

# Population health profile of the Macarthur

## Division of General Practice

Population Profile Series: No. 14

PHIDU

November 2005



© Commonwealth of Australia 2005

This work may be reproduced and used subject to acknowledgement of the source of any material so reproduced.

## National Library of Australia Cataloguing in Publication entry

---

Population health profile of the Macarthur Division of General Practice.

Bibliography.

ISBN 0 7308 9421 5.

1. Public health - New South Wales - Macarthur - Statistics. 2. Health status indicators - New South Wales - Macarthur - Statistics. 3. Health service areas - New South Wales - Macarthur. 4. Macarthur (N.S.W.) - Statistics, Medical. I. Public Health Information Development Unit (Australia). II. Australia. Dept. of Health and Ageing. III. Australian Institute of Health and Welfare. (Series : Population profile series, 1833-0452 ; no. 14).

362.1099441

ISSN 1833-0452 Population Profile Series

**Public Health Information Development Unit, The University of Adelaide**  
***A Collaborating Unit of the Australian Institute of Health and Welfare***

---

This profile was produced by PHIDU, the Public Health Information Development Unit at The University of Adelaide, South Australia. The work was funded under a grant from the Australian Government Department of Health and Ageing. The views expressed in this profile are solely those of the authors and should not be attributed to the Department of Health and Ageing or the Minister for Health and Ageing.

The data in this report are designed to be used for needs assessment and planning purposes: while they are based on the best available data and analytic processes, data available by postcode or Statistical Local Area, as used in this report, cannot be precisely translated to Division. Division totals in the report should, therefore, be seen as estimates. Interpretation of differences between data in this profile and similar data from other sources needs to be undertaken with care, as such differences may be due to the use of different methodology to produce the data.

Suggested citation:

PHIDU. (2005) *Population health profile of the Macarthur Division of General Practice*. Population Profile Series: No. 14. Public Health Information Development Unit (PHIDU), Adelaide.

Enquiries about or comments on this publication should be addressed to:

PHIDU, The University of Adelaide, South Australia 5005  
Phone: 08-8303 6237 or e-mail: [PHIDU@publichealth.gov.au](mailto:PHIDU@publichealth.gov.au)

This publication, the maps and supporting data, together with other publications on population health, are available from the PHIDU website ([www.publichealth.gov.au](http://www.publichealth.gov.au)).

Published by Public Health Information Development Unit, The University of Adelaide

Contributors: Anthea Page, Sarah Ambrose, Liz Fisher, Kristin Leahy and John Glover

# Population health profile of the *Macarthur Division of General Practice*

## Introduction

This profile has been designed to provide a description of the population of the Macarthur Division of General Practice, and aspects of their health. Its purpose is to provide information to support a population health approach, which aims to improve the health of the entire population and to reduce health inequalities among population groups: a more detailed discussion of a population health approach is provided in the supporting information, page 16.

## Contents

The profile includes a number of tables, maps and graphs to profile population health in the Division and provides comparisons with other areas (eg. Sydney and Australia). Specific topics covered include:

- a socio-demographic profile (pages 2-5);
- GP workforce data (page 6);
- immunisation rates (page 6);
- rates of premature death (page 7); and
- estimates of the prevalence of chronic disease and selected risk factors (pages 8-12).

## Key indicators

**Location:** New South Wales

**Division number:** 215

Population‡:	No.	%
Total	234,157	
65+	17,419	7.4%
<25	93,766	40.0%
Indigenous	5,172	2.3%

**Disadvantage score<sup>1</sup>:** 973

**GP services per head of population:**

Division‡	5.9
Australia	4.7

**Population per FTE GP:**

Division‡	1,458
Australia	1,403

**Premature death rate<sup>2</sup>:**

Division‡	314.2
Australia	290.4

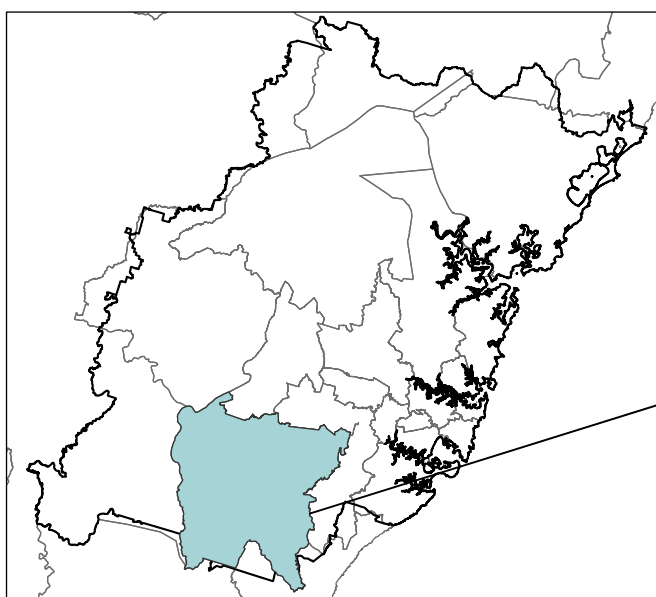
<sup>1</sup> Numbers below 1000 (the index score for Australia) indicate the Division is relatively disadvantaged

<sup>2</sup> Deaths at ages 0 to 74 years per 100,000 population

‡ See note "Data converters and mapping" re calculation of Division Total

## Macarthur Division of General Practice

*NSW Divisions of General Practice*



*Macarthur DGP by SLA*



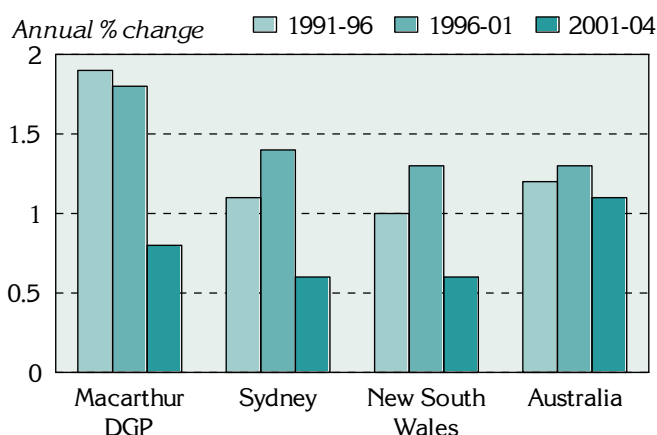
— Sydney Divisions of General Practice  
 — Sydney Statistical Division

# Socio-demographic profile

## Population

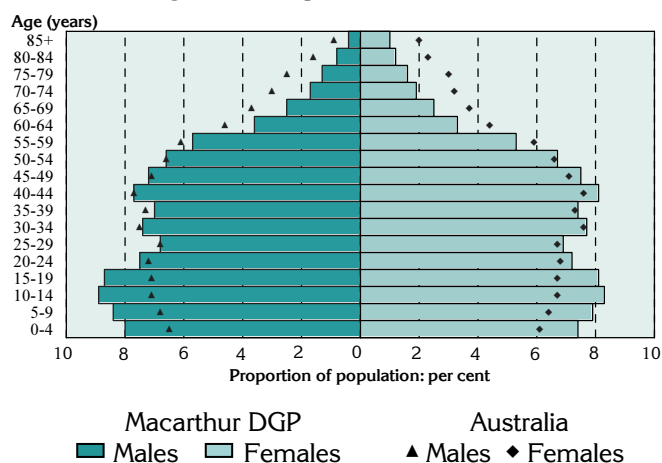
The Macarthur Division had an Estimated Resident Population of 234,157 at 30 June 2004.

**Figure 1: Annual population change, Macarthur DGP‡, Sydney, New South Wales and Australia, 1991 to 1996, 1996 to 2001 and 2001 to 2004**



Over the five years from 1991 to 1996, the Division's population increased by 1.9% on average each year, higher than in Sydney (1.1%), New South Wales (1.0%), and Australia (1.2%). From 1996 to 2001, the annual percentage increase was 1.8%, higher than in Sydney (1.4%) and New South Wales (1.3%). The growth rate declined to 0.8% per year from 2001 to 2004, still higher than the annual increases for Sydney and New South Wales (0.6%).

**Figure 2: Population in Macarthur DGP‡ and Australia, by age and sex, 2004**



The most notable differences in the age distribution of the Division's population (when compared with Australia overall) are:

- at younger ages – notably higher proportions of children aged 0 to 14 years, and young people aged 15 to 19 years;
- slightly higher proportions of young people aged 20 to 24 years; and
- at 55 years and over - lower proportions of both males and females.

**Table 1: Population by age, Macarthur DGP‡ and Australia, 2004**

Age group (years)	Macarthur DGP		Australia	
	No.	%	No.	%
0-14	57,217	24.4	3,978,751	19.8
15-24	36,549	15.6	2,762,769	13.8
25-44	69,112	29.5	5,881,048	29.3
45-64	53,861	23.0	4,864,037	24.2
65-74	10,102	4.3	1,374,792	6.8
75-84	5,696	2.4	934,505	4.7
85+	1,621	0.7	295,602	1.5
<b>Total</b>	<b>234,157</b>	<b>100.0</b>	<b>20,091,504</b>	<b>100.0</b>

As shown in the age-sex pyramid above, Macarthur DGP had higher proportions of children and young people than Australia, with 24.4% at ages 0 to 14 years, and 15.6% aged 15 to 24 years (compared to 19.8% and 13.8% for Australia) (Table 1). Conversely, the 45 years and over age groups had lower proportions compared with Australia.

The Macarthur DGP comprised 11.1% of people born in predominantly non-English speaking countries and resident in Australia for five years or more (Table 2), notably lower than the 17.8% in Sydney as a whole. Recent arrivals (those resident in Australia for less than five years) from non-English speaking countries comprised 1.8% of the Division's population (compared to 4.3% in Sydney).

‡ See note under 'Data converters and mapping' re calculation of Division totals on this page

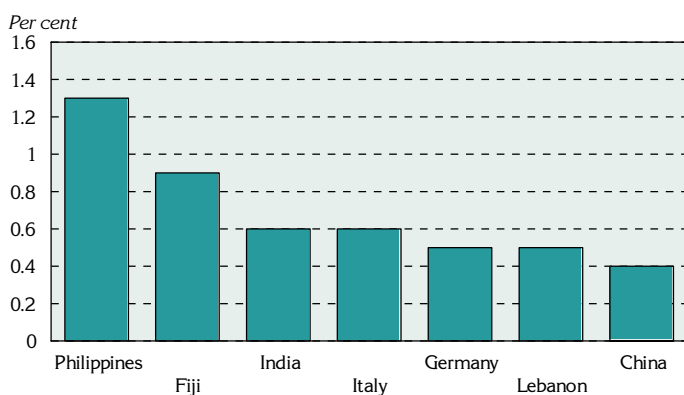
Of these residents, 1.8% had poor proficiency in English (determined when people aged five years and over born overseas in predominantly non-English speaking countries reported in the Census speaking another language and speaking English 'not well' or 'not at all'), lower than the proportions in Sydney (4.8%), New South Wales (3.2%) and Australia (2.4%).

**Table 2: Non-English speaking born, Macarthur DGP, Sydney, New South Wales and Australia, 2001**

People born in predominantly non-English speaking countries	Macarthur DGP		Sydney		New South Wales		Australia	
	No.	%	No.	%	No.	%	No.	%
Resident in Australia for five years or more	24,666	11.1	705,841	17.8	803,824	12.7	2,019,410	10.8
Resident in Australia for less than five years	3,969	1.8	170,580	4.3	182,972	2.9	408,074	2.2
Poor proficiency in English <sup>1</sup>	3,727	1.8	176,287	4.8	189,874	3.2	425,399	2.4

<sup>1</sup> Calculated on persons aged 5 years and over who reported speaking another language and speaking English 'not well' or 'not at all'.

**Figure 3: Major non-English speaking birthplaces, Macarthur DGP, 2001**



Australian-born people comprised 78.0% of the Division's population, above the Australian figure of 72.6%. Of the 8.4% of people from English speaking countries, 5.9% were from the UK and Eire. The major birthplaces of the non-English speaking population include the Philippines (1.3%); Fiji (0.9%); India and Italy (0.6%); Germany and Lebanon (0.5%); and China (0.4%).

## Socioeconomic status

*The indicators presented in this section describe geographic variations in the distribution of the population for a number of key socioeconomic influences, which impact on the health and wellbeing of populations.*

The Macarthur DGP had higher a proportion of single parent families (13.5%) compared to Sydney as a whole (9.6%), and twice the rate of Aboriginal and Torres Strait Islanders (2.3%, compared to 1.1%) (Figure 4, Table 3).

Full-time secondary school education participation of 16 year olds living in the Division (69.3%) was notably lower than for Sydney (76.2%).

A marginally lower proportion of the Division's households received rent assistance from Centrelink (12.6%) compared to Sydney (13.7%), but there were more dwellings rented from the State housing authority (9.8%, compared to 5.1% for Sydney). The proportion of dwellings with no access to a motor vehicle (8.7%) was lower compared to that for Sydney (13.1%).

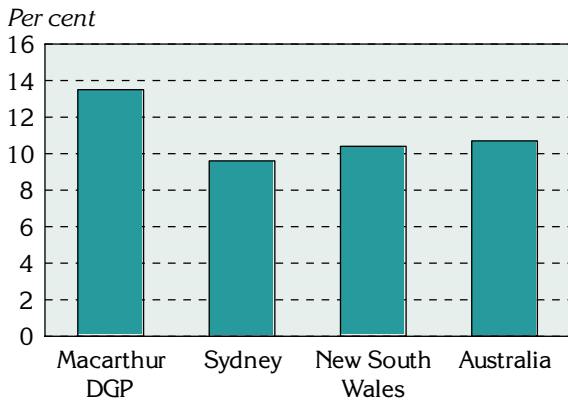
The Division had lower proportions of the population who reported using, at home, a computer (41.3%) and the Internet (25.8%), compared to Sydney (43.7% and 31.0%).

These socioeconomic indicators show the Division to comprise a population of relatively low socioeconomic status: see also the note on page 5 (Summary of socioeconomic ranking).

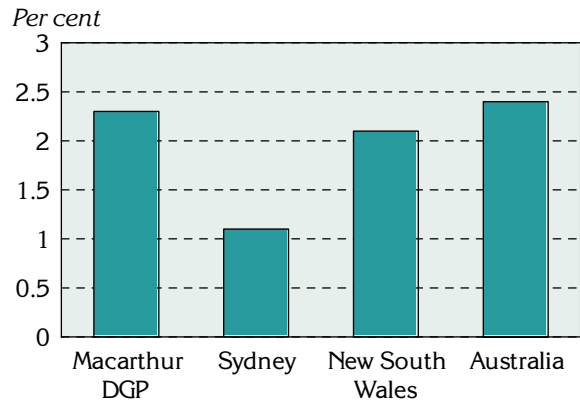
**Figure 4: Socio-demographic indicators, Macarthur DGP, Sydney, New South Wales and Australia, 2001**

*Note the different scales*

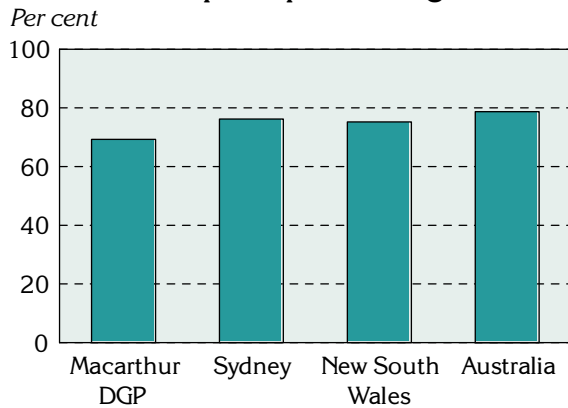
**Single parent families**



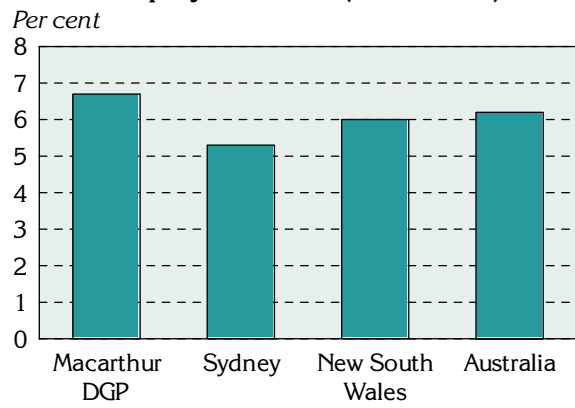
**Indigenous‡**



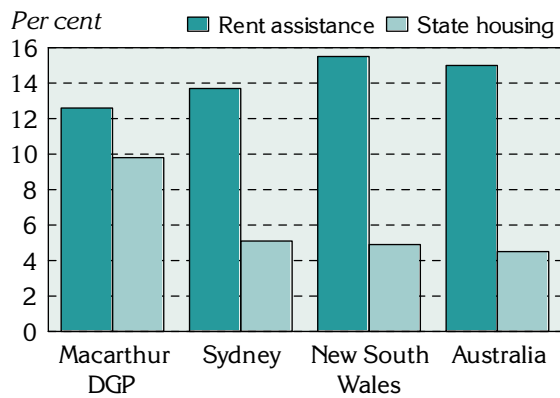
**Education participation at age 16‡**



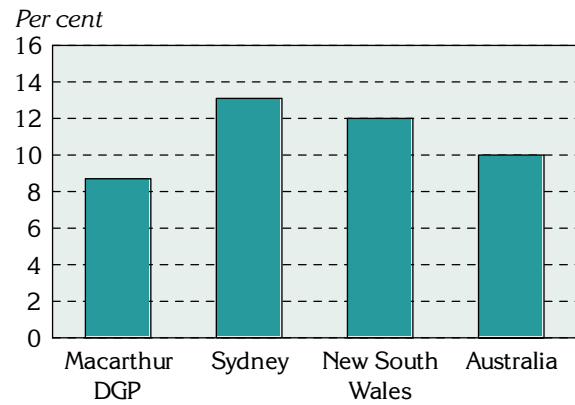
**Unemployment rate (June 2003)‡**



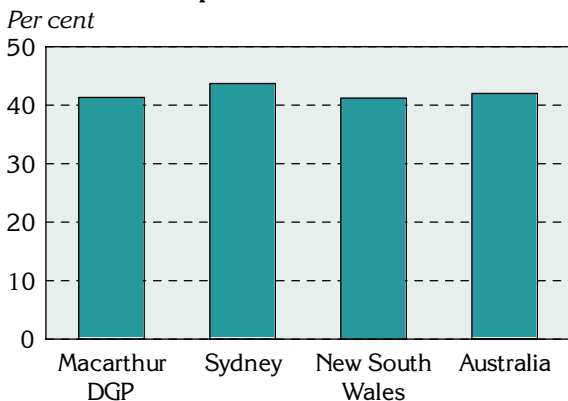
**Households receiving rent assistance & Dwellings rented from State housing authority**



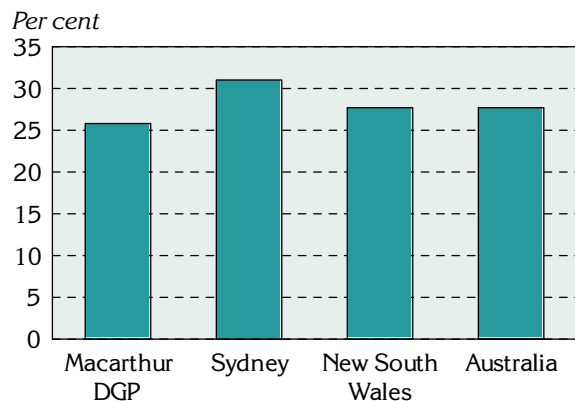
**Dwellings with no motor vehicle**



**Computer use at home**



**Internet use at home**



‡ See note under 'Data converters and mapping' re calculation of Division totals

**Table 3: Socio-demographic indicators, Macarthur DGP, Sydney, New South Wales and Australia, 2001**

Indicator	Macarthur DGP		Sydney		NSW		Australia	
	No.	%	No.	%	No.	%	No.	%
Single parent families	7,917	13.5	98,394	9.6	172,199	10.4	529,969	10.7
Indigenous‡	5,172	2.3	43,850	1.1	134,886	2.1	458,261	2.4
Full-time secondary education at age 16‡	2,733	69.3	40,951	76.2	65,205	75.2	130,198	78.7
Households: rent assistance	8,698	12.6	187,466	13.7	343,540	15.5	1,006,599	15.0
Dwellings rented from the State housing authority	7,005	9.8	72,724	5.1	114,130	4.9	317,171	4.5
Dwellings: no motor vehicle	6,205	8.7	187,858	13.1	280,434	12.0	708,073	10.0
Computer use at home	90,995	41.3	1,726,050	43.7	2,600,257	41.2	7,881,983	42.0
Internet use at home	57,317	25.8	1,227,632	31.0	1,751,626	27.7	2,019,410	27.7

‡ See note under 'Data converters and mapping' re calculation of Division total

The unemployment rate of 6.7% in Macarthur DGP was higher than the rates for Sydney (5.3%) and for New South Wales (6.0%) (Table 4, Figure 4). The labour force participation rate (75.7%) was similar to that for Sydney (75.9%) and New South Wales (74.6%). The female labour force participation (67.0%) was lower than for Sydney (70.2%) and New South Wales (69.0%).

**Table 4: Unemployment and labour force, Macarthur DGP, Sydney, New South Wales and Australia, 2003**

Labour force indicators	Macarthur DGP		Sydney		NSW		Australia	
	No.	%	No.	%	No.	%	No.	%
Unemployment rate‡	8,105	6.7	115,715	5.3	198,946	6.0	623,791	6.2
Labour force participation‡	120,234	75.7	2,188,568	75.9	3,331,064	74.6	10,038,147	75.2
Female labour force participation (2001)	39,238	67.0	731,898	70.2	1,093,243	69.0	3,306,521	69.7

‡ See note under 'Data converters and mapping' re calculation of Division total

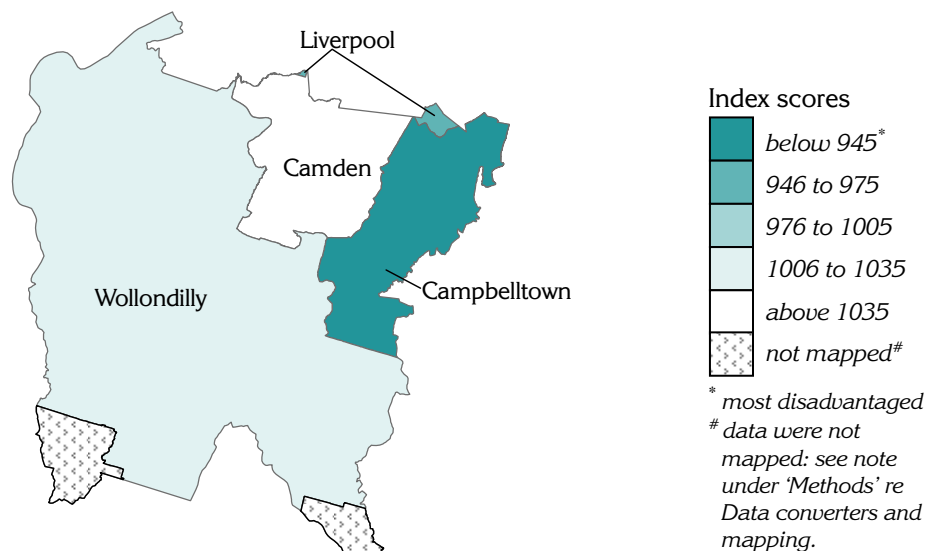
### Summary of the socioeconomic ranking of the Macarthur DGP

Following the 2001 Census, the Australian Bureau of Statistics (ABS) produced four socioeconomic indexes for areas (SEIFA) which describe various aspects of the socioeconomic profile of populations in areas. The scores for these indexes for each Statistical Local Area (SLA) or part SLA in Central Sydney DGP are shown in the supporting information in Table 9, page 16: SLAs are described on page 16.

The Macarthur DGP area's SEIFA Index of Relative Socio-Economic Disadvantage (IRSD) score is 973, well (2.7%) below the average score for Australia (1000) and consistent with Sydney (973); this highlights the average socioeconomic status profile of the Macarthur DGP population. Variations in the IRSD at the SLA level are shown in Map 1.

**Map 1: Index of Relative Socio-Economic Disadvantage by SLA, Macarthur DGP, 2001**

See note under 'Methods' re Data converters and mapping concerning SLAs mapped to the Division. This is of particular relevance where part of an SLA is mapped to the Division.



## General medical practitioner (GP) supply

A total of 160.4 full-time equivalent (FTE) GPs and 235.4 full-time workload equivalent (FWE<sup>1</sup>) GPs worked in the Division over 2003/04 (Table 5). Of the FWE GPs, 17.3% were female, and 30.6% were over 55 years of age (compared to 26.4% and 33.4%, respectively, for New South Wales).

Apart from the estimated day-time population, the rates of population per FTE GP varied, depending on the population measure used, from a high of 1,458 per GP (calculated on the average Estimated Resident Population (ERP) as at 30 June 2003 and 30 June 2004), to a low of 1,402 people per GP (calculated on the 1 August 2001 Census count – all people counted in the Division on Census night, including visitors from Australia and overseas). The rates of population per FWE GP were lower, ranging from 955 (calculated on the Census count) to 994 (calculated on the ERP). When calculated on the estimated day-time population, the rates were 20.1% below those calculated on the Usual Resident Population (usual residents of the Division counted in Australia on Census night), reflecting the substantial net movement of people out of the Division during the day for employment.

Based on the ERP, the rate of population per FTE GP in Macarthur DGP was slightly higher than the rates for New South Wales and Australia, indicating a marginally lower level of provision of GP services in the Division. The FWE GP rate was lower than the rates for New South Wales and Australia.

**Table 5: Population per GP in Macarthur DGP, New South Wales and Australia, 2003/04**

Population measure	Population	GPs		Population per GP	
		FTE	FWE	FTE	FWE
<b>Macarthur DGP</b>					
Census count (adjusted)*	224,850	160.4	235.4	1,402	955
Usual Resident Population (URP) (adjusted)*	226,174	..	..	1,410	961
Estimated Resident Population (ERP)	233,928	..	..	1,458	994
Day-time population (estimated on URP) * ‡	180,806	..	..	1,127	768
<b>New South Wales (ERP)</b>	<b>6,706,674</b>	<b>4,819</b>	<b>5,969</b>	<b>1,392</b>	<b>1,124</b>
<b>Australia (ERP)</b>	<b>19,989,303</b>	<b>14,246</b>	<b>16,872</b>	<b>1,403</b>	<b>1,185</b>

\* The Census count, Usual Resident Population and Day-time population were adjusted to reflect population change between 2001 and 2003/2004, as measured by the ERP

‡ See note under 'Data converters and mapping' re calculation of Division totals

## Immunisation

Data from the Australian Childhood Immunisation Register show that 92.8% of children in the Division in 2002 were fully immunised at age one, marginally below the Australian proportion of 94.2%. Immunisation by provider type for children between the ages of 0 to 6 is shown in Table 6. The proportion of children in the Division who were immunised by a general practitioner was 97.1%, compared to 70.0% for Australia, with 2.6% immunised at a local government council.

**Table 6: Childhood immunisation at ages 0 to 6 by provider type, Macarthur DGP and Australia, 2003/04**

Provider	Macarthur DGP	Australia
	%	%
General practitioner	97.1	70.0
Local government council	2.6	16.6
Community health centre/ worker	0.0	9.8
Public hospital	0.0	2.1
Aboriginal health service/ worker	0.3	0.9
Other*	0.0	0.6
<b>Total: Per cent</b>	<b>100.0</b>	<b>100.0</b>
<b>Number</b>	<b>50,115</b>	<b>3,843,610</b>

\* Includes immunisations in/ by State Health Departments, RFDS and private hospitals

<sup>1</sup> The FWE value is calculated for each GP location by dividing the GP's total Medicare billing (Schedule fee value of services provided during the reference period) by the mean billing of full-time doctors in that derived major speciality for the reference period. Thus, a GP earning 20% more than the mean billing of full-time doctors is shown as 1.2 FWE: this differs from full-time equivalent (FTE) counts, where the FTE value of any GP cannot exceed 1.0.



## Premature mortality

Deaths at ages below 75 years are used as an indicator of health status, as they largely reflect premature deaths, given the current levels of life expectancy in Australia.

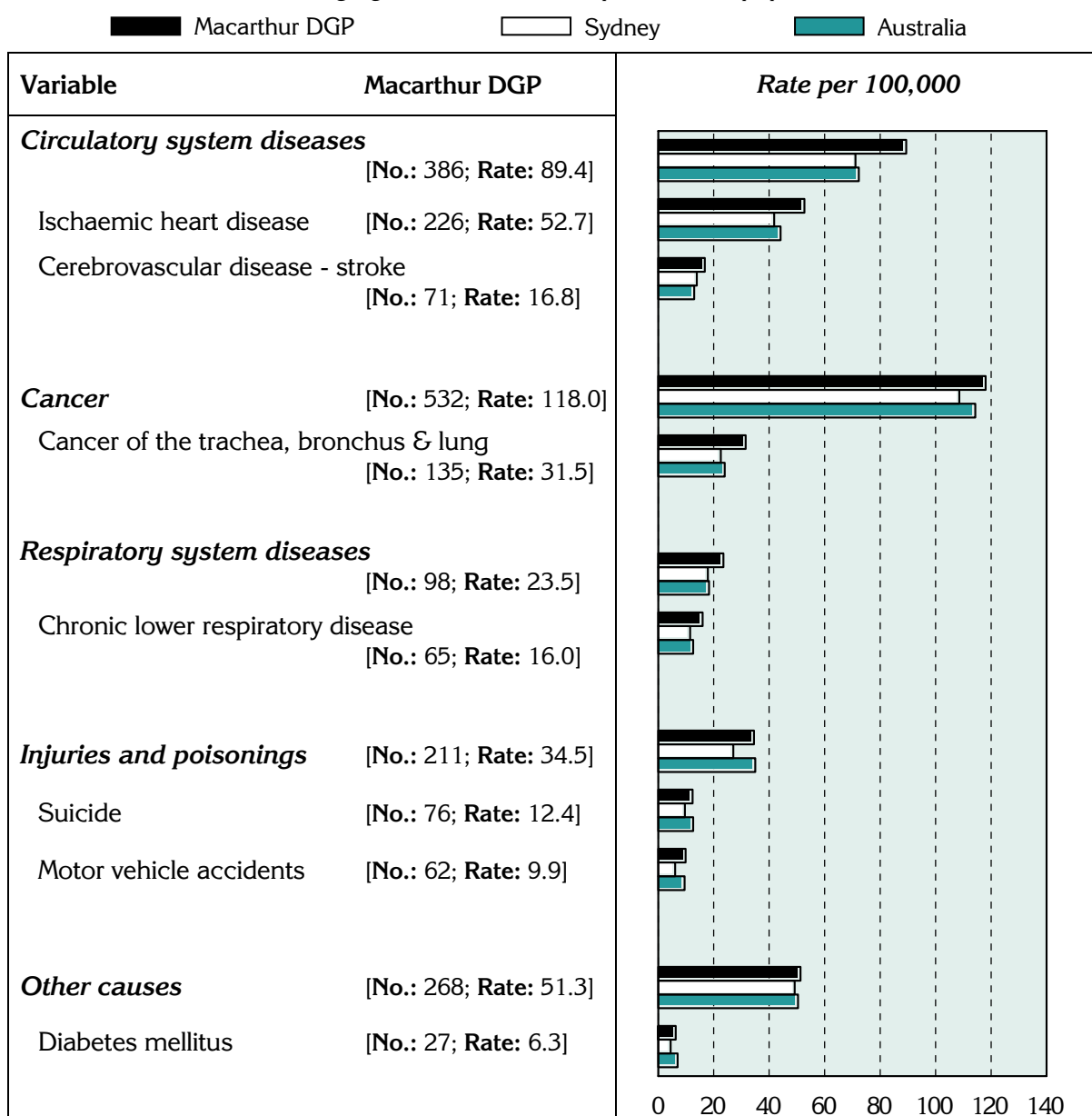
The 'all causes' death rate in the Division at ages 0 to 74 years (314.2 deaths per 100,000 population) is higher than for Sydney (273.4) and for Australia (290.4): the rates have been age standardised to allow for comparisons between areas, regardless of differences in age profiles between the Division and Australia.

The major causes of premature mortality in the Division, as for Sydney and Australia as a whole, are cancer and diseases of the circulatory system (Figure 5). Death rates in the Division were higher than those for Sydney for all conditions and causes.

The data on which the following chart is based are in Table 12.

**Figure 5: Deaths before 75 years of age by major condition group and selected cause, Macarthur DGP‡, Sydney and Australia, 2000-02\***

*Indirectly age standardised rate per 100,000 population*



\* 'No.' is the total number of deaths for the 2000-02 period; 'Rate' is an annual rate, based on the 3 year average

‡ See note under 'Data converters and mapping' re calculation of Division totals

## Chronic diseases and risk factors

*The term “chronic disease” describes health problems that persist across time and require some degree of health care management (WHO 2002). Chronic diseases tend to have complex causes, are often long lasting and persistent in their effects, and can produce a range of complications (Thacker et al. 1995). They are responsible for a significant proportion of the burden of disease and illness in Australia and other westernised countries. Given the ageing of the population, this trend is likely to continue.*

*At different life stages, risk factors for chronic diseases and their determinants include genetic predisposition; poor diet and lack of exercise; alcohol misuse and tobacco smoking; poor intra-uterine conditions; stress, violence and traumatic experiences; and inadequate living environments that fail to promote healthy lifestyles (NPHP 2001). Risk factors are also more prevalent in areas of low socioeconomic status, and in communities characterised by low levels of educational attainment; high levels of unemployment; substantial levels of discrimination, interpersonal violence and exclusion; and poverty. There is a higher prevalence of risk factors among Indigenous communities, and other socioeconomically disadvantaged Australians (NPHP 2001).*

## Background

In this section, estimates of the prevalence of selected chronic diseases and risk factors, and two summary measures of health, are shown for the Division‡, and for SLAs within the Division: note that the estimates have been predicted from self-reported data, and are not based on clinical records or physical measures. The chronic diseases and risk factors are those for which sufficiently reliable estimates can be made for the Division from national survey data. The process by which the estimates have been made, and details of their limitations, are described in the Notes section, pages 14-15. The data on which the following charts are based are in Table 13.

The estimates provide information of relevance to a number of the National Health Priority Areas (NHPAs – asthma; cardiovascular health; diabetes mellitus; injury prevention and control; mental health; and arthritis and musculoskeletal conditions: estimates have not been made for cancer control, the other NHPA). The risk factors for which estimates have been made are those which are accepted as being associated with these important chronic conditions. They are overweight (not obese), smoking, lack of exercise and high risk alcohol use.

*The numbers are estimates for an area, not measured events as are death statistics: they should be used as indicators of likely levels (and not actual levels) of a condition or risk factor in an area.*

## Prevalence estimates: chronic disease‡

It is estimated that, with the exception of respiratory system diseases and musculoskeletal diseases, which were lower, and osteoporosis (females), which was higher, similar proportions of the population in Macarthur DGP reported having any of the selected chronic conditions than in Australia as a whole (Figure 6).

## Prevalence estimates: self-reported health‡

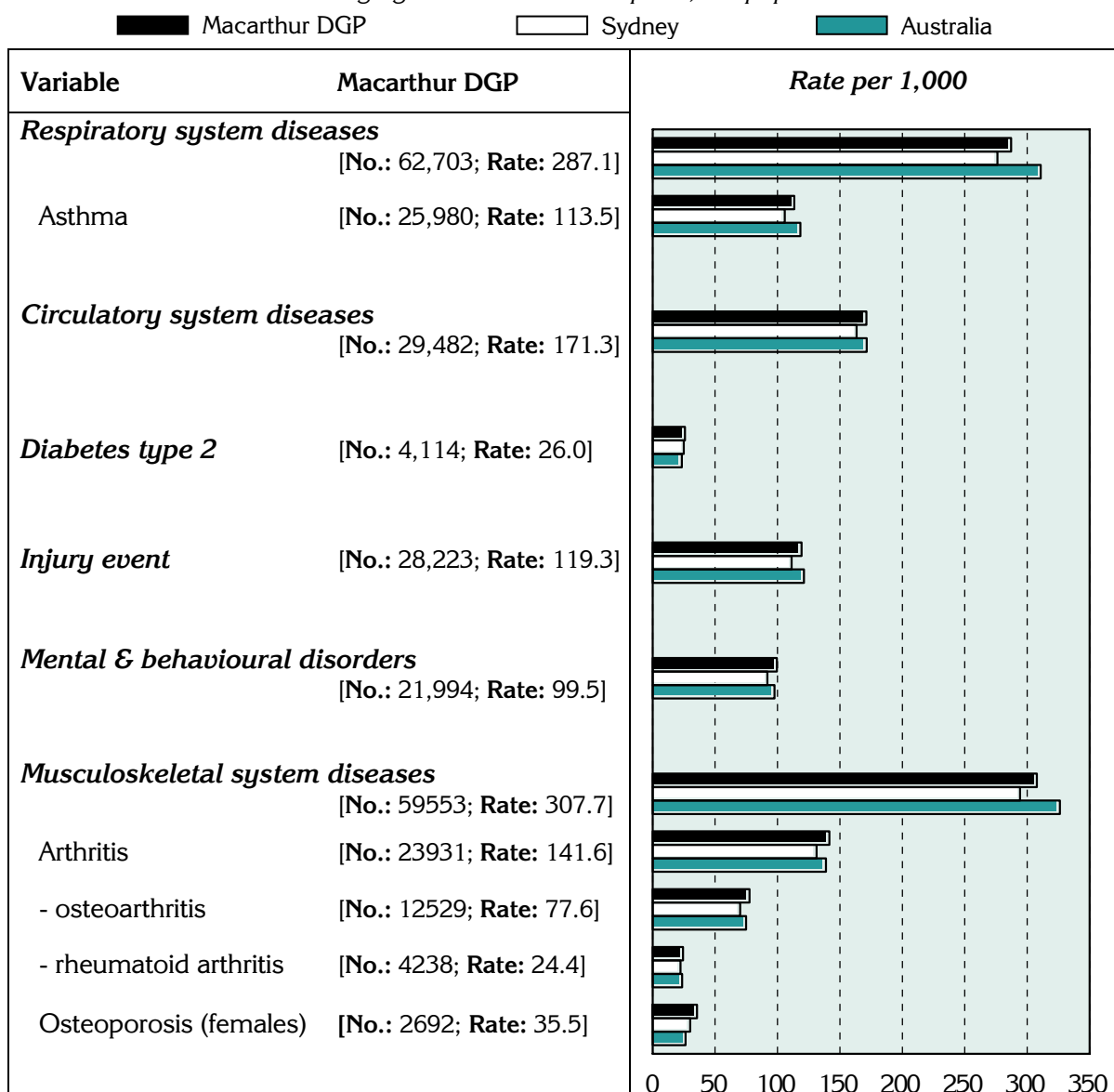
The NHS includes two measures of self-reported health. One is the Kessler Psychological Distress Scale–10 items (K–10). This is a scale of non-specific psychological distress based on 10 questions about negative emotional states in the four weeks prior to interview, asked of respondents 18 years and over (ABS 2002).

The other asks respondents aged 15 years and over to rate their health on a scale from ‘excellent’, through ‘very good’, ‘good’ and ‘fair’, to ‘poor’ health. The population of the Division aged 18 years and over is estimated to have more people with very high psychological distress levels as measured by the K–10 compared to Australia as a whole (Figure 7). The proportion of the population aged 15 years and over estimated to have reported their health as ‘fair’ or ‘poor’ is also above the national average.

‡ See note under ‘Data converters and mapping’ re calculation of Division totals

Figure 6: Estimates\* of chronic disease and injury, Macarthur DGP‡, Sydney and Australia, 2001

Indirectly age standardised rate per 1,000 population

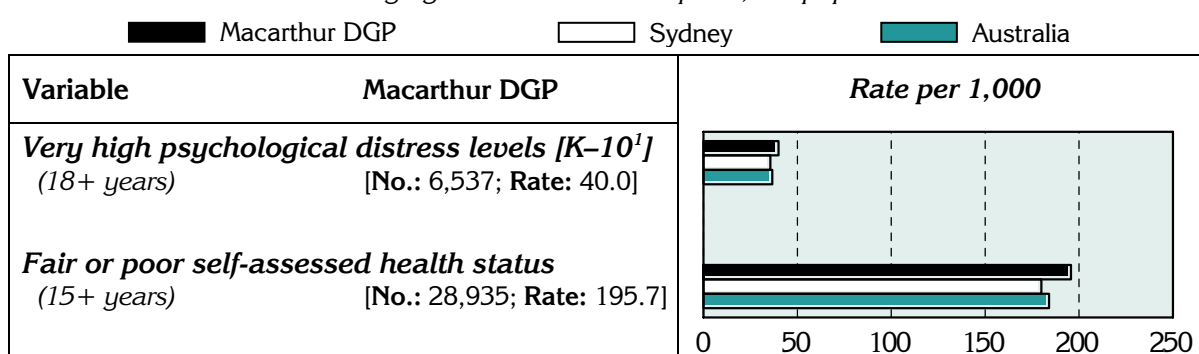


\* 'No.' is a weighted estimate of the number of people in Macarthur DGP reporting each chronic condition and is derived from synthetic predictions from the 2001 NHS

‡ See note under 'Data converters and mapping' re calculation of Division totals

Figure 7: Estimates\* of measures of self-reported health, Macarthur DGP‡, Sydney and Australia, 2001

Indirectly age standardised rate per 1,000 population



\* 'No.' is a weighted estimate of the number of people in Macarthur DGP reporting under these measures and is derived from synthetic predictions from the 2001 NHS

<sup>1</sup> Kessler 10

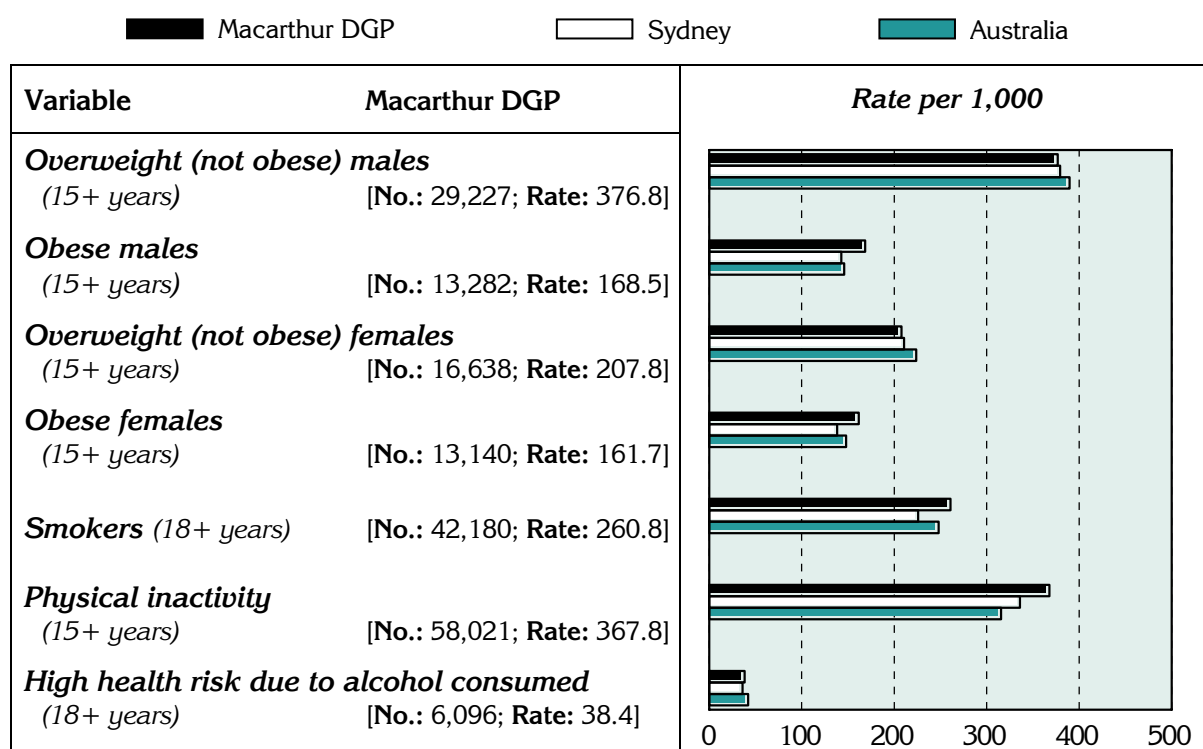
‡ See note under 'Data converters and mapping' re calculation of Division totals

## Prevalence estimates: risk factors‡

The Macarthur DGP had relatively higher rates (when compared to the Australian population) for obesity (males and females), smoking and lack of exercise (Figure 8).

**Figure 8: Estimates\* of selected risk factors, Macarthur DGP‡, Sydney and Australia, 2001**

*Indirectly age standardised rate per 1,000 population*



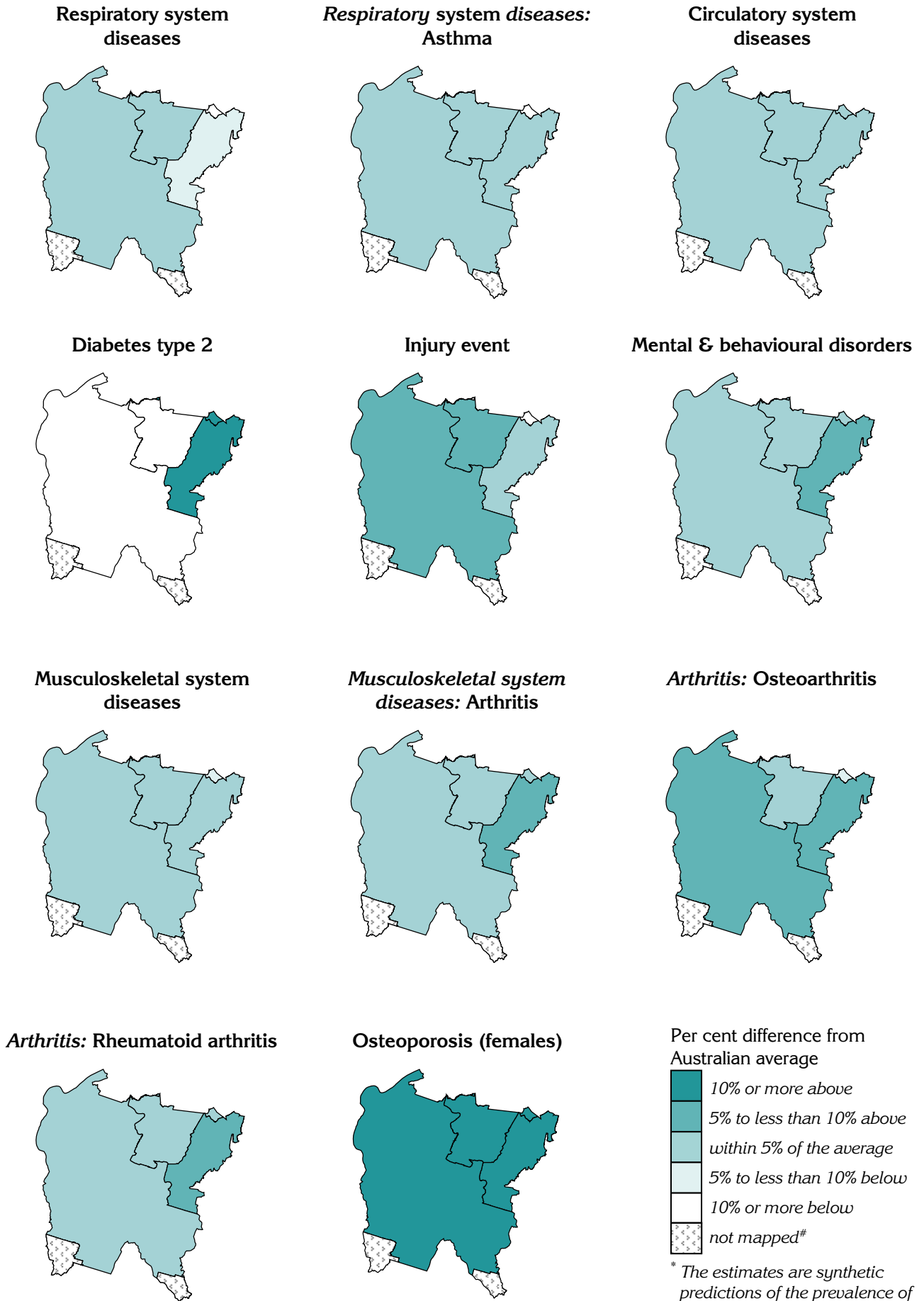
\* 'No.' is a weighted estimate of the number of people in Macarthur DGP with these risk factors and has been predicted using data from the 2001 NHS and known data for the Division

‡ See note under 'Data converters and mapping' re calculation of Division totals

The following maps provide details of the geographic distribution, at the SLA level, of the estimated prevalence of chronic disease (Map 2), self-reported health (Map 3) and risk factors associated with chronic disease (Map 4).

In the following maps, users should note that the estimates shown for part SLAs in the Division (see Table 11, page 17, for the per cent of SLA population in the Division) represent the estimates for the whole SLA, and not just the part shown. However, SLAs with only a small proportion of their population in the Division are likely to have little influence on the total estimates for the Division, which have been based on the percentage of the SLA population in the Division.

Map 2: Estimates\* of chronic disease and injury by SLA, Macarthur DGP, 2001



\* The estimates are synthetic predictions of the prevalence of these conditions: see Notes on the data.

# Data not mapped: see Notes on the data.

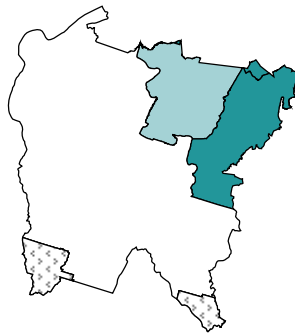
Map 3: Estimates\* of measures of self-reported health by SLA, Macarthur DGP, 2001

Very high psychological distress levels [K-10<sup>1</sup>] (18+ years)

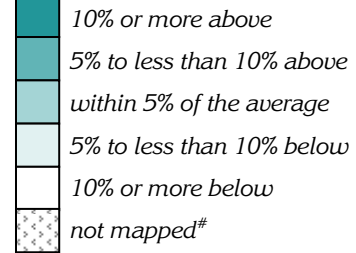


<sup>1</sup> Kessler 10

Fair or poor self-assessed health status (15+ years)



Per cent difference from Australian average

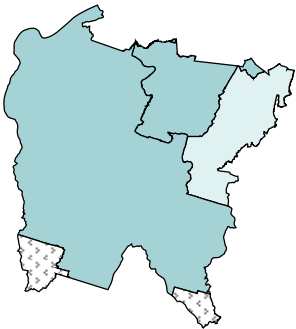


\* The estimates are synthetic predictions of the prevalence of these conditions: see Notes on the data.

# Data not mapped: see Notes on the data.

Map 4: Estimates\* of selected risk factors by SLA, Macarthur DGP, 2001

Overweight (not obese) males (15+ years)



Obese males (15+ years)



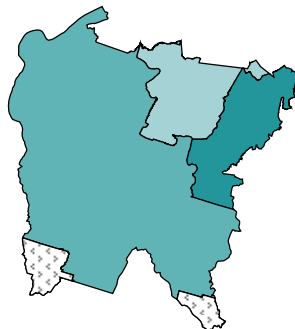
Overweight (not obese) females (15+ years)



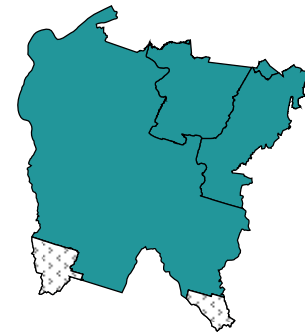
Obese females (15+ years)



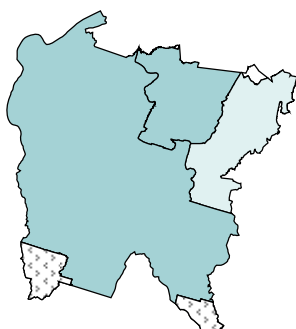
Smokers (18+ years)



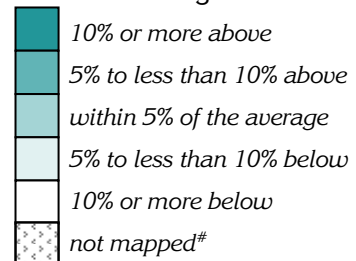
Physical inactivity (15+ years)



High health risk due to alcohol consumed (18+ years)



Per cent difference from Australian average



\* The estimates are synthetic predictions of the prevalence of these conditions: see Notes on the data.

# Data not mapped: see Notes on the data.

# Notes on the data

## Data sources and limitations

### General

Unless stated otherwise, references to 'Sydney' relate to the Sydney Statistical Division.

### Data sources

Table 7 details the data sources for the material presented in this profile.

**Table 7: Data sources**

Section	Source
<b>Key indicators</b>	
GP services per head of population	GP services data supplied by Department of Health and Ageing, 2003/04 Population data: Estimated Resident Population, ABS, mean of 30 June 2003 and 30 June 2004 populations
<b>Socio-demographic profile</b>	
Figures 1 and 2; Table 1	Estimated Resident Population, ABS, 30 June for the periods shown
Tables 2, 3 and 4; Figures 3 and 4	Data were extracted by postal area from the ABS Population Census 2001 <sup>1</sup> , except for the following indicators: - <i>Indigenous</i> – Experimental estimates of Aboriginal and Torres Strait Islander people, ABS 2001 (unpublished) - <i>Full-time secondary education participation at age 16</i> – Census 2001 (unpublished) - <i>Households receiving rent assistance</i> – Centrelink, December Quarter 2001 (unpublished) - <i>Unemployment rate / Labour force participation</i> – extracted from <i>Small Area Labour Markets Australia</i> , June Quarter 2003, Department of Employment and Workplace Relations
Map 1; Table 9	ABS SEIFA package, Census 2001
<b>General medical practitioner (GP) supply</b>	
Table 5	GP data supplied by Department of Health and Ageing, 2003/04 Population estimates used in calculating the population per GP rates are the: - Census count <sup>2</sup> , ABS Population Census 2001, scaled to 2003/04 - Usual Resident Population <sup>3</sup> , ABS Population Census 2001, scaled to 2003/04 - Day-time population: calculated from journey to work data, ABS Population Census (JRP) 2001 (unpublished); and 2001 Census JRP, scaled to 2003/04 - Estimated Resident Population, ABS, June 2003/2004
<b>Immunisation</b>	
Text comment: 1 year olds	National Centre for Immunisation Research and Surveillance, 2002
Table 6	Australian Childhood Immunisation Register, Health Insurance Commission, 2003/04 (unpublished)
<b>Premature mortality</b>	
Figure 5; Table 12	ABS Deaths, 2000 to 2002
<b>Chronic diseases and associated risk factors<sup>4</sup></b>	
Figures 6, 7 and 8; Maps 2, 3 and 4; Table 13	Estimated from 2001 National Health Survey (NHS), ABS (unpublished)

<sup>1</sup> All data extracted from Usual Residents Profile, except for data variables only released in the Basic Community Profile

<sup>2</sup> *Census count* - those counted in the Division on Census night, including tourists, business people and other visitors

<sup>3</sup> *Usual Resident Population* - those who usually live there and who were in Australia at the time and would have provided details in the Census at the address where they were counted

<sup>4</sup> See notes below

## Chronic diseases and associated risk factors

The data for chronic conditions and risk factors for SLAs have been estimated from the 2001 National Health Survey (NHS), conducted by the ABS: see note below on synthetic estimates. The NHS sample includes the majority of people living in private households, but excludes the most remote areas of Australia. These areas cover 86.4% of Australia's land mass and comprise just 3% of the total population, however, 28% of Australia's Indigenous population live in these areas. Thus it has not been possible to produce these estimates for Divisions with relatively high proportions of their population in the most remote areas of Australia.

The data for chronic conditions and risk factors are self-reported data, reported to interviewers in the 2001 NHS. Table 8 includes notes relevant to this data.

**Table 8: Notes on estimates of chronic diseases and associated risk factors**

Indicator	Notes on the data
<b>Estimates of chronic disease and injury</b> (Figure 6 and Map 2)	
Long term conditions	- Respondents were asked whether they had been diagnosed with any long term health condition (a condition which has lasted or is expected to last for 6 months or more), and were also asked whether they had been told by a doctor or nurse that they had asthma, cancer, heart and circulatory conditions, and/or diabetes
Injury event	- Injuries which occurred in the four weeks prior to interview
<b>Estimates of measures of self-reported health</b> (Figure 7 and Map 3)	
Very high psychological distress levels (K10)	- Derived from the Kessler Psychological Distress Scale-10 items (K-10), which is a scale of non-specific psychological distress based on 10 questions about negative emotional states in the 4 weeks prior to interview. 'Very high' distress is the highest level of distress category (of a total of four categories)
Fair or poor self-assessed health status	- Respondent's general assessment of their own health, against a five point scale from excellent through to poor – 'fair' or 'poor' being the two lowest in the scale
<b>Estimates of selected risk factors</b> (Figure 8 and Map 4)	
Overweight (not obese)	- Based on self-reported height and weight; BMI calculated and grouped into categories (to allow reporting against both WHO and NHMRC guidelines) - overweight: 25.0 to less than 30.0
Obese	- Based on self-reported height and weight; BMI calculated and grouped into categories (to allow reporting against both WHO and NHMRC guidelines) – obese: 30.0 and greater
Smokers	- Respondent's undertaking regular (or daily) smoking at the time of interview
Physical inactivity	- Did not exercise in the two weeks prior to interview through sport, recreation or fitness (including walking) – excludes incidental exercise undertaken for other reasons, such as for work or while engaged in domestic duties
High health risk due to alcohol consumed	- Respondent's estimated average daily alcohol consumption in the seven days prior to interview (based on number of days and quantity consumed). Alcohol risk levels were grouped according to NHMRC risk levels for harm in the long term, with 'high risk' defined as a daily consumption of more than 75 ml for males and 50 ml for females

**Note:** For a full description, refer to *ABS 2001 National Health Survey, Cat. No. 4364.0* and *ABS 2001 Health Risk Factors, Cat. No. 4812.0*



## Methods

### Synthetic estimates

The estimates of the prevalence of chronic disease and associated risk factors have been predicted for a majority of SLAs across Australia, using modelled survey data collected in the 2001 ABS National Health Survey (NHS) and known characteristics of the area. A synthetic prediction can be interpreted as the likely value for a 'typical' area with those characteristics: the SLA is the area level of interest for this project (where SLAs had small populations they were grouped to larger areas). This work was undertaken by the Australian Bureau of Statistics, as they hold the NHS unit record files: the small area data were compiled by PHIDU.

The approach used is to undertake an analysis of the survey data for Australia to identify associations in the NHS data between the variables that we wish to predict at the area level (eg. prevalence of chronic conditions and risk factors) and the data we have at the area level (eg. socioeconomic status, use of health services). The relationship between these variables for which we have area level data (the predictors) and the reporting of chronic conditions in the NHS is also a part of the model that is developed by the ABS. For example, such associations might be between the number of people reporting specified chronic conditions in the NHS and:

- the number of hospital admissions (in total, to public and to private hospitals, by age, sex and diagnosis),
- socioeconomic status (as indicated by Census data, or for recipients of government pensions and benefits), and
- the number of visits to a general medical practitioner.

The results of the modelling exercise are then applied to the SLA counts of the predictors. The prediction is, effectively, the likely value for a typical area with those characteristics. The raw numbers were then age-standardised, to control for the effects of differences in the age profiles of areas.

*The numbers are estimates for an area, not measured events as are death statistics: they should be used as indicators of likely levels of a condition or risk factor in an area.*

### Premature deaths

Details of deaths by SLA were purchased from the ABS. The raw numbers were then age-standardised, by the indirect method, to control for the effects of differences in the age profiles of areas.

### Data converters and mapping

#### [Conversion to Division of data available by postcode](#)

The allocation of postcodes to Divisions was undertaken using information from the Department of Health and Ageing's web site, which shows the proportion of a postcode in a Division (Table 10).

#### [Conversion to Division of data available by SLA](#)

(marked in this profile as ‡ See note under 'Data converters and mapping' re calculation of Division total)

Where the data presented in these profiles were only available by SLA they have been converted to Division of General Practice areas using a concordance based on data at the 2001 Census. A copy of the concordance is included in the Population data: A Guide for Divisions of General Practice: it is also available from the Divisions' data area on PHIDU web site.

In brief, the concordance splits the data (eg number of deaths) for each SLA across one or more Divisions. The proportion of an SLA's data that is allocated to each Division was calculated from (a) CD level Census 2001 data that splits SLAs across approximations to postcodes (referred to as postal areas) and (b) data on the DoHA website that splits postcodes across Divisions. This concordance can be adjusted to meet any new configuration of Division boundaries based on the 2001 Collection Districts, or combinations thereof.

The estimated population of each SLA in this Division is shown in Table 11.

#### [Mapping](#)

In some Divisions the maps may include a very small part of an SLA which has not been allocated any population, or either has a population of less than 100 or has less than 1% of the SLA's total population: these areas are mapped with a pattern.

## Supporting information

This and other information is also available at [www.publichealth.gov.au](http://www.publichealth.gov.au)

### A definition of population health

Population health, in the context of general practice, has been defined<sup>1</sup> as:

*“The prevention of illness, injury and disability, reduction in the burden of illness and rehabilitation of those with a chronic disease. This recognises the social, cultural and political determinants of health. This is achieved through the organised and systematic responses to improve, protect and restore the health of populations and individuals. This includes both opportunistic and planned interventions in the general practice setting.”*

The key determinants of health are social support networks, employment and working conditions, social environments, physical environments, geographical isolation, personal health practices, healthy child development, ageing and disability, biology and genetic endowment, health services, gender and culture.

In the Aboriginal and Torres Strait Islander context this means that a population health approach to health services will assist in ensuring “that Aboriginal and Torres Strait Islander people enjoy a healthy life equal to that of the general population, that is enshrined by a strong living culture, dignity and justice”.<sup>2</sup> This recognises the importance of achieving improvements to Aboriginal and Torres Strait Islander health and respects the particular health issues facing Indigenous people.

<sup>1</sup> “The role of general practice in population health – A Joint Consensus Statement of the General Practice Partnership Advisory Council and the National Public Health Partnership Group” (Joint Advisory Group on General Practice and Population Health 2001)

<sup>2</sup> As defined in the Strategic Framework for Aboriginal and Torres Strait Islander Health

### SEIFA scores

Following the 2001 Census, the Australian Bureau of Statistics (ABS) produced four socioeconomic indexes for areas (SEIFA). The indexes describe various aspects of the socioeconomic make-up of populations in areas, using data collected in the 2001 Census.

The Index of Relative Socio-Economic Disadvantage (labelled ‘Disadvantage’ in Table 9) includes all variables that either reflect or measure disadvantage. The Index of Advantage/Disadvantage is used to rank areas in terms of both advantage and disadvantage: any information on advantaged persons in an area will offset information on disadvantaged persons in the area. The Index of Economic Resources and the Index of Education and Occupation were targeted towards specific aspects of advantage/disadvantage.

For further information on the composition and calculation of these indexes see the ABS Information Paper ABS Cat No. 2039.0 available on the ABS web site [www.abs.gov.au](http://www.abs.gov.au). The scores for these indexes for each Statistical Local Area (SLA) or part SLA in Macarthur DGP are shown in Table 9.

**In using this table, users should note that the index score shown for SLAs with less than 100 per cent in the Division represents the score for the whole SLA, and not just the part shown. However, SLAs with small proportions may have little influence on the average index score for the Division which has been based on the postcodes in the Division.**

**Table 9: SEIFA scores by SLA, Macarthur DGP, 2001**

SLA code	SLA name (% per cent of SLA in the Division)	Index score			
		Disadvantage	Advantage	Economic Resources	Education & Occupation
11450	Camden (89.4)	1041	1043	1102	994
11500	Campbelltown (99.8)	941	969	1011	939
14900	Liverpool (4.3)	949	978	1030	949
18400	Wollondilly (80.0)	1023	1003	1034	968

\* Proportions are approximate and are known to be incorrect in some cases, due to errors in the concordance used to allocate CDs to form postal areas

Note: Scores are not shown for SLAs in the Division with estimated populations of less than 100 or with less than 1% of the SLA’s total population (refer to Table 11)

## Statistical geography of the Macarthur DGP

The postcodes in the Division (as per the Department of Health and Ageing web site) are in Table 10.

**Table 10: Postcodes in Macarthur DGP, 2004**

Postcode	Per cent of postcode population in the Division*	Postcode	Per cent of postcode population in the Division*	Postcode	Per cent of postcode population in the Division*
2167	100	2563	100	2569	100
2171	20	2564	100	2570	100
2174	50	2565	100	2571	100
2558	100	2566	100	2572	100
2559	100	2567	100	2573	100
2560	100	2568	100	2574	50

\* Proportions are approximate

Source: Department of Health and Ageing web site (accessed online version as at February 2005)

<http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-pcd-programs-divisions-divspc.htm>

Statistical Local Areas (SLAs) are defined by the Australian Bureau of Statistics to produce areas for the presentation and analysis of data. In Macarthur DGP, Camden and Campbelltown SLAs comprise the majority of the Division, with Liverpool and Wollondilly comprising smaller parts of the Division.

**Table 11: SLAs in Macarthur DGP by 2001 boundaries**

SLA code	SLA name	Per cent of the SLA's population in the Division*	Estimate of the SLA's 2004 population in the Division
11450	Camden	89.4	44,896
11500	Campbelltown	99.8	149,310
<b><i>12850</i></b>	<b><i>Fairfield</i></b>	<b><i>0.1</i></b>	<b><i>123</i></b>
14900	Liverpool	4.3	7,256
<b><i>17152</i></b>	<b><i>Sutherland Shire - West</i></b>	<b><i>0.1</i></b>	<b><i>112</i></b>
18400	Wollondilly	80.0	32,459

\* Proportions are approximate and are known to be incorrect in some cases, due to errors in the concordance used to allocate CDs to form postal areas. In addition, in a small number of cases, part(s) of an SLA can be allocated to another Division, sometimes several hundred kilometres away. Although adjustments have not been made to the concordance to correct these errors, the affected SLAs are highlighted in the table (shown in bold italic typeface)

## Supporting data

The Macarthur DGP covers 2,549 square kilometres based on 2001 SLA data.

The data used in Figure 5 to illustrate the rates of premature mortality in the Division are in Table 12.

**Table 12: Deaths before 75 years of age by major condition group and selected cause, Macarthur DGP‡, Sydney and Australia, 2000-02\***

*Indirectly age standardised rate per 100,000 population*

Variable	Macarthur DGP‡		Sydney		Australia	
	No.	Rate	No.	Rate	No.	Rate
<b>Circulatory system diseases</b>	386	89.4	7,428	71.1	38,357	72.3
Ischaemic heart disease	226	52.7	4,359	41.8	23,364	44.1
Cerebrovascular disease – stroke	71	16.8	1,451	13.9	6,920	13.0
<b>Cancer</b>	532	118.0	11,366	108.5	60,603	114.3
Cancer of the trachea, bronchus & lung	135	31.5	2,347	22.6	12,715	24.0
<b>Respiratory system diseases</b>	98	23.5	1,866	17.9	9,726	18.3
Chronic lower respiratory disease	65	10.0	1,191	11.5	6,657	12.6
<b>Injuries and poisonings</b>	211	34.5	3,077	27.1	18,573	35.0
Suicide	76	12.4	1,101	9.6	6,706	12.6
Motor vehicle accidents	62	9.9	692	6.1	5,014	9.5
<b>Other causes</b>	268	51.3	5,283	49.2	26,735	50.4
Diabetes mellitus	27	6.3	541	4.5	3,734	7.0

\* 'No.' is the total number of deaths for the 2000-02 period; 'Rate' is an annual rate, based on the 3 year average

‡ See note under 'Data converters and mapping' re calculation of Division totals

The rates used to illustrate the prevalence estimates of chronic disease and injury (Figure 6), measures of self-reported health (Figure 7), and selected risk factors (Figure 8), are shown in Table 13 below.

**Table 13: Estimates of chronic diseases and associated risk factors, Macarthur DGP‡, Sydney and Australia, 2001**

*Indirectly age standardised rate per 1,000 population*

Variable	Macarthur DGP‡	Sydney	Australia
<b>Chronic disease and injury (Figure 6)</b>			
Respiratory system diseases	287.1	276.2	310.8
Asthma	113.5	105.8	118.3
Circulatory system diseases	171.3	163.4	171.5
Diabetes type 2	26.0	25.0	23.4
Injury event	119.3	111.4	121.2
Mental & behavioural disorders	99.5	91.9	97.6
Musculoskeletal system diseases	307.7	294.3	326.2
Arthritis	141.6	131.3	138.8
- Osteoarthritis	77.6	70.2	74.9
- Rheumatoid arthritis	24.4	22.3	23.6
Osteoporosis (females)	35.5	30.1	26.4
<b>Measures of self-reported health (Figure 7)</b>			
Very high psychological distress levels (18+ years)	40.0	35.6	36.6
Fair or poor self-assessed health status (15+ years)	195.7	179.9	184.0
<b>Risk factors (Figure 8)</b>			
Overweight (not obese) males (15+ years)	376.8	379.3	389.7
Obese males (15+ years)	168.5	142.9	145.9
Overweight (not obese) females (15+ years)	207.8	210.7	223.9
Obese females (15+ years)	161.7	138.4	148.0
Smokers (18+ years)	260.8	225.9	248.0
Physical inactivity (15+ years)	367.8	335.9	315.5
High health risk due to alcohol consumed (18+ years)	38.4	36.0	42.1

‡ See note under 'Data converters and mapping' re calculation of Division totals

## References

Australian Bureau of Statistics (ABS) (2002). *2001 National Health Survey: summary of results*. Australia. (ABS Cat. No. 4364.0). Canberra: ABS.

National Public Health Partnership (NPHP) (2001). *Preventing Chronic Disease: A Strategic Framework*. Melbourne, Victoria.

Thacker S, Stroup D & Rothenberg R (1995). Public health surveillance for chronic conditions: a scientific basis for decisions. *Statistics in Medicine* 14: 629-641.

World Health Organization (2002). *The World Health Report 2002: Reducing Risks, Promoting Healthy Life*. Geneva: World Health Organization.

## Acknowledgements

Funding for these profiles was provided by the Population Health Division of the Department of Health and Ageing (DoHA). Assistance, by way of comment on the profiles and assistance in obtaining some datasets, has also been received from the Primary Care Division of the DoHA, the ABS and the ACIR.

## Further developments and updates

Subject to agreement and funding, a number of developments could be undertaken:

- Details of hospitalisations potentially avoidable through ambulatory care interventions are currently being prepared and will be forwarded to Divisions (and posted on the PHIDU web site) when they are available. Other enhancements will be considered as appropriate datasets become available.

The profiles could be updated as the data are updated. For example:

- Population estimates, avoidable hospitalisations, immunisation, and GP activity and workforce data – annually;
- Chronic disease estimates – three-yearly;
- Census data – five-yearly.

Any developments would be informed by consultation, including with Divisions.

## PHIDU contact details

**For general comments, data issues or enquiries re information on the web site, please contact PHIDU:**

Phone: 08-8303 6236 or e-mail: [PHIDU@publichealth.gov.au](mailto:PHIDU@publichealth.gov.au)