Institut für Finanz- und Aktuarwissenschaften, Universität Ulm

Longevity Risk in the United Kingdom

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Prologue

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- She placed a bet of £100 at 100-1 odds 11 years ago, and a year later staked another £50 at 50-1 odds.
- Her mother-in-law, Rosalind, celebrates her birthday at a party paid for with the winnings.

Source: BBC News, 4^{th} November 2004.

Prologue—odds

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- He should have used a figure five times greater: 5.48%.

Source: Own calculations using 1992–1994 GAD interim life table for females in England and Wales.

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- And here's why...

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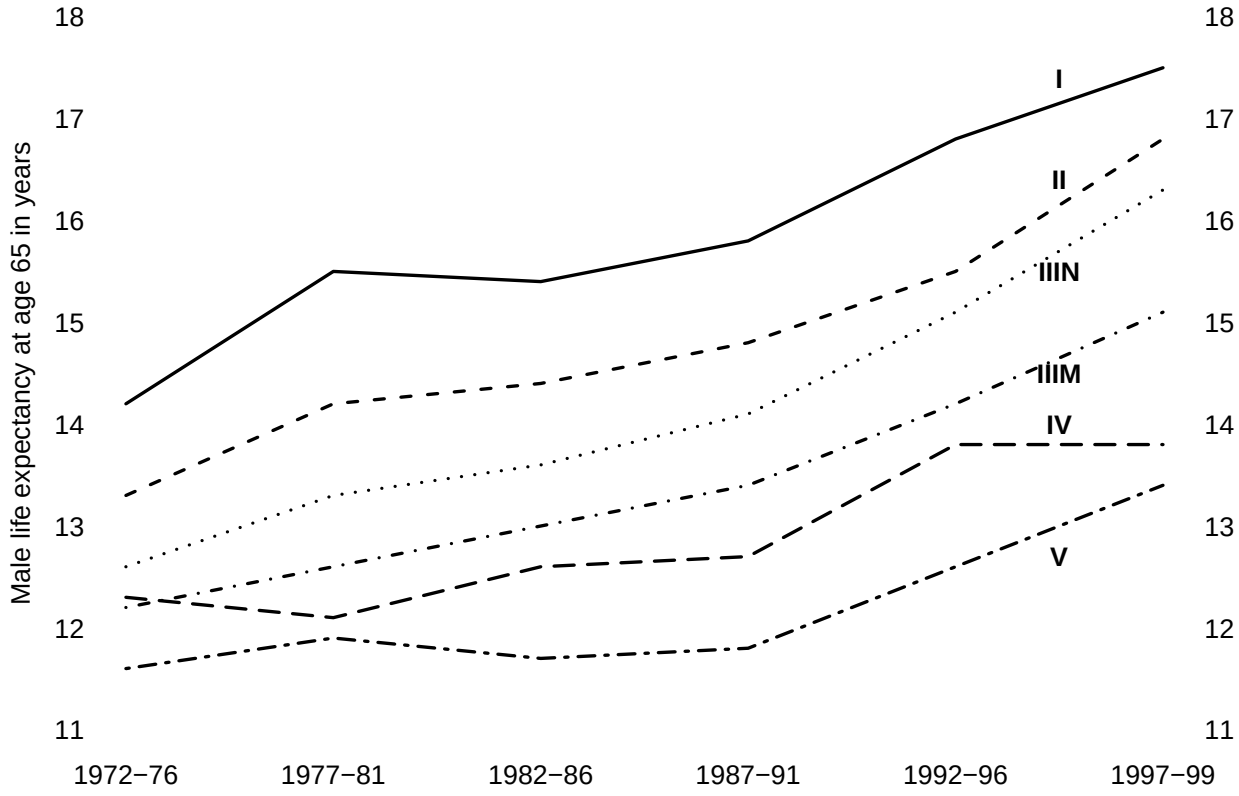
- Following the adoption of International Financial Reporting Standards (IFRS), British Airway's net assets fell from £2.7bn to £1.4bn as the pension-scheme deficit came the balance sheet[2].

Source: [1]British Aerospace: 2004 preliminary results, page 25. [2]British Airways: Release of Financial Information 2004/5 under IFRS, page 3.

Retirement life expectancy by socio-economic group



Source: ONS Longitudinal Survey.

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- For more details, see Willets (2004) and Richards and Jones (2004).

Mortality improvements by year of birth

Source: Own calculations with GAD interim life tables for 2000–2002 and 2001–2003.

Possible causes of cohort mortality patterns

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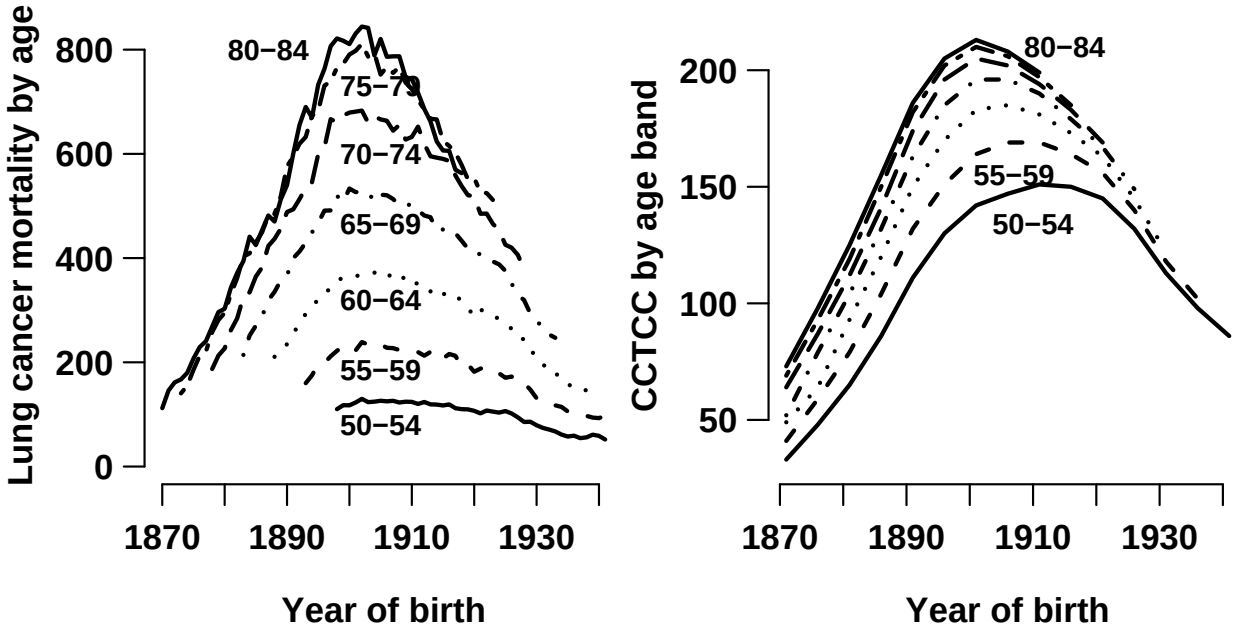
- Changes in smoking incidence.

Lung-cancer mortality rates (left) and lifetime consumption of cigarettes (right) by year of birth



Source: Lee et al (1990), Forey et al (1993) and ONS data.

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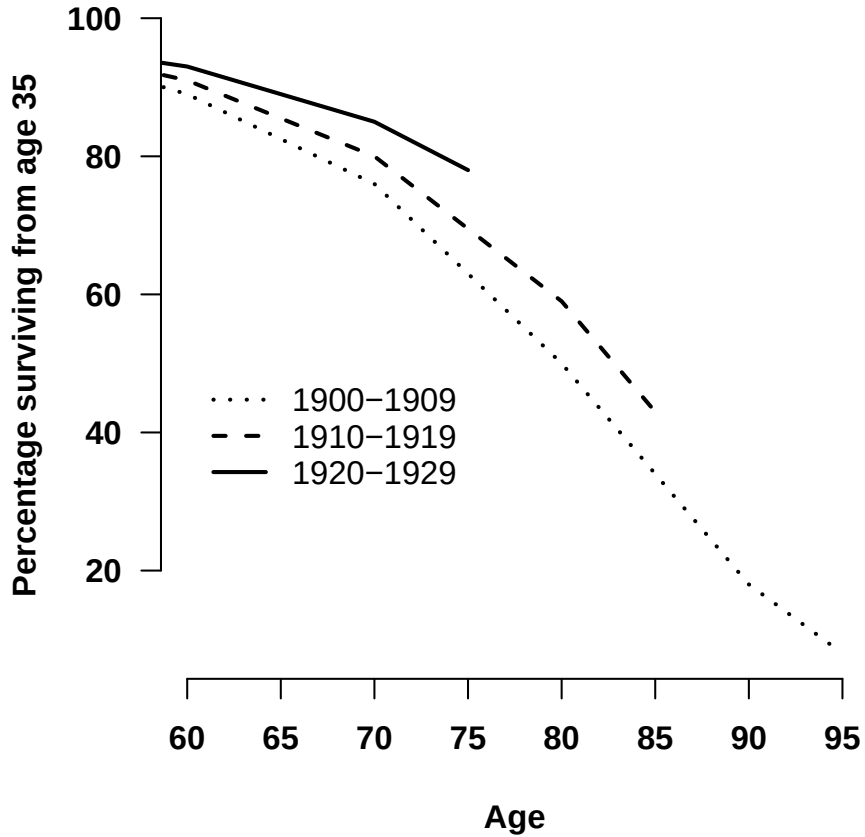
- . . . but this cannot be the whole explanation.

Cohort survival curves for life-long non-smokers



Source: Doll et al (2004).

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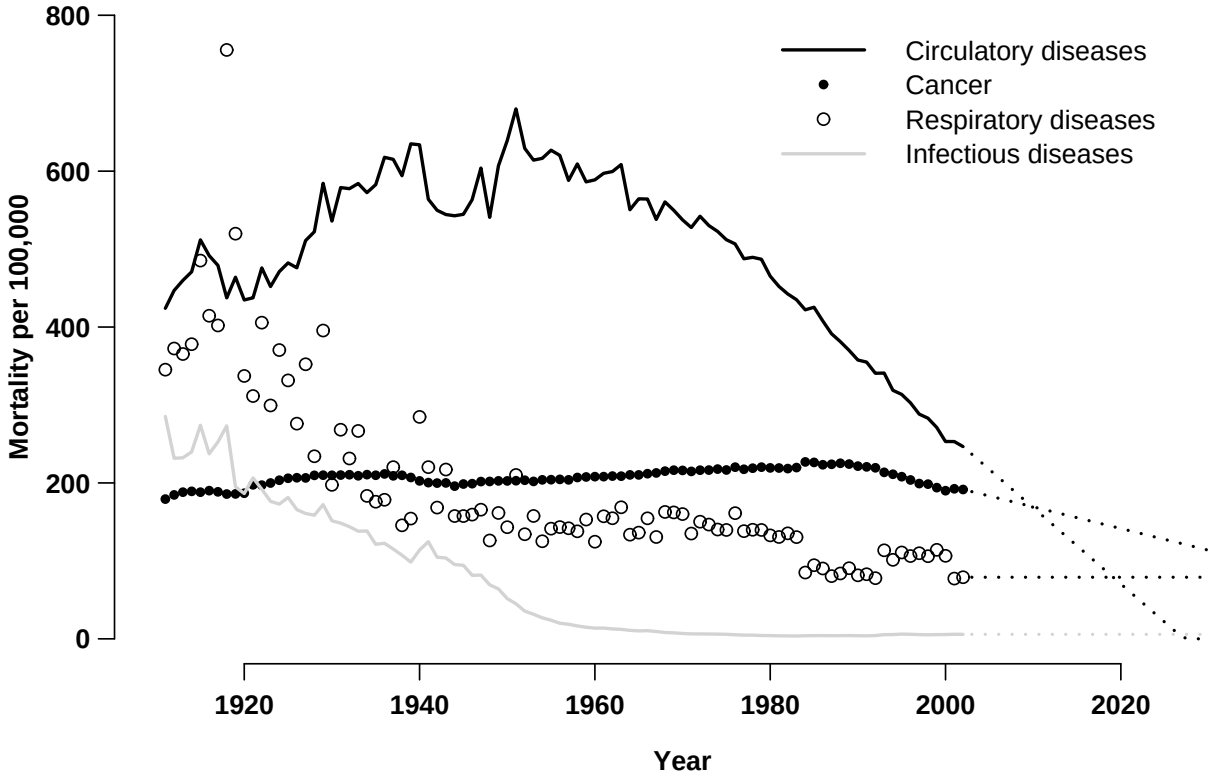
- Early-life exposure to pathogens.

Mortality rates by broad cause of death



Source: Own calculations using ONS data.

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- ...and consider the implications of circulatory-disease mortality continuing its linear downward trend...

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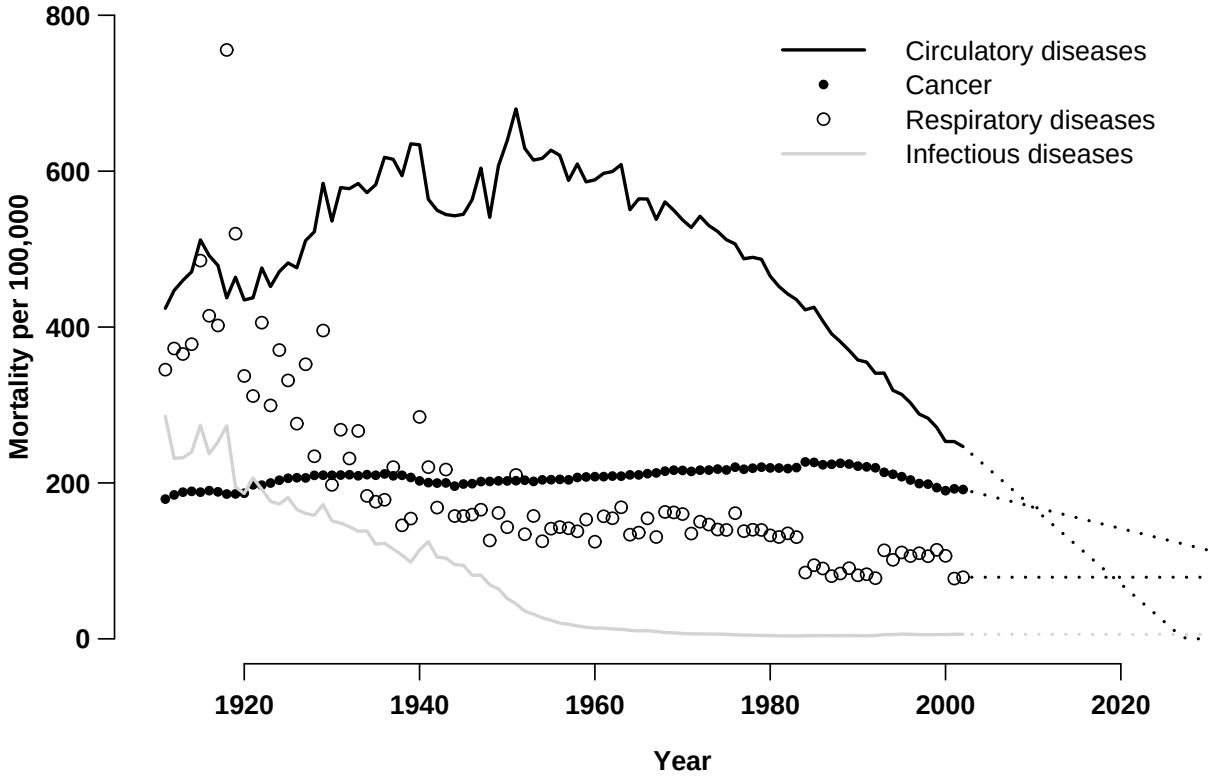
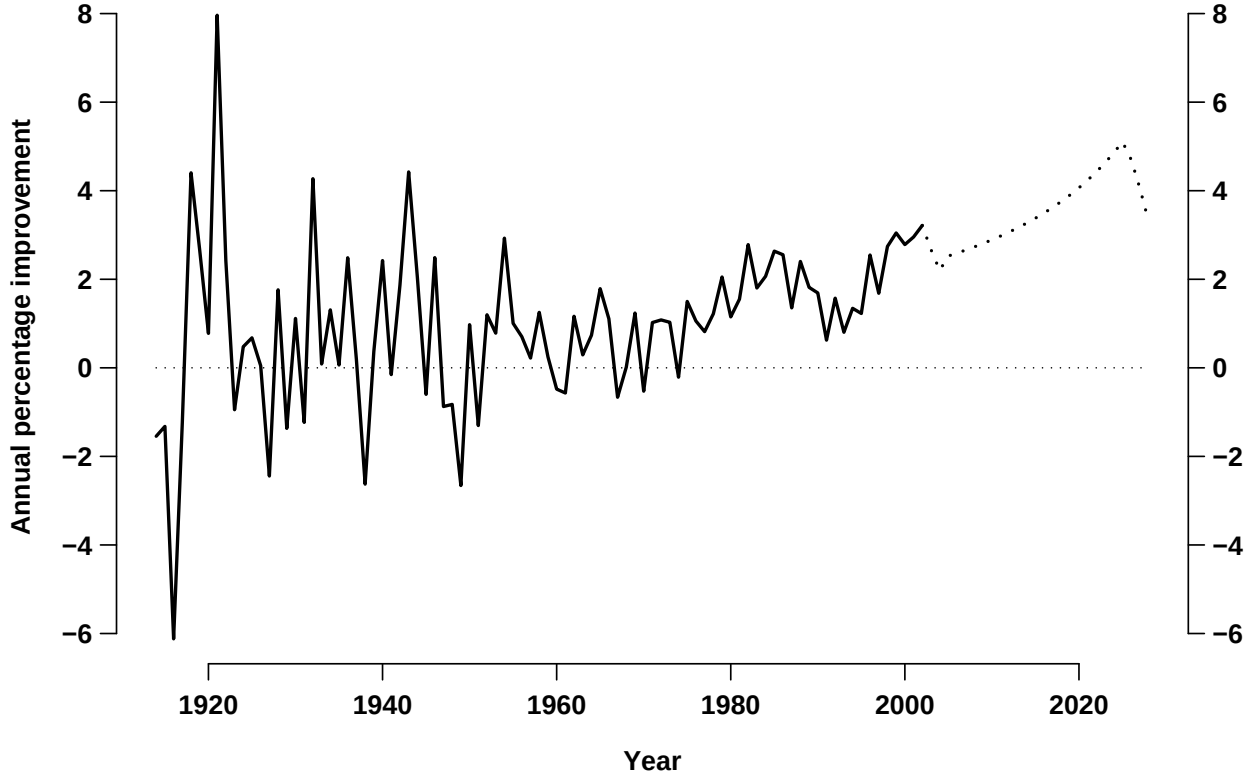


Source: Own calculations using ONS data.

Smoothed annual mortality improvement



Source: Five-year moving average. Own calculations using ONS data.

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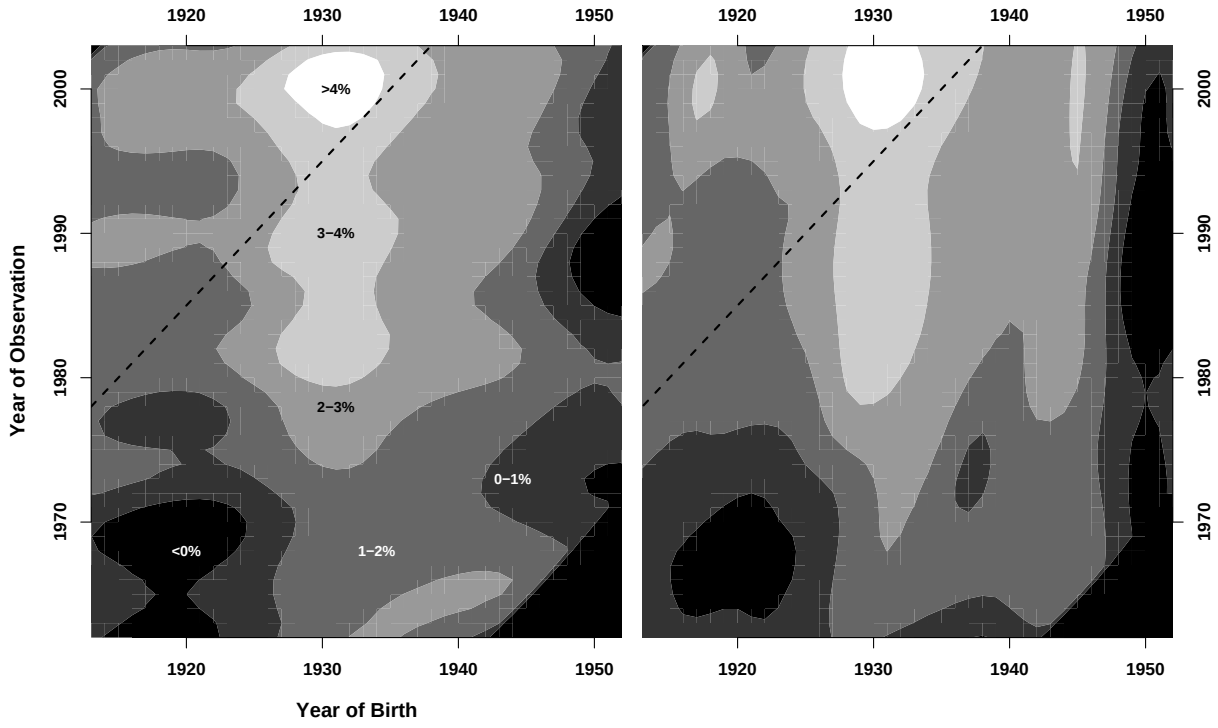
- For application to mortality projections, see Currie, Durban and Eilers (2003) and CMIB (2005).

Mortality improvements



Source: Richards, Kirkby and Currie (2005). Male mortality improvements after smoothing mortality rates in two dimensions using penalised splines.

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- The pace of mortality improvement appears to be accelerating.
- If so, then reserves for annuities and pensions are understated.
- Cohort effects would also appear to exist outside the U.K.

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