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Trends in and trade-off between different HE using SILC

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Summary

To date comparison of health expectancies across the European Union has been restricted to HLY (based on activity limitation) and has tended to compare standard groupings of countries such as the older established countries of the Union (EU15) and the newer acceding countries (EU10). Within EHLEIS we wished to extend this to incorporate the other two health indicators in the Minimum European Health Module: self-perceived health and chronic morbidity and to use the data to create the groupings using cluster analysis. In addition a decision was needed on what age to concentrate on as preciously the HLY have been presented and analysed mostly at age 50. However different age cohorts may have different health problems and therefore impact on the health expectancy values. It was decided therefore to use partial life expectancies so that such age differences would be reflected in the groups produced by the cluster analysis.

This report is the first stage in a scientific paper on this topic. The report is in two parts. Part 1comprises a paper presented to the IUSSP meeting in 2009 which explored the association between macro-level factors and partial health expectancies between ages 55 and 64, prior to retirement. This was the first time that partial health expectancies had been produced using SILC data. The second part of the report is the analysis for the final scientific paper as presented to the REVES 2010 meeting for comment. The final paper is in preparation.

Part 1

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

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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 55^{th} and 65^{th} 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 PHLY(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.

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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).

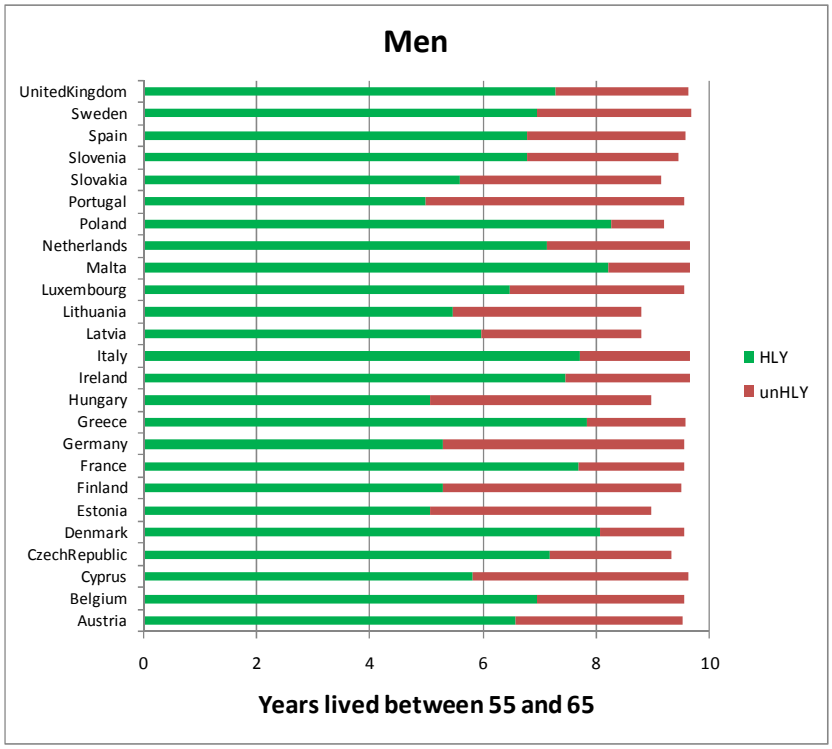
Table 1: Employment rate of population aged 55-64 years in 2005, annual increase between 2005 and 2008 and projected value in 2010, by whether 50% target achieved in 2010

		Employment rate for population aged 55-64 years		
50% target achieved by 2010	**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)

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

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



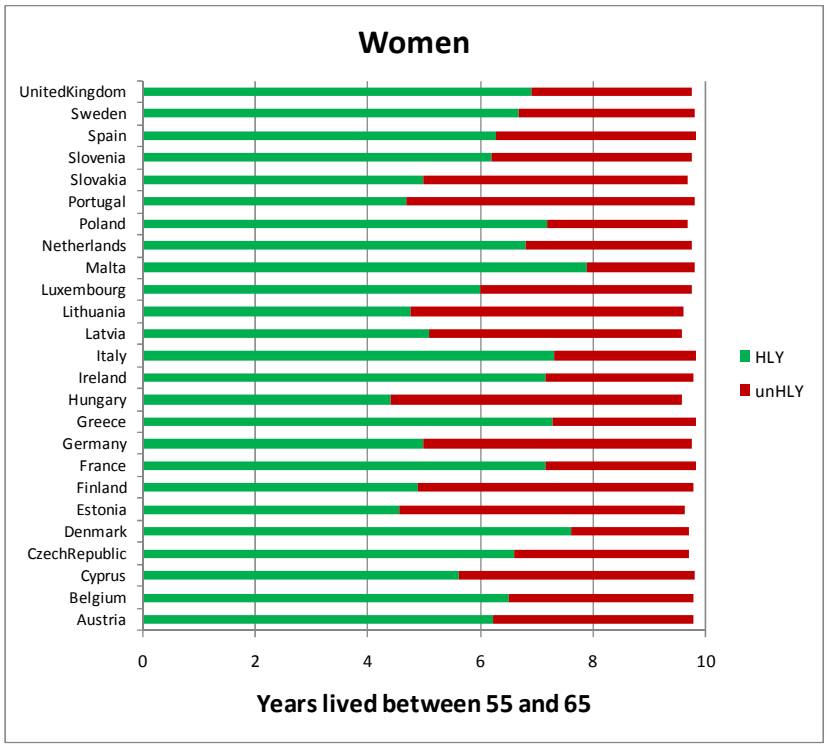
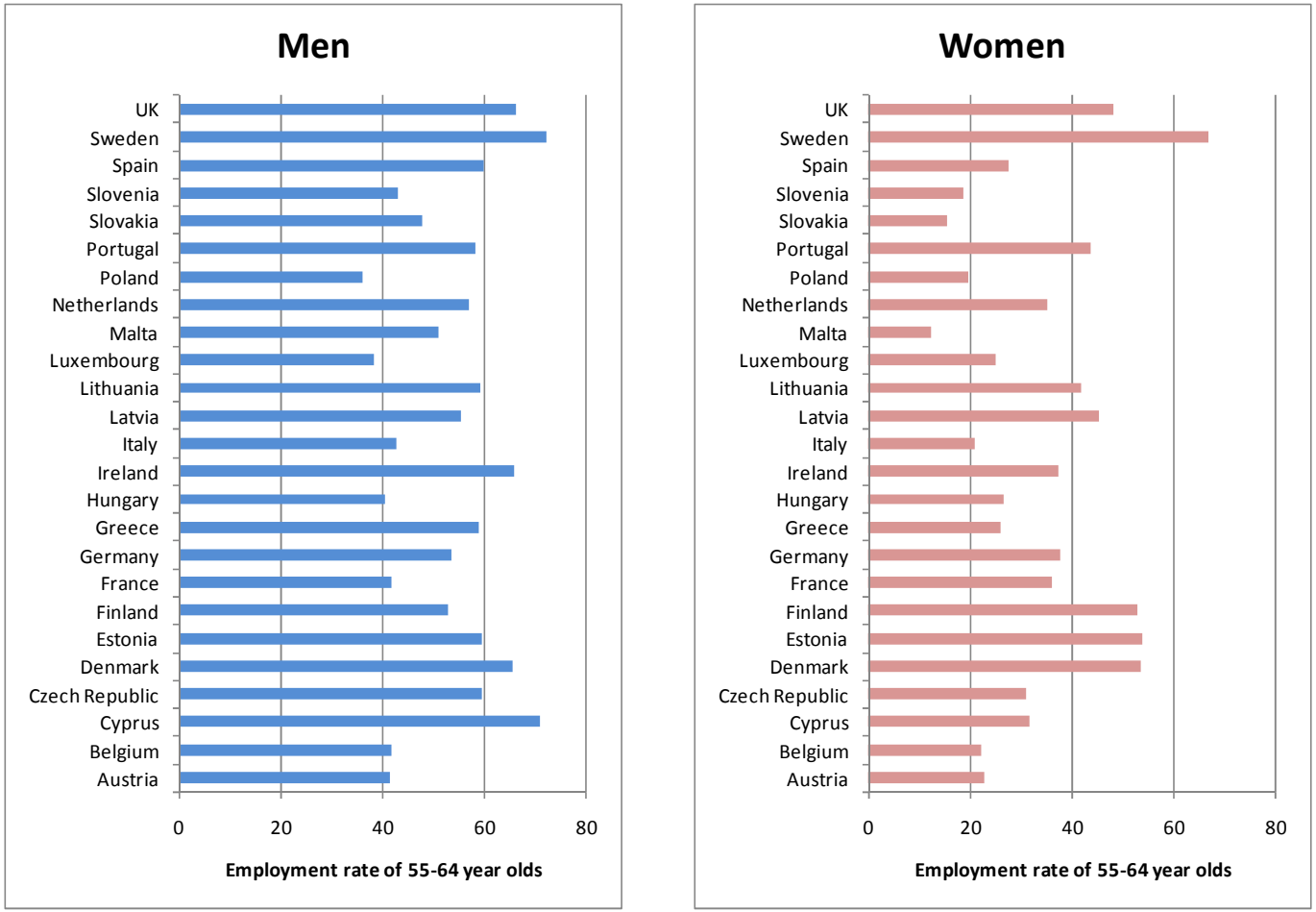


Figure 2: Employment rate of population aged 55-64 years in 2005 for the EU25, by gender



Part 2

European Health & Life expectancies Information System

Similarities and differences in Healthy Life Years across the lifecourse in Europe

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REVES Annual Meeting, Havana 2010

Outline

- Why?
- How?
  - Data used
  - Analysis
- What did we find?
- What does this analysis add to existing knowledge?

RATIONALE

Health Indicators in the EU

- In 2004 Healthy Life Years (HLY), a disability-free life expectancy, was added to the list of structural indicators
  - The first EU health structural indicator
- Substantial differences found in HLY at age 50 between 25 countries of EU in 2005 particularly between Eastern and Western European countries*
  - Artificial groupings: north, south, east, west
  - Focus on birth and age 65 rather than whole age range
  - Focus on HLY: are results same for other measures?

*Jagger et al., Lancet 2008; 372: 2124–31

METHODS

Data

- EU Statistics on Income and Living Conditions (EU-SILC) 2005-7 with 3 health questions:
  - How is your health in general? Very good / good / fair/ bad / very bad.
  - 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 ? Yes, strongly limited / Yes, limited / No, not limited. (HLY)
- Population and mortality data for each of 25 countries for 2005-7 from EHEMU database

Methods 1

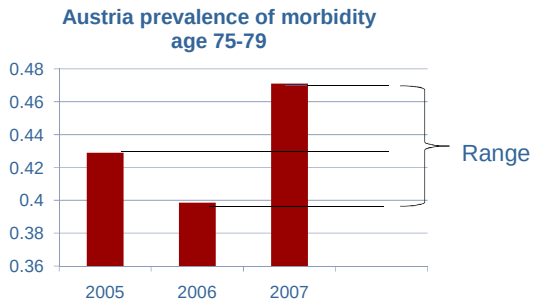
- Compared prevalence of each health measure over time within country and gender
- Combined prevalence, population and mortality over period 2005-7 for each country and gender
- Calculated partial life and health expectancies for each country to give health expectancies for ages:
  - 16-34 years
  - 35-54 years
  - 55-74 years

Methods 2

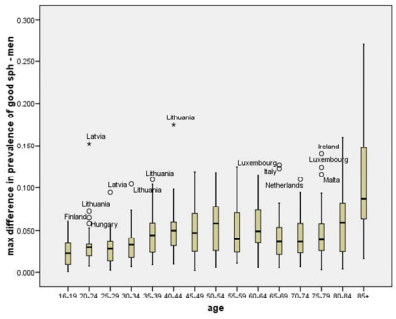
- A cluster analysis was carried out to group countries with similar LE and HEs
- The analysis was run with LEs and HEs (3 health measures) for both men and women, and for the three age groups together
- To determine the most appropriate number of clusters an index was calculated for each possible clustering solution (e.g. 1 cluster, 2 clusters, 3 clusters…)
- We chose the solution with the smallest index value for 6 or fewer clusters

RESULTS

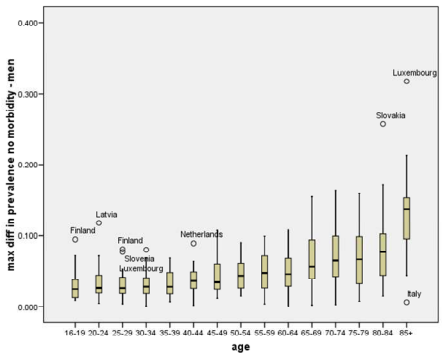
Comparing prevalence over time



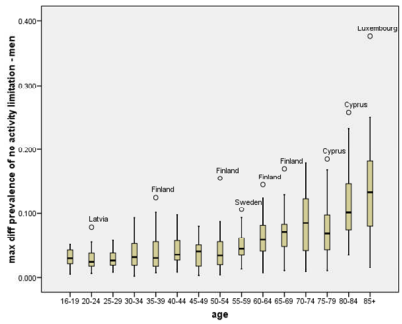
Good SPH: men



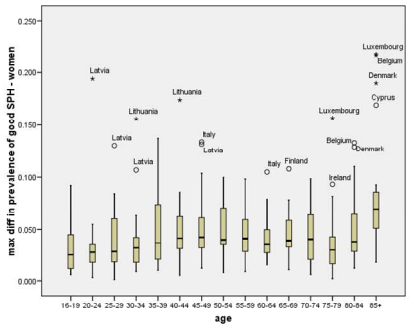
No morbidity: men



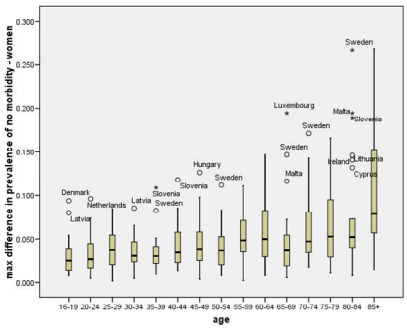
No activity limitation: men



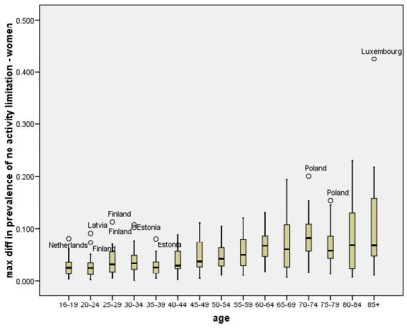
Good SPH: women



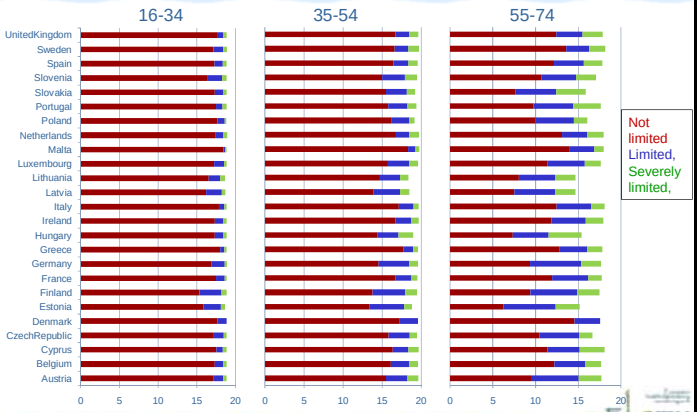
No morbidity: women

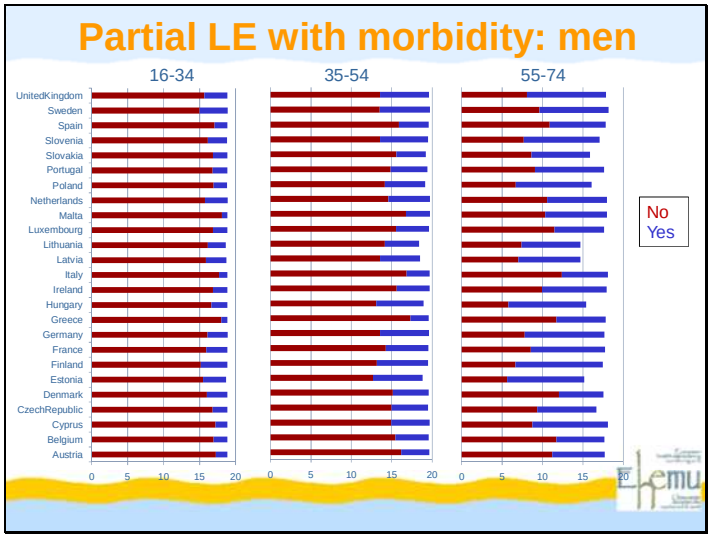


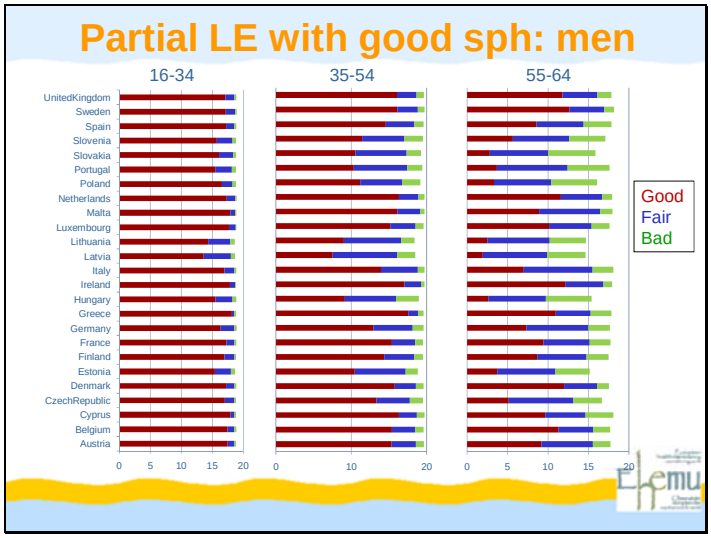
No activity limitation: women

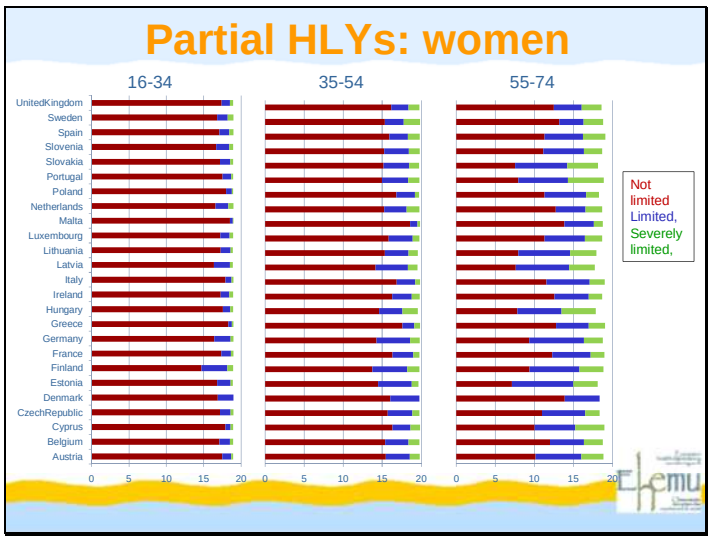


Partial HLYs: men

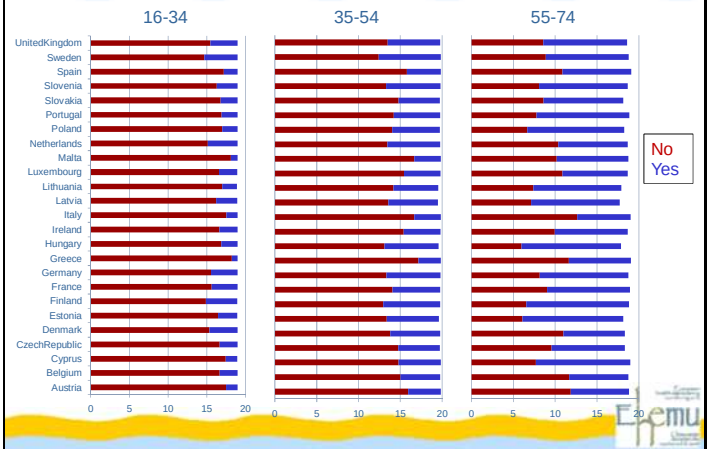



Partial LE with morbidity: men
16-34
35-54
55-74
UnitedKingdom
Sweden
Spain
Slovenia
Slovakia
Portugal
Poland
Netherlands
Malta
Luxembourg
Lithuania
Latvia
Italy
Ireland
Hungary
Greece
Germany
France
Finland
Estonia
Denmark
CzechRepublic
Cyprus
Belgium
Austria
0 5 10 15 20
0 5 10 15 20
0 5 10 15 20
No
Yes

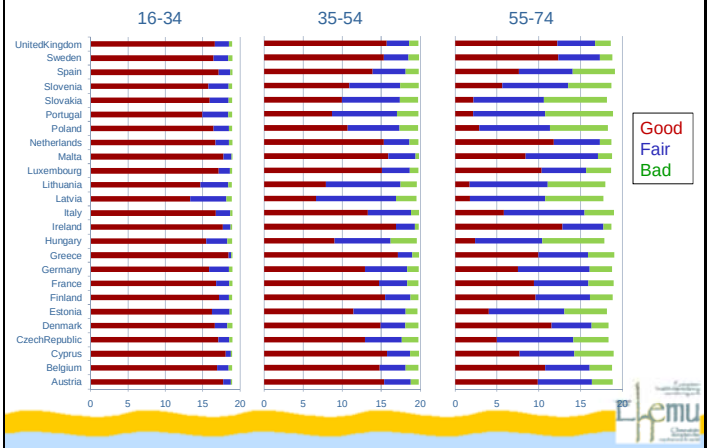

Partial LE with good sph: men
16-34
35-54
55-64
UnitedKingdom
Sweden
Spain
Slovenia
Slovakia
Portugal
Poland
Netherlands
Malta
Luxembourg
Lithuania
Latvia
Italy
Ireland
Hungary
Greece
Germany
France
Finland
Estonia
Denmark
CzechRepublic
Cyprus
Belgium
Austria
0 5 10 15 20
0 10 20
0 5 10 15 20
Good
Fair
Bad


Partial HLYs: women
16-34
35-54
55-74
UnitedKingdom
Sweden
Spain
Slovenia
Slovakia
Portugal
Poland
Netherlands
Malta
Luxembourg
Lithuania
Latvia
Italy
Ireland
Hungary
Greece
Germany
France
Finland
Estonia
Denmark
CzechRepublic
Cyprus
Belgium
Austria
0 5 10 15 20
0 5 10 15 20
0 5 10 15 20
Not limited
Limited,
Severely limited,

Partial LE with morbidity: women



Partial LE with good sph: women



Partial life and health expectancies by cluster

		1	2	3	4	5	6	All
Age 16-34 yrs LE	M	18.8	18.8	18.9	18.9	18.9	18.9	18.8
	F	18.9	19.0	19.0	19.0	19.0	19.0	18.9
LE free of morbidity	M	16.4	15.2	16.4	15.9	18.0	17.0	16.5
	F	16.7	14.9	16.2	15.4	18.2	16.9	16.5
LE free activity limitation (HLY)	M	16.9	15.3	16.8	17.4	18.2	17.4	17.2
	F	17.2	14.7	16.8	17.0	18.4	17.4	17.2
LE in good SPH	M	15.3	17.0	16.4	17.3	18.0	17.4	16.7
	F	15.3	17.2	16.2	16.8	18.1	17.2	16.6
Age 35-54 yrs LE	M	18.9	19.5	19.5	19.7	19.7	19.6	19.4
	F	19.6	19.8	19.8	19.8	19.8	19.8	19.7
LE free of morbidity	M	14.0	13.1	14.0	14.5	17.0	15.6	14.7
	F	13.9	13.0	13.8	13.7	16.9	15.4	14.5
LE free activity limitation (HLY)	M	14.8	13.7	15.1	16.8	18.0	16.3	15.9
	F	15.1	13.7	15.1	15.8	18.1	16.0	15.7
LE in good SPH	M	9.7	14.3	12.5	16.3	16.8	15.1	13.6
	F	9.2	15.5	12.3	15.6	16.5	14.7	13.2
Age 55-74 yrs LE	M	15.6	17.5	17.1	17.9	17.9	17.8	17.1
	F	18.1	18.8	18.6	18.6	18.9	18.9	18.6
LE free of morbidity	M	7.2	6.7	8.3	10.0	11.0	10.7	9.2
	F	7.1	6.6	8.6	9.8	10.9	10.7	9.1
LE free activity limitation (HLY)	M	8.1	9.4	10.1	13.1	13.4	11.6	10.8
	F	8.2	9.4	10.5	13.0	13.3	11.2	10.7
LE in good SPH	M	2.9	8.7	6.0	12.1	9.9	9.3	7.7
	F	2.4	9.6	6.1	12.1	9.2	8.8	7.4

1= Estonia, Hungary, Latvia, Lithuania, Poland, Portugal, Slovakia

2 = Finland,

3 = Czech Republic, Germany, Slovenia

4= Denmark, Ireland, Netherlands, Sweden, United Kingdom

5= Greece, Malta

6= Austria, Belgium, Cyprus, France, Italy, Luxembourg, Spain

What this study adds

- Country clusters only partly reflect other geographies
- Estonia, Hungary, Latvia, Lithuania, Poland, Portugal, Slovakia lowest LE and LE in good SPH at all ages
- Finland average (or better) LE but lowest LE free of morbidity and HLY at all ages
- Czech Republic, Germany, Slovenia average or above LE but second lowest years in good SPH
- Denmark, Ireland, Netherlands, Sweden, UK second lowest LE free of morbidity for 16-34 age group but above average HLY and LE in good SPH at 55-74
- Greece, Malta, consistently the highest on all measures across all age range (except LE in good SPH at 55-74)
- Differences observed between countries may reflect country specific healthcare, environment and individual lifestyles

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