



Oral health practitioner labour force projections, 2006–2025

This report presents oral health practitioner labour force projections from 2006 to 2025. Oral health practitioners include dental therapists, dental hygienists and dual qualified hygienists and therapists commonly referred to as oral health therapists. Baseline estimates presented in this report were derived from the 2006 National Dental Labour Force Collection.

Dental hygienists are trained in an accredited school and registered by the state/territory board to provide various dental services including examinations, scaling and polishing teeth, prevention, health promotion and radiography in accordance with the restrictions in place by the dental boards. Dental therapists provide various clinical and preventive services to preschool-aged and school-aged children and young adults, which include services such as examinations, fillings, extractions, health promotion and prevention. Oral health therapists are eligible to register as both a dental therapist and dental hygienist but may not necessarily maintain dual registration or employment in a dual capacity.

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Main findings

- ✦ The annual number of oral health practitioners graduating from Australian institutions is anticipated to increase more than 2.5 times, to 335 by 2015.
- ✦ By 2025, more than half of the graduates for the year (200) are expected to be oral health therapists (an increase of 251%), and there will be an estimated 120 dental hygienist graduates (an increase of 135%) and 15 dental therapist graduates (a decrease of 38%).
- ✦ Over the projection period 2006–2025 the number of practising:
 - oral health therapist numbers will increase the most, more than 460%, from 371 to 2,117
 - dental hygienist numbers are expected to more than double, from 674 to 1,458
 - practising dental therapist numbers are projected to decrease by 61%, from 1,171 to 443.
- ✦ Overall, the number of oral health practitioners per 100,000 population is expected to increase by 52%, from 10.8 oral health practitioners per 100,000 population to 16.2 by 2025.
- ✦ Despite this substantial anticipated growth, the ratio of dentists to oral health practitioners is expected to remain relatively stable. This is due to an anticipated similar proportionate increase in the number of dentist graduates over the same period.

Projection model

The framework underlying the projection of oral health practitioners in Australia conceives the labour force as a dynamic system of stocks and flows. The stock of practitioners is equivalent to the number of practising oral health practitioners (as opposed to the number registered). Inflows to the stock of practitioners comprise Australian university graduates and those who return to practise after a career break. Movement out of the stock, or wastage, is associated with cessation of practice, either permanently (retirement, death and alternative career) or temporarily (more than 12 months).

Oral health practitioners were categorised by nine 5-year age groups. Each element of the inflows and outflows was followed through each age group and through the application of a basic Markov chain model (Bartholomew et al. 1991).

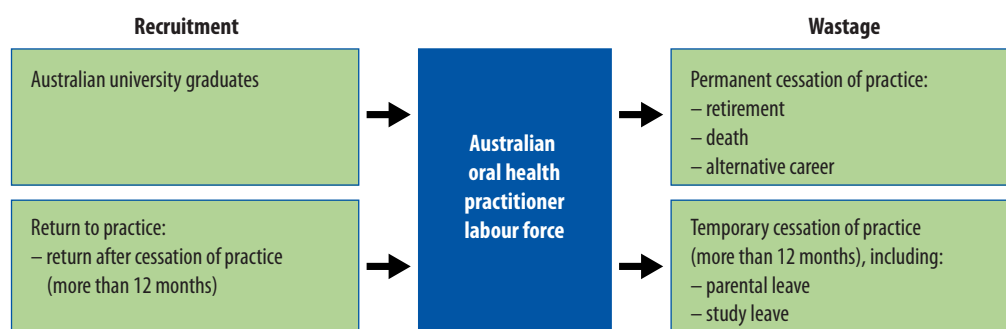


Figure 1: Schematic model of recruitment and wastage

Baseline oral health practitioner labour force numbers

The projection base year was 2006, as this was the most recent estimate available at the time of publication.

Due to the rapid emergence of the oral health therapist labour force, and the different characteristics of the three occupational groups, separate projections were calculated for each group.

In 2006, there were 2,216 practising oral health practitioners, consisting of 1,171 dental therapists, 674 dental hygienists and 371 oral health therapists. The majority of all oral health practitioners were female (97.5%) and only 2.5% were male (Table 1).

Average age varied by labour force group and sex. Dental therapists were the oldest (average age was 42.9 years), followed by hygienists (average age was 37.7 years). Female oral health practitioners were older than their male counterparts for each group (Table 1).

Table 1: Number and proportion of practising oral health practitioners, by age group and sex, 2006

Age group (years)	Therapists		Hygienists		Oral health therapists		Total	
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
20–24	37	3.2	44	6.8	41	11.3	123	5.6
25–29	47	4.0	99	14.7	67	18.0	213	9.6
30–34	96	8.1	124	18.4	60	16.4	280	12.6
35–39	169	14.4	121	18.0	47	12.9	337	15.3
40–44	222	19.0	121	18.0	58	15.6	401	18.1
45–49	392	33.5	92	13.5	69	18.5	553	24.9
50–54	163	13.9	47	7.0	22	5.6	232	10.4
55–59	39	3.3	22	3.1	6	1.6	66	3.0
60+	6	0.5	4	0.5	—	—	10	0.4
Total	1,171	100.0	674	100.0	371	100.0	2,216	100.0
Sex	Percentage							
Male	1.2		3.3		5.2		2.5	
Female	98.8		96.7		94.8		97.5	
Sex	Average age (years)							
Male	38.6		35.9		33.0		35.6	
Female	43.0		37.8		36.6		40.4	
Persons	42.9		37.7		36.4		40.2	

Notes

1. The estimates for the projection base year were derived from the 2006 Dental Labour Force Data Collection.
2. Some rows/columns may not sum to totals due to rounding of weighted estimates.

Recruitment

Total recruitment consisted of new graduates and a 'return to practice' component (each described below). Overseas-trained practitioners were not included in total recruitment. Only a small number of New Zealand and United Kingdom oral health practitioners migrate to Australia and gain registration via mutual recognition, and, at time of publication, graduates from other countries had no qualification assessment pathway.

Australian oral health practitioner graduates

Since the 1990s, there have been substantial changes in the structure of oral health programs. The number of single qualification programs have been reduced and gradually replaced by Bachelor Oral Health programs training dual qualified hygienists and therapists. The number of programs has increased, and it is possible that the establishment of new dentistry programs will be accompanied by further Bachelor Oral Health programs over the next decade.

In 2003, there were three therapy programs, three hygiene programs and two Bachelor Oral Health programs. By 2009, there were seven Bachelor Oral Health programs, three hygiene programs, and only one remaining dedicated therapy program.

The majority of programs (at time of publication) have annual student intakes ranging from 20 to 30 students; however, the University of Newcastle hygiene program has intakes of about 45–50 students, and programs available at Curtin University have intakes of about 12–15 students.

Return to practice

The return to practice component includes oral health practitioners who have career breaks for a period of 12 months or more. Return to practice rates for these practitioners could not be calculated due to limited availability of consecutive year data. As an approximation, oral health practitioner return to practice rates were based on female dentist rates (averaging 2.6%) (Teusner et al. 2008). As previous research has indicated that oral health practitioners have wastage rates higher than female dentists, it logically follows that oral health practitioner return to practice rates are likely to be lower than female dentists. Consequently, female dentist rates were applied in the projection model at half rate (averaging 1.3%).

Total recruitment

Total annual recruitment of all oral health practitioners is expected to increase by 139%, from an estimated 161 in 2007 to 385 in 2025. Over the projection period 2007–2025, recruitment of oral health therapists is expected to increase by 266% (from 62 in 2007 to 227 in 2025). Recruitment of hygienists will increase by 130% (from 60 in 2007 to 138 in 2025), and recruitment of dental therapists will decrease by 49% (from 39 in 2007 to 20 in 2025) (Table 2).

Table 2: Annual recruitment inputs, by recruitment source and year

Recruitment source	2007	2010	2015	2020	2025
Dental therapists					
Graduates	24	12	15	15	15
Return to practice	15	13	9	6	5
Total	39	25	24	21	20
Hygienists					
Graduates	51	88	120	120	120
Return to practice	9	10	13	16	18
Total	60	98	133	136	138
Oral health therapists					
Graduates	57	128	200	200	200
Return to practice	5	8	15	22	27
Total	62	136	215	222	227

Note: Graduate estimates derived from Department of Education, Employment and Workplace Relations data and the Australasian Council of Dental Schools data analysed by the Australian Research Centre for Population Oral Health. Projected graduate estimates were based on current student starts, and the anticipated intake of scheduled new programs.

Wastage

Due to limited availability of consecutive year data, oral health practitioner wastage rates could not be calculated. Previous research has shown that therapist and hygienist wastage rates are higher than dentist rates (Newton et al. 2001), so female dentist wastage rates were increased by 50% and applied to these occupational groups (Teusner et al. 2008). As the wastage rates are age-specific, the total percentage wastage in a given year of a projection varied as the age distribution changed. For example, the projected percentage wastage for dental therapists varied from 6.3% in 2007 to 9.8% in 2025 (Table 3).

Table 3: Percentage projected wastage, by projection year (per cent)

Year	Dental therapists	Hygienists	Oral healththerapists	Total
2007	6.3	6.9	6.8	6.6
2010	7.0	7.2	7.4	7.2
2015	8.4	7.6	7.7	7.9
2020	9.4	7.7	7.6	7.9
2025	9.8	7.6	7.4	7.7

Projected number of practising oral health practitioners

Overall, taking into account expected recruitment and wastage, the total number of practising oral health practitioners is expected to increase substantially from 2,216 in 2006 to 4,018 in 2025 (an 81% increase) (Figure 2 and Table 4).

The oral health therapist group is projected to have the greatest increase, rising by 469%, from 372 in 2006 to 2,117 in 2025. It is projected that dental hygienists will increase in number from 674 in 2006 to 1,458 in 2025 (a 116% increase), and dental therapist numbers will decrease, from 1,170 in 2006 to 443 in 2025 (a 62% decrease) (Figure 2 & Table 4).

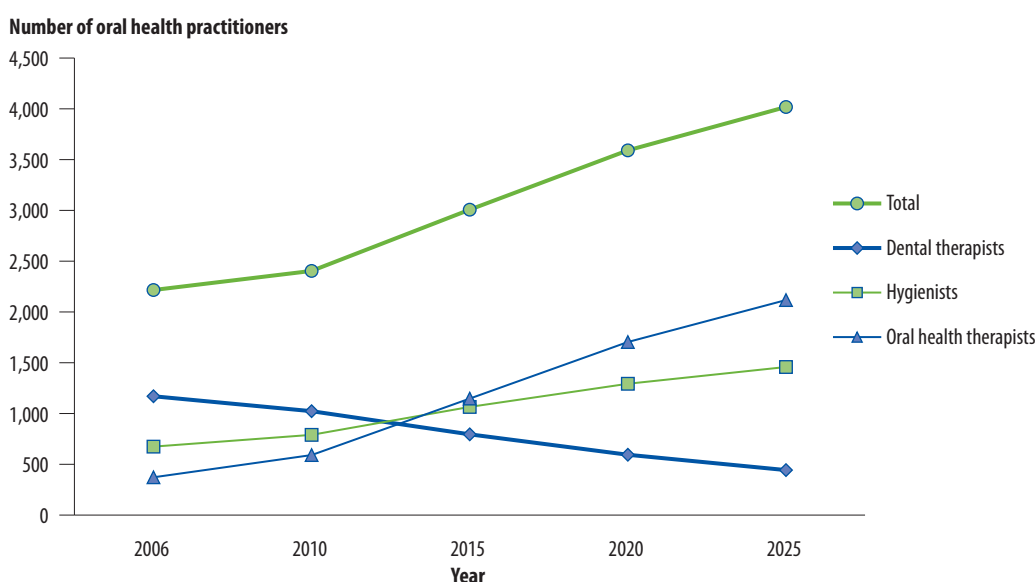


Figure 2: Projection of the number of oral health therapists, dental hygienists and dental therapists in Australia, 2006–2025

Table 4: Projection of the number of oral health therapists, dental hygienists and dental therapists in Australia, 2006–2025

Year	Dental therapists	Hygienists	Oral health therapists	Total
2006	1,171	674	371	2,216
2010	1,023	790	591	2,404
2015	795	1,065	1,147	3,007
2020	594	1,293	1,704	3,591
2025	443	1,458	2,117	4,018

To assess the sensitivity of projections to changes in recruitment, two other recruitment scenarios were calculated. The ‘low’ recruitment scenario assessed the impact if the number of graduates was 10% lower from 2015 onwards. The HIGH scenario assumed that graduate numbers would be 10% higher from 2015 onwards. The two scenarios are broadly equivalent to losing or gaining one training program.

Projections under the LOW and HIGH recruitment scenarios only varied slightly from the standard projection for each occupational group. In 2025, the total number of oral health practitioners was projected to increase by 6% under the HIGH recruitment scenario and decrease by 6% under the LOW scenario (Table 5).

Table 5: Projections of oral health practitioners by LOW and HIGH recruitment scenarios

Year	Dental therapists		Hygienists		Oral health therapists		Total	
	Low	High	Low	High	Low	High	Low	High
2006	1,171	1,171	674	674	371	371	2,216	2,216
2010	1,023	1,023	790	790	591	591	2,404	2,404
2015	795	795	1,065	1,065	1,147	1,147	3,007	3,007
2020	589	600	1,249	1,336	1,632	1,777	3,470	3,712
2025	432	453	1,374	1,542	1,977	2,256	3,783	4,251

Note: LOW represents a recruitment decrease of 10% after 2015. HIGH represents a recruitment increase of 10% after 2015.

The practising rate of oral health practitioners is projected to increase from 10.8 per 100,000 population in 2006 to 16.2 in 2025, a 50% increase. The numbers of practising oral health therapists per 100,000 population will increase from 1.8 in 2006 to 8.5 in 2025 (a 372% increase). Dental hygienists will increase from 3.3 in 2006 to 5.9 in 2025 per 100,000 population (a 79% increase), while dental therapists will decrease from 5.7 per 100,000 population in 2006 to 1.8 in 2025 (a 68.4% decrease) (Figure 3).

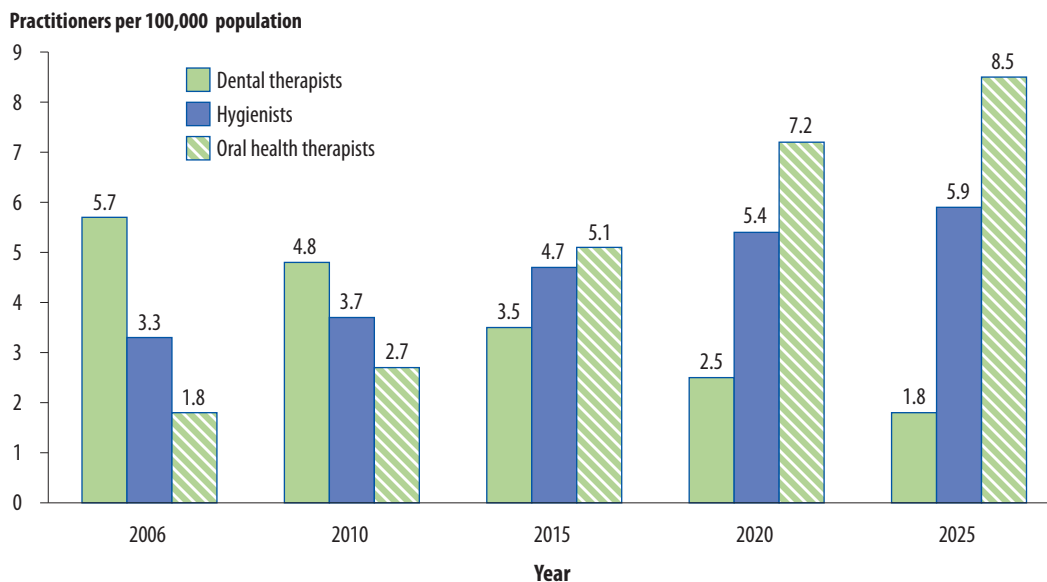


Figure 3: Projected number of oral health practitioners per 100,000 population, 2006–2025

Table 6 shows each of these three occupational groups as well as dentists and dental prosthetics as proportions of the registered dental labour force. At the time of publication, published projections for dentists and prosthetists were only available to 2020, so comparison projections for 2025 were not available for this publication. As a proportion of the five registered dental labour force groups, oral health therapist numbers are expected to increase from 2.8% in 2006 to 8.8% in 2020, numbers of hygienists will increase slightly from 5% in 2006 to 6.7% in 2020, and numbers of dental therapists are projected to decrease from 8.7% in 2006 to 3.1% in 2020. Dentists will remain the largest group, with their proportion projected to remain stable through to 2020.

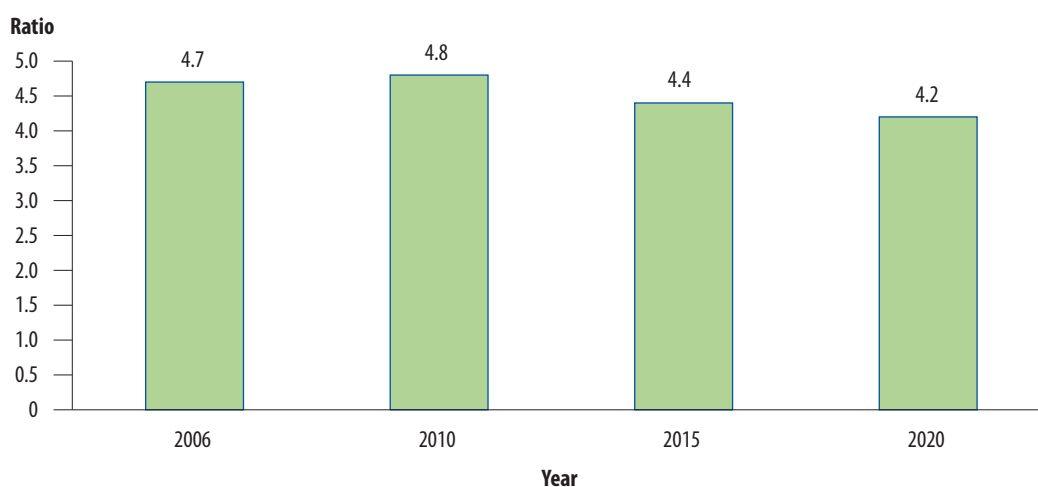
Table 6: Registered dental labour force, by occupation group, 2006–2020 (per cent)

	2006	2010	2015	2020
Dental therapists	8.7	6.9	4.7	3.1
Hygienists	5.0	5.3	6.3	6.7
Oral health therapists	2.8	4.0	6.7	8.8
Prosthetists	6.4	5.7	4.8	4.0
Dentists	77.1	78.1	77.6	77.5
Total	100.0	100.0	100.0	100.0

Notes

1. The dental labour force also includes dental technicians and dental assistants. However, at the time of publication neither of these groups have a registration requirement.
2. At the time of publication, published projections for dentists and prosthetists were only available to 2020, so comparison projections for 2025 were not available for this publication.

Despite the projected increase in the oral health practitioner labour force, the dentist to oral health practitioner ratio was projected to remain relatively stable over the period 2007–2020. It is anticipated that the ratio will decline slightly, from 4.7 dentists to each oral health practitioner in 2006 to 4.2 in 2020 (Figure 4). This stability in the rate of dentists to oral health practitioners is related to the increase in the numbers of dental students over the same period.



Note: At the time of publication, published projections for dentists and prosthetists were only available to 2020, so comparison projections for 2025 were not available for this publication.

Figure 4: Projection of the ratio of dentists to oral health practitioners, 2007–2020

Discussion

While the changes in numbers of oral health practitioners are projected to be substantial, the relative ratio of dentists to oral health practitioners is not expected to alter greatly. However, the mix within oral health practitioners is changing markedly. The emerging dual qualified group of oral health therapists will develop working patterns across private and public sectors, so the nature and shape of the oral health team is likely to change considerably. Similarly, the increase in the numbers of dental hygienists may also influence the shape of teams, and potentially lead to subtle changes in the service mix provided in private practice.

The projected decline in dental therapist numbers may lead to recruitment issues for public sector school dental services. Historically, dental therapists' practice has been restricted to public dental services. Since 2000, restrictions on therapist practice have been relaxed to allow their employment in the private sector. While both therapists and oral health therapists are trained and qualified to practice therapy in the school dental services, they may now opt to practice in the private sector instead of school dental services. Hence, there is considerable uncertainty on the future distribution of oral health therapists across sectors and ages of patients.

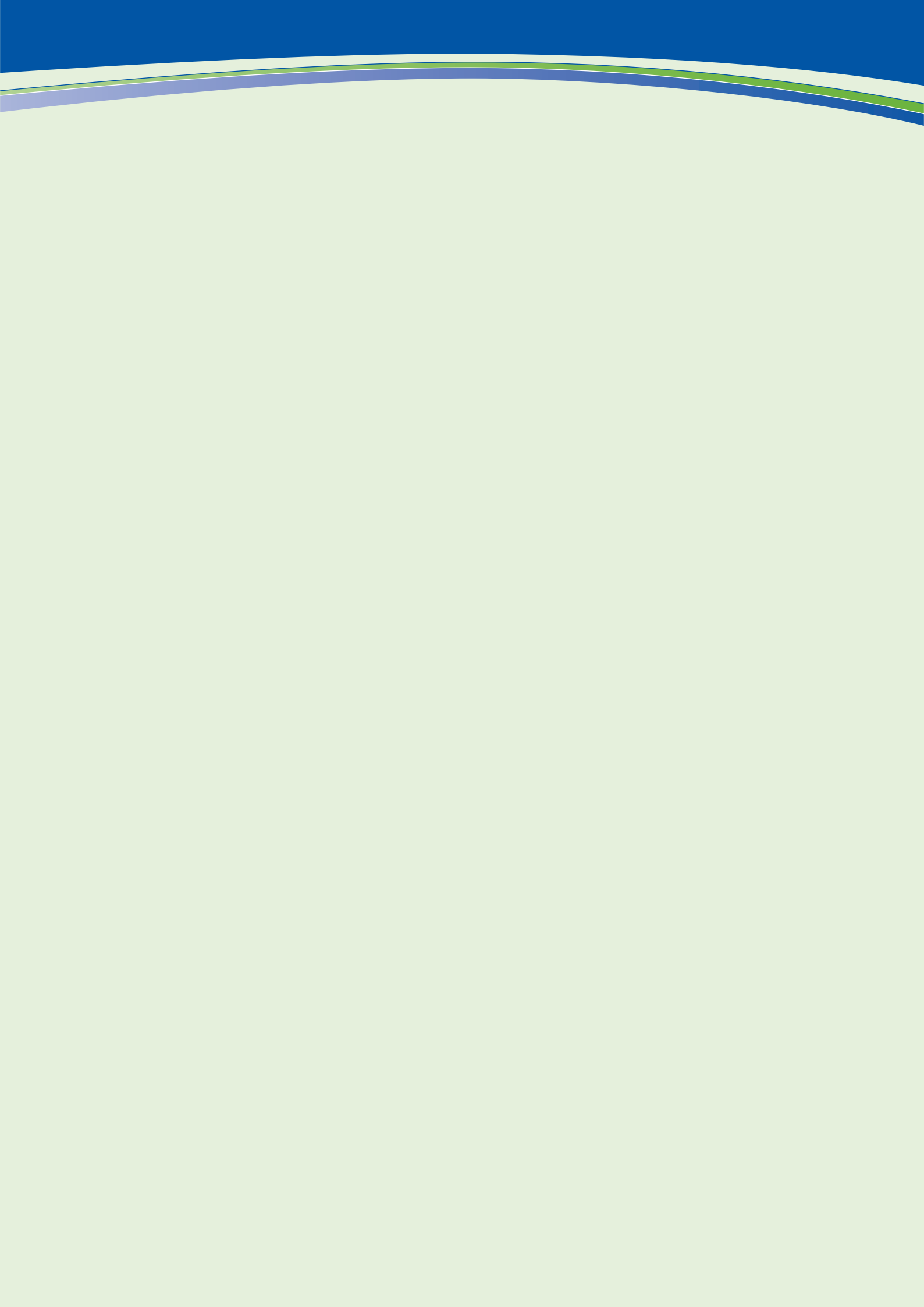
Bibliography

- ABS (Australian Bureau of Statistics) 2003. Population projections Australia 2001–2101 (Series 8). ABS cat no. 3222.0. Canberra: ABS.
- AIHW DSRU: Teusner DN 2011. Oral health practitioners in Australia, 2006. Research report series no. 49. Cat. no. DEN 201. Canberra: AIHW (in press).
- Bartholomew DJ, Forbes AF & McClean SI 1991. Statistical techniques for manpower planning. London: John Wiley & Sons Ltd.
- Newton JT, Buck D & Gibbons DE 2001. Workforce planning in dentistry: the impact of shorter and more varied career patterns. *Community Dental Health* 18:236–41.
- Teusner DN, Chrisopoulos S & Spencer AJ 2008. Projected demand and supply for dental visits in Australia: analysis of the impact of changes in key inputs. *Dental statistics and research series no. 38*. Cat. no. DEN 171. Canberra: AIHW.

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