

## HEALTH EXPECTANCY IN DENMARK

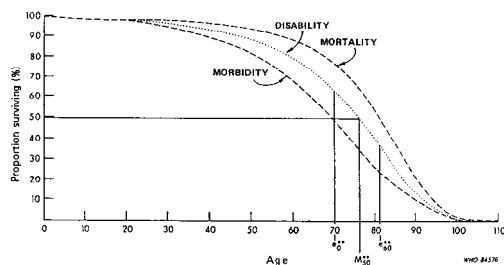
### What is health expectancy?

Health expectancies were first developed to address whether or not longer life is being accompanied by an increase in the time lived in good health (the **compression of morbidity** scenario) or in bad health (**expansion of morbidity**). So health expectancies divide life expectancy into life spent in different states of health, from say good to bad health. In this way they add a dimension of quality to the quantity of life lived.

### How is the effect of longer life measured?

The general model of health transitions (WHO, 1984) shows the differences between life spent in different states: total survival, disability-free survival and survival without chronic disease. This leads naturally to life expectancy (the area under the 'mortality' curve), disability-free life expectancy (the area under the 'disability' curve) and life expectancy without chronic disease (the area under the 'morbidity' curve).

**The general model of health transition (WHO, 1984): observed mortality and hypothetical morbidity and disability survival curves for females, USA, 1980.**



$e_0^{**}$  and  $e_{60}^{**}$  are the number of years of autonomous life expected at birth and at age 60, respectively.  
 $M_{50}^{**}$  is the age to which 50% of females could expect to survive without loss of autonomy.

There are in fact as many health expectancies as concepts of health. The commonest health expectancies are those based on self-perceived health, activities of daily living and on chronic morbidity.

### How do we compare health expectancies?

Health expectancies are independent of the size of populations and of their age structure and so they allow direct comparison of different population sub-groups: e.g. sexes, socio-professional categories, as well as countries within Europe (Robine et al., 2003).

Health expectancies are most often calculated by the Sullivan method (Sullivan, 1971). However to make valid comparisons, the underlying health measure should be truly comparable.

To address this, the European Union has decided to include a small set of health expectancies among its European Community Health Indicators (ECHI) to provide synthetic measures of disability, chronic morbidity and perceived health. Therefore the Minimum European Health Module (MEHM), composed of 3 general questions covering these dimensions, has been introduced into the Statistics on Income and Living Conditions (SILC) to improve the comparability of health expectancies between countries.\* In addition life expectancy without long term activity limitation, based on the disability question, was selected in 2004 to be one of the structural indicators for assessing the EU strategic goals (Lisbon strategy) under the name of "Healthy Life Years" (HLY).

Further details on the MEHM, the European surveys and health expectancy calculation and interpretation can be found on [www.ehemu.eu](http://www.ehemu.eu).

### What is in this report?

This report is produced by the European Health Expectancy Monitoring Unit (EHEMU) as part of a country series. In each report we present:

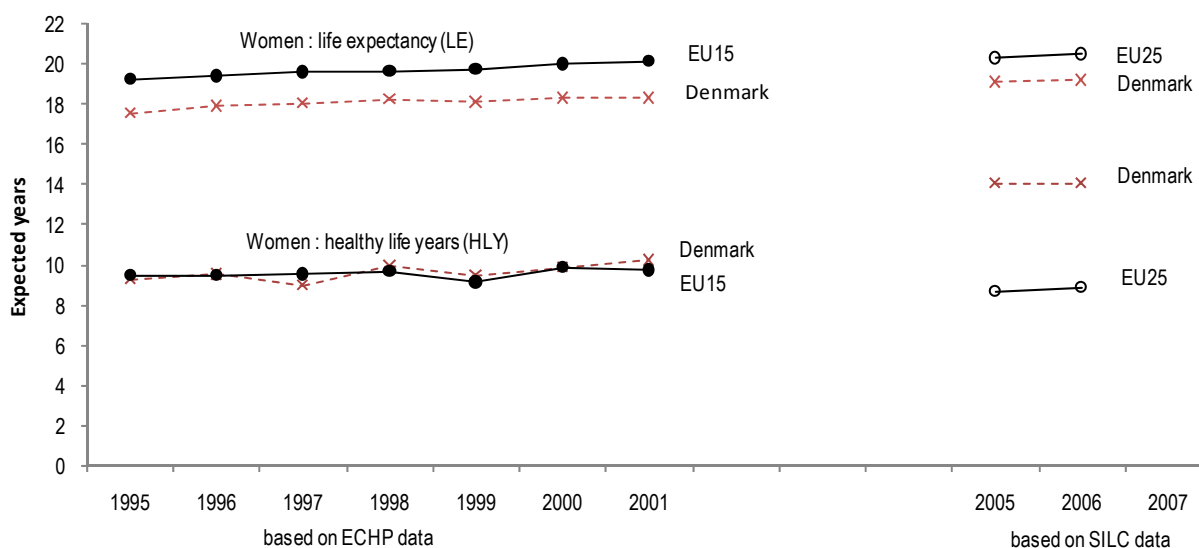
- Life expectancies\*\* and health expectancies based on activity limitation (HLY) for the country of interest and for the overall 25 European Union member states (EU25), using the SILC question on long term activity limitation for 2005 and 2006. As the SILC has been only recently initiated, to document trends we provide previous HLY series based on the disability question of the 1995-2001 European Community Household Panel (ECHP)
- health expectancies based on the two additional dimensions of health (chronic morbidity and self-perceived health) for the country of interest, based on SILC 2006
- a global analysis of health expectancies of European countries, based on the SILC 2006

### References

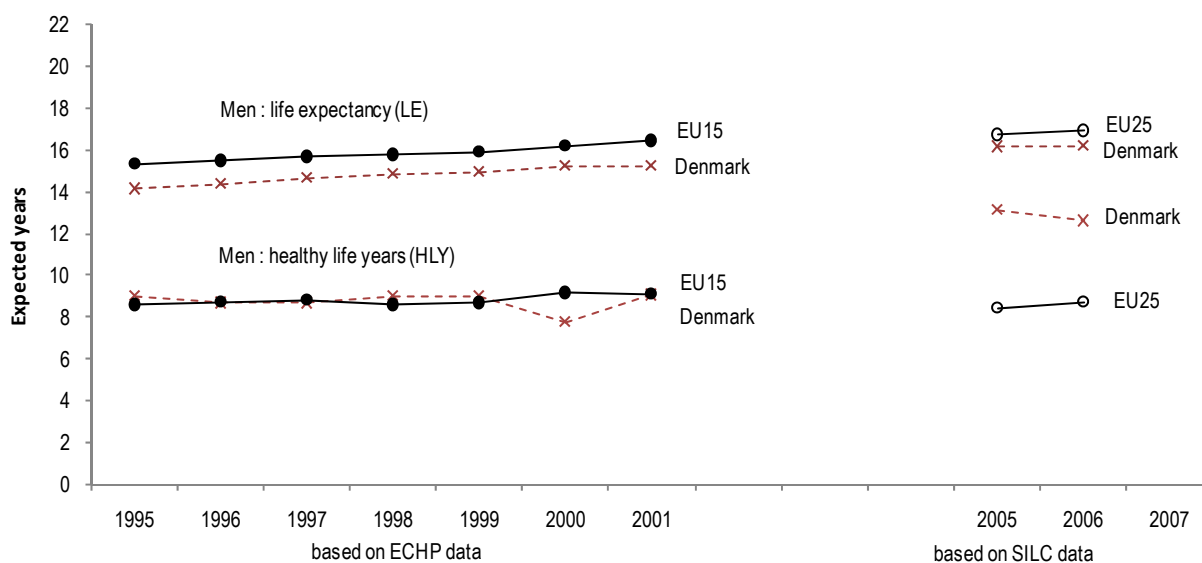
- Jagger C, Gillies C, Moscone F, Cambois E, Van Oyen H, Nusselder W, Robine J-M, EHLEIS Team. *Inequalities in healthy life years in the 25 countries of the European Union in 2005: a cross-national meta-regression analysis*. *The Lancet*. 2008;[372\(9656\)](https://doi.org/10.1016/S0140-6736(08)61594-9) 2124-2131 (doi:10.1016/S0140-6736(08)61594-9)
- Robine JM, Jagger C, Mathers CD, Crimmins EM, Suzman RM, Eds. *Determining health expectancies*. Chichester UK: Wiley, 2003.
- Sullivan DF (1971) A single index of mortality and morbidity. *HSMHA Health Reports* **86**:347-354.
- World Health Organization. *The uses of epidemiology in the study of the elderly: Report of a WHO Scientific Group on the Epidemiology of Aging*. Geneva: WHO, 1984 (Technical Report Series 706).

\* Nevertheless, before 2008, the translations of the module used in some countries were not optimum (See Eurostat-EU Task Force on Health Expectancies common statement about the SILC data quality); \*\* Computed with the Eurostat method.

## Life expectancy (LE) and Healthy Life Years (HLY) at age 65 for Denmark and the European Union (EU15 and EU25) based on ECHP (1995-2001) and SILC (2005-2006)



Denmark	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Women : LE	17.6	17.9	18.0	18.3	18.1	18.3	18.3				19.1	19.2	
Women : HLY	9.3	9.5	9.0	9.9	9.5	9.9	10.3				14.1	14.1	
% HLY/LE	53%	53%	50%	54%	52%	54%	56%				74%	73%	

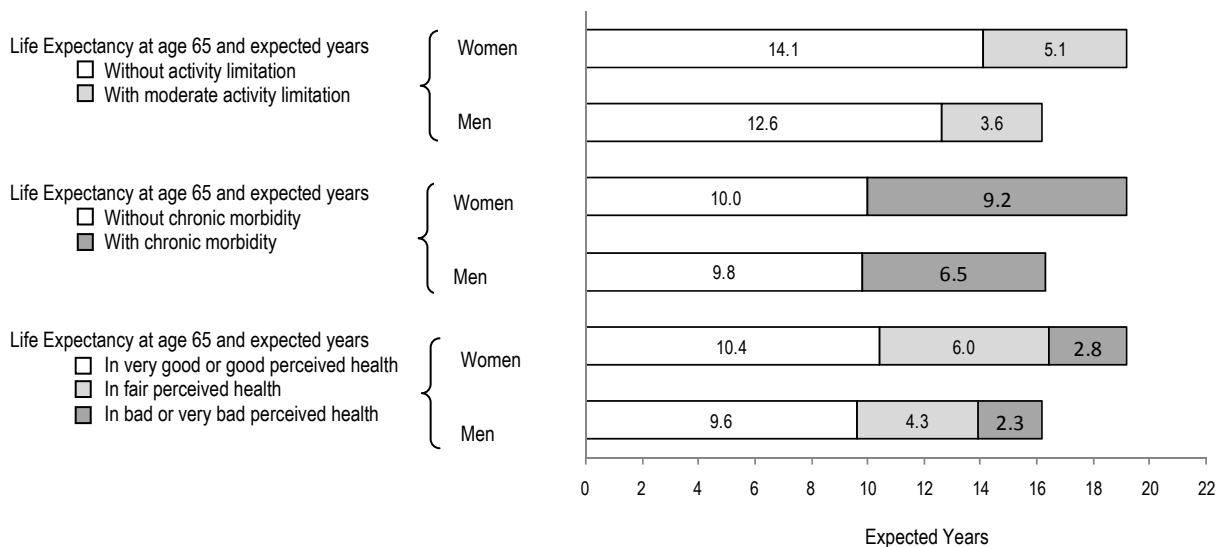


Denmark	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Men : LE	14.1	14.4	14.6	14.9	15.0	15.2	15.2				16.1	16.2	
Men : HLY	9.0	8.6	8.6	9.0	9.0	7.7	9.0				13.1	12.6	
% HLY/LE	64%	60%	59%	61%	60%	51%	59%				81%	78%	

### Key points:

- Danish life expectancy (LE) at age 65 has increased by 1.3 years for women and 1.8 years for men over the 1996-2006 period: LE for both sexes between 1995-2001 was below the EU15 average. In 2006 LE for both sexes was below the EU25.
- Over the 1995-2001 period, health expectancy based on activity limitation (HLY) at age 65 from the ECHP data increased for women and was relatively stable for men. The proportion of HLY (or years without *self-reported limitations due to health condition or disability*), within the total expected years, slightly increased for women and decreased for men, being 56% and 59% respectively in 2001. Between 1995 and 2001, HLY in Denmark was close to the EU15 average.
- The new HLY series, initiated in 2005 with the SILC data, shows values for Denmark in 2006 of 5.2 and 3.9 years above the EU25 average for women and men respectively. In 2006 women and men at age 65 could expect to spend 73% and 78% of their life without *self-reported long-term activity limitations* respectively. Between 2005 and 2006 HLY did not change for women and decreased for men.
- Results for Denmark should be interpreted cautiously given the difference in response categories for activity limitation compared to other EU countries.

## Life and health expectancies at age 65 based on activity limitation (Healthy Life Years), chronic morbidity and perceived health for Denmark (Health data from SILC 2006)



### Key points:

- In 2006, LE at age 65 in Denmark was 19.2 years for women and 16.2 years for men.
- Based on the SILC 2006, at age 65, women spent 14.1 years (73% of their remaining life) without activity limitation (corresponding to Healthy Life Years (HLY)) and 5.1 years (27%) with activity limitation.\*
- Men of the same age spent 12.6 years (78% of remaining life) without activity limitation compared to 3.6 years (22%) with activity limitation.\*
- Although for all the health expectancies the years of life spent in positive health were greater for women than men, women spent a larger proportion of their life in ill health.

These results should be interpreted cautiously given the lack of the institutional population and the difference in response categories for activity limitation. The sample size for Denmark comprised 540 women and 460 men aged 65+ years.

\* These may not sum to Life Expectancy due to rounding.

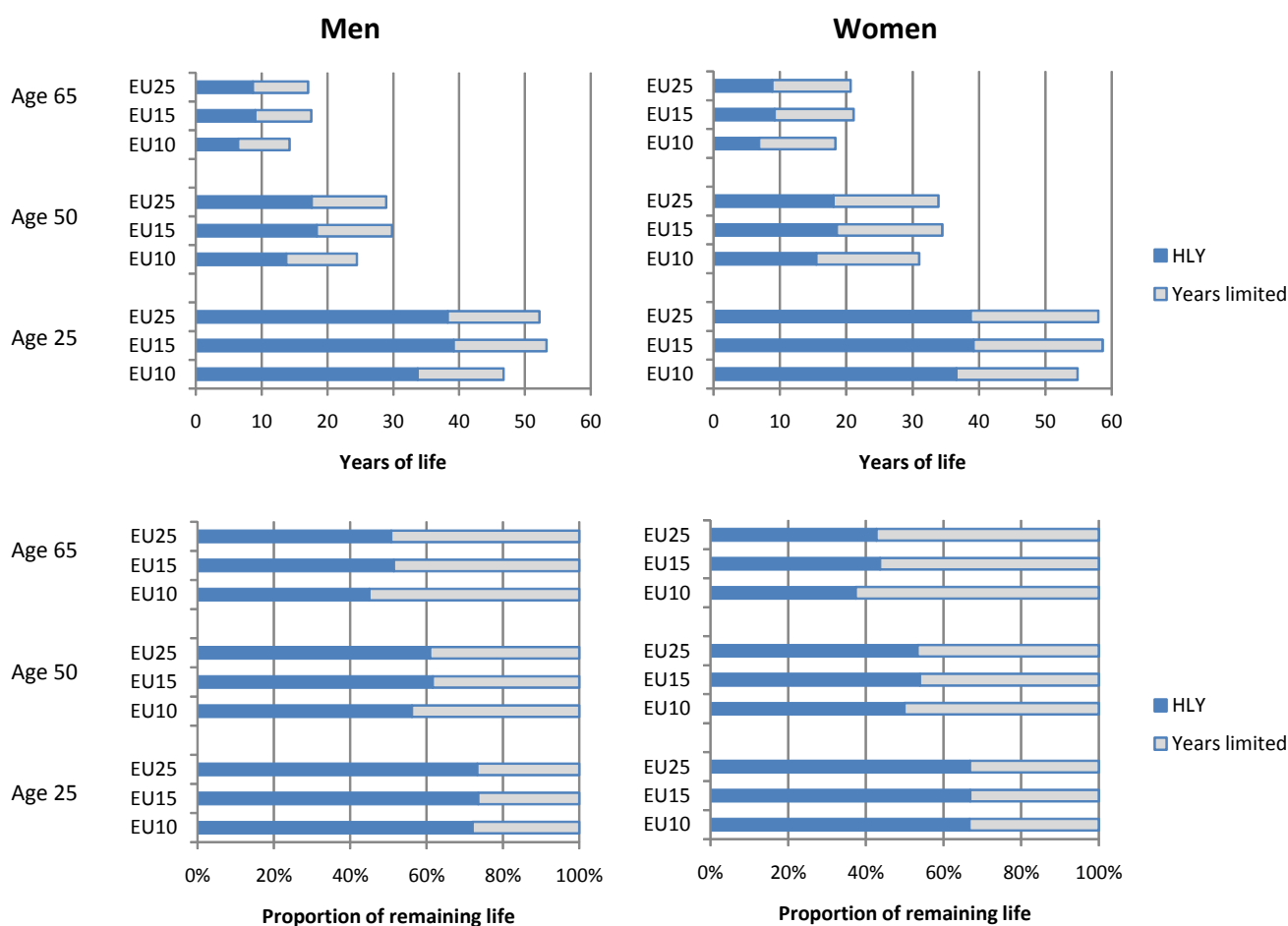
## Published results and other reports of health expectancies for Denmark

- C. Jagger, C. Gillies, F. Moscone, E. Cambois, H. Van Oyen, W. Nusselder, J.-M. Robine, EHLEIS Team. Inequalities in healthy life years in the 25 countries of the European Union in 2005: a cross-national meta-regression analysis. *The Lancet* 2008;[372\(9656\)](https://doi.org/10.1016/S0140-6736(08)61594-9) 2124-2131 (doi:10.1016/S0140-6736(08)61594-9)
- B. Jeune, H. Bronnum-Hansen. Trends in health expectancy at age 65 for various health indicators, 1987-2005, Denmark. *Eur J Ageing*. 2008;5(4): 279-285.
- H. Brønnum-Hansen, I. Petersen, B. Jeune, K. Christensen. Lifetime according to health status among the oldest olds in Denmark. *Age Ageing*. 2008 Advance Access published on November 18, 2008; doi:10.1093.
- H. Bronnum-Hansen, M. Baadsgaard. Increase in social inequality in health expectancy in Denmark. *Scand J Public Health*. 2008;36:44-51.
- A. Lievre, F. Jusot, T. Barnay, C. Sermet, N. Brouard, J.-M. Robine, A.-M. Brieu, F. Forette. Healthy working life expectancies at age 50 in Europe: a new indicator. *J Nutr Health Aging*. 2007;11(6):508-514.
- H. Bronnum-Hansen, K. Juel, M. Davidsen, J. Sorensen. Impact of selected risk factors on expected lifetime without long-standing, limiting illness in Denmark. *Preventive Medicine*. 2007 Mar 31;45(1):49-53.
- H. Bronnum-Hansen, K. Juel, M. Davidsen. The burden of selected diseases among older people in Denmark. *J Aging Health*. 2006;18(4):491.
- H. Bronnum-Hansen. Health expectancy in Denmark, 1987-2000. *Eur J Public Health*. 2005;15(1):20-25.

## Healthy Life Years in Europe at ages 25, 50 and 65 in 2006

The top two graphs in the figure below show for men and women separately Healthy Life Years (HLY) and life expectancy at different ages for the newly joined EU10 countries, the established EU15 countries and the EU25 as a whole. The two lower graphs show HLY as a proportion of life expectancy for each of the ages and country groupings. The key points are:

- LE at age 25 is less in the EU10 countries than the EU15, by 6.5 years in men and 3.8 years in women. Differences between the EU10 and EU15 in LE reduce with age and by age 65 are 3.3 years for men and 2.7 for women.
- Differences in HLY between the EU10 and EU15 are smaller than differences in LE at all ages; at age 25 men in the EU10 have 5.5 years fewer free of activity limitation than men in the EU15 and women have 2.6 years fewer. Differences reduce with age for men but are relatively static for women; by age 65 differences are 2.6 years for men and 2.3 years for women.
- The proportion of remaining life spent free of activity limitation reduces with age but values are very similar in the EU10 and EU15.



## About EHEMU

The European Health Expectancy Monitoring Unit (EHEMU) and its current project European Health and Life Expectancy Information System (EHLEIS) are funded by the European Public Health Programme (2004-2008) and is a collaboration between: the French national institute on health and medical research (INSERM) and CRLC (Montpellier, France), the University of Leicester (UK), the Scientific Institute of Public Health (ISP Belgium), the French National Institute of Demography (INED), University Charles (Czech Republic), Erasmus University Medical centre (The Netherlands) and University of Rostock (Germany). EHEMU aims to provide a central facility for the co-ordinated analysis, interpretation and dissemination of life and health expectancies to add the quality dimension to the quantity of life lived by the European populations. Further details about EHEMU can be found on the websites: [www.ehemu.eu](http://www.ehemu.eu) and [www.healthy-life-years.eu](http://www.healthy-life-years.eu)