



Society of Actuaries in Ireland

Mortality Research Update

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Disclaimer

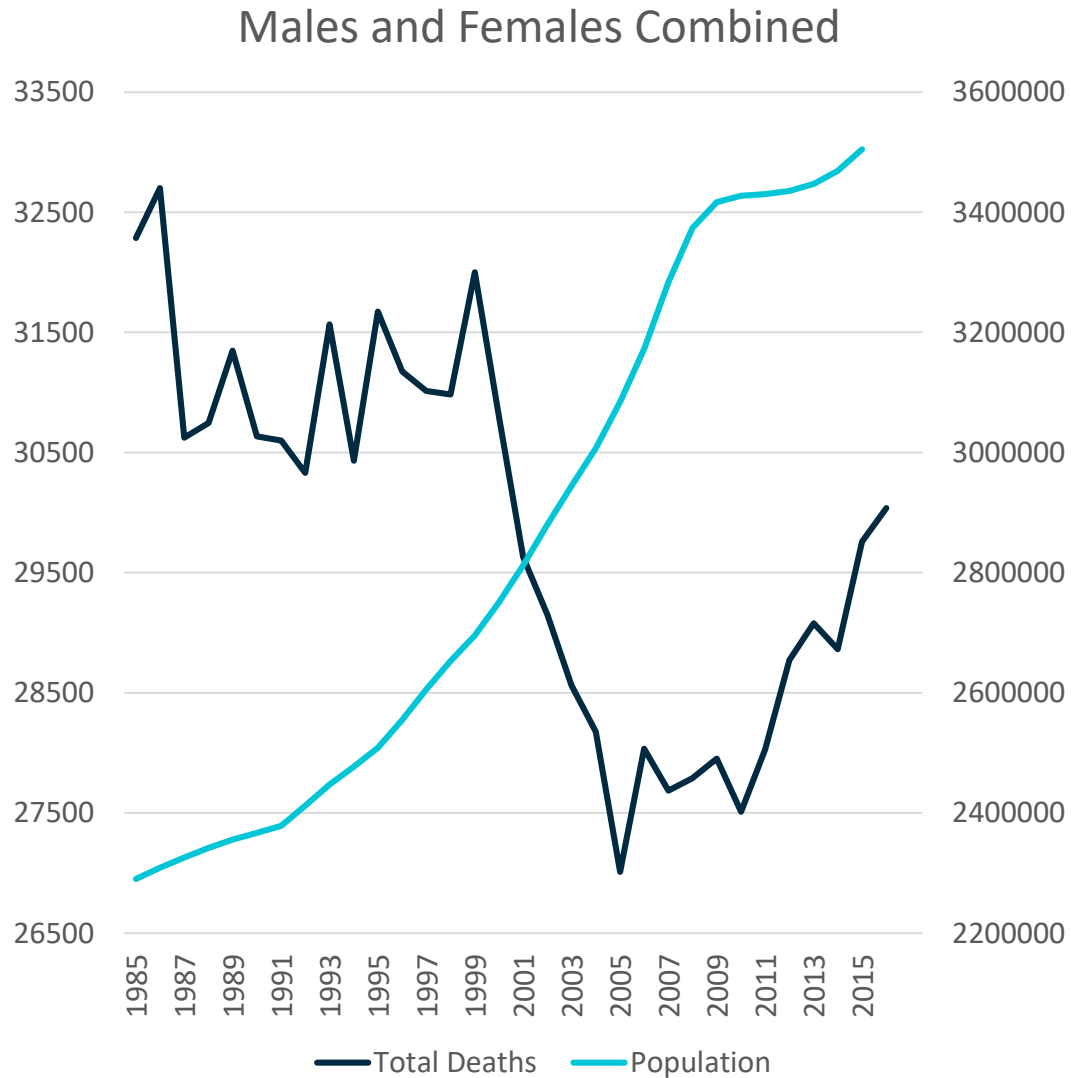
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Agenda

- Recent Mortality Experience in Ireland – Sinéad Carty
- International Mortality Developments – Caroline Twomey
- Irish Mortality Research – Dr Mary Hall



Total Deaths ages 18-102 in Ireland, 1985 -2016



1985 -1999

- Considerable year on year volatility
- Population steadily growing

1999-2006

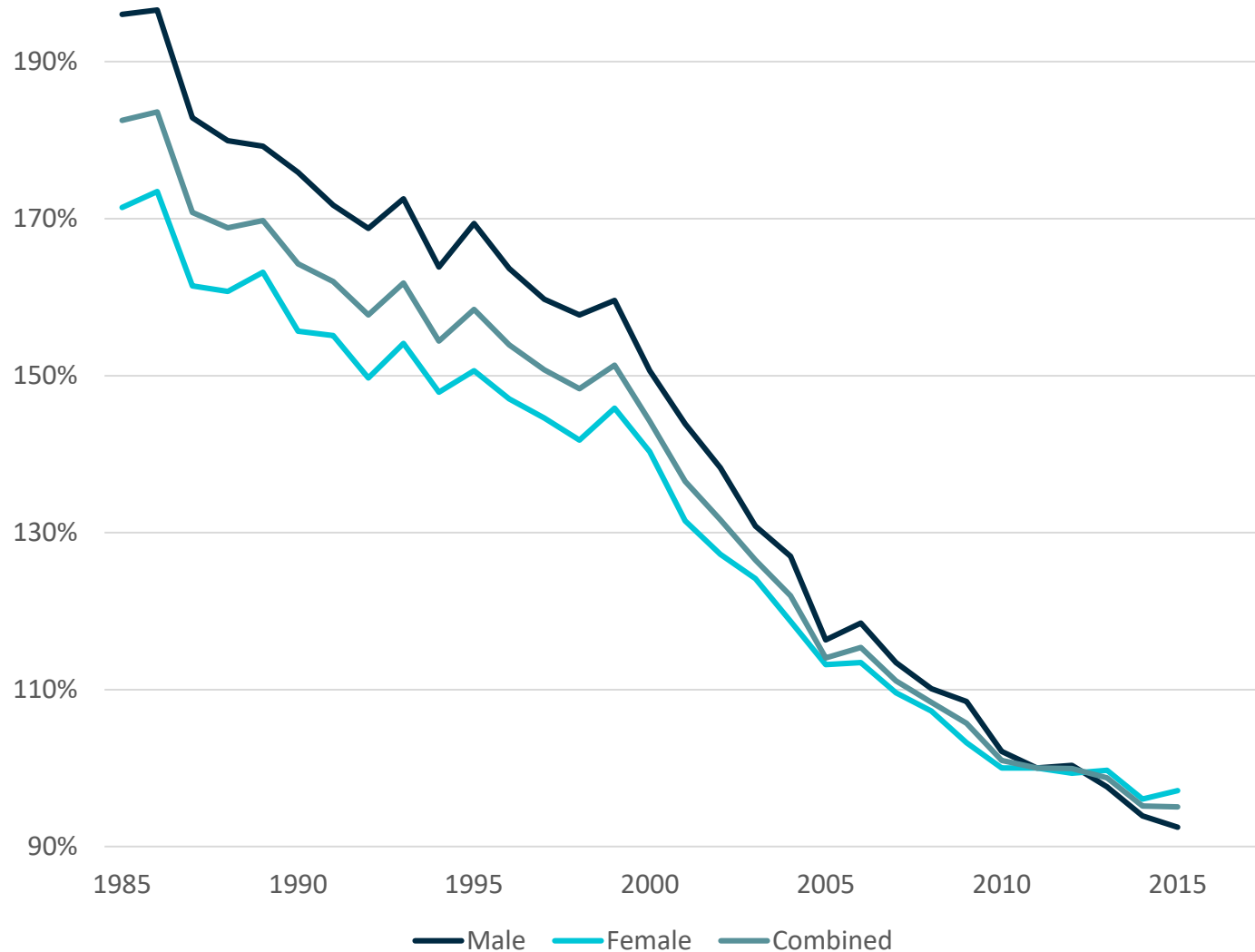
- Sharp decline in deaths with low volatility
- Population continues steady growth

2006-2015

- Volatility in year on year deaths, fairly steady increase from 2010
- Population growth slowing from 2010



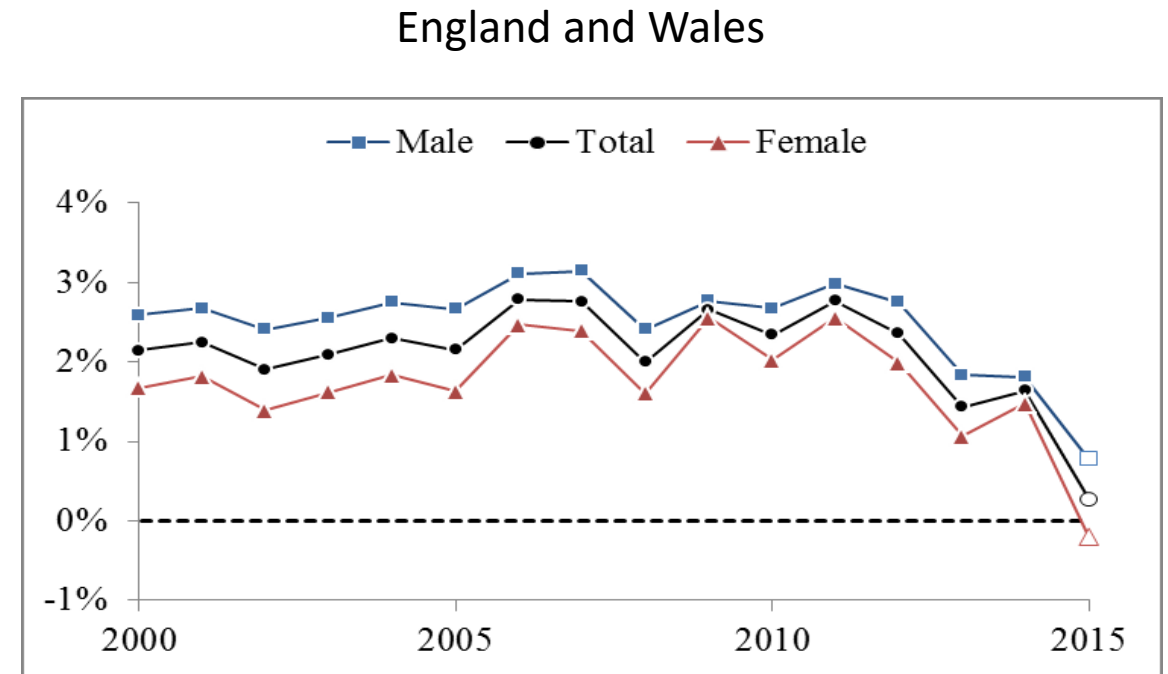
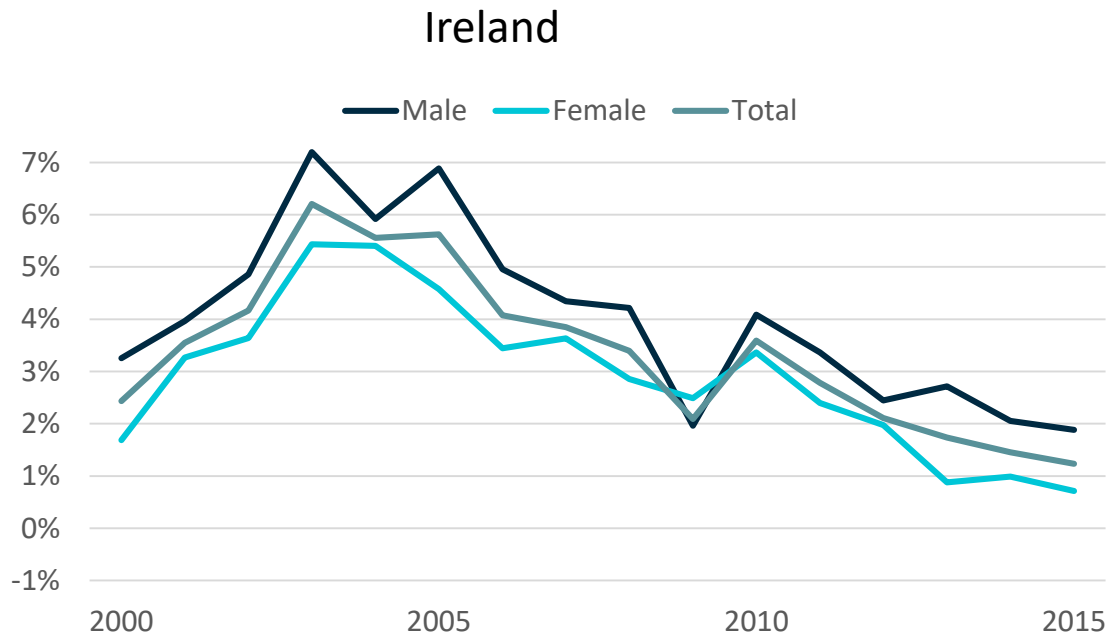
Standard Mortality Ratios, 1985 -2015



- Standard Mortality Ratios - a “model free” approach
- Reference point chosen as 2011
- Sharp steady decline mortality ratios during “Celtic Tiger years
- Some slowdown in decline in **male** ratios evident from 2010 onwards but improvements largely continue year on year
- Slowdown in decline in **female** mortality ratios clear. Improvements almost flat 2010-2014



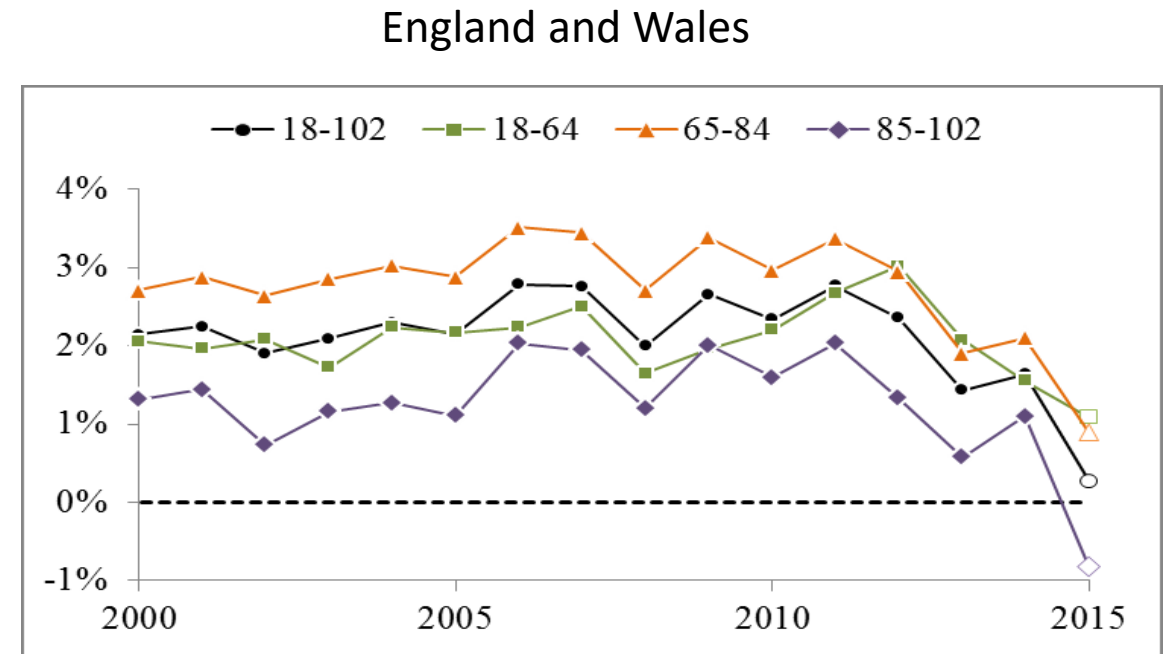
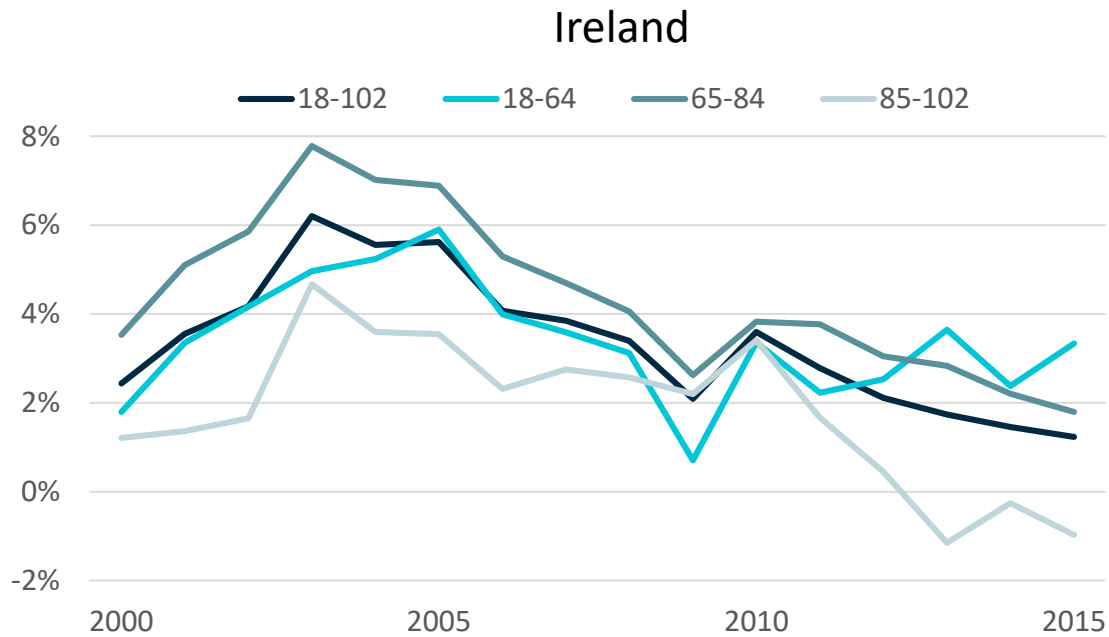
Annualised 4 year mortality improvements Ireland & UK 2000-2015



- Different trends apparent in Ireland and UK mortality improvements over the period
- 2000-2005: Impact of economic prosperity in Ireland evident in Ireland – level of improvements increasing rapidly and peaking at levels not evident in the UK
- 2005-2010: Return of improvements in Ireland to levels similar to UK
- 2010-2015: Clear reduction in level of improvements in both countries but pronounced in the UK.



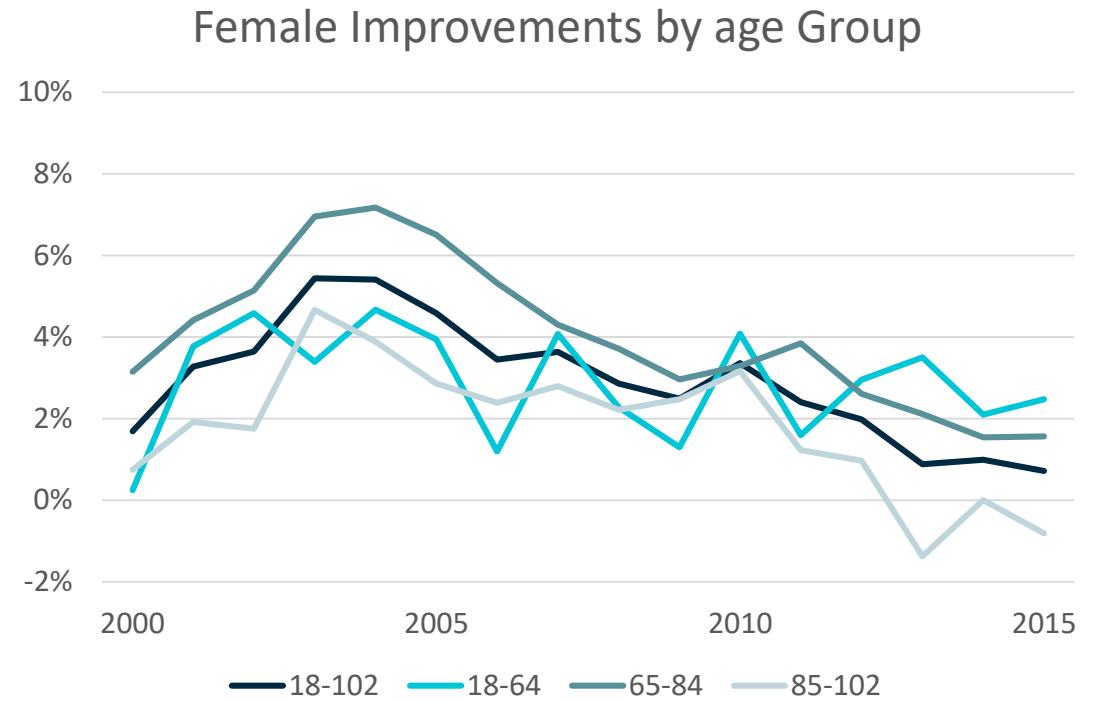
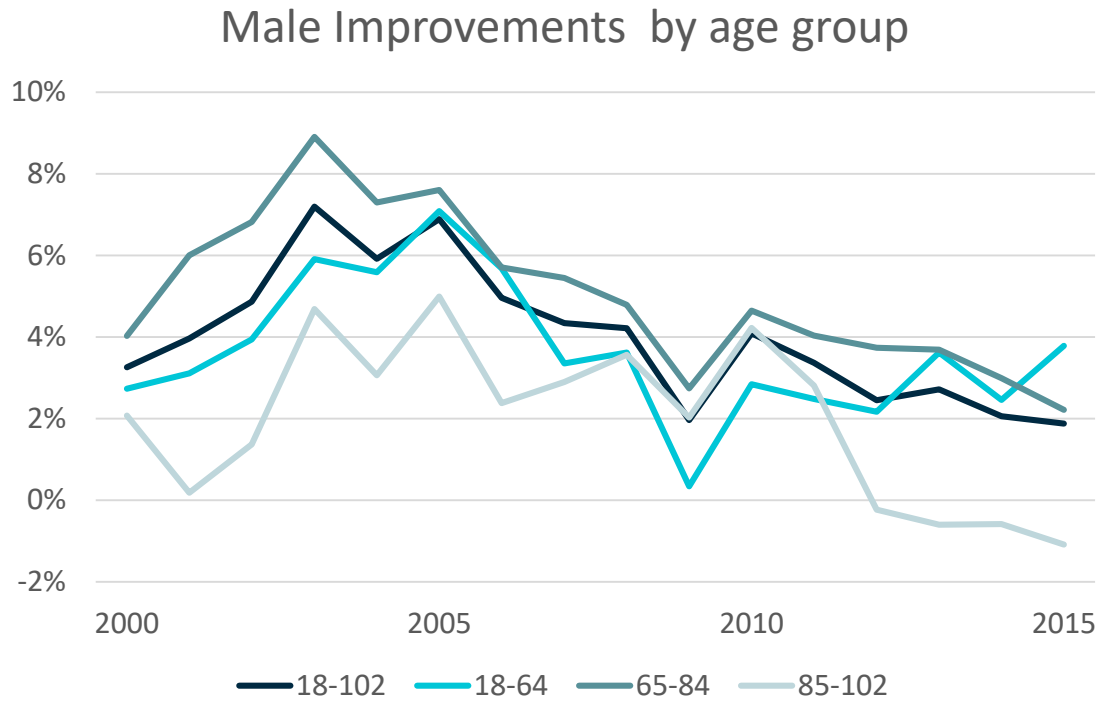
Annualised 4 year mortality improvements by age, Ireland & UK



- Largest improvements experienced by the age group 65-84 in both Ireland and UK
- Age groups 65-84 and 85-102 tend to follow the same pattern. Ages 15-64 show different pattern
- Slow down in improvements from 2010 most apparent in oldest age group
- 2011- 2015 exceptionally low for UK , 0.3% pa average, 1.2% for Ireland



Annualised 4 year mortality improvements - Males & Females



- Results more volatile when broken down by age
- In general females showing lower mortality improvements but pattern by age group similar for both male and females



Conclusions

- Marked slowdown in mortality improvements since 2010 in UK and Ireland
- On average slowdown more pronounced in UK than Ireland
- Age groups 65-84 and 85-102 most impacted by slow down in mortality improvements
- Ages 85-102 - negative average mortality improvement from 2011-2015 in Ireland and UK
- Female improvements lower but pattern of slowdown similar for both males and female by age in Ireland



References

- CSO - Deaths and Population data 2011-2015
- Human Mortality Database – Deaths and Population data 1985-2010

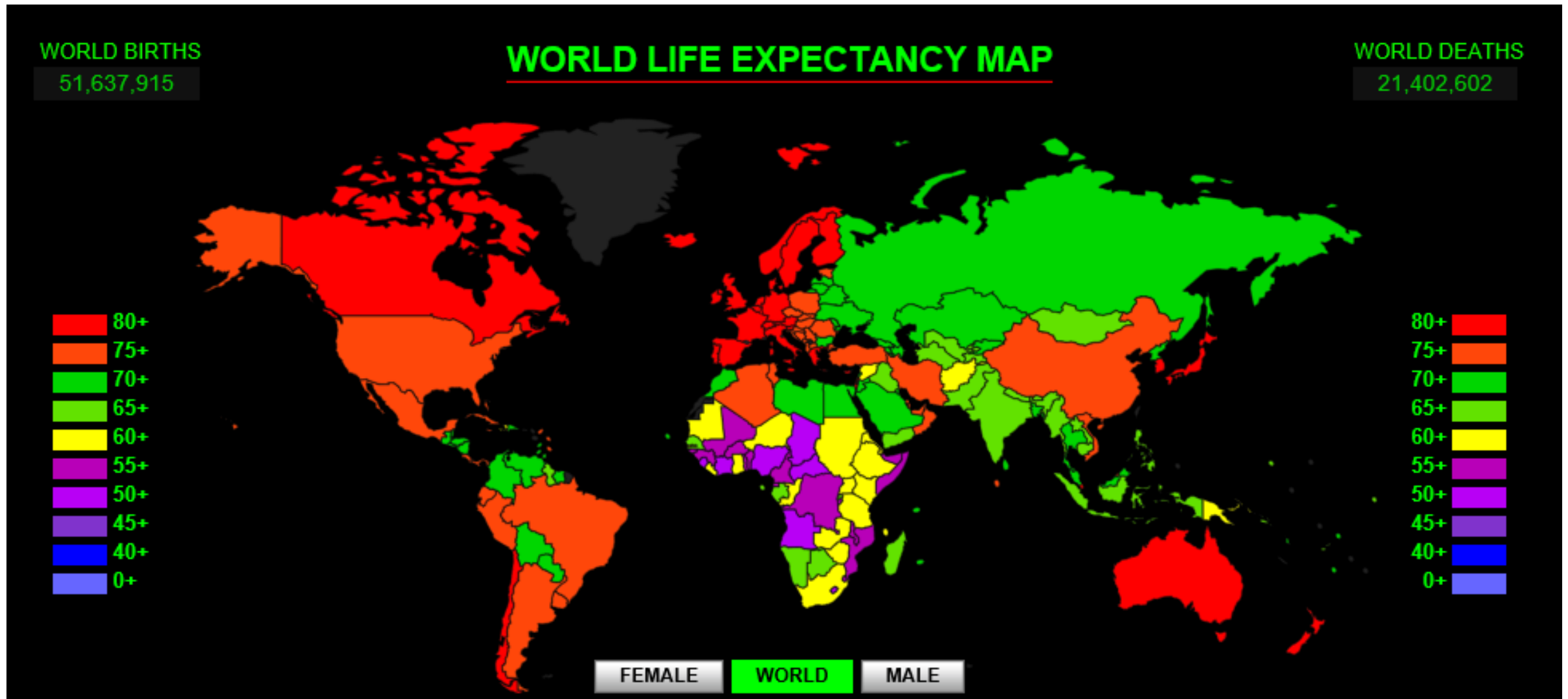
<http://www.mortality.org/cgi-bin/hmd/country.php?cntr=IRL&level=1>

- CMI Working paper 83- Recent mortality in England and Wales

<https://www.actuaries.org.uk/learn-and-develop/continuous-mortality-investigation/cmi-working-papers/mortality-projections/cmi-wp-83>



International Mortality Developments



Source: <http://www.worldlifeexpectancy.com/world-life-expectancy-map>



International Mortality Developments

- UK
 - 08 series mortality tables: Annuities & Assurances (WP 81, 92 & 94)
 - CMI_2017 (WP 105)
 - Initial analysis of data for S3 SAPs tables (WP 104)
- USA
 - Population mortality 2000-2015
 - MP-2017
- Canada
 - Guidance on Pension plan mortality
 - Minimum improvements 2017

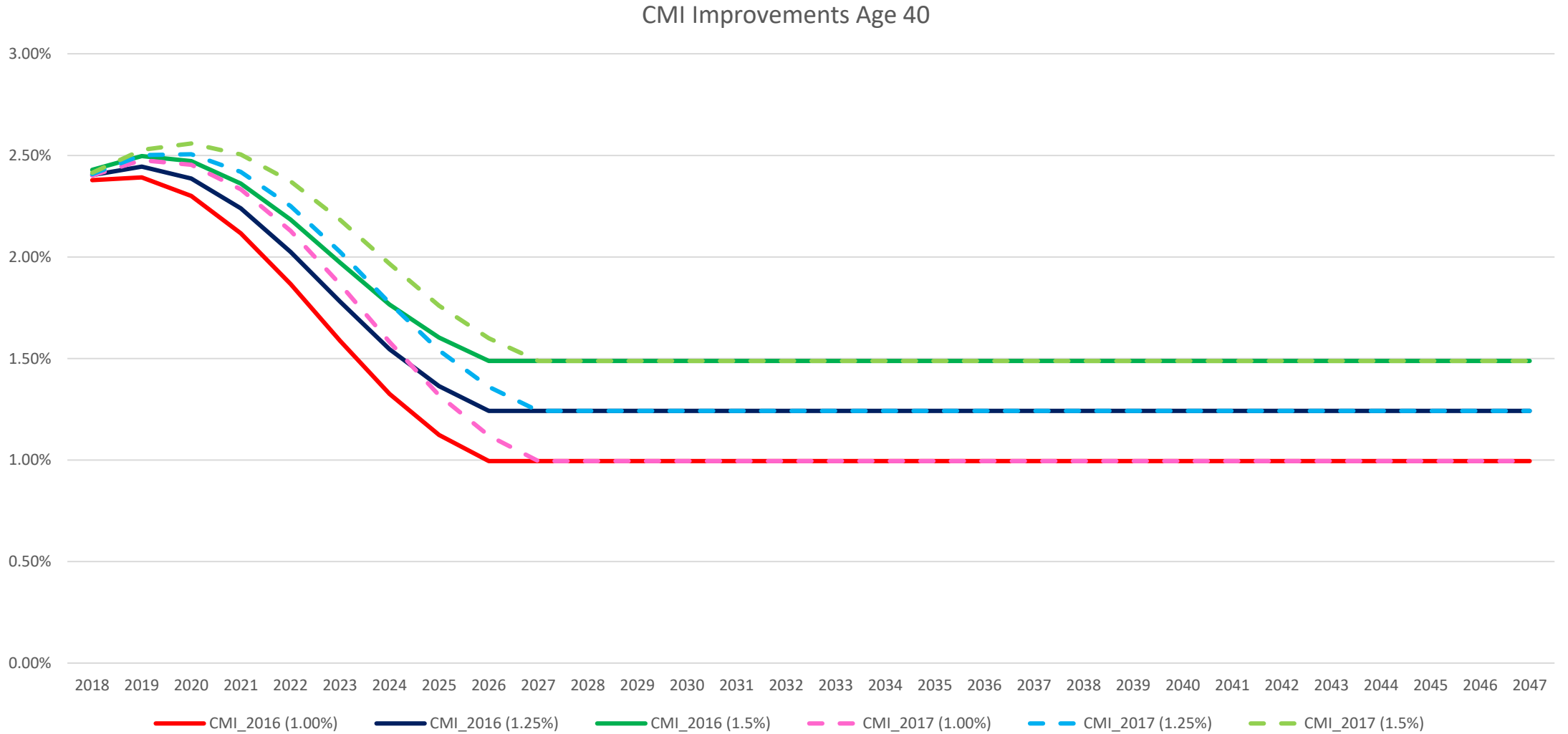


International Mortality Developments

- Netherlands
 - AG2016
- Japan
 - Standard mortality table 2018
- Israel
 - New committee to research projected mortality improvements



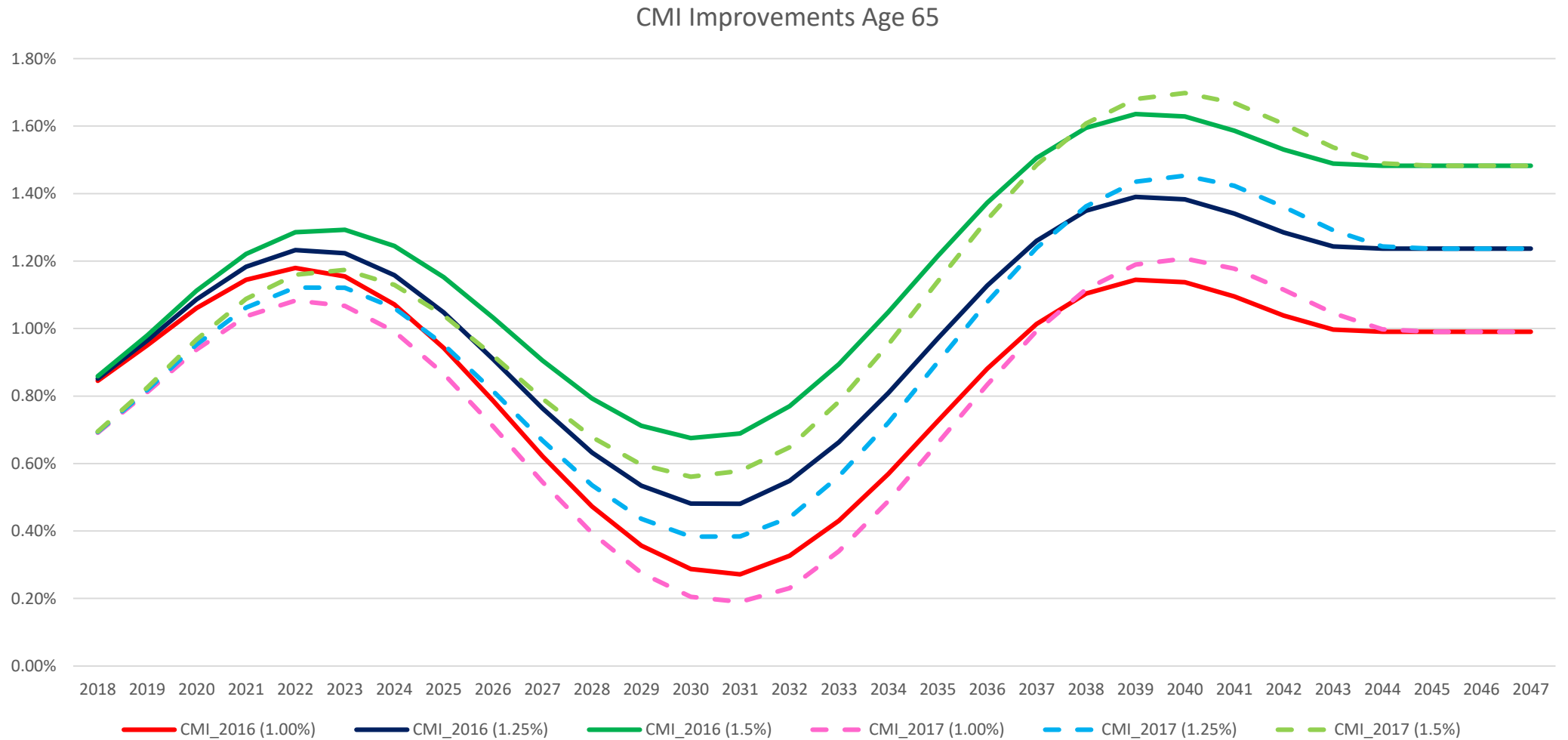
International Mortality Developments



Source: CMI projection models with core parameters



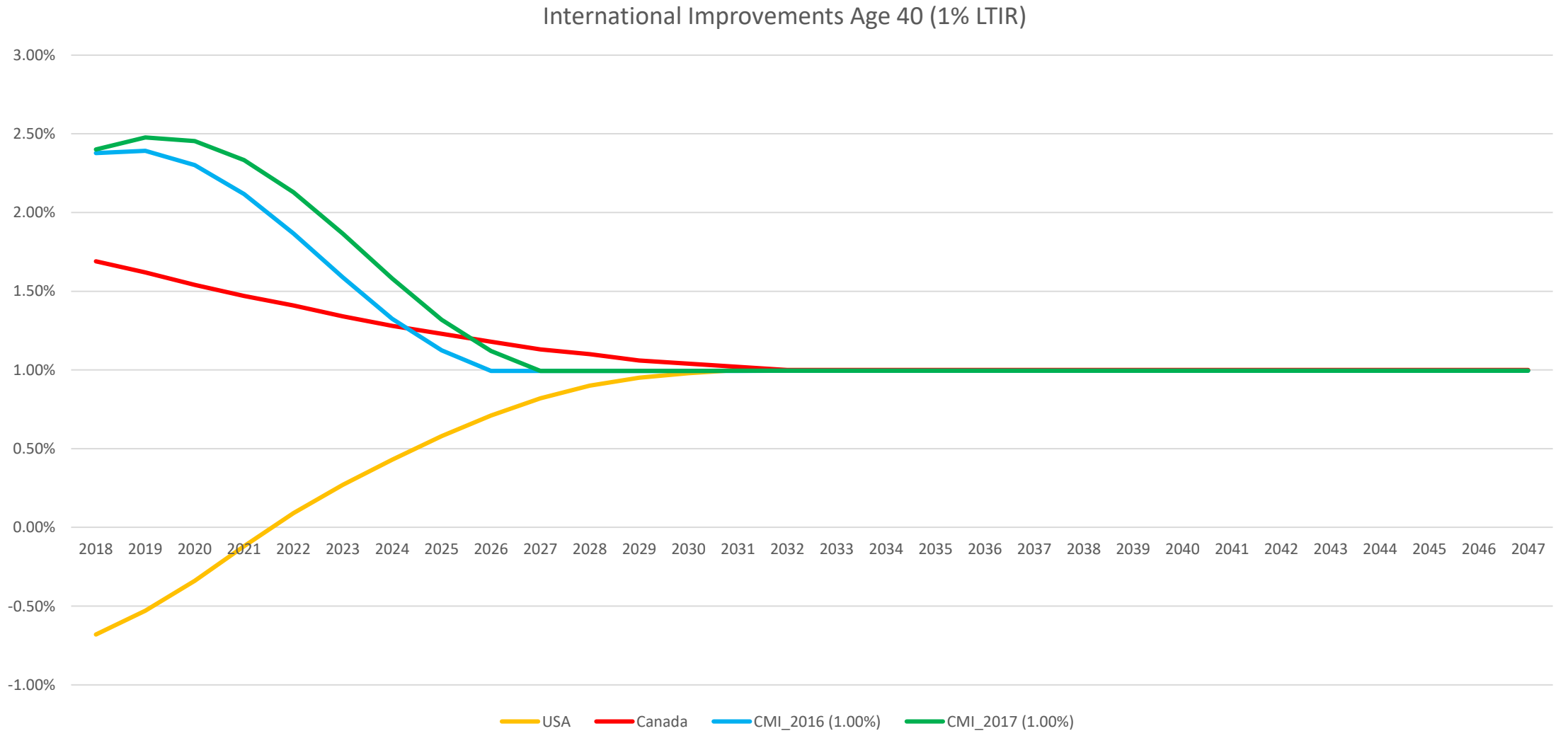
International Mortality Developments



Source: CMI projection models with core parameters



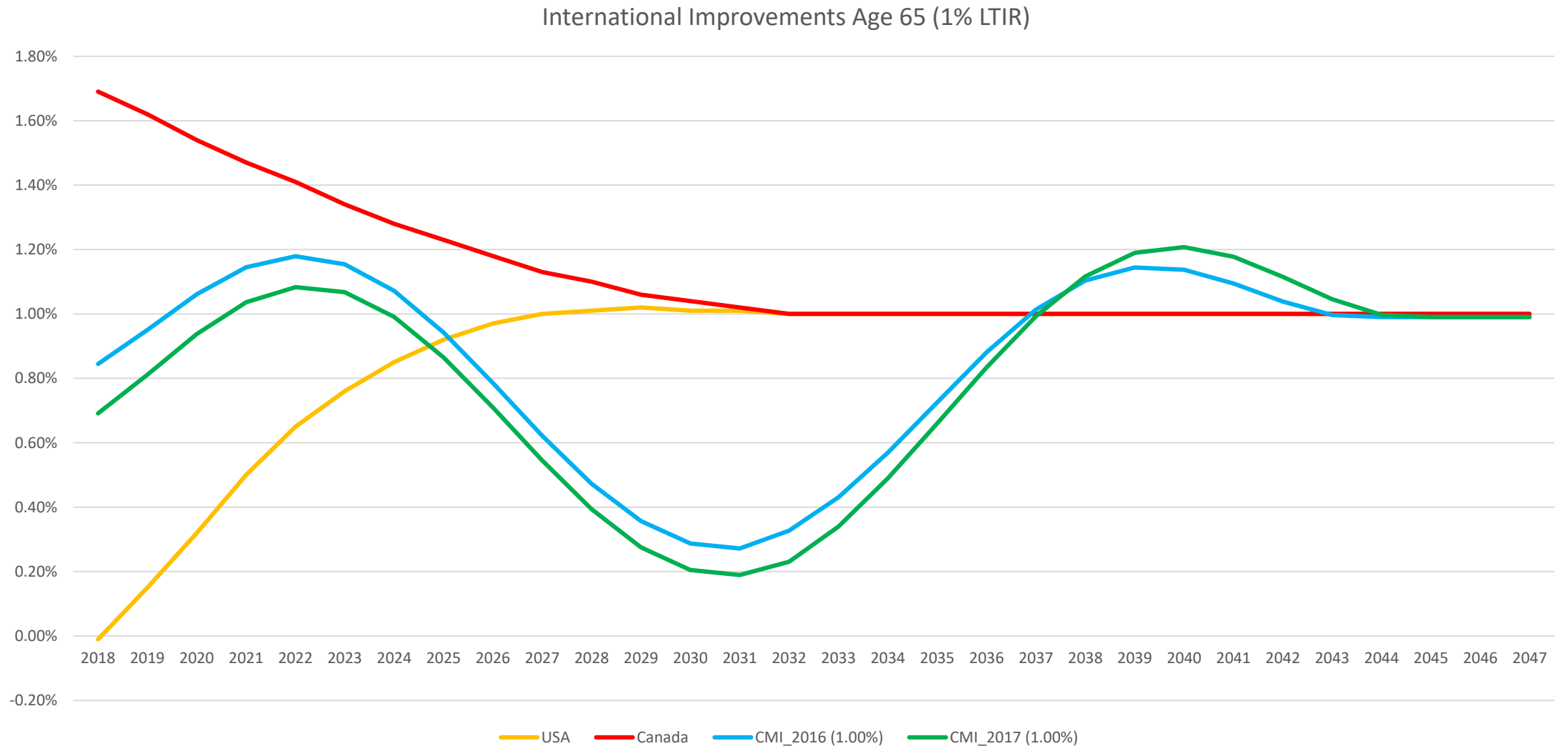
International Mortality Developments



Source: Country-specific actuarial profession websites



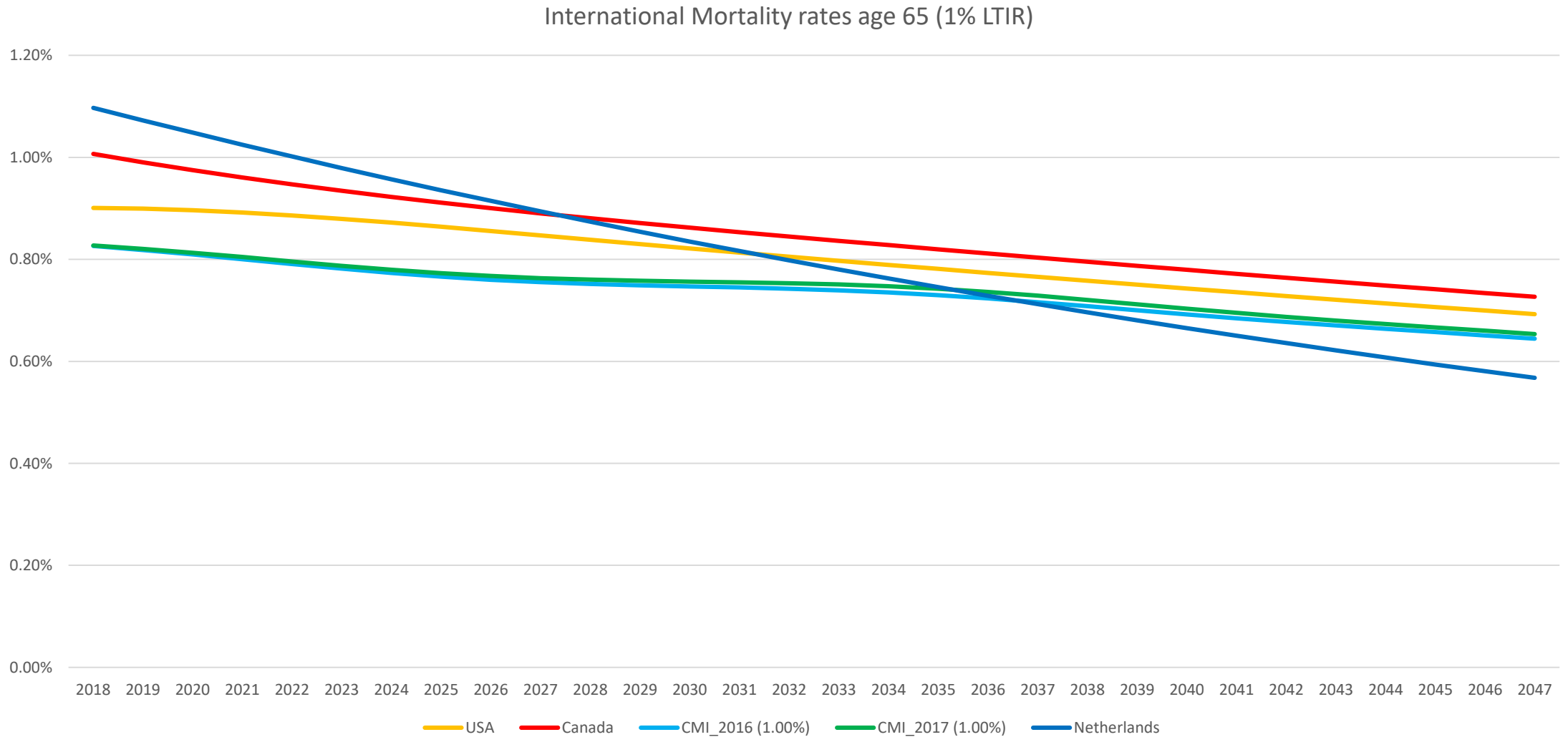
International Mortality Developments



Source: Country-specific actuarial profession websites



International Mortality Developments



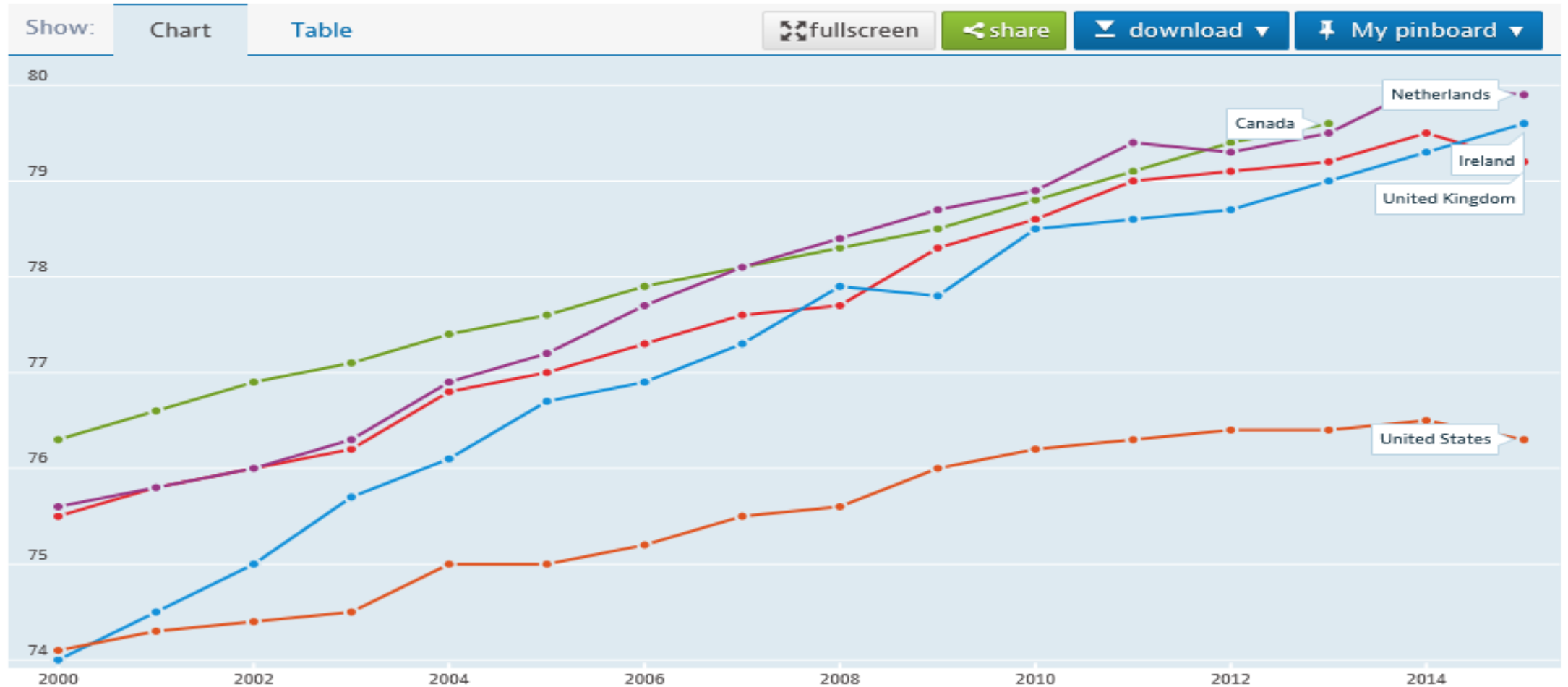
Source: Country-specific actuarial profession websites



International Mortality Developments

Life expectancy at birth Men, Years, 2000 – 2015

Source: Health status



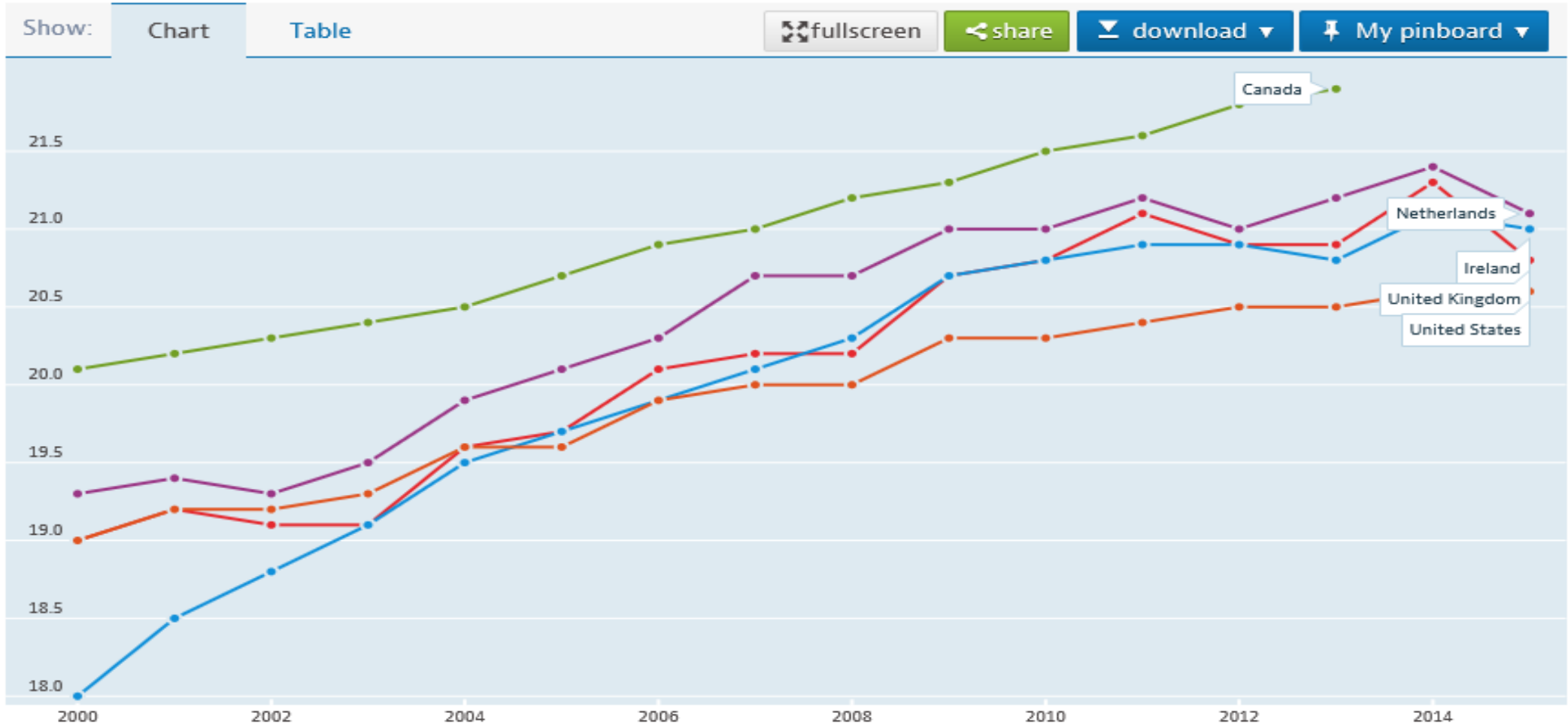
Source: <https://data.oecd.org/healthstat/life-expectancy-at-birth.htm#indicator-chart>



International Mortality Developments

Life expectancy at 65 Women, Years, 2000 – 2015

Source: Health status



Source: <https://data.oecd.org/healthstat/life-expectancy-at-65.htm#indicator-chart>



Irish Mortality Research

- DCU
 - Irish Mortality Models
 - Ill-Health Retirement Mortality
 - Seasonal Mortality
- UCC
 - Long Term Care
 - Ill-Health Retirement Mortality
 - Stochastic Mortality Modelling
- UCD
 - Irish Mortality Models



Irish Mortality Research (continued)

- Irish Specific Data Sources
 - CSO
 - TILDA
 - NIMS & NILS
- Future Irish Mortality/Morbidity Research
 - IILMI
 - Big Data
 - Climate Change