Mortality trends in Britain and future numbers of older people

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Demographic forecasting

“As we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns - the ones we don't know we don't know.”
(D Rumsfeld)

Demographic factors important to future needs of older people

• Population size
• Age structure
• Health status
• Living arrangements
  – living alone
  – marital status
• Kin support
  – children

Fertility - a long-term perspective: Total Fertility Rate, England and Wales, 1841-2005

Disability prevalence rates (per 1000 adults)
Official projections in Britain

Produced
• National population (frequent)
• Sub-national population (irregular)
• Marital status (including cohabitation)
• Household (irregular)

Not produced
• Family (some for social security, implicitly in household projections)
• Kinship
• Ethnicity

Actual & projected population United Kingdom, 1951-2031

Population overall size

• between 2004 & 2050 EU projections expect
  – the largest population decreases in
    • Germany (-7.9 million)
    • Italy (-5.2 million)
  – the largest population increases in
    • France (+5.8 million)
    • United Kingdom (+4.7 million)*

  ‘gentle’ UK trends
• likely overall UK increase BUT substantial changes in UK age structure will occur
  *the latest 2006-based UK projections give +17.3 million

In the next 25 years (by 2031)

Total UK expected population growth
approx 10.5 million
• 6.1 million more older people (65 & over)
  – of which 2.7 million 80 & over
• 3.1 million more ‘working age’ (20-64)
• 1.3 million more children (0-19)

Ageing of the older population

The elderly population is itself ageing. The proportion of the UK population aged 65 & over who were 85 & over
1981  7%
2006 13%
2031 18%

Recent increases in the number of very old people have been larger than expected because of unanticipated falls in mortality among the elderly.
Mortality drives numbers of older people in short & medium term so what is happening to death rates at old ages?

- Substantial improvement of mortality at old ages recently
- The number of centenarians is increasing dramatically
- Sex differentials are declining
- Inequalities remain up to the highest ages

**Mortality - a long-term perspective: e0, England and Wales, 1841-2006**

Life expectancy at birth, 1841-2006

**Probability of death at age 85: actual & projected values, E&W**

**Cohort life expectancy at age 85: actual & projected values, E&W**

**Distribution of deaths out of 100,000 births, Females GB 2004-6 & Japan 2006**

Population aged 90 & over in 2006 and 2031, United Kingdom (000s)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Males</th>
<th>Females</th>
<th>M:F (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>423</td>
<td>106</td>
<td>317</td>
<td>33</td>
</tr>
<tr>
<td>2031</td>
<td>1,226</td>
<td>492</td>
<td>734</td>
<td>67</td>
</tr>
<tr>
<td>Change (000s)</td>
<td>803</td>
<td>387</td>
<td>417</td>
<td></td>
</tr>
<tr>
<td>2031: 2006</td>
<td>290</td>
<td>466</td>
<td>231</td>
<td></td>
</tr>
</tbody>
</table>

Based on Office for National Statistics 2006-based projections (http://www.gad.gov.uk/)

Mortality assumptions

The 2006-based official projections assume that annual rates of mortality improvement will converge to a common rate of 1.0 per cent a year at 2031 for most ages, and continue to improve at that constant rate thereafter. However those born in the years 1923 to 1940 will continue to experience higher rates of mortality improvement in and after 2031, e.g. 2.5 per cent a year for those born in 1931.

Population Trends 129 Autumn 2007, p.84

There is nothing new under the Sun – the 1920s & 30s

“We had on our Committee Mr Derrick, the great exponent of [the generational] theory, and we had on the other side Professor Kuczynski, who was the exponent of the year of observation theory, and the arguments were so furious at some of these meetings that I sometimes had considerable doubt whether the rate of mortality among the Committee might not be unduly high!” (quoted in Davey Smith & Kuh, 2001)

Projected expectation of life at birth, United Kingdom 1981-2081

Alternative projections (ONS/GAD 2006-based)

Male cohort life expectancy at 65: “optimists” and “pessimists”, United Kingdom

SINGLE COMPONENT VARIANTS

<table>
<thead>
<tr>
<th>Principal projection</th>
<th>Total population (000s)</th>
<th>Population aged 65 &amp; over (000s)</th>
<th>% of population aged 65 &amp; over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal 2003-based</td>
<td>71,100</td>
<td>15,779</td>
<td>22.2</td>
</tr>
<tr>
<td>Vaupel?</td>
<td>72,982</td>
<td>15,779</td>
<td>21.6</td>
</tr>
<tr>
<td>Olshansky?</td>
<td>72,984</td>
<td>15,779</td>
<td>22.9</td>
</tr>
</tbody>
</table>
Male cohort life expectancy at 65: “optimists” and “pessimists”, England & Wales

Based on Pensions Commission Appendix Figure e-5 & calculated from 2006-based official projections GAD unpublished data

Projected population aged 85 & over in 2011 and 2031, alternative projection base years, England & Wales (author’s calculations)


The proportion of men who will survive to their late 80s and early 90s is therefore highly uncertain: for annuity providers, this represents a ‘toxic tail’ that can have lethal implications for the annuity provider’s financial health.

Summary: relevant demographic factors for long-term care needs

• Population size & age structure in next quarter century
  – Growth of ‘young old’ (3 million) & ‘old old’ (3 million)

• Health status
  – No overwhelming evidence for either positive or negative changes, so numbers disabled likely to increase

• Living arrangements
  – Some decrease in prevalence of living alone among old people (but overall numbers increase)
  – More married, especially women (& more divorced)

• Kin support
  – More living children available for decades to come

Thank you!