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The Impact of the 2009/2010 European Debt Crisis on Mortality Trends

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05 November 2015

Mortality Trends Working Party

- John Flanagan
- Mary Hall
- Aine Houlihan
- Colin Murphy
- Shane Prendergast

Agenda

- Overview of European Economic Crisis – Mary Hall
- Trends by All Causes of Death– Shane Prendergast
- Trends by Cause of Death – Colin Murphy
- Conclusion – Colin Murphy

Research Review

- Extensive but conflicting research on impact of economy on mortality
- Theory:
  - Economic Boom: increase in certain causes of death – mainly heart disease and accidents
  - Recession: increase in suicides
- Support Theory: Valkonen et al.(2000), Rhum (2003 and 2007), Gerdthan et al.(2006) Granados(2008), Miller et al. (2009)
- Do Not Support Theory: Khang et al. (2005), Murphy et al. (2006). Gordon et al. (2015).

European Financial Crisis 2008-2015

- 2007–2009: Global Financial Crisis
- 2008: Lehman brothers collapse
- 2008: Icelandic banking collapse
- 2010: Irish Bailout
- 2011: Portugal Bailout
- 2011–2012: EU support for Italian and Spanish Economies
- 2010-2015: Ongoing Greek Debt Crisis

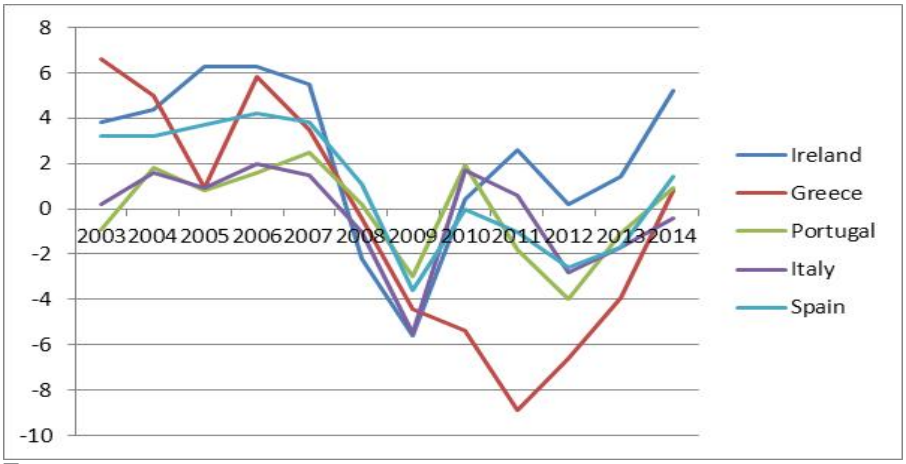
Irish Economic Crisis

- Mid 1990s – 2007: Celtic Tiger
- 2007: Collapse of housing bubble
- 2008: Recession
- 2008-2010: Banking Crisis
  - Sept 2008 - Banking Guarantee
  - Nov 2010 – EU/IMF bailout
- 2013 – Exit EU/IMF bailout programme
- 2014 – Irish GDP growth rate of 4.8%

Grouping of Countries for Analysis

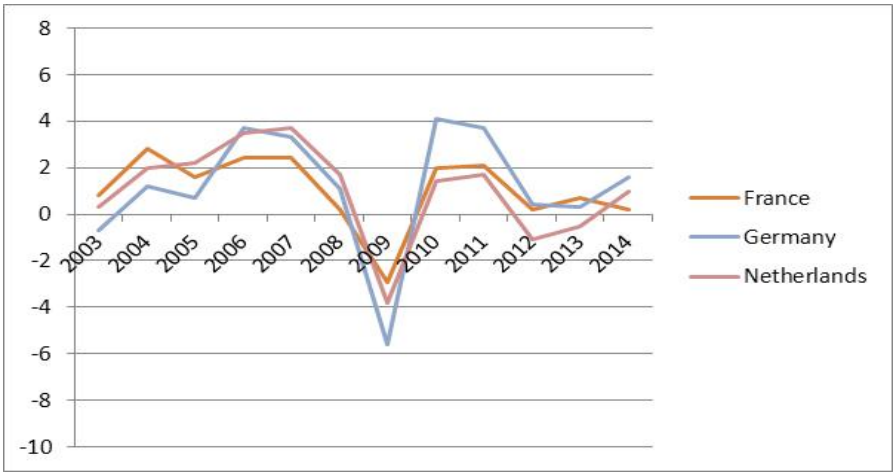
- A = Euro Countries most affected by crisis:
  - Greece, Ireland, Italy, Portugal, Spain
- B = Euro Countries less affected – for comparison:
  - France, Germany, Netherlands
- C = Non Euro Countries – for comparison:
  - Sweden, United Kingdom

Group A – Real GDP Growth Rate



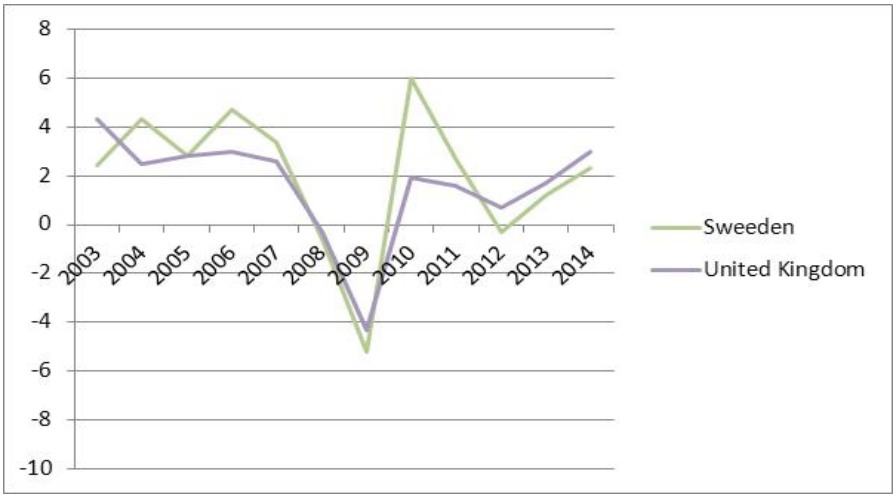
- Source Eurostat

Group B – Real GDP Growth Rate



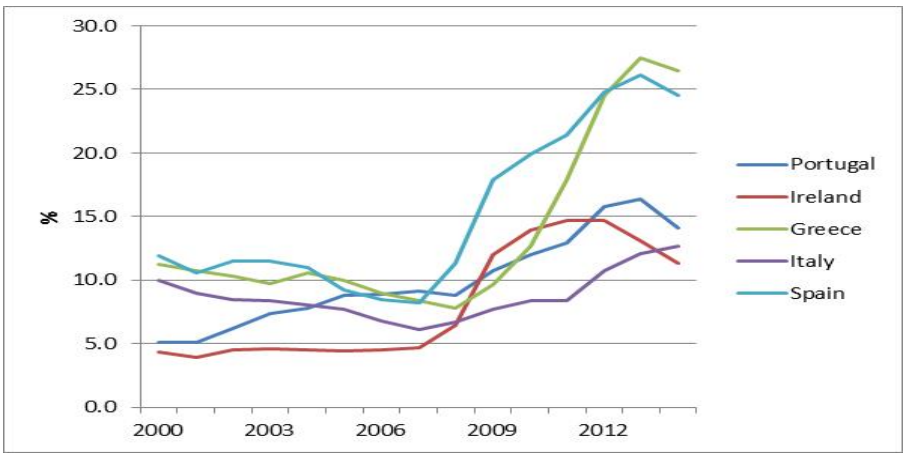
- Source Eurostat

Group C – Real GDP Growth Rate



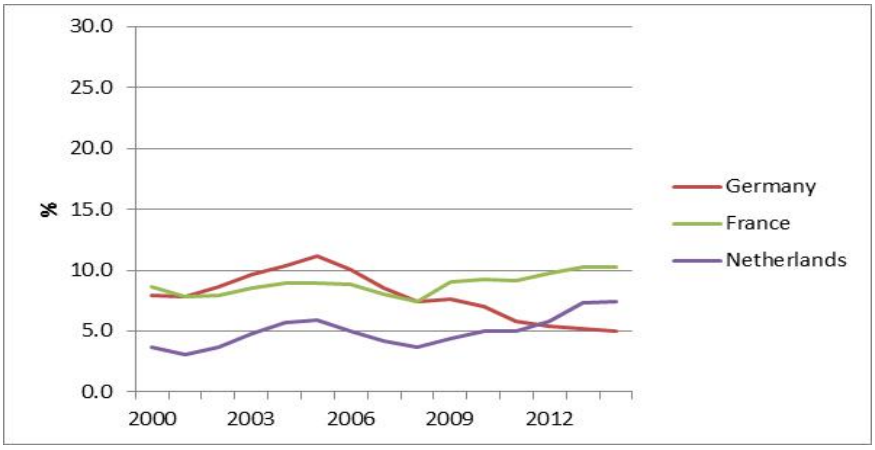
- Source Eurostat

Group A – Unemployment Rate



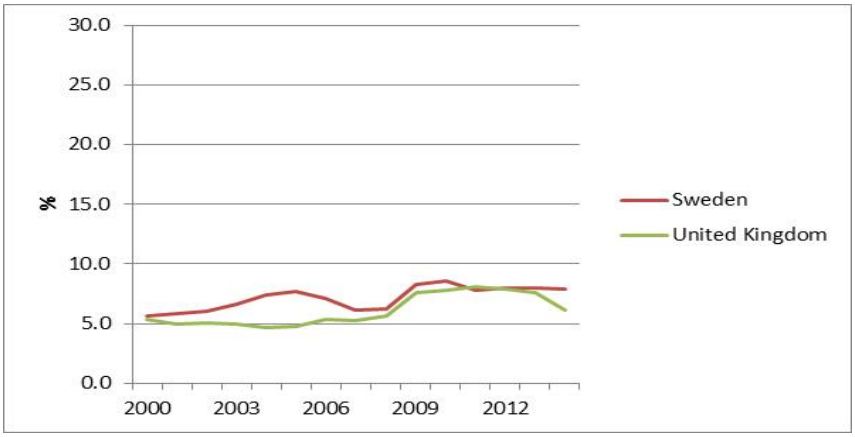
- Source Eurostat

Group B – Unemployment Rate



- Source Eurostat

Group C – Unemployment Rate



- Source Eurostat

Pic 5

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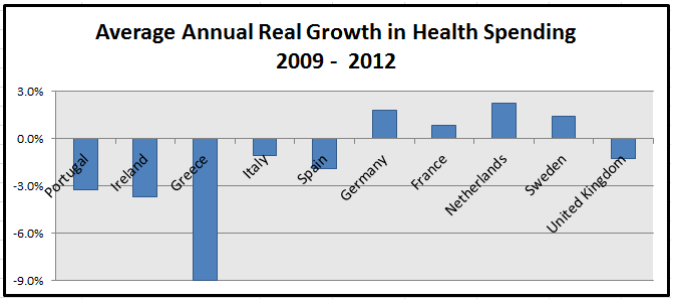
Trends by All Causes of Death

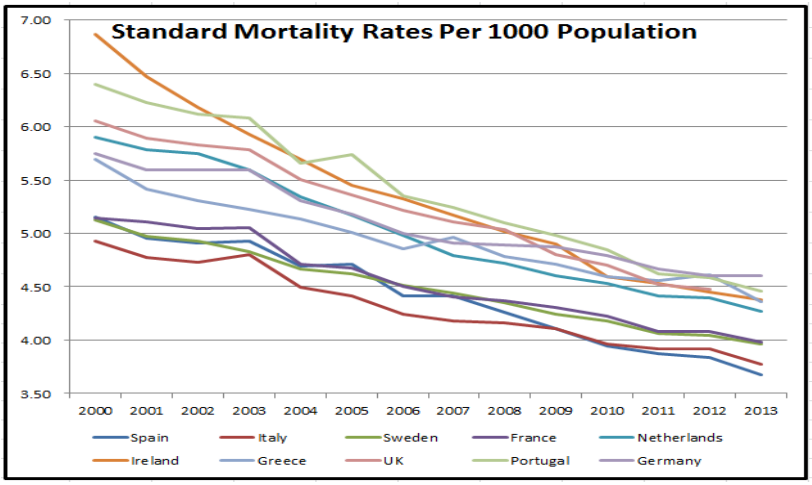
Health Care Spending

Heath care spending has been falling in those countries most hit by the economic recession. The largest falls have been in Greece, Ireland, Portugal, Italy & Spain.



Source: Health at a Glance Europe 2014 (joint publication of the OECD and the European Commission)

Overall Mortality Rates Still Falling



Source: Eurostat, combined standard death rates per 1,000 of population ages 0 to 84

Mortality League Table

Overall Ranking	Country	Mortality Rtae Per 1000	Male Rank	Female Rank
1	Spain	3.83	3	1
2	Italy	3.89	2	3
3	Sweden	4.06	1	5
4	France	4.09	7	2
5	Netherlands	4.40	4	9
6	Ireland	4.49	6	8
7	Greece	4.53	8	6
8	UK	4.57	5	10
9	Portugal	4.63	10	4
10	Germany	4.67	9	7

Source: Eurostat, average years 2010 -2013 combined standard death rates per 1,000 of population ages 0 to 84

- Lowest combined mortality rates in Spain
- Lowest male rate in Sweden and female rate in Spain
- Highest Mortality rates in Germany
- Highest male rate in Portugal and female rate in the UK
- Largest gender differential in Portugal

Mortality League Table Young / Old Differentials

Overall Ranking	Country	Age 24 -64 Rank	Age 65 -84 Rank
1	Spain	3	1
2	Italy	1	3
3	Sweden	2	4
4	France	10	2
5	Netherlands	4	7
6	Ireland	5	8
7	Greece	7	5
8	UK	6	9
9	Portugal	9	6
10	Germany	8	10

Source: Eurostat, average years 2010 -2013 combined standard death rates per 1,000 of population

- Italy has lowest mortality rates for under 65's, while France has the highest mortality rates for under 65's
- Spain has lowest mortality rates for over 65's, while Germany has the highest mortality rates for over 65's
- Largest differential between young and old in France

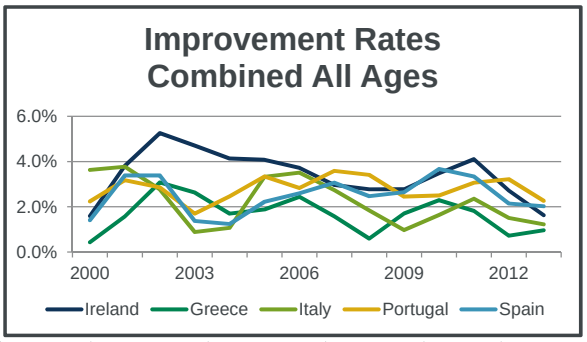
Mortality Differentials - Gender Gap

Female Mortality Level / Male Mortality Level					
Country	2002 -2004	2005-2007	2008 - 2010	2011 - 2013	% Change
Netherlands	61%	63%	64%	67%	6%
Sweden	63%	64%	65%	66%	4%
Italy	54%	55%	56%	57%	4%
Ireland	61%	63%	63%	65%	3%
UK	65%	66%	67%	68%	3%
Spain	57%	58%	58%	59%	2%
Germany	57%	58%	58%	59%	2%
France	49%	49%	50%	51%	2%
Portugal	54%	52%	52%	51%	-2%
Greece	58%	57%	56%	55%	-2%

Progression female age standardised mortality rate divided by male age standardised mortality rate between ages 0 – 84 along with % change over the entire period

- In general the mortality gap between males and females is closing in most countries
- The exceptions are Portugal & Greece where gender gap has widened over the analysis period
- The largest differentials are in France and Portugal while the smallest differentials are in the UK Netherlands & Sweden

Group A – 2 Year Mortality Improvement Rates



Country	2001-2007 Average Improvement PA	2008-2013 Average Improvement PA	Overall Change	Male Change	Female Change
Ireland	4.1%	2.9%	-1.2%	-1.3%	-1.0%
Greece	2.1%	1.3%	-0.8%	-0.4%	-1.3%
Italy	2.6%	1.6%	-1.0%	-0.7%	-1.3%
Spain	2.5%	2.7%	0.2%	0.5%	-0.1%
Portugal	2.8%	2.8%	0.0%	0.2%	-0.3%

Source: Eurostat ages 0 to 84

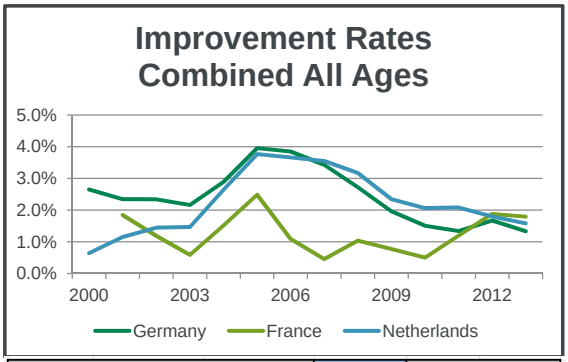
- Combined mortality improvement rates have slowed by roughly 1% in Ireland, Italy & Greece
- Improvement rates have remained steady in Portugal & Spain throughout the analysis period
- The lowest rates are in Greece with the more recent improvements being below 1%

Group A – Change in 2 Year Mortality Improvement Rates By Age Band & Gender

Country	Gender	Age Band 25-44	45-64	65-74	75+
Ireland	Males	-2.2%	-1.3%	-1.6%	-0.8%
Greece		2.3%	-1.5%	-1.3%	0.2%
Italy		0.3%	-1.0%	-1.9%	0.3%
Portugal		1.2%	-0.3%	-0.5%	0.8%
Spain		1.4%	0.5%	0.4%	0.4%
Ireland	Females	-1.7%	-0.2%	-2.0%	-0.7%
Greece		-1.0%	-1.5%	-1.9%	-1.0%
Italy		-1.4%	-1.3%	-2.0%	-0.6%
Portugal		-0.5%	-1.1%	-0.3%	0.3%
Spain		0.5%	-1.0%	0.5%	0.0%

Source: Eurostat change in annual mortality improvement from 2001 – 2007 average to 2008 – 2013 average

Group B – 2 Year Mortality Improvement Rates



Country	2001-2007 Average Improvement PA	2008-2013 Average Improvement PA	Overall Change	Male Change	Female Change
Netherlands	2.5%	2.2%	-0.4%	-0.3%	-0.3%
Germany	2.3%	1.4%	-0.9%	-1.1%	-0.9%
France	2.2%	1.8%	-0.4%	-0.2%	-0.5%

Source: Eurostat ages 0 to 84

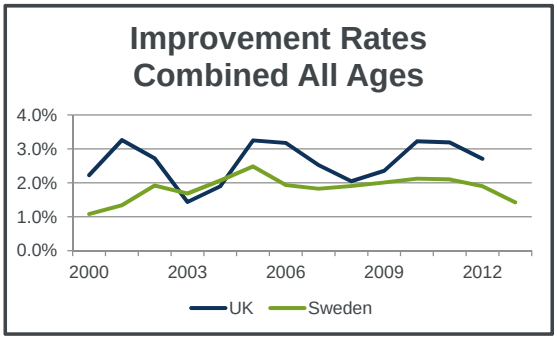
- The slowdown in improvement rates in the core Eurozone countries has been less significant
- Mortality improvement rates have decreased by 0.4% pa in both Netherlands & France
- German rates have fallen by roughly 1% which is more akin to the Group A countries

Group B – Change in 2 Year Mortality Improvement Rates By Age Band & Gender

Country	Gender	Age Band 25-44	45-64	65-74	75+
Germany	Males	0.2%	-1.2%	-2.2%	-0.6%
France	Males	-0.7%	-0.1%	-1.1%	0.5%
Spain	Males	1.4%	0.5%	0.4%	0.4%
Germany	Females	-0.2%	-1.4%	-3.2%	0.4%
France	Females	0.1%	-0.3%	-1.1%	-0.3%
Spain	Females	0.5%	-1.0%	0.5%	0.0%

Source: Eurostat change in annual mortality improvement from 2001 – 2007 average to 2008 – 2013 average

Group C – 2 Year Mortality Improvement Rates



Country	2001-2007 Average Improvement PA	2008-2013 Average Improvement PA	Overall Change	Male Change	Female Change
UK	2.6%	2.7%	0.1%	0.0%	0.2%
Sweden	1.9%	1.9%	0.0%	0.1%	0.0%

Source: Eurostat ages 0 to 84

- Mortality improvement rates have picked up slightly in the UK & Sweden over the analysis period
- Much less volatility in improvement rates for group C countries compared to the other groups
- Very consistent movement in rates across genders

Group C – Change in 2 Year Mortality Improvement Rates By Age Band & Gender

Country	Gender	Age Band 25-44	45-64	65-74	75+
UK	Males	1.9%	0.7%	-1.1%	0.5%
Sweden	Males	-1.1%	1.9%	0.0%	0.2%
UK	Females	0.8%	0.4%	-0.7%	0.8%
Sweden	Females	-0.7%	1.9%	-0.1%	-0.3%

Source: Eurostat change in annual mortality improvement from 2001 – 2007 average to 2008 – 2013 average

Case Study Ireland – Change in 2 Year Mortality Improvement Rates

Males

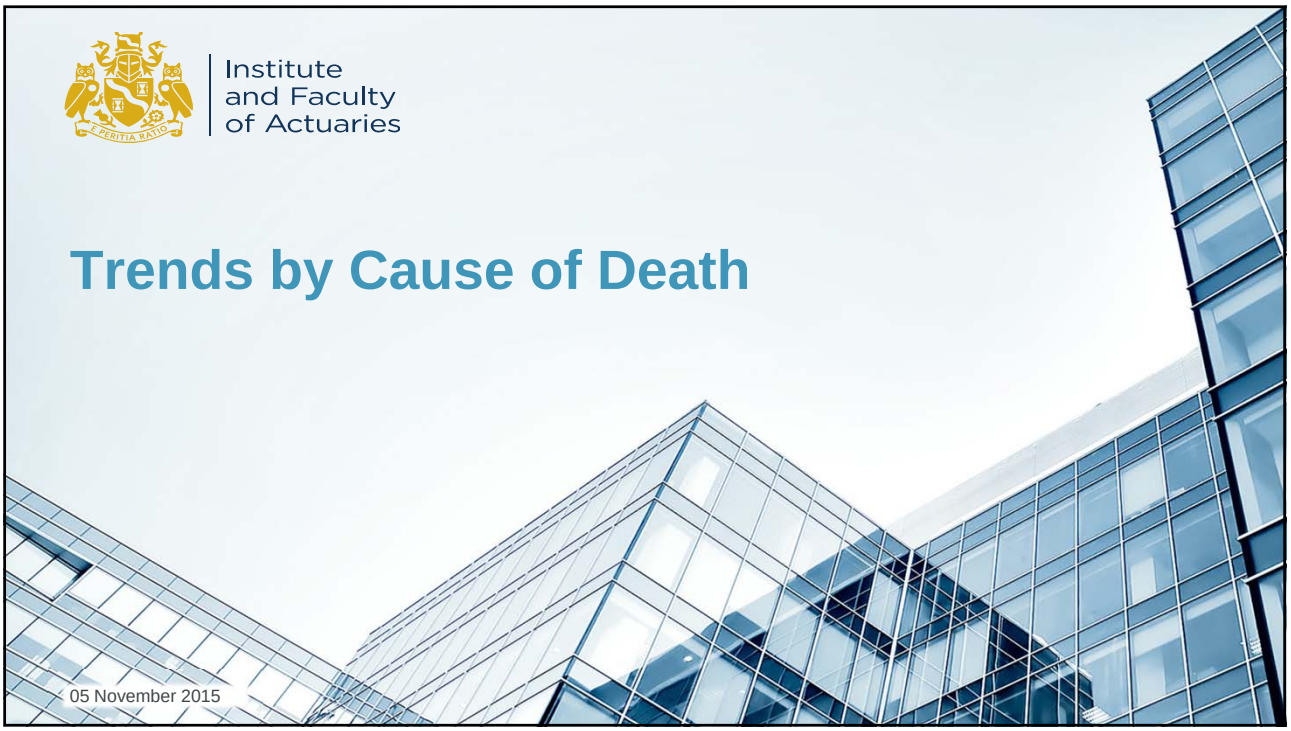
Age Band	2001-2007 Average Improvement PA	2008-2013 Average Improvement PA	Overall Change
25-44	3.4%	1.2%	-2.2%
45-64	3.7%	2.4%	-1.3%
65-74	5.3%	3.7%	-1.6%
75-84	4.1%	3.3%	-0.8%

Females

Age Band	2001-2007 Average Improvement PA	2008-2013 Average Improvement PA	Overall Change
25-44	2.9%	1.3%	-1.7%
45-64	2.6%	2.4%	-0.2%
65-74	4.9%	2.9%	-2.0%
75-84	3.6%	2.9%	-0.7%

- Slowdown in improvement rates occurring across all age bands and gender splits
- Males ages 25-44 showing the biggest slowdown in improvement rates
- For females the biggest slowdown occurring between ages 65-74
- Fall in improvement rates lowest in the 75-84 age band for males and 45-64 for females

Source: Eurostat change in annual mortality improvement from 2001 – 2007 average to 2008 – 2013 average



International Classification of Disease 10th Revision

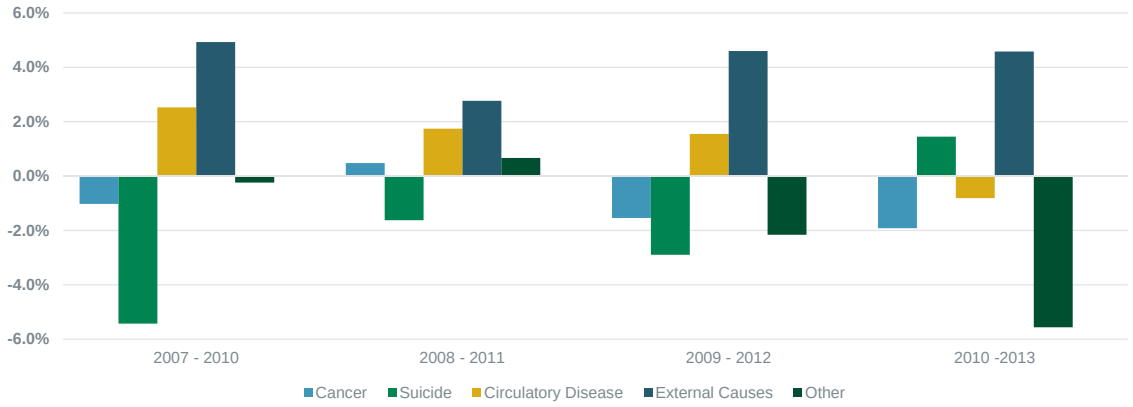
ICD-10 is a medical classification list by the World Health Organisation (WHO), containing codes for differing types of death including suicide, cancer, external causes, etc.

Causes of deaths analysed

- Cancer: C00 – C99
- Suicide: X60 – X84
- Circulatory Diseases: I00 – I99
- External Causes: V01 – X59, X85 – Y99
- Other: All other ICD codes

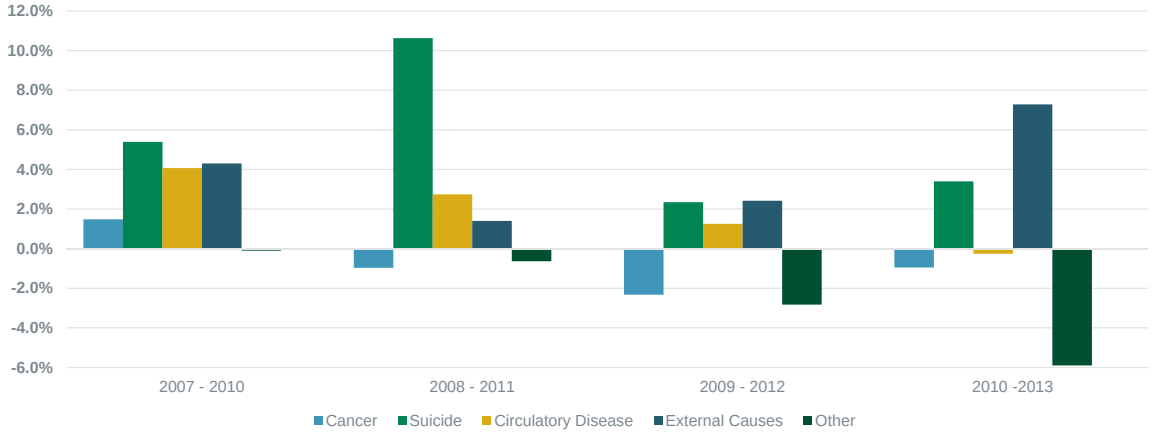
World Health Organization

Irish male average improvement rate by cause of death



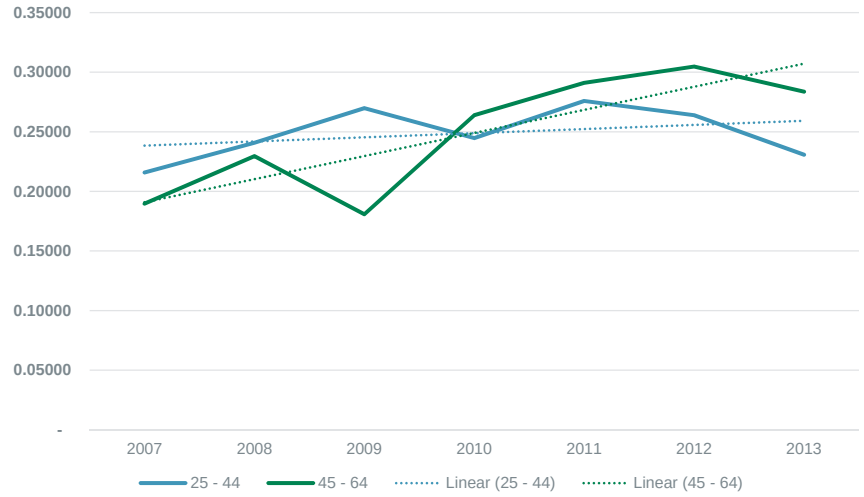
Average Improvement = SQUARE ROOT (Average (Crude Rate Year 'X' + Crude Rate Year 'X-1') / Average (Crude Rate Year 'X-2' + Crude Rate Year 'X-3'))

Irish female average improvement rate by cause of death



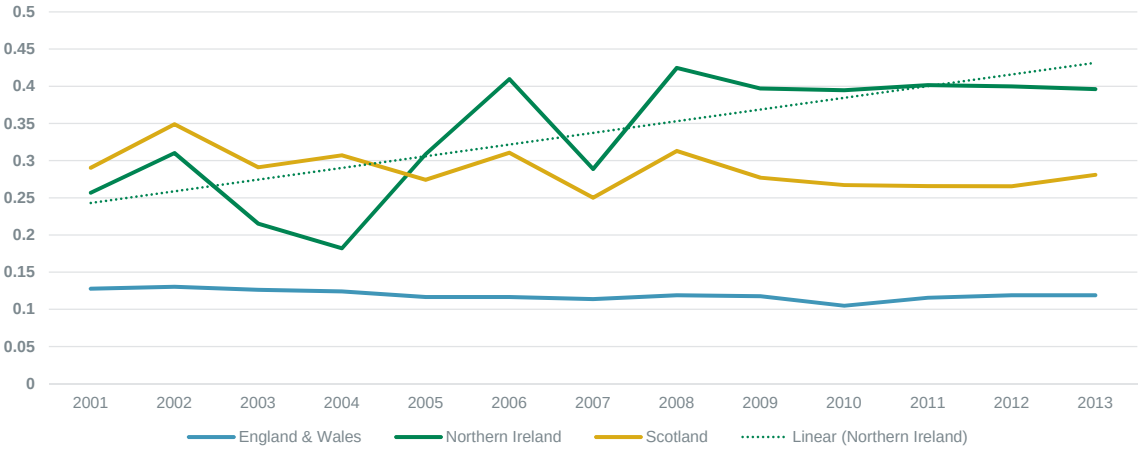
Average Improvement = SQUARE ROOT (Average (Crude Rate Year 'X' + Crude Rate Year 'X-1') / Average (Crude Rate Year 'X-2' + Crude Rate Year 'X-3'))

Irish male suicide death rate per thousand by age band



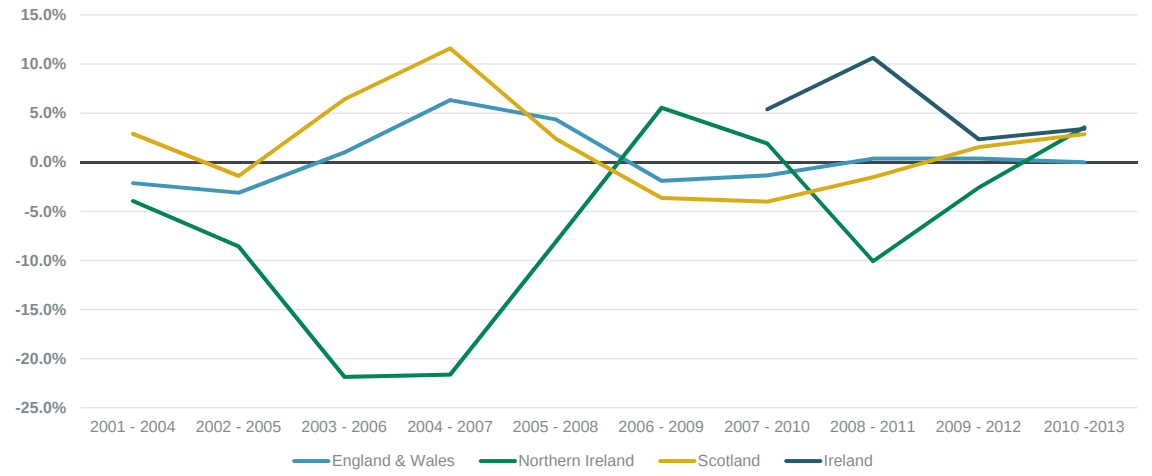
- Average suicide rate for 25 to 64 years olds is 0.249 deaths per thousand.
- Peak Death rates in 2011 for 25 – 44 year olds and 2012 for 45 -64

Male 25 - 44 suicide death rate per thousand



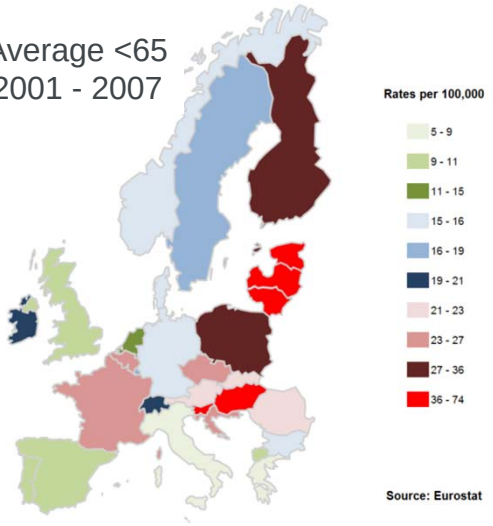
Male 45 - 64 suicide death rate per thousand

Average female suicide improvement rates



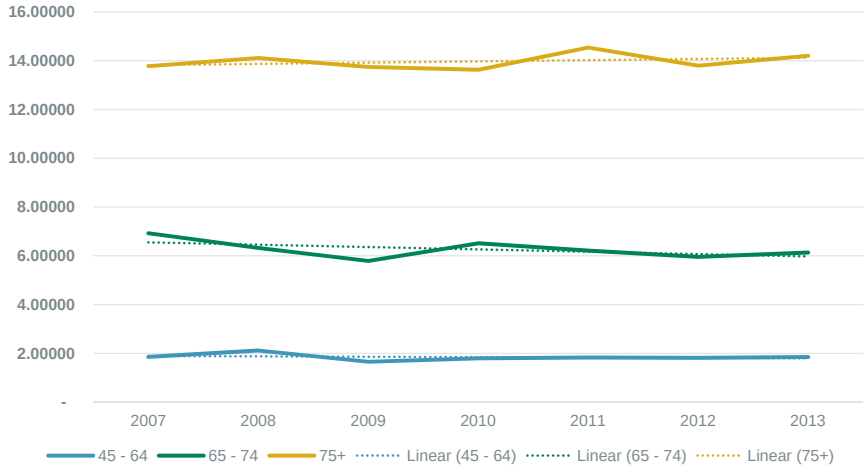
What are male suicide rates across Europe?

Average <65
2001 - 2007



Average <65
2008 - 2012

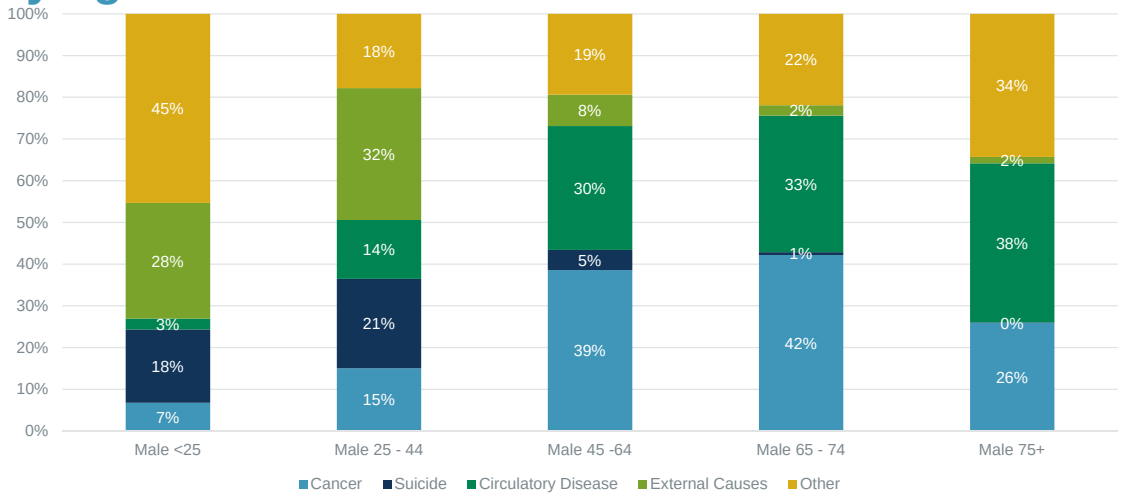
Irish female cancer death rate per thousand by age band



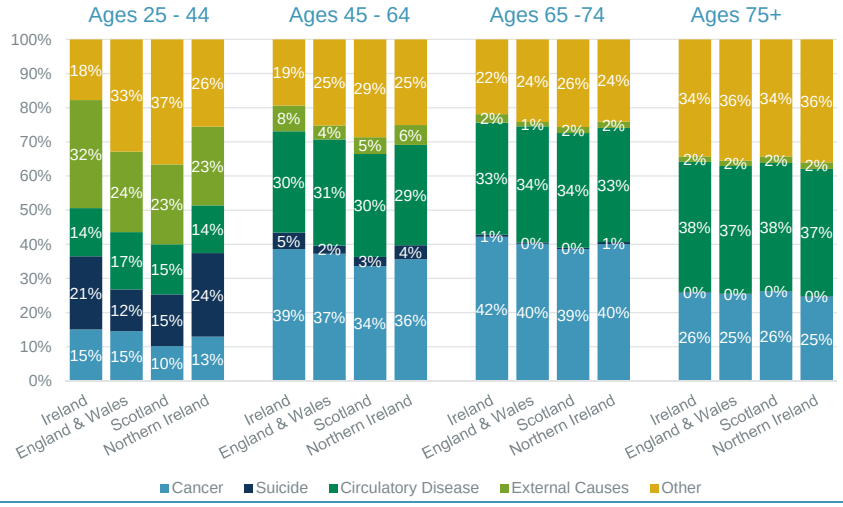
- Increase in cancer death rate at age 75+.
- Decrease in cancer death rates at ages 45 to 74.

How are people dying?

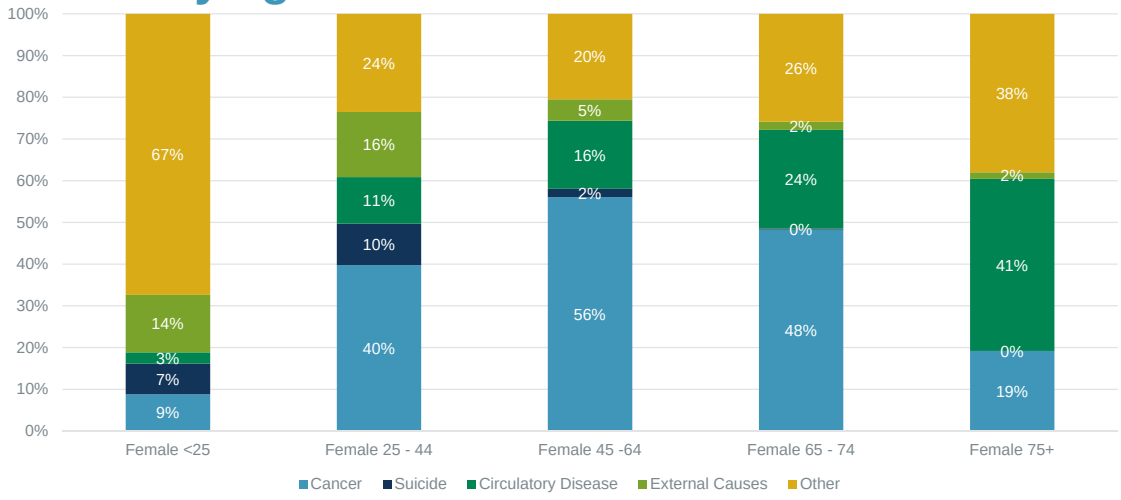
An Irish Perspective – Proportionate Male deaths by age band 2007 - 2013



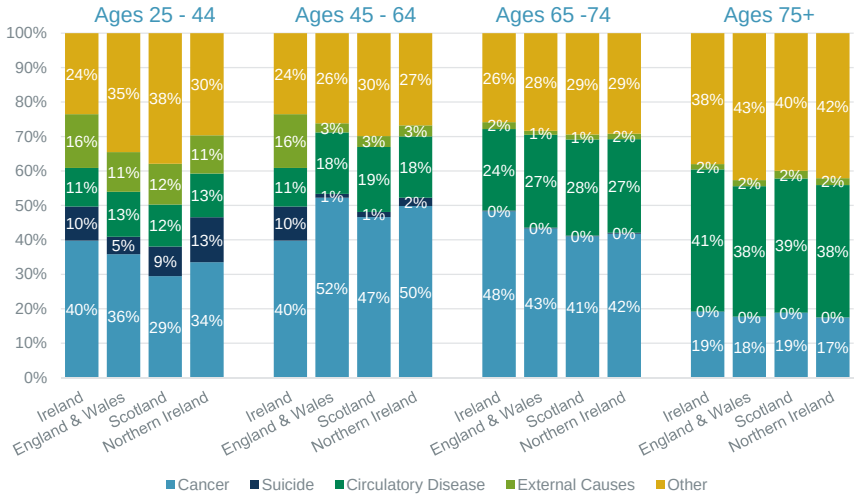
Average 2001 - 2013 Male proportionate deaths by age band



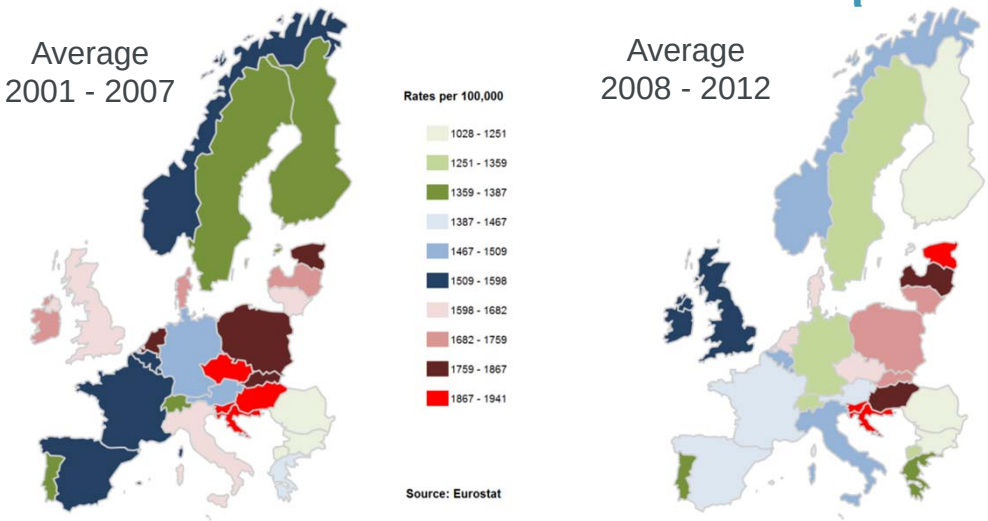
An Irish Perspective – Proportionate Female deaths by age band 2007 - 2013



Average 2001 - 2013 Female proportionate deaths by age band

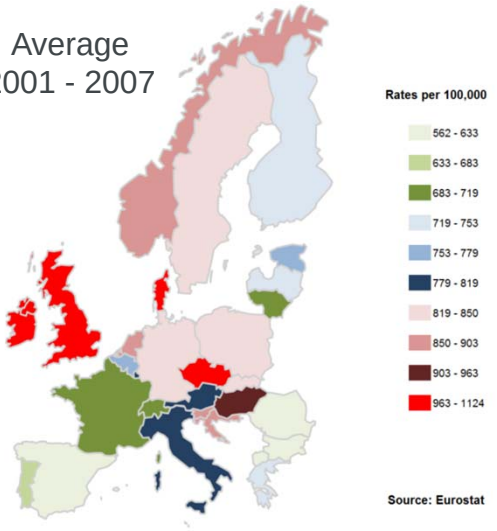


Male over 65 cancer rates across Europe

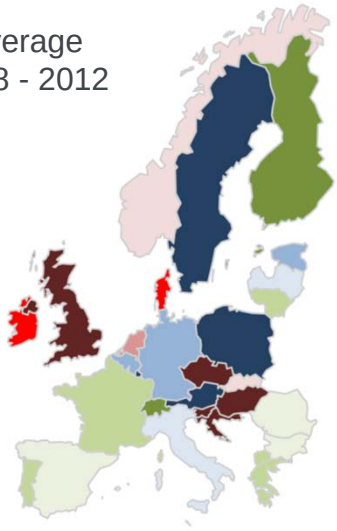


Female over 65 cancer rates across Europe

Average
2001 - 2007



Average
2008 - 2012



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Conclusion

- There is a link between economic fluctuations and mortality
- Mortality improvement rates have slowed down most significantly in group A countries
  - Slow down most significant for ages 45 – 74
  - Less significant at ages 75+
- Male suicide rates have increased post the financial crises in Ireland and the UK particularly at ages 45 – 64.

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