

## Patterns of dental service provision in general practice

**T**his Newsletter uses data from the **Longitudinal Study of Dentists' Practice Activity** to examine restorative service patterns over time, and services by geographic location and insurance status in 1993-94.

### Longitudinal Study of Dentists' Practice Activity

The Longitudinal Study of Dentists' Practice Activity is a five-yearly survey of Australian dentists. The Study commenced in 1983-84 (response rate 73%) and has also been collected in 1988-89 (response rate 75%) and 1993-94 (response rate 74%).

### Dentist age distribution by time

The unweighted age distribution of responding private general practitioners is presented in Table A. At all three survey times, the majority of dentists in the Study were in the 30-39 year age group.

**Table A: Dentist age distribution by time: (private general practitioners)**

Dentist age (years)	1983-84		1988-89		1993-94	
	n	(%)	n	(%)	n	(%)
20-29	61	(19.1)	95	(22.0)	78	(18.8)
30-39	104	(32.6)	157	(36.3)	149	(35.9)
40-49	67	(21.0)	87	(20.1)	104	(25.1)
50-59	60	(18.8)	51	(11.8)	47	(11.3)
60+	27	(8.5)	42	(9.7)	37	(8.9)
<b>Total</b>	<b>319</b>		<b>432</b>		<b>415</b>	

### Sample weighting

The data are weighted using the estimated number of practising private general practice dentists (December 1983 and 1988), with the age and sex distribution of dentists (1981 and 1986 population censuses), and dental board registration statistics (1992). This weighted measure is representative of the age and sex distribution of Australian private practice dentists at each wave of the study.

## Service provision data

Data on service provision were collected by responding practitioners using a log of one to two days of typical clinical practice. Service items provided to patients were recorded in the log using item numbers from the *A.D.A. Schedule of Dental Services*.

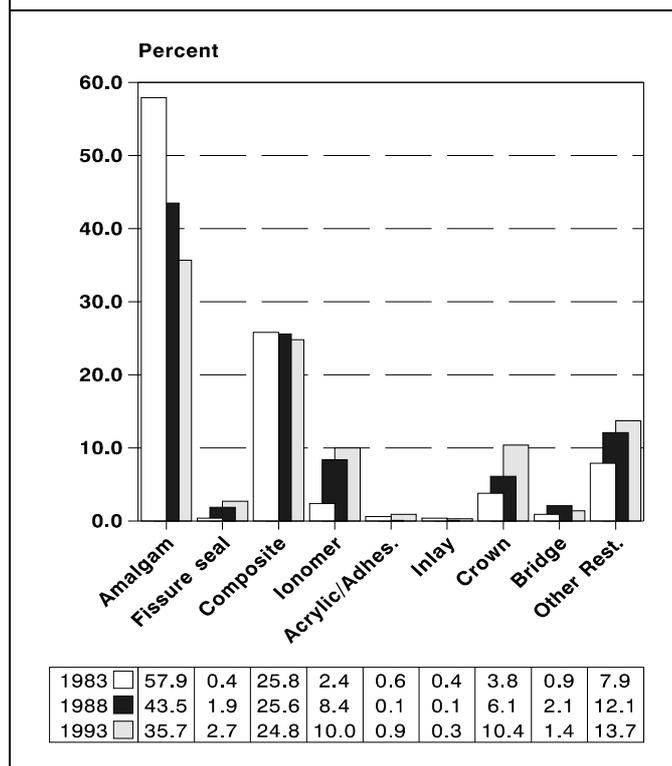
## Restorative service provision: 1983-84 to 1993-94

Restorative related service items provided during the typical day log were divided by the number of patients from the log. These data were then multiplied by estimates, supplied by the dentist completing the log, of the total number of patients seen during a year to arrive at a measure of annual service provision.

### Percentage of restorative services

Figure 1 shows amalgams decreased as a percentage of restorative related services, while percentages of ionomers, crowns and other restorative services (e.g., temporary restorations, veneers) increased.

**Figure 1: Percentage of restorative services by time of study**



### Volume of restorative services over time

A breakdown of the measures of annual services over time is presented in Table B. These consist of thousands of services provided per year across the three points in time.

Table B shows an increase in volume of services provided over the period, consistent with some growth in the numbers of registered practising dentists. Increased service volume was marked in areas such as composites, ionomers, and crowns. However, despite the increase in total volume, the total numbers of amalgams were lower at the end compared to the beginning of the period.

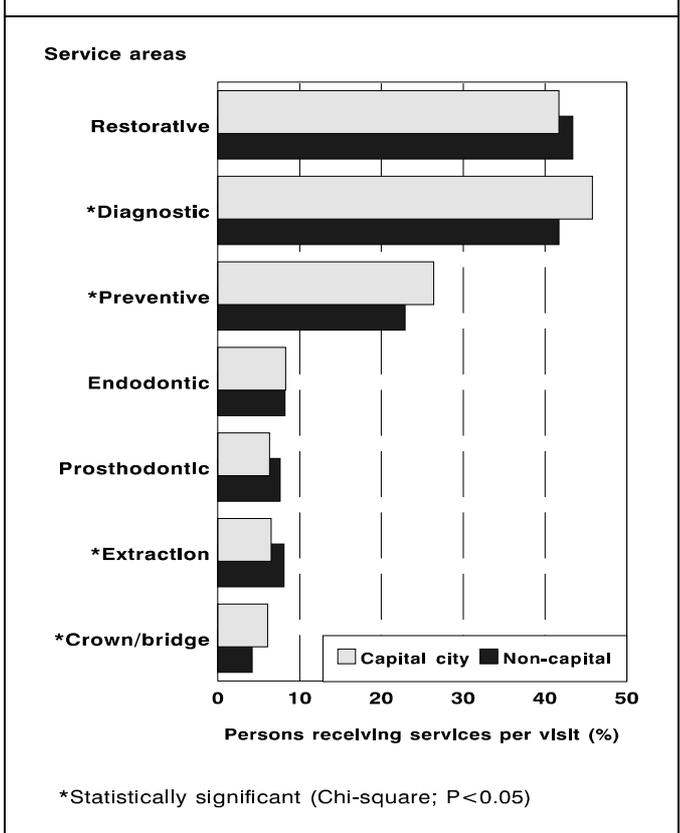
**Table B: Measures of annual services (x1,000): private general practitioners**

Service type	1983-84	1988-89	1993-94
Amalgam (1 surface)	1938.4	1310.4	1264.6
Amalgam (2 surfaces)	2907.8	2267.9	2452.5
Amalgam (3+ surfaces)	1324.1	1277.0	1594.8
<i>Total amalgams</i>	<i>6170.3</i>	<i>4855.3</i>	<i>5311.9</i>
Fissure sealants	38.6	216.1	407.2
Composite (1 surface)	1449.0	1335.6	1679.9
Composite (2 surfaces)	780.7	924.9	1254.9
Composite (3+ surfaces)	513.1	598.9	762.6
<i>Total composites</i>	<i>2742.8</i>	<i>2859.4</i>	<i>3697.4</i>
Ionomer (1 surface)	14.3	668.9	1015.5
Ionomer (2 surfaces)	228.0	213.7	334.7
Ionomer (3+ surfaces)	15.1	55.9	142.8
<i>Total ionomers</i>	<i>257.4</i>	<i>938.5</i>	<i>1493.0</i>
Acrylic restorations	61.2	8.0	-
Adhesive restorations	-	-	133.1
Inlays	39.3	12.8	39.3
Crowns	404.6	685.5	1550.2
Bridges	92.1	230.6	215.3
Other restorative	843.6	1350.3	2038.3
<i>Total restorative service</i>	<i>10649.9</i>	<i>11156.5</i>	<i>14885.7</i>

### Service provision by location

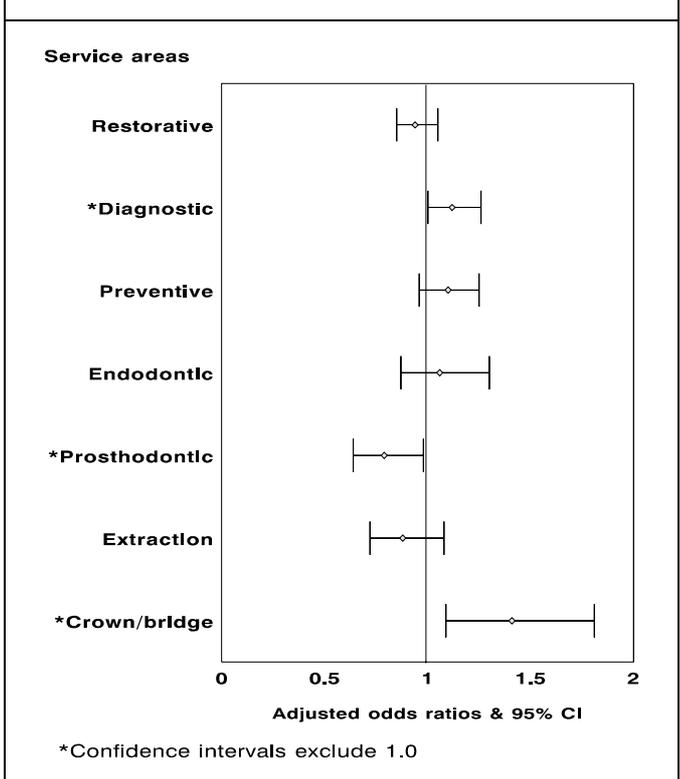
Service provision per visit in the seven most commonly provided service areas from the 1993-94 wave of the Study are presented in Figure 2 by location. The rank order for the rate of service per visit was similar for both capital city and non-capital locations. However, there were differences by location within main areas of service (e.g., diagnostic and preventive services were provided at higher rates at capital city compared to non-capital locations).

**Figure 2: Percent receiving services by location: 1993-94**



The differences in receipt of services for capital city compared to non-capital locations are presented as odds ratios in Figure 3 below.

**Figure 3: Adjusted odds ratios by location: 1993-94**



The odds ratios compare the percent of persons receiving services per visit between capital city and non-capital locations adjusted for age and sex of patients, insurance status, and visit type.

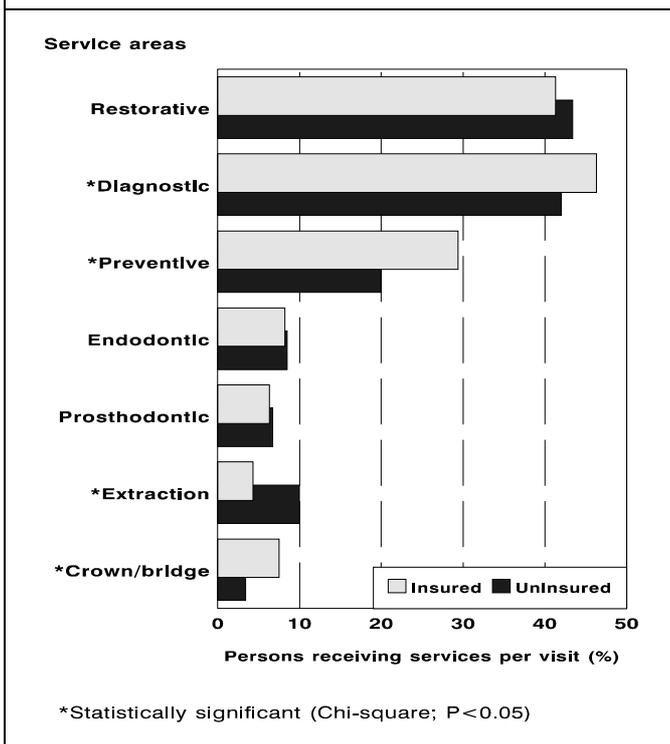
The odds ratios indicate higher odds of diagnostic and crown and bridge services at capital city locations, while the odds ratio below 1.0 indicates lower odds of prosthodontic services at capital city compared to non-capital locations.

### Service provision by insurance

The percentage of persons receiving services per visit in the seven most commonly provided service areas from the 1993-94 wave of the Study are presented in Figure 4 by insurance status.

Differences by insurance status occurred for diagnostic, preventive, extraction, and crown and bridge services.

**Figure 4: Percent receiving services by insurance: 1993-94**

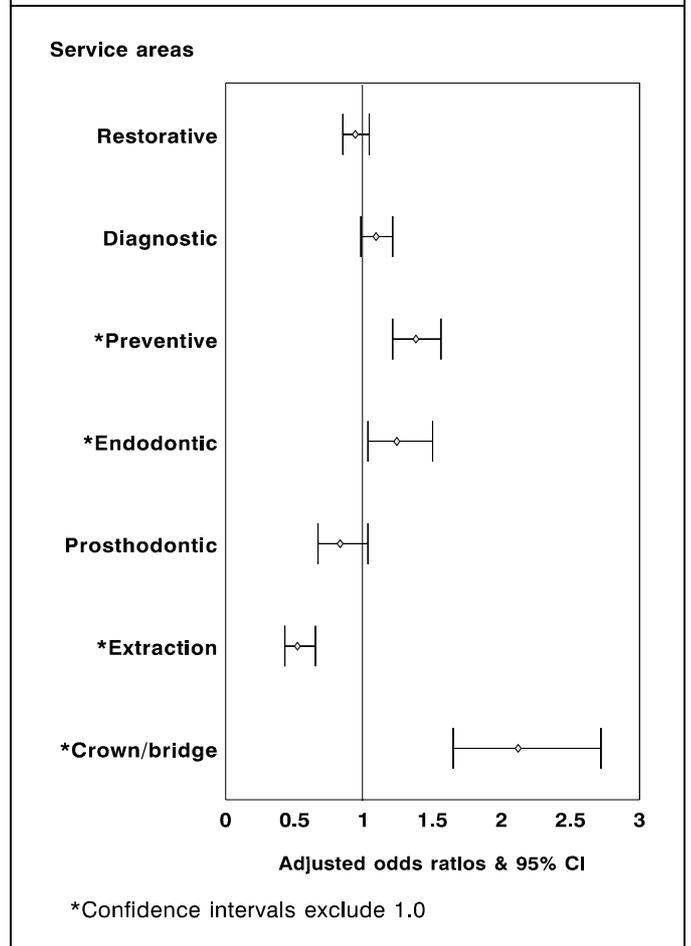


The differences in receipt of services for insured compared to uninsured patients are presented as odds ratios in Figure 5.

The odds ratios compare the odds of service per visit between insured and uninsured patients adjusted for age and sex of patients, geographic location and visit type. An odds ratio of 1.0 corresponds to identical odds.

After adjustment for age and sex of patients, geographic location and visit type, there were higher odds for receipt of preventive, endodontic, and crown and bridge services, and lower odds of extractions for insured compared to uninsured patients.

**Figure 5: Adjusted odds ratios by insurance: 1993-94**



### Discussion

#### Restorative services over time

A large percentage of dentists work as general practitioners (e.g., 84.6% in 1994), with restorations comprising a large component of the services provided (e.g., 34.7% when the Study began in 1983-84).

However, this may be changing in response to factors such as oral health trends and developments in dental materials.

Restorative services increased in annual volume over the period of the study, with:

- increased volumes of composites, ionomers, and crowns, and;
- decreased volume of amalgams.

## Service provision by location

Rates of practising dentists per 100,000 population vary between capital city (51.2) and rest of State (28.7 in 1994), with lower availability of dentists outside of capital cities.

Oral health status also varies by location, with a higher percentage of edentulism (i.e., complete tooth loss) in non-capital (14.8%) compared to capital city locations (9.2% in 1994).

Compared to non-capital locations, dentists at capital city locations reported:

- higher odds of diagnostic and crown and bridge services, and;
- lower odds of prosthodontic services per visit.

## Service provision by insurance

Insurance may be related to service patterns, with greater use of services among insured patients (e.g., 61.7% of insured persons had a dental visit within the last year vs 41.5% for uninsured persons in 1994).

The pattern of service provision varied by insurance status. These differences included:

- higher odds of preventive, endodontic, and crown and bridge services per visit, and;
- lower odds of extraction per visit for insured compared to uninsured patients.

## Summary

Changes in patterns of service provision occurred over time for restorative related services. In 1993-94, there were differences in service patterns between capital city and non-capital locations, and between insured and uninsured patients.

## Further reference

Brennan DS, Spencer AJ, Szuster FSP. Insurance status and provision of dental services in Australian private general practice. *Community Dent Oral Epidemiol* 1997;25:423-8.

Brennan DS, Spencer AJ, Szuster FSP. Rates of dental service provision between capital city and non-capital locations in Australian private general practice. *Aust J Rural Health* 1998;6:12-17.

Carter K, et al. *National Dental Telephone Interview Survey 1994*. Adelaide: AIHW Dental Statistics and Research Unit, 1994.

Spencer AJ, Brennan DS, Szuster FSP. Changing provision of restorative services in Australia. *J Dent* 1994;22:136-40.

Spencer AJ, Lewis JM. Service-mix in general dental practice in Australia. *Aust Dent J* 1989;34:69-74.

Szuster FSP, Spencer AJ. *Dental practitioner statistics, Australia 1994*. Adelaide: AIHW Dental Statistics and Research Unit, 1997.

## Acknowledgements

The 1993-94 Longitudinal Study of Dentists' Practice Activity was supported by a Human Services and Health Research and Development Grant from the Commonwealth Department of Human Services and Health.

The assistance of the responding dental practitioners is greatly appreciated.

*The AIHW Dental Statistics and Research Unit (DSRU) is a collaborative unit of the Australian Institute of Health and Welfare, established in 1988 at The University of Adelaide. The DSRU aims to improve the oral health of Australians through the collection, analysis and reporting of dental statistics and research on the dental workforce, dental health status, dental practices and use of dental services.*

**DSRU Director** Professor A. John Spencer

**Research Officers** Mr Jason Armfield  
Mr David Brennan  
Mr Knute Carter  
Dr Jane Chalmers  
Miss Sophie Kriven  
Mrs Judy Stewart  
Mr Fearnley Szuster

**Research Associates** Dr Rachael Mathew  
Dr Anuradha Narayanan

**Consultant Oral Epidemiologists** Dr Gary Slade (Uni. of North Carolina)  
Dr Kaye Roberts-Thomson

**Published by:**

AIHW Dental Statistics and Research Unit  
The University of Adelaide  
SOUTH AUSTRALIA 5005

Email: [aihw.dsru@dentistry.adelaide.edu.au](mailto:aihw.dsru@dentistry.adelaide.edu.au)

Phone: 61 8/(08) 8303 4051

Fax: 61 8/(08) 8303 4858

[www.adelaide.edu.au/socprev-dent/dsru](http://www.adelaide.edu.au/socprev-dent/dsru)

ISSN 1321-9227