Ageing and Mortality in the UK
National Statistician’s Annual Article on the Population

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National Statistician

The population of the UK is growing at the fastest rate since the 1960s, increasing on average by 0.5 per cent each year. The fastest growing age group is those aged 85 years and older, who now represent just over 2 per cent of the population, compared to just over 1 per cent in 1982. In 2007, continued increase in the population over state pension age meant for the first time this sub-group of the population exceeded the number aged under 16. Further improvements in survival mean both the continued growth of the older population and the likely continued ageing of the population as a whole.

This is the second in a series of annual reports on the population of the UK, providing an overview of the latest statistics on the population, and focusing on a specific theme. This year’s theme is the ageing population, with different topics to be covered in future years. The report highlights the work being taken forward as part of the National Statistics Centre for Demography (NSCD) work programme to understand the social and demographic impacts of an ageing society.

Introduction

The population of the UK is growing in size and becoming increasingly older. The growth in the older population largely reflects the ageing of those people resident in the UK and this trend is likely to continue into the future. In 2007 there were about 9.8 million people aged 65 or over in the UK, but by 2032 this number is projected to be as high as 16.1 million. There were 1.3 million people in the UK in 2007 aged over 85, which is projected to increase to 3.1 million by 2032. Population ageing will bring benefits but also a new set of challenges to society – for example, ensuring access to services, housing, welfare, pensions and benefits and in other areas.

Awareness of population ageing issues is not new, and the demographic ageing seen in the UK is shared with other developed countries. Appropriate statistical and research intelligence will be needed to inform policy makers and clarify requirements for service delivery. The Office for National Statistics (ONS), in conjunction with the Welsh Assembly Government (WAG), the General Register Office for Scotland (GROS) and the Northern Ireland Statistics and Research Agency (NISRA), are committed to improving the evidence base for this ageing society. Research plays a central role in providing information for policy makers in explaining the process and consequences of ageing.

This report provides a brief overview of the current population of the UK. It then focuses in detail on demographic and other characteristics of the older population. Since the growth in the older population has mainly been driven by improvements in mortality at older ages over the second half of the 20th century, trends in mortality are presented. Finally, the report describes the impact of an ageing population on changes in health expectancy and employment and incomes of older people.
Overview of the UK population

In 2007 the population of the UK was almost 61 million. This was an 8 per cent increase from just over 56 million in 1982, and a 3 per cent increase from just over 59 million in the five years since 2002 (Table 1).

Between 1982 and 2007, the populations of England, Wales and Northern Ireland increased by 9 per cent, 6 per cent and 14 per cent respectively, while the population of Scotland showed a slight decline. Over the past five years, however, all four countries have experienced population growth.

The population pyramid in Figure 1 shows that in 2007 there were fewer young people (aged 5–15) than in 1982, and many more aged between 35 and 60. In 1982 there were many young people who had been born in the post-war and 1960s baby booms. By 2007 these baby boom cohorts were middle aged, and there have been comparatively low fertility rates during decades since the late 1960s. As these larger cohorts age, they are replaced by comparatively smaller generations.

The number of people aged 85 or over rose from 0.6 million in 1982 to 1.3 million in 2007

Overall between 1982 and 2007 the proportion of people in the UK who were children (aged under 16) fell from 22 per cent to 19 per cent of the total population. The proportion of people aged 16 to 64 increased from 63 to 65 per cent, and the share aged 65 or over also increased slightly. Most striking, however, was the growth in the number of very old people: in 1982 there were 0.6 million people aged 85 or over (1.1 per cent of the total), but by 2007 this figure had more than doubled to 1.3 million (2.1 per cent). In 2007, the number of people of state pensionable age exceeded the number under the age of 16 for the first time, and this is projected to continue.

Components of total population change

Population change is driven partly by the balance between the number of births and the number of deaths (natural increase), and partly by the volume of international migration into and out of the UK.

In 2007 there were 772,000 live births in the UK, an increase of over 15 per cent from 669,000 in 2002. The total fertility rate (TFR) in the UK has risen consistently from a record low of 1.63 children per woman in 2001 to 1.90 children per woman in 2007. This is the highest TFR since 1980, but is still below replacement level and much lower than the rates seen during the 1960s baby boom (Figure 2). The recent rise in the TFR has occurred in all four countries of the UK.

The total fertility rate in the UK has risen consistently from a record low of 1.63 children per woman in 2001 to 1.90 children per woman in 2007

In 2007 there were 575,000 deaths registered in the UK, an increase of over 15 per cent from 469,000 in 2002. Period life expectancy at birth in the UK has risen steadily over the past 25 years (Figure 3). Latest estimates...
based on mortality rates for 2005–07, and compared to mortality rates for 1980–82, indicate that life expectancy for newborn boys has risen more than six years to 77.2 years, while that for newborn girls has risen by over four years to 81.5 years. These estimates of life expectancy do not take into account projected improvements in mortality during the lifetime of children born in 2005–07. Allowing for the projected mortality improvements assumed in the 2006-based population projections, cohort life expectancy (see Box one) at birth in 2006 was 88.1 years for boys and 91.5 years for girls.

**Life expectancy in the UK has risen steadily to 77.2 years for men and 81.5 years for women in 2005–07, and is expected to continue to rise**

### International migration

In 2006, 191,000 more people came to live in the UK for a year or more than left to live overseas (Figure 4). An estimated 591,000 long-term international migrants arrived to live in the UK, of whom 86 per cent were non-British citizens. The estimated number of people emigrating from the UK reached a record high of 400,000 in 2006, of whom just over half were British citizens.

**In 2006, 191,000 more people came to live in the UK for a year or more than left to live overseas**

Mid-year population estimates only take into account international migration that is ‘long-term’, namely the migration of people who are coming to or leaving the UK for one year or more. Experimental estimates of short-term migration (based on the UN definition of visits lasting between 3 and 12 months for work or study only) indicate that an additional 81,000 people were, on average, temporarily resident in England and Wales, at any given time during the year to mid-2006.

### Latest population projections

The population of the UK is expected to continue to grow and reach 65 million by 2017 (an increase of 7 per cent compared with the mid-2007 estimate), 71 million by 2032 and 79 million by 2057. In addition the UK constituent countries and English regions are all projected to experience population growth. As Table 2 indicates, between 2007 and 2031 the

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**Box one**

**Period and cohort life expectancy**

*Period* life expectancy at a given age for an area is the average number of years a person would live, if he or she experienced the particular area’s mortality rates for that time period throughout his or her life. It makes no allowance for any later actual or projected changes in mortality.

*Cohort* life expectancies are calculated using mortality rates which allow for known or projected changes in mortality in later years and are thus regarded as a more appropriate measure of how long a person of a given age would be expected to live, on average, than period life expectancy.
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Table 2
Population estimates, mid-2007, and mid-2006 based population projections 2012 to 2031 – UK and constituent countries

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Note: the projections in this table are at five year intervals. However, the last interval (2027 to 2031) is only four years as 2031 is the latest year for which annual regional level data are available.

Source: ONS, GROS, NISRA

It is projected that the population of the UK will increase by over 10 million (17 per cent) by 2032

Focus on ageing and the older population

What do we mean by old age and population ageing?

The term ‘ageing’ covers both the ageing of the population and the increasing number of people reaching old age. The ageing of the population refers to the increase in the average age of that population.

Population ageing is a result of the demographic transition that has been occurring in most western societies since the late 18th century. These changes are unprecedented in demographic history. Over the past 150 years, there have been falls in both the birth and death rates. These have resulted in changes in the size of the cohorts that are becoming older and changes in the chances of survival into later life. Decreases in mortality during the 20th century, combined with declines in fertility rates, have resulted in the increasingly aged populations of today.

The most commonly used definition of old age throughout the 20th century and today is the age at which a person becomes entitled to receive state pension benefits. Until recently this tended to be 60 or 65 in most European countries. The increase in life expectancy over the last century means that reaching the age of 85 years or over is no longer rare.

Age and gender structure of the older population

Over the last 25 years the number of people aged 65 and over in the UK has increased by 16 per cent, from 8.5 million to 9.8 million. The number of children aged under 16 has declined by nearly 800,000 over the same period.

Over the same period the population of Wales is projected to increase by 11 per cent, and that of Northern Ireland by 14 per cent. Scotland, however, is projected to experience a more limited population growth of 4 per cent.

The population of England is projected to increase by 18 per cent, with the highest growth in the East Midlands (25 per cent) and the slowest in the North East (8 per cent). Subnational population projections assume that current trends in fertility, mortality and migration will continue.

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Source: Total International Migration estimates, ONS

Figure 4
Total international long-term migration to and from the UK, 1991 to 2006

Net flow = Inflow – Outflow

Source: Total International Migration estimates, ONS

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period, from 12.3 million to 11.5 million. In 1982 the population aged 65 and over accounted for 15 per cent of the population; by 2007 this figure had reached 16 per cent. There are far more older people in the population than ever before.

In addition, the older population itself is ageing. The fastest increases in population numbers were seen for the population aged 85 and over (sometimes described as the ‘oldest old’). Since 1982, the numbers of ‘oldest old’ have risen by nearly 680,000, to reach 1.3 million in 2007. The ‘oldest old’ population represented 1.1 per cent of the total population in 1982 and, after more than doubling in number by 2007, currently represents 2.1 per cent of the total population.

National population projections indicate that population ageing will continue for the next few decades. By 2032 the number in the ‘oldest old’ population is projected to more than double again, reaching 3.1 million and representing 4 per cent of the total population. The number of people aged 65 and over is projected to increase by about two-thirds to 16.1 million, while the number of people aged between 16 and 64 will only increase by 2.9 million. Based on these projections, the population aged 65 and over will account for nearly 23 per cent of the total population in 2032, while the proportion of the population aged between 16 and 64 is due to fall from 65 per cent to 60 per cent. This is due to the effect of increasing numbers of people from the 1960s baby boom, who are currently of working age, reaching retirement age, combined with smaller numbers of people replacing them in the working population. Figure 6 shows the changing age structure of the UK over time.

By 2032 the number in the oldest old population is projected to more than double, reaching 3.1 million, representing 4 per cent of the total population.
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Figure 7 shows the estimated and projected ratio of women to men in the population aged 65 and over and 85 and over, UK, for the period between 1972 and 2032. Women in these age groups have always outnumbered men of the same age because women have, on average, greater life expectancy. The increase in the ratio of women to men aged 85 and over from the mid-1970s to the mid-1980s may reflect the high number of casualties among men during the First World War. In 1982, there were more than 330 women aged 85 and over for every 100 men of the same age, however by 2032 it is projected that there will be just under 140 women aged 85 and over for every 100 men of the same age.

In 1982 there were 155 women aged 65 and over for every 100 men of the same age. It is expected that by 2032 there will be 120 women aged 65 and over for every 100 men of the same age.

By 2032, it is projected there will be just under 140 women aged 85 and over for every 100 men of the same age, compared with more than 330 women aged 85 and over for every 100 men in 1982.

Ethnicity
In 2007 the White Irish group had the oldest age structure of all ethnic groups in the UK, with one in four people aged 65 and over. Among the other ethnic minority groups, Other White and Black Caribbean groups had the largest proportions of people aged 65 and over. This reflects the large number of predominantly young migrants from these ethnic groups who arrived in the UK in the 1950s. Within the ethnic minority groups, Indians and Other Black had the joint fourth largest proportion of people aged 65 and over in 2007. An increase in the proportion of people aged 65 and over from other ethnic minority groups is expected to occur in the future, reflecting immigration from Pakistan, Bangladesh and China during the 1970s and 1980s. While proportions of ethnic minorities are still small at older ages, the ethnic composition of the older population is beginning to change. Research has shown that there are significant differences in access to material resources at older ages, both between and within ethnic minority groups.

Living arrangements and family structure
The living arrangements of older people are a potential indicator of family support and interactions. Figure 9 shows the percentages of men and women aged 65 and over and 85 and over by type of living arrangements in the UK in 2001. Figure 10 shows the percentages of men and women aged 65 and over and 85 and over, living in communal establishments in the UK in census years 1981, 1991 and 2001.


In 2001, about 60 per cent of men aged 65 and over in the UK were married or were living as a cohabiting couple in a household with no children. The equivalent proportion for women of the same age was slightly over a third. The proportion of women aged 65 and over living alone was double that of men of the same age. Women tend to live longer than men and tend to marry men older than themselves, resulting in more elderly women living alone. Women tend to live longer than men and tend to marry men older than themselves, resulting in more elderly women living alone. Women tend to live longer than men and tend to marry men older than themselves, resulting in more elderly women living alone. Women tend to live longer than men and tend to marry men older than themselves, resulting in more elderly women living alone. Women tend to live longer than men and tend to marry men older than themselves, resulting in more elderly women living alone. Women tend to live longer than men and tend to marry men older than themselves, resulting in more elderly women living alone.

The proportion of married women aged 85 and over doubled between 1971 and 2006 (Figure 12). By 2031 more women are projected to remain married at very old ages but there will also be an increase in the proportions of divorced men and women.

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The distribution of people aged 65 and over by marital status has changed since 1971 and is projected to change further by 2031 (Figure 11).

Among men aged 65 and over, the trend (in the past and projected for the future) is for a decline in the proportion of married and widowed and an increase in the proportion of divorced. Among women 65 and over, the trend is for an increase in the proportion of married and divorced, and for a decline in the proportions widowed. The decline in the proportion of widowed women at older ages reflects improvements in mortality amongst older men.

Having children and family size are important factors associated with the likelihood of seeking care outside the household in older life. Figure 13.
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shows the proportion of women with no children or only one child at age 45 by birth cohort in England and Wales. Relative to the 1940s cohort, the 1950s and 1960s cohorts have both experienced an increase in the proportion of women with no children.

There is evidence that being unmarried or childless in older age increases the chances of entering a communal care institution\(^2\). There may be relatively less demand for communal care if the lack of children to care for their parents is outweighed by the higher likelihood of marriages remaining intact in old age: whether trends in family formation and dissolution experienced by the 1960s and later cohorts mean that partners are less likely to be together in old age is not yet known. More analysis of trends in care provision is needed to understand the effects that family formation, dissolution and size may have on the demand for care outside the household.

As the older population grows there are also concerns over whether there will be enough suitable housing to support independent living in safe environments. In response to this need the Government released its ‘Lifetime Homes, Lifetime Neighbourhoods’ strategy earlier this year, which set out standards for all new build social housing\(^3\).

The geographic distribution of the older population

In each country within the UK there is evidence of population ageing. Wales is more aged than the rest of the UK, with over 21 per cent of the population being over State Pension Age (SPA). Wales has demonstrated similar fertility and mortality patterns to England, but these have been combined with out-migration of younger people. It is also largely rural, and significantly larger proportions of older people live in and retire to rural areas as opposed to urban areas\(^4\). Scotland is also more aged than the UK average because it has had consistently lower fertility than England, Wales and Northern Ireland since the 1980s\(^5\).

However, in contrast, the proportion of the population aged 85 and over is lower in Scotland than in the UK partly because the fertility rate has been markedly higher than the rest of the UK over the past few decades. England, Wales and Scotland have all experienced below replacement fertility since the mid-1970s: Northern Ireland’s fertility only fell below replacement level in the early 1990s.

Within the four countries, there is far more variability in local age structure. Map 1 shows that the five most aged local authorities are East Dorset, North Norfolk, Rother, West Somerset and Christchurch. Each of these has a population of state pensionable age accounting for more than 30 per cent of the total population. The most aged areas tend to be situated on or near to the coast, whereas the least aged areas are generally urban – for example, Derry, Edinburgh, Glasgow, Manchester, Milton Keynes and Slough. Of the 21 local areas making up the youngest 5 per cent of the UK’s local authorities, 15 are situated in London. The five least aged local authorities, each with less than 12 per cent of their total population over state pensionable age are all London boroughs: Hackney, Lambeth, Newham, Southwark and Tower Hamlets.

European comparisons

Falling death rates at older ages combined with the post-war European decline in fertility have contributed to increased population ageing across all of Europe. The older population is projected to increase in all European Union (EU) countries. Figure 14 shows estimated and projected proportions of population aged 65 and over for selected EU countries and country groups in 2007 and 2032, respectively. In 2007, less than a fifth of the population was aged 65 and over in most European countries, with the lowest percentages in the new EU ‘Accession’ countries. Projections of

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Source: 2007 Mid-year estimates, ONS, GROS, NISRA

Figure 12

Estimated and projected marital status for women and men aged 85 and over in England and Wales in 1971, 2006 and 2031

Source: ONS 1971 and 2006 mid-year population estimates by marital status for England and Wales. GAD 2003 based marital status projections

Figure 13

Percentage of women with no children or only one child at age 45, by birth cohort, 1920–1960, England and Wales

Source: Vital events registration data (FM1 n.34) and General Household Survey data

Wales had the highest proportion of people over state pensionable age compared with the rest of the UK in 2007

Figure 14

Estimated and projected proportions of population aged 65 and over for selected EU countries and country groups in 2007 and 2032, respectively

Source: ONS 1971 and 2006 mid-year population estimates by marital status for England and Wales. GAD 2003 based marital status projections
Map 1
Percentage of people of state pensionable age, by unitary and local authority, 2007

United Kingdom

Per cent (total number of areas = 434)
- 26 to 36 (19)
- 23 to 25 (84)
- 18 to 22 (218)
- 14 to 17 (92)
- 6 to 13 (21)

Source: 2007 Mid-year estimates, Office for National Statistics, General Register Office for Scotland and Northern Ireland Statistics and Research Agency

Orkney Islands
Shetland Islands
Isles of Scilly
London
population aged 65 and over for 2032 show that countries with lower proportions of older people today are ageing faster than countries already having a more aged population. For example, for some countries, the median age is projected to increase by more than 15 years by 2060, but over that period. The more rapid increases are mainly in East European countries and the relatively large number of births resulting from the echo of the 1960s baby boom in the 1990s. The effect of migration has been broadly neutral. Therefore the main driver of ageing in recent decades has been improving mortality rates.

Improvements in mortality rates and the associated increases in survival to older ages are likely to drive growth in the numbers of older people for the next 25 years at least. The picture of mortality experienced in the UK is described in the next section.

What is driving the ageing of the UK population?

Demographers have striven to quantify the relative contributions of changing fertility, mortality and migration to structural changes in the population. Analysing consequences is relatively easy in response to changes in one of the demographic components; for example, for mortality. It is possible to create a theoretical population and apply different sets of age-specific mortality rates and so compare different structures of the resulting theoretical populations as has been done in the variant projections of the most recent national population projections. However, it is more complex to do this so that the contributions of more than one demographic component to changes in the age structure are calibrated to changes in period population measures.

Work is in progress to assess the relative contributions of these different factors. This will be reported in a later article in Population Trends. Early results show that the effect of fertility has been to dampen the ageing of the population, even though fertility has been below replacement level since 1972. This reflects population momentum resulting from the high fertility of the 1960s and the relatively large number of births resulting from the echo of the 1960s baby boom in the 1990s. The effect of migration has been broadly neutral. Therefore the main driver of ageing in recent decades has been improving mortality rates.
47 per cent of deaths occurred below the age of 16 and 19 per cent above the age of 64, comparing with 35 and 28 per cent respectively in 1907 and 1 and 83 per cent respectively in 2007. The proportions of deaths occurring below age 16 and over the age of 64 have remained stable since 1993.

Over the last forty years, mortality rates for men have fallen by 38 per cent and for women by 29 per cent

Figure 16 shows age-standardised mortality rates (see Box two) for males and females in the UK over the 40 year period 1967–2007. Rates have continued to fall throughout this period for both males and females, falls of 38 and 29 per cent respectively. It also shows that females had lower mortality than males throughout the 40 year period after allowing for differences in the age structure of the population. The gap between males and females has been decreasing since the 1970s and was at its closest in 2007.

Figure 17 shows the relative change in age-specific death rates for males and females, from 1967 to 2007. Overall, death rates declined in this period in all age-groups. The greatest declines, around 70 per cent for both males and females, occurred at the youngest ages (0 and 1–14). The falling death rates since 1976 have been greater for males than females for the majority of age-groups; the one exception is the 15–39 group with falls of 22 per cent for males and 38 per cent for females respectively.

Box two

Mortality rates used in this article

Age-specific mortality rate

Age-specific rates are calculated as:

\[
\text{age-specific mortality rate} = \frac{\text{deaths in age/sex group}}{\text{mid-year population in age/sex group}} \times 100,000
\]

Age-standardised mortality rates/ratios

Age-standardised rates make allowances for differences in the age structure of the population, over time, between sexes and across areas.

Age/sex group distribution = 0, 1–4, 5–9, …, 80–84, 85 years and over for males and females.

In Figure 16 the age-standardised rate for a particular year or disease is that which would have occurred if the observed age-specific rates for the year/disease had applied in a given standard population. For these analyses the European Standard Population has been used. This is a hypothetical population standard that is the same for both males and females allowing standardised rates to be compared for each sex and between sexes.

In Map 2 the standardised mortality ratios (SMRs) presented have been calculated using age-specific death rates for the UK. These national death rates were used to calculate how many deaths would be expected in a particular area given the area’s age and sex structure. The ratio is of “observed” to “expected” deaths. The SMR for an area allows their mortality experience to be compared with the national average, UK = 100. If an area had an SMR of less than 100 then the number of deaths was less than expected and conversely if the SMR was greater than 100 then the number of deaths was greater than expected.

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47 per cent of deaths occurred below the age of 16 and 19 per cent above the age of 64, comparing with 35 and 28 per cent respectively in 1907 and 1 and 83 per cent respectively in 2007. The proportions of deaths occurring below age 16 and over the age of 64 have remained stable since 1993.

Over the last forty years, mortality rates for men have fallen by 38 per cent and for women by 29 per cent

Figure 16 shows age-standardised mortality rates (see Box two) for males and females in the UK over the 40 year period 1967–2007. Rates have continued to fall throughout this period for both males and females, falls of 38 and 29 per cent respectively. It also shows that females had lower mortality than males throughout the 40 year period after allowing for differences in the age structure of the population. The gap between males and females has been decreasing since the 1970s and was at its closest in 2007.

Figure 17 shows the relative change in age-specific death rates for males and females, from 1967 to 2007. Overall, death rates declined in this period in all age-groups. The greatest declines, around 70 per cent for both males and females, occurred at the youngest ages (0 and 1–14). The falling death rates since 1976 have been greater for males than females for the majority of age-groups; the one exception is the 15–39 group with falls of 22 per cent for males and 38 per cent for females respectively.

Box two

Mortality rates used in this article

Age-specific mortality rate

Age-specific rates are calculated as:

\[
\text{age-specific mortality rate} = \frac{\text{deaths in age/sex group}}{\text{mid-year population in age/sex group}} \times 100,000
\]

Age-standardised mortality rates/ratios

Age-standardised rates make allowances for differences in the age structure of the population, over time, between sexes and across areas.

Age/sex group distribution = 0, 1–4, 5–9, …, 80–84, 85 years and over for males and females.

In Figure 16 the age-standardised rate for a particular year or disease is that which would have occurred if the observed age-specific rates for the year/disease had applied in a given standard population. For these analyses the European Standard Population has been used. This is a hypothetical population standard that is the same for both males and females allowing standardised rates to be compared for each sex and between sexes.

In Map 2 the standardised mortality ratios (SMRs) presented have been calculated using age-specific death rates for the UK. These national death rates were used to calculate how many deaths would be expected in a particular area given the area’s age and sex structure. The ratio is of “observed” to “expected” deaths. The SMR for an area allows their mortality experience to be compared with the national average, UK = 100. If an area had an SMR of less than 100 then the number of deaths was less than expected and conversely if the SMR was greater than 100 then the number of deaths was greater than expected.
Map 2 shows the standardised mortality ratio (SMR) for each local or unitary authority in the UK. The SMR compares mortality in each area with mortality in a standard population while allowing for differences in age structure. Here the standard mortality rates are for the UK. In 2007, Glasgow had the highest mortality ratio, 47 per cent higher than the UK as a whole. Kensington and Chelsea had the lowest, with mortality 39 per cent lower than the UK average.

**Glasgow has the highest mortality rate, 47 per cent higher than the UK as a whole. Kensington and Chelsea had the lowest, 39 per cent below the UK average**

**Mortality by cause of death – England and Wales**

Figure 18 shows mortality rates for England and Wales by selected broad cause groups. It clearly shows the dramatic decline in mortality by infectious disease that took place in the first half of the 20th century due to improved living conditions. Deaths from the diseases poliomyelitis, diphtheria, tetanus, whooping cough, measles, mumps and rubella were virtually eliminated or substantially reduced by the second half of the century following the introduction of childhood immunisation. Infectious disease mortality rates have begun to increase slightly since the early 1990s, especially among males (HIV/AIDS were included in this cause category from 1993 onwards).

In the years between 1984 and 1992 the proportion of deaths resulting from respiratory diseases fell by about 25 per cent, purely as a result of a change in the rules to select underlying cause of death. Cancer mortality rates remained relatively stable in females but increased slightly for males until the early 1980s. Since then it has declined for both sexes. Death rates from circulatory diseases increased for both males and females from 1917 to the 1950s. Since then rates have fallen for males and females. Ischaemic heart disease is the most important cause of death in this group and hypertension remains a significant cause of death, particularly through strokes.

**Improvements in living conditions and the childhood immunisation programme have led to significant improvements in mortality from infectious diseases**

Source: ONS
Map 2  Standardised mortality ratios in 2007, by unitary and local authority

- Orkney Islands
- Shetland Islands
- Isles of Scilly
- London

**Standardised Mortality Ratios**
UK = 100
- 120 and over
- 110 to 119
- 100 to 109
- 90 to 99
- less than 90

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Data for Isles of Scilly and Penwith are combined; data for City of London and Hackney are combined.

*Source: Office for National Statistics*
Main drivers of past and future mortality

<table>
<thead>
<tr>
<th>Driver</th>
<th>Description</th>
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<tr>
<td>Medical Advances</td>
<td>Medical advances have been responsible for a large element of current improvements in mortality rates. Continuing public and political support and availability of funding for medical research suggest that medical advances and progress in preventive medicine will continue to lead to further mortality decline. Several studies have aimed to assess the contributions of medical advances to the increase in life expectancy. Data for the UK suggests that mortality under age 75 from causes considered amenable to medical treatment (such as breast cancer, leukaemia, hypertensive diseases) has decreased substantially since 1993 for both males and females. Mortality from causes considered preventable has decreased by a larger amount for males than for females. There has been a relatively modest decrease in mortality from unavoidable causes such as cancers of the pancreas, ovary and prostate. Coronary heart disease (CHD) mortality has declined by over 50 per cent in England and Wales between 1981 and 2000 for men and women aged 25 to 84.</td>
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| Smoking trends         | The prevalence of smoking in the UK fell from 51 per cent for males aged 16 and over in 1974 to 28 per cent in 1994, since when the decline has slowed, with 25 per cent of males smoking in 2005, with similar current levels in female smoking prevalence. Lung cancer rates for men in the UK have peaked and are falling with the highest rates for the cohort of men born in the early 20th century; for women the peak has occurred later for each successive age group.
| Obesity                | A recent UK government report projects that by 2050 60 per cent of adult males and 50 per cent of adult females in the UK could be obese. While increased obesity levels are likely to lead to increased future morbidity, it is less clear how future mortality will be affected. Obesity may lead to increases in deaths from causes which are currently experiencing large reductions. |
| Infectious diseases    | Whilst recent medical advances and other factors have continued to lead to a regime of increasing life expectancy, other factors work in the opposite direction. These include the threat from new infectious diseases and the re-emergence of old ones, such as tuberculosis, which may prove resistant to existing antibacterial agents. |
| Uncertainty at young ages | Mortality rates in the 1980s and 1990s increased for young ages as deaths related to AIDS, drug and alcohol abuse and violence more than offset improvements in health-related causes of death at these ages. |
| The cohort effect      | Both males and females born in the late 1920s and in the 1930s have consistently exhibited, over a very long period, larger improvements in mortality rates than those born in the years either side. These patterns have been termed ‘cohort effects’, although they are not necessarily driven by conditions experienced in early childhood or before birth. Various explanations for these cohort effects have been put forward, including:
  - Differences in smoking patterns between generations
  - Better diet and environmental conditions during and after the Second World War
  - Differing birth rates, with those born in periods of low birth rate facing less competition for resources as they age
  - Benefits from the introduction in the late 1940s of the Welfare State
These generations have benefited from medical advances which have increasingly affected older people. |

Factors affecting mortality change in the United Kingdom

Several main factors have influenced mortality changes in the past and are likely to continue in the future. These are described in Box three. There is currently considerable debate as to the potential for increased human longevity and whether the impact of future technical, medical and environmental changes will have a greater or lesser effect on improvements in mortality rates. What is clear is that current and expected continuing improvements in mortality rates are likely to result in improved life expectancy within the UK population.

Improving survival

The significant mortality rate improvements seen during the 20th century have meant that more people are reaching retirement ages and that those at older ages are surviving longer than their predecessors. In England and Wales, survival from birth to age 85 has increased steadily. A male born in 1851 had a 3 per cent chance of average reaching the age of 85, while a female had a 6 per cent chance of doing so. For those born in 1901, the chances of reaching 85 had increased to 8 per cent for males and 22 per cent for females. For those born in 1926, males had a 23 per cent chance of reaching age 85 in 2011, whereas females had a 37 per cent chance.

Figure 19 shows the chances of survival from birth to age 85 and from age 85 to age 100 based on mortality rates experienced in the past or assumed for the future for males and females born in England and Wales between 1851 and 1981. For the cohort born in 1851, the likelihood of 85-year-olds reaching 100 years was very small (estimated at 0.3 per cent for males and 0.8 per cent for females). For those born in 1901 the chances of an 85-year-old reaching age 100 had increased to just over 1 per cent for males and to over 3 per cent for females. For those born in 1926, it is projected that 6 per cent of males and 7 per cent of females who reach age 85 in 2011 could expect to live to 100. The likelihood of those aged 85 reaching 100 years is then projected to continue increasing.

Impacts of an ageing population

Employment and income

Figure 20 shows the employment rates of men aged 50–65 and 65 and over, and of women aged 50–59 and 60 and over, for the period between 1992 and 2007 in the UK. The employment rates among men aged 50–64
declined during the early 1990s but have recovered slightly since. Among women aged 50–59, employment rates have increased steadily since the early 1990s and the gender difference is declining in the age group prior to SPA. The employment rates of men aged 65 and over and women aged 60 and over have remained at about the same level over the last 15 years.

Figure 21 shows the estimated and projected old-age support ratio in the UK for the period between 1972 and 2032. The ratio represents the number of people of working age to the number of people of SPA (allowing for the phased changes in SPA to be introduced by the UK Government between 2010 and 2046). The potential impact that changes in retirement age will have on the old-age support ratio are shown in Figure 21. By 2032, there will be about 2.9 people of working age to each person above SPA. Without the planned changes in SPA, this figure would have been projected to fall to around 2.2 people. The old-age support ratio is a demographic ratio and does not take into account possible future inactivity owing to early retirement, health problems, disabilities and caring responsibilities that prevent people from working. Similarly, some people of SPA will choose to extend their working lives into later life. Care is therefore needed in its use; it is not an indicator of the economic support ratio which is the ratio of the number of people aged 16 and over in paid employment to the number of people aged over SPA in retirement.

The most significant demographic trend affecting the size and composition of the labour force over the next 20 to 40 years will be the decrease in the proportion of people in the working age group 16 to 49 and the increase in the proportion aged between 50 and SPA. As the population ages over the next few decades, the work force will become older on average and, as Figure 21 showed, the demographic support ratio will decrease. The greater the number of people who are in work and contributing to the growth of the economy, the greater the funds there will be available to support those people who are in retirement. The UK already has the highest overall employment rate in the EU. However, there is still scope to raise labour market participation rates, particularly for older workers. In response to a European Court ruling, and as part of the UK government strategy to increase employment at older ages, the SPA for women is set to rise from age 60 to 65 between 2010 and 2020, and the SPA for both men and women will rise from 65 to 68 between 2024 and 2046. On 1 October 2006 age-discrimination legislation came into force, making it unlawful to discriminate on the grounds of age in employment and vocational training. It also introduced a default retirement age of 65.

In the UK the number of people over state pension age is set to increase from 11.6 million in 2007 to 15.2 million in 2032, a rise of 31 per cent. These figures take into account the equalisation of state pension age...
for men and women. The increased pensions burden will impact on the economy and on those still in the workforce.

**Figure 22** shows average net income for single pensioners and pensioner couples (see **Box four**). The median net income, based on 2006/07 prices, before housing costs (BHC) for pensioner couples rose by 33 per cent over the 12 year period 1994/95 to 2006/07, from £248 to £329 per week. The corresponding increase for single pensioners was slightly greater at 39 per cent rising from £133 in 1994/95 to £184 in 2006/07. Median net weekly income after housing costs (AHC) for pensioner couples and single pensioners increased by 47 per cent and 71 per cent respectively, over the same period. The larger increases for income after housing costs are partly a result of the increasing number of pensioners who own their own homes. A more comprehensive analysis of household pension resources can be found in Pension Trends 32.

**Health**

With increases in life expectancy, more people are living to much older ages. These additional years are not necessarily spent in good health or free from limiting illness or disability. Projected increases in the number of people at older ages combined with increasing morbidity rates mean that there are likely to be increases in both the numbers of people experiencing morbidity in old age and the number of years that people can expect to live with morbidity. Up-to-date and accurate information on health status at older ages is increasingly important for resource allocation and health needs assessment 34.

Measures of healthy life expectancy (HLE) are based on the subjective well-being model of health status, dividing life expectancy into years spent in good or fairly good health and years spent in not good health. Disability Free Life Expectancy (DFLE) is based on a functional model of health status and measures the proportion of period life expectancy without a limiting illness or disability. **Figure 23** shows the life expectancy (LE) and DFLE 35 at age 65 for males and females in the UK. LE and DFLE have risen between 2000–02 and 2004–06: in 2000–02 males at age 65 could expect to live 35 per cent of their remaining years free from disability; in 2004–06 this proportion rose to 60 per cent. In 2000–02 and 2004–06 females could expect to live 54 per cent of their remaining years free from disability. This means that men aged 65 in 2004–06 could on average expect to live a further ten years without a disabling illness, and women, a further ten years and seven months.

**Men aged 65 in 2004–06 could, on average, expect to live a further ten years without a disabling illness; women, a further ten years and seven months**

Older people and in particular the ‘oldest old’ are among the heaviest users of health and social care services. **Figure 24** shows that the reporting of limiting long-standing illness increases with age. Data

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**Box four**

**Pensioners’ Incomes Series** 33

The Pensioners’ Incomes Series of the Department for Work and Pensions (DWP) measures the income of ‘pensioner benefit units’ defined by the DWP as ‘a single adult over state pension age or married or cohabiting pensioners where one or more are over state pension age’. In the Pensioners’ Incomes Series, some benefit units are part of larger households – for instance where pensioners are living with relatives.

The median measure divides the income distribution for the pensioner benefit units into two equal parts: one-half of the cases falling below the median income for the pensioner benefit units and one-half above the median.

Gross income is income from all sources received by the benefit unit including income from state pensions, Social Security benefits (including Housing Benefit), earnings from employment or self-employment, any private pension income, and tax credits.

Net income before housing costs is equal to gross income minus direct taxes, such as Income Tax and Council Tax.

Net income after housing costs is equal to net income before housing costs minus housing costs which include rent, water rates and mortgage interest payments.

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**Figure 22** Median income of single pensioners and pensioner couples, UK, 1994–95 to 2006–07

![Graph showing the median income of single pensioners and pensioner couples from 1994-95 to 2006-07.](image)

Notes: Incomes are based on 2006/07 prices. BHC = before housing costs and AHC = after housing costs. Source: 2006/07 Pensioners Income Series, based upon Households Below Average Income data set which is based upon Family Resources Survey data.

**Figure 23** Life expectancy and Disability Free Life Expectancy at age 65 by sex, 2000–02 and 2004–06, UK

![Graph showing life expectancy and disability free life expectancy at age 65 by sex.](image)

Source: ONS, General Household Survey.
from the 2001 Census show that 44 per cent of males and 41 per cent of females aged between 65 and 74 reported having a limiting long-standing illness, compared with 70 per cent of males and 79 per cent of females aged 85 and over.

As the size of the older populations grow, demand for health and social care services will continue to increase. A number of health and care initiatives relevant to the older population have been implemented over the past decade including the National Service Framework for older people in 2001 which sets out the core aims and performance standards for improving health and care.

The issue of how to fund long-term care is one of the most difficult problems confronting policy makers. In the years ahead there will be many more frail old. The rising numbers of older people and the break-up of families through divorce are likely to reduce the provision of informal caring. In addition, children caring for their parents will be increasingly old themselves and potentially caring for their children or grandchildren at the same time as their ageing parents. Demand for long-term care is inevitably going to increase over the coming years as the population aged 85 and over grows.

Mental health and well being are just as important as physical well being. In tandem with increases in numbers of older people there will inevitably be increased numbers of people affected by dementia. The number of people affected could double to 1.4 million within 30 years. The effects on individuals, families, carers and the economy would be large.

**Conclusions and looking to the future**

Older people are generally living longer, staying healthy for longer and playing a more important role in the labour market. In general, older people are more likely than younger ones to use public services provided by central and local government and the National Health Service (NHS). A round 40 per cent of NHS expenditure on health and social care is spent on those over 65, and those over State Pension Age receive more than £60 billion annually in state pensions and benefits. Greater numbers of older people have significant implications for the delivery of public services. Research and statistics play a central role in providing information for policy makers in explaining the processes and consequences of ageing.

Recognising the need to understand more about ageing, a large research initiative – the New Dynamics of Ageing – has been established in the UK by the five research councils, signalling the importance of this topic both now and in the future. ONS has collaborated on the project, ‘Transitions, Choices and Health at Older Ages: Life Course Analyses of Longitudinal Data’. This uses data from longitudinal studies to explore possible links between labour market position and health in later life.

Given the ever greater complexity involved in estimating and understanding the UK population, ONS is increasingly seeking to involve both academics and expert users of our products, for example local authorities, in our future work. A good example of this is the creation in 2008 of a Centre for Population Change, funded by the ESRC. The Centre will be collaborating with ONS, General Register Office for Scotland (GROS) and the Scottish Government, building on long-established links between ONS and the University of Southampton and on existing partnerships between Scottish universities, GROS and the Scottish Government. The Centre’s themes include household dynamics and living arrangements across the life course, which will link to ONS work on the social and demographic implications of an ageing society.

Demography was established as a work sector by the British-Irish Council in 2006 and is being led by Scotland. One area of focus will be healthy independent ageing. Efforts are focused on identifying areas of work where sharing experiences between the Member administrations would be beneficial. In developing the evidence base, the Scottish Government carried out an extensive consultation exercise which culminated in a report published in 2007 called, ‘All our Futures: Planning for a Scotland with an Ageing Population’.

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**References**

1 References