



List of references on health expectancy

Update n°11

March 2009

New references with keywords and abstracts

2009

Bruggink, J.-W., Lodder, B. J. H., Kardal, M. **Healthy life expectancy higher / Gezonde levensverwachting neemt toe.** 2009. Accessed 23 March 2009. Available from:

<http://www.cbs.nl/en-GB/menu/themas/gezondheid-welzijn/publicaties/artikelen/archief/2009/2009-2679-wm.htm?Languageswitch=on>

and

<http://www.cbs.nl/nl-NL/menu/themas/gezondheid-welzijn/publicaties/artikelen/archief/2009/2009-2679-wm.htm>)

CB19/10

HEALTH EXPECTANCY / DISABILITY-FREE LIFE EXPECTANCY / DISEASE-FREE LIFE EXPECTANCY / HEALTHY LIFE EXPECTANCY / THE NETHERLANDS / TRENDS / 1981-2007 :

This webpage provides graphs showing the trends in life expectancy without physical limitations, without chronic diseases and in good perceived health in the Netherlands from 1981 to 2007 for men and women.

Figures are available through a link to CBS StatLine.

Cox, B., van Oyen, H., Cambois, E., Jagger, C., Le Roy, S., Robine, J.-M., Romieu, I. **The reliability of the Minimum European Health Module.** *International Journal of Public Health* 2009;54(2):55-60. CB19/19

<http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&listuids=19183846>

/ HEALTH SURVEYS /

Objectives: The Minimum European Health Module (MEHM) consists of 3 global questions concerning 3 health domains: self-perceived health, chronic conditions and long-term activity limitation. The objective of this paper is to evaluate the reliability of the MEHM.

Methods: Participants of the Belgian Food Consumption Survey were interviewed twice: 170 individuals were selected for the MEHM reliability evaluation. For each of the 3 questions Pearson and Kappa coefficients were estimated. Analyses were stratified by gender, age, education, language and time between the interviews.

Results: The Pearson correlations are between 0.73 and 0.81. The Kappa estimates are good or excellent: 0.74 (self-perceived health), 0.77 (chronic conditions) and 0.68 (activity limitation).

Also stratified analyses indicated in general an acceptable reliability.

Conclusion: The MEHM has an acceptable reliability.

Liu, J., Chen, G., Song, X., Chi, I., Zheng, X. **Trends in disability-free life expectancy among Chinese older adults.** *Journal of Aging and Health* 2009;21(2):266-285. CB19/14
(<http://jah.sagepub.com/cgi/content/abstract/21/2/266>)

HEALTH EXPECTANCY / DISABILITY-FREE LIFE EXPECTANCY / ORIGINAL CALCULATION / SULLIVAN METHOD / TRENDS / CHINA / 1987-2006 /

Objectives: This study evaluates trends in disability-free life expectancy (DFLE) of Chinese adults aged 60 and older.

Methods: Based on two national disability surveys in 1987 and 2006 as well as mortality data from World Population Prospects, the Sullivan method was used to calculate DFLE.

Results: DFLE increased from 13.0 to 13.9 years at age 60 and from 1.2 to 1.5 years at age 90 in 1987 and 2006, respectively. The proportion of DFLE increased after age 75. The proportion of DLEx with severe disability decreased while that of least disability increased. Onset of disability was delayed from 0.3 years to 4.7 years across disability types.

Conclusions: Trends in DFLE by age and severity of disability as well as the delayed onset of disability provide evidence for the compression of morbidity among the oldest old in China. But a similar trend was not found among the young-old.

Matthews, F. E., Jagger, C., Miller, L. L., Brayne, C. **Education differences in life expectancy with cognitive impairment.** *Journal of Gerontology: Medical Sciences* 2009;64(1):125-131.

CB19/22

(http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=19182231)

HEALTH EXPECTANCY / MENTAL HEALTH EXPECTANCY / COGNITIVE IMPAIRMENT / EDUCATION / ENGLAND / WALES /

Background: Low education has an impact on life expectancy and level of cognition, but little is known on its effect on life expectancy with cognitive impairment.

Methods: The Medical Research Council Cognitive Function and Ageing Study (MRC CFAS) collected population-based longitudinal data on people aged 65 years and older including measures of education and cognitive impairment, using the Mini-Mental State Examination (MMSE), for five geographically diverse areas around England and Wales interviewed between 1991 and 2003. Transitions between health states were calculated using Markov chain methods. Life expectancy in different states of cognitive function as measured by MMSE were further explored for different education groups. The effect of fixed and educationally based cut points for cognitive impairment are investigated.

Results: Life expectancy spent with cognitive impairment is fairly constant with increasing age at around 1.4 years in men and 2.5 years in women, though this reflects a large increase in the proportion of life spent with cognitive impairment. The differences seen between education groups for the proportion of total life with cognitive impairment (men 13% and women 22% of life lived for low education vs men 7% and women 12% in high education group) disappear when education-adjusted cut points are used (10% in men and 17% in women at age 65 for all education groups).

Conclusions: The results show that there is a substantial amount of life expectancy with cognitive impairment in both men and women. The impairment burden is just as great for those with high education as the lowest educated group.

Ngondi, J. M., Matthews, F. E., Reacher, M. H., King, J., Brayne, C., Gouda, H., Emerson, P. M. **What will happen if we do nothing to control trachoma: health expectancies for blinding trachoma in southern Sudan.** *PLoS Neglected Tropical Diseases* 2009;3(3):e396.

CB19/21

(http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=19290039)

HEALTH EXPECTANCY / DISEASE-FREE LIFE EXPECTANCY / ORIGINAL CALCULATION / SULLIVAN METHOD / SUDAN /

This study demonstrates the application of the health expectancies to estimate burden due to trachoma. It illustrates the future burden associated with doing nothing to control trachoma in Southern Sudan: a substantial proportion of remaining life expectancy spent with trichiasis and low vision or blindness for both men and women, with a disproportionate burden falling on women. The results presented are intuitively meaningful for policy makers and a non-technical audience and compare favourably with other indicators such as mortality and incidence rates or DALYs, which are not generally easily understood.

van den Hout, A., Matthews, F. E. **A piecewise-constant Markov model and the effects of study design on the estimation of life expectancies in health and ill health.** *Statistical Methods in Medical Research* 2009;18(2):145-62.

CB19/20

(http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=18445698)

HEALTH EXPECTANCY / TRANSITIONS / MATHEMATICAL MODEL /

Multi-state models are frequently applied to describe transitions over time between three states: healthy, not healthy and death. The three-state model can be used to estimate life expectancies in health and ill health. In this article, continuous-time Markov models are specified for the transitions between the three states. Transition intensities are regressed on age as a time-dependent covariate. The covariate is handled in a piecewise-constant fashion where the time interval between two consecutive observations is divided into subintervals of fixed and equal lengths. Study design choices such as sample size, length of follow-up, and time intervals between observations are investigated in a simulation study. The effects on parameter estimation are discussed as well as the effects on the estimation of life expectancies. In addition, data taken from the UK Cognitive Functioning and Ageing Study are analyzed.

Whynes, D. K. **Deprivation and self-reported health: are there 'Scottish effects' in England and Wales?** *Journal of Public Health* 2009;31(1):147-153.

CB19/18

(<http://jpubhealth.oxfordjournals.org/cgi/content/abstract/31/1/147>)

HEALTH EXPECTANCY / HEALTHY LIFE EXPECTANCY / DISEASE-FREE LIFE EXPECTANCY / PERCEIVED HEALTH / LONG-STANDING ILLNESS / ORIGINAL CALCULATION / SOCIAL INEQUALITY / INCOME / SCOTLAND / ENGLAND / WALES /

Although the association between poor health and deprivation is well-founded, a 'Scottish effect' has been observed, whereby the level of health appears even poorer than Scotland's higher level of deprivation should warrant. We consider whether 'Scottish effects' also occur within the regions of England and Wales. Using ward-level data from the national census, we regress healthy life expectancies relative to total life expectancies on Carstairs deprivation scores, households' average disposable incomes, geo-spatial characteristics and regional dummy variables. Higher incomes and lower Carstairs scores are each associated with longer proportions of lives expected to be spent in good health or without long-standing illness. Relative to the London region, the coefficients on the regional dummies are uniformly negative and mostly significant. There exist differences in relative health expectancies between the regions of England and Wales, which are not fully explained by the differences in socio-economic circumstances. Conventional deprivation measures tend to understate the poorer health performances of the more deprived regions (Wales and the north of England), and the understatement increases with deprivation. The exception to the rule is London, where health expectancies are superior to those which deprivation leads us to expect.

2008

Kroll, L. E., Lampert, T., Lange, C., Ziese, T. *Entwicklung und Einflussgrößen der gesunden Lebenserwartung / Trends and Determinants of Healthy Life Expectancy*. Veröffentlichungsreihe der Forschungsgruppe Public Health, Schwerpunkt Bildung, Arbeit und Lebenschancen. Wissenschaftszentrum Berlin für Sozialforschung (WZB) 2008 CB19/06 (http://www.wzb.eu/bal/ph/abstracts/2008/sp_i_2008-306.en.htm)

HEALTH EXPECTANCY / HEALTHY LIFE EXPECTANCY / TRENDS / HEALTH INEQUALITY / GERMANY /

Demographic ageing is a major challenge of health policy in Germany. The main question is no longer if the population of Germany is getting older, but whether gained life years will be in a healthy condition or not. This paper gives an overview on current research and evidence regarding trends and determinants of the healthy life expectancy. Recent evidence for Germany seems to suggest that the population of Germany is going to live even longer and in a better health state. These positive trends may attenuate the expected increase of health costs during the process of demographic ageing. On the other hand there is evidence that not all parts of the population benefit from rising life expectancy. There are lasting social inequalities regarding the chances of a long and healthy life.

Gezonde levensverwachting naar opleidingsniveau (healthy life expectancy by level of education), 1997/2005

In: Centraal Bureau voor de Statistiek, editor. StatLine databank. Den Haag/Heerlen: CBS; 2008. Accessed Last 15 April 2009. Available from: <http://statline.cbs.nl/StatWeb/publication/?VW=T&DM=SLNL&PA=71885ned&D1=a&D2=a&D3=a&D4=a&D5=a&HD=090112-1559&HDR=T,G3&STB=G1,G2,G4> CB19/17

HEALTH EXPECTANCY / SOCIAL INEQUALITY / EDUCATION / DATABANK / THE NETHERLANDS /

Pages of the CBS website providing values of health expectancies in the Netherlands for

1997/2005, for both sexes. The health expectancies computed are life expectancies in good perceived health, without activity restrictions, and without chronic diseases, from age 0 to age 80 according to four education levels.

Gezonde levensverwachting (healthy life expectancy). In: Centraal Bureau voor de Statistiek, editor. StatLine databank. Den Haag/Heerlen: CBS; 2008. Accessed Last 15 April 2009. Available from:
<http://statline.cbs.nl/StatWeb/publication/?VW=T&DM=SLNL&PA=71559ned&D1=a&D2=a&D3=a&D4=a&D5=a&HD=090112-1603&HDR=T,G4&STB=G1,G2,G3> CB19/16

HEALTH EXPECTANCY / HEALTHY LIFE EXPECTANCY / DISABILITY-FREE LIFE EXPECTANCY / DISEASE-FREE LIFE EXPECTANCY / ORIGINAL CALCULATION / DATABANK / THE NETHERLANDS /

Pages of the CBS website providing values of health expectancies in the Netherlands for 2001/2003 and 2004/2006, for both sexes. The health expectancies computed are life expectancies in good perceived health, without activity restrictions, and without chronic diseases, from age 0 to age 80.

Gezonde levensverwachting; regio 2001/2005 (healthy life expectancy by region). In: Centraal Bureau voor de Statistiek, editor. StatLine databank. Den Haag/Heerlen: CBS; 2008. Accessed Last 25 March 2009. Available from:
<http://statline.cbs.nl/StatWeb/publication/?VW=T&DM=SLNL&PA=71339ned&D1=a&D2=a&D3=a&D4=a&D5=a&HD=090112-1605&HDR=T,G3&STB=G1,G2,G4> CB19/15

HEALTH EXPECTANCY / HEALTHY LIFE EXPECTANCY / DISABILITY-FREE LIFE EXPECTANCY / DISEASE-FREE LIFE EXPECTANCY / ORIGINAL CALCULATION / GEOGRAPHIC COMPARISON / DATABANK / THE NETHERLANDS /

Pages of the CBS website providing values of health expectancies for four regions in the Netherlands in 2001/2005, for both sexes. The health expectancies computed are life expectancies in good perceived health, without activity restrictions, and without chronic diseases, from age 0 to age 80.

Bruggink, J.-W., Kardal, M., Lodder, B. J. H. **Well-educated women have highest life expectancy / Hoogopgeleiden leven langer en gezonder** 2008. Accessed 23 March 2009. Available from: <http://www.cbs.nl/nl-NL/menu/themas/gezondheid-welzijn/publicaties/artikelen/archief/2008/2008-2601-wm.htm> CB19/08

HEALTH EXPECTANCY / HEALTHY LIFE EXPECTANCY / DISEASE-FREE LIFE EXPECTANCY / DISABILITY-FREE LIFE EXPECTANCY / CALCULATION / SULLIVAN METHOD / EDUCATION / THE NETHERLANDS / 1997-2005 /

The authors calculate health expectancies according to 4 education levels in the Netherlands. A higher education means double profit: a longer life and more years in good health. High skilled people live 6 to 7 years longer than low-skilled people and 16 to 19 years longer in good health.

Cases, C., Jouglu, E., Danet, S. **Indicateurs synthétiques de santé. Actualité et Dossier en**

Santé Publique 2008(64):5-10.

CB19/04

(<http://www.hcsp.fr/hcspi/explore.cgi/adsp?ae=adsp&clef=104&menu=111281>)

HEALTH INDICATOR / MORTALITY / DISABILITY-FREE LIFE EXPECTANCY /
DISABILITY-ADJUSTED LIFE YEARS (DALYs) / HEALTH-ADJUSTED LIFE
EXPECTANCY (HALE) / REVIEW /

The authors review the main summary indicators of population health useful to monitor the health status of the population. They present their limits and propose the use of complementary indicators.

Juel, K., Sorensen, J., Bronnum-Hansen, H., Guest ed. **Risk factors and public health in Denmark.** *Scandinavian Journal of Public Health* 2008;36(Supplement 1). CB19/02
(http://sjp.sagepub.com/cgi/reprint/36/1_suppl/1)

HEALTH EXPECTANCY / DISEASE-FREE LIFE EXPECTANCY / LIFE EXPECTANCY
LOST / QUALITY-ADJUSTED LIFE EXPECTANCY / LONG-STANDING ILLNESS /
SMOKING / ALCOHOL / PHYSICAL ACTIVITY / OBESITY / EDUCATION / ORIGINAL
CALCULATION / SULLIVAN METHOD / DENMARK / 2000 /

This report illustrates the impact of selected risk factors on expected lifetime without longstanding illness. The risk factors include smoking, alcohol, physical inactivity, overweight, psychosocial job strain, weak social relations and education. The data used are from the 2000 Danish Health interview survey.

Kardal, M., Lodder, B. J. H. **Gezonde levensverwachting naar sociaaleconomische status (Healthy life expectancy by socioeconomic status).** Den Haag/Heerlen: Centraal Bureau voor de Statistiek; 2008. CB19/13
(<http://www.cbs.nl/NR/rdonlyres/3E9B29C7-E4DA-47F9-99DC-5FE5A44A7D36/0/13J759.pdf>)

HEALTH EXPECTANCY / HEALTHY LIFE EXPECTANCY / ORIGINAL CALCULATION /
SULLIVAN METHOD / EDUCATION / TRENDS / THE NETHERLANDS / 1997-2005 /

The authors calculate health expectancies according to 4 education levels in the Netherlands over the period 1997-2005 - See results pages 19 to 31. (In Dutch)

Moravec Berger, D., Zupanic, T., Lavtar, D. **Novi Kazalnik Zdravja: "Leta Zdravega Zivljenja" / New Indicator of Health: "Healthy life years" (HLY)** In: 18th Statistical Days: Intergenerational solidarity - challenge facing modern societies; Radenci, Slovenia Organised by Statisticni Dnevi; 2008. CB19/05
(http://www.statisticni-dnevi.si/images/stories/berger-lavtar-zupanic_referat.pdf and
<http://www.statisticni-dnevi.si/content/view/8/11/lang,en/>)

HEALTHY LIFE YEARS / ORIGINAL CALCULATION / SLOVENIA / 2005 /

The development and the meaning of the new summary health indicator named "Healthy Life Years" - HLY is presented in the paper. The proposed Slovene term is also presented. The HLY indicator is based on estimation of limitation in activities people usually do because of health

problems.

The results as regards HLY for EU member states with the stress on Slovene values are presented. Based upon data for 2005 using the statistics of Income and living conditions (SILC), which is an official source for HLY computation, Slovenia ranks with 56,3 years of healthy life years at birth under joint European average (EU25), where healthy life years at birth reached 61,1 years. Similar is in case of women, where Slovenia rank with 59,9 years of healthy life years at birth under joint European average (EU25), where healthy life years at birth reached 63,0 years.

Nepal, B., Brown, L., Ranmuthugala, G. **Years of life lived with and without dementia in Australia, 2004–2006: a population health measure** *Australian and New Zealand Journal of Public Health* 2008;32(6):565-568. CB19/03
([http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=19076750&log\\$=activity](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=19076750&log$=activity))

HEALTH EXPECTANCY / DEMENTIA-FREE LIFE EXPECTANCY / SULLIVAN METHOD / AUSTRALIA / 2004-2006 /

Objective: To estimate the fraction of remaining life lived with and without dementia among Australian males and females at later life.

Method: Analysis was performed by applying the life table technique that integrates mortality and morbidity statistics to derive a single population health indicator. Observed prevalence rates were used to calculate life expectancy with dementia.

Results: At the age of 65 years, males are expected to live an additional 18 years, of which 6% would be lived with dementia. Females surviving to 65 years are likely to live a further 22 years, 9% of which is expected to be lived with dementia. At the age of 85 years, males live a further six years; one-sixth of this life spent with dementia. Females surviving to this age would live an additional seven years, with one-fourth of that life with dementia. The portion of life lived with dementia out of total remaining years of life increases with age at the rate of 20 to 30% every five years beyond the age of 65.

Conclusion. The extension of life expectancy is associated with increased duration of life lived with dementia. As females live longer than males, they experience a greater impact of dementia.

Stam, S., Garssen, M. J., Kardal, M., Lodder, B. J. H. **Hoogopgeleiden leven lang en gezond** In: *Gezondheid en zorg in cijfers 2008 (health and care in figures)*. Den Haag/Heerlen: Centraal Bureau voor de Statistiek; 2008. p. 9-19. CB19/12
(<http://www.cbs.nl/NR/ronlyres/516BE7D7-B35E-4CFA-BF66-9B48ADF6995F/0/2008c156pub.pdf>)

HEALTH EXPECTANCY / HEALTHY LIFE EXPECTANCY / DISEASE-FREE LIFE EXPECTANCY / DISABILITY-FREE LIFE EXPECTANCY / ORIGINAL CALCULATION / SULLIVAN METHOD / EDUCATION / THE NETHERLANDS / 1997-2005 /

The authors calculate health expectancies according to 4 education levels in the Netherlands. A higher education means double profit: a longer life and more years in good health. High skilled people live 6 to 7 years longer than low-skilled people and 16 to 19 years longer in good health. (In Dutch)

Wojtyniak, B., Stokwiszewski, J., Gorynski, P., Poznanska, A. *Długość życia i umieralność ludności Polski (Life expectancy and mortality of the Polish population)*. In: Wojtyniak, B., Gorynski, P., editors. Sytuacja Zdrowotna Ludności Polski (Health situation of the Polish Population). Warszawa: Narodowy Instytut Zdrowia Publicznego-Państwowy Zakład Higieny; 2008. p. 31-86. CB19/11
(http://www.pzh.gov.pl/page/fileadmin/user_upload/PZH_Raport_2008.pdf)

HEALTH EXPECTANCY / ORIGINAL CALCULATION / POLAND /

Chapter 2 of this health report is about life expectancy and mortality of Polish population. Fig. 2.1-2.5c present life expectancy and its change (fig. 2.4 presents author's calculations of life expectancy in urban areas of different size, the smallest towns < 5000 population are even worse than rural areas). Table 2.1 shows HLY in Poland in 2005 (Eurostat) by sex in 0 and 65. Fig.2.6a shows our calculation of Lex and HLY in 2002 (census) by sex and education level, 2.6b by sex, education and urban-rural residence, 2.7a,b by sex and voievodship (region); fig 2.10 shows HLY in 2005 (Eurostat) in EU countries. (In Polish)

2007

Langer leven is niet altijd gezonder leven. In: Gezondheid en zorg in cijfers 2007 (health and care in figures 2007). Den Haag/Heerlen: Centraal Bureau voor de Statistiek; 2007. p. 71-80. CB19/09

(<http://www.cbs.nl/NR/rdonlyres/6C792CAC-CF11-4F5E-B25F-A22BDA8F7502/0/2007c156pub.pdf>)

HEALTH EXPECTANCY / HEALTHY LIFE EXPECTANCY / DISEASE-FREE LIFE EXPECTANCY / DISABILITY-FREE LIFE EXPECTANCY / ORIGINAL CALCULATION / SULLIVAN METHOD / SEX COMPARISON / THE NETHERLANDS / 1994-2006 /

The average life expectancy at birth and at 65 years for women is higher than for men. Women are living this extra life in less than good health. Men and women experience almost the same number of years in good health and without activity restrictions. Life expectancy without chronic disease is higher for men than for women. (In Dutch)

2006

Good health lasts just as long for men and women / Goede gezondheid duurt voor mannen en vrouwen even lang. 2006. Accessed 23 March 2009. Available from:

<http://www.cbs.nl/en-GB/menu/themas/gezondheid-welzijn/publicaties/artikelen/archief/2006/2006-2082-wm.htm?Languageswitch=on>

and

<http://www.cbs.nl/nl-NL/menu/themas/gezondheid-welzijn/publicaties/artikelen/archief/2006/2006-2082-wm.htm>

CB19/07

HEALTH EXPECTANCY / HEALTH REPORT / CALCULATION / THE NETHERLANDS / 2005 /

Short report on the values of life expectancy without chronic disease, without physical limitations and in good or very good perceived health in 2005 in the Netherlands. Sex and geographical comparisons in the Netherlands (North, South, East, and West) are provided.

1996

Veenhoven, R. **Happy life expectancy**. *Social Indicators Research* 1996;39(1):1-58.

CB19/01

(<http://www.springerlink.com/content/j63851378084883p/>)

QUALITY OF LIFE / ORIGINAL CALCULATION /

Apparent quality of life can be measured by the degree to which citizens live long and happily. This is operationalized by combining registration based estimates of length-of-life, with survey data on subjective appreciation-of-life. Life-expectancy in years is multiplied by average happiness on a 0–1 scale. The product is named Happy Life-Expectancy (HLE), and can be interpreted as the number of years the average citizen in a country lives happily at a certain time. HLE was assessed in 48 nations in the early 1990's. It appears to be highest in North-West European nations (about 60) and lowest in Africa (below 35).

HLE scores are systematically higher in nations that are most affluent, free, educated, and tolerant. Together, these country-characteristics explain 70% of the statistical variance in HLE. Yet HLE is not significantly related to unemployment, state welfare and income equality, nor to religiousness and trust in institutions. HLE does not differ either with military dominance and population pressure.

The conclusion is that HLE qualifies as the envisioned comprehensive social indicator. It has both clear substantive meaning (happy life-years) and theoretical significance (ultimate output measure). HLE differentiates well. Its correlations fit most assumptions about required input, but also challenge some. The indicator is likely to have political appeal.