

Patterns in the gender differences of the Disability-Free Life Expectancy in the European Union 1995-2001.



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Summary

The objective of this report is to describe the patterns in gender differences in life expectancy and in health expectancy indicators (life expectancy with and without disability). We use data from the EHEMU Information System to estimate the gender difference in life expectancy (period 1995-2005) and the gender difference in health expectancy (period 1995-2005). The morbidity data for the health expectancy indicators were provided by the European Community Household Panel in fourteen countries of the EU (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden and the United Kingdom). We used linear regression models to estimate the annual change in gender difference of the total life expectancy, disability-free life expectancy and in life expectancy with disability. The gender differences in life expectancy diverge among the European countries with larger differences in the EU10 compared to the EU15. Especially within the Eastern European countries the gender differences are extreme. Over the time period of observation the geographical pattern remains unchanged although the gender differences tend to reduce in most countries. There is no clear geographical pattern in the gender difference and the temporal changes in the gender difference in disability-free life expectancy and in life expectancy with disability. In most countries the gender differences in disability-free life expectancy decreases while the gender difference in life expectancy with disability increases.

Introduction

It is well known that males have a different health profile than females. Males have a higher mortality than females for total mortality and for most causes of death¹. Men's higher mortality is due in part to gender differences in risk-taking and health related behaviour (e.g. males' higher rates of cigarette smoking or heavy drinking) and gender differences in employment. Several biological hypotheses have been proposed including more active female immune functioning, the protective effect of estrogen, compensatory effects of the second X chromosome, reduction in the activity of growth hormone and the insulin-like growth factor 1 signaling cascade, and the influence of oxidative stress on aging and disease². On the other hand, there is a remarkable discrepancy between the health and the mortality of men and women. Despite the higher mortality at all ages compared to women, men tend to report a better self-assessed health and fewer disabilities. This phenomena is called the male-female health-survival paradox³. Proposed explanations for this paradox are rooted in biological, social, and psychological interpretations. Next to the above mentioned causes, there may be reluctance or delay to seek and to comply with medical treatment in men. It cannot be excluded that part of the differences in morbidity may be due to methodological challenges such as differential participation or underreporting of health problems by gender.

The objective of this report is to describe the pattern of gender differences in life expectancy and in Disability-Free Life expectancy within Europe. Disability-Free Life expectancy belongs to the family of health expectancy indicators which are composite health measures combining both mortality and morbidity. Therefore it is of interest to explore the male-female health-survival paradox using these indicators.

Methods

Health expectancy combines information on mortality and morbidity into a single summary measure. Full life (period 1995-2005) and health expectancy (period 1995-2005) tables were downloaded from the EHEMU Information System (www.ehemu.eu).

The country, age and sex-specific prevalence of disability was obtained from the European Community Household Panel (ECHP). The ECHP is a longitudinal, multi-subject survey covering many aspects of daily life with the sample covering some 60 000 households (130 000 adults aged 16 or over at 31 December of the previous year). The ECHP was conducted in fourteen countries of the EU (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden and the United Kingdom). The first wave took place in 1994. Although data from the ECHP would theoretically provide harmonized data, changes over time and differences between countries in the survey design and question wording have required some adjustments to be made before calculations. Disability was inferred from the question “*Are you hampered in your daily activities by any physical or mental health problem, illness or disability?*”. As the form of the question changed between the first wave (1994) and second wave (1995), data for 1994 was excluded.

Statistical methods

Trends in the gender difference in life expectancy (LE), Disability-Free Life expectancy (DFLE), life expectancy with disability (DLE), at ages 0 (LE only) 16 and 65 years were analysed by fitting weighted linear regressions separately by country.

Results

Distribution of gender difference life expectancy at age 0 (LE₀).

Figure 1 shows the gender differences in LE at birth (LE₀) between 1995 and 2005. LE₀ was always larger in females. Gender differences in the EU27 ranged from 4.6 to 12.9 years in 1995 and 4.10 to 12.1 in 2005. Over this period, the median gender difference decreased from about 7.3 to 6.4 years (Table 1) whilst the Interquartile Range (IQR) did not reduce and fluctuated around 2.4 years. Three countries (Estonia, Latvia and Lithuania) were outliers over the whole period with a gender difference of more than 10 years. The gender difference was larger in the EU10 compared to the EU15 countries (Table 1) and this difference did not reduce over time (temporal change 1995-2005 in the median gender difference was -0.2 years in the EU10 compared to -1.0 years in the EU15).

Figure 1: Gender differences in life expectancy at birth in the EU27, 1995-2005.

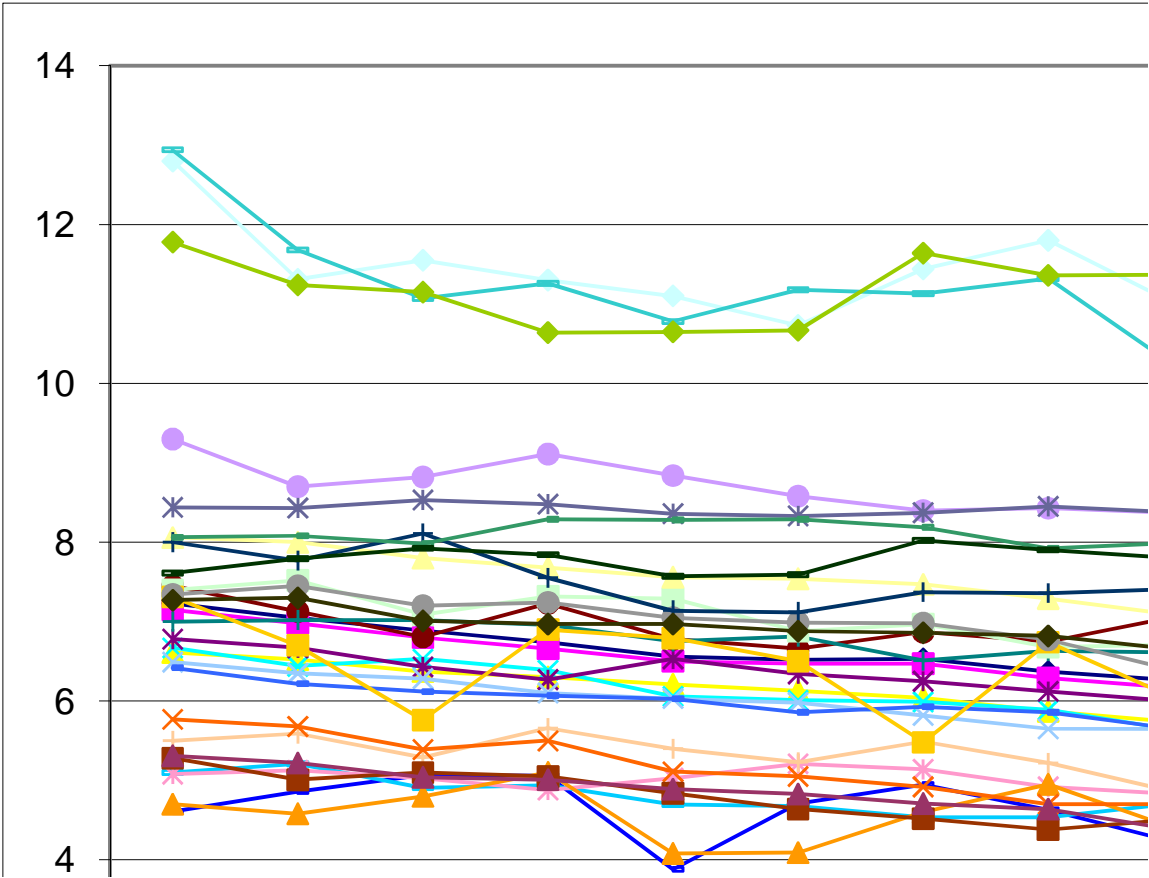


Table 1: Distribution of the gender differences in life expectancy at birth in the EU27, EU25, EU15 and EU10 countries, 1995-2005.

Year	EU27				EU25			
	Median	Minimum	Maximum	IQR	Median	Minimum	Maximum	IQR
1995	7.27	4.61	12.94	2.40	7.00	4.61	12.94	2.56
1996	7.02	4.58	11.68	2.26	6.70	4.58	11.68	2.41
1997	6.81	4.80	11.55	2.61	6.53	4.80	11.55	2.63
1998	6.96	4.88	11.30	2.18	6.90	4.88	11.30	2.34
1999	6.78	3.88	11.10	2.31	6.75	3.88	11.10	2.46
2000	6.66	4.09	11.18	2.34	6.50	4.09	11.18	2.38
2001	6.51	4.52	11.64	2.44	6.25	4.52	11.64	2.88
2002	6.68	4.38	11.80	2.55	6.63	4.38	11.80	2.95
2003	6.39	4.23	11.37	2.76	6.04	4.23	11.37	2.97
2004	6.55	3.93	11.45	2.21	6.32	3.93	11.45	2.35
2005	6.37	4.10	12.06	2.41	5.75	4.10	12.06	2.51

Year	EU15				EU10			
	Median	Minimum	Maximum	IQR	Median	Minimum	Maximum	IQR
1995	6.58	5.08	12.80	1.86	8.06	4.61	12.94	4.16
1996	6.40	5.01	11.31	1.84	8.08	4.58	11.68	3.62
1997	6.20	4.91	11.55	1.79	7.98	4.80	11.55	3.74
1998	6.19	4.88	11.30	1.65	8.29	5.06	11.30	3.65
1999	6.04	4.70	11.10	1.90	8.28	3.88	11.10	3.82
2000	5.99	4.64	10.73	1.71	8.29	4.09	11.18	3.70
2001	5.88	4.52	11.44	1.80	8.19	4.60	11.64	4.04
2002	5.88	4.38	11.80	1.88	7.92	4.63	11.80	4.10
2003	5.65	4.38	11.01	1.65	7.99	4.23	11.37	3.65
2004	5.76	4.20	11.45	1.75	7.70	3.93	11.45	3.50
2005	5.54	4.10	10.88	1.99	7.91	4.14	12.06	4.34

* Austria, Belgium, Denmark, Finland, France, Ireland, Italy, Germany, Greece, Luxembourg, Portugal, Spain, the Netherlands, Sweden, UK (EU15); Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia (EU10); + Bulgaria, Romania (EU27).

By geographical region (Table 2), the gender difference over the whole period is larger in the East. The median gender difference in this region did not change. It was about 8.2 years in 1995 and 2005. The indicator of spread, the IQR, remained also unchanged (3.4 years in 1995 and 3.2 years in 2005). There was more evidence for a decrease in the gender difference over time in the other regions (-0.4 years (South), -0.8 years (North) and -1.2 years (West)). The gender difference did decrease in all countries of the EU27 with the exception of Poland (+0.1 years) and Lithuania (+0.3 years) (Fig. 2). The change in the gender difference was statistically significant in all countries in the North, the West (except for Ireland), in Italy, Portugal, Spain and in the Czech Republic and Hungary.

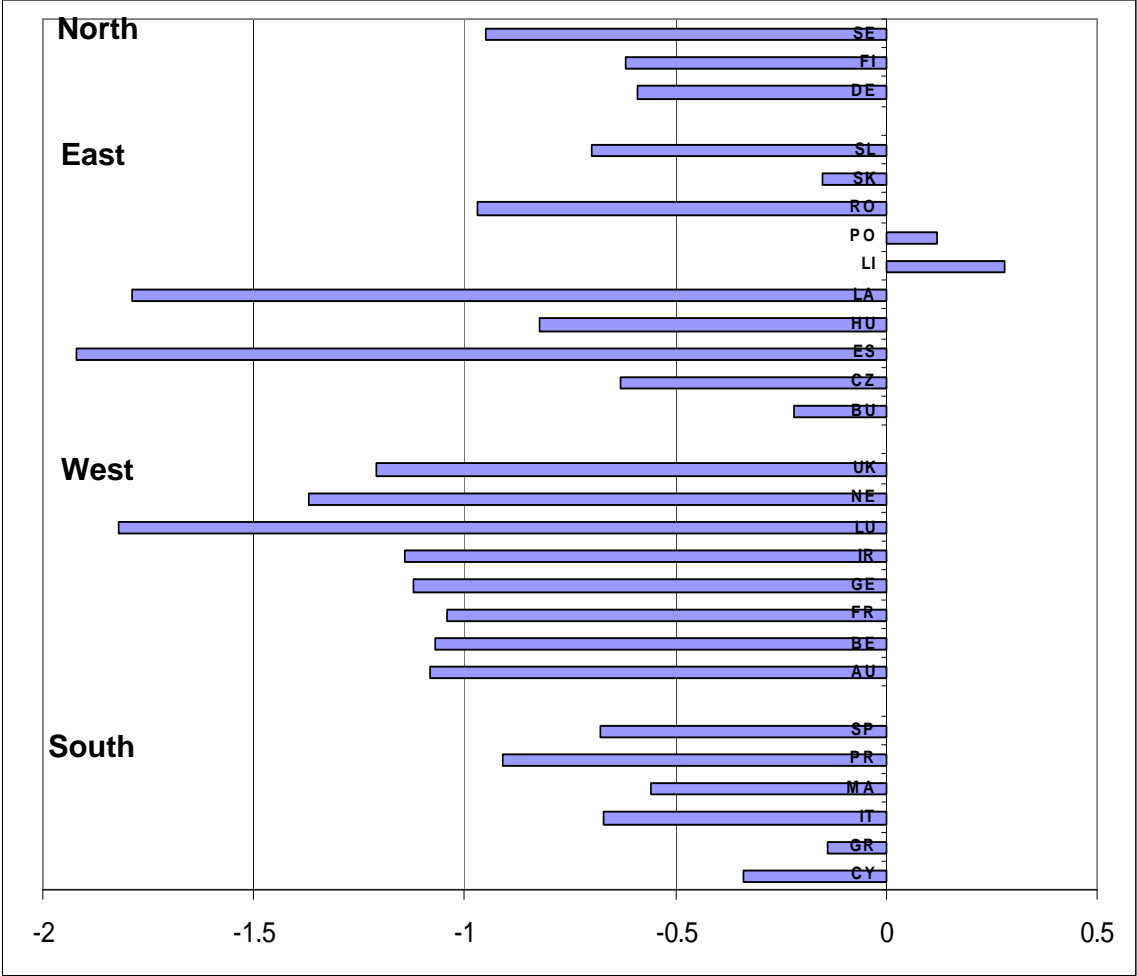
Table 2: Distribution of the gender differences in life expectancy at birth by geographical regions*, EU27, 1995-2005.

Year	North				East			
	Median	Minimum	Maximum	IQR	Median	Minimum	Maximum	IQR
1995	5.28	5.10	7.40	1.15	8.25	7.00	12.94	3.45
1996	5.21	5.01	7.52	1.26	8.26	7.02	11.68	2.83
1997	5.10	4.91	7.09	1.09	8.32	6.81	11.55	2.57
1998	5.05	4.94	7.32	1.19	8.39	6.96	11.30	2.64
1999	4.84	4.70	7.29	1.30	8.32	6.75	11.10	2.95
2000	4.68	4.64	6.88	1.12	8.31	6.66	11.18	2.91
2001	4.54	4.52	6.97	1.23	8.28	6.51	11.64	2.92
2002	4.54	4.38	6.68	1.15	8.18	6.63	11.80	3.11
2003	4.71	4.51	6.71	1.10	8.18	6.61	11.37	2.26
2004	4.70	4.32	6.96	1.32	8.09	6.64	11.45	2.61
2005	4.51	4.33	6.78	1.23	8.20	6.37	12.06	3.22

Year	West				South			
	Median	Minimum	Maximum	IQR	Median	Minimum	Maximum	IQR
1995	6.58	5.31	8.06	1.21	5.75	4.61	7.34	2.26
1996	6.40	5.22	8.00	1.02	5.68	4.58	7.45	2.10
1997	6.02	5.04	7.80	1.09	5.60	4.80	7.20	1.75
1998	6.19	5.01	7.68	0.90	5.59	4.88	7.24	1.68
1999	6.04	4.89	7.56	1.27	5.53	3.88	7.05	2.42
2000	5.99	4.83	7.54	1.20	5.54	4.09	6.99	1.79
2001	5.66	4.71	7.47	0.72	5.54	4.60	6.98	1.63
2002	5.77	4.64	7.29	1.18	5.41	4.63	6.82	1.62
2003	5.65	4.38	7.09	1.19	5.24	4.23	6.65	1.70
2004	5.66	4.20	7.12	1.19	5.53	3.93	6.68	1.38
2005	5.43	4.10	7.02	1.23	5.35	4.14	6.59	1.82

* North : Denmark, Finland, and Sweden ; East : Bulgaria, Czech Republic, Estonia,, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia; West : Austria, Belgium, Denmark, France, Ireland, Germany, Luxembourg, the Netherlands, and UK South : Cyprus, Greece, Italy, Malta, Portugal, and Spain.

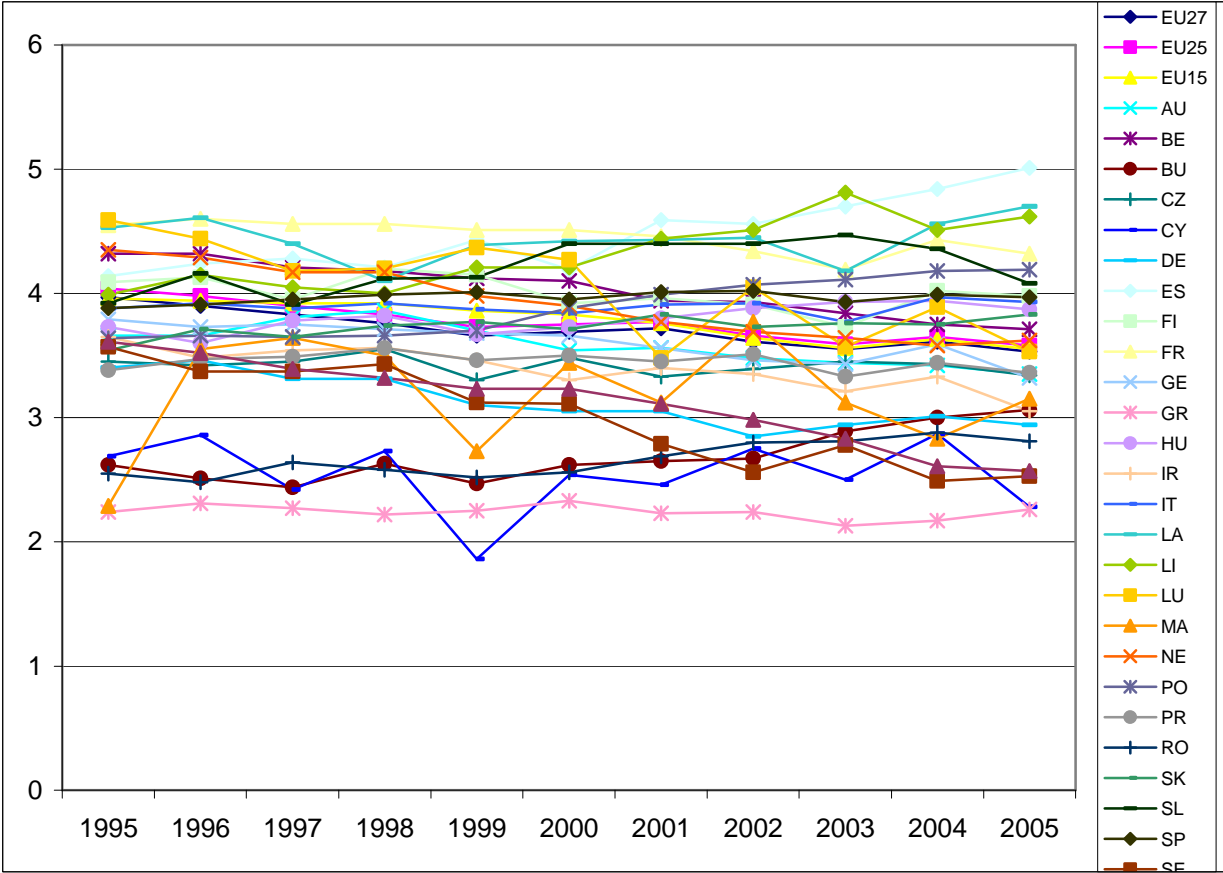
Figure 2: Temporal change in the gender differences in life expectancy at birth in the EU27, 1995-2005.



Distribution of gender difference life expectancy at age 65 (LE₆₅).

Figure 3 shows the gender differences in LE and HLY at age 65 between 1995 and 2005. At age 65 the LE was larger in women in all countries. The gender differences in the EU27 ranged between 2.2 to 4.6 years in 1995 and 2.3 to 5.0 years in 2005 (Table 3). The median gender difference remained about 3.6 years but the measure of spread increased (IQR₁₉₉₅: 0.6; IQR₂₀₀₅: 0.9). In 1995, there were 4 countries (Bulgaria, Malta, Greece, Romania) with a difference of about 2.5 years or less. Only in Greece, the gender difference remained small. Comparing the EU15 and EU10 countries, the difference in gender difference in LE₆₅ was not as distinct as at younger ages. However the gender differences tended to increase in the EU10 countries (median₁₉₉₅₋₂₀₀₅: +0.3 years) and to decrease in the EU15 countries (median₁₉₉₅₋₂₀₀₅: -0.4 years).

Figure 3: Gender differences in life expectancy at age 65 in the EU27, 1995-2005.



By geographical region (Table 4), the gender differences increased in the East and South (median₁₉₉₅₋₂₀₀₅: respectively +0.3 years and +0.2 years), while it decreased in the North and West (median₁₉₉₅₋₂₀₀₅: respectively -0.6 years in both regions). The increase in the gender difference in LE₆₅ was statistically significant in Estonia, Lithuania and Poland. The decrease was statistically significant in all countries in the North (except Finland) and West (except Ireland) (Table 5).

Table 3: Distribution of the gender differences in life expectancy at age 65 in the EU27, EU25, EU15 and EU10 countries, 1995-2005.

Year	EU27				EU25			
	Median	Minimum	Maximum	IQR	Median	Minimum	Maximum	IQR
1995	3.66	2.24	4.59	0.61	3.73	2.24	4.59	0.55
1996	3.66	2.31	4.61	0.69	3.71	2.31	4.61	0.68
1997	3.75	2.27	4.56	0.58	3.78	2.27	4.56	0.56
1998	3.74	2.22	4.56	0.64	3.82	2.22	4.56	0.57
1999	3.70	1.86	4.51	0.95	3.70	1.86	4.51	0.83
2000	3.71	2.33	4.51	0.76	3.73	2.33	4.51	0.66
2001	3.56	2.23	4.59	0.86	3.77	2.23	4.59	0.66
2002	3.73	2.24	4.56	0.87	3.77	2.24	4.56	0.66
2003	3.57	2.13	4.81	0.90	3.64	2.13	4.81	0.72
2004	3.59	2.17	4.84	1.00	3.75	2.17	4.84	0.69
2005	3.53	2.26	5.01	0.92	3.62	2.26	5.01	0.83

Year	EU15				EU10			
	Median	Minimum	Maximum	IQR	Median	Minimum	Maximum	IQR
1995	3.84	2.24	4.59	0.59	3.54	2.29	4.53	1.17
1996	3.82	2.31	4.60	0.78	3.60	2.48	4.61	0.79
1997	3.85	2.27	4.56	0.71	3.65	2.42	4.40	0.80
1998	3.89	2.22	4.56	0.66	3.66	2.58	4.12	0.80
1999	3.79	2.25	4.51	0.73	3.67	1.86	4.39	1.33
2000	3.75	2.33	4.51	0.71	3.71	2.54	4.42	1.02
2001	3.56	2.23	4.59	0.62	3.80	2.46	4.44	1.29
2002	3.60	2.24	4.56	0.70	3.77	2.67	4.51	1.14
2003	3.51	2.13	4.70	0.65	3.76	2.50	4.81	1.14
2004	3.59	2.17	4.84	0.73	3.75	2.83	4.56	1.33
2005	3.45	2.26	5.01	0.92	3.83	2.28	4.70	1.03

Table 4: Distribution of the gender differences in life expectancy at age 65 by geographical regions, EU27, 1995-2005.

Year	North				East			
	Median	Minimum	Maximum	IQR	Median	Minimum	Maximum	IQR
1995	3.57	3.40	4.09	0.35	3.69	2.55	4.53	0.50
1996	3.46	3.37	4.13	0.38	3.69	2.48	4.61	0.69
1997	3.37	3.31	3.95	0.32	3.72	2.44	4.40	0.52
1998	3.43	3.31	4.20	0.45	3.78	2.58	4.21	0.50
1999	3.12	3.10	4.15	0.53	3.74	2.47	4.43	0.80
2000	3.11	3.05	3.92	0.44	3.81	2.56	4.42	0.67
2001	3.05	2.79	3.96	0.59	3.91	2.65	4.59	0.98
2002	2.85	2.56	3.91	0.68	3.98	2.67	4.56	0.96
2003	2.94	2.78	3.73	0.48	4.02	2.81	4.81	0.87
2004	3.01	2.49	4.02	0.77	4.06	2.88	4.84	0.96
2005	2.94	2.53	3.98	0.73	3.98	2.81	5.01	1.05

Year	West				South			
	Median	Minimum	Maximum	IQR	Median	Minimum	Maximum	IQR
1995	4.06	3.61	4.59	0.74	3.04	2.24	3.88	1.37
1996	4.01	3.48	4.60	0.73	3.51	2.31	3.92	0.81
1997	3.99	3.39	4.56	0.49	3.57	2.27	3.95	1.13
1998	4.02	3.32	4.56	0.51	3.53	2.22	3.99	0.91
1999	3.84	3.23	4.51	0.56	3.10	1.86	4.01	1.40
2000	3.78	3.23	4.51	0.66	3.47	2.33	3.95	0.99
2001	3.56	3.11	4.46	0.35	3.29	2.23	4.01	1.17
2002	3.59	2.98	4.34	0.53	3.64	2.24	4.02	0.94
2003	3.51	2.83	4.19	0.32	3.23	2.13	3.93	1.01
2004	3.59	2.61	4.43	0.39	3.16	2.17	3.99	1.00
2005	3.44	2.57	4.32	0.39	3.26	2.26	3.97	1.29

Table 5: Temporal change in the gender differences in life expectancy at age 65 by geographical regions in the EU27, 1995-2005.

	North		East		West		South
Denmark	-0.46*	Bulgaria	0.44	Austria	-0.31*	Cyprus	-0.41
Finland	-0.11	Czech Republic	-0.11	Belgium	-0.61*	Greece	0.02
Sweden	-1.04*	Estonia	0.87*	France	-0.23*	Italy	0.05
		Hungary	0.14	Germany	-0.47*	Malta	0.86
		Latvia	0.17	Ireland	-0.60	Portugal	-0.02
		Lithuania	0.63*	Luxembourg	-1.06*	Spain	0.09
		Poland	0.55*	Netherlands	-0.73*		
				United Kingdom	-1.04*		
		Romania	0.26				
		Slovakia	0.29				
		Slovenia	0.16				

*: temporal change in LE₆₅ is statistically different by gender

Patterns of gender difference in health expectancy indicators at age 16 (Disability-Free Life Expectancy (DFLE) and Life Expectancy with Disability (DLE)) between 1995 and 2005.

The gender differences in DFLE and DLE at age 16 is estimated using the data from the ECHP for the period 1995-2001 (Fig. 4, 5). The median difference of DFLE was 2.9 years in 1995 with a minimum of -0.8 years (Denmark) and maximum of 4.7 years (Austria) compared to a median difference of 2.2 years in 2001 (min: -1.83 years (the Netherlands); max: 4.1 years (Austria)). The spread of the gender differences in DFLE clearly increased over the period of observations. The IQR_{1995} was 1.4 years compared to an IQR_{2001} of 3.5 (Table 6). The gender difference in DFLE increased in Ireland and in Sweden, while it decreased in all other countries (Table 7). DFLE in males was or became larger than DFLE in women in Denmark, Germany, the Netherlands, and Sweden. The median gender difference in DLE fluctuated between 3.6 and 4.5 years. The IQR of DLE increased to some extent (Table 6). The gender difference in DLE increased substantially in several countries such as Belgium, Finland, Germany, Greece, the Netherlands and UK. In all of these countries, except Belgium there is evidence of expansion among women, i.e. that the rise in life expectancy is larger than the increase in DFLE. The expansion in women is then more extreme compared to either an expansion in men or compared to a compression in men (Table 7). The differential evolution in DFLE by gender was statistically significant in Finland, Germany and the Netherlands.

Figure 4: Gender differences in Disability-Free Life expectancy at age 16, European Community Household Panel, 1995-2001.

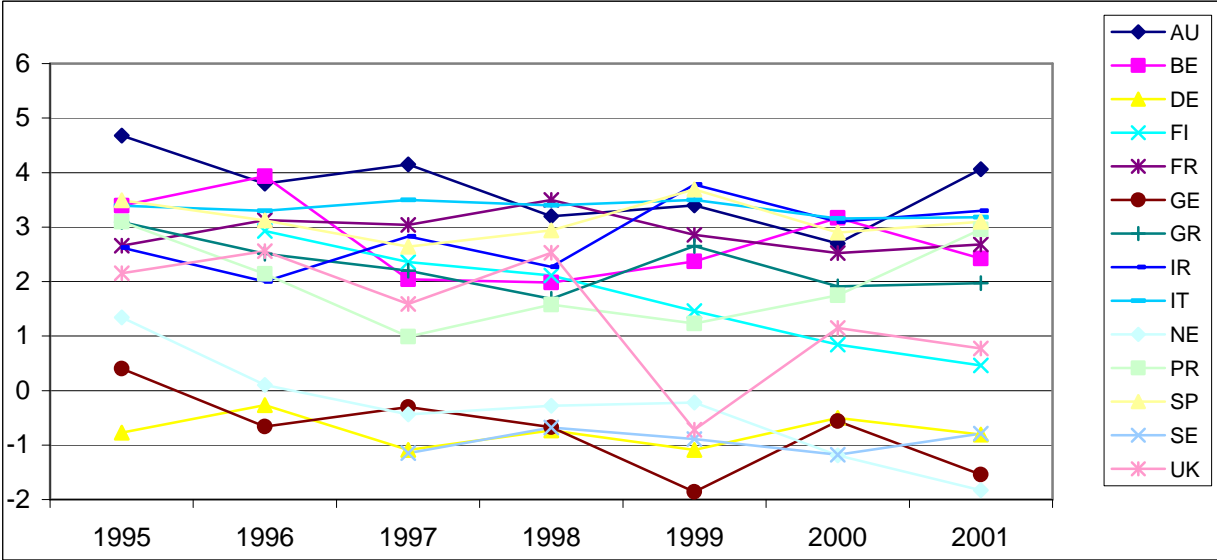


Figure 5: Gender differences in life expectancy with disability at age 16, European Community Household Panel, 1995-2001.

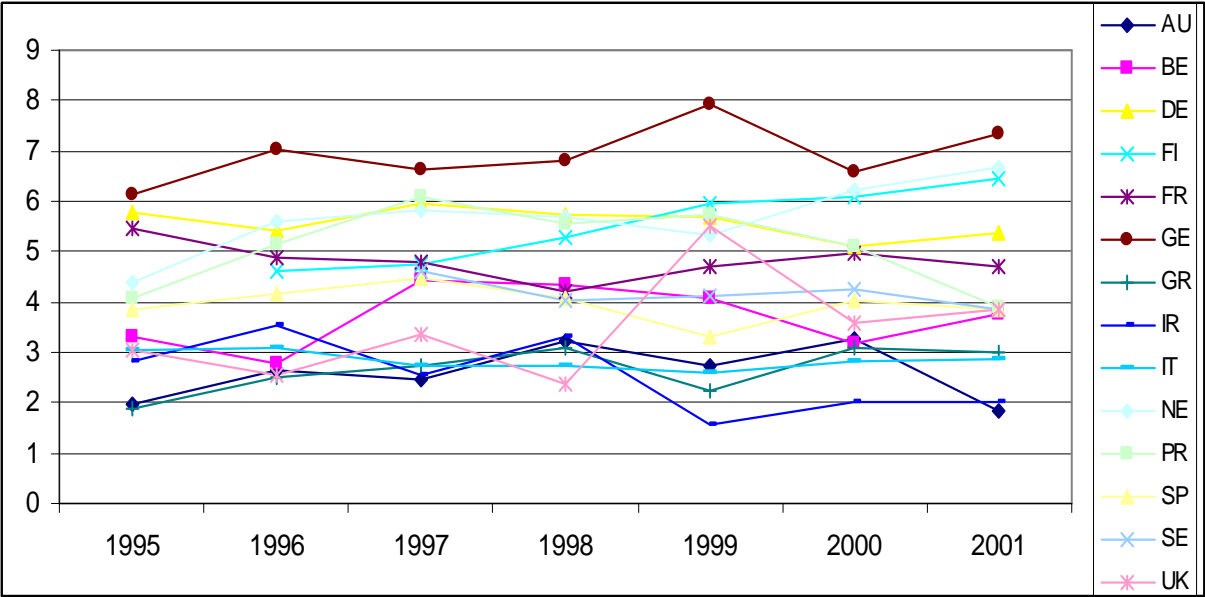


Table 6: Distribution of the gender differences in health expectancy indicators (Disability-Free Life Expectancy (DFLE), Disability Life Expectancy (DLE), Moderate Disability Life Expectancy (MDLE) and Severe Disability Life Expectancy (SDLE)) at age 16, European Community Household Panel, 1995-2001.

Year	DFLE				DLE			
	Median	Minimum	Maximum	IQR	Median	Minimum	Maximum	IQR
1995	2.88	-0.77	4.68	1.44	3.59	1.87	6.12	1.69
1996	2.56	-0.66	3.93	1.13	4.18	2.51	7.03	2.41
1997	2.12	-1.15	4.15	2.76	4.54	2.45	6.62	2.68
1998	2.05	-0.73	3.50	2.65	4.15	2.36	6.82	2.22
1999	1.92	-1.86	3.78	3.86	4.42	1.58	7.92	2.78
2000	1.83	-1.19	3.17	3.02	4.15	2.03	6.57	1.93
2001	2.20	-1.83	4.06	3.54	3.85	1.84	7.34	2.02

Year	MDLE				SDLE			
	Median	Minimum	Maximum	IQR	Median	Minimum	Maximum	IQR
1995	2.32	0.71	4.36	1.45	1.76	0.11	2.42	0.50
1996	2.69	0.89	4.42	1.64	1.70	1.09	2.66	0.59
1997	2.83	0.91	4.15	1.50	1.96	0.90	3.26	1.02
1998	2.59	1.34	4.94	1.29	1.90	0.11	2.77	0.75
1999	2.60	0.91	5.00	1.60	1.74	0.21	2.96	1.10
2000	2.39	1.23	5.51	1.74	1.32	-0.36	3.22	0.92
2001	2.13	1.17	5.12	1.45	1.66	0.67	3.46	0.65

Table 7: Temporal change in the gender differences in Life Expectancy (LE) and health expectancy indicators (Disability-Free Life Expectancy (DFLE), Disability Life Expectancy (DLE)) at age 16, European Community Household Panel, 1995-2001.

					Compression (C) / Expansion (E)	
	Country	LE	DFLE	DLE	Males	Females
North	Denmark	-0.44	-0.04	-0.40	E	E
	Finland	-0.65	-2.47	1.82	C*	EE*
	Sweden	-0.43	0.36	-0.79	E	C
West	Austria	-0.76	-0.62	-0.14	C	C
	Belgium	-0.52	-0.97	0.45	C	C
	France	-0.74	0.02	-0.76	E	E
	Germany	-0.72	-1.94	1.22	C*	E*
	Ireland	-0.12	0.68	-0.80	E	E
	Netherlands	-0.88	-3.17	2.29	E*	EE*
	United Kingdom	-0.55	-1.38	0.83	E	EE
South	Greece	0.01	-1.12	1.13	C	EE
	Italy	-0.41	-0.21	-0.20	C	C
	Portugal	-0.33	-0.14	-0.19	EE	EE
	Spain	-0.40	-0.39	-0.01	C	C

* Temporal change in the gender difference in $DFLE_{16}$ is statistically significant.

Patterns of gender difference in health expectancy indicators at age 65 (Disability-Free Life Expectancy (DFLE) and Life Expectancy with Disability (DLE)) between 1995 and 2005.

At older ages, women still live more years without disability and more years with disability. The gender difference in DFLE ranged between 0.3 and 2 years in 1995 and -0.36 and 1.94 years in 2001 (Fig. 6). The median difference decreased from 1.5 to 0.9 years. The IQR fluctuated around 0.6 to 1 year over the period of observation (Table 8). The median gender difference in DLE was 2.5 years in 1995 and 2.4 years in 2001. The minimum and maximum ranged between respectively 0.6 to 3.8 years and 1.0 to 4.0 years. The measure of spread, the IQR fluctuated around 0.6 and 1.4 years (Fig 7, Table 8). The gender difference in DFLE expectancy decreased with one year or more in Finland, Germany, Greece and Portugal. At the same time, the DLE gender difference increased with 1 year or more in these countries and with the exception of Portugal, there is evidence of more extreme expansion among women compared to either an expansion or compression in men (Table 9). The gender

difference in DFLE only increased in Italy and Sweden. Next to the countries mentioned above with an increasing gender difference in DLE, the gender difference also increased in Finland, Ireland, the Netherlands and Spain. The differential evolution in DFLE by gender was not statistically significant in any country.

Figure 6: Gender differences in Disability-Free Life expectancy at age 65, European Community Household Panel, 1995-2001.

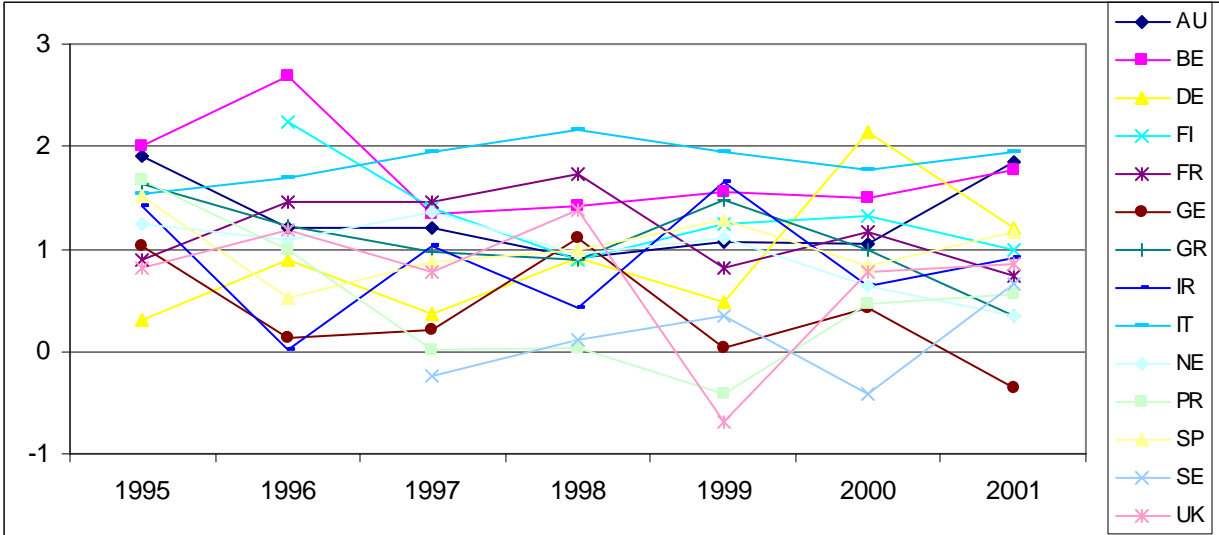


Figure 7: Gender differences in life expectancy with disability at age 65, European Community Household Panel, 1995-2001.

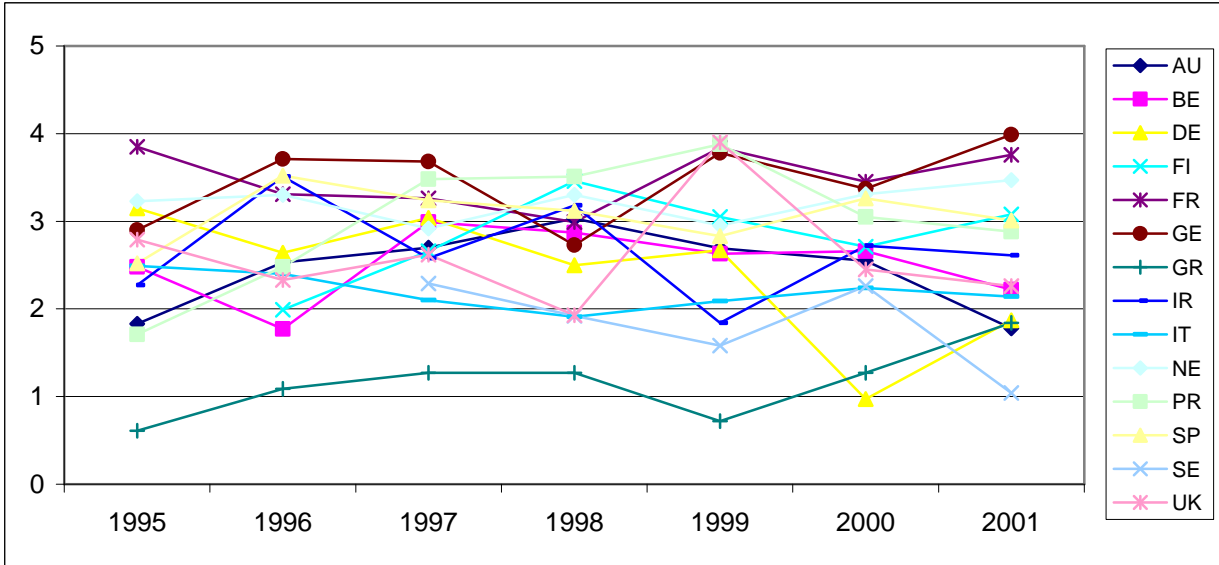


Table 8: Distribution of the gender differences in health expectancy indicators (Disability-Free Life Expectancy (DFLE), Disability Life Expectancy (DLE), Moderate Disability Life Expectancy (MDLE) and Severe Disability Life Expectancy (SDLE)) at age 65, European Community Household Panel, 1995-2001.

Year	DFLE				DLE			
	Median	Minimum	Maximum	IQR	Median	Minimum	Maximum	IQR
1995	1.47	0.30	2.00	0.65	2.51	0.61	3.85	0.80
1996	1.19	0.02	2.69	0.56	2.53	1.09	3.71	0.98
1997	1.00	-0.24	1.94	0.89	2.81	1.27	3.68	0.60
1998	0.94	0.04	2.17	0.42	2.93	1.27	3.51	1.09
1999	1.09	-0.68	1.95	1.05	2.76	0.72	3.90	1.37
2000	0.92	-0.42	2.14	0.65	2.69	0.97	3.45	0.90
2001	0.88	-0.36	1.94	0.61	2.44	1.04	3.99	1.13

Year	MDLE				SDLE			
	Median	Minimum	Maximum	IQR	Median	Minimum	Maximum	IQR
1995	1.02	0.37	2.08	0.95	1.73	0.24	2.05	0.78
1996	1.34	-0.25	2.08	1.02	1.41	0.81	2.02	0.28
1997	1.26	0.51	1.85	0.35	1.54	0.75	2.40	0.47
1998	1.42	0.46	2.90	0.49	1.51	0.28	2.04	0.84
1999	1.40	0.47	2.59	0.58	1.33	0.22	2.60	1.20
2000	1.18	0.64	2.41	0.72	1.31	0.06	2.08	1.14
2001	1.18	0.53	2.25	0.37	1.52	0.23	2.07	0.94

Table 9: Temporal change in the gender differences in Life Expectancy (LE) and health expectancy indicators (Disability-Free Life Expectancy (DFLE), Disability Life Expectancy (DLE)) at age 65, European Community Household Panel, 1995-2001.

					Compression (C) / Expansion (E)	
	Country	LE	DFLE	DLE	Males	Females
North	Denmark	-0.37	0.91	-1.28	EE	C
	Finland	-0.16	-1.25	1.09	C	E
	Sweden	-0.35	0.90	-1.25	E	C
West	Austria	-0.11	-0.06	-0.05	C	C
	Belgium	-0.49	-0.23	-0.26	C	C
	France	-0.24	-0.15	-0.09	E	E
	Germany	-0.30	-1.39	1.09	E	EE
	Ireland	-0.17	-0.51	0.34	E	E
	Netherlands	-0.65	-0.89	0.24	E	EE
	United Kingdom	-0.49	0.04	-0.53	EE	EE
South	Greece	-0.05	-1.28	1.23	C	EE
	Italy	0.05	0.40	-0.35	EE	EE
	Portugal	0.06	-1.11	1.17	EE	EE
	Spain	0.14	-0.35	0.49	C	E

Discussion

In this report, we observed that within Europe, in addition to the inequality among the EU Members States⁴, the size and the evolution over time of the gender differences in life expectancy (period 1995-2005) and healthy life years (period 1995-2001) diverge. At birth, there was an overall reduction of the gender differences in life expectancy. The catching up of men over the 10 years period is about 0.9 years. However the reduction in the gender gap was and remained larger among the EU15 countries compared to the EU10 countries. This is mainly a result of the size and evolution of the gender differences among the Eastern European countries, especially the 3 Baltic countries (Estonia, Latvia and Lithuania). In 1995, the sizes of the gender gap (about 12 or more years) in these 3 countries were outliers and they remained outliers over time. Among the 27 member states, the gender differences did not reduce in only 2 countries (Lithuania and Poland). At age 65, the gender gap in the EU27 countries hardly changed, among the EU15 countries it decreased, while it increased among the EU10 countries. At regional level, there was only a substantial and statistically significant decrease in the countries in the North and West (except for Ireland). In the South, the gender differences remained unchanged, except for a decrease in Cyprus. In the Eastern European countries, the gender difference increased except for the Czech Republic. The higher gender differences in life expectancy at different ages in the Eastern European countries have been attributed to the high mortality from accidents and violence at younger age combined with a very high rate of degenerative diseases, especially cardiovascular disease and cancer in later life. Both alcohol consumption patterns and smoking habits contribute to the gender differences and the increase in gender differences is not only because men are more likely to smoke and drink alcohol more excessively, but also because women in Eastern European countries have a faster increase in life expectancy because they are more likely to pick up healthier life styles once health promotion programs are installed⁵.

The interpretation of the evolution of the gender differences in the DFLE and the DLE is more complicated. At age 16, no distinct geographical pattern can be observed. Within 6 countries (Belgium, Finland, Germany, Greece, the Netherlands and UK), the decrease in the gender difference in DFLE is compensated for by an increase in the gender difference in DLE. This is a result of a larger expansion of morbidity in women compared to an expansion or compression of morbidity in men. In Ireland and Sweden the opposite is observed: the

gender difference in DFLE increased whereas the gender difference in DLE decreased. In Austria, Italy and Portugal, both the gender differences in DFLE and DLE are reducing. In Austria and Italy there is a compression in both genders, while this is not the case in Portugal. At age 65 years, the gender difference in DFLE decreased in almost all countries except for Denmark, Italy, Sweden and the UK. The decrease in DFLE gender difference most often coincide with an increase of the gender difference of the DLE.

Limitations of our study relate mainly to the underlying survey, the ECHP, which provides the disability prevalence. One problem with the ECHP, which is in fact a panel survey, is the falling response rate over time. A number of researchers have investigated attrition in the survey^{6,7} but Watson⁸ concludes that gender is not associated with attrition and the fears that attrition has undermined the representativeness of the ECHP are unfounded. An additional methodological problem is the omission of the institutionalised population. The institutionalisation rates greatly differ not only from one country to another as past and present public health policies in long-term care services widely vary across Europe, but within countries the institutionalisation rate differs by gender. However this report is mainly concerned with trends over time and although there may be bias at any one time point, it is likely that trends will be less sensitive to these as the bias is unlikely to change with time. Problems related to differences due to the translation of the underlying disability question are less important as the gender difference is a within-country estimate.

While it is hard to argue that male-female mortality differences are a statistical artefact, female excess morbidity is, at least in part, socially constructed. Despite the “male-female health-survival paradox”, the number of expected years to live without disability at age 16 and at age 65 in most countries is less among men. At the same time men have less expected years with disability. The disparity in the gender difference in DFLE and DLE is related to the evolution of the population health. The evolution of population health is determined by different phenomena taking place with opposite effects. Declining mortality tends to increase the duration and the proportion of life in ill-health. This is because declining mortality among the healthy brings more people into ages where the probability of unhealthy outcomes is high and because the life of the unhealthy is extended. From a historical point of view women are ahead. The gains in life expectancy and changes in health among women are much more concentrated at the frontier of human life span, whereas men still have a large space for improvement both in life expectancy and in health. Delay in incidence, more effective therapy

and the greater availability of technical aids can be possible reasons for the observed interaction between mortality and morbidity. However, differences in medical care are probably less likely to explain a differential trend in DFLE and DLE by gender over time. Nevertheless modifiable healthy lifestyle, e.g. smoking abstinence, weight management, regular exercise are predictors of both survival and good health and function even during older age⁹⁻¹¹. Therefore the historical pattern of gender difference in changing lifestyles such as the decline in smoking prevalence among men and the smoking uptake among women may be an important contributing factor to the observed evolution of the gender differences in DFLE and DLE.

Conclusion

We have shown that the gender differences in life expectancy diverge among the European countries with larger differences in the EU10 compared to the EU15. Within the Eastern European countries the gender differences are the most substantial. Over the time period of observation the geographical pattern remains unchanged although gender differences tend to reduce, especially at younger ages. Within the 14 of the 'old' Member States, a geographical pattern in the evolution of the gender difference in DFLE and DLE is not distinct. In most countries the gender difference in DFLE decreases while the gender difference in DLE increases.

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