

# Trends in Australian government health funding by age: a fiscal incidence analysis

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**Abstract:** Government health expenditure per capita has grown steadily across the last few decades, but little is known about trends in the age distribution of health expenditure. Here the ABS fiscal incidence studies, which track expenditure at the household level between 1984 and 2010, are used to shed light on this topic. The main finding is that spending has shifted focus from the younger half to the older half of the population. This shift is evident in three areas: acute care (hospitals), community health services (doctors) and pharmaceuticals, which together make up about 88 per cent of expenditure. The trend is independent of demographic ageing. It is unlikely to reflect changes in population health. Its explanation is open to debate.

## Introduction

In this paper we present an analysis of Australian government health expenditure – state and Federal – since 1984, looking for trends in how that expenditure has been distributed between age categories. The analysis is based on data from the Australian Bureau of Statistics fiscal incidence studies. We track expenditure by age group, classifying “age” into three categories: young (household reference person aged 15–44); middle (reference person aged 45–64); and elderly (reference person 65 and over). Most dependent children belong in the young household category.

There are six ABS fiscal incidence studies, beginning in 1984 and ending (most recently) in 2009–10. Fiscal incidence analysis tracks the effects of government social expenditure (including health expenditure), and taxation on household incomes. In Australia, government health expenditure makes up 70 per cent of all health expenditure. That fraction has been stable across the last few decades. Here we will not be discussing the non-government component. Of the government fraction, nearly two thirds comes from the Federal government (AIHW 2012, 472).

Fiscal incidence analysis tracks expenditure per household type. This has the advantage that it screens out demographic “ageing” – increases in the average age of the population. Increased longevity naturally entails increased overall expenditure on the elderly. But it doesn’t follow from demographic ageing that *average* expenditure on the elderly will increase. With a fiscal incidence approach, we can see the impacts on average expenditure at the household level. These figures are

not tracking actual households but categories of household. Across time, actual households will move in and out of these categories.

Health benefits are defined by the ABS as “social transfers in kind derived from government expenses relating to acute care institutions, community health services, pharmaceuticals and other health benefits” (ABS 2003–04, 94). We can track age-related trends within these categories. The four are defined as follows:

- Acute care institutions. These include “all activities of acute care hospitals, free-standing hospices, alcohol and drug treatment centres, and same-day establishments except activities involving health research and formal health education” (ABS 2012, 97). This is calculated on the basis of hospital bed utilisation rates for age, sex and place of residence. “The benefit allocated to households was the sum of each member's utilisation rate multiplied by the average benefit per hospital bed day in their state or territory of residence. The average benefit per hospital bed day was derived by dividing GFS [government finance statistics] expenses per state or territory by the number of days spent in hospital by the state or territory population....” (ABS 2012, 83).
- Community health services. These include “domiciliary nursing services, well baby clinics, dental health services, health services provided to particular community groups, family planning services, alcohol and drug rehabilitation programs not involving admission, and other health services provided in a community setting. Also includes expenditure on patient transport” (ABS 2012, 97). The cost per person was calculated based on “the doctor visit rate for their age, sex and state or territory of residence. Doctor visits were used as an indicator of utilisation for all non-institutional benefits and services such as dentists, specialists, maternal and infant centres, chiropractors, pathology services and domiciliary care... An average benefit per doctors visit was derived by dividing GFS expenses per state or territory by the number of doctor visits made by the state or territory population” (ABS 2012, 83).
- Pharmaceuticals, medical aids and appliances. Here the cost to government is a function of utilisation rates and eligibility for concession benefits (pensioner concession cards, health care cards, Commonwealth seniors health cards and Department of Veterans' Affairs cards). Utilisation rates were calculated from prescription numbers.
- Other health benefits. This includes “social transfers in kind relating to public health services such as health promotion campaigns, occupational health and safety programs, food standards regulation, immunisation programs, breast cancer screening and screening for childhood diseases, as well as expenditure on health research” (ABS 2012, 102).

The analysis applies only to persons living in private households and therefore does not include government expenditure on persons permanently in residential aged care and other care institutions. In 2010, about 156,000 persons aged 65 and over were in such care, at a cost of about 0.75 per cent of GDP (estimated from PC 2005, Table 7.1, 184). Trends in expenditure for this population would add a further dimension to the topic of this paper.

## What is known

Curiously little is said about age in the standard Australian textbooks on health economics (Gardner and Barraclough 2002, Mooney and Scotton 1999, Duckett 2004, Palmer and Scott 2010). In

addition, trends in the relation between age and government health expenditure are not reported by the Australian Institute of Health and Welfare.

One study of the subject is the Productivity Commission's 2005 report, *Economic Implications of an Ageing Australia*. This notes that "Across all health expenditure types, expenditure on those aged over 65 is around four times higher than expenditure on those under 65, and rises to between six to nine times higher for the oldest groups. ... In combination with rapidly increasing numbers of older people ... the upward sloping age profile of health expenditure suggests that, all things being equal, ageing will increase health expenditure significantly" (PC 2005, 147). It admits that evidence on age trends is not conclusive, noting that

While there are limitations in the data, it would appear that in Australia and internationally, growth in health care spending is occurring either equally across age groups, or at a greater rate for older than younger people — in other words, the age profile of expenditure is either stable or steepening over time. (PC 2005, 154)

In this paper we show that the age profile of expenditure is steepening quite dramatically.

Age-related expenditure trends are important in a number of ways. The four generally accepted criteria of good health policy are efficiency, effectiveness, quality and access. Here, we focus on access. Questions of access are primarily questions of equity, which is usually seen as a matter of making health care affordable to low socio-economic status (SES) households and individuals. That is, equity and access are seen as "vertical" issues, comparing rich with poor, as opposed to "horizontal" issues comparing rich *and* poor across age groups. Age might be seen as an equity matter in two ways. One arises from the question of whether current health expenditure trends are sustainable in the long run. If they are not then the younger half of today's population may inherit a diminished healthcare system. That is a matter of intergenerational equitability. That aside, there is also an issue of "life cycle" equitability, or at least of prudence. Could one age stratum of the population come to unfairly dominate access to the healthcare system? This paper will present evidence relevant to that question.

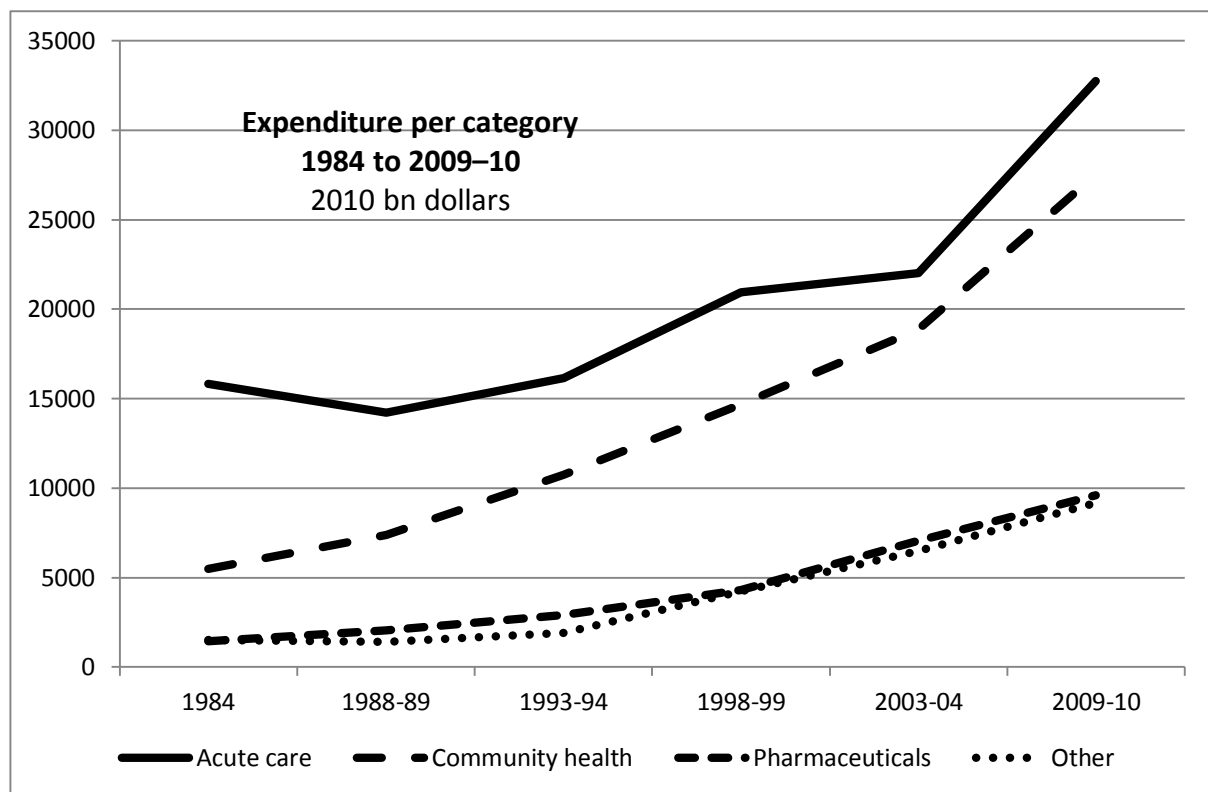
## Overall trends

Across the 26 years from 1984 to 2009–10, total public health expenditure has grown dramatically, more than tripling in that time. Trends in health expenditure are often reported as percentages of GDP. The rate of growth in health expenditure has exceeded the rate of GDP growth for many decades. In 1981–82, total health expenditure was 6.3 per cent of GDP; today it is 9.3 per cent. In the 2000s health spending grew at 5.3 per cent per year, while GDP grew at 3.1 per cent (AIHW 2012, 469; see also Figure 8.1). According to the Grattan Institute, "Growth in [government] health spending above GDP over the past ten years was greater than the growth above GDP of all other spending combined" (Daley et al, 2013, 14).

In this paper we report the trends not as percentages of GDP but in monetary terms. All dollar figures in this paper are in constant 2010 dollars. As noted above, the fiscal incidence studies break expenditure into four main categories. Figure One shows the expenditure trend per category. In 2009–10, acute care made up 41.4 per cent of all expenditure; community health services (CHS) 29.1

per cent; pharmaceuticals 12.1 per cent; “other” 11.9 per cent; and the private health insurance rebate 5.6 per cent. The private health insurance (PHI) rebate was introduced by the Howard government in 1997. In the 2003–04 fiscal incidence study it was included under “Community health services”. In 2009–10 it was counted as a separate item. For the purpose of this study it will be included in community health services, to facilitate comparability across time. With this amendment, the CHS component for 2009–10 grows to 34.7 per cent. Clearly, acute care and community health services dominate health expenditure, making up over three-quarters of the total (76.1 per cent) when the PHI rebate is added to CHS.

**Figure One**

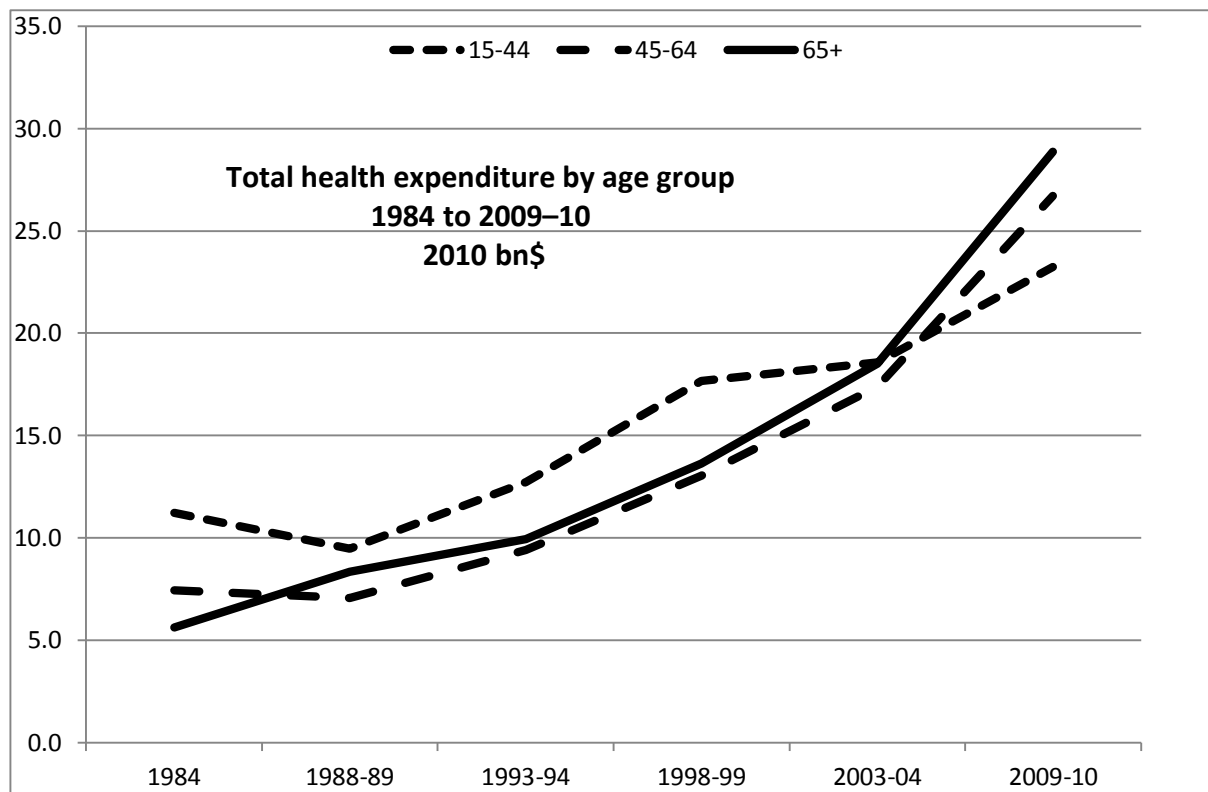


Source: ABS, etc.

Growth in acute care expenditure has been relatively restrained, up by only 107 per cent overall, though rising steeply in recent times. The other three categories show rapid growth: community health services (here shown as including the Private Health Insurance rebate) up by 400 per cent; pharmaceuticals, up by 571 per cent; and other health benefits, up by 509 per cent. This is somewhat at odds with the Grattan Institute’s recent analysis, which found that in the 10-year period 2002–03 to 2012–13 “The expense that did most to increase government spending above GDP growth was hospital spending” (Daley et al 2013, 15). In the longer run, hospital spending has grown more slowly than the general trend.

Figure Two shows the shares of this growth going to three age household categories (young, middle and elderly). Total expenditure on young households grew by 107 per cent (up from \$11.2bn to \$23.2bn); on middle-aged households by 259 per cent (up from \$7.4bn to \$26.7bn); and on elderly households by 414 per cent (up from \$5.6bn to \$28.9bn).

**Figure Two**



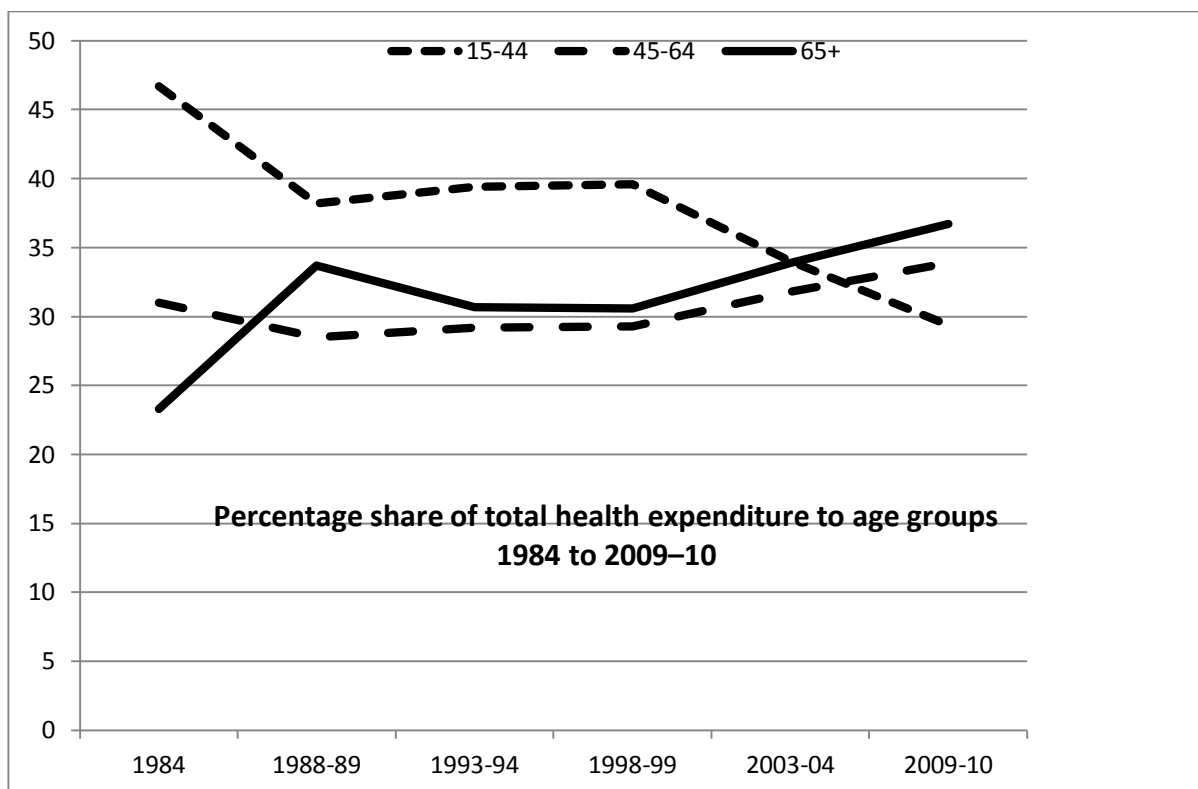
Source: ABS, etc.

Households are classified by the ABS based on the age of the household “reference person”, who is determined as follows: “The reference person for each household is chosen by applying, to all household members aged 15 years and over, the selection criteria below, in the order listed, until a single appropriate reference person is identified:

- the person with the highest tenure when ranked as follows: owner without a mortgage, owner with a mortgage, renter, other tenure
- one of the partners in a registered or de facto marriage, with dependent children
- one of the partners in a registered or de facto marriage, without dependent children
- a lone parent with dependent children
- the person with the highest income
- the eldest person.” (ABS 2012, 103)

Figure Three shows the age group shares as a fraction of the total in each of the six survey years. Here the fraction going to the young has fallen from 46.7 per cent in 1984 to 29.4 per cent in 2009-10, while the fraction going to the elderly rose from 23.3 per cent to 36.7 per cent. The share of the middle-age group gained overall but only slightly, up from 31 per cent to 33.9 per cent.

**Figure Three**



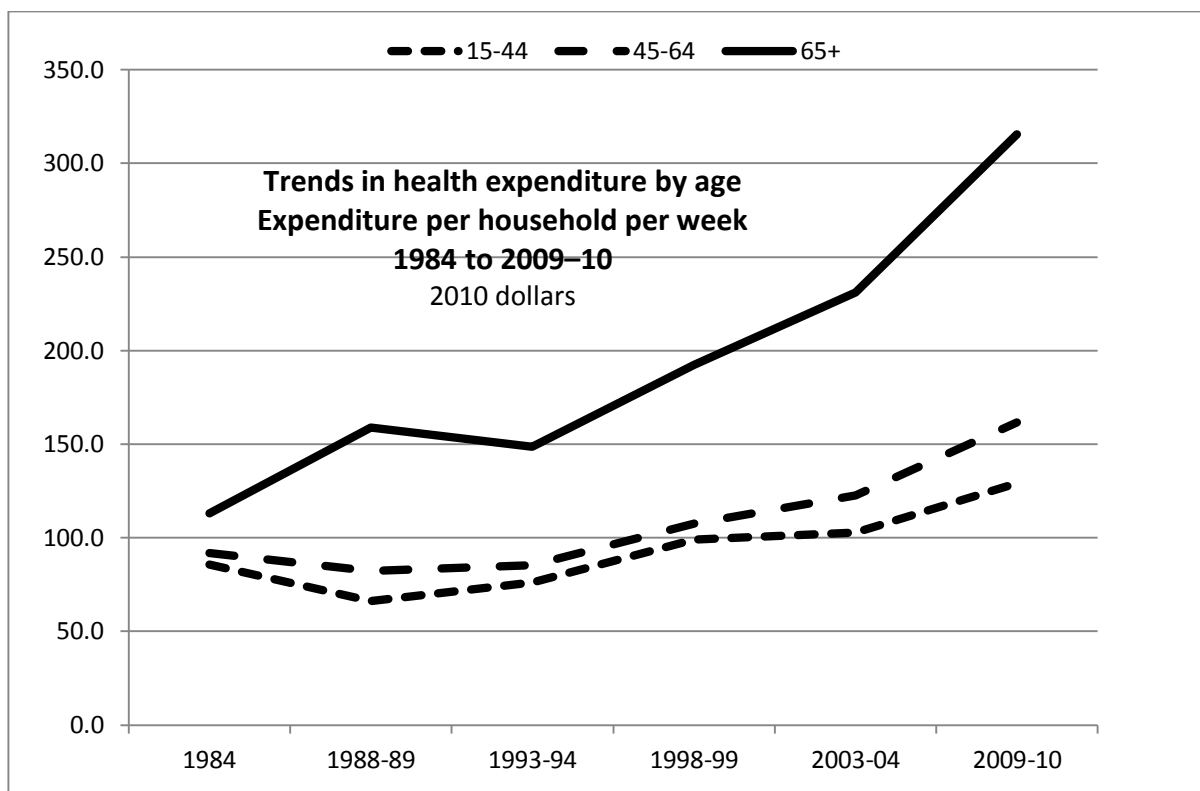
Source: ABS, etc.

## Trends at the household level

Taken together, Figures One and Two show that government health expenditure has grown dramatically, but with marked differences in the age distribution of that growth. This may merely reflect demographic ageing. In 1984 the average age of the household reference person was 47, households aged over 65 contained 11.5 per cent of the whole population, while those under age 45 made up 58.5 per cent; in 2009–10 the average age was 50, over-65 households were 14 per cent of the population and under-45 households 46.9 per cent.

In fact, however, demographic ageing is only one factor in the overall picture. Figure Four shows trends at the household level, thereby excluding the demographic factor. Here we see expenditure per household per week for the three age categories. Across this period expenditure per household per week has increased by 51 per cent for the young, by 79 per cent for the middle age, and by 179 per cent for the elderly. Across time there has been a shift in priorities that favours health expenditure on the elderly, quite independent of demographic ageing.

**Figure Four**



Source: ABS, etc.

To fully track trends at the household level requires that we factor in changes in household size across time in the various age categories. If household size changes, expenditure per household will change. Trends in household size by age are shown in Table One.

	15-24	25-34	35-44	45-54	55-64	65+	All
1984	2.3	3.1	3.9	3.2	2.3	1.7	2.8
1988-89	2.1	2.9	3.8	3.2	2.1	1.7	2.8
1993-94	2.1	2.9	3.5	2.8	2.1	1.6	2.6
1998-99	2.3	2.8	3.3	2.9	2.2	1.6	2.6
2003-04	2.2	2.6	3.3	2.9	2.1	1.6	2.5
2009-10	2.4	2.5	3.4	3.0	2.2	1.7	2.6
Average	2.2	2.8	3.5	3.0	2.2	1.7	2.7

Source: ABS, etc.

The overall trend is a small decline in average household size, from 2.8 to 2.6 persons per household. Households in the 25–34 and 35–44 age groups have shrunk the most. Young households (reference person aged 15–44) have declined on average by about 10 per cent. Middle-aged households (aged 45–64) have declined by about 5 per cent. Elderly household sizes are unchanged.

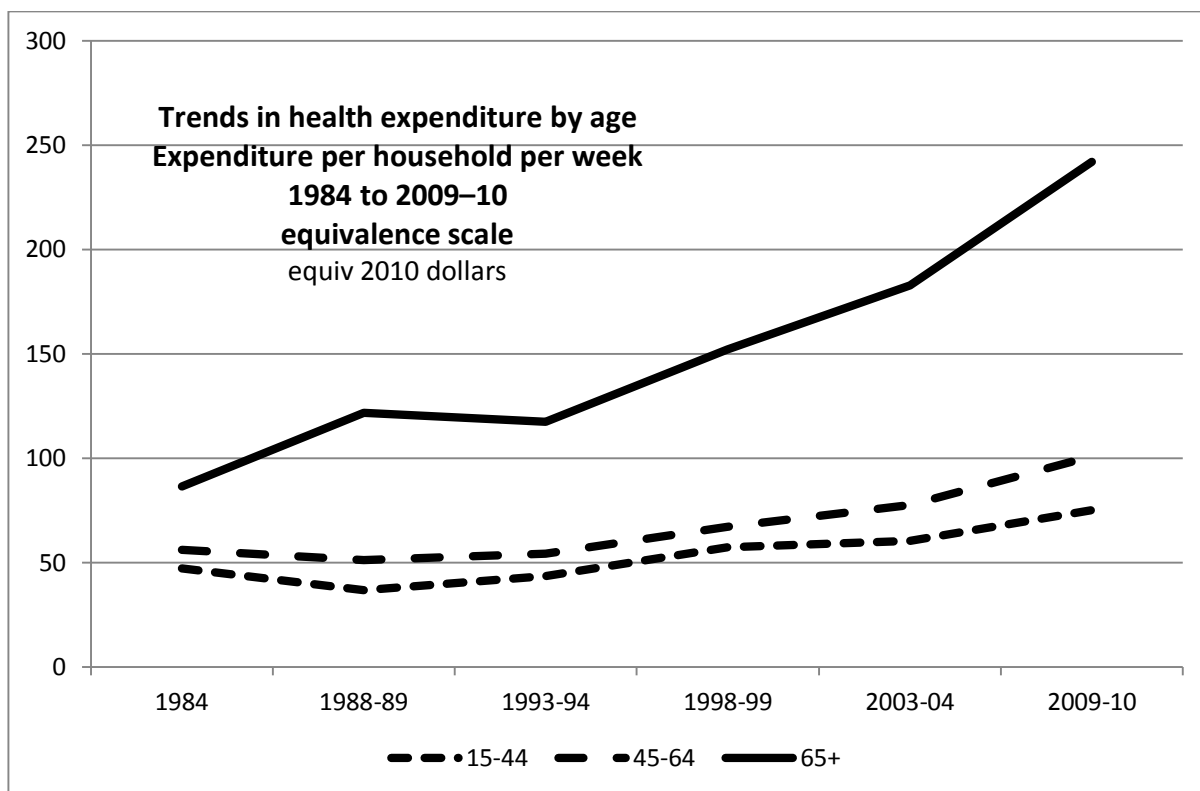
Household size also varies across the life cycle, as the “average” figures in the bottom line of Table Two indicate. Household size rises to a peak in mid-life and declines thereafter. The average for young households is about 2.6; for middle-aged households about 2.6; and for elderly households 1.7. A dollar of health expenditure given to an elderly household will go further than a dollar given to young or middle-aged households. The ideal way to quantify this difference is by the use of equivalence scales at the unit record level. However, the health expenditure figures have not been equalised by the ABS.

A crude but tolerable way to equalise is to divide average health expenditure per household type by the square root of average household size. Using this method, all young and middle-aged figures need to be divided by 1.6 (a reduction of 37 per cent), while elderly figures are divided by 1.3 (a reduction of 23 per cent). Accordingly, we can conclude that Figures Two and Four understate the real benefits to the elderly by about 23 per cent (1.6 divided by 1.3). Likewise in Figure Three the percentage share of the elderly should be increased slightly and that of the young and middle-aged decreased slightly (by a few percentage points in each case).

Figure Five is an equalised version of Figure Four, using the rough method of equalisation just described. The Y axis is in “equalised dollars”, so it cannot be read as a measure of actual expenditure. It shows that, after equalising, health expenditure to young households has increased across this period by 60 per cent, to middle-aged households by 80 per cent, and to elderly households by 179 per cent. These trend figures are so similar to those in Figure Four (51, 76 and 179 per cent respectively) that we can justifiably ignore equivalence requirements in what follows. Subsequent figures will show only non-equalised trends. In each case the trend would be very little different if equalisation were carried out, though the equalised value of expenditure to the elderly would be greater than is shown in Figures Six to Nine.

### **Figure Five**





Source: ABS, etc.

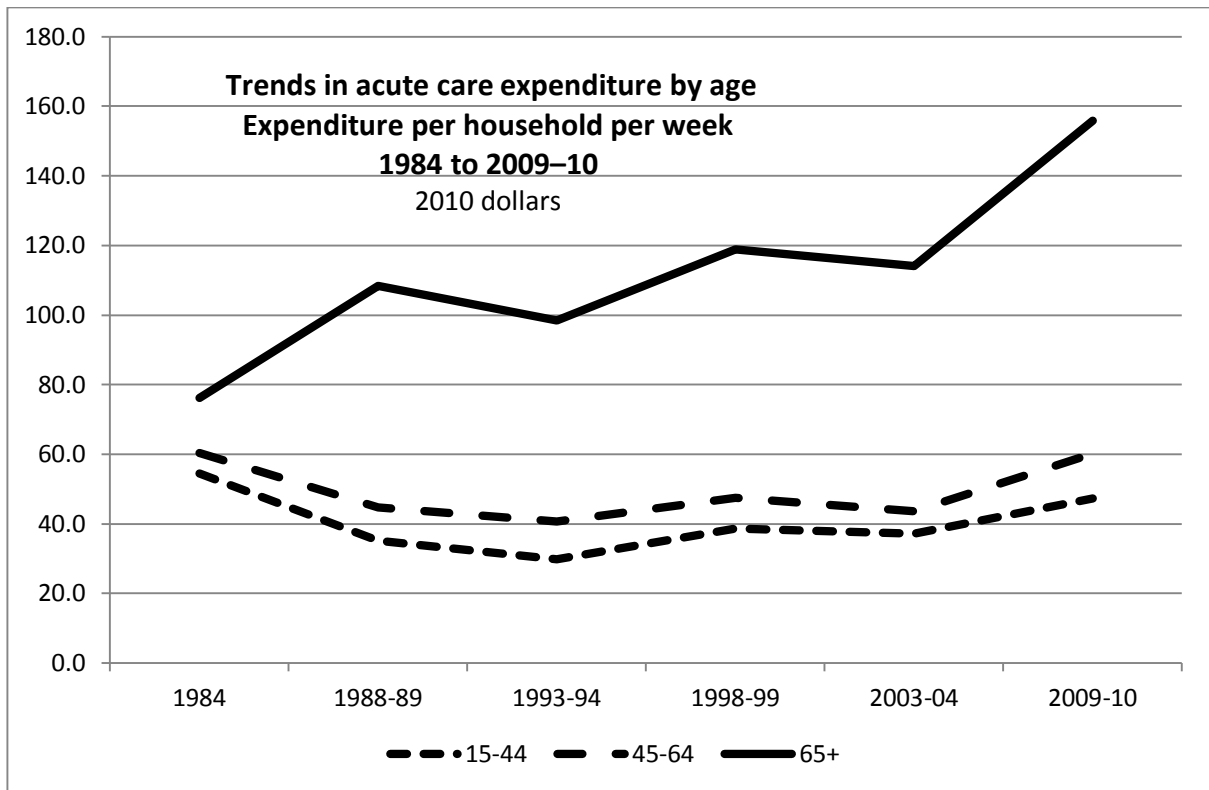
## Expenditure categories

We will now track trends in (non-equivalised) age-related expenditure per household per week in each of the ABS's four expenditure types, showing changes across time for each of the three age categories.

### Acute care institutions

In Figure Six we see that expenditure per household in acute care has fallen for the young by 13 per cent, for the middle-aged it is unchanged, while for the elderly it has increased by 105 per cent.

**Figure Six**

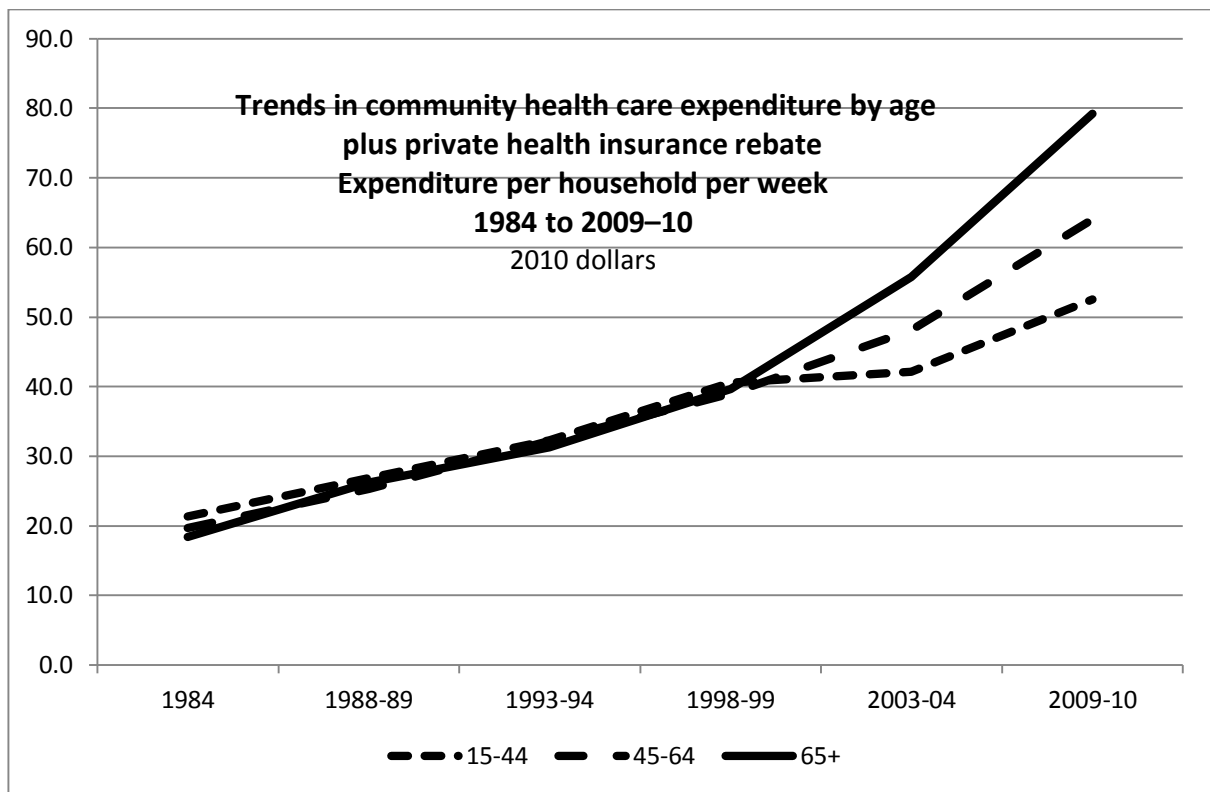


Source: ABS, etc.

### Community health services

In Figure Seven expenditure per household in community health care has increased for the young by 146 per cent, for the middle-aged by 226 per cent, and for the elderly by 331 per cent.

**Figure Seven**

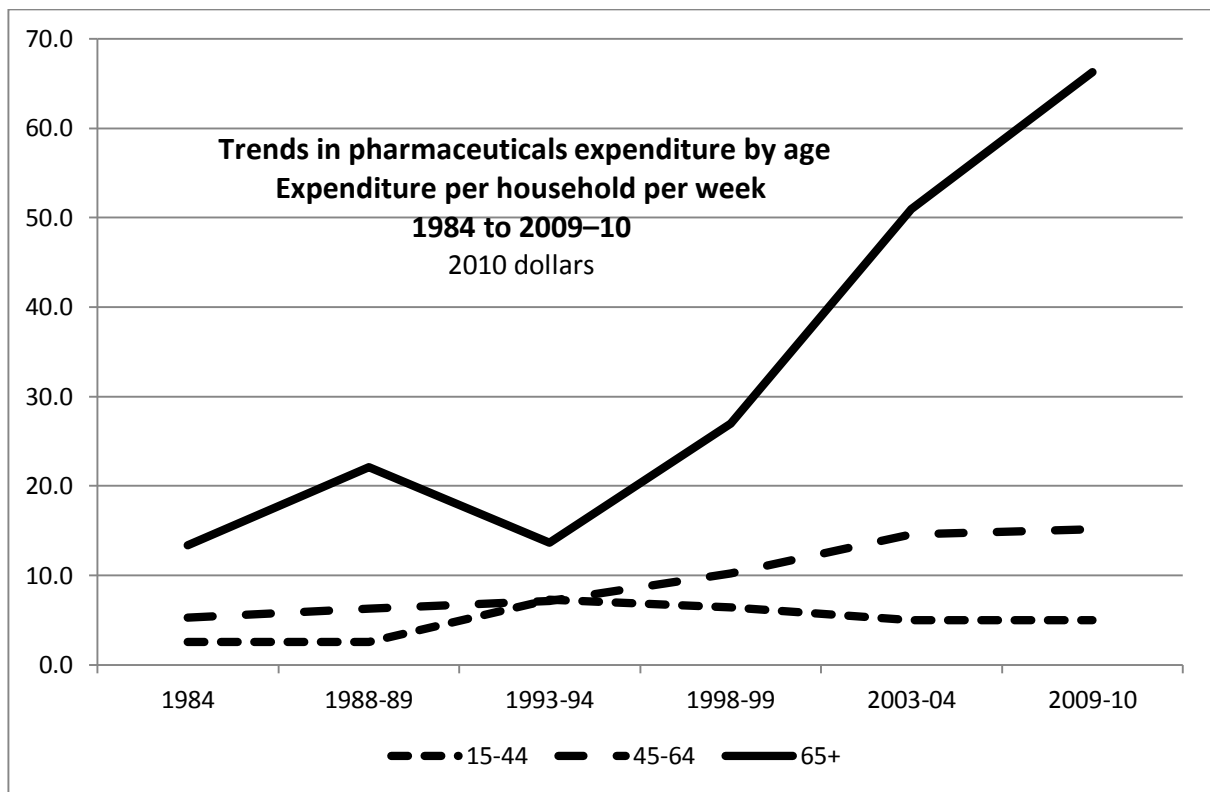


Source: ABS, etc.

## Pharmaceuticals

In Figure Eight expenditure per household in pharmaceuticals has increased for the young by 93 per cent, for the middle-aged by 188 per cent, and for the elderly by 396 per cent, a dramatic divergence of trends.

**Figure Eight**

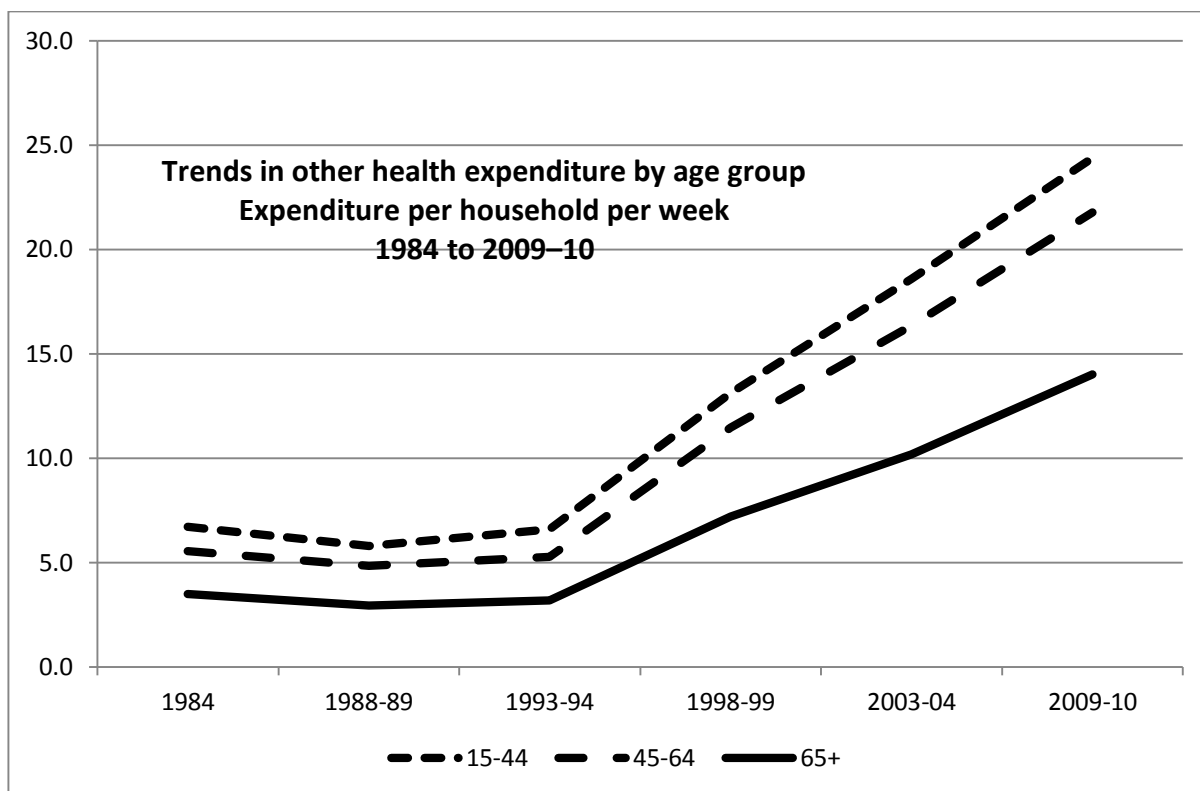


Source: ABS, etc.

### Other health benefits

The “other” category is the only one of the four in which young households get the highest payment levels. In Figure Nine “other” expenditure per household has increased for the young by 264 per cent, for the middle-aged by 291 per cent, and for the elderly by 301 per cent.

**Figure Nine**



Source: ABS, etc.

## Overall gains by age and type

Table Two summarises the findings shown in Figures Six to Nine. The gains in community health services and in “other” expenditures are spread fairly evenly across age groups. By contrast, the gains in acute care and pharmaceuticals are heavily skewed in favour of the elderly.

	15-44	45-64	65+
Acute care	-7	0	80
Community health services plus private health insurance rebate	31	44	61
Pharmaceuticals	2	10	53
Other	18	16	10

Total	43	70	202
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Source: ABS, etc.

## Conclusions

We have seen that government health expenditure trends vary dramatically for different age categories, quite independently of demographic ageing. Across nearly three decades, there is a strong positive correlation between household age and expenditure per household. Growth in expenditure per household has been more than three times faster for elderly households than for young households. This correlation holds good for three of the four main categories of expenditure (acute care, community health services, and pharmaceuticals), which together make up about 88 per cent of expenditure.

Many economists have insisted that demographic ageing is not a major driver of health expenditure trends (see, for example, PC 2005, 146). Gregory, for example, says that “The major issue in health expenditure ... is what determines expenditure within each cohort rather than the impact of the changing age structure on expenditure. This is a very important message which should be repeated and repeated because so many lay people find this message difficult to believe” (Gregory, 1999, 394). Similarly, the Grattan Institute forecasts that “Health expenses are likely to increase by 2 per cent of GDP as their growth over the last decade continues, driven primarily not by an ageing population, as many believe, but by the increase in the scope and volume of health services” (Daley et al, 2013, 6). Their report adds that “Increases in health expenditures are primarily driven not by an ageing population, but by *people of all ages* seeing doctors more often, having more tests and operations, and taking more prescription drugs, often employing new – and effective treatments” (Daley et al, 2013, 16, emphasis added). With this downplaying of the impact of demographic ageing we are in agreement. We also agree that expenditure growth arises from servicing growth. However, this servicing growth is only partly driven by “people of all ages”. It is more accurately described as mostly driven by people of older age. In this paper we have shown the importance of what we can call “age-related servicing growth”.

The explanation for these age-related trends is far from clear. Why is the per household share going to the elderly growing in this way and to this degree? The answer is very much open to debate. Sheiner has observed:

To the extent that increases in longevity and reductions in disability arise from factors unrelated to contemporaneous health spending — for example, reductions in smoking, improvements in diet, less physically taxing jobs, or better preventive care when young — then age-specific health spending for the elderly should decline over time. However, if reductions in disability and increase in longevity are attributable to improved and more costly medical care, then the relationship between improved health and the age distribution of health spending is more ambiguous, as the increased spending that produces these benefits might outweigh the reductions in spending associated with improved health. (Sheiner, 2011, 876–877)

We won't pursue the difficult issue of explanation in this paper. However, we can suggest that future projections may need to be reconsidered. Demographic ageing will be one source of expenditure pressure, but it may be a rather minor and manageable factor. However, if expenditure at the household level also "ages", as it has done quite rapidly over the last few decades, that pressure will be considerably stronger.

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