

Inequalities in healthy life years in the EU25:
monitoring the Lisbon Strategy target to increase
the participation of older people in the labour
market

Carol Jagger¹, Clare Gillies¹, Jean-Marie Robine² and the EHLEIS team³

¹University of Leicester, United Kingdom

²French Institute of Health and Medical Research, INSERM

³<http://www.chemu.eu/index.php?option=aboutchemu#team>

Funding

The EHLEIS project is funded by the EU Public Health Programme 2003-2008

Abstract

A target for the European Union (Lisbon Strategy) is to increase the proportion of older people (aged 55-64) in the labour market. However, although life expectancy in Europe is increasing, it remains unclear whether the majority of extra years are healthy ones. Using the new EU structural indicator Healthy Life Years (HLY), we have already shown that the range in HLY at age 50 in 2005 was 14.5 years for men and 13.7 years for women, wider than the total remaining years of life at age 50 of 9.1 years for men and 6.1 years for women. In this paper we look more closely at the Lisbon Strategy target and explore the variation in partial life and healthy life expectancies between 55 and 64 years of age for the EU25 countries in both 2005 and 2006, relating this to macro-level indicators of wealth, education and employment through meta-regression.

Introduction

Life expectancy at birth and at age 65 in the EU25 show a strong rising trend indicating that not only are greater numbers of individuals reaching old age but the very elderly are continuing to live longer. This greying of our European populations is not uniformly experienced in all countries; notably the life expectancy gap between Eastern and Western European countries, which began to converge in the second half of the 20th century, has been widening over the last decades. (1) Different trends have also been observed within Western Europe with old-age mortality declining consistently in France, England and Wales between the 1950s and 1990s, whilst declines have stagnated in Denmark and the Netherlands.(2)

Though historically life expectancy has been used to assess the health of a population, with the advent of chronic diseases replacing infectious disease, increasing life expectancy no longer implies a healthier population. Health expectancies were developed to bring a quality of life dimension to life expectancy (3), and to determine whether the year on year increases in life expectancy are accompanied by decreases in unhealthy life years (known as the compression of morbidity hypothesis)(4), increases in unhealthy life years (expansion of morbidity)(5), or increases in years spent healthy and unhealthy, though the ill-health is less severe (dynamic equilibrium).(6) An ageing population in poor health has important consequences for future medical and care requirements and pension provision, whereas an ageing population in good health has mainly long term consequences for pension provision.

Increasing life expectancy is therefore challenging many countries in how they can support their ageing populations in the face of falling fertility and rising dependency ratios. In 1950, the average male in the UK retired at age 67 and could expect to live for another 10.2 years, thus spending 17 per cent of his life in retirement. Today the average retirement age for men is 64, and life expectancy at that age is another 20.9 years, meaning that 31 per cent of life is spent in retirement. The picture is similar in many European countries and one of the targets of the Lisbon Strategy, adopted by the European Council, is that the employment rate for older workers (aged 55-64) should reach 50% by 2010. Recent pension reforms in a number of European countries have extended working lives and begun to offset the rising trends in early retirement. The main arguments supporting extensions of working life appear to be the evidence of gains in life expectancy and an assumption of declining old-age disability. However trends of old-age disability, as with life expectancy, are far from uniform across European countries, with clear evidence of decline in only four of the eight European countries studied by OECD.(7)

In 2004 the European Commission added a health expectancy measure to the set of Structural Indicators, under the name of “Healthy Life Years” (HLY). HLY is the first and only EU Structural Indicator on health and includes information on disability. In its 2005 annual report to the Spring European Council, the Commission emphasised that increasing HLY is crucial if an increase in the employment rate of older workers is to be achieved.(8) Using the new EU structural indicator HLY, we have already shown that the range in HLY at age 50 (HLY50) in 2005 was 14.5 years for men from 9.1 years (Estonia) to 23.6 years (Denmark) and 13.7 years for women, from 10.4 years (Estonia) to 24.1 years (Denmark), wider than the total remaining years of life at age 50 of 9.1 years for men and 6.1 years for women. (9) In addition we found a

number of countries, especially within the EU10, with low HLY50 and where men already retire early, suggesting that ill-health may be a predominant factor in retirement.

In this paper we look more closely at the Lisbon Strategy target and explore the variation in partial life and healthy life expectancies between 55 and 64 years of age for the EU25 countries. Analysis of partial life expectancy and healthy life years between 55 and 64 years of age will more directly assess whether the target of increasing labour force participation of older people (55-64) to 50% is achievable in all countries of the EU25.

Methods

Data

The usual method of calculation of disability-free life expectancies is by the Sullivan method(10) and requires the age-specific prevalence of disability from a survey and a standard life table. For HLY the disability data came from SILC 2005. The SILC contains the Minimum European Health Module (MEHM), devised by the Euro-REVES group(11), which includes a disability measure, the global activity limitation index (GALI). The GALI aims to capture long-term limitation (>6 months) in usual activities, caused by ill-health.(12) Death counts and population estimates for the life tables were obtained for each country from the EHEMU database (www.ehemu.eu). Partial life expectancies were calculated in the usual way as the years lived between the 55th and 65th birthday, and are denoted by PLE(55-65). We similarly calculated PLE(65-75) and the partial healthy life expectancies PHLE(55-65) and PHLE(65-75). All data, including death counts, population estimates and activity limitation, were for 2005 and 2006.

Relevant macro-level factors, structural and sustainable indicators, for each country, selected to cover broad areas of wealth and expenditure (GDP, poverty risk for aged 65+, inequality of income distribution, expenditure on elderly care), labour force participation (employment rate of older workers, long term unemployment rate, mean exit age from labour force), and level of education (lifelong learning, low education attainment), were obtained from the Communication and Information Resource Centre Administrator (CIRCA) Europa website . Definitions of each of the indicators are given in Box 1.

Statistical analysis

HLY estimates for the EU25 in 2005 and 2006 were computed using an algorithm developed by EUROSTAT in collaboration with EHEMU and based on the Sullivan method.(10, 13) As SILC is undertaken only on community dwelling individuals, we have assumed that the prevalence of health states outside and within institutions does not differ, though the prevalence of institutionalization within the 55-64 year age group is likely to be small.

To investigate the relationships between PHL(55-65) and country specific structural indicators linear regression models were fitted, entering each structural indicator univariately, and fitting separate models for males and females. The models were fitted for all the EU25 countries together, and then separately for the old EU15 countries and the newly joining EU10 countries.

Results

Years lived between age 55 and 65, PLE(55-65) for the EU25 in 2005 were 9.5 years for men and 9.8 years for women out of the maximum possible 10 years. Both men and women lived longer between the ages of 55 and 65 than their counterparts in the EU10, for men by 0.4 years and for women by 0.1 years. At an individual country level, there was more variation between countries for men than for women (men: range 8.8 to 9.7; women range 9.6 to 9.8) (Figure 1).

Partial healthy life years between age 55 and 65, PHLY(55-65), were much more variable than for life expectancies. For the EU25 as a whole, men had 6.8 HLY between the ages of 55 and 65 and women 6.4 years. Differences between the EU15 and EU10 were greater with men in the EU10 enjoying almost 1 year less healthy life than men in the EU15 and women in the EU10 0.3 healthy years less (Men: EU10=5.9 years, EU15=6.8; Women: EU10=6.2 years, EU15=6.5). The range between the individual countries was striking (Figure 1) with nine countries having fewer than 6 years of healthy life between 55 and 64 for men and women and five countries having fewer than 5 years of healthy life for women.

Amongst the macro-level factors we first explored the relationship between PHLY(55-64) and the employment rate of those aged 55-64 years which will be referred to as EMP(55-64). In 2005 the average employment rate for men aged 55-64 years was 53.5% and for women 34.0%.

Differences between the EU10 and EU15 were small for men (EU10:52.1%; EU15: 54.3%) but somewhat larger for women (EU10:30.0%; EU15: 37.0%). Projecting annual increases/decreases by country between 2005 to 2008 forward for 2010 revealed that half the countries (13) would achieve the target of 50% employment rate of the population aged 55-64 years overall by 2010

(Table 1). There was no significant difference in the partial healthy life years between 55 and 65 for women or men in the groups who would and would not achieve the target though on average those who would not achieve the target had slightly higher HLY than those who would not. This was confirmed using the gender specific employment rates for this age group.

We investigated other macro-level factors to see if they explained the variation in partial HLY between 55 and 65 for men and women separately. For the EU25 as a whole none of the macro-level factors significantly explained the variation in partial HLY. However when the analysis was repeated for the EU15 and EU10 separately, significant correlations were found in the EU10 between partial HLY in men and expenditure on elderly care ($r=0.62$, $p=0.03$) and between partial HLY in women and expenditure on elderly care ($r=0.62$, $p=0.03$), employment rate of women 55-64 ($r=-0.62$, $p=0.03$) and low educational attainment ($r=0.58$, $p=0.04$) (Table 2), , though none of these were reflected in significantly explaining variation.

Discussion

In this paper we have sought to examine the relationship between partial healthy life years between the ages of 55 and 65 years and the employment rate of older workers ages 55-64 in the EU25 countries. In general the number of healthy years lived between 55 and 65 in the EU countries were greater for men than women but we found considerable variation between the countries with five countries (Estonia, Finland, Hungary, Lithuania and Portugal) having fewer than five years of healthy life between 55 and 65.

One of the targets of the Lisbon Strategy is that the employment rate for older workers (aged 55-64) should reach 50% by 2010. In 2005 this target had already been met for men overall in the EU but only a third (34%) of women of this age were employed. When the employment rate of the older population aged 55-64 years between 2005 and 2008 was projected forward to 2010 for each country, 12 countries (Austria, Belgium, France, Greece, Hungary, Italy, Luxembourg, Malta, Poland, Slovakia, Slovenia, Spain) failed to reach the target of 50%. The number of healthy life years between 55 and 65 appeared to have little relation to the employment rate in this age group, some countries with low healthy life years having high employment, for instance Estonia and Finland for women and Hungary and Lithuania for men, whilst others had high healthy life years and high employment, for instance Denmark and Sweden for men and women. However within the EU10 countries with low healthy life years between 55 and 65 tended to have high employment rates in this age group.

In our previous analysis(9) of HLY at age 50 in the EU25 we found significant relationships with GDP in men and women, expenditure on elderly care in men and women, long term

unemployment and life-long learning in men and low educational attainment in both genders. Most of these were reflected in associations within the EU10, although interestingly HLY50 in women was negatively associated with employment rate of women aged 55-64 in the EU10. This latter finding is the only one confirmed in the current analysis with partial HLY between 55 and 65.

Limitations of these analyses lie with the contemporaneous nature of the outcome and explanatory variables with the potential for ecological fallacy, the still imperfect harmonisation of the health measure, the exclusion of the institutional population and the low power for analyses within the EU10. Although optimal translation of the health measure, the GALI, was not attained, the GALI appears to satisfactorily reflect other objective and subjective health measures in a similar way within a subset of European countries.(14) Most cross-national comparisons of health expectancies suffer from exclusion of those in institutional care from the general surveys that provide the health measure and the SILC is no exception. Institutional rates vary across the European Union, with variations in definitions of what constitutes a ‘care home’ further complicating the issue. Finally problems exist when using country level data, primarily because although relationships may be found at the country level, these relationships may not hold at the individual level(15).

In conclusion the lack of relationship between the employment rate of older people in the European countries and the healthy years of life in the decade prior to retirement suggests that increasing HLY will not necessarily increase the potential for reaching the Lisbon Strategy target.

References

1. Velkova A, Wolleswinkel-van den Bosch J, J M. The East-West life expectancy gap: differences in mortality from conditions amenable to medical intervention *International Journal of Epidemiology*. 1997;26:75–84.
2. Janssen F, Mackenbach JP, Kunst AE, NEDCOM. Trends in old-age mortality in seven European countries, 1950–1999. *Journal of Clinical Epidemiology* 2004;57:203–16.
3. Sanders BS. Measuring community health levels. *American Journal of Public Health*. 1964;54:1063-70.
4. Fries JF. Aging, natural death, and the compression of morbidity. *New England Journal of Medicine*. 1980 July 1980;303(3):130-5.
5. Gruenberg EM. The failures of success. *Milbank Memorial Fund Quarterly*. 1977 Winter;55(1):3-24.
6. Manton KG. Changing concepts of morbidity and mortality in the elderly population. 1982. p. 183-244.
7. Lafortune G, Balestat G. Trends in severe disability among elderly people: assessing the evidence in 12 OECD countries and their future implications. Paris: OECD; 2007. Report No.: JT03224784.
8. 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. Communication; 2005 02.02.2005. Report No.: Com (2005) 24.
9. Jagger C, Gillies CL, Moscone F, Cambois E, Van Oyen H, Nusselder WJ, et al. Inequalities in healthy life years in the 25 countries of the European Union in 2005: a cross-national meta-regression analysis. *Lancet*. 2008;372:2124–31.
10. Sullivan DF. A single index of mortality and morbidity. *Health Services Mental Health Administration Health Reports*. 1971;86:347-54.
11. Robine J-M, Jagger C, Euro-REVES group. Creating a coherent set of indicators to monitor health across Europe: the Euro-REVES 2 project. *European Journal of Public Health*. 2003;13(3):6-14.
12. Van Oyen H, Van der Heyden J, Perenboom R, Jagger C. Monitoring population disability: evaluation of a new Global Activity Limitation Indicator (GALI). *Soz Praventivmed* 2006;51:153–61.
13. Jagger C. Health expectancy calculation by the Sullivan Method: a practical guide. Tokyo: Nihon University Population Research Institute; 1999.
14. Jagger C, Gillies CL, Cambois E, Van Oyen H, Nusselder WJ, Robine J-M, et al. Evaluation of the Global Activity Limitation Indicator (GALI) within the European Union. *Journal of Clinical Epidemiology*. Submitted.
15. Riley RD, Simmonds MC, Look MP. Evidence synthesis combining individual patient data and aggregate data: a systematic review identified current practice and possible methods. *Journal of Clinical Epidemiology*. 2007;60(5):431-39.
16. Lambert PC, Sutton AJ, Jones DR. A comparison of summary patient-level covariates in meta-regression with individual patient data meta-analysis. *Journal of Clinical Epidemiology*. 2002(55):86-94.

Box 1: Definitions of the structural and sustainable indicators used, values were from 2005

Gross domestic product (GDP)

GDP per capita in Purchasing Power Standards, (EU-25=100).

Expenditure on elderly care

Expenditure on care for elderly as a percentage of GDP in 2004.

Poverty risk for >65yrs

At-risk-of poverty rate (%) for persons aged 65 years and over.

Inequality of income distribution

The ratio of total income received by the 20% of the population with the highest income (top quintile) to that received by the 20% of the population with the lowest income (lowest quintile).

Employment rate of older workers

Employed persons aged 55-64 years as a percentage of the total population of the same age group.

Long term unemployment rate

Long-term unemployed (12 months and more) as a percentage of the total active population.

Mean exit age from the labour force

Mean exit age from the labour force weighted by the probability of withdrawal from the labour market.

Life-long learning

Percentage of the adult population aged 25-64 years participating in education and training over the four weeks prior to the survey.

Low education attainment

Percentage of the population aged 25-64 years having completed at most lower secondary education (International Standard Classification of Education level of 2 or less).

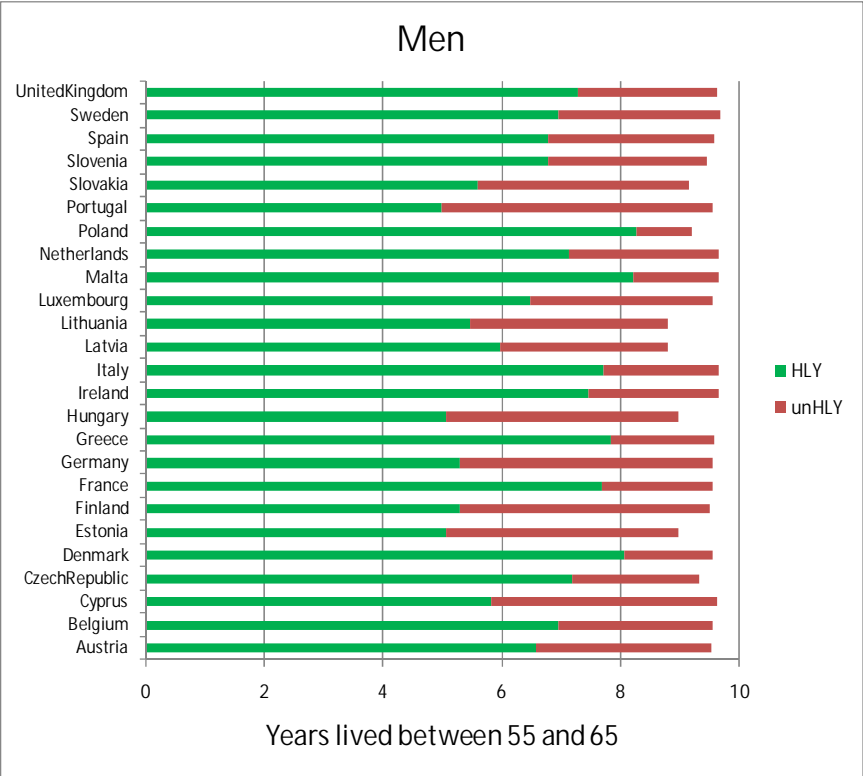
Table 1: Employment rate of population aged 55-64 years in 2005, annual increase between 2005 and 2008 and projected value in 2010, by whether 50% target achieved in 2010

50% target achieved by 2010	Employment rate for population aged 55-64 years			
	Country	2005	annual increase 2005-2008	projected 2010
Yes	Cyprus	50.6	1.4	57.6
	CzechRepublic	44.5	1.0	49.7
	Denmark	59.5	-0.8	55.3
	Estonia	56.1	2.1	66.6
	Finland	52.7	1.3	59.0
	Germany	45.4	2.8	59.4
	Ireland	51.6	0.7	54.9
	Latvia	49.5	3.3	66.0
	Lithuania	49.2	1.3	55.7
	Netherlands	46.1	2.3	57.6
	Portugal	50.5	0.1	51.0
	Sweden	69.4	0.2	70.6
	UnitedKingdom	56.8	0.4	58.8
No	Austria	31.8	3.1	47.1
	Belgium	31.8	0.9	36.3
	France	38.7	-0.1	38.0
	Greece	41.6	0.4	43.6
	Hungary	33.0	-0.5	30.3
	Italy	31.4	1.0	36.4
	Luxembourg	31.7	0.8	35.7
	Malta	30.8	-0.6	28.0
	Poland	27.2	1.5	34.5
	Slovakia	30.3	3.0	45.1
	Slovenia	30.7	0.7	34.2
	Spain	43.1	0.8	47.3

Table 2: Correlations between partial HLY between 55 and 65 in 2005 and macro-level indicators, by gender (p-values in parentheses)

Macro indicator	EU25		EU15		EU10	
	M	F	M	F	M	F
GDP per capita	0.20 (0.18)	0.28 (0.09)	0.05 (0.43)	0.04 (0.45)	0.15 (0.34)	0.32 (0.19)
Expenditure on elderly care	0.25 (0.12)	0.30 (0.07)	0.15 (0.29)	0.12 (0.24)	0.62 (0.03)	0.62 (0.03)
Poverty risk for >65yrs (%)	-0.04 (0.43)	0.03 (0.45)	0.12 (0.34)	0.11 (0.35)	-0.21 (0.28)	-0.10 (0.40)
Inequality of income distribution	-0.10 (0.32)	-0.17 (0.21)	-0.03 (0.46)	-0.03 (0.45)	-0.09 (0.40)	-0.22 (0.27)
Employment rate of older workers	-0.06 (0.39)	-0.23 (0.14)	0.11 (0.34)	-0.11 (0.34)	-0.35 (0.16)	-0.62 (0.03)
Long term unemployment rate	-0.04 (0.42)	-0.21 (0.15)	-0.23 (0.21)	-0.22 (0.22)	0.22 (0.27)	-0.32 (0.19)
Mean exit age from labour force	0.01 (0.49)	-0.02 (0.47)	-0.12 (0.34)	-0.31 (0.14)	0.85 (0.08)	-0.18 (0.41)
Life-long learning (%)	0.20 (0.17)	0.19 (0.18)	0.09 (0.38)	0.14 (0.31)	0.28 (0.22)	-0.06 (0.43)
Low education attainment (%)	0.22 (0.14)	0.29 (0.08)	-0.14 (0.31)	-0.16 (0.29)	0.47 (0.09)	0.58 (0.04)

Figure 1: Partial life and healthy life expectancies between the ages of 55 and 65 in 2005 for the EU25, by gender



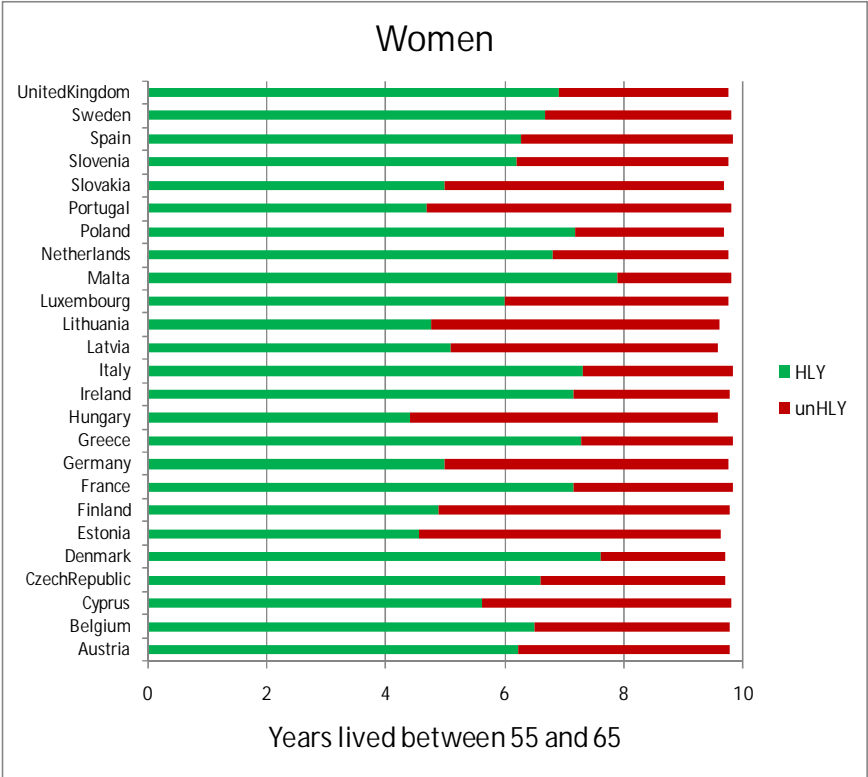


Figure 2: Employment rate of population aged 55-64 years in 2005 for the EU25, by gender

