

Documenting and quantifying observations: a case study

Rising health-care spending and price are more than a curiosity. The more a society spends on health care, the less it can spend on other things. Concerns about the falling proportion of the population taking out private health insurance have led to major proposals for changing the way health care is provided and paid for in Australia. Private health insurance has long been an important component of the Australian health care system, and it continues to play an important role in the current system. Indeed, the ability of the government to provide benefits through Medicare, while maintaining expenditure restraint, depends to a large extent on a significant proportion of the population electing to be covered against the cost of medical care by private health insurance. Throughout the 1990s, health care was a major political issue and there have been many debates about how to slow rising spending on Medicare. Let's see how the facts about health-care spending are put together.

GDP, health care and the health-care share

The most comprehensive available measure of the size of an economy is the gross domestic product (GDP). For Australia, GDP is the total value of all products made in the country during a specified period of time, such as a year. GDP includes all newly made goods, such as cars, trucks, shoes, aeroplanes, houses and telephones; it also includes services, such as education, rock concerts and health care. To measure the total value of all products made in the economy, economists add up all the dollars that people spend on the products.

How large is GDP in Australia? In 1998, it was \$543.5 billion. (In Australia, the national accounts are prepared on the basis of financial years which start on 1 July and end on 30 June of the following calendar year. The 1998 GDP figure is actually the figure for the financial year 1997/98. We will use this convention throughout this text. Throughout this text a 'billion' is one thousand millions.) We can compute GDP in any year, and the question about health-care spending and the size of the economy requires that we look at the economy over time. For this purpose, we will examine the growth of GDP and spending on health care over the period 1985–96 as reported in table 1.1.

In order to document observations and look for patterns, economists usually need to look back at some historical period and see what happened. The study of economic events of the past is called economic history. Economic historians frequently go back further than 1985 to obtain observations. For example, Noel Butlin, an economic historian, has compiled a GDP series for Australia dating back to 1788. (Butlin, N. G. 1987, 'Australian national accounts', in *Australian Historical Statistics*, ed. Wary Vamplex, Fairfax, Syme and Weldon Associates, Broadway, New South Wales.) This is an enormous investment in time and effort that can be justified by the desire to uncover what actually happened in the past. Although covering a relatively short period, the observations shown in table 1.1 are enough to illustrate how economists quantify their observations.

TABLE 1.1
GDP and health-care spending, 1985–96

YEAR	GDP	HEALTH-CARE SPENDING	HEALTH-CARE SHARE OF GDP (PER CENT)
1985	217.1	8.3	3.823
1986	240.8	9.3	3.862
1987	264.7	10.6	4.005
1988	299.3	12.0	4.009
1989	339.3	13.4	3.949
1990	370.2	14.8	3.998
1991	378.7	16.4	4.331
1992	387.1	18.0	4.650
1993	404.8	19.1	4.718
1994	429.8	20.0	4.653
1995	457.7	21.1	4.610
1996	489.1	22.4	4.580

Note: GDP and health-care spending are measured in billions of dollars.
Source: Australian Bureau of Statistics.

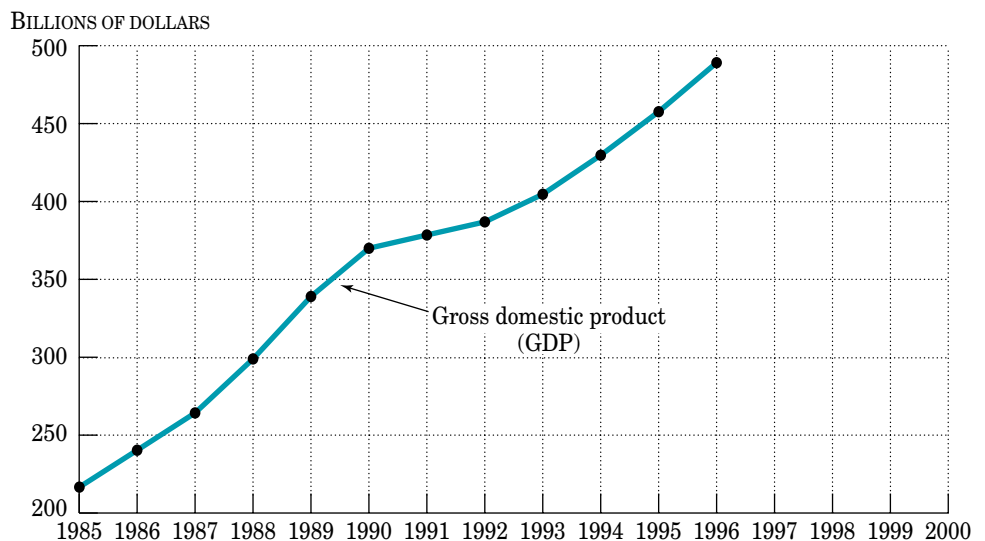
100 times the second column divided by the first column

Economists frequently use graphs to present data like those shown in table 1.1. For example, figure 1.1 plots the data on GDP from the first column of table 1.1. The vertical axis is measured in billions of dollars; the horizontal axis is measured in years. For example, the point at the extreme lower left in figure 1.1 represents GDP of \$217.1 billion (on the vertical axis) in the year 1985 (on the horizontal axis). The points are connected by a line, which helps us visualise the steadily growing GDP during this period.

Now let us consider health-care spending, which includes payments for hospital services, lab tests, nursing homes, visits to the doctor or dentist, medicines, hearing aids and glasses. By adding up all spending on health care in 1996, we get \$22.4 billion. This amount is greater than the value of output generated in some important sectors such as agriculture and mining.

FIGURE 1.1
Gross domestic product (GDP) in Australia, 1985–96

GDP is the total dollar value of newly produced goods and services. It can be measured by adding up what people spend on everything from health care to cars. For each year from 1985 to 1996, GDP is plotted; the line connects all the points.



Source: Australian Bureau of Statistics.

Health-care spending from 1985 to 1996 is listed in the second column of table 1.1 and is plotted in figure 1.2. Figures 1.1 and 1.2 show that both GDP and health-care spending have grown since 1985. One way to assess the growth of health-care spending compared to spending on all goods and services is to look at health-care spending as a share, or percentage, of GDP. For example, health-care spending in 1996 was \$22.4 billion; GDP was \$489.1 billion. Thus, the share (in percentage terms) of GDP going to health care was:

$$\frac{\text{health-care spending}}{\text{GDP}} \times 100 = \text{health-care spending as a share of GDP}$$

$$\frac{22.4}{489.1} \times 100 = 4.6 \text{ per cent}$$

The third column of table 1.1 performs this calculation for all years from 1985 to 1996. Again, you can observe a pattern by plotting the shares, as in figure 1.3. Health-care spending has risen as a per cent of GDP or, in other words, has risen relative to the size of the economy, although in some years it declined relative to the preceding year. Although both GDP and health-care spending have been increasing, health-care spending has been increasing more quickly, at least for most of the period.

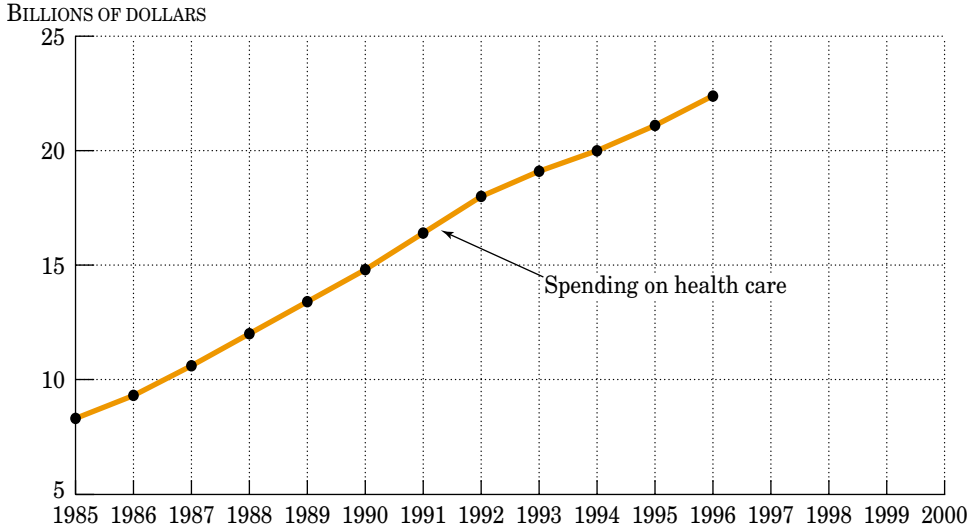


FIGURE 1.2
Spending on health care in Australia, 1985-96
Health-care spending is the dollar value of payments for hospitals, doctors, dentists, nursing homes, medicines and other items that provide medical care. Health care is one part of GDP.

Source: Australian Bureau of Statistics.

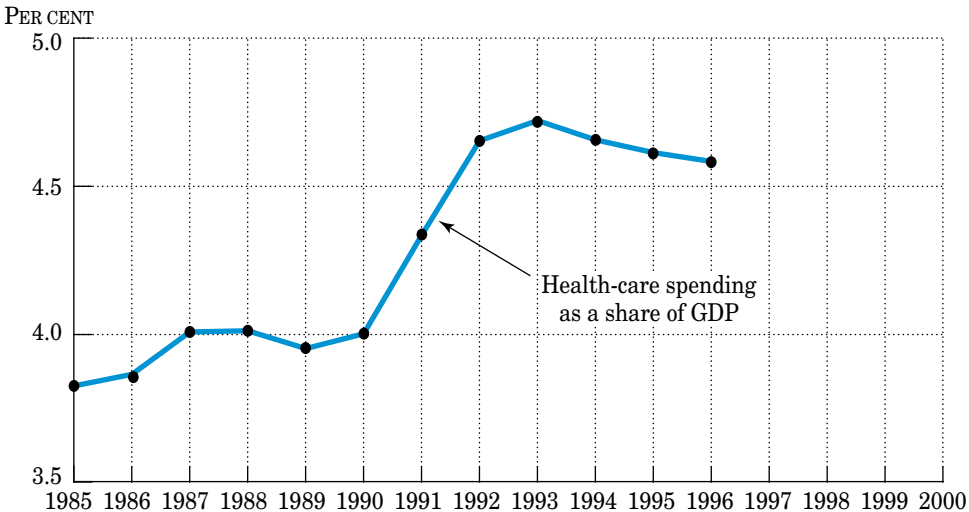


FIGURE 1.3
Health-care spending as a per cent of GDP
Each point in the graph is the ratio of spending on health care from figure 1.2 to GDP from figure 1.1, measured as a per cent. For example, in 1996 health-care spending was \$22.4 billion and GDP was \$489.1 billion. The ratio is $22.4/489.1 = 0.046$ or 4.6 per cent.

We have now quantified the observation about rising health-care spending. Now let us go on to consider the second question about health care and see whether the price of health care has risen compared with the price of other goods and services in the economy.

Overall price level, health-care price and relative price

The first column of table 1.2 shows a measure of the average price of all the goods and services in GDP. Economists gather this information from surveys of prices of individual goods and services. They average these prices, giving greater weight to the prices of items on which more is spent. This average, plotted in figure 1.4, is called the overall price level. A quick glance at the figure shows the increasing trend in the overall price level. There is a tendency for all prices to rise over time. The general increase in prices over time is called inflation. The inflation rate is defined as the percentage increase in the overall price level from one year to the next. The inflation rate did not fall below zero during these years; in other words, the price level did not decline.

TABLE 1.2

The overall price level and the price of health care

YEAR	OVERALL PRICE LEVEL	HEALTH-CARE PRICE	RELATIVE HEALTH-CARE PRICE
1985	0.678	0.610	0.899
1986	0.735	0.666	0.906
1987	0.804	0.773	0.961
1988	0.862	0.861	0.999
1989	0.926	0.933	1.008
1990	1.000	1.000	1.000
1991	1.053	1.096	1.041
1992	1.073	1.213	1.131
1993	1.084	1.240	1.144
1994	1.104	1.290	1.168
1995	1.139	1.355	1.190
1996	1.187	1.418	1.195

Note: The prices in the first and second columns are given as a ratio to the price in 1990. This year is arbitrary: using another year would not change the patterns of the relative price.

Source: Australian Bureau of Statistics.

The third column divided by the second column

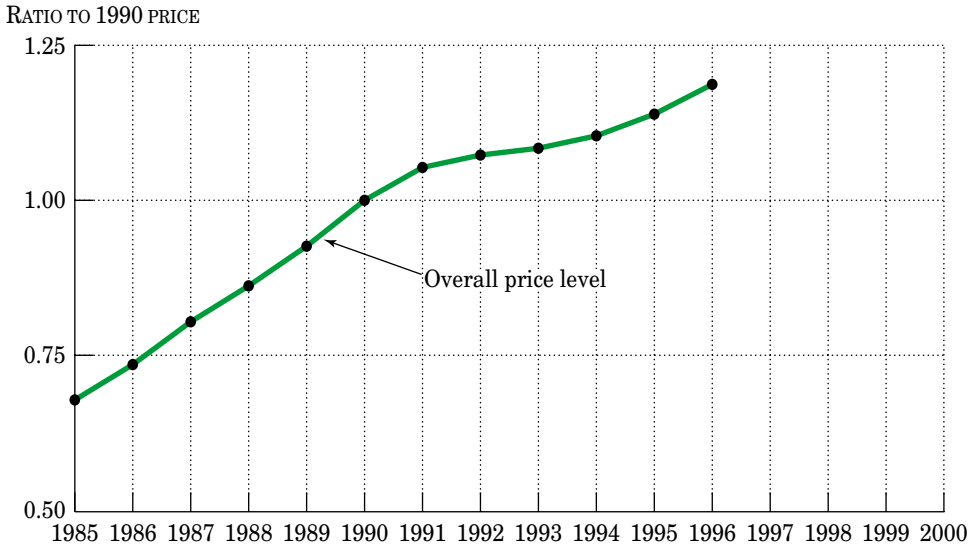
The tendency for the overall price level to rise over time affects our measure of GDP. Economists correct GDP for the rise in the overall price level and get a measure called real gross domestic product (real GDP). Real GDP can be computed by dividing GDP by the overall price level. Real GDP increases much less rapidly than GDP simply because the general price level tends to rise rather than fall. However, this is not always the case. In the 1930s and last century, the Australian economy experienced a falling price level, or deflation. Under deflation, real GDP increases more rapidly than GDP.

Having examined the overall price level, let us now determine whether the increase in the price of health care is greater than the increase in the overall price level. The second column of table 1.2 shows a measure of the price of health care

from laboratory tests to medicines. It is an average of the prices of all the items we included in our measure of health-care spending. Figure 1.5 plots the price of health care; like the overall price level, it has increased.

Now, to determine whether the price of health care has increased more or less rapidly than the overall price level, we look at the relative price of health care. The relative price is a measure of health-care prices compared with the average prices of all goods and services. It is computed by dividing the health-care price by the overall price level:

$$\text{relative price of health care} = \frac{\text{health-care price}}{\text{overall price level}}$$

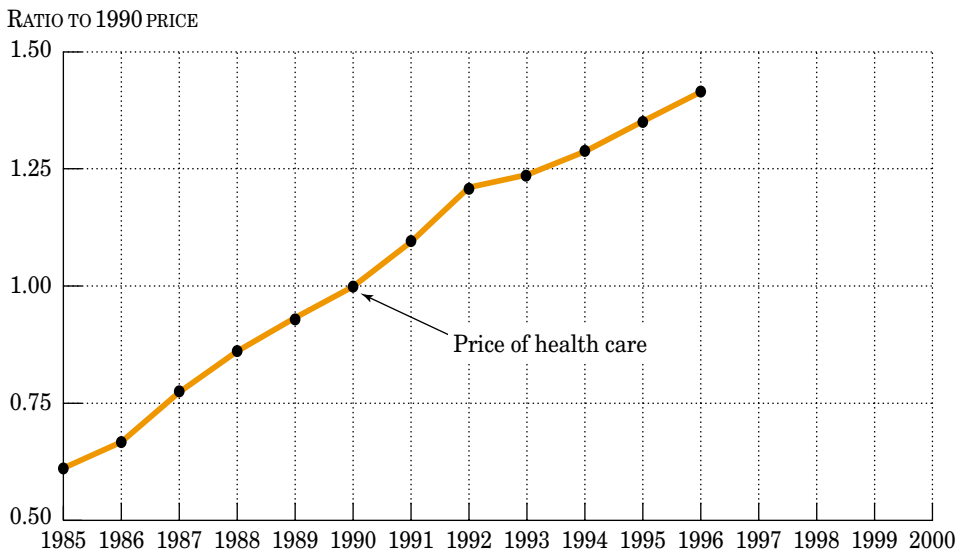


Source: Australian Bureau of Statistics.

FIGURE 1.4

The overall price level in Australia

The overall price level in the economy is like an average of prices of all goods and services in GDP. The overall price level has risen every year from 1985 to 1996.



Source: Australian Bureau of Statistics.

FIGURE 1.5

The price of health care

The average price of health care has increased since 1985, although the increase slowed somewhat after 1992.

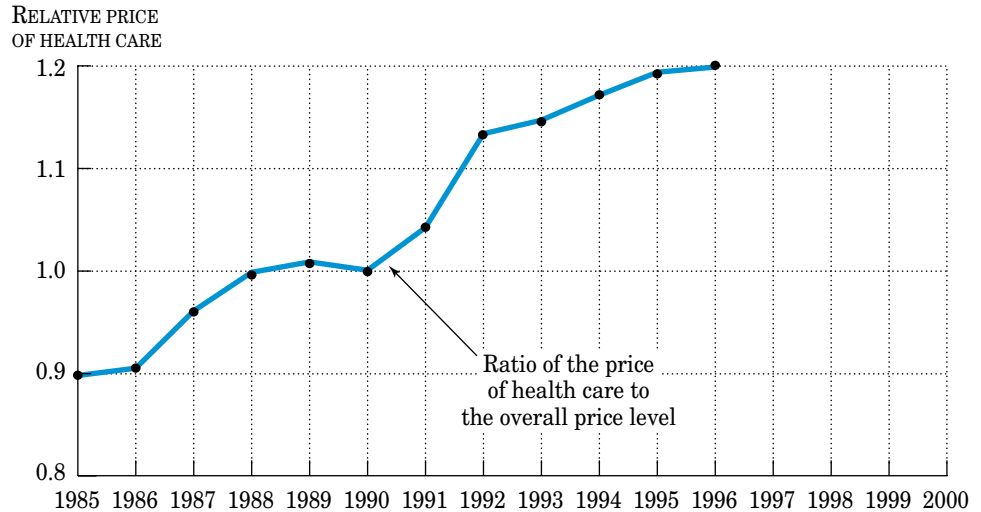
The relative price of health care is shown in the third column of table 1.2 and is plotted in figure 1.6. Although the prices of all goods have increased on average,

the price of health care has risen more rapidly in most years. Thus, we have quantified the second observation about health care: the price of health care has increased relative to the overall price level.

FIGURE 1.6

Relative price of health care

The figure shows the ratio of the price of health care from figure 1.5 to the overall price level from figure 1.4. Health-care prices have risen more rapidly than the overall price level in most years. Hence, the relative price of health care has increased.



The behaviour of people underlying the observations

Interpreting economic observations requires that one look behind the data to the behaviour of the people whose economic decisions generate the data — for example, the people who consume health care (health-care consumers) and the people who produce health care (health-care producers).

Economists often group the people who consume goods and services into households (see figure 1.7). A household is an individual or a group of individuals who share the same living quarters. For example, a household could be a group of recent university graduates sharing an apartment, a divorced person living alone, a family with four children, or a single retiree. Every individual in an economy belongs to a household, and each household must make decisions about the products and services it consumes.

Producers of goods and services are often referred to as *organisations*, which include firms and governments (see figure 1.7). A private hospital or a small group practice of doctors are examples of firms producing health care. Governments also produce goods and services, such as national defence, police, education and health care, but they serve other functions as well, such as the establishment and maintenance of laws and law enforcement. Government can play an important role in influencing economic decision makers through the laws it sets on taxing and spending, but it is also one of the main tasks of economics to determine what role the government itself should play as a producer and consumer of goods in the economy.

Figure 1.7 also illustrates the working of markets. Households buy goods and services in markets. A market refers to an arrangement through which exchanges of goods or services between people take place. For example, medical clinics produce health-care services and households purchase the health-care services in the health-care market, shown in the box labelled ‘Product market’ at the bottom of figure 1.7.

Households also supply their labour to the firms who employ them; the buying and selling take place in the labour market, also shown in figure 1.7. For example, a doctor or nurse may be employed by a medical clinic and receive wages in return. Households also supply other resources to firms, such as machines, land and equipment, either by owning shares in the firms, renting

equipment to the firms or lending the firms funds to buy equipment. Resources, such as machines, used by firms to produce goods and services are called capital. In the health-care industry, capital includes such items as x-ray machines, hospital beds and doctors' offices. For example, a young couple may rent out the first floor of their house as a doctor's office. They receive rent in return. Capital and labour are also called inputs or factors of production because they are used to produce goods and services.

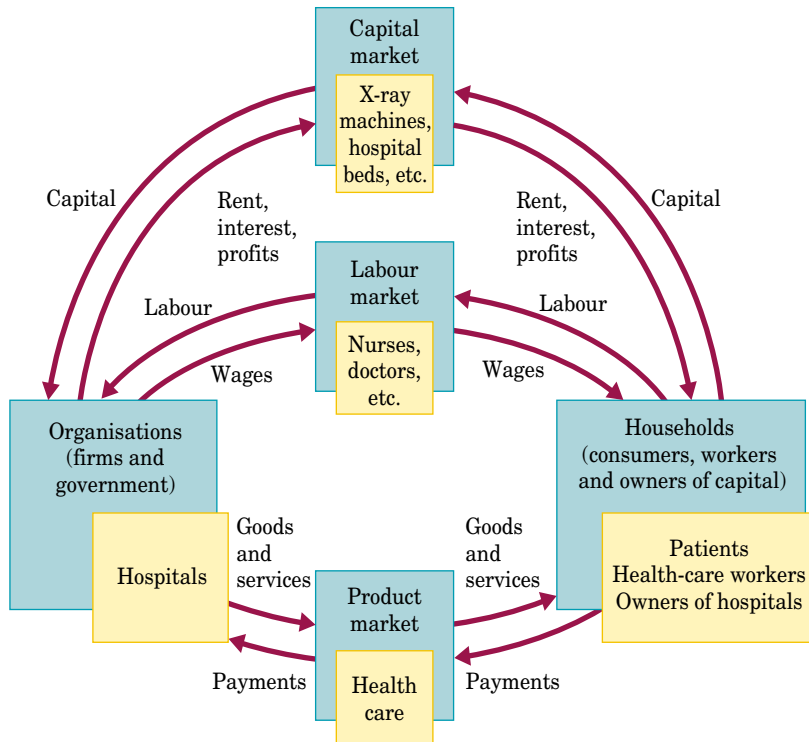


FIGURE 1.7
A circular flow diagram

This diagram shows how spending in general, and spending on health care in particular, equals production in general, and production of health care in particular. The buying and selling of goods and services takes place in the product market. The inputs to production — from tractors to magnetic resonance imagers — are supplied by households, either as workers or owners. Buying and selling take place in the labour and capital markets.