Demand for Dental Services in Australia

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Executive summary

The purpose of this study is to examine the factors that drive the demand for dental services in Australia and to project the demand for dental services out to 2020. This allows us to bring together the earlier studies we have done on the supply of the dental workforce and the productivity of dentists with the demand projections to form a view on whether the market for dental services is likely to be in shortage or surplus by 2020.

A key phenomenon in the dental services market in Australia is that it is dominated on the providers side by private dental practices (although public dentistry does play a role) and on the financing side by individuals who provide the bulk of financing. This makes dental services very different to medical and health services where public financing plays the dominant role. During the life of the Chronic Disease Dental Scheme (CDDS) Commonwealth government funding increased markedly. However, that program ended in December 2012 and has been replaced by a significant but somewhat smaller package of interventions aimed at children, low income adults and people in rural areas.

Similar to the Australian Research Centre for Population Oral Health (ARCPOH), we have used revealed demand as the focus for our demand projections. While latent demand for dental services is generally judged to be significant (30 plus per cent of the population have difficulty accessing dental services whether for financial or location reasons), at this stage there is no robust estimate of its dimension.

The main drivers of revealed demand for dental services, especially that part financed by individuals, include population and the population structure (i.e. the ageing population), incomes, price, educational attainment, consumer expectations and new and improved dental service offerings. The extent to which the population is covered by health insurance also is important, as is the availability of and access to public dentistry.

Prior to developing our own demand projections for dental services we examined closely the demand projections prepared by ARCPOH in 2003 and 2008 out to 2010 and 2020 respectively. We also studied projections that have been made in other countries, notably the US.

We also looked at the evolution of demand for dental services in the US, Canada and the UK over the last decade and especially since the global financial crisis (GFC), which led to recessions in the three countries in 2009. Recent studies in the US show that the demand for dental services in per capita terms has fallen and is expected to take some time before growth is restored. Even then, growth rates might be lower than experienced before the GFC as households seek to keep debt levels down.

Australia’s real expenditure on dental services has been affected by two contrary forces in recent years. First, the introduction of the CDDS program in 2007 represented a very considerable injection of Commonwealth government funding into the dental market rising to over 12 per cent of financing from all sources.
That program has now terminated. While the proposed new arrangements announced in August 2012 will see considerable Commonwealth funding, this will not be at the level that applied in the final years of the CDDS.

The second factor is the marked increase in the household savings rate from 2-3 per cent in the years prior to the GFC to 10-11 per cent subsequently, which takes Australia back to savings rate that applied in the 1980s. The increased savings rate and the reduced level of private debt have acted to severely dampen consumption demand, including the demand for dental services. Expert opinion is that the household savings rate is likely to remain high for the next 5 years.

We estimate that real expenditure on dental services will grow at about 2.5 per cent per annum out to 2020. This is somewhat lower than the estimated growth rate from 2000-1 to 2010-11 (the last year for which data is available) that would have occurred in the absence of the CDDS.

There are already emerging signs that post the ending of the CDDS the supply of dentists exceeds the demand for their services. Anecdotal evidence as well as very recent surveys of the work experiences of recent graduates both point to an emerging surplus of dentists.

When our demand projections for growth in real dental expenditure are combined with our projections for dental workforce supply and productivity, if current trends continue we estimate that there will be a surplus of dentists of about 1,000 by 2020.

Our findings reflect the view that, with the number of dentists per 100,000 people in Australia projected to rise from 53.6 in 2010 to about 65 in 2020, per capita demand for dental services would need to increase strongly to avoid a surplus of dentists. Given continuing weakness in private demand and the cut back in Commonwealth government funding following the termination of the CDDS, only relatively slow growth in real per capita demand for dental services can be expected. We estimate that the underlying annual rate of growth of per capita demand for dental services has been only around one per cent since 2000.

The projected surplus, given unchanged supply side conditions, would only disappear were the Commonwealth and State governments to significantly lift funding for dental services and individuals’ expenditure were to rise at levels seen prior to the GFC.

Even without these changes on the demand side, there is likely to be a supply side response as potential dentistry students make other career choices and adjustments are made to the numbers of dentists migrating to Australia.

While a surplus of dentists might put downward pressure on dental prices which is a potential benefit to their patients, it is also likely to impose a major cost on the community as the expensive investment in dentists’ education is less than fully utilised. It also has the capacity to deter capable people from seeking to enter the profession in the future.

Our discussions with dental academics, practicing dentists and the Australian Dental Association suggests that following the ending of the CDDS there are
already strong signs that a surplus of dentists is emerging in metropolitan areas where most dentists practice. This is expressing itself in a number of ways: the great difficulty of recently graduated dentists finding places and meaningful hours of work, the relative ease of recruiting dentists to work in the public dental system, and the number of applicants applying for positions with private dental practices.

The analysis we have done points to the reality that even when the gap left by the ending of the CDDS and the coming into full operation of the measures announced in August 2012 is reduced there will remain an underlying trend towards supply growing more quickly than demand to 2020.

The supply and demand balance for the dental workforce is currently undergoing very considerable shorter-term and medium to longer-term changes. In such a situation it is prudent to up date projections more frequently than if business-as-usual prevailed. Relying on projections made in totally different circumstances a number of years ago is likely to lead to inappropriate policy responses.
CHAPTER 1

Objectives

1.1 Scope of the study

The purpose of this project, which is a companion study to the previous ones we have conducted on the dental workforce to 2020 and the productivity of dentists, is to analyse the drivers of the demand for dental services and to formulate a view about the likely future evolution of demand out to 2020.

While demand for dental services is fundamentally concerned with need, the part of need we are concerned with is that which is realised in the market. This is often referred to as revealed demand (or reported usage) in comparison to latent demand (which is represented by occasions in which people may want dental care but have been unable to obtain it). There is also a cohort who will never go to the dentist regardless of funding.

Some studies of demand seek to distinguish between dental services which are focused on improving oral health and dental services which are designed to improve the appearance of individuals (so-called cosmetic dentistry). In practice, making this distinction is extremely difficult. Accordingly, in this study we have included all forms of dental services. This seems to have the approach adopted by the Australian Research Centre for Population Oral Health (ARCPOH) the agency that has produced projections for supply and demand for dental services in Australia.

ARCPOH in making its demand projections has essentially sought to project future demand for dental visits and dental services based on a projection model encompassing population, ageing population and whether individuals are dentate or edentulous. Their demand projections are essentially an outcome of population projections and projections of per capita demand.

We have taken the ARCPOH projections as a starting point but have also developed our own set of demand projections. In many ways these are based on a similar approach to those of ARCPOH but evaluate the evolution of real expenditure on dental services since the turn of the century. Our estimates are also able to take account of more recent developments since the GFC. Like ARCPOH, we have taken 2020 as the end point for our set of projections for demand for dental services.

The dental market in Australia, unlike the market for health services more generally, is dominated in terms of financing by private expenditure and private health insurance. Between 2007 and 2012 the Medicare Chronic Disease Dental Scheme (CDDS) became a significant source of financing, and while its replacement programs will have an impact, especially the increased services for children, these are less relatively important than is the case with other medical services. At the same time, public dental services do exist in the States.
Nevertheless, overall dental services are overwhelmingly provided by private dental practices and funded by individuals. This is shown in Exhibit 1.1 below, although it should be noted that Commonwealth expenditure on dental services at this time was inflated by the CDDS, which would terminate around two years after the year to which the data in the chart refer.

**EXHIBIT 1.1: EXPENDITURE ON DENTAL SERVICES BY SOURCE, 2009-10**

![Pie chart showing expenditure on dental services by source for 2009-10](chart.png)


Total expenditure on dental services in Australia in 2010-11 was $7.9 billion, up marginally from the $7.7 billion in 2009-10. In terms of real growth in dental expenditure over the last two decades, it looks like there have been at least three distinct periods. From 1994-95 to 2004-05 real growth in dental expenditure averaged 3.7 per cent per annum. From 2004-05 to 2006-07 real growth in dental expenditure fell below 2 per cent per annum.

Under the impetus of the CDDS program, introduced in 2007, real growth in dental expenditure rose at around 3.5 per cent, similar to the rates seen in the period 1994-95 to 2004-05. The CDDS program was terminated at the end of 2012 and replaced by a $4 billion program over 6 years starting in 2013 for children and 2014 for adults. This represents a significantly scaled back commitment of Commonwealth funds compared to the CDDS in its final years when it was costing around $1 billion per annum.

It should be noted, however, that in some senses the CDDS introduced a distortion onto the market for dental services in terms of longer-term trends in demand. While there may have been some substitution in terms of dental expenditure that would have occurred anyway being funded by the CDDS, anecdotal evidence suggests this effect was relatively minor. One effect of the CDDS may have been to send signals to the market that expenditure on dental
services was growing at a higher rate that would, in fact, eventuate. In principle, this could lead to an over-supply of dentists.

To obtain an international perspective we have also looked at the dental markets and the evolution of dental demand in three other OECD countries, namely, the US, Canada and the UK. In all three countries dental services are in the main provided by privately-owned dental practices but unlike Australia, the US and Canada the government through the NHS plays a significant role in the UK in terms of financing dental services.

The three comparator countries all showed relatively strong real growth in demand for dental services in the 1990s and the early 2000s (and also in per capita demand). However, they showed either a decline in real terms of private expenditure on dental services in 2009 and 2010 or a very low rate of growth. But according to some observers signs of a slowdown in previous growth rates were already present somewhat earlier in the decade.

Looking ahead to 2020, part of the challenge with this study is to distinguish between the essentially cyclical effects on discretionary dental expenditure brought about by the Global Financial Crisis (referred to as the Great Recession in North America and Europe) and its aftermath as households have sought to lift savings to restore their balance sheets and more structural effects underlying the evolution of demand for dental services.

Some of the more notable structural effects on the side of consumers of dental services include changing consumer expectations. This has been exemplified over time by a strong movement away from removing teeth and replacing them with dentures or partial dentures in favour of implants, crowns and bridges and restorative interventions. Consumers of dental services have also placed a higher priority than in the past on aspects of appearance.

According to international studies made by the OECD oral health measured by DMFT (diseased, missing and filled teeth) index has tended to improve in virtually all OECD countries for children. At the other end of the age scale, there has been a marked reduction in the rate of edentulous people. The National Advisory Council on Dental Health (2012) found that: “Over the last two decades, clinical practice in oral health, home care and fluoridation has led to significant improvements in oral health.” It is an interesting question whether, as oral health rises past a certain point and no major changes are made in the coverage of publicly funded dental services, there will be a tendency for expenditure on dental services to decline.

### 1.2 Sources of information

As far as Australia is concerned, we have drawn on the data on health expenditure presented in the annual Health Expenditure series prepared by the AIHW. This has been supplemented by data from the Dental Practices Surveys conducted by the ADA and a series of reports prepared by ARCPOH on aspects of the Australian oral health situation and projections of the supply and demand for dental services.
We have used comparable studies for the US, Canada and the UK to see how dental expenditure in those countries has changed over time. We have also drawn on a range of published studies including those undertaken by academic researchers and the dental association.

We have benefited from interviews with Australian dentists and dental school academics.

1.3 Structure of the report

Our report is structured as follows:

- The market for dental services in Australia is discussed in Chapter 2, as well as the relative importance of private and public financing/provision and changes over time in the balance between traditional dentistry and what has come to be called cosmetic dentistry.

- Chapter 3 includes a discussion of previous demand studies and projections undertaken both in Australia and Internationally

- Factors that influence the demand for dental services are analysed in Chapter 4

- In Chapter 5 we present our findings on the immediate past growth in demand for dental services and our projections of likely future growth

- The conclusions and implications of our analysis for the overall supply-demand balance for the dental workforce are set out in Chapter 6.
CHAPTER 2

Market for dental services

2.1 Market structure

The market structure for dental services is characterised by two main features. First, the great bulk of dental services are provided by privately owned dental practices comprising one or a small number of dentists. While larger group practices and more recently commercial practices have emerged, the dominant model remains the small privately owned dental practice.

Public sector dental services providers exist in all the States and Territories of Australia but they tend to account for only about one-tenth of the services provided. They are, however, important in terms of the provision of dental services to lower income and other disadvantaged groups.

The second feature is that the main source of funding for dental services comes from individuals. Taken together with funding from private health insurance, private expenditure accounts for about 80 per cent of total funding of dental services. Both the Commonwealth and State/Territory governments also provide funding for dental services with the share provided by the Commonwealth government rising strongly during the life of the CDDS program. CDDS terminated on 1 December 2012, however, and was replaced by a less expensive albeit significant package of Commonwealth government expenditure measures.

In Australia about 53 per cent of the population is covered, either fully or partially, by private health insurance for dental services.

As we discuss in the Chapter 3, Australia is in a broadly similar situation to the US and Canada in terms of the reliance on private provision and financing of dental services. The UK is the outlier in terms of financing of dental services, with over half being funded by the National Health Service (NHS). Since contracts to provide NHS supported dental services are held by private dental practices, however, the UK also relies on the private dentist practice model. Indeed, about one-quarter of dental practices in the UK deal entirely with private patients.

2.2 Revealed demand

The demand for dental services reflects a mixture of need and the capacity of the population to pay for required dental services. The outcome, which is measured by dental expenditure statistics, is often referred to as revealed or effective demand, which can be observed directly.

In countries like Australia, Canada and the US, where the primary emphasis is placed upon individual financial responsibility to pay for dental services, wide differences have been observed, especially in the US, between the revealed demand for dental services expressed by high income people in comparison to
lower income people and other disadvantaged people. This suggests that there is a considerable latent demand for dental services which would express itself if there were financing available.

The actual dimension of the latent demand for dental services is a matter of conjecture. However, it could be considerable given waiting lists for public dental services and the finding that 1 in 3 Australians delay or go without dental treatment because they do not consider it a priority within their budgets. The $4 billion package announced in August 2012 sets a possible lower bound to latent demand in Australia. At this stage, no-one has undertaken the sort of studies that would be needed to develop an authoritative estimate of latent demand.

ARCPOH in their projections of the supply and demand for dental services in Australia have also taken revealed demand as their measure of demand. Overseas studies of the demand for dental services have adopted a similar approach.

A consequence of this approach is that as a significant part of the demand for dental services is discretionary it can be expected that in times of slow economic growth or even recession individuals will tend to cut back on dental services. This pattern tends to be observed in Australia and all the comparator countries.

2.3 Nature of demand

Looking at dentistry over the longer term, its origins were very much in the elimination of oral pain. Aesthetic considerations were secondary until comparatively recent times. It was not uncommon even in the 1960s for adults to have all their teeth removed and relaced by full dentures.

But generally speaking, in the second half of the 20th Century there was a gradual change in the nature of dentistry towards conservative tooth restoration and some prevention of disease. It became the exception rather than the rule for adults to be edentulous. One of the most notable improvements in oral health that has occurred throughout the developed world is the marked reduction in the share of people without any teeth. The share of the edentulous in the total population has declined from 14.4 per cent in 1987-88 to over 10 per cent in 1989 to 6.4 per cent in 2004-05. The share is projected to fall to 2.7 to 3.1 per cent by 2021 and 0.4 to 1.0 per cent by 2041. Not surprisingly, dentate people demand significantly more dental services than do the edentulous.

Available data suggest that dental health in the Australian community has improved significantly over the years. Survey data in this area tend to be episodic, but the survey conducted by ARCPOH for the Australian Institute of Health and Welfare in 2007 suggest a significant improvement in dental health occurred in Australia between 1987-88 and 2004-06 (Exhibit 2.1). The improvement was observed in every age bracket, except the 15-24 age group. There was a considerable decline in the number of decayed teeth observed in every age group, as well as in the number of missing teeth in every age group except the youngest one. There was a decline in the number of filled teeth in the younger age groups but this then reversed in middle age; thereafter there was an increase in the number of filled teeth between the late 1980s and the early years of the twenty-first century. This may well relate to the introduction of fluoridation.
EXHIBIT 2.1: TRENDS IN DENTAL HEALTH IN DENTATE AUSTRALIANS, 
BY AGE GROUP, 1987-88 TO 2004-06

As the share of adults, especially older adults, with 21 or more teeth increased so did their per capita expenditure on dental services. This is associated with the need for restoration work associated with earlier fillings and other previous dental interventions needing to be updated.

In the 1960s the focus in the US and increasingly elsewhere was on aesthetics as porcelain-fused-to-metal crowns were developed and resin-based composite replaced silicate cement in anterior directly placed restorations. Throughout the 1970s, 1980s and 1990s, root-form dental implants were developed. Individuals were not only demanding to have oral disease treated but also to have their appearance improved.

In view of the amounts being invested in dental research and the development of new techniques and materials, there is a complex interaction between increasing consumer expectations and the ability of the dental profession to provide new in-demand services.

2.4 Trends in demand

The revealed demand for dental services increased strongly through the 1990s and into the first decade on the 20th Century. The AIHW report *Health Expenditure Australia 2003-04* showed that expenditure on dental services in Australia rose from $1.9 billion in 1994-95 to $5.1 billion in 2004-05. As a share of total health expenditure, dental expenditure grew from 4.95 per cent to 5.99 per cent in the same period. The real growth in in recurrent expenditure on dental services was about 3.7 per cent per annum.

The biggest single contributor to the growth in dental expenditure came from individuals whose share of expenditure rose from 59.9 per cent in the mid 1990s to 69.3 per cent in the mid 2000s.

Over the same period per capita expenditure on dental services rose relatively strongly. Demand for increased dental services were in a sweet spot with increasing population, an ageing population, a rising rate of dentate people and increasing per capita expenditure.

The rate of growth in real per capita expenditure on dental services remained positive after the mid 2000s but fell by about half compared to the growth rates achieved between the mid 1990s and the mid 2000s to be under 2 per cent per annum.

It has only been in the recent years heavily influenced by the injection of Commonwealth government financing coming from the CDDS program that real growth in dental expenditure rose more strongly. But even so, in 2010-11 total dental expenditure rose marginally as the decline in expenditure by individuals offset to a degree the impetus coming from the CDDS program.

As we shall demonstrate in the following chapter, the economic recession in North America and the UK following the GFC has brought about a distinctly softer market for dental services as individuals defer dental treatment and/or look for cheaper options. The question looking out to 2020 is whether the cyclical factors associated with the GFC and its aftermath will continue to exert a downward pressure on future demand for dental services or whether structural factors are in play which will tend to move the growth of dental expenditure back to the levels reached immediately prior to the GFC.
CHAPTER 3

Previous demand studies

3.1 Australian studies

The main studies of demand for dental services and projections of likely future demand have been made by ARCPOH. Significant projections of dental demand were made by them in 2003 (ARCPOH 2003(ii)) and 2008 (ARCPOH 2008(iii)). The 2003 study projected demand for dental services to 2010, while the 2008 study projected demand for dental services to 2020.

The projection model used essentially has three main elements:

- Population
- The share of the population that is dentate and edentulous
- Per capita dental demand for dentate and edentulous people.

Projections are made of the demand for visits and services provided per visit. These are combined to yield projections of the demand for dental services.

The projections at the main stages in terms of projecting visits and services per visit incorporate three scenarios:

- Scenario 1 is based on the linear trend in per capita rate of visits being the same as it was in the period 1979 to 1995.
- Scenario 2 is based on the linear trend in per capita rate of visits being 50 per cent of the linear trend in the period 1979 to 1995.
- Scenario 3 is based on no growth in per capita rate of visits.

ARCPOH’s preferred projections are based on Scenario 2. This reflects their judgement that the structural factors which drove higher per capita demand for dental services between 1979 to 1995 are unlikely to be as strong in the period over which the projections have been made.

Over the period from 1979 to 1995 dental visits per person per year increased among dentate and edentulous persons by approximately 50 per cent.

ARCPOH nominates the following factors as being behind the increasing per capita demand:

- Macro-economic factors such as community affluence, as reflected in growth in GDP.
- Social factors like increasing educational attainment.
- Consumer expectations about health and health services, including oral health and dental services.
• Science and technology and their impact through the broadening of
diagnostic tests and clinical interventions in health and dental services.

• Interactions between supply and demand.

The outcome was an increasing desire for a broader range of increasingly
efficacious dental services. However, ARCPOH did not seek to identify the role of
any of these factors in the change in per capita demand from 1979 to 1995.
Against that background, they decided for the purpose of making projections that
to assume no growth in per capita demand would be too conservative and to
assume the continuation of the earlier period linear trend in per capita demand
would be too optimistic. They settled on the mid point 50 per cent rate of the past
linear trend in per capita demand between 1979 and 1995 as their preferred
projection element.

In their 2003 projections based on their favoured midpoint scenario, ARCPOH
projected that the total demand for dental services (defined as visits multiplied by
services provided per visit) would increase from 47.89 million in 1995 to 73.88
million in 2010. This represents an annual rate of growth of about 3.5 per cent per
annum. It can be interpreted as a proxy for the growth of real expenditure in
dental services over the same period.

ARCPOH updated its 2003 projections in its 2008 report and extended its
projections to 2020. They essentially used the same projection methodology that
they had employed in the 2003 study. Projections of dental demand to 2020 were
presented against the actual outcome for 2005.

Based on their favoured 50 per cent of past linear trend in visits and services per
visit ARCPOH projected that the total demand for dental services would rise from
65.52 million in 2005 to 94.62 million in 2020. This represents an annual rate of
growth of about 3.0 per cent.

It is interesting that ARCPOH’s two projections are marked by a slowdown in the
projected rate of growth in demand for dental services using their measure
between the 2003 and 2008 projections.

Major developments affecting the current and future demand for dental services
since the time when the 2008 projections were made include:

• the major boost to revealed demand provided by the CDDS program
  terminated in December 2012

• the package of measures announced by the Commonwealth government in
  August 2012, of which major elements have yet to come into operation

• the softness in the willingness of individuals to purchase dental services
  post the GFC associated with the marked move to a higher household
  savings rate.
3.2 International studies

**United States**

The two sets of studies for the US which we have examined are ones undertaken this year by the Health Policy Resources Center at the American Dental Association (2013(i) and 2013(ii)) and a study of the supply and demand for dental services in Wisconsin, 2010-2020, by Beazoglou et al (2010).

The earlier study for Wisconsin, a state with a population of about 6 million people, carried out a projection approach to estimate the total demand for dental services (defined as expenditure on dental services) over the period 2010 to 2020.

In essence the projection model consists of two elements: a projection of population and a projection of demand per capita. The projection of demand per capita represents the continuation of demand per capita from an immediately prior period.

Using this comparatively simple approach, Beazoglou et al (2010) estimate that total demand for dental services will increase by 44 per cent over the ten year period, which represents growth of about 4 per cent per annum.

Most of this growth is accounted for by the growth in demand per capita, which is projected to grow by about 3.5 per cent per annum. In the light of developments in the US in recent years, this projection now looks to be on the high side.

The March 2013 Research Brief prepared by the Health Policy Research Center of the American Dental Association shows that while national dental expenditure in inflation adjusted terms has been rising (it fell slightly in 2009) it has been doing so at a slowing rate that became apparent in the early 2000s. The slowdown in dental expenditure in the US is more marked when looking at inflation-adjusted per capita dental expenditure. Between 1990 and 2002 inflation-adjusted per capita dental expenditure was growing at 3.9 per cent per annum. However, in the 2002-2008 period the per capita dental expenditure growth rate declined dramatically to 1.8 per cent per annum. Since 2008, inflation-adjusted dental expenditure per capita has declined, albeit at a very slow rate of 0.3 per cent per annum.

In the US, a key trend since 2000 is an increase in the share of dental expenditure financed by public sources (from 4 per cent in 2000 to 8 per cent in 2011) and a decrease in out-of-pocket spending. However, dental expenditure remains mainly financed by out-of-pocket spending and private dental insurance.

The reasons underlying these observed changes include lower levels of utilization by adults as discretionary incomes are squeezed, the shifting balance of dental services provided to children and adults in favour of children who consume less costly dental care than adults and, for most segments of the population, an improvement in oral health, which could be contributing to a shift in services mix away from more costly restorative procedures towards less costly preventative and diagnostic services. The latter point is important but needs further research in order to be confident this is occurring on a significant scale.
Canada


In many fields Canada tends to be a good comparator for Australia. The countries have similar economies, levels of real income, education and approaches to public policy. While Canada arguably has a more continental European approach to health more generally, like Australia financing for dental services is essentially driven by private expenditure and funding coming from private health insurance.

There is in fact a smaller role played by public funding in the Canadian dental system than in Australia. Public funding accounts for well under 10 per cent of total funding. Like Australia, Canada focusses public funding on targeted disadvantaged groups.

About 62 per cent of Canadians have private dental insurance. Funding from private dental insurance constitutes 55 per cent of total dental expenditure compared to 45 per cent for out of pocket dental expenditures.

In 2009 dental expenditure in Canada was $12.6 billion, of which $12 billion came from private sources and $600 million from public sources. Per capita expenditure on dental services was $380 in 2009. Unlike Australia but like the US, there was a significant recession in 2009 and GDP in Canada fell by 2.5 per cent.

According to data presented by R K House & Associates (2012), real per capita expenditure on dental services which had risen in index terms from 96 in 2004 to 132 in 2009 fell to 122 in 2010 and 2011 and in 2012 again looked weak.

This reflects the same sort of development that has been at work in the US following the 2009 recession. Looking out over the coming decade, R K House & Associates (2012) take the view that as real per capita disposable incomes are likely to grow relatively more slowly in Canada than before the recession, the per capita demand for dental services in real terms is likely to remain at levels seen post 2009. (They also propose that the per capita demand by higher income Canadians may be near saturation and lower income people will be cash constrained.) Offsetting this, the Canadian population is expected to grow which will probably mean that total expenditure on dental services will also grow but at a slow rate compared to pre 2009 rates.

RK House & Associates envisage a tightening market for dentistry with weak demand unable to keep pace with the robust expansion of supply.

While the R K House & Associates (2012) study looks essentially to have projected the weaker dental demand conditions post the recession to operate for the rest of the decade and therefore may have erred on the conservative side even allowing for a rise in interest rates as the economy improves, they do seem to be reflecting a view in the Canadian dental profession that a return to the solid growth in demand seen from 2004-2009 is unlikely any time soon.
**United Kingdom**


Unlike Australia, the US and Canada, the public health system (NHS) plays a very significant role in the UK in terms of funding dental services. In terms of the provision of services, however, the dominant provider is private dental practices.

In 2009-10 expenditure on dental services was £7.2 billion with £5.7 billion being needs-based dental services and £1.5 billion being cosmetic dentistry. In terms of the non-cosmetic element, the NHS provided £3.3 billion and private individuals £2.4 billion. Since 2000 expenditure by private individuals has grown more strongly than financing under the NHS dental scheme.

Dental expenditure was growing in the UK by about 4 per cent per annum between 2000-01 to 2007-08, but the growth rate fell to 1-2 per cent in 2008-09 and 2009-10. In the latter two years, private demand for dental services fell by 3-4 per cent.

As noted by the Office Of Fair Trading (2012) in their report, rising disposable incomes, increased cosmetic consciousness, greater access to dental insurance plans and dental maintenance plans, as well as increasing government funding for NHS dental services have been some of the factors driving growth in the UK dentistry market.

Like the US and Canada, the UK economy was in recession in 2009 and has only recently started to show positive growth. Given the deep seated nature of the economic challenges facing Europe and the UK, it seems likely that disposable incomes will rise less quickly than in the past decade and that the demand for dental services will reflect this. Real growth in the range 1-2 per cent per annum might become more the norm than the 4 per cent experienced from 2000-01 to 2007-08.

### 3.3 Implications

The demand projections made by ARCPOH in 2008 were calculated before the termination of the CDDS program and before impact of the economic uncertainty that emerged as a consequence of the GFC had expressed itself in changed household savings behaviour and attitude towards debt. Most notably in Australia, where the economy managed to avoid recession, households have nevertheless been very conscious of the need to reduce debt and have lifted the savings rate from about 2 to 10 per cent, which is back to levels not seen since the 1980s. This has had an impact on the amount of disposable income available for purposes such as purchasing dental services. Senior figures in banking and business economics are predicting that household savings rates are likely to remain high for some time. This is at a time when the increases in household incomes as a result of the terms of trade gains from the minerals boom are coming to an end.
Similar patterns have been observed in the US, Canada and the UK, which all experienced recession in 2009. It is clear that in the three comparator countries real per capita dental expenditures have fallen somewhat and have not yet reached pre-recession levels. While this can be expected to change as economic growth returns to something more like normal long term levels, it is unlikely looking to 2020 that the rates of growth seen from the mid 1990s to the mid 2000s will return quickly. We return to this question in Chapter 5. Before doing so, in Chapter 4 we review the main factors that have been identified as driving dental demand.
CHAPTER 4
Factors affecting demand

4.1 Theoretical framework

Economists see the demand for products and services being a function of a number of socio-economic variables. A common approach is to estimate a demand function/curve for a particular product/service at a particular point in time by expressing the quantity demanded as a function of the price the product/services is offered. Products/services are thought of as being price elastic or inelastic depending upon the response of demand to changes in price. If the elasticity of demand exceeds unity, demand will increase more than proportionately to a drop in price. If the elasticity of demand is less than unity, demand will increase less than proportionately to a drop in price.

When a view is needed of the change in demand over time and especially as incomes rise, economists then focus on the relationship between incomes and quantity demanded. Products/services are said to have an income elasticity of greater than unity when demand increases more than proportionately to a rise in incomes.

Demand studies for dental services undertaken by economists tend to show that demand is relatively price inelastic for given levels of income (and other factors) but relatively income elastic over time.

Demand for products/services over time depend on a number of factors including:

- Population level and structure by age
- Income, which generally means disposable income/capacity to pay
- Price, both absolutely and relative to other products/services
- Education attainment
- Consumer expectations
- Innovation.

We look at each of these factors in relation to the demand for dental services over time.

4.2 Population: level and structure

Population is an important driver of demand for dental services over time. Generally speaking, it can be expected that the demand for dental services will increase as the population increases. Depending upon whether the main source of population growth is from births or immigration the effect on increasing demand
will be greater or lesser in the shorter term as adults tend to have a greater need for dental services than young children.

Perhaps even more important than population growth is the changing structure of the population with respect to different age groups. In Australia and indeed most developed countries the tendency has been for life expectation to lengthen and hence a tendency for the population to age. To the extent that older people retain most of their own teeth their need for dental services tends to increase through time as they have considerable restorative dental needs.

Over time the proportion of the adult population that is dentate has increased. Edentulous people now occupy a much smaller share of the population at any age group than they did in the past. ARCPOH in their demand projections make specific allowance for dentate and edentulous people and their very different per capita demands for dental services.

### 4.3 Income

In countries like Australia where individuals are primarily responsible for financing the purchase of dental services (both in terms of out-of-pocket expenses and claims met by private health insurance) the development in household disposable incomes and the part of it which is spent rather than saved is a key factor in determining the revealed demand for dental services. Over time real disposable incomes in Australia have been rising.

While Australia avoided the recession associated with the GFC (which was not the case in the US, Canada and the UK), households have reacted to the associated economic uncertainty by increasing their savings rate and paying down debt. This has had the consequence of reducing demand for goods and services of all kinds, dental services included.

The savings rate by households in Australia has risen from about 2-3 per cent immediately prior to the GFC to about 10-11 per cent. Unlike in the case of the three comparator countries where household savings rates have tended to revert at least some way back to pre GFC levels, in Australia’s case they have remained high. Senior bankers such as Graham Bradley, Australian Chair of HSBC quoted in *The Australian* (25 March 2013), and business economists such as Saul Eslake (2011) and Don Stammer (2012) are suggesting that we are facing a “new normal” higher savings norm in Australia which could last for another 5 years as households rebuild their balance sheets.

The distribution of income also potentially plays an important role in the demand for dental services. Lower income families tend to be less likely to take out private health insurance and to have lower per capita demand for dental services reflected in lower numbers of visits to dentists and less costly interventions. People with private insurance are 1.5 times more likely to have visited a dentist in the last year than those without. The gap between the demand patterns of high and low income families in the US is particularly wide. However, it is also significant in Australia and Canada.

In Australia, like the US and Canada, public programs are targeted on supporting dental care for children and disadvantaged adults. The reality is that the public
programs tend to constitute a relatively small part of the market for dental services, although towards the end of its life the CDDS program became a significant source of funding. Its replacement, while important for children and other disadvantaged groups, is not expected to be as expensive as the CDDS, which in its final year was running at close to $1 billion per annum.

### 4.4 Price

Like health and medical services, there has been a tendency for dental services to increase in price over time by a rate in excess of the CPI. By and large many goods consumed in the economy are subject to import competition, but this tends not to apply to services which must be provided in close proximity to the consumers. There is starting to be some dental tourism especially for the more expensive cosmetic interventions but that is relatively small at this stage.

For much of the 2000s in Australia the rate of increase in the price of dental services has been less than that for other health services. This relationship seems likely to continue for the foreseeable future.

Taking a longer view, a significant feature of dental services is that cheaper dental services such as teeth extraction, dentures and fillings are being replaced, for higher income patients at least, by more expensive procedures such as implants, bridges, crowns and veneers.

At a time of pressure on household incomes, such as during and in the aftermath of the GFC, as well as deferring dental treatment some consumers have been opting for less costly interventions. Some observers have also noted in the US a trend by dentistry to prevention and conservative therapy.

### 4.5 Education

While the level of educational attainment tends to be closely related to income levels, studies tend to show that the better educated are more likely to visit a dentist regularly, to brush and floss their teeth and to obtain dental services. Rising levels of oral health in OECD countries almost certainly owes something to rising education levels.

Improving community knowledge about dental decay and proper preventative actions are generally considered to be cost-effective measures.

### 4.6 Consumer expectations

Rising consumer expectations about dental services has been an important driver of increasing demand since the middle of the last century. At a certain point consumers turned away from teeth extraction and the wearing of dentures in favour of dental treatment. Later in the last century came a focus on aesthetics. Dental demand is no longer primarily pain driven except for disadvantaged groups in society who lack the disposable income to pay for regular visits and treatments.

In most major market areas whether they be product or services markets there is a consumer expectation of innovation. To the extent that new and better
products/procedures are available, consumers will be attracted to them if they can afford them. Where innovation starts to slow, growth in consumer demand also tends to slow.

4.7 Dental Innovation

Since the 1950s and 1960s, a great deal of R&D and investment has been made by dental research schools and dental product suppliers into developing new procedures and products. These have radically altered the product/service offering to consumers.

Over time in many areas, unless there is continuous innovation, markets tend to reach saturation point and demand growth slows. In dentistry, there is no sign that the drive to innovation by equipment and product suppliers is running out. The same goes for researchers working on dental procedures and treatment philosophies.

Changes in treatment philosophies by the dental profession have had a major impact in the past and can be expected to do so in the future. To the extent that they tend to place greater emphasis on prevention and less intensive treatment strategies, there could be a tendency for the revealed demand for dental services to slow down.
CHAPTER 5

Insight Economics demand analysis

5.1 Background to the projections

The objective of this study is to project the demand for dental services in Australia to 2020. This is important to ensuring that the future supply of dentists, from Australian universities and overseas, is sufficient to satisfy likely future demand.

As may be seen from Exhibit 5.1, aggregate dental expenditure had been growing relatively slowly from 2001 to 2007 when it picked up under the influence of the Medicare Chronic Disease Dental Scheme (CDDS). The compound annual growth rate (CAGR) between 2000-01 and 2010-11 was 3.5 per cent, or about the same as the growth rate for the Australian economy as a whole. Yet between 2007 and 2012 when demand growth picked up this reflected the impact of the CDDS. The effects of this may be observed in Exhibit 5.1. If the expenditure associated with the CDDS is removed, the underlying rate of growth in demand for dental services was only around 2.5 per cent a year in the decade to 2010-11. This is a relatively low rate of growth. Once population growth is taken into account, the increase in real expenditure on dental services per capita was only modest over this period.

EXHIBIT 5.1: EXPENDITURE ON DENTAL SERVICES, AUSTRALIA, 2000-2011 ($MILLION, CONSTANT 2010-11 PRICES)


5.2 Our approach

Initially, we examined the possibility of applying regression analysis first in order to explain changes in demand for dentists over time in terms of changes in other factors and then to estimate future demand by projecting those explanatory
factors forward. Ultimately, however, and in line with other studies both in Australia and overseas, we settled on a more practical approach to making demand projections and one that we believe will provide more robust results.

As discussed above, the demand for any good or service is determined by factors that include:

- The size of the population and its structure
- The level of income
- The price of the good or service relative to substitute products

In a regression analysis, the dependant variable would be total expenditure on dental services, while the independent variables would be some measure of the three factors identified above. There are three difficulties here.

First of all is the problem of specifying the independent variables. While population is easily specified, it is likely to be highly correlated itself with any income measures, which also increase over time. This causes a severe difficulty in separating out the influences of the two variables (the technical terms for this is multicollinearity). There is also a problem in specifying the relative price variable. There are no obvious substitutes for dental care; a person suffering from a toothache is unlikely to weigh up the relative cost of having it treated or taking a weekend’s holiday instead. Certainly, it would be possible to relate the costs of dental care to the CPI over time, but the consequent regression results may be difficult to interpret when it comes to price.

Secondly, as suggested above, the dental expenditure figures are heavily influenced by government programs, such as the CDDS and Teen Dental, that are episodic in their influence and therefore difficult to predict in future. While in principle these could be accounted for in regression analysis, the means of doing so would both be imperfect (such as using a blunt instrument like dummy variables) and also introduce another degree of uncertainty when it came to projecting the variables forward into the future.

The third problem with using regression analysis relates to its doubtful value in making projections. In order to use the best fitting equation to project the value of the dependant variable (expenditure on dental services) over time, it is necessary to project forward the value of each of the independent variables. This is generally done on the basis of past trends. The problem here is that a greater degree of error is likely to enter into the projection of expenditure on dental services if it is necessary to project three or more variables forward in time than in focussing on the single variable that we are seeking to project.

We therefore came to the conclusion that a better way forward would be to examine the trends in expenditure on dental services in the recent past, that is, since the turn of the century, and evaluate whether any clear patterns have emerged. Then we would seek to build on any such patterns to make the forward projections. The data that were used are described in Section 5.3 below.
5.3 Data series and methodology

The main data series relating to dental expenditure and used as a basis for the projections are presented in Exhibit 5.2.1

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Dental Expenditure at Current Prices</th>
<th>C'wealth Gov't Funding</th>
<th>C'wealth Gov't Funding Less DVA* Expenditure</th>
<th>Private Dental Expt, Current Prices</th>
<th>Total Dental Expt, (2010-11 Prices)</th>
<th>Private Dental Expenditure (2010-11 Prices)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>3,461</td>
<td>3,461</td>
<td>5,570</td>
<td>5,570</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001-02</td>
<td>4,023</td>
<td>4,023</td>
<td>6,295</td>
<td>6,295</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002-03</td>
<td>4,316</td>
<td>4,316</td>
<td>5,851</td>
<td>5,851</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003-04</td>
<td>4,663</td>
<td>4,663</td>
<td>6,064</td>
<td>6,064</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004-05</td>
<td>5,090</td>
<td>5,090</td>
<td>6,220</td>
<td>6,220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005-06</td>
<td>5,375</td>
<td>5,375</td>
<td>6,312</td>
<td>6,312</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006-07</td>
<td>5,749</td>
<td>5,749</td>
<td>6,397</td>
<td>6,397</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007-08</td>
<td>6,106</td>
<td>6,106</td>
<td>6,531</td>
<td>6,531</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008-09</td>
<td>6,790</td>
<td>6,790</td>
<td>7,033</td>
<td>7,033</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009-10</td>
<td>7,688</td>
<td>7,688</td>
<td>7,757</td>
<td>7,757</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010-11</td>
<td>7,857</td>
<td>7,857</td>
<td>7,857</td>
<td>7,857</td>
<td>3.50</td>
<td>2.51</td>
</tr>
</tbody>
</table>

*CVA = Department of Veterans Affairs.

Source: AIHW (2012) and Insight Economics estimates.

The last two columns in Exhibit 5.2 show respectively aggregate dental expenditure in real terms (at 2010-11 prices) and the adjusted figures once the effects of the CDDS and the Medicare Teen Dental program are removed. In estimating the numbers in the final column, we have attempted to identify the underlying rate of growth in dental expenditure by adjusting the demand data series to account for the effects of the CDDS from 2007-08 and the Teen Dental program from 2008-09. This involves removing from the Commonwealth government expenditure data the ongoing spending on dental care by the Department of Veterans Affairs, running at just over $100 million annually.

In seeking then to remove the spending associated with the CDDS and Teen Dental from the data series we also need to account for the effects of some substitution — that is, that some patients may have paid for dental treatment anyway, in the absence of the government program. There is no hard evidence as to the extent of such substitution and therefore an assumption needs to be made. Discussions with dental authorities suggested that the degree of substitution was not high, that is that the expenditure under the CDDS overwhelmingly represented ‘new money’. We have therefore proposed that 10 per cent of the funding under the CDDS and Teen Dental represented substitution and estimated the adjusted real expenditure series on that basis.

Some support for the validity of this approach is provided by the data in Exhibit 5.3 below. It can be seen that until the introduction of the CDDS in 2007-08, the rate of growth of per capita expenditure in real terms was extremely low, to the extent that per capita expenditure remained virtually static until 2008-09, when the effects of the CDDS were first registered. The adjusted data in the last column, based on our formula for removing the effects of the CDDS, appear to justify the estimate we have used to account for substitution and provide a reasonable estimate of the growth in underlying dental expenditure.

### Exhibit 5.3: Per Capita Expenditure on Dental Services, 2000-2011,

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Dental Expenditure ($m, 2010-11 Prices)</th>
<th>Private Dental Expenditure ($m, 2010-11 Prices)</th>
<th>Population, Australia, December</th>
<th>Total Per Capita Dental Expenditure ($, 2010-11 Prices)</th>
<th>Private Dental Expenditure, 2010-11 Prices, Adjusted ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>5,570</td>
<td>5,570</td>
<td>19,141,036</td>
<td>291</td>
<td>291</td>
</tr>
<tr>
<td>2001-02</td>
<td>6,295</td>
<td>6,295</td>
<td>19,386,461</td>
<td>324</td>
<td>324</td>
</tr>
<tr>
<td>2002-03</td>
<td>5,851</td>
<td>5,851</td>
<td>19,605,441</td>
<td>298</td>
<td>298</td>
</tr>
<tr>
<td>2003-04</td>
<td>6,064</td>
<td>6,064</td>
<td>19,827,155</td>
<td>306</td>
<td>306</td>
</tr>
<tr>
<td>2004-05</td>
<td>6,220</td>
<td>6,220</td>
<td>20,046,003</td>
<td>310</td>
<td>310</td>
</tr>
<tr>
<td>2005-06</td>
<td>6,312</td>
<td>6,312</td>
<td>20,311,543</td>
<td>311</td>
<td>311</td>
</tr>
<tr>
<td>2006-07</td>
<td>6,397</td>
<td>6,397</td>
<td>20,627,547</td>
<td>310</td>
<td>310</td>
</tr>
<tr>
<td>2007-08</td>
<td>6,531</td>
<td>6,509</td>
<td>21,016,121</td>
<td>311</td>
<td>311</td>
</tr>
<tr>
<td>2008-09</td>
<td>7,033</td>
<td>6,843</td>
<td>21,475,625</td>
<td>327</td>
<td>319</td>
</tr>
<tr>
<td>2009-10</td>
<td>7,757</td>
<td>7,162</td>
<td>21,865,623</td>
<td>355</td>
<td>328</td>
</tr>
<tr>
<td>2010-11</td>
<td>7,857</td>
<td>7,135</td>
<td>22,172,469</td>
<td>354</td>
<td>322</td>
</tr>
<tr>
<td>CAGR (%)</td>
<td>3.50</td>
<td>2.51</td>
<td>1.48</td>
<td>1.98</td>
<td>1.02</td>
</tr>
</tbody>
</table>

Source: AIHW (2012); ABS Cat. No.3101.0 and Insight Economics estimates.

This approach, together with the generation of an estimate of growth in private dental demand in the previous decade, now provide us with two alternative methods of estimating future aggregate dental expenditure to 2020:

- Projecting underlying private aggregate demand forward at the same growth rate as has occurred in the past, that is 2.51 per cent per year
- Projecting underlying per capita expenditure forward at a growth rate of 1.02 per cent a year.

Both these underlying estimates would then require a further adjustment to be made so as to account for future injections of government expenditure to 2020.

### 5.4 Demand projections to 2020

#### Aggregate projections

In Section 3 above, we adjusted the constant price dental expenditure data so as to produce:

- A series showing total private expenditure on dental services, which grew at a real average annual rate of 2.51 per cent
A series with government expenditure on two programs — CDDS and Teen Dental — adjusted for substitution and then added to the underlying dental expenditure series.

While it is straightforward to project the private dental expenditure series forward at a rate of 2.51 per cent a year to 2020, the difficulty comes in projecting forward government expenditure, which has been characterised in the past by episodic programs of relatively short duration. It should also be noted that our projections do not include expenditure by the Department of Veterans Affairs or State governments, or private health insurance rebates.

Currently, following the termination of the CDDS and Teen Dental programs, further significant Commonwealth funding on dental health has been foreshadowed, as is shown in Exhibit 5.4. These programs include Dental Blitz, the Child Dental Benefit Scheme and a New Public Dental Scheme. Of course, government programs can change, particularly in terms of funding, or even be withdrawn entirely. Any projection of future government funding for dental services must therefore be regarded as uncertain.

EXHIBIT 5.4: COMMONWEALTH FUNDING OF DENTAL SERVICES, 2010-2018, ($MILLION)

Nevertheless, these are the best estimates that are currently available and so we apply these estimates in our forward projections of aggregate dental expenditure. For the last two years of the projection period, we assume that government funding on these programs remains at the same level in current price terms as in 2017-18. We continue to adjust the figures in the future, however, using our 10 per cent substitution assumption. Because our dental expenditure series are at
constant 2010-11 prices, we also adjust the government funding numbers for inflation, using an assumption that future inflation will run at 2.5 per cent a year to 2020.

**EXHIBIT 5.5: PROJECTIONS OF EXPENDITURE ON DENTAL SERVICES ($MILLION)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-11</td>
<td>7,135</td>
<td>803</td>
<td>803</td>
<td>7,857</td>
</tr>
<tr>
<td>2011-12</td>
<td>7,314</td>
<td>1,020</td>
<td>995</td>
<td>8,210</td>
</tr>
<tr>
<td>2012-13</td>
<td>7,498</td>
<td>530</td>
<td>504</td>
<td>7,952</td>
</tr>
<tr>
<td>2013-14</td>
<td>7,686</td>
<td>486</td>
<td>451</td>
<td>8,092</td>
</tr>
<tr>
<td>2014-15</td>
<td>7,879</td>
<td>1,045</td>
<td>945</td>
<td>8,730</td>
</tr>
<tr>
<td>2015-16</td>
<td>8,077</td>
<td>925</td>
<td>815</td>
<td>8,811</td>
</tr>
<tr>
<td>2016-17</td>
<td>8,279</td>
<td>925</td>
<td>795</td>
<td>8,995</td>
</tr>
<tr>
<td>2017-18</td>
<td>8,487</td>
<td>925</td>
<td>775</td>
<td>9,185</td>
</tr>
<tr>
<td>2018-19</td>
<td>8,700</td>
<td>925</td>
<td>756</td>
<td>9,380</td>
</tr>
<tr>
<td>2019-20</td>
<td>8,919</td>
<td>925</td>
<td>736</td>
<td>9,581</td>
</tr>
<tr>
<td>CAGR (%)</td>
<td>2.51</td>
<td></td>
<td></td>
<td>2.23</td>
</tr>
<tr>
<td>Cum Growth (%)</td>
<td>25.0</td>
<td></td>
<td></td>
<td>21.9</td>
</tr>
</tbody>
</table>

* Assuming 10 per cent substitution of government expenditure for private expenditure.

**Source:** Insight Economics estimates.

The resulting projections are shown in Exhibit 5.5 above. The two significant projections to 2019-20 are:

- **Real private dental expenditure** (Column 2). This is a continuation of the data series shown in the final column of Exhibit 5.2 above, and projected forward at the previously observed average annual growth rate of 2.51 per cent. The cumulative growth rate between 2010-11 and 2019-20 is 25 per cent — that is, real private dental expenditure is projected to be 25 per cent higher in 2019-20 than in 2010-11.

- **Total dental expenditure** (Column 5). This includes the foreshadowed new government programs identified above, adjusted both for future inflation and, as before, assumed substitution between government and private expenditure. Because government expenditure is projected to show very little growth, if any, in real terms from 2011-12 (when the CDDS provided very substantial funding), the average annual growth rate of total dental expenditure to 2019-20 is only 2.23 per cent. On a cumulative basis, real total dental expenditure is projected to be 22 per cent higher in 2019-20 than in 2010-11.

These projections are shown in Exhibit 5.6 below.
EXHIBIT 5.6: PROJECTIONS OF EXPENDITURE ON DENTAL SERVICES
($MILLION, 2010-11 PRICES)

Per capita projections

A second approach to projecting demand in 2020, at least for private dental expenditure, is to look at per capita expenditure on dental services and relate it to population growth.

The Australian Bureau of Statistics has produced three alternative projections of Australia’s population growth from 2006, namely a high, median and low scenario. As can be seen in Exhibit 5.3 above, population grew at an average annual rate of growth of 1.48 per cent in the first decade of the century. This growth rate is consistent with median ABS projections and has been applied in our projections of population as shown in Exhibit 5.7 below.

As discussed above, per capita dental expenditure grew only slowly in the ten years to 2010-11. We apply the compound annual growth rate of 1.02 per cent to average private per capita expenditure in order to project the series to 2019-20. We then multiply the per capita projections to the estimates of population growth in order to produce another projection of private expenditure on dental services to 2019-20. We can then compare this projection with the previous estimates shown in Exhibit 5.5 above.

These projections are shown in Exhibit 5.7. It may be observed that the projections of private expenditure on dental services shown in the fourth column of the table are virtually identical to the estimates shown in the second column of Exhibit 5.5 above.
**5.5 Conclusions**

The most important estimates of the future growth of demand for dental services relate to private expenditure, which represents the overwhelming majority of spending and where the exclusion of episodic government programs makes the trend much easier to assess. The conclusion from this assessment is that private expenditure on dental services has increased at a relatively modest 2.5 per cent a year since the turn of the century. If private demand is projected forward at this rate of growth, total private expenditure on dental services will be 25 per cent higher in 2019-20 than in 2010-11.

When government spending is added in to the estimates, the exercise becomes more difficult because there is no clear trend in Commonwealth expenditure. Apart from the DVA expenditure, programs have tended to be episodic and relatively short lived. The CDDS injected very substantial funds into the sector for a relatively short while and was then wound up. However, in a sense it introduced a “distortion” to the expenditure series by providing a substantial increase at the beginning of the projection period. Future government spending that has been foreshadowed on new programs on new programs, while substantial by pre-CDDS standards, is not projected to be as great. For this reason, aggregate private and government spending is projected to increase at a rate of only 2.2 per cent a year, to be 22 per cent higher in real terms in 2019-20 than in 2010-11.

Noting that our estimates also exclude expenditure by the DVA and the States, as well as private health insurance rebates, we do not believe that too much reliance can be placed on future government spending estimates. Even if these were added in, uncertain as is future spending in these areas, they would not push the growth of aggregate expenditure on dental services above the 25 per cent increase by 2019-20 estimated for private expenditure.
Our conclusion is that in planning for the dental workforce to 2020, an increase in demand of around 2.5 per cent a year should be factored in. This represents an increase in real expenditure on dental services between 2010-11 and 2019-29 of 25 per cent.
CHAPTER 6

Conclusions and implications

6.1 Demand outlook

Revealed demand for dental services reflects both need and the capacity of individuals to pay. Out-of-pocket expenditure tends to represent the biggest segment of expenditure on dental services. Finance coming from private insurance is also important. Hence forming a view about the likely evolution of demand for dental services in the future requires making judgements about the capacity and willingness of individuals to pay for such services.

State governments play a relatively small role in the total market for dental services by financing the State-based public dental systems. Prior to the introduction of the CDDS, the Commonwealth government’s main contribution came through the Department of Veterans Affairs and indirectly through the private health insurance premium rebates. But there was a change with the introduction of the CDDS in 2007, with funding from the Commonwealth government rising strongly until its final year in 2012, when it is estimated the program cost almost $1 billion.

To form a view on the underlying demand for dental services we sought to net out of total dental expenditure that part which was due to the CDDS and its effects. As we showed in Chapter 5, the underlying rate of growth of real dental expenditure between 2000-01 and 2010-11 the last year for which data is available was about 2.5 per cent per annum rather than the actual rate of growth of real dental expenditure of 3.5 per cent per annum over the same period.

The rate of growth in real per capita dental expenditure over the same period was about 1 per cent per annum when an adjustment was made for the CDDS and almost 2 per cent per annum when the actual figures for dental expenditure were used. Population growth accounts for the difference between the rate of growth of aggregate expenditure and per capita expenditure.

In making projections of real dental expenditure to 2020, it is necessary to take into account the impact of the dental health package announced by the Commonwealth government in August 2012 which will start for children on 1 January 2013 and for adults on 1 July 2014. When announcing the new six-year scheme, the Health Minister compared its cost of $4.1 billion to an estimated cost over the same period of $6.6 billion if the CDDS and the teenage dental scheme had been retained.

We project real expenditure for dental services to grow by about 2.5 per cent per annum to 2020 which is below the 3 per cent per annum growth rate in demand for dental services projected by ARCPOH to 2020.
The projected growth rate would tend to underestimate actual growth in real
dental expenditure were household savings and expenditure patterns to return
more quickly than expected to pre GFC levels. Also, if decisions were taken to
increase Commonwealth government funding for dental services over and above
the August 2012 package, the actual growth rate could be higher than we project.

The projected growth rate would probably overestimate actual growth in real
dental expenditure were an incoming Commonwealth government to scale back
the dental services package announced in August 2012. The reason for doing this
might be as a part of a package of expenditure measures to bring the
Commonwealth Budget back into surplus more quickly than is now envisaged.

While all projections are subject to uncertainty as the future is unknowable, we
believe the projections we have made are realistic and incorporate the data points
available since the ARCPOH 2008 projections, the developments in household
savings and expenditure patterns and the Commonwealth government’s dental
policy decisions.

6.2 Demand/supply balance

In our two earlier studies on the supply of the dental workforce and the
productivity gains made by dentists we have developed a perspective on the likely
growth in the supply capacity of the Australian dental workforce out to 2020. This
is against a background in which under the impetus of the much expanded
number of graduates from Australia’s dental schools the number of dentists per
100,000 people is estimated by ARCPOH to increase from 53.6 in 2010 to 63.2 in
2020. However, we estimate that there will be about 1,000 dentists more in 2020
than the approximately 15,000 estimated by ARCPOH. Accordingly, the number
of dentists per 100,000 people in 2020 could be about 65.

The point is that the supply of dentists is expanding at a rate well in excess of the
rate of population growth. Unless per capita demand for dental services expands
strongly a surplus of dentists will emerge given unchanged trends.

Our studies point to an annual growth rate in the capacity of the Australian dental
workforce to supply dental services of between 3.75 to 4.25 per cent per annum.
This is more than sufficient to meet the projected growth in demand for dental
services of about 2.5 per cent per annum. We estimate a surplus of dentists by
2020 of about 1,000 should current trends continue unchanged. This represents
the output of dental graduates for between one and two years.

These figures suppose that the current dental force is fully employed at present.
However, the fact that it was possible to meet the expanded demand for dental
services associated with the now discontinued CDDS program and anecdotal and
survey evidence of softness in the demand for dentists as new graduates find it
more difficult to find places and the hours they would like, suggests that part of
demand can be met by increasing the “busyness” of dentists. If this is the case,
our estimate for the likely surplus of dentists is likely to be conservative.

We would emphasise that we are talking about revealed demand for dental
services and have made no allowance for further possible policy action by
Commonwealth and State governments during the period to 2020 to expand
public dental services. We have also not sought to distinguish between regional
and national supply and demand. It is possible that there could be a surplus of
dentists nationally but a shortfall in some regional areas of Australia. Such
shortfalls should be addressed by specific rather than by general workforce supply
measures.

### 6.3 Implications

If the underlying trends in demand and supply of dental services in Australia were
to continue to 2020 there is a very real prospect that Australia will be facing a
very significant national over-supply of dentists. This would represent a waste of
highly trained people and would be costly for the community as a whole.

To restore balance in the market for dental services by action on the demand side
there would either need to be a movement to a more generously funded set of
Commonwealth and State dental programs designed to deliver dental services to
groups in society who have relatively poor oral health or private demand for
dental services would need to strengthen. Neither of these possibilities look likely
to happen in the medium term.

Bigger public sector dental expenditure runs up against the need to return the
Commonwealth budget to surplus, which seems to be accepted by the major
political parties. State governments have a rather limited capacity to increase
dental funding as their budgets are also under pressure.

Private demand is unlikely to strengthen while household savings rates stay high.
Informed opinion sees household savings remaining at post GFC levels for the
next 5 years.

A more likely scenario is that the adjustment to oversupply and
underemployment of the dental workforce will come on the supply side. As the
prospects of new graduates obtaining the positions they desire recede and they
are underemployed, this will send a message to potential future students to look
at other career options which then would tend to limit supply side growth. As the
perception of a dental workforce surplus strengthens, it is likely that Australia will
be seen as a less attractive place for foreign dentists seeking a new country in
which to practice.

Our discussions with dental academics, practicing dentists and the dental
association suggests that, following the termination of the CDDS, there are
already strong signs that a surplus of dentists is emerging. This is expressing itself
in a number of ways, from the greater difficulty of recently graduated dentists to
find places and meaningful hours of work, to the relative ease of recruiting
dentists to work in the public dental system and to the number of applicants
applying for positions with private dental practices.

The analysis we have done points to the reality that even when the gap left by the
ending of the CDDS and the full operation of the measures announced in August
2012 is reduced, there will remain an underlying trend towards supply growing
more quickly than demand to 2020.
The supply and demand balance for the dental workforce is currently undergoing very considerable shorter term and medium to longer-term changes. In such a situation it is prudent to update projections more frequently than if business-as-usual trends prevailed. Relying on projections made in totally different circumstances a number of years ago is likely to lead to inappropriate policy responses.
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