Long-term trends
Practical

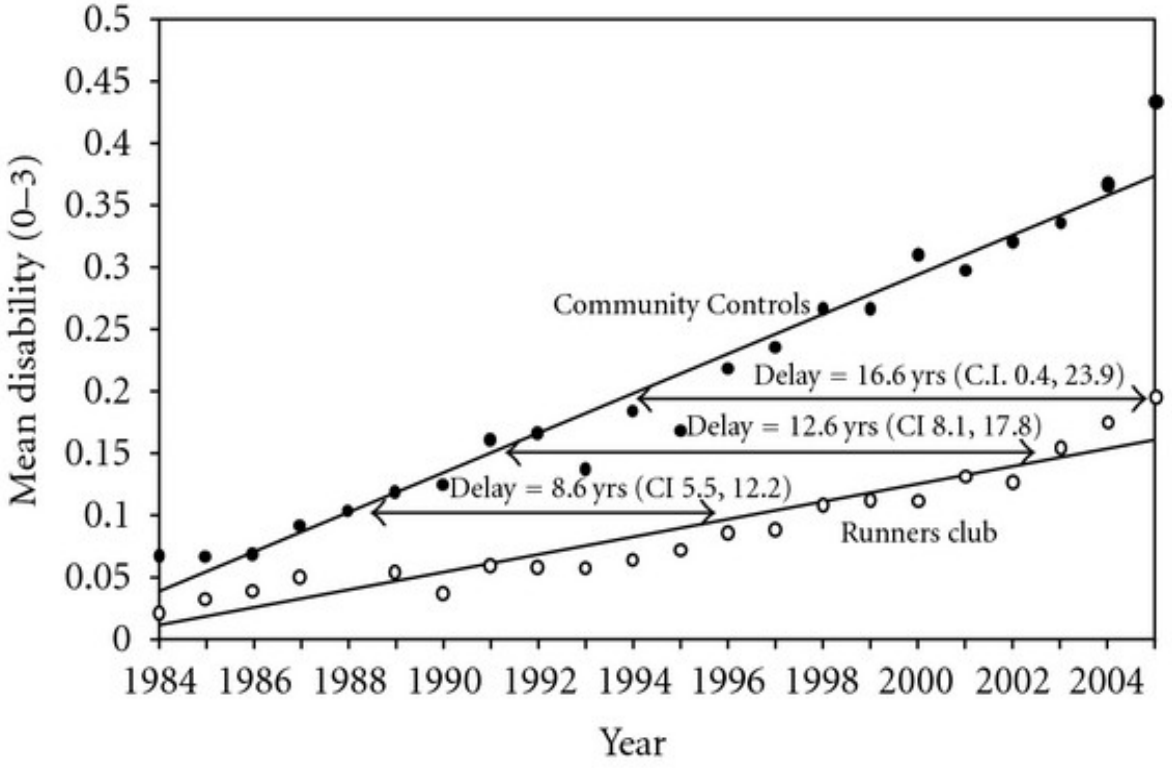
Mortality & morbidity compression

US life expectancy 1900–2007 from various ages. Average number of years of life remaining.

From age	1900	1920	1940	1960	1980	2000	2007	Gain, Years 1900–2007
0	49.2	65.4	63.6	69.9	73.9	76.9	77.9	28.7
65	11.9	12.5	12.8	14.4	16.5	17.9	18.6	6.7
75	7.1	7.5	7.6	8.7	10.5	11.3	11.7	4.6
85	4.0	4.2	4.3	4.6	6.0	6.3	n/a	2.3
100	1.6	1.5	2.1	1.9	2.7	2.6	n/a	1.0

1. Please describe the changes in LE at different ages

2. Can you see any pattern?



Disability progression—ages 58–79 years: Runners' Club and Community Controls. Progression of disability in Runner's Club and Community Control groups over 21 years from an average age of 58 is compared in the figure both with yearly disability values and statistically derived regression lines. The regression lines are derived from linear mixed models and adjusted for age, gender, BMI, smoking, and initial disability. Comparison of postponement of disability is represented by the absolute difference between the two groups in the time required to develop a given level of disability. The example shown is to reach Health Assessment Questionnaire (HAQ) Disability Index Scores of 0.10, 0.15, and 0.20. All differences are highly statistically different ($P < 0.001$). Lines continue to diverge with age. The postponement is 8.6 years between groups in reaching the .010 mark, 12.6 years to reach the 0.15 mark, and projected at 16.6 years for the HAQ level of 0.20. Consistent moderately active exercise postpones onset of disability for many years.

A comparison of health expectancies over two decades in England: results of the Cognitive Function and Ageing Study I and II

*Carol Jagger, Fiona E Matthews, Pia Wohland, Tony Fouweather, Blossom C M Stephan, Louise Robinson, Antony Arthur, Carol Brayne, on behalf of the Medical Research Council Cognitive Function and Ageing Collaboration**

Summary

Background Whether rises in life expectancy are increases in good-quality years is of profound importance worldwide, with population ageing. We investigate how various health expectancies have changed in England between 1991 and 2011, with identical study design and methods in each decade.

Methods Baseline data from the Cognitive Function and Ageing Studies in populations aged 65 years or older in three geographically defined centres in England (Cambridgeshire, Newcastle, and Nottingham) provided prevalence estimates for three health measures: self-perceived health (defined as excellent–good, fair, or poor); cognitive

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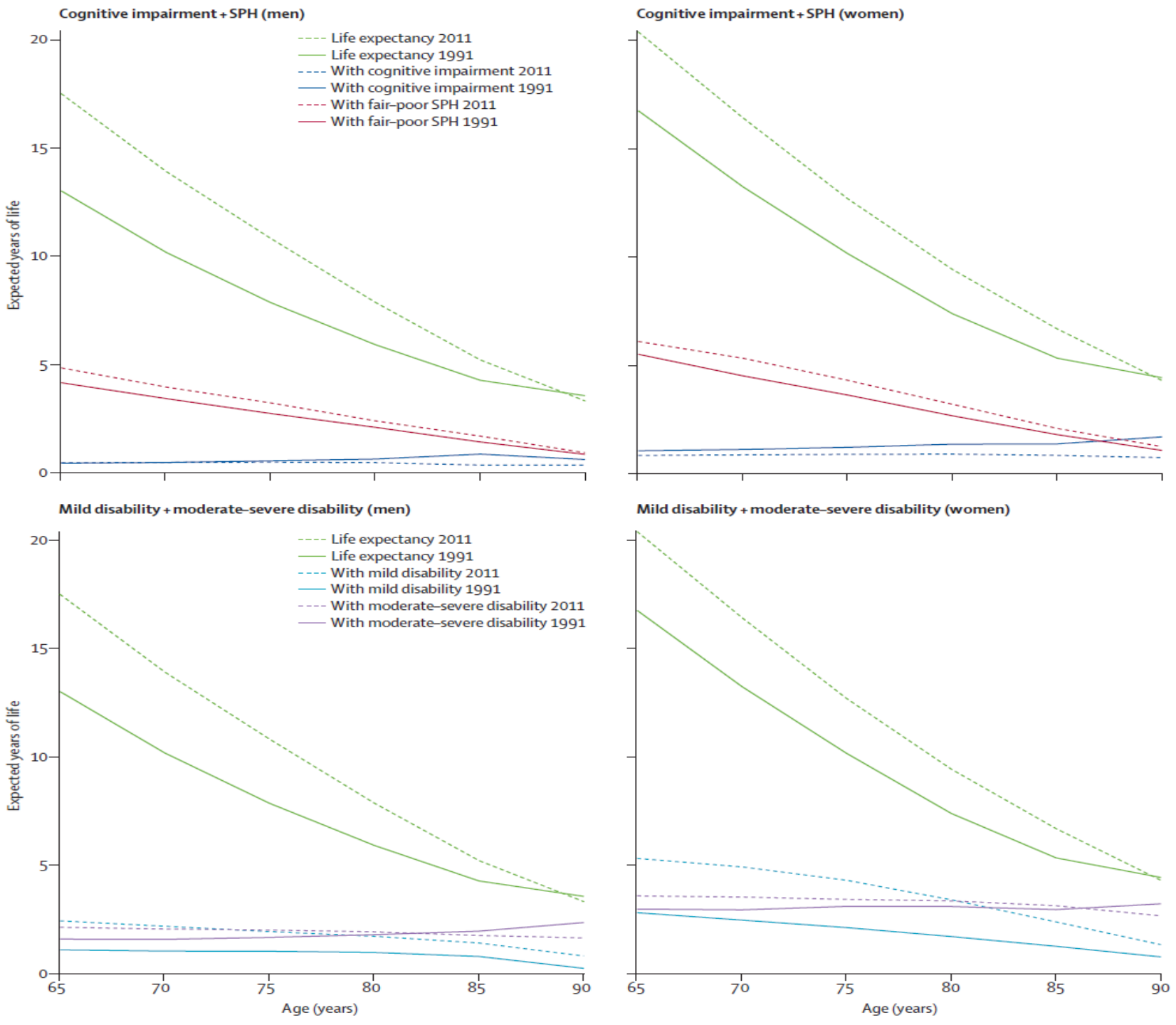
*Members listed at end of report

Institute of Health and Society,

Background: Whether rises in life expectancy are increases in good-quality years is of profound importance worldwide, with population ageing. We investigate how various health expectancies have changed in England between 1991 and 2011, with identical study design and methods in each decade.
Methods: Baseline data from the Cognitive Function and Ageing Studies in populations aged 65 years or older in three geographically defined centres in England (Cambridgeshire, Newcastle, and Nottingham) provided prevalence estimates for three health measures: self-perceived health (defined as excellent-good, fair, or poor); cognitive impairment (defined as moderate-severe, mild, or none, as assessed by Mini-Mental State Examination score); and disability in activities of daily living (defined as none, mild, or moderate-severe). Health expectancies for the three regions combined were calculated by the Sullivan method, which applies the age-specific and sex-specific prevalence of the health measure to a standard life table for the same period.
Findings: Between 1991 and 2011, gains in life expectancy at age 65 years (4·5 years for men and 3·6 years for women) were accompanied by equivalent gains in years free of any cognitive impairment (4·2 years [95% CI 4·2-4·3] for men and 4·4 years [4·3-4·5] for women) and decreased years with mild or moderate-severe cognitive impairment. Gains were also identified in years in excellent or good self-perceived health (3·8 years [95% CI 3·5-4·1] for men and 3·1 years [2·7-3·4] for women). Gains in disability-free years were much smaller than those in excellent-good self-perceived health or those free from cognitive impairment, especially for women (0·5 years [0·2-0·9] compared with 2·6 years [2·3-2·9] for men), mostly because of increased mild disability.
Interpretation: During the past two decades in England, we report an absolute compression (ie, reduction) of cognitive impairment, a relative compression of self-perceived health (ie, proportion of life spent healthy is increasing), and dynamic equilibrium of disability (ie, less severe disability is increasing but more severe disability is not). Reasons for these patterns are unknown but might include increasing obesity during previous decades. Our findings have wide-ranging implications for health services and for extension of working life.


Cognitive impairment + SPH (men)
Life expectancy 2011
Life expectancy 1991
With cognitive impairment 2011
With cognitive impairment 1991
With fair–poor SPH 2011
With fair–poor SPH 1991
Expected years of life
0
5
10
15
20
Cognitive impairment + SPH (women)
Mild disability + moderate–severe disability (men)
Life expectancy 2011
Life expectancy 1991
With mild disability 2011
With mild disability 1991
With moderate–severe disability 2011
With moderate–severe disability 1991
Expected years of life
0
5
10
15
20
65
70
75
80
85
90
Age (years)
Mild disability + moderate–severe disability (women)
65
70
75
80
85
90
Age (years)