
40 to 44	0.10	0.59	260
45 to 49	0.12	0.78	340
50 to 54	0.15	1.06	480
55 to 59	0.14	1.33	590
60 to 64	0.18	1.80	810
65 to 69	0.15	1.87	840
70 to 74	0.24	3.79	1,700
75 to 79	0.26	4.71	2,110
80 and over	0.30	6.52	2,920
All	**0.14**	**1.03**	**460**

Source: NHS (ABS 1990); author's calculations.

3.2 Health status

Although age was found to be closely related to the level of benefits a person could expect to receive, it is by no means the only determinant of the level of benefits.[7] For example, not all elderly people suffer poor health and not all young people enjoy good health. In fact, about 60% of people over the age of 65 report being in excellent or good health, and about 10% of people under the age of 65 report being in poor or fair health (see Table A2 in Appendix A). Therefore, it could be expected that there might be an even more marked relationship between hospital use, insurance benefits received and a person's health status.

Indeed, the difference in average hospital benefits between people in excellent health and those in poor health was considerable. People in poor health were found to be about 3.5 times as likely to be hospitalised and receive about 15 times the benefits paid of people in excellent health (Table 3.2). In fact, the univariate analysis indicated that health status was the most important determinant of benefits received, with age being the second most important.

[7] Health status was recorded only for people aged 18 years and over on the NHS. Accordingly, this part of the analysis was restricted to person 18 years and over.

Table 3.2: Hospital use and estimated benefits per annum, by health status, Australia, 1989–90

Health status	Probability of hospitalisation	Average hospital bed-days	Average benefits paid ($)
Excellent	0.12	0.57	260
Good	0.15	1.02	460
Fair	0.24	2.35	1060
Poor	0.42	8.59	3850
All	**0.14**	**1.03**	**460**

Source: NHS (ABS 1990); author's calculations.

The analysis was extended to include both health status and age. An analysis of benefits received *between* age groups revealed that elderly people received a greater benefit than young people reporting the same health status (Table 3.3). Although the probability of being hospitalised was not much higher for people over the age of 65 compared with those under the age of 65 (reporting the same health status), there was a substantial difference in the benefit received. People over the age of 65 received benefits about 2.5 times higher than people under 65 reporting the same health status.

An analysis of benefits received by health status *within* age groups also revealed some interesting patterns. People aged under 65 years and in poor health receive about 10 times the benefit of people of the same age in excellent health, and people over the age of 65 and in poor health receive about 18 times the benefit of those in excellent health.

Accordingly, it must be concluded that community rating provides an enormous benefit to people reporting poor health, regardless of their age.

Table 3.3: Hospital use and estimated benefits per annum, by health status and age, Australia, 1989–90

Health status by age	Probability of hospitalisation	Average hospital bed-days	Average benefits paid ($)
Under 65			
Excellent	0.12	0.56	250
Good	0.15	0.81	370
Fair	0.23	1.80	810
Poor	0.38	5.61	2,510
All	**0.13**	**0.77**	**340**
Over 65			
Excellent	0.10	0.75	340
Good	0.19	2.65	1,190
Fair	0.25	3.85	1,720
Poor	0.49	13.98	6,262
All	**0.22**	**3.67**	**1,640**

Source: NHS (ABS 1990); author's calculations.

3.3 Family type

To analyse the benefits received from health funds by family characteristics, families were grouped into four types matching those defined in the NHS—single, couple without children, couple with children, and sole-parent families. Substantial differences in the benefits

received from community rating were found following an analysis by family type. Individuals from families without children (single persons and couples) were more likely to be hospitalised than persons from other family types, and therefore also received a greater average benefit. Benefits paid to single persons and individuals from families without children were about 2.5 and 1.5 times higher respectively than for individuals from sole-parent families and from families with children (Table 3.4)

Table 3.4: Hospital use and estimated benefits per annum, by family type, Australia, 1989–90

Family type of individuals	Probability of hospitalisation	Average hospital bed-days	Average benefits paid ($)
Single	0.15	1.76	780
Couple without children	0.16	1.27	570
Sole parents	0.13	0.76	340
Couple with children	0.13	0.67	300
All	**0.14**	**1.03**	**460**

Source: NHS (ABS 1990); author's calculations.

An explanation for the greater average benefits received by single people and couples without children is that about 20% of these people are over the age of 65 years, whereas for people from families with children, less than 1% are over 65 years. Accordingly, when the analysis by family type was further broken down by age, there was little difference in the probability of hospitalisation between different family types for people under the age of 65 years, although the benefits paid to people from families without children was still a little higher than for families with children (Table 3.5). There was, however, a substantial difference in the benefits received by people from families without children who were over the age of 65 years compared with those who were less than 65 years. For example, single people over the age of 65 received more than 5 times the benefits of singles aged under 65 years.

Table 3.5: Hospital use and estimated benefits per annum, by family type and age group, Australia, 1989–90

Family type of individuals	Probability of hospitalisation	Average hospital bed-days	Average benefits paid ($)
Under 65			
Single	0.13	0.92	410
Couple without children	0.15	0.88	400
Sole parents	0.13	0.76	340
Couple with children	0.13	0.67	300
Over 65			
Single	0.23	4.98	2,230
Couple without children	0.21	2.74	1,230
Sole parents	*	*	*
Couple with children	*	*	*

* Indicates that there were too few records to produce reliable estimates.
Source: NHS (ABS 1990); author's calculations.

In addition, when analysing by family type, it is important to consider the impact of family size, as private health insurance is usually purchased by families, rather than by each individual within a family. It is also a current issue, as the government has recently

introduced some changes to community rating which might impact on the premiums paid by different family types and families of different sizes. These changes took effect on 1 October 1996 (DHFS 1996). Previously, there were two membership categories (single and family), with a requirement to charge families twice the premium charged for singles for the same insurance table. Under the new system, there are four membership categories (singles, couples without children, sole parents, and couples with children), with no set relativity between the premiums for different family types.

To analyse benefits received by families (rather than the earlier individual level analysis) the average size of each family was calculated (Table 3.6). Then, the average-family-size figures were used to adjust the analysis of hospital use and benefits for family size by multiplying the figures for average benefits paid (in Table 3.4 above) by the average number of persons in each family type (Table 3.6), producing an estimate of average benefits *per family*. These results are presented in Table 3.7.

Table 3.6: Average number of persons, per family, by family type, Australia, 1989–90

Family type	Average number of members
Single	1
Couple without children	2
Sole parent	2.6
Couple with children	3.8

Source: NHS (ABS 1990); author's calculations.

The analysis undertaken at the family level was used to calculate a benefit ratio between family types, with benefits for single people being used as the basis for comparison.

Couples with and without children received about 1.5 times the benefit of single people, despite paying twice the premium under the previous system which had two membership categories (Table 3.7). This is an important finding, as couples with and without children have at least twice as many family members as singles (3.8 and 2 members for couples with and without children respectively).

Sole-parent families received relatively little benefit for their family rate premium, gaining only just over 10% more benefits than single people. Both family size and age are important in explaining why sole-parent families received a relatively low benefit. First, almost all members of sole-parent families are under the age of 65 years (and, therefore, on average, use fewer hospital services than family types with a relatively higher proportion of elderly people) and second, they represent a smaller sized family on average when compared with two-parent families (2.6 and 3.8 members respectively).

Based on this analysis, it appears that single people, on average, have been the major beneficiaries of the two membership categories (single and family) insurance premiums under the previous community rating scheme.

Table 3.7: Hospital use, estimated benefits and benefit ratio per annum, by family type, Australia, 1989–90

Family type	Probability of hospitalisation	Average hospital bed-days	Average benefits paid ($)	Benefit ratio
Single	0.15	1.76	780	1
Couple without children	0.32	2.54	1,140	1.5
Sole parents	0.34	1.98	880	1.1
Couple with children	0.49	2.55	1,140	1.5

Source: NHS (ABS 1990); author's calculations.

3.4 Family income

Analysis by family income indicated that people on the lowest incomes derive the greatest benefit from community rating, with benefits decreasing sharply as income increased. People from families with an annual income of less than $30,000 per annum were more likely to be hospitalised and received more in benefits than the average person with hospital insurance (Table 3.8). People in the lowest income group received more than 3 times the benefits paid to people in the highest income groups.

Despite being the greater beneficiaries from private health insurance, people on the lowest incomes were the least likely to be insured (less than 25% of persons with family income from $10,000 to $19,000 per year compared with about 85% of people with family income over $70,000 per year in 1990) (Schofield 1996a). This pattern is a result of private health insurance representing a much higher proportion of disposable income for low-income families than for families on higher incomes.

The greater benefit derived by people from the lowest income groups is partially a result of a clustering of aged pensioners at these income levels. About 30% of people from families with annual income of less than $20,000 were over 65 years of age, compared with only about 2% of people with an annual income of more than $70,000.

Table 3.8: Hospital use and estimated benefits per annum, by gross annual family income, Australia, 1989–90

Family income ($)	Probability of hospitalisation	Average hospital bed-days	Average benefits paid ($)
0 to 9,999	0.17	2.25	1,010
10,000 to 19,999	0.18	1.67	750
20,000 to 29,999	0.15	1.11	500
30,000 to 39,999	0.14	0.80	360
40,000 to 49,999	0.13	0.65	290
50,000 to 59,999	0.12	0.69	310
60,000 to 69,999	0.13	0.66	300
70,000 or more	0.10	0.67	300
All	**0.14**	**1.03**	**460**

Source: NHS (ABS 1990); author's calculations.

However, the difference in the risk of hospitalisation between people from low- and high-income families was not entirely a result of the age distribution across the income groups. People under the age of 65 years in the lowest income group were estimated to receive about

double the hospital benefits of those in the three highest income groups (Table 3.9). Similarly, among the elderly, benefits received declined as income increased.

This finding—of higher hospital benefits paid to people (in both age groups) in families with lower income than to people in families with higher income—is probably the result of the generally poorer health of people with fewer financial resources across all age groups (see, for example, National Health Strategy 1992).

Table 3.9: Hospital use and estimated benefits per annum, by gross annual family income and age, Australia, 1989–90

Family income ($) by age	Probability of hospitalisation	Average hospital bed-days	Average benefits paid ($)
Under 65			
0 to 9,999	0.14	1.24	560
10,000 to 19,999	0.16	1.00	450
20,000 to 29,999	0.14	0.97	440
30,000 to 39,999	0.14	0.73	330
40,000 to 49,999	0.13	0.64	290
50,000 to 59,999	0.12	0.54	240
60,000 to 69,999	0.13	0.56	250
70,000 or more	0.10	0.65	290
All	**0.13**	**0.77**	**340**
Over 65			
0 to 9,999	0.24	4.60	2,060
10,000 to 19,999	0.22	3.41	1,530
20,000 to 29,999	0.23	2.47	1,110
30,000 to 39,999	0.18	2.47	1,110
40,000 to 49,999	0.11	1.11	500
50,000 to 59,999	*	*	*
60,000 to 69,999	*	*	*
70,000 or more	*	*	*
All	**0.22**	**3.67**	**1,640**

* Indicates that there were too few records to produce reliable estimates.
Source: NHS (ABS 1990); author's calculations.

3.5 Labour force status

Although it is well known that poverty is related to poor health (for an analysis and review of current literature see National Health Strategy (1992)), there is also a sizeable body of literature linking unemployment with ill health (for an analysis and review of current literature see Schofield (1996b) and National Health Strategy (1992)). Therefore, it was not surprising that the unemployed were more likely to be hospitalised and received about twice the benefits of the employed (Table 3.10).

However, as was noted for people on low incomes, the unemployed have a relatively low rate of private health insurance cover. Only about 25% of the unemployed had private health insurance in 1990 (Schofield 1996a).

People not in the labour force also received a greater benefit than the employed, being about 50% more likely to be hospitalised and receiving about 2.5 the amount of benefits. This probably results from the clustering of women in the child-bearing years and men who had retired early due to ill health in this category (Schofield 1996b).

Table 3.10: Hospital use and estimated benefits per annum, by labour force status, Australia, 1989–90

Labour force status	Probability of hospitalisation	Average hospital bed-days	Average benefits paid ($)
Employed	0.13	0.63	285
Unemployed	0.19	1.47	660
Not in the labour force	0.20	1.62	730
Not applicable	0.12	1.33	600
All	**0.14**	**1.03**	**460**

Note: Children and the retired appear in the 'not applicable' labour force status category.
Source: NHS (ABS 1990); author's calculations.

3.6 Sex

Analysis by sex revealed that women under the age of 65 years were more likely to be hospitalised and received about 65% more benefits than men of the same age. However, for the over 65 age group, men had a slightly higher risk of being hospitalised and received about the same amount of benefits as women.

The higher rate of hospitalisation and greater amount of benefits received by women in the under 65 age group results, at least in part, from hospitalisation due to childbirth and conditions associated with childbirth.

Table 3.11: Hospital use and estimated benefits per annum, by sex and age, Australia, 1989–90

Sex by age	Probability of hospitalisation	Average hospital bed-days	Average benefits paid ($)
Under 65			
Male	0.10	0.58	260
Female	0.16	0.95	430
All	**0.13**	**0.77**	**340**
Over 65			
Male	0.25	3.57	1,600
Female	0.20	3.73	1,670
All	**0.22**	**3.67**	**1,640**

Source: NHS (ABS 1990); author's calculations.

3.7 Location of residence

There was no notable difference in benefits from community rating between people living in metropolitan areas compared with non-metropolitan areas (Table 3.12). Similarly, in a univariate linear regression model, location of residence, at least at this level of analysis, was not found to be a significant predictor of health insurance benefits paid after hospitalisation.

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Table 3.12: Hospital use and estimated benefits per annum, by location of residence and age, Australia, 1989–90

Location of residence by age	Probability of hospitalisation	Average hospital bed-days	Average benefits paid ($)
Under 65			
Metropolitan	0.13	0.78	350
Non-metropolitan	0.13	0.73	330
All	**0.13**	**0.77**	**340**
Over 65			
Metropolitan	0.21	3.57	1600
Non-metropolitan	0.23	3.84	1720
All	**0.22**	**3.67**	**1,640**

Source: NHS (ABS 1990); author's calculations.

4 Estimating the impact of community rating on private health insurance premiums

In Section 3, community rating was considered against health risks and the average benefits members received from health funds. In this section, community rating is examined in terms of its impact on private health insurance premiums.

In order to estimate the impact of community rating on premium levels, *new* premiums were calculated, based on a set of risk ratings. The starting point or base value for the new premiums was the average yearly premium per person from all insurance funds at June 1996 ($569 per person) (PHIAC 1995b). These insurance premiums included persons with hospital cover who may or may not also have had ancillary cover. For the purposes of this study it would have been preferable to have used premiums paid only for hospital insurance, as the focus of the study was hospital benefits. However, this breakdown was not provided in the PHIAC report. Accordingly, the approach relies on the assumption that ancillary benefits are distributed in the same way as hospital benefits. Nonetheless, the measure was considered to be a reasonable approximation of the relative value of risk-based premiums between different subpopulations.

The risk ratings were based on a benefit ratio, which was an estimate of the ratio of benefits paid to people in high- (and low-) risk groups compared with the average person with hospital insurance (using the benefit estimates from Section 3). Thus, the ratio represented a relative comparison with the average person with hospital insurance for each socioeconomic subgroup.

The new risk-based premium was then calculated by multiplying the base value of the insurance premium by the benefit ratio for each subpopulation in the analysis. For example, people aged 70 to 74 years had a benefit ratio of 3.7. Therefore, the risk-based benefit for this group was estimated to be $2,102 (3.7 x $569).

This is, of course, only an estimation of the premium levels which might be paid by different subgroups in the absence of community rating, as there are other factors which might be expected to impact on the final premiums. Accordingly, the methodology used here provides an indication of the likely relativities that would operate between particular groups were health risks to be used to set premiums.

The analysis of benefit ratios and estimated risk-related insurance premiums was undertaken at the individual person level.

4.1 Age

Analysis by age indicated, as might be expected, that the elderly currently derive the greatest benefit from community rating in terms of the private health insurance premiums they would otherwise have to pay. For example, were premiums to be set according to the risks associated with age, people over the age of 80 years would pay an annual premium of more than $3,500 for insurance per person. This would be more than 6 times the average premium and more than 25 times the lowest estimated age risk-based premium (of $136 for the 10 to 14 age group) (Table 4.1).

Table 4.1: Estimate benefit ratios and risk-based private health insurance annual premiums, by age risk category, June 1996

Subpopulation	Benefit ratio	Risk-based premium ($)
Average	1	569
Age		
0 to 4	0.57	322
5 to 9	0.30	173
10 to 14	0.24	136
15 to 19	0.28	161
20 to 24	0.80	458
25 to 29	1.00	569
30 to 34	0.76	433
35 to 39	0.76	433
40 to 44	0.57	322
45 to 49	0.74	420
50 to 54	1.04	594
55 to 59	1.28	730
60 to 64	1.76	1,002
65 to 69	1.83	1,039
70 to 74	3.70	2,102
75 to 79	4.59	2,609
80 and over	6.35	3,611

Source: NHS (ABS 1990); author's calculations.

4.2 Health status

Were private health insurance premiums to be set according to health status,[8] people reporting the poorest health would need to pay more than $4,500 per person for insurance. This is more than 8 times the average premium and about 15 times the estimated risk-based premium for people in excellent health. On the other hand, people in excellent health would pay only a little more than half the average risk-based premium (Table 4.3).

Whereas Tables 4.1 and 4.2 indicate that setting insurance premiums based on age or health risk would see higher premiums for the old and the sick, a risk-based premium based on both age *and* health risk would result in an even greater disparity of premiums. For example, people in the poorest health and over the age of 65 years would pay an estimated $7,955 per annum for health insurance. This would be about 14 times the average risk-based premium and 25 times the estimated premium of the lowest risk group (about $320 for people under the age of 65 years and in excellent health).

[8] It is unlikely that insurance premiums would be set according to self-assessed health status, but could more likely be linked to a physician's assessment of health. However, self-reported health status was used in this study as no clinical measures were included in the NHS.

4.3 Family type

Analysis by family type suggested that families without children (that is, singles and couples) have benefited from the impact of community rating on private health insurance premiums. After estimating a risk-based premium for individuals set according to family type, it was found that single people would pay more than $950 per annum for health insurance. This would be 1.7 times the average risk-based premium and about 2.5 times as much as the cheapest premium ($371 for people from two-parent families with children). The higher estimated risk-based premium associated with belonging to a family without children was a result of the relatively higher proportion of older people in these family types (as discussed in Section 3.3).

As families currently purchase private health insurance as a package rather than as individuals, family packaged risk-based premiums were also estimated. (Family premiums were derived by multiplying the average family size from Table 3.6 by the individual risk-based premium for different family types in Table 4.3.) It was found that if insurance premiums were charged on a risk basis, singles would pay about 70%, and sole-parent families about 80% of the premiums paid by couples with children (at $965, $1,092 and $1,410 respectively) (Table 4.2). However, couples without children were estimated to still pay about the same amount as couples with children ($1,410).

Table 4.2 Risk-based private health insurance annual premiums for families, by family type, June 1996

Family type	Family premium ($)
Single	965
Sole parent	1,092
Couple without children	1,410
Couple with children	1,410

Source: NHS (ABS 1990); author's calculations.

4.4 Family income

If an income risk-based premium were applied, individuals in the lowest income category would pay over $1,250 per annum for health insurance. This would be more than 2 times the average premium and more than 3 times the lowest estimated premium ($371 for people with family income of $60,000 or more per year).

By contrast, an income risk-related premium would produce cheaper insurance for the wealthy, with people in the top 4 income categories being charged about 60% of the average premium.

4.5 Labour force status

Based on the health risks related to labour force status, an individual not in the labour force would pay an estimated $903 per annum for private health insurance, more than 1.5 times the average risk-based premium, and more than 2.5 the estimated premium for an individual who was employed. By contrast, under a risk-based premium approach, the employed would pay only about 60% of the average premium.

4.6 Sex

Analysis by sex indicated that a sex risk-based premium would see women paying a premium 1.2 times the average and 1.5 times the estimated premium for men.

Table 4.3: Estimated benefit ratios and risk-based annual health insurance premiums, by health status, family type, family income, labour force status and sex risk categories, June 1996

Subpopulation	Benefit ratio	Risk-based premium ($)
Average	1	569
Health status		
Excellent	0.57	322
Good	1.00	569
Fair	2.30	1,311
Poor	8.37	4,761
Family type		
Single	1.70	965
Couple without children	1.24	705
Sole parents	0.74	420
Couple with children	0.65	371
Family income		
0 to 9,999	2.20	1,249
10,000 to 19,999	1.63	927
20,000 to 29,999	1.09	618
30,000 to 39,999	0.78	445
40,000 to 49,999	0.63	359
50,000 to 59,999	0.67	383
60,000 to 69,999	0.65	371
70,000 or more	0.65	371
Labour force status		
Employed	0.62	352
Unemployed	1.43	816
Not in the labour force	1.59	903
Not applicable	1.30	742
Sex		
Male	0.78	441
Female	1.22	693

Source: NHS (ABS 1990); author's calculations.

5 Conclusions

The results of this study clearly demonstrate that some socioeconomic groups have derived a substantial benefit from community rating, with these groups being characterised by their high risk of hospitalisation. These groups have derived both direct and indirect benefits. The direct benefits flow from their higher use of hospital services, and thus, the higher level of benefits received as refunds from private health insurance funds.

The direct benefits received as refunds were used as the basis for calculating indirect benefits. These indirect benefits arise from the difference in the level of private health insurance premiums currently paid compared with those they might pay in the absence of community rating. Indirect benefits were defined by comparing estimated risk-based insurance premiums with *average per person premiums* under the existing system of community rating. It should be noted that, although the basis for comparison was the *average per person premium*, not all individuals pay exactly this amount for health insurance. The actual insurance premiums paid vary somewhat from the average according to the size of the family purchasing insurance,[9] the type of premium purchased[10] and the particular fund joined.

Perhaps the most notable finding of the study was the positive impact of community rating on people in poor health. People in this group were estimated to receive about 15 times the benefits received by people in excellent health. In addition, the sickest members of the community have benefited from private health insurance premiums which have been much lower than would be the case if their risk of hospitalisation were taken into account. Thus, based on a health risk-based premium, people in poor health might have been required to pay as much as $4,761 per person per annum for health insurance, more than 8 times the average premium.

The aged were the other major beneficiaries from existing community rating principles. People aged 80 years and over received about 6 times the benefits paid to the average person with health insurance. Cross-subsidisation between fund members has operated to protect the elderly from premiums which might otherwise be more than 6 times the average, if they were to be set after taking account of the risks associated with ageing.

Interestingly, single people were also found to be major beneficiaries, receiving more, for example, than 2.5 times the benefits received by individuals from sole-parent families. This was considered to be a result of a clustering of the aged in the single family type. By contrast, despite paying double the premium of single people, sole-parent families received, on average, only 10% more in benefits than singles.

The poor and the unemployed have also benefited from community rating, with persons from the lowest income group receiving about 3 times the benefits of people from the highest income groups. The higher benefits derived by the poor were explained by both the higher proportion of the aged in the lower income groups, and the generally poorer health status of people on low incomes. It was also found that if premiums were based on health risk, the poor might otherwise pay more than three times the premium applied to people with the

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[9] For example, individuals from a family type of a couple with three children would pay less per person for private health insurance than individuals from a family type of a couple without children.

[10] For example a front-end deductible policy (where the claimant shares the cost of the claim with the insurer) or one which excluded some services would be less expensive than a policy with the highest level of cover.

highest family incomes. It was concluded that community rating produced a redistribution of resources from the rich to the poor, and that this occurred among both the young and the elderly.

Women under the age of 65 years have also been beneficiaries of community rating, having a higher risk of hospitalisation and receiving 65% more in benefits than men of the same age. This was explained, at least in part, by the inclusion of women in their child-bearing years in this age group. There was, however, little observable difference in the benefits received by men and women aged over 65 years.

Community rating has played a major role in the redistribution of benefits from health funds from low-risk to high-risk groups. Accordingly, as the analysis showed, private health insurance premiums based on health risk could substantially increase for people with high health risks, but could also result in a major reduction in premiums for low-risk groups.

Finally, there are two areas in which further research would add to the findings of this study.

First, it has been possible for community rating to play an important role in restricting the price of private health insurance to particular subpopulations while there has been a large pool of fund members with a range of health risks. However, there have been changes to the characteristics of the insured population as a result of the rapid decline and changing composition of people with private health insurance, as well as other demographic changes, over the last 15 years. Accordingly, there is a need for further research to examine how changes in the insurance pool might alter the distribution of benefits from health funds and the future price of private health insurance. This type of shift may be evidenced by an increase in the average use of hospital services and drawing rates by health fund members (see, for example, Goss & Hynes 1996).

Second, this study was limited to an examination of the hospital benefits derived from health insurance by various sociodemographic groups. There is also a need to undertake such a study for ancillary insurance, as it may well be that benefits from ancillary insurance are differently distributed when compared with those from hospital insurance. However, the data used in this study are not ideal for this type of analysis as they do not identify which ancillary services used were private and which were public. This information is necessary, as only private ancillary services attract a health insurance benefit. Therefore, it may be necessary to identify an alternative data source to undertake such a study.

Appendix A Population estimates for subpopulations

Table A1: Population estimates of persons with hospital insurance, by age, Australia, 1989–90

Age group	Population estimate ('000s)
0 to 4	613
5 to 9	606
10 to 14	617
15 to 19	624
20 to 24	483
25 to 29	593
30 to 34	701
35 to 39	701
40 to 44	724
45 to 49	578
50 to 54	484
55 to 59	403
60 to 64	383
65 to 69	276
70 to 74	218
75 to 79	144
80 and over	112

Source: NHS (ABS 1990).

Table A2: Population estimates of persons with hospital insurance, by major age group and subpopulation, Australia, 1989–90

Age group	Subpopulation	Population estimate ('000s)
Under 65	*Health status*	
	Excellent	1,872
	Good	2,701
	Fair	583
	Poor	117
	Family type	
	Single	1,067
	Couple without children	1,689
	Sole parents	1,845
	Couple with children	4,496
	Family income	
	0 to 9,999	609
	10,000 to 19,999	660
	20,000 to 29,999	1,104
	30,000 to 39,999	1,305
	40,000 to 49,999	1,323
	50,000 to 59,999	987
	60,000 to 69,999	771
	70,000 or more	752
	Labour force status	
	Employed	4,176
	Unemployed	144
	Not in the labour force	1,353
	Not applicable	1,837
	Location of residence	
	Metropolitan	4,856
	Non-metropolitan	2,653
	Sex	
	Male	3,744
	Female	3,766

(continued)

Table A2 (continued): Population estimates of persons with hospital insurance, by major age group and subpopulation, Australia, 1989–90

Age group	Subpopulation	Population estimate ('000s)
Over 65	*Health status*	
	Excellent	124
	Good	340
	Fair	220
	Poor	65
	Family type	
	Single	275
	Couple without children	451
	Sole parents	2
	Couple with children	5
	Family income	
	0 to 9,999	259
	10,000 to 19,999	252
	20,000 to 29,999	111
	30,000 to 39,999	51
	40,000 to 49,999	24
	50,000 to 59,999	15
	60,000 to 69,999	18
	70,000 or more	19
	Labour force status[(a)]	
	Employed	not applicable
	Unemployed	not applicable
	Out of the labour force	not applicable
	Not applicable	749
	Location of residence	
	Metropolitan	491
	Non-metropolitan	258
	Sex	
	Male	299
	Female	450

(a) Labour force categories (except not applicable) applied only to persons under the age of 65 years on the NHS.
Source: NHS (ABS 1990).

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Private Health Insurance and Community Rating: Who Has Benefited? is the first report on private health insurance to be published by the Australian Institute of Health and Welfare. It provides detailed information about the benefits that different groups of insured persons derive from health insurance. It also analyses the impact of community rating on premiums paid by the different groups.

The report provides information on a current and important public health issue. It will be of interest to health planners and administrators, health insurers and health researchers.