Inequalities in InHALE Healthy Active Life Expectancy

Introduction to longitudinal health expectancies

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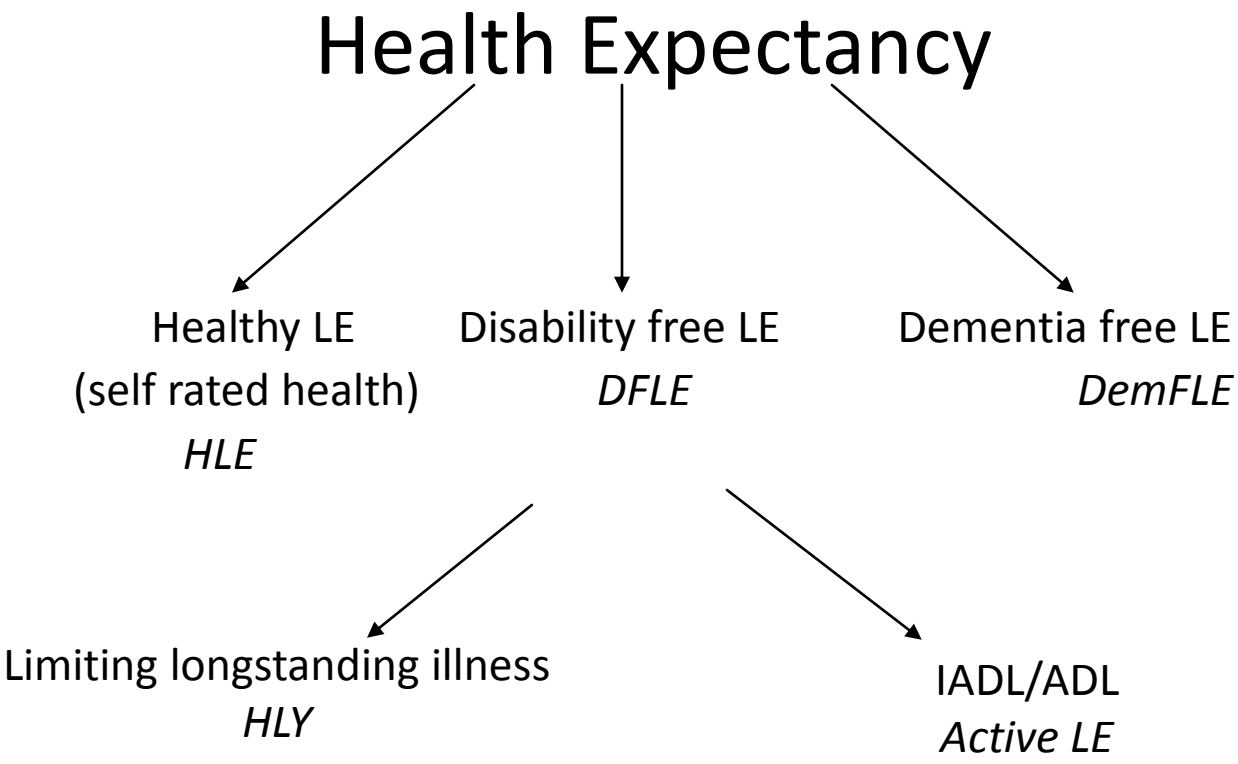
Health expectancy v life expectancy

Health expectancy (HE)

- is a more useful population health indicator than life expectancy (LE) as our populations continue to age
- gives a measure of quality of remaining life
- NOT more important than LE but both important since
  - **Increase in healthy years should exceed increase in life expectancy or unhealthy years will increase**
- Relationship between LE and HE can determine:
  - Compression of disability – extra years free of disability
  - Expansion of disability – extra years with disability
  - Dynamic Equilibrium – extra years with disability but less severe

Terminology of health expectancies



Many measures of health = many health expectancies!

Methods for HE

- The simplest method of calculating a health expectancy is Sullivan's method (Sullivan 1971) with:
  - prevalence of the health state from a cross-sectional survey
  - a standard life table for the same period
- Multi-state life tables require longitudinal data on transitions between health states and death
- See www.eurOhex.eu for more detail

Pros and cons of different methods

- Cross-sectional
  - + easiest for trends
  - - life tables not available for subgroups
- Longitudinal
  - + explicitly estimates incidence and recovery providing better future forecasts
  - - cost, attrition
- Not either/or

InHALE project will benchmark methods

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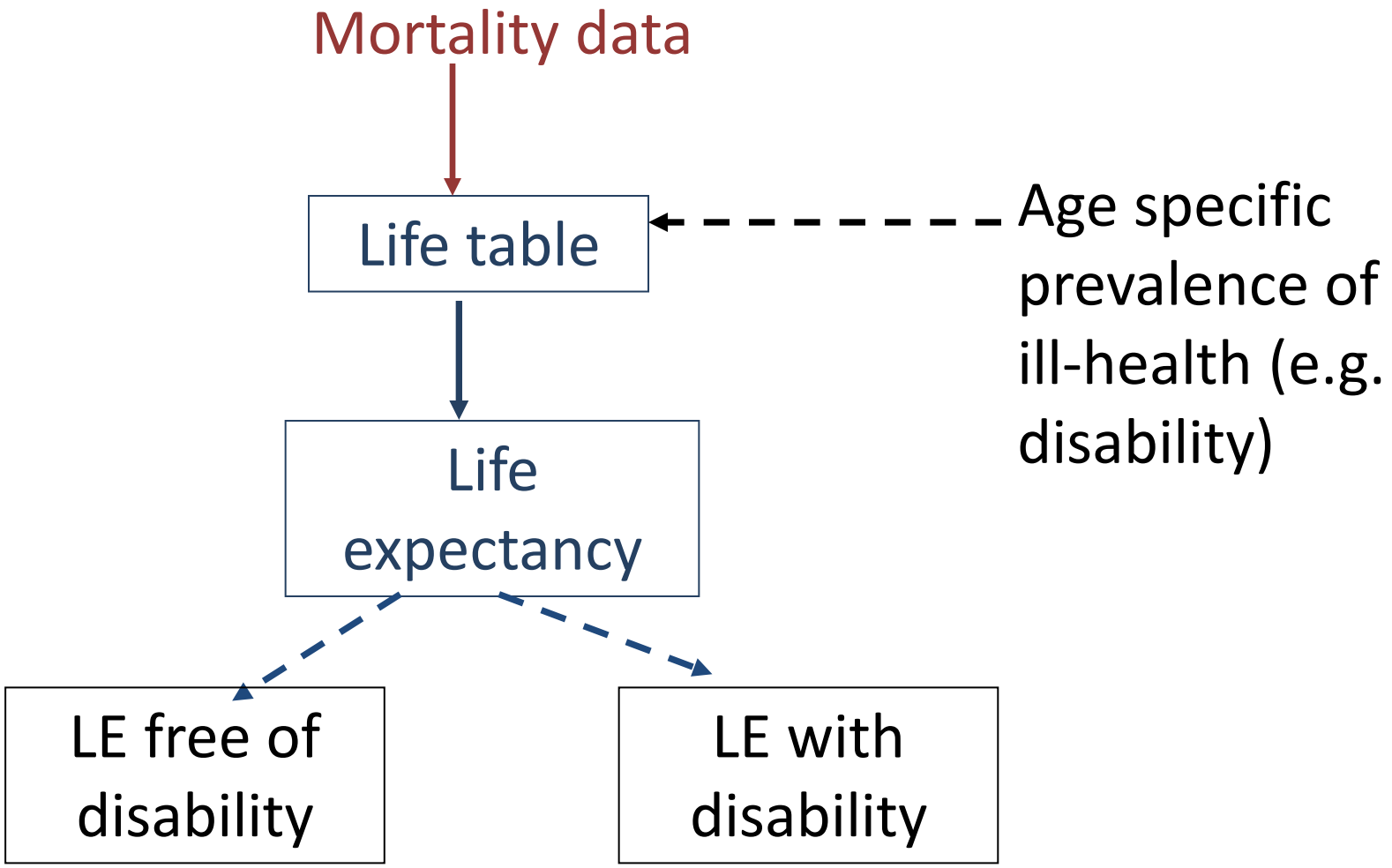
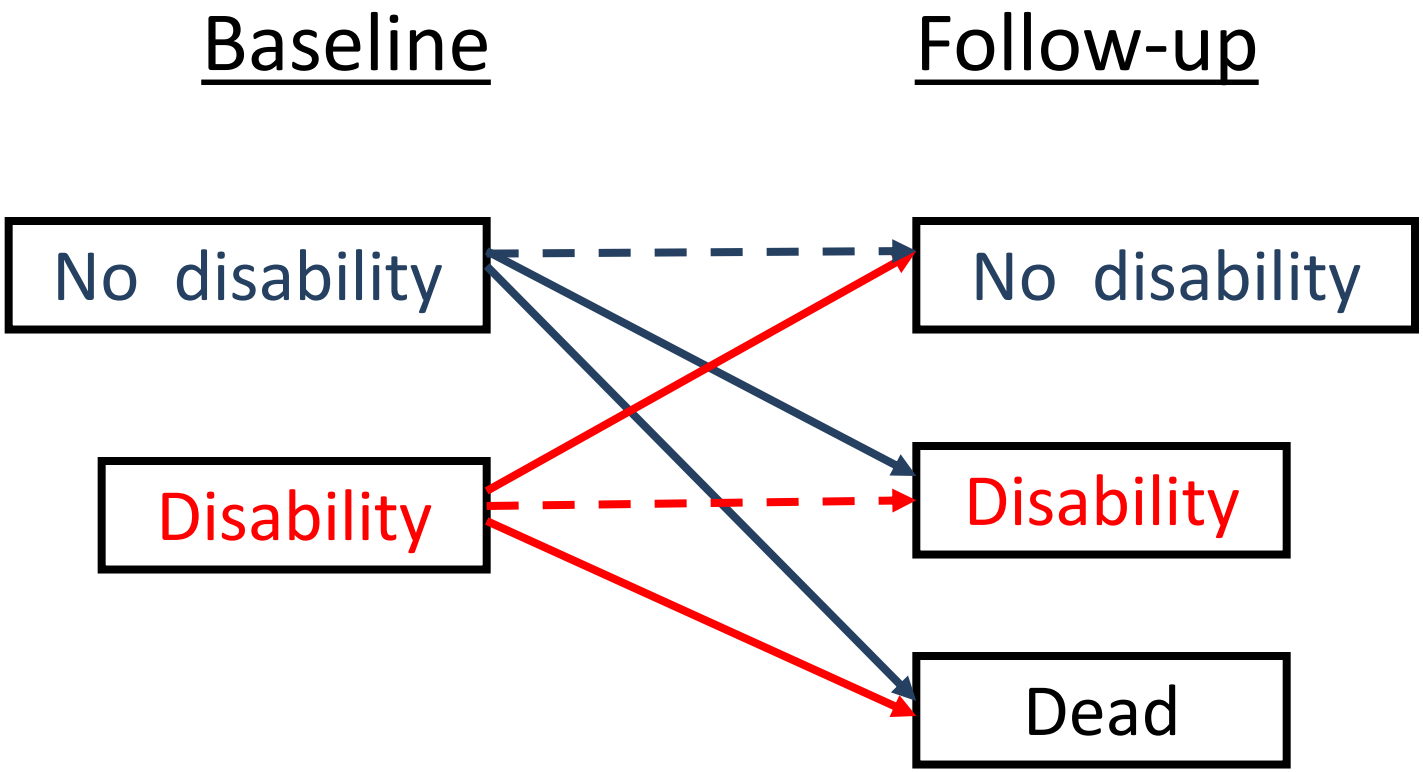
http://research.ncl.ac.uk/InHALE/index.html

HE with cross-sectional data



HE with longitudinal data



Example

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Educational differences in the dynamics of disability incidence, recovery and mortality: Findings from the MRC Cognitive Function and Ageing Study (MRC CFAS)

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Background This study aims to establish the extent of educational differences in the disability transitions of incidence, recovery and mortality in people aged 65 years and over, whether these can be explained by differentials in disease burden and their relative contribution to educational differences in prevalence and disability-free life expectancy (DFLE).

Methods A stratified random sample of 13004 participants in five areas in England and Wales were interviewed in 1991–94 and followed up at 2, 6 (one centre only) and 10 years. Two levels of disability were analysed: mobility difficulty and activities of daily living (ADL) disability. We fitted logistic regression models to model educational differences in disability prevalence, incidence, recovery and mortality transitions. DFLE was calculated to assess the combined effect of the dynamic transitions.

Results Those with ≤9 years education had higher ADL and mobility disability prevalence and higher incidence and lower recovery of mobility disability. Differences in disability incidence remained after adjustment for comorbidity. Women with the lowest education had shorter life expectancies (1.7 years less at the age of 65 years) than the most educated and had even shorter DFLE (1.9 years free of ADL disability and 2.8 years free of mobility difficulty at the age of 65 years).

Conclusions Differentials in education continue to contribute to prevalence of disability at ages beyond 65 years in both men and women and independently of diseases. These appear to be driven predominantly by differentials in disability incidence that also compound to produce greater differentials in DFLE between education groups than in total years lived.

Keywords MRC CFAS, socioeconomic factors, disability, old age, self-report, activities of daily living

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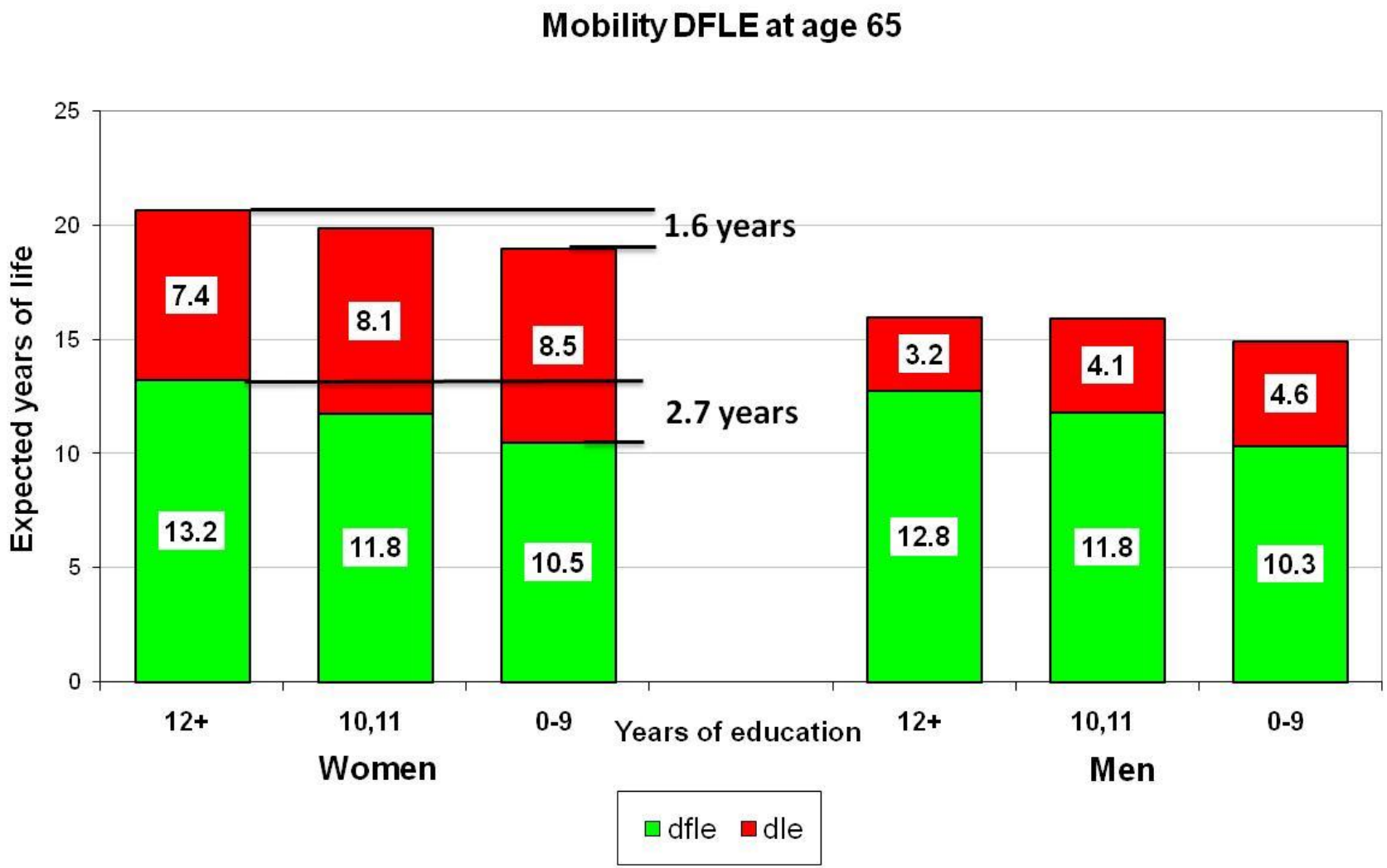
Introduction

The nature of the links between less privileged socio-economic status and health have been extensively studied in middle aged populations, but rather less so in older people, especially in the UK. For mortality, strong links have been demonstrated between socio-economic status and overall survival in older people.[1] Higher prevalence rates of disability (having difficulty undertaking everyday activities) have also been linked to

MRC CFAS

- Five centres
- stratified random sample aged 65+
- includes those in institutions
- 13004 interviewed at baseline in 1991
- 2, 6 (Cambridge only) and 10 year follow-ups
- death information from ONS

Social inequalities at age 65



Disability is dynamic

Incidence

Recovery

EDUCATION

EDUCATION

Death

Longitudinal study

- Simplest form is to take a baseline cohort who are then followed up over time
- Might refresh cohort by bringing in new entrants at youngest ages
- Usually aim for equal intervals between data collection (waves) however optimal interval is balance between:
  - too close = too expensive
  - too far = lose new events through death or loss to follow-up
- Problems:
  - Tracing individuals over time
  - Attrition
  - Non-response at wave (dealt with through weighting though not if different mechanisms across different waves) or item non-response (dealt with through imputation) – messy!

What does this mean for HE?

- Based on incidence measures therefore representing current health conditions
- Allows movement in two directions, both into and out of non-absorbing health states
- Directly measures health changes
- Allows death rates to differ by health status
- Use of incidence and recovery rates results in a life table indicating healthy life if a population experiences current incidence, recovery and mortality rates throughout its lifespan

Implications

The longitudinal study designs have implications for the methods we might use to calculate transition rates because of :

- Irregularity of intervals between waves
- Missing values of health states
- Other covariate information
- Entry into cohort at later date

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