List of references on health expectancy
Update n°6
Sept 2007

New references with keywords and abstracts

2007

Adamson, J. **Disability and education - the Madonna factor?** *International Journal of Epidemiology* 2007(36):365-367. CB17/126
(http://ije.oxfordjournals.org/cgi/content/full/36/2/365)

DISABILITY
ACTIVITIES OF DAILY LIVING (ADL)
ELDERLY
SOCIAL INEQUALITY
TRANSITION PROBABILITY

Commentary of the article by Jagger et al. (16:127)

Bronnum-Hansen, H. **Social Ulighed i sygdomsbyrde [Social inequality in the burden of disease]**. *Ugeskrift for Læger* 2007;169(26):2526-2528. CB17/122
(http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=17725899 and http://www.ugeskriftet.dk/LF/UFL/2007/26/pdf/VP50685.pdf)

DISABILITY-FREE LIFE EXPECTANCY
DISEASE-FREE LIFE EXPECTANCY
LONG-STANDING ILLNESS
ORIGINAL CALCULATION
EDUCATION
DENMARK

INTRODUCTION: Social inequality in health status is apparent in different life expectancy as well as expected lifetime with illness. The purpose of the study was to estimate the difference in expected lifetime with cancer, cardiovascular diseases and diseases of the musculoskeletal system between Danes with high and low educational levels.
MATERIALS AND METHODS: The study was based on data from the Danish Health Interview Survey in 2000 and registered data on education and mortality in the period 1995-1999. Expected lifetime with and without long-standing, limiting illness based on observed data was compared with expected lifetime with and without long-standing, limiting illness after elimination of specific diseases and causes of death. The expected lifetime for persons with high and low educational levels between the age of 30 and 75 with and without illness was compared.

RESULTS: Cancer contributes by 0.3 years to the difference in partial life expectancy (age 30-75) between persons with high and low educational levels. Cardiovascular diseases cause men with low educational levels a loss of 0.6 life years and women 0.4 life years compared to men and women with high educational levels. Because of co-morbidity elimination of cancer would increase social inequality in expected lifetime with illness. The same was seen for women if cardiovascular diseases were eliminated. If diseases of the musculoskeletal system were eliminated, the difference in expected lifetime without long-standing, limiting illness from age 30 to 75 between persons with high and low educational levels would be reduced by 1.2 years.
CONCLUSION: Social inequality in life expectancy would be reduced by the elimination of cancer and cardiovascular diseases. Socially disadvantaged suffer from the largest burden of disease.

Bronnum-Hansen, H., Baadsgaard, M. **Increasing social inequality in life expectancy in Denmark**. *European Journal of Public Health* 2007 (In press) CB17/121
(http://eurpub.oxfordjournals.org/cgi/content/abstract/ckm045v1?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&fulltext=Bronnum-hansen&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT)

LIFE EXPECTANCY
MORTALITY
SOCIAL INEQUALITY
DENMARK

BACKGROUND: The purpose of the study was to determine trends in social inequality in mortality and life expectancy in Denmark.
METHODS: The study was based on register data on educational level and mortality during the period 1981-2005 and comprised all deaths among Danes aged 30-60. Sex- and age-specific death rates for each of three levels of education were calculated and age-standardized to allow comparisons over time and between groups. As data obtained since 1996 included ages up to 74, partial life expectancy (i.e. expected lifetime of 30-year-olds before the age of 75) was calculated for the period 1996-2005.
RESULTS: Between 1981 and 2005, the difference in death rates between people aged 30-60 with low and high educational level increased by two-thirds for men and was doubled for women. During the period 1996-2005, the gap in partial life expectancy from age 30 to 75 between people with low and high educational level increased by 0.3 years.
CONCLUSION: During the past 25 years, the social gap in mortality has widened in Denmark. In particular, women with a low educational level have been left behind.

Bronnum-Hansen, H., Juel, K., Davidsen, M., Sorensen, J. **Impact of selected risk factors on expected lifetime without long-standing, limiting illness in Denmark**. *Preventive Medicine* 2007;45(1):49-53
CB17/123
(http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6WPG-4NCSGJ2-2&_user=10&_coverDate=03%2F31%2F2007&_rdoc=1&_fmt=&_orig=search&_sort=d&view=c&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=201a070ebd450b9ab2e26e4c6c2ec062)

HEALTH EXPECTANCY
LONG-STANDING ILLNESS
ORIGINAL CALCULATION
SULLIVAN METHOD
DENMARK
2000

OBJECTIVE: To estimate the impacts of tobacco smoking, high alcohol consumption, physical inactivity and overweight on expected lifetime with and without long-standing, limiting illness.
METHODS: Life tables for each level of exposure to the risk factors were constructed, mainly on the basis of the Danish National Cohort Study. Expected lifetime without long-standing, limiting illness was estimated for exposed and unexposed persons by combining life tables and prevalence data from the Danish Health Interview Survey 2000 (14,503 participants aged 25+).
RESULTS: The life expectancy of 25-year-olds was 9-10 years shorter for heavy smokers than for those who never smoke, and all the lifetime lost would have been without long-standing, limiting illness. Similarly, all 5 years of expected lifetime lost by men with high alcohol consumption would have been without illness. The expected lifetime without long-standing, limiting illness was 8-10 years shorter among sedentary than physically active people. Obesity shortened lifetime without illness by 5 years for men and ten years for women.
CONCLUSION: The results of this study could be used in health policy-making, as the potential gains in public health due to interventions against these risk factors could be evaluated, when the prevalence of exposure to the risk factor is available.

Cairncross, F. **Age, health and wealth**. *Nature* 2007;448(23 August):875-876. CB17/142
(http://www.nature.com/doifinder/10.1038/448875a)

HEALTH STATUS
ELDERLY
DISABILITY
TRENDS
USA

The author discusses the paper by Manton (CB17/141).

Diehr, P., Derleth, A., Cai, L. M., Newman, A. B. **The effect of different public health interventions on longevity, morbidity, and years of healthy life**. *BMC Public Health* 2007;7(52) CB17/134
(http://www.biomedcentral.com/content/pdf/1471-2458-7-52.pdf)

LIFE EXPECTANCY
HEALTHY LIFE EXPECTANCY
MORTALITY
MORBIDITY
TRANSITION PROBABILITY
MULTI-STATE LIFE TABLE
PUBLIC HEALTH

Background: Choosing cost-effective strategies for improving the health of the public is difficult because the relative effects of different types of interventions are not well understood. The benefits of one-shot interventions may be different from the benefits of interventions that permanently change the probability of getting sick, recovering, or dying. Here, we compare the benefits of such types of public health interventions.
Methods: We used multi-state life table methods to estimate the impact of five types of interventions on mortality, morbidity (years of life in fair or poor health), and years of healthy life (years in excellent, very good, or good health).
Results: A one-shot intervention that makes all the sick persons healthy at baseline would increase life expectancy by 3 months and increase years of healthy life by 6 months, in a cohort beginning at age 65.

An equivalent amount of improvement can be obtained from an intervention that either decreases the probability of getting sick each year by 12%, increases the probability of a sick person recovering by 16%, decreases the probability that a sick person dies by 15%, or decreases the probability that a healthy person dies by 14%. Interventions aimed at keeping persons healthy increased longevity and years of healthy life, while decreasing morbidity and medical expenditures. Interventions focused on preventing mortality had a greater effect on longevity, but had higher future morbidity and medical expenditures. Results differed for older and younger cohorts and depended on the value to society of an additional year of sick life.
Conclusion: Interventions that promote health and prevent disease performed well, but other types of intervention were sometimes better. The value to society of interventions that increase longevity but also increase morbidity needs further research. More comprehensive screening and treatment of new Medicare enrollees might improve their health and longevity without increasing future medical expenditures.

Gartner, C. E., Hall, W. D., Vos, T., Bertram, M. Y., Wallace, A. L., Lim, S. S., Gartner, C. E., Hall, W. D., Vos, T., Bertram, M. Y., Wallace, A. L., Lim, S. S. **Assessment of Swedish snus for tobacco harm reduction: an epidemiological modelling study.[see comment]**. *Lancet* 2007;369(9578):2010-4.
CB17/139
(http://espace.library.uq.edu.au/view.php?pid=UQ:13766)

HEALTHY YEARS OF LIFE LOST
SMOKING
ORIGINAL CALCULATION
SULLIVAN METHOD
AUSTRALIA

BACKGROUND: Swedish snus is a smokeless tobacco product that has been suggested as a tobacco harm reduction product. Our aim was to assess the potential population health effects of snus.
METHODS: We assessed the potential population health effects of snus in Australia with multistate life tables to estimate the difference in health-adjusted life expectancy between people who have never been smokers and various trajectories of tobacco use, including switching from smoking to snus use; and the potential for net population-level harm given different rates of snus uptake by current smokers, ex-smokers, and people who have never smoked.
FINDINGS: There was little difference in health-adjusted life expectancy between smokers who quit all tobacco and smokers who switch to snus (difference of 0.1-0.3 years for men and 0.1-0.4 years for women). For net harm to occur, 14-25 ex-smokers would have to start using snus to offset the health gain from every smoker who switched to snus rather than continuing to smoke. Likewise, 14-25 people who have never smoked would need to start using snus to offset the health gain from every new tobacco user who used snus rather than smoking.
INTERPRETATION: Current smokers who switch to using snus rather than continuing to smoke can realise substantial health gains. Snus could produce a net benefit to health at the population level if it is adopted in sufficient numbers by inveterate smokers. Relaxing current restrictions on the sale of snus is more likely to produce a net benefit than harm, with the size of the benefit dependent on how many inveterate smokers switch to snus.

Gispert, R., Ruiz-Ramos, M., Bares, M. A., Viciana, F., Clot-Razquin, G. **Differences in disability-free life expectancy by gender and autonomous regions in Spain [Differences in Disability-Free Life Expectancy by Gender and Autonomous Regions in Spain]**. *Revista Espanola De Salud Publica* 2007;81(2):155-165.
CB17/120
(http://scielo.isciii.es/pdf/resp/v81n2/original1.pdf)

HEALTH EXPECTANCY
DISABILITY-FREE LIFE EXPECTANCY
ORIGINAL CALCULATION
SULLIVAN METHOD
GEOGRAPHIC COMPARISON
SPAIN
1999

Background: Improvement of population health is the main aim and an important challenge for the health system. To monitor the population health indicators like disability-free life expectancy (DFLE) have been implemented. The purpose of this paper was to analyze the geographical distribution of DFLE according to autonomous regions in Spain.
Methods: Data of mortality, population and disability for the year 1999, provided by the National Institute of Statistics (INE), were used. To calculate DFLE by gender and region we used the Sullivan method that weights the expected time to live according to the status of disablement of the population. The standard error of DFLE, the expectation of disability and the proportion of time lived free of disability have also been estimated.
Results: In 1999 the DFLE at birth in Spain was 68.5 year for men and 72.2 years in women. Men lived proportionally more time free of disability than women (91% versus 87.7%) with an expectation of disability of 6.8 and 10.1 years respectively. Variability among regions was higher in DFLE than in life expectancy (LE). The regions with highest LE are not always those with the highest proportion of time lived without disability.
Conclusions: Highest life expectancy does not always mean best health as it has been assumed currently. The DFLE indicator is a useful tool to show health status differences among the Spanish population.

Jagger, C., Matthews, R., Melzer, D., Matthews, F., Brayne, C. **Educational differences in the dynamics of disability incidence, recovery and mortality: Findings from the MRC Cognitive Function and Ageing Study (MRC CFAS)**. *International Journal of Epidemiology* 2007(36):358-365.
CB17/127
(http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=17255347)

DISABILITY-FREE LIFE EXPECTANCY
DISABILITY
ACTIVITIES OF DAILY LIVING (ADL)
ELDERLY
SOCIAL INEQUALITY
TRANSITION PROBABILITY
ORIGINAL CALCULATION
MULTI-STATE LIFE TABLE (Imach)
UNITED KINGDOM

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 13 004 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.

Laditka, J. N., Laditka, S. B., Olatosi, B. M., Elder, K. T. **The Health Trade-off of Rural Residence for Impaired Older Adults: Longer Life, More Impairment**. *Journal of Rural Health* 2007;23(2):124-132. CB17/124
(http://www.ingentaconnect.com/content/bsc/jrh/2007/00000023/00000002/art00004;jsessionid=sscmdgui8vhw.alice?format=print)

HEALTH EXPECTANCY
IMPAIRMENT-FREE LIFE EXPECTANCY
EDUCATION
RESIDENCE
RACIAL COMPARISON
ORIGINAL CALCULATION
MICROSIMULATION
USA
1982-1999

Context: Years lived with and without physical impairment are central measures of public health.
Purpose: We sought to determine whether these measures differed between rural and urban residents who were impaired at the time of a baseline measurement. We examined 16 subgroups defined by rural/urban residence, gender, race, and education.
Methods: This is a 20-year retrospective cohort study, following 2,939 Americans who were aged 65-69 in 1982 and physically impaired at the time of the baseline measurement, with data from the National Long-Term Care Survey. Interpolated Markov chain analysis and microsimulation estimated life expectancy at age 65 and expected number of years with physical impairment. Impairment was defined as requiring help in 1 or more activities of daily living.
Findings: Among older individuals with physical impairments at baseline, rural residents lived notably longer than urban residents. In all but 1 group, rural residents lived more years with physical impairment, and they also had a notably larger proportion of remaining life impaired.,
Conclusions: Results suggest a notable public health impact of rural residence for impaired individuals, a longer expected period of impairment. Needs for services for people with impairments may be greater in rural areas.

Manton, K. G., Lamb, V. L., Gu, X. **Medicare Cost Effects of Recent U.S. Disability Trends in the Elderly**. *Journal of Aging and Health* 2007;19(3):359-381. CB17/143
(http://jah.sagepub.com/cgi/content/abstract/19/3/359)

DISABILITY

ACTIVITIES OF DAILY LIVING (ADL)
INSTRUMENTAL ACTIVITIES OF DAILY LIVING (IADL)
FUNCTIONAL LIMITATION
TRENDS
HEALTH EXPENDITURE
HEALTH STATUS
ELDERLY
GOM ANALYSIS
USA

Objective: The authors examine how trends in disability prevalence and in inflation-adjusted per capita, per annum Medicare costs, 1982 to 1999 and 1989 to 1999, affected total Medicare costs projected to 2004 and 2009.
Method: To describe disability trends, the authors applied grade of membership analyses to 27 measures of disability from the 1982 to 1999 National Long Term Care Surveys (NLTCS). This identified seven disability profiles for which individual scores were calculated. These were used to calculate sample weighted Medicare costs and cost trends.
Results: Significant declines (up to 19%) in Medicare costs were found in 2004 and 2009 assuming continuation of the 1982 to 1999 disability declines and Medicare cost trends. In addition to declines in disability prevalence, inflation-adjusted per capita, per annum Medicare costs declined for nondisabled persons aged 65 to 84.
Discussion: Preserving health in the growing nondisabled population did not require increased health care expenditures.

Manton, K. G., Lowrimore, G. R., Ullian, A. D., Gu, X., Tolley, H. D. **Labor force participation and human capital increases in an aging population and implications for U.S. research investment**. *Proceedings of the National Academy of Sciences of the United States of America* 2007;104(26):10802-10807. CB17/141
(http://www.pnas.org/cgi/reprint/0704185104v1)

HEALTH STATUS
HEALTH EXPENDITURE
FUNCTIONAL EFFICIENCY
COGNITIVE FUNCTION
ELDERLY
DISABILITY
TRENDS
USA

The proportion of the United States labor force 65 years of age is projected to increase between 2004 and 2014 by the passing of age 65 of the large post-World War II baby boom cohorts starting in 2010 and their greater longevity, income, education, and health. The aging of the U.S. labor force will continue to at least 2034, when the largest of the baby boom cohorts reaches age 70. Thus, the average health and functional capacity of persons age 65+ must improve for sufficient numbers of elderly persons to be physically and cognitively capable of work. This will require greater investments in research, public health, and health care. We examine how disability declines and improved health may increase human capital at later ages and stimulate the growth of gross domestic product and national wealth.

Rychtaříková, J. **Healthy life expectancy in the current Czech population**. *Czech Demography*

2007;1:61-74. CB17/140
(http://www.czso.cz/eng/redakce.nsf/i/jitka_rychtarikova:_healthy_life_expectancy_in_the_current_czech_population_/$File/cz_demography06.pdf)

HEALTHY LIFE EXPECTANCY
PERCEIVED HEALTH
MORBIDITY
ACTIVITY LIMITATION
ACTIVITIES OF DAILY LIVING (ADL)
DISEASE (CHRONIC)
EDUCATION
MARITAL STATUS
ORIGINAL CALCULATION
SULLIVAN METHOD
CZECH REPUBLIC
2005

In this article the author deals with the current state of health of the Czech population, which she analyses using the indicator of disability (disability-free life expectancy) based on a combination of life tables and the prevalence of health status indicators.

2006

Naised ja mahed / Women and men. Tallinn: Statistics Estonia; 2006. CB17/119

HEALTH EXPECTANCY
HEALTHY LIFE YEARS
ORIGINAL CALCULATION
ESTONIA
2004

This report analyses the situation of women and men in contemporary Estonian society by life cycles. The childhood, working and family years as well as elderly years of women and men are reflected. Demographic aspects, education, time use, income, poverty, lifestyle, labour market and health are discussed. Table 1-9 provides the healthy life years calculated from the EU-SILC in 2004

Cambois, E., Clavel, A., Robine, J.-M. **L'espérance de vie sans incapacité continue d'augmenter**. *Solidarité Santé* 2006(2):7-21. CB17/130
(http://www.sante.gouv.fr/drees/dossier-solsa/pdf/dossier200602.pdf)

DISABILITY-FREE LIFE EXPECTANCY
TRENDS
FRANCE

Which are the effects of the lengthening of life expectancy on the health of the population in France? The estimates of disability-free life expectancy (DFLE) for the two last decades computed from four large surveys gather for the first time the whole of the population data making it possible to describe the combined evolution of mortality and functional health. Four disability indicators from the 2002-2003 survey on health and medical care (ESSM) were thus compared with other sources, offering a more

complete panorama in terms of evolution and levels of disability-free life expectancy reached. This confrontation shows that the problems of disability remain concentrated at the end of the lifetime and that women are disadvantaged for the proportion of years lived free of disability. This work confirms that DFLE continued its progression in the last decade, although contrasted according to the indicators used, and goes against the assumption of a pandemia of severe disabilities with population ageing.

Quels sont les effets de l'allongement de l'espérance de vie sur l'état de santé de la population en France? Les estimations d'espérance de vie sans incapacité (EVSI) pour les deux dernières décennies établies à partir de quatre grandes enquêtes rassemblent pour la première fois l'ensemble des données en population permettant de décrire l'évolution combinée de la mortalité et de la santé fonctionnelle. Quatre indicateurs d'incapacité issus de l'enquête sur la santé et les soins médicaux (ESSM) de 2002-2003 ont ainsi été comparés aux autres sources, offrant un panorama plus complet en termes d'évolution et de niveaux d'espérance de vie sans incapacité atteints. Cette confrontation montre que les problèmes d'incapacité demeurent concentrés en fin de vie et que les femmes sont désavantagées du point de vue de la proportion d'années vécues sans incapacité. Ces travaux confirment que l'EVSI a poursuivi sa progression dans la dernière décennie, bien que de façon contrastée suivant les indicateurs utilisés, et vont à l'encontre de l'hypothèse d'une pandémie des incapacités sévères avec le vieillissement de la population.

Cambois, E., Robine, J.-M. **L'incapacité et le Handicap dans l'enquête santé 2002-2003: diversité des approches et usage des indicateurs**. *Solidarité Santé* 2006(2):23-31. CB17/131
(http://www.sante.gouv.fr/drees/dossier-solsa/pdf/dossier200602.pdf)

DISABILITY
HEALTH INDICATOR
PREVALENCE
FRANCE

In population health surveys, disability can be measured starting from various approaches: perceived handicap, functional health, dependence, administrative recognition of the handicap… Specific needs of care and of assistance rise from each one of these dimensions. This study compares the answers to four general questions of the 2002-2003 health and the medical care survey. They are compared with a detailed module on functional problems and impairments in activities of daily living. According to the criteria selected, 2.5 to 6.5 million people would be in situation of disability, from the "administrative recognition of a handicap" to the "long term activity limitations" or to perceived handicap. The analysis shows that the question about the "administrative recognition of handicap" would be rather limited to activity restrictions. That on the "handicaps or impairments in daily life" appears rather restrictive and covers mainly the severe or recognized forms of disability. Lastly, the "long term activity limitations" and the fact "of considering to have a handicap" reflect various functional problems concerning or not the daily activities.

Dans les enquêtes santé en population, l'incapacité peut être mesurée à partir d'approches diverses : le handicap ressenti, la santé fonctionnelle, la dépendance, la reconnaissance administrative du handicap… De chacune de ces dimensions découlent des besoins en matière de soins et d'assistance spécifiques. Cette étude compare les réponses à quatre questions générales de l'enquête sur la santé et les soins médicaux de 2002-2003, qui sont analysées au regard d'informations issues d'un module détaillé sur les problèmes fonctionnels et les gênes dans les activités du quotidien. Selon les critères retenus, 2,5 à 6,5 millions de personnes seraient en situation d'incapacité, allant de la «reconnaissance administrative d'un handicap» aux «limitations d'activités de long terme» ou au handicap ressenti. L'analyse montre que la question sur la «reconnaissance administrative du handicap» serait plutôt limitée aux restrictions d'activité. Celle sur les «handicaps ou gênes dans la vie quotidienne» se révèle assez restrictive et recouvre plutôt des formes d'incapacité sévères ou reconnues. Enfin, les «limitations d'activité de long terme» et le fait de «

considérer avoir un handicap » reflètent des problèmes fonctionnels divers touchant ou non les activités quotidiennes.

2005

Cambois, E., Robine, J.-M., Romieu, I. **The influence of functional limitations and various demographic factors on self-reported activity restriction at older ages**. *Disability and Rehabilitation* 2005;27(15):871-83. CB17/132 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16096239)

DISABILITY
FUNCTIONAL LIMITATION
ACTIVITY RESTRICTION
ELDERLY

PURPOSE: The study analysed some differentials in self-reported restrictions for personal care activities. Activity restrictions are the result of basic functional limitations (vision, mobility...), but such limitations do not evenly reduce activity performance. We assessed how age, sex and the place of residence (household or institutions) changed the risk of reporting restrictions for similar functional problems.
METHOD: We used the French disability survey data on personal care activity restrictions and functional limitations (physical, visual, time orientation) for people aged 55 years and older (n=16961). A logistic regression model shows the separate impact of the nature of functional limitations and of age, gender and residence on the risk of reported restrictions.
RESULTS: Half of the people aged 55 and older reported functional problems; 20% of them also reported personal care activity restrictions. The probability of reporting restrictions was higher for people with several types of limitations, especially orientation and physical controlling for such limitations, the probability of restriction increased with age beyond 70, was higher for men than women below 70, and was higher in institutions than in households.
CONCLUSION: Self-reported activity restrictions are not solely related to functional limitations but also to various demographic variables likely to modify the impact of these limitations on activity performance. These findings suggest studying differentials in the resources allowing to compensate limitations and to prevent reported restrictions.

European Commission. ***Communication to the Spring European Council - Working together for growth and jobs - A new start for the Lisbon strategy - Communication from President Barroso in agreement with Vice-President Verheugen***. 2005 02.02.2005 (Com (2005) 24). CB17/125 (http://eur-lex.europa.eu/Notice.do?val=394925:cs&lang=en&list=394925:cs,&pos=1&page=1&nbl=1&pgs=10&hwords=Communication%20to%20the%20Spring%20European%20Council%20-%20Working%20together%20for%20growth%20and%20jobs%20-%20A%20new%20start%20for%20the%20Lisbon%20strategy%20-%20Communication%20from%20President%20Barroso%20in%20agreement%20with%20Vice-President%20Verheugen~)

AGING
HEALTH CARE SYSTEM
ACTIVE AGING
EUROPE

See page 25 of the report:

Member States should modernize social protection systems (most importantly pensions and health care systems) and strengthen their employment policies. Member States' employment policies should aim at attracting more people into employment (notably through tax and benefit reforms to remove unemployment and wage traps, improved use of active labour market policies and active ageing strategies); improving the adaptability of workers and enterprises notably through wage developments in line with productivity growth and increased investment in human capital. Increasing healthy life years will be a crucial factor in achieving this objective.

Feinglass, J., Thompson, J. A., He, X. Z., Witt, W., Chang, R. W., Baker, D. W. **Effect of physical activity on functional status among older middle-age adults with arthritis**. *Arthritis and Rheumatism* 2005;53(6):879-85. CB17/136
(http://www3.interscience.wiley.com/cgi-bin/fulltext/112193115/PDFSTART)

PHYSICAL ACTIVITY
FUNCTIONAL STATUS
ADULT
ELDERLY

OBJECTIVE: To determine the effect of leisure time and work-related physical activity on changes in physical functioning among 3,554 nationally representative survey respondents, ages 53-63 years in 1994, with arthritis and joint symptoms, interviewed in the Health and Retirement Study (HRS). *
METHODS: In 1992-1994, light and vigorous exercise items were empirically categorized into recommended, insufficient, and inactive leisure time physical activity levels using data from the HRS. Leisure and work-related physical activity levels in 1994 were used to predict 1996 functional decline or improvement, controlling for baseline functional difficulties, health status, sociodemographic characteristics, and behavioral risk factors.
RESULTS: Whereas 29.7% of respondents reported functional declines in 1996, 38.6% of those with baseline difficulties in 1994 reported improvement. Compared with inactive respondents, recommended and insufficient leisure time physical activity were equally protective against functional decline (odds ratio [OR] 0.59 and 0.62, respectively; $P < 0.0001$). Higher levels of physical activity were also modestly associated with functional improvement among respondents with baseline functional difficulties (OR 1.47, $P = 0.05$ and OR 1.45, $P = 0.01$, respectively). Work-related physical activity was not a significant predictor of decline or improvement.
CONCLUSION: Given the high prevalence of arthritis, even modest increases in rates of lifestyle physical activity among older adults could make a substantial contribution to disability-free life expectancy.

Franco, O. H., de Laet, C., Peeters, A., Jonker, J., Mackenbach, J., Nusselder, W. J. **Effects of physical activity on life expectancy with cardiovascular disease**. *Archives of Internal Medicine* 2005;165(20):2355-2360. CB17/137
(http://archinte.ama-assn.org/cgi/reprint/165/20/2355)

PHYSICAL ACTIVITY
DISEASE
DISEASE-FREE LIFE EXPECTANCY
ORIGINAL CALCULATION
MULTI-STATE LIFE TABLE

BACKGROUND: Physical inactivity is a modifiable risk factor for cardiovascular disease. However,

little is known about the effects of physical activity on life expectancy with and without cardiovascular disease. Our objective was to calculate the consequences of different physical activity levels after age 50 years on total life expectancy and life expectancy with and without cardiovascular disease.
METHODS: We constructed multistate life tables using data from the Framingham Heart Study to calculate the effects of 3 levels of physical activity (low, moderate, and high) among populations older than 50 years. For the life table calculations, we used hazard ratios for 3 transitions (healthy to death, healthy to disease, and disease to death) by levels of physical activity and adjusted for age, sex, smoking, any comorbidity (cancer, left ventricular hypertrophy, arthritis, diabetes, ankle edema, or pulmonary disease), and examination at start of follow-up period.
RESULTS: Moderate and high physical activity levels led to 1.3 and 3.7 years more in total life expectancy and 1.1 and 3.2 more years lived without cardiovascular disease, respectively, for men aged 50 years or older compared with those who maintained a low physical activity level. For women the differences were 1.5 and 3.5 years in total life expectancy and 1.3 and 3.3 more years lived free of cardiovascular disease, respectively.
CONCLUSIONS: Avoiding a sedentary lifestyle during adulthood not only prevents cardiovascular disease independently of other risk factors but also substantially expands the total life expectancy and the cardiovascular disease-free life expectancy for men and women. This effect is already seen at moderate levels of physical activity, and the gains in cardiovascular disease-free life expectancy are twice as large at higher activity levels.

Manton, K. G., Gu, X. **Disability declines and trends in Medicare expenditures**. *Ageing Horizons* 2005(2):25-34. CB17/145
(http://www.ageing.ox.ac.uk/ageinghorizonsnew/healthpolicy/published/manton%20gu%20issue%202%202005.pdf)

DISABILITY
FORECASTING
TRENDS
HEALTH EXPENDITURE
USA

Forecasts of disability and Medicare expenditures ignore heterogeneity in the prevalence of disability, and associated health costs, in the U.S. elderly population. Understanding how people, and their health costs, are distributed over differences in individual health and function may identify further savings for the Medicare Trust Fund. In this paper we: (i) construct multivariate functional status profiles graded by severity of disability to make cross-temporal comparisons, (ii) analyze changes in the distribution of the age 65+ population across disability groups 1982 to 1999; (iii) document inflation adjusted Medicare costs, and their 1982 to 1999 changes, in these disability groups and for the U.S. elderly population.

Manton, K. G., Gu, X., Ukraintseva, S. V. **Declining prevalence of dementia in the U.S. elderly population**. *Advances in Gerontology* 2005;16:30-37. CB17/144
(http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=16075674&ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_RVDocSum)

DISABILITY
TRENDS
DEMENTIA
AlZHEIMER DISEASE
USA

A decline in chronic disability prevalence occurred 1982 to 1999 in the U.S. elderly population parallel to declines in severe cognitive impairment. Comparative analysis of factors contributing to the incidence of dementia led us to suggest explanations for this decline. 42,000 disabled and non-disabled individuals aged 65+ participating in National Long Term Care Surveys (NLTCS) were drawn from Medicare enrollment lists to ensure the US population aged 65+ is represented. Severe cognitive impairment (SCI) was defined by the subject not being able to successfully answer any cognitive screen questions in survey interviews. This definition thus covered cases of dementia of different origin and clinical manifestation: Alzheimer's, non-Alzheimer's, stroke-related, vascular etc. Age-specific prevalence of SCI was calculated for 1982, 1984, 1989, 1994 and 1999, and Medicare record physician determined diagnoses of vascular, mixed and Alzheimer's dementia in 1994 and 1999 was determined by gender and age. We found 310,000 fewer severely cognitively impaired elderly in 1999 than in 1982. The average decline in prevalence was from 5.7% to 2.9% for this period. This was associated with a significant decline in mixed but not Alzheimer's dementias. On a gender basis, the male proportional decline was larger than that of female. Several possible explanations of such a surprising trend in elderly age dementias are discussed, including (i) increased proportion of better educated people among the oldest old; (ii) recent declines in stroke rates (these may contribute to decreasing risks of post-stroke dementias); (ii) expanding use of neuro-protective medications working prophylactically for selected dementias. A significant component of disability decline in the U.S. elderly population is the decline in vascular and mixed dementias, but not in Alzheimer's disease alone. Improved medical therapies and better education among the old appear to play important roles in this decline.

Matthews, R. J., Smith, L. K., Hancock, R. M., Jagger, C., Spiers, N. A. **Socioeconomic factors associated with the onset of disability in older age: a longitudinal study of people aged 75 years and over**. *Social Science and Medicine* 2005;61(7):1567-1575. CB17/128 (http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16005788)

DISABILITY
ELDERLY
SOCIAL INEQUALITY
INCOME
ACTIVITIES OF DAILY LIVING (ADL)

Although the association between socioeconomic status and mortality is well documented, there is less work focusing on the association with morbidity in older people. This is partly due to the difficulties of measuring socioeconomic status at older ages. The work that does exist tends to use cross-sectional data and objective measures of socioeconomic status such as education, social class or income. However, these standard measures may be less relevant for older people. In this study, we explore the association between socioeconomic status and disability in older people using a range of individual, household and area level indicators of socioeconomic status, including a subjective measure of adequacy of income. We use cross-sectional data of 1470 participants aged 75 years or over on 31/12/1987 and registered with a UK primary care practice. Of these 719 participants with no disability at baseline were followed up until 2003 with measurements at up to seven time points to determine onset of disability. Disability was defined as difficulty with any one of five activities of daily living. In cross-sectional multivariate analysis, age, housing tenure, living status and a subjective measure of income adequacy were associated with prevalence of disability. In longitudinal analyses, self-perceived adequacy of income showed the strongest association with onset of disability; with those reporting difficulties managing having a median age of onset 80.5 years, 7 years younger than those who felt their income was adequate (median age 87.8 years). The prospective association between self-perceived adequacy of income and onset of disability decreased

with age. This subjective measure of income adequacy may signify difficulties in budgeting, but could also capture differences in objective indicators of status not recorded in this study, such as wealth. Further work is needed to explore what causes older people to experience difficulty in managing their money and to understand the mechanisms behind its impact on their physical health.

Robine, J.-M., Jagger, C. **The relationship between increasing life expectancy and healthy life expectancy**. *Ageing Horizons* 2005(3):14-21. CB17/146
(http://www.ageing.ox.ac.uk/ageinghorizons/thematic%20issues/biodemography/papers%20biodemography/pdf/2robinejaggerah3.pdf)

HEALTHY LIFE EXPECTANCY
LIFE EXPECTANCY
MORTALITY
ELDERLY
OLDEST OLD

The continued increases in life expectancy with no obvious deceleration, the proliferation of centenarians and appearance of supercentarians (those aged 110 years and over) leave us in no doubt that the belief that life expectancy was limited to 85 years is now untenable. Although we may ask how long the limits to life can be pushed, the crucial question is whether the extra years gained year on year in life expectancy are healthy years. This paper begins by reviewing what was historically believed to be the theoretical relationships between life expectancy and healthy life expectancy. We debate how current knowledge of mortality rates in the old and oldest old, the trends in healthy life expectancy, and the gap between the genders shed light upon these theoretical models, discussing the fact that different models may exist in different cohorts of the same population. The paper closes with some speculations on how we might monitor the evolution of healthy life expectancy more closely, particularly in those countries still early on in the ageing transition.

2003

Andersen, I., Osler, M., Petersen, L., Gronbaek, M., Prescott, E. ***Income and risk of ischaemic heart disease in men and women in a Nordic welfare country***. In: International Journal of Epidemiology; 2003. p. 367-74. CB17/129
(http://ije.oxfordjournals.org/cgi/reprint/32/3/367)

DISEASE-FREE LIFE EXPECTANCY
SOCIAL INEQUALITY
INCOME
DENMARK
1964-1992

BACKGROUND: The inverse relation between ischaemic heart disease (IHD) and income is well known among men, but it remains to be clarified whether the relationship between social gradient and IHD is similar for men and women. The present study explores the associations between income and IHD in men and women in a Nordic country.
METHODS: We used data from two prospective population studies conducted in Copenhagen. A total of 22 782 subjects, 54% women, with initial examination between 1964 and 1992 were followed until 1996 for hospital admission or death from IHD. We performed survival analyses, taking traditional cardiovascular risk factors into account, and estimated IHD-free life expectancy by household income in

men and women.
RESULTS: During follow-up, 1803 men and 1258 women experienced an event of IHD (21% fatal). The hazards by deciles of income showed a non-linear graded inverse effect of income, with a large group of middle-income in which income was not associated with risk of IHD. The hazard ratio for highest versus lowest deciles was 0.53 (95% CI: 0.44-0.65). The association was attenuated by adjustment for risk factors, but remained statistically significant. The associations were similar for both sexes. Median IHD-free life expectancy for low-income versus high-income groups was reduced by 9.4 and 7.0 years in men and women, respectively.
CONCLUSIONS: The effect of household income on risk of IHD was graded and similar for men and women. The difference between high and low income, regarding IHD-free life expectancy, was considerable.

Diehr, P., Beresford, S. A. **The relation of dietary patterns to future survival, health, and cardiovascular events in older adults**. *Journal of Clinical Epidemiology* 2003;56(12):1224-35. CB17/133
(http://www.ingentaconnect.com/content/els/08954356/2003/00000056/00000012/art00202)

ELDERLY
NUTRITION
PERCEIVED HEALTH
MORTALITY
PUBLIC HEALTH

BACKGROUND: There have been few long-term follow-up studies of older adults who follow different dietary patterns.
METHODS: We cluster-analyzed data on dietary fat, fiber, protein, carbohydrate, and calorie consumption from the U.S. Cardiovascular Health Study (mean age=73), and examined the relationship of the dietary clusters to outcomes 10 years later.
RESULTS: The five clusters were named "Healthy diet" (relatively high in fiber and carbohydrate and low in fat), "Unhealthy diet" (relatively high in protein and fat, relatively low in carbohydrates and fiber); "High Calorie," "Low Calorie," and "Low 4," which was distinguished by higher alcohol consumption. The clusters were strongly associated with demographic factors, health behaviors, and baseline health status. The Healthy diet cluster had the most years of life and years of healthy life, and the Unhealthy diet cluster had the fewest. The Low 4 cluster had the best cardiovascular outcomes. Differences were not usually large.
CONCLUSIONS: Older adults who followed the healthy eating pattern had somewhat longer and healthier lives, and the cluster with more alcohol consumption was associated with fewer cardiovascular events. The unhealthy eating pattern had the worst outcomes.

Ezzati, M., Hoorn, S. V., Rodgers, A., Lopez, A. D., Mathers, C. D., Murray, C. J., Comparative Risk Assessment Collaborating Group. **Estimates of global and regional potential health gains from reducing multiple major risk factors**. *Lancet* 2003;362(9380):271-80. CB17/135
(http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=Retrieve&db=PubMed&list_uids=12892956)

HEALTHY LIFE EXPECTANCY
MORBIDITY
MORTALITY
POTENTIAL GAINS

BACKGROUND: Estimates of the disease burden due to multiple risk factors can show the potential gain from combined preventive measures. But few such investigations have been attempted, and none on a global scale. Our aim was to estimate the potential health benefits from removal of multiple major risk factors.
METHODS: We assessed the burden of disease and injury attributable to the joint effects of 20 selected leading risk factors in 14 epidemiological subregions of the world. We estimated population attributable fractions, defined as the proportional reduction in disease or mortality that would occur if exposure to a risk factor were reduced to an alternative level, from data for risk factor prevalence and hazard size. For every disease, we estimated joint population attributable fractions, for multiple risk factors, by age and sex, from the direct contributions of individual risk factors. To obtain the direct hazards, we reviewed publications and re-analysed cohort data to account for that part of hazard that is mediated through other risks.
RESULTS: Globally, an estimated 47% of premature deaths and 39% of total disease burden in 2000 resulted from the joint effects of the risk factors considered. These risks caused a substantial proportion of important diseases, including diarrhoea (92%-94%), lower respiratory infections (55-62%), lung cancer (72%), chronic obstructive pulmonary disease (60%), ischaemic heart disease (83-89%), and stroke (70-76%). Removal of these risks would have increased global healthy life expectancy by 9.3 years (17%) ranging from 4.4 years (6%) in the developed countries of the western Pacific to 16.1 years (43%) in parts of sub-Saharan Africa.
INTERPRETATION: Removal of major risk factors would not only increase healthy life expectancy in every region, but also reduce some of the differences between regions. The potential for disease prevention and health gain from tackling major known risks simultaneously would be substantial.

1996

Liang, J., Borawski-Clark, E., Liu, X., Sugisawa, H. **Transitions in cognitive status among the aged in Japan**. *Social Science and Medicine* 1996;43(3):325-337. CB17/138 (http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=Retrieve&db=PubMed&list_uids=8844935&dopt=Citation)

ACTIVE LIFE EXPECTANCY (ALE)
IMPAIRMENT-FREE LIFE EXPECTANCY
COGNITIVE FUNCTION
EDUCATION
MARITAL STATUS
SMOKING
RESIDENCE
FUNCTIONAL LIMITATION
ORIGINAL CALCULATION
MULTI-STATE LIFE TABLE
JAPAN

This study examines the competing risk of cognitive impairment, mortality and study attrition over a three year period within a national probability sample of Japanese elderly (n = 1506). Younger age and fewer chronic conditions were related to recovery, while older age, being married, poorer self-rated health and depression were related to mortality. Impaired, urban respondents were more likely to drop out of the study than impaired rural respondents. For those 'intact' at baseline, the probabilities of impairment, death and non-response were 7, 6 and 16%. Older, less educated individuals were more likely to become impaired; older males, less educated, married, those in poorer self-rated health with poor functional health were more likely to die; and younger, single, urban living individuals with poor self-rated and functional

health, a past smoking history and high levels of depression were the most likely to drop out of the study. A Japanese elder aged 65 is expected to spend about 14.6 years (81%) free from cognitive impairement and about 3.45 years (19%) experiencing some degree of cognitive impairment throughout the remaining lifetime.