1. UK health and social care spending

Tom Lee and George Stoye (IFS)

Key findings

Public spending on health has increased more than tenfold in real terms since 1949–50, and the share of national income spent on health has doubled from 3.5% to 7.3%. Since 2009–10, public spending on health has increased at a lower rate than has been seen historically.

Spending has increased substantially over the past 70 years, a phenomenon common across developed economies. The UK now spends at around the EU15 average, due to the large increase in public spending from 2000 to 2009. Since 2009–10, public spending on health has fallen as a share of national income, though it is higher as a share of national income than it was in 2007–08 prior to the financial crisis.

Despite this recent slowdown in funding, health spending has been more favoured relative to other areas of public spending than it was in the previous decade. In 2016–17, almost 19p in every £1 spent by the government went on health, or 30p in every £1 spent on public services.

Health spending has been rising as a share of total public spending on services by 2.1% a year since 2009–10, compared with a rate of increase of 1.1% a year between 1999–2000 and 2009–10. Health accounted for 23% of public service spending in 1999–2000, 26% in 2009–10 and 30% in 2017–18.

Despite this relative protection, growth in health spending since 2009–10 has only just been enough to account for a growing and ageing population.

Per-person spending grew by 0.6% per year between 2009–10 and 2016–17, compared with average annual increases of 3.3% between 1949–50 and 2016–17. After taking into account population ageing, age-adjusted per-person spending has risen by just 0.1% a year since 2009–10.

Public spending on adult social care grew at an average rate of 5.7% per year in the 2000s, but has fared worse than the NHS in recent years, falling by 1.5% a year since 2009–10.

Differences in needs and generosity have led to large differences in spending per adult across England, Scotland, Wales and Northern Ireland. In 2015–16, social care spending per adult was 31% lower in England than in Scotland.

Health budgets across developed countries face a number of future budgetary pressures.

These pressures include rising expectations and income growth, demographic and health changes, and a range of cost pressures. Existing estimates suggest that new technology is a key driver of growth in spending.

1.1 Introduction

Public spending on health and related areas has changed vastly over the past 70 years. In 1949–50, the first financial year after the founding of the National Health Service (NHS) in July 1948, UK public spending on health was £12.9 billion (2018–19 prices). This was 3.5% of national income and accounted for 9.0% of total public spending.

Fast-forward 70 years and public spending on health and other related areas has increased monumentally. Health spending alone was £149.2 billion in 2016–17, with an additional £31.1 billion spent on social care and £48.3 billion on benefit payments to support individuals with disabilities and health conditions.[1] Taken together, this constitutes 29.6% of public spending.

Despite these increases, public budgets for health and social care are coming under increasing pressure. Following large increases for both the NHS and social care during the 2000s, the years since 2009–10 have seen much slower growth in funding for the NHS and, in the case of social care, budget cuts. Between 1996–97 and 2009–10, public spending on health increased by 6.0% per year over and above economy-wide inflation. Similarly, funding for adult social care rose by 5.7% per year between 2001–02 and 2009–10. Since 2009–10, health spending has increased by only 1.4% per year, while adult social care funding has fallen by an annual average of 1.5%.

Despite the fact that, taking the whole period since 1996–97, spending growth, at 4.3% a year, has been above the long-term average of 3.7% a year, this recent slowdown in funding growth has been reflected in problems experienced by the NHS and local authorities. Performance along a number of measures – including various waiting times, delayed transfers of care between hospitals and social care providers, satisfaction with the NHS and provider deficits – has got worse in recent years, which has led to recent calls for funding increases.

In addition to these short-run pressures, the health and social care system faces a series of longer-term, and potentially more serious, challenges. Demographic pressures in the form of a growing and ageing population are only one part of this. Rising expectations, changing population health, and a range of cost pressures from wages and new technologies will all create substantial pressure on the public finances.

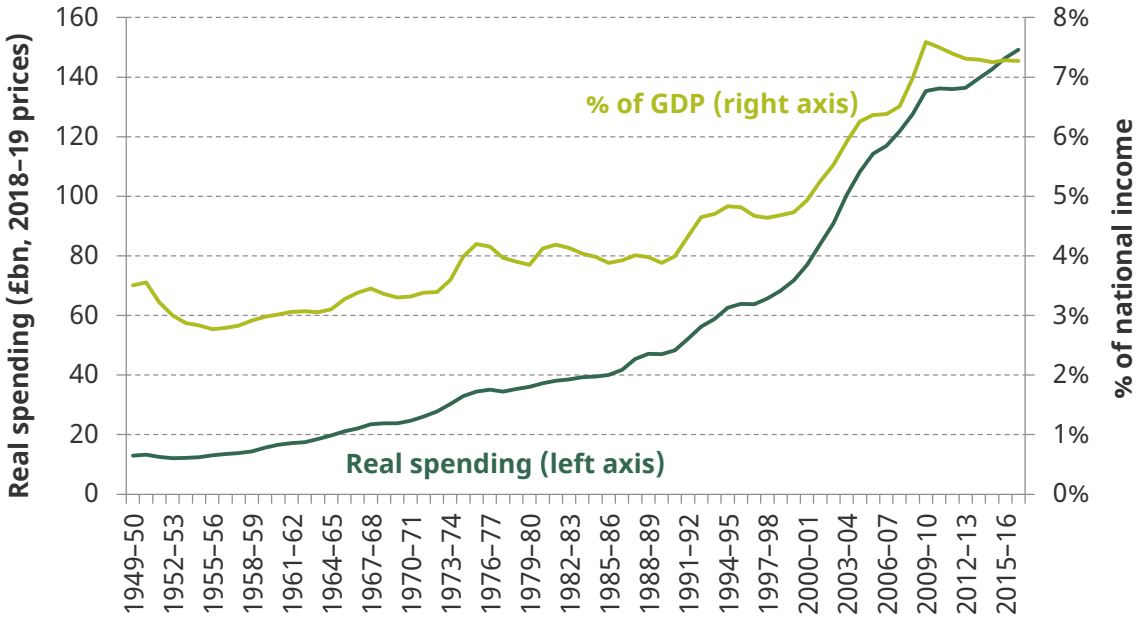
[1] This includes incapacity and disability benefits, carer's allowance, industrial injuries benefits and associated housing benefit.

In this chapter, we consider how and why spending on health and social care has evolved over time. Section 1.2 considers how public spending on health in the UK has grown since the founding of the NHS. Section 1.3 describes how public spending on health varies across England, Scotland, Wales and Northern Ireland. Section 1.4 compares public and private health spending in the UK with that in other developed countries. Section 1.5 then examines how public spending on adult social care has changed over time. Section 1.6 sets out the reasons why health spending increases over time and presents the empirical evidence on drivers of previous growth in public spending. Section 1.7 concludes.

1.2 Public spending on health

Figure 1.1 shows how UK public spending on health evolved between 1949–50 and 2016–17, both in real terms (after accounting for economy-wide changes in prices) and as a share of national income.[2] Between 1949–50 and 2016–17, UK public spending on health rose from £12.9 billion to £149.2 billion (2018–19 prices), an average real-terms increase of 3.7% per year. This increase in spending was substantially above the rate of wider growth in national income. As a result, public spending on health rose from 3.5% of national income in 1949–50 to 6.5% in 2007–08. It then peaked at 7.6% in 2009–10, following a large fall in national income after the 2008 financial crisis, since when it has fallen back to 7.3% in 2016–17.

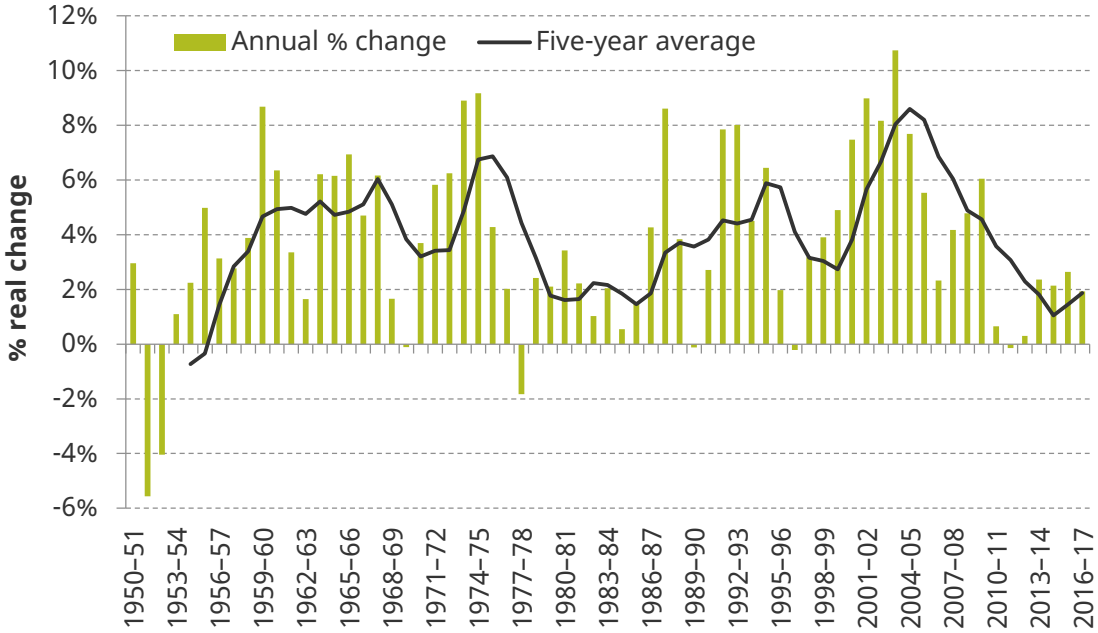
Figure 1.1. Annual UK public spending on health in real terms (2018–19 prices) and as a percentage of national income



Source: Nominal health spending data from Office of Health Economics (1949–50 to 1990–91) and HM Treasury *Public Expenditure Statistical Analyses* (1991–92 to 2016–17). Real spending refers to 2018–19 prices, using the GDP deflator from the Office for Budget Responsibility (OBR) in March 2018.

[2] We use GDP deflators to account for inflation throughout this report. This is because health-specific measures of inflation are not available consistently over time. Health spending data begin in 1949–50, the first full financial year in which the NHS existed.

Figure 1.2. Annual growth rate in real UK public spending on health



Source: Authors' calculations using data from Figure 1.1.

Figure 1.2 shows the annual growth rate in real UK public spending on health in each financial year between 1950–51 and 2016–17. Over the entire period, it increased by an annual average of 3.7%. Real spending changes ranged from an increase of 10.7% in 2003–04 to a cut of 5.6% in 1951–52. Real-terms cuts have been rare, with only seven years in the entire history of the NHS experiencing reductions in spending. Large cuts took place in 1951–52 (–5.6%) and 1952–53 (–4.0%) as budgets fluctuated sharply in the early years of the NHS and some drug spending was shifted towards private spending following the introduction of prescription charges. In 1977–78, health spending fell by 1.8% as part of widespread cuts to public spending under the terms of a loan from the International Monetary Fund. In the other four years in which cuts occurred (1969–70, 1989–90, 1996–97 and 2011–12), these were modest, with none exceeding 0.5%.

There have been prolonged periods of more or less rapid growth in spending. Table 1.1 shows how spending increases varied across different governments. Since 1996–97, spending has increased at an average annual rate of 4.3%. But within this period, spending first increased rapidly (in the late 1990s and 2000s) before rising at a much slower pace after 2009–10. Average increases under the Labour governments between 1996–97 and 2009–10 were 6.0%,. Between 2009–10 and 2014–15, by contrast, spending increases averaged 1.1%, the lowest five-year average increase since the mid 1950s, and the lowest government average increase since the 1976–77 to 1978–79 Callaghan government (0.9% per year). Spending since 2014–15 has grown slightly more quickly, at 2.3% per year, but still below the long-run average of 3.7%.

While health spending has increased over time, so have the demands on the health service. One reason why demand has increased is that the population has grown by 131%, as shown in Figure 1.3. Population growth has varied over time, being stronger in the 1960s contrasted with little growth in the 1970s. It has been particularly strong in recent

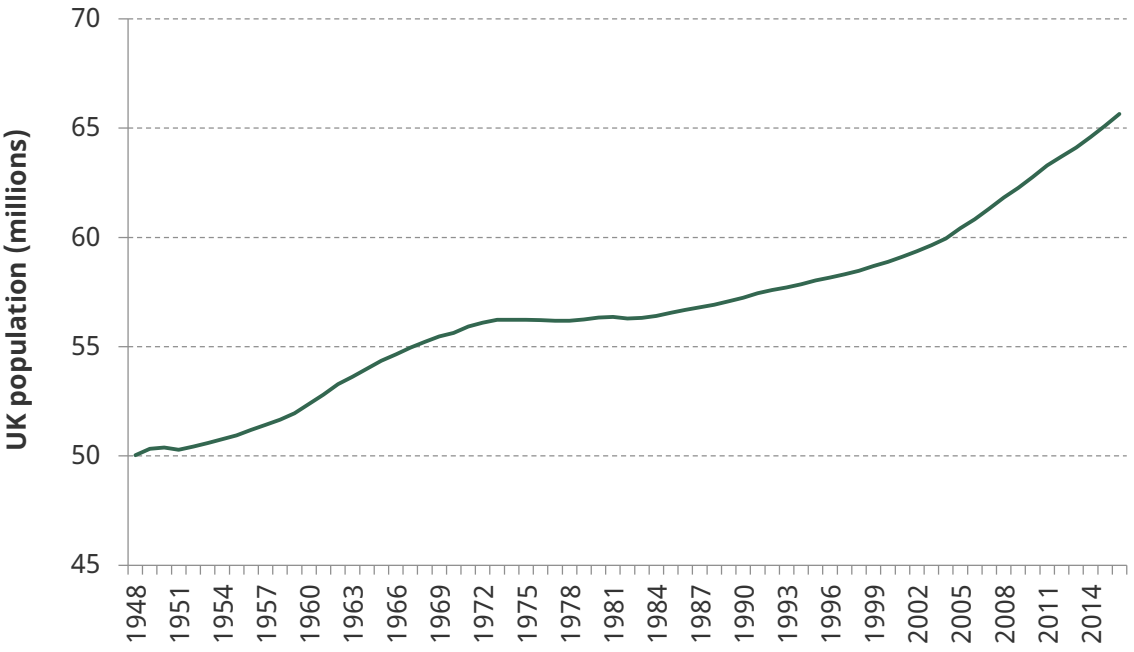
years, with annual average increases of 0.8% (twice the long-run average) between 2006 and 2016 driven by rising levels of immigration and an increased birth rate.[3]

Table 1.1. Annual average real growth rates in UK public spending on health, selected periods

Period	Financial years	Average annual real growth rate
Whole period	1949–50 to 2016–17	3.7%
Pre 1979 (various governments)	1949–50 to 1978–79	3.5%
Thatcher and Major Conservative governments	1978–79 to 1996–97	3.3%
Blair and Brown Labour governments	1996–97 to 2009–10	6.0%
Coalition government	2009–10 to 2014–15	1.1%
Conservative government	2014–15 to 2016–17	2.3%

Source: Authors' calculations using data from Figure 1.1.

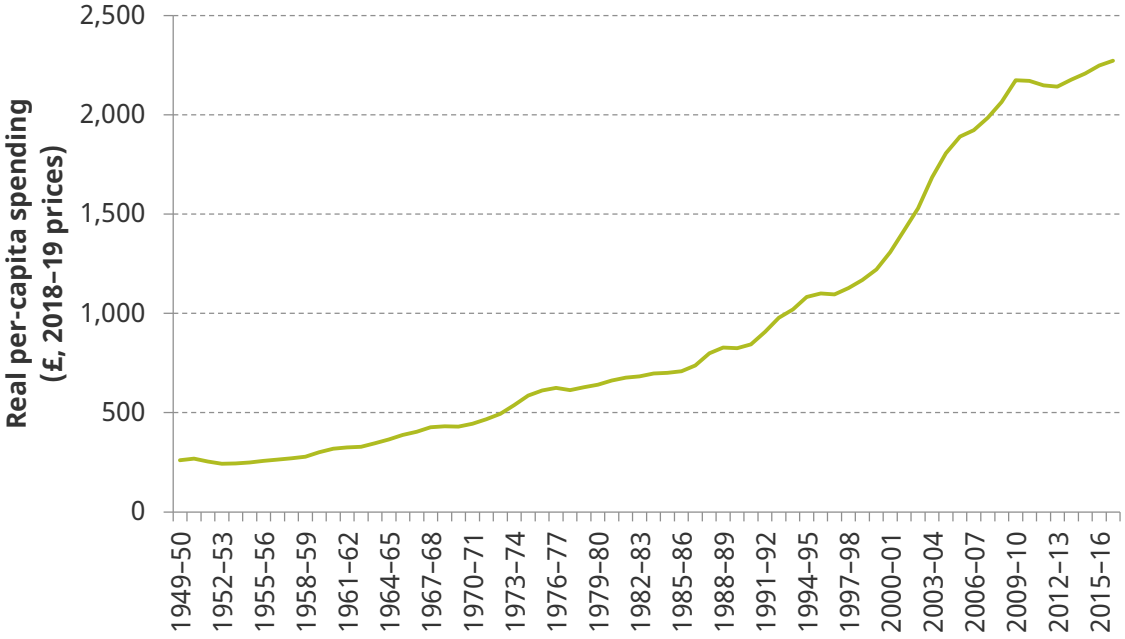
Figure 1.3. UK population size



Source: Past UK population data available on an annual basis (but not financial year) from the Office for National Statistics (ONS) mid-year population estimates (June 2016 release), https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/timeseries/ukpop/pop.

[3] Office for National Statistics, 'Overview of the UK population: July 2017', 2017, https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/overviewoftheukpopulation/july2017.

Figure 1.4. Real per-capita public spending on health



Source: Nominal health spending data from Office of Health Economics (1949–50 to 1990–91) and HM Treasury *Public Expenditure Statistical Analyses* (1991–92 to 2016–17). Real spending refers to 2018–19 prices, using the GDP deflator from the OBR in March 2018. UK population data available on an annual basis (but not financial year) from the ONS mid-year population estimates (June 2016 release), https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/timeseries/ukpop/pop.

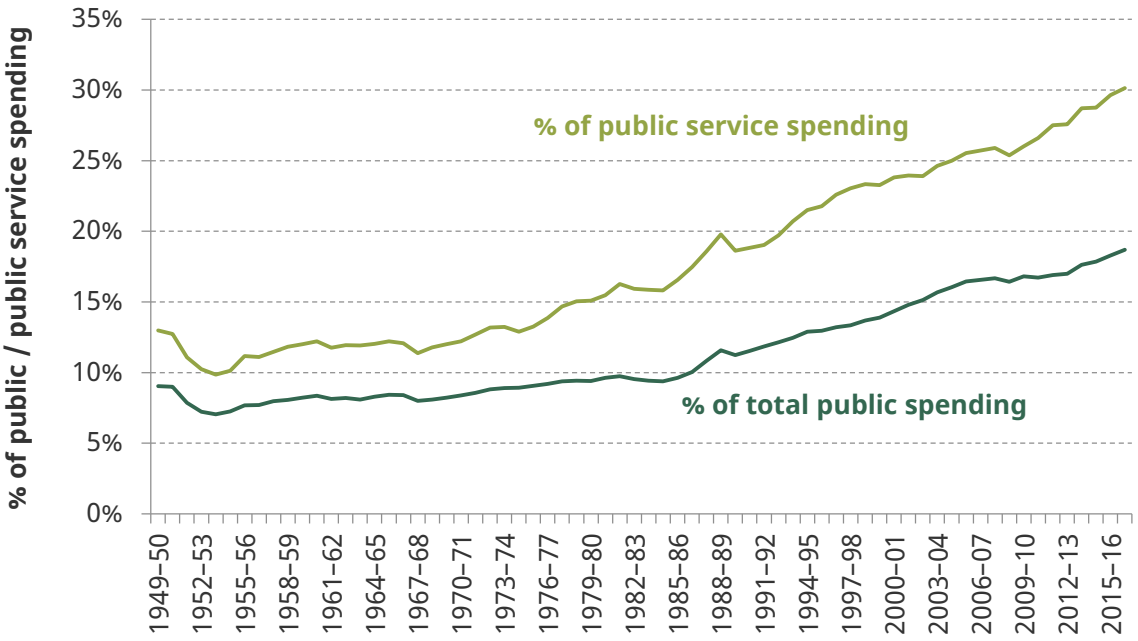
Figure 1.4 shows real per-person public spending on health between 1949–50 and 2016–17, which rose at an annual rate of 3.3% (compared with 3.7% for total health spending over the same period).

With high population growth and low overall spending growth, growth in per-capita spending has been particularly weak since 2009–10, increasing by just 0.6% a year between 2009–10 and 2016–17, as compared with 5.4% between 1996–97 and 2009–10 and 3.3% per year between 1949–50 and 2016–17.

Broader public spending has also increased over time. Figure 1.5 shows public spending on health as a percentage of total public spending and as a percentage of public service spending (which excludes spending on social security benefits, tax credits and debt interest). Over time, spending on health increased more quickly than spending on other areas, and so the share of public spending accounted for by health has increased.

Prior to the 1980s, this increase was relatively modest, with the largest increases in public spending directed towards education and state pensions. The growth in the share of public spending on health then accelerated from the mid 1980s. Between 1985–86 and 2016–17, health spending rose from 9.6% of total public spending to 18.7%. A similar increase is also seen when looking at health spending as a share of public service spending, rising from 16.6% to 30.1% over this period. This means that in 2016–17, almost 19p in every £1 spent by the government went on health, or 30p in every £1 spent on public services.

Figure 1.5. Annual UK public spending on health as a percentage of total public spending and of public service spending



Note: Public spending is total managed expenditure. Public service spending is defined as total public spending less spending on gross debt interest and less spending on benefits and tax credits.

Source: Health spending data as for Figure 1.1. Public spending and public service spending calculated from OBR Public Finances Database and Department for Work and Pensions Benefit Expenditure Tables.

It is interesting to note that the share of spending directed towards health has actually increased at a quicker pace since 2009–10, during a period of historically low increases in health spending, than during the 2000s. Between 2002–03 and 2009–10, health spending as a share of public service spending grew by 2.1 percentage points (a 9% increase), from 23.9% to 26.0% of service spending. Between 2009–10 and 2016–17, it grew by 4.1 percentage points (16%). So while health spending increased at a historically slow pace during this period, it has continued to be protected relative to other service spending, which was substantially cut as part of a wider government austerity programme.

1.3 How does public spending on health vary across the UK?

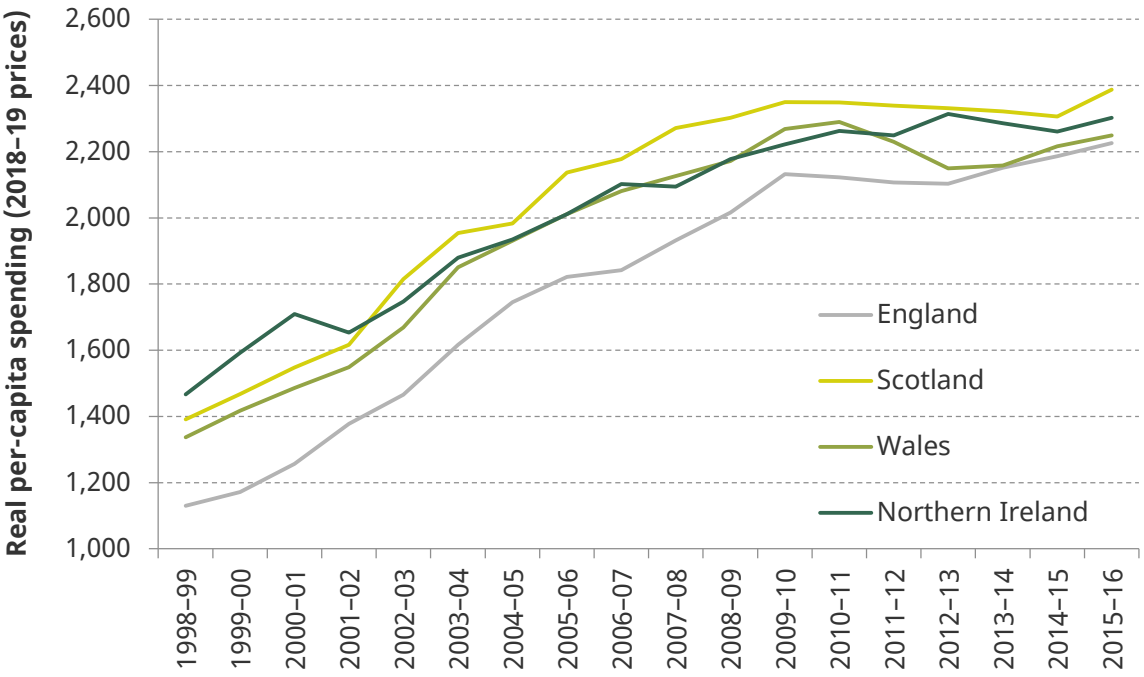
Different demographic compositions, socio-economic characteristics and underlying health mean that the need for healthcare varies across different parts of the UK. In addition, since 1999, the devolved administrations of Scotland, Wales and Northern Ireland have been responsible for local health spending decisions. As a result, as shown in Figure 1.6, per-person public health spending varies across the different parts of the UK. In 2015–16, it was highest in Scotland at £2,387. This compares with spending of £2,302 in Northern Ireland, £2,249 in Wales and £2,226 in England.

Per-person spending increased in all areas between 1998–99 and 2009–10, but at varying rates. Spending grew most in England, increasing by an annual average of 5.9% between 1998–99 and 2009–10. This compares with annual growth rates over the same period of

4.9% in Scotland and Wales and 3.9% in Northern Ireland. So while per-capita spending is lower in England than elsewhere, this gap has narrowed over time.

Growth in per-capita health spending has been much slower since 2009–10. Table 1.2 summarises changes in spending, population size and per-capita spending in England,

Figure 1.6. Real per-capita public spending on health in England, Scotland, Wales and Northern Ireland



Source: Authors' calculations using HM Treasury Public Expenditure Statistical Analyses 2007–17 and the March 2018 OBR GDP deflator.

Table 1.2. Changes in health spending, population and per-capita health spending between 2009–10 and 2015–16 in England, Scotland, Wales, Northern Ireland and the UK

	% change between 2009–10 and 2015–16		
	Real health spending	Population	Real per-capita health spending
England	9.6	5.0	4.4
Scotland	4.3	2.7	1.6
Wales	1.1	2.0	-0.9
Northern Ireland	7.0	3.3	3.6
UK	8.6	4.6	3.8

Source: Population data from ONS mid-year population estimates, 2009 and 2015; accessed through NOMIS on 23 March 2018. Nominal health spending from HM Treasury *Public Expenditure Statistical Analyses 2017*. Real spending refers to 2018–19 prices, using the GDP deflator from the OBR in March 2018. The changes in UK real health spending and real per-capita health spending only include UK health spending that takes place inside the UK.

Scotland, Wales and Northern Ireland over the period from 2009–10 to 2015–16. After taking into account population growth, per-capita spending increased by most in England, rising by 4.4% (0.7% per annum) compared with growth rates of 3.6% (0.6% p.a.) in Northern Ireland and 1.6% (0.3% p.a.) in Scotland. Per-capita spending fell slightly in Wales during this period, by 0.9% (0.1% p.a.).

The decisions taken over health spending in each part of the UK in recent years have also had wider consequences for public spending on other services across the country. The choice to protect NHS spending necessitated larger cuts in other departments to achieve overall spending reductions. So while NHS spending grew at a much slower rate in Wales than in England, spending in other areas (e.g. local government spending, which funds social care) experienced smaller cuts.[4]

1.4 International comparisons

Different countries spend varying amounts on healthcare. The differences may reflect differences in the organisation of care, different preferences for health, and variation in the overall levels of taxation and public spending in each country.[5]

Figure 1.7 shows how total (public and private) health spending in the UK, as a share of national income, compares with other countries in 2015.[6] UK spending, at 9.5% of national income, was just above the unweighted EU15 average of 9.6% and just below the EU15 average of 10.2% when weighting spending by GDP for each country. However, this is substantially below figures for large economies such as the US (17.2%), Germany (11.3%) and France (11.0%), with much lower shares of GDP being devoted to health in the smaller economies of Greece (8.3%), Ireland (7.8%) and Luxembourg (6.3%). This means that if the UK wanted to spend the same proportion of national income on health as Germany in the next year, it would have to spend more than an additional £30 billion on health. Of course, GDP per person is also higher in Germany than in the UK. An even greater increase in spending would therefore be required to match the actual level of health spending per person in Germany.

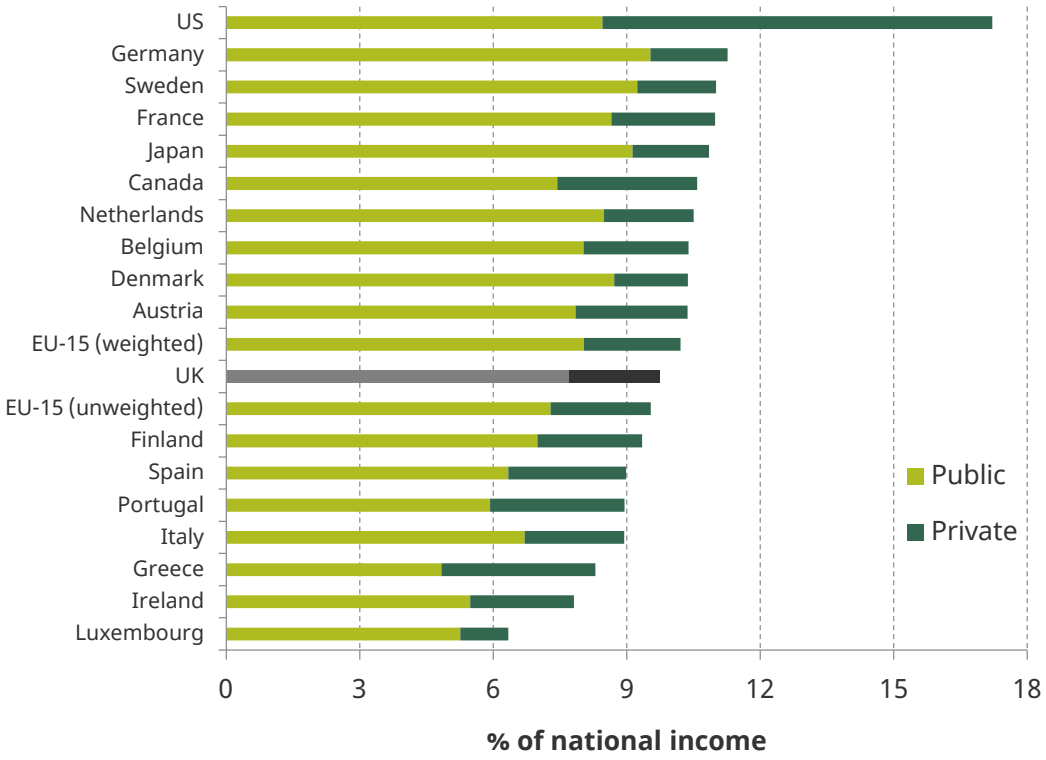
The figure also distinguishes the fractions of spending that are conducted through public and private channels. Public spending accounted for a slightly larger share of health and health-related long-term care spending in the UK (79%) than on average in the EU15 (76%). Private health spending in the UK was 2.0% of national income in 2016. The majority of this spending is out-of-pocket spending (1.5% of GDP) by consumers on medical goods (e.g. drugs, medical equipment, fitness and well-being aids) and spending on private

[4] B. Deaner and D. Phillips, *Scenarios for the Welsh Government Budget to 2025–26*, IFS Report R83, 2013, https://www.ifs.org.uk/comms/r83.pdf.

[5] See *OECD Reviews of Health Systems* for the different organisational structures of international healthcare systems: http://www.oecd.org/els/health-systems/reviews-health-systems.htm.

[6] Figures in Section 1.4 are reported under the international definitions of the System of Health Accounts 2011. This is an internationally comparable definition, used by the OECD to compare spending across countries, and includes a number of health-related elements of social care spending. Public spending in the UK under this definition is higher than that used elsewhere in the report: 7.7% of GDP in 2016 as compared with 7.3% of GDP reported by HM Treasury in 2016–17.

Figure 1.7. Public and private health spending as a percentage of national income across the EU15 and G7 countries in 2016



Note: Figures for the UK differ from those in Figure 1.1 as health spending (as reported by the OECD) is measured on an internationally comparable basis. This measure includes spending on health services and products, in addition to spending on services and equipment for health-related long-term care. Figure 1.1 excludes most spending on long-term care, which is classified as 'social care spending' and instead included in Figure 1.8. EU15 averages are weighted (by GDP) and unweighted averages, and exclude the UK.

Source: OECD Health Statistics, http://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT.

medical insurance (0.3% of GDP).[7] At the end of 2015, 10.6% of the population were covered by some sort of private medical insurance,[8] which gives access to duplicate services to those provided by the NHS but with shorter waiting times and access to private hospitals.

The US is a notable outlier in the proportion that is spent through private channels (51%). Despite this high share of private spending, the US still publicly spends a larger share of its national income on health (8.5%) through care programmes for the over-65s (Medicare) and for low-income people (Medicaid) than the UK (7.7%), with an additional 8.8% of GDP spent privately in the US.

While comparisons of spending do not necessarily reflect differences in the quality of care provided in different countries (with different costs of production and levels of health

[7] Office for National Statistics, 'UK Health Accounts: 2016', 2018, https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthcaresystem/bulletins/ukhealthaccounts/2016.

[8] LaingBuisson, 'Demand for PMI increases thanks to corporates', Market Briefing, 2017, https://www.laingbuisson.com/wp-content/uploads/2017/01/HealthCover_13ed_market_briefing.pdf.

across countries), it is interesting to note that the UK has historically spent (and continues to spend) less on health than countries such as France and Germany. Indeed, these differences directly fed into policy in the 2000s when then Prime Minister Tony Blair promised to raise UK health spending to the European average by 2005.[9] Following this pledge, while health spending rose as a share of GDP in most EU countries over the next decade, spending in the UK increased at a quicker pace. These increases were therefore broadly in line with this pledge,[10] and they narrowed the gap in spending with France and Germany. While lower than in some countries, spending in the UK is now not low compared with that in other comparable countries on average.

1.5 Social care spending

Individuals with physical or learning disabilities, or physical or mental illnesses, often have difficulties with activities of daily living, such as cooking, washing and getting dressed. Social care includes a broad range of non-medical services that support people with these activities. This is distinct from healthcare, which treats underlying medical conditions, but both types of care are often required by the same individuals.

Unlike healthcare, the majority of social care is provided on an informal basis by family, friends or neighbours, or purchased privately. For example, among the population aged 65 and over in England in 2014–15, 23% of individuals reported receiving some sort of informal care.[11] In addition to this, approximately half of individuals who reported receiving formal social care privately financed at least part of their care.

Publicly funded social care is available for individuals who meet the required eligibility criteria, including both a needs and a financial means test (see below for details of how this varies across the UK). In 2016–17, the UK government spent, mostly through local authorities, a total of £31.1 billion on social care for both adults and children.[12] While much of the public discussion about the organisation and funding of social care centres upon care for individuals in old age, publicly funded social care is used by individuals of all ages and, in fact, only a minority goes on those aged 65 and over. Social care spending on children amounted to £9.9 billion (32% of the total). The remaining £21.2 billion was spent on adults, with approximately half of this spent on individuals aged 65 and over.[13]

[9] See *Hansard*, 28 November 2001, column 964, https://publications.parliament.uk/pa/cm200102/cmhansrd/vo011128/debtext/11128-03.htm.

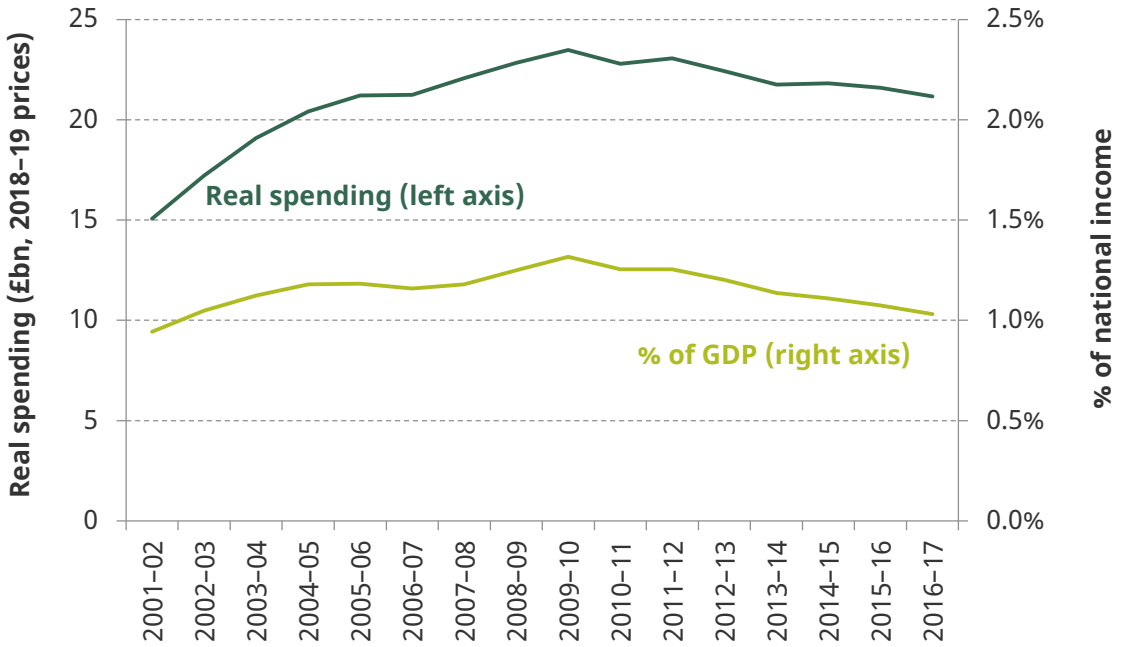
[10] R. Thorlby and J. Maybin, 'Health and ten years of Labour government', King's Fund Briefing, 2007, https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/health-ten-years-labour-government-achievements-challenges-may2007.pdf.

[11] R. Crawford and G. Stoye, *The Prevalence and Dynamics of Social Care Receipt*, IFS Report R125, 2017, https://www.ifs.org.uk/publications/8893.

[12] HM Treasury, *Public Expenditure Statistical Analyses 2017*, https://www.gov.uk/government/statistics/public-expenditure-statistical-analyses-2017.

[13] Recipients of care under the age of 65 tend to have higher costs than individuals aged 65 and over. As a result, there are more recipients at older ages even though the costs are split equally. For example, in England, adults aged 18–64 represented 33% of adult social care recipients but accounted for half of all spending on adult social care. (For more details, see http://digital.nhs.uk/catalogue/PUB30121.)

Figure 1.8. Annual UK public spending on adult social care in real terms (2018–19 prices) and as a percentage of national income



Source: Nominal adult social care spending data from HM Treasury *Public Expenditure Statistical Analyses* 2007–17. Real spending refers to 2018–19 prices, using the GDP deflator from OBR in March 2018. Adult social care spending is defined as spending on personal social services minus personal social services spending on children and family and minus personal social services spending on unemployment.

Figure 1.8 shows annual UK public spending on adult social care between 2001–02 and 2016–17, both in real terms and as a percentage of national income.[14] Social care spending initially follows a similar pattern to health spending, with large increases in public spending throughout the 2000s. Public spending increased by 56% from £15.1 billion in 2001–02 to £23.5 billion in 2009–10, an average annual real increase of 5.7%. This is mirrored by an increase in the share of national income spent on adult social care over the same period, rising from 0.9% in 2001–02 to 1.3% in 2009–10.

Spending on social care has fallen consistently since 2009–10. Between 2009–10 and 2016–17, spending fell by 9.9% (or 1.5% a year) to £21.2 billion. This pattern contrasts with public spending on health, which, although increasing at a historically slow pace, actually increased by 10.3% after accounting for economy-wide inflation over the same period.

In England, publicly funded social care is the responsibility of the local authority (LA). Since April 2015, national eligibility criteria have governed who is eligible for LA financial contributions towards care in their own home or in a residential care home.

Eligibility for public social care is judged on two separate criteria.[15] First, there is a needs assessment. Since April 2015, this has been standardised across all LAs. Individuals with

[14] Chapter 3 models pressures on adult social care and not children's social care. As a result, we focus our discussion of spending on adult social care.

[15] For a more detailed explanation of eligibility for local authority social care, see T. Jarrett, 'Social care: paying for care home places and domiciliary care (England)', Commons Briefing Paper SN01911, 2017, http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN01911.

difficulties with at least two daily activities are judged to have sufficient need for assistance from the LA.

Second, all individuals who meet the needs assessment are subject to a financial means test. This determines who will pay for care: the individual, the LA or a combination of the two. The financial means test has two components, with individuals expected to contribute to the cost of their care if they have a sufficient level of income, assets or both.

Individuals receiving LA care are expected to contribute to the costs of their care from their income (although some income is exempt from this test). Individuals make contributions to the point at which they have a minimum weekly income remaining. The minimum income differs across residential home and non-residential home care recipients. The minimum income for residential home care recipients is currently £24.90. For others it is set higher, and is equivalent to basic levels of income support or guarantee credit element of pension credit, plus an additional sum.[16]

In addition to their income (i.e. even if income is zero), individuals face an asset test. Individuals with eligible assets above the 'upper threshold' – set at £23,250 in 2015 – must pay for all care. Individuals with assets between the 'upper' and 'lower' threshold – set at £14,250 – pay for some of their care, with the remaining costs met by the LA. Individuals with assets below the lower threshold (and with sufficiently small income) do not pay anything towards care.

The definition of assets varies according to the care received by an individual. The value of their primary residence is not included in the asset test if the individual is receiving care in their own home. Similarly, the value of this property is not included in the asset test if the individual is receiving care in a residential home, but a dependant (e.g. their spouse) still lives in the property.[17]

The organisation and funding arrangements for adult social care vary across the different parts of the UK. In Scotland and Wales, as in England, health and social care are largely provided separately, with adult social care the responsibility of LAs.[18] In Northern Ireland, where health and adult social care have been structurally integrated since 1973, social care is provided by five Health and Social Care Trusts (HSCTs).

Variability in eligibility across England, Scotland, Wales and Northern Ireland arises from differences in the thresholds used for the tests and in the types of care or services that are covered by the tests (and which are exempt). These differences are summarised in Table 1.3.

In Scotland, fewer services are covered by the financial means test. Individuals who are judged to need personal or nursing care do not contribute to payments towards this care. However, the financial means test still remains for residential care. In Northern Ireland, residential care is not means-tested but domiciliary care (or care in a private residence) is.

[16] T. Jarrett, 'Social care: paying for care home places and domiciliary care (England)', Commons Briefing Paper SN01911, 2017, http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN01911.

[17] Since 2015, individuals have been allowed to take out deferred payment schemes to fund care, borrowing money against the value of their house which is recouped after the recipient dies. This means that individuals do not need to sell their house to fund their care as a result of the asset test.

[18] There are 152 LAs with social care responsibilities in England, 32 in Scotland and 22 in Wales.

Table 1.3. Social care eligibility criteria in England, Scotland, Wales and Northern Ireland

	England	Scotland	Wales	N. Ireland
Organisation				
Number of responsible organisations	152 LAs	32 LAs	22 LAs	5 HSCTs
Needs test?	Yes	Yes	Yes	Yes
Income test?	Yes	Yes	Yes	Yes
Asset test?	Yes	Yes	Yes	Yes
Lower asset test threshold	£14,250	£16,500	-	£14,250
Upper asset test threshold:	£23,250	£26,500	£30,000[a]	£23,250
Services covered by the means test				
Personal care	Yes	No	Yes	Yes
Nursing care	Yes	No	Yes	Yes
Residential care	Yes	Yes	Yes	No

[a] The upper means test of £30,000 applies to those in receipt of residential care. The corresponding number for recipients of domiciliary care is £24,000. However, there is a cap on weekly payments, of £70, for domiciliary care recipients.

Note: Personal care includes help with everyday activities that does not require qualified nursing or medical care. Nursing care covers services provided by a qualified nurse. Residential care includes care in a nursing home or residential care facility.

Source:
For details of the means test in England, see T. Jarrett, 'Social care: paying for care home places and domiciliary care (England)', Commons Briefing Paper SN01911, 2017, http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN01911.
For Wales, see S. Boyce, 'Paying for adult social care in Wales: debate and reform', Research Briefing, National Assembly for Wales, 2017, http://www.assembly.wales/research%20documents/17-009/17-009-web-english.pdf.
For details of the means test and free personal care in Scotland, see Care Info Scotland, http://www.careinfoscotland.scot/.
For a summary of social care arrangements in Northern Ireland, see Citizens Advice, https://www.citizensadvice.org.uk/nireland/family/looking-after-people/social-care-and-support-ni/.

The asset thresholds are also set at different levels. In Scotland, the upper and lower thresholds are set at a more generous level – individuals with assets below £16,500 do not pay anything for care (subject to having sufficiently low income). In Wales, there is only one threshold. This means that individuals must pay for all residential care if they have assets above £30,000, or all domiciliary care if they have assets above £24,000. However, in Wales, there is a cap on weekly payments set at £70 for domiciliary care recipients.

Perhaps unsurprisingly given the different organisation and eligibility criteria, there is considerable variation in per-capita spending across the different parts of the UK. Table 1.4 shows public spending per adult in England, Scotland, Wales and Northern Ireland in 2011–12 and 2015–16. Spending per person in England in 2015–16 was 31% below the level in Scotland, a gap which has grown from 19% in 2011–12. The gap between spending in England and Northern Ireland is even greater. These changes in the gaps reflect both differences in choices about social care spending in recent years, and differential

Table 1.4. Social care spending per head in England, Wales, Scotland, Northern Ireland and the UK: real spending (2018–19 prices) and percentage change between 2011–12 and 2015–16

	Real per-capita adult social care spending		
	2011–12	2015–16	% change (2011–12 to 2015–16)
England	398	365	–8.2%
Scotland	492	530	7.7%
Wales	495	486	–1.8%
Northern Ireland	482	555	15.1%
UK	456	415	–9.1%

Source: Population data from ONS mid-year population estimates, 2009 and 2015; accessed through NOMIS on 23 March 2018. Nominal health spending from HM Treasury *Public Expenditure Statistical Analyses 2017*. Real spending refers to 2018–19 prices, using the GDP deflator from the OBR in March 2018. The changes in UK real social care spending and real per-capita health spending only include UK health spending that takes place inside the UK. Adult social care spending is defined as spending on personal social services minus personal social services spending on children and family and minus personal social services spending on unemployment.

population growth and ageing, in the different parts of the UK, with England implementing larger cuts to social care and experiencing a larger increase in its over-18 population.

In addition to the variation in spending across the UK, there is also considerable variation in spending and the quality and quantity of care provided even within individual parts of the UK. For example, there is considerable variation in adult social care spending across local authorities in England. In 2015–16, 10% of LAs spent less than £325 per adult, while 10% spent more than £445 per adult (in 2016–17 prices).[19] The past seven years have seen considerable variation in cuts to spending across different LAs.[20] This in part reflects different pressures on local budgets, with differential levels of reliance on central government grants (which saw large cuts over this period) and different abilities to raise tax revenue from local sources (e.g. council tax), as well as variation in the choices made by different LAs over which services to prioritise.

1.6 Why might spending on health and social care increase over time?

Health spending has increased substantially over time. But why has spending increased so much? There are a number of potential drivers of spending:

- *Rising incomes and expectations*: As income increases, demand for more and better-quality healthcare increases. As a result, spending is likely to increase over time. However, what happens to the share of income spent on health as income rises is less

[19] D. Phillips and P. Simpson, *National Standards, Local Risks: The Geography of Local Authority Funded Social Care, 2009–10 to 2015–16*, IFS Report R128, 2017, https://www.ifs.org.uk/publications/9122.

[20] Ibid.

certain. Many projections (including those of the OBR) assume that, abstracting from other pressures, a constant share of national income would be spent on health as incomes rise. But it is possible that a growing share will be spent if additional health spending is a priority as we get richer.

- *Demographic changes*: As the population grows and ages, demand for care increases. Older individuals typically require more, and more expensive, care than younger individuals. It has been estimated that health spending in England would need to increase by 1.3% a year between 2009–10 and 2019–20 simply to keep pace with projected demographic change over this period.[21]

- *Population health*: Changes in the underlying health of individuals of a given age will also impact spending over and above demographic changes. For example, an increase in the prevalence of chronic conditions such as diabetes at particular ages would increase the burden on the health service. Underlying rates of conditions are related to wider health behaviours, such as obesity, smoking and drinking, and future health spending demands will reflect trends in these behaviours.

- *Cost pressures*: In addition to demand pressures, the cost of providing a given level and quality of healthcare will also change over time. One major source of cost pressure is wages for NHS staff as pay rises. These increases are often required to maintain competitiveness with wages being offered in the wider economy, rather than necessarily reflecting productivity improvements in the NHS. New medical technologies and drugs are also likely to increase costs as the number and quality of treatments provided by the NHS expand over time.

We now explore each of these potential drivers of health spending in more detail, setting out the reasons why these factors could increase spending and the empirical evidence on these impacts.

Rising incomes and expectations

One factor driving increased health spending over time is income growth. As incomes rise, individuals demand more, better-quality, healthcare-related goods and services. As a result, health spending increases as a country becomes richer.

However, the extent to which additional income is spent on health is uncertain. In the UK and most developed countries, increases in health spending have outstripped general economic growth (as demonstrated by the rising share of national income spent on health in Figure 1.1), but this could be explained by a number of other factors aside from income (as discussed below).

The income elasticity of demand for health – which captures what proportion of increases in income is spent on health – is therefore a key determinant of future spending. An elasticity of 1 indicates that the share of income spent on health remains constant as the country becomes richer. In other words, health spending would rise in line with national income. An income elasticity below (above) 1 means that, all else equal, health spending

[21] D. Luchinskaya, P. Simpson and G. Stoye, 'UK health and social care spending', in C. Emmerson, P. Johnson and R. Joyce (eds), *The IFS Green Budget: February 2017*, https://www.ifs.org.uk/uploads/publications/budgets/gb2017/gb2017ch5.pdf.

would rise at a slower (quicker) rate than national income. The value of the income elasticity is therefore important in modelling future increases in health spending and in determining the role of income growth in previous growth of health expenditures.

Most forecasters of health spending use an income elasticity of around 1.[22] The OBR and US Congressional Budget Office both use an income elasticity of 1 for their long-run projections.[23] The European Commission uses an elasticity of 1.1,[24] while the OECD uses an income elasticity of 0.8.[25] The OECD estimates would imply that a third of health spending growth in the UK between 1995 and 2009 could be explained by income growth.[26]

Demographics

As noted in Section 1.2, the number of people living in the UK has grown over time. The population has also aged. Table 1.5 shows the size of the population by age group in 1953,

Table 1.5. UK population size and age composition

	Population size (millions)			% of total population		
	1953	1985	2016	1953	1985	2016
Total	50.6	56.6	65.6	100%	100%	100%
Aged 0–14	11.5	10.9	11.7	22.8%	19.2%	17.8%
Aged 15–39	17.3	21.2	21.1	34.2%	37.6%	32.2%
Aged 40–64	16.1	15.9	21.0	31.9%	28.0%	32.0%
Aged 65–84	5.4	7.9	10.2	10.6%	13.9%	15.6%
Aged 85+	0.2	0.7	1.6	0.5%	1.2%	2.4%

Source: UK population data on an annual basis (but not financial year) from ONS: 1953 and 1985 data from https://www.ons.gov.uk/aboutus/transparencyandgovernance/freedomofinformationfoi/populationbyagegenderandethnicity; 2016 data accessed through the NOMIS website on 28 March 2018.

[22] A range of empirical estimates exist for the income elasticity. Estimates using individual-level data typically produce values below 1 (e.g. J. Newhouse and the Insurance Experiment Group, *Free for All? Lessons from the RAND Health Insurance Experiment*, Harvard University Press, 1993; D. Acemoglu, A. Finkelstein and M. Notowidigdo, 'Income and health spending: evidence from oil price shocks', *Review of Economics and Statistics*, 2013, 95, 1079–95). In contrast, estimates using national-level data often produce values greater than 1 (U. Gerdtham and B. Jonsson, 'International comparisons of health expenditure: theory, data and econometrics analysis', in *Handbook of Health Economics*, 11–53, Elsevier, 2000; R. Hall and C. Jones 'The value of life and the rise in health spending', *Quarterly Journal of Economics*, 2007, 122, 39–72).

[23] Office for Budget Responsibility, *Fiscal Sustainability Report: January 2017*, http://obr.uk/fsr/fiscal-sustainability-report-january-2017/;
Congressional Budget Office, *The 2016 Long-Term Budget Outlook*, 2016, https://www.cbo.gov/publication/51580.

[24] European Commission, 'The 2015 Ageing Report: economic and budgetary projections for the 28 EU Member States (2013-2060)', *European Economy*, 2015, 3, May.

[25] C. de la Maisonneuve and J. Oliveira Martins, 'A projection method for public health and long-term care expenditures', OECD Economics Department Working Paper 1048, 2013, http://dx.doi.org/10.1787/5k44v53w5w47-en.

[26] The OECD decomposition splits average health increases into three parts: (i) an age effect – which takes spending per age at a given year and asks how the age composition of the population has changed over time; (ii) an income effect – which simply multiplies per-capita income growth by the chosen income elasticity, in this case 0.8; and (iii) a residual – which includes everything else, including policy choices, which may or may not be driven by rising income and expectations.

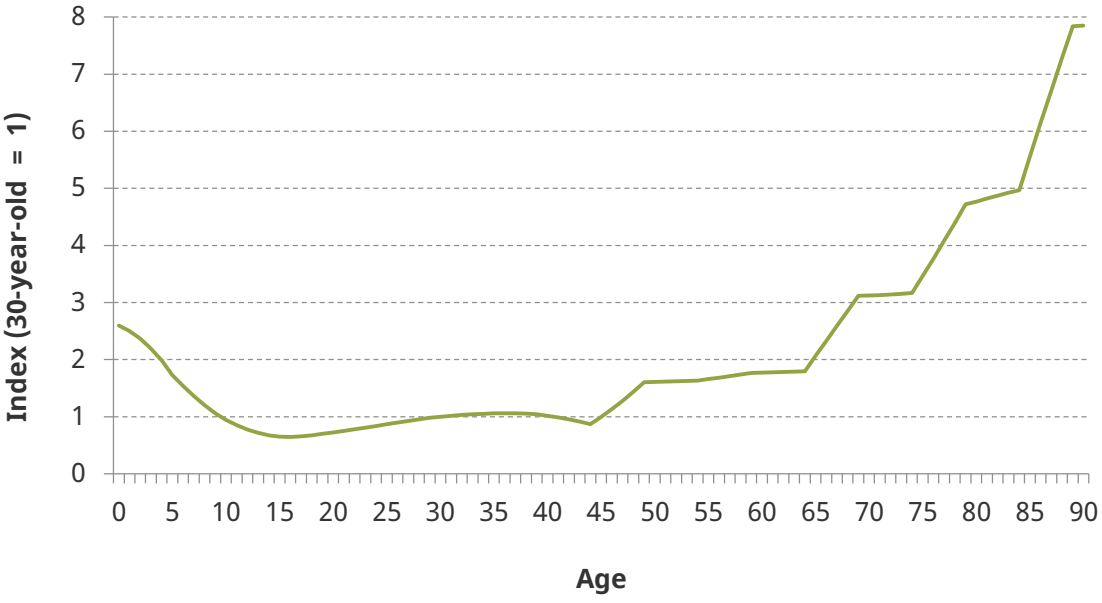
1985 and 2016. While the size of the population aged 15–64 increased by about a quarter, the number of individuals aged 65–84 almost doubled between 1953 and 2016, increasing from 5.4 million in 1953, to 7.9 million in 1985 and to 10.2 million by 2016. There are also now 1.6 million people aged 85 and above – an eightfold increase on the figure in 1953, when there were only 0.2 million individuals in this age group.

The share of the population accounted for by these older groups has therefore increased substantially over time. In 2016, 65- to 84-year-olds accounted for 15.6% of the population, an increase of 5 percentage points from 1953, and individuals aged 85 and above accounted for 2.4% of the population in 2016. Over the same period, the share of the population aged under 40 has decreased.

These demographic changes are in part explained by the ageing of a particularly large birth cohort: as the large baby-boomer cohort born after the end of the Second World War age, the share of the population accounted for by individuals at older ages will increase. In addition to this, longevity at older ages has risen considerably in recent decades. The next few years are therefore likely to see continued increases in the share of the older population.

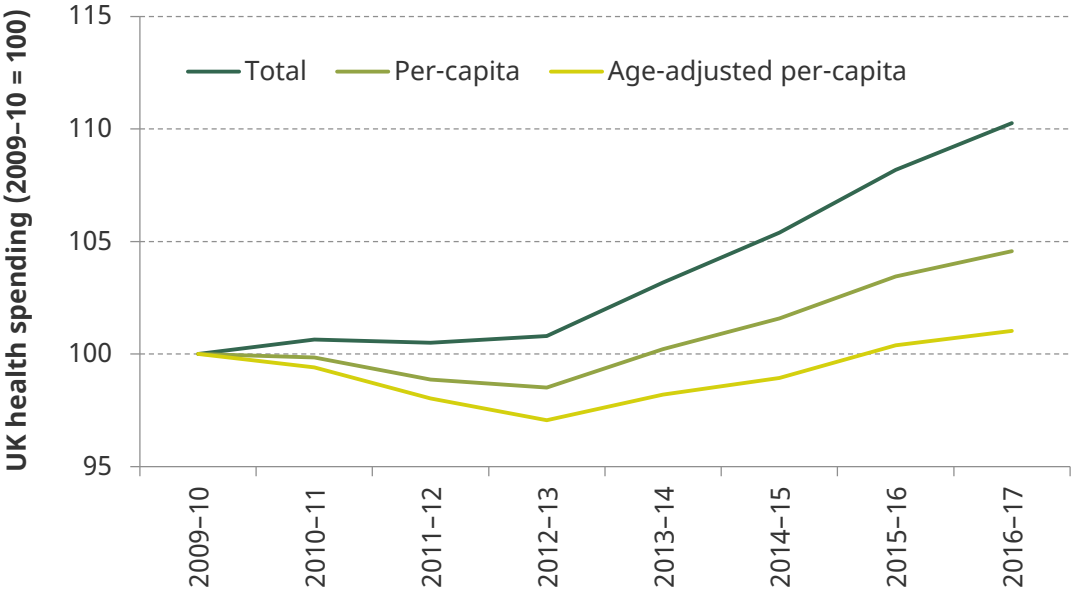
These demographic changes mean that the NHS now serves more people and, in particular, a greater number of older individuals. Figure 1.9 shows how, according to the OBR, average annual spending on individuals of different ages in the UK in 2021–22 is projected to compare with the average annual spending on a 30-year-old in the same year. Average spending on 65-year-olds is projected to be roughly double that on 30-year-olds. This ratio increases sharply at older ages, with average spending on 85-year-olds projected to be five times, and average spending on 90-year-olds almost eight times, average spending on 30-year-olds. Treating a population with a larger share of older individuals, and particularly those aged 80 and above, will therefore cost much more than treating a population mostly composed of working-age individuals.

Figure 1.9. Age profile of UK public spending on health (relative to a 30-year-old)



Source: Chart 3.7 of OBR *Fiscal Sustainability Report: January 2017*. Projected costs in 2021–22 are reported for individuals of each age between 0 and 90 years, relative to the average cost of treating a 30-year-old in the UK.

Figure 1.10. Real-terms UK health spending (2009–10 = 100)



Note: Total, per-capita and age-adjusted per-capita spending in 2009–10 each take the value 100.

Source: Authors' calculations using UK health spending from HM Treasury *Public Expenditure Statistical Analyses 2017* (https://www.gov.uk/government/statistics/public-expenditure-statistical-analyses-2017) for all years between 2009–10 and 2016–17, ONS population projections (June 2016), ONS mid-year population estimates (2009 to 2016) and age spending weights from the Office for Budget Responsibility *Fiscal Sustainability Report: January 2017* (http://budgetresponsibility.org.uk/fsr/fiscal-sustainability-report-january-2017/).

We can combine this profile with the latest population estimates and projections to examine how recent spending and planned future spending (in the short term) compare with estimated demographic pressures. Figure 1.10 presents the results of this exercise. It shows how changes to UK health spending between 2009–10 and 2016–17 compare with the demographic pressures over this period. Real health spending increased by 10.3% (or 1.4% per annum on average), compared with population growth of 5.4% over this period (0.8% p.a.), and so per-capita spending increased by 4.6% (0.6% p.a.). After accounting for changes to the age composition of the population, real age-adjusted per-capita spending increased by only 1.0% (0.1% p.a.). This suggests that recent spending increases have been almost entirely absorbed by demographic pressures, leaving very little for any other increase in demands on the NHS.

Population health

The above calculations rely on the assumption that the shape of the age profile shown in Figure 1.9 (i.e. the ratio of spending between different age groups) has remained relatively constant over time. This appears to be a reasonable assumption in the short run and comparisons with the cost curve used in the 2002 Wanless Review indicate a similar pattern of spending by age in the late 1990s, even if overall spending has changed considerably.[27] However, going forward, there is still considerable uncertainty over how the demands placed by individuals of different ages on the NHS might change. The

[27] See chart C.6 of D. Wanless, *Securing our Future Health: Taking a Long-Term View – Final Report*, 2002, https://www.yearofcare.co.uk/sites/default/files/images/Wanless.pdf. Figures are not completely comparable with the numbers reported in Figure 1.9 as they cover Hospital and Community Health Services only (and therefore exclude other sources of healthcare expenditure included in the OBR projections).

relative costs of these individuals will depend on how the underlying health of individuals of a given age changes over time. Older individuals in future may be increasingly healthy, and therefore require relatively less spending (compared with younger individuals) than they do now. On the other hand, individuals may spend increasing periods of time in relatively poor health (which requires NHS treatment), particularly as technology develops to allow us to treat a greater range of conditions. The relative size of these effects will therefore have important consequences for future spending pressures. Box 1.1 explains the impacts in more detail.

Box 1.1. How will underlying health change as individuals live longer?

One key determinant of future health spending will be the underlying health of individuals at any given age. In particular, the length of time that individuals spend in good or ill health is a key driver of future healthcare costs. If additional years of life are spent in good health, healthcare costs may be simply delayed to an older age. If the additional years are, in part, spent in poor health, requiring additional treatment for a longer period of time, then overall costs are likely to increase. These two scenarios are summarised in the following way:

a) *Compression of morbidity*: As life expectancy rises, individuals could spend the same number of years or fewer in ill health. This means that additional years of life are spent in good health, with costly treatment delayed until an older age. For example, improvements in medical treatments could reduce the prevalence of certain conditions, and reduce the costly expense associated with care. This would lead to an overall decrease in health spending for an individual of a given age (assuming nothing else changed about the care they received). However, overall costs could still increase as health use is unlikely to be zero even in the additional years of (relatively healthy) life.

b) *Expansion of morbidity*: As life expectancy rises, individuals might spend more time in ill health. This could occur if, for example, new medical treatments reduced mortality from particular conditions (and so extend life expectancy) but do not fully cure a disease. This would lead to an overall increase in health spending for an individual of a given age.

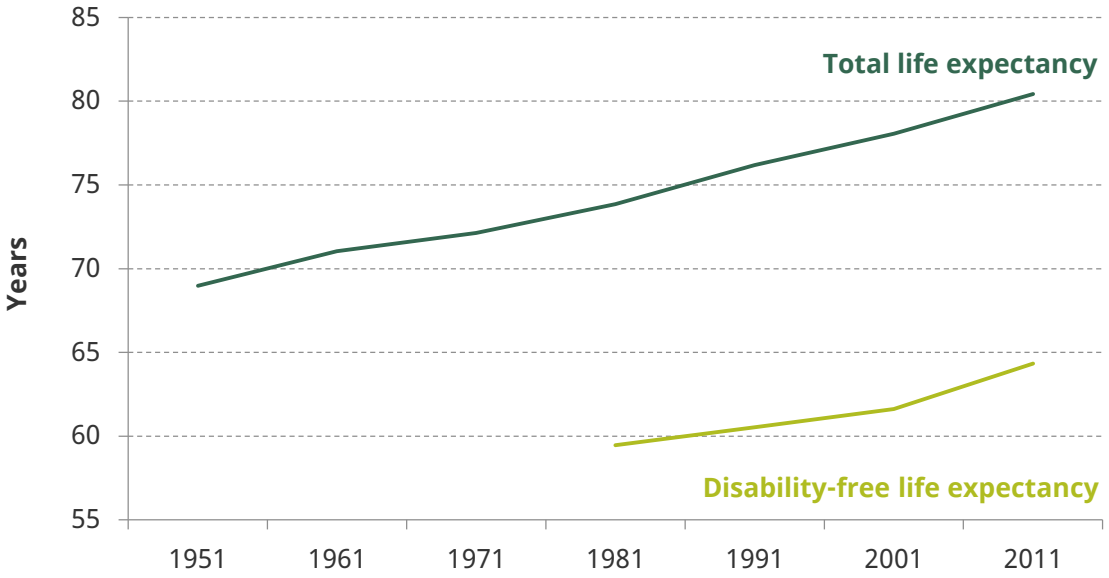
The OBR assumes that the health of an individual of a given age and sex does not change over time in its central projections of future health spending. This makes an implicit 'expansion of morbidity' assumption, as some of the additional years of life will be spent at least partially in ill health. A paper from the OBR shows that using an alternative, 'compression of morbidity' assumption, where all longevity gains are translated into years of good health, reduces forecast pressures on health spending by 1% of GDP in 2065–66.[a]

[a] Chart 3.4 of M. Licchetta and M. Stelmach, 'Fiscal sustainability and public spending on health', OBR Fiscal Sustainability Analytical Paper, 2016, http://obr.uk/docs/dlm_uploads/Health-FSAP.pdf.

The empirical evidence on how spending changes at older ages is mixed. A growing body of literature suggests that age is not the driving factor, but costs are instead caused by proximity to death.[28] This suggests that many of the costs at older ages are associated with being in the last few years of life, rather than being a certain age. As a result, increases in life expectancy may simply delay costs to a later date, as opposed to creating new costs. For example, this would mean that spending on the average 80-year-old could decrease as life expectancy rises, as they would have a lower probability of dying in the next year than an 80-year-old had in the past. As a result, demographic change would put less pressure on NHS spending than suggested above.

In contrast, trends in total and disability-free life expectancy suggest that at least some additional years of life are associated with ill health (and therefore increased cost for the NHS). Figure 1.11 shows how life expectancy and disability-free life expectancy (at the time of birth) have increased over time. In 1951, an individual could expect to live almost 70 years. By 2011, this has increased to over 80 years. However, the proportion of life spent disability-free has remained roughly constant over time, at around 80%. As a result, requirements for care are expected to rise in a similar proportion to longevity.

Figure 1.11. Total and disability-free life expectancy at birth

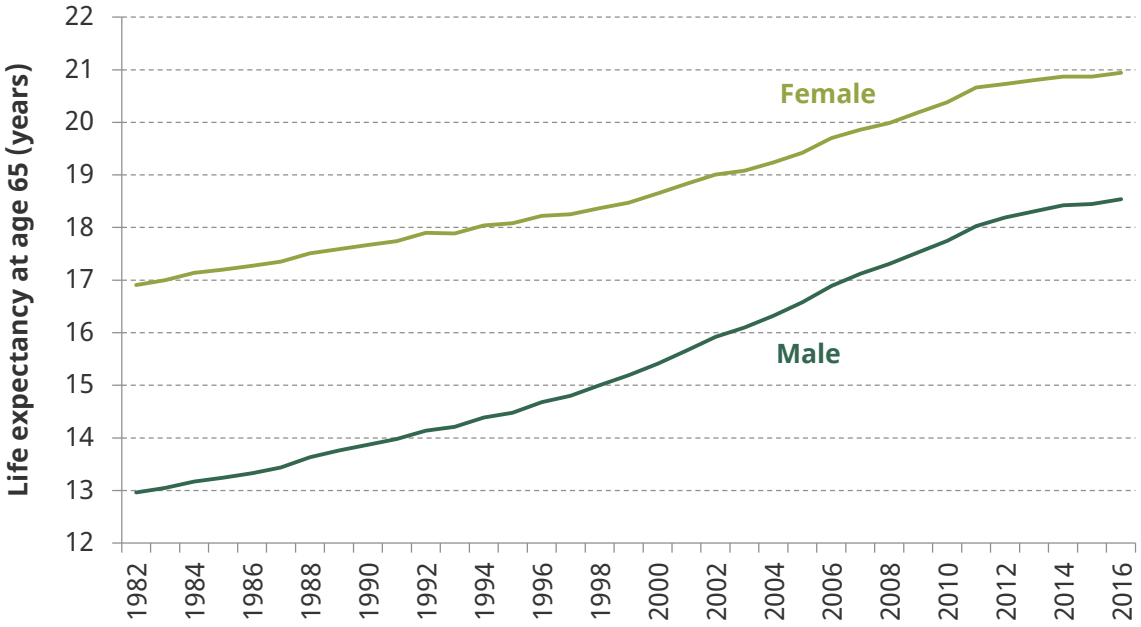


Source: ONS, 'Healthy life expectancy in Great Britain: 2001', *Health Statistics Quarterly*, 23, Autumn 2004. ONS, 'Healthy life expectancy (HLE) and disability-free life expectancy (DFLE), in the United Kingdom, at birth and at age 65, 2000–2002 until 2009–2011'. ONS, 'How has life expectancy changed over time?'.

Much of the recent increase in life expectancy has come from increased longevity at older ages. Figure 1.12 shows life expectancy at age 65 for men and women in the UK between 1982 and 2016. In 1982, a 65-year-old man could expect to live for an additional 13 years on average, and a woman of the same age could expect to live 17 years. By 2016, these had increased to 18.5 years for men and 21 years for women – annual average increases of 1.1% and 0.6% respectively.

[28] See, for example, P. Zweifel, S. Felder and M. Meiers, 'Ageing of population and health care expenditure: a red herring?', *Health Economics,* 1999, 8, 485–96.

Figure 1.12. Male and female life expectancy at age 65 in the UK



Source: Figures 5a and 5b of Office for National Statistics, 'National life tables, UK: 2014 to 2016', 2017, https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/bulletins/nationallifetablesunitedkingdom/2014to2016#life-expectancy-at-older-ages.

Again, the evidence suggests that overall increases in longevity are associated with more years spent in ill health. In England, between 2006 and 2008, a man aged 65 could expect to live a further 17.6 years of life, 7.7 years (43.6%) of which would be spent with disability.[29] By 2010–12, this had risen to 18.6 remaining years for a 65-year-old man, 7.9 (42.7%) of which would be spent in disability. For women, expected years with a disability increased from 9.7 (47.9% of remaining life expectancy) to 9.9 years (46.7%) over the same period. This suggests that although some additional years of life at older ages are spent disability-free, there is also an expansion in the number of years spent in ill health, and this is likely to increase pressures on the NHS and social care.

There is also considerable geographic variation in both total life expectancy and the proportion of this spent with a disability. Life expectancy at age 65 is lower in Scotland than in the rest of the UK for both men and women, and these gaps have grown since the 1980s.[30] Within England, between 2010 and 2012, a man living in the South East had a life expectancy of 19.2 years at age 65, 61.3% of which was spent disability-free. This compares

[29] Office for National Statistics, 'Disability-free life expectancy (DFLE) and life expectancy (LE): at age 65 by region, England', 2016, https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/datasets/disabilityfreelifeexpectancydfleandlifeexpectancyleatage65byregionengland.

[30] Office for National Statistics, 'Health state life expectancies, UK: 2014 to 2016', 2017, https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/healthstatelifeexpectanciesuk/2014to2016;
Office for National Statistics, 'Life expectancy at birth and at age 65 for the UK and local areas in Scotland', https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/datasets/lifeexpectancyatbirthandatage65bylocalareasintheunitedkingdomtable2ukandlocalareasinscotland.

to 17.6 years in the North East, of which only 51.3% would be spent disability-free.[31] Such inequalities mean that the pressures on the NHS associated with underlying population health and demographic change will vary considerably across the country.

The role of the NHS – and the resources required to fund this – in future will depend both on the underlying needs of the population and the improved ability of the NHS to treat different conditions. The treatments provided by the NHS have changed considerably over time as a result of both an improved ability to treat many conditions (see below) and a changing disease burden among the population.

One illustration of the changing disease burden among patients is provided by Table 1.6, which shows the most common (primary) causes of death in England and Wales in 1950, 1975, 2000 and 2016. In 1950, almost half of all deaths were due to cardiovascular disease. A further sixth of individuals died from cancer and one-ninth from respiratory disease. The share of deaths attributed to cardiovascular disease has fallen by more than half since 1975, from 51.3% to 25.5%. Deaths from cancer rose to 28.5% in 2016, so that it now accounts for more deaths than cardiovascular disease. Deaths from other age-related diseases have also increased in recent years. These include dementia, accounting for 12% of deaths in 2016 (although the recent increase in deaths attributed to dementia is partly as a consequence of better recording of dementia in recent years).

Table 1.6. Mortality prevalence (% of total deaths) in England and Wales

	1950	1975	2000	2016
Cardiovascular	48.9	51.3	38.6	25.5
Cancer	17.1	21.2	25.0	28.5
Respiratory	11.3	13.9	17.4	13.8
Other	22.7	13.5	18.9	32.3
of which: Dementia[a]			*1.7*	*12.0*

[a] Recording practices for dementia have improved over time. No data for dementia prevalence are available for 1950 and 1975.

Source: ONS, 'Causes of death'. Changes in the International Classification of Diseases (ICD) make it difficult to categorise deaths. The following ICD codes were used to create the consistent categories over time:
1950 (ICD-6) – cardiovascular: 3310–3349, 4000–4549, 4560–4689, 7820–7829; respiratory: 2400–2419, 4700–5279; cancer: 1400–2209, 2220–2399, 2940–2949.
1975 (ICD-8) – cardiovascular: 3900–4441, 4444–4589, 7820–7829; respiratory: 4600–5199; cancer: 1400–2089, 2100–2399.
2000 (ICD-9) – cardiovascular: 3900–4599; respiratory: 4600–5199; cancer: 1400–2399; dementia 2900–2905, 3310.
2016 (ICD-10) – cardiovascular: category I; respiratory: category J; cancer: category C, category D where three-digit numerical code ≤489; dementia: category F where three-digit numerical code ≤30, category G where three-digit numerical code ≥300 and ≤309.

[31] Office for National Statistics, 'Disability-free life expectancy (DFLE) and life expectancy (LE): at age 65 by region, England', 2017, https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/datasets/disabilityfreelifeexpectancydfleandlifeexpectancyleatage65byregionengland.

Morbidity – the conditions that patients suffer from – has also changed considerably over time. This is reflected in the change in the number of patients requiring treatment for some of the conditions listed in Table 1.6: data from the British Heart Foundation indicate that the percentage of inpatient episodes for men accounted for by cardiovascular disease decreased from 15% in 1961 to 10% in 2009–10. In contrast, 6% of episodes were linked to cancer in 1961, rising to 11% by 2009–10.[32] We explore further how these changes in morbidity are reflected in changes in NHS activity in Chapter 2.

Changes in morbidity are also reflected in a wider change in the types of conditions treated by the NHS. For example, when it was first set up, the NHS dealt with many cases of infectious disease, such as measles and mumps.[33] Due to vaccinations, these conditions now require little hospital treatment. Another example that reflects the development of medical practice over time is the declining number of tonsillectomies. In the 1950s, 200,000 of these were performed each year.[34] As medical research has shown that they are only clinically appropriate under certain circumstances, numbers have fallen and fewer than 50,000 tonsillectomies were carried out in 2012–13.

There has been a particular increase in the prevalence of age-related illnesses. The number of patients with dementia and Alzheimer's has increased drastically over recent years, in part reflecting the increased number of individuals living to older ages. A recent study found that in 2015 over 8% of all 80- to 89-year-olds have a dementia diagnosis, up from 6% just eight years earlier in 2007.[35]

These changes in the disease burden mean that the range of services provided by the NHS must also change over time. Future changes in the amount and type of treatment provided by the NHS will also depend on the health behaviours of the population. The last 70 years have seen dramatic changes in consumption patterns and lifestyles, with declining smoking rates and alcohol consumption, higher rates of obesity and increasingly sedentary lifestyles. The 60% fall in tobacco consumption over the past 40 years[36] will decrease the prevalence of related conditions, including a number of types of cancer. However, the effect of reduced smoking rates on the amount of care provided by the NHS in future is ambiguous: while cancer treatment is expensive, smokers who die at a younger age do not incur costly treatment for other conditions at a later date. Some empirical evidence suggests that the lifetime healthcare costs for smokers are lower than those for non-smokers even though, on an annual basis, their care is more expensive.[37]

---

[32] P. Scarborough, K. Wickramasinghe, P. Bhatnagar and M. Rayner, *Trends in Coronary Heart Disease 1961-2011*, London, British Heart Foundation, 2011.

[33] M. J. Goldacre and J. J. Maisonneuve, 'Hospital admission rates for measles and mumps in England: historical perspective', *The Lancet*, 2013, 382(9889), 308–9.

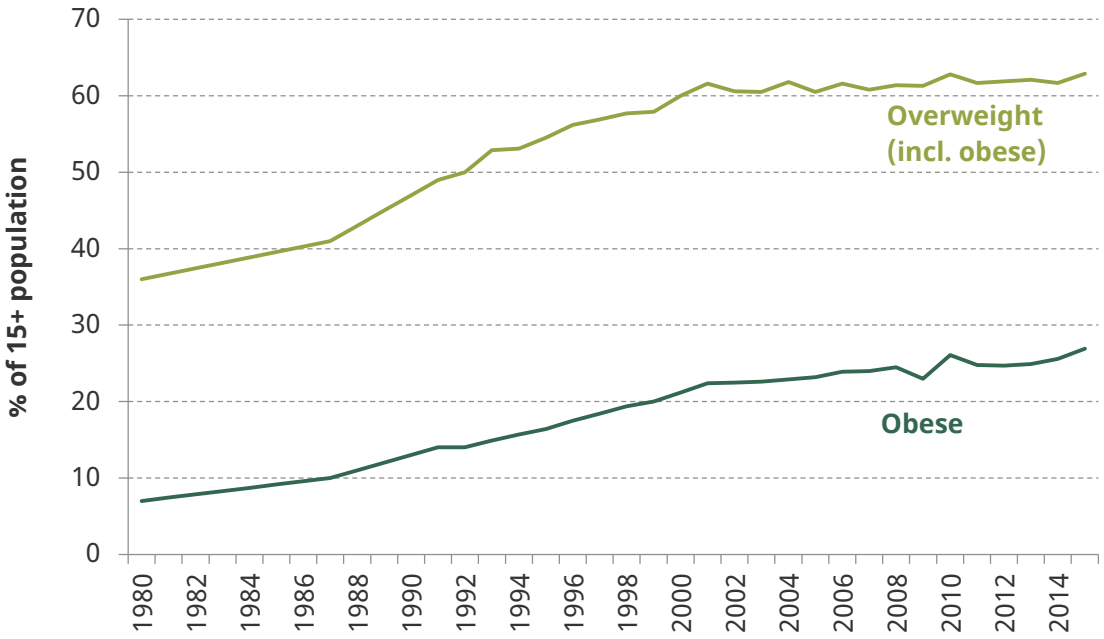
[34] Royal College of Surgeons, 'Is access to surgery a postcode lottery?', 2014.

[35] K. Donegan, N. Fox, N. Black, G. Livingston, S. Banerjee and A. Burns, 'Trends in diagnosis and treatment for people with dementia in the UK from 2005 to 2015: a longitudinal retrospective cohort study', *The Lancet Public Health*, 2017, 2(3), e149–56.

[36] OECD Health Statistics, http://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT.

[37] J. Barendregt, L. Bonneux and P. van der Maas, ' The health care costs of smoking', *New England Journal of Medicine*, 1997, 337, 1052–7.
J. Tiihonen, J., K. Ronkainen, A. Kangasharju and J. Kauhanen, 'The net effect of smoking on healthcare and welfare costs. A cohort study', *BMJ Open*, 2012, 2(6), e001678, doi: 10.1136/bmjopen-2012-001678.

Figure 1.13. Shares of people aged 15+ who are overweight (BMI≥25) and obese (BMI≥30)



Note: Overweight includes individuals with a BMI of 25 or above (this includes individuals who are classed as obese). Obese includes individuals with a BMI of 30 or above.

Source: OECD Health Statistics, http://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT.

Figure 1.13 shows how the shares of the population who are overweight and obese (categorised by Body Mass Index, or BMI) have evolved from 1980 to 2015. In 1980, 36% of the population were overweight, and of these only a fifth (7% of the total population) were obese. By 2015, 63% were overweight. Obesity has quadrupled over the period: in 2015, over one in four people were considered obese (40% of those classified as overweight). While the exact effect of this trend on future health spending is unknown, obesity is linked to an increased prevalence of a range of conditions, including diabetes and associated complications.[38] Public health is therefore likely to play an important role in determining future healthcare costs.

Cost pressures

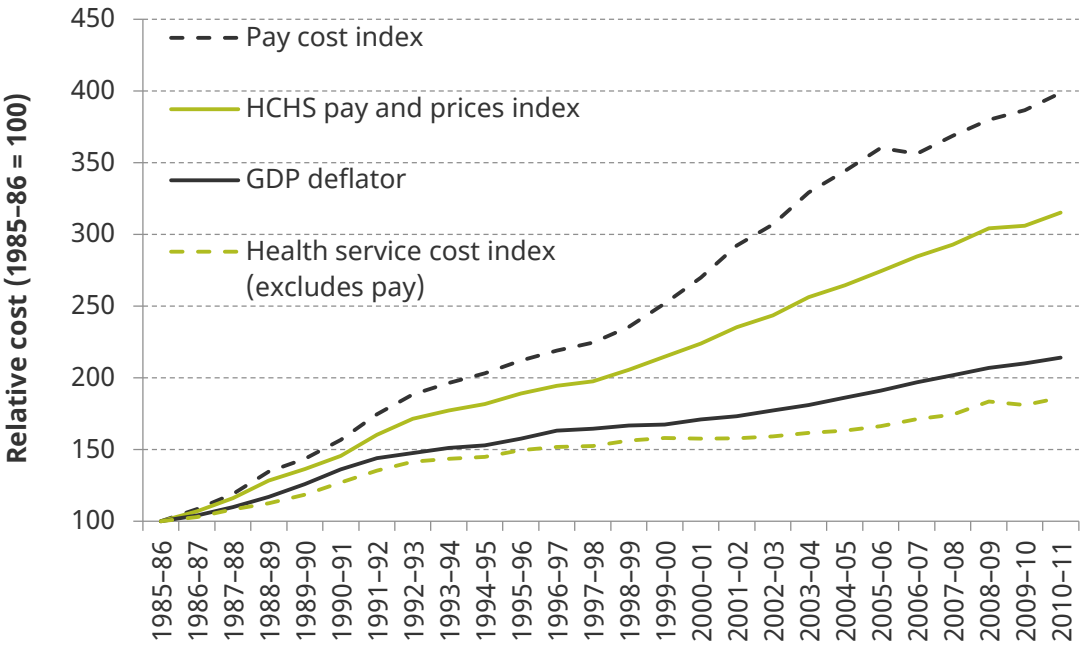
In addition to the demand pressures outlined above, the NHS faces a number of pressures that change the cost of providing a given level of (quality-adjusted) healthcare. Indeed, most empirical studies find that these cost pressures have played a greater role in driving increases in health spending than the demand pressures discussed above. We explore two sources of cost pressure in more depth: the relative costs of providing healthcare (compared with economy-wide inflation) and changes in medical technology.

Relative healthcare costs

Figure 1.14 shows how the costs associated with Hospital and Community Health Services (HCHS) inputs changed relative to economy-wide inflation (as measured by the GDP deflator) between 1985–86 and 2010–11.

[38] A. H. Mokdad, E. S. Ford, B. A. Bowman, W. H. Dietz, F. Vinicor, V. S. Bales and J. S. Marks, 'Prevalence of obesity, diabetes, and obesity-related health risk factors, 2001', *JAMA*, 2003, 289(1), 76–9.

Figure 1.14. NHS Hospital and Community Health Services (HCHS) pay cost index and health service cost index, 1985–86 to 2010–11



Note: The pay cost index is a weighted average of increases in unit staff costs for each of the staff groups within the HCHS sector. Pay cost inflation tends to be higher than pay settlement inflation because of an element of pay drift within each staff group (i.e. there is a tendency for there to be a gradual shift up the incremental pay scales). The health service cost index measures the price change for 41 sub-indices of goods and services purchased by NHS Hospital and Community Health Services, weighted according to the proportion of total expenditure that they represent. These pay index figures are not comparable with those from 2011–12 onwards due to a change in methodology in that year.

Source: Department of Health, 'NHS Hospital and Community Health Services (HCHS) pay cost index and health service cost index, 1985–86 to 2010–11', www.info.doh.gov.uk/doh/finman.../2015.16%20Pay%20&%20Price%20series.xlsx. The GDP deflator is from the OBR in March 2018.

The pay cost index shows how the cost of labour has developed since 1985–86 (set at a base level of 100). This provides a weighted average of increases in the cost of employing one member of staff for each of the staff groups within the HCHS sector. It therefore captures both increases in the entire NHS salary scales (which are determined by the overall NHS pay settlement) and compositional changes in the workforce that arise from increased average seniority and from changes in the skill mix of the workforce (e.g. changes in the ratio between doctors and nurses). The health service cost index shows how prices for non-labour goods and services (medicines, medical technology etc.) have changed over the same period. This is a weighted average of the price change of 41 groups of goods and services used by the HCHS sector.

The figure also shows the GDP deflator, so we can compare the two indices with this to examine how input prices have developed relative to economy-wide inflation. Over the period, the change in the cost of non-labour goods and services purchased by the NHS (2.5% per year) has been similar to – and if anything run slightly below – economy-wide inflation (3.1% per year), with the health service cost index just below the GDP deflator series. In contrast, pay has increased much more quickly than economy-wide inflation, with an annual average increase of 5.7% in the pay cost index. This represents an average

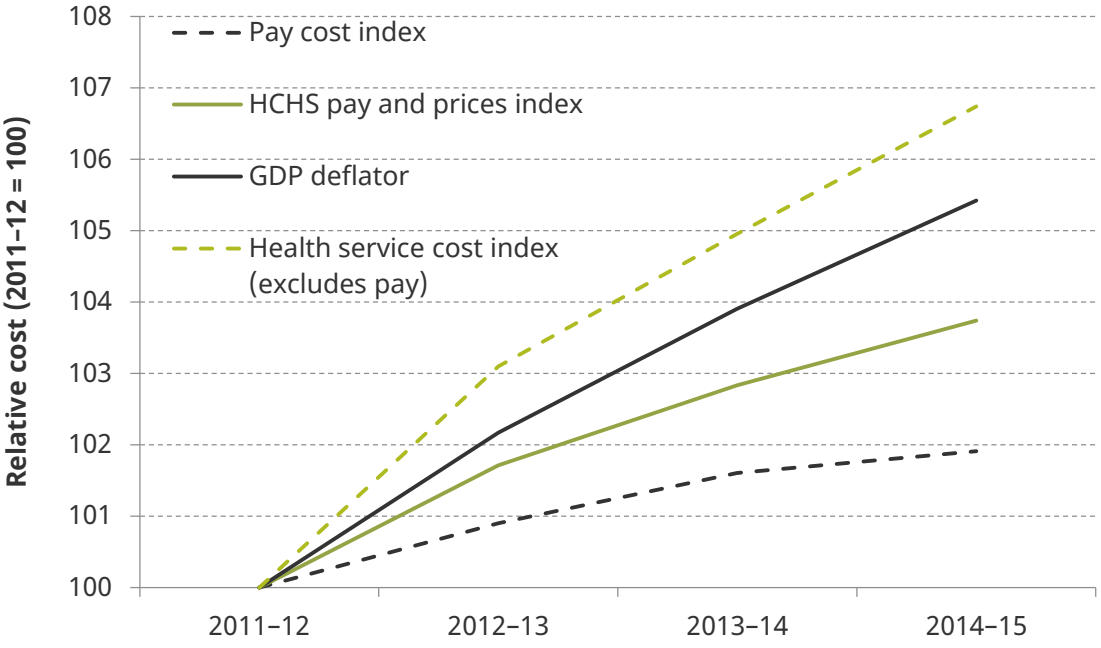
real increase – i.e. over and above economy-wide inflation – in the cost of NHS labour of 2.6% per year between 1985–86 and 2010–11.

The two indices are then combined in the HCHS pay and prices index, using the proportion of total expenditure represented by each category as a weight, to measure the overall change in the cost of inputs. The majority of HCHS costs arise from labour, and so the overall cost index is closer to the pay cost index than to the other index. We can see that the overall cost index increased by 4.7% per year between 1985–86 and 2010–11, which means that over a 25-year period the real cost of providing healthcare grew substantially.

Assuming that increases in pay do not simply reflect a more skilled workforce, using this measure of NHS-specific inflation instead of the GDP deflator would imply that real health spending, adjusted for the costs of inputs into health, grew by 3.4% per year between 1985–86 and 2010–11, as compared with the 5.0% per year increase shown in Figure 1.1. However, as noted above, some of the increases in pay will reflect an increasing level of seniority or a higher proportion of skilled staff within the NHS workforce over time. To the extent that these pay increases reflect higher productivity within the NHS, this measure will overstate NHS inflation.

Due to methodological changes in the pay cost index after 2010–11, we cannot directly compare changes in costs before and after this financial year. Figure 1.15 therefore compares how costs have changed since 2011–12, and how these costs have changed compared with economy-wide inflation. It shows a different pattern in costs from that for the earlier period: the pay cost index increases at a slower rate (0.6% per year) than economy-wide inflation (1.8%). In contrast, the health service cost index increases faster (2.2% per year). Combining these indices, the HCHS pay and prices index rose at a slower pace (1.2% per year) than economy-wide inflation.

Figure 1.15. NHS Hospital and Community Health Services (HCHS) pay cost index and health service cost index, 2011–12 to 2014–15



Note and source: See Figure 1.14. These pay index figures are not comparable with those from 2015–16 onwards due to a change in the source of pay data and classifications of staff groups.

The recent pattern in labour costs can in part be explained by pay restraint within the NHS (and the wider public sector). Pay for most NHS staff was frozen between 2010–11 and 2013–14, and increases have been capped at 1% since. Recent announcements – including a pay deal for staff of Agenda for Change contracts from 2018–19 – look set to loosen this restraint somewhat, increasing cost pressures going forward.

Medical technology

Technological improvements allow the NHS to provide treatment for a broader range of conditions or to deliver better outcomes relative to existing treatments. These include the development and introduction of new drugs and the use of new machines. For example, the introduction of magnetic resonance imaging (MRI) scanners in 1980 vastly improved the ability of doctors to detect and to treat more effectively a range of conditions, while the continued introduction of new drugs has ensured that cancer treatment has continued to evolve over time.

In some cases, new developments in technology reduce the costs of providing a given level of healthcare. However, many technological improvements are thought to (at least temporarily) increase costs. New technologies may be used to treat previously untreatable conditions (e.g. a new cure for Alzheimer's) or replace an existing treatment and provide better outcomes (e.g. a new cancer drug). While having these options available is clearly a good thing, taking the options up creates a new cost or increases existing costs for treating particular conditions. Demand for these treatments may also increase if there is a reduction in any side effects. This could also increase future costs if individuals who survive the initial condition also require additional treatment for other conditions in future.

Understanding the impact of technology on healthcare costs has been a major focus of an empirical literature in economics.[39] These studies vary in their approach, and in the period and range of treatments studied. As a result, while most studies point to an important role for technology in driving costs, the estimates span a large range. A paper examining the role of technology in driving healthcare cost increases in the US between 1940 and 1990 estimates that technology explains 60% of health spending increases over the period.[40] This is slightly larger than another estimate, that technology explained almost half of spending increases over the same period in the US.[41]

In the UK, the Wanless Review estimated that technology explained a fifth of spending increases over the previous two decades.[42] The report also noted that the UK has historically been slow to adopt new technologies, and stronger growth in technology costs would be required in the 2000s and beyond to catch up with the medical technological abilities of other developed countries.

---

[39] For a summary, see M. Chernew and J. Newhouse, 'Health care spending growth', in *Handbook of Health Economics: Volume 2*, 1–43 Elsevier, 2011.

[40] J. P. Newhouse, 'Medical care costs: how much welfare loss?', *Journal of Economic Perspectives*, 1992, 6(3), 3–21.

[41] D. M. Cutler, 'Technology, health costs, and NIH', National Institutes of Health Roundtable on the Economics of Biomedical Research, 1995.

[42] Page 171 of D. Wanless, *Securing our Future Health: Taking a Long-Term View – Interim Report*, 2001, http://webarchive.nationalarchives.gov.uk/+/http://www.hm-treasury.gov.uk/consult_wanless_final_2001.htm.

1.7 Discussion

The last 70 years have seen very large increases in public spending on health. In particular, under the Labour governments in the late 1990s and 2000s, public spending on both health and social care grew at a rapid pace, before slowing after 2009–10. As a result of these changes, the UK spends more on healthcare than it ever has before. We now also look more like our EU neighbours in terms of the amount spent, but still lag behind large economies such as the US, Germany and France.

While recent years have seen historically slow increases in health spending, the share of public spending devoted to health has continued to grow. Indeed, due to flat spending elsewhere, the share of public spending on services that goes to the NHS has continued to increase at a rapid pace – an average growth rate of 2.1% per year between 2009–10 and 2016–17. This is almost double the pace at which this share of spending grew in the 2000s, a period of historically high increases in NHS funding.

Despite these increases, the NHS has begun to show signs of strain. Meanwhile, social care funding has fallen in real terms since 2009–10, cuts which are larger when factoring in demographic change. And such pressures are not purely a short-term phenomenon, with a host of demographic and non-demographic pressures pushing up spending needs.

These findings raise a series of questions about the NHS and social care. These include: What could an additional increase in NHS funding buy in terms of inputs and outputs? How large are the pressures on NHS and social care budgets, and what does this imply for future spending requirements? How might we raise additional funding in future to meet these pressures? We now turn to answering these questions in the remainder of this report.