

Appendix F: Methods: demand projection model

This section describes in detail the inputs and components of the demand projection model.

For the purposes of this publication, the word 'demand' is used synonymously with usage of dental care or expressed demand. Historical patterns of usage are examined and used to estimate future demand for dental care. Projections of future demand presented in this publication are not based on the number of visits that will be 'needed' or actually used; rather, they are an estimate of the quantity of dental visits that people are likely to consume based on previous patterns of consumption.

Projected demand is calculated by multiplying estimated age-specific PCD rates for dentate and edentulous persons by the numbers of people that are projected to be in those age groups in the future.

Demand for dental visits in 2020 for a given age group i is equivalent to:

$$\text{Demand 2020, age group (i) = } ERP_{2020} (\text{PCD(D)}_{(i, 2020)} \times (1 - \%E_{2020}) + \text{PCD(E)}_{(i, 2020)} \times \%E_{2020})$$

Where:

ERP_{2020} = projected estimated resident population in 2020

$\text{PCD(D)}_{(i, 2020)}$ per capita demand for dentate persons for age group i in 2020

$\text{PCD(E)}_{(i, 2020)}$ per capita demand for edentulous persons for age group i in 2020

$\%E_{2020}$ = projected percentage edentulous persons in the year 2020.

Hence, there are three key components of the demand projection:

- **Population projection**
Population projections were sourced from the ABS. See Appendix E.
- **Projection of percentage of edentulous persons**
The projection of the percentage of edentulous persons (those with no natural teeth remaining) of the total population is estimated from a 2005 baseline (source NSAOH 2004–06) and is based on projected percentages previously published (Carter & Stewart 2003) (Table F.1).
- **Per capita demand (PCD) per annum by age group**
PCD is calculated by multiplying the percentage accessing in the previous 12 months by the mean number of visits made in that period (source NDTIS 2005). The 'no PCD growth' projection was based on the 2005 PCD rates for dentate and edentulous persons, and these rates were held constant through out the projection.

- **Dentate PCD projection**

Future growth was forecasted from a 2005 baseline using linear regression with available data points from the period 1979 to 1995. Under the 'half PCD growth' projection, PCD was assumed to grow at half the rate observed between 1979 and 1995. Under the 'continued PCD growth' projection, it was assumed that PCD will grow at the same rate observed between 1979 and 1995 (Table F.2).

- **Edentulous PCD projection**

Future growth was forecasted by applying an annualised percentage growth rate observed between 1988 and 1995. Under the 'half PCD growth' projection, the percentage growth was 50% of the growth observed in that period, and under the 'continued PCD growth' projection growth was 100% (Table F.3).

Table F.1: Projected percentage of edentulous persons, 2005 to 2020

Year	Age group (years)									
	0-4	5-11	12-17	18-24	25-34	35-44	45-54	55-64	65-74	75+
2005 ^(a)	0.0	0.0	0.0	0.2	0.2	0.2	2.9	9.8	20.3	35.7
2006	0.0	0.0	0.0	0.2	0.2	0.4	2.9	9.5	19.8	35.1
2007	0.0	0.0	0.0	0.2	0.3	0.5	2.8	9.1	19.3	34.5
2008	0.0	0.0	0.0	0.1	0.3	0.7	2.8	8.8	18.8	34.0
2009	0.0	0.0	0.0	0.1	0.4	0.8	2.7	8.4	18.3	33.4
2010 ^(b)	0.0	0.0	0.0	0.1	0.4	1.0	2.7	8.1	17.8	32.8
2011	0.0	0.0	0.0	0.1	0.4	1.0	2.6	7.8	17.0	31.7
2012	0.0	0.0	0.0	0.1	0.4	0.9	2.5	7.4	16.3	30.6
2013	0.0	0.0	0.0	0.1	0.3	0.9	2.5	7.1	15.5	29.5
2014	0.0	0.0	0.0	0.1	0.3	0.9	2.4	6.7	14.8	28.4
2015	0.0	0.0	0.0	0.1	0.3	0.9	2.3	6.4	14.0	27.3
2016	0.0	0.0	0.0	0.0	0.3	0.8	2.2	6.1	13.2	26.1
2017	0.0	0.0	0.0	0.0	0.3	0.8	2.1	5.7	12.5	25.0
2018	0.0	0.0	0.0	0.0	0.2	0.8	2.1	5.4	11.7	23.9
2019	0.0	0.0	0.0	0.0	0.2	0.7	2.0	5.0	11.0	22.8
2020 ^(b)	0.0	0.0	0.0	0.0	0.2	0.7	1.9	4.7	10.2	21.7

Sources: (a) NDTIS 2005, (b) Carter & Stewart 2003, NDTIS 2002. Projections of percentage edentulous persons by age group.

Table F.2: Dentate per capita demand for dental visits by growth assumption and age group, 2005 to 2020

Year	Age group (years)									
	0–4	5–11	12–17	18–24	25–34	35–44	45–54	55–64	65–74	75+
'Half PCD growth' projection										
2005	0.20	1.64	2.17	1.27	1.14	1.33	1.55	1.71	1.63	1.53
2006	0.20	1.68	2.20	1.25	1.14	1.35	1.56	1.72	1.67	1.56
2007	0.20	1.70	2.22	1.26	1.14	1.36	1.58	1.74	1.70	1.58
2008	0.20	1.72	2.24	1.26	1.14	1.38	1.60	1.76	1.72	1.60
2009	0.20	1.74	2.26	1.27	1.14	1.39	1.62	1.78	1.74	1.62
2010	0.20	1.76	2.28	1.27	1.15	1.40	1.64	1.80	1.77	1.65
2011	0.20	1.78	2.30	1.28	1.15	1.42	1.67	1.82	1.79	1.67
2012	0.20	1.80	2.33	1.29	1.15	1.43	1.69	1.84	1.81	1.69
2013	0.20	1.82	2.35	1.29	1.15	1.45	1.71	1.86	1.84	1.71
2014	0.20	1.85	2.37	1.30	1.15	1.46	1.73	1.88	1.86	1.74
2015	0.20	1.87	2.39	1.30	1.15	1.47	1.75	1.90	1.88	1.76
2016	0.20	1.89	2.41	1.31	1.16	1.49	1.77	1.92	1.91	1.78
2017	0.20	1.91	2.43	1.31	1.16	1.50	1.80	1.94	1.93	1.80
2018	0.20	1.93	2.45	1.32	1.16	1.51	1.82	1.96	1.95	1.82
2019	0.20	1.95	2.48	1.33	1.16	1.53	1.84	1.98	1.98	1.85
2020	0.20	1.97	2.50	1.33	1.16	1.54	1.86	2.00	2.00	1.87
'Continued PCD growth' projection										
2005	0.20	1.64	2.17	1.27	1.14	1.33	1.55	1.71	1.63	1.53
2006	0.20	1.71	2.22	1.23	1.14	1.36	1.56	1.74	1.71	1.59
2007	0.20	1.76	2.27	1.25	1.14	1.39	1.61	1.78	1.76	1.63
2008	0.20	1.80	2.31	1.26	1.14	1.42	1.65	1.82	1.81	1.68
2009	0.20	1.84	2.35	1.27	1.15	1.45	1.69	1.86	1.85	1.72
2010	0.20	1.88	2.40	1.28	1.15	1.48	1.74	1.90	1.90	1.77
2011	0.20	1.93	2.44	1.29	1.15	1.50	1.78	1.94	1.95	1.81
2012	0.20	1.97	2.48	1.30	1.15	1.53	1.82	1.98	1.99	1.85
2013	0.20	2.01	2.52	1.31	1.16	1.56	1.87	2.02	2.04	1.90
2014	0.20	2.05	2.57	1.32	1.16	1.59	1.91	2.06	2.09	1.94
2015	0.20	2.10	2.61	1.34	1.16	1.61	1.95	2.10	2.13	1.99
2016	0.20	2.14	2.65	1.35	1.17	1.64	2.00	2.14	2.18	2.03
2017	0.20	2.18	2.69	1.36	1.17	1.67	2.04	2.18	2.23	2.08
2018	0.20	2.22	2.74	1.37	1.17	1.70	2.08	2.22	2.27	2.12
2019	0.20	2.27	2.78	1.38	1.18	1.72	2.13	2.26	2.32	2.17
2020	0.20	2.31	2.82	1.39	1.18	1.75	2.17	2.29	2.37	2.21

Note: Under the 'no PCD growth' projection PCD is assumed to remain constant at 2005 rate.

Table F.3: Edentulous per capita demand for dental visits by growth assumption and age group, 2005 to 2020

Year	Age group (years)									
	0–4	5–11	12–17	18–24	25–34	35–44	45–54	55–64	65–74	75+
'Half PCD growth' projection										
2005	0.00	0.00	0.00	0.67	0.67	0.67	0.67	0.67	0.67	0.67
2006	0.00	0.00	0.00	0.68	0.68	0.68	0.68	0.68	0.68	0.68
2007	0.00	0.00	0.00	0.69	0.69	0.69	0.69	0.69	0.69	0.69
2008	0.00	0.00	0.00	0.70	0.70	0.70	0.70	0.70	0.70	0.70
2009	0.00	0.00	0.00	0.71	0.71	0.71	0.71	0.71	0.71	0.71
2010	0.00	0.00	0.00	0.72	0.72	0.72	0.72	0.72	0.72	0.72
2011	0.00	0.00	0.00	0.73	0.73	0.73	0.73	0.73	0.73	0.73
2012	0.00	0.00	0.00	0.74	0.74	0.74	0.74	0.74	0.74	0.74
2013	0.00	0.00	0.00	0.74	0.74	0.74	0.74	0.74	0.74	0.74
2014	0.00	0.00	0.00	0.75	0.75	0.75	0.75	0.75	0.75	0.75
2015	0.00	0.00	0.00	0.76	0.76	0.76	0.76	0.76	0.76	0.76
2016	0.00	0.00	0.00	0.77	0.77	0.77	0.77	0.77	0.77	0.77
2017	0.00	0.00	0.00	0.78	0.78	0.78	0.78	0.78	0.78	0.78
2018	0.00	0.00	0.00	0.79	0.79	0.79	0.79	0.79	0.79	0.79
2019	0.00	0.00	0.00	0.80	0.80	0.80	0.80	0.80	0.80	0.80
2020	0.00	0.00	0.00	0.81	0.81	0.81	0.81	0.81	0.81	0.81
'Continued PCD growth' projection										
2005	0.00	0.00	0.00	0.67	0.67	0.67	0.67	0.67	0.67	0.67
2006	0.00	0.00	0.00	0.69	0.69	0.69	0.69	0.69	0.69	0.69
2007	0.00	0.00	0.00	0.71	0.71	0.71	0.71	0.71	0.71	0.71
2008	0.00	0.00	0.00	0.73	0.73	0.73	0.73	0.73	0.73	0.73
2009	0.00	0.00	0.00	0.74	0.74	0.74	0.74	0.74	0.74	0.74
2010	0.00	0.00	0.00	0.76	0.76	0.76	0.76	0.76	0.76	0.76
2011	0.00	0.00	0.00	0.78	0.78	0.78	0.78	0.78	0.78	0.78
2012	0.00	0.00	0.00	0.80	0.80	0.80	0.80	0.80	0.80	0.80
2013	0.00	0.00	0.00	0.82	0.82	0.82	0.82	0.82	0.82	0.82
2014	0.00	0.00	0.00	0.84	0.84	0.84	0.84	0.84	0.84	0.84
2015	0.00	0.00	0.00	0.86	0.86	0.86	0.86	0.86	0.86	0.86
2016	0.00	0.00	0.00	0.87	0.87	0.87	0.87	0.87	0.87	0.87
2017	0.00	0.00	0.00	0.89	0.89	0.89	0.89	0.89	0.89	0.89
2018	0.00	0.00	0.00	0.91	0.91	0.91	0.91	0.91	0.91	0.91
2019	0.00	0.00	0.00	0.93	0.93	0.93	0.93	0.93	0.93	0.93
2020	0.00	0.00	0.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95