

Social differences in the burden of long-standing illness in Denmark

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Purpose

To quantify the health impact of diseases with high prevalence or mortality, and to evaluate social differences of the burden of long-standing illness

Selected diseases of high prevalence or mortality

Disease group	ICD-10 code ^{a)}
Neoplasms	C00 – D48 ^{b)}
Breast cancer	C50
Endocrine, nutritional and metabolic diseases	E00 – E90
Diabetes melitus	E10 – E14
Mental and behavioural disorders	F00 – F99
Diseases of the nervous system	G00 – G99
Diseases of the circulatory system	I00 – I99
Ischaemic heart diseases	I20 – I25
Cerebrovascular diseases	I60 – I69
Chronic obstructive lung disease	J40 – J44
Diseases of the musculoskeletal system and connective tissue	M00 – M99

^{a)} International Classification of Diseases, tenth revision

^{b)} Mortality data included only deaths with ICD codes C00 – D09

Data

Mortality, register linkage (Statistics Denmark)

Sex- and age-specific numbers of persons at risk and the numbers of deaths from selected causes during the period 1995-1999 for each of three educational groups

Long-standing illness, the Danish Health Interview Survey 2000 (National Institute of Public Health)

Sex-, age- and educational level-specific prevalence of long-standing, limiting illness

Educational level

Information about schooling, vocational training and further education

Register information (Statistics Denmark)

Questions in the health interview survey (National Institute of Public Health)

Danish adaptation of UNESCO's International Standard Classification of Education grouped into three levels:

- Low
- Medium
- High

Long-standing illness

Interview question:

“Do you suffer from any long-standing illness, long-standing after-effect of injury, any disability, or other long-standing condition?”

If “yes” questions were asked to clarify:

- the nature of the disease(s) (up to four diseases)

- whether the disease implied restrictions to daily life or at work

Methods

Construction of life tables

by sex and educational level

Disease elimination

- Construction of cause-deleted life tables
- Elimination of specific diseases from prevalence of long-standing, limiting illness

Health expectancy, Sullivan's method

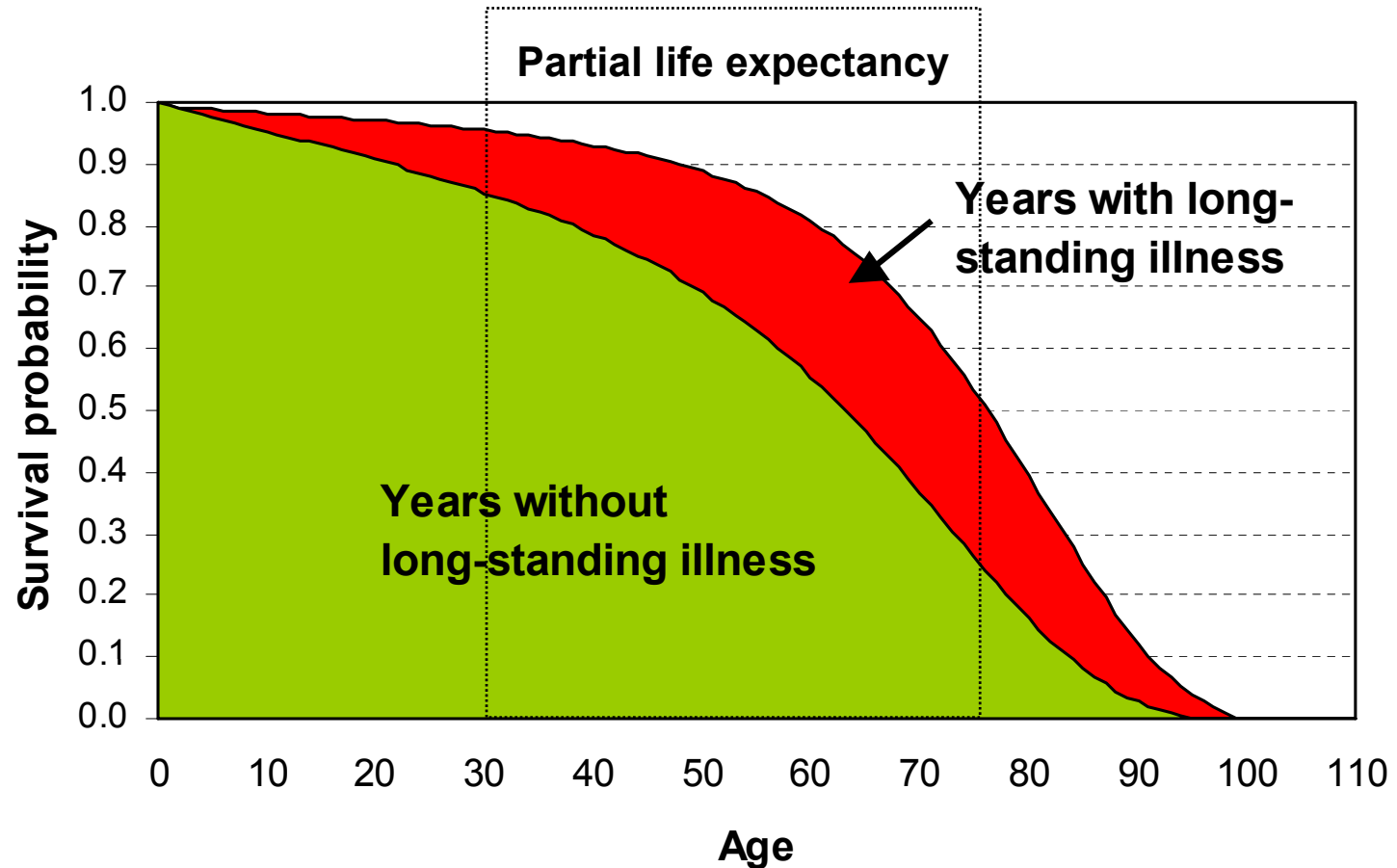
Expected lifetime with and without long-standing, limiting illness

- Observed
- Hypothetical after disease elimination

**Expected lifetime with and
without long-standing,
limiting illness**

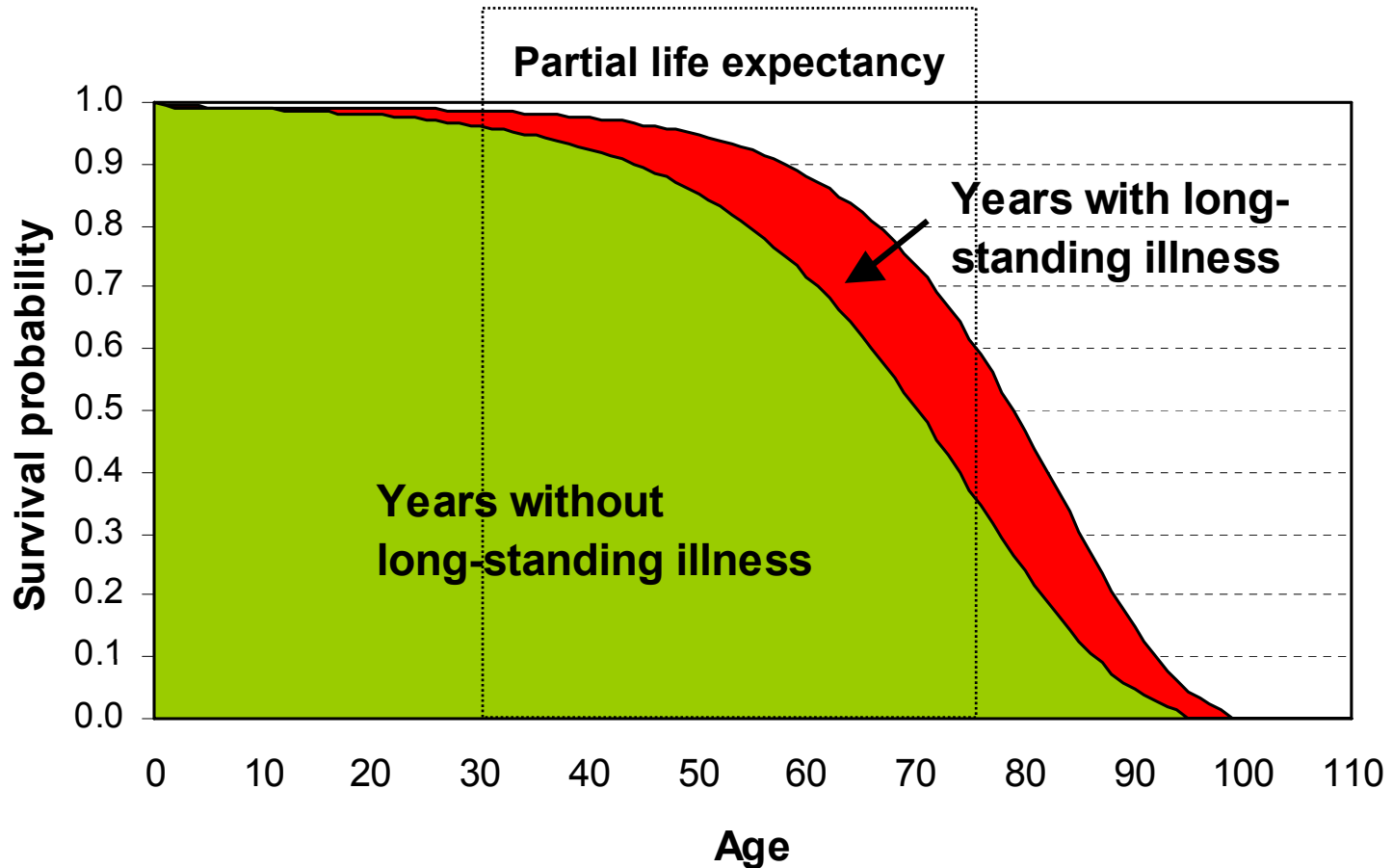
Life expectancy and expected lifetime with and without long-standing, limiting illness

before elimination of a specific disease



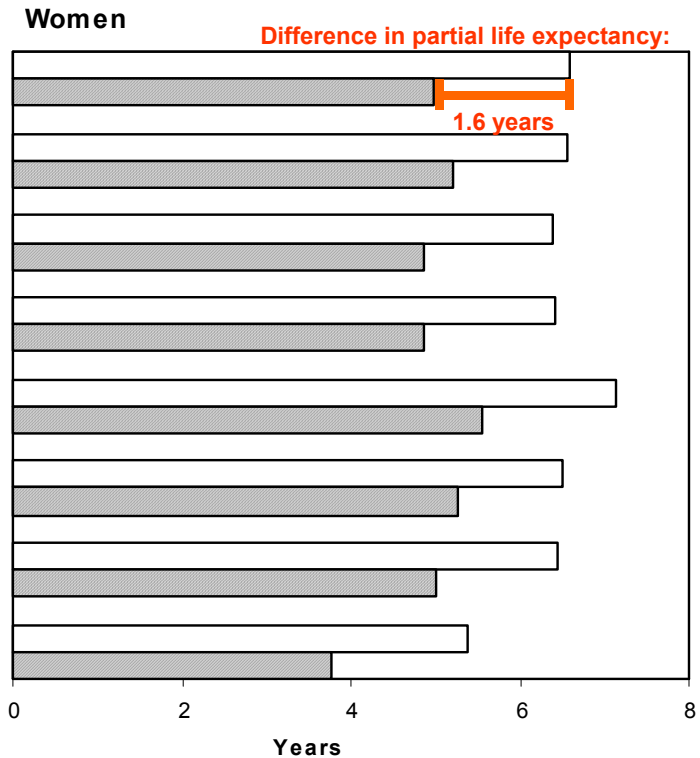
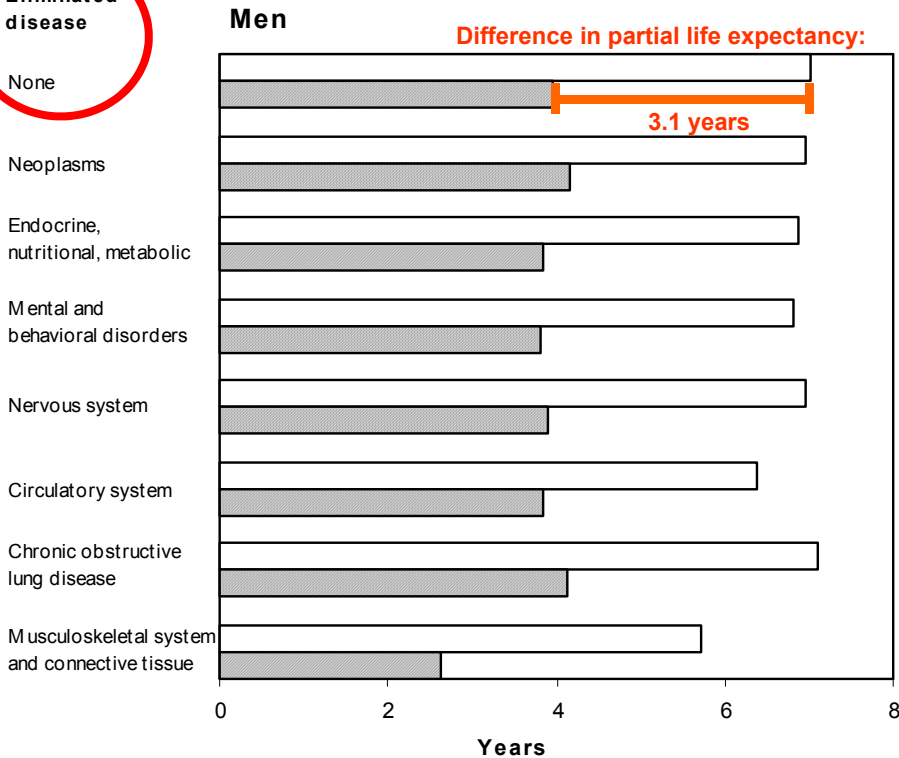
Life expectancy and expected lifetime with and without long-standing, limiting illness

after elimination of a specific disease



Difference in expected lifetime (between age 30 and 75) with and without long-standing, limiting illness between people with high and low educational level

Eliminated disease



More years without long-standing, limiting illness among people with high educational level compared to people with low educational level



More years with long-standing, limiting illness among people with low educational level compared to people with high educational level



Gain in partial life expectancy and changes in expected lifetime with and without long-standing, limiting illness due to elimination of **cancer at age 30**

Eliminated disease: Neoplasms

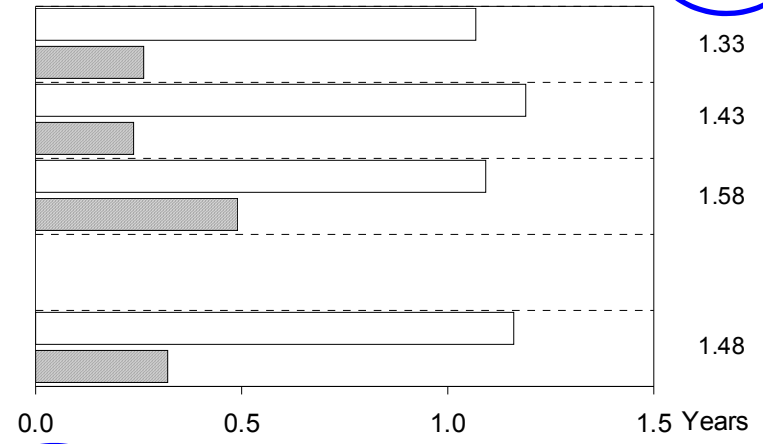
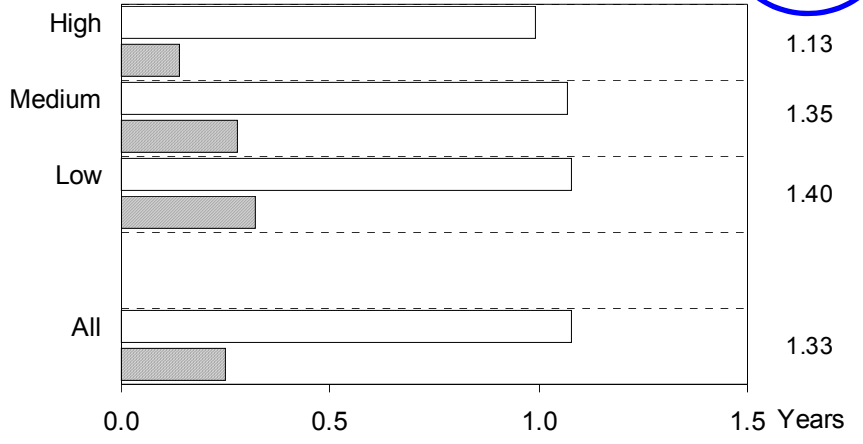
Educational level

Men

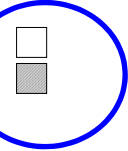
Women

Gain in life expectancy at age 30

Gain in life expectancy at age 30



Added lifetime without long-standing illness
 Added lifetime with long-standing illness



More years with long-standing illness

Gain in partial life expectancy and changes in expected lifetime with and without long-standing, limiting illness due to elimination of **diseases of the circulatory system at age 30**

Eliminated disease: Diseases of the circulatory system

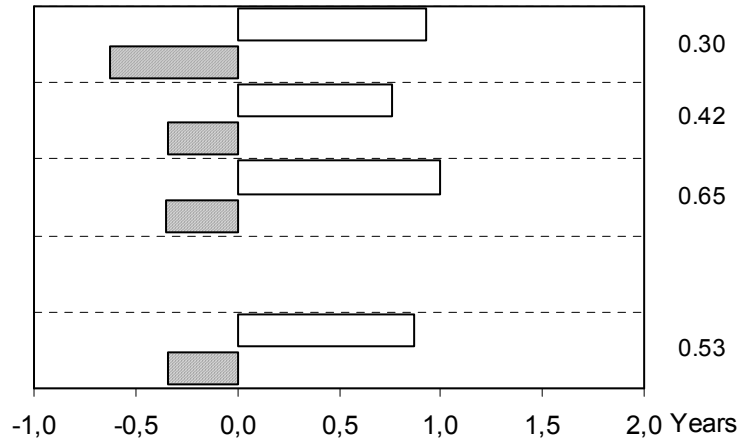
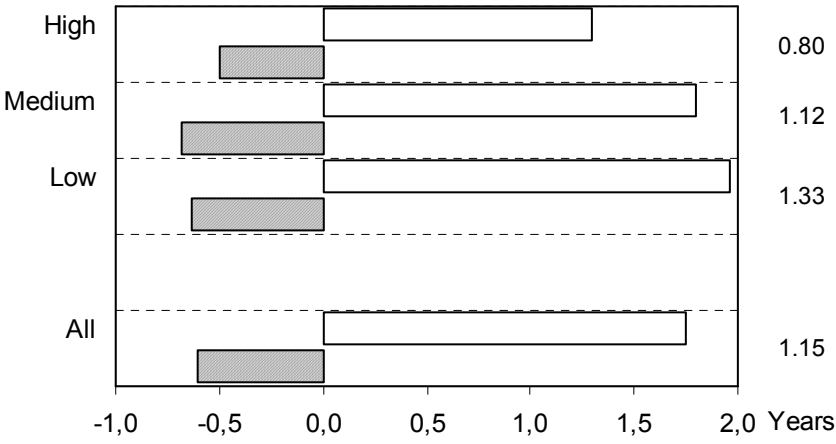
Educational level

Men

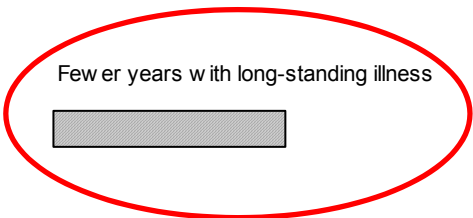
Gain in life expectancy at age 30

Women

Gain in life expectancy at age 30



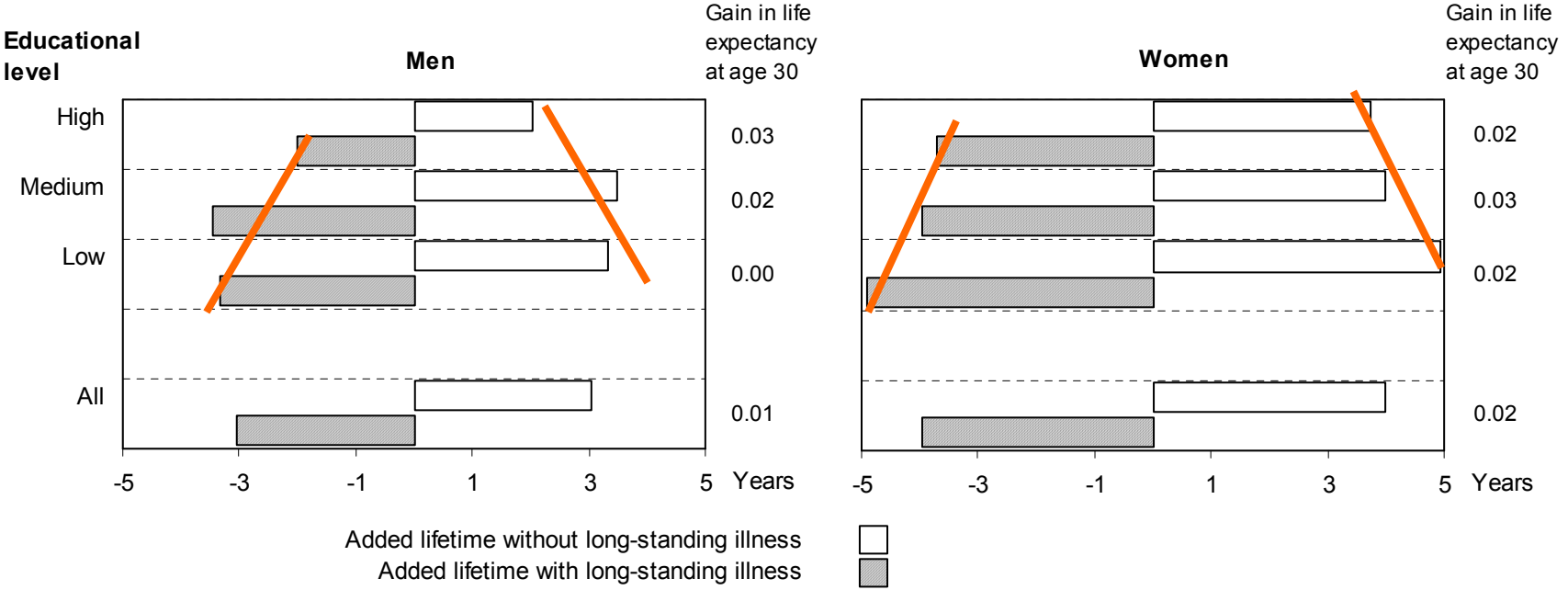
Added lifetime without long-standing illness
 Added lifetime with long-standing illness



Gain in partial life expectancy and changes in expected lifetime with and without long-standing, limiting illness due to elimination of **diseases of the musculoskeletal system at age 30**

social gradient

Eliminated disease: Diseases of the musculoskeletal system



Gain in partial life expectancy and changes in expected lifetime with and without long-standing, limiting illness due to elimination of **mental and behavioural disorders at age 30**

social gradient

Eliminated disease: Mental and behavioural disorders

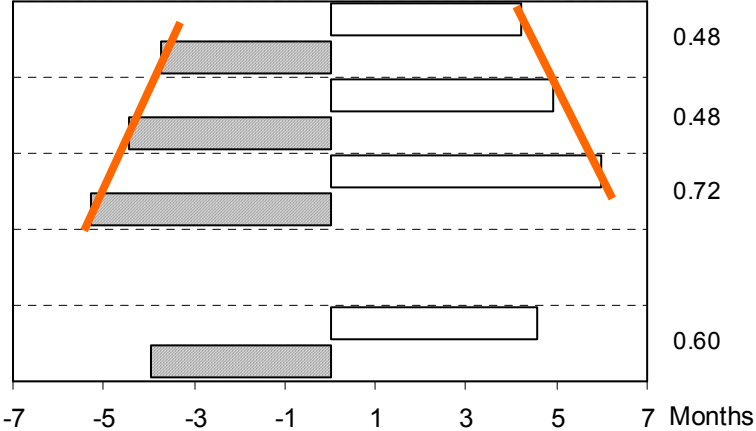
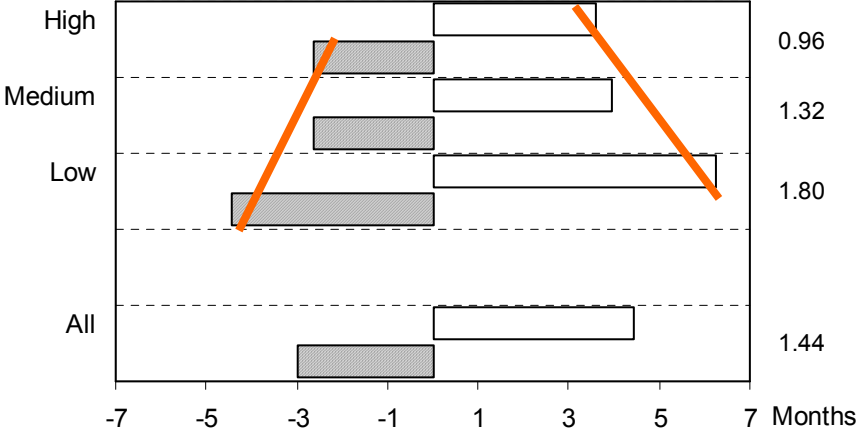
Educational level

Men

Gain in life expectancy at age 30

Women

Gain in life expectancy at age 30



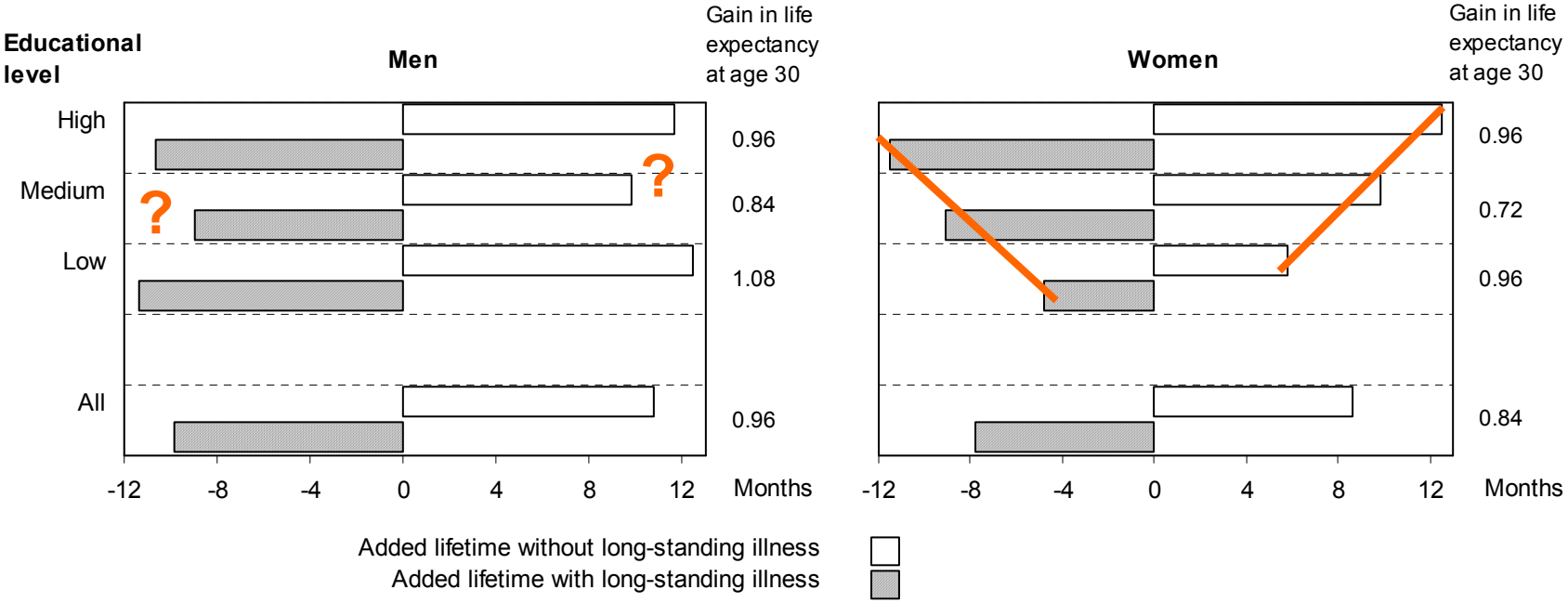
Added lifetime without long-standing illness
 Added lifetime with long-standing illness



Gain in partial life expectancy and changes in expected lifetime with and without long-standing, limiting illness due to elimination of **diseases of the nervous system at age 30**

social gradient – opposite direction!

Eliminated disease: Diseases of the nervous system



Conclusions

- Persons with a low educational level were more likely to have long-standing, limiting illness than those with a high educational level.
- The gain in partial life expectancy to be expected by eliminating certain diseases decreased with educational level.
- The gain in partial life expectancy that could be expected to derive from elimination of cancer decreases with educational level, but also added lifetime with long-standing illness decreases with educational level. A similar phenomenon was seen for cardiovascular diseases: if they were eliminated, women with a low educational level would gain lifetime years, but the reduction in lifetime with long-standing illness would be greatest for women with a high educational level.
- We found a social gradient in the burden of all major diseases with low fatality, except for diseases of the nervous system for women.