Still “the sick man of Europe”? 
Trends in Scottish mortality in a European context

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Background

• ‘Understanding the Health of Scotland’s Population in an International Context’ Leon et al, London School of Hygiene and Tropical Medicine, March 2003
  – focused on understanding Scotland’s health in an international context.
  – a major component of this work was an analysis of mortality trends from 1950 to 2000 in 20 European countries
Reasons for updating

• Scottish data are now available for a full \textit{60 year period from 1950 to 2010}.

• Data for the other Western European countries have been extended, allowing for a more up to date comparison of Scottish mortality within Europe.

• A comparison of \textit{mortality among younger working age adults (15-44 years of age)} has been added, reflecting concerns about trends (and inequalities) in avoidable deaths in this age group.
Data Source

• World Health Organisation Statistical Information System (WHOSIS):
  – The WHO Mortality Database contains counts of deaths by country, 5-year age group, sex, individual year and cause-of-death, coded according to the International Classification of Diseases (ICD) in use at the time of death registration in each country.
  – Mid-year population estimates were obtained from the same WHO website.
## Countries

<table>
<thead>
<tr>
<th>Region</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UK</strong></td>
<td>Scotland, England &amp; Wales, Northern Ireland</td>
</tr>
<tr>
<td><strong>Northern Europe</strong></td>
<td>Denmark, Finland, Norway, Sweden</td>
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<tr>
<td><strong>Western Europe</strong></td>
<td>Belgium, France, Ireland, The Netherlands</td>
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<tr>
<td><strong>Central Europe</strong></td>
<td>Austria, Germany, Switzerland</td>
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<tr>
<td><strong>Southern Europe</strong></td>
<td>Greece, Italy, Portugal, Spain</td>
</tr>
<tr>
<td><strong>Eastern Europe</strong></td>
<td>Hungary, Poland</td>
</tr>
</tbody>
</table>
Mortality by age

Five different age groups –
• infancy (the first year of life),
• childhood (1-14 years of age),
• younger working adults (15-44 years),
• working age adults (15-74 years)
• the elderly (75 years and older)
Mortality by cause
(for working age population – 15 -74 years)

13 selected Causes

- Cancers: oesophageal, stomach, colorectal, pancreatic, lung and breast
- Ischaemic heart disease
- Cerebrovascular disease
- Chronic obstructive pulmonary disease
- Chronic liver disease, including cirrhosis
- External causes
- Suicide
- Motor vehicle accidents
Methodology

• Age-standardised mortality rates

• Western European country means, minimums and maximums

• Rank position
Figure Q1M
Motor vehicle accidents mortality age standardised rates among men aged 15-74 years
Scotland in context of maximum, minimum, and mean rates for 16 Western European countries
Source: WHOSIS (April 2012)

ICD 6/7: A138
ICD8: A138
ICD9: B471
ICD10: V02-V04, V09, V12-V14, V19-V79, V86-V89

Scotland's rank: 12 12 12 12 11 10 11 12 11 6
Figure Q1M

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Example of graph format

Figure Q1M
Motor vehicle accidents mortality age standardised rates among men aged 15-74 years
Scotland in context of maximum, minimum, and mean rates for 16 Western European countries
Source: WHOSIS (April 2012)

![Graph showing motor vehicle accidents mortality rate among men aged 15-74 years in Scotland and its context in Western European countries. The graph includes a line for maximum, mean, and minimum rates, with Scotland's rank indicated for each year. The graph also includes ICD codes for the data sources.](image-url)

Rankings: High = good; Low = bad
Trends by age
Infant Deaths

Figure A1M a
Infant mortality rates among males
Scotland in context of maximum, minimum, and mean rates for 16 Western European countries
Source: WHOSIS (April 2012)
Children’s Mortality

Figure B1F
All cause mortality age standardised rates among females aged 1-14 years
Scotland in context of maximum, minimum, and mean rates for 16 Western European countries
Source: WHCSIS (April 2012)
Working Age Mortality - Men

Figure C1M
All cause mortality age standardised rates among men aged 15-74 years
Scotland in context of maximum, minimum, and mean rates for 16 Western European countries
Source: WHOIS (April 2012)
Figure C.1F

All cause mortality age standardised rates among women aged 15-74 years
Scotland in context of maximum, minimum, and mean rates for 16 Western European countries
Source: WHOIS (April 2012)
Younger Working Age Mortality - Men

Figure CA.1M
All cause mortality age standardised rates among men aged 15-44 years
Scotland in context of maximum, minimum, and mean rates for 16 Western European countries
Source: WHoSIS (April 2012)
Younger Working Age Mortality - Women

Figure CA1F

All cause mortality age standardised rates among women aged 15-44 years
Scotland in context of maximum, minimum, and mean rates for 16 Western European countries
Source: WHO/IS (April 2012)
Elderly Mortality - Men

Figure D1M
All cause mortality age standardised rates among men aged 75 years and over
Scotland in context of maximum, minimum, and mean rates for 16 Western European countries
Source: WHO/IS (April 2012)
Elderly Mortality - Women

Figure D1F
All cause mortality age standardised rates among women aged 75 years and over
Scotland in context of maximum, minimum, and mean rates for 18 Western European countries
Source: WHOIS (April 2012)

Rate per 100,000 population per year

Year of death

Comparison to WE Mean – Males

Scottish Male Mortality relative to the Western European Country Mean, 1955-2009
Source: WHOSIS (April 2012)
Comparison to WE Mean – Females

Scottish Female Mortality relative to the Western European Country Mean, 1955-2009

Source: WHOSIS (April 2012)
Trends for selected causes
Ischaemic Heart Disease

Figure K1F
Ischaemic heart disease mortality age standardised rates among women aged 15-74 years
Scotland in context of maximum, minimum, and mean rates for 16 Western European countries
Source: WHOIS (April 2012)
Ischaemic Heart Disease - Scotland vs Finland

Figure K3M
Ischaemic heart disease mortality age standardised rates among men aged 15-74 years
Scotland in context of Northern Europe
Source: WHOSIS (April 2012)
Cerebrovascular Disease

Figure L1F
Cerebrovascular disease mortality age standardised rates among women aged 15-74 years
Scotland in context of maximum, minimum, and mean rates for 16 Western European countries
Source: WHOIS (Dec 2012)
Lung cancer

Figure 11F
Lung cancer mortality age standardised rates among women aged 15-74 years
Scotland in context of maximum, minimum, and mean rates for 16 Western European countries
Source: WH0918 (April 2012)

25 year+ peak
Colorectal cancer

Figure G1F
Colorectal cancer mortality age standardised rates among women aged 15-74 years
Scotland in context of maximum, minimum, and mean rates for 16 Western European countries
Source: WHOSIS (April 2012)
Breast cancer mortality age standardised rates among women aged 15-74 years
Scotland in context of maximum, minimum, and mean rates for 16 Western European countries
Source: WHO/IS (April 2012)
Chronic liver disease, including cirrhosis

Figure N1F
Mortality from chronic liver disease, incl cirrhosis, age standardised rates among women 15-74 years
Scotland in context of maximum, minimum, and mean rates for 16 Western European countries
Source: WHO5 (April 2012)
Chronic liver disease, including cirrhosis
Scotland vs Finland

Figure N3M
Mortality from chronic liver disease, incl. cirrhosis, age standardised rates among men 15-74 years
Scotland in context of Northern Europe
Source: WHO/IS (April 2012)
Cumulative Mortality - Males

Figure S1M
Age standardised mortality rates for 10 major causes of death among Scottish men aged 15-74 years, 1955-2010
Source: WHOSIS (April 2012)
Cumulative Mortality - Females

Figure S1F
Age standardised mortality rates for 11 major causes of death among Scottish women aged 15-74 years, 1955-2010

Source: WHOSIS (April 2012)
Proportionate Contribution by Cause - Males

Figure S2M
Proportionate contribution of 10 major causes of death as a % of all selected causes among Scottish men aged 15-74 years, 1955-2010
Source: WHOSIS (April 2012)
Proportionate Contribution by Cause - Females

Figure S2F
Proportionate contribution of 11 major causes of death as a % of all selected causes among Scottish women aged 15-74 years, 1955-2010
Source: WHOSIS (April 2012)
Conclusions

• Reductions in mortality in all age groups over last 60 years e.g. infant mortality has reduced by 90%
  ✔
• However, Scotland’s relative position within Western Europe has become notably worse, particularly for women  ❌
• Rise/flat trend in mortality in younger working age group in last 25 years and Scotland now has highest mortality in Western Europe in this age group  ❌
• Mortality among working age people has reduced for many causes and Scottish rates are converging with Western European mean – ischaemic heart disease, male lung cancer, colorectal cancer, female breast cancer  ✔
• 25 year peak in lung cancer mortality among women  ❌
• Other concerns - highest rates of mortality due to oesophageal cancer in Western Europe, suicide rates 3\textsuperscript{rd}/4\textsuperscript{th} highest in Western Europe and chronic liver disease mortality amongst the highest in Europe  ❌
• Potential for further research into causes associated with younger working age mortality and elderly female mortality; comparisons to a wider range of European countries