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Offset of public hospital cost and Net cost to the government of subsidizing Private Health Insurance in Australia

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0. EXECUTIVE SUMMARY

Government goals related to the role of Private Health Insurance (PHI) have been supported by a series of carrot and stick policies since the introduction of Medicare in 1984. In this report, we study the premium rebates and the Medicare Levy Surcharge (MLS). **The aim of the report is to assess the net impact of the premium rebates and the MLS policy on government spending taking into account the savings (offsets) PHI yields for public sector medical spending.**

Our main source of data is administrative information from PHI provided to Finity by insurers, which disaggregates benefits paid (claims, spending) into different categories. In addition, to construct a nationally representative sample of those in PHI we use data from the ATO requested by Finity, which contains enrollment of taxpayers in PHI by income groups, and data from APRA, which represents the best source of enrolled persons per age group in the system. We also use policy parameters of the premium rebates and the MLS, along with supported assumptions about premium levels and income averages to construct costs of premium rebates and MLS policies to the government.

We estimate the offset for the Australian government. By "offset" we mean health care costs saved by the government because an individual is enrolled in PHI. We estimate offsets by age, income, and family/individual coverage, as well as for a nationally representative population. Our estimates show large offsets for the government, with a nationally representative population average of $1,434 per person. Offsets for all age, income, coverage group range from $221 to $5,268. Older individuals use more resources than younger groups and offsets are higher for older enrollees.

We estimate the net cost to the government by subtracting offsets from government subsidies to purchase of PHI in the form of premium rebates and MLS tax obligation forgiveness. **From the two measures of net costs to the government of subsidizing PHI, we conclude that the current PHI subsidy policy is a very good financial deal for the government**. When only considering the premium rebates, net cost to the government is negative, i.e., there are net savings. Net savings for the government average to $916 per person. Net savings increase with age. When incorporating the MLS tax forgiveness, savings are roughly cut in half to $554 per person. Savings remain high for the older groups.

We estimate the net social cost of enrolling the average person from the age/income groups in PHI. **The net social cost is the extra social resources associated with an individual enrolling in PHI due to higher utilization and cost in PHI. Moving an older person into PHI saves the government money but costs society.** This "double-edged sword" of PHI plays in heavily to the question of government policy towards the subsidy to PHI.

In addition, we performed sensitivity checks on our main assumptions. Reasonable changes in assumptions about relative hospital efficiency in the public and private system and in the effect of PHI on utilization leave the government with net savings from PHI.

Noting that moving individuals into PHI on the one hand increases government costs by the additional subsidy required but on the other hand leads additional offsets, we conduct a "critical value" analysis, asking, how much additional PHI enrollment is required for a given increase in subsidy to produce net savings for government. **Our results show that for a change in the subsidy to be budget neutral, a $1 dollar increase in subsidy (say, by increase of premium rebate) must lead to at least 9,679 new enrollees in PHI (amounting to 0.11% of current enrollees).** Related research by our group on demand response to PHI premiums sheds light on whether the increase in demand is likely to exceed or fall short of the critical value.

We call attention to further applications of our data and analysis to conduct policy simulations of subsidy changes at the age/income level. The analysis could address questions related to, depending on government objectives, for which age/income group subsidies should increase, and for which age/income groups they should decrease.

Finally, our findings suggest that **including general treatment rebate money to hospital treatment rebate increases the subsidy given by the government to PHI by $249 per person on average**. This still maintains net savings for the government equal to $667 per person when only considering the rebates, and of $305 when taking into considering the tax forgone of the MLS. Probably the most notable change is that in the scenario where both subsidies (rebates and MLS) are considered, and the sensitivity checks are combined, there is a net cost to the government of $66 per person. Finally, considering adding the general treatment rebate is a lump sum increase by increasing in the subsidy component of the formulas, the number of individuals that must be moved to PHI, if for a $1 dollar increase in the subsidy for it to be budget neutral, increases to 13,285 when only pondering the rebate money, and to 29,034 when adding the MLS.

1. INTRODUCTION

1.1. CONTEXT

Private Health Insurance in Australia has historically held a key role in the health system. Since the introduction of Medicare in 1984, which extended coverage to all Australian residents, the health system has been characterized by a public-private mix in terms of funding and provision, where private health insurance (PHI) has taken a duplicative role in terms of hospital coverage and supplementary role in relation to general treatment coverage which insures for those services not covered by Medicare (e.g., dental).

Increasing participation in PHI has been a deliberate goal of government policy, with one of the expected results being relieving pressure off the public system. This has motivated a series of "carrots and sticks" policies, namely the Lifetime Health Cover (LHC), Medicare Levy Surcharge (MLS), and premium rebates. In this report, we will focus on the last two policies.

Briefly, the premium rebates are a straightforward ad-valorem (percentage) subsidy to premiums (both hospital and general treatment cover) which is means and age tested, while the MLS is a levy to be paid for those that don't take up appropriate hospital coverage (also income based).

The role of PHI and the design of the premium rebates and complimentary policies such as the MLS are key issues in the discussion of future reforms of Australia's healthcare system. In the current environment there is a strong sense that the rebate is poorly targeted. Particularly spurred by the total $6.7b budget allocation (health portfolio and ATO) in 2021/22 (or $27m over the budget forward estimates of 2021/22 to 2024-25). In terms of the MLS, critics question its ability to increase participation.

Questions regarding the efficacy and economic efficiency of these policies, and their role in the government budget, have motivated the Department of Health (DoH) to comprehensively review the tools utilized in PHI.

1.2. AIM OF THE REPORT

This report studies the net impact of the premium rebates and the MLS on government spending taking into account the savings (offsets) PHI yields for public sector medical spending. We conduct empirical analysis to estimate the offset for the Australian government using claims from PHI. In concrete terms, the report constructs the counterfactual costs that would have been paid by Medicare if an individual did not have PHI. We then compute the net government spending as the difference between the two subsides (costs to the government) and offsets (benefit to the government). We refer to the analysis as "static," as we take the market as is, with its current enrollment, pricing, and PHI product characteristics. Note that any change in policy, for example, a change in premium subsides would require a different analysis taking into account the system response to the policy change.

Both premium rebates and the MLS impact over the government spending and revenues. First, explicitly, the premium rebates imply a spending line in the budget. In addition, the MLS tax forgiveness feature implies a reduction in government revenue for individuals joining PHI. In the case of the MLS, if individuals with certain characteristics don't choose to buy PHI, then they must pay a tax, increasing government revenues, but if they choose PHI, then they do not have to pay the tax. Moreover, the effect of these policies in terms of PHI enrolment and use of private hospitals instead of public hospitals has direct consequences for health care spending by the government.

The three measures have effects that vary by income and age. Rebates are the highest for the lowest income individuals and increasing in age, while for the highest income earners, irrespective of age, there are no rebates. In terms of the MLS, there is no difference on the surcharge by age, but those in the highest income range pay the greater percentage. Offsets are greater for older individuals with higher health care spending. Our analysis, therefore, is disaggregated at the level of age and income to elucidate the disaggregated effect of subsidies, offsets, and net government savings.

1.3. STRUCTURE OF THE REPORT

The remaining of the report is as follows. Section 2 describes the MLS and rebate policies, including an articulation of the objectives of these policies based on public reports and consultation with DoH and other stakeholders, as well as laying out current trends in enrolment. Section 3 reviews previous research evaluating the policies in question in relation to their impact on public funds. In Section 4, we present the data, primarily from PHI benefits (claims, spending) information, policy parameters, the assumptions behind our analysis, and the evaluation measures and sensitivity checks to be performed. In addition, Section 4 describes our methodology for calculating of the critical value of enrolment response leading to additional next savings for the government. Section 5 contains the results of our empirical analysis. Finally, in Section 6 we conclude and discuss the results, as well as lay out the next steps.

Appendix 1 describes our reconciliation of the data we use in this report to public budget data. Appendix 2 develops the economic theory behind design of optimal subsidies to advance social objectives.

2. THE PREMIUM REBATES AND THE MEDICARE LEVY SURCHARGE

In this section, we describe the history, characteristics and trends related to the premium rebates and the MLS. We also touch upon the objectives of these policies.

After more than 10 years of falling PHI enrolment following the introduction of Medicare in 1984, in 1996, the Commonwealth government introduced an income-tested subsidy and a penalty for high income earners who did not enroll in PHI, the Medicare Levy Surcharge (Parliament of Australia, 1996).

These policies have gone through various changes since their implementation. Indeed, in 1998, the government modified the lump-sum subsidy by applying a 30% non-income tested rebate to the cost of PHI cover, either through direct payment or reduced premiums, or in the form of tax forgiveness. In 2005 rebates increased for older people (for persons aged 65-69 years increased to 35% and for persons aged 70 years and over it increased to 40%) and from 2012 the 30% rebates were replaced with a means-testing approach.

Currently, individuals receive a discounted price for their policy – hospital or general treatment-based on their income and age. The current thresholds and percentages are shown in the Table 1. An enrollee can choose to use the rebate for a premium reduction or as a contribution towards tax obligations.

Table 1: Private Health Insurance Rebate Tiers as of 2022

	Base tier	**Tier 1**	**Tier 2**	**Tier 3**
Singles	<= $90,000	$90,001-$105,000	$105,001-$140,000	>=$140,000
Families	<= $180,000	$180,001 – $210,000	$210,001-$280,001	>=$280,001
Age <65	24.608%	16.405%	8.202%	0
Age >=65 and <=70	28.710%	20.507%	12.303%	0
Age >=70	32.812%	24.608%	16.405%	0

In terms of spending, original estimates stated that the first full year of operation of the premium rebates (the 30%) would cost $1.09 billion in 1999-2000. In the 2004-05 period, it amounted to $3 billion (Cheng, 2011), and in 2014-15 this value amounted to 5.8 billion (Kettlewell, Stavrunova, & Yerokhin, 2017).

	2018-19 ($m) (Actual)	2019-20 ($m) (Actual)	2020-21 ($m) (Actual)	2021-22 ($m) (Estimate)	2022-23 ($m) (Estimate)	2023-24 ($m) (Estimate)	2024-25 ($m) (Estimate)	2025-26 ($m) (Estimate)	Total (2021-22 to 2024-25) ($m)
Health Portfolio	6,061.7	6,076.4	6,321.4	6,494.5	6,648.4	6,821.6	6,998.0	7,192.2	26,962.6
ATO	228.7	231.5	239.2	226.3	239.2	244.7	250.9	257.0	961.1
TOTAL	**6,290.4**	**6,307.9**	**6,560.6**	**6,720.8**	**6,887.6**	**7,066.4**	**7,248.9**	**7,449.2**	**27,923.7**

The PHI Act 2007 which contains the regulatory framework of PHI states the objective of the subsidy to be “to encourage people to take out, and continue to hold, private health insurance”.

In relation to the MLS, a surcharge of 1% of income was introduced in 1997 and applied to single individuals with taxable incomes in excess of $50,000 and couples and families with combined taxable incomes in excess of $100,000 who did not have ‘sufficient’ private hospital cover. These nominal thresholds were not indexed to inflation or to changes in average weekly earnings. The effect of non-indexation meant a reduced threshold in practice by around 36.5 per cent in real terms since 1997, which is the change in the average level of prices (i.e. the CPI inflation rate) over that period. In 2008, income thresholds were increased, particularly for single individuals, from $50,000 to $70,000, with the combined taxable income for surcharge purposes for couples and families increasing from $100,000 to $140,000, for the first time to accommodate inflation.

Currently, the MLS is paid by individuals not covered by a hospital policy with certain characteristics and earn above a threshold. This translates in practice to two broad characteristics of the MLS:

- Type of cover and level of cover, which in this case is hospital cover which has an excess of either $750 or less for a single policy or $1,500 or less for other policies. These new values were implemented in 2019. Before, the maximum excess was of $500 for singles or $1,000 for couples and families in order to avoid the MLS.
- Income, in particular, the rate that is applied according to income thresholds and policy types (e.g., singles and families). Currently, the surcharge ranges from 0% for those earning less than $90k (and $180k) depending on the policy type, and 1% to 1.5%, increasing in annual income (see Table 2).

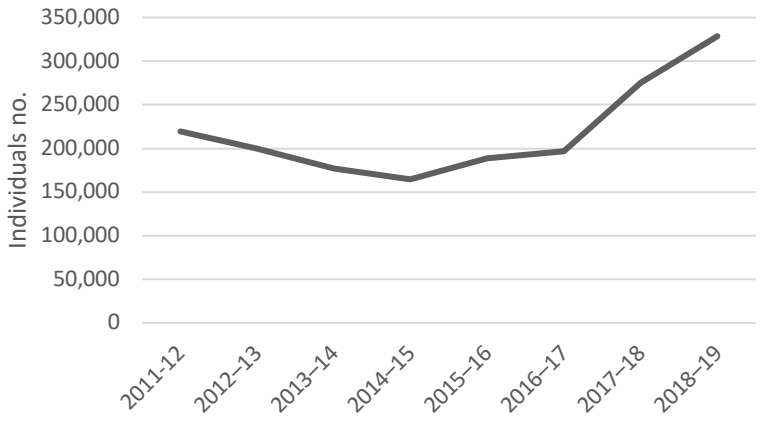
Table 2: Medicare Levy Surcharge Thresholds as of 2022

Singles	<= $90,000	$90,001-$105,000	$105,001-$140,000	>=$140,000
Families	<= $180,000	$180,001 – $210,000	$210,001-$280,001	>=$280,001
All ages	0%	1%	1.25%	1.5%

Private health webpage[1], in turn, states that for the MLS, the aim is similar to the premium rebated policy, i.e., "to encourage individuals to take out private hospital cover, and where possible, to use the private system to reduce the demand on the public Medicare system."

According to ATO statistics, individuals subject to the MLS have increased steadily since 2014-15 period. In 2018-19 period, 328,574 individuals paid the levy, from the roughly 11,228,000 individuals which hold hospital coverage policies in June 2019 (APRA, 2022). See Figure 1.

Figure 1: Individuals Paying the Medicare Levy Surcharge, 2011-2019.



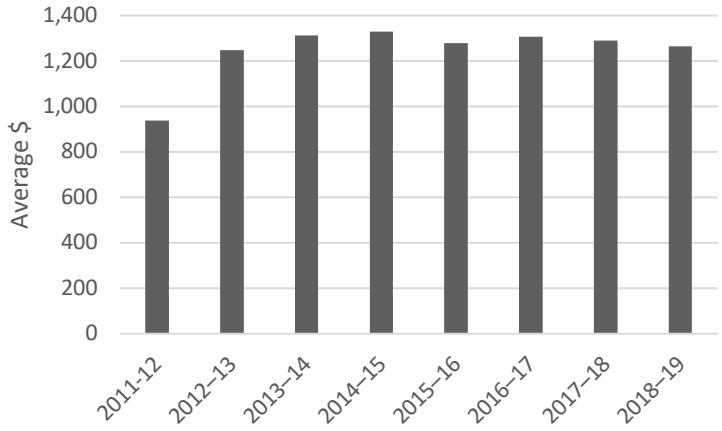
Source: ATO. Taxation statistics 2018–19. Table 4: Snapshot.

In addition, the ATO publishes data on the average amount of MLS that is paid. The data, which is reported in Figure 2 below, shows that on average, individual taxpayers paid around $937 in

[1] https://www.privatehealth.gov.au/health_insurance/surcharges_incentives/medicare_levy.htm

2011-12, while in 2018-19 the value amounted on average to $1,264. With the above numbers, this would mean that the government is obtaining on the order of 328,574*$1,264=AUD $415,317,536 in revenues through the MLS.

Figure 2: Average MLS paid, 2011-2019



In addition to revenues from the MLS, overall, according the AIHW 2019-20 estimates, private health insurers contributed to the funding of 8.2% of total healthcare spending, amounting to $16.7bn (AIHW, 2022).

3. COMPARISON WITH EARLY STUDIES

In this section, we compare our work with earlier studies. It's important to recall the aim of this report noted in Section 1.2 for contrasting purposes. The aim of the report is to assess the net impact of the premium rebates and the MLS policy on government spending taking into account the savings (offsets) PHI yields for public sector medical spending.

We highlight the report that more closely relates to our work. Deloitte was commissioned to review the economic impacts of the means testing of the 30% rebate (Deloitte, 2011). One of the evaluations in the Deloitte report is the impact of the changes in the government revenue. This is one of the points our report assesses.

The report used data from ANOP/Newspoll survey to determine the demand elasticity and the likelihood of consumers to claim among the tiered private health insurance enrollees. This data is used to compute PHI holder which would drop out, and given the estimated claiming patterns, use public hospitals instead (increasing operating costs), derive premium rebate savings, and Medicare Levy Surcharge revenues.

The computation of public hospital spending differs from our approach. Our model estimates the counterfactual cost for the government if an individual in PHI did not have PHI and would have

been served in the public system, and not hospital costs for those leaving PHI. In addition, we do not assess the impact of policy changes, but rather take the current market structure as given. We also use administrative claims data from PHI, under certain assumptions, while the Deloitte report computes increased public hospital costs due to potential increased claims using data from the National Hospital Cost Data Collection (NHCDC), from the IHPA.

In addition, we compute average premium rebates costs per income and age groups, rather than savings in the rebate due to decrease enrolment (which are not de-aggregated by income or age). Finally, we consider the Medicare Levy Surcharge not as a revenue for the government, but as a subsidy component by the government forgiving the MLS for those purchasing qualified PHI policies.

Overall, the report finds that means testing the rebate, the net government expenditure position (calculated as rebate savings plus Medicare levy surcharge revenues, minus public hospital recurring costs) would deteriorate over time, as public hospital costs would outweigh the savings in the rebate and increased MLS revenue.

Another paper that performs similar computations regarding cost savings for the government is (Cheng, 2014). The author, similarly, to the Deloitte report, studies a change in the premium rebate, and its impact on enrollment trends and public hospital (claim) use. The data in this study is different. HILDA survey is used for price elasticity analysis and change in distribution of claims in the private and public sector. In combination, they use publicly available data from AIHW to compute money amounts related to public hospital costs. This differs from our study as we do not compute elasticities and use administrative data to compute hospital costs per age and income groups. The author concludes that reducing the rebates would generate cost savings on the net (reduction in the subsidy spending by the government is greater than the increase in public hospital expenditure).

In (Duckett & Cowgill, 2019), which has a summary of the literature related to the rebate taking pressure off the public sector to offset the cost of the rebate, we can learn that most of the literature has focused on how the relevance of price elasticities would affect enrollment changes if the rebate was modified, and based on this, how it would shift private hospital spending to public hospital spending.

Commissioned to review the impact of the new Medicare Levy Surcharge thresholds on public hospitals, KPMG released in 2012 (KPMG, 2012) the third review report. In particular, they assessed the impact on public hospital activity, operating costs and elective surgery waiting lists. In their review, there is no inclusion of the premium rebates. In relation to public hospital activity (which was analyzed using data from Australian Hospital Statistics from the National Minimum Data Set), the report finds, by looking at hospital separations (episodes of admitted patient care) in public, private in public hospitals, and private hospitals, that after the MLS changes, a higher growth in private patient activity relative to public activity was observed. They argue that then the MLS changes did not result in a transfer from private to publicly treated patients. Due to this,

the report suggested that there was no increase in public hospital operating cost, rather, a revenue contribution from private patients to public hospital operating expenditure. In this sense, there is no computation of actual public hospital costs.

Therefore, to our knowledge, there hasn't been a report that focuses on a static analysis (i.e., taking the market as is), as the existing work has evaluated changes in policies (a dynamic analysis), and their potential impacts in different items of government spending. The latter has made the reports all rely on price-elasticities assumptions or the "what if" a change in the subsidies occurred, in terms of enrolment and public hospital use. Moreover, there hasn't been an explicit attempt to computing an offset amount. Also, no study has done the comparison with the rebate and MLS amounts (in combination), and disaggregated the effects per age, income groups.

4. DATA AND METHODS

4.1. DATA

We use several sources of data including administrative data on benefits (claims, spending) in PHI, policy parameters for the premium rebates and MLS, associated average premiums and income, and official data on number of individuals in PHI from the Australia Prudential Regulatory Authority (APRA) and Australian Tax Office (ATO) to estimate nationally representative results.

Our main source of data is administrative information from PHI provided to Finity by private insurers, which contains benefits paid (claims, spending) in different categories (hospital benefits, medical benefits, prosthesis benefits), exposure, age, product category (e.g., single, family), and income tier, among other variables. Use of these data distinguishes our analysis from those previously published in the literature, which have been performed mainly with survey data (e.g. HILDA survey), and some with ATO files.

The PHI data cover 14,054,456 individuals enrolled during the 2019 premium year. Insurer participation in supplying data is voluntary so we cannot be sure our data are nationally representative. To address this, we compute all utilization and cost statistics by age and income cell, as described shortly, and then weight cell-based result by national statistics on enrollment. In effect, our national estimates adjust for differences in age and income between our sample and the entire PHI population, but not for other factors, such as geographical distribution of the enrolees, that may differ.

We study three spending variables: hospital, medical, and prosthesis benefits. See Table 3. Hospital benefits capture total benefits paid for hospital in 2019 premium year. It excludes any excess paid by the patient. The sum of all hospital benefits in 2019 amounted to $10.6b, while the mean hospital benefit (per person in the data, irrespective of their exposure) paid was $756.30 (sd=$4,213). The maximum spending on this item is $634,749 (maximum single payment/line item in file).

Medical benefits capture total benefits paid for medical services in 2019 premium year. It excludes any excess or out of pocket paid by the patient. The sum of all medical benefits amounted to $2.2b, with an average of $159.60 (sd=$761), and a single payment line maximum of $382,084.

Prosthesis benefits capture total benefit paid for prosthesis in 2019 premium year. It excludes any excess paid by the patient. The sum of all prosthesis benefits amounted to $1.9b, with an average of $138.4 (sd=$1,445), and a single-line maximum of $378,468.

The exposure variable records the number of people in PHI. At the person level, this variable ranges from 0 to 1, and reflects the fraction of the year (2019 premium year, April 2019 to March 2020) that an individual was enrolled in PHI. Thus, for each individual, dividing payments of the above three types by exposure yields an estimate of the annual rate of spending.

We use these data to compute total benefits per benefit group (hospital, medical and prosthesis), status (family and single), income range and age band. Table 3 presents the total benefits of hospital, medical and prosthesis, and exposure in PHI. In Appendix A, Tables A1-A3 show the disaggregation of the benefits per status, income and age. The values in each cell represent total spending for that group (e.g., 18 – 24 and income $180,000 and less). The sum totals for each table are the same as in Table 3.

Table 3: Total benefits per group and exposure

Benefit group	**Total**
Hospital benefits (in $AUD)	10,628,797,977
Medical benefits (in $AUD)	2,242,924,383
Prosthesis benefits (in $AUD)	1,945,580,235
Total benefits (hospital + medical + prosthesis) (in $AUD)	14,817,302,595
Exposure	11,041,054
Observations	14,054,456

Some observations in the data have unknown income. These are dropped from our analysis. We also exclude roughly 2.3 million individuals below 18 years old. In total, this deletes 2,503,664 ($ AUD in 000's) benefits from the total of $14,817,303 (AUD in 000's).

We use the policy parameters for the premium rebates together with premium averages to construct government costs. Table 4 shows the parameters for the premium rebate and MLS.

Table 4: Policy parameters for the premium rebates and Medicare Levy Surcharge.

		Family	**Single**

	Age band/Income range	$180,000 or less	$180,001 to $210,000	$210,001 to $280,000	$280,001 or more	$90,000 or less	$90,001 to $105,000	$105,001 to $140,000	$140,001 or more
Premium rebate percentages	Age <65	24.608%	16.405%	8.202%	0	24.608%	16.405%	8.202%	0
	Age >=65 and <=70	28.710%	20.507%	12.303%	0	28.710%	20.507%	12.303%	0
	Age >=70	32.812%	24.608%	16.405%	0	32.812%	24.608%	16.405%	0
Average premium		$4900				$2300			
Medicare Levy Surcharge percentages	All ages	0%	1%	1.25%	1.5%	0%	1%	1.25%	1.5%
Average income			190,000	240,000	300,000		97,000	120,000	160,000

The average premium was estimated using Finity's web scraper which periodically retrieves and collects advertised premiums from insurers websites. The premium values correspond to data from July 2021. These were filtered to include just hospital only policies for one single adult, and excluded ACT and NT. For family policies, the average singles premium value was multiplied by 2.1 based on Finity estimates. The average values can be found in Table 4.

Finity also obtained general treatment policy premiums (coming from the same source than hospital treatment policy premiums). In particular, these premiums come to $2300 for families and $1150 for singles. Lastly, the average total premium corresponds to the sum of hospital treatment and general treatment premiums, and add up to $7200 and $3450, for families and singles, respectively.

In regard to the average incomes within income categories, we use an estimate of average incomes per income range. The mean income in each income range for family and individuals is chosen to recognize the declining frequency as income increase (i.e., the mean income in a category will be less than the average of the two income bands). The estimated average values can be found in Table 4.

Both the premium rebate and the MLS revenues were reconciled using publicly available data. For the premium rebate, the 2019-20 Portfolio Budget Statement – Department of Health was used to obtain the money amount the government spends in the premium rebates. It's worth reminding that so far, we have focused on hospital policies only, and the rebates apply also to general (extras, ancillary) policies, given the total amount spent by the government also considers this spending. This work can be found in the Appendix. For the MLS, (Bilgrami, Cutler, Sinha, & Cheng, 2021) report median household income for the family groups similar to our assumption, tier 1 of $180k, $227k and $290k for each income group subject to the MLS.

To construct nationally representative values for costs and offsets we use data from the Australian Tax Office (ATO) requested by Finity. These data contain information on the number

of taxpayers-individuals with private health insurance (PHI) and without PHI (individuals which note in their tax returns that hold PHI), on a particular year and age range (under 18, 18-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-69, 70-74, 75+), family status (family, single), and household taxable income ranges. These data are used to construct the number of taxpayers insured in PHI, and their proportions, by income range, family status, and age range. Table 5 shows the distribution of individuals in PHI according to those variables. In the Appendix we show the numbers of taxpayers per group used to construct the percentages in Table 5.

Table 5: Distribution of taxpayers in PHI according to family status (single, family), age band and income groups, for year 2018-19.

	Family				**Single**			
Age band/Income range	$180,000 or less	$180,001 to $210,000	$210,001 to $280,000	$280,001 or more	$90,000 or less	$90,001 to $105,000	$105,001 to $140,000	$140,001 or more
18 - 24	4%	0%	0%	0%	92%	1%	1%	2%
25 - 29	28%	3%	2%	1%	54%	5%	4%	2%
30 - 34	46%	7%	7%	3%	26%	4%	5%	3%
35 - 39	50%	9%	10%	7%	16%	3%	3%	3%
40 - 44	48%	9%	11%	10%	13%	2%	3%	3%
45 - 49	46%	9%	11%	11%	14%	2%	3%	3%
50 - 54	49%	8%	10%	10%	15%	2%	3%	3%
55 - 59	54%	6%	8%	8%	17%	2%	3%	3%
60 - 64	62%	4%	5%	6%	19%	2%	2%	2%
65 - 69	67%	2%	3%	4%	20%	1%	1%	2%
70 - 74	68%	2%	2%	4%	21%	1%	1%	2%
75 and over	54%	1%	2%	3%	33%	1%	2%	4%

These data are reconciled using data from the Australian Prudential Regulatory Authority (APRA) using Quarterly Private Health Membership data trends from June 2019. These data do not contain information disaggregated by income but represents the best source of total insured persons (per age group) in the system. Total number of insured individuals in the June 2019 quarter in PHI (Hospital policies) according to APRA is presented in Table 6.

Table 6: Individuals in PHI (Hospital policies) according to APRA

Age band/Income range	**Individuals**
18 - 24	782,357
25 - 29	443,528
30 - 34	737,175
35 - 39	837,454
40 - 44	781,218
45 - 49	826,739
50 - 54	769,159
55 - 59	798,597
60 - 64	752,066
65 - 69	681,280

70 - 74	583,249
75 and over	873,000
Total	8,865,821

APRA total insured numbers by age group is then apportioned by income band according to ATO data (multiplying the percentages in Table 5 to the numbers in Table 6). By this, we are able to weight our cell-based data to produce nationally representative estimates by age, income and family status.

4.2. METHODS

Static analysis

In this report, we conduct what we refer to as a static analysis. By static, we mean that we take the market as is, with its current structure (enrolment, age, income and family status heterogeneity, PHI spending). Static analysis ignores feedback from the system in response to any policy changes (e.g., how participation affects premiums and how in turns premiums affect participation). This report characterizes the cost outcomes to the government of current policy. In the conclusion/discussion section, we address potential next steps.

To calculate the offset and net cost to the government in the current system we construct the following:

- Benefits (spending) that would have been paid by Medicare if individual did not have PHI
- Premium rebate amounts paid by the government per age, income and family groups
- MLS tax forgone by individuals per income and family groups due to PHI enrolment

Regarding benefits, we seek the counterfactual cost for the government if an individual in PHI did not have PHI and would have been served in the public system. As noted in the data section above, spending is composed of three items: hospital, medical, and prosthesis benefits. Our initial assumptions about counterfactual public spending relate to each group. Table 7 summarizes the assumptions we use for each spending item.

Table 7: Initial assumptions on benefits to construct counterfactual cost to the government

Hospital benefit	Public and private hospitals have same cost per day
Medical benefit	Offset is 25% of MBS Fee
Prostheses benefits	Prices are 60% higher in private system.

Previous research suggests that "the efficiency of public and private hospitals is, on average, similar" (Productivity Commission Research Report, 2009). We rely on this for our initial assumption, which can readily be changed, that the same person with the same use would cost

the same in the public system in terms of hospital costs. As this is a parameter, it can be modified to adjust for other differences in efficiency.

In PHI, medical benefits are jointly paid by PHI and Medicare. Specifically, Medicare pays 75% of the Medicare Benefits Schedule Fee. The remainder is paid by PHI. There is a possibility that insurers fund more than 25% of the MBS fee, as in fact doctors have the ability to bill over the set fee. Since the government pays the entire MBS fee when procedures are done in the public system, the offset is 25% of the MBS fee.

Prosthesis costs in PHI have been found to be significantly more expensive in the private system as compared to the public. Based on Finity analysis of the top 10 DRGs by total prosthesis cost (IHPA public data sample), we estimate that the spending difference is 60%. I.e., for the same service, PHI costs are 60% above public sector costs. Note that this is also a parameter that can be modified to adjust for higher or lower differences.

The subsidy component is integrated by two parts: the premium rebates and MLS tax forgone. By using the hospital premiums and the rebate percentages, we construct subsidy amounts per age, income and family groups.

So far, we have focused on both constructing the offset PHI yields for public sector medical spending, and the subsidy costs of the premium rebates per enrollee related to the corresponding hospital policies.

The reasoning for our focus on hospital treatment is that there is no offset for the other type of coverage that PHI offers: general treatment (extras or ancillary). General treatment covers for out of hospital services not covered by Medicare. Nevertheless, general treatment policies do attract a rebate, and therefore government subsidies/spending. The rebates related to this part follow the multiplication of the premiums for general treatment policies and the percentages according to age and income range to obtain per person rebate subsidies corresponding to hospital and general treatment policies.

The MLS tax forgone by individuals enrolling in PHI per income and family groups is equal to the percentage of the levy times the average income per age group/family status. This represents a subsidy the government contributes by forgiving the MLS for those purchasing qualified PHI policies.

It is important to note that our initial assumptions that there is no impact of PHI on utilization and that efficiency of private and public hospitals are equal will tend to lead to higher offset estimates. Introducing any effect of PHI on use or lowering the relative cost of the public sector, which our analysis is set up to do, will lower offset estimates. We will show this in the sensitivity analysis.

We compute, from the above, the following measures with the aim of understanding the impact on public and total health care spending of subsidizing PHI.

- *Net cost to the government:* We compute the net cost to the government two ways, first as the difference the premium rebate less the offset, and second, the sum of the premium rebate and MLS forgiveness less the offset.
- *Net social cost:* This is equal to an individual's total cost in PHI less what the individual would have used had they not had PHI. The net social cost is the extra social cost incurred by an individual enrolling in PHI.

Sensitivity analyses

We perform several sensitivity checks on some key assumptions. In particular, we test separately and together the following changes:

- *Sensitivity check 1*: we modify the assumption made in the hospital benefits computation that would have been paid by Medicare if the individual did not have PHI to check the effect of the assumption of the relative efficiency of public hospitals and private hospitals. In particular, as a sensitivity analysis we assume in the public system an individual would require spending equal to 80% of the costs in PHI. In other words, the public system is 20% less costly than the private system for the same hospital utilization.
- *Sensitivity check 2*: we change the assumption on how much more expensive prosthesis are in the private sector than in the public sector. In particular, we say prosthesis benefits are 80% more expensive in private system.
- *Sensitivity check 3*: last, we consider the impact of PHI on utilization (sometimes referred to as "moral hazard). This addresses the concern that PHI might induce utilization and increase spending. We assume PHI affects all components of spending equally. We include as a parameter how much of private utilization would have taken place in the public system. Our specific assumption is 90%. This means PHI induces 1/.9 = 1.1111 new utilization. With this parameter, we reduce offsets to 90% of the value computed if PHI had no effect on spending. This 90% assumption is more of an effect that found in some papers in this literature. See (Eldridge, Onur, & Velamuri, 2017) and (Doiron & Kettlewell, 2018) whose results imply a parameter choice of around 95%.

Critical value analysis

In order to consider changes to the magnitude of subsides to PHI, overall and by group, it is necessary to know how enrollment changes with a change in subsidy. This question has been addressed in earlier research and is also studied in another component of this project. Prior to incorporation of empirical estimates (including likely sensitivity analyses), we make a calculation based on our current results to answer the following question: How much does enrollment need to increase for the government to break even? By breaking even, we mean that the additional offsets associated with the increased enrollment just pay for the increase in subsidies. We refer

to this as the "critical value" (CV) of enrollment increase. If enrollment increase is expected to exceed the critical value, the government saves on net by the subsidy increase; if enrollment increases less than the critical value, the increased subsidy costs the government on net.

In this report we compute the critical value for the population overall. Our data allow us to compute the critical value separately for each of our age-income groups.

The critical value can be figured as follows. The cost to the government of increasing the subsidy for PHI by $1 is $1 times the number of people presently enrolled in PHI (i.e., the subsidy increase goes to all those purchasing PHI). The savings to the government from the $1 increase is the number of new enrollees' times the average nets savings per person to the government (offset less current level of subsidy).

Critical value of increase in enrollment equalizes the costs and the savings:

CV of enrollment increase*net government savings per person = $1*number enrolled in PHI

Thus, the CV of enrollment increase is:

CV of enrollment increase = $1*Number enrolled in PHI/net government savings per person.

A notable assumption behind this formula is that the new people brought in by the subsidy have the same average offset as those already enrolled. This is unlikely to be true as those with higher expected health care costs are likely to have chosen to enroll at the higher premium. An assumption about the difference in average costs for the new and the existing enrollees can be easily incorporated. (This phenomenon is referred to as "adverse selection" in health insurance.)

Another notable assumption is that the enrollment increase is distributed across all current age-income groups in proportion to current enrollment. In this way the average of insurance pool costs does not change and the community-rated premium can be assumed not to change. To the degree that a subsidy policy changes the cost structure of the insured pool, the community-rated premium can change with indirect effects on enrollment, subsidies and offsets. Our simulation model is capable of incorporating these indirect effects.

5. RESULTS: STATIC ANALYSIS

In this section we show the results of our static analysis of government offsets and subsidies from the premium rebates and MLS.

5.1. BASE CASE ANALYSIS

Offsets: Counterfactual cost of use of public hospitals instead of private hospitals

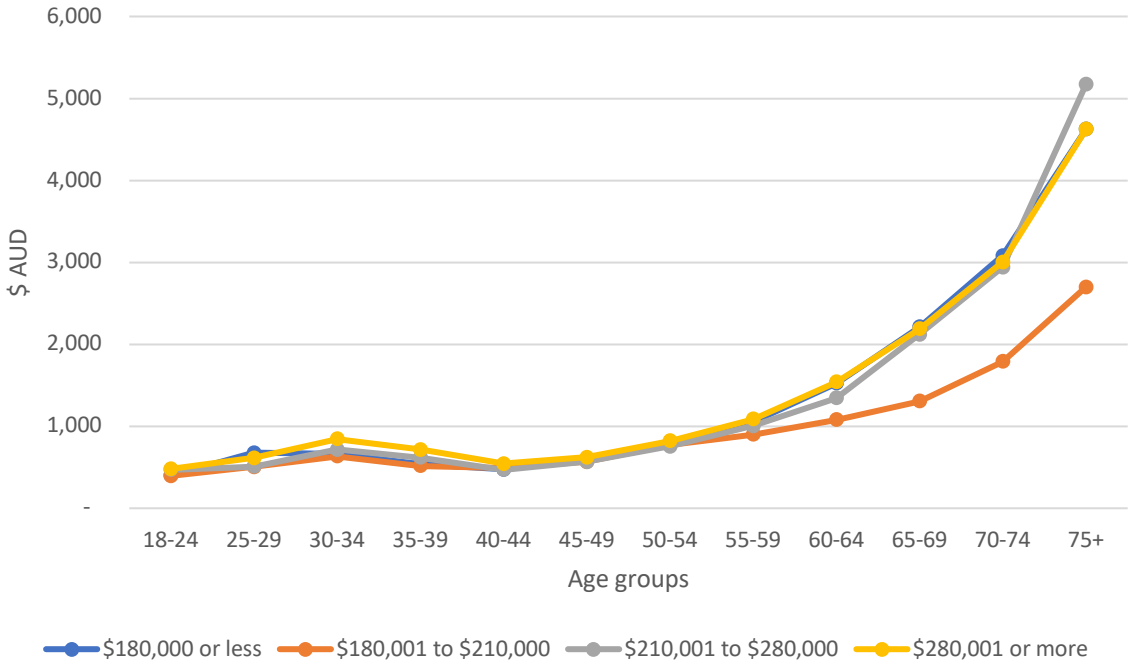
We construct the counterfactual cost for the government if an individual had not had PHI. We show values of the estimated offset by age, income and family status groups.

Figure 3 shows the offset by age groups and income with a panel for family and single coverage. The estimated offset for the nationally representative sample average is $1434 per person. This average is the sum product of the offset in each an age, income and family status group weighted by nationally representative share of PHI enrollment in each category.

Offsets are positive for all groups. Older individuals use more resources than younger groups; an older person with PHI saves the government more money than a younger person. Offsets increase dramatically at age 60 and above. By age 75+ the average enrollee is offsetting approximately $4,000 in public health care costs. We also observe in general terms that mid-range income (orange line) lies below the other income groups.

Figure 3: Average offset per age and income groups

Panel A: Family

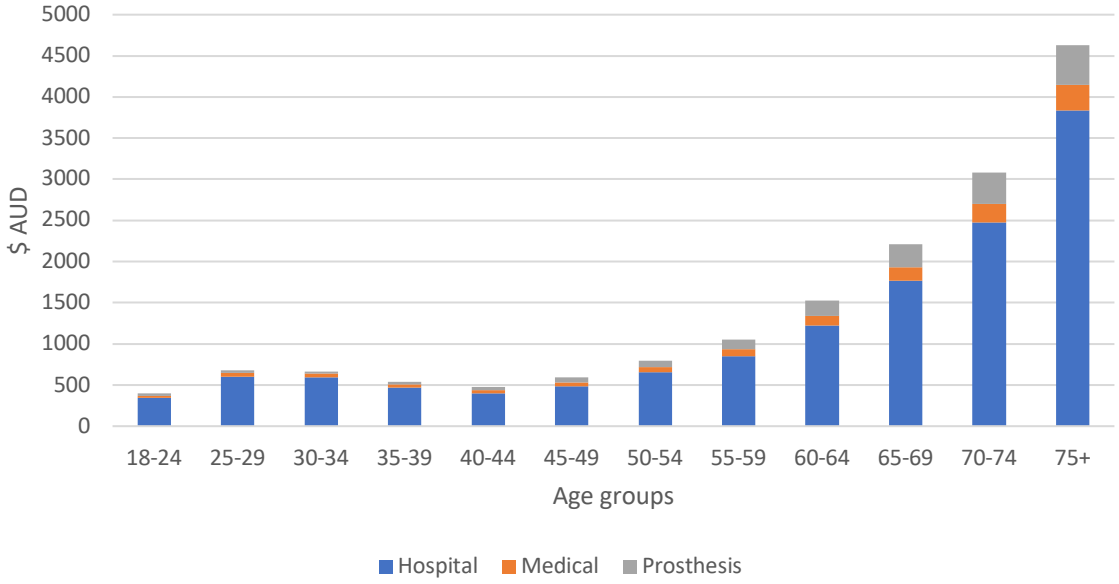


Panel B: Single

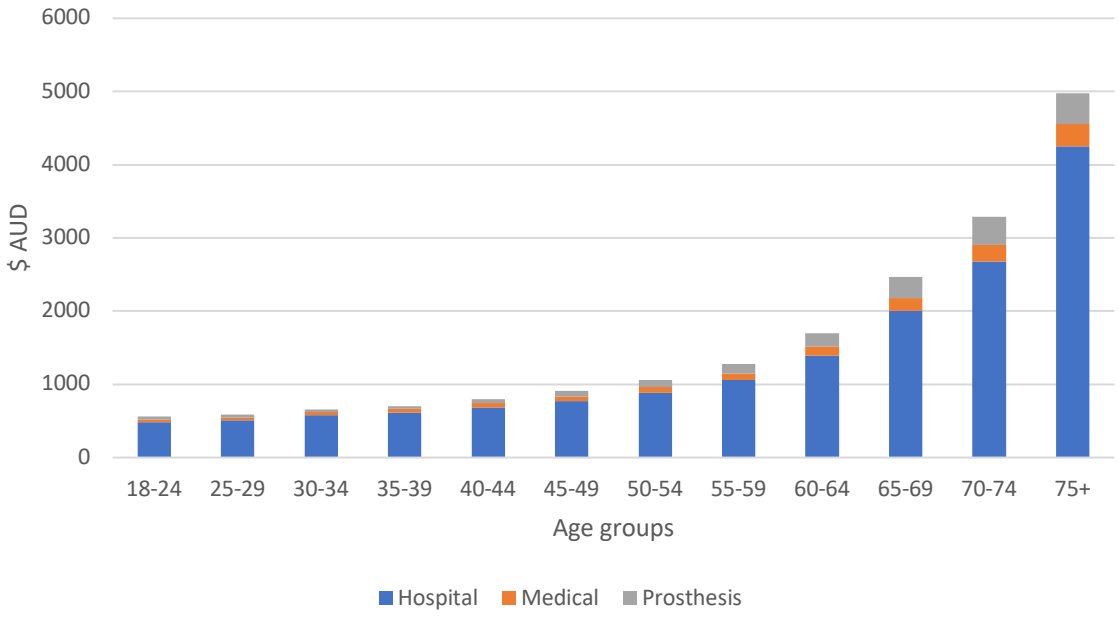
The offset consists of three components: hospital, medical and prosthesis benefits. Figure 4 plots the distribution of the offset by each component by age. We selected the population group with the largest number of individuals, the lowest income tier, to plot the distribution of spending offset.

Figure 4: Distribution of offset by components (hospital, medical, prosthesis)

Panel A: Family, Income tier $180,000 or less



Panel B: Single, Income tier $90,000 or less



By far the largest component of offset is hospital benefits. This is true for all age groups. For those in family status (Panel A), the highest proportion of hospital offset is in the 25-29 age group, 89.1% of the total offset. Medical offset among the age groups is highest for those 40-44, relative to the other groups, 8.3%, and last, for those 70-74, prosthesis represents 12.4% of their offsets (the largest relative to the other age groups). This pattern is repeated for the single status (Panel B), where 30–34-year old's have the highest proportion of hospital spending out of the age ranges (88.6%), 55–59-year old's hold the highest proportion of medical benefits (7.2%), and 65-69 for prosthesis (11.9%).

Premium rebate

Table 8 shows the average premium rebate by family status, income, and age group. Following the structure of the percentages, the higher average premium rebate is for those with lower incomes and older. Based on Finity premium estimates, those 70 and over have an average rebate of $766 in the family category and $755 in the singles category (and lower income ranges). The lowest non-zero rebate corresponds to those 18-64 and in the income range of $210,001 to $280,000 (family), equal to $191; and $189 for singles in the $105,001 to $140,000 range. The population average of the premium rebate equals $518 per person. The averages shown in Table 8 are nationally representative based on cell weights described above.

Our numbers can be reconciled with public reports. See Appendix 1. Multiplying the $518 by the 8,865,821 hospital PHI insured, we obtain a total for the hospital rebate of $ 4,595,061,628. As shown in Appendix 1, the remaining roughly $2bn corresponds to the extras rebate. Together, the numbers sum up to the total of officially reported $6.7bn for year 2022/23.

Table 8: Average premium rebate by family status, income, and age group

	Family				Single			
Age band/Income range	$180,000 or less	$180,001 to $210,000	$210,001 to $280,000	$280,001 or more	$90,000 or less	$90,001 to $105,000	$105,001 to $140,000	$140,001 or more
18 – 24 to 60 – 64	$574	$383	$191	$ -	$566	$377	$189	$ -
65 – 69	$670	$478	$287	$ -	$660	$472	$283	$ -
70 and over	$766	$574	$383	$ -	$755	$566	$377	$ -
Total								**$ 518**

Medicare Levy Surcharge

The analysis of the MLS is done under the assumption of current law, i.e., if an individual had not enrolled in PHI, they would pay the MLS.

Table 9 shows the average MLS revenue lost with enrollment in PHI. The average income in each range is multiplied by the percentage of the levy surcharge. The family income was adjusted by an average 2.1 family size average. The table shows that on average, families of the income range $180,001 to $210,000 joining PHI did not pay in MLS $905. This value increases by 2.4 times for the highest income range (280k+). In turn, individuals in the lowest income range subject to the MLS ($90,001 to $105,000) did not pay $970, value which increases to $2,400 in the highest income range $140,001 or more.

Table 9: MLS tax expenditure (yearly values)

		Family				Single			
	Age band/Income range	$180,000 or less	$180,001 to $210,000	$210,001 to $280,000	$280,001 or more	$90,000 or less	$90,001 to $105,000	$105,001 to $140,000	$140,001 or more
Medicare Levy Surcharge percentages	All ages	0%	1%	1.25%	1.5%	0%	1%	1.25%	1.5%
Average income			190,000	240,000	300,000		97,000	120,000	160,000
Tax forgone			$905	$1,429	$2,143		$ 970	$1,500	$ 2,400

Net cost to the government

The net cost to the government is equal to subsidies less offset. We show results first for the premium rebate subsidies alone, and then for the premium rebate plus the MLS subsidy.

In Figure 5, negative values correspond to offsets exceeding subsidies; in other words, government net savings for groups with negative values. On the contrary, positive values represent subsidy greater than avoided costs. For a nationally representative population, the

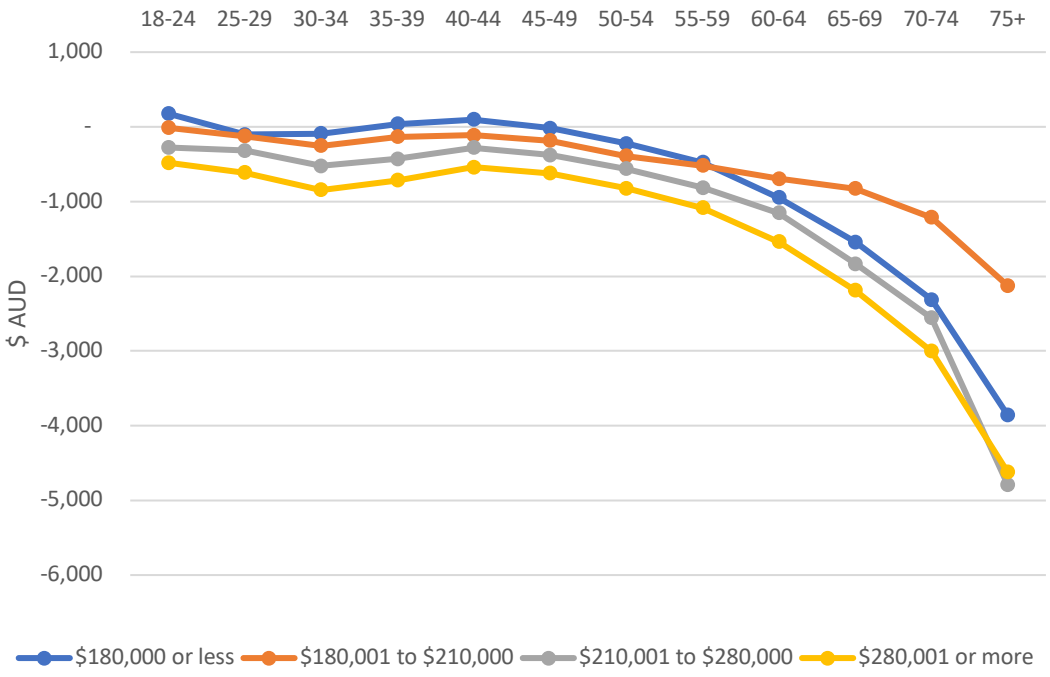
government saves money with PHI, on average, $916 dollars per person when the only subsidy considered in the premium rebate.

Overall, in both panels, and for most age and income groups, the net cost is negative. Indeed, only for the 18-24 (also for singles), 35-44 age groups, the net cost is positive, meaning subsidies are higher than avoided costs for those groups. In particular, the graph shows that the greatest savings for the government come from the single, older (75+) and individuals in the range 105-140k (an equivalent group in the family panel). On average, savings for that group are $4,891 (and $4,792, respectively). As the income range of $180,001 to $210,000, and $90,001 to $105,000, exhibited comparatively less offset, this means their relative cost to the government is higher in contrast to the other income ranges (rebates are higher than the offset).

Older individuals are more likely to make use of health services, and therefore greater offsets. Subsidies these older individuals receive are small in relation to the costs they avoid in the public system.

Figure 5: Net Cost to Government of PHI: rebate less offset

Panel A: Family



Panel B: Single

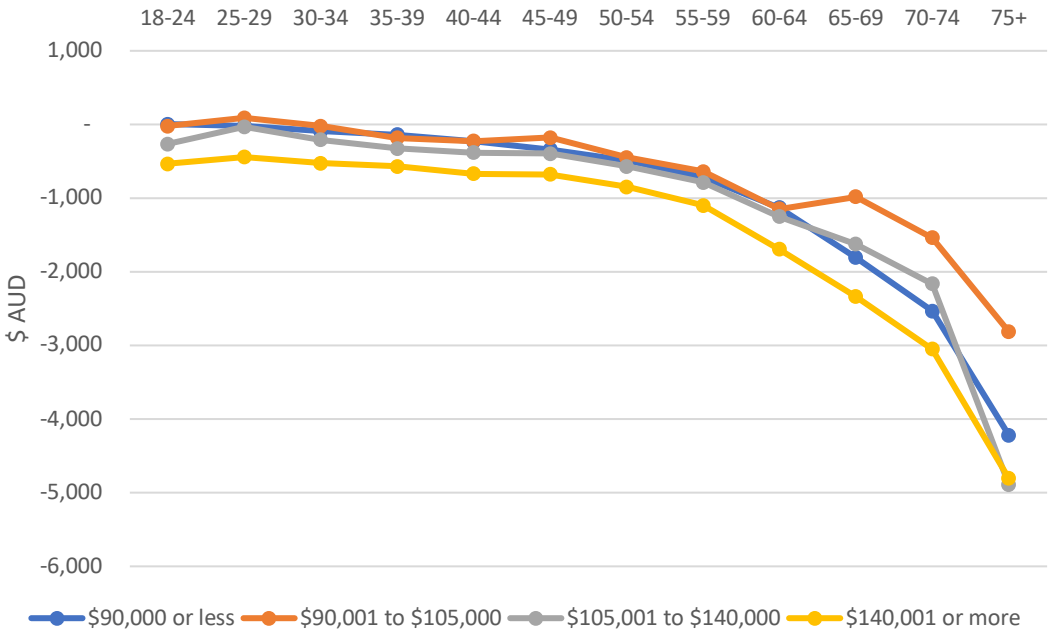
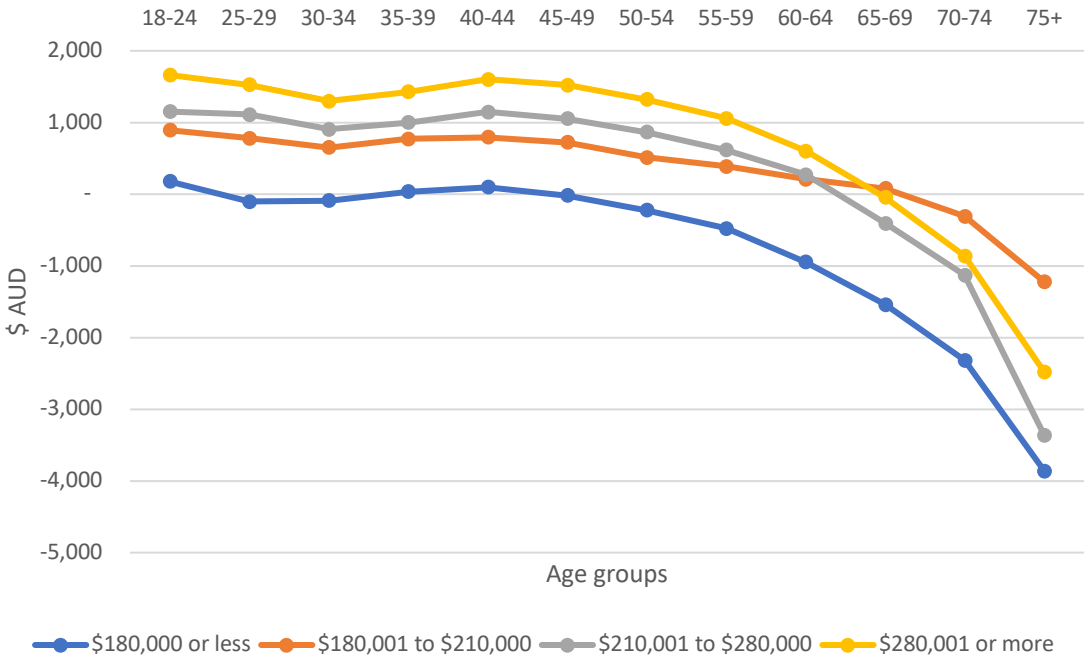


Figure 6 adds tax forgiveness from MLS to the subsidy. In this case, the average population savings from the government are roughly cut in half to $554. The net cost to the government for younger groups is positive, meaning subsidies exceed offsets for younger groups. High net savings remain at the older income groups.

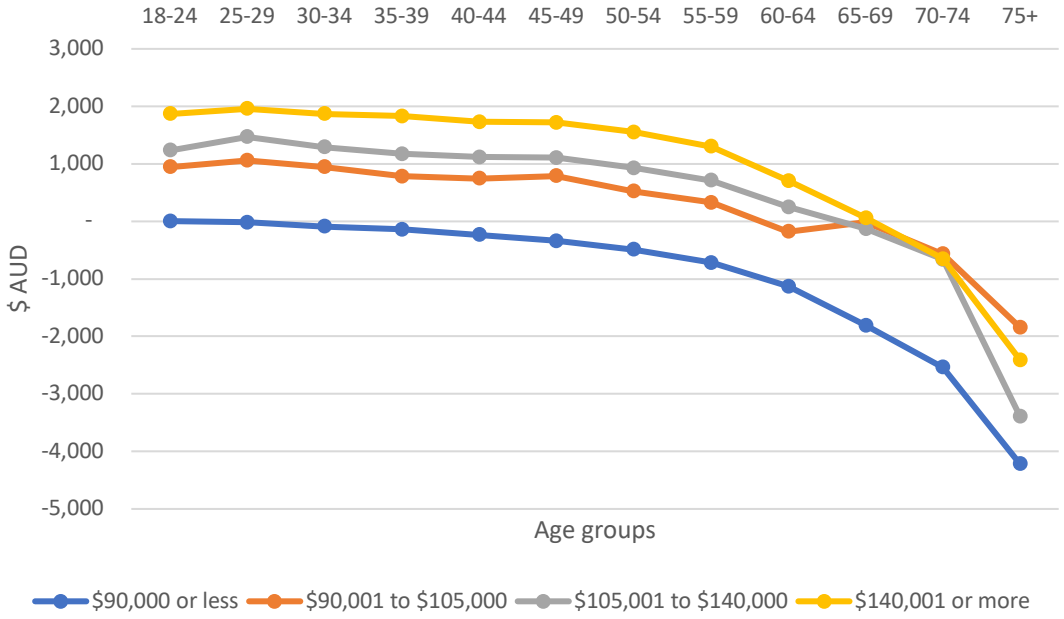
The pattern of net government cost from Figure 5 changes in Figure 6. Those with the lower income do not pay the MLS, so net savings are largest for older individuals with lower incomes once the subsidy from the MLS forgiveness is included in the calculations.

Figure 6: Net Cost to Government of PHI: Rebates plus MLS less Offset

Panel A: Family



Panel B: Single



The net cost to the government analysis shows that the government saves on net for older persons in PHI and bears cost on net for younger persons in PHI. Combing PHI experience with subsidy rules allows us to calculate the magnitude of net costs/savings by age and income.

Net social cost

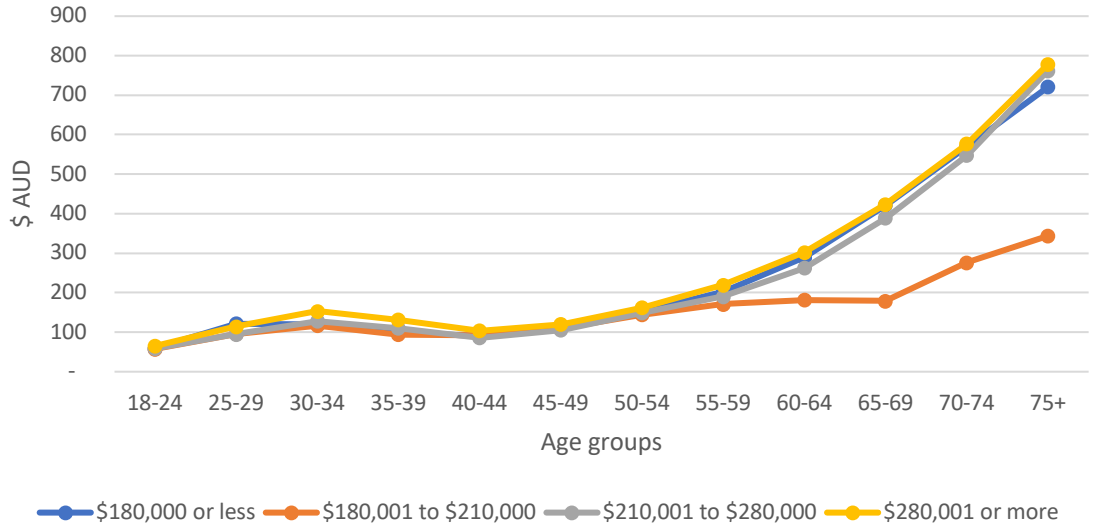
Our data allow us to estimate the net social cost due to PHI, equal to the total cost in PHI less what the individual would have used had they not had PHI and been served in the public sector. In terms of results from above the net social cost is the difference between Average PHI spending - Average Offset.

Figure 7 shows that the net social cost increases with age. Values are roughly similar among income groups. The exception to this trend is the middle-income group (orange line).

Note the contrast between the net cost to the government and net cost to society. For example, each older person in PHI generates savings for the government but costs for society.

Figure 7: Social marginal cost (PHI average spending – offset)

Panel A: Family

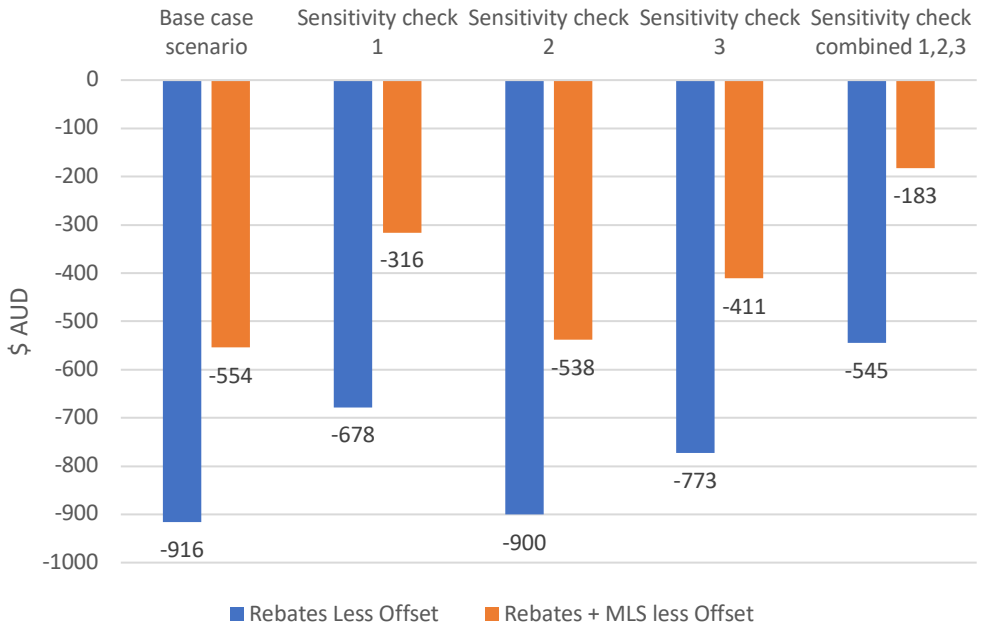


Panel B: Single

5.2. SENSITIVITY ANALYSIS

We performed sensitivity analysis on some key assumptions. Here we show their overall effect on government spending for a nationally representative population. In Figure 8, we present population averages of the rebates minus the offset, and the rebates plus the MLS forgiveness minus offset.

Figure 8: Net cost to government in the sensitivity check scenarios



In Sensitivity check 1, we changed the assumption of efficiency between public and private hospitals. By considering public hospitals to be more efficient and using an 80% parameter on the hospital component of spending (and keeping the rest fixed), the net cost to government is still on average large and negative (meaning there are savings for the government). The net savings change from $916 in the base case scenario to $678, a reduction of 26%. When considering also the MLS, the value remains negative (savings), but changes from $554 to $316 dollars per representative person.

Sensitivity check 2 changed the prosthesis assumption to make this component 80% more expensive in the private sector. We observe that the difference in both our government spending measures with the base case scenario is smaller, than in the case of sensitivity check 1. This is due to the fact that prothesis is only around 4% to 12% of the total offset (depending on the age group).

Last, when adding the moral hazard component in sensitivity check 3, savings decrease from $916 to $773, and from $554 to $411, respectively, in both measures of net cost to government. Combining the three changes, the savings are reduced the most. Net savings reach $183, which is a 3-fold reduction compared to the base case scenario of $554, when also considering the MLS.

In sum, incorporating series of sensitivity analysis to reduce the offset still leaves net savings for the government for a nationally representative population.

5.3. CRITICAL VALUE ANALYSIS

The critical value of enrollment increase is the increase in enrollment necessary to generate net savings to the government (offset less subsidy) sufficient to pay for the increase in the subsidy. As described in the Methods section, the critical value of enrollment change from a $1 subsidy increase is:

CV of enrollment increase = $1*Number enrolled in PHI/net government savings per person.

Table 10 contains the inputs from the base case analysis in section 5.1 and the resulting CV of The enrollment increase.

Table 10: Critical value of enrollment change for a $1 increase in subsidy

	Population average premium rebate	Population average MLS
Population average subsidy	$518	$362+$518= $880
Population average offset	$1,434	$1,434
Subsidy minus offset	-$916	-$554
Number of individuals in PHI	8,865,821	8,865,821
Critical value of change in enrollment	9,679	16,004
CV of change in enrolment (percent)	0.11%	0.18%

In order for a change in the subsidy to be budget neutral considering only the premium rebate as a subsidy, an increase in $1 dollar of the net cost to the government must move at least 9,679 people to PHI, 0.11% of present enrollees. When considering the MLS forgiveness also as a subsidy, the same change must move at least 16,004 individuals into PHI (or 0.18%). Consideration of the MLS requires a larger CV because the net savings to the government for enrollment in PHI is less when recognizing the MLS tax forgiveness.

5.4. INCORPORATING GENERAL TREATMENT REBATES

In this section, we describe the general treatment rebate subsidies and incorporate them into the evaluation measures of Net cost to the government, Sensitivity checks and Critical value analysis.

It's important to note that the offsets do not change, as there is no alternative cost for the government in this regard, this means the net social cost remains unchanged. In addition, the MLS subsidy doesn't vary, as this levy only concerns appropriate level of hospital treatment policies.

Premium rebates

Table 11 shows the average premium rebate for the combination of Hospital treatment rebates and General treatment rebates by family status, income, and age group. In the same fashion as the hospital premium rebates in Table 8, following the structure of the rebate percentages, the highest income earners, and younger individuals attract the least subsidy; while those in the lower income range and of older age, the highest subsidy.

Table 11: Average premium rebate for hospital and general treatment policies by family status, income and age group

	Family				Single			
Age band/Income range	$180,000 or less	$180,001 to $210,000	$210,001 to $280,000	$280,001 or more	$90,000 or less	$90,001 to $105,000	$105,001 to $140,000	$140,001 or more
18 – 24, 60 – 64	$ 844	$ 562	$ 281	$ -	$ 849	$ 566	$ 283	$ -
65 – 69	$ 984	$ 703	$ 422	$ -	$ 990	$ 707	$ 424	$ -
70 +	$ 1,125	$ 844	$ 562	$ -	$ 1,132	$ 849	$ 566	$ -
Population average								**$ 767**

In combination, the population average subsidy increases from $518 to $767. This gives us that the general treatment rebate portion equals $249 for the population average (the difference between $767 and $518).

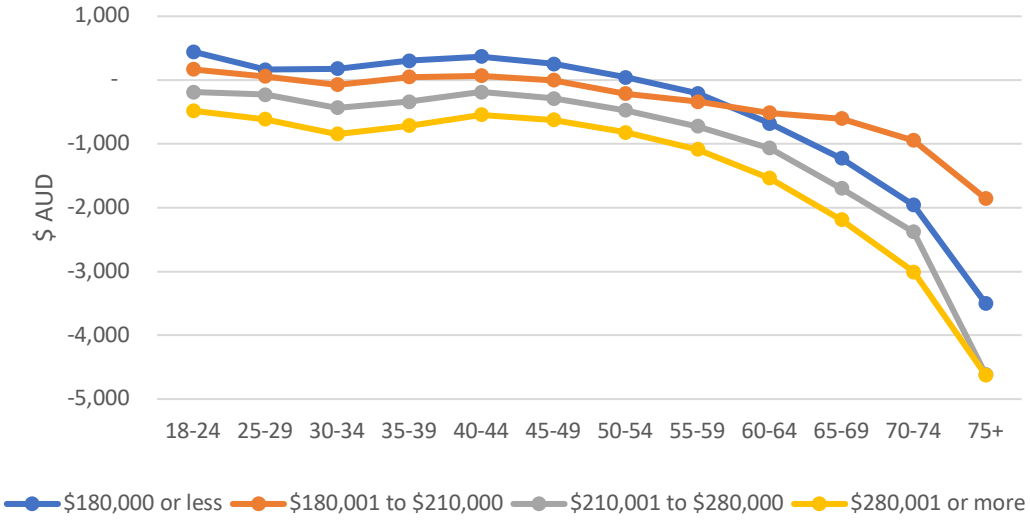
Net cost to the government

In Figure N9, the net Cost to Government of PHI: rebate (including general treatment) less offset is graphed. For a nationally representative population, the government still saves money with PHI, on average, $667 dollars per person when the only subsidy considered is the premium rebate.

It's important to note that for high income earners of every age group, the net cost to the government remains unchanged when incorporating the general treatment policies rebate, as they are not subject to these subsidies. Savings remain high for the older age groups. Following the rebate percentages, and offset patterns, the groups that see the greatest net increase in cost are the younger age groups. For example, those aged 18-24 and in the two lower income ranges increase costs to be government by 2.5 times (from $176 to $445) and 13 times from savings of $13 to net cost of $167. In general, the same pattern on age and income groups is observed in Figure 9.

Figure 9: Net Cost to Government of PHI: rebate (including general treatment) less offset

Panel A: Family



Panel B: Singles

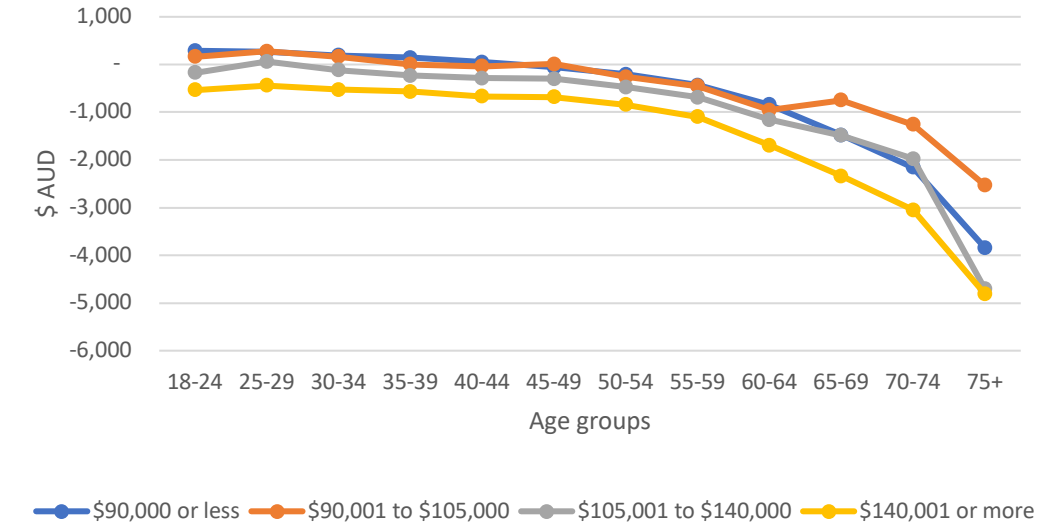
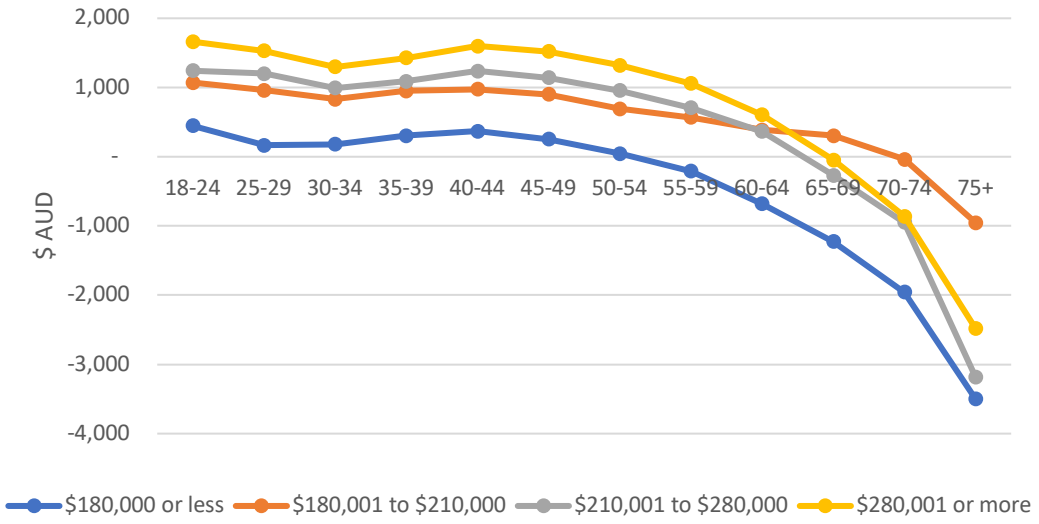


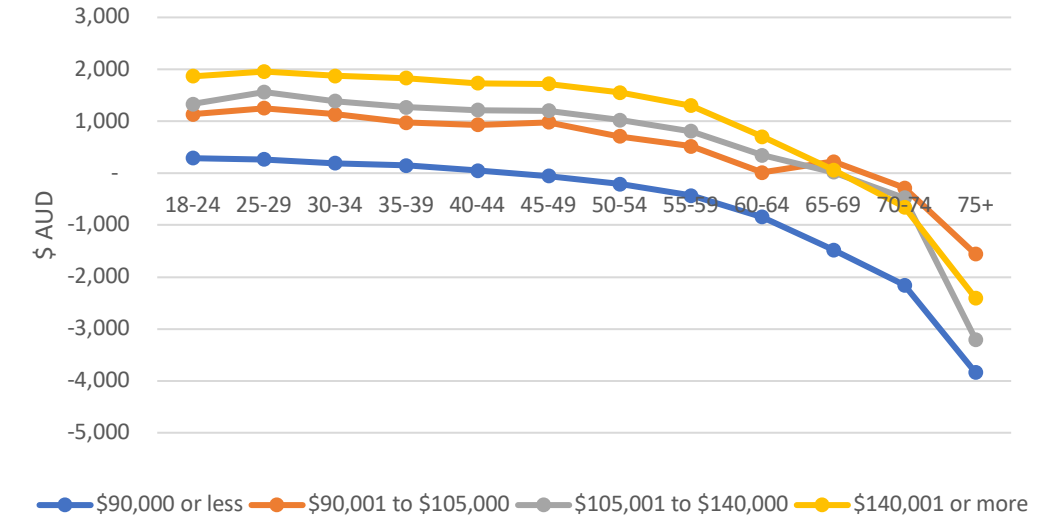
Figure 10 contains the net cost to the government which takes into consideration the MLS. In this case, the population average net cost to the government is -$305, meaning savings still exist.

Figure 10: Net Cost to Government of PHI: Rebates (including general treatment) plus MLS less Offset

Panel A: Family



Panel B: Singles



Sensitivity checks

As our sensitivity checks affect the offset component, and do not modify the subsidy component, all values in Figure 8 will change by the exact amount of the population average of the general treatment rebate subsidy: $249.

This changes Sensitivity check 1 from -$678 to -$429 in the rebate less offset case, and from -$316 to -$67 when considering the MLS; Sensitivity check 2 from -$900 to -$651, and -$538 to -$289 respectively. Last, in terms of sensitivity check 3, net cost changes from -$773 to -$524, and -$441 to -$162.

When combining all sensitivity checks, in the rebate only scenario, the net cost to the government changes from $-545 to $-296, and when incorporating the MLS, for the only case so far, on average, the net cost to the government becomes positive, from -$183 to $66. This is probably the most significant change.

Critical value analysis

Incorporating the general treatment rebate increases the subsidy component for the government. This affects the critical value of change in enrollment and increases the number of individuals that must be moved to PHI, if the subsidy is increased in $1 for it to be budget neutral. Specifically, from Table 12, we see that in the case where we do not consider the MLS, the number individuals shifts from 9,679 to 13,285 – meaning a CV change in enrolment as a percentage of 0.15%. Again, when considering the MLS, the number of individuals needed to keep a $1 dollar increase in subsidy budget neutral, increases. In this scenario, 29,034, or a 0.33% change in enrolment is needed.

Table 12: Critical value of enrollment change for a $1 increase in subsidy

	Population average premium rebate	Population average MLS
Population average subsidy (including general treatment)	$767	$362+$767= $1,129
Population average offset	$1,434	$1,434
Subsidy minus offset	-$667	-$305
Number of individuals in PHI	8,865,821	8,865,821
Critical value of change in enrollment	13,285	29,034
CV of change in enrolment (percent)	0.15%	0.33%

6. CONCLUSION/DISCUSSION

This report investigates the costs and savings to the government of subsidizing PHI. Costs take the form of subsidies, savings take the form of offsets of public sector health care costs

We conduct what refer to as a static exercise to characterize costs and savings in the current system, taking enrollment, premiums and patterns of costs as given.

In the base case, the government enjoys large savings from subsidizing PHI. We show how these savings are distributed according to age and income groups (and family groups). Net savings are largest for the oldest age groups. When considering the MLS forgiveness as a component of the subsidy, low-income elderly generate the highest net savings of any population group.

Net social cost – the effect of PHI on total resource use – is greatest for older groups. The level of subsidies do not play into an estimate of net social cost which is simply the difference between what an individual uses in PHI and what they would use in the public system.

Sensitivity checks incorporating potential greater efficiency of public hospitals, increasing costs of prosthesis in PHI, and moral hazard all reduced the net savings as expected. All our sensitivity analyses had the effect of reducing the offset. Nonetheless, net savings for the government remained in all our sensitivity analyses.

A critical value analysis showed how much enrollment needs to increase in response to a subsidy in order for the subsidy to be budget neutral. Comparing our CV to an expected response to subsidies based on data analysis and review of previous work can guide the government in terms of whether, from the standpoint of public budgets, subsidies should be increased or decreased.

Last, our analysis also incorporated the general treatment policies, even if the offsets do not apply to this part of spending, they do attract rebates. Savings are maintained in or base case analysis scenario. When combining the three sensitivity check assumptions, is when we observe the only situation where there is a cost to the government.

It is important to note what our analysis does not do. Although we show that current policy is associated with net savings to the government, we do not provide support one way or the other for whether this is the optimal policy, or even whether subsidies should be increased or decreased, and for what groups.

With reliable estimates on enrollment response to subsidies, however, our model is capable of answering what-if questions about changes in subsidy policies. Our model tracks by group and for a nationally representative population:

- Enrollment
- Offset
- Premium rebate
- MLS tax forgiveness
- Net cost to government

Our model is set up to incorporate the feedback between enrollment patterns and community-rated premiums, important for a comprehensive analysis of changes in subsidy policy.

7. APPENDICIES

7.1. APPENDIX 1: RECONCILIATION OF PREMIUM REBATES

The reconciliation of the premium rebate performed by the Finity team has 8 steps. In step 1 and 2, the population of PHI insured in hospital treatment policies (by income, age and family groups)

was constructed using ATO and APRA data. The details of this are the same as in Appendix 3. Step 3, took the policy parameters of the premium rebates (percentages and average premiums) to construct the total rebate sums (Step 4). Table A1.1 shows those totals.

Table A1.1: Premium Rebate Amount - Hospital

	Family				Single			
Age band/Income range	$180,000 or less	$180,001 to $210,000	$210,001 to $280,000	$280,001 or more	$90,000 or less	$90,001 to $105,000	$105,001 to $140,000	$140,001 or more
18 - 24	60,382,511	5,547,211	3,198,056	-	333,658,510	4,697,994	2,240,545	-
25 - 29	71,416,757	4,955,483	1,837,470	-	136,415,935	8,145,420	3,762,472	-
30 - 34	194,366,129	19,520,566	9,384,795	-	106,898,723	11,483,569	6,519,364	-
35 - 39	240,579,404	28,214,914	15,692,782	-	74,264,470	8,614,828	5,495,750	-
40 - 44	214,249,252	28,013,213	16,815,862	-	59,097,099	6,739,252	4,419,969	-
45 - 49	219,686,271	28,618,898	17,680,552	-	65,068,209	7,201,033	4,682,885	-
50 - 54	214,779,710	23,846,428	14,216,884	-	66,930,205	6,695,842	4,178,696	-
55 - 59	247,328,883	19,800,093	11,493,448	-	75,674,287	6,402,079	3,833,817	-
60 - 64	270,858,125	10,604,247	6,057,560	-	83,055,118	4,131,977	2,282,428	-
65 - 69	318,620,247	5,229,969	3,894,966	-	94,919,898	2,150,302	1,490,964	-
70 - 74	322,025,453	2,887,011	2,517,566	-	98,641,940	1,079,897	951,966	-
75 and over	393,615,191	2,601,640	2,516,035	-	235,754,578	2,245,259	2,182,767	-
Total								4,595,061,628

In Step 5, general treatment (extras) participation according to APRA was spread according to the ATO information by income range. This is the same procedure as for hospital treatment policies. Step 6 consisted of obtaining the average premium for general treatment policies, which in this case amounted to $2300 for families and $1150 for singles. In step 7, the premium rebates totals for general treatment was obtained.

Table A1.2: Premium Rebate Amount - General

	Family				Single			
Age band/Income range	$180,000 or less	$180,001 to $210,000	$210,001 to $280,000	$280,001 or more	$90,000 or less	$90,001 to $105,000	$105,001 to $140,000	$140,001 or more
18 - 24	33,912,874	3,115,503	1,796,137	-	199,615,325	2,810,633	1,340,434	-
25 - 29	44,796,270	3,108,334	1,152,556	-	91,147,568	5,442,438	2,513,930	-
30 - 34	103,482,709	10,392,968	4,996,570	-	60,625,868	6,512,719	3,697,351	-
35 - 39	123,811,634	14,520,506	8,076,124	-	40,711,991	4,722,673	3,012,785	-
40 - 44	111,892,224	14,629,972	8,782,127	-	32,876,457	3,749,130	2,458,884	-
45 - 49	115,874,010	15,095,101	9,325,646	-	36,558,656	4,045,910	2,631,085	-
50 - 54	112,223,780	12,459,912	7,428,413	-	37,252,211	3,726,791	2,325,791	-
55 - 59	127,176,448	10,181,203	5,909,928	-	41,449,419	3,506,640	2,099,914	-
60 - 64	134,672,517	5,272,504	3,011,860	-	43,988,764	2,188,433	1,208,850	-
65 - 69	150,082,035	2,463,511	1,834,674	-	47,626,739	1,078,930	748,102	-
70 - 74	142,127,286	1,274,194	1,111,138	-	46,375,341	507,701	447,555	-
75 and over	154,441,474	1,020,797	987,208	-	98,534,988	938,419	912,300	-
Total								2,341,830,876

The final step (8) combines the two rebate amounts: 6,936,892,504.

7.2. APPENDIX 2: BENEFITS IN THE PHI INSURED POPULATION

Table A2.1: Total hospital spending per family status, income groups and age bands (in $000 AUD)

	Family					Single				
Age band/Income range	Unknown	$180,000 or less	$180,001 to $210,000	$210,001 to $280,000	$280,001 or more	Unknown	$90,000 or less	$90,001 to $105,000	$105,001 to $140,000	$140,001 or more
Under 18	52,447	240,076	17,156	14,375	21,667	6,639	37,993	1,613	1,313	3,437
18 – 24	24,884	140,796	7,863	8,143	17,517	10,503	57,783	1,080	889	4,523
25 – 29	9,780	57,832	2,970	1,644	3,077	21,330	121,953	3,033	1,681	8,566
30 – 34	22,092	167,102	12,410	9,549	12,762	20,011	152,363	6,762	5,960	11,624
35 – 39	31,265	192,196	13,637	13,121	18,932	18,566	117,218	6,317	5,926	9,943
40 – 44	38,698	162,881	11,552	10,126	16,687	18,125	90,031	4,204	4,276	8,493
45 – 49	49,605	207,941	12,729	12,199	22,276	21,534	99,528	3,361	3,921	8,606
50 – 54	61,168	257,842	14,230	12,229	27,118	26,716	112,522	4,246	4,077	9,881
55 – 59	86,522	351,893	14,573	12,571	35,718	38,534	152,391	5,008	4,964	13,269
60 – 64	105,341	485,763	17,734	8,837	39,152	45,080	213,284	5,384	4,527	17,110
65 – 69	128,318	608,242	42,705	5,009	33,050	62,016	288,213	23,519	2,364	16,153
70 – 74	128,840	706,376	46,822	2,234	23,767	73,048	383,318	32,907	995	13,418
75-79	96,749	587,401	33,133	1,278	14,298	69,114	408,616	31,528	906	10,199
80-84	54,339	399,777	20,835	709	6,901	60,525	415,820	25,001	743	8,908
85+	35,600	260,194	13,815	764	5,236	74,720	577,605	31,643	1,978	14,368
Total	925,649	4,826,312	282,162	112,790	298,160	566,463	3,228,637	185,606	44,521	158,499

Table A2.2: Total medical spending per family status, income groups and age bands (in $000 AUD)

	Family					Single				
Age band/Income range	Unknown	$180,000 or less	$180,001 to $210,000	$210,001 to $280,000	$280,001 or more	Unknown	$90,000 or less	$90,001 to $105,000	$105,001 to $140,000	$140,001 or more
Under 18	11,975	47,547	2,970	2,685	4,282	1,170	5,777	195	170	511
18 – 24	4,849	27,587	1,562	1,391	3,177	1,847	9,434	195	125	731
25 – 29	2,512	14,467	791	442	730	4,294	23,996	761	455	1,672
30 – 34	6,102	42,645	3,183	2,431	3,049	4,180	30,891	1,712	1,502	2,471
35 – 39	8,392	49,756	3,567	3,308	4,634	3,643	23,109	1,365	1,431	2,176
40 – 44	10,486	43,351	3,139	2,662	4,365	3,546	17,435	894	969	1,748
45 – 49	12,792	54,306	3,461	3,202	22,276	4,348	19,436	859	975	1,924
50 – 54	15,319	66,513	3,635	3,309	27,118	5,649	23,361	951	1,037	2,314
55 – 59	20,656	88,685	3,715	3,169	35,718	7,917	32,322	1,151	1,136	3,030
60 – 64	23,640	117,519	4,093	2,227	39,152	9,198	45,269	1,251	1,054	3,720
65 – 69	27,434	143,643	8,325	1,151	33,050	12,318	61,330	4,510	514	3,432
70 – 74	26,121	161,591	9,426	527	23,767	13,668	80,081	6,038	194	2,813
75-79	18,141	125,431	6,057	217	14,298	12,061	78,846	5,552	142	1,971
80-84	9,188	75,550	3,359	137	1,319	9,522	71,850	3,958	139	1,489
85+	4,856	41,415	1,992	144	798	10,258	80,915	4,256	260	2,001
Total	202,463	1,100,005	59,275	27,002	70,756	103,618	604,052	33,647	10,103	32,004

Table A2.3: Total prosthesis spending per family status, income groups and age bands (in $000 AUD)

	Family					Single				
Age band/Income range	Unknown	$180,000 or less	$180,001 to $210,000	$210,001 to $280,000	$280,001 or more	Unknown	$90,000 or less	$90,001 to $105,000	$105,001 to $140,000	$140,001 or more
Under 18	6,320	24,749	1,203	1,403	2,354	665	4,727	82	53	347
18 – 24	2,495	18,810	1,025	855	1,950	1,416	8,498	196	183	536
25 – 29	953	4,264	259	96	225	2,199	14,648	475	299	1,152
30 – 34	2,013	11,827	883	496	689	1,818	13,790	603	548	1,002
35 – 39	4,219	21,424	1,371	1,233	1,663	1,888	12,029	666	584	903
40 – 44	6,509	25,851	2,038	1,557	2,449	2,390	11,967	469	579	1,274
45 – 49	9,403	38,536	2,732	2,241	4,154	4,013	14,905	631	630	1,509
50 – 54	12,402	51,937	2,812	2,759	5,773	4,744	19,373	995	1,042	2,013
55 – 59	18,904	80,152	3,194	2,965	8,128	7,981	30,341	1,355	1,118	2,899
60 – 64	24,841	117,138	3,043	2,250	9,487	9,673	45,132	1,284	1,150	3,863
65 – 69	31,545	156,200	3,795	1,307	8,106	13,477	67,876	1,251	737	3,578
70 – 74	28,908	175,702	4,040	536	5,667	15,024	87,789	995	229	2,991
75-79	18,924	134,583	2,168	261	3,498	11,780	86,004	621	130	1,960
80-84	8,264	78,085	1,146	159	1,497	7,642	72,025	490	128	1,437
85+	3,082	35,734	920	115	632	5,292	62,006	809	205	1,561
Total	178,783	974,991	30,629	18,232	56,270	90,002	551,112	10,921	7,614	27,025

7.3. APPENDIX 3: PHI INSURED POPULATION DATA

Table A3.1: Number of taxpayers in PHI 2018-19 (ATO data)

	Family				Single				Total
Age band/Income range	$180,000 or less	$180,001 to $210,000	$210,001 to $280,000	$280,001 or more	$90,000 or less	$90,001 to $105,000	$105,001 to $140,000	$140,001 or more	
Under 18	9	-	-	-	66,056	143	157	288	66,653
18 - 24	23,143	832	422	168	563,590	8,560	7,020	9,971	613,706
25 - 29	168,565	17,545	13,012	4,645	326,649	29,257	27,030	14,390	601,093
30 - 34	389,503	58,679	56,425	26,949	217,326	35,020	39,765	24,563	848,230
35 - 39	455,787	80,183	89,199	61,684	142,736	24,837	31,691	24,881	910,998
40 - 44	398,537	78,165	93,848	85,148	111,523	19,077	25,025	23,078	834,401
45 - 49	404,357	79,016	97,637	99,495	121,501	20,170	26,235	25,332	873,743
50 - 54	391,385	65,183	77,727	82,185	123,732	18,568	23,177	22,828	804,785
55 - 59	442,641	53,155	61,714	66,592	137,396	17,436	20,884	20,831	820,649
60 - 64	427,281	27,703	31,652	38,462	132,919	10,951	12,099	12,729	693,796
65 - 69	317,060	10,930	13,568	20,274	95,824	4,559	5,269	7,310	474,794
70 - 74	201,151	5,028	6,577	11,411	62,509	1,908	2,523	4,483	295,590
75 and over	195,169	4,531	6,573	12,550	118,590	3,967	5,785	13,085	360,250
Total									8,198,688

Table A3.2: Nationally representative distribution of PHI insured per age, income and family status.

	Family				Single			
Age band/Income range	$180,000 or less	$180,001 to $210,000	$210,001 to $280,000	$280,001 or more	$90,000 or less	$90,001 to $105,000	$105,001 to $140,000	$140,001 or more

18 - 24	105,162	14,492	16,711	17,391	589,519	12,451	11,877	14,755
25 - 29	124,379	12,946	9,601	3,427	241,024	21,588	19,945	10,618
30 - 34	338,507	50,996	49,037	23,421	188,872	30,435	34,559	21,347
35 - 39	418,992	73,710	81,998	56,704	131,213	22,832	29,133	22,872
40 - 44	373,135	73,183	87,866	79,721	104,415	17,861	23,430	21,607
45 - 49	382,604	74,765	92,385	94,143	114,965	19,085	24,824	23,969
50 - 54	374,059	62,297	74,286	78,547	118,255	17,746	22,151	21,817
55 - 59	430,746	51,727	60,056	64,803	133,704	16,967	20,323	20,271
60 - 64	471,725	27,703	31,652	38,462	146,745	10,951	12,099	12,729
65 - 69	475,624	10,930	13,568	20,274	143,746	4,559	5,269	7,310
70 - 74	420,611	5,028	6,577	11,411	130,708	1,908	2,523	4,483
75 and over	514,117	4,531	6,573	12,550	312,392	3,967	5,785	13,085
Total								

Note: Total insured equals 8,865,821

7.4. APPENDIX 4: OPTIMAL SUBSIDIES FOR PURCHASE OF PRIVATE HEALTH INSURANCE IN AUSTRALIA

This Appendix characterizes the efficient subsidy of private health insurance (PHI) in Australia according to different potential objectives of government policy. As a starting point, we begin by characterizing the subsidies that promote efficient choice of PHI. We then consider a general objective in which the government seeks to economize on government spending but also provide financial support to the health care sector. Both of these elements are estimated in the empirical analysis in the body of the report. The importance of these two components is represented by the relative weight placed on them in a maximization problem. The optimal subsidies are those that maximize the government's weighted objective. By modifying the weight on supporting the health care sector, we characterize the optimal subsidies for a range of relative importance of the two objectives, including the case in which the government seeks only to subsidize PHI for the purpose of reducing government expenditures.

The optimal subsidy is described in the context of community-rated premiums. The level of community-rated premiums depends on the distribution of people choosing PHI (which will be affected by the subsidies). In other words, this theoretical analysis incorporates the feedback between enrollment and the community-rated premium.

In addition to community-rated premiums, the analysis in this paper is conducted in the context of a tax-financed Medicare[2] program open to all. Both community rating and the public health-care program embody strong equity components.

Definitions

The population partitions into I mutually exclusive groups i ϵ {1,..i,..I}, with N_i the number of individuals in group i. In the empirical application connecting this to the body of the report, the partition is by age and income. Spending in PHI by a representative individual in group i if they

[2] We use the term "Medicare" to refer to the Medicare program and care from public hospitals.

have PHI is c_i. The representative individual's spending in Medicare is m_i if they do not have PHI and m_i^{PHI} if they do have PHI. The difference between m_i and m_i^{PHI} is the offset of PHI to Medicare: $o_i = m_i - m_i^{PHI}$. The spending a representative person would receive in each sector is regarded as given. Everyone joining PHI pays a community-rated premium p, though they may also receive a subsidy from the government. The price of insurance to an individual from group i is therefore $p_i = p - s_i$ where s_i is the subsidy to group i. The number of individuals in group i with PHI is $n_i(p_i), n_i'(p_i) < 0$.

Given these definitions, and a competitive (zero economic profit) health insurance sector, the community-rated premium is equal to the average cost of those joining PHI, i.e., the p that solves the following equation:

$$\sum_i n_i(p_i)(p - c_i) = 0$$

Government spending, G, is the sum of subsidies to PHI and Medicare spending:

$$G = \sum_i \left[n_i(p_i)\left(s_i + m_i^{PHI}\right) + \left(N_i - n_i(p_i)\right)m_i\right] = \sum_i n_i(p_i)(s_i - o_i) + M$$

Where $M = \sum_i N_i m_i$ is the total government's spending if there were no PHI, a constant.

Total third-party spending on health care is TS:

$$TS = \sum_i \left[n_i(p_i)\left(c_i + m_i^{PHI}\right) + \left(N_i - n_i(p_i)\right)m_i\right] = \sum_i \left[n_i(p_i)(c_i - o_i)\right] + M$$

The marginal social cost for a representative member of group i joining PHI is:

$$mc_i = c_i - o_i$$

An individual incurs cost c_i with PHI but with the offset of o_i in the public sector, the marginal social cost is the difference.

Unregulated competitive pricing by insurers would lead to a price for each group equal to c_i.

Patients have out-of-pocket (OOP) costs in both PHI and Medicare depending on coverage and prices charged by providers for services in the two sectors. In choosing whether or not to buy PHI, consumers take account of OOP costs as one of the characteristics of PHI. Differences in OOP costs (and any differential risk associated with those prices) are thus reflected in demand for PHI.

Baseline: Socially Efficient Choice of PHI

The socially efficient sorting of consumers into PHI is a matter of benefits and costs. Some consumers value PHI above the marginal social costs of PHI and from an efficiency standpoint should have PHI. Some other consumers do not value PHI above the marginal social cost and therefore should not have PHI. This section describes the subsidies that lead to this efficient sorting given the assumption that the consumer demand function, $n_i(p_i)$, represents consumer

willingness to pay (consumer benefits). Government spending and total third-party payments to the health care sector are determined by the distribution of consumers in and out of PHI.

As with any other good in the economy, the efficient price to a consumer is the marginal social cost of supplying the good. Thus, assuming no adverse selection into PHI, the efficient price for each group i is:

$$p_i^* = mc_i = c_i - o_i$$

And the optimal subsidy to achieve this price for each group is:

$$s_i^* = p - mc_i = p - c_i + o_i$$

Without community rating, the efficient subsidy would simply be the offset for each group. All groups would receive a positive subsidy. With community rating, the expression for the optimal subsidy implies that for groups for which the marginal social cost exceeds the community-rated premium, the optimal subsidy is negative. When both positive and negative subsidies are allowed, the net cost to the government of subsidies to PHI, taking account of Medicare offsets, is exactly zero. The government pays exactly the same for a person if they do or do not buy PHI.

The optimal subsidy policy improves social welfare. All groups pay a premium equal to the costs they impose on the health care system. Consumers are made better off by being offered an efficiently priced PHI product at no cost to the government.

No Negative Subsidies

The purpose of community rating is to ensure that high-cost groups pay no more for health insurance than as low-cost groups. Negative subsidies interfere with this objective by increasing the price of PHI for high-cost groups. We can rewrite the equation for the optimal subsidy ruling out negative subsidies. At the close of this paper, we return to the issue of "negative subsidies" and consider alternative policies that may accomplish similar objectives without explicit negative subsidies.

The rule for efficient subsidies when negative substitutes are not allowed modifies to:

$$s_i^* = p - c_i + o_i = p - mc_i \text{ if } p > mc_i; \text{otherwise}, s_i^* = 0.$$

With this amended subsidy rule, low-cost groups would face the same post-subsidy price for PHI as when negative subsidies are allowed. High-cost groups would pay the community-rated premium. Note that the community-rated premium will be higher when negative subsidies are not allowed since high-cost groups face lower price for insurance and are more likely to join, raising the average cost among those choosing PHI.

Reducing Government Expenditure and Increasing Support for the Health Care Sector

In this section we assume that the government is concerned both with reducing government expenditure and with providing financial support to the health care sector. (These objectives correspond to the concepts of net costs to government and net social cost measured in the body of the report.) Pursuit of the two objectives can be represented as a maximization of the

weighted sum government expenditures multiplied by -1 (to change a minimization goal to a maximization) and total third-party spending. Writing n_i for $n_i(p_i)$ to economize on notation, the government's objective is:

$$\text{Max} \sum_i [n_i(o_i - s_i) + \gamma n_i(c_i - o_i)]$$

Where the first element in the objective function is the variable part of the government spending multiplied by -1 and the second element is the variable part of the PHI spending multiplied by γ reflecting the relative weight put on the two objectives. We expect $\gamma < 1$, i.e., the government values a reduction of one dollar in its own spending greater than an increase of one dollar in total third-party support for health care. If this were not true, the government could simply transfer funds to the health sector until γ dropped below 1.[3]

This objective is maximized subject to:

$$\sum_i n_i(p - c_i) = 0$$

Plugging in the constraint (which is equal to zero) the objective becomes:

$$\text{Max} \sum_i n_i p_i - (1 - \gamma) n_i mc_i$$

The FOC wrt p_i is:

$$n'_i p_i + n_i - (1 - \gamma) n'_i mc_i = 0$$

Or, letting ε_i represent the price elasticity of demand for group i:

$$\varepsilon_i + 1 - (1 - \gamma)\varepsilon_i \frac{mc_i}{p_i} = 0$$

$$\frac{p_i}{mc_i} = \frac{(1 - \gamma)\varepsilon_i}{1 + \varepsilon_i}$$

For the price of group i to be positive it must be that $\varepsilon_i < -1$. Furthermore, if $-\frac{1}{\gamma} < \varepsilon_i < -1$ this condition calls for "marking up" the social marginal cost of all groups. That is, the price a group faces would be greater than its marginal social cost, requiring negative subsidies for high-cost groups. The markup is reduced as the importance of supporting the health care sector increases.

Note that when $\gamma = 0$, i.e., no weight on the objective of supporting the health care system, the objective becomes minimizing government expenditures. Minimizing government expenditure calls for the government to set subsidies as would a price-discriminating monopolist, so as to

[3] The government also has other uses for spending. With constrained public budgets, the shadow price of a dollar of government spending is greater than one, another reason why the value to the government of a reduction in its expenditures in the health sector (freed up for other uses) exceeds the value of spending on health care.

maximize the consumer surplus generated by PHI that is transferred from consumers. This maximized transfer of economic surplus reduces government spending.

The expression for markup has no or unreasonable solutions when $\gamma \geq 1$. Expressed in terms of the optimal subsidy,

$$s_i^* = p - p_i = p - \frac{mc_i(1-\gamma)\varepsilon_i}{1+\varepsilon_i}$$

No Negative Subsidies

Ruling out negative subsidies means the optimal subsidy is described by the above expression when $p > \frac{mc_i(1-\gamma)\varepsilon_i}{1+\varepsilon_i}$; otherwise, $s_i^* = 0$.

8. BIBLIOGRAPHY

Parliament of Australia. (1996). *Bills Digest 76 1996-97 Private Health Insurance Incentives Bill 1996*. Retrieved from https://www.aph.gov.au/Parliamentary_Business/Bills_Legislation/bd/BD9697/97bd076

Cheng, T. C. (2011). Measuring the Effects of Removing Subsidies for Private Insurance on Public Expenditure for Health Care. *Melbourne Institute Working Paper No 26/11*.

Kettlewell, N., Stavrunova, O., & Yerokhin, O. (2017). Premium subsidies and demand for private health insurance: results from a regression discontinuity design. *Applied Economic Letters*.

AIHW. (2022). *Data tables for Health Expenditure Australia 2019-20.* Retrieved from https://www.aihw.gov.au/reports/health-welfare-expenditure/health-expenditure-australia-2019-20/data

Duckett, S., & Cowgill, M. (2019). *Saving private health 2: Making private health insurance viable.* Grattan Institute.

Frech III, H., & Hopkins, S. (2004). Why subsidise private health insurance? *The Australian Economic Review*.

Deeble, J. (2003). *The private health insurance rebate: report to state and territory health ministers.* National Center for Epidemiology and Population Health, Australian National University.

Cheng, T. C. (2014). Measuring the effects of reducing subsidies for private insurance on public expenditure for health care. *Journal of Health Economics*.

Sowa, P., Kault, S., Byrnes, J., Ng, S., Comans, T., & Scuffham, P. (2018). Private Health Insurance Incentives in Australia: In Search of Cost-Effective Adjustments. *Appl Health Econ Health Policy*.

Biggs, A. (2011). *Legislation to means test the private health insurance rebate re-introduced-debate continues*. Retrieved from https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary

_Library/FlagPost/2011/July/Legislation_to_means_test_the_private_health_insurance_rebate_re-introduceddebate_continues

Private Healthcare Australia. (2011, May 13). *Economic Impact Assessment of the Proposed Reforms to Private Health Insurance*. Retrieved from https://www.privatehealthcareaustralia.org.au/research/economic-impact-assessment-of-the-proposed-reforms-to-private-health-insurance/

The Department of Health and Aged Care. (2012). *Summary*. Retrieved from https://www1.health.gov.au/internet/publications/publishing.nsf/Content/review_MLS_yr2~review_MLS_yr2_summ

Bilgrami, A., Cutler, H., Sinha, K., & Cheng, Z. (2021). The impact of means-tested premium rebates and tax penalties on the demand for private hospital cover in Australia. *Economic Record*.

Productivity Commission Research Report. (2009). *Public and Private Hospitals.* Commonwealth of Australia 2009.

Eldridge, D., Onur, I., & Velamuri, M. (2017). The impact of private hospital insurance on the utilization of hospital care in Australia. *Applied Economics*.

Doiron, D., & Kettlewell, N. (2018). The effect of health insurance on the substitution between public and private hospital care. *Economic Record*.

Department of Health and Aging. (2011). *Post implementation review: increase of the incoome tax threshold for the Medicare levy Surcharge.*

KPMG. (2012). *Review of the impact of the new Medicare Levy SUrcharge thresholds on public hospitals. Year 3 review report*. Retrieved from https://nanopdf.com/download/review-of-the-impact-of-the-new-medicare-levy-surcharge_pdf