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Peter Dawkins, Elizabeth Webster, Sandra Hopkins and Jongsay Yong with the assistance of Alfons Palangkaraya

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Executive Summary

1. The proportion of population covered under PHI declined steadily in the 1990s; coverage fell from 41 per cent in 1992 to an all-time low of 30 per cent in 1998. In response, the Commonwealth Government introduced a number of important policy changes in the late 1990s and early 2000s. In January 1999, a 30 per cent premium rebate on both existing and new health insurance policies was introduced. Subsequently, in July 2000, lifetime health cover, a limited type of age rating, was built into PHI premiums. The policy objectives were to increase PHI membership, thereby lessening the burden on public hospitals.

2. The policy changes have been quite effective in encouraging the uptake of PHI. The percentage of persons with PHI rose from 31 per cent in 1999 to 45 per cent at the end of 2001. Most of these increases, however, occurred shortly after the introduction of lifetime health cover.

3. Two issues are important in assessing the performance of the policy changes: (i) how the policy changes affect utilisation of health care resources, specifically utilisation of public and private hospitals; (ii) what the distributive implications are.

4. Data on utilisation suggest significant overall increases in the last few years, as well as some changes in the balance of activity between the private and public hospital sectors. This is particularly true in the case of the numbers of private patients admitted to public hospitals.

5. Data on hospital separations by patient status show an obvious jump in total separations and private separations in the late 1990s and early 2000s. Various utilisation figures indicate that there have been increases in utilisation overall rather than a substitution of private for public care. This implies that the increase in PHI membership were not having the anticipated impact on excess demand in public hospital utilization.

6. The trend in the average cost weight of separation by patient election status shows that the cost weight per separation for private patients in public hospitals is greater than that for public patients in public hospitals and considerably greater than that for private patients in private hospitals. Moreover, in all states the cost weights for private patients in public hospitals have increased since the year 2000.

7. This appears to indicate that, increasingly, the admitting doctors prefer public hospitals for complicated procedures. Where privately insured patients have an urgent condition, which does not therefore entail a significant waiting time, they are being

admitted to a public hospital. Where they require non-urgent elective surgery or other low intensity and therefore low cost treatment, increasingly they opt for the private hospital.

8. With an increase in activity in the private sector, there was an expectation that there would be a decrease in public hospital waiting times for elective surgery. Data show that, however, most of the decrease in waiting times occurred only in non-urgent cases. There was a slight decline in waiting times in the semi-urgent category and in fact an increase in waiting times for urgent cases.

9. The increase in waiting times for urgent cases is consistent with the data on average cost weights. Privately insured patients appeared to be using the public sector for complex and urgent procedures and the private sector for less complex and non-urgent procedures.

10. The distributive consequences of the recent PHI policy changes were evaluated using the two most recent health surveys conducted by ABS, the 1995 and 2001 National Health Surveys. The insurance choices of two types of households, singles and families, were modelled using a well-established multivariate statistical approach known as the probit approach.

11. The estimated probit models allow the construct of a hypothetical situation of no policy changes by "transporting" households in 2001, with 2001 characteristics, to the environment of 1995. This answers the question: if a householder in 2001 were to decide his health insurance choices exactly as he would in 1995, what would he have chosen? The answer will enable us to isolate the effects of the PHI policy changes by comparing households' choices in 2001 with their hypothetical choices. The difference can be regarded as the effect of the PHI policy changes. The results show very clearly that the policy changes were having more effects on households with high income and high socio-economic standings.

12. There is strong evidence that not only a larger number of households of higher income and socio-economic standings responded to the policy changes, but also they were more likely to have PHI even without the policy changes. These latter households enjoyed "deadweight benefits," in the sense they needed no such benefits to purchase PHI to begin with. Given that households who took up PHI ought, by their revealed preference, to be better off, we can reasonably conclude that households with high income and socio-economic standings are the main beneficiaries of the policy changes.

13. The estimation results suggest approximately 66 per cent of singles and 82 per cent of families who would have purchased PHI without the policy changes were able to enjoy the "deadweight benefits."

14. In summary, the evidence is strong that households who were most affected by the recent policy changes were those with high socio-economic standing and high income. On the other hand, hospital utilisation data suggest little evidence that the policy changes have alleviated the burden of public hospitals. In light of the 30 per cent premium rebate becoming a significant and rising fiscal burden for the Commonwealth government, the performance of the recent PHI policy changes clearly leaves much to be desired.

15. If the principal aim of the reforms was to take pressure off the public hospital system, we would recommend redirecting the public funding that has been used to encourage increased take up of PHI, to other purposes, recognising that any government will have to consider the distributional effects of the changes from the status quo and the possible adverse political consequences that may result.

16. From a short-term perspective, there is a reasonable argument that that the 30 per cent premium rebate should be scaled down considerably, and the funds being used directly to subsidise the supply of important health services that would take pressure of the public system, rather than subsidising the demand for health services in a less focused way.

17. From a long-term perspective, it would be worthwhile to explore more fundamental system design issues. Here, PHI policy changes need to be considered within a broader context of the functioning of the whole health system. In this context, the soundness of the 30 per cent premium rebate appears to be highly questionable.

18. We outline below several health policy goals that are important for the long term. First , there are strong arguments that policy efforts should be directed at bringing a better integration of the health system, and in particular the private and public funding and private and public hospital systems. Serious consideration should be given to bringing about a system in which PHI plays a much more complementary role with the public system. Specifically, there is a strong argument for a setting in which Medicare and the public system provide a base coverage for all health needs of Australians, encompassing primary as well as hospital care. PHI would then become a form of "top up" to the public system.

19. Secondly, both the Commonwealth and State/Territory governments should focus efforts in managing the overall health care resource utilisation of the system as a whole, not the shifting of utilisation from one sector of the system to another. The existing PHI arrangement appears to aim at shifting the financing of hospital care from public to private hospitals, so as to relieve capacity and financial pressure from the public hospitals. While it is questionable whether a shift have actually occurred, there is

evidence of an increase in the overall utilisation of hospital resources due to moral hazard at both the demand and supply sides.

20. Thirdly, the case for a greater degree of competition being injected into the health system should be seriously explored. This could take several forms. One possibility is to introduce some form of managed care into the system via, for examples, the establishment of budget-holding entities.

21. Lastly, the current health system is severely lacking in ensuring adequate supplies of some health care professionals and care facilities in response to changing demand. We believe that policies need to be in place so that supplies can be made more responsive to demand.

1 Health Insurance in Australia

The history of health insurance in Australia can be traced back to Federation time, when friendly societies developed as the main source of funding for medical services for lower paid workers. By 1910, it is estimated that 30 per cent of Victorians had medical cover of some sort (Scotton and McDonald, 1993). Friendly societies were able to offer a wide range of services including medical and dispensary coverage. The societies were able to exercise significant market power as purchasers of medical services on behalf of their members, largely by negotiating capitation contracts for the services of general practitioners. Solo private medical practices were supplemented and complemented by charitable hospitals. These hospitals, which developed into the modern day public hospitals, were enabled by donations and limited public subsidies to provide free outpatient and dispensary services to the poor, and inpatient services to a wider range of patients. Friendly societies members received specialist and inpatient services, used far less frequently, through these hospitals.

As the range of specialised and intensive hospital-based services widened in response to increasing incomes, demand for treatment in hospitals increased. State governments became more and more drawn into both running and providing funds. Their market power brought them into conflict with doctors associations over conditions of access and staffing. Eventually hospitals in Victoria and New South Wales allowed doctors to treat private patients in public hospitals through the use of means tests and patient classification.

In the period up to 1970, voluntary insurance, subsidised by Commonwealth benefits became the cornerstone of health service provision. Insurance and government support covered medical visits, inpatient and outpatient services from hospitals and pharmaceuticals and diagnostic services. Means tests were applied to government contributions and pensioners were supported to the extent that generally they bore no co-payments for care or purchase of pharmaceuticals or diagnostic services. Those whose income was too high to meet the means test, paid co-payments for the purchase of health services. Government provided some relief in the form of tax deductability for net payments but over time the inequity of these arrangements led to considerable pressure for change. Following the election of the new Labor government in 1972 a universal health insurance system called Medibank was announced, promising free health services for all.

The dramatic expansion of government activities after December 1972 was the culmination of a steady extension of federal government involvement in the health care system over the previous decades. The year 1975 was a watershed year for health care in Australia, when Medibank, the first universal health insurance scheme in Australia, was completely in place. However, a change of government in 1975 heralded modifications to Medibank, strengthening the role of private insurers though allowing the government insurer, Medibank to also provide

private insurance services. Other changes included the enactment of a levy on income to pay part of the costs of government support, provision for co-payments, and the introduction of a reinsurance scheme for private insurers. There were yet further modifications in ensuing years although in all cases the property of basic universal coverage was retained. In 1984 a new government reverted to most of the key features of the original Medibank in a new universal scheme called Medicare. Under Medicare, all Australians have access to free medical treatment as a public patient in a public hospital, and free or subsidised medical treatment outside of hospitals by health care providers.

The appeal of Medicare to the masses, coupled with real and perceived problems associated with PHI (Cormack, 2002), caused the proportion of population covered under PHI to decline steadily in the 1990s. According to figures from Private Health Insurance Administration Council (PHIAC), coverage fell from 41 per cent in 1992 to an all-time low of 30 percent in 1998. In response, the Commonwealth Government introduced a number of important policy changes in the late 1990s and early 2000s. To encourage high-income earners to purchase PHI, a tax surcharge was introduced in July 1997. Then, in January 1999, a 30 per cent premium rebate on both existing and new health insurance policies was introduced. At the beginning of July 2000, lifetime health cover, a limited type of age rating, was built into private health insurance premiums so that consumers who join after July 2000 are required to pay an additional loading on the base premium of 2 per cent for every year of age above 30 years. The policy objectives of these changes are to increase the share of private health insurance, thereby lessening the burden on the public hospital system. These policy changes, however, have profound effects on the equity and efficiency of the health care sector. What is more, a significant sum of public spending is also involved as, for example, the 30 per cent premium rebate alone amounted to almost $1.4b of additional government spending in the first year (i.e., 1999–2000), and in excess of $2b for the current financial year.

There is no doubt that these policy changes have been quite effective in encouraging the uptake of PHI (Butler, 2002; Frech et al., 2003). The percentage of persons with PHI rose from 31 per cent in 1999 to 45 per cent at the end of 2001. There are, however, issues of efficiency as well as equity associated with the policy changes. This report aims to provide an in-depth assessment of these issues along two dimensions: (i) how these policy changes affect health resource utilization, principally hospital utilization, and (ii) the distributive implications of these changes.

This report is organised as follows. Section 2 examines the effects of recent policy changes on health resource utilization, with a particular focus on public hospital usage. Section 3 gives an in-depth evaluation of the distributive implications of the recent policy changes by using a well-established multivariate statistical approach known as the probit methodology.

The methodology is implemented using data from the two most recent health surveys, i.e., the 2001 and 1995 National Health Surveys, conducted by ABS. A discussion of policy directions is contained in Section 4. Some concluding remarks are included in Section 5.

2 On Health Resource Utilization

2.1 Recent Policy Changes

The objective of the health insurance reform packages in the late 1990s were described as being aimed "to stabilise the health insurance sector by stopping the decline in health fund membership" and ensuring the viability of the private sector as it "is a vital complement to the long term viability of Medicare and the public hospital system" (Wooldridge, 1997).

The government chose to address the problem of falling numbers in private funds and excess demand for public hospital services by changing the regulation of the private health insurance industry to make it more attractive to middle and upper income Australians rather than inject more money into the public hospital system.

The major policy changes to the private health insurance market were introduced over a three-year time period. Table 1 provides a summary of these policy changes in chronological order. Each of the successive changes was designed to deal with a perceived policy flaw. In July 1997, high-income earners were encouraged to take out PHI by the introduction of a tax surcharge. At the same time, a means-tested partial refund on health insurance premiums was made available. The response to these policy changes was perverse. The percentage of the population with private health insurance declined from 31.9 at the 30th June 1997 to 30.1 at the end of December 1998 (refer to Figure 1).

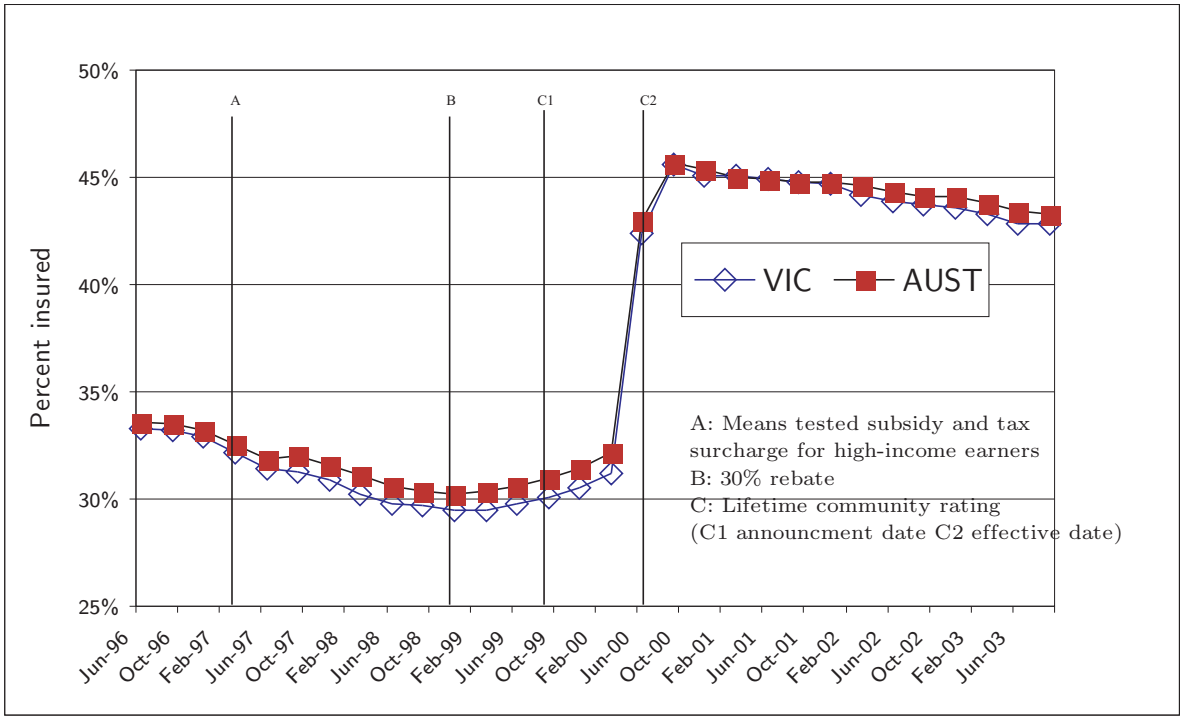
The second policy change, introduced in January 1999, was a 30% rebate on both existing and new health insurance policies. The rebate was not means-tested. The response to the rebate was slow but did lead to a small increase in the percentage of the population with private health insurance. At the end of 1999, the percentage had increased to 31.1 from 30.1 at the end of 1998. The rebate was initially estimated to cost $1.09 billion. With substantial increases in new members after the changes to community rating in July 2000, the cost estimate was raised to $1.67 billion in the first year (Hansard, 2000; quoted in Quinn, 2003).

Changes in the regulation of private health insurance to alter community rating occurred at the beginning of July 2000. The policy change, known as 'Lifetime HealthCover,' introduced lifetime community rating or a limited type of age rating into private health insurance premiums. The policy change enabled anyone who was insured by the time they were

Table 1: Major PHI policy changes since 1997

1997	· A PHI premium subsidy for low income earners was introduced but subsequently scrapped in 1999. · A 1 per cent Medicare tax surcharge was introduced for high-income earners who did not take out an approved PHI policy.
1999	· A 30 per cent non-means tested tax rebate on PHI premium was given for all approved PHI policy holders.
2000	· The legislation was amended to require all health funds offering 'No Gap' or 'Known Gap' policies. · Introduction of Lifetime Health Cover, which financially penalises individuals between 30 and 65 years of age who did not purchase PHI by July 2000. The penalty is 2 per cent of the base premium per year for individuals who purchase PHI after the age of 30, subject to a maximum loading of 70 per cent. Individuals who were 65 years of age as at 1 July 2000 were not subject to any loading.

Figure 1: Percentage of the population with PHI: Victoria and Australia



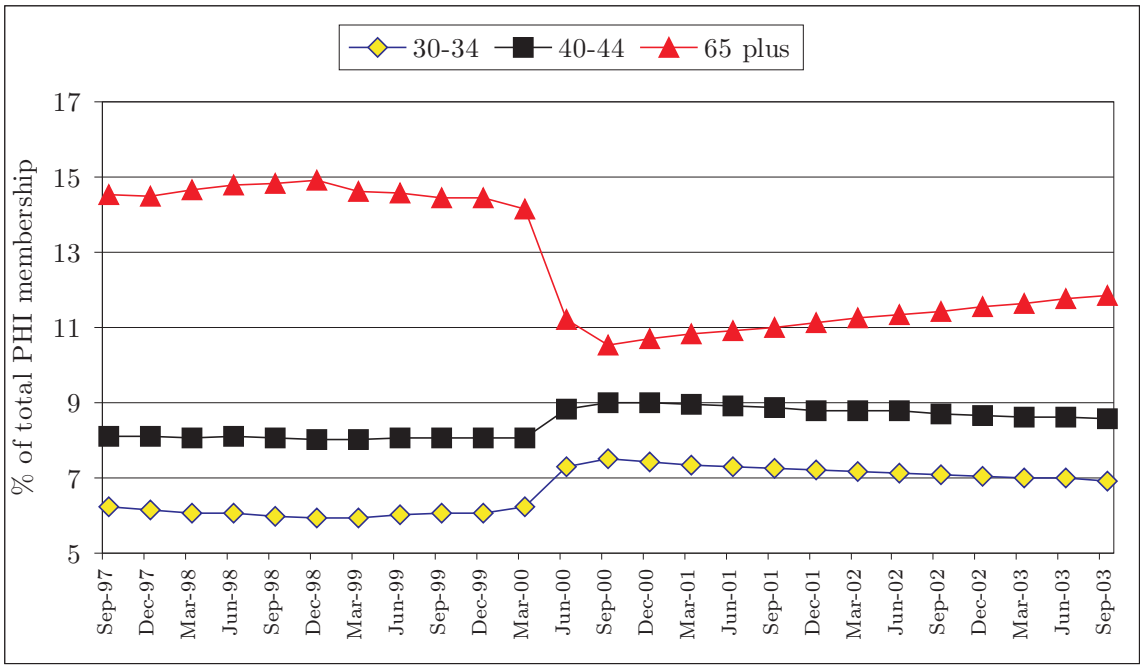
Source: PHIAC (www.phiac.gov.au)

30, or older persons prior to the cut-off date of 30th June 2000, to take advantage of a base premium. The base premium increases by 2 per cent for each year the individual is over 30 at the time of first joining with a ceiling of 70 per cent over the base premium. (Note that this loading does not apply to persons over the age of 65 as at July 2000). Lifetime HealthCover, as the name implies, was designed to prevent so-called 'hit and run' behaviour. People were joining a private health fund when they anticipated they would use private hospital treatment and withdrawing from the fund once the treatment had been completed.

The immediate effect on PHI membership following the introduction of lifetime community rating was outstanding. The percentage of persons with private health insurance jumped from 31.3 at the end of 1999 to 43 at the end of June 2000. A year later, 44.9 per cent of the Australian population had private health insurance coverage. Importantly, the age profile of the privately insured pool changed considerably making the pool of insured less adverse for the insurers. At the end of 1999, 6.1 per cent of the insured pool were aged 30 to 34 and 14.5 per cent were aged 65 plus (Private Health Insurance Administration Council, 2001). By the time the Lifetime HealthCover has had its main effect, at the end of September 2000, 7.5 per cent of the pool were aged 30 to 34 and 10.5 per cent were aged 65 and over. The total numbers of persons aged 65 and over slowly increased over the period, but the total number of insured increased at a much faster rate (Hopkins and Frech, 2001). It should, however, be noted that beginning in 2001, a downward trend in PHI membership can be detected in Figure 1. This decline was noted by Frech et al. (2003) and Quinn (2002); both studies estimated that without any further policy changes, the percentage of the population with private health insurance would return to the 1999 levels of around 30 per cent in about 10 years. The main reason for the steady decline is likely to be the so-called "adverse selection spiral" that was responsible for the decline in membership before the policy changes. (A discussion of the adverse selection phenomenon is included in Appendix A of this report.) The evidence for this can be found in Figure 2, which shows the age profile of PHI members before and after 2000. The percentage of PHI members in three age cohorts, namely those age 30–34, 40–44, and 65 and above, were shown. It is clear that the percentage of members above age 65 experienced a sharp decline in 2000, but has been steadily increasing since. In contrast, the percentage of fund members in the age groups 30 to 34 and 40 to 44 increased in 2000 but has been declining since then.

In response to frequent complaints from consumers regarding gaps in PHI cover, private health funds began, from around 2000, to offer a range of policies that allow customers to either enjoy no gap treatment in hospitals or know in advance what their out-of-pocket payment will be. The health insurance funds also negotiated with individual doctors and provider groups to provide services for their members at a specified fee. These are important

Figure 2: Age profile of PHI membership



Source: PHIAC (2004) Statistic Trends: Membership and Benefits. Available at www.phiac.gov.au/statistics/trends/index.htm.

developments as the gap between the doctor's fee and the health insurance benefit paid by the patient created a significant disincentive to using private hospital treatment. Because public hospital treatment is free for public patients, and the cost is minimal for private patients in public hospitals, the gap created a deterrent not only for using private hospitals but also for having private health insurance.

These policies have proven to be very attractive to purchasers. The proportion of in-hospital services with no gap increased from 50 per cent in June 2000 to 70 per cent in June 2001. The percentage at March 2003 was 81 (PHIAC, 2003a). This expansion certainly created scope for the substitution of public hospital care by private hospital services. There is some state-by-state variation in the proportion of hospital services with no gap (refer to Table 2). It is apparent, however, that over the period where gap policies have been mandated, that is June 2000, there has been a considerable decline in the differences between the states as well as a considerable improvement in the percentage across the board. Note, however, that the percentage figures are computed based on medical services, not on hospital visits, and a hospital visit may involve several medical services being provided.

2.2 Impact on the uptake of PHI

What impact did the three policy changes have on the health insurance market? Most analysis of the impact of the policy has focussed on the 30 per cent rebate as it was the most costly reform and its impact appears to be slight compared with the third policy change of the introduction of lifetime community rating. The initial estimate of the 30 per cent rebate was $1.09 billion. With the substantial increases in new members, it cost $1.4 billion in the first year it was introduced. Table 3 shows the premium rebates, average premium, and general price index. The rebates were both in nominal terms and as a percentage of the total Commonwealth government expenditure on health. Note that figures prior to 1999–00 were rebates given under the means-tested subsidy scheme introduced in 1997; 1999–2000 was the first year that the current 30 per cent rebate scheme was introduced. It was applied universally to new and existing policies and therefore cannot be seen merely as a means of attracting additional membership. It is however now vigorously protected by the health insurance industry as being vital to the sustenance of the health insurance numbers. See, for example, Harper (2003).

Also included in Table 3 are figures on average PHI premium and percentage change over the preceding year. It appears that the rates of PHI premium increase have accelerated following the introduction of the 30 per cent rebate. For the years 2000–2003, average premium increase was about 4.7 per cent, this compared to the increases of 2.2 per cent and 3.5 per cent of respectively 1998–99 and 1999–2000. The three-year average increase of 4.7 per cent is also higher than the corresponding increases in CPI and health price index, which stood at, respectively, 4.0 per cent and 4.6 per cent over the same period. Needless to say, the increases further raised the fiscal burden of the Commonwealth through the 30 per cent premium rebate, which in its present form is not capped in any form.

Frech, Hopkins and MacDonald (2003) estimate that the 30 per cent subsidy, implying a 30 per cent decrease in price lead to an 11 per cent increase in the percentage insured. They estimate this by fitting a trend to quarterly data on the percentage of the Australian population with private health insurance from the March quarter 1987 to the March quarter 1997. The trend is fitted by regressing the percentage of the population with health insurance on a constant and a time variable. They estimate that between 1993 and 1997 the percentage with private coverage was declining at a rate of about 1.6 percentage points per year. This trend line is then use to forecast the likely future percentage of the population with health insurance had there been no policy change. Using this analysis, they find that in contrast to the first policy in 1997 of a means-tested rebate that the second policy of the 30 per cent rebate clearly moves the percentage of the population with insurance away from its long term trend line. Over the period from the first quarter 1999 to the end of the fourth quarter

Table 2: Hospital services with no-gap (%)

	NSW[a]	QLD	SA	TAS	VIC	WA	AUSTRALIA
Sept 2000	50.4	57.7	69.0	51.0	69.0	70.9	60.1
March 2003	75.3	78.8	93.0	84.2	84.6	83.4	81.0

[a]Includes ACT.

Note: data are based on medical services, and a hospital visit may involve multiple medical services being provided.

Source: PHIAC (2003).

Table 3: Private Health Insurance Premium and Rebates, 1997–2003

Year	Premium Rebate[c] ($m)	As % Commonwealth health exp.	Avg premium per member ($)	Per cent change	Per cent change	
					CPI	Health price index
1997–98	407	1.9%	1,398			
1998–99	778	3.3%	1,430	2.2%	1.2%	-1.2%
1999–00	1,385	5.3%	1,480	3.5%	2.4%	-2.9%
2000–01	2,031	7.1%	1,548	4.6%	6.0%	3.5%
2001–02	2,110[a]	6.9%	1,573	1.6%	2.9%	3.4%
2002–03	2,129[b]	-	1,698	8.0%	3.1%	6.8%

Note: Figures prior to 1999–00 were rebates given under the means-tested subsidy scheme introduced in 1997; see Table 1.

[a]Based on preliminary AIHW estimates.

[b]Estimated actual amount, from *The Health and Ageing 2003-04 Portfolio Budget Statements*, available at www.budget.gov.au/2003-04/pbs/html/index.htm

[c]Includes $175m in 2000-01 and $161m in 2001-02 as rebates claimed through the taxation system.

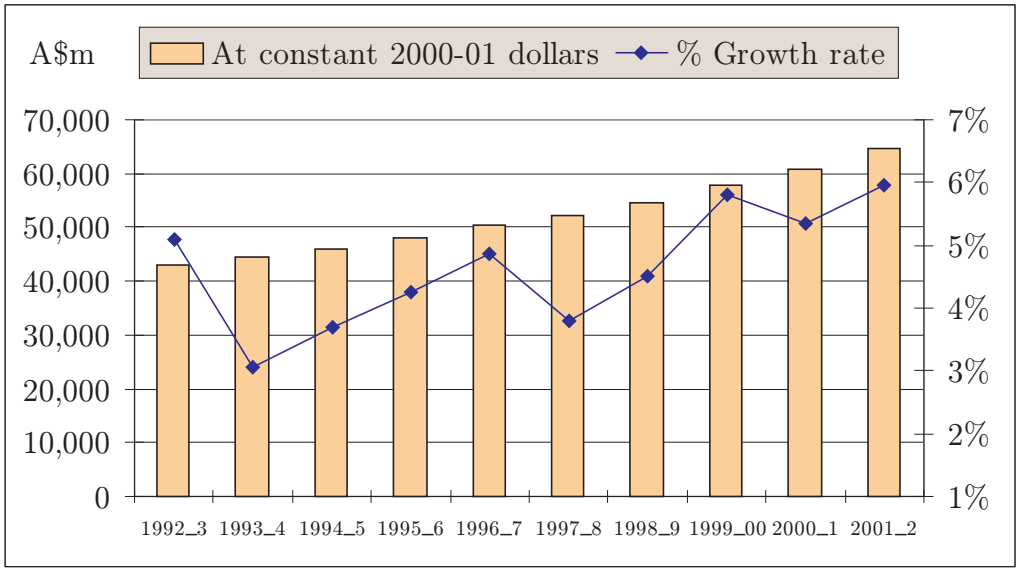
Source: AIHW (2003a), PHIAC (2003a), ABS (2003), Consumer Price Index, Australia, #6401.0.

1999 when the change in the numbers insured may be attributable to second policy, there was a 4 per cent increase in the number of people insured. This amounts to an 11 per cent increase over the long term trend. So, the 30 per cent decrease in price which led to an 11 per cent increase in the quantity demanded implies a reasonable price elasticity of demand of -0.37. The analysis is supported by the work of Quinn (2002).

It is clear from Figure 1 that most of the increased coverage is due to introduction of lifetime community rating. The number of people with insurance increased 42.8 per cent in the first three quarters of 2000. Frech, Hopkins and MacDonald (2003) estimate that the change to lifetime health cover increased the percentage of the population with PHI by 16 per cent. It is clear that this 30 per cent subsidy has had some effect, but the quantitatively more powerful policy was liberalising community rating. Since the changes in the percentage of the population with health insurance, there have been higher than average increases in hospital utilisation and as a result increases in health expenditure. The increases in utilisation are an example of moral hazard. The intuitive explanation for this is that many people who had not previously held insurance policies had felt compelled to purchase them as a result of the introduction of Lifetime Community rating. The 'run for cover' advertising campaign worked successfully on people's fears about the future of Medicare. Having purchased a policy, these people set about to lower the effective price of the policy by receiving some benefits or some claimable treatment. The data support this view. The ratio of the premium to benefits (or what is otherwise called the inverse of the loss ratio) is generally low and has declined from 1.13 to 1.10 since the introduction of the subsidy (Hopkins and Zweifel, 2003). This demonstrates that that although the premiums have increased, the benefits paid out have increased even more. In aggregate terms, national health expenditure reached a record of 9.3 per cent of GDP in 2001-02. This was an increase of 6 per cent over the previous year's expenditure in real terms (AIHW, 2003a). As depicted in Figure 3, this represents the largest increase in health expenditure in a decade. In per capita real terms, the increase was 4.6 per cent. In Victoria, the increase in health expenditure between 2000-01 and 2001-02 in real terms was 5.3 per cent. In the previous financial year (1999-00 to 2000-01), real funding increased by 8.2 per cent. On a per capita basis, real expenditure increased by 3.88 per cent. This was lower than the increase in both NSW and nationally but Table 4 shows that the increases in Victoria were considerably greater than the increases in the previous financial years.

Where is the additional expenditure going? Table 5 shows, for Victoria only, that the highest increases over the five year period were in non-institutional services such as community and public health, dental services and research. It is, however, worth noting that expenditures on public hospitals and other health care institutions increased at astonishing rates of 25 per cent and 27.5 per cent respectively between 1999–00 and 2000–01,

Figure 3: National Health Expenditure in Constant Dollars, 1992–2002



Source: AIHW (2003a).

Table 4: Annual percentage increases in real per capita health expenditure

	NSW	QLD	SA	TAS	VIC	WA	AUST
1997-98	1.36	2.59	1.66	-4.33	2.75	10.91	2.73
1998-99	2.98	5.24	1.27	1.06	3.65	2.10	3.31
1999-00	3.01	7.43	9.63	4.70	2.91	4.43	4.56
2000-01	2.06	1.72	7.34	2.68	6.75	6.00	3.93
2001-02	4.47	2.23	6.14	6.26	3.88	8.81	4.62

Source: Table 7 AIHW, Health Expenditure Australia, 2001-02

Table 5: Annual percentage changes in Victorian State and Local Expenditure, 1996-2001

	Public non-psych hospitals	Total institutional	Other non-institutional services#	Total non-institutional
1996-97 to 1997-98	7.4	6.4	29.3	24.6
1997-98 to 1998-99	-9.5	-9.5	-2.9	-9.2
1998-99 to 1999-00	14.5	12.8	18.5	23.7
1999-00 to 2000-01	25.0	27.5	10.1	11.8
1996 to 2001 (annualised)	9.8	9.6	15.9	14.1

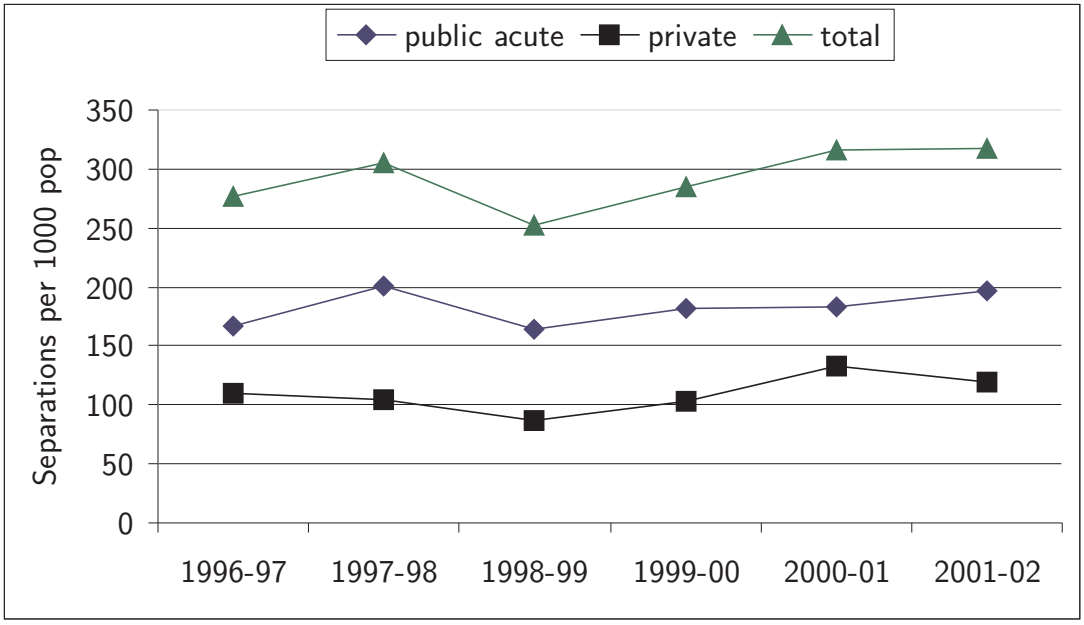
#includes community and public health, dental and research expenditure.
Source: Tables B5, B6, B7 (AIHW, *Health Expenditure*, 2000-01) and
Tables B4, B5, B6 (AIHW, *Health Expenditure*, 2001-02)

2.3 Effects on hospital utilisation

There have been significant increases in hospital utilisation in the last few years and some change in the balance of activity between the private and public sectors. This is particularly true in the case of the numbers of private patients admitted to public hospitals. However, two questions need to be answered: First, would the changes in utilisation been more or less without the increase in the percentage of the population with hospital insurance? Secondly, were there significant substitution between private and public hospital care? To answer these questions, we are not only interested in overall utilsation, but also the activities of public and private hospitals, and the types of patients (private or public) under their care.

Figures 4 to 6 show the hospital separations by patient status for Victoria, New South Wales and Australia. Patient status refers to the self-declared status of the patient whether in a private or public hospital. The motivation of the figures is to examine whether there has been a substitution of private care for public care following the increases in the percentage of the population with private health insurance. The figures show that there have been increases in separations or activity rather than a simple substitution between sectors.

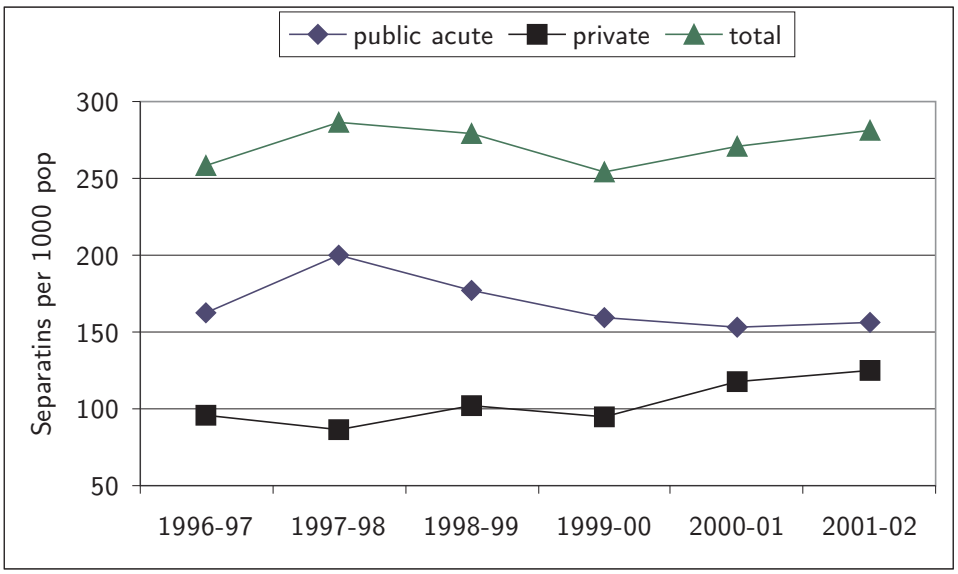
Figure 4: Hospital separations per 1000 population by patient status, Victoria



Source: AIHW (Australian Hospital Statistics), various issues

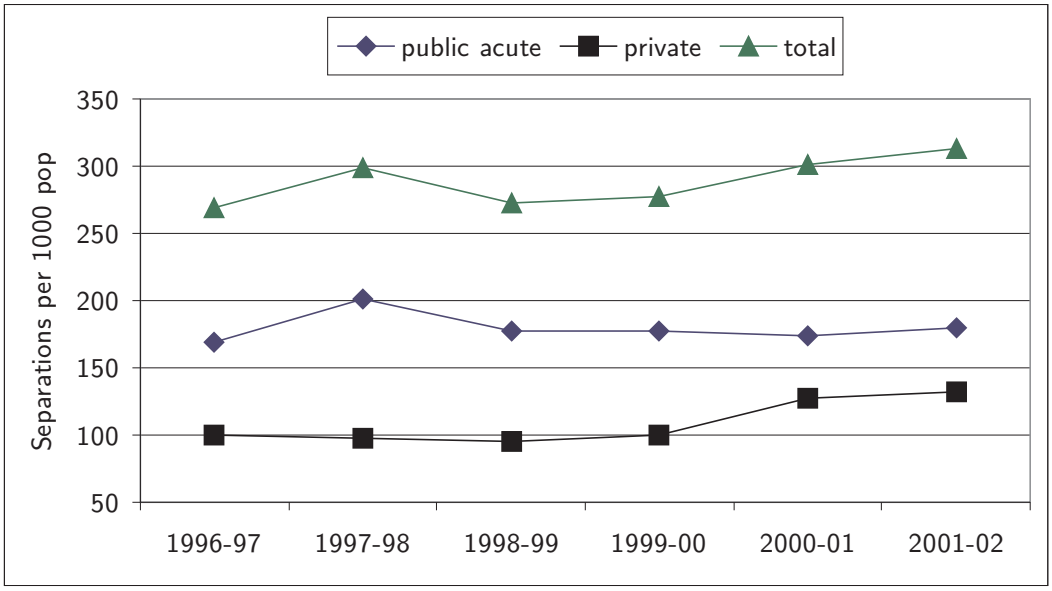
All figures show an obvious jump in total separations and private separations in the late 1990s and early 2000s. The largest increases in privately insured occurred in September 2000 as a result of the introduction of Lifetime Community rating in June 2000. In all cases, private separations have increased more since the late 1990s than public separations. Also worth noting in the figures is the the sharp decline in hospital utilization in 1998-99.

Figure 5: Hospital separations per 1000 population by patient status, New South Wales



Source: AIHW (Australian Hospital Statistics), various issues

Figure 6: Hospital separations per 1000 population by patient status, Australia



Source: AIHW (Australian Hospital Statistics), various issues

This is quite possibly related to the large decreases in beds per 1000 population in that year, especially in public beds in Victoria. Other factors that may account for this phenomenon are: innovations in medical practice that lead to more day-only procedures and reductions in length of stay, and fluctuations in the incidence of disease. An example of the later is epidemics such as influenza which are typically worse in some years than others.

Table 6 shows changes in separations by patient status before the large increases in the privately insured (1999-00) and after (2001-02). The percentage changes in the last column show that there have been large increases in utilisation in all categories, expect in one instance, over the two year period. In Victoria and nationally, both public and privately insured separations have increased. In NSW, there was a small decline in public separations which took place during the earlier period 1999–2000 to 2000–01.

These figures and Table 6 indicate that there have been increases in utilisation overall rather than a substitution of private for public care. Note, however, that there has been considerable debate about the phenomenon of apparent reduction in NSW public hospital separation rates. Some of this apparent reduction is due to differences in application of admission policy in NSW, with services instead being counted as non-admitted services (e.g. chemotherapy, dialysis). NSW Health now includes an "adjustment" factor in its Annual Reports to count back in these services. This qualification notwithstanding, it is worth noting that the overall increase is far more pronounced for the period 2000–01 to 2001–02. The critical issue for a State government is whether the increase in privately insured activity has occurred in the public or private sector.

Table 6: Hospital separations per 1000 population by patient status, 1999–2002

		1999-00	2000-01	2001-02	% change		
					1999-00 to 2000-01	2000-01 to 2001-02	1999-00 to 2001-02
VIC	Public acute	182.0	183.0	196.8	0.5	7.5	8.1
	Private	103.0	112.9	120.0	9.6	6.3	16.5
	Total	285.0	295.9	316.8	3.8	7.1	11.2
NSW	Public acute	159.1	153.4	156.1	-3.6	1.8	-1.89
	Private	95.2	100.6	125.0	5.7	24.3	31.3
	Total	254.3	254.0	281.1	-0.1	10.7	10.5
Australia	Public acute	177.7	174.2	180.0	-2.0	3.3	1.3
	Private	99.7	107.6	132.6	7.9	23.2	33.0
	Total	277.4	281.8	312.6	1.6	10.9	13.8

Source: AIHW (Australian Hospital Statistics), various issues.

Tables 7 to 13 show hospitals separations per 1000 population by patient and hospital category for the states of NSW, Queensland, South Australia, Tasmania, Victoria, Western

Australia and nationally. It should be noted that for Tables 7–13, the categories 'private patients in private hospitals and 'private patients in public hospitals' include only those patients with private health insurance. They exclude private patients whose admission category is private but self-funded, or funded by Department of Veterans' Affairs, Worker's Compensation or Motor Vehicle third-party personal claim.

Table 7: Hospital separations per 1000 population by patient and hospital category, New South Wales

	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02
Total hospitals	281.8	277.0	276.0	273.5	273.3	292.0
Public hospitals	198.1	194.9	192.1	185.5	181.7	188.6
Public patients	159.4	161.2	161.4	155.8	150.4	153.4
Private patients	26.5	22.9	20.6	19.1	20.7	24.5
Private hospitals	83.8	82.1	83.8	88.0	91.6	103.4
Private patients	68.9	66.6	63.1	76.1	79.8	88.0
Public patients	2.9	3.4	3.3	3.3	3.0	2.7

Source: AIHW (Australian Hospital Statistics), various issues.

Table 8: Hospital separations per 1000 population by patient and hospital category, Queensland

	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02
Total hospitals	299.8	311.4	317.9	322.5	329.3	358.0
Public hospitals	192.4	200.0	202.8	198.9	189.4	192.5
Public patients	170.2	179.0	183.8	181.3	172.2	178.4
Private patients	19.8	18.3	15.5	13.0	11.8	10.3
Private hospitals	107.5	111.4	115.1	123.6	139.9	165.5
Private patients	92.7	94.9	935.0	103.4	107.5	133.6
Public patients	0.3	0.3	0.3	1.2	4.7	5.8

Source: AIHW (Australian Hospital Statistics), various issues.

Table 14 shows the changes in separation per 1000 population between 1999-2000 to 2001-02 for all these states and nationally. The fiscal year 1999-2000 was chosen for comparison as, even though there were prior policy changes, no significant changes in the percentage of the population with hospital insurance were recorded.

Public hospital separations decreased in Queensland and WA between 1999-00 and 2001-02. In five states, NSW, Qld, SA, TAS and WA, public patients in public hospital declined. Victoria is an outlier in this category. Private patients in public hospitals increased in some cases by quite large amounts. This occurred in all states except Queensland. Another data anomaly in Table 14 is the large increase in the percentage of public patients in private hospitals in Queensland, although it should be noted that the actual numbers have grown quickly from a very small base (from 1.2 in 1999-00 to 4.7 in 2000-01, and to 5.8 in 2001-02). Such a large change is almost certainly the result of an administrative change in the

Table 9: Hospital separations per 1000 population by patient and hospital category, South Australia

	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02
Total hospitals	319.6	313.0	317.6	321.6	331.1	352.7
Public hospitals	223.0	222.5	226.6	226.8	223.1	229.7
Public patients	189.8	195.5	200.4	200.6	195.3	197.8
Private patients	20.4	17.3	16.1	16.1	18.2	20.4
Private hospitals	96.6	90.5	91.0	94.8	108.0	123.0
Private patients	89.8	83.3	77.0	86.0	99.2	122.2
Public patients	0.3	0.3	0.6	1.9	0.2	0.8

Source: AIHW (Australian Hospital Statistics), various issues.

Table 10: Hospital separations per 1000 population by patient and hospital category, Tasmania

	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02
Total hospitals	277.4	268.2	259.3	258.1	273.4	310.3
Public hospitals	161.9	165.3	165.2	155.0	145.7	165.0
Public patients	136.5	142.9	143.1	135.3	121.0	133.9
Private patients	12.3	11.6	11.9	10.1	15.5	18.1
Private hospitals	115.5	102.9	94.1	102.6	127.7	145.3
Private patients	79.9	69.6	65.2	60.7	91.0	59.4
Public patients	16.3	7.9	0.6	22.2	26.1	25.4

Source: AIHW (Australian Hospital Statistics), various issues.

Table 11: Hospital separations per 1000 population by patient and hospital category, Victoria

	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02
Total hospitals	296.5	292.8	298.8	305.5	316.6	340.6
Public hospitals	196.4	200.7	199.4	203.1	204.5	222.5
Public patients	166.4	168.7	176.5	180.9	181.9	196.2
Private patients	19.3	15.9	13.5	12.9	13.8	15.2
Private hospitals	100.1	104.6	99.4	102.4	112.1	118.2
Private patients	90.4	88.8	83.2	90.1	99.0	103.0
Public patients	0.4	0.6	0.6	1.1	1.1	0.6

Source: AIHW (Australian Hospital Statistics), various issues.

Table 12: Hospital separations per 1000 population by patient and hospital category, Western Australia

	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02
Total hospitals	265.8	282.8	297.6	308.5	321.6	333.7
Public hospitals	194.8	193.9	196.0	193.9	191.4	190.7
Public patients	168.9	170.2	174.9	175.2	172.1	170.2
Private patients	16.8	15.0	12.8	11.9	12.3	12.5
Private hospitals	71.1	89.0	101.5	114.5	130.1	143.0
Private patients	56.9	68.7	70.7	82.3	94.2	106.5
Public patients	5.7	7.4	14.5	19.0	23.8	27.0

Source: AIHW (Australian Hospital Statistics), various issues.

Table 13: Hospital separations per 1000 population by patient and hospital category, Australia

	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02
Total hospitals	289.1	290.6	294.5	298.0	304.5	327.5
Public hospitals	197.7	198.2	199.7	197.4	193.9	202.8
Public patients	167.0	171.0	174.8	173.6	169.1	174.4
Private patients	21.3	18.5	16.3	15.0	16.0	17.5
Private hospitals	91.5	92.4	95.5	101.4	11.5	124.8
Private patients	78.4	78.2	75.5	84.7	92.3	103.6
Public patients	2.1	2.3	9.6	4.1	5.1	5.4

Source: AIHW (Australian Hospital Statistics), various issues.

Table 14: Changes in hospital separations per 1000 population, 1999–2000 to 2001–02

	NSW	QLD	SA	TAS	VIC	WA	AUST
Total hospitals	6.8	11.0	9.7	20.2	11.5	8.2	9.9
Public hospitals	1.67	-3.2	1.3	6.5	9.6	-1.7	2.7
Public patients	-1.5	-1.6	-1.4	-1.0	8.5	-2.9	0.6
Private patients	28.3	-20.8	26.7	79.2	17.8	5.0	16.7
Private hospitals	17.5	33.9	29.7	41.6	15.4	24.9	23.1
Private patients	15.6	29.2	42.1	-2.1	14.3	29.4	22.3
Public patients	-18.2	383.3	-57.9	14.4	-45.5	42.1	31.7

Source: AIHW (Australian Hospital Statistics), various issues.

admission of public patients to private hospitals. It is quite possible that the Queensland Health Department contracted to use private beds for public patients during the period indicated.

The changes in the number of private patient separations in public hospitals is important because it means that the policy changes and the increase in the number of insured were not having the anticipated impact on excess demand in public hospital utilization. More private patients in the public sector, however, improve the revenue of the public hospitals to a certain degree. Several revenue sources are available for public hospitals when admitting private patients. For example, bed day fees are charged for private patients in public hospitals. In Victoria, the fees range from $210 to $548 (Victorian Department of Human Services, 2002), and bed day fees are usually covered in full by private insurance funds. In addition, some public hospitals charge doctors for using hospital facilities for their private patients. States may also set revenue targets for public hospitals as part of the hospital payment system. For examples, public hospitals in Victoria and New South Wales can keep any revenue in excess of the target, but will not receive any additional funding from the States if the revenue target is not met. Table 15 shows the revenue amounts received by public hospitals from private insurance funds from 1998–2001. Not surprisingly, the amounts tend to vary with the number of private patient separations in the same period.

Table 15: Funds received by public non-psychiatric hospitals from private health insurance funds ($million)

	NSW	QLD	SA	TAS	VIC	WA
1998-99	113	25	16	5	44	20
1999-00	98	20	14	4	39	19
2000-01	111	21	17	5	41	20

Source: AIHW, Hospital Expenditure Australia 2001-02.

Private hospital separations have increased significantly in all states and nationally and most of this increase has been driven by the private patient separations in private hospitals. In Tasmania, there was a decline in private patient separations in private hospitals and a large increase in private patients in public hospitals. The organisation of the hospital sector in Tasmania is different to that of other states. For example, the numbers of public patient separations in private hospitals is large at 25.4 per 1000 population in 2001-02, compared with 5.4 nationally (refer to Table 10).

Queensland also tends to be different than the other states. Again this is due to differences in the hospital sector. Queensland has a long traditional of free public hospital care, dating back to the Hospitals Act in 1923. This means that the percentage of the Queensland population with private health insurance has been and still is lower than the national average. For example, in the September quarter 2003, 40.7 per cent of the Queensland population

had hospital insurance compared with 43.3 per cent nationally.

Figures 7 to 13 show the trend in the average cost weight of separation by patient election status for NSW, QLD, SA, TAS, Victoria, WA and nationally. The patient type is restricted to acute and newborn and not reported separations (AIHW, 2003b). Average cost weights give an indication of the costliness and therefore the intensity of treatment for separations. "The costs weights represent the costliness of an AR-DRG relative to all other AR-DRGs, such that the average cost weight for all separations is 1.00." (AIHW, 2003b, p. 224).

In NSW, Victoria, Western Australia, nationally and South Australia (in the latter period only), the cost weight per separation for private patients in public hospitals is greater than that for public patients in public hospitals and considerably greater than that for private patients in private hospitals. Moreover, in all these states the cost weights for private patients in public hospitals have increased since the year 2000. This appears to indicate that the admitting doctors prefer public hospitals for complicated procedures. Where privately insured patients have an urgent condition, which does not therefore entail a significant waiting time, they are being admitted to a public hospital. Where they require non-urgent elective surgery or other low intensity and therefore low cost treatment, they opt for the private hospital. Privately insured persons are using their insurance to avoid the non-urgent elective surgery wait for treatment in public hospitals but not public hospitals *in toto*.

The increase in the average cost weight of separations for privately insured in public hospitals in NSW, South Australia, Victoria, Western Australia and nationally may reflect a number of factors. First, the requirement that insurance companies offer known-gap or no-gap policies to their clients may mean that more persons are willing to declare their status as privately insured when they are admitted to a public hospital. Second, the group of persons who chose to be privately insured are likely to be sicker and older than the total population. Even though the move to lifetime community rating was an attempt to address adverse selection problems in the insurance pool, in particular by attracting more young people, the pool overall may still be adverse to the insurer.

The cost weights for Queensland and Tasmania show a different pattern. The cost weight for private patients in public hospitals in both states has decreased over the 2000s. In the case of Tasmania, the decrease in the cost weight is in spite of a very large increase in private patients in public hospitals between 1999-00 and 2001-02 (refer to table 10). Note that these figures do not include patients admitted to either public or private hospitals as a result of motor vehicle accidents nor do they include Department of Veterans' affairs patients. The MVA patients in public hospital have on average a very high cost weight (2.11 nationally in 2001-02).

Figure 7: Average cost weight of separation by patient status, New South Wales

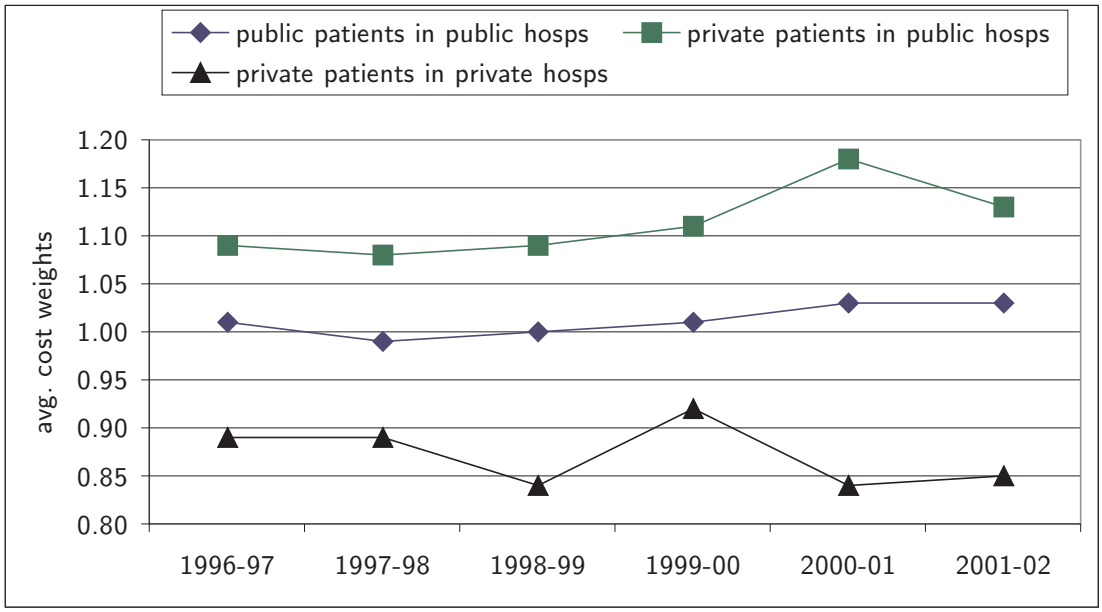


Figure 8: Average cost weight of separation by patient status, Queensland

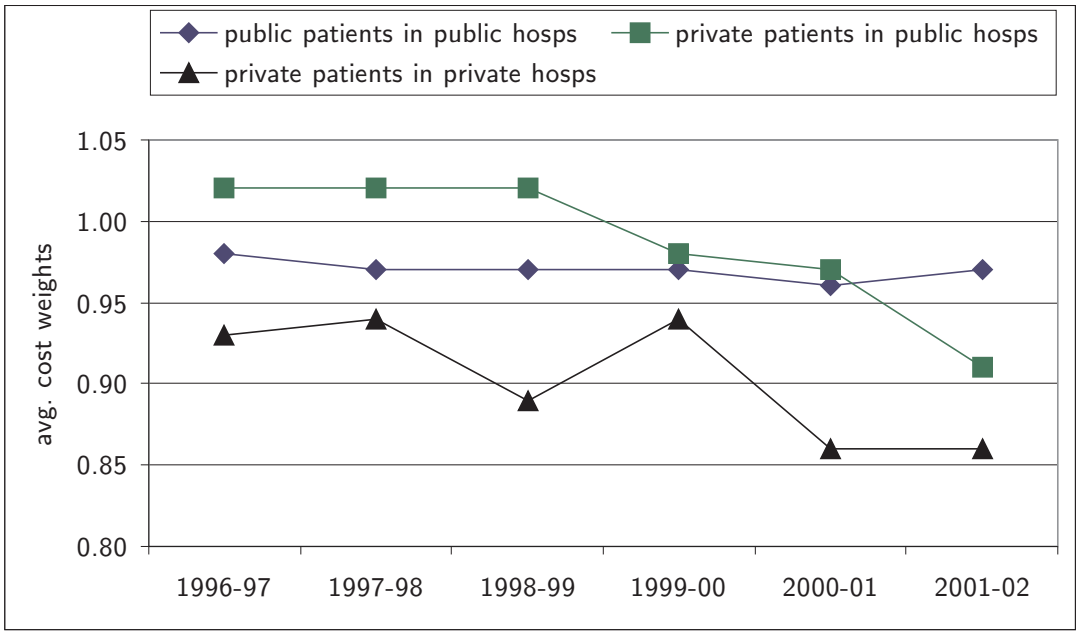


Figure 9: Average cost weight of separation by patient status, South Australia

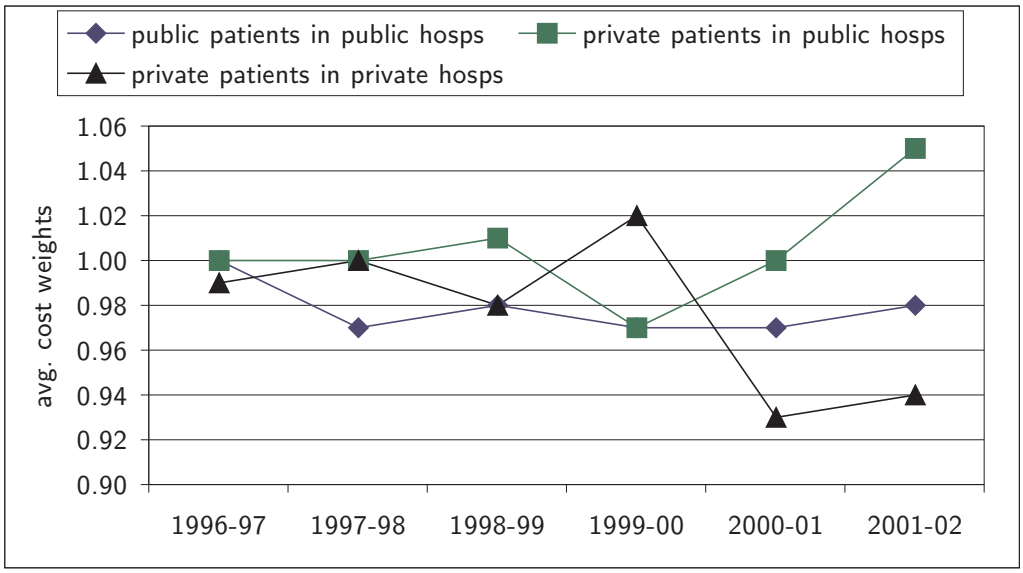


Figure 10: Average cost weight of separation by patient status, Tasmania

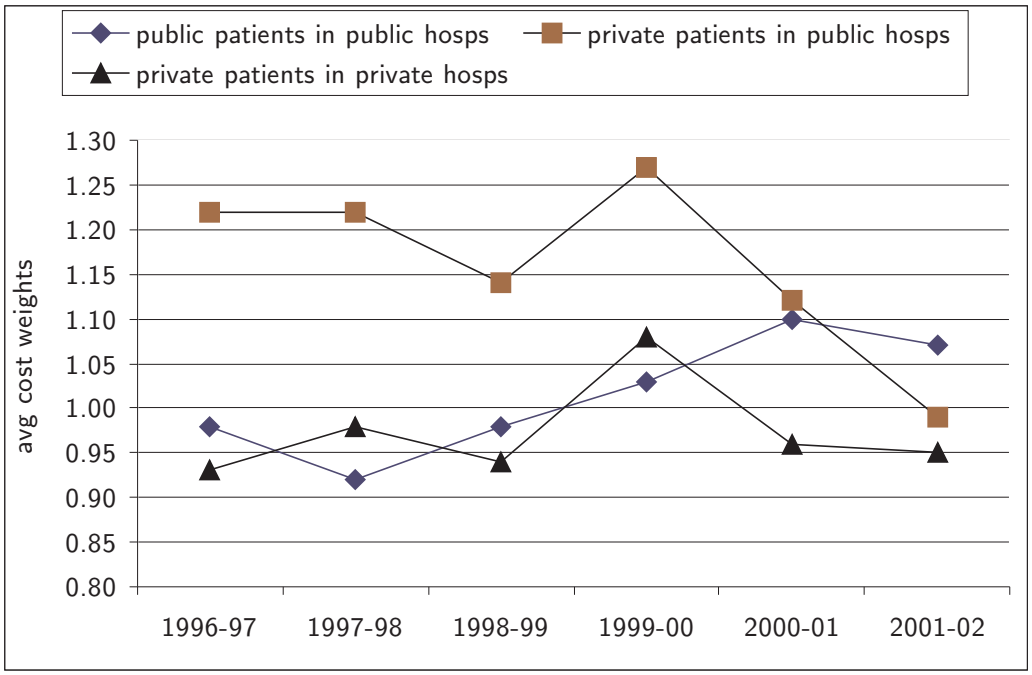


Figure 11: Average cost weight of separation by patient status, Victoria

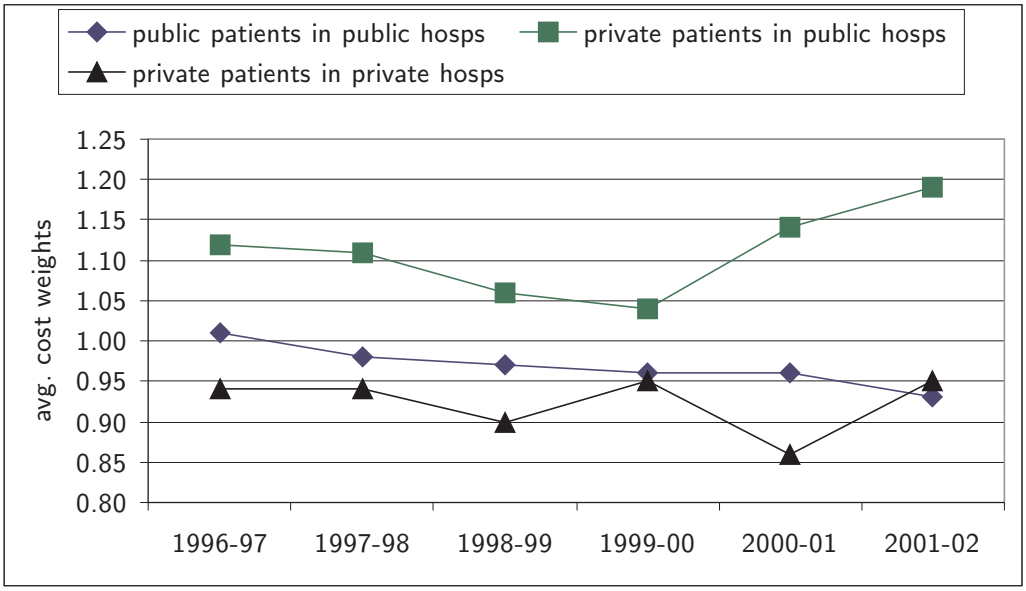
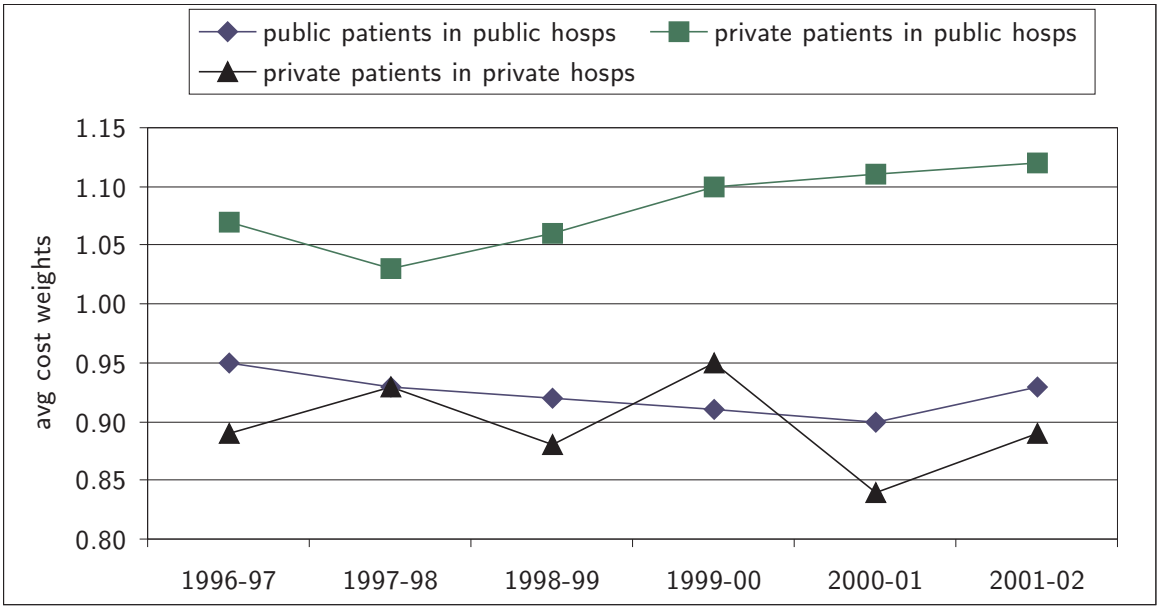


Figure 12: Average cost weight of separation by patient status, Western Australia



2.4 Waiting periods for elective procedures

With an increase in activity in the private sector, there was an expectation that there would be a decrease in public hospital waiting times for elective surgery. The waiting list data for Victoria in Figure 14 indicates the number of people on public hospital waiting lists for elective surgery. The waiting list categories are (Hospital Services Report September quarter 2003, p. 19, www.health.vic.gov.au/hsr/):

- Urgent - admission within 30 days desirable for a condition that has the potential to deteriorate quickly to the point where it may become an emergency.
- Semi-urgent - admission within 90 days desirable for a condition causing some pain, dysfunction or disability but which is not likely to deteriorate quickly or become an emergency
- Non-urgent cases - admission at some time in the future acceptable for a condition causing nominal or no pain, dysfunction of disability which is unlikely to deteriorate quickly and which does not have the potential to become an emergency.

The total number of people on waiting lists declined after September 2000. This appeared to be consistent with the increase in the number of privately insured at the time. The numbers of persons with hospital insurance coverage in Victoria reached a peak of 45.6 per cent in September 2000. But what is noticeable from figure 14 is that most of the decrease in waiting, which is reflected in the total, occurred in non-urgent cases. There was a slight decline in waiting in the semi-urgent category and then a flattening of the trend. There was in fact an increase in the waiting list for urgent cases.

The increase in waiting for urgent cases is consistent with the data on average cost weights in the previous section. The average cost weight per separation for private patients in public hospitals in Victoria increased after mid-2000. Thus privately insured patients appear to be using the public sector for complex and urgent procedures and the private sector for less complex and non-urgent procedures.

The data on waiting lists for NSW are not as comprehensive as that produced by the Department of Human Services in Victoria. The national data published by the AIHW (2003b) is based on the time spent waiting at the 50th and 90th percentile for patients waiting for elective surgery. These data are collected consistently across the states but do not provide the same level of detail as some of the State data.

Figure 15 shows that there has been very little movement in the number of days spent waiting at either percentile in most of the states and nationally. The increase in the waiting

Figure 13: Average cost weight of separation by patient status, Australia

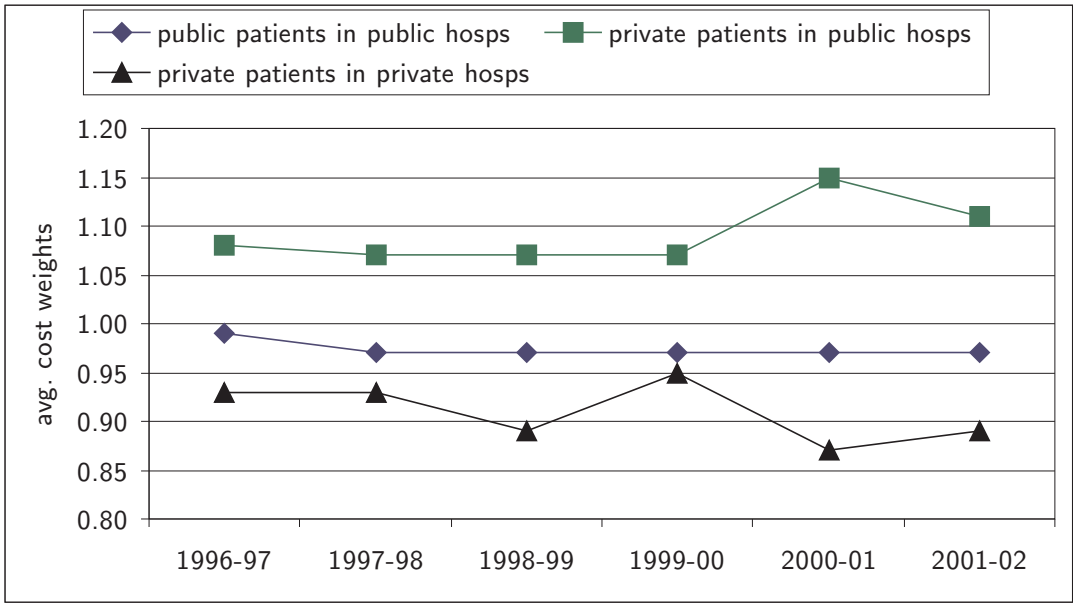
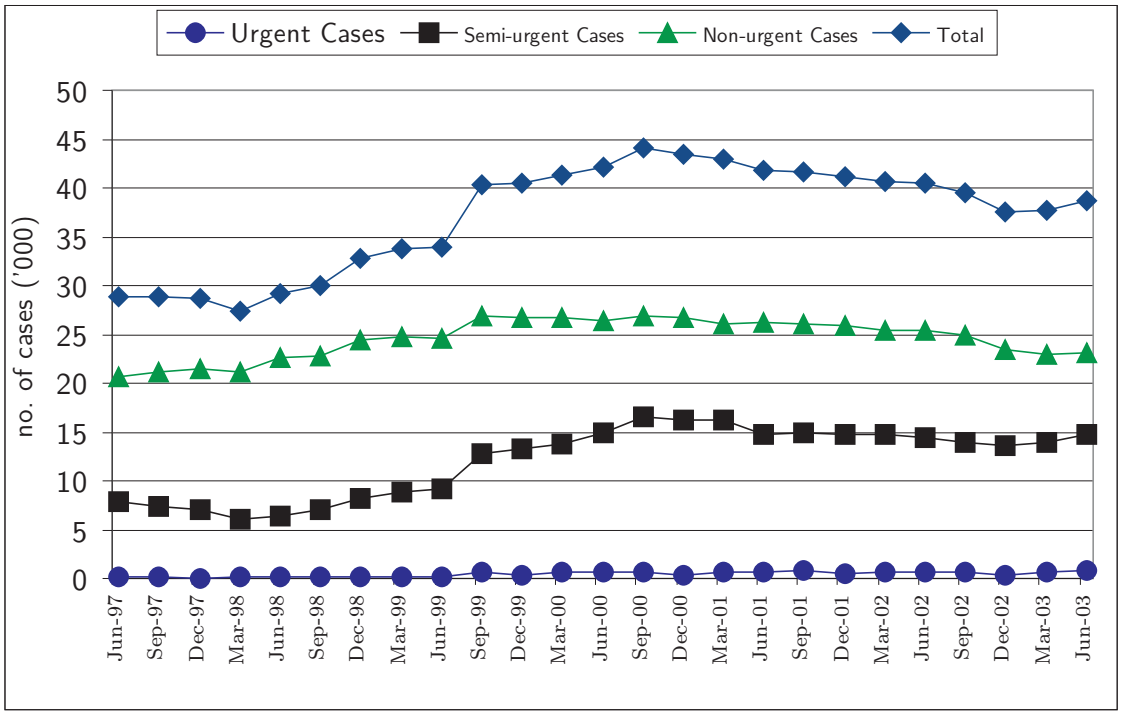


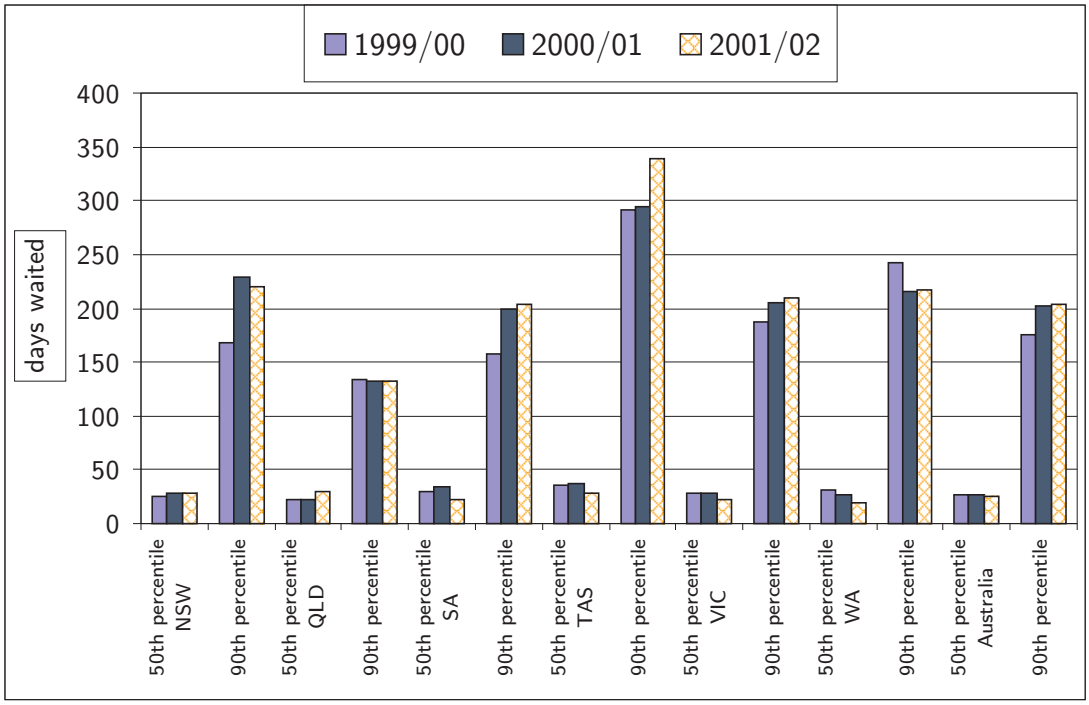
Figure 14: Number of patients waiting by category, Victoria



Source: www.health.vic.gov.au/hsr/

at the 90th percentile in Tasmania is consistent with the large increases in activity in public hospitals in that state.

Figure 15: Number of days waited at the 50th and 90th percentile



Source: AIHW, Australian Hospital Statistics, various issues.
Notes: The data cover public hospitals only, except for two private hospitals in NSW which are funded by the NSW Health Department to provide services for public patients. The waiting times are for elective surgery only.

2.5 Demand for ancillary services

A major issue in the recent PHI policy changes is the application of the 30 per cent rebate to insurance which covers such a broad mix of services and goods. The mix includes private hospital services, privately provided dental services and rebates on gym membership. Thus much of the subsidy is applied to services which have no cost offsets on the public side. In addition to some ancillary services, the subsidy is also covering the provision of gap insurance and the administrative costs of running private health funds. Frech and Hopkins (2003) estimate that 53.5 per cent of the subsidy applies to hospital care. In a similar vein, Deeble (2003) estimates that only 40 per cent of the subsidy is applied to services which are likely to reduce demand on public services.

Benefits paid for fitness and lifestyle equipment and courses increased from $3 million to $15.1 million or an increase of 403 per cent, over the thirteen quarters from June 2000 and June 2003. The increase in ancillary benefits paid over the same period was from $327 million

to $489 million or an increase of 49.5 per cent. The increase in hospital benefits was from $825 to $1254 million or an increase of 52 per cent (PHIAC, 2003). On 12 February 2003, the funds announced that they would stop reimbursing the cost of gym shoes, relaxation tapes and other lifestyle benefits from the 31st December 2003. This change is a response to considerable criticism of the application of the government subsidy to this area.

A major part of ancillary services, about half, is dental services. While there is no direct offset, until recently, i.e., 1996, there was a Commonwealth dental program. Today most of the funding for public dental services has been taken up by State governments (refer to Table 5 in the case of Victoria). The application of the subsidy to ancillary services exacerbates the inequity of the policy. Income is an important determinant in decision to purchase private health insurance (see below; also Hopkins and Kidd, 1996). The inequity is particularly stark if one considers that private insurance policyholders have their dental visits subsidised, while as the same time the waiting time for public dental services worsens. Spencer (2001) reports that about 500,000 people are on waiting lists in Australia and only about 11 per cent of those eligible for treatment receive it each year. These accessibility problems associated with public dental services means that many people eligible for public care will instead seek private care or receive no care.

It is worth noting that benefits claimed for dental services nationally increased from $162 million to $246 million over the period June quarters 2000 to 2003, representing an increase of 51.8 per cent. In Victoria, benefits paid for dental services increased from $27 million in the June quarter 2000 to $45 million in the September quarter 2003, an increase of 67 per cent. For all ancillary services during the same period, the increase was from $52 million to $88 million, a 69 per cent increase.

2.6 Privately Insured Medicare Patients

Under the Australian health system, a patient who has private insurance can be admitted into a public hospital as either a private or a public (i.e., Medicare) patient. The many policy changes toward private health insurance in 1999/2000 was based, in part, on the belief that an increase in the take up of private insurance would relieve pressure on public hospitals. According to an estimate given in the 1998–2003 Australian Health Care Agreement, a 1% decline in private health insurance coverage would cost public hospitals an additional $82 million in providing additional services to those who drop out of private health insurance. There is, however, considerable doubt about the reliability of the estimate (Cromwell, 2002; Deeble, 2002). We provide a brief evaluation of the extent of public hospital usage by privately insured patients. Two sources of data are used: the National Health Surveys conducted by ABS and the Australian Hospital Statistics published by AIHW.

The 2001 National Health Survey asked respondents what their patient type was at their most recent hospital admission. Table 16 presents a simple cross tabulation of insurance status and patient types. It shows that close to 14 percent of those who were admitted into hospitals were Medicare patients even though they were privately insured. This represents roughly 28 percent of those who were privately insured and admitted to a hospital (i.e., the first row total in Table 16). The percentage appears rather high, especially since we include only those with hospital insurance under private insurance. We note, however, that this could be due to the timing of the survey, which took place in 2001, less than a year after the general upswing in PHI membership. Many of the respondents were newly enrolled in private health funds, as such they were serving the one- or two-year waiting period before they could use their insurance for various restricted items. This may explain the high percentage of Medicare patients among those with PHI and were admitted to a hospital.

Table 16: Insurance Status and Hospital Patient Types, NHS 2001

Whether currently covered by private health insurance	Patient type at most recent admission		
	Medicare[a]	Private	Total
With private insurance[b]	448 (13.6%)	1,173 (35.7%)	1,621 (49.3%)
Without private insurance	1,500 (45.6%)	165 (5.0%)	1,665 (50.7%)
Total	1,948 (59.3%)	1,338 (40.7%)	3,286 (100.0%)

[a]Public patients, they were referred to as "Medicare" patients in NHS 2001.
[b]Those with hospital cover, with or without ancillary.
Source: National Health Survey 2001, ABS.

Tables 17–20 compare the characteristics of patients with and without PHI, first by their equivalent income quintile in Tables 17 and 18, and then by age groups in Tables 19 and 20. The per cent figures in parentheses show the column per cent, i.e., they show the income or age distribution of patients of a particular type. For comparison, the average distribution of all patients is included in the last column. This provides a convenient point of reference when making comparison across different patient types.

Table 17 shows, among patients with PHI, there was little difference in income between Medicare and private patients and this is true for both sexes. It appears that income is not a deciding factor whether a patient with PHI elects to be admitted under Medicare or not. In other words, this would suggest that a high-income patient is no more nor less likely to elect to be a Medicare patient than a low-income patient. In contrast, among patients with no PHI, their patient types differ markedly according to their income. Specifically, Table 18 shows that, among patients with no PHI, those in the high-income groups were more likely

to elect to be treated as private patients.

Table 17: Hospital Patients with PHI, Patient Types by Income, NHS 2001

Equivalent Income Quintile	Male Patients		Female Patients		
	Medicare[a]	Private	Medicare[a]	Private	Total
1st quintile	17	53	30	73	173
	(9.9%)	(12.9%)	(14.5%)	(13.2%)	(12.9%)
2nd quintile	36	58	31	97	222
	(21.1%)	(14.1%)	(15.0%)	(17.5%)	(16.5%)
3rd quintile	33	78	50	120	281
	(19.3%)	(19.0%)	(24.2%)	(21.6%)	(20.9%)
4th quintile	41	81	51	136	309
	(24.0%)	(19.7%)	(24.6%)	(24.5%)	(23.0%)
5th quintile	44	141	45	129	359
	(25.7%)	(34.3%)	(21.7%)	(23.2%)	(26.7%)
Total	171	411	207	555	1,344

Note: Figures in parentheses are per cent of column total.
[a]Public patients, they were referred to as "Medicare" patients in NHS 2001.

Table 18: Hospital Patients with No PHI, Patient Types by Income, NHS 2001

Equivalent Income Quintile	Male Patients		Female Patients		
	Medicare[a]	Private	Medicare[a]	Private	Total
1st quintile	193	21	285	15	514
	(35.5%)	(30.4%)	(40.5%)	(22.7%)	(37.2%)
2nd quintile	168	14	251	34	467
	(30.9%)	(20.3%)	(35.7%)	(51.5%)	(33.8%)
3rd quintile	90	12	97	6	205
	(16.6%)	(17.4%)	(13.8%)	(9.1%)	(14.8%)
4th quintile	59	10	52	5	126
	(10.9%)	(14.5%)	(7.4%)	(7.6%)	(9.1%)
5th quintile	33	12	18	6	69
	(6.1%)	(17.4%)	(2.6%)	(9.1%)	(5.0%)
Total	543	69	703	66	1,381

Note: Figures in parentheses are per cent of column total.
[a]Public patients, they were referred to as "Medicare" patients in NHS 2001.

With regards to the age distribution of different types of patients, Table 19 shows that, among patients with PHI, younger patients, i.e., those aged 19 or less, were much more likely to be admitted as Medicare patient, and this is true for both males and females. In contrast, older patients, i.e., those aged 60 to 79, of both sexes were more likely to elect to use their private insurance cover. Two possible explanations come to mind. First, this may simply reflect the difference types of illnesses that patients of different age groups are likely to face. Secondly, it may also be a reflection of the type of PHI coverage that patients in

different age groups tend to purchase. For example, it is conceivable that younger people tend to buy insurance with higher front-end deductibles and less comprehensive coverage.

Table 19: Hospital Patients With PHI, Patient Types by Age, NHS 2001

Age group	Male Patients		Female Patients		
	Medicare[a]	Private	Medicare[a]	Private	Total
19 or less	82	111	58	105	356
	(40.4%)	(23.1%)	(23.7%)	(15.2%)	(22.0%)
20-39	39	82	90	210	421
	(19.2%)	(17.0%)	(36.7%)	(30.3%)	(26.0%)
40-59	50	137	60	174	421
	(24.6%)	(28.5%)	(24.5%)	(25.1%)	(26.0%)
60-79	27	132	29	158	346
	(13.3%)	(27.4%)	(11.8%)	(22.8%)	(21.3%)
80 or over	5	19	8	45	77
	(2.5%)	(4.0%)	(3.3%)	(6.5%)	(4.8%)
Total	203	481	245	692	1,621

Note: Figures in parentheses are per cent of column total.
[a]Public patients, they were referred to as "Medicare" patients in NHS 2001.

The age distributions of patients without PHI were quite similar to that of those with PHI. The tendency of patients to use the public system is also quite similar. As shown in Table 20, fewer young patients, i.e., those 19 years or younger, elected to be admitted as private patients, while the converse is true for older patients, i.e., those older than 60 years of age.

Table 20: Hospital Patients With No PHI, Patient Types by Age, NHS 2001

Age group	Male Patients		Female Patients		
	Medicare[a]	Private	Medicare[a]	Private	Total
19 or less	217	8	187	11	423
	(33.6%)	(9.8%)	(21.9%)	(13.3%)	(25.4%)
20-39	142	20	330	18	510
	(22.0%)	(24.4%)	(38.6%)	(21.7%)	(30.6%)
40-59	119	13	135	17	284
	(18.4%)	(15.9%)	(15.8%)	(20.5%)	(17.1%)
60-79	138	26	150	24	338
	(21.4%)	(31.7%)	(17.6%)	(28.9%)	(20.3%)
80 or over	30	15	52	13	110
	(4.6%)	(18.3%)	(6.1%)	(15.7%)	(6.6%)
Total	646	82	854	83	1,665

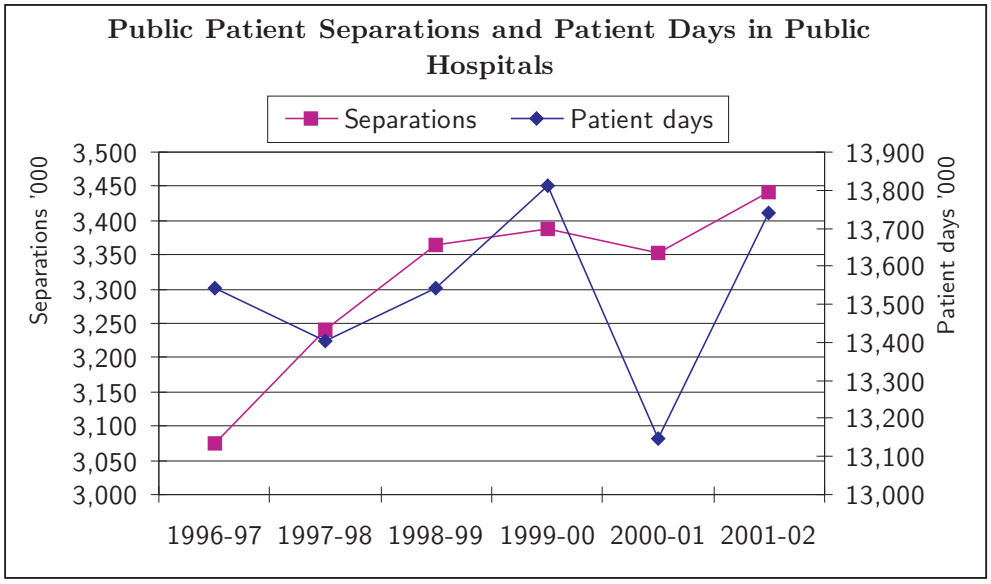
Note: Figures in parentheses are per cent of column total.
[a]Public patients, they were referred to as "Medicare" patients in NHS 2001.

It will be very useful if one can examine some time trend to gain further insight into the hospital usage pattern of privately insured patients. Unfortunately, a comparison with 1995

NHS is not possible as the 1995 survey did not ask respondents what their patient types were if they were admitted into a hospital, nor whether the hospitals were private or public hospitals. Instead, we have to resort to using hospital statistics published by AIHW, to gauge the extent of privately insured patients are using the public system as public patients. The data, however, show only patient types in public hospitals, not their insurance status. The data on separations of public patients include all those who were admitted as public patients, even though some of whom may be privately insured.

Figure 16 shows the total number of separations and patient days of public patients in public hospitals, nationally, during the period 1996–2002. It is apparent that public patient separations were mostly following an upward trend, with a noticeable increase between 2000–01 and 2001–02, a year after the introduction of the 30% rebate and life-time health cover. In contrast, patients days were fluctuating widely during the same period, except that an even more noticeable increase occurred between 2000–01 and 2001–02.

Figure 16: Total Output of Public Hospitals, Australia

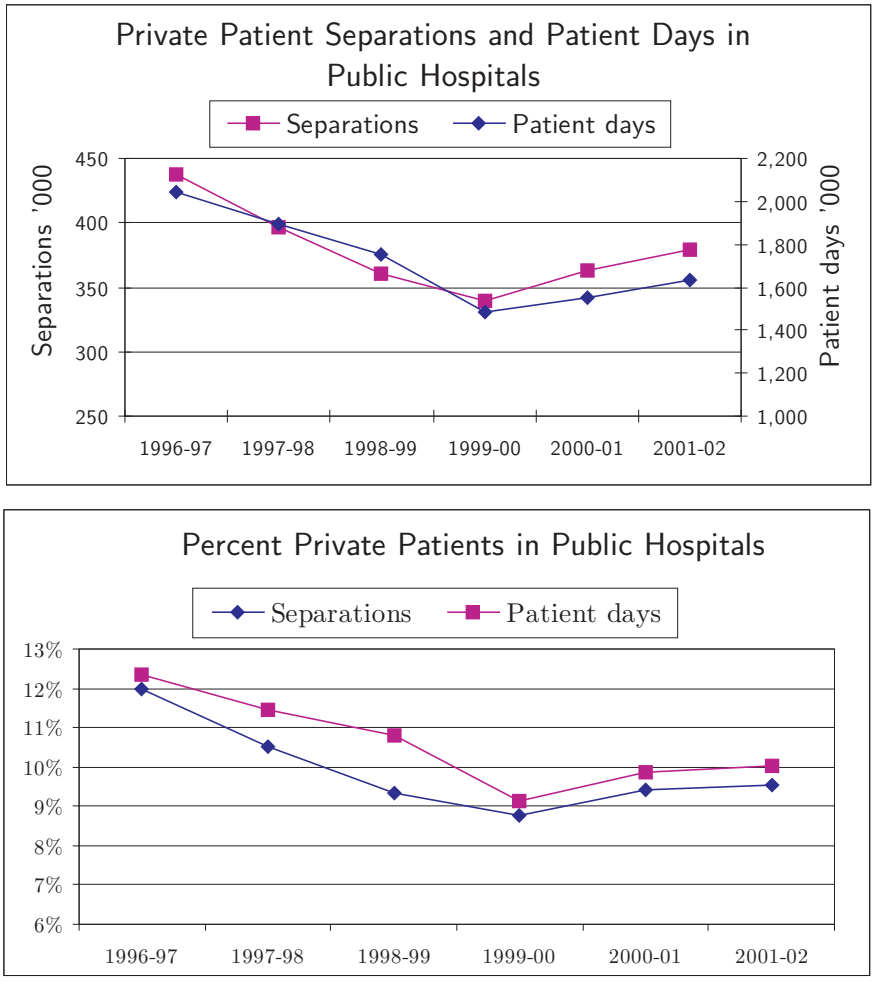


Source: *Australian Hospital Statistics*, various years, AIHW.

We compare the public patient output with that of private patient in public hospitals in Figure 17. Here, both separations and patient days of private patients followed roughly the same pattern throughout the period, where a steady decline took place in the first four years of the period, followed by a significant upward trend in the last two years. It appears that public and private patient outputs by and large moved in different directions prior to 1999–2000, while between 2000-01 and 2001–02, the two sets of indicators moved in the same upward direction.

In percentage terms, private patients' share of public hospital output declined steadily from around 12% in 1996–97 to a low of around 9% in 1999-2000, after which the trend

Figure 17: Private Patients in Public Hospitals, Australia



Source: *Australian Hospital Statistics*, various years, AIHW.

was reversed and appeared to be holding at around 10% in 2001–02. We summarize the observation in the following remarks:

- Private patients' use of public hospitals followed the same declining trend as private insurance membership until 1999–2000, when major policy changes took place.
- Public patients' use of public hospitals was by and large on an upward trend without being unduly affected by private insurance membership.
- After 2000–01, both private and public patients' use of public hospitals has been on an upward trend. It thus appears that an increase in private insurance membership did not shift patients from public to private hospitals, but if anything simply increased the utilization of public hospitals by both types of patients.

2.7 Remarks on Health Resource Utilisation

There was about a 15 percentage point increase in the percentage of the population covered by PHI between early and late 2000. This coincided with the introduction of the Lifetime HealthCover policy, not the tax and subsidy incentives introduced earlier. The increase in PHI membership, however, did not appear to have the anticipated effects on health resource utilization. In particular, since 1999-00, there has been strong increases in both public and private hospitals separations per 1000 population. In absolute terms most of this growth in public hospital separations has come from public patients, although private patients registered a higher rate of increase. Over the same period, the average cost of each separation for private patients in public hospitals has increased dramatically, possibly because public hospitals were increasingly relied upon for more complicated treatments. In terms of waiting time, there is no evidence that waiting times in Victoria for elective surgery in public hospitals has fallen over the period 1999-00 to 2001-02; if anything they have actually risen.

3 Distributive Consequences of Recent PHI Policy Changes

This part of the report is concerned with assessing the distributive consequences of recent PHI policy changes. The data sources we use are the two most recent health surveys, the 1995 and 2001 National Health Surveys conducted by ABS. Since the major PHI policy changes took place in 1997 and 2000, which was in between the two surveys, we can regard the 1995 and 2001 survey respondents as, respectively, the control and treatment groups.

In the empirical work, we divide all households into two types: singles and families, for two reasons. First, as will be shown later, these two types of households behave rather differently in their decisions to purchase PHI. In addition, families have important characteristics that are not applicable to singles, e.g., number of children. It is thus necessary to separate singles from families in any meaningful statistical analysis.

For each type of households and in each survey, we examine the characteristics of those who purchased PHI against those who did not. Simple descriptive statistics such as sample mean and proportion give a snapshot of the characteristics of households, but they make no allowance for the fact that many factors are important in influencing households' insurance decisions. For example, statistics on the age distribution of households who purchase PHI may reflect households' income, health status, occupations, etc. Thus if one observes a strong tendency of older individuals purchasing PHI, one cannot be sure whether it is due to higher income, higher health needs, or other factors.

To control for the many factors that are potentially important in influencing households' health insurance decisions, we adopt a multivariate statistical approach. In this report, we rely on the standard probit approach, a well-established statistical technique dealing with binary dependent variables. Specifically, we estimate a probit model for each household type and in each survey. The probit models allow us to isolate the effects of a particular factor, say income, while controlling for all other factors such as age, educational attainment, and so on. Predicted probabilities of households' insurance choices can be generated from the probit models, and these predicted probabilities indicate the likelihood of households of some particular characteristics purchasing PHI, while controlling for all other factors considered in the model.

While the probit model can control the influences of different variables, it can only do so within a particular estimated model. This presents a problem in our context since we estimate four separate probit models in this report (one for each of two household types and of two surveys), and we wish to compare results across the two surveys to gauge the effects of the aforementioned PHI policy changes on household behavior. A simple comparison of predicted probabilities between the two surveys fails to account for important changes that took place between 1995 and 2001, in social and demography trends, developments in the private insurance market, the economy, political environment, and all factors that are not captured in the model. To overcome this problem, we construct a hypothetical situation by "transporting" households in 2001, with 2001 characteristics, to the environment of 1995. In other words, we seek to answer the question: if a household in 2001 (with his 2001 income, age, and other characteristics) were to decide its health insurance choices exactly as it would in 1995, what would it have chosen? The answer to this question will enable us to isolate the effects of the PHI policy changes by comparing households' choices in 2001 with

their hypothetical choices. The probit equations we estimate allow the construction of the hypothetical situation in a relatively straightforward manner: we feed the 2001 household data into the estimated 1995 probit equation to compute households' hypothetical predicted probabilities. In so doing, we are in effect forcing households in 2001 to use the decisions rules dictated by the preferences of 1995 households, as embodied in the estimated 1995 probit equations.

3.1 Descriptive Statistics

We begin with a summary of the sizes of various groups of households in our sample by their insurance status. The 1995 and 2001 National Health Surveys contain, respectively, 53,828 and 26,862 records of individuals. Our sample sizes are considerably smaller due to the elimination of records with incomplete and non-useable observations. Table 21 summarizes the samples of households according to their insurance status. Two points are worth noting: first, the percentage of households with PHI increased noticeably between 1995 and 2001; and second, compared to singles, families have a higher tendency to have PHI.

Table 21: Private Insurance Membership

	1995			2001		
	No PHI	PHI	Total	No PHI	PHI	Total
No. of single individuals	3,534	1,201	4,735	2,997	1,808	4,805
Per cent with PHI	–	25.4%	–	–	37.6%	–
No. of families	3,928	3,058	6,986	4,614	4,952	9,566
Per cent with PHI	–	43.8%	–	–	51.8%	–

Table 22 presents the percentage of households in each State/Territory of both household types that were privately insured in the two surveys. The figures were weighted with the sampling weights supplied by ABS. South Australia had the most singles in 1995 who were privately insured, whereas the figures for families were quite similar across States/Territories, except for Northern Territory which, had a noticeably lower than average percentage. The picture in 2001 was, however, rather different. The figures for singles were similar across States/Territories, except again for Northern Territory, which was noticeably lower than the rest of the country. For families, ACT and Western Australia were the two States/Territories with the highest percentage of PHI membership. The percentages of families with PHI in ACT and Western Australia stood at, respectively, 62 per cent and 57 per cent.

Of particular interests are the characteristics of those households in Table 21 who purchased PHI, as compared to those who did not. The characteristics of those with PHI, and those without PHI are included in the Appendix B. Table 30 provides a comparison of singles with PHI against those without, in 1995 and 2001. The characteristics of families with and

Table 22: Per cent Population with PHI by States/Territories

	1995		2001	
	Singles	Families	Singles	Families
NSW	21.2	44.2	33.7	52.5
VIC	25.4	42.9	35.6	52.8
QLD	23.2	44.2	31.9	50.8
SA	30.7	43.2	36.0	53.1
WA	26.5	44.1	43.7	57.3
TAS	26.7	44.3	33.6	52.7
NT	18.9	35.8	31.3	54.3
ACT	23.9	44.2	45.1	62.0

without PHI are presented in Table 31. Two points are worth emphasizing. First, there were large income differences between households with PHI and those without. Secondly, there is no strong tendency for households with higher health risks to purchase PHI. In particular, there was a strong tendency for smokers *not* to purchase PHI.

To explore the relationship between health insurance decisions and socioeconomic standing, we tabulate households' insurance choices by the index of households' relative socioeconomic disadvantage (SEIFA), as defined and compiled by ABS, in Table 23. The present-form SEIFA index, first produced in 1990, consisted of five indexes formed from Census data. They relate to socio-economic aspects of geographic areas. Each index summarises a different aspect of the socio-economic conditions in an area. The construction of the index is outlined in an Information Paper (#2039.0) published by ABS in 1998.

As expected, the incidence of PHI membership is strongly and positively correlated with the socioeconomic standing of households. The percentages of households with PHI, whether singles or families, were uniformly increasing in the index of social standing. Households in the highest quintile were more than twice as likely to have PHI, as compared to households in the first quintile. It is also worth noting that, within each SEIFA group, families are much more likely to have PHI than singles.

Table 23: PHI membership by index of relative socioeconomic disadvantage

SEIFA	Per cent singles with PHI		Per cent families with PHI	
	1995	2001	1995	2001
1st quintile	15.2	22.0	22.5	31.2
2nd quintile	24.3	29.1	36.0	43.9
3rd quintile	24.7	34.5	42.4	50.7
4th quintile	25.9	40.9	46.4	58.9
5th quintile	34.0	55.5	63.4	73.2

3.2 Probit estimation results

As mentioned earlier, tabulations such as Table 23 fail to control for changes in all other relevant factors. For example, the figures in Table 23 did not make allowance for the fact that incidence of PHI membership was much higher in 2001, and income, general macroeconomic conditions, degree of health awareness, etc. may have changed in significant ways between 1995 and 2001. To account for these, we turn to the probit methodology, which we describe in Appendix C. To implement the probit model empirically, we make use of the data from the 1995 and 2001 National Health Surveys. Households are divided into two types: singles and families, and a probit model is estimated for each type in each survey. Table 24 list the variables that we constructed for single individuals. The variables are grouped into seven categories, namely person descriptions, States/Territories, age, education, income and employment, health status, and health habits. Care has been taken to ensure that the variables are defined consistently across the two surveys.

Table 24: Variables Used in Probit Estimation—Singles

Variable name	Variable definition
Dependent variable	
PHI	Private health insurance (1=Yes, 0=N0)
Explanatory variables	
Person description variables	
female	dummy, 1=female
prevmrd	dummy, 1=previously married
immig	dummy, 1=non-immigrant
govcrd	dummy, 1=government concession/entitlement card holder
devinc	standardised income (actual - mean income)
devinc2	squared standardised income
States/Territories variables	
NSW†	dummy, 1=New South Wales
VIC	dummy, 1=Victoria
QLD	dummy, 1=Queensland
SA	dummy, 1=South Australia
WA	dummy, 1=Western Australia
TAS	dummy, 1=Tasmania
NT	dummy, 1=Northern Territory
ACT	dummy, 1=ACT
Age group variables	
age1819	dummy, 1=age 18 or 19
age2024	dummy, 1=age between 20 and 24
age2529	dummy, 1=age between 25 and 29
age3034	dummy, 1=age between 30 and 34
age3539	dummy, 1=age between 35 and 39

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Variable name	Variable definition
age4044†	dummy, 1=age between 40 and 44
age4549	dummy, 1=age between 45 and 49
age5054	dummy, 1=age between 50 and 54
age5559	dummy, 1=age between 55 and 59
age6064	dummy, 1=age between 60 and 64
age6569	dummy, 1=age between 65 and 69
age7074	dummy, 1=age between 70 and 74
age7579	dummy, 1=age between 75 and 79
age80p	dummy, 1=age above 80
Educational qualification variables	
degree	dummy, 1=bachelor degree or higher
postscd	dummy, 1=post secondary qualification
hischl†	dummy, 1=high school qualification
left15	dummy, 1=left school at age below 15
Employment and income sources variables	
wages†	dummy, 1=income from salaried employment
selfemp	dummy, 1=income from self-employment
pension	dummy, 1=pension income
othrinc	dummy, 1=other income sources
admin	dummy, 1=administration
prof	dummy, 1=professional
paraprf	dummy, 1=para-professional
trade†	dummy, 1=trade profession
clrksrv	dummy, 1=clerks or services
plntopr	dummy, 1=plant operator
laborer	dummy, 1=labourer
Health status variables	
diabet	dummy, 1=diabetic
hiblod	dummy, 1=high blood pressure
hichol	dummy, 1=high cholesterol
chnum	number of long-term conditions, 0–10
poorhth	dummy, 1=self-assessed health is poor
fairhth	dummy, 1=self-assessed health is fair
goodhth†	dummy, 1=self-assessed health is good
underwt	dummy, 1=self-assessed under-weight
overwt	dummy, 1=self-assessed over-weight
accptwt†	dummy, 1=self-assessed weight acceptable
Health habits variables	
lowdrnk†	dummy, 1=average alcohol intake is low
meddrnk	dummy, 1=average alcohol intake is moderate
hidrnk	dummy, 1=average alcohol intake is high
exsmok	dummy, 1=ex-regular smoker
smoker	dummy, 1=current regular smoker, daily
sdntary	dummy, 1=no exercise
lowexr	dummy, 1=low level of exercise

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Variable name	Variable definition
modexr†	dummy, 1=moderate level of exercise
vigexr	dummy, 1=vigorous exercise

†denote dummy variables omitted in estimation.

In the probit estimation, observations were weighted according to the sampling weights supplied by ABS. The estimated coefficients for single individuals are presented in Table 32 in Appendix D.

We make the following remarks about the estimated probit coefficients of singles:

- Income is a strong determinant of health insurance status, although the impact of income appeared to have diminished in 2001. This could have been due to the 30 per cent premium rebate, which made income less of a deciding factor.
- As expected, government concession card holders were much less likely to have private health insurance, even after controlling for income and employment status.
- Relative to the 40–44 age group, individuals in their 20s were much less likely to have PHI, whereas those above the age of 60 were far more likely to have PHI. The effects of age were noticeably more pronounced in 1995, due probably to the fact that more individuals in the base age group (i.e., 40–44) were privately insured in 2001.
- Individuals with high blood pressure and those with chronic conditions were slightly more likely to have PHI.
- Smokers and ex-smokers were a lot less likely to have PHI, and this phenomenon remained very much the same in the two surveys, even after controlling for income, occupation, education attainment and so on.
- Individuals who exercised less were found to be slightly more likely to have PHI, and this is true in both surveys.

The probit estimation for families was implemented by grouping individual observations according to their income-unit relationships as indicated in the surveys. There are three broad types of families in the sample: married couple with children, married couple without children, and single parent with dependent children.

The probit estimation for families is different from that of singles in several aspects. First, we introduce four additional variables in the model: "famsize" refers to family size, "childnum" refers to number of children below 18 years of age, "childlt5" refers to number of

children below 5 years of age, and "chnumcld" refers to average number of chronic conditions per child. Second, the income figures used in constructing the standardised income variable ("devinc") are total household income, which is the sum of family members' gross income. Third, we dropped two variables: sex ("female") and whether previously married ("prevmrd") that were used previously in the estimation for singles. Lastly, education, employment, health status, and health habit variables used in the estimation were those of the heads of households.

The estimated coefficients for families can be found in Table 33 of Appendix D. We make several remarks about the estimated coefficients for families:

- Income, as in the case for singles, was an important determinant of health insurance status in both surveys. Unlike the case for singles, however, the effects of income rose in magnitude in 2001.
- Family size was also an important determinant of insurance status, although its effects were less pronounced in 2001.
- The number of chronic conditions of family heads was important in influencing households' insurance choices in both surveys.
- Family heads' age was an important factor in determining family health insurance choices. Compared to the base age group (40–44), families with heads whose age fall below the base age group were less likely to have PHI, whereas the converse is true for families whose heads' age was above the base group.
- Families with heads whose self-assessed health was poor or fair were less likely to have PHI in comparison to the base group (i.e., families whose heads' self-assessed health was good).
- Consistent with the case of singles, families whose heads were smokers or ex-smokers were very much less likely to have PHI.

3.3 Predicted probabilities under no policy changes

Using the estimated probit models, we can compute predicted probabilities of households with a particular set of characteristics having PHI. Since most of the major PHI policy changes took place between 1997 and 2000, the predicted probabilities generated from the 1995 survey data can be considered the before effects, while the 2001 predicted probabilities were the after effects. A straightforward comparison of the two sets of predicted probabilities, however, fail to account for relevant changes that took place during the two survey

years. For examples, we can be certain that household income increased during the five-year period, insurance products were not the same, macroeconomic conditions were quite different, and there may be important changes in preferences for health insurance that we did not capture in the model. To allow for these changes, we constructed a hypothetical situation, in which households in 2001 (i.e., with their 2001 characteristics) were "transported" to 1995, in the sense that they were "forced" to use the 1995 probit models to make their insurance choices. By comparing the hypothetical predicted probabilities with the actual predicted probabilities of 2001, we hope to isolate the effects of the aforementioned PHI policy changes on households' insurance decisions. The implementation of this is relatively straightforward using the estimated probit models. We simply feed the 2001 data on household characteristics into the estimated 1995 probit equation for each type of households. In effect, we asked households in 2001 to pretend that they were required to make their insurance choices using the 1995 decision rules, as embodied in the 1995 probit equations.

Table 25 presents the hypothetical and actual predicted probabilities by States/Territories. The difference between the two can be regarded as the effects of the PHI policy changes on households from different States/Territories. Overall, singles in ACT registered the best response, while Tasmania and Western Australia had the most families taking up PHI in respond to the policy changes. The response of households in Victoria to the policy changes was about average. The likelihood of a single-individual household in Victoria taking up PHI is estimated to have increased by 0.1196 due to the policy changes, from 0.2385 to 0.3581, or roughly a one-third increase. The corresponding increase for families was quite similar, although in percentage terms it was at 22%, due largely to the fact that families were more likely to have PHI even without the policy changes.

Table 25: Hypothetical and actual predicted probabilities of PHI membership by States/Territories

	Mean predicted probabilities					
	2001 Singles			2001 Families		
	No policy changes	Actual	Policy effects	No policy changes	Actual	Policy effects
NSW	0.2068	0.3365	0.1297	0.4118	0.5264	0.1146
VIC	0.2385	0.3581	0.1196	0.4133	0.5275	0.1142
QLD	0.2117	0.3215	0.1098	0.3670	0.5073	0.1403
SA	0.2946	0.3623	0.0677	0.3978	0.5298	0.1320
WA	0.2696	0.4374	0.1678	0.4093	0.5718	0.1625
TAS	0.2483	0.3353	0.0870	0.3646	0.5295	0.1649
NT	0.2074	0.3172	0.1098	0.3872	0.5419	0.1547
ACT	0.2413	0.4560	0.2147	0.4633	0.6185	0.1552

We next compute the hypothetical predicted probabilities by the index of socio-economic

standing, SEIFA. The difference between the hypothetical and actual predicted probabilities can be regarded as the effect of the PHI policy changes on households of different social standings. It is obvious from Table 26 that the effects of the policy changes were uniformly increasing in SEIFA index for both types of households. There is strong evidence that households in the higher SEIFA quintiles were the most responsive. Not only that, households in the higher SEIFA quintiles were also more likely to have PHI even without the policy changes. These households therefore enjoyed the "deadweight benefits," in the sense that they needed no such benefits to purchase PHI to begin with. Given that those households who took up PHI ought, by their revealed preference, to be better off, we can reasonably conclude that high SEIFA households were the main beneficiaries of the policy changes.

Table 26: Hypothetical and actual predicted probabilities of PHI membership by SEIFA

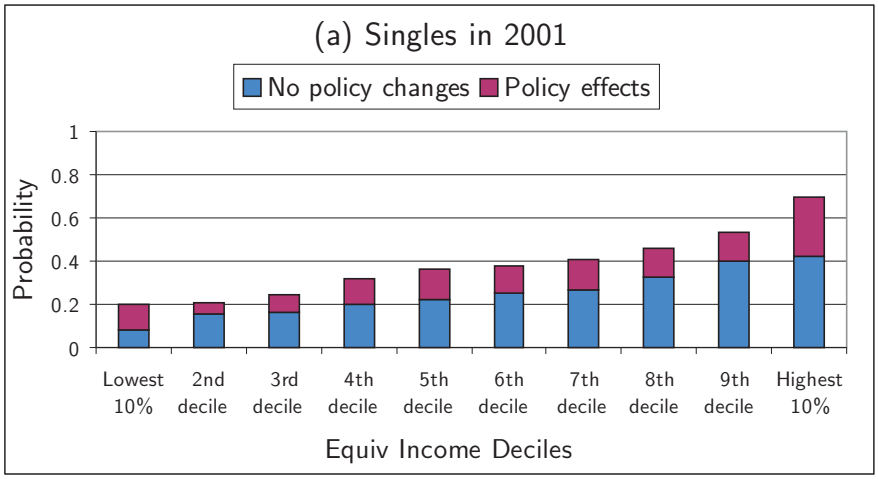
	Mean predicted probabilities					
	2001 Singles			2001 Families		
SEIFA index	No policy changes	Actual	Policy effects	No policy changes	Actual Actual	Policy effects
1st quintile	0.1904	0.2769	0.0865	0.2774	0.3697	0.0923
2nd quintile	0.2087	0.3213	0.1126	0.3439	0.4644	0.1205
3rd quintile	0.2308	0.3540	0.1232	0.3810	0.5077	0.1267
4th quintile	0.2466	0.3830	0.1364	0.4240	0.5679	0.1439
5th quintile	0.2994	0.4654	0.1660	0.5429	0.6874	0.1445

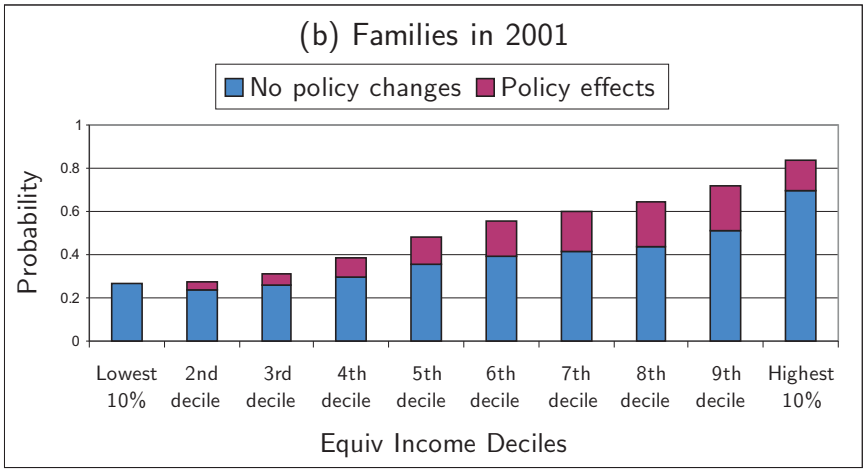
A similar pattern also emerges when we tabulate the results according to the equivalent income deciles. Figure 18 depicts the average probabilities of singles and families by the equivalent income deciles. It is clear that the higher the income levels, the larger are the effects of the recent PHI policy changes.

3.4 Transition Tables

To further explore the impacts of the PHI policy changes, we classify households into those who would have bought PHI and those who would not, according to their hypothetical predicted probabilities. That is, we set a cutoff or threshold level; any households whose hypothetical predicted probability is above the threshold is said to be those who would have bought PHI in 1995. In determining the threshold point, we follow the advice of Cramer (1999) by choosing the sample proportion instead of the usual 50 per cent cutoff rule. In other words, we regard those who had hypothetical predicted probability higher than the actual 2001 sample proportion as those who would have bought private health insurance. We then cross-tabulated this classification with the actual insurance choices of households. The sampling weights supplied by ABS were used in the computation. The

Figure 18: Average probabilities of having PHI by equivalent income deciles, singles and families in 2001





results are summarized in Table 27 in the form of a transition table. Households, whether singles or families, were grouped into one of four cells. Of interest is the top cell of the second column for each household type, the proportion represents those households who would not have purchased PHI in the hypothetical situation but did actually take up PHI in 2001. In this sense it is a measure of the effectiveness of the PHI policy changes. Approximately 26 per cent of singles and 41 per cent of families who would not have purchased PHI under the hypothetical situation actually ended up with PHI in 2001. On the other hand, approximately 66 per cent of singles and 82 per cent of families would have purchased PHI without the policy changes ended up enjoying the "deadweight benefits." These figures indicate that a significant proportion of households would have purchased PHI in any case, with or without the policy changes. Seen in this light, the 30 percent premium rebate represents a mere transfer of money, without making any difference in terms of PHI membership outcomes.

Table 27: Hypothetical PHI membership transition

No policy changes	2001 Singles—Actual			2001 Families—Actual		
2001	No PHI	PHI	Total	No PHI	PHI	Total
No PHI	0.569	0.204	0.773	0.419	0.289	0.708
(Row per cent)	(73.6)	(26.4)	(100)	(59.1)	(40.9)	(100)
PHI	0.078	0.149	0.227	0.052	0.240	0.292
(Row per cent)	(34.5)	(65.5)	(100)	(17.9)	(82.1)	(100)

To understand how the PHI policy changes affect different households in different socio-economic classes, we introduce a more detailed but slightly different classification scheme using the hypothetical predicted probabilities. We classify households into three categories: whether they are "unlikely," "somewhat likely," or "very likely" to purchase PHI under the hypothetical situation. These households are then cross-tabulated according to their actual PHI decisions. The classification of households' likelihood of purchasing PHI is according to whether their hypothetical predicted probabilities fall into the lowest 30%, the middle 40%, or the upper 30% of the weighted sample. That is, those whose hypothetical predicted probabilities are in the lowest 30% are considered to be "unlikely" to have purchased PHI in the hypothetical situation, whereas those in the top 30% are considered to be "very likely." Table 28 presents a summary of this classification as applied to all households. It can be seen that households who were unlikely to purchase PHI remained largely without PHI even after the policy changes took place. On the other hand, most of those who were very likely to purchase PHI were insured after the policy changes took place. Thus, out of 24 per cent of singles who were considered very likely to have purchased PHI without any policy changes, about 16 per cent actually ended up with PHI. The percentage for families was higher, 80 per cent of those who would have purchased PHI ended up purchasing it. Among those who were somewhat likely to purchase PHI, only 32 per cent of singles and 50 per

cent of families ended up purchasing PHI. Seen in the context of the large sum of public spending involved, these estimated effects appear to be less than impressive. Households that were unlikely or somewhat likely to purchase PHI remained largely unmoved by the policy changes, only those that were very likely to purchase PHI ended up, mostly, having PHI. More importantly, the policy changes appear to affect households in different socio-economic groups in a vastly different way, as shown below.

Table 28: Hypothetical PHI membership transition, all households

No policy changes	2001 Singles—Actual			2001 Families—Actual		
2001	No PHI	PHI	Total	No PHI	PHI	Total
Unlikely	0.292	0.068	0.360	0.202	0.059	0.261
(Row per cent)	(81.1)	(18.9)	(100)	(77.5)	(22.5)	(100)
Somewhat likely	0.269	0.128	0.397	0.203	0.206	0.408
(Row per cent)	(67.8)	(32.2)	(100)	(49.6)	(50.4)	(100)
Very likely	0.087	0.157	0.244	0.066	0.265	0.332
(Row per cent)	(35.5)	(64.5)	(100)	(20.0)	(80.0)	(100)

To explore the distributive consequences of the policy effects, we apply the same classification scheme to households in the first and fifth SEIFA quintiles. The results are presented in Table 29. It is apparent that the effects were minimal for households in the first quintile; most of those who were unlikely to purchase PHI under the hypothetical situation remained without PHI coverage in 2001, only 8 per cent of singles and 13 per cent of families in the "unlikely" category took up PHI. In contrast, the figures for households in the fifth quintile were very different; about 43 per cent of singles who were unlikely to purchase PHI under the hypothetical situation actually took up PHI in 2001, and the corresponding figure for families was 38 per cent.

To summarize, the evidence is strong that households who were most affected by the recent policy changes are those with high socio-economic standing and high income. This, coupled with the fact that these policy changes do not appear to have the anticipated effects on health resource utilisation, suggests a rethink of the policy direction. In particular, the 30 per cent premium rebate appeared to have minimal effects on the uptake of PHI, with most of which ended up subsidising households who would have purchased PHI in any case. Our results confirm that most of these are high income households who would have purchased PHI in any case. As an indication of the extent of this "deadweight loss," as much as 87 per cent of families who would most likely have purchased PHI without the rebate ended up enjoying the subsidies in 2001. Not only is the 30 per cent rebate lacking in focus, it also has obvious and undesirable distributive consequences, since high-income households are the main beneficiaries.

Table 29: Hypothetical PHI membership transition of SEIFA 1 and 5 households

SEIFA 1 households						
No policy changes	2001 SEIFA 1 Singles—Actual			2001 SEIFA 1 Families—Actual		
2001	No PHI	PHI	Total	No PHI	PHI	Total
Unlikely	0.401	0.036	0.437	0.388	0.056	0.444
(Row per cent)	(91.8)	(8.2)	(100)	(87.3)	(12.7)	(100)
Somewhat likely	0.299	0.096	0.395	0.250	0.155	0.405
(Row per cent)	(75.7)	(24.3)	(100)	(61.7)	(38.3)	(100)
Very likely	0.080	0.088	0.168	0.051	0.101	0.152
(Row per cent)	(47.6)	(52.4)	(100)	(33.4)	(66.6)	(100)
SEIFA 5 households						
Hypothetical	2001 SEIFA 5 Singles—Actual			2001 SEIFA 5 Families—Actual		
2001	No PHI	PHI	Total	No PHI	PHI	Total
Unlikely	0.147	0.110	0.257	0.067	0.042	0.109
(Row per cent)	(57.2)	(42.8)	(100)	(61.6)	(38.4)	(100)
Somewhat likely	0.206	0.159	0.365	0.129	0.209	0.338
(Row per cent)	(56.4)	(43.6)	(100)	(38.3)	(61.7)	(100)
Very likely	0.091	0.288	0.379	0.071	0.482	0.553
(Row per cent)	(24.1)	(75.9)	(100)	(12.9)	(87.1)	(100)

4 PHI Policy Recommendations

The analysis in this report gives rise to two main results. (i) There is little evidence that the recent PHI policy changes have alleviated the burden of public hospitals. In fact, if anything, there is an increase in the overall utilisation of health resources due to the moral hazard problem. (A discussion of moral hazard in the context of health insurance can be found in Appendix A). (ii) There is strong evidence that the recent PHI policy changes have adverse distributive consequences, particularly if one considers the likelihood of households in various income and socio-economic groups taking up PHI. Furthermore, the 30 per cent premium rebate represents a significant and rising fiscal burden for the Commonwealth government (See Table 3).

Clearly, given the significant outlay of public spending, the performance of the recent PHI policy changes leaves much to be desired. Our evidence suggests that there is a strong case for a reassessment of the approach. Of course, any steps taken to reverse policy changes would result in winners and losers, and the political consequences could be severe. However, the fact remains that the recent PHI policy changes represent a piecemeal approach that attempted but appeared to have failed to achieve its objectives.

If the principal aim of the reforms was to take pressure off the public hospital system, we would recommend redirecting the public funding that has been used to encourage increased take up of PHI, to other purposes, recognising, as mentioned above, that any government will have to consider the distributional effects of the changes from the status quo and the possible adverse political consequences that may result.

In considering possible policy options, government should explore both the idea of re-directing the public subsidy of PHI to more beneficial uses within the system as currently structured. It should also consider longer-term changes to the structure of the system that could improve overall efficiency while also seeking to achieve equity and access goals. In the following discussions of policy options we canvass both the narrow issues of possible ways of re-directing funds within the current system and avenues of more fundamental health system reform in which public funds may be more efficiently used. Especially the latter discussion is very exploratory as it was never intended to be a central focus for this particular study. However, a discussion of alternative policy options would be incomplete if it did not pay any regard to these more fundamental kind of reform options.

From a short-term perspective, there is a reasonable argument that that the 30 per cent premium rebate be scaled down considerably (through, for example, means-testing), and the funds being used directly to subsidise the supply of important health services that would take pressure of the public system, rather than subsidising the demand for health services

in a less focused way. One must, however, be cautious with the use of means-testing. We are well aware of its adverse effects on incentives within the larger taxation system, and its effects must be carefully assessed before any measure is introduced.

Based on our analysis, scaling down the premium rebate would have little adverse effect on PHI membership. However, to counter any adverse effect in PHI membership, a cost-effective measure such as raising the Medicare Levy Surcharge, to say 1.5 per cent, might be sufficient. This would have no effect on households who have purchased PHI; it would only affect high-income households without PHI and those contemplating dropping their PHI coverage. The amount saved could be channelled into more effective measures aiming at reducing the strain of the whole health system. Possible short-term measures, for examples, could be direct subsidies on public and private hospital operations, increased funding for nursing home care which reduces the reliance on public hospitals as aged care facilities, better funding of regional primary care facilities, aiming at reducing the outpatient burden of country hospitals.

From a long-term perspective, it would be worthwhile to explore more fundamental system design issues. Here, PHI policy changes need to be considered within a broader context of the functioning of the whole health system. In this context, the soundness of the 30 per cent premium rebate appears to be highly questionable, and it would be reasonable to argue for its withdrawal in the long term.

We outline below several health policy goals that appear to be important for the long-term viability of the Australian health system.

First , there are strong arguments that policy efforts should be directed at bringing a better integration of the health system, and in particular the private and public funding and private and public hospital systems. Under the present arrangement, private health funds on one hand cover for in-hospital accommodation (bed, nursing, meals, etc.) and in-hospital medical services that are funded publicly for public patients in public hospitals. On the other hand, funds also provide coverage for services that are not funded publicly, e.g., dental, optical, chiropractic, podiatry, and so on. Additionally, funds may also cover the "medical gaps," i.e., the difference between the fee charged by doctors and the combined health insurance and Medicare payments. Therefore, under the current institutional setting, PHI neither substitutes nor complements the universal public health insurance scheme. As a result, this creates a hybrid system that is very hard to to manage, not to mention the significant amount of confusion with regards to the desired role of PHI. In particular, evaluating policy changes in such a context becomes a complicated exercise, as any significant changes to PHI policies will result in multidimensional impacts.

Very serious consideration should be given to bringing about a system in which PHI plays

a much more complementary role with the public system. Specifically, there is a strong argument for a setting in which Medicare and the public system provide a base coverage for all health needs of Australians, encompassing primary as well as hospital care. PHI would then become a form of "top up" to the public system, in the form of better amenities, speedier treatment in cases of elective surgery, and wider coverage for services that are not covered under Medicare. Such a system will also remove a highly undesirable aspect of the current institutional setting, namely the incentives for privately insured patients admitted to public hospitals to hide their insurance status.

Secondly, both the Commonwealth and State/Territory governments should focus efforts in managing the overall health care resource utilisation of the system as a whole, not the shifting of utilisation from one sector of the system to another. The existing PHI arrangement appears to aim at shifting the financing of hospital care from public to private hospitals, so as to relieve capacity and financial pressure from the public hospitals. While it is questionable whether a shift have actually occurred, there is evidence of an increase in the overall utilisation of hospital resources due to moral hazard at both the demand and supply sides. In addition, for reasons that will be discussed later, private health funds also appear to have limited incentive to control health resource utilisation. As utilisation increases with PHI uptake, medical efficacy may become an important issue since the marginal effectiveness of treatments may decrease due to the law of diminishing returns. The problem of supplier-induced demand may also become an important consideration in this situation.

Thirdly, the case for a greater degree of competition being injected into the health system should be seriously explored. This could take several forms. One possibility is to introduce some form of managed care into the system via, for examples, the establishment of budget-holding entities. Existing private health funds are one kind of existing entity which could assume this role.

Under the present arrangement, private health funds play a limited role in managing the utilisation of health care resources. Two reasons may have accounted for this. First, Medicare's contribution to private in-hospital medical treatments reduces health funds' accountability for the real cost of private care. This in effect means that the government is a major funder of the private hospital system, yet has very little say over the quantity, quality, and appropriateness of care delivered. It also does not provide enough incentive for health funds to manage risk exposure and over-utilization of care. Second, health funds' ability to control price and utilisation by negotiating with hospitals selectively may be limited by the current legislation stipulating that hospitals without contracts receive the default payments. Related to health funds' ability to contain utilisation is the recent regulation aiming at reducing medical gaps. While it reduces unexpected expenditure of PHI members when using their insurance cover, it may worsen the problem of over utilisation due to moral hazard,

thus creating problems in containing premium inflation and maintaining the affordability of PHI in the long run.

Lastly, the current health system is severely lacking in ensuring adequate supplies of health care professionals and care facilities in response to changing demand. We believe that policies need to be in place so that supplies can be made more responsive to demand. The only viable option in the long term of reducing hospital waiting time and queues lies in ensuring an adequate supply of care providers and care facilities. An adequate supply also helps to reduce the monopoly power of health care providers in setting prices, thereby indirectly controlling health care costs. This may require some degree of deregulation of the labour market for health professionals. Arguments against this have included a concern that the presence of supplier-induced demand may result in such policies causing an unnecessary increase in health spending. This may mean that any such labour market reforms would require complementary changes in the payment system for health services to avoid this supplier-induced effect, and this highlights the importance of the earlier point on injecting competition into the health system.

5 Conclusion

This report provides a comprehensive assessment of how recent policy changes on private health insurance affect hospital utilization patterns and their distributive consequences. Proponents of PHI emphasize two aspects of having a higher PHI uptake. First, it helps to shift utilisation of hospital care from public hospitals to private hospitals. Secondly, PHI also enhances choice, in that households with PHI have greater choice over hospitals, doctors, and the timeliness of care (e.g., Harper, 2003).

The evidence on hospital resource utilization, however, is at best mixed. There appeared to be some reduction of hospital utilization initially when the policy changes were introduced in 2000–01. Data from subsequent years, however, did not support the contention that public hospital utilization would be reduced as more households enrolled in private health insurance. Over the same period, the average cost of each separation for private patients in public hospitals has increased dramatically, possibly because public hospitals were relied on for complicated treatments. Furthermore, there is no evidence that waiting times in Victoria and elsewhere in Australia for elective surgery in public hospitals has fallen over the period; in fact, if anything they have risen at the extreme end, i.e., at the 90th percentile level.

Furthermore, the advantage of PHI in enhancing choice is limited by the universal principle guiding the Australian health system, which intends that equity of access and medical care

be provided to all citizens. An uneasy tension results from the role of PHI in enhancing choice, in that higher PHI uptake may create incentives for differentiated access and treatment according to insurance status, because doctors and public hospitals are to a certain extent better paid when treating private patients. For example, unless explicitly prohibited by the hospital, Visiting Medical Officers (VMO) can charge private patients higher fees than the Medicare Benefits Schedule rates. Some public hospitals also charge doctors for using hospital facilities for their private patients. Therefore, having enhanced choice via PHI under the present Australian health system may represent a costly option with questionable benefits.

On the other hand, the distributive effects of the recent policy changes are unequivocal. They are disproportionately favouring high income earners. Specifically, the 30 per cent premium rebate has had scant effects on low-income households' insurance choices, while it represents a windfall for high income households, many of whom would have purchased private health insurance without the rebate.

The long-term effects of these policy changes on health outcomes are one area that deserves more careful examination. However, as the policy changes came into effect only in 2000, the available data at this point do not allow any meaningful conclusion to be drawn. Experience of other countries, however, suggests very little difference in terms of health outcomes. For example, evidence on the effect of different insurance arrangements in the United States on health outcomes generally suggests very little difference in health outcomes across plans. The Rand Health Insurance Experiment (Newhouse et al., 1993), for example, found that health outcomes did not differ across plans for most people, even though spending differed by up to one-third.

Appendix A

Health Insurance Principles and Practices

Although health insurance is common to many countries, its financing differs from country to country. In most developed countries, health insurance is universal, meaning that every citizen is entitled to coverage. Some countries, e.g., England and Canada, finance their health insurance through general taxation, while others such as the United States finance their health insurance through mostly private means. Australia sits somewhere in the middle of the two extremes, with a universal public health insurance system supplemented by a sizeable private health insurance sector.

The value of health insurance lies in the unpredictability of medical spending, which tends to varies greatly from individuals to individuals. For example, an analysis of Australian Medicare data showed that 5 per cent of the Australian Population accounted for roughly 25 per cent of the Medicare Benefit Schedule (MBS) budget in three consecutive years (Sadkowsky and Vicente, 1997). Therefore, at any given point in time, only a small number of individuals require a large outlay on medical care. It thus makes sense to pool the risks via an insurance scheme. The use of health insurance can be appreciated by imagining a world without health insurance. In such a world, individuals only have one of two options should they need substantial medical care: (i) borrowing money for treatment and repay the money when well; (ii) curtailing consumption expenditure to save up for future medical expenses should they become sick. Neither of these options are attractive or practicable since the amount of money involved is likely very large, although only a small number of people would need it. Insurance can thus be used to smooth out the consumption patterns of individuals in different states of the world.

The logic is depicted graphically in Figure 19. Assume that for any given individual there are only two states of the world: being healthy and being sick. The individual begins with an income $\overline{y}$, which can be used for consumption in both states. However, in the state of being sick, the individual must devote a large portion, M, of his income to medical care, leaving little for other consumption goods. Thus, without health insurance, the individual is able to consume $\overline{y}$ and $\overline{y} - M$ in, respectively, the healthy and sick states, and this gives an utility level of u_0. With health insurance, and assuming that the insurance is actuarially fair, so that the premium rate is set at the break even point for the insurer, then the individual purchases insurance to fully insure his risk. In effect, the individual pays a premium r so that he can ensure his consumption of non-health goods is $\overline{y} - r$, regardless of whether he becomes sick or not. This means that he is paid (or indemnified) the amount M if he is sick. This allows the individual to reach point A, at which point he attains a higher level of utility u_1.

Health insurance in the real world, however, is much more complicated than the situation depicted in Figure 19. Individuals, for example, do not face the same health risk—some people are healthier than others—but insurers are unlikely to know who is healthier. This causes the problem of asymmetric information for the insurer, in that a non-discriminating health insurance policy will attract people with higher health risks. Being insured also changes the behavior of individuals when making consumption decisions with regards to how much

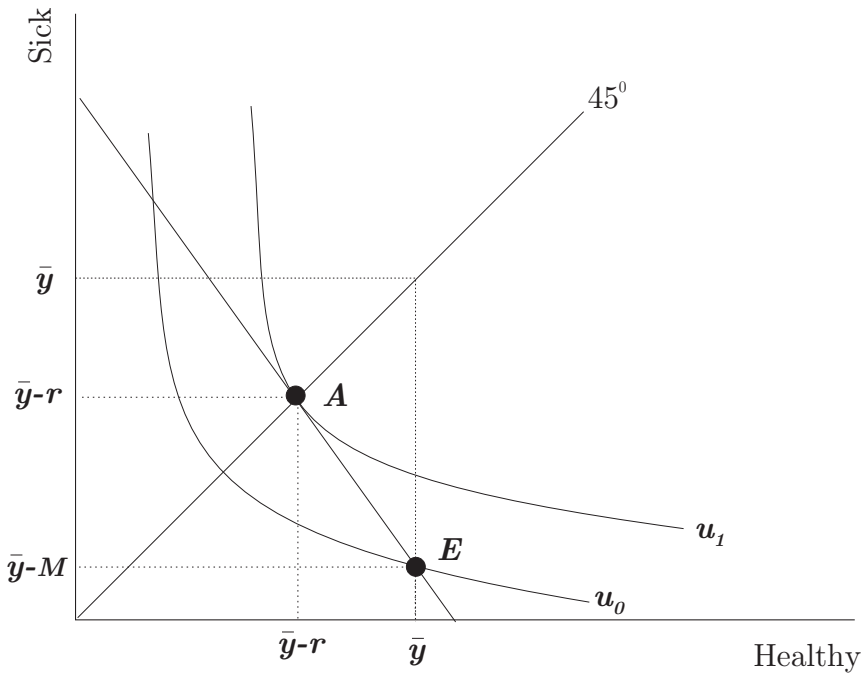


Figure 19: Consumption smoothing and health insurance

health goods to purchase. This is known as the problem of moral hazard in the insurance literature. Further, when seriously ill, individuals often follow the recommendations of their physicians rather than making the health care consumption choices by themselves. Insurance affects not only the incentive of individuals but also that of their health care providers. This is the agency problem in health care consumption and provision. We briefly discuss these three major issues below.

A.1 Adverse selection

Individuals differ in their health risks, and they generally have a much better idea about the state of their health than the insurer. If the insurer can only offer a single health insurance plan at an average premium that covers claims and other costs, there is then an incentive for above-average risk individuals to join the plan, very low-risk individuals will find the plan unattractive and stay out. This phenomenon is called adverse selection in the insurance literature. What is more, since only individuals with above-average risk join the plan, the "average" premium meant to attract all risk groups will be too low to cover all claims. Thus the insurer will have no choice but to raise its premium, this further drives individuals with lower risk away from the plan, thereby begins an adverse selection spiral that can ultimately break a health plan completely.

A survey by Cutler and Zeckhauser (1999) shows that adverse selection is a serious problem in health insurance and its effect on social welfare is large and economically significant. To prevent adverse selection, insurers must design different insurance plans in such a way that individuals in different risk groups would self-select. Imagine a world that individuals belong to one of two risk groups: high and low. The insurer offers two plans: a generous and a basic plan, at different premiums. To induce individuals to self-select, the insurer

must induce high risk individuals to choose the generous plan and pay the high premium, while low risk individuals enrol in the basic plan with the low premium. It has been shown that this occurs if the coverage of the basic plan is set at a lower level than it otherwise need be (Ellis, 1998). This is known as plan manipulation or stinging in the health insurance literature. In practice, plan manipulation takes many forms. Plans that pay for aerobics programs and running shoes, for examples, will attract healthy individuals with low risk.

From the view point of social welfare, plan manipulation is a second-best arrangement, since it requires that low risk individuals get a lesser plan than they would prefer. Unfortunately, theoretical models are complicated by the many different special cases and multiplicity of equilibrium outcomes. Further discussions can be found in Feldman and Dowd (1991), Cutler and Reber (1998), and Cutler and Zeckhauser (1998).

One attractive feature of a government-funded health insurance plan such as Medicare is that it takes care of the adverse selection problem since low-risk individuals cannot opt out of the plan as it is financed by general taxation. With private health funds, however, the welfare losses from adverse selection cannot be avoided, and any gains in terms of lower premiums that competition induces must be balanced against losses from adverse selection.

The Australian system has a public system in the form of Medicare that provides universal coverage for all citizens, at the same time there is a sizeable presence of PHI industry. Gans and King (2003) regard Medicare as the less generous plan with effectively zero premium, while private health insurance is thought of as more generous plans with high premiums, and as such cater to individuals with high health risks. Thus Medicare represents a form of plan manipulation so as to induce high-risk individuals to take up private health insurance, and the 30 per cent premium subsidy represents a form of cross subsidy from low-risk to high-risk groups. This representation of the real world, however, ignores two important considerations: (i) Unlike the standard literature, individuals differ not only in their health risks, but also their income, and empirical evidence has shown that income is an important determinant of private health insurance choice. (ii) Under the Australian system, individuals who purchase private health insurance are still covered under Medicare, thus it is not an either-or choice as is often the case in theory. Furthermore, evidence from recent National Health Surveys shows that individuals who purchase PHI do opt to be admitted as public patients when they are hospitalised. Thus it is perhaps not appropriate to treat private health insurance as a more generous, hence a superior, alternative to Medicare. What this means is that even if high risk individuals are attracted to take up PHI by the 30 per cent rebate, the risk pool of the public system is not reduced. These two considerations in fact accentuate the problem of moral hazard, to which we now turn.

A.2 Moral hazard

By sharing risk, health insurance enables individuals to consume health care at greatly reduced costs when they need it. This, however, creates a tendency for individuals to consume more health care than they would otherwise choose to do so, thus giving rise to the problem of moral hazard (Arrow, 1965; Pauly, 1968; Zeckhauser, 1970). The problem arises because health insurance changes the relative price of health goods versus non-health goods. In the simple theoretical situation depicted in Figure 19, the individual is indemnified an amount M when sick, and faces the full price of health goods when making consumption

decisions. In the real world, however, health insurance rarely if ever take the form of a pure indemnity insurance. Instead, individuals typically do not face the full price when buying health goods under insurance coverage. The marginal costs to individuals are out of line with marginal benefits, hence there is an incentive for individuals to consume more than they would.

Moral hazard is a concern in health insurance as it conflicts with the objective of risk pooling. Increasing the coverage of health insurance spreads the risk more broadly among individuals of different risk types, but it also increases the incentive for individuals to use more health care resources than would otherwise be the case. This implies, in aggregate, that society tends to spend more than optimal on health care, in that at the margin, an additional dollar of health expenditure brings forth less than a dollar's worth of benefits.

In the Australian health insurance system, moral hazard is likely to be a serious problem. Compared to Medicare, private health insurance plans typically provide wider coverage, and are purchased by higher income individuals. The wider coverage is often in the form of ancillary covers such as dental- and eye-care products. To the extent that health care demand tend to rise with income (Getzen, 1992; Johnson and Yong, 2003), and private health insurance provides cover for health services and goods that can be considered normal, having higher-income individuals under wider coverage means that utilization will be high. The 30 per cent premium rebate further encourages higher income individuals to join the private insurance pool, thus exacerbates the moral hazard problem.

A.3 Agency relationship and incentive problems

The problem of moral hazard is further complicated, and some would say magnified, by the agency relationship between physicians, patients, and the insurer. In most cases of serious health episodes, it is the physicians who make the resource utilization decisions, with patients and insurers bearing the costs. Patients usually do not know the full costs at the point of making consumption decisions. This three-player agency relationship creates substantial problems for health insurance. The payment system under which physicians operate will have a direct effect on health care utilization. For example, if the insurer fully indemnify patients on the costs of care, the interests of patients and physicians are aligned. Due to the moral hazard problem mentioned above, patients tend to demand more care than is socially optimal. Physicians, if they are paid on a fee-for-service basis, are happy to prescribe excessive amount of care with little regards to the actual costs to insurers. This gives rise to the phenomenon known as supplier-induced demand in the health economic literature; see, among others, Labelle et al. (1994); Freebairn (2001); and Richardson (2001).

For this reason, over-consumption of health care resources can be a serious problem in a conventional health insurance arrangement because physicians act as agents of patients, not of the insurer. Thus physicians recommend treatment options based on the potential benefits to the patients, but not at all on the cost to the insurer. To better serve the interests of all three parties, it is necessary to make physicians also the agents of the insurer. It is based on this premise that various forms of managed care are introduced. By the same argument, there is also a case for vertical integration of the insurer and providers, say by merging health insurance companies and hospitals. Studies on managed care insurance in the United States find that health spending is reduced under managed care plans, although there are concerns

about the quality of care. Further discussion can be found in, for examples, Cherkin et al. (1989), Hodgkin and McGuire (1994), Miller and Luft (1997).

Appendix B

Descriptive Statistics

Table 30: Summary Statistics of singles by PHI membership

	1995		2001	
	No PHI	PHI	No PHI	PHI
Within group weighted sample proportion/mean				
States/Territories				
NSW	0.3670	0.3133	0.3489	0.3253
VIC	0.2449	0.2647	0.2535	0.2573
QLD	0.1813	0.1736	0.1738	0.1493
SA	0.0722	0.1014	0.0861	0.0888
WA	0.0817	0.0934	0.0888	0.1265
TAS	0.0243	0.0281	0.0265	0.0247
NT	0.0113	0.0083	0.0083	0.0069
ACT	0.0173	0.0173	0.0142	0.0213
Age groups				
age 18–19	0.0742	0.0414	0.0672	0.0553
age 20–24	0.2419	0.1820	0.1684	0.1221
age 25–29	0.1406	0.1076	0.1224	0.0801
age 30–34	0.0817	0.0706	0.0630	0.0845
age 35–39	0.0548	0.0716	0.0488	0.0678
age 40–44	0.0371	0.0614	0.0484	0.0600
age 45–49	0.0488	0.0535	0.0448	0.0725
age 50–54	0.0345	0.0489	0.0584	0.0974
age 55–59	0.0344	0.0441	0.0541	0.0742
age 60–64	0.0420	0.0589	0.0554	0.0637
age 65–69	0.0492	0.0564	0.0553	0.0489
age 70–74	0.0544	0.0680	0.0650	0.0601
age 75–79	0.0502	0.0639	0.0680	0.0480
age 80 & above	0.0560	0.0718	0.0807	0.0655
Person descriptions				
Female	0.4705	0.5689	0.4782	0.5445
Concession card holder	0.4589	0.2833	0.5325	0.3003
Disposable income ($10,000)	1.8713	2.5670	2.1587	3.5135
Standardised income	-0.1935	0.5022	-0.5532	0.8017
Educational qualifications				
Degree holder	0.0949	0.1876	0.1016	0.2412
Left school by age 15	0.2041	0.1574	0.2166	0.1254
Employment and income sources				
Salaried employment	0.5216	0.6055	0.4327	0.5937
Pensioner	0.4230	0.2789	0.4691	0.2037
Administration	0.0330	0.0545	0.0207	0.0659

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	1995		2001	
	No PHI	PHI	No PHI	PHI
Professional	0.0665	0.1194	0.0744	0.1800
Trade person	0.1074	0.0889	0.0909	0.0810
Plant Operator	0.0411	0.0286	0.0495	0.0353
Labourer	0.1134	0.0555	0.0672	0.0375
Health status				
Chronic conditions	2.5650	2.9825	2.7975	2.8586
Self-assessed poor health	0.0600	0.0427	0.0799	0.0443
Self-assessed fair health	0.1430	0.1048	0.1758	0.1282
Self-assessed good health	0.7969	0.8526	0.7443	0.8275
Self-assessed over weight	0.2788	0.3106	0.2949	0.3415
Health habits				
High alcohol intake	0.0434	0.0416	0.0496	0.0334
Smoker	0.3365	0.1642	0.3231	0.1826
No exercise	0.3497	0.2651	0.3274	0.2435
Vigourous exercise	0.0977	0.0956	0.0797	0.0949

We make several remarks about the descriptive statistics of singles:

- New South Wales had the most singles with PHI among all States/Territories, followed by Victoria, and this was the case in both 1995 and 2001. This distribution is likely a reflection of the population size of States/Territories.
- The average gross income of those with PHI is substantially higher than those without PHI. However, it should also be noted that average income has increased from 1995 to 2001. The figures on education attainment and occupation types are broadly consistent with the income figures.
- The age distribution of those with PHI appeared to have shifted from younger to older age groups when comparing households in 1995 with those in 2001. In particular, most privately insured singles in 1995 were in the 20–24 and 25–29 groups, whereas in 2001 they were more spread out among all age groups.
- The average number of chronic conditions are slightly higher among those with PHI, although the difference was negligible.
- There were far more smokers among those without PHI, and this is true in both surveys. Furthermore, a high proportion of those without PHI also do not exercise. These figures may reflect different risk preferences of individuals towards health, with those preferring a high-risk lifestyle less likely to be privately insured.
- Overall, it is difficult to conclude whether, according to their self assessment, individuals with PHI have better health than those without.

Table 31 presents the sample proportions or means of family characteristics by insurance status. Here, several additional variables that are not applicable for singles are introduced

to describe the characteristics of families. These are: family size, number of children, and the average number of chronic conditions per child. Also, income in this case refers to total family income (gross), and personal characteristics such as employment, health status, and health habits refer to those of the heads of households.

Table 31: Summary Statistics of families by PHI membership

	1995		2001	
	No PHI	PHI	No PHI	PHI
Within group weighted sample proportion/mean				
States/Territories				
NSW	0.3337	0.3408	0.3370	0.3313
VIC	0.2459	0.2377	0.2516	0.2500
QLD	0.1836	0.1875	0.1990	0.1826
SA	0.0849	0.0832	0.0790	0.0795
WA	0.0976	0.0992	0.0874	0.1045
TAS	0.0272	0.0278	0.0254	0.0252
NT	0.0125	0.0090	0.0077	0.0082
ACT	0.0146	0.0149	0.0129	0.0188
Head's age groups				
age 18–19	0.0041	0.0060	0.0052	0.0003
age 20–24	0.0516	0.0145	0.0556	0.0119
age 25–29	0.1054	0.0523	0.1090	0.0571
age 30–34	0.1425	0.1007	0.1274	0.1145
age 35–39	0.1522	0.1136	0.1327	0.1326
age 40–44	0.1286	0.1407	0.1217	0.1401
age 45–49	0.1036	0.1423	0.0860	0.1414
age 50–54	0.0724	0.1156	0.0712	0.1270
age 55–59	0.0571	0.0880	0.0638	0.0890
age 60–64	0.0480	0.0685	0.0589	0.0607
age 65–69	0.0514	0.0598	0.0558	0.0464
age 70–74	0.0389	0.0548	0.0451	0.0432
age 75–79	0.0270	0.0302	0.0463	0.0226
age 80 & above	0.0170	0.0183	0.0214	0.0132
Family descriptions				
Family size	2.9461	2.9072	3.0498	3.1178
Number of children $\leq$18 years	1.0752	0.8852	0.9600	0.8884
Number of children, $\leq$5 years	0.3290	0.2207	0.2750	0.2242
Average chronic conditions per child	0.1606	0.0999	0.0558	0.0543
Concession card holder	0.4706	0.2087	0.4805	0.1854
Gross family income ($10,000)	3.1397	4.5135	4.0483	6.9866
Standardised income	-0.6282	0.7456	-1.4355	1.5028
Educational qualifications of head				
Degree holder	0.0848	0.2051	0.0859	0.2371
Left school by age 15	0.2174	0.1598	0.1875	0.0966
Employment and income sources of head				
Salaried employment	0.4860	0.5966	0.4255	0.6099

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	1995		2001	
	No PHI	PHI	No PHI	PHI
Pensioner	0.3579	0.1558	0.4179	0.1473
Administration	0.0739	0.1754	0.0311	0.0916
Professional	0.0756	0.1676	0.0732	0.1984
Trade person	0.1746	0.1325	0.0892	0.0714
Plant Operator	0.0828	0.0600	0.0628	0.0414
Labourer	0.1028	0.0518	0.0735	0.0335
Health status of head				
Chronic conditions	2.5103	2.8151	2.6729	2.7477
Self-assessed poor health	0.0540	0.0242	0.0690	0.0216
Self-assessed fair health	0.1486	0.0922	0.1588	0.1098
Self-assessed good health	0.7974	0.8836	0.7721	0.8686
Self-assessed over weight	0.3189	0.3853	0.3553	0.3842
Health habits				
High alcohol intake	0.0431	0.0345	0.0364	0.0355
Smoker	0.3275	0.1639	0.2949	0.1428
No exercise	0.4048	0.3116	0.3595	0.2610
Vigourous exercise	0.0603	0.0766	0.0428	0.0699

The descriptive statistics for families give a similar picture as the case of singles. We make several remarks:

- Among those families with PHI in 1995, most of them were from New South Wales, which had the highest proportion of families with PHI, followed closely behind by Victoria at around 24%. This likely reflects the population size of these two states.
- Among families with PHI, the age distribution of household heads appeared to have shifted slightly towards younger age groups in 2001, as compared to that in 1995.
- In both 1995 and 2001, families with PHI appeared to have fewer children below the age of 18 years, and also have fewer average chronic conditions per child. This may, however, simply be a reflection of different income levels of families with and without PHI, although to what extent this is the case is impossible to tell from the simple descriptive statistics.
- In both surveys, families with PHI have noticeably higher levels of income on average as compared to those without PHI. It is also apparent that income levels increased significantly from 1995 to 2001.
- In both the 1995 and 2001 surveys, families without PHI were far more likely to have heads who were smokers, and who exercised less.

Appendix C

The Probit Methodology

To control for the many factors that can affect households' insurance choices, we require a framework that can allow a multivariate statistical approach. For this purpose, we adopt the usual neoclassical economic approach by assuming that households make their consumption choices in order to maximize their utility or welfare. Thus if we observe a household chooses to purchase PHI, it is because by doing so, it yields a higher utility for the household than not buying PHI. Let $W_i \equiv (w_{i1}, \ldots, w_{iL})$ be a L-vector of household i's personal, socio-economic and other characteristics. Let $h = 0, 1$ be a household's health insurance choice. Further, let

$$V_i = U_i(h = 1, W_i) - U_i(h = 0, W_i)$$

denote the difference in utility between having private insurance and having without. Assume that V_i can be represented by a linear model of the form:

$$V_i = W_i\beta + u_i,$$

where u_i is a random term that follows a standard normal distribution.

Since V_i is a utility index, we do not observe V_i in practice. What we observe is whether household i chooses to have private insurance or not. Let H_i denote the observed insurance choice of household i. Then, it follows from the utility maximization assumption that

$$H_i = \begin{cases} 1 \text{ if } V_i > 0, \\ 0 \text{ otherwise.} \end{cases}$$

The probability of household i choosing to purchase private insurance is thus

$$\Pr[H_i = 1] = \Pr[V_i > 0] = \Pr[u_i < W_i\beta] = F(W_i\beta),$$

where $F(\cdot)$ is the standard normal distribution function. This is the standard probit model, the estimation of which can be carried out using maximum likelihood in the usual fashion (e.g., Greene, 2003, Chapter 21; Hill et al., 2001, Chapter 18).

Appendix D

Estimated Probit Coefficients and Predicted Probabilities

The estimated probit coefficients for singles are presented in Table 32, while those for families can be found in Table 33. Using the estimated probit models, we can predict how likely each household in the sample would purchase private health insurance in each of the surveys. These predicted probabilities were then averaged across all households according to particular variables of interests. Tables 34 and 35 cross-tabulate the average predicted probabilities with the variables of interest.

Table 32: Probit estimation—Singles, 1995 and 2001

Variable name	Estimated coefficients 1995	2001
Dependent variable: PHI		
Person descriptions		
constant	-0.3828*	-1.1392*
female	0.1845**	0.2009**
prevmrd	-0.3313**	0.0143
immig	-0.2370**	0.6650
govcrd	-0.5728**	-0.3377**
devinc	0.2204**	0.1242**
devinc2	-0.0226*	-0.00061
States/Territories		
VIC	0.1993**	0.1004#
QLD	0.1208	0.0719
SA	0.4171**	0.1782*
WA	0.2848**	0.3448**
TAS	0.2684*	0.1105
NT	0.0818	-0.0409
ACT	0.0375	0.1509
Age groups		
age1819	-0.5369**	-0.0238
age2024	-0.6220**	-0.3560**
age2529	-0.6659**	-0.6126**
age3034	-0.4857**	-0.1309
age3539	-0.2606	0.0265
age4549	-0.1457	0.1686
age5054	0.1500	0.2983*
age5559	0.2436	0.2913*
age6064	0.6505**	0.3371**
age6569	0.5673**	0.3920**
age7074	0.8213**	0.4351**
age7579	0.7832**	0.3021*

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Variable name	Estimated coefficients 1995	2001
age80p	0.7697**	0.3773**
Educational qualifications		
degree	0.1400	0.2479**
postscd	0.0184	0.1011*
left15	-0.3276**	-0.2229**
Employment and income sources		
selfemp	-0.1045	0.1149
pension	-0.1047	-0.3797**
othrinc	0.3046*	0.4116**
admin	0.0580	0.4175**
prof	0.0050	0.1322
paraprf	-0.1133	0.0942
clrksrv	0.1392	0.1110
plntopr	-0.0826	-0.1829
laborer	-0.1916	-0.1165
Health status		
diabet	0.0585	-0.0831
hiblod	0.1824*	0.1478*
hichol	0.0343	-0.1227
chnum	0.0431**	0.0386*
poorhth	-0.1217	-0.1393
fairhth	-0.1270	-0.1208*
underwt	0.0852	0.0863
overwt	0.0180	0.0210
Health habits		
meddrnk	0.0628	0.1000
hidrnk	0.2352#	-0.1999#
exsmok	-0.2204**	-0.1688**
smoker	-0.4859**	-0.4181**
sdntary	-0.0879	-0.0470
lowexr	0.1244#	0.1426**
vigexr	-0.0672	0.1224

#statistically significant at 10%
*statistically significant at 5%
**statistically significant at 1%

Table 33: Probit estimation—Families, 1995 and 2001

Variable name	Estimated coefficients 1995	2001
Dependent variable: PHI		
Family descriptions		
constant	-0.7378**	-0.0474
famsize	0.3256**	0.0545#
childnum	-0.3148**	-0.0528
childlt5	0.0646	0.1229**
chnumcld	0.0191	0.2177**
immig	-0.5423**	-0.4576**
govcrd	-0.4486**	-0.0534
devinc	0.0287**	0.1366**
devinc2	0.0086**	-0.0020*
States/Territories		
VIC	0.0134	0.0239
QLD	0.0139	0.0926*
SA	0.1103#	0.1863**
WA	0.0835	0.2234**
TAS	0.1253	0.2825**
NT	-0.0951	-0.0485
ACT	-0.1275#	-0.1059
Head's age groups		
age1819	-0.3506	-1.3487**
age2024	-0.4834**	-1.0056**
age2529	-0.3666**	-0.6071**
age3034	-0.2188*	-0.2405**
age3539	-0.1791*	-0.1222*
age4549	0.1347#	0.1965**
age5054	0.3267**	0.3480**
age5559	0.5441**	0.4890**
age6064	0.8394**	0.6289**
age6569	1.1455**	0.8235**
age7074	1.2990**	1.0061**
age7579	1.1446**	0.5899**
age80p	1.1832**	0.7299**
Educational qualifications of head		
degree	0.2098**	0.1741**
postscd	0.0746#	0.0538#
left15	-0.2172**	-0.2393**
Employment and income sources of head		
selfemp	-0.0098	0.0113
pension	-0.4944**	-0.1860**
othrinc	0.0873	0.3303**
admin	0.4072**	0.3710**
prof	0.2570**	0.2102**

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Variable name	Estimated coefficients	
	1995	2001
paraprf	0.4360**	0.2531**
clrksrv	0.2336**	0.1998**
plntopr	-0.0337	-0.2403**
laborer	-0.1255	-0.2455**
Health status of head		
diabet	0.0343	-0.2014**
hiblod	0.0501	-0.0067
hichol	0.0163	-0.0169
chnum	0.0346**	0.0458**
poorhth	-0.3822**	-0.4073**
fairhth	-0.2589**	-0.0896*
underwt	-0.0119	-0.1730*
overwt	0.1137**	0.0330
Health habits of head		
meddrnk	0.1691#	-0.0204
hidrnk	-0.0665	-0.0391
exsmok	-0.1206*	-0.1327**
smoker	-0.3378**	-0.4336**
sdntary	-0.1770**	-0.0899*
lowexr	-0.0806	0.0001
vigexr	-0.0097	0.0679
#statistically significant at 10%		
*statistically significant at 5%		
**statistically significant at 1%		

Table 34 summarizes the average predicted probabilities by States/Territories. These predicted probabilities serve as a useful check of appropriateness of the estimated models. As expected, the models predict that the incidence of PHI membership for both household types was much higher in 2001 as compared to 1995.

Table 34: Predicted probabilities of PHI membership by States/Territories

	Mean predicted probabilities			
	Singles		Families	
	1995	2001	1995	2001
NSW	0.2125	0.3365	0.4418	0.5264
VIC	0.2552	0.3581	0.4286	0.5275
QLD	0.2317	0.3215	0.4418	0.5073
SA	0.3060	0.3623	0.4303	0.5298
WA	0.2658	0.4374	0.4416	0.5718
TAS	0.2664	0.3353	0.4425	0.5295
NT	0.1867	0.3172	0.3556	0.5419
ACT	0.2450	0.4560	0.4449	0.6185

Table 35 summarizes the predicted probabilities according to the socio-economic index, SEIFA. Consistent with the sample proportions, the models' predicted probabilities show that the incidence of PHI membership was uniformly increasing in socio-economic standing. However, the difference between the lowest and highest quintiles, although still substantial, were less stark than the actual sample proportions. The can be attributed to the fact that many other variables were not controlled for in computing the sample proportions, whereas they were properly controlled for in the models.

Table 35: Predicted probabilities of PHI membership by SEIFA

	Mean predicted probabilities			
	Singles		Families	
SEIFA index	1995	2001	1995	2001
1st quintile	0.2145	0.2769	0.3085	0.3697
2nd quintile	0.2446	0.3213	0.3872	0.4644
3rd quintile	0.2398	0.3540	0.4295	0.5077
4th quintile	0.2474	0.3830	0.4500	0.5679
5th quintile	0.2658	0.4654	0.5601	0.6874

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