

Health expenditure and outcomes

Report by Access Economics Pty Limited for
**The Australian Association of
Pathology Practices**

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GLOSSARY OF ACRONYMS

AAPP	Australian Association of Pathology Practices
AIHW	Australian Institute of Health and Welfare
GDP	gross domestic product
OECD	Organisation for Economic Cooperation and Development
PPP	purchasing power parity
PYLL	potential years of life lost
UK	United Kingdom
US(\$)	United States (dollars)
WHO	World Health Organization

EXECUTIVE SUMMARY

The aim of this report for the Australian Association of Pathology Practices (AAPP) was to compare expenditure on health, and pathology if possible, in Australia with that in other comparable countries from the Organisation for Economic Co-operation and Development (OECD), together with comparisons of health outcomes. Data from the OECD (both published and specially ordered) was used to provide:

- ❑ cost comparisons across OECD countries;
- ❑ outcome comparisons across OECD countries; and
- ❑ analysis of the relationship between those costs and outcomes.

Findings

It is generally recognised that Australians enjoy relatively good health and one of the longest lifespans in the world, with outcomes expected to continue to improve according to the Australian Institute of Health and Welfare (AIHW, 2008a). Moreover, in most aspects of health, Australia is known to match or lead other comparable countries from the OECD.

In the three areas assessed in this report for 2005, Australia performed well in the league of 30 OECD countries.

- ❑ Australia's life expectancy at birth (80.9 years in 2005) was 4th highest in the OECD, behind Japan, Switzerland and Iceland.
- ❑ In terms of premature mortality, Australia's 'potential years of life lost' (PYLL) was 8th highest in the OECD (6,444 per 100,000 people), 10th highest for females (2,362 PYLL) and 7th highest for males (4,082 PYLL). This metric is useful to take account of the burden of disease borne by younger cohorts of a population.
- ❑ Measuring quality of life through perceived health status, Australia ranked 5th in the OECD (84.1% of Australians ranked their health as 'good' or better), behind New Zealand, the United States (US), Canada and Switzerland. This metric has been found to be a good predictor of people's future health care use and mortality.

To achieve these health outcomes – which have continued to improve over recent decades across the OECD, member countries have increased their expenditure on health care.

- ❑ Average health expenditure per capita across the OECD was 8.9% of gross domestic product (GDP), and Australia was right in the middle of the range, ranking 15th at 8.8% of GDP in 2005.
- ❑ Australia also ranked in the middle of the OECD (15th) in terms of health expenditure per capita, measured in US dollars (US\$) converted using purchasing power parity (PPP) – US\$2,999 in 2005 compared to the OECD average of US\$2,701.
- ❑ In terms of public health expenditure as a share of the total, Australia ranked 24th in the OECD, with a 67.0% public sector share compared to the OECD average of 72.9%.
- ❑ Although pathology services are not separately identifiable, the OECD reports pathology and diagnostic imaging expenditure combined in an 'ancillary services' group; Australia ranks relatively high (8th of 21) among OECD comparators in terms of the share of current health expenditure on ancillaries.

To assess Australia's overall performance in terms of outcomes relative to health system costs, OECD countries were ranked 1 to 30 for each data series – expenditure relative to GDP

and per capita, public share, life expectancy, PYLL and health status. Two 'summary measures' were then calculated to assess:

- ❑ the 'total' score, a metric measuring the 'bang for buck' from total health spending; and
- ❑ the 'public' score, a metric measuring the 'bang for buck' from public health spending.

Using these metrics, Australia has the best performance from its public health expenditure of any OECD country, and the fourth highest performance from its total health expenditure (behind Japan, Spain and New Zealand).

Possible explanations for this finding are:

- ❑ Australia's relatively high GDP per capita and fairly young population structure;
- ❑ around 70% of Australia's population lives in urban clusters, although our low population density overall (the lowest in the OECD) works against high performance, as service delivery to regional and remote areas is generally more complex and expensive;
- ❑ different clinical models of care, practice preferences and indemnity environments;
- ❑ greater reliance on evidence-based care and the use of cost effectiveness analysis in Australia; and
- ❑ relatively high emphasis placed on prevention, early detection and intervention (including through pathology and diagnostic imaging services).

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1. BACKGROUND

1.1 AIM OF ANALYSIS AND STRUCTURE OF REPORT

Access Economics was commissioned by the AAPP to undertake a comparative study of health expenditure and outcomes in Australia and in comparable countries of the OECD.

The report is structured as follows.

- The remainder of this chapter outlines the purpose of the analysis, the methodological approach and the main data sources.
- Chapter 2 examines national health expenditures across OECD countries based on comparable cost measures for the longest historical timeframe available. The following measures are presented:
 - total health expenditure, expressed per capita and relative to GDP;
 - health expenditure by bearer (ie, who pays) as a share of total health expenditure; and
 - health expenditure by cost category (with pathology included within ‘ancillary services’).
- Chapter 3 compares health outcomes across OECD countries based on comparable health indicators, also for the longest historical timeframe available, including:
 - life expectancy at birth;
 - premature mortality (measured as PYLL); and
 - perceived health status.
- Chapter 4 compares costs and outcomes and draws conclusions about observable relationships between the data presented in the previous chapters.

1.2 METHODOLOGY AND DATA

This comparative study examines the health expenditure and outcomes of Australia relative to other comparable OECD countries.

Health can be difficult to conceptualise and measure. The World Health Organization (WHO, 1946) defines health as ‘a state of complete physical, mental and social wellbeing, and not merely the absence of disease and infirmity’. International comparisons of health measures can be problematic, since there is no single indicator of health status. This report has been limited to a small range of key indicators of health and health systems that were selected on the basis of the availability and comparability of data. Although no simple set of statistics can measure the success or failure of a health system, the core measures examined here allow a broad view of how Australia compares to other developed OECD countries.

Data used in this report were sourced from publicly available OECD datasets as well as from a special data request from the OECD for data released for purchase on 10 December 2008¹ (see the References section at the end of this report, and the relevant sections within the report).

¹ See http://www.oecd.org/document/30/0,3343,en_2649_34631_12968734_1_1_1_1,00.html

1.2.1 COMPARATOR COUNTRIES

The comparator countries are 30 developed OECD countries, selected to allow comparisons between Australia and other countries with similar socioeconomic structures, health systems or standards of living. The selected countries (apart from Australia) are (as per OECD, 2005):

- ❑ Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, United Kingdom (UK) and US.

For the group of these OECD countries as a whole, averages are weighted to take account the proportional relevance of each component. For example, the average OECD health expenditure to GDP ratio is total health expenditure divided by total OECD GDP and the average OECD per capita health expenditure is total health expenditure divided by the total OECD population.

1.2.2 HEALTH EXPENDITURE INDICATORS

The health expenditure indicators in this report centre on total health expenditure as a percentage share of GDP and on a per capita basis. Both metrics are important since GDP per capita varies, so countries having a relatively high health spending to GDP ratio might have relatively low health expenditure per capita, and vice versa.

Categorisation of health expenditure was based on the OECD's *System of Health Accounts*. Total health expenditure measures the final consumption of health goods and services (ie, current health expenditure) plus capital investment in health care infrastructure (ie, gross capital formation). It includes spending by both public and private sources (including households) on medical services and goods, public health and prevention programs and administration. Health-related expenditure such as training, research and environmental health is excluded.

- ❑ Current health expenditure comprises (1) personal health services and goods provided directly to the individual and (2) collective services, covering tasks of public health such as health promotion and disease prevention services and health administration.
- ❑ Personal health services comprise services of curative care, rehabilitative services, services of long-term care, ancillary services to health care and medical goods dispensed to outpatients.
 - The basic functions of care (curative, rehabilitative and long-term care) can also be classified by the mode of production (inpatient, outpatient in hospitals or in the ambulatory sector and home care.)
- ❑ Differences between countries in what is included as 'health expenditure' complicate the comparison to some extent, so caution is warranted when making comparisons. Over time, data have been adjusted to take account of a number of series breaks that are present in health expenditure series, mostly due to methodological changes from implementation of the System of Health Accounts. The revision of the health sector boundary usually results in a level shift in health expenditure at the point of implementation (eg, Australia recently removed aged care from 'health expenditure').²

² The most important factor limiting the comparability of functional structure across countries is the difference in estimating long-term care expenditure. Another important issue is that in some countries, inpatient expenditure is still linked to hospital expenditure (ie, it includes other services, such as outpatient care, delivered in hospitals). For similar reasons, ancillary services may be included in either inpatient or outpatient expenditure.

Expenditure data were converted to US\$ on the basis of PPP conversions for the relevant years. PPPs are currency conversion rates that both convert to a common currency and equalise the purchasing power of different currencies, eliminating the differences in price levels between countries in the process of conversion. PPPs reflect the amount of a national currency that is required in each country to buy the same basket of goods and services as a US dollar does in the US. Estimates of PPPs are computed jointly by the OECD and Eurostat by comparing the prices of about 2,500 items in different countries. PPP estimates are affected by statistical errors: as a result, differences between countries of 5% or less are not significant. PPPs for the whole of GDP were used in this report because of the poor reliability of health-specific ones, particularly in the early part of the decade to 2005. PPP data were obtained from the OECD website³.

In the *System of Health Accounts*, the OECD defines three elements of health care financing: (1) funding 'source' (households, employers and government); (2) financing schemes/arrangements (eg, compulsory or voluntary insurance); and (3) financing agents (organisations managing the financing schemes).

1.2.3 HEALTH OUTCOME INDICATORS

There are a variety of health outcome indicators reported by the OECD. Some of the main categories are:

- 1 life expectancy at birth;
- 2 life expectancy at age 65;
- 3 premature mortality;
- 4 mortality from heart disease and stroke;
- 5 mortality from cancer;
- 6 mortality from road accidents;
- 7 suicide;
- 8 infant mortality;
- 9 infant health: low birth weight;
- 10 dental health among children;
- 11 perceived health status; and
- 12 AIDS incidence.

Of these, three were selected as core indicators of health outcomes – life expectancy at birth, premature mortality and perceived health status – since in developed countries the first two of these are reported in a broadly standard fashion, allowing for more robust comparisons. Morbidity and quality of life comparability is more difficult and more caution is required in their interpretation.

The OECD (2007) provides the following definitions for the three outcome indicators selected for this comparison.

- **Life expectancy** measures how long on average people would live based on a given set of age-specific death rates. However, the actual age-specific death rates of any

³ http://www.oecd.org/department/0,3355,en_2649_34357_1_1_1_1_1,00.html

particular birth cohort cannot be known in advance. If age-specific death rates are falling (as has been the case over the past decades in OECD countries), actual life spans will be higher than life expectancy calculated with current death rates. Each country calculates its life expectancy according to methodologies that can vary somewhat. These differences in methodology can affect the comparability of reported life expectancy estimates, as different methods can change a country's life expectancy estimates by a fraction of a year. Life expectancy at birth for the total population is calculated by the OECD Secretariat for all countries, using the unweighted average of life expectancy of men and women.

- **Potential years of life lost (PYLL)** is a summary measure of premature mortality providing an explicit way of weighting deaths occurring at younger ages. The calculation for PYLL involves adding age-specific deaths occurring at each age and weighing them by the number of remaining years to live up to a selected age limit, defined here as age 70. For example, a death occurring at five years of age is counted as 65 years of PYLL. The indicator is expressed per 100,000 females and males.
- **Perceived health status** reflects people's overall perception of their health, including physical and psychological dimensions. Most OECD countries conduct regular health interview surveys that allow respondents to report on different aspects of their health. Typically, survey respondents are asked a question such as: 'How is your health in general?' with Likert scale response options such as 'Excellent, very good, good, fair, poor, very poor.' OECD health data provide figures related to the proportion of people rating their health to be 'good/very good/excellent' combined. Despite the general and subjective nature of this question, indicators of perceived health status have been found to be a good predictor of people's future health care use and mortality (for instance, Miilunpalo et al, 1997). For international comparisons, however, cross-country differences in perceived health status are more complex to interpret than indicators such as life expectancy at birth or PYLL, because responses may be affected by differences in the formulation of survey questions and responses, and by cultural factors. So more caution is warranted for this indicator.

2. HEALTH EXPENDITURE

This chapter presents international comparisons of health expenditure for Australia and the OECD comparator countries.

2.1 HEALTH EXPENDITURE AS A SHARE OF GDP

Health expenditure by different countries can be compared as a share of GDP. This gives a measure of the proportion of a nation's productive effort that is spent on funding its health goods and services. Short-term fluctuations in the ratio naturally need to be interpreted carefully since they reflect movements in GDP as well as in health expenditure.

In 2005, the average share of GDP that OECD countries devoted to health spending reached 8.9%, having increased steadily from 6.3% in 1975 (Table 2–1). The share varies considerably across countries, ranging in 2005 from around 6% in Turkey, Korea and Poland up to 15.2% of GDP for the US. In 2005, seven of the 30 countries spent more than 10% of GDP on health goods and services, compared with three in 1995, only one country in 1985 and none in 1975. **Australia ranks in the middle of OECD countries in its health spending to GDP ratio (8.8% in 2005).**

TABLE 2–1: OECD30, HEALTH EXPENDITURE AS A SHARE OF GDP (%), 1975-2005

Rank	OECD country	1975	1985	1995	2005
1	United States	7.9	10.0	13.3	15.2
2	Switzerland	6.9	7.7	9.7	11.4
3	France	6.4	8.0	10.4	11.1
4	Germany	8.4	8.8	10.1	10.7
5	Belgium	5.6	7.0	8.2	10.6
6	Austria	7.0	6.5	9.7	10.3
7	Portugal	5.1	5.7	7.8	10.2
8	Canada	7.0	8.1	9.0	9.9
9	Netherlands*	7.0	7.3	8.3	9.5
10	Iceland	5.7	7.2	8.2	9.4
11	Sweden	7.5	8.5	8.0	9.2
12	Norway	5.9	6.6	7.9	9.1
13	Greece			8.6	9.0
14	Italy			7.3	8.9
15	Australia	6.5	6.6	7.4	8.8
16	Denmark*	8.7	8.5	8.1	8.8
17	Hungary			7.3	8.5
18	Finland	6.2	7.1	7.7	8.3
19	Spain	4.6	5.4	7.4	8.3
20	Ireland	7.3	7.5	6.7	8.2
21	Japan	5.7	6.7	6.9	8.2
22	United Kingdom	5.5	5.9	6.9	8.2
23	New Zealand*	6.7	5.1	7.2	8.0
24	Luxembourg	4.3	5.2	5.6	7.8
25	Czech Republic			7.0	7.1
26	Slovak Republic				7.1
27	Mexico			5.6	6.4
28	Poland			5.5	6.2
29	Korea		3.5	3.9	5.9
30	Turkey	3.0	2.2	3.4	5.7
	OECD - Total	6.3	6.7	7.7	8.9

* Data supplied for the most recent years available.

Note: Rank is based on health expenditure to GDP ratio in 2005.

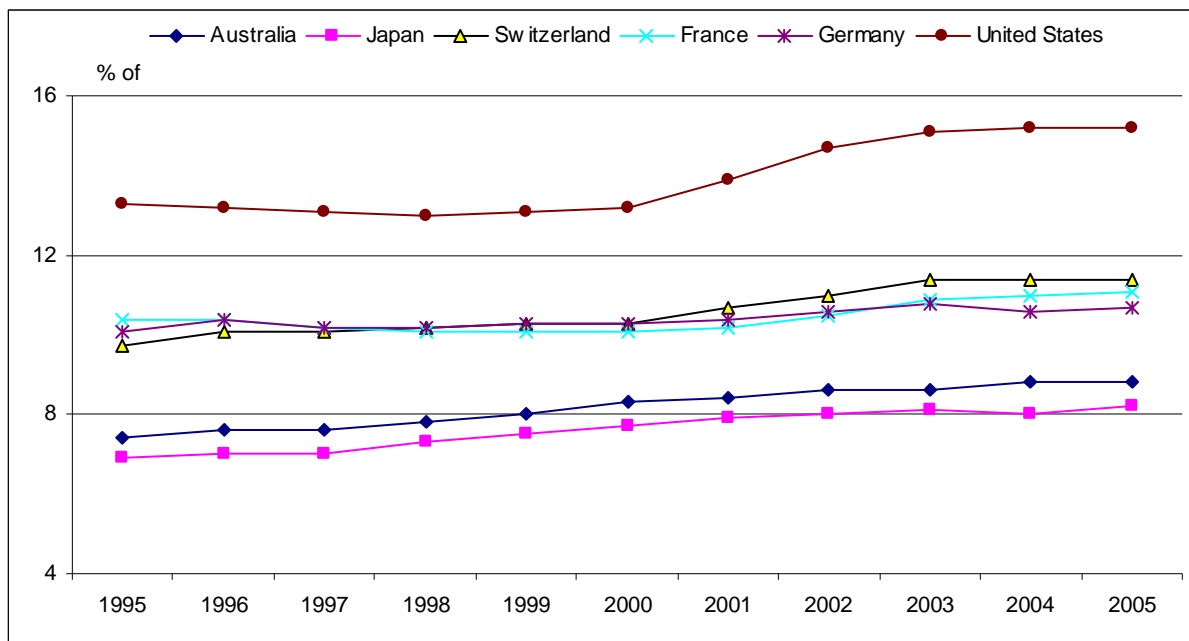
Source: OECD (2008a,b).

All OECD countries have experienced an increase in the proportion of the national economy devoted to health over the past ten years and (for those where data are available) since 1975 (Table 2–1).

- In particular, Portugal, Belgium, Turkey, Luxembourg and the US have experienced strong increases, with the ratio doubling or nearly doubling since 1975 in these countries and with increases around 2% of GDP or more in the past decade.
- While the strong-growth countries over 1975 to 2005 were a similar set to those growing 1995 to 2005, the countries with modest growth are somewhat different in the two periods.
 - Over the longer period (dividing the 2005 ratio by the 1975 ratio), Denmark, Ireland, Sweden and New Zealand had the least enlargement of their health sectors, having all started with fairly large health sectors.
 - Over the past decade (subtracting the 1995 ratio from the 2005 ratio), health/GDP in the Czech Republic, Greece, Finland, Germany and Austria has grown least.

Growth in Australia’s health/GDP ratio over 1995-2005 is compared to that of five other OECD economies in Figure 2-1, on a yearly basis. In the US, Switzerland and France, health expenditure growth considerably outpaced overall economic growth between 2000 and 2003. On the other hand, the increase in the share of GDP devoted to health has been more modest over the past ten years in Germany and Japan, where low economic growth overall has been matched by low growth in health spending (partly as a result of cost-containment measures).

FIGURE 2-1: HEALTH EXPENDITURE AS A SHARE OF GDP, SELECTED COUNTRIES (%), 1995-2005



Source: OECD (2008a,b).

2.2 HEALTH EXPENDITURE ON A PER CAPITA BASIS

Health expenditure per person allows for comparisons between countries and within a country over time without the distorting effect of movements in GDP and population size differences. Between 1995 and 2005 real per capita health expenditure grew around 4% per annum on average across the OECD. This compares with average economic growth over the same period of 2.5%, resulting in an increasing share of GDP devoted to health.

Once again Australia ranks in the middle (15th) of the 30 comparator countries (Table 2–2), spending US\$2,999 in 2005 compared to the OECD average of US\$2,701 – with highest expenditure in the US (US\$6,347) and lowest in Turkey (US\$591). Nominal per capita health expenditure grew on average 7.6% annually over 1975-2005 across all OECD countries – for Australia growth was a little less at 6.6% annual average.

Eight of the top 10 countries are common to both ‘per capita’ and ‘share of GDP’ tables – US, Switzerland, Austria, Canada, Belgium, Iceland, France and Germany. Six of the bottom ten countries are common to both groups, including all of the bottom five (Turkey, Mexico, Poland, Slovak Republic and Korea; the Czech Republic is the sixth). The R-squared of a simple regression of the two series (expenditure per capita and relative to GDP) for 2005 is 71%.

TABLE 2–2: OECD30, HEALTH EXPENDITURE PER CAPITA (US\$), 1975-2005

Rank	OECD country	Per capita health expenditure, US\$, PPP				Ave annual growth, %
		1975	1985	1995	2005	
1	United States	590	1,765	3,656	6,347	8.2
2	Norway	323	943	1,863	4,328	9.0
3	Luxembourg			1,911	4,153	8.1
4	Switzerland	621	1,460	2,598	4,069	6.5
5	Austria	435	939	2,259	3,507	7.2
6	Canada	480	1,264	2,057	3,460	6.8
7	Belgium	350	969	1,854	3,385	7.9
8	Iceland	375	1,184	1,910	3,373	7.6
9	France	369	1,036	2,102	3,306	7.6
10	Germany	572	1,409	2,275	3,251	6.0
11	Netherlands	450	967	1,799	3,204	6.8
12	Ireland	275	658	1,204	3,126	8.4
13	Denmark	543	1,256	1,871	3,039	5.9
14	Sweden	531	1,271	1,746	3,012	6.0
15	Australia	437	928	1,611	2,999	6.6
16	United Kingdom	295	694	1,350	2,580	7.5
17	Finland	345	925	1,440	2,523	6.9
18	Italy			1,538	2,496	5.0
19	Japan	301	874	1,551	2,474	7.3
20	New Zealand*	424	639	1,244	2,386	5.9
21	Greece			1,264	2,283	6.1
22	Spain	212	497	1,193	2,260	8.2
23	Portugal	155	397	1,036	2,029	9.0
24	Czech Republic			899	1,447	4.9
25	Hungary			660	1,440	8.1
26	Korea		161	504	1,263	10.8
27	Slovak Republic				1,130	
28	Poland			411	843	7.4
29	Mexico			386	724	6.5
30	Turkey	45	68	173	591	9.0
	OECD - Total	301	752	1,479	2,701	7.6

* Data supplied for the most recent years available.

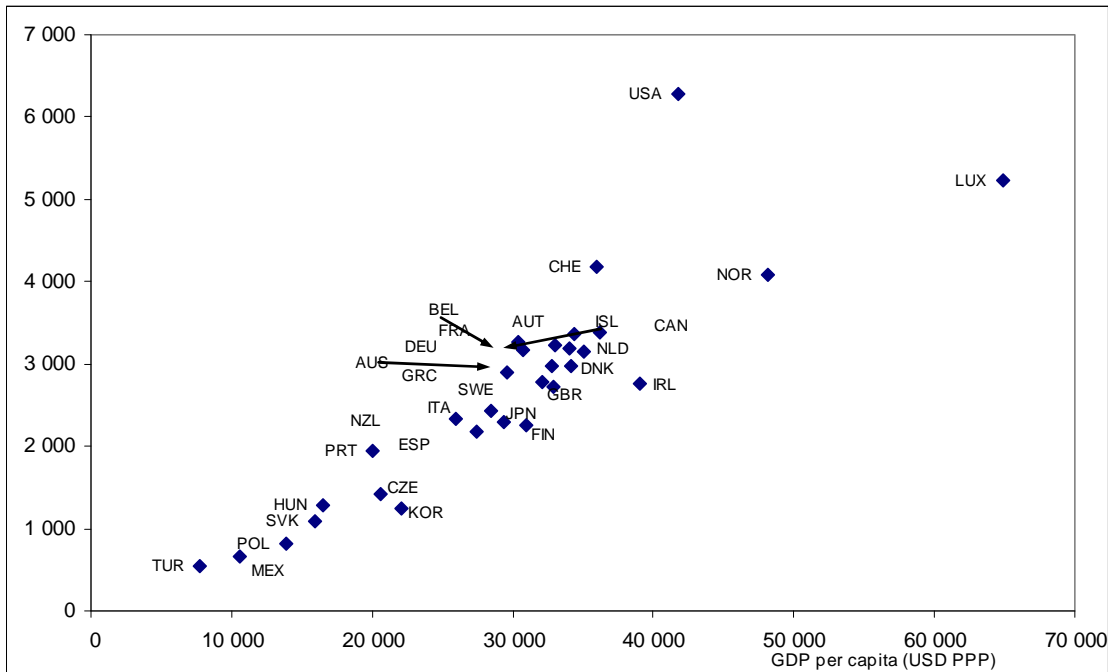
Note: Rank is based on health expenditure per capita in 2005.

Source: OECD (2008a,b).

There is a positive association between health expenditure per capita and GDP per capita across OECD countries (Figure 2-2). OECD countries with higher average income tend to spend more on social protection (public and private) and the relationship is particularly tight in the case of health spending (Francia et al, 2008). As incomes rise, people tend to devote an increasing share to social services such as health (ie, the ‘income-elasticity’ of health expenditure is greater than one).

Again, however, there is considerable variation in the elasticity across countries and over different periods. The association is stronger among OECD countries with low GDP per capita than among countries with a higher GDP per capita. For countries with similar levels of GDP per capita there are substantial differences in health expenditure at a given level of GDP. For example, despite Japan and Germany having the same GDP per capita, their health spending per capita differs considerably, with Japan spending less than 75% of the level of Germany on health.

FIGURE 2-2: OECD30, HEALTH EXPENDITURE PER CAPITA AND GDP PER CAPITA (US\$), 2005



Source: OECD (2007).

2.3 HEALTH EXPENDITURE BY BEARER

Different methods of financing health care may affect the level and distribution of health expenditure, and access to services across the population. OECD countries use a mix of public and private financing.

- ❑ Public financing is either confined to government revenues in countries where central and/or local governments are responsible for financing health services directly (eg, Spain and Norway), or comprises both general government revenues and social contributions in countries with social insurance based funding (eg, France and Germany).
- ❑ Private financing comprises out-of-pocket payments of households (eg, cost-sharing, copayments or other non-insured direct payments to health care providers), third-party payment arrangements effected through various forms of private health insurance (sponsored by employers and/or subsidised in some countries), health services such as occupational health care directly provided by employers, and other direct benefits provided by charities and similar non-profit organisations.

Table 2–3 shows the public share of health financing across the 30 OECD countries from 1975 to 2005. The public sector contributed 50% or more of total health expenditure in all OECD countries apart from Mexico and the US (and Korea in 1985 and 1995). On average, the public share of health spending was 72.9% in 2005. In Luxembourg, the Czech Republic, most

Nordic countries, the UK and Japan, public financing accounted for more than 80% of all health expenditure.

In general, there has been a convergence of the public share of health spending among OECD countries over recent decades; the standard deviation fell from 14.2% in 1995 to 11.3% in 2005. Some countries with a relatively high public share in the early 1990s – such as Hungary – have had a decrease (reflecting liberalisation of previously more centralised economies), while other countries with formerly a relatively low public share (eg, Portugal, Greece and Korea) have had an increase, reflecting health system reforms and the expansion of social democracy. **Australia ranks 24th on this basis; our share of public expenditure on health has been between 65% and 74% over the period.**

TABLE 2–3: OECD30, PUBLIC RELATIVE TO TOTAL HEALTH EXPENDITURE (%), 1975-2005

Rank	OECD country	1975	1985	1995	2005
1	Luxembourg	91.8	89.2	92.4	90.2
2	Czech Republic	96.9	92.2	90.9	88.6
3	United Kingdom	91.1	85.8	83.9	86.9
4	Norway	96.2	85.8	84.2	83.5
5	Denmark*	85.4	85.6	82.5	82.9
6	Japan	72.0	70.7	83.0	82.7
7	Sweden	90.2	90.4	86.6	81.7
8	Iceland	87.1	87.0	83.9	81.4
9	France	78.0	78.5	79.7	79.9
10	Ireland	79.0	75.7	71.9	79.5
11	New Zealand*	73.7	87.0	77.2	78.3
12	Germany	79.0	77.4	81.6	77.0
13	Italy			70.8	76.7
14	Austria	69.6	76.1	72.6	76.5
15	Finland	78.6	78.6	74.1	75.0
16	Slovak Republic				74.4
17	Portugal	58.9	54.6	62.6	71.8
18	Turkey	50.0	50.6	70.3	71.4
19	Hungary			84.0	70.9
20	Belgium			78.5	70.9
21	Spain	77.4	81.1	72.2	70.6
22	Canada	76.2	75.5	71.4	70.2
23	Poland			72.9	69.3
24	Australia	73.6	70.6	65.8	67.0
25	Greece			52.0	62.8
26	Netherlands*	67.9	70.8	71.0	62.5
27	Switzerland		50.3	53.8	59.6
28	Korea		32.8	37.9	53.7
29	Mexico			42.1	45.5
30	United States	40.9	39.6	45.3	45.1
	OECD - Total	76.8	73.3	72.2	72.9

* Data supplied for the most recent years available.

Note: Rank is based on public relative to total health expenditure in 2005.

Source: OECD (2008a,b).

Interestingly, there is no correlation between public financing share and health expenditure (either per capita or relative to GDP). The top eight ‘common’ countries (in blue in Table 2–4) and bottom six countries (in green in Table 2–4) are dispersed across the spectrum, and the R-squared is less than 4% for each series relative to public share of health expenditure.

⁴ In terms of health expenditure per capita and relative to GDP.

TABLE 2–4: OECD30, HEALTH EXPENDITURE (% GDP, PER CAPITA) AND PUBLIC SHARE (%), 2005

% GDP		per capita		public share	
Rank	OECD country	Rank	OECD country	Rank	OECD country
1	United States	1	United States	1	Luxembourg
2	Switzerland	2	Norway	2	Czech Republic
3	France	3	Luxembourg	3	United Kingdom
4	Germany	4	Switzerland	4	Norway
5	Belgium	5	Austria	5	Denmark*
6	Austria	6	Canada	6	Japan
7	Portugal	7	Belgium	7	Sweden
8	Canada	8	Iceland	8	Iceland
9	Netherlands*	9	France	9	France
10	Iceland	10	Germany	10	Ireland
11	Sweden	11	Netherlands	11	New Zealand*
12	Norway	12	Ireland	12	Germany
13	Greece	13	Denmark	13	Italy
14	Italy	14	Sweden	14	Austria
15	Australia	15	Australia	15	Finland
16	Denmark*	16	United Kingdom	16	Slovak Republic
17	Hungary	17	Finland	17	Portugal
18	Finland	18	Italy	18	Turkey
19	Spain	19	Japan	19	Hungary
20	Ireland	20	New Zealand*	20	Belgium
21	Japan	21	Greece	21	Spain
22	United Kingdom	22	Spain	22	Canada
23	New Zealand*	23	Portugal	23	Poland
24	Luxembourg	24	Czech Republic	24	Australia
25	Czech Republic	25	Hungary	25	Greece
26	Slovak Republic	26	Korea	26	Netherlands*
27	Mexico	27	Slovak Republic	27	Switzerland
28	Poland	28	Poland	28	Korea
29	Korea	29	Mexico	29	Mexico
30	Turkey	30	Turkey	30	United States
	OECD - Total		OECD - Total		OECD - Total

Source: OECD (2008a,b).

The public sector does not play the dominant role in every area of health care, although it does dominate the financing of payments for medical services. There is an increasingly important role for private financing of outpatient services (Orosz and Morgan, 2004) and for medical goods (mainly pharmaceuticals). The size and composition of private funding differs across countries with, on average, some two-thirds of private funding being out-of-pocket payments and 6-7% of total health expenditure being private health insurance (OECD, 2007). Private health insurance, however, provides primary coverage for certain population groups in Germany and for a large proportion of the non-elderly population in the US (where it is 37% of total health expenditure). Private health insurance finances 12-13% of health expenditure in France and Canada, providing complementary and supplementary coverage respectively in a universal public system. These are also features of the Australian system.

2.4 HEALTH EXPENDITURE BY COMPONENT

In the OECD data classification system, although pathology services are not separately identified, they form part of the category 'ancillary services', which comprises laboratory tests and diagnostic imaging. Table 2–5 shows current expenditure by component, ranked by the share of ancillaries in the total (only 23 of the 30 OECD countries had enough data to include).

TABLE 2-5: SELECTED OECD COUNTRIES, COMPONENT TYPES OF CURRENT HEALTH EXPENDITURE, RANKED BY ANCILLARY SHARE (%), 2005

Country	Curative and rehabilitative													Rank by ancillary share
	In-patient	Day-care	Outpatient				Total out-patient	Home care	Total curative & rehab.	Long-term care	Ancillary services	Medical goods	Other	
			Physician	Dental	Other									
Czech Republic	25.1	1.1	16.6	5.7	0.4	22.6	0.1	48.9	3.5	12.5	29.7	5.4	1	
Portugal	23.4	2.8				32.3	2.7	61.2	1.3	9.6	24.7	3.2	2	
New Zealand	22.4	2.5	17.0	1.7	5.9	24.6	5.7	55.2	15.1	6.8	13.1	9.7	3	
Norway	26.8	3.7	12.7	5.1	1.7	19.5	0.2	50.3	25.6	6.8	14.4	2.8	4	
Canada	17.4	3.1	10.6	7.4	8.6	26.6	0.2	47.2	14.2	6.4	20.9	11.4	5	
Slovak Republic	28.2	-	11.9	4.5	1.4	17.7	0.2	46.1	0.5	5.6	41.3	6.5	6	
Luxembourg*	27.8	1.2	19.0	4.5	3.5	26.9	0.4	56.4	16.6	5.5	11.6	9.8	7	
Australia**	32.9	-	17.2	6.2	8.1	31.4	-	64.3	7.4	5.5	18.3	4.4	8	
Germany	28.4	0.8	12.2	7.6	3.0	22.8	1.5	53.5	12.5	4.6	20.2	9.2	9	
Spain	21.5	1.7	26.4	5.3	2.3	34.0	0.5	57.6	7.0	4.4	26.0	4.9	10	
Belgium	-	-	-	-	-	-	-	53.2	14.9	4.4	19.3	8.2	11	
Hungary*	26.5	0.9	14.4	7.5	0.8	22.8	0.2	50.4	3.6	4.3	34.9	6.8	12	
Poland	30.0	1.9	13.5	5.5	0.4	19.3	1.5	52.8	6.9	3.8	32.5	4.0	13	
France	36.2	-	11.4	4.7	4.5	20.6	-	56.8	8.8	3.6	21.5	9.3	14	
Switzerland	28.2	-	22.4	6.3	-	28.6	-	56.9	20.1	3.5	12.6	6.9	15	
Denmark	30.9	-	18.2	5.2	2.5	25.9	-	56.8	22.3	3.1	13.6	4.2	16	
Austria	36.0	-	18.7	7.6	0.8	27.2	-	63.2	12.6	2.3	15.8	6.2	17	
Netherlands	-	-	-	-	-	-	-	56.7	14.0	2.2	17.7	9.4	18	
Japan*	23.2	0.9	26.3	6.4	-	32.6	0.1	56.8	17.6	0.8	20.5	4.3	19	
Korea	25.4	-	28.8	8.4	-	37.3	0.0	62.7	0.5	0.2	30.9	5.7	20	
Iceland	41.5	-	13.0	6.2	4.1	23.3	-	64.8	17.0	0.1	15.9	2.3	21	
Finland	-	-	-	-	-	-	-	65.4	6.2	-	19.7	8.7		
United States	20.5	-	22.6	4.7	18.0	45.3	2.5	68.3	6.5	-	13.9	11.3		
OECD	27.4	1.2	17.9	5.9	3.4	27.4	0.8	56.8	11.1	4.2	21.3	6.7		

* Data for 2004. ** Data for 2004-05.

Note: Rank is based on ancillary relative to current health expenditure in 2005 (Finland and US cannot be ranked as the ancillary share was not separable).

Source: OECD (2007).

Australia ranks relatively high (8th of 21) among 2005 OECD comparators in terms of the share of current expenditure on ancillaries – 5.5% compared to the average of 4.2%.

The share of health spending allocated to different types of health goods and services is influenced by a number of factors, such as differences in capacities (availability of hospital beds and physicians), financial incentives for providers, the nature of the disease burden and the emphasis placed on different priorities (eg, prevention).

On average across these OECD countries in 2005, personal medical services (comprising curative-rehabilitative care, long-term care and ancillary services provided to outpatients) accounted for more than 70% of current health spending. Curative-rehabilitative care accounted for the greater part of this, with 57% of health spending on average across OECD countries. Long-term care expenditure accounted for another 11% on average with ancillary services only 4%. Of the remaining health spending, a little over 20% was spent on medical goods (mainly pharmaceuticals). Other expenditure comprised public health, prevention, health administration and insurance, and accounted for the remaining 7% of health spending.

OECD (2007) summarises curative-rehabilitative care as covering:

medical services delivered not only in an inpatient setting, such as a hospital, but also those services provided either as day-care, or as an outpatient service in hospitals or in the ambulatory sector, or in a patient's own home. Changes in medical practice and innovations in medical technology, as well as moves towards a more efficient allocation of health care resources, can all affect the balance between these different types of care delivery. For example, there has been a trend to move some health services away from inpatient services to outpatient and home care. Out of total spending on curative-rehabilitative care, typically around half is accounted for by spending on inpatient care. A number of countries are still unable to quantify spending separately on day-care in hospitals or other institutions (often it is included with inpatient care); where reported, it can account for up to 6 or 7% of curative-rehabilitative spending, for example in Canada and Norway. Outpatient services in hospitals and in the ambulatory sector account for over a third of curative care expenditure on average across OECD countries. About 10% of total curative care is allocated to dental care (above 15% in Hungary and Canada). Finally, home care accounts for 1 to 2% of curative care, although often the distinction of this care from long-term care delivered at the patient's residence is difficult.

OECD (2007) also discussed the share (3% on average) of public expenditure allocated to public health and prevention activities – such as vaccination programs and public health campaigns on alcohol abuse and smoking – and notes there are very different abilities to report such spending between countries, and hence inconsistencies.

3. HEALTH OUTCOMES

Health outcomes are determined by a broad range of demographic and social determinants; both the World Health Organization and the European Union have recently established commissions to explore the social determinants of health. As well as outcomes that are relatively simple to collect (such as overall mortality and life expectancy data), there is a growing body of data on specific patterns of mortality and morbidity cross-tabulated by factors such as disease/injury code, age, gender and ethnicity, as well as distribution patterns – which are useful in assessing equity of health outcomes across populations.

As foreshadowed in Chapter 1, this section presents findings from the analysis of three indicators compared across OECD countries – life expectancy at birth (Section 3.1), premature mortality (Section 3.2) and perceived health status, a measure of quality of life (Section 3.3).

3.1 LIFE EXPECTANCY AT BIRTH

Longevity, measured here as life expectancy at birth, has increased in all OECD countries in recent decades, driven by reductions in mortality rates at all ages, and reflecting factors such as improved living standards (eg, income/GDP to spend on health technologies and public programs such as road traffic management), better lifestyle and education (eg, regarding the harms of smoking), and enhanced access to health services (eg, through more widespread financial provisioning vehicles and enhanced delivery models).

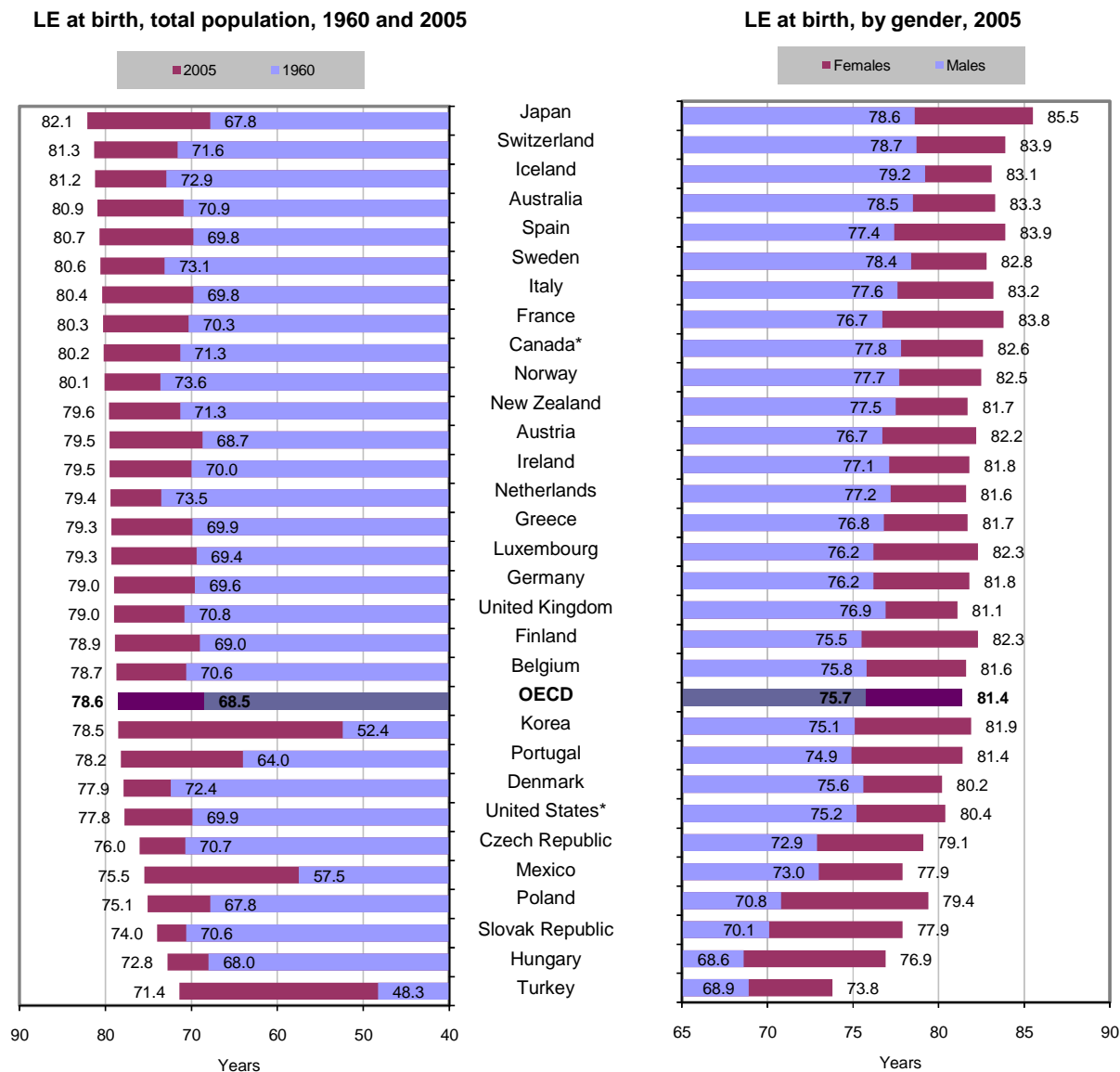
Life expectancy at birth increased by a decade on average across OECD countries from 68.5 years in 1960 to 78.6 years in 2005 (Figure 3-1). Life expectancy at birth exceeded 80 years in 2005 in around a third of OECD countries. Japan's life expectancy at birth is highest (82.1 years for males and females combined), and Turkey's is lowest (though rapidly increasing). Women live on average 5.7 years longer than men (81.4 years compared to 75.7 years), due to differences in key drivers such as prevalence of cardiovascular disease and risk factors.

The relationship between life expectancy at birth and GDP per capita is less pronounced at higher levels of national income. As for GDP per capita, higher health spending per capita is generally associated with higher life expectancy at birth, although this relationship is also less pronounced in countries with higher health spending per capita. For example, Japan and Spain have higher life expectancies than would be predicted by their GDP or health spending per capita alone, while the US, Denmark and Hungary have lower life expectancies than would be expected on the basis of income and expenditure (OECD, 2007).⁵ The factors causing the divergence between 'inputs' and 'outcomes' are of interest to this analysis – factors such as responsive and high quality health systems, equity of access and value for money (OECD, 2004).

Australia's life expectancy at birth (80.9 years in 2005) is fourth highest in the OECD, behind Japan, Switzerland and Iceland.

⁵ Variations in GDP per capita may influence *both* life expectancy and health expenditure per capita.

FIGURE 3-1: OECD30, LIFE EXPECTANCY AT BIRTH, TOTAL & BY GENDER (YEARS), 1960, 2005



* 2004. Note: Rank is based on total life expectancy.
Source: OECD (2007) and special data.

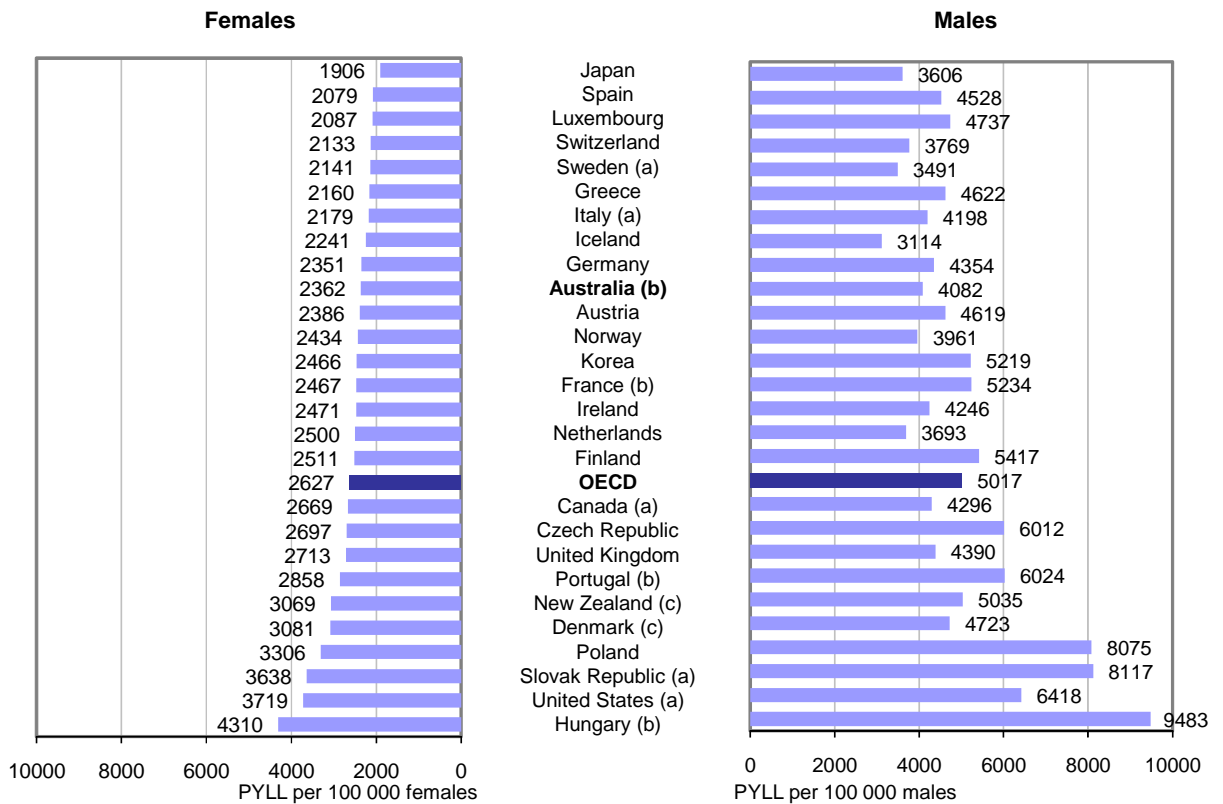
3.2 PREMATURE MORTALITY

Premature mortality is measured in terms of potential years of life lost (PYLL). The metric is an indicator of the burden of disease reflected in the distribution of deaths, where values are heavily influenced by infant mortality and deaths from diseases and injuries affecting children and younger adults.

Across OECD countries, PYLL has been reduced by more than half since 1970 (OECD, 2007), largely driven by falling infant mortality and, more recently, from declining mortality from cardiovascular disease and cancer. Accidents, suicides and homicides (grouped as ‘external causes’) are significant contributors to relatively high PYLL in some countries (eg, the US - Figure 3-2). On average across OECD countries, the main causes of PYLL before age 70 among men are external causes including accidents and violence (29%), followed by cancer (21%) and circulatory diseases (18%). For women, the principal causes are cancer (31%), external causes (17%), and circulatory diseases (13%).

Australia's PYLL is 8th highest in the OECD at 6,444 per 100,000 people in 2005, 10th highest for females (2,362 PYLL) and 7th highest for males (4,082 PYLL).

FIGURE 3-2: OECD, PYLL, FEMALES AND MALES, 2004



(a) 2002. (b) 2003. (c) 2001.

Note: Rank is based on PYLL for females. Only data for 27 countries were available.

Source: OECD (2007) and special data from WHO mortality database.

3.3 PERCEIVED HEALTH STATUS

Table 3–1 shows the proportion of the adult population in OECD countries who rate their health to be good, very good or excellent. **Australia ranks 5th in the OECD by this 'quality of life' metric (84.1% rank their health as 'good' or better), behind New Zealand, the US, Canada and Switzerland.**

In most OECD countries men are more likely than women to rate their health as 'good' or better, positive ratings unsurprisingly decline with age, and people with a lower level of education and income do not rate their health as positively as people with higher levels. The proportion of the adult population rating their health as 'good' or better has remained generally stable over the past 25 years in those countries where such long time series are available. One possible interpretation of the coexistence of relatively stable rates of perceived health status together with steady rise in life expectancy, may be that people in these countries are living longer now but not necessarily living healthier.

TABLE 3–1: OECD, ADULTS AGED 15 & OVER REPORTING GOOD HEALTH (%), 2005*

	Females	Males	Total	Rank
New Zealand	89.8	89.4	89.6	1
United States	87.8	89.6	88.7	2
Canada	87.9	88.9	88.4	3
Switzerland	84.0	87.8	85.8	4
Australia	84.5	83.6	84.1	5
Ireland	82.2	83.7	82.9	6
Norway	80.0	82.0	81.0	7
Iceland	76.9	82.6	79.7	8
France	77.0	82.1	79.5	9
Denmark	77.3	81.6	79.4	10
Belgium	75.2	78.8	76.9	11
Netherlands	74.1	79.3	76.6	12
Sweden	71.8	78.0	74.4	13
Luxembourg	72.0	75.0	74.0	14
United Kingdom	72.9	75.1	73.9	15
Germany	69.4	75.9	72.6	16
Spain	63.5	73.2	68.3	17
Finland	68.3	64.2	66.4	18
Mexico	64.4	67.1	65.6	19
Czech Republic	56.4	62.1	59.0	20
Italy	54.2	64.0	58.9	21
Turkey	49.0	62.0	55.0	22
Poland	51.1	58.3	54.5	23
Korea	41.3	53.7	47.4	24
Hungary	40.3	50.3	45.0	25
Portugal	34.0	45.0	39.0	26
Japan	36.7	40.9	38.7	27
Slovak Republic	30.6	39.5	34.4	28
OECD	66.2	71.2	68.6	

Note: Only data for 28 countries were available. * 2005 or latest year available.

Source: OECD (2007) and special data request.

4. CONCLUSIONS

In this chapter costs and outcomes are compared, with conclusions drawn about the relationship between the two based on data from the previous chapters. Demographic factors may affect the relationship (eg, 'older' populations spend more on health care), and there may also be fundamental differences between health systems that potentially contribute to the results.

4.1 THE RELATIONSHIP BETWEEN COSTS AND OUTCOMES

Table 4–1 provides a summary of the expenditure and outcome metrics presented in the previous chapters (in original units – eg, percentage of GDP, and so on) while Table 4–2 presents the ranking of each country for each data series with two 'summary scores'.

TABLE 4–1: SUMMARY OF EXPENDITURE AND OUTCOME MEASURES (ORIGINAL UNITS), 2005

OECD country	Total health spending			Ancillary (% current)	LE at birth	Health	
	(% GDP)	(per capita)	% public			PYLL	status (%)
United States	15.2	6,347	45.1		77.8	10,137	88.7
Switzerland	11.4	4,069	59.6	3.5	81.3	5,902	85.8
France	11.1	3,306	79.9	3.6	80.3	7,701	79.5
Germany	10.7	3,251	77.0	4.6	79.0	6,705	72.6
Belgium	10.6	3,385	70.9	4.4	78.7		76.9
Austria	10.3	3,507	76.5	2.3	79.5	7,005	
Portugal	10.2	2,029	71.8	9.6	78.2	8,882	39.0
Canada	9.9	3,460	70.2	6.4	80.2	6,965	88.4
Netherlands	9.5	3,204	62.5	2.2	79.4	6,193	76.6
Iceland	9.4	3,373	81.4	0.1	81.2	5,355	79.7
Sweden	9.2	3,012	81.7		80.6	5,632	74.4
Norway	9.1	4,328	83.5	6.8	80.1	6,395	81.0
Greece	9.0	2,283	62.8		79.3	6,782	
Italy	8.9	2,496	76.7		80.4	6,377	58.9
Australia	8.8	2,999	67.0	5.5	80.9	6,444	84.1
Denmark	8.8	3,039	82.9	3.1	77.9	7,804	79.4
Hungary	8.5	1,440	70.9	4.3	72.8	13,793	45.0
Finland	8.3	2,523	75.0		78.9	7,928	66.4
Spain	8.3	2,260	70.6	4.4	80.7	6,607	68.3
Ireland	8.2	3,126	79.5		79.5	6,717	82.9
Japan	8.2	2,474	82.7	0.8	82.1	5,512	38.7
United Kingdom	8.2	2,580	86.9		79.0	7,103	73.9
New Zealand	8.0	2,386	78.3	6.8	79.6	8,104	89.6
Luxembourg	7.8	4,153	90.2	5.5	79.3	6,824	74.0
Czech Republic	7.1	1,447	88.6	12.5	76.0	8,709	59.0
Slovak Republic	7.1	1,130	74.4	5.6	74.0	11,755	34.4
Mexico	6.4	724	45.5		75.5		65.6
Poland	6.2	843	69.3	3.8	75.1	11,381	54.5
Korea	5.9	1,263	53.7	0.2	78.5	7,685	47.4
Turkey	5.7	591	71.4		71.4		55.0

Source: As per previous OECD data sources presented in this report. Health spending per capita is in US\$ converted at PPP. Life expectancy (LE) at birth is in years. Health status is the proportion of the population perceiving their health as 'good' or better. Year is as close to 2005 as available.

In Table 4–2, ranks are 1 to 30 where 1 is the least expensive (lowest share of GDP, lowest per capital health expenditure) and lowest public share, highest life expectancy (LE) at birth, lowest PYLL and highest health status percentage. For outcome measures, in the five cases

where there are missing data, the numbers in red are the average of the other health outcome ranks. The 'summary measures' in the last two columns are calculated as follows.

- ❑ The 'total' score takes the average rank of health spending in total (ie, as a share of GDP and per capita) and subtracts the average rank of the three outcome measures (life expectancy at birth, premature mortality measured as PYLL and perceived health status). This metric measures the 'bang for buck' from total health spending.
- ❑ The 'public' score takes the average rank of health spending in total (ie, as a share of GDP and per capita) *and* includes the public share in the average, then subtracts by the average rank of the three outcome measures (life expectancy at birth, premature mortality measured as PYLL and perceived health status). This metric measures the 'bang for buck' from public health spending.
- ❑ **Using these metrics, Australia has the best performance from its public health expenditure of any OECD country, and the fourth highest performance from its total health expenditure (behind Japan, Spain and New Zealand).**

TABLE 4-2: SUMMARY OF EXPENDITURE AND OUTCOME MEASURES (RANK IN OECD)

OECD country	Total health spending			LE at birth	Health		Total Score	Public Score
	(% GDP)	(per capita)	% public		PYLL status (%)			
Australia	15	15	24	4	8	5	9.3	12.3
Spain	19	22	21	5	9	17	10.2	10.3
Switzerland	2	4	27	2	4	4	(0.3)	7.7
New Zealand	23	20	11	11	21	1	10.5	7.0
Korea	29	26	28	21	17	24	6.8	7.0
Mexico	27	29	29	26	22.5	19	5.5	5.8
Greece	13	21	25	16	12	14	3.0	5.7
Japan	21	19	6	1	2	27	10.0	5.3
Netherlands	9	11	26	14	5	12	(0.3)	5.0
Iceland	10	8	8	3	1	8	5.0	4.7
Ireland	20	12	10	13	11	6	6.0	4.0
Italy	14	18	13	7	6	21	4.7	3.7
Canada	8	6	22	9	14	3	(1.7)	3.3
Sweden	11	14	7	6	3	13	5.2	3.3
Poland	28	28	23	27	25	23	3.0	1.3
Turkey	30	30	18	30	26	22	4.0	-
Norway	12	2	4	10	7	7	(1.0)	(2.0)
Finland	18	17	15	19	20	18	(1.5)	(2.3)
United Kingdom	22	16	3	18	16	15	2.7	(2.7)
Slovak Republic	26	27	16	28	26	28	(0.8)	(4.3)
Luxembourg	24	3	1	15	13	14	(0.5)	(4.7)
France	3	9	9	8	18	9	(5.7)	(4.7)
Belgium	5	7	20	20	15.5	11	(9.5)	(4.8)
Austria	6	5	14	12	15	13.5	(8.0)	(5.2)
Czech Republic	25	24	2	25	22	20	2.2	(5.3)
Germany	4	10	12	17	10	16	(7.3)	(5.7)
Denmark	16	13	5	23	19	10	(2.8)	(6.0)
United States	1	1	30	24	24	2	(15.7)	(6.0)
Hungary	17	25	19	29	27	25	(6.0)	(6.7)
Portugal	7	23	17	22	23	26	(8.7)	(8.0)

Source: As per previous OECD data sources presented in this report. Ranks are 1 to 30 where 1 is the least expensive and lowest public share, highest life expectancy (LE) at birth, lowest PYLL and highest health status percentage. For outcome measures, in the five cases where there are missing data, the numbers in red are the average of the other health outcome ranks. Year is as close to 2005 as available.

4.2 POTENTIAL DRIVERS OF THE RESULTS

4.2.1 DEMOGRAPHIC FACTORS

In the OECD, Australia has relatively high GDP per capita, middle level sized population which is growing faster than average, the lowest population density, and a fairly young albeit relatively rapidly ageing population structure (Appendix A).

While our relatively high GDP per capita and fairly young population structure may help explain our high performance in terms of health outcomes relative to expenditure, our low population density works against such performance. That said, around 70% of our population lives in urban clusters, although service delivery to the regional 30% certainly presents challenges.

4.2.2 DIFFERENCES IN HEALTH SYSTEMS

Differences in health systems also help to account for differences in health outcomes relative to expenditures (OECD, 2004). Clinical models of care and practice preferences may differ between countries, which may in turn be related to public/private financing pathways. There tends to be a greater reliance on evidence-based care in some 'Anglo' countries, with cost effectiveness analysis (through the National Institute of Clinical Excellence) a priority of the National Health Service in the UK. Cost effectiveness analysis is also an important consideration of public financing decisions in Australia and New Zealand – albeit less of a concern for Canada and relatively unimportant in the US. Where the evidence from cost effectiveness studies is a priority in public decision making, more efficient outcomes might be expected to be achieved. The desire for evidence-based care might also be expected to influence pathology services utilisation, with diagnosis based on symptoms backed up by pathology tests rather than on symptoms only. Another systemic factor is medical indemnity, where higher levels of insurance and litigation might be expected to both increase costs but also to improve outcomes (with unclear relativities between the two).

Potentially, an emphasis on early diagnosis, prevention and early intervention might form part of the explanation for why some countries perform better than others when health outcomes are ranked relative to health inputs (expenditure and, in particular, public sector investments). Ancillary expenditure, covering pathology and diagnostic imaging, is generally directed to the goals of early detection, differential diagnosis and monitoring health pathways. As such, the share of ancillary expenditure in current health expenditure might show a relationship with the 'total' score or the 'public' score in Table 4–2. However, simple regression analysis revealed no such relationship with either the share or the ranking of the ancillary expenditure as the dependent variable (R-squared was less than 10% for all the specifications tested). More in-depth analysis is suggested, however, to more rigorously test this hypothesis.

4.3 SUMMARY DISCUSSION

It is generally recognised that Australians enjoy relatively good health and one of the longest lifespans in the world, with outcomes expected to continue to improve (AIHW, 2008a). Moreover, in most aspects of health, Australia matches or leads other comparable countries from the OECD.

In the three areas assessed in this report for 2005, Australia performed well in the league of 30 OECD countries.

- ❑ Australia's life expectancy at birth (80.9 years in 2005) was 4th highest in the OECD, behind Japan, Switzerland and Iceland.

- ❑ In terms of premature mortality, Australia's PYLL was 8th highest in the OECD (6,444), 10th highest for females (2,362 PYLL) and 7th highest for males (4,082 PYLL).
- ❑ Measuring quality of life through perceived health status, Australia ranked 5th in the OECD (84.1% of Australians ranked their health as 'good' or better), behind New Zealand, the US, Canada and Switzerland.

To achieve these health outcomes – which have continued to improve over recent decades across the OECD, member countries have increased their expenditure on health care.

- ❑ Average health expenditure per capita across the OECD was 8.9% of GDP, and Australia was right in the middle of the range, ranking 15th at 8.8% of GDP in 2005.
- ❑ Australia also ranked in the middle of the OECD (15th) in terms of health expenditure per capita – US\$2,999 in 2005 compared to the OECD average of US\$2,701.
- ❑ In terms of public health expenditure as a share of the total, Australia ranked 24th in the OECD, with a 67.0% public sector share compared to the OECD average of 72.9%.
- ❑ Although pathology services are not separately identifiable, the OECD reports pathology and diagnostic imaging expenditure combined in an 'ancillary services' group; Australia ranks relatively high (8th of 21) among OECD comparators in terms of the share of current health expenditure on ancillaries.

To assess Australia's overall performance in terms of outcomes relative to health system costs, OECD countries were ranked 1 to 30 for each data series – expenditure relative to GDP and per capita, public share, life expectancy, PYLL and health status. Two 'summary measures' were then calculated to assess:

- ❑ the 'total' score, a metric measuring the 'bang for buck' from total health spending; and
- ❑ the 'public' score, a metric measuring the 'bang for buck' from public health spending.

Using these metrics, Australia has the best performance from its public health expenditure of any OECD country, and the fourth highest performance from its total health expenditure (behind Japan, Spain and New Zealand).

Possible explanations for this finding are:

- ❑ Australia's relatively high GDP per capita and fairly young population structure;
- ❑ around 70% of Australia's population lives in urban clusters, although our low population density overall (the lowest in the OECD) works against high performance, as service delivery is more complex to regional and remote areas;
- ❑ different clinical models of care, practice preferences and indemnity environments;
- ❑ greater reliance on evidence-based care and the use of cost effectiveness analysis in Australia;
- ❑ relatively high emphasis placed on prevention, early detection and intervention (including through pathology and diagnostic imaging services).

APPENDIX A: OECD COUNTRY PROFILES

Since GDP and population are important determinants of health care expenditure, definitions of these metrics are provided in this appendix together with some demographic and GDP comparisons between Australia and other OECD countries.

A.1 GROSS DOMESTIC PRODUCT

GDP is the standard measure of the value of the goods and services produced by a country during a period. Each country calculates GDP in its own currency and it can be expressed in current prices (nominal GDP) or constant prices (real GDP). Real GDP, measured by deflating the expenditure components by appropriate price indices is more appropriate for making comparisons over time. Nominal GDP is more appropriate for calculating ratios over time (for example health expenditure to GDP) as it does not need to rely on deflators. Comparisons of GDP between countries are best made using PPP.

Virtually all OECD countries now follow the 1993 System of National Accounts for reporting economic data such as GDP. However, since Luxembourg and, to a lesser extent, Switzerland, have a relatively large number of frontier workers, their GDP per capita is overstated compared with other countries. A similar situation is seen for Ireland due to the influence of foreign companies operating in that country. Table A–1 shows real GDP per capita in US\$ using PPP. In 2005, Australia ranked 12th highest, with less than a US\$1,000 per capita between Australia and Sweden, ranked 7th.

TABLE A–1: OECD30, REAL GDP PER CAPITA (US\$), 1975-2005

Rank	OECD country	1975	1985	1995	2005	Ave annual growth, %
1	Luxembourg	21,969	27,208	42,378	59,894	3.4
2	Norway	17,570	24,923	31,034	39,124	2.7
3	United States	19,802	25,203	29,907	36,902	2.1
4	Ireland	9,687	12,316	19,115	34,391	4.3
5	Iceland	16,263	22,319	23,866	33,752	2.5
6	Switzerland	23,646	27,153	29,318	32,721	1.1
7	Sweden	18,557	21,313	23,647	30,904	1.7
8	Netherlands	17,466	19,920	24,808	30,603	1.9
9	Canada	17,867	21,983	24,333	30,591	1.8
10	Austria	16,112	20,403	25,002	30,381	2.1
11	Denmark	16,720	21,683	25,525	30,184	2.0
12	Australia	17,027	20,121	23,827	30,145	1.9
13	Belgium	16,351	19,883	24,359	29,193	2.0
14	United Kingdom	14,883	17,931	22,321	28,724	2.2
15	Finland	14,835	18,916	20,592	28,671	2.2
16	Japan	14,094	18,775	24,642	27,106	2.2
17	Germany	14,803	18,936	23,619	26,615	2.0
18	France	15,586	18,963	22,463	26,503	1.8
19	Italy	14,227	18,834	23,307	25,933	2.0
20	New Zealand	16,699	17,910	19,123	23,564	1.2
21	Spain	12,396	13,535	17,802	23,201	2.1
22	Greece	13,177	14,819	15,934	22,212	1.8
23	Korea	3,760	6,624	13,833	20,061	5.7
24	Czech Republic			13,833	18,060	2.7
25	Portugal	8,097	9,858	14,244	17,280	2.6
26	Hungary			9,963	15,290	4.4
27	Slovak Republic			9,343	13,968	4.1
28	Poland			8,105	12,316	4.3
29	Mexico	7,482	8,773	8,296	10,410	1.1
30	Turkey	5,485	6,228	7,801	10,204	2.1
	OECD - Total	14,732	18,303	22,185	26,840	2.0

Note: Rank is based on GDP per capita in 2005. Source: OECD (2008a,b).

A.2 POPULATION

The size of a nation's population, the rate of population growth and the age composition of the population have a bearing on perceived quality of life and on the allocation and use of health care resources. Total population is defined as the resident population (ie, all nationals present in or temporarily absent from the country, and foreigners who have a permanent place of residence in the country). OECD population estimates are mid-year estimates based on regular censuses extrapolated to intercensal years.

A.2.1 POPULATION SIZE AND GROWTH

In 2005, OECD countries were around 18% of the world's population of 6.5 billion people. The US remained the most populous country in the OECD (approaching 300 million). Japan and Mexico are the only other OECD countries with more than 100 million people. Iceland and Luxembourg each have less than half a million people. Australia ranked 13th largest of OECD countries in terms of population size (Table A–2).

In the post-war years, Australia exhibited one of the largest proportional increases in population numbers among the OECD, growing 49.1% from 1975 to 2005. Natural increase (births minus deaths) has slowed in Australia and across the OECD in recent decades, leading to demographic ageing. Immigration has been a major contributor to population growth in Australia, which ranks equal 2nd among OECD member countries on this metric.

TABLE A–2: OECD30, DEMOGRAPHIC DETAILS, 1975-2005

Rank	OECD country	Population, '000				Ave annual growth, %	Foreign born % of 2005 pop
		1975	1985	1995	2005		
1	United States	220,165	243,063	270,245	299,846	1.0	12.9
2	Japan	111,524	120,837	125,472	127,897	0.5	1.6
3	Mexico	60,713	76,826	91,823	104,266	1.8	0.4
4	Germany	78,674	77,685	81,661	82,652	0.2	12.9
5	Turkey	41,211	52,150	62,736	72,970	1.9	1.9
6	France	52,699	55,284	58,203	60,991	0.5	8.1
7	United Kingdom	56,226	56,554	57,961	60,245	0.2	9.7
8	Italy	55,441	56,593	57,301	58,646	0.2	4.6
9	Korea	35,281	40,806	45,008	47,870	1.0	1.0
10	Spain	35,688	38,420	39,388	43,397	0.7	6.2
11	Poland	34,015	37,202	38,595	38,196	0.4	1.6
12	Canada	23,142	25,843	29,302	32,271	1.1	19.1
13	Australia	13,625	15,669	18,072	20,310	1.3	23.8
14	Netherlands	13,666	14,492	15,459	16,328	0.6	10.6
15	Greece	9,047	9,934	10,656	11,100	0.7	5.2
16	Portugal	9,093	10,011	10,030	10,528	0.5	6.3
17	Belgium	9,779	9,816	10,084	10,398	0.2	12.1
18	Czech Republic	10,034	10,310	10,310	10,192	0.1	5.1
19	Hungary	10,532	10,579	10,329	10,086	-0.1	3.3
20	Sweden	8,193	8,350	8,827	9,038	0.3	12.4
21	Austria	7,579	7,578	8,047	8,292	0.3	13.5
22	Switzerland	6,339	6,536	7,133	7,424	0.5	23.8
23	Denmark	5,060	5,114	5,228	5,417	0.2	6.5
24	Slovak Republic	4,735	5,140	5,364	5,387	0.4	3.9
25	Finland	4,711	4,902	5,108	5,246	0.4	3.4
26	Norway	4,007	4,153	4,359	4,639	0.5	8.2
27	Ireland	3,177	3,539	3,609	4,143	0.9	11.0
28	New Zealand	3,083	3,247	3,673	4,097	1.0	19.4
29	Luxembourg		367	408	457	1.1	33.4
30	Iceland	218	241	267	296	1.0	..
	Total OECD	927,657	1,011,241	1,094,658	1,172,625	0.8	7.9

Note: Rank is based on population size in 2005.

Source: OECD (2008a,b).

A.2.2 POPULATION DENSITY

Population density can have an impact on health service delivery costs and access to services. Australia is one of the world's largest countries, with an area of more than 7.7 million square kilometers (22.1% of the OECD and 5.8% of the world), exceeded in the OECD only by Canada and the US. Australia has the lowest population density of all OECD countries, with an average of 2.6 people per square kilometer. In comparison, Korea has the highest population density with an average of 482.3 people per square kilometer (Table A–3).

TABLE A–3: OECD30, SURFACE AREA AND POPULATION DENSITY, 2005

Rank	OECD country	Surface area			Population density (pop' per km2)
		1,000 km ²	% of OECD	% of world	
1	Canada	9,985	28.5	7.5	3.0
2	United States	9,632	27.4	7.2	31.0
3	Australia	7,741	22.1	5.8	3.0
4	Mexico	1,958	5.6	1.5	53.0
5	Turkey	784	2.2	0.6	93.0
6	France	552	1.6	0.4	111.0
7	Spain	505	1.4	0.4	86.0
8	Sweden	450	1.3	0.3	20.0
9	Japan	378	1.1	0.3	338.0
10	Germany	357	1.0	0.3	232.0
11	Finland	338	1.0	0.3	16.0
12	Norway	324	0.9	0.2	12.0
13	Poland	313	0.9	0.2	118.0
14	Italy	301	0.9	0.2	195.0
15	New Zealand	271	0.8	0.2	15.0
16	United Kingdom	244	0.7	0.2	248.0
17	Greece	132	0.4	0.1	84.0
18	Iceland	103	0.3	0.1	3.0
19	Korea	99	0.3	0.1	481.0
20	Hungary	93	0.3	0.1	108.0
21	Portugal	92	0.3	0.1	114.0
22	Austria	84	0.2	0.1	99.0
23	Czech Republic	79	0.2	0.1	129.0
24	Ireland	70	0.2	0.1	59.0
25	Slovak Republic	49	0.1	0.0	110.0
26	Denmark	43	0.1	0.0	126.0
27	Netherlands	42	0.1	0.0	393.0
28	Switzerland	41	0.1	0.0	180.0
29	Belgium	31	0.1	0.0	341.0
30	Luxembourg	3	0.0	0.0	177.0
	Total OECD	35,092	100.0	26.2	33.4

Note: Rank is based on surface area.

Source: OECD (2008a,b).

A.2.3 POPULATION COMPOSITION AND PROJECTIONS

The growth and composition of a country's population can have significant impacts on both public and private expenditure on health care now and in future years. Table A–4 shows the annual average growth in the OECD population, expected to fall from 0.9% over the past 30 years to 0.3% in the next 40 years. Australia's population is expected to increase by 0.9% per annum over the next 40 years and ranks 3rd highest in terms of projected average annual growth rates.

TABLE A-4: OECD30, POPULATION PROJECTIONS, 2005-2045

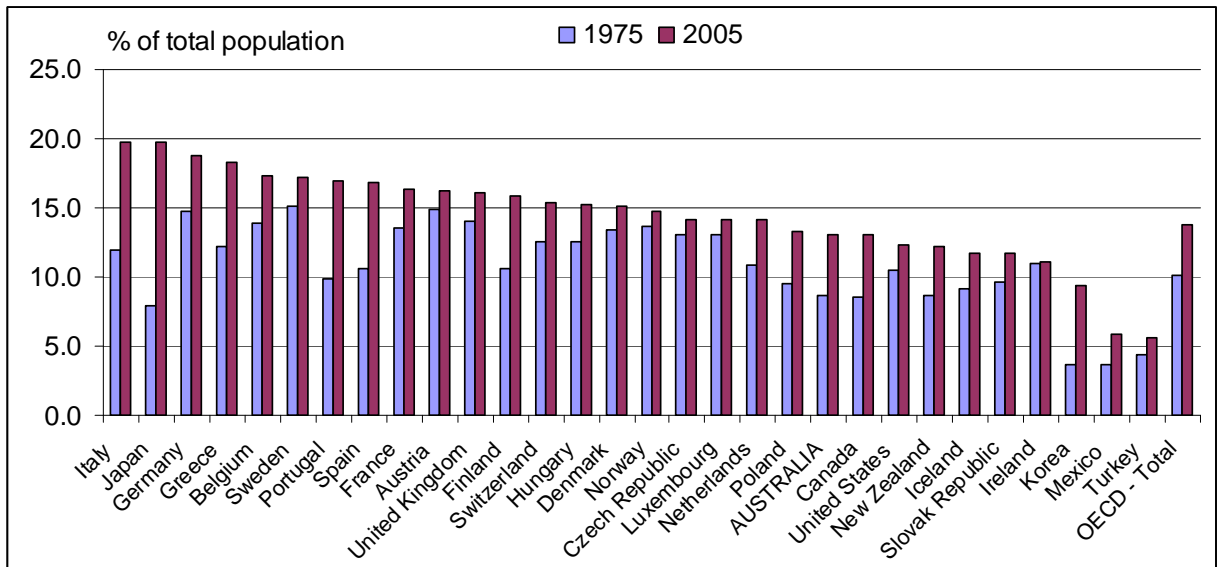
Rank	OECD country	Total population, '000					Ave annual change %
		2005	2015	2025	2035	2045	
1	Luxembourg	457	510	569	633	693	1.0
2	Ireland	4,143	4,805	5,275	5,669	6,032	0.9
3	Australia	20,310	22,397	24,393	26,075	27,425	0.8
4	Turkey	72,970	82,111	89,557	94,887	98,145	0.7
5	United States	299,846	329,010	354,930	376,492	394,426	0.7
6	Canada	32,271	35,191	37,912	40,148	41,920	0.7
7	Mexico	104,266	115,756	124,695	130,683	132,758	0.6
8	New Zealand	4,097	4,457	4,764	5,003	5,157	0.6
9	Norway	4,639	4,932	5,228	5,482	5,656	0.5
10	Iceland	296	320	337	349	354	0.4
11	Sweden	9,038	9,440	9,854	10,130	10,354	0.3
12	United Kingdom	60,245	62,787	65,190	66,931	68,172	0.3
13	Switzerland	7,424	7,699	7,978	8,202	8,350	0.3
14	France	60,991	63,746	65,769	67,307	68,121	0.3
15	Spain	43,397	46,000	46,623	46,735	46,699	0.2
16	Netherlands	16,328	16,625	16,960	17,262	17,279	0.1
17	Austria	8,292	8,514	8,622	8,634	8,555	0.1
18	Belgium	10,398	10,613	10,742	10,788	10,710	0.1
19	Finland	5,246	5,384	5,464	5,450	5,387	0.1
20	Denmark	5,417	5,510	5,578	5,606	5,558	0.1
21	Greece	11,100	11,273	11,236	11,111	10,932	0.0
22	Portugal	10,528	10,805	10,712	10,485	10,176	-0.1
23	Italy	58,646	59,001	58,079	56,929	55,506	-0.1
24	Korea	47,870	49,117	49,019	47,371	44,255	-0.2
25	Germany	82,652	81,825	80,341	78,171	75,466	-0.2
26	Slovak Republic	5,387	5,392	5,308	5,100	4,820	-0.3
27	Czech Republic	10,192	10,129	9,910	9,511	9,056	-0.3
28	Hungary	10,086	9,783	9,448	9,054	8,646	-0.4
29	Japan	127,897	126,607	121,614	114,569	106,590	-0.5
30	Poland	38,196	37,580	36,337	34,197	31,616	-0.5
	Total OECD	1,172,625	1,237,319	1,282,444	1,308,964	1,318,814	0.3

Note: Rank is based on the average annual change in population over the forecast horizon.

Source: OECD (2008a,b).

In addition to total population changes, the demand for and financing of health care depend partly on how the demographic structure of a country changes. The percentage of the population that is 65 years or older has risen in all OECD countries (Figure A-1). Australia ranked 21st in terms of the population aged 65 years and older in 2005.

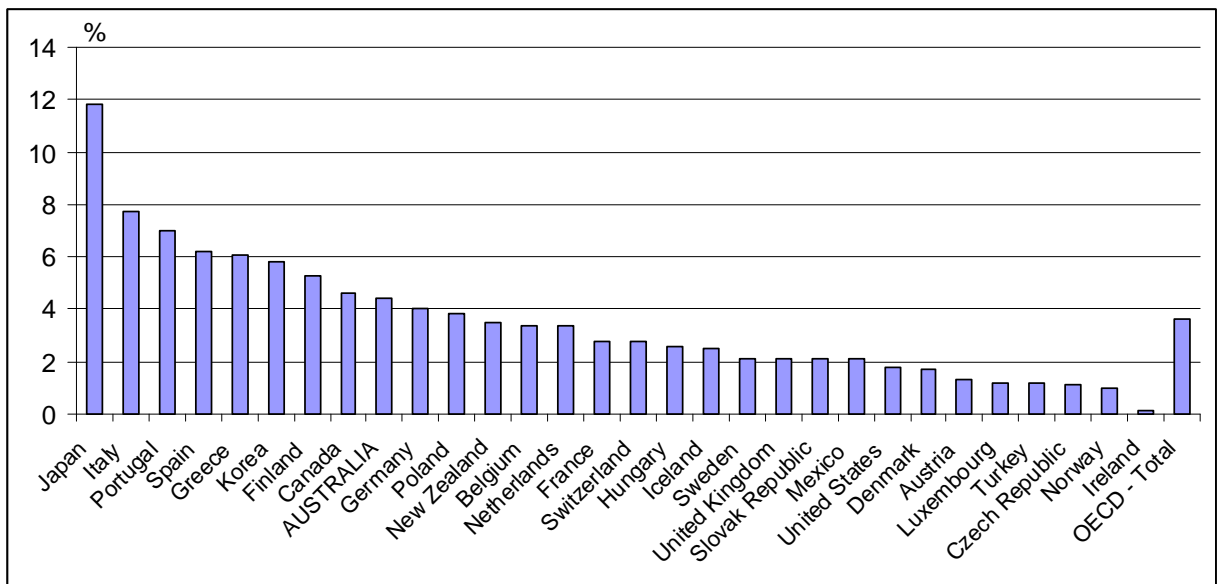
FIGURE A-1: OECD30, SHARE OF POPULATION AGED 65 YEARS & OVER (%), 1975 & 2005



Note: Rank is based on GDP per capita in 2005.
Source: OECD (2008a,b).

While the proportion of Australia’s population aged 65 years and older (13.1%) was lower than the OECD average (13.8%) in 2005, the ageing of the population has been one of the most rapid in the OECD. Australia’s older population increased from 8.7% in 1975 to 13.1% in 2005, an addition of 4.4% of the population – 9th fastest in the OECD for that period.

FIGURE A-2: OECD30, CHANGE IN SHARE OF POPULATION AGED 65 YEARS & OVER (%), 1975-2005



Note: Rank is based on GDP per capita in 2005.
Source: OECD (2008a,b).

The ageing of all OECD populations is expected to continue in the coming decades. Since older populations tend to be in poorer health and thus in greater need of health and long-term care, population ageing can be expected to lead to increased public expenditure in these areas. Across the OECD, a quarter of the population is expected to be aged over 65 years by 2045, with Japan, Italy and Germany having greatest proportions of their populations above

this age threshold (Table A–5). Australia is ranked 22nd in terms of the proportion of the population expected to be aged 65 years or older by 2045 (Table A–5).

TABLE A–5: OECD30, SHARE OF POPULATION AGED 65 YEARS & OVER (%), 2005- 2045

Rank	OECD country	% of population aged 65 yrs and over					Ave ann additional increase in pop 65+
		2005	2015	2025	2035	2045	
1	Japan	19.7	26.2	29.5	32.3	36.6	0.4
2	Korea	9.4	13.3	19.6	26.9	32.9	0.6
3	Italy	19.7	22.1	24.6	29.6	32.8	0.3
4	Spain	16.8	18.3	21.4	26.7	32.2	0.4
5	Greece	18.3	19.9	22.6	26.5	30.6	0.3
6	Germany	18.8	20.9	24.4	29.8	30.1	0.3
7	Czech Republic	14.2	18.2	21.8	24.2	29.9	0.4
8	Portugal	16.9	18.5	21.4	25.2	29.6	0.3
9	Austria	16.2	18.6	21.8	27.3	28.6	0.3
10	Poland	13.3	15.5	21.4	23.6	27.9	0.4
11	Belgium	17.3	19.0	22.4	25.9	27.0	0.2
12	Slovak Republic	11.7	13.8	18.7	21.8	27.0	0.4
13	Hungary	15.2	17.3	20.7	21.8	26.4	0.3
14	Netherlands	14.2	18.0	22.0	25.7	25.8	0.3
15	France	16.3	18.5	21.7	24.3	25.6	0.2
16	Canada	13.1	16.1	20.9	24.3	25.3	0.3
17	Finland	15.9	20.1	23.8	25.6	25.3	0.2
18	Switzerland	15.4	18.7	21.9	25.5	25.2	0.2
19	Denmark	15.1	18.8	21.4	24.0	24.7	0.2
20	Iceland	11.7	14.2	18.5	22.2	24.5	0.3
21	Sweden	17.2	20.2	21.9	23.7	24.2	0.2
22	Australia	13.1	16.1	19.6	22.4	23.8	0.3
23	Norway	14.7	17.0	19.8	22.6	23.8	0.2
24	United Kingdom	16.1	18.1	19.9	23.1	23.7	0.2
25	New Zealand	12.2	14.7	18.5	22.1	23.6	0.3
26	Ireland	11.1	12.4	14.9	17.8	21.7	0.3
27	United States	12.3	14.1	17.8	20.2	20.6	0.2
28	Luxembourg	14.2	14.6	16.3	18.9	19.4	0.1
29	Mexico	5.8	7.5	10.6	14.5	19.4	0.3
30	Turkey	5.6	6.5	9.0	12.6	16.6	0.3
	Total OECD	13.8	16.1	19.4	22.6	24.7	0.3

Note: Rank is based on the proportion of the population that is aged 65 years and over by 2045.

Source: OECD (2008a,b).

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