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Population Ageing:
Causes and Consequences

In most of the richer countries of the world and in an increasing number of poorer ones, population ageing is now a predominant demographic issue. Ageing at the individual level is a heterogeneous experience not necessarily involving serious disability, and there is no biological reason for choosing any particularly age to mark passage to elder status. However, here I follow convention and generally talk about the 'older' population as being those aged 65 and over. I examine the causes, course and consequences of population ageing, drawing mainly on the experience of England and Wales.

Figure 1 presents a historic view of population ageing in England and Wales and, for comparison, the USA and Japan.

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In England and Wales, the relative size of the population aged 65 and over doubled from five to 10 per cent in the first half of the 20th century. It increased by another five percentage points by 2000, and will grow by a further five points (or slightly more) by 2020. In Japan, by contrast, there was no increase in the relative size of the older population until the 1960s, but change since then has been much greater than in England and Wales, reflecting rapid falls in both fertility and mortality in the second half of the 20th century. Population ageing has been slower and less marked in the USA than in either England and Wales or Japan.

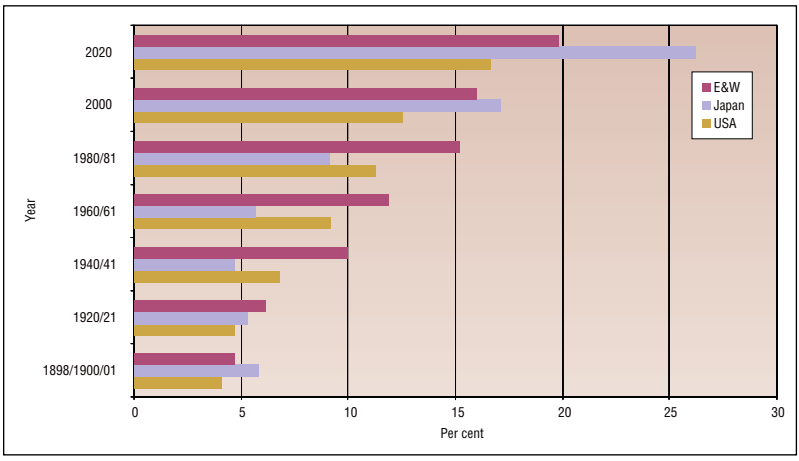

Figure 1. Proportion (%) of the population aged 65 and over, Japan, E&W, and the USA, 1900–2020

Source: Grundy E.: "The epidemiology of aging." In: Brocklehurst's *Textbook of Geriatric Medicine*, eds. R. Tallis & H. Fillit, Churchill Livingstone (from national and international series), 2003.

These differences reflect varying levels and trends in the demographic drivers of population size and age structure: fertility, mortality and migration. Numbers of older people reflect both how many births there were 65 to 100 years earlier and how many of those born survived to age 65 and beyond. What proportion of the overall population is represented by older people depends on these numbers and the size of the population as a whole. This is predominantly influenced by subsequent birth rates and it is long-term downward trends in fertility which cause the initial shift towards an older population.

Fertility trends

In England and Wales, and other North West European countries, this shift towards lower fertility was set in motion towards the end of the 19th century, as illustrated in Figure 2.

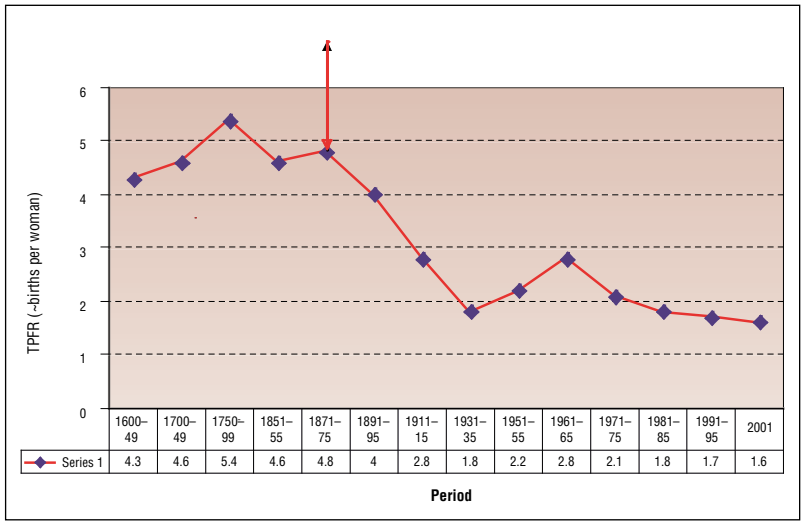

Figure 2. Long-term trends in fertility, England and Wales.
Sources: Wrigley & Schofield: *The population history of England,* 1981; ONS various years.

The arrow marks the start of the 'demographic transition' – a once and forever shift to lower fertility which set in motion the process of population ageing. However, whilst we have never returned to pre-transition levels of fertility, there have been subsequent fluctuations in birth rates – in particular, during the baby-boom of the late 1950s and early 1960s fertility rates were higher than in the inter-war period.

In some recent years, the Total Period Fertility Rate (TPFR) – an estimate of how many children a woman will have based on current trends, has fallen to as low as 1.6 in England and Wales (currently 1.8). But this is still higher than in countries such as Japan, as well as many countries in Southern and Eastern Europe. Japan now has one of the world's oldest populations, due to a combination of 'lowest low' fertility and low mortality. In 2004–5, for example, Japan's TPFR was 1.3, compared with 1.8 in England and Wales. By way of contrast, the US population is younger, because of higher fertility and continuing immigration.

Mortality trends

Death rates also influence age structures, although their potential effect is not as great. At roughly the same time as the fertility transition, there were

large declines in mortality, as illustrated in Figure 3. However, early improvements in life expectancy were mainly achieved through declines in death at young ages. Rather than contributing to population ageing, in fact, this trend to some extent offset the consequences of lower fertility, as it led to increases in the child population and in the proportions of women surviving long enough to have children themselves.

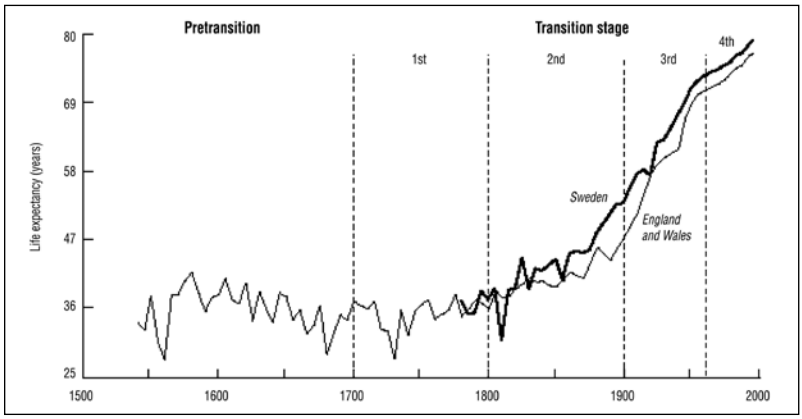

Figure 3. Long-term trends in life expectancy, England and Wales and Sweden.

Source: Wrigley and Schofield (1981) and Keyfitz and Flieger (1968), updated from U.N. *Demographic Yearbooks*.

In populations with low fertility and mortality and an already old age structure, declines in mortality at older ages assume a much more important role in determining the extent of further population ageing. As illustrated for England and Wales, recent declines in late age mortality (measured here by years of further life expectancy at age 65) have been quite considerable.

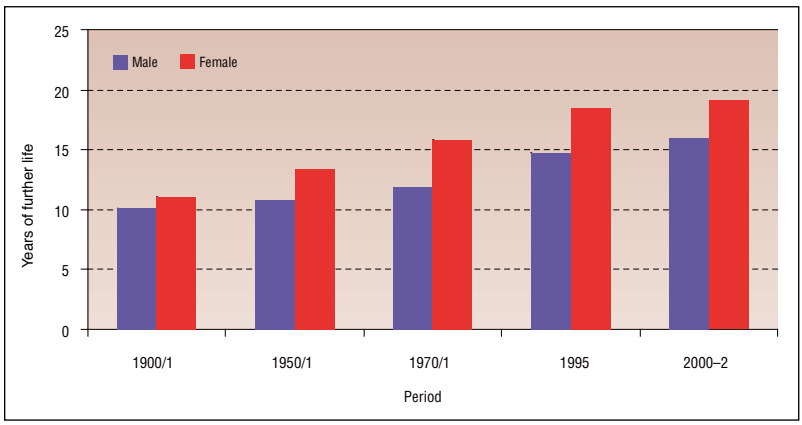

Figure 4. Trends in further life expectancy at age 65, England & Wales, 1901 to 2000–2.

Source: Grundy E.: "Gender and Healthy Aging." In: *Longer life and healthy ageing.* Zeng Yi *et al.* (eds.), Springer (based on data from Government Actuary's Department), 2006.

For men, the gain in further life expectancy at 65 between 1970–1 and 2000–2 was larger than throughout the whole period from 1900 to 1970. For women, improvements were more evenly spaced across the century. The gap between men and women widened at first, but recently has narrowed again. There are similar trends in some other countries, such as Italy and the USA, although elsewhere – particularly Eastern Europe – the gap between male and female is still widening.

The recent narrowing of differences in mortality rates, and the fact that there were disproportionate numbers of women in the population in previous periods because of events such as the World Wars and excess male emigration, means that the sex ratio, or number of males per 100 females, is now much more balanced than it has been – a trend predicted to continue.

This, and lower levels of mortality overall, mean that widowhood is being delayed, and the proportion of older people who are married has been increasing. This has positive implications as older couples are able to draw on each other for support. A further positive outcome of past trends is current declines in the proportion of older women who have never married. The baby boom was partly a consequence of a marriage boom. Much higher proportions of people (especially women) born in the 1930s and 1940s and now in early 'old age', married than was the case among those born earlier in the century. In 1971, 15 per cent of women aged 75 and over in England and Wales were single (never married) compared with seven per cent in 2001 – and a projected low of four per cent in 2021. In the longer term (2031 onward), trends will become less favourable, because by then the groups of people born from the mid-1950s onward will be in or entering later life. Among these, there has been some return to lower rates of marriage and much higher rates of divorce.

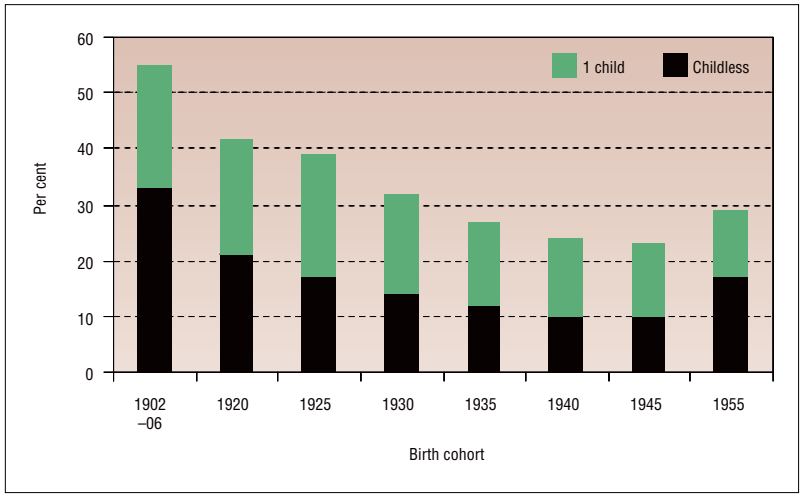

Figure 6. Women with no or only 1 child at age 45 by birth cohort, England and Wales

Source: Grundy E.: "Population Review: the population aged 65 and over." *Population Trends* 84, 14–20, 1996.

One consequence of past trends in marriage and other aspects of family formation is that the proportion of older women with at least one child is currently *increasing* and will do so until those born in 1955 onward reach old age (see Figure 6 above). This may seem at odds with falling fertility but, as already discussed, fertility rates were higher in the late 1950s and early 1960s than earlier in that century. Moreover, the distribution of family sizes has changed. The average number of children produced by women born around 1900 and in 1955 was much the same (about two each), but the earlier group included, as shown above, more women who were childless or with only one child, as well as higher numbers with very large families.

Predictions of the proportion of women who will still have at least one child alive at the age of 80, show that this will peak in 2027, when those born in 1947 reach that age. So in the coming quarter century, a higher proportion of elderly people are likely to have at least one living child than ever before – or ever after.

Having close kin, such as spouses and children, does not in itself guarantee family support for older people. Questions have been raised about possible changes in the willingness or ability of younger generations to provide assistance – concerns fuelled partly by major changes in the living arrangements of older people. The proportion of older people living with two or more generations of family has declined dramatically since 1971, particularly among the 'older old' while the proportions living alone have increased. In England and Wales, most women aged 85 and over now live alone, and the next most usual arrangement is residence in institutional care. Trends in other countries have been similar, although large differences remain between Southern and Northern Europe.

Although intergenerational co-residence has declined, all available evidence from Britain and elsewhere in Europe is that family interaction and support remain high.

Health in older populations

Clearly, the current and future state of health of older people is of vital importance. However, a long-running debate about associations between trends in mortality and those in disease and disability (morbidity) is still not fully resolved. From the negative point of view, if people with a poor history of health and high risk of frailty have a better survival rate than in the past, this may lead to a worsening of the overall health status of the older population, simply because the selection effect is reduced. Rather than postponing the onset of chronic disease or disability, interventions which prolong survival with chronic disease would also negatively affect population health. On the positive side, better past health legacies may mean people reaching old age now are in better health than their predecessors and medical interventions such as the treatment of high blood pressure may prevent or postpone some disabling conditions such as stroke. Evidence on trends in disability from the United States is generally positive, but trends in Europe are less certain and the knowledge base on trends in disability is still poor. There is, however, evidence that certain behaviours, such as avoidance of smoking and excessive alcohol consumption, 'Mediterranean' type diets involving consumption of lots of fruit and vegetables, and physical activity, are all associated with better health outcomes in later life.

Is population ageing a problem?

The main policy concerns arising from population ageing revolve around costs of income support (through pensions) and acute and long-term care. All of these are related to health and disability, which is why trends and differentials in health are so important. However, health and disability are not the only factors of importance. In many European populations, changes in the ages at which people retire have had a bigger effect on the relative size of the 'pensioner' population than demographic change. More recently, governments have realised that discouraging early retirement and promoting longer working lives is a growing economic priority

(there is also some evidence that working for longer may in itself be beneficial for health), but achieving this aim often presents political problems. Similarly, population ageing has not been the main influence on acute health care costs which increased during the latter 20th century largely because of the development of new, more expensive medical technologies. Long-term care costs, are, however, very strongly influenced by the proportion of older old people in the population (and by the availability of family support) and, as such, are to a large extent demographically driven.

Although population ageing is often portrayed negatively, it is important to recognise that increased survival to and beyond later life is a great achievement and that the inverse of population ageing is rapid population growth, which itself poses challenges. Similarly, although the needs of the young, middle aged and old are sometimes presented as being in conflict, in fact different generations are linked through shared family lives and of course expectations of the future – old people were once young and the only alternative to growing old is premature death.

The characteristics and resources people have in later life are shaped by their life courses, as well as by current circumstances. During my very enjoyable stay at CAS, I researched one aspect of such life course influences on later life, i.e. the effect of people's individual fertility histories on their late life mortality risks. I am very grateful to have had the opportunity to undertake this work in such a supportive and stimulating environment.