Joint Action European Health and Life Expectancy Information System (JA EHLEIS)

Carol Jagger
Newcastle University
Outline

- What is health expectancy
- History of Healthy Life Years
- Aims of JA EHLEIS
- Examples
  - Healthy productive life in the EU - Inequalities in HLY at age 50
  - Latest HLY results 2009
- Conclusions
WHAT IS HEALTH EXPECTANCY?
Monitoring population ageing

- Most countries are seeing year on year increase in life expectancy at birth and at older ages
- Are we exchanging longer life for poorer health (expansion of morbidity scenario) or are the extra years spent in good health (compression of morbidity)?
- Do these trends hold for all countries, all social groups, men and women?
- Health expectancies provide the answer as they extend the notion of life expectancy to different health dimensions, thus adding quality to quantity of life lived
Health expectancy

• partitions years of life at a particular age into years healthy and unhealthy

• adds information on quality to life expectancy

• is used to:
  ➤ monitor population health over time
  ➤ compare countries (EU Healthy Life Years)
  ➤ compare regions within countries
  ➤ compare different social groups within a population (education, social class)
Example: HLY at age 65 (EU27)

Life expectancy = expected number of remaining years of life at a particular age
Health expectancy = expected number of remaining years of life spent healthy
Terminology of health expectancies

Health Expectancy

- Healthy LE (self rated health) - HLE
- Disability free LE - DFLE
- Dementia free LE - DemFLE
- Limiting longstanding illness - HLY
- IADL/ADL - Active LE

Many measures of health = many health expectancies!
Are the extra years healthy ones? - theory

**Pessimists**

- Increases in life expectancy due to keeping the old and frail alive for longer (Kramer 1980)

**Optimists**

- Onset and progression of chronic diseases are being delayed (Fries 1980, 2011)

**Dynamic Equilibrium**

- More disability but less severe (Manton, 1982)

Proportion surviving (%) vs Age

- Mortality
- Morbidity
- Disability
The simplest method is Sullivan’s method (Sullivan 1971) with:

- prevalence of the health state from a cross-sectional survey
- a standard life table for the same period
Health expectancy methods

- Multi-state life tables require longitudinal data on transitions between health states and death
- See [www.eurOhex.eu](http://www.eurOhex.eu) for more detail
Pros and cons of different methods

- **Cross-sectional**
  - + easiest for trends
  - - life tables not available for subgroups

- **Longitudinal**
  - + explicitly estimates incidence and recovery providing better future forecasts
  - - cost, attrition

*Not either/or but must include institutional population*
HISTORY OF HEALTHY LIFE YEARS
Historical background

The sustained interest in health expectancy within countries led to a European research programme Euro-REVES I identifying reasons for the incomparability of European results (Biomed II, 1995-1997)

- Collection of health expectancies made by European members identified the problem
- Detailed description of the concepts, questionnaires and calculation methods used identified the reason for incomparability
Proposals for nine instruments dealing with:

- **Chronic morbidity**
  - Global
  - Detailed

- **Functional limitation**
  - Detailed (physical and sensory)

- **Activity restriction**
  - Global (GALI)
  - Detailed (personal care, household care, other activities)

- **Perceived health**
  - Global

- **Mental health**

*Minimum European Health Module* (Module 2000) for inclusion in all the European health and social surveys and included in Health Surveys (Eurobarometer, SILC)
EU Statistics on Income and Living Conditions (EU-SILC)
2005-7 MEHM with 3 health questions:

- Do you suffer from (have) any chronic (long-standing) illness or condition (health problem)? Yes/ No.

- For the past 6 months or more have you been limited in activities people usually do because of a health problem? Severely limited / Limited but not severely/ Not limited. (HLY)

- How is your health in general? Very good / good / fair/ bad / very bad.
Lisbon Strategy

- In 2001 additional target set:
  - To increase the proportion of older people (aged 55-64) in the workforce to 50% by 2010
- In 2004 Healthy Life Years (HLY) added to the list of structural indicators
- “Increasing healthy life years will be a crucial factor in achieving this objective (of modernising social protection systems and strengthening pensions and healthcare).” (2005 Spring Council)
- Part of the European Community Health Indicators (ECHI)
Previous projects

During the first phase (2004-7) the EHEMU project developed several summary measures of population health (SMPH) indicating the quality of the remaining years that a person is expected to live (i.e. free of chronic disease, free of disability and in good perceived health).

In the second phase (2007-2010) the EHLEIS project began to systematically monitor health trends and gaps among the European countries and to identify their determinants through survey instruments developed by EHEMU and included in the pan-European survey SILC (European Statistics on Incomes and Living Conditions) and SHARE (Survey on Health, Ageing and Retirement in Europe).
AIMS OF JA EHLEIS
Aims

In the framework of the new **Europe 2020 Strategy** (2011-2020), the **JA EHLEIS** (2011-2014) aims to increase:

- (i) the utility of the SMPH through consolidation and further development of the EHLEIS Information System,
- (ii) the comparability with SMPH for the United States and Japan and
- (iii) the use by Member States in national policy-making.
Contributions to other initiatives

JA EHLEIS will contribute to:

- the **first European Innovation Partnership**, which focuses on **active and healthy ageing** and with the target of increasing by 2 years the average number of **healthy life years** by 2020
- identifying the main determinants of healthy life in Europe, thus offering new avenues for policies targeting increases in HLY
JA EHLEIS cofunded by the European Commission DG SANCO, two French institutions (Ministry of Health and the National Solidarity Fund for Autonomy CNSA) and 10 Member States:

- Belgium (Scientific Institute of Public Health)
- the Czech Republic (Institute of Health Information and Statistics of the Czech Republic)
- Denmark (Danish National Board of Health; Economic Council of the Labour Movement; University of Southern Denmark; University of Copenhagen)
- France (INSERM; INED; Regional Oncology Research Centre; University of Montpellier)
- Germany (Robert Koch Institute; Rostock Center for Demographic Change)
- Greece (Hellenic Statistical Authority)
- Italy (University La Sapienza)
- The Netherlands (Erasmus Medical Center; National Institute for Public Health and the Environment RIVM ; Statistical Office CBS)
- Sweden (National Board of Health and Welfare)
- United Kingdom (Office for National Statistics ONS; Newcastle University)

11 further Member States participate in meetings along with United States, Japan, OECD, the United Nations International Institute on Aging (UN-INIA) and the WHO.
Main objectives of JA EHLEIS

- **CONSOLIDATE THE EXISTING INFORMATION SYSTEM (EHLEIS)**
  - by calculation and dissemination (online information system, annual country reports) of SMPH (including the HLY) and analysis of trends and gaps in life and health expectancies at the EU level (macro-level determinants)

- **CONTINUE DEVELOPING IN-DEPTH RESEARCH**
  - by analysis of micro-level health determinants using the new European Health Interview Survey and analysis of SMPH gaps between socio-economic groups;

- **UNDERTAKE RESEARCH**
  - in order to develop an alternative SMPH in the future, in collaboration with the US, Japan and OECD

- **INTEGRATE THE EUROPEAN TASK FORCE ON HEALTH EXPECTANCIES**
  - into an annual meeting to further engage Member States and promote SMPH use in policy-making
Outputs

FOR EACH OF THE 27 MEMBER STATES

Annual country report (4 pages)
Health Expectancy in Belgium

What is health expectancy?

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

How is the effect of longer life measured?

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

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

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

How do we compare health expectancies?

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

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

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

Further details on the MEHM, the European surveys and health expectancy calculation and interpretation can be found on www.eurohex.eu

What is in this report?

This report is produced by the Joint Action European Health and Life Expectancy Information System (EHLEIS) as part of a country series. In each report we present:

- Life expectancies and Healthy Life Years (HLY) at age 65 for the country of interest and for the overall 25 (27 after 2007) European Union member states (EU25 then EU27), using the SILC question on long term health related disability, known as the GAI (Global Activity Limitation Indicator), from 2004 to 2009. The wording of the question has been revised in 2008. When available, we provide previous HLY series based on the disability question of the 1995-2001 European Community Household Panel (ECHP).
- Health expectancies based on the two additional dimensions of health (chronic morbidity and self-perceived health) for the country of interest, based on SILC 2009;
- The correlation between life expectancies and HLY at age 50 in 2005 (EU25) and 2009 (EU27) for the member states.

References

Life expectancy (LE) and Healthy Life Years (HLY) at age 65 for Belgium and the European Union (EU15 and EU25) based on ECHP (1995-2001) and SILC (2004-2009)

Key points:
Belgian life expectancy (LE) at age 65 has increased by 1.5 years for women and 2.0 years for men over the 1999-2009 period. LE for men between 1995-2001 was slightly below the EU15 average. By 2009 LE for both sexes was close to the EU27 average (20.7 for women and 17.2 for men).

Over the 1995-2001 period, health expectancy based on activity limitation (HLY) at age 65 from the ECHP data increased in Belgium. The proportion of HLY (years without self-reported limitations due to health condition or disability) within the total expected years, slightly increased for both sexes between 1995 and 2001, being close to 65% for women and 70% for men in 2001. Between 1995 and 2001 HLY in Belgium was above the EU15 average.

The new HLY series, initiated in 2004 with the SILC data, shows values for Belgium being in 2009 about 2 years above the EU27 average (8.2 for women and men). In 2009 women and men at age 65 can expect to spend 68% and 60% of their life without self-reported long-term activity limitations respectively. HLY continued to increase for men in Belgium between 2004 and 2009. For women HLY increased until 2007 but tends to stagnate/decrease since that year. The wording of the GALL question has not needed to be changed in Belgium since the new HLY series was initiated.

Life and health expectancies at age 65 based on activity limitation (Healthy Life Years), chronic morbidity and perceived health for Belgium (Health data from SILC 2009)

Key points:
In 2009, LE at age 65 in Belgium was 21.1 years for women and 17.5 years for men.
Based on the SILC 2009, at age 65, women spent 10.1 years (48% of their remaining life) without activity limitation (corresponding to Healthy Life Years (HLY)), 6.9 years (33%) with moderate activity limitation and 4.1 years (19%) with severe activity limitation.
Men of the same age spent 10.5 years (60% of their remaining life) without activity limitation compared to 4.7 years (27%) with moderate activity limitation and 2.3 years (13%) with severe activity limitation.
Although the total years lived by men were less than those for women, the number of years lived in very good or good perceived health and years lived without activity limitation were almost similar. However the number of years lived with chronic morbidity was slightly greater for men than for women. Compared to men, women spent a larger proportion of their life in ill health, and spent more years with severe health problems.

These results should be interpreted cautiously given the lack of the institutional population, such as people living in nursing homes, and in some countries the small sample size. The sample size for Belgium comprised 1168 women and 1023 men aged 65 years in 2009.

Publications and reports on health expectancies for Belgium
Life expectancy (LE) and healthy life years (HLYs) at 50 years of age in 2005 and 2009, by sex, SULC EU25 2005 and SULC EU27 2009

When the first values of HLY for 2005 for all EU25 countries were published1, the relationship between HLY and life expectancy (LE) at age 50 were reported. The graphs showed a cluster of Eastern European countries with very low LE and HLY for men and women and, for men particularly, a large group of countries with very similar life expectancies but widely ranging HLY. By 2009 there have been a number of changes, notably:

- A large group of countries with very similar LE but widely varying HLY has emerged in women. The HLY ranking has little shifted over time.
- The large group with similar LE for men in 2005 has dispersed somewhat showing that these countries have gained LE differentially.
- The inclusion of Bulgaria and Romania in 2009 has resulted in more distinct groups of low and high life expectancy for both men and women, though within these groups HLY vary considerably.


About the Joint Action EHLEIS

The current Joint Action EHLEIS (European Health and Life Expectancy Information System) and EurChew (www.eurchew.eu) are co-funded by 10 Member States, the European Commission, DG SANCO, and two French institutions: the Ministry of Health and the National Solidarity Fund for Autonomy (CSGN). It is a collaboration between: Belgium (Scientific Institute of Public Health - ISP-W), the Czech Republic (Institute of Health Information and Statistics of the Czech Republic - UDS CR), Denmark (Danish National Board of Health – SST), Economic Council of the Labour Movement - AE; University of Southern Denmark – IFN; University of Copenhagen – UCPH), France (National Institute of Health and Medical Research – INSERM; National Institute of Demography – INED; Regional Oncology Research Centre – CRCU; University of Montpellier - UMR); Germany (Robert Koch Institute – RKI; Robert Koch Institute – RKI; Robert Koch Institute – RKI); Greece (Hellenic Statistical Authority – ESA); Italy (University La Sapienza – DSSAS); The Netherlands (Erasmus Medical Center – EM), National Institute for Public Health and the Environment – RIVM; Statistical Office – CBS; Sweden (National Board of Health and Welfare – ScHReNIS) and the United Kingdom (Office for National Statistics – ONS). The Joint Action EHLEIS and EurChew are to provide a central facility for the co-ordinated analysis, interpretation and dissemination of life and health expectancy to add the quality dimension to the quantity of life lived by the European populations. Further details about the Joint Action can be found on the websites: www.eurchew.eu and www.healthylife.eu.
Advanced research on European health expectancies

Welcome

EurOhex is a website which provides access to research on health expectancies in Europe. It includes a database on health indicators comprising life expectancies and Healthy Life Years (HLY) for 27 European countries.

From 2011 onwards projects on health expectancies are conducted in the framework of a Joint Action between the European Commission and the Member-States:

EUROPEAN HEALTH & LIFE EXPECTANCY

The JA:EHLEIS contributes to the European Innovation Partnership (EIP) on Active an Healthy Ageing as well as to the European Year for Active Ageing.

The JA:EHLEIS follows:

- Ehemu (2004-2007)
- Ehleis (2007-2010)

We hope that you find this site to be a useful online resource, and welcome any comments or questions that you may have about it or the Joint Action.

EurOhex is part of the international network on health expectancies
Advanced research on European health

EurOhex is a website which provides access to research on health expectancies. It includes a database on health indicators comprising life expectancies and health for 27 European countries.

From 2011 onwards projects on health expectancies are conducted in the framework between the European Commission and the Member-States:

The JA:EHLEIS contributes to the European Innovation Partnership (EIP) on Active Ageing.
INTERPRETING HEALTH EXPECTANCIES

Most countries in the world are ageing rapidly with longer and longer life expectancies. Whether these extra years are healthy or with increasing disability and dependence is important for governments, health services and individuals. Health expectancies were first developed to answer this question. The European Health Expectancy Monitoring Unit (EHEMU) has developed this guide to aid the understanding and interpreting health expectancies and to accompany the more technical guide on how to calculate health expectancies\(^1\).

What are health expectancies?

Health expectancies are a natural extension of the well known indicators of life expectancies. Life expectancies measure the number of remaining years to be lived at a particular age, considering the current mortality level of the country. For example in 2004 the female life expectancy at birth in Belgium was 81.4 years, so a baby girl born in 2004 could expect to live to age 81 years, assuming the conditions of 2004 prevailed over her whole life. By considering not only mortality but also ill-health at particular ages we can divide this remaining number of years into years spent in good and bad health – these are then health expectancies. Health expectancies add a quality dimension to the quantity of life lived.

As there are many dimensions of health, there are many health expectancies. The proposed new EU structural indicator Healthy Life Years (HLY) is based on limitations in daily activities and is therefore a disability-free life expectancy, one of the most common health expectancies reported. Others include healthy life expectancy (based
EHLEIS research findings

- Healthy productive life in the EU
- Inequalities on HLY at age 65: OECD Health at a Glance
- Inequalities in wider range of health expectancies
- Cross-national validation of HLY against other measures of health and function
- Gender differences in health of EU10 and EU15 populations: the double burden of EU10 men
- Gender gaps in HLY at age 50: relationship with macro-level structural indicators
EXAMPLE 1: HEALTHY PRODUCTIVE LIFE IN THE EU
Inequalities in healthy life years in the 25 countries of the European Union in 2005: a cross-national meta-regression analysis

Carlo Jagger, Clare Gilles, Francesco Maccarelli, Emanuela Canevasi, Herman Van Oyen, Willie Norval, and the EHLEIS Team

Summary

Background. Although life expectancy in the European Union (EU) is increasing, whether most of these extra years are spent in good health is unclear. This information would be crucial for both ensuring health-care costs and increasing labour-force participation for older people. We investigated inequalities in life expectancies and healthy life years (HELYs) at 50 years of age for the 25 countries in the EU in 2005 and the potential for increasing the proportion of older people in the labour force.

Methods. We calculated life expectancies and HELYs at 50 years of age by sex and country by the Sullivan method, which was applied to Eurostat's life tables and age-specific prevalence of activity limitation from the 2005 statistics of living and income conditions survey. We investigated differences between countries through meta-regression techniques, with attritional and sustained indicators for every country.

Findings. In 2005, an average 50-year-old man in the 25 EU countries could expect to live until 67.3 years free of disability, and a woman so 64.1 years. HELYs at 50 years for both men and women varied more between countries than did life expectancy (HEY range for men, from 9.1 years in Estonia to 23.6 years in Denmark; for women, from 10.4 years in Estonia to 24.1 years in Denmark). Gross domestic product and expenditure on elderly care were both positively associated with HELYs at 50 years in men and women (p<0.01 for both indicators and sexes). However, in men alone, long-term unemployment was negatively associated (p<0.01) and life-long learning positively associated (p<0.01) with HELYs at 50 years of age.

Interpretation. Substantial inequalities in HELYs at 50 years exist within EU countries. Our findings suggest that, without major improvements in population health, the gains of increasing participation of older people into the labour force will be difficult to sustain in all 25 EU countries.

Lancet 2008; 372: 2124–31
Variation in HLY at age 50

**HLY in men**

- Austria
- Belgium
- Denmark
- Finland
- France
- Germany
- Greece
- Ireland
- Italy
- Luxembourg
- Netherlands
- Portugal
- Spain
- Sweden
- United Kingdom
- EU15 combined
- Cyprus
- Czech Republic
- Estonia
- Hungary
- Latvia
- Lithuania
- Malta
- Poland
- Slovakia
- Slovenia
- EU10 combined
- EU25 combined

**HLY in women**

- Austria
- Belgium
- Denmark
- Finland
- France
- Germany
- Greece
- Ireland
- Italy
- Luxembourg
- Netherlands
- Portugal
- Spain
- Sweden
- United Kingdom
- EU15 combined
- Cyprus
- Czech Republic
- Estonia
- Hungary
- Latvia
- Lithuania
- Malta
- Poland
- Slovakia
- Slovenia
- EU10 combined
- EU25 combined
## What explain inequalities in HLY?

<table>
<thead>
<tr>
<th>Macro indicator</th>
<th>Quality grade</th>
<th>EU25</th>
<th>EU15</th>
<th>EU10</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita</td>
<td>A</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Expenditure on elderly care</td>
<td>Not available</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Poverty risk for &gt;65yrs (%)</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inequality of income distribution</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment rate of older workers</td>
<td>A</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long term unemployment rate</td>
<td>A</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean exit age from labour force</td>
<td>Not available</td>
<td></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Life-long learning (%)</td>
<td>Not available</td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Low education attainment (%)</td>
<td>Not available</td>
<td>+</td>
<td></td>
<td>+</td>
</tr>
</tbody>
</table>
Potential for increasing working life
LATEST HLY RESULTS 2009
Life expectancy (LE) and the number of Healthy Life Years (HLY) in the European Union (EU27) in 2009

The key figures
Life expectancy (LE) and the number of Healthy Life Years (HLY) in the European Union (EU27) in 2009

The key figures
Conclusions

- Health expectancy is a useful indicator to monitor population health and compare countries, regions, population sub groups.
- Healthy Life Years (HLY) are increasingly being used as a target for EU policy on active and healthy ageing and in funding programmes.
  - European Innovation Partnership on Active and Healthy Ageing (EIP-on AHA) - headline target is to increase the EU average healthy lifespan of the EU citizens by two years by 2020 [http://ec.europa.eu/research/innovation-union/index_en.cfm?section=active-healthy-ageing](http://ec.europa.eu/research/innovation-union/index_en.cfm?section=active-healthy-ageing).
  - Futurage, a road map for ageing research [http://futurage.group.shef.ac.uk/](http://futurage.group.shef.ac.uk/).
Conclusions

- Harmonisation of HLY question (GALI) is improving but is still a possible source of difference between countries.
- The JA EHLEIS brings together most Member States to encourage them to use HLY nationally through:
  - Eurohex website
  - Calculation guides
  - Research
  - Sharing good practice
Conclusions

“Increased longevity without quality of life is an empty prize. Health expectancy is more important than life expectancy.”

Dr Hiroshi Nakajima, Director-General WHO 1997
Joint Action European Health and Life Expectancy Information System (JA EHLEIS)

Carol Jagger

carol.jagger@ncl.ac.uk

www.eurohex.eu

www.reves.net
<table>
<thead>
<tr>
<th>COUNTRY/</th>
<th>Life expectancy (years)</th>
<th>Healthy Life Years (HLY)</th>
<th>Proportion HLY/LE (%)</th>
<th>Mean HLY</th>
<th>Gap HLY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td></td>
<td>77.8</td>
<td>77.6</td>
<td>77.9</td>
<td>58.3</td>
</tr>
<tr>
<td>Belgium</td>
<td></td>
<td>76.9</td>
<td>77.3</td>
<td>:</td>
<td>63.3</td>
</tr>
<tr>
<td>Bulgaria</td>
<td></td>
<td>69.8</td>
<td>70.1</td>
<td>70.2</td>
<td>62.1</td>
</tr>
<tr>
<td>Cyprus</td>
<td></td>
<td>78.5</td>
<td>78.7</td>
<td>:</td>
<td>64.5</td>
</tr>
<tr>
<td>Czech Republic</td>
<td></td>
<td>74.1</td>
<td>74.2</td>
<td>74.5</td>
<td>61.2</td>
</tr>
<tr>
<td>Denmark</td>
<td></td>
<td>76.5</td>
<td>76.9</td>
<td>77.2</td>
<td>62.1</td>
</tr>
<tr>
<td>Estonia</td>
<td></td>
<td>68.7</td>
<td>69.8</td>
<td>70.7</td>
<td>53.0</td>
</tr>
<tr>
<td>Finland</td>
<td></td>
<td>76.5</td>
<td>76.6</td>
<td>76.9</td>
<td>58.6</td>
</tr>
<tr>
<td>France</td>
<td></td>
<td>77.8</td>
<td>78.0</td>
<td>78.2</td>
<td>62.7</td>
</tr>
<tr>
<td>Germany</td>
<td></td>
<td>77.6</td>
<td>77.8</td>
<td>78.0</td>
<td>56.3</td>
</tr>
<tr>
<td>Greece</td>
<td></td>
<td>77.7</td>
<td>77.8</td>
<td>78.4</td>
<td>65.8</td>
</tr>
<tr>
<td>Hungary</td>
<td></td>
<td>70.0</td>
<td>70.3</td>
<td>70.7</td>
<td>54.8</td>
</tr>
<tr>
<td>Ireland</td>
<td></td>
<td>77.8</td>
<td>77.4</td>
<td>78.7</td>
<td>63.5</td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td>79.1</td>
<td>79.4</td>
<td>:</td>
<td>63.0</td>
</tr>
<tr>
<td>Latvia</td>
<td></td>
<td>67.0</td>
<td>68.1</td>
<td>68.6</td>
<td>51.8</td>
</tr>
<tr>
<td>Lithuania</td>
<td></td>
<td>66.3</td>
<td>67.5</td>
<td>68.0</td>
<td>54.8</td>
</tr>
<tr>
<td>Luxembourg</td>
<td></td>
<td>78.1</td>
<td>78.1</td>
<td>77.9</td>
<td>64.8</td>
</tr>
<tr>
<td>Malta</td>
<td></td>
<td>76.9</td>
<td>77.8</td>
<td>79.1</td>
<td>68.9</td>
</tr>
<tr>
<td>Netherlands</td>
<td></td>
<td>78.4</td>
<td>78.7</td>
<td>78.9</td>
<td>62.4</td>
</tr>
<tr>
<td>Poland</td>
<td></td>
<td>71.3</td>
<td>71.5</td>
<td>72.1</td>
<td>58.5</td>
</tr>
<tr>
<td>Portugal</td>
<td></td>
<td>76.2</td>
<td>76.5</td>
<td>76.7</td>
<td>59.1</td>
</tr>
<tr>
<td>Romania</td>
<td></td>
<td>69.7</td>
<td>69.8</td>
<td>:</td>
<td>60.2</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td></td>
<td>70.8</td>
<td>71.4</td>
<td>71.7</td>
<td>52.1</td>
</tr>
<tr>
<td>Slovenia</td>
<td></td>
<td>75.5</td>
<td>75.9</td>
<td>76.4</td>
<td>59.5</td>
</tr>
<tr>
<td>Spain</td>
<td></td>
<td>78.2</td>
<td>78.7</td>
<td>79.0</td>
<td>64.1</td>
</tr>
<tr>
<td>Sweden</td>
<td></td>
<td>79.2</td>
<td>79.4</td>
<td>79.6</td>
<td>69.4</td>
</tr>
<tr>
<td>United Kingdom</td>
<td></td>
<td>77.8</td>
<td>78.3</td>
<td>:</td>
<td>65.0</td>
</tr>
<tr>
<td>ELI27</td>
<td></td>
<td>76.4</td>
<td>76.7</td>
<td>:</td>
<td>61.1</td>
</tr>
<tr>
<td>Gap Min-Max</td>
<td></td>
<td>12.9</td>
<td>11.9</td>
<td>11.6</td>
<td>17.6</td>
</tr>
</tbody>
</table>

Mean HLY: The average Healthy Life Years across the years 2008-2010.
Gap HLY: The difference between the highest and lowest Healthy Life Years in the years 2008-2010.
<table>
<thead>
<tr>
<th>COUNTRY/</th>
<th>Life expectancy (years)</th>
<th>Healthy Life Years (HLY)</th>
<th>Proportion HLY/LE (%)</th>
<th>Mean HLY</th>
<th>Gap HLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>83.3 83.2 83.5</td>
<td>59.7 60.8 60.7</td>
<td>71.6 73.0 72.6</td>
<td>60.4 1.0</td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>82.6 82.8 :</td>
<td>64.2 63.7 :</td>
<td>77.8 76.9 :</td>
<td>: :</td>
<td></td>
</tr>
<tr>
<td>Bulgaria</td>
<td>77.0 77.4 77.4</td>
<td>65.7 65.9 67.2</td>
<td>85.2 85.1 86.9</td>
<td>66.3 1.5</td>
<td></td>
</tr>
<tr>
<td>Cyprus</td>
<td>83.1 83.7 :</td>
<td>65.5 66.4 :</td>
<td>78.8 79.4 :</td>
<td>: :</td>
<td></td>
</tr>
<tr>
<td>Czech Republic</td>
<td>80.5 80.5 80.9</td>
<td>63.4 62.7 64.6</td>
<td>78.8 77.8 79.8</td>
<td>63.6 1.2</td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>81.0 81.1 81.4</td>
<td>61.0 60.3 61.9</td>
<td>75.3 74.4 76.0</td>
<td>61.1 0.9</td>
<td></td>
</tr>
<tr>
<td>Estonia</td>
<td>79.5 80.2 80.8</td>
<td>57.5 59.2 58.1</td>
<td>72.3 73.8 72.0</td>
<td>58.3 0.6</td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td>83.3 83.5 83.5</td>
<td>59.5 58.3 57.8</td>
<td>71.4 69.9 69.2</td>
<td>58.5 -1.7</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>84.8 85.0 85.3</td>
<td>64.6 63.3 63.5</td>
<td>76.1 74.4 74.4</td>
<td>63.8 -1.1</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>82.7 82.8 83.0</td>
<td>57.7 58.0 58.6</td>
<td>69.8 70.1 70.6</td>
<td>58.1 0.9</td>
<td></td>
</tr>
<tr>
<td>Greece</td>
<td>82.3 82.7 82.8</td>
<td>66.1 66.7 67.6</td>
<td>80.3 80.7 81.7</td>
<td>66.8 1.5</td>
<td></td>
</tr>
<tr>
<td>Hungary</td>
<td>78.3 78.4 78.6</td>
<td>58.3 58.3 58.6</td>
<td>74.5 74.3 74.6</td>
<td>58.4 0.3</td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td>82.4 82.5 83.2</td>
<td>65.0 65.1 66.9</td>
<td>78.8 79.0 80.4</td>
<td>65.7 1.9</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>84.5 84.6 :</td>
<td>61.9 62.5 :</td>
<td>73.2 73.9 :</td>
<td>: :</td>
<td></td>
</tr>
<tr>
<td>Latvia</td>
<td>77.8 78.0 78.4</td>
<td>54.6 56.1 56.5</td>
<td>70.2 71.8 72.1</td>
<td>55.7 1.9</td>
<td></td>
</tr>
<tr>
<td>Lithuania</td>
<td>77.6 78.7 78.9</td>
<td>59.9 61.1 62.3</td>
<td>77.2 77.7 79.0</td>
<td>61.1 2.4</td>
<td></td>
</tr>
<tr>
<td>Luxembourg</td>
<td>83.1 83.3 83.5</td>
<td>64.4 66.2 66.0</td>
<td>77.5 79.4 79.0</td>
<td>65.5 1.6</td>
<td></td>
</tr>
<tr>
<td>Malta</td>
<td>81.9 82.7 83.6</td>
<td>72.1 71.0 71.6</td>
<td>88.0 85.8 85.7</td>
<td>71.6 -0.5</td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>82.5 82.9 83.0</td>
<td>59.9 60.0 60.2</td>
<td>72.7 72.4 72.6</td>
<td>60.0 0.3</td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>80.0 80.1 80.7</td>
<td>63.0 62.5 62.2</td>
<td>78.7 77.9 77.1</td>
<td>62.6 -0.8</td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>82.4 82.6 82.8</td>
<td>57.6 56.2 56.6</td>
<td>69.9 68.0 68.4</td>
<td>56.8 -1.0</td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>77.2 77.4 :</td>
<td>62.8 61.7 :</td>
<td>81.4 79.7 :</td>
<td>: :</td>
<td></td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>79.0 79.1 79.3</td>
<td>52.6 52.6 52.1</td>
<td>66.6 66.5 65.7</td>
<td>52.4 -0.5</td>
<td></td>
</tr>
<tr>
<td>Slovenia</td>
<td>82.6 82.7 83.1</td>
<td>60.8 61.3 b</td>
<td>73.7 74.2 b</td>
<td>b b</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>84.5 84.9 85.3</td>
<td>63.6 62.3 63.7</td>
<td>75.3 73.4 74.7</td>
<td>63.2 0.1</td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>83.3 83.5 83.6</td>
<td>69.0 69.6 71.0</td>
<td>82.9 83.3 84.9</td>
<td>69.9 2.0</td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>81.9 82.5 :</td>
<td>66.3 66.0 :</td>
<td>81.0 80.1 :</td>
<td>: :</td>
<td></td>
</tr>
<tr>
<td>ELJ27</td>
<td>82.4 82.6 :</td>
<td>62.2 62.0 :</td>
<td>75.5 75.0 :</td>
<td>: :</td>
<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>(France) (France) :</td>
<td>(Malta) (Malta) :</td>
<td>(Malta) (Buergaria)</td>
<td>71.6 2.4</td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>77.0 77.4 :</td>
<td>52.6 52.6 :</td>
<td>(Malta) (Buergaria)</td>
<td>52.4 -1.7</td>
<td></td>
</tr>
<tr>
<td>Gap Min-Max</td>
<td>7.8 7.6 7.9</td>
<td>19.5 18.4 19.5</td>
<td>21.4 19.3 21.2</td>
<td>19.1 4.1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COUNTRY/</th>
<th>Mean HLY</th>
<th>Gap HLY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008-2010</td>
<td>2010-2008</td>
</tr>
<tr>
<td>COUNTRY/ /YEAR</td>
<td>Life expectancy (years)</td>
<td>LE in good perceived health (YGPH)</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Austria</td>
<td>17.7 17.7 17.9</td>
<td>7.0 7.9 7.4</td>
</tr>
<tr>
<td>Belgium</td>
<td>17.3 17.5 :</td>
<td>9.1 9.4 :</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>13.5 13.8 13.6</td>
<td>2.8 2.9 :</td>
</tr>
<tr>
<td>Cyprus</td>
<td>18.0 18.1 :</td>
<td>6.8 7.0 :</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>15.3 15.2 15.5</td>
<td>3.0 3.2 :</td>
</tr>
<tr>
<td>Denmark</td>
<td>16.6 16.8 17.0</td>
<td>10.4 9.7 10.0</td>
</tr>
<tr>
<td>Estonia</td>
<td>13.6 14.0 14.2</td>
<td>1.9 2.0 :</td>
</tr>
<tr>
<td>Finland</td>
<td>17.5 17.3 17.5</td>
<td>6.9 6.1 6.1</td>
</tr>
<tr>
<td>France</td>
<td>18.5 18.7 18.9</td>
<td>6.8 7.1 :</td>
</tr>
<tr>
<td>Germany</td>
<td>17.5 17.6 17.8</td>
<td>6.1 6.4 6.3</td>
</tr>
<tr>
<td>Greece</td>
<td>17.8 18.1 18.5</td>
<td>7.4 7.0 :</td>
</tr>
<tr>
<td>Hungary</td>
<td>13.9 14.0 14.1</td>
<td>2.3 2.3 :</td>
</tr>
<tr>
<td>Ireland</td>
<td>16.8 17.2 18.1</td>
<td>10.4 10.7 11.6</td>
</tr>
<tr>
<td>Italy</td>
<td>18.2 18.3 :</td>
<td>5.1 5.1 :</td>
</tr>
<tr>
<td>Latvia</td>
<td>13.0 13.4 13.3</td>
<td>1.5 1.9 :</td>
</tr>
<tr>
<td>Lithuania</td>
<td>13.4 13.4 13.5</td>
<td>1.2 1.4 :</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>17.4 17.6 17.3</td>
<td>7.7 8.0 :</td>
</tr>
<tr>
<td>Malta</td>
<td>16.8 16.8 18.4</td>
<td>5.0 5.4 :</td>
</tr>
<tr>
<td>Netherlands</td>
<td>17.4 17.6 17.7</td>
<td>10.8 10.4 10.6</td>
</tr>
<tr>
<td>Poland</td>
<td>14.8 14.8 15.1</td>
<td>1.9 2.1 :</td>
</tr>
<tr>
<td>Portugal</td>
<td>16.9 17.1 17.1</td>
<td>2.1 2.5 :</td>
</tr>
<tr>
<td>Romania</td>
<td>14.0 14.0 :</td>
<td>3.8 3.8 :</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>13.8 14.1 14.0</td>
<td>2.2 2.1 :</td>
</tr>
<tr>
<td>Slovenia</td>
<td>16.4 16.4 16.8</td>
<td>4.9 4.5 :</td>
</tr>
<tr>
<td>Spain</td>
<td>18.1 18.3 18.5</td>
<td>7.9 7.7 :</td>
</tr>
<tr>
<td>Sweden</td>
<td>18.0 18.2 18.3</td>
<td>11.3 11.3 11.7</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>17.7 18.1 :</td>
<td>10.6 10.7 :</td>
</tr>
<tr>
<td>EU27</td>
<td>17.2 17.4 :</td>
<td>6.4 6.5 :</td>
</tr>
<tr>
<td>Maximum (country)</td>
<td>18.5 18.7 18.9</td>
<td>11.3 11.3 11.7</td>
</tr>
<tr>
<td>Minimum (country)</td>
<td>13.0 13.4 13.3</td>
<td>1.2 1.4</td>
</tr>
<tr>
<td>Gap Min-Max</td>
<td>5.5 5.3 5.6</td>
<td>10.1 9.9 10.6</td>
</tr>
</tbody>
</table>
Inequalities in HLY at age 65

Life expectancy and healthy life years (HLY) at 65, by gender, 2005-2007

Females

Males

Source: OECD Health at a Glance
## Inequalities in HE: SHARE 2006

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LE at age 50 (yrs)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>29.7</td>
<td>29.8</td>
<td>30.9</td>
<td>26.1</td>
<td>24.8</td>
<td>29.1</td>
</tr>
<tr>
<td>F</td>
<td>34.3</td>
<td>33.2</td>
<td>35.2</td>
<td>31.3</td>
<td>31.5</td>
<td>33.8</td>
</tr>
<tr>
<td><strong>Proportion of LE free of morbidity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>10.0</td>
<td>10.3</td>
<td>13.1</td>
<td>6.0</td>
<td>6.7</td>
<td>9.7</td>
</tr>
<tr>
<td>F</td>
<td>9.3</td>
<td>8.5</td>
<td>14.0</td>
<td>6.7</td>
<td>5.7</td>
<td>9.1</td>
</tr>
<tr>
<td><strong>Proportion of LE free of PFL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>18.2</td>
<td>15.7</td>
<td>22.3</td>
<td>15.7</td>
<td>10.5</td>
<td>17.5</td>
</tr>
<tr>
<td>F</td>
<td>14.5</td>
<td>10.1</td>
<td>19.9</td>
<td>11.5</td>
<td>7.1</td>
<td>13.8</td>
</tr>
<tr>
<td><strong>Proportion of LE free of activity restriction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>17.3</td>
<td>21.7</td>
<td>21.2</td>
<td>12.3</td>
<td>10.5</td>
<td>17.1</td>
</tr>
<tr>
<td>F</td>
<td>17.3</td>
<td>21.5</td>
<td>22.2</td>
<td>11.7</td>
<td>11.1</td>
<td>17.1</td>
</tr>
<tr>
<td><strong>Proportion of LE free of IADL restriction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>25.6</td>
<td>26.2</td>
<td>28.3</td>
<td>23.0</td>
<td>18.5</td>
<td>25.1</td>
</tr>
<tr>
<td>F</td>
<td>25.8</td>
<td>23.7</td>
<td>30.3</td>
<td>24.4</td>
<td>20.3</td>
<td>25.5</td>
</tr>
<tr>
<td><strong>Proportion of LE free of ADL restriction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>26.7</td>
<td>28.1</td>
<td>28.5</td>
<td>24.0</td>
<td>19.4</td>
<td>26.2</td>
</tr>
<tr>
<td>F</td>
<td>29.2</td>
<td>29.4</td>
<td>32.6</td>
<td>28.2</td>
<td>23.7</td>
<td>29.0</td>
</tr>
<tr>
<td><strong>Proportion of LE in good self-rated health</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>19.4</td>
<td>22.4</td>
<td>25.4</td>
<td>14.9</td>
<td>10.3</td>
<td>19.0</td>
</tr>
<tr>
<td>F</td>
<td>20.4</td>
<td>22.4</td>
<td>28.2</td>
<td>16.7</td>
<td>10.9</td>
<td>20.2</td>
</tr>
</tbody>
</table>

1= Austria, Belgium, Denmark, France, Germany, Italy, Netherlands, Spain, Sweden
2= Greece
3= Switzerland
4= Czech Republic
5= Poland
ULY gender gap: decomposition by age

- EU-15: men less disability at all ages than women
- EU-10: men less disability at older ages than women but not at younger ages
Gender gaps and structural indicators

- **EU15**: Gender gaps in $\Delta$AL ↓ by:
  - ↓ inequality of income distribution
  - ↓ low education attainment
  - ↓ mean exit age from labour force men

- **EU10**: Gender gaps in $\Delta$AL ↓ by:
  - ↑ expenditure on elderly care
  - ↓ poverty risk for 65+
  - ↓ employment rate of older women and men

**Association between gender gaps and GDP, expenditure, poverty and employment rate of older women** is significantly different between EU15 and EU10.
Validation of HLY to other function measures

**ADL**

- France
- Netherlands
- Greece
- Belgium
- Denmark
- Germany
- Switzerland
- Italy
- Sweden
- Spain
- Austria
- Combined

Odds ratio of being limited, one or more ADLs compared to none

- p=0.106

**Walking speed**

- Italy
- Austria
- Greece
- Spain
- Denmark
- Germany
- Netherlands
- Sweden
- Belgium
- France
- Switzerland
- Combined

Odds ratio of being limited, by walking speed

- p=0.577
Why health expectancy

- Continued increases in life expectancy even at older ages
- Emphasis on reducing mortality sufficient when infectious diseases main concern
- Quantity of remaining life not sufficient – need measure of quality

“Increased longevity without quality of life is an empty prize. Health expectancy is more important than life expectancy.”

Dr Hiroshi Nakajima, Director-General WHO 1997
Healthy productive life in the EU

○ Focus on Healthy Life Years at age 50
  ✐ Are countries with highest life expectancies the healthiest?
  ✐ What is the variation in Healthy Life Years at age 50?
  ✐ What factors explain differences among countries (wealth, health expenditure, employment, education)?
  ✐ What is the potential for increasing the size of the older workforce?