



List of references on health expectancy

Monthly update n°3

15/01/2006 to 15/02/2007

New references with keywords and abstracts

2006

Concept paper: ageing and health. In: IARU Longevity and Health Research project; 2006. CB17/20

BACKGROUND PAPER
DISABILITY-FREE LIFE EXPECTANCY
ACTIVE LIFE EXPECTANCY (ALE)

The authors of this background paper of the International Alliance of Research Universities (IARU) research project on "ageing and health" stress the importance to calculate healthy life expectancy and compare the health expectancy in developed and developing countries using disability free life expectancy and active life expectancy.

Health. In: The Social Report. Wellington (New Zealand): Ministry of Social Development; 2006.CB17/26

INDEPENDENT LIFE EXPECTANCY
NEW ZEALAND
TRENDS
1996-2001

The Social Report 2006 provides a report card on how New Zealanders are doing in nine different social outcomes that contribute to wellbeing and quality of life including trends in people's health. Six health indicators are used. Taken together, they provide an overall picture of the state of the nation's health now and the likely trends in the future. They cover both the length and quality of life, and include both physical and mental health. Among them, independent life expectancy and life expectancy at birth.

Feldmann, U., Mehnert, R. F. **Assessing the state of population health by age-adjusted life expectancies.** *Methods of Information in Medicine* 2006;45(3):275-280. CB17/02

LIFE EXPECTANCY
HEALTH STATUS
AGING

Objectives: A gain in life expectancy of a population is commonly interpreted as an effect of improved health care. After the reunion of Germany in 1990 life expectancy at birth grew extremely in me new

federal states. Within one decade after reunion the new federal states had a gain in life expectancy of about five years while the gain in the old federal states was only about two years.

Methods: It has been widely argued that this phenomenon is caused by an obviously improved public health service and environmental protection or even by an increased social status in the new federal states. On the other hand, the median population age grew rapidly in the new federal states, caused by a dramatic reduction of the birth rate as well as a high emigration rate of young people. Using real time series for three selected federal states and for the total Federal Republic of Germany, it is derived that most of the gain in life expectancy is explained by population ageing. Results: An elementary probabilistic procedure is proposed allowing for estimating the amount in life expectancy not attributable to population ageing.

Conclusions: The age-adjusted life expectancy can be regarded as an unbiased measure of a populations' state of health that stays comparable both over time and across countries.

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Holstein, B. E., Avlund, K., Due, P., Martinussen, T., Keiding, N. **The measurement of change in functional ability: dealing with attrition and the floor/ceiling effect.** *Archives of Gerontology and Geriatrics* 2006;43(3):337-50.

CB17/01

AGED
HEALTH STATUS
PERCEIVED HEALTH
QUALITY OF LIFE
FUNCTIONAL EFFICIENCY
1986-1990

The purpose was to describe four-year change in functional ability among older persons and the relationship to sex, age, and other background factors. The baseline study, performed in 1986, is based on a random sample of older persons (n=1261). Follow-up data were collected four-years later (n=912). The analyses of change in functional ability were based on the assumption that the categories reflected an underlying latent continuous dimension. The change in functional ability, DeltaFA, was calculated by a logistic model for paired observations and applied in parallel analyses with and without inclusion of the dead to deal with the attrition problem. Fifty percent had no change in functional ability, 37% had declined and 13% improved. Models including the dead showed more functional decline with increasing age but this was not the case when the dead were excluded. Functional change was not related to sex, functional ability at baseline, relative wealth, social network, self-rated health, and life-satisfaction. Inclusion of the dead in statistical models for the study of change in functional ability reduced the attrition problem. A logistic model for paired observations of functional ability at two points in time reduced the problem related to the floor/ceiling problem.

Ishizaki, T., Kai, I., Imanaka, Y. **Self-rated health and social role as predictors for 6-year total mortality among a non-disabled older Japanese population.** *Archives of Gerontology and Geriatrics* 2006;42(1):91-99.

CB17/09

MORTALITY
DISABILITY
PERCEIVED HEALTH
ACTIVITIES OF DAILY LIVING (ADL)
ELDERLY
JAPAN

We examined whether social role and self-rated health in an older population were predictors for 6-year total mortality among a non-disabled community-dwelling older population in Saku City, Nagano Prefecture, Japan, surveyed in 1992 and 1998. A total of 8090 men and women aged 65–99 years who reported no disability in performing activities of daily living (ADL) at the time of the survey in 1992 and provided information on their survival status at follow-up 6 years later were analyzed in this study. One dependent variable was survival status in 1998 and independent variables were various factors potentially associated with total mortality, which were obtained from a questionnaire survey at the baseline. During the 6-year interval, having poor self-rated health and poor social roles were identified as significant predictors for total mortality among both men and women. This study revealed that social role and self-rated health are independent predictors for 6-year total mortality for non-disabled Japanese aged 65 years or older.

Manton, K. G., Gu, X., Lamb, V. L. **Change in chronic disability from 1982 to 2004/2005 as measured by long-term changes in function and health in the U.S. elderly population.** *Proceedings of the National Academy of Sciences of the United States of America* 2006;103:18374-18379. CB16/98

DISABILITY (PERMANENT)
ACTIVITIES OF DAILY LIVING (ADL)
TRENDS
USA
1982-2005

Changes in the health and functioning of the Medicare-enrolled population aged 65+ are tracked by using the 1982–2004/2005 National Long-Term Care Surveys. We found a significant rate of decline in the prevalence of chronic disability that accelerated from 1982 to 2004. These declines are significant for both persons with less severe chronic disability, which might be compensated by modifying the built environment and providing assistive devices, and for persons with more serious disability, which may be affected by reductions in the incidence and severity of disease through biomedical interventions. Declines in chronic disability continued over the 22-year period at a rate fast enough (i.e., 1.52% per annum) to contribute significantly to the long-term fiscal stability of the Medicare (and Medicaid) programs. Changes in the rate and substance of disability declines seem consistent with the intentions of policy interventions in Medicare and Medicaid.

van Baal, P. H., Hoogenveen, R. T., de Wit, G. A., Boshuizen, H. C. **Estimating health-adjusted life expectancy conditional on risk factors: results for smoking and obesity.** *Population Health Metrics* 2006;4:13. CB17/04

HEALTH-ADJUSTED LIFE EXPECTANCY (HALE)
MORBIDITY COMPRESSION

BACKGROUND: Smoking and obesity are risk factors causing a large burden of disease. To help formulate and prioritize among smoking and obesity prevention activities, estimations of health-adjusted life expectancy (HALE) for cohorts that differ solely in their lifestyle (e.g. smoking vs. non smoking) can provide valuable information. Furthermore, in combination with estimates of life expectancy (LE), it can be tested whether prevention of obesity and smoking results in compression of morbidity.
METHODS: Using a dynamic population model that calculates the incidence of chronic disease conditional on epidemiological risk factors, we estimated LE and HALE at age 20 for a cohort of smokers with a normal weight (BMI < 25), a cohort of non-smoking obese people (BMI>30) and a cohort of 'healthy living' people (i.e. non smoking with a BMI < 25). Health state valuations for the different

cohorts were calculated using the estimated disease prevalence rates in combination with data from the Dutch Burden of Disease study. Health state valuations are multiplied with life years to estimate HALE. Absolute compression of morbidity is defined as a reduction in unhealthy life expectancy (LE-HALE) and relative compression as a reduction in the proportion of life lived in good health (LE-HALE)/LE. RESULTS: Estimates of HALE are highest for a 'healthy living' cohort (54.8 years for men and 55.4 years for women at age 20). Differences in HALE compared to 'healthy living' men at age 20 are 7.8 and 4.6 for respectively smoking and obese men. Differences in HALE compared to 'healthy living' women at age 20 are 6.0 and 4.5 for respectively smoking and obese women. Unhealthy life expectancy is about equal for all cohorts, meaning that successful prevention would not result in absolute compression of morbidity. Sensitivity analyses demonstrate that although estimates of LE and HALE are sensitive to changes in disease epidemiology, differences in LE and HALE between the different cohorts are fairly robust. In most cases, elimination of smoking or obesity does not result in absolute compression of morbidity but slightly increases the part of life lived in good health. CONCLUSION: Differences in HALE between smoking, obese and 'healthy living' cohorts are substantial and similar to differences in LE. However, our results do not indicate that substantial compression of morbidity is to be expected as a result of successful smoking or obesity prevention.

Zunzunegui, M. V., Nunez, O., Durban, M., Garcia de Yébenes, M. J., Otero, A. **Decreasing prevalence of disability in activities of daily living, functional limitations and poor self-rated health: a 6-year follow-up study in Spain.** *Aging-Clinical & Experimental Research* 2006;18(5):352-358. CB17/05

DISABILITY
ACTIVITIES OF DAILY LIVING (ADL)
FUNCTIONAL LIMITATION
PERCEIVED HEALTH
TRENDS
ELDERLY
SPAIN

BACKGROUND AND AIMS: Forecasting functional status in elderly populations is uncertain. Our aim is to provide evidence of population trends of Activities of Daily Living (ADL) disability, functional limitations and self-rated health.

METHODS: Data come from a longitudinal study of aging in Leganes (Spain), collected in 1993, 1995, 1997 and 1999, on a representative sample of 1560 community dwelling people over 65. Response rate at baseline was 82%. ADL disability was defined as needing help in at least one of the following: walking across a small room, taking a shower, toileting, getting out of bed, getting up from a chair, using the toilet, dressing and eating. Functional limitations were based on questions of difficulty with upper and lower limbs. Self-rated health was assessed with a single question. ADL disability, functional limitations and self-rated health were regressed on age, survey year, sex and education.

RESULTS: There are significant declines in ADL disability, functional limitations and poor self-rated health at every age and up to very advanced ages. Over 90, the ADL disability trend may be reversed, with the emergence of a very old and disabled population. Women and people with little education have a higher prevalence of disability, functional limitations and poor health, when compared with men and those with higher education.

CONCLUSIONS: Results suggest the postponement of severe disability onset in this Spanish population, leading to longer healthy life expectancy, and support the emergence of a very disabled population over 90 years of age.

2005

Health. In: The Social Report. Wellington (New Zealand): Ministry of Social Development; 2005. CB17/25
INDEPENDENT LIFE EXPECTANCY
NEW ZEALAND
TRENDS
1996-2001

The Social Report 2005 provides a report card on how New Zealanders are doing in nine different social outcomes that contribute to wellbeing and quality of life including trends in people's health. Six health indicators are used. Taken together, they provide an overall picture of the state of the nation's health now and the likely trends in the future. They cover both the length and quality of life, and include both physical and mental health. Among them, independent life expectancy and life expectancy at birth.

Azéma, B., Martinez, N. **Les personnes handicapées vieillissantes : espérances de vie et de santé ; qualité de vie : Une revue de la littérature.** *Revue Française des Affaires Sociales* 2005(2):297-333.

CB17/28

LIFE EXPECTANCY
HANDICAP
ELDERLY
AGING
QUALITY OF LIFE
REVIEW

This article surveys the life expectancy data (broken down by nature of the disability) along with some morbidity and mortality data for specific conditions. Other aspects are also addressed, such as the problems of premature or specific ageing relating to ageing disabled workers. With the exception of certain particular conditions such as Down's syndrome, genetic disorders and major mobility impairment, the ageing of disabled people is in fact similar to that of the general population. Complex problems are raised by the situation of disabled persons growing old at home, outside institutional support. Their new longevity has increased the visibility of disabled persons and is leading to a true paradigm shift in social perceptions, professional practices and health and social policies.

Cruz, G. T., Saito, Y., Natividad, J. N. **Active life expectancy and functional health transition among Filipino older people.** In: Special Conference - Federation of Canadian Demographers -Longitudinal studies and demographic challenges of the 21st century Montreal; 2005.

CB17/21

HEALTH EXPECTANCY
EDUCATION
SOCIAL INEQUALITY
ORIGINAL CALCULATION
SULLIVAN METHOD
MULTI-STATE LIFE TABLE (Imach)
PHILIPPINES
1996
1996-2000

The authors estimate Active Life Expectancy (ALE) based on ADLs and IADLs to separate the population aged 50 and over into healthy or active, and unhealthy or disabled. The paper presents the

ALE estimates from both Sullivan method and the multistate life table method (IMaCH). Results are presented by sex, education and place of residence (urban or rural).

Granados, D., Lefranc, A., Reiter, R., Gremy, F., Spira, A. **Les « Années de vie ajustées sur l'incapacité » : un outil d'aide à la définition des priorités de santé publique ? / Disability-adjusted life years: an instrument for defining public health priorities?** *Revue d'Epidemiologie et de Sante Publique* 2005;53(2):111-125. CB17/07

DISABILITY-ADJUSTED LIFE YEARS (DALYs)
PARIS
FRANCE

The objective of this paper is the study of a health indicator allowing surveillance and evaluation of the overall health of the Paris population, and providing information to help prioritize possible choices among preventive and curative actions. Moreover, comparison between results obtained for Paris with a global health indicator, "Disability-adjusted life years" (DALYs) and available bibliographical data will enable clarifying some points about summary measures of health.

Methods: The method used is that of the Global Burden of Disease. It allows a ranking of diseases using an indicator called DALYs. This indicator integrates mortality and morbidity components by summing expected years of life lost due to premature mortality and calculated years of healthy life lost. DALYs were calculated using local mortality data and published regional disabilities tables from the World Health Organisation (WHO).

Results: There were a total of 242 061 DALYs for Paris for the year 1999. The six leading specific causes are: alcoholic psychosis and dependence (accounting for 6.5% of the total), lung cancers (5.7%), ischaemic heart disease (4.8%), depression (4.4%), dementias (4.2%), and arthritis (3.9%). Men contributed the majority of DALYs for the first three. For four of the six leading causes, the majority of DALYs came from years lived with disability, rather than mortality. Only for lung cancer and ischaemic heart disease was the majority of DALYs from years of life lost by mortality.

Conclusion: The results for Paris are used to illustrate how DALYs can illuminate debates about public health priorities. Such data can inform the population about health condition and provide decision makers with global health indicators.

The next step will be to estimate the DALYs from local morbidity data when available, and compare these results to those based on the World Health Organisation tables, which are not sensitive to local results other than those due to mortality. Future steps include further evaluation and development of this method for surveillance, assessment and evaluation of public health actions. However, some of the results obtained with this indicator underline the limits of this kind of analysis.

Guillot, M., Yu, Y. **Estimating health expectancies from two cross-sectional surveys.** In: XXVe Congrès International de la Population Tours (France); 2005. CB17/10

HEALTH EXPECTANCY
MORBIDITY COMPRESSION
MATHEMATICAL MODEL
USA

Health expectancy is a key indicator for monitoring the health of populations, as well as for informing debates about compression or expansion of morbidity. However, current methodologies are not entirely satisfactory. They are either of limited applicability because of high data requirements (the multistate method) or not methodologically sound (the Sullivan method). This paper proposes a new method which relies on the multistate framework but uses widely available data. The idea is to use age-specific

proportions healthy at two successive (but independent) cross-sectional health surveys, and, together with information on general mortality, to solve for the set of transition probabilities that produces the observed sequence of proportions healthy. The system is solved by making realistic parametric assumptions about the age patterns of transition probabilities. Using data from the Medicare Current Beneficiary Survey, the method is tested against both the Sullivan method and the goldstandard multistate method.

Hadley, E. C., Rossi, W. K. **Exceptional survival in human populations: National Institute on Aging perspectives and programs.** *Mechanisms of Ageing and Development* 2005;126(2):231-234. CB17/11

ACTIVE LIFE EXPECTANCY (ALE)
LONGEVITY
USA

Identifying the factors that contribute to long and healthy life can lead to improved interventions that can help delay or prevent the onset of major aging-related diseases and disabilities and increase the time that older persons spend in good health. Studies on longevity and other exceptional survival outcomes can contribute to this knowledge. The National Institute on Aging (NIA) supports a considerable amount of basic, behavioral, demographic, epidemiologic, and clinical research on these topics, including a large research program on longevity assurance genes, primarily in laboratory animals, and in biodemographic aspects of longevity in humans and other species. This article describes NIA's activities regarding one important aspect of research on longevity and related phenotypes: exceptional survival phenotypes in humans, including exceptional longevity, health span, and active life expectancy.

Hardy, S., Dubin, J., Holford, T., Gill, T. **Transitions between states of disability and independence among older persons.** *American Journal of Epidemiology* 2005;161(6):575-584. CB17/08

ACTIVITIES OF DAILY LIVING (ADL)
DISABILITY
FRAILTY
TRANSITIONS
AGED
NEW HAVEN
CONNECTICUT
USA

The objectives of this prospective cohort study, conducted in New Haven, Connecticut, from 1998 to 2004, were to describe disability states experienced by older persons, to evaluate the rate of transitions between states and the duration of disability episodes, and to determine whether these findings differ on the basis of physical frailty— a condition of low physical capacity and vulnerability to adverse functional outcomes. Participants included 754 persons aged 70 years or older who were initially independent in four key activities of daily living: bathing, dressing, walking, or transferring. Disability was assessed during monthly telephone interviews for a median of 60 months, and participants were classified each month according to the following four states: no disability, mild disability (one or two activities), severe disability (three or four activities), and death. Transitions between states of disability and independence were common, with a majority of both frail and nonfrail participants experiencing at least one transition. The rate of transitions varied greatly among individuals. Nonfrail participants had lower rates of transition from less to more disability, higher rates of transition from more to less disability, and slightly shorter durations of disability. To fully understand the disabling process, investigators and clinicians must consider the episodic and recurrent nature of disability.

Reynolds, S. L., Phillips, S. **Active life expectancy in underweighted and obese older Americans.** *The Gerontologist* 2005;45(Special Issue II):507-507. [Abstract] CB16/97

HEALTH EXPECTANCY
ACTIVE LIFE EXPECTANCY (ALE)
ELDERLY
ORIGINAL CALCULATION
MULTI-STATE LIFE TABLE (Imach)
HEALTH POLICY
USA

While study done on obesity and active life expectancy in older adults implies that obesity has a larger impact on disability than on mortality, medical literature suggests a strong effect of underweight on mortality in old age. This study examines the impact of underweight and obesity on both the length and quality of life in older Americans. Population-weighted data from the Asset and Health Dynamics Among the Oldest Old are used to estimate total, active and disabled life expectancy in a sample of older adults. Using a multistate model, transition rates between activity (no ADL disability), disability (any ADL disability), and death, are estimated, from which multistate life tables are constructed using the IMACh procedure (Lièvre et al., 2003). Results indicate that underweight older men and women live 1-5 years less than all other weight groups. The number of disabled years lived is more for women than men, regardless of weight. The number of disabled years lived is the least for underweight men and women, the most for obese men and women. Implications of these findings for public health and further research are discussed.

Tang, Z., Xiang, M.-J., Zimmer, Z., Fang, X.-H., Kaneda, T. **[Study on the active life expectancy of the elderly and its longitudinal transition in Beijing].** *Chinese Journal of Epidemiology* 2005;26(12):939-942. CB17/03

HEALTH EXPECTANCY
ACTIVE LIFE EXPECTANCY (ALE)
ACTIVITIES OF DAILY LIVING (ADL)
ELDERLY
ORIGINAL CALCULATION
MULTI-STATE LIFE TABLE (Imach)
BEIJING
CHINA

OBJECTIVE: Focus on the Active Life Expectancy (ALE) of elderly in Beijing and the transition in recent years.

METHODS: A representative sample of 3257 elderly people who lived in the urban, suburban and rural communities in Beijing that had been followed up for 12 years. Their health and survival status had been surveyed every 2-3 years. Activity Daily Living scale (ADL), recommended by WHO was used to evaluate the physical function capability of the elderly. IMACh 0.8 was used to estimate life expectancy (LE) and active life expectancy (ALE) for both periods while age, sex and rural/urban residence areas were adjusted.

RESULTS: Longitudinally, data showed that the main characters remained unchange throughout the two periods including 1) LE, ALE, ALE/LE of elderly living in urban area were higher than those living in rural area; 2) LE seemed longer in women than men, but ALE/LE was less in women. The transition between two period showed that 1) LE increased modestly in all groups but less prominent in urban

residents and in females; 2) ALE was not significantly changed in the rural elderly but declined markedly in women living in the urban area; 3) ALE/LE of the elderly declined in all groups, especially in urban and oldest old groups.

CONCLUSION: In Beijing, elderly ALE did not increase in parallel with the increase of LE while ALE/LE of the elderly declined significantly in recent years. In order to improve quality of life of the elderly and to increase their ALE, emphasis should be given to prevention of cardiovascular, cerebrovascular and other chronic diseases while reducing the occurrence of physical disability and strengthening on rehabilitation would be the basic health care measures.

2004

Health. In: The Social Report. Wellington (New Zealand): Ministry of Social Development; 2004.

CB17/24

INDEPENDENT LIFE EXPECTANCY
NEW ZEALAND
TRENDS
1996-2001

The Social Report 2004 provides a report card on how New Zealanders are doing in nine different social outcomes that contribute to wellbeing and quality of life including trends in people's health. Six health indicators are used. Taken together, they provide an overall picture of the state of the nation's health now and the likely trends in the future. They cover both the length and quality of life, and include both physical and mental health. Among them, independent life expectancy and life expectancy at birth.

Ahn, N., Genova, R., Herce, J. A., Pereira, J. **Ageing, health and retirement in Europe: Bio-demographic aspects of population ageing.** Madrid: ENEPRI; 2004.

CB17/27

HEALTH EXPECTANCY
DISABILITY-FREE LIFE EXPECTANCY
HEALTHY LIFE EXPECTANCY
PERCEIVED HEALTH
DISABILITY
ORIGINAL CALCULATION
SULLIVAN METHOD
TRENDS
FORECASTING
1994-2000
EUROPEAN UNION

The authors use ECHP data to calculate disability-free life expectancy according to Sullivan method for 12 European countries, by sex, at birth and at age 65 and by severity levels, in 1994 and 2000.

Pamuk, E. R., Wagener, D. K., Molla, M. T. **Achieving National Health Objectives: The Impact on Life Expectancy and on Healthy Life Expectancy** *American Journal of Public Health* 2004;94(3):378-383.

CB17/13

HEALTH EXPECTANCY
MORTALITY
ACTIVITY LIMITATION
FORECASTING

HEALTH INEQUALITY
RACIAL COMPARISON
ORIGINAL CALCULATION
SULLIVAN METHOD
USA

Our study quantifies the impact of achieving specific Healthy People 2010 targets and of eliminating racial/ethnic health disparities on summary measures of health. We used life table methods to calculate gains in life expectancy and healthy life expectancy that would result from achievement of Healthy People 2010 objectives or of current mortality rates in the Asian/Pacific Islander (API) population. Attainment of Healthy People 2010 mortality targets would increase life expectancy by 2.8 years, and reduction of populationwide mortality rates to current API rates would add 4.1 years. Healthy life expectancy would increase by 5.8 years if Healthy People 2010 mortality and assumed morbidity targets were attained and by 8.1 years if API mortality and activity limitation rates were attained. Achievement of specific Healthy People 2010 targets would produce significant increases in longevity and health, and elimination of racial/ethnic health disparities could result in even larger gains.

2003

Health. In: The Social Report. Wellington (New Zealand): Ministry of Social Development; 2003.

CB17/23

INDEPENDENT LIFE EXPECTANCY
NEW ZEALAND
TRENDS
1996-2001

The Social Report 2003 provides a report card on how New Zealanders are doing in nine different social outcomes that contribute to wellbeing and quality of life including trends in people's health. Six health indicators are used. Taken together, they provide an overall picture of the state of the nation's health now and the likely trends in the future. They cover both the length and quality of life, and include both physical and mental health. Among them, independent life expectancy and life expectancy at birth.

Egidi, V. **Health status of older people**. *Genus* 2003;LIX(1):169-200.

CB17/06

HEALTH EXPECTANCY
AGED
TRENDS
REVES

This paper aims at showing that older ages do not necessarily mean illness and no-independence. Health expectancies are significant indicators representing the health status of elderly people and their trends are discussed. The author stresses the importance of using a set of indicators to describe the health conditions of elderly people.

Groenewegen, P. P., Westert, G. P., Boshuizen, H. C. **Regional differences in healthy life expectancy in the Netherlands**. *Public Health* 2003;117(6):424-429.

CB17/15

HEALTHY LIFE EXPECTANCY
GEOGRAPHIC COMPARISON

THE NETHERLANDS

Background. Healthy life expectancy has mainly been studied at the level of healthcare systems rather than at regional level within healthcare systems. In this article, healthy life expectancy at birth and at 65 years of age for men and women in the Netherlands has been described, and factors related to these regional variations have been explored.

Methods. Ecological study of 27 healthcare regions (hospital catchment areas). Life expectancy and healthy life expectancy were calculated using 1995 mortality data and pooled health interview survey data (1992–1997) from Statistics Netherlands.

Results. Healthy life expectancy shows a regional pattern, slightly different from that found in life expectancy and self-reported health. The regional distribution of male and female healthy life expectancy is different, especially at 65 years. Healthy life expectancy of women aged 65 years is independent of their total life expectancy. Social conditions and lifestyle differences between regions are negatively associated with healthy life expectancy in Dutch regions. Healthcare supply variables show no clear relationship.

Conclusion. Although the Netherlands is a small, homogeneous country, substantial differences were found in healthy life expectancy.

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Mathers, C. D., Murray, C. J. L., Salomon, J. A., Sadana, R., Tandon, A., Lopez, A. D., Ustun, B., Chatterji, S. **Healthy life expectancy: comparison of OECD countries in 2001.** *Australian and New Zealand Journal of Public Health* 2003;27(1):5-11.

CB17/17

HEALTH-ADJUSTED LIFE EXPECTANCY (HALE) OECD COUNTRIES

Objectives: To compare average levels of population health for Australia and other OECD countries in 2001.

Methods: Healthy life expectancies (HALE) for OECD countries for 2001 are based on analysis of mortality data for OECD countries, country-specific estimates of health state prevalences for 135 causes from the Global Burden of Disease 2000 study, and an analysis of 34 health surveys in 28 OECD countries, using novel methods to improve the comparability of self-report data.

Results: HALE at birth ranges from a low of 59.8 years for Turkey to a high of 73.6 years in Japan in 2001. Australia ranks fourth among OECD countries at 71.6 years with a 95% uncertainty interval of 70.9 to 72.8 years, ahead of New Zealand in 13th place at 70.3 years. The equivalent 'lost' healthy years at birth range from around 10 years in OECD countries with lowest life expectancies to around eight years in those with high life expectancies at birth. There is a statistically significant association between higher levels of health expenditure and higher healthy life expectancy across OECD countries, although causal inferences require more sophisticated analyses of the health system and non-health system determinants of levels of health.

Conclusions: The new methods used in the WHO Multi-Country Household Survey Study have increased the comparability of self-report data across OECD countries, a major step forward in the use of self-reported data on health. Building on this experience, WHO is developing improved health status measurement techniques for a World Health Survey to be carried out in 2002/03.

2002

Martin, R. M. *Estimates of healthy life expectancy in New Jersey for selected race/sex subpopulations, 1996-1998*. Trenton, NJ: New Jersey Department of Health and Senior Services; 2002. Report No: 02-02.

CB17/14

HEALTH EXPECTANCY
ORIGINAL CALCULATION
PERCEIVED HEALTH
SULLIVAN METHOD
RACIAL COMPARISON
NEW JERSEY
USA
1996-1998

Health agendas for the year 2010 for both New Jersey and the nation include a goal to increase the quality and length of healthy life. This report uses a technique, which combines measures of morbidity and mortality, to derive a summary estimate of healthy life expectancy. The data used in this methodology are available from the state file of death records and from the results of the Behavioral Risk Factor Surveillance System surveys in New Jersey. Application of the statistical technique results not only in average life expectancy by age for each of four major race/sex populations in New Jersey, but also the average number of healthy years of life expected at each age. The overall life expectancy at birth for a newborn in New Jersey in 1996 through 1998 was 77 years, but there was considerable variation in this number, depending on race and sex. White females had the highest life expectancy of the groups examined (80.1 years) and black males had the lowest (68.0 years). White females also could look forward to the highest average number of years in "good" health (self-perceived excellent, very good, or good health) at birth (69.6 years) while black males could expect 53.9 years of "good" health, on average. As the population continues to age and the average life expectancy increases, methods of assessing quality of life will become more critical. The method presented here can be updated as needed, due to the availability of the data and the ease of computation.

2001

Kosen, S. *Healthy life expectancy*. In: WHO/SEARO Regional consultation & technical workshop on health systems performance assessment; New Dehli; 2001.

CB17/16

DISABILITY-ADJUSTED LIFE EXPECTANCY (DALE)
DISABILITY-ADJUSTED LIFE YEARS (DALYs)

Short presentation of the DALE as summary measure of population health its advantages and problems

Mahapatra, P., Rao, P. V. C. *A guide to compute healthy life expectancy*. In: WHO/SEARO Regional consultation & technical workshop on health systems performance assessment; New Dehli; 2001.

CB17/18

DISABILITY-ADJUSTED LIFE EXPECTANCY (DALE)
CALCULATION GUIDE

Calculation guide of DALE with example for Indian females in 1996

Saito, Y. [Changes in health expectancy in Japan: 1992, 1995, and 1998]. *Jinko Mondai Kenkyu [Journal of Population Problems]* 2001;57(4):31-50.

CB17/12

HEALTH EXPECTANCY
HEALTHY LIFE EXPECTANCY
ACTIVE LIFE EXPECTANCY (ALE)
ORIGINAL CALCULATION
SULLIVAN METHOD
CHRONOLOGICAL SERIES
TRENDS
JAPAN
1990s

Active life expectancy and healthy life expectancy are calculated using the Sullivan method and data from survey data collected in 1992, 1995, and 1998. The changes in the health of the Japanese population aged 40 and over are examined.

2000

WHO issues new healthy life expectancy rankings: Japan number one in new 'healthy life' system. In: WHO Press release; Washington, DC and Geneva; 2000.

CB17/19

DISABILITY-ADJUSTED LIFE EXPECTANCY (DALE)
PRESS RELEASE

The World Health Organization (WHO) has calculated healthy life expectancy for babies born in 1999 based upon an indicator developed by WHO scientists, Disability Adjusted Life Expectancy (DALE) which summarizes the expected number of years to be lived in what might be termed the equivalent of "full health." To calculate DALE, the years of ill-health are weighted according to severity and subtracted from the expected overall life expectancy to give the equivalent years of healthy life.

1998

United Nations Population Fund (UN FPA). *Adding years to life, and life to later years.* In: The state of world population 1998. New York: UNFPA; 1998. p. 51-58.

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HEALTHY LIFE EXPECTANCY
AGED
REVES

Women live longer than men, and average more years of ill health late in life. Older women's health reflects inadequate access to basic services, food and nutrition throughout their lives, and the hardships of their childbearing years — including births too early or too closely spaced, poor nutrition and anaemia.