

National Health and Hospital Reform Commission
**Costing a Social Insurance Scheme for Dental
Care**

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List of Abbreviations

ABS	Australian Bureau of Statistics
ADA	Australian Dental Association
AIHW	Australian Institute of Health and Welfare
Commission	National Health and Hospitals Reform Commission
DVA	Department of Veteran's Affairs
NDTIS	AIHW National Dental Telephone Interview Survey
PHIAC	Private Health Insurance Administration Council
PwC	PricewaterhouseCoopers
the Scheme	The proposed National Oral Health Scheme

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1 Introduction

Introduction

PricewaterhouseCoopers (PwC) was requested by the Secretariat of the National Health and Hospital Reform Commission (the Commission) to estimate the cost of the proposed National Oral Health scheme (the Scheme), a national social insurance scheme for dental care focussing on preventative and restorative dental services. This report also discusses a number of key issues and risks which we have identified whilst performing our analysis.

In preparing our results, we have relied significantly on data provided by Dr David Brennan and Ms Anne Ellershaw as well as useful insights and feedback provided by Professor John Spencer and Dr Jane Harford of the University of Adelaide. We would like to thank them for their contribution and suggestions in preparing this report. We thank the significant contribution of Cathy Wu from PricewaterhouseCoopers to this report, and acknowledge John Walsh from PricewaterhouseCoopers for his feedback and review.

Background to our review

The work we have performed for the Commission has been prepared in two key Phases, herein-after referred to as “Phase 1” and “Phase 2”. Our initial Phase 1 analysis, conducted in August to September 2008, presents high level costings of a range of alternative services in scope or broad dental service categories, and provides a high-level estimate of potential demand increases arising as a result of the introduction of free or reduced-cost dental care to a broader segment of the population. Our Phase 1 analysis was performed using publicly available information- the methodology is documented in Appendix 4 of this report.

Subsequent to the initial Phase 1 findings, we were provided with further details of the proposed National Oral Health Scheme on 16 October 2008. A number of changes and enhancements were made during our Phase 2 costings, largely due to the collection of more recent Health Expenditure data from the AIHW and more granular data from the University of Adelaide. The Phase 2 scope of work is based on a refined definition of the services in scope, which are described in Section 3 and Appendix 2 of this report. The findings discussed in the main body of this report are based on our more recent Phase 2 analysis.

Reliance and limitations

This work was conducted for the sole use and benefit of the Commission in estimating the potential cost of a comprehensive social insurance scheme for dental care. PwC accepts no liability for loss or damage howsoever arising in the use of this document by the Commission or third parties for other than the purpose stated above, or for any use of this document, without full understanding of the reliance and limitations noted herein, or for errors or omissions arising from the provision of inaccurate or incomplete information to PwC.

It is the responsibility of the Commission and third parties to ensure that recipients of copies of, or extracts from, this document understand the reliance on which any conclusions in this document are based.

The document relies on the completeness and accuracy of the publicly available data and literature, particularly from the AIHW and the Dental Statistics and Research Unit at the University of Adelaide. No independent review of this information was undertaken, but where possible this information was assessed for reasonableness and consistency (for example, compared to published reports).

This document must be read in its entirety and individual sections of this document could be misleading if considered in isolation from each other.

2 Current Expenditure on Dental Care

Total Expenditure on Dental Care

In 2006/07, expenditure on dental care in Australia was \$5.7bn. The table below splits the 2006/07 baseline spend of \$5.7bn by current source of funds. This allocation is sourced from the AIHW 2006/07 Health Expenditure Report (“HEXR”) with a small adjustment for the medical threshold tax rebate using the estimate provided by Spencer¹.

Table 1 - Source of funds 2006/07 – before dental scheme

2006/07 Current Spend by Source of Funds: (\$millions)			
Government	AIHW 2006-07		Notes
Direct Outlays	Commonwealth	114	
	State	519	
Indirect Outlays	Health Prem Rebates	414	
	Tax rebates	30	(1)
Total Government		1,077	
Other	Individuals	3,830	(2)
	Health insurance funds	820	
	Other (e.g. CTP)	10	
Total Other		4,660	
Grand Total		5,737	

(1) Spencer (2001) provides an estimate of \$23m in 2001. This amount has been increased to \$30m to increase to 2006-07 levels.

(2) As per AIHW 2006-07 HEXR, less \$30m tax rebate.

We have estimated the 2008/09 dental care expenditure in Australia by allowing for

- Population growth
- Population ageing
- Increases in dental visits and services arising from higher income

Overall, we estimate that dental expenditure in 2008/09 is \$6.7bn, reflecting an increase of 7.9% per annum since 2006/07. This compares to increases in dental expenditure of 7.2% per annum in the three years prior to 2006/07.²

Table 2 provides an estimate of the 2008/09 baseline spend of \$6.7bn, broken down by an estimate of the source of funds. The estimated source of funds uses 2006/07 as a starting point and makes adjustments for the Commonwealth Dental Plan and the Teen Dental Plan.

¹ Spencer AJ. *What options do we have for organising, providing and funding better public dental care?*. Australian Health Policy Institute Commissioned Paper Series 2001/02, University of Sydney, 2001.

² AIHW Health Expenditure Australia 2006-07 Table A7

The table indicates that government expenditure, without a dental social insurance fund, would be in the order of \$1.5bn.

Table 2 - Source of funds 2008/09 – before dental scheme

2008/09 Spend by Source of Funds: (\$millions)	
Government	
Direct Govt Outlays	
C'wealth	131
C'wealth dental plan	92
C'wealth Teen Dental	161
Sub-total C'Wealth Direct	384
Plus State Funding	596
Govt Direct Funding	979
Indirect Govt Outlays	
Health Prem Rebates	462
Tax rebates	33
Govt Indirect Funding	495
Total Government	1,475
Other	
Individuals Out of Pocket	4,272
Health insurance funds	915
Other (e.g. CTP)	11
Total Other	5,199
Grand Total	6,674

The remainder of this memo now addresses the specific deliverables as described to us by the Commission.

Phase 1 Analysis - Expenditure on Preventative, Restorative and Diagnostic Dental Care

In this section, we summarise the results of our Phase 1 Analysis, which estimates the portion of current dental expenditure that goes to preventative, restorative and diagnostic services, which might be covered by a social insurance scheme.

The service categories shown below are based on the Australian Dental Association *Australian Schedule of Dental Services and Glossary, 8th Edition*, which is also used by Medicare and the Department of Veteran Affairs (DVA) dental plans.

We have estimated current expenditure under three "Schemes". These Schemes are summarised below:

Table 3: Alternative Scheme Coverage

Scheme A	Scheme B	Scheme C
Coverage for ALL services defined as:	Coverage is provided to a SUBSET of services defined as:	Coverage is provided to a SUBSET of services defined as:
Restorative	Restorative	Restorative
Diagnostic	Diagnostic	Diagnostic
Preventative	Preventative	Preventative
Extractions	Extractions	Extractions
Dentures	Dentures	

Note that all schemes exclude services which are not considered preventative or restorative, such as endodontic (root canal), crown and bridge, periodontic, orthodontic and general/miscellaneous dental.

In Schemes B and C, only a subset of services are included. The subset of services in each main group are as follows:

- Restorative includes Amalgam and Composite Resin services, but excludes “Other Restorative” services;
- Diagnostic includes Examination and Radiograph, but excludes “Other Diagnostic” services;
- Preventative includes Dental Prophylaxis (Scale and Clean), Topical Fluoride, but excludes “Other Preventative”;
- Dentures includes Full Dentures, and Partial Dentures, but excludes other remaining denture and prosthodontic services.

Table 4 shows the estimated current expenditure under each of these schemes in 2008/09, as derived from our Phase 1 analysis. The allocation of expenditure by service category is based on the methodology described in Appendix 4.

Table 4: Phase 1 - Summary of Results – 2008/09

No changes in Demand	All Services	Social Insurance Scheme		
		A	B	C
	\$bn	\$bn	\$bn	\$bn
2008/09 Baseline				
Public practitioners	0.8	0.8	0.8	0.8
Private Practitioners				
Restorative	1.7	1.7	1.6	1.6
Diagnostic	1.0	1.0	0.9	0.9
Preventative	0.7	0.7	0.7	0.7
Denture	0.5	0.5	0.3	x
Extractions	0.3	0.3	0.3	0.3
All Other	1.7	x	x	x
Private Practitioners	5.9	4.2	3.8	3.4
Scheme Cost	6.7	5.0	4.5	4.2
Coverage Ratio	100%	74%	68%	63%

Note that the allocation of total dental expenditure of \$6.7bn by service category, as shown under “All Services” in the table above, was based on publicly available information. The allocation of the \$6.7bn in expenditure by service category was subsequently refined in our Phase 2 costings, upon receipt of more granular data from the University of Adelaide. The refined estimates are presented in Table 5 in the next Section. The differences in allocation are relatively immaterial, and do not lead to any differences in conclusions.

The estimated 2008/09 cost of preventative and restorative care Schemes A, B, and C are \$5.0bn; \$4.5bn; and \$4.2bn respectively. This represents 0.81% to 0.96% of total taxable income or 0.92% to 1.09% of total salaries and wages.³

We note that our estimates under Schemes A, B and C are based on current expenditure in these categories only. When exclusions are introduced, such as those envisioned in Schemes B or C, then it is possible that dentist coding practices may change to ‘upcode’ otherwise excluded services, so there may be no difference in the overall expenditure under Schemes A, B and C without appropriate prudential oversight.

Note that in each of the above Schemes, we have assumed that existing services provided by State or Territory providers (“public dental practitioners” e.g. those working in hospitals or schools) will continue to be funded in the future.

³ Derived from Australian Taxation Statistics

3 Refined scope of preventative and restorative services to be covered by the Scheme

On 16 October 2008 we were provided with a description of the proposed National Oral Health Scheme. We were requested to define the services that might be covered by the Scheme under the service categories of Restorative, Preventative, Diagnostic, Extractions, Dentures, and existing Public Dental services. A list of services proposed for inclusion was provided to us by Professor John Spencer from the University of Adelaide. For each Australian Dental Association (“ADA”) item number, the list contained a flag indicating whether the item should be included or excluded. A copy of this list is provided in Appendix 1 of this report.

Table 5 below provides a summary of the cost of the services which are ‘in scope’ for the Scheme, assuming no change to underlying demand: For comparison, we also show our estimates from the original Phase 1 research.

Table 5: Phase 2 - Summary of Services in Scope – 2008/09

Revised Phase 2 Estimates	Cost of Services in Scope (\$m)			
All Services Expenditure (\$m)	Revised Phase 2 Estimate	Initial Phase 1 Estimate	Difference	
Notes:	(1)	(2)	(3)	(4)
Public Dental	750.4	750.4	750	0
Private Practitioners				
Restorative	1,947.5	1,808.0	1,720	88
Diagnostic	845.2	806.7	950	-143
Preventative	771.0	744.5	740	4
Dentures	575.3	464.0	550	-86
Extractions	269.6	235.1	260	-25
Other Services	1,514.6	420.7	0	421
Total - Private Practitioners	5,923.3	4,478.9	4,230	249
Total Public = Private	6,673.7	5,229.3	4,980	249
Scheme Coverage Ratio		78%	74%	

Notes

- (2) As defined per services described in Appendix 1
- (3) From Scheme A in Table 4
- (4) Difference between Phase 2 and Phase 1 estimates
= (2) - (3)

The allocation of total current expenditure by service category was revised in our Phase 2 analysis, which is shown in column 1 above. These estimates are derived from the more

granular data that we received from the University of Adelaide⁴. Appendix 2 provides a further breakdown of the above results by service sub-categories, including the percentage of services that are covered by the Scheme, additional columns not shown in this table, and provides a comparison to our Phase 1 estimates.

The estimated 2008/09 cost of services in scope is \$5.2bn (column 2 in the table above). Key differences between the Phase 1 (“Scheme A”) and Phase 2 scope of services are:

- **Exclusion** of certain services which fall under “Diagnostic”, “Restorative”, and “Preventative”;
- **Exclusion** of Partial Lower Dentures;
- **Inclusion** of some components of “Other Services”, such as a subset of Root Canal services and Periodontic services.

Professor Spencer has advised us that it is possible that different dental practitioners will have different views on which items should be included and excluded from the Scheme. Overall, however, he has strongly recommended the **exclusion** of certain categories of services – particularly those high cost items that do not strictly fall into the “Preventative” or “Restorative” categories, e.g. Crown and Bridge. Failure to exclude such items could lead to significant inflationary impacts in the Scheme and we note that these services have been utilised significantly in the Medicare Enhanced Primary Care scheme. Nevertheless, “scope creep” will still remain a risk - when exclusions are introduced, then it is possible that dentist coding practices might change to ‘upcode’ otherwise excluded services, such that total Scheme costs are higher than the results provided above.

⁴ Data underlying the report: Brennan DS & Spencer AJ 2006. Practice activity patterns of dentists in Australia. AIHW cat. no. DEN 148. Canberra: Australian Institute of Health and Welfare (Dental Statistics and Research Series No. 32).

4 Indicative Risk Adjusted Costs for Private Health Cover Option

We have estimated the risk adjusted costs by patient age to cover 85% of the 2008/09 expected cost of services in scope for those who opt for private health cover. The expected cost of services is derived from:

- 2008/09 levels of dental fees charged⁵;
- Dental visit and service utilisation patterns observed for those that currently have dental insurance⁶.

There are two sets of results provided in Figure 1 below, which are defined as follows:

“Current service mix and utilisation patterns” calculates the 2008/09 risk adjusted costs based on the observed dental services used by those that currently have private dental insurance.

The data provided to us indicates that higher income groups with private dental insurance have a higher utilisation of dental services than lower income groups with dental insurance. One hypothesis for this difference is that, under most dental insurance schemes currently available, significant out of pocket expenses are incurred, leading to lower utilisation by lower income groups. Assuming that dentists do not increase their fees, individual out of pocket costs will be lower following introduction of the Scheme⁷. The decrease in out of pocket expenses could lead to an increase in service utilisation by lower income groups. In order to model this impact, we have calculated a second set of risk adjusted costs, called “Changed service mix and utilisation” – these costs are modelled using the utilisation and service mix of the highest income groups with dental insurance.

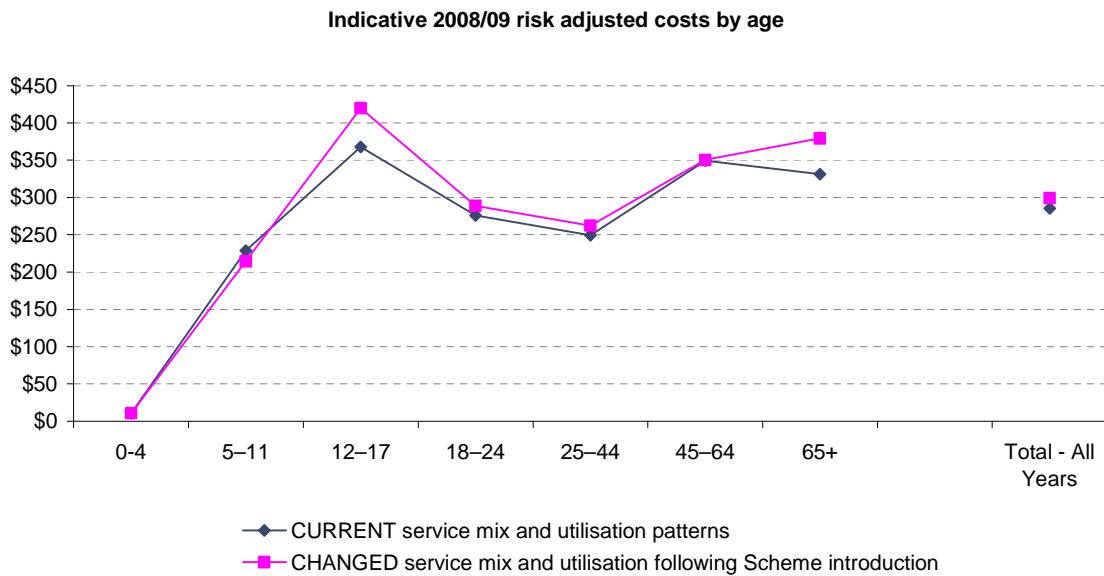
⁵ Estimated at ADA item number using a combination of: 2006 ADA (Victoria Branch) survey of dental fees charged, indexed to 2008/09 values based on increases in the average dental fees sourced from PHIAC data. Where item numbers were not present in the survey, fees were estimated using the DVA November 2007 fee Schedule relativities, and/or the Medicare Chronic Care November 2007 fee schedule relativities.

⁶ Sourced from data provided by the University of Adelaide, particularly: data underlying the report “Practice activity patterns of dentists in Australia” (Brennan DS & Spencer AJ 2006) AIHW cat. no. DEN 148. Canberra: Australian Institute of Health and Welfare (Dental Statistics and Research Series No. 32); and the 2002 National Dental Telephone Interview Survey (“NDTIS”).

⁷ Further commentary is provided on the issue of demand increases later in this paper.

Figure 1 - Risk Adjusted Costs by Age

Risk adjusted costs based on:	Patient Age							Total - All Years
	0-4	5-11	12-17	18-24	25-44	45-64	65+	
CURRENT service mix and utilisation patterns	\$11	\$229	\$368	\$276	\$249	\$349	\$331	\$285
CHANGED service mix and utilisation following Scheme introduction	\$11	\$214	\$420	\$289	\$262	\$350	\$379	\$299



Note: the above figures do not allow for insurer profit margin or expenses.

It is important to note that, regardless of any impact of dental scheme, we would expect to see increases in private dental insurance premiums in the future. The reason for this is that the proportion of the population who are edentulous (without teeth) is declining, and quite significantly in the over 65 age group – those with teeth will require more dental services.

Note that in the above figures, risk adjusted costs are calculated assuming that for 5 to 11 year olds and 12 to 17 year olds, all services are provided by private practitioners, including the services which would currently be provided through the school dental programme. If we allow for the lower per-item costs of services provided through the school dental programme (including examination services, topical fluoride services, and scale and clean services), then the risk adjusted costs for those age groups would be lower. The table below illustrates some alternative scenarios:

Table 6 - Change in risk-adjusted costs for school-age children, depending of % of services provided by School Dental

% of preventative services provided by School Dental**	5–11	12–17
0%	\$229	\$368
25%	\$218	\$351
50%	\$207	\$334
75%	\$197	\$318
100%	\$186	\$301

** Scale & Clean, Topical Fluoride, and Examination Services

From the table above, it can be seen that the risk-adjusted costs decrease if the proportion of services provided by the school dental programme increases. The items highlighted in yellow represent the current proportion of services provided by the school dental programme for 5-11 year olds (50%), and 12-17 year olds (25%). One of the issues that is not addressed directly in the description of the Scheme provided to us is whether the fee that is to be paid to the school dental programme by health insurers (where a parent with health insurance elects to use the school dental service) should be based on a per-item charge that is lower than that paid to a private practitioner.

Further detail on the risk-adjusted cost methodology is provided in Appendix 3.

5 Total Scheme Costs and Tax Funding

No Demand Growth, No change in Public / Private Mix

The table below sets out the direct government outlays required to fund the Scheme, using the 2008/09 baseline expenditure, and assuming:

- no growth in demand;
- no change in the mix of services delivered through public dental practitioners and private dental practitioners; and
- that 100% of all individuals who currently use private practitioners will opt for private health insurance. The impact of this on the calculations is that all these services are assumed to be provided through the private sector, and financed at a rate of 85%. Further discussion on this assumption is provided in Section 7.

Table 7 - Scheme Costs, % of Taxable Income

\$millions	(a)	(b)	(c)	Notes
Dental services delivered through:				
Public dental practitioners	750.4	100%	750.4	(a) Refer Table 5, Column (2)
Private dental practitioners	4,478.9	85%	3,807.1	(c) = (a) x (b)
Scheme Expenditure	5,229.3	87%	4,557.5	
Plus Expansion Programs				
School expansion			100.0	
Dental residency program			200.0	
Oral health promotion			20.0	
Sub-total			320.0	
Total Direct Government Outlays			4,877.5	(1)
Estimated Taxable Income, 2008/09			539,090.6	(2) From 2005/06 ATO Stats + AWE + Population Growth
Total Direct Outlay, % of Taxable Income			0.90%	(3) = (1)/(2)
Current Direct Outlays for Public Dental			979.4	(4) Refer Table 2
Additional Outlays for Dental Scheme			3,898.1	(5) = (1) - (4)
Additional Outlay, % of Taxable Income			0.72%	(6) - (5) / (2)

Comments are as follows:

- Total cost of services in scope is \$5.2bn, as shown in Table 5;
- Of this amount, 100% of services delivered by public practitioners will be paid by the Scheme, while 85% of the cost of services in scope provided by private practitioners will be financed by the Scheme. The direct government outlays for the scheme will therefore be \$4.6bn;

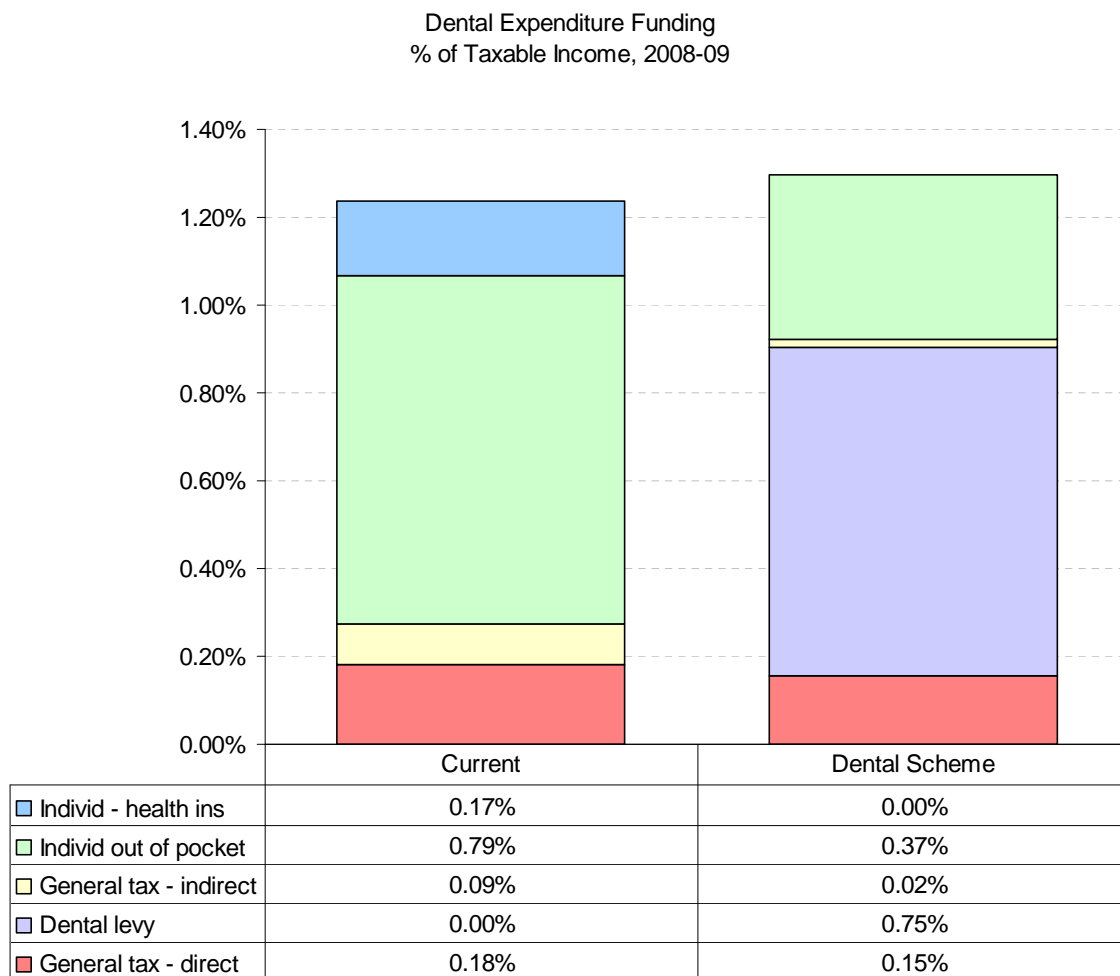
- Allowing for the cost of the expansion programs brings total direct outlays to \$4.9bn, which equates to **0.9%** of taxable income;
- The additional cost of the Scheme, over and above existing direct government expenditure, is around \$3.9bn, or 0.72% of taxable income. Therefore, the proposed 0.75% levy will be sufficient to fund the additional costs of the Scheme (assuming the assumptions set out above are met).
- The existing direct government expenditure (\$979.4 million) is higher than dental services funded through public practitioners (\$750.4 million). This is due to the fact that certain components of direct government expenditure – such as the Teen Dental Plan and the Commonwealth Dental Plan – are provided via the private sector. We note that, in addition to the direct public outlays, the government also indirectly finances \$475 million dental through the 30% private health insurance rebate.

6 Scheme Transfers

Aggregate Results

Figure 2 below summarises dental services expenditure, by source of funds, expressed as a percentage of taxable income:

Figure 2 – Dental Expenditure by Source of Funds



Comments are as follows:

- 2008/09 dental expenditure, as a proportion of taxable income, is 1.24%;
- Once the Dental Scheme is introduced, the total increases to 1.30%. Aggregate expenditure is slightly higher due to the effect of the expansion programs (residency program, school dental, and oral health promotion).

- A significant proportion of current expenditure is funded by individuals' out-of-pocket expenditure at 0.79% of taxable income, which represents 64% of dental expenditure. Individual out of pocket expenses are net of all health insurance claim benefits, the 30% premium rebate, and the medical tax threshold rebate;
- When we add dental health insurance premiums paid, individual funding of dental services represents 0.96% of taxable income, which represents 78% of total dental services expenditure. This proportion is decreased significantly under the Dental Scheme scenario, where individual funding is reduced to 0.37% of taxable income, or 29% of dental services expenditure.
- The current level of government expenditure, both direct and indirect, is 0.27% of taxable income, i.e. 22% of total dental services expenditure. This increases to 0.92% of taxable income, or 71% of total dental services expenditure under the Dental Scheme scenario.

Therefore the impact of the Dental Scheme is to lead to a significant decrease in direct out-of-pocket funding for dental services and a corresponding increase in the dental levy.

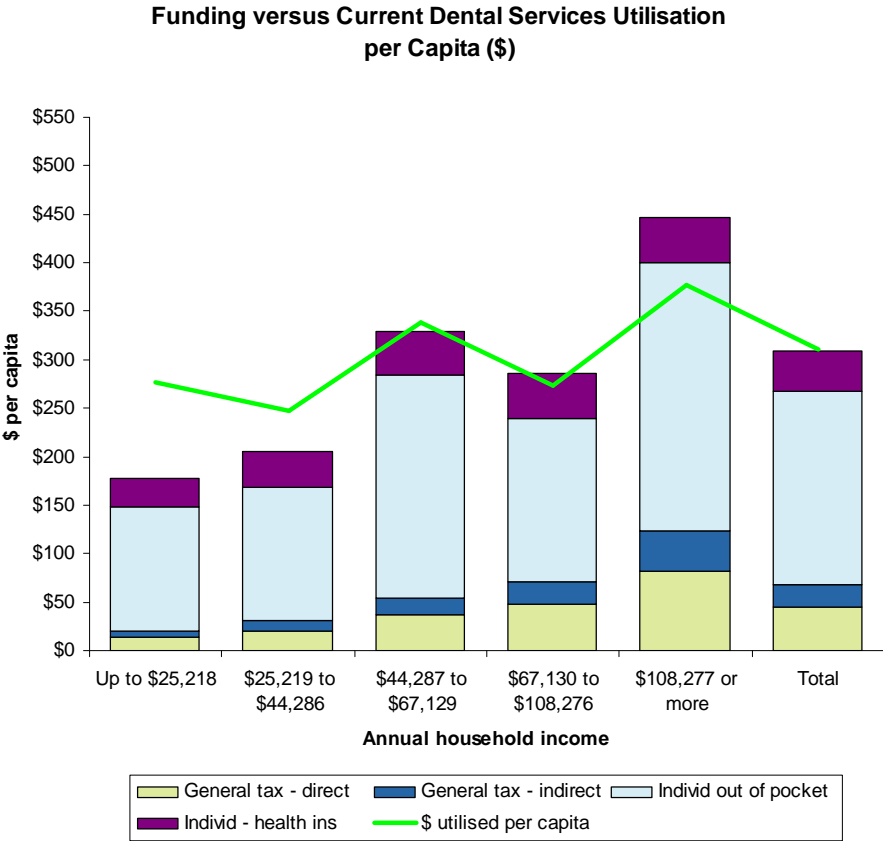
In the charts presented in this Section:

- **“General tax – direct”** represents the individuals' taxation contribution to direct government outlays (such as public dental services);
- **“General tax – indirect”** represents the individuals' taxation contribution to indirect government outlays such as the Health Insurance premium rebate, and the medical threshold tax rebates received through the Australian Taxation Office.

Results by Household Income Band

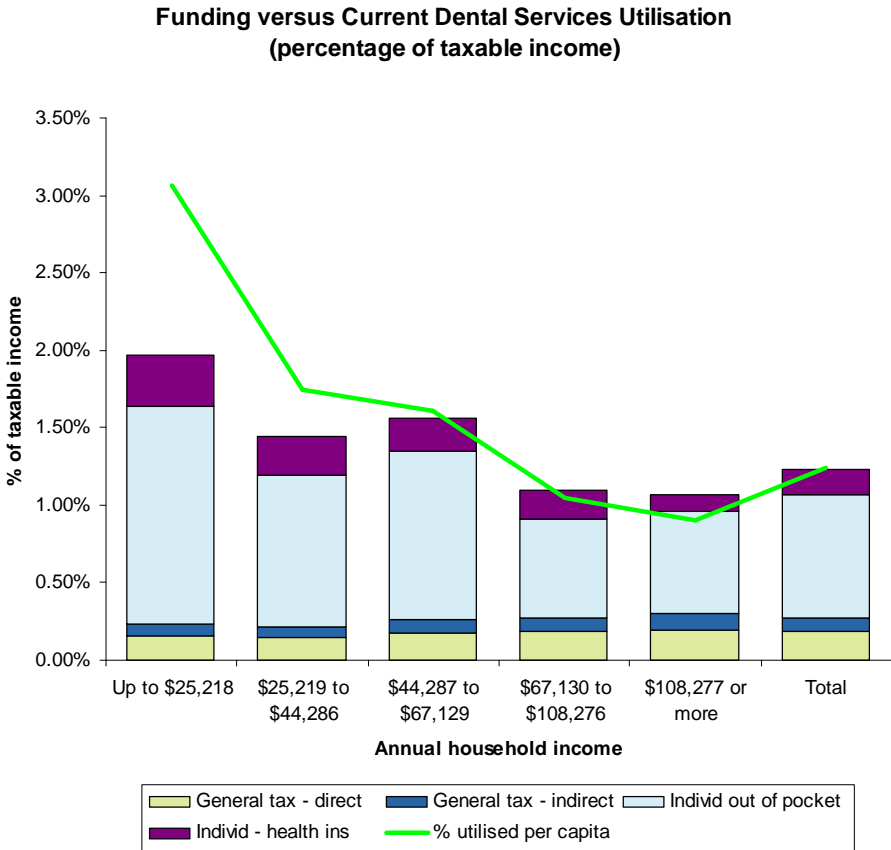
Figure 3 below illustrates the breakdown of dental services funding, for each income band, expressed as dollars per capita. The average cost per capita of dental services utilised is also shown on the same chart:

Figure 3 – Current Dental Services Funding and Utilisation (\$ per capita)



- The green line titled “\$ utilised per capita” above estimates the cost of services utilised per person in each household income bracket. Note that this line does not represent what they pay out of pocket, but rather the cost of the dental services used regardless of who pays. The \$ utilised per capita series illustrates that the cost of services utilised by the higher income groups is higher than the cost of services utilised by the lower income groups. Lower income groups visit the dentist less frequently, are more likely to use public dental services, and use a mix of lower-cost services (refer Figure 9 and Figure 10).
- The solid bars underneath illustrate who pays for the dental services utilised. The most striking feature of the above chart is the significant contribution of individual out of pocket expenditure to total dental expenditure. This is so across both the low and high income groups. As would be expected, the average per capita tax contribution increases as household income increases.
- Lower income groups are net receivers of dental services, i.e. the value of services used exceeds their per capita contribution, while higher income groups are net contributors of dental services.
- However, as Figure 4 below shows, when the contributions are expressed as a percentage of income, the out-of-pocket expenses represent a significantly higher proportion of income for the lower income groups compared to the higher income groups.

Figure 4 – Current Dental Services Funding and Utilisation (% of Taxable Income)



Contributions to dental expenditure are illustrated by the solid bars above. The key observations from this are as follows:

- The individual out of pocket contribution (light blue shading), when expressed as a percentage of taxable income, is highest for the lowest income groups, and lowest for the highest income groups;
- The cost of services utilised, when expressed as percentage of taxable income, is *significantly* higher for the lower income groups than the highest income groups. Affordability of higher-cost dental services therefore becomes problematic for the lowest income groups. Table 7.1.1(b) of the 2002 National Dental Telephone Interview Survey reports 35% to 40% of cardholders with under \$20,000 annual household income have a lot of difficulty paying for a \$100 dental bill. For non cardholders under \$30,000 annual household income, 17% to 20% report difficulty paying a \$100 dental bill.
- The contributions by individuals through the taxation system (as illustrated by the legends titled “General tax – direct” and “General tax – indirect”

Figure 5 below shows the same charts but AFTER allowing for a dental social insurance scheme. In this chart, we have assumed no increase in demand.

Figure 5 – Dental Services Funding and Utilisation (\$ per capita) – AFTER Dental Scheme

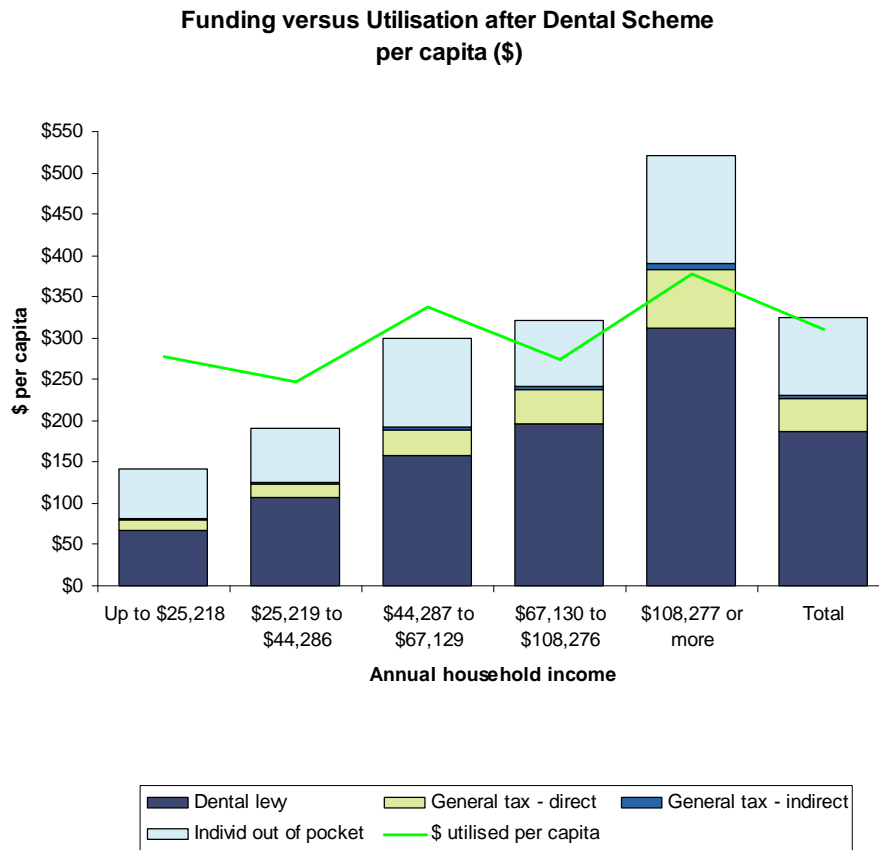
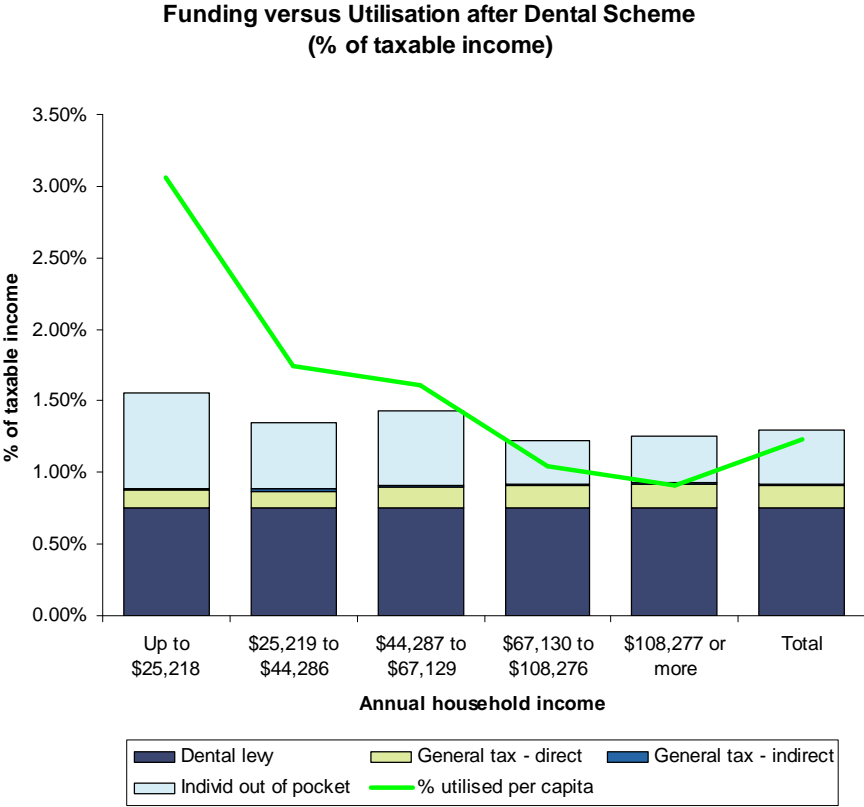


Figure 5 above compares current funding of dental services per capita under our estimates with the dental scheme scenario. For the purpose of this chart, we have assumed no increase in demand for services overall as a result of the scheme. We note that one possible outcome arising from the scheme is an increase services used by those in lower income bands – this would produce an increase in services utilised (the green line in the chart above) for minimal increase in individual out-of pocket expenditure.

- The solid bars above illustrate the individuals' contribution to the funding of dental services through the dental levy, general taxation, and individual out of pocket.
- Comparing Figure 3 and Figure 5, we can see that there is a significant decrease in out-of-pocket expenditure (as illustrated above by the light blue bars) across all groups, and that this is replaced by a levy which, in dollar terms, is much lower for lower income groups.
- Figure 6 below shows a similar chart, but instead based on percentage of taxable income.

Figure 6 – Dental Services Funding and Utilisation (% of Taxable income) – AFTER Dental Scheme



- The solid bars above illustrate the individuals’ contribution to the funding of dental services through the dental levy, general taxation, and individual out of pocket, expressed as a % of taxable income.
- Comparing to Figure 4, the aggregate contribution, as a percentage of taxable income, is more uniformly spread under the dental scheme scenario, compared to the current situation.

Table 8 below converts these figures to an amount per capita per week:

Table 8 - Dental Services Funding, \$ Per Capita per Week

		Annual Household Income					Total	Notes
		Up to \$25,218	\$25,219 to \$44,286	\$44,287 to \$67,129	\$67,130 to \$108,276	\$108,277 or more		
CURRENT								
Source of Funds								
Dental levy	0.00%	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
General tax - direct	0.18%	\$0.27	\$0.39	\$0.70	\$0.91	\$1.58	\$0.87	
General tax - indirect	0.09%	\$0.13	\$0.20	\$0.35	\$0.46	\$0.80	\$0.44	
Individ out of pocket	0.79%	\$2.46	\$2.65	\$4.40	\$3.22	\$5.32	\$3.82	(1)
Individ - health ins	0.17%	\$0.57	\$0.71	\$0.88	\$0.91	\$0.88	\$0.82	
Other	0.00%	\$0.00	\$0.00	\$0.01	\$0.01	\$0.02	\$0.01	
Total (a)	1.24%	\$3.42	\$3.95	\$6.34	\$5.52	\$8.60	\$5.96	(2)
WITH SOCIAL INSURANCE								
Source of Funds								
Dental levy	0.75%	\$1.31	\$2.04	\$3.04	\$3.79	\$6.01	\$3.61	(3)
General tax - direct	0.15%	\$0.23	\$0.33	\$0.60	\$0.78	\$1.35	\$0.75	
General tax - indirect	0.02%	\$0.02	\$0.03	\$0.06	\$0.08	\$0.14	\$0.08	
Individ out of pocket	0.37%	\$1.16	\$1.25	\$2.08	\$1.52	\$2.52	\$1.81	(4)
Individ - health ins	0.00%	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Other	0.00%	\$0.00	\$0.00	\$0.01	\$0.01	\$0.02	\$0.01	
Total (b)	1.30%	\$2.72	\$3.67	\$5.78	\$6.18	\$10.03	\$6.25	(5)
Difference in Total Per Week (b) less (a)		-\$0.71	-\$0.29	-\$0.56	\$0.66	\$1.43	\$0.29	(6)
Number of people		2,773,129	3,740,392	4,220,128	5,039,966	5,753,325	21,526,940	
% of population		13%	17%	20%	23%	27%	100%	

On average, the 0.75% dental levy is about **\$3.61** per person per week (refer (3) above). Individual out of pocket expenses decreases from \$3.82 per person per week (refer (1) above), to \$1.81 (refer (4) above). Therefore, there is a substitution from out of pocket funding, to funding via the levy. Across all income groups, the marginal additional contribution to dental expenditure (before allowing for demand growth), is an additional 29 cents a week per individual (refer (6) above), however the change in funding varies by income groups: there is a decrease in contribution for low income groups, and an increase for higher income groups.

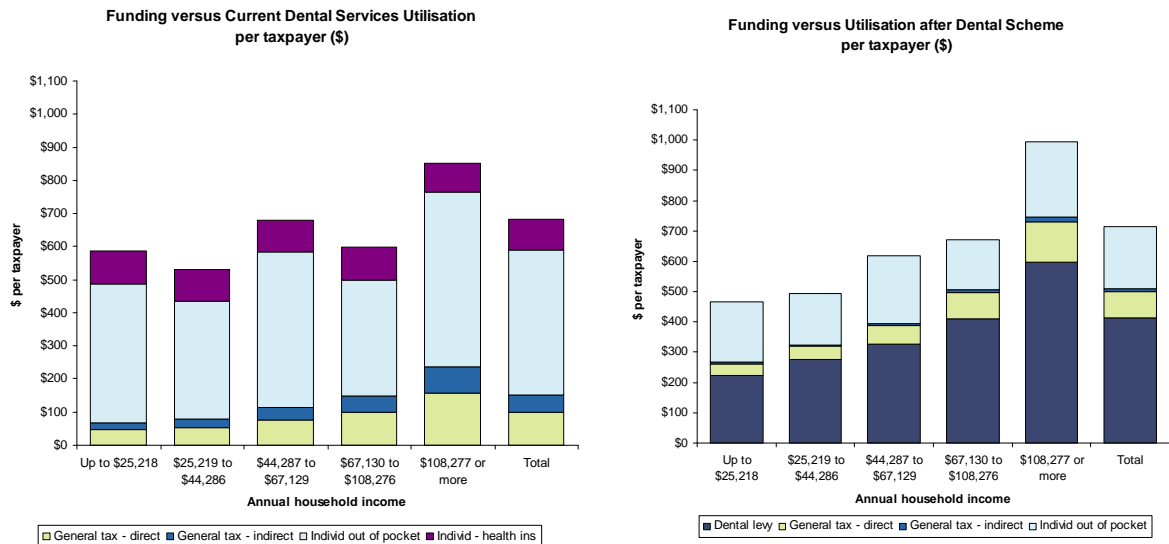
Alternatively, we can consider the amounts on a **per taxpayer** basis. On average, the 0.75% dental levy is about **\$7.97** per taxpayer per week (refer (3) below). Individual out of pocket expenses decreases from \$8.42 per taxpayer per week (refer (1) below), to \$3.98 (refer (4) below). Across all income groups, the marginal additional contribution to dental expenditure (before allowing for demand growth), is an additional 63 cents a week per taxpayer (refer (6) above), however the change in funding varies by income groups: there is a decrease in contribution for low income groups, and an increase for higher income groups.

Table 9 - Dental Services Funding, \$ Per Capita per Week

\$\$ PER TAXPAYER PER WEEK	Annual Household Income					Total	Notes
	Up to \$25,218	\$25,219 to \$44,286	\$44,287 to \$67,129	\$67,130 to \$108,276	\$108,277 or more		
CURRENT							
Source of Funds							
Dental levy	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
General tax - direct	\$0.87	\$1.01	\$1.44	\$1.91	\$3.01	\$1.93	
General tax - indirect	\$0.44	\$0.51	\$0.73	\$0.97	\$1.52	\$0.98	
Individ out of pocket	\$8.08	\$6.85	\$9.07	\$6.74	\$10.16	\$8.42	(1)
Individ - health ins	\$1.86	\$1.84	\$1.81	\$1.91	\$1.68	\$1.80	
Other	\$0.00	\$0.01	\$0.02	\$0.03	\$0.04	\$0.02	
Total	\$11.25	\$10.23	\$13.07	\$11.55	\$16.42	\$13.15	(2)
WITH SOCIAL INSURANCE							
Source of Funds							
Dental levy	\$4.30	\$5.29	\$6.25	\$7.92	\$11.49	\$7.97	(3)
General tax - direct	\$0.74	\$0.86	\$1.23	\$1.63	\$2.57	\$1.65	
General tax - indirect	\$0.07	\$0.09	\$0.12	\$0.16	\$0.26	\$0.17	
Individ out of pocket	\$3.82	\$3.24	\$4.29	\$3.19	\$4.81	\$3.98	(4)
Individ - health ins	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Other	\$0.00	\$0.01	\$0.02	\$0.03	\$0.04	\$0.02	
Total	\$8.94	\$9.49	\$11.92	\$12.93	\$19.16	\$13.78	(5)
Difference per taxpayer in Total Pe	-\$2.32	-\$0.74	-\$1.15	\$1.37	\$2.74	\$0.63	(6)
Number of taxpayers*	843,356	1,445,752	2,048,149	2,409,587	3,011,984	9,758,829	
% of taxpayers	9%	15%	21%	25%	31%	100%	

* Estimate only. Estimated using proportion of people of working age population in each household income band

Figure 7 – Dental Services Funding and Utilisation (\$ per taxpayer) – BEFORE and AFTER Dental Scheme



7 Workforce Implications

Public / Private mix

The mixture of public and private financing and workforce required to meet the cost of the scheme will depend fundamentally on the uptake of private health insurance, which will continue to finance the private sector dentists.

At present, around 35% of individuals that visited the dentist do not have private health insurance, yet visited a private practitioner. If these individuals do not purchase health insurance, how will their need for dental services be met through the scheme – by public practitioners or private practitioners?

Figure 8 – Dental Insurance Status and Usage of Public / Private Services

		Services Accessed	
		Private Practitioner	Public Scheme
With dental health insurance (Current = 45%)	Non School Age 81% of insured	35%	1%
	School Age 19% of insured	5%	3%
Total with dental insurance		40%	5%
No dental insurance (Current = 55%)		35%	20%
Total dental services in sector		75%	25%

The percentages shown in the table are based on the results from the 2002 NDTIS.

We have based our estimates of the cost of the Scheme on the assumption that those who visit a private dentist at present will opt to take up private health insurance, in order to be able to continue to visit a private dentist.

However, current levels of private health insurance coverage are significantly below this – around 45% currently have private health insurance covering dental. If this much lower proportion people took up private health insurance under the new Dental Scheme, then this would mean a very significant increase in the public dental sector to meet the requirements of people covered by the Scheme.

The workforce mix is very different from this again, with the bulk of dentists (84%) employed in the private sector. The dental labour force is detailed in Table 10 below. In addition to the workforce listed below, dentists are supported across Australia by around 15,000 dental assistants.⁸

Table 10 – Dental Labour Force 2005

Dental Labour Force 2005					
	Public	Private	Other	Total	% Public
Dentists	1,599	8,332	143	10,074	16%
Dental Hygienists	176	673	23	872	20%
Dental Therapists	1,196	308	18	1,522	79%
Dental Prosthetists	79	774	9	862	9%
Total	3,050	10,087	193	13,330	23%
Dentists as % of total	52%	83%	74%	76%	

Sources

AIHW Dental Statistics Research Unit Research Report No 33 'Dental Labour force in Australia 2005' (August 2008)
 AIHW Dental Statistics Research Unit Research Report No 34 'Dental Hygienist Labour force in Australia 2005' (August 2008)
 AIHW Dental Statistics Research Unit Research Report No 35 'Dental Therapist Labour force in Australia 2005' (August 2008)
 AIHW Dental Statistics Research Unit Research Report No 37 'Dental Prosthetist Labour force in Australia 2005' (August 2008)

Dental therapists and hygienists can provide many of the services which will be covered by the Dental Social Insurance Scheme, under the general supervision of dentists. Public dental services, particularly the School Dental Programme are staffed significantly by dental therapists – almost 80% of dental therapists work in the public sector.

Large scale transfer of dentists out of the private sector and into the public sector seems unlikely, without significant incentives or mandating of minimum public sector participation (e.g.; a minimum number of years in the public sector as part of training, or minimum annual commitment). The option for a minimum public sector involvement as trainees seems feasible and was discussed in some detail in John Spencer's paper to the commission.

The result is that there is likely for some time to be a significant portion of the Dental Social Insurance scheme which is publicly-funded but privately provided – we discuss this further under 'Risks and Issues'.

Impact of Demand Growth

Sources of Demand Increase

Without any workforce supply constraints, it is reasonable to assume that the demand for dental services would increase if a dental social insurance scheme was introduced. In fact, one might envision that this is the overall intention of such a scheme. The figures below show that those on lower incomes are less likely to visit the dentist in a year than others. Similarly, people without private health insurance cover are significantly less likely to visit a dentist than those with cover. Furthermore, the volume of services per visit provided to lower income earners is lower than that provided to higher income earners, with a different overall

⁸ ABS Census 2006, Population by Occupation.

mix of services. Introducing a social insurance scheme for dental care would offer free or low cost access to appropriate dental services for many people who are currently do not access services due to price and other issues.

Figure 9: Percentage of Persons visiting dentist in a 12 month period, by annual household income

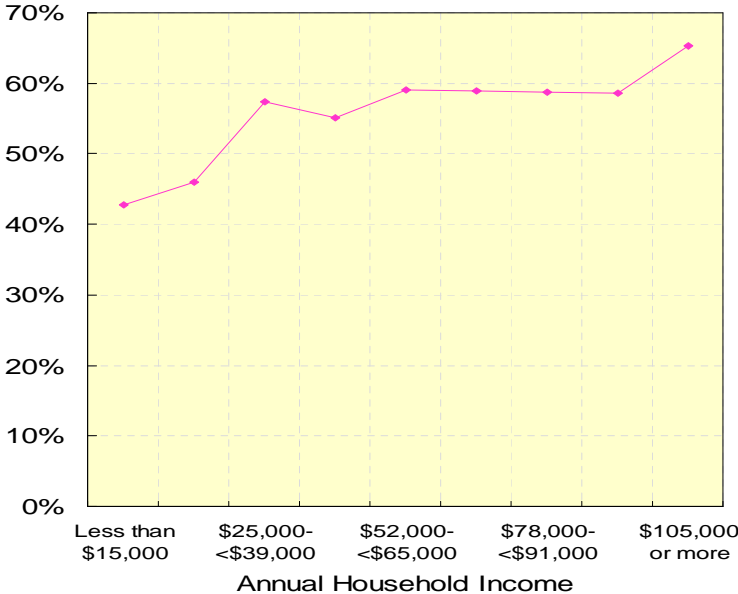
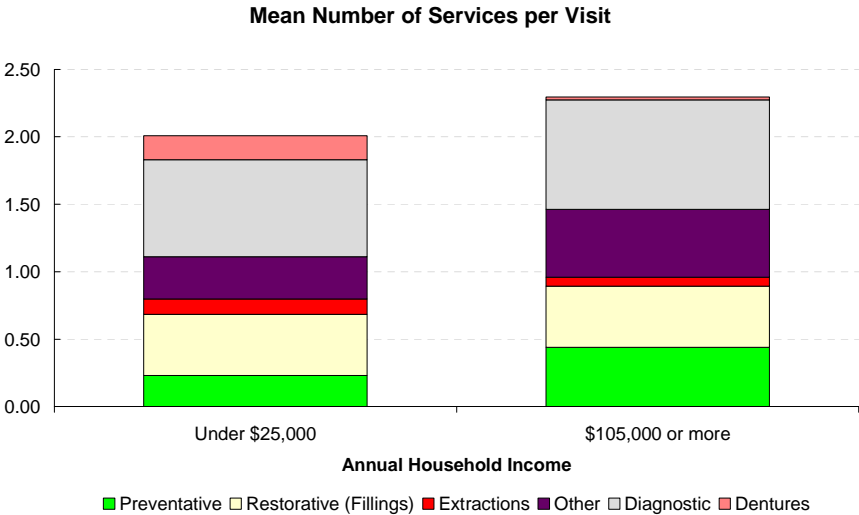


Figure 10: Average Number and type of services per visit to Dentist, selected income bands



Source: Compiled from AIHW National Dental Telephone Interview Survey 2002, combined with AIHW Practice activity patterns of dentists in Australia: trends over time by age of patients

Estimated Cost of Demand Increases

As part of our Phase 1 analysis, we estimated the potential increase in demand for dental services by assuming visits per capita to the dentist and the service volume and mix for lower income earners increases in line with that for higher income earners. Overall, this results in an increase in the dental services demand in the order of 11.5% to 17%. If we assume that this is all provided through the private sector, then this would result in growth in private sector dental expenditure of some to 13.5% to 20%. This analysis is provided in Appendix 4.

A review of the utilisation levels and service mix using the more granular data we received for Phase 2 confirms notable differences between those with dental insurance, and those that do not, across all income groups. An *upper bound* on **longer-term** growth (20+ years) was investigated, where utilisation and service mix for the *highest users* of dental services was adopted – these are high income-earners with dental insurance. This investigation produced a ‘worst case’ demand growth (as measured by the number of services provided) in the order of 40%.

Table 11 below provides an estimate of direct government outlays under the 20% growth scenario:

Table 11 - 20% Growth and changes in workforce mix

20% Growth Scenario \$millions	Current Service Mix, No Growth	% of additional services absorbed by public practitioners		
		0%	2%	4%
DIRECT GOVERNMENT OUTLAYS				
	\$m	\$m	\$m	\$m
Public dental (100%)	750.4	750.4	794.4	838.3
Private practitioners (85%)	3,807.1	4,568.5	4,492.4	4,416.2
Dental services	4,557.5	5,318.9	5,286.7	5,254.5
Plus:				
School expansion	100.0			
Dental residency program	200.0			
Oral health promotion	20.0			
Government Outlays	4,877.5	5,318.9	5,286.7	5,254.5
Taxable Income, 2008/09	539,090.6			
Scheme Cost, % of Taxable Income	0.90%	0.99%	0.98%	0.97%

A 20% growth scenario produces a scheme cost of around **\$5.3bn**. The cost is reduced marginally (along the right hand side of the table) if a small proportion of the additional services are absorbed through public practitioners.

How demand growth could be met.

The overall growth in the Dental Social Insurance scheme will be constrained to the extent that supply of workforce and dental services can grow to meet the required services. In this section we consider some of the issues in expansion to meet the growth in demand.

Workforce Growth

The dental workforce is projected to grow at about 2.7% per annum⁹. Of this 2.7% increase, about 1% would be needed to meet the growth in the Australian population, leaving about 1.7% per annum workforce growth to meet the demand growth from the scheme. It would take a decade or more for the natural growth in the workforce to be able to meet the anticipated demand growth arising as a result of the Dental Social Insurance scheme. Increasing the number of dentists through greater training places, international recruitment and greater retention of dental workforce may help, but it must be borne in mind that dentistry is just one of a range of career options amongst which people can choose, and Australia competes internationally for skilled workers in what is becoming an increasingly tight global market for healthcare professionals. The forecast growth in dental workforce already takes into account three new dental training schools which were announced in 2007, with the number of graduates expected to double to 500 per annum by 2014.¹⁰

Hours worked and service output in the dental workforce

Average hours worked by dentists are 38.4 hours per week. Evidence points toward recent declines in average hours worked by dentists, but a workforce which still works longer hours relative to the health workforce (30.8)¹¹ and the Australian labour force in general (34.3)¹².

Table 12 – Average Hours Worked and Part-time Status of Dental Labour Force, 2005

Dental Labour Force 2005 - Average Hours Worked and Part-time status								
	Dentists		Dental Hygienists		Dental Therapists		Dental Prosthetists	
	Average hours p.w.	% Part time	Average hours p.w.	% Part time	Average hours p.w.	% Part time	Average hours p.w.	% Part time
Male	40.3	19.9	-	-	-	-	-	19.9
Female	33.5	43.1	31.6	52.9	29.5	55.7	42.6	41.4
Total	38.4	26.5	31.6	52.9	29.5	55.7	42.6	22.0

(96.5% are female) (97.5% are female) (90.2% are male)

Sources

AIHW Dental Statistics Research Unit Research Report No 33 'Dental Labour force in Australia 2005' (August 2008)

AIHW Dental Statistics Research Unit Research Report No 34 'Dental Hygienist Labour force in Australia 2005' (August 2008)

AIHW Dental Statistics Research Unit Research Report No 35 'Dental Therapist Labour force in Australia 2005' (August 2008)

AIHW Dental Statistics Research Unit Research Report No 37 'Dental Prosthetist Labour force in Australia 2005' (August 2008)

For dentists, there has been a slight decline in average hours worked since 2002, when the average hours worked was 39.3 hours. The main reason for this decline is a decline in the average hours worked for males of 41.1 to 40.3 hours per week, as well as an increase in the

⁹ AIHW Dental Statistics and Research Unit Research Report No 43, "Dental Labour Force projections 2005 – 2020"

¹⁰ AIHW Dental Statistics and Research Unit Research Report No 43, "Dental Labour Force projections 2005 – 2020"

¹¹ AIHW Health and community services labour force 2001, September 2003

¹² ABS Cat No. 6291.0.55.001 - Labour Force, Australia, Detailed - Electronic Delivery, Sep 2008

proportion of dentists who are women. This is consistent with trends observed in the medical workforce, although we note that the medical workforce has slightly higher average hours worked than dentists (e.g.: 46.2 hours per week for male doctors and 37.6 for female doctors¹³).

In terms of productivity, a paper by the AIHW Dental Statistics and Research Unit summarises the evidence:¹⁴

- The number of patient visits per hour declined between 1983-84 and 1998-99 from 1.9 patients per hour to 1.5, but increased to 2003-04 to 1.6.
- Related to this was an overall decline in the mean number of patient visits per annum for the average dentist, from around 3,500 in 1983-84 to 2,500 in 2003-04
- These changes are explained due to the reduction in number of hours worked per week by dentists, as well as longer time required per visit, due to the impact of increases in the number of services provided at each visit, and time required for infection control procedures.

Important in the context of a workforce which is set to have a significant increase in graduate entrants, and continued growth in the female workforce, both younger dentists and female dentists have significantly lower visits per annum than older dentists and male dentists, the latter reflecting lower hours worked.

This information points to the potential for a continued decline in output per dentist, particularly if average hours worked continues to decline. We note that more recent data is available for the medical labour force¹⁵, and it indicates that average hours worked have continued to decline up to 2006, suggesting that declining hours rather than increasing hours seems to be the norm.

Change in workforce mix

The mix of dentists and dental technicians in the public sector is very different to the private sector. As Table 10 above indicated, around 80% of the private sector workforce is comprised of dentists, whereas 50% of the public dental workforce is dentists – the bulk of the remainder is dental therapists who largely staff the School Dental Programme.

This would indicate that there is some scope for change in mix of the private sector workforce, or scope for the mix overall to change if the public sector grows. In considering the feasibility of this in meeting the additional demand for dental services, the following points are important:

¹³ AIHW Medical Labour Force Survey 2006, November 2008.

¹⁴ AIHW Dental Statistics and Research Unit Research Report No 23, "Trends in productivity of Australian Dentists"

¹⁵ AIHW Medical Labour Force Survey 2006

- The growth in the dental therapist and dental hygienist workforce is projected to be somewhat less than the growth in the dentist workforce, largely due to a limited number of training places. Around 80 new graduates are expected each year, so that the percentage growth in the workforce will be roughly equivalent to dentists. Considerable expansion of existing training places is likely to be required if this workforce is to grow more rapidly.
- Training of dental therapists and hygienists requires around 3 years at university (although 2 years is possible in some States), compared to a minimum of 5 years for dentists, so there may be some 'saving' in terms of training time.
- Salaries of dentists and dental therapists working in the public sector are quite similar, so an increase in dental therapists relative to dentists may not lead to an overall cost saving, if the salary differential remains the same.

Change in mix of work provided

Our estimates indicate that around 78% of the cost of dental services will be covered by the scheme, with the remaining 22% continuing to be financed through a mix of out-of-pocket payments and private health insurance premiums. In theory, these types of services could decline and be replaced with growth in the services to be covered under the scheme. However, this assumes that non-covered services are 'discretionary' services, and this is probably not the case. Non-covered services comprise predominantly crowns and bridges.

While it might be hoped that improved oral health will, over time, lead to a reduction in the need for these types of services, this would be a very long-term impact of introducing a Dental Scheme, and not one which we would expect to be a 'saving' to the system in the short term.

To the extent that any of these non-covered services are a result of 'supplier-driven demand', then there is potential for these services to reduce as demand for other services grows. Overall, we expect that there will be some shift away from un-covered to covered services, however, it is difficult to estimate what this shift may be.

Conclusion

This discussion has highlighted the challenges in using the current and expected future workforce to meet growing demand for dental services as a result of a Dental Scheme. The implication is that a 'phased' introduction of such a scheme may well be required to ensure workforce supply can meet the growth in demand.

8 Key Risks and Issues

In reviewing the proposal for a National Oral Health Scheme, we have become aware of a number of issues and risks which will impact the veracity of the Scheme and effectiveness of the Scheme in achieving its aims. We note these issues here to help in your considerations for refining the design of such a Scheme.

Public financing / private dentists

Most (84%) of dentists work in the private sector, whereas under the proposed scheme, it is likely that a significant portion of the scheme could be financed through the public sector, if uptake of private health insurance for dental does not increase significantly. An approach will need to be developed to facilitate publicly-financed but privately-provided dental services.

Options include:

- A voucher system. This is used presently in a limited way by State governments to manage shortages in the public dental system, and is also the approach used for the recently-introduced Teen Dental programme. The administration of such a system could become cumbersome if it is used on a large scale.
- Employment of dentists on a 'sessional' basis. Greater flexibility could be offered for dentists to work part-time in the public sector, for example on a sessional basis, as occurs with many medical specialists working in public hospitals.
- The Medicare system is another option which could be used – Medicare is already an efficient mechanism for delivering public financing to the private sector medical system, and is used to finance dental services to some people with chronic illnesses, through the Enhanced Primary Care programme.

Price inflation

We consider that price inflation is a significant risk with the Scheme as proposed, because:

- The Scheme is intended to broaden the range of people who seek dental services, increasing demand considerably. Given that the workforce supply will take some time to respond, price increases seem a reasonable likelihood in response to increased demand.
- For many people, it will significantly reduce the price to the patient (i.e.: out-of-pocket expenditure). For example, for those currently covered by private health insurance, we estimate that around two-thirds of the cost of dental services is paid directly by the individual, and one-third by the insurer. The proposed system will see that change to 15% paid by the individual and 85% paid by the insurer. For those who are currently un-insured, in the price impact is even clearer. People are 'used to' paying for dental services and it is easy to envisage a situation where dentists increase their prices so that patient out-of-pocket expenditure remains unchanged.

A significant challenge in introducing such a Scheme will be to maintain effective price control. The most effective way to 'control' price inflation is likely to be introduction of a schedule from which dentists are reimbursed. Phased introduction may also help manage the risk of inflation, allowing time for the workforce to grow to meet the growing demand, and private health insurance industry to develop appropriate mechanisms to better manage future dental costs.

Impact on other Private Health Insurance

Dental forms a significant part of the private health insurance dollar – According to AIHW estimates¹⁶, 12% of private health insurer expenditure is on dental, making it the most important component of ancillary cover. Changes in the way dental is financed could therefore significantly impact the private health insurance industry, though the overall direction of the impact is not clear.

- If insurers are able to offer a standalone private health insurance product to cover dental services, then it is possible that people will opt to take-up that product, without taking up hospital cover. This may lead to an overall decline in private health insurance coverage. In the 2004-05 National Health Survey¹⁷, 22% of people indicated that they had private health insurance because of the ancillary cover.
- On the flip-side, price reductions in private health insurance could make private health insurance more attractive. The overall impact of the Scheme would be to make private health insurance appear cheaper, because the government is paying for a significant portion of dental coverage. This may attract more people into private health insurance. We note however that previous policies to use price levers to increase private health insurance coverage - for example, the 30% rebate – had only a minor impact.

It may therefore be appropriate to 'road test' the design of the proposed private health insurance interaction with the industry and consumers, perhaps through focus groups, so that the likely impact on the private health insurance industry can be better predicted.

School Dental and Private Health Insurance

We note that there is an intention to have private health insurers reimburse the cost of the school dental system in respect of children who are covered by private health insurance. This would require a very different set of administrative processes than exists at present – students do not generally need to provide any information to access school dental services at present, but under the proposed scheme, students would need to provide details of their parents' private health insurance coverage. We suspect poor-reporting by students of this information would be common place, and overlooked if provision of this information was NOT a prerequisite for treatment in the school dental system.

¹⁶ AIHW Health Expenditures Australia 2006-07

¹⁷ ABS Cat No 4364.0 National Health Survey: Summary of Results 2004-05, Table 39

We suggest that it may be more appropriate to exclude the cost of school dental services from the risk-adjusted premium transferred from the Scheme to the private health insurers, and that instead the Scheme directly funds the school dental component.

Alternatively, an efficient administration mechanism could be established, perhaps involving a 'bulk transfer' of information to be shared by the private health insurers and the school dental programme to identify and estimate the cost of school dental visits made by those with insurance cover each year. A unique identifier by which each student covered by or visiting the school dental programme would need to be used, and this information would need to be collected by the private health insurers also.

Appendix 1: Services in Scope

ADA Item	Category 2 Mapping	Service Category Mapping	Description
11	Diagnostic	Examination	Comprehensive oral exam
12	Diagnostic	Examination	Periodic oral exam
13	Diagnostic	Examination	oral examination - limited
14	Diagnostic	Examination	Consultation
22	Diagnostic	Radiograph	Intraoral periapical radiograph
23	Diagnostic	Radiograph	Two intraoral periapical or bitewing radiographs
25	Diagnostic	Radiograph	Intraoral radiograph - occusal, maxillary or mandibular - per exposure
37	Diagnostic	Radiograph	Panoramic radiograph - per exposure
111	Preventative	Prophylaxis (Scale and Clean)	Removal of plaque and/or stain
113	Preventative	Prophylaxis (Scale and Clean)	Recontouring pre-existing restoration(s)
114	Preventative	Prophylaxis (Scale and Clean)	Removal of calculus - first visit
115	Preventative	Prophylaxis (Scale and Clean)	Removal of calculus - subsequent visit
121	Preventative	Topical Fluoride	Topical application of remineralising agent - one treatment
123	Preventative	Topical Fluoride	Concentrated remineralising agent, application - single tooth
131	Preventative	Other Preventative	Dietary advice
141	Preventative	Other Preventative	Oral hygiene instruction
151	Preventative	Other Preventative	Provision of a mouthguard - indirect
161	Preventative	Other Preventative	Fissure sealing -per tooth
213	Other Services	Periodontic	Treatment of acute periodontal infection - per visit
221	Other Services	Periodontic	Clinical periodontal analysis and recording
222	Other Services	Periodontic	Root planing and subgingival curettage - per eight teeth or less
231	Other Services	Periodontic	Gingivectomy - per eight teeth or less
311	Extraction	Extraction	1st tooth extracted from each quadrant (extraction)
314	Extraction	Extraction	1st sectional removal from each quadrant (Extraction)
322	Extraction	Extraction	1st tooth extracted from each quadrant (Surgical extraction)
323	Extraction	Extraction	1st tooth extracted from each quadrant (with removal of bone)
324	Extraction	Extraction	1st tooth extracted from each quadrant (with removal of bone and tooth division)
386	Other Services	General/misc	Splinting of displaced tooth/teeth - per tooth
392	Other Services	General/misc	Incision and draining of abscess or cyst
411	Other Services	Endodontic (root canal)	Direct pulp capping
414	Other Services	Endodontic (root canal)	Pulpotomy

ADA Item	Category 2 Mapping	Service Category Mapping	Description
415	Other Services	Endodontic (root canal)	Complete chemo-mechanical preparation of root canal - one canal
417	Other Services	Endodontic (root canal)	Root canal obturation - one canal
419	Other Services	Endodontic (root canal)	Extirpation of pulp or debridement of root cana(s) - emergency or palliative
455	Other Services	Endodontic (root canal)	Additional visit for irrigation and/or dressing of the root canal system - per tooth
458	Other Services	Endodontic (root canal)	Interim therapeutic root filling - per tooth
485	Denture	Other - dentures	Repairing broken base of a partial denture (labour, laboratory costs)
511	Restorative	Amalgam	Metallic restoration - one surface
512	Restorative	Amalgam	Metallic restoration - two surfaces
513	Restorative	Amalgam	Metallic restoration - three surfaces
514	Restorative	Amalgam	Metallic restoration - four surfaces
515	Restorative	Amalgam	Metallic restoration - five surfaces
521	Restorative	Composite Resin	Adhesive restorations - one surface - anterior tooth
522	Restorative	Composite Resin	Adhesive restorations - two surfaces - anterior tooth
523	Restorative	Composite Resin	Adhesive restorations - three surfaces - anterior tooth
524	Restorative	Composite Resin	Adhesive restorations - four surfaces - anterior tooth
525	Restorative	Composite Resin	Adhesive restoration - five surfaces - anterior tooth
531	Restorative	Composite Resin	Adhesive restorations - one surface - posterior tooth
532	Restorative	Composite Resin	Adhesive restorations - two surfaces - posterior tooth
533	Restorative	Composite Resin	Adhesive restorations - three surfaces - posterior tooth
534	Restorative	Composite Resin	Adhesive restorations - four surfaces - posterior tooth
535	Restorative	Composite Resin	Adhesive restoration - five surfaces - posterior tooth
572	Restorative	Other	Provisional (intermedial/temporary) restoration
575	Restorative	Other	Pin retention - per pin
577	Restorative	Other	Cusp capping - per cusp
578	Restorative	Other	Restoration of an incisal corner - per corner
711	Denture	Full	Complete maxillary denture
712	Denture	Full	Complete mandibular denture
719	Denture	Full	Complete maxillary and mandibular dentures
721	Denture	Partial Upper	Partial maxillary denture - resin base
727	Denture	Partial Upper	Partial maxillary denture - cast metal framework

ADA Item	Category 2 Mapping	Service Category Mapping	Description
730	Denture	Other - dentures	Provision of casting
731	Denture	Other - dentures	Retainer - per tooth
732	Denture	Other - dentures	Occusal rest - per rest
733	Denture	Other - dentures	Tooth/teeth (partial denture)
736	Denture	Other - dentures	Immediate tooth replacement - per tooth
741	Denture	Other - dentures	Adjustment of a denture
743	Denture	Other - dentures	Relining - complete denture - processed
744	Denture	Other - dentures	Relining - partial denture - processed
751	Denture	Other - dentures	Relining - complete denture - direct
753	Denture	Other - dentures	Cleaning and polishing of pre-existing denture
761	Denture	Other - dentures	Reattaching pre-existing tooth or clasp to denture
762	Denture	Other - dentures	Replacing clast on denture
763	Denture	Other - dentures	Replacing broken base of a complete denture
764	Denture	Other - dentures	Repairing broken base of a partial denture
765	Denture	Other - dentures	Replacing first tooth on denture
768	Denture	Other - dentures	Adding tooth to partial denture to replace an extracted or decoronated tooth - per tooth
776	Denture	Other - dentures	Impression where required for denture repair/modification

Appendix 2: Services in Scope Results

Table 13 – Phase 2 Costing Current Dental Expenditure, and Services in Scope

Services in Scope:

		Phase 1 Estimates			Phase 2 Estimates			Change from Phase 1
		Dental Expenditure	% of Total \$ by Category	% of Expenditure Covered	Dental Expenditure	% of Total by Category	% of Expenditure Covered	
Public Dental							100%	
Restorative	Amalgam	291.9	5%	100%	333.4	6%	98%	
	Composite Resin	1,301.6	22%	100%	1,370.6	23%	100%	
	Sub Total - Fillings	1,593.5	27%	100%	1,704.0	29%	99%	
	Other	131.3	2%	100%	275.7	5%	29%	
	Total - Restorative	1,724.9	29%	100%	1,979.7	33%	100%	4%
Diagnostic	Examination	523.5	9%	100%	529.3	9%	98%	
	Radiograph	394.3	7%	100%	287.1	5%	100%	
	Sub-total - diagnostic	917.8	15%	100%	816.5	14%	98%	
	Other Diagnostic	36.7	1%	100%	27.9	0%	0%	
	Total - Diagnostic	954.5	16%	100%	844.4	14%	95%	-3%
Preventative	Prophylaxis (Scale and Clean)	560.5	9%	100%	576.6	10%	100%	
	Topical Fluoride	116.0	2%	100%	118.4	2%	100%	
	Sub-total - Preventative	676.6	11%	100%	695.0	12%	98%	
	Other Preventative	66.7	1%	100%	76.0	1%	65%	
	Total - Preventative	743.2	13%	100%	771.0	13%	95%	0%
Denture	Full	111.2	2%	100%	126.8	2%	100%	
	Partial Upper	141.2	2%	100%	237.3	4%	100%	
	Partial Lower	79.5	1%	100%	99.7	2%	0%	
	Sub-total - dentures	331.9	6%	100%	463.9	8%	79%	
	Other - dentures	214.4	4%	100%	108.6	2%	92%	
	Total - Dentures	546.2	9%	100%	572.4	10%	81%	-1%
Other Services	Extraction	256.6	4%	100%	269.6	5%	99%	
	Endodontic (root canal)	303.4	5%	0%	440.7	7%	85%	
	Crown and bridge	1,181.1	20%	0%	874.6	15%	0%	
	General/misc	68.9	1%	0%	73.3	1%	0%	
	Periodontic	27.2	0%	0%	54.5	1%	85%	
	Orthodontic	139.8	2%	0%	42.9	1%	0%	
	Total - Other Services	1,976.9	33%	13%	1,755.7	30%	36%	6%
Total - Private Practitioners		5,945.7	100%	71%	5,923.3	100%	78%	7%
<i>For Chart</i>								
Total - Private Practitioners		5,945.7	100%	71%	5,923.3	100%	78%	7%

The Phase 2 Estimates were derived as follows:

- The 2008/09 estimated number of private practitioner ADA service items is 53.7m (refer Attachment B attached in this Appendix);
- The allocation of the 53.7m services to the service categories described above was based on ADA service item data, provided by the University of Adelaide, underlying the report titled "Practice activity patterns of dentists in Australia", Brennan DS & Spencer AJ 2006 (AIHW cat. no. DEN 148. Canberra: Australian Institute of Health and Welfare (Dental Statistics and Research Series No. 32);

- The total cost of services is derived by multiplying the estimated number of services per ADA service item number, by the estimated fee per ADA service item number. The estimated fees were derived by using a combination of: 2006 ADA (Victoria Branch) survey of dental fees charged, indexed to 2008/09 values based on increases in the average dental fees sourced from PHIAC data; where item numbers were not present in the survey, fees were estimated using the DVA November 2007 fee Schedule relativities, and/or the Medicare Chronic Care November 2007 fee schedule relativities, adjusted for differences between private sector charges and the scheduled fees.

The underlying parameters used to produce the above results are provided below:

Table 14: Attachment B – Phase 2 Calculations

Note: Attachment A is provided in Table 16

	Population	Population growth rate	% of people that visit the dentist	Number of people that visit the dentist in a year	Dental expenditure per person visiting per annum	Dental Fee Inflation Rate	% of expenditure that is public	Dental Expenditure (\$millions)			Mean no. of dental visits per capita per annum	National no. of dental visits	
								Public Practitioners	Private Practitioners	Public + Private Practitioners			
	(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
2005.06	20,587,475		56.7%	11,665,303	458	4.06%	10.0%	534	4,804	5,338	1.31	26,916,517	
2006.07	20,896,175	1.50%	57.2%	11,957,879	480	5.55%	10.0%	548	5,188	5,736	1.32	27,663,466	
2007.08	21,183,265	1.37%	57.8%	12,241,443	499	4.03%	10.0%	611	5,498	6,109	1.34	28,391,596	
2008.09	21,526,940	1.62%	58.4%	12,561,258	524	5.00%	10.0%	658	5,923	6,582	1.36	29,205,931	
2008.09	Marginal additional impact from the Commonwealth Dental Plan (CDP) is:								92		92		650,000
	Total Dental Services Expenditure, 2008/09:								750	5,923	6,674	1.36	29,855,931

% provided by private practitioners 80.2% See Attachment A

	No. of private practitioner visits	No. of private practitioner services	Avg private practitioner fee per service item	Total Growth in Dentistry Spend	GDP	Nominal GDP Growth Rate	Dental Spend, % of GDP
	(12)	(12.1)	(12.2)	(13)	(14)	(16)	(17)
2005.06	21,587,047	49,484,671	97		967,984		0.55%
2006.07	22,186,100	50,857,900	102	7.46%	1,043,783	7.8%	0.55%
2007.08	22,770,060	52,196,529	105	6.50%	1,128,046	8.1%	0.54%
2008.09	23,423,156	53,693,643	110	7.74%	1,232,390	(15) 9.3%	0.53%
2008.09	23,423,156	53,693,643					

Notes to Attachment B – Phase 2 Calculations

Note: Attachment A is provided in Table 16

Notes

- (1) 2005/06 = average of 4 quarters in 2005/06, ABS **3101.0 Australian Demographic Statistics**
 2006/07 = average of 4 quarters in 2006/07, ABS **3101.0 Australian Demographic Statistics**
 2007/08: sourced from projected population estimates, ABS, 3222.0 Population Projections, Australia and ABS, 3101.0 Australian Demographic Statistics
 Population at 30/6/07: 21,015,000 ABS, 3101.0 Australian Demographic Statistics
 Projected at 30/6/08: 21,351,529 (a)
 Average for 2007/08 21,183,265
 Projected at 30/6/09 21,702,351 (b)
 Average for 2008/09: 21,526,940 Avg (a and b)
- (2) Refer Attachment A for 2005.06 estimate
 2008.09 estimate updated using the latest Annual Income distribution from the 2006 Census (wealthier distribution since 2001) and updated to reflect slightly older population (age distribution derived from the 2008/09 population projections, ABS Cat 3222, avg of 30 Jun 08 and 30 Jun 09)
 Other years by linear interpolation
- (3) (1) x (2)
 (4) (9) / (3)
 (5) Sourced from PHIAC data as at 30 June 2008, average dental fee charged per service.
 Also checked for consistency against 6401.0 - Consumer Price Index, Australia, Jun 2007 - Health
 For 2008/09, 5% was adopted, as per the Government costings for the Teen Dental and Commonwealth Dental plans.
 (6) Based on public expenditure proportion in 2005/06
 (7) For 2005/06, comes from AIHW HER 2005/06, Table A3
 For other years = (6) x (9)
 \$92m for Commonwealth Dental Plan sourced from Govt Costing (ALP038_Request_for_Costing_-_Better_Dental_Health.pdf)
 100% assumed to be marginal due to low costs currently spent on the Chronic Care Plan (see <http://www.alp.org.au/media/0907/mshea180.php>)
- (8) For 2005/06, comes from AIHW HER 2005/06, Table A3
 For other years = (9) - (7)
 (9) For 2005/06, comes from AIHW HER 2005/06, Table A3
 For other years = (4) x (3)
- (10) See Attachment A, note (6)
 2008.09 estimate updated using the latest Annual Income distribution from the 2006 Census (wealthier distribution since 2001) and updated to reflect slightly older population (age distribution derived from the 2008/09 population projections, ABS Cat 3222, avg of 30 Jun 08 and 30 Jun 09)
 Other years by linear interpolation
- (11) (1) x (10) Note: overall dental visits similar in magnitude to Spencer's projections in AIHW - Projected demand and supply for dental visits in Australia 2008.pdf, page 84.
 For 2008/09 CDP, based on 650,000 waiting list being cleared out.
- (12) (11) x 80.2% of visits at private practitioner, 2002 AIHW NDTIS, p40
 (12.1) (12) x 2.292 services per visit (see Attachment A, note 7)
 (12.2) (12.1) / (8)
 (14) 5206.0 Australian National Accounts: National Income, Expenditure and Product, Table 1. Key National Accounts Aggregates, Trend
 Compares to 966,442 in AIHW 2005-06 HER (Health Expenditure Report)
- (15) 2008/09 projected using the nominal growth rate of 9.25%. Sourced from 2008/09 budget paper.
 (16) 2008/09 projected using the nominal growth rate of 9.25%. Sourced from 2008/09 budget paper.
 (17) (9) / (17)

Appendix 3: Risk-adjusted Cost Methodology

Methodology

We have used broadly the same methodology as in Phase 1; however there have been some adjustments for the model as described below;

New Data

More granular data was sought from the 2002 NDTIS, and this was used to update assumptions regarding the percentage of individuals who visit the dentist, and the mean number of visits per annum by age and income group.

This data allowed us to update our model assumptions by:

- Dental service category
- By age and income.

The model adopted in Phase1 was updated with the new data and assumptions, based on the experience in the NDTIS data.

The key drivers of the model include:

- Proportion of individuals who visit the dentist in each year
- Mean number of visits annually given that the individual visits a dentist
- Mean services per visit (by service type)

From this model, the number of services in each service category are modelled separately, and then combined with the average dentist fees per service category weighted by actual usage of services within each category to produce total cost of dental services. The mix of dental services was derived from the data underlying the 2005 Dentists' Practice Activity Study.

The number of services and costs in each service category was adjusted downwards to exclude those services not covered by the dental scheme. This produced an estimate of scheme costs by service category, which was transformed to a risk adjusted premium by dividing by the number of insured individuals in 2009. We checked our assumptions regarding the percentage covered by dental insurance through comparison with PHIAC publications (41.2% in 2002, 42.2% in 2006).

Appendix 4: Details of Phase 1 Analysis

A4.1 Background to Phase 1

PricewaterhouseCoopers (PwC) was requested by the Secretariat of the National Health and Hospital Reform Commission (the Commission) to estimate the cost of a national social insurance scheme for dental care, focussing on preventative and restorative dental services. This Appendix summarises the results of our initial analysis, which was based on

- publicly available reports, i.e. prior to the receipt of the more granular data we received from the University of Adelaide for the Phase 2 analysis;
- Health Expenditure data as at 2005/06¹⁸.

Our high level costings documented in this Appendix present a range of alternative scenarios for scheme coverage as well as potential demand increases arising as a result of introduction of free or reduced-cost dental care to a broader segment of the population.

Outline

This Appendix comprises the following sections:

- A4.1 - *Introduction*
- A4.2 – *Preliminary estimates of Current Expenditure on Dental Care*;
- A4.3 – *Phase 1 Analysis - Demand Adjustments*;

A4.2 Preliminary Estimates of Current Expenditure on Dental Care

Allocation of Expenditure to Preventative, Restorative and Diagnostic Dental Care

In this section, we describe our methodology used in Phase 1 to estimate the portion of current dental expenditure which goes to preventative, restorative and diagnostic services, which might be covered by a social insurance scheme.

The service categories shown below are based on the Australian Dental Association *Australian Schedule of Dental Services and Glossary, 8th Edition*, which is also used by Medicare and the Department of Veteran Affairs (DVA) dental plans.

Allocation of expenditure into different service categories was performed using results from the 2003/04 Longitudinal Study of Dentists' Practice Activity in Australia. This dataset

¹⁸ Australian Institute of Health and Welfare 2007. Health expenditure Australia 2005–06. Health and Welfare Expenditure Series no. 30. Cat. no. HWE 37. Canberra: AIHW, Table A3

indicates the proportion of private dentists' services which fall into the different service categories. The service numbers in each service category are then combined with average dentist fees per service category, to produce an estimate of the proportion of total costs by service category spend.

Total numbers of services per annum were derived from a number of sources, which are outlined in Table 15 below. Average dentist fees per service are sourced from a fee survey conducted by the Australian Dental Association Victoria Branch, with additional guidance from the DVA fee schedule, and the Medicare fee schedule.

Throughout our analysis we have compared our estimates to other sources, such as:

- A comparison of our estimated overall average dentist fee per service (\$97 for 2005/06, and \$112 for 2008/09) to PHIAC data – these comparisons are within \$1 of the PHIAC average dentist fees;
- A comparison of our estimates of dentist services to estimates produced in the 1995 AIHW Demand for Dental care (“DDC”) report – the estimates are consistent;
- A comparison of the mix of dentist services by service category to the DDC report – the estimates are consistent;
- A comparison of the **number** of dental visits serviced by public / private dental practices to the AIHW 2005 Dental Labour Force Surveys (reports 33, 34, 35, and 37). We have estimated that 20% of visits are serviced by public practitioners, which compare to the Labour Force Surveys that indicate that the combined number of dentists, hygienists, therapists, and prosthetists employed in the public sector is 21% of the total dental and dental auxiliary workforce.

Table 15: Phase 1 Analysis - Detailed costing information 2008/09

Part 1 of Table 15

ALLOCATION OF 2008-09 DENTAL SERVICES EXPENDITURE, BY TYPE OF SERVICE PROVIDED		% of Private Practitioner Services	Number of Services Provided per Annum	Private Practitioner Expenditure, % of Total Private Practitioners	Estimated 2008-09 expenditure by activity	Estimate of average fee per service item
		(1)	(2) millions	(3)	(4) \$millions	(5)
Public Practitioner (Assume 100% provided in any new scheme) Includes additional services provided under the new Commonwealth Dental Plan					753	
Private Practitioners			53.13		5,946	\$112
Restorative	Amalgam	4%	2.23	5%	292	\$131
	Composite Resin	16%	8.53	22%	1,302	\$153
	Sub Total - Fillings	20%	10.77	27%	1,594	\$148
	Other	8%	4.02	2%	131	\$33
	Total - Restorative	28%	14.78	29%	1,725	\$117
Diagnostic	Examination	20%	10.73	9%	524	\$49
	Radiograph	14%	7.24	7%	394	\$54
	Sub-total - diagnostic	34%	17.97	15%	918	\$51
	Other Diagnostic	1%	0.67	1%	37	\$54
	Total - Diagnostic	35%	18.64	16%	954	\$51
Preventative	Prophylaxis (Scale and Clean)	12%	6.43	9%	561	\$87
	Topical Fluoride	4%	2.22	2%	116	\$52
	Sub-total - Preventative	16%	8.65	11%	677	\$78
	Other Preventative	3%	1.53	1%	67	\$44
	Total - Preventative	19%	10.18	13%	743	\$73
Denture	Full	0.2%	0.10	2%	111	\$1,090
	Partial Upper	0.5%	0.26	2%	141	\$545
	Partial Lower	0.3%	0.15	1%	80	\$545
	Sub-total - dentures	1.0%	0.51	6%	332	\$654
	Other - dentures	2.5%	1.31	4%	214	\$163
Total - Dentures	3%	1.82	9%	546	\$300	
Other Services	Extraction	3%	1.68	4%	257	\$153
	Endodontic (root canal)	5%	2.78	5%	303	\$109
	Crown and bridge	3%	1.67	20%	1,181	\$708
	General/misc	2%	0.90	1%	69	\$76
	Periodontic	0.8%	0.42	0%	27	\$65
	Orthodontic	0.5%	0.26	2%	140	\$545
	Total - Other Services (Including Extractions)	15%	7.71	33%	1,977	\$256
Total - Private Practitioners excluding Teen Dental	100%	53.13	100%	5,946	\$112	
					PHIAC Check	\$113
GRAND TOTAL - Private + Public Practitioners				100%	6,699	
Coverage Ratio = expenditure incurred, % of total of \$6,699m					100%	

Notes

- (1) 2003-04 Longitudinal study of dentists' practice activity
- (2) For public, is sourced from Column (7) of Attachment B - Phase 1 Version
Services shown for Private Practitioners
= Percentage shown in (1)
x Private practitioner service numbers of 53,132,515

53.13 million total derived as follows:

	Attachment B - Phase 1 Version
Estimated Resident population, 2005/06	21,526,940
x Mean number of visits to the dentist per capita per annum	1.34
= National number of dental visits per annum	28,900,713
x % serviced by private practitioners	80.2%
Number of private practitioner dental services per annum	23,178,372
x Mean no. of services per visit	2.292
= Number of private practitioner services per annum	53,132,515
- (3) Derived from 2005/06 allocation estimate - adds up to 100% for Private pre Teen Dental
- (4) Sourced from Attachment B - Phase 1 Version
For service categories, equals (3) x Total Private of \$5,776m
- (5) (4) / (2)

Table 15: Phase 1 Analysis - Detailed costing information 2008/09

Part 2 of Table 15

ALLOCATION OF 2008-09 DENTAL SERVICES EXPENDITURE, BY TYPE OF SERVICE PROVIDED		National Scheme Coverage Costs		
		A) Coverage for all: Restorative + Diagnostic + Preventative + Extractions + Dentures	B) Partial Coverage for: Restorative + Diagnostic + Preventative + Extractions + Dentures	C) Partial Coverage for: Restorative + Diagnostic + Preventative + Extractions
		(6) \$millions	(7) \$millions	(8) \$millions
Public Practitioner (Assume 100% provided) Includes additional services provided under the new Commonwealth Dental Plan		753	753	753
Private Practitioners				
Restorative	Amalgam	292	292	292
	Composite Resin	1,302	1,302	1,302
	Sub Total - Fillings	1,594	1,594	1,594
	Other	131	x	x
	Total - Restorative	1,725	1,594	1,594
Diagnostic	Examination	524	524	524
	Radiograph	394	394	394
	Sub-total - diagnostic	918	918	918
	Other Diagnostic	37	x	x
Total - Diagnostic	954	918	918	
Preventative	Prophylaxis (Scale and Clean)	561	561	561
	Topical Fluoride	116	116	116
	Sub-total - Preventative	677	677	677
	Other Preventative	67	x	x
Total - Preventative	743	677	677	
Denture	Full	111	111	x
	Partial Upper	141	141	x
	Partial Lower	80	80	x
	Sub-total - dentures	332	332	x
	Other - dentures	214	x	x
	Total - Dentures	546	332	x
Other Services	Extraction	257	257	257
	Endodontic (root canal)	x	x	x
	Crown and bridge	x	x	x
	General/misc	x	x	x
	Periodontic	x	x	x
	Orthodontic	x	x	x
Total - Other Services (Including Extractions)	257	257	257	
Total - Private Practitioners excluding Teen Dental	4,225	3,776	3,444	
GRAND TOTAL - Private + Public Practitioners	4,978	4,529	4,197	
Coverage Ratio = expenditure incurred, % of	74%	68%	63%	

Table 16: Phase 1 Analysis - Key Parameters for Costing

ATTACHMENT A: GLOBAL PARAMETERS FROM PUBLICLY AVAILABLE INFORMATION

	Private \$millions	Private Practitioners	Public Practitioners	Notes
AIHW 2005-06 Health Expenditure on Dental Services, Table A3 (\$millions)	5,338	4,804	534	(1)
Number of Dental Visits per annum, 2005/06 estimate				
Estimated Resident population, 2005/06	20,587,475			(3)
x % that visit the dentist in a 12-month period	56.7%			(4)
= Number of people that visit a dentist in a 12-month period	11,664,506			(5)
Estimated Resident population, 2005/06	20,587,475			
x Mean number of visits to the dentist per capita per annum	1.31			(6)
= National number of dental visits per annum	26,916,517			
Private / Public % Split of Visits	100%	80.2%	19.8%	(2)
National number of visits per annum, by Practitioner Type	26,916,517	21,587,047	5,329,470	(6.1)
x Mean number of private practitioner services per visit		2,292		(7)
Number of private practitioner dental services per annum		49,484,671		(8)
		(6/1) x (7)		
Key Statistics				
Average annual dental spend per person visiting a dentist, hygienist, therapist, or prosthodontist		\$458		(9)
		(1) / (5)		
Average dental spend per visit		\$198	\$223	\$100
		(1) / (6.1)		(10)
Average fee per service item at a Private Practitioner per Australian Dental Association (ADA)			\$97	(11)
		(1) / (8)		

Notes

(1) Table A3

(2) AIHW 2002 AIHW 2002 National Dental Telephone Interview Survey ("NDTIS"), page 40, and also validated by:
a) mix of public / private practitioners (FTE) in the AIHW 2005 Dental Labour Force Surveys, Research Reports 33, 34, 35, 37
b) the derived average dental fee per service of \$97 shown in (10) is within \$1 of the PHAC data average dental service fee of \$98.

(3) ABS Cat 3101, avg of 4 quarters to Jun-06

(4) Overall average derived as follows:

Population Profile

Population Segment	% of Population	Source
0 to 4 years of age	6.6%	ABS 2001 Census, Cat. No. 2068.0
Dentate, Aged 5+	87.2%	ABS 2001 Census, Cat. No. 2068.0, Combined with 2002 NDTIS Table 3.1.1 (a)
Edentulous	6.2%	Based on 2002 NDTIS Table 3.1.1, which shows % of ADULTS aged 18+ that are edentulous is 8.3% - figure of 6.2% shown here is % of all PERSONS, including 0 to 17 year olds
Total	100.0%	

Note: 2001 Census used for consistency with the sampling frame of the 2002 NDTIS. Population profile from 2006 Census not materially different.

% that visited the dentist in the last 12 months

Population Segment	% of Population	% that visited	Source of % that visited
0 to 4 years of age	6.6%	16.2%	AIHW 2003-04 Longitudinal Study of Dentists' Practice Activity ("LSDPA"), % of patient profile converted to % of population.
Dentate, Aged 5+	87.2%	62.7%	AIHW 2002 NDTIS, Table 4.1.1(a), age-specific factors shown re-weighted to 2001 Census age profile
Edentulous	6.2%	15.1%	AIHW 2002 NDTIS, Table 4.1.2, age-specific factors shown re-weighted to 2001 Census age profile
Total	100.0%	56.7%	Check: TRUE

(5) Public / private split is derived from (2)

(6) AIHW 2002 National Dental Telephone Interview Survey ("NDTIS") for Ages 5+, Dentate and Edentulous combined, and AIHW Demand for Dental Care Research Report No. 8 for ages 0-4

Population Segment	% of Population	% that visit	Mean no. of visits per person visiting	Mean visits per capita per annum	Source of mean no. of visits
0 to 4 years of age	6.6%	16.2%	1.23	0.20	0-4 sourced from Table 2 of AIHW 1995 Demd for Dental Care (DDC)
Dentate, Aged 5+	87.2%	62.7%	2.32	1.45	Table 4.5.1(a), AIHW 2002 NDTIS
Edentulous	6.2%	15.1%	2.89	0.44	Derived from NDTIS 2002: Avg no. of visits per capita of 0.44, which is derived from Table 4.1.2. The 0.44 figure is comparable to the 0.48 figure for 1995 in Page 2 of the DDC report
Total	100.0%	56.7%	2.31	1.31	

Key Assumptions and Sensitivity Analysis

Our estimates of dental spend for Diagnostic, Preventative, Restorative, Extractions, and Denture Services are affected by the assumed average dentist fee charged per service category.

Within each service category, e.g. Prosthodontics (mostly Dentures) there could be up to 50 service items within that category. For example, for metallic restorations (Amalgam Services), there are 10 service items, with average surveyed fees ranging from \$101 to \$230. To accurately calculate the average dentist fee for “Amalgam Services”, we need data that provides us with information about the mix of metallic restoration services. This data is not publicly available. Therefore, in selecting the average service fee per service category, we have applied judgement, supported by the sighting of sample dentist invoices.

Due to the importance of these assumptions, we have performed sensitivity testing on alternative scenarios by assuming that the average fee for each service category is actually 50% higher than our selection. A summary is provided in Table 17.

Interpretation of this table is as follows: *“If the average service fee for Composite Resin is \$210 instead of \$140, then the estimated cost of the Social Insurance Schemes A, B and C will increase by \$70.5m, \$88.9m, and \$102.5m respectively”.*

Table 17: Phase 1 Analysis - Sensitivity Testing for 2008/09

	Original Fee Assumption	Test if Fee is Actually 50% higher	2008.09			2008.09		
			Scheme			Scheme		
			A	B	C	A	B	C
BASE ESTIMATE			4,978	4,529	4,197	4,978	4,529	4,197
Service Category			\$Change			% Change		
Amalgam	\$120	\$180	41	52	60	1%	1%	1%
Composite Resin	\$140	\$210	169.7	214.0	246.8	3%	5%	6%
Examination	\$45	\$67	72.5	91.5	105.5	1%	2%	3%
Radiograph	\$50	\$75	55.2	69.6	80.3	1%	2%	2%
Other Diagnostic	\$50	\$75	5.3	-11.6	-10.6	0%	0%	0%
Prophylaxis (Scale and Clean)	\$80	\$120	77.4	97.7	112.6	2%	2%	3%
Topical Fluoride	\$48	\$72	16.6	21.0	24.2	0%	0%	1%
Full Dentures	\$1,000	\$1,500	15.9	20.1	-31.9	0%	0%	-1%
Partial Upper Dentures	\$500	\$750	20.2	25.5	-40.4	0%	1%	-1%
Partial Lower Dentures	\$500	\$750	11.4	14.4	-22.9	0%	0%	-1%
Other - dentures	\$150	\$225	30.5	-66.9	-61.0	1%	-1%	-1%
Extraction	\$140	\$210	36.3	45.8	52.8	1%	1%	1%
Crown and bridge	\$650	\$975	-381.8	-341.2	-311.2	-8%	-8%	-7%
Orthodontic	\$500	\$750	-49.1	-43.9	-40.0	-1%	-1%	-1%

The Social Insurance Scheme Costs are most sensitive to the assumed average fee for Composite Resin services, and Crown and Bridge services. Nevertheless, despite even a 50% variation in the fee for Crown and Bridge, i.e. a variation of \$325 per service, the percentage variation in the total Social Insurance Scheme cost is relatively smaller at 7% to 8% of total costs. An increase in Crown and Bridge fees decreases the cost of a Social Insurance Scheme, as we have assumed that these services will NOT be covered under a Social Scheme.

The above table indicates that the accuracy of our estimates can be improved if more granular data is available, but that the overall magnitude of our estimates is reasonable.

Another assumption we have made as a result of working with summarised data is the household income / age interaction on dental visiting and service utilisation behaviour. Data is available from the NDTIS by one-way factors, and we have inferred the two-way interaction from the summary tables provided in that report. Assumptions about the interaction between these two factors influence our estimates of the projected growth in demand. However, we do not believe that the high level estimates presented in this report would be materially different if more accurate data was available.

A4.3 Phase 1 Analysis - Demand Adjustments

We have estimated the potential increase in demand for dental services by assuming visits per capita to the dentist and the service volume and mix for lower income earners increases in line with that for higher income earners (refer Figure 9 and Figure 10 of the main body of this report). This Section describes our analysis.

The 2008/09 baseline estimate was adjusted to allow for the growth in demand that is assumed to occur when dental services become more affordable. We have considered two key sources of potential demand growth:

1. Growth in the proportion of people visiting the dentist.
2. Growth in the services provided and change in service mix at each dental visit

Demand may also increase due to the poorer oral health of lower socio-economic groups. At this stage we have not performed this modelling.

Growth in people visiting the dentist

We have provided for a flat increase of 11.5% per annum to reflect this increase. If this increase is provided entirely through the private sector (rather than through public dental), then this equates to a 13.6% growth in the relevant private dental expenditure.

In deriving our estimate, we reviewed three high-level approaches to estimate the growth in demand, and all three approaches point to a growth in demand ranging from 9% to 11.5%, assuming no workforce supply constraints. We have presented the 11.5% scenario in this memo.

1. 9% growth in demand – based on a comparison of dentate persons (i.e. have teeth) reporting a “perceived need” for a dental visit (68.5%) in the 2002 AIHW National Dental Telephone Interview Survey (“NDTIS”), compared to the current proportion of dentate persons that visit a dentist in a year of 62.7%;
2. 10% growth in demand – based on dental visits by individuals with private health insurance (69.2%, 2002 NDTIS), compared to the current overall level of 62.7%;
3. 11.5% growth in demand – based on dental visits per capita by age, where annual household income exceeds \$80,000 (1.45 average), compared to the current level of 1.31 (2002 NDTIS).

Note that the above figures are derived from the 2002 NDTIS – the figures quoted above exclude the age group 0 to 4 years of age, and exclude all edentulous (i.e. no teeth) adults. Additional data is unavailable for these segments, so we have extrapolated the above growth rates to these additional groups at this stage. More granular data will enable us to refine our assumptions for these segments.

Growth in the services provided and change in service mix at each dental visit

In addition to the 13.6% in increase in private dental visits allowed for above, we have also reviewed the number and type of services provided at each visit. This was achieved by analysing data **for each service type**, the average number of services provided at each dental visit, subdivided by age and gender cohorts. For Preventative, Restorative and Diagnostic dental care, we allowed for a further increase in service utilisation to reflect the fact that higher income earners receive more of these per visit than lower income earners, and once a social insurance scheme is introduced, we would anticipate that utilisation of these services would increase.

For dentures and extractions, we allowed for a further increase over the 13.6% increase in private dental visits to reflect the fact that the expected increase in visits will come from those people who have poorer oral health and are therefore more likely to require extractions or dentures – in line with utilisation of these services by others in low income bands. In the long term it would be hoped that there would be a decline in these types of services as oral health improves and the system shifts to more preventative care. However, in the short term, expenditure on these services may increase.

Summary of results

Overall, our scenarios described above result in an increase in the dental services demand in the order of 11.5% to 17%. If we assume that this is all provided through the private sector, then this would result in growth in private sector dental expenditure of some to 13.5% to 20%.

Table 18 below summarises the 2008/09 dental spend under Scheme A allowing for alternative demand growth assumptions.

Table 18: Phase 1 Analysis - Summary of Results – 2008/09, Scheme A after demand adjustment

Demand Growth Impact	Original Scheme A	Allow for Growth in proportion of people visiting dentist		Allow for Growth in proportion of people visiting dentist, and increase in services and service mix	
		Scheme A	Scheme A	Scheme A	Scheme A
		\$b	\$b	% increase	\$b
2008/09 + Demand Growth					
Public practitioners	0.8	0.8	0%	0.8	0%
Private Practitioners					
Restorative	1.7	2.0	13.6%	2.0	16%
Diagnostic	1.0	1.1	13.6%	1.1	16%
Preventative	0.7	0.8	13.6%	1.0	33%
Denture	0.5	0.6	13.6%	0.7	23%
Extractions	0.3	0.3	13.6%	0.3	19%
All Other	x	x	0%	x	0%
Private Practitioners	4.2	4.8	13.6%	5.1	20%
Scheme Cost	5.0	5.6	11.5%	5.8	17%
Increase in Scheme Cost		0.6		0.9	

So, for Scheme A, the potential increase in scheme cost, and hence total dental expenditure ranges from \$570m to \$860m. This represents 0.11% to 0.17% of the total taxable income, or 0.13% to 0.19% of total salaries and wages.

We note that these estimates assume that the price of dental services will not alter as a result of introduction of the scheme. Any significant injection of funding can lead to inflationary pressures which may lead to higher prices in the dental sector. Conversely, there is an opportunity for prices to decline, if efficiencies can be incorporated into the sector. The cost per service of services provided in the public sector is roughly half that provided in the private sector. The mix of services provided in each sector is quite different and there is strong anecdotal evidence that public dental is currently impacted by significant shortages in the workforce, so this does not necessarily indicate that public dental is priced right. Nevertheless, we note that the workforce mix is very different in public dental compared to private dental, with Dental auxiliaries – therapists, hygienists and prosthetists – comprising around half the public dental workforce compared to less than 20% of the private dental workforce.