

Amenable mortality in the EU – has crisis changed its course?

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Amenable mortality in the EU – has crisis changed its course?

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Abstract

Background: Did the global financial crisis and its aftermath impact upon the performance of health systems in Europe? We investigated trends in amenable and other mortality in the EU since 2000 across 28 EU countries.

Methods: We use WHO detailed mortality files from 28 EU countries to calculate age-standardised deaths rates from amenable and other causes. We then use joinpoint regression to analyse trends in mortality before and after the onset of the economic crisis in Europe in 2008.

Results: Amenable and other mortality have declined in the EU since 2000, albeit faster for amenable mortality. We observed increases in amenable mortality following the global financial crisis for females in Estonia (-4.53 annual percentage change (APC) in 2005-2012 to 0.03 APC in 2012-2014) and Slovenia (4.22 APC in 2000-2013 to 0.73 in 2013-15) as well as males and females in Greece (males: -2.93 APC in 2000-2010 to 0.01 APC in 2010-2013; females: -3.48 APC in 2000-2010 to 0.06 APC in 2010-2013). Other mortality continued to decline for these populations. Increases in deaths from infectious diseases before and after the crisis played a substantial part in reversals in Estonia, Slovenia and Greece.

Conclusion: There is evidence that amenable mortality rose in Greece and, among females in Estonia and Slovenia. However, in most countries, trends in amenable mortality rates appeared to be unaffected by the crisis.

Key words

Amenable mortality, economic crisis, EU-28

Introduction

The global financial crisis of 2007-08 and its consequences have had a severe long-term impact on many European economies. National economies, as measured by Gross Domestic Product (GDP), was most negatively affected in 2009, however some European Union (EU) member states, especially Greece, are yet to recover fully.¹ Challenges arising from low or no economic growth, coupled with rising deficits and borrowing costs, impacted on the availability of resources for public spending, including for health, across Europe.² Thus, per capita public spending on health fell in several countries, with a small number experiencing sustained reductions during 2009-2012, in particular Greece, Ireland and Slovenia, but also Italy, Portugal, Spain and the United Kingdom.³ The slowdown in health spending impacted upon the provision of health services⁴ and access to care⁵, with large increases in unmet medical need observed in Greece, Estonia and Latvia during and following the crisis.¹ Other evidence points to an increase in the proportion of European citizens aged 50 years and older who incurred a rise in out-of-pocket expenditures during the same time, with significant increases in the proportion of those experiencing catastrophic expenditures in the Czech Republic, Italy and Spain.⁶ It is plausible that these barriers to access impact health outcomes, while reduced public health spending may result in deterioration of quality of care. At the same time, a well-functioning and resilient health system should be capable of maintaining adequate levels of services, unless gaps in financing, coverage, or service delivery are unsurmountable.

As was demonstrated previously⁷⁻¹⁰, European health systems have continued to contribute to improving population health by reducing deaths that can be avoided with timely and effective care (amenable mortality), a concept that is now used by several governments and international organisations as an indicator of health system performance.¹¹⁻¹⁵ The pace of improvement varied across countries, reflecting differences in the availability of and access to technologies and treatment, the effectiveness of service delivery and wider healthcare policies. In this study we analyse amenable mortality trends from 2000 onwards in the countries of the European Union in order to understand the possible impacts of the global financial crisis by means of Joinpoint regression analysis. We contrast amenable deaths with those where healthcare may have a less obvious impact (other mortality).

Methods

Definition

We used the list of conditions included in amenable mortality (AM) proposed by Nolte and McKee in 2004 (Appendix 1).⁷ For consistency with previous work, we applied an upper age limit of 75 years

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3 and include 50% of ischaemic heart disease deaths as potentially amenable. We also measured
4 'other' mortality (all remaining causes) under age 75 year as a comparator to help interpret changes
5 in amenable mortality.
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7 8 *Data and availability* 9

10 We used the WHO detailed mortality files¹⁶ to obtain data on the number of deaths in the 28 EU
11 member states by country, year, sex and cause by 5-year age-group and the corresponding
12 population denominators, for the years 2000-2015. [We calculated age-standardised mortality rates](#)
13 [using the European Standard Population 2013.](#) Mortality data for Italy (2004, 2005) and Portugal
14 (2004-2006) were not available and we only calculated trends from 2006 and 2007, respectively.
15 Data for Greece included a change in ICD-coding of cause of death in 2014 (from ICD-9 to ICD-10).
16 This resulted in marked changes in certain causes of amenable death, so we only used data for 2000-
17 2013 to examine trends over time.
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23 24 *Joinpoint regression* 25

26 We used Joinpoint regression analysis to identify significant changes in mortality trends for
27 amenable and non-amenable (i.e. all other) causes in each EU country, starting in 2000. We then
28 identified countries which experienced significant reversal (flat-lining or increase) in amenable
29 mortality in either males or females in or after 2009, while mortality from other causes continued
30 falling. While we recognise that economic crisis can also potentially affect mortality beyond
31 amenable causes, trends in other causes provide a comparator between these two mortality groups,
32 one of which is a widely recognised marker of health care sector performance. We performed
33 further Joinpoint analysis on specific amenable causes of death in those countries where we found
34 reversals in trends. The overall change in trend was measured in terms of annual percentage change
35 (APC). We used Joinpoint Trend Analysis Software v4.5.0.1.¹⁷
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42 43 *Pre- and post- crisis period* 44

45 The global financial crisis affected the economies of EU member states in or after 2008, with the
46 earliest plausible impact on health service effectiveness and mortality expected in or after 2009. We
47 therefore defined the years 2009 onwards as the post-crisis period, consistent with established
48 usage. However, we recognise that the timing of the crisis differed across countries.²
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51 **Results** 52

53 Overall, amenable and other mortality declined in all EU countries between 2000 and 2015. For
54 amenable mortality, the average pace of decline varied between and annual percentage change
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3 (APC) of 0.4 in Lithuania to 5.6 in Ireland for males and between 1.8 in Lithuania and Italy to 5.0 in
4 Ireland for females. The pace of decline of other mortality ranged from APC 1.2 in Bulgaria, Greece
5 and Lithuania to 3.6 in Croatia and Slovenia for males and from 0.5 in Portugal to 4.6 in Cyprus for
6 females. With the exception of Cyprus (females) and Lithuania (males), amenable mortality declined
7 faster, on average, than other mortality (Table 1).
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11 [Table 1 about here]
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13 Since 2000, 30 Joinpoints in 18 countries were identified across both genders in amenable mortality
14 trends. Most of these were related to amenable mortality displaying either more favourable, or a
15 similar direction of change compared to other mortality (Appendix 2). There were only four
16 instances of reversals in amenable mortality coinciding with the onset of the economic crisis (from
17 decreases to 0 APC change or increases), against a background of a continued fall in other mortality.
18 These were observed for females in Estonia (-4.5 APC in 2005-2012 to 0 APC in 2012-2014) and
19 Slovenia (-4.2 in 2000-2013 to 0.7 in 2013-2015), as well as males and females in Greece (males: -2.9
20 APC in 2000-2010 to 0 APC in 2010-2013; females; -3.5 APC in 2000-2010 to 0.1 APC in 2010-2013)
21 (Figure 1).
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28 [Figure 1 about here]
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30 To better understand drivers of amenable deaths behind the post-crisis reversals, we performed
31 Joinpoint analysis by cause of death for Estonia, Greece and Slovenia, for males and females (Table
32 2).
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35 [Table 2 about here]
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38 Observed reversals in female amenable mortality in Estonia was attributable, mainly, to a large
39 relative increase in deaths from infectious diseases after 2012, on top off an underlying increasing
40 trend in amenable deaths from respiratory conditions and treatable cancers since 2007. Among
41 males, there was a small increase in amenable respiratory deaths, from 2011. A similar picture is
42 seen in Slovenia, where a reversal in amenable mortality in females can be attributed to an increase
43 in deaths from infectious diseases after 2010, accompanied by underlying slowing in the rate of
44 decrease of amenable deaths from ischaemic heart disease after 2007, while the rate of reduction in
45 other amenable causes remained consistent. Unlike in Estonia, there was a similar pattern among
46 males in Slovenia, with a reversal in amenable deaths from infectious diseases after 2012, but also
47 an underlying reduction in the pace of decline in deaths from ischaemic heart disease and
48 respiratory conditions. Further examination of trends of infectious diseases found substantial recent
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3 rises in deaths from sepsis in both countries, although absolute numbers remain small (data not
4 shown).

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6 In Greece, amenable mortality reversed for males and females in 2010. This was driven by a complex
7 set of changes, which also differed between males and females. Thus, the observed changes
8 occurred against the background of small, but sustained increases in selected amenable causes of
9 death since 2000. These included mortality from amenable infectious diseases, and from digestive
10 and respiratory conditions among males and females, rose at a pace of between 1 and 3 per cent per
11 year between 2000 and 2013. In addition, males experienced sustained increases in mortality from
12 amenable cancers (APC 0.6%) and diabetes (APC 1.1%) from 2000 onwards. Mortality from stroke
13 fell throughout the entire observation period but we observed a significant deceleration of the pace
14 of decline that coincided with the crisis (-7% in 2000-2010 to -0.8% APC in 2010-2013 in females and
15 -6.6% in 2005-2010 to -0.2% in 2010-2013 in males). Reversals in mortality were observed for males
16 for amenable perinatal and congenital conditions, which had been declining until 2007 (APC -8% in
17 2000-2007 to 0.3% in 2007-2013) and the remaining amenable causes of death (APC -7.2% in 2000-
18 2004 to 2.4% in 2004-2013).

27 Discussion

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29 This study found wide variations in both levels and pace of change in amenable mortality over time
30 across EU member states. While rates have, overall, declined, some countries experienced reversals
31 in recent years, at least in the short-term. These are still fairly small in Estonia, Greece and Slovenia,
32 but these countries have seen no increase in other mortality, suggesting that while overall
33 population health is improving, health services may have experienced some challenges. However,
34 observed trends have to be interpreted with caution as they affected males and females differently.
35 In any case, a significant reversal in what has been a very long-term decline in mortality in any
36 country should be a cause of concern, requiring further investigation.
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43 Amenable mortality, as used in this study, plays a dual role. First, it is one of the few existing
44 indicators, which provides an initial assessment of the potential contribution of health services to
45 population health. Second, as the outcome is deaths, it can help understand the impact of health
46 system change. While it is not possible, with aggregate data, to trace specific policies and actions
47 affecting service delivery that lead to amenable deaths, it is known that the global financial crisis was
48 associated with reduced access to care in multiple countries across the EU, particularly among more
49 vulnerable groups.¹⁸
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3 Trends in amenable mortality in Estonia, Greece and Slovenia present a complex picture. First, while
4 total amenable mortality in Estonia and Slovenia has reversed only in women after the crisis, cause-
5 specific data show that men have also been affected, although to a lesser extent. In Estonia, the rise
6 in amenable mortality in females was driven partially by an increase in mortality from infectious
7 diseases, but this was not replicated in males. At the same time, rise in deaths from respiratory
8 conditions seen across both genders was more pronounced in males, while both sexes experienced
9 rise in mortality from other amenable conditions throughout the period. In Slovenia, the rise in
10 deaths from infectious diseases was sharp in both genders in recent years, but only in females did it
11 result in a pronounced change of direction in overall amenable mortality. It is important to note that
12 deaths from infectious disease present a very small proportion of total amenable mortality, and
13 absolute numbers are particularly low when disaggregated by gender in countries with small
14 populations, such as Estonia and Slovenia. The increase in mortality from infectious diseases in both
15 countries was driven by a rise in deaths from septicaemia, a trend seen in other European countries,
16 such as the Czech Republic¹⁹ and Serbia²⁰. Explanations of these trends are complex, including
17 population ageing and rising prevalence of complications of chronic diseases, while in Serbia the
18 increase corresponded with the onset of the economic crisis. Suhrcke et al. suggested various
19 mechanisms by which economic crises can affect communicable disease control, such as through
20 compromising the health of vulnerable population groups and placing additional pressures on health
21 systems facing budgetary problems.²¹ However, the precise manifestations depended on the
22 underlying epidemiological situation.

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35 The effects of the measures imposed on Greece following the global financial crisis, including
36 sustained reductions in public spending on health services, together with the broader impact of the
37 crisis on population health, have been detailed elsewhere.²²⁻²⁵ This body of research has shown that
38 while crisis in itself can pose real threats to health, particularly of vulnerable people, through
39 unemployment and loss of income, the austerity measures to health system exacerbate the issue
40 and further limit access to and quality of health care services. In terms of mortality outcomes, t
41 There
42 is some limited research on selected causes of death, such as suicides²⁶, cardiovascular diseases and
43 cancers, all of which show unfavourable trends since the start of the crisis. Our analysis of amenable
44 mortality points to more long-standing challenges that people in Greece might have experienced
45 regarding access to and effectiveness of health care which were present even before the economic
46 crisis. Thus, we found small but steady increases in a number of amenable conditions from 2000
47 onwards, suggesting that the crisis might have exposed systemic problems in the Greek health
48 system which eventually led to an overall reversal in amenable mortality in Greece. Available
49 evidence has documented fragmentation of coverage, a poorly developed primary care system, and
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3 lack of referral systems, along with poorly coordinated care across the care pathway.²⁷ These
4 underlying challenges will have been exacerbated by the changes imposed by the economic crisis,
5 including a cut of 40% of overall public spending on health between 2009 and 2013¹, coupled with
6 exclusion of a large proportion of population from health coverage due to rising unemployment, as
7 well as the sharply rising unmet medical need²⁸ observed since the start of the crisis. Others have
8 suggested that an increase in mortality at older ages in Greece in 2011-12 may be linked to problems
9 accessing care²⁹, while one study reported an increase in deaths due to adverse events associated
10 with medical treatment³⁰. Consequently, deterioration in amenable mortality, along with other
11 health outcomes, is not unexpected.

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17 From a broader perspective, our findings suggest that amenable mortality may be a relatively
18 insensitive indicator of the impact of the economic crisis on the quality of healthcare. This is partly
19 due to the inherent limitations of amenable mortality indicator overall: setting the widely accepted
20 age limit at 75 years to minimise issues with coding of multi-morbidity excludes large number of
21 potentially amenable deaths in older people, reduces the potential of detecting significant change
22 when low levels have been achieved, and increases chances of random year-on-year fluctuations in
23 specific amenable causes due to small numbers. In addition, amenable mortality captures only
24 deaths thus missing the impacts on morbidity. Moreover, given recent advances in health care, there
25 is a need to keep the list of amenable causes under continuing review to accurately reflect the
26 current capability of healthcare to prevent deaths. Concerning studying the impacts of the economic
27 crisis, another set of limitations arises from the problem of defining the “crisis”, given how the range
28 of possible economic indicators (Gross domestic product, employment, housing repossessions etc.)
29 varied across countries, as did the extent to which cuts were directed at healthcare specifically, and
30 differences in the ability of health system to withstand economic fluctuations. Finally, data
31 availability and timeliness remains problematic, with many years of detailed mortality data missing
32 even for high-income countries, leading to shorter or even interrupted timelines.

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43 In summary, this study adds to the growing body of evidence showing that amenable mortality
44 continues to decline across Europe. At the same time, it highlights increases of deaths from
45 infectious diseases which should either be treatable or preventable in a small number of countries,
46 and calls for investigation of the factors underlying these developments. Other causes for concern
47 include respiratory conditions, as well as the sudden slowdown in the decline in mortality from
48 stroke in Greece. Amenable mortality is a useful tool to highlight the presence of potential concerns
49 about health systems performance, but its ability to detect the impact of changes in public spending
50 on health care on the outcomes achieved by an individual health system is limited.

Key points:

- Amenable mortality has declined in all EU countries between 2000 and 2015, however Estonia, Greece and Slovenia have seen a reversal in previously favourable trends in recent years.
- Individual causes of death contributing to the reversal in amenable mortality suggest a complex picture but the rise in mortality from infectious diseases in at least 3 countries calls for further investigation.
- Mortality trends in Greece show a sustained rise in deaths from a number of amenable causes, which predated the crisis, while progress stalled in reducing deaths from stroke corresponding to the onset of health expenditure cuts.
- The use of amenable mortality to detect the impact of economic fluctuations on health system performance is limited, due to delayed data availability, ever-reducing scope for improvement, and the focus on death rather than other less adverse health outcomes.

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Table 1. Overall change in amenable and non-amenable mortality (APC) since 2000

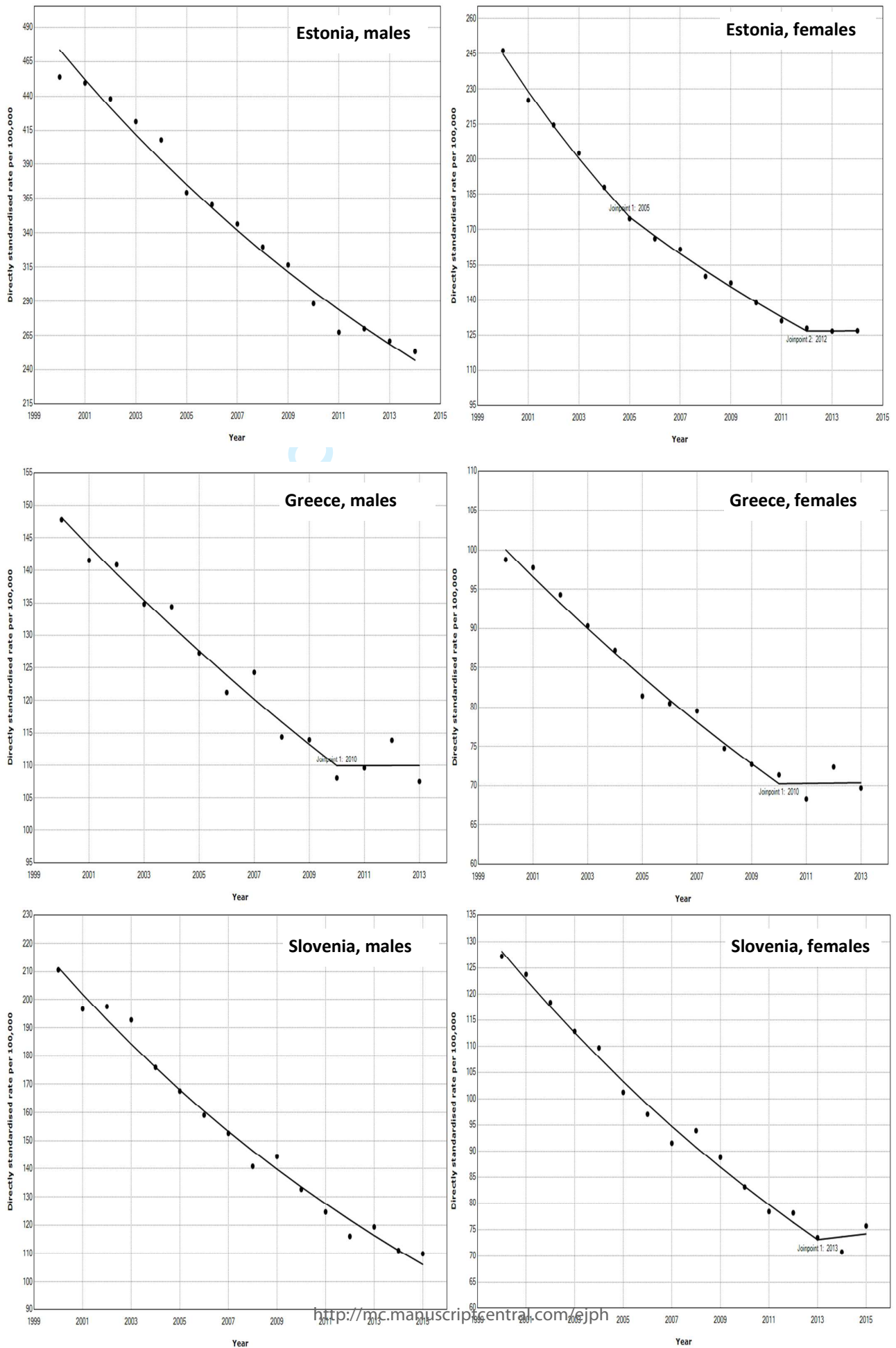
	Amenable mortality		Other mortality	
	males	females	males	females
Austria	-4.4	-3.5	-1.7	-0.9
Belgium	-3.9	-3.0	-2.0	-0.9
Bulgaria	-2.0	-2.8	-1.2	-2.2
Croatia	-3.7	-4.5	-3.6	-3.2
Cyprus	-4.0	-4.3	-2.9	-4.6
Czech Republic	-3.4	-4.0	-2.0	-1.6
Denmark	-4.3	-4.5	-2.5	-2.7
Estonia	-4.5	-4.6	-2.9	-3.1
Finland	-4.3	-3.6	-1.8	-1.0
France	-3.6	-2.6	-2.2	-1.3
Germany	-3.6	-2.9	-1.9	-1.1
Greece	-2.3	-2.7	-1.2	-1.5
Hungary	-2.8	-2.9	-2.3	-1.4
Ireland	-5.6	-5.0	-3.0	-2.4
Italy	-2.1	-1.8	-2.0	-0.9
Latvia	-2.7	-2.8	-1.9	-1.8
Lithuania	-0.4	-1.8	-1.2	-1.0
Luxembourg	-4.4	-3.8	-3.2	-2.2
Malta	-4.8	-4.4	-2.7	-2.6
Netherlands	-4.6	-3.3	-2.7	-1.2
Poland	-3.5	-3.7	-1.7	-1.4
Portugal	-4.5	-2.5	-3.3	-0.5
Romania	-2.4	-3.2	-1.5	-2.1
Slovakia	-3.4	-3.4	-2.1	-1.7
Slovenia	-4.5	-3.6	-3.6	-2.9
Spain	-3.3	-3.2	-2.6	-1.9
Sweden	-3.5	-2.9	-1.7	-1.2
United Kingdom	-4.9	-4.2	-2.2	-1.6

Table 2. Changes in amenable mortality by cause in Estonia, Greece and Slovenia

Cause	Estonia				Greece				Slovenia			
	Males		Females		Males		Females		Males		Females	
	Segments	APC	Segments	APC	Segments	APC	Segments	APC	Segments	APC	Segments	APC
Infectious diseases	2000-2014	-10.6*	2000-2012 2012-2014	-15.7* 91.4	2000-2013	2.9*	2000-2013	2.5	2000-2006 2006-2012 2012-2015	2.7 -26.0* 20.4	2000-2006 2006-2010 2010-2015	7.7 -32.6 15.9
Treatable cancers	2000-2014	-0.9*	2000-2007 2007-2014	-3.6* 0.0	2000-2013	0.6	2000-2013	-0.6*	2000-2015	-1.4*	2000-2015	-2.3*
Diabetes	2000-2014	-0.2	2000-2014	-5.9	2000-2013	1.1	2000-2013	-1.7	-	-	-	-
IHD (50% amenable)	2000-2002 2002-2014	0.1 -7.0*	2000-2014	-9.6*	2000-2013	-2.7*	2000-2013	-3.9*	2000-2006 2006-2015	-6.2* -2.2*	2000-2007 2007-2015	-9.0* -0.7
Stroke	2000-2005 2005-2014	-5.8* -11.9*	2000-2014	-11.2*	2000-2005 2005-2010 2010-2013	-3.5* -6.6* -0.2	2000-2010 2010-2013	-7.0* -0.8	2000-2015	-5.7*	2000-2015	-5.2*
Respiratory disorders	2000-2011 2011-2014	-10.6* 23.4	2000-2007 2007-2014	-14.7* 4.6	2000-2013	1.3	2000-2013	1.9	2000-2004 2004-2007 2007-2015	2.8 -22.0 -7.0*	2000-2015	-8.2*
Digestive disorders	2000-2014	-4.2*	2000-2014	-3.3*	2000-2013	1.1	2000-2013	1.8	2000-2015	-9.2*	2000-2015	-8.0*
Perinatal and congenital	2000-2014	-7.4*	2000-2014	-8.0*	2000-2007 2007-2013	-8.0* 0.3	2000-2013	-5.2*	2000-2015	-4.8*	2000-2015	-5.9*
Other amenable causes	2000-2009 2009-2014	10.3* 0.0	2000-2014	5.3*	2000-2004 2004-2013	-7.2 2.4*	2000-2013	-2.1*	2000-2015	-4.2*	2000-2015	-4.0*

* Significant at $p < 0.05$; Note: In Slovenia, the number of deaths from diabetes is 0 for some years, therefore the cause has been excluded from joinpoint regression analysis

Figure 1. Amenable mortality trends (APC) in Estonia, Greece and Slovenia, 2000-2015



Online Supplement. Appendix 1. List of amenable causes of deaths

Amenable causes of death	Age	ICD-10 code
Infectious diseases		
Intestinal infections	0-14	A00-09
Tuberculosis	0-74	A15-19, B90
Other infections (tetanus, diphtheria septicaemia, poliomyelitis)	0-74	A36, A35, A80
Whooping cough	0-14	A37
Measles	1-14	B05
Treatable cancers		
Colon and rectum	0-74	C18-21
Skin	0-74	C44
Breast	0-74	C50
Cervical and uterus	0-44	C53-55
Testis	0-74	C62
Hodgkin's disease	0-74	C81
Leukaemia	0-44	C91-95
Diabetes	0-49	E10-14
Ischaemic heart disease (50% of deaths)	0-74	I20-25
Cerebrovascular disease	0-74	I60-69
Respiratory diseases		
Influenza	0-74	J10-11
Pneumonia	0-74	J12-18
Other respiratory conditions	1-14	J00-09, J20-99
Digestive diseases		
Peptic ulcer	0-74	K25-27
Appendicitic	0-74	K35-38
Abdominal hernia	0-74	K40-46
Cholelithiasis and cholecystitis	0-74	K80-81
Perinatal deaths	0-74	P00-96, A33
Other amenable conditions		
Diseases of thyroid	0-74	E00-07
Epilepsy	0-74	G40-41
Chronic rheumatic heart disease	0-74	I05-09
Hypertensive disease	0-74	I10-13, I15
Nephritis and nephrosis	0-74	N00-07, N17-19,
Benign prostatic hyperplasia	0-74	N25-27
Misadventures to patients	0-74	Y60-69, Y83-84
Maternal deaths	0-74	O00-99
Congenital cardiovascular anomalies	0-74	Q20-28

Source: Adapted from Nolte and McKee⁷

Online Supplement. Appendix 2. Joinpoint regression results for 28 EU member states, 2000-2015
(or latest available)

Country	Cause	Males			Females		
		No of joinpoints	Segments	APC	No of joinpoints	Segments	APC
Austria	amenable	1	2000-2005 2005-2014	-6.8* -3*	1	2000-2008 2008-2014	-4.7* -1.9*
	other	0	2000-2014	-1.7*	1	2000-2007 2007-2014	-1.7* -0.1
Belgium	amenable	0	2000-2014	-3.9*	0	2000-2014	-3*
	other	2	2000-2006	-2.9*	2	2000-2006	-1.9*
			2006-2012 2012-2014	-0.7 -3.3		2006-2012 2012-2014	0.6 -2.6
Bulgaria	amenable	0	2000-2013	-2*	0	2000-2013	-2.8*
	other	1	2000-2011	-0.8*	2	2000-2007	-2.4*
			2011-2013	-3.4*		2007-2011 2011-2013	-0.6 -4.8*
Croatia	amenable	0	2000-2015	-3.7*	1	2000-2002 2002-2015	-13.8* -2.9*
	other	1	2000-2002 2002-2015	-12.7* -2.1*	1	2000-2002 2002-2015	-11.5* -1.8*
Cyprus	amenable	0	2004-2014	-4*	0	2004-2014	-4.3*
	other	0	2004-2014	-2.9*	0	2004-2014	-4.6*
Czech Republic	amenable	1	2000-2011 2011-2015	-3.8* -2.1*	0	2000-2015	-4*
	other	0	2000-2015	-2*	0	2000-2015	-1.6*
Denmark	amenable	1	2000-2003	-0.4	2	2000-2002	-1.3
			2003-2014	-5.3*		2002-2010 2010-2014	-4.5* -6*
Estonia	amenable	0	2000-2014	-4.5*	2	2000-2005	-6.5*
						2005-2012 2012-2014	-4.5* 0
	other	2	2000-2007 2007-2010 2010-2014	-1.2* -7.9* -2.2	2	2000-2007 2007-2010 2010-2014	-2.2* -6.6 -2.1
Finland	amenable	1	2000-2006 2006-2014	-5.1* -3.7*	0	2000-2014	-3.6*
	other	1	2000-2008 2008-2014	-1.1* -2.7*	0	2000-2014	-1*
France	amenable	0	2000-2013	-3.6*	0	2000-2013	-2.6*
	other	1	2000-2007	-2.7*	2	2000-2003	-0.7
			2007-2013	-1.6*		2003-2006 2006-2013	-3.1* -0.8*
Germany	amenable	1	2000-2011	-4*	1	2000-2010	-3.4*
			2011-2014	-1.8		2010-2014	-1.7*
	other	1	2000-2007 2007-2014	-2.8* -1*	1	2000-2007 2007-2014	-2.1* 0
Greece	amenable	1	2000-2010	-2.9*	1	2000-2010	-3.5*
			2010-2013	0		2010-2013	0.1
	other	0	2000-2013	-1.2*	1	2000-2006 2006-2013	-3.1* -0.2

Hungary	amenable	0	2000-2015	-2.8*	1	2000-2007 2007-2015	-3.7* -2.2*
	other	1	2000-2008 2008-2015	-1.3* -3.3*	0	2000-2015	-1.4*
Ireland	amenable	0	2000-2013	-5.6*	1	2000-2002 2002-2013	-9.5* -4.1*
	other	0	2000-2013	-3*	1	2000-2006 2006-2013	-3.3* -1.6*
Italy	amenable	0	2006-2012	-2.1*	0	2006-2012	-1.8*
	other	1	2006-2010 2010-2012	-2.7* -0.7	0	2006-2012	-0.9*
Latvia	amenable	1	2000-2006 2006-2014	-0.7 -4.2*	1	2000-2005 2005-2014	-1.1 -3.8*
	other	1	2000-2006 2006-2014	0.3 -3.5*	1	2000-2006 2006-2014	0.4 -3.4*
Lithuania	amenable	2	2000-2007 2007-2010 2010-2015	2.4* -5.4 -1.1	1	2000-2007 2007-2015	0 -3.3*
	other	1	2000-2007 2007-2015	1.6* -3.5*	2	2000-2007 2007-2010 2010-2015	1.4* -5.6 -1.5*
Luxembourg	amenable	0	2000-2014	-4.4*	0	2000-2014	-3.8*
	other	0	2000-2014	-3.2*	0	2000-2014	-2.2*
Malta	amenable	0	2000-2014	-4.8*	0	2000-2014	-4.4*
	other	0	2000-2014	-2.7*	0	2000-2014	-2.6*
Netherlands	amenable	1	2000-2008 2008-2015	-5.4* -3.6*	0	2000-2015	-3.3*
	other	2	2000-2002 2002-2008 2008-2015	-2.1 -3.9* -1.8*	2	2000-2003 2003-2007 2007-2015	-0.2 -3.5* -0.4*
Poland	amenable	1	2000-2012 2012-2014	-2.9* -7.1*	2	2000-2002 2002-2012 2012-2014	-5.2* -3.1* -5.1*
	other	2	2000-2002 2002-2007 2007-2014	-2.6 -0.4 -2.3*	1	2000-2002 2002-2014	-3.7 -1*
Portugal	amenable	0	2007-2014	-4.5*	0	2007-2014	-2.5*
	other	1	2007-2014	-3.3*	1	2007-2012 2012-2014	-2.8* 5.6*
Romania	amenable	1	2000-2002 2002-2015	3.5 -3.2*	1	2000-2002 2002-2015	2.2 -4*
	other	0	2000-2015	-1.5*	0	2000-2015	-2.1*
Slovakia	amenable	1	2000-2009 2009-2014	-2.8* -4.5*	0	2000-2014	-3.4*
	other	2	2000-2003 2003-2006 2006-2014	-2.5* 0.2 -2.8*	1	2000-2007 2007-2014	-0.7* -2.7*
Slovenia	amenable	0	2000-2015	-4.5*	1	2000-2013 2013-2015	-4.2* 0.7
	other	0	2000-2015	-3.6*	0	2000-2015	-2.9*
Spain	amenable	0	2000-2014	-3.3*	0	2000-2014	-3.2*
	other	1	2000-2003 2003-2014	-1.7* -2.8*	0	2000-2014	-1.9*

Sweden	amenable	1	2000-2011	-4.1*	0	2000-2015	-2.9*
			2011-2015	-1.8*			
	other	2	2000-2004	-1.3*	0	2000-2015	-1.2*
		2004-2013	-2.3*				
			2013-2015	0.4			
United Kingdom	amenable	0	2001-2013	-4.9*	0	2001-2013	-4.2*
	other	0	2001-2013	-2.2*			

* Significant at $p < 0.05$

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