



Institute
and Faculty
of Actuaries

IFoA Life Conference

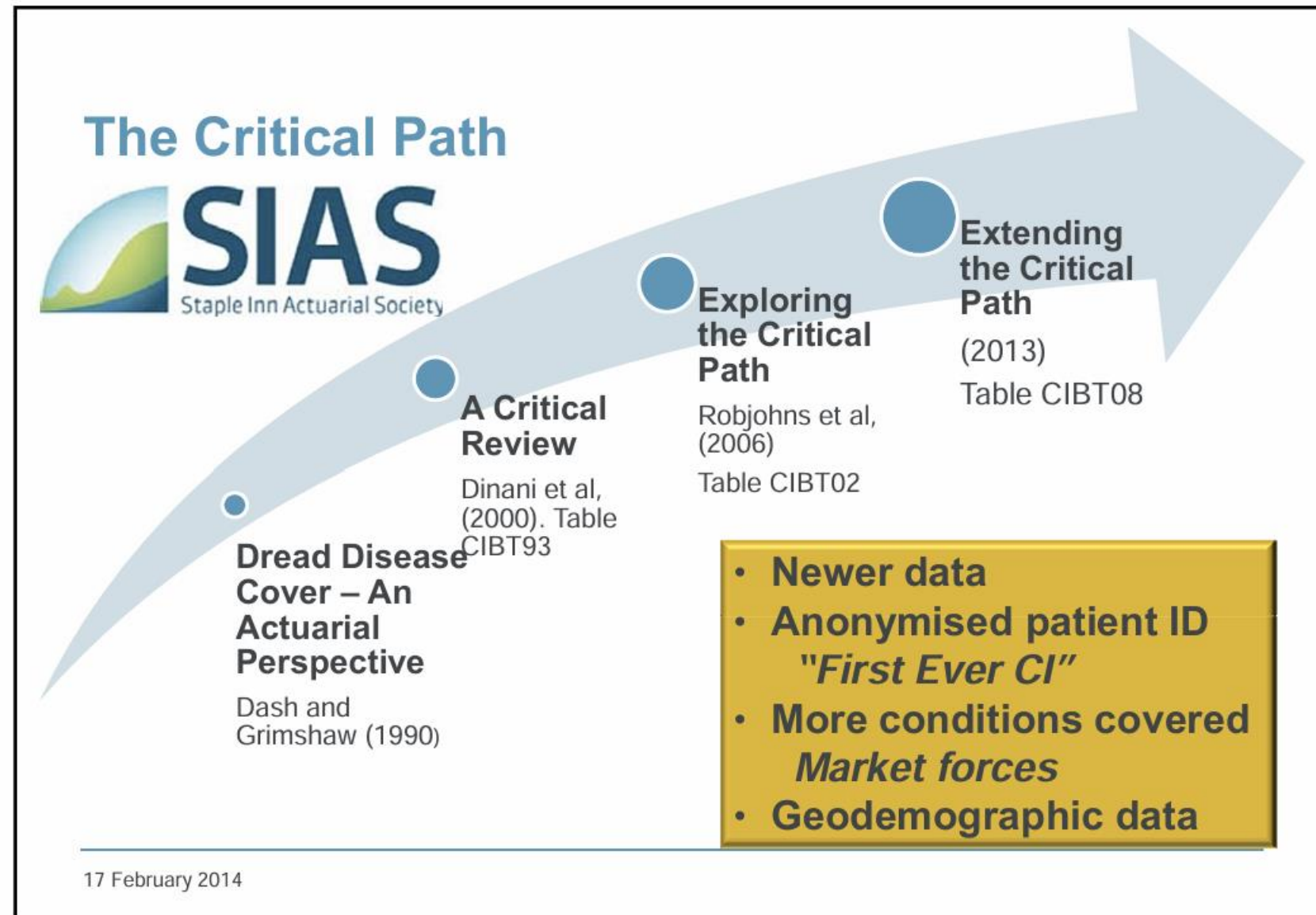
Welcome to G5:

An Update from the Critical Illness Population Incidence
Rates Working Party

CI Working Parties

Critical Illness

Population incidence rates Working Party



Carrying on ...
the Critical Path

Population incidence rate
tables produced:

CIBT24: 2023-2025 (???)

CIBT08: 2007-2009

CIBT02: 2001-2003

Why so long?

Why so long?

Demographically Classed

<https://blog.ouseful.info/2014/02/25/demographically-classed/>

Tony Hirst

February 25, 2014

Data, Policy, privacy
care.data

So it seems that in a cost-recovered data release then but possibly wouldn't be now* – [Hospital sold to insurers](#) – the Staple Inn Actuarial Society and Geographical Variations

FOR HEALTHCARE LEADERS
HSJ



HSJ Podcast: The NHS baby



ASK HSJ

SECTORS

TOPICS

LOCAL

COMMENT

INTER

HOME

NHS records 'sold to insurers'

By The Press Association | 24 February 2014

The medical records of almost 50 million NHS hospital patients have been sold for insurance purposes, it has been reported.

UK
The Guardian

Hospital records of 47m NHS patients obtained by insurance society

The Telegraph

News Sport Business Money Opinion Ukraine Travel Health Lifestyle Best schools Culture Puzzles

Hospital records of all NHS patients sold to insurers

Hospital records of all NHS patients sold for insurance purposes days after controversial plans to extract patient data from GP files put on hold

By Laura Donnelly and Lauradonnelly
23 February 2014 • 10:00pm

Information from patients' NHS records was used in the development of premiums, it was claimed. Photograph: Dominic Lipinski/PA

Less than a week after the NHS was forced to postpone its huge GP and hospital record-sharing plan, it has emerged that a major insurance body bought more than a decade's worth of hospital data covering 47 million

Review of data releases by the NHS Information Centre

Sir Nick Partridge
17 June 2014

recorded: "The Board requested a quarterly report of organisations that had requested or had contracts with the HSCIC for the provision of data. This would include the reason for the request, and the legal basis on which the data had been supplied."

10. This work gained added importance and urgency due to growing public interest in plans developed by NHS England to upload information from patients' GP records on to a national database to be run by the HSCIC, known as the care.data programme. The revelation that the NHS IC had released data to an actuarial body added to public concern, amidst a wide misunderstanding that personal medical records were being easily accessed by insurers. Further concerns expressed by the Health Select Committee on 25th February 2014 prompted the HSCIC Board to ask me to lead a review of all the data releases made by the NHS IC, its predecessor organisation.

What the review discovered

Source:

https://assets.publishing.service.gov.uk/media/5a7eeaba40f0b62305b83fd3/Sir_Nick_Partridge_s_summary_of_the_review.pdf

Update from the CI Population Incidence Rates WP



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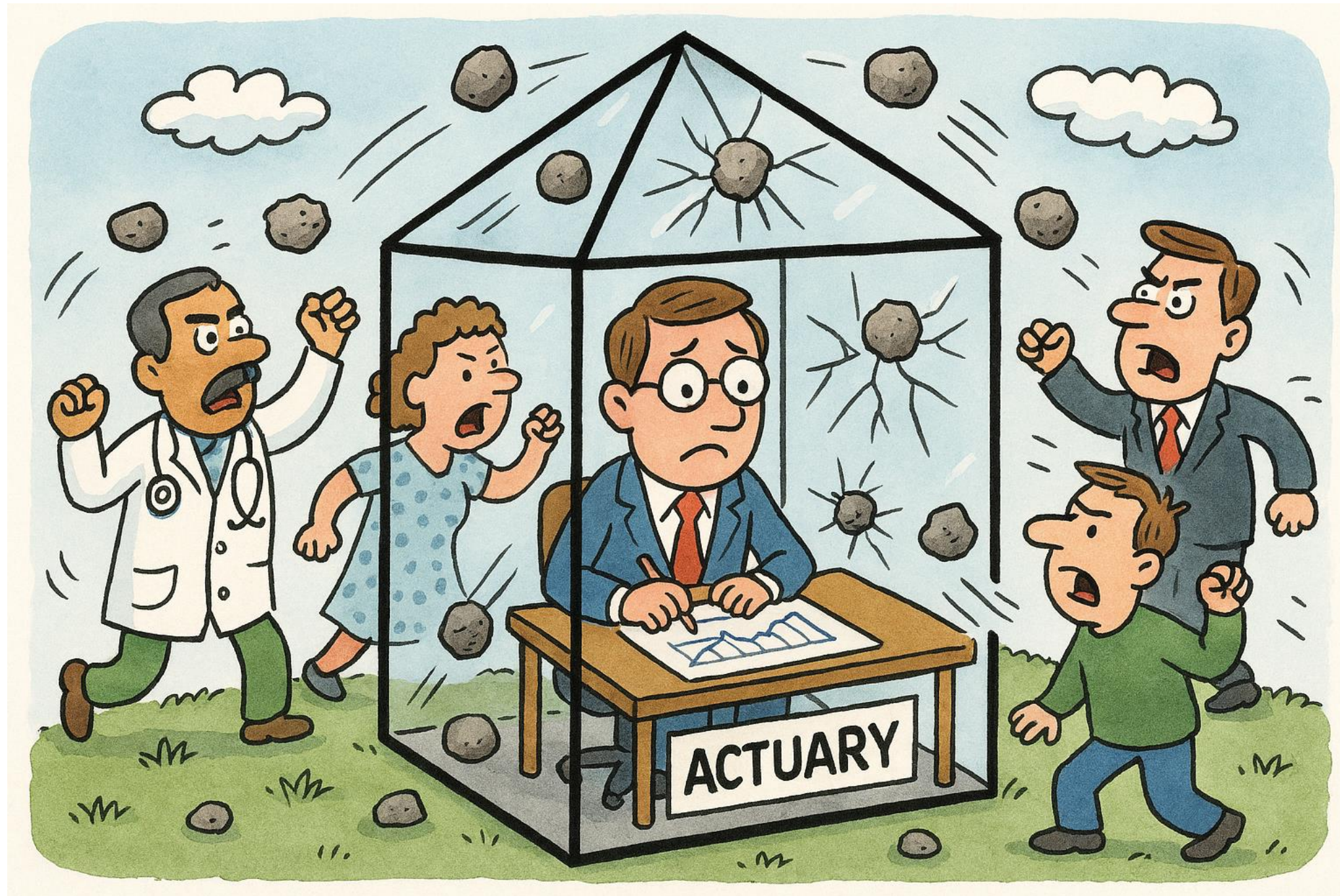
It's a Sensitive and Nuanced Area

Key Events: 2013 - 2016

NHS Data & Controversy Timeline

Date	Event
Dec 2013	Actuarial working party uses NHS Hospital Episode Statistics to study Critical Illness claims.
Feb 2014	Media reveal NHS data shared with actuaries – public outcry follows.
28 Feb 201	Health Secretary Jeremy Hunt: “NHS data will not be sold to insurers.”
Mar 2014	MPs debate data use; new safeguards promised.
Apr – Jun 2014	Parliamentary inquiries & reviews confirm past releases to reinsurers and actuaries.
2016	Care.data programme scrapped amid trust concerns.

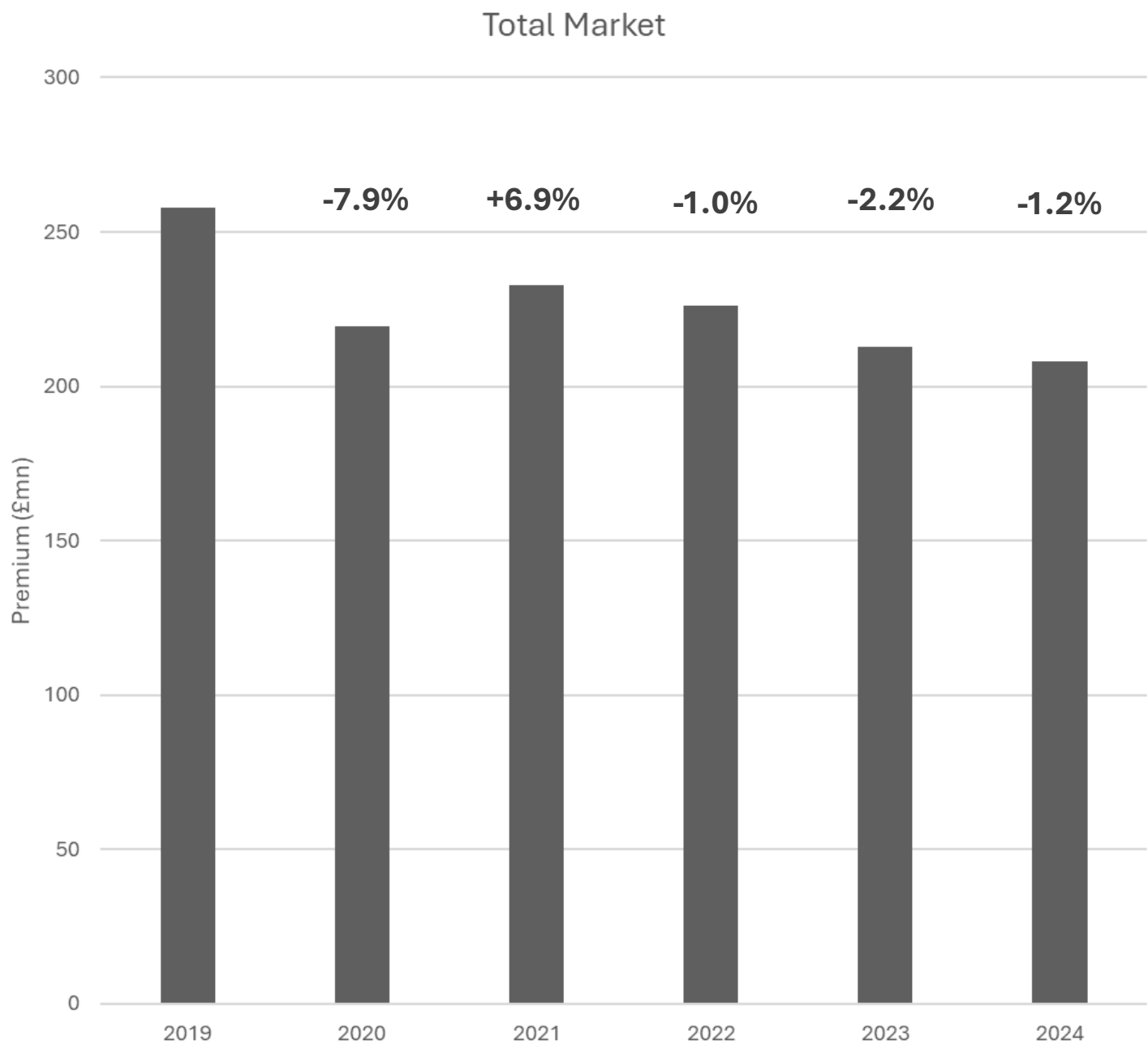
2025 - Is it time to revisit?



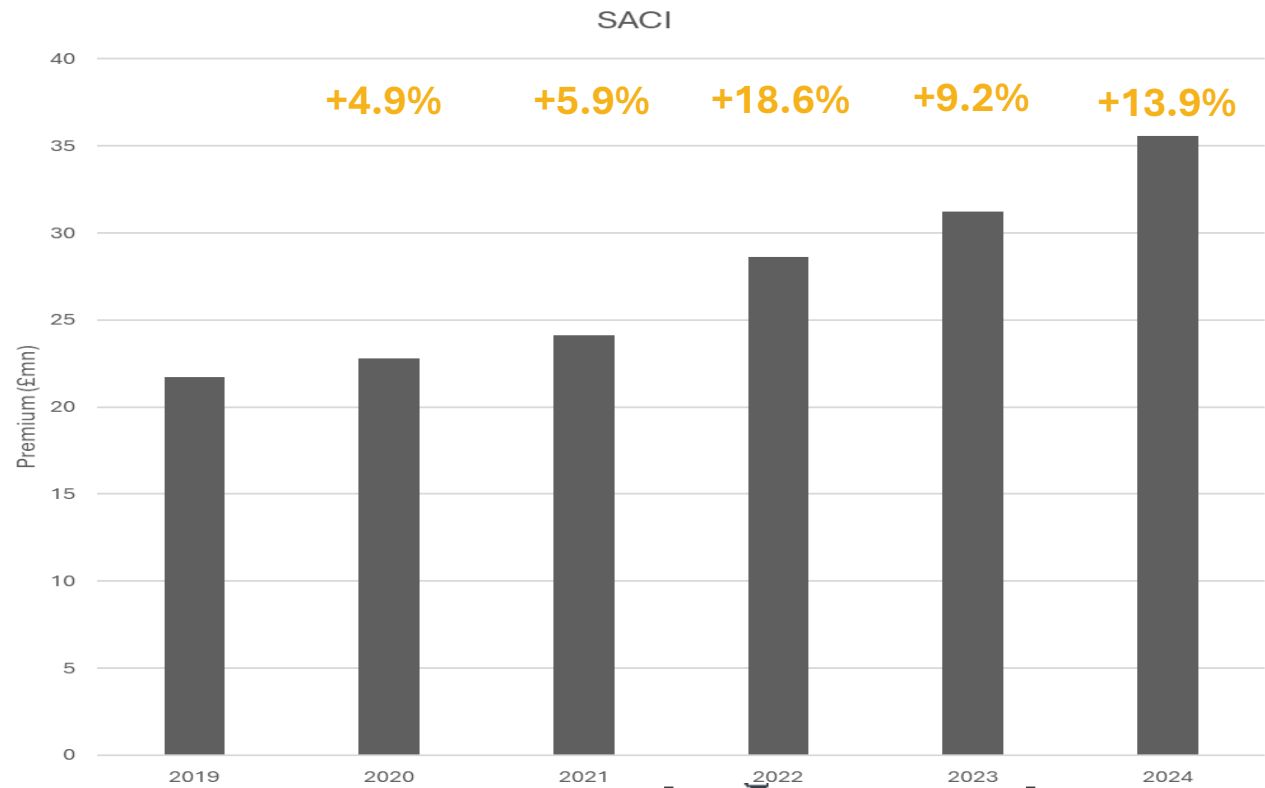
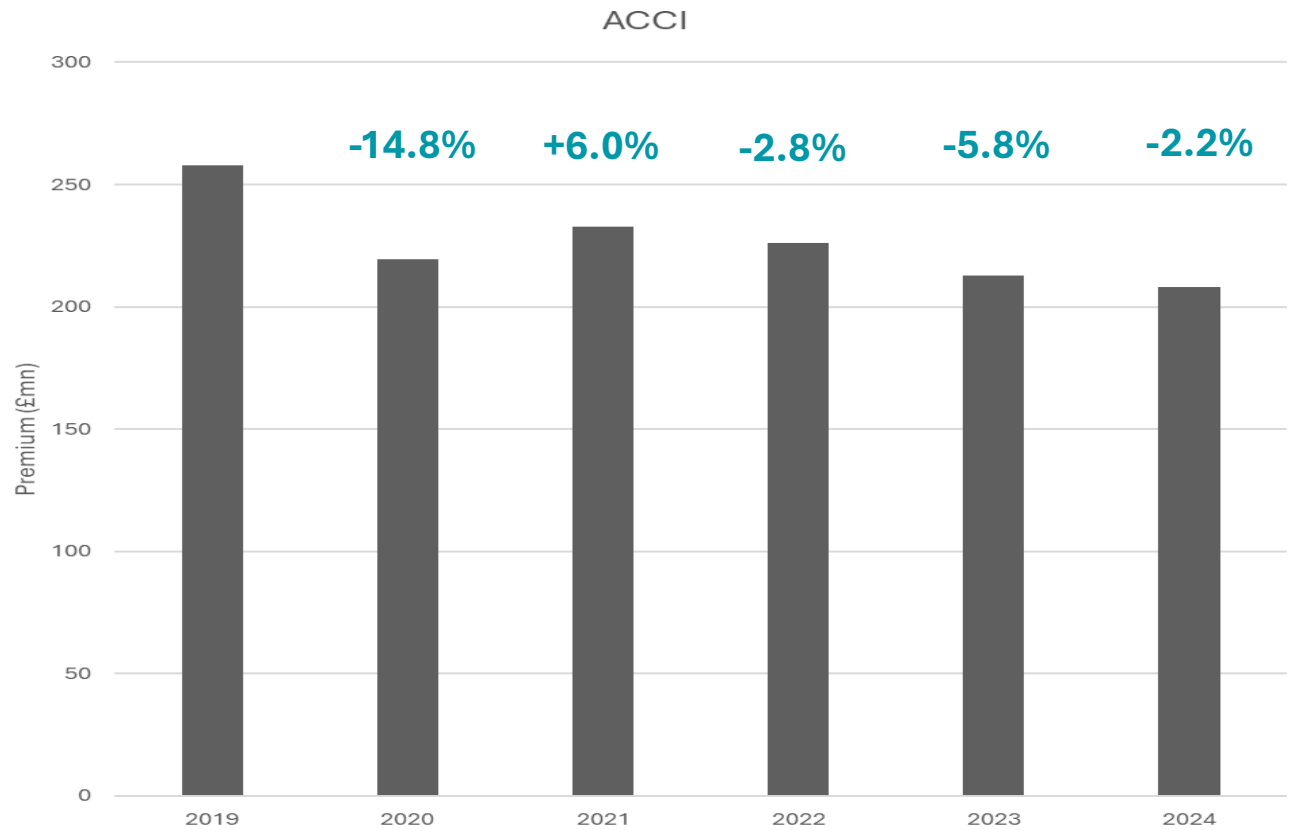
Market Developments

Critical Illness

Market overview: 2019-2024

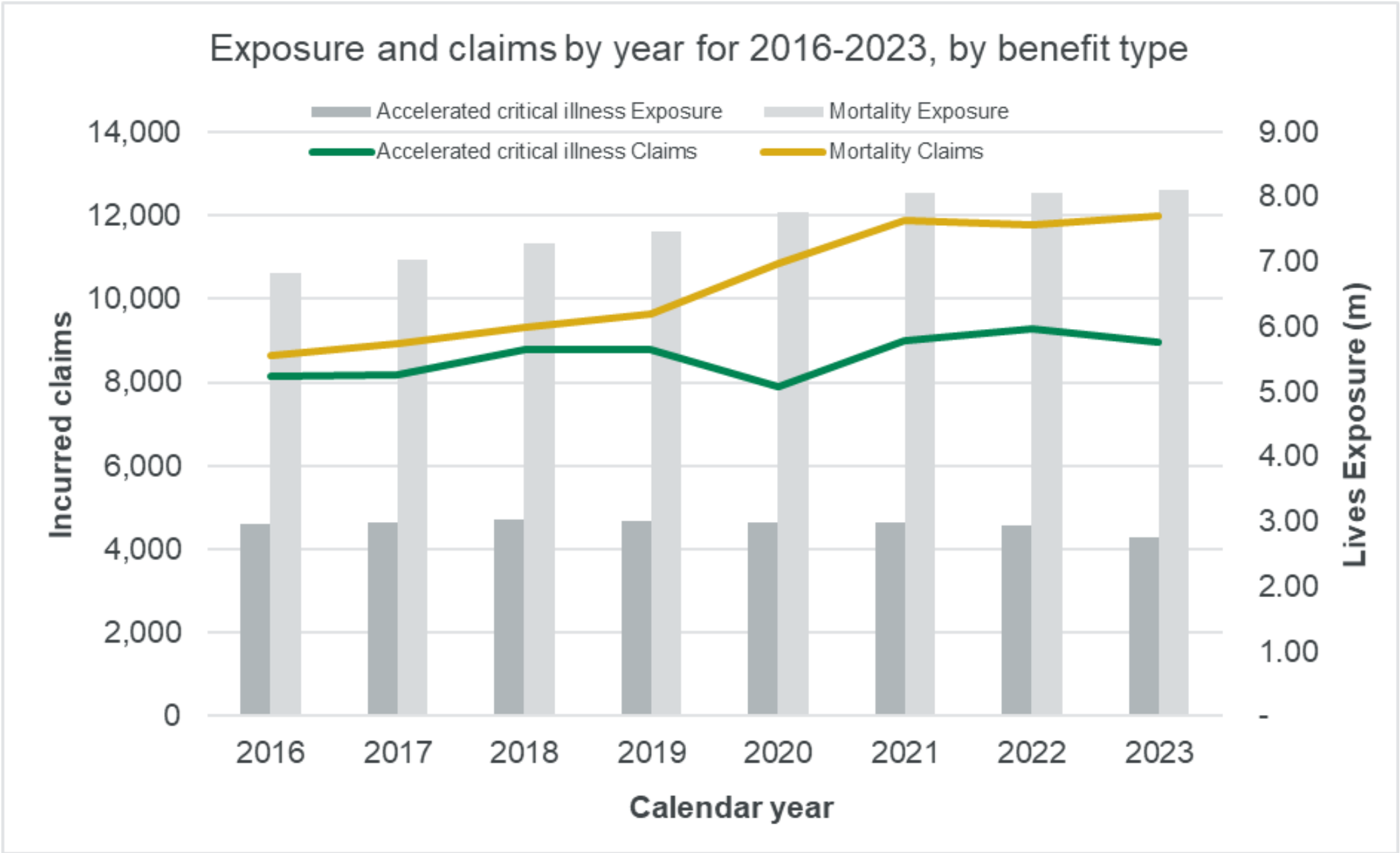


% change in premium (£m) p.a.
Source: Gen Re Protection Pulse



Critical Illness

Industry exposure and claims: 2016-2023



Title: Incurred claims (including allowances for late reporting) by calendar year for accelerated critical illness policies in the CMI Assurances dataset

Reference: CMI Working Paper 202

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Update from the CI Population Incidence Rates WP

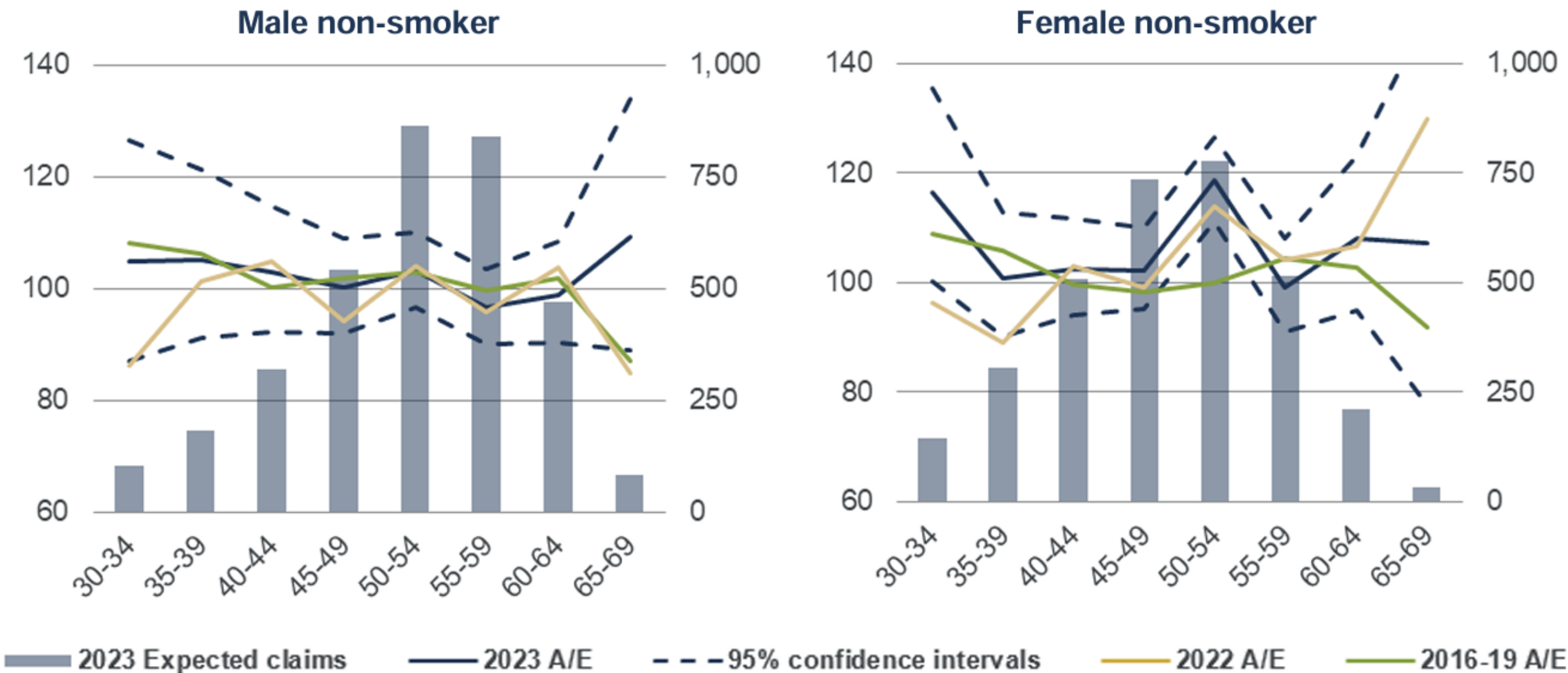


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Critical Illness

Industry A/E: 2016-2023

Chart 2: 100 x Actual / Expected values (LH axis) and expected claims (RH axis) by age band, durations 2+ only



Reference: CMI Working Paper 202
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Critical Illness

Population Incidence – developments since 2008

61,823,772 people in 2008

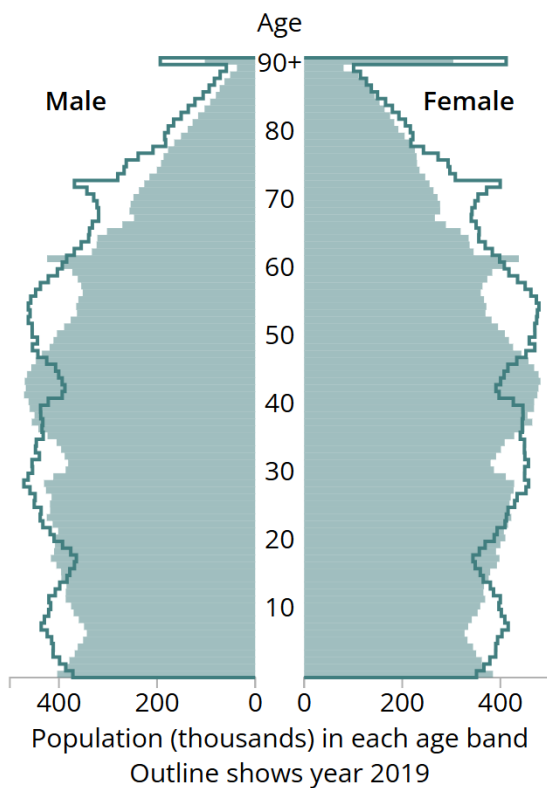
All ages

30,300,617 males

49.0%

31,523,155 females

51.0%



66,796,807 people in 2019

All ages

32,978,229 males

49.4%

33,818,578 females

50.6%

Crude Rate per 100,000	Circa 2008	Most recent
All Cancer	2007-2009 519.0	2017-2019 576.4
Hospital admissions due to Heart Failure	2007/08 114.4	2023/24 176.8
Hospital admissions due to Stroke	2007/08 134.5	2023/24 169.6

UK - Population estimates for the UK, England and Wales, Scotland and Northern Ireland - Office for National Statistics

England - <https://crukcanerintelligence.shinyapps.io/CancerStatsDataHub>

England - Finger Tips, OHID, based on NHS England and Office for National Statistics data

Update from the CI Population Incidence Rates WP



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Definitions

Critical Illness

ABI Definitions: Version development

Version	Comment	Grouping	Added/Removed	Critical Path Research
1999	Statement of Best Practice for Critical Illness Cover			2000 published
2004		Core & Additional		
2006	<i>Edited: Loss of Limb -> hands or feet</i>	Model CI Definitions	Alzheimer's disease, HIV Infection, Paralysis of limbs, Traumatic head injury Paralysis / paraplegia	
2011	-	..	Total permanent disability	2013 published
2014	-	..	-	
2018	<i>Edited: Loss of hands or feet -> hand or foot, Paralysis of Limbs > Limb</i>	Three core & Further	HIV Infection, Terminal Illness	
2023	<i>Edited: Dementia including Alzheimer's disease of specified severity</i>	..	-	Proposed update

Critical Illness

ABI Definition 2011 to 2023: Three Core - Cancer

- ~ 64% of claims counts & amounts
- Definition changes:
 - Clarity on scope: skin, neuroendocrine, gastrointestinal
 - Medical diagnosis: Prostate, Urothelial, Thyroid classification
- Research implications:
 - Thyroid exclusion in ABI, not widely adopted by industry
- Future considerations
 - Pituitary Tumours – WHO classification ‘PitNET’

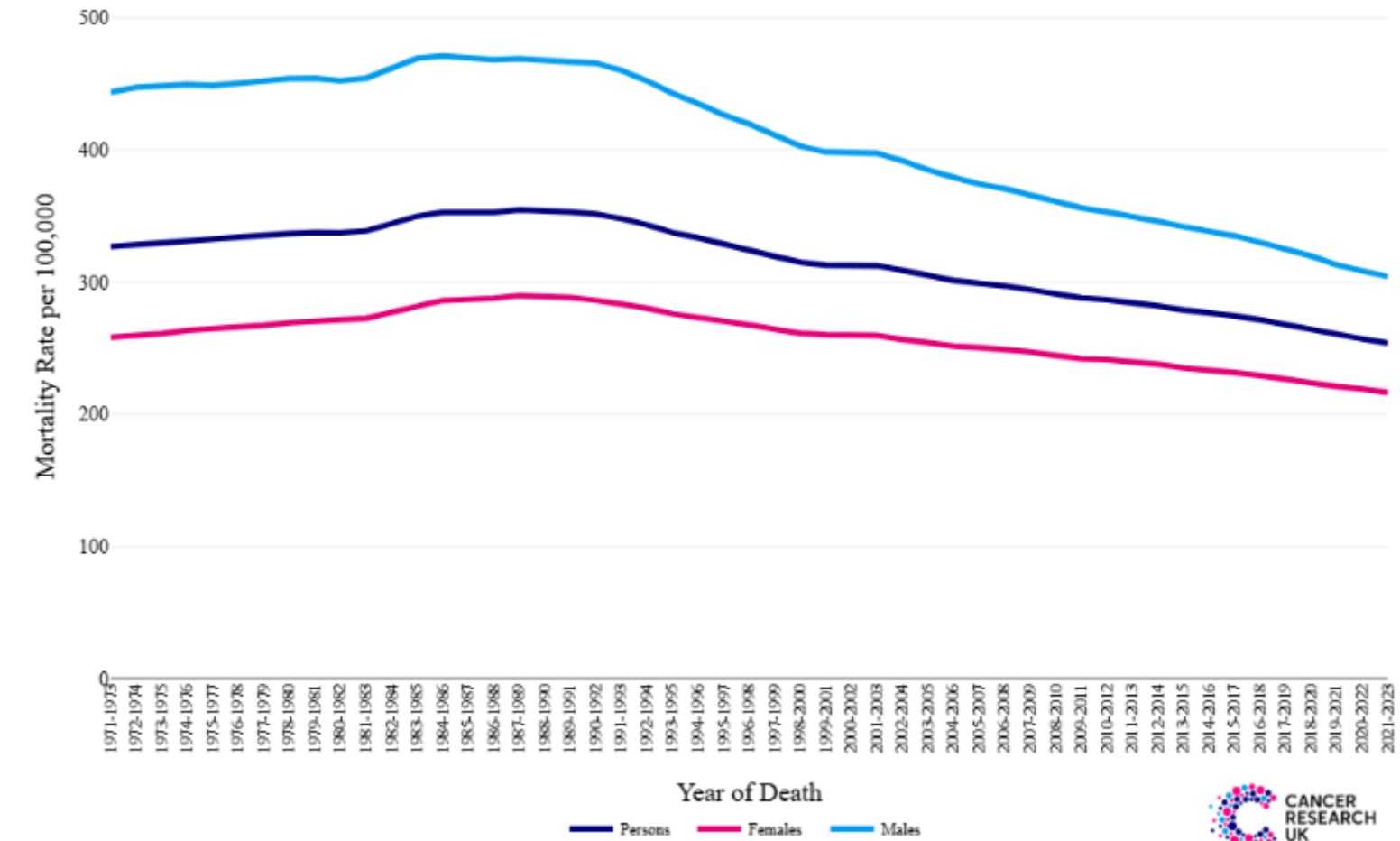
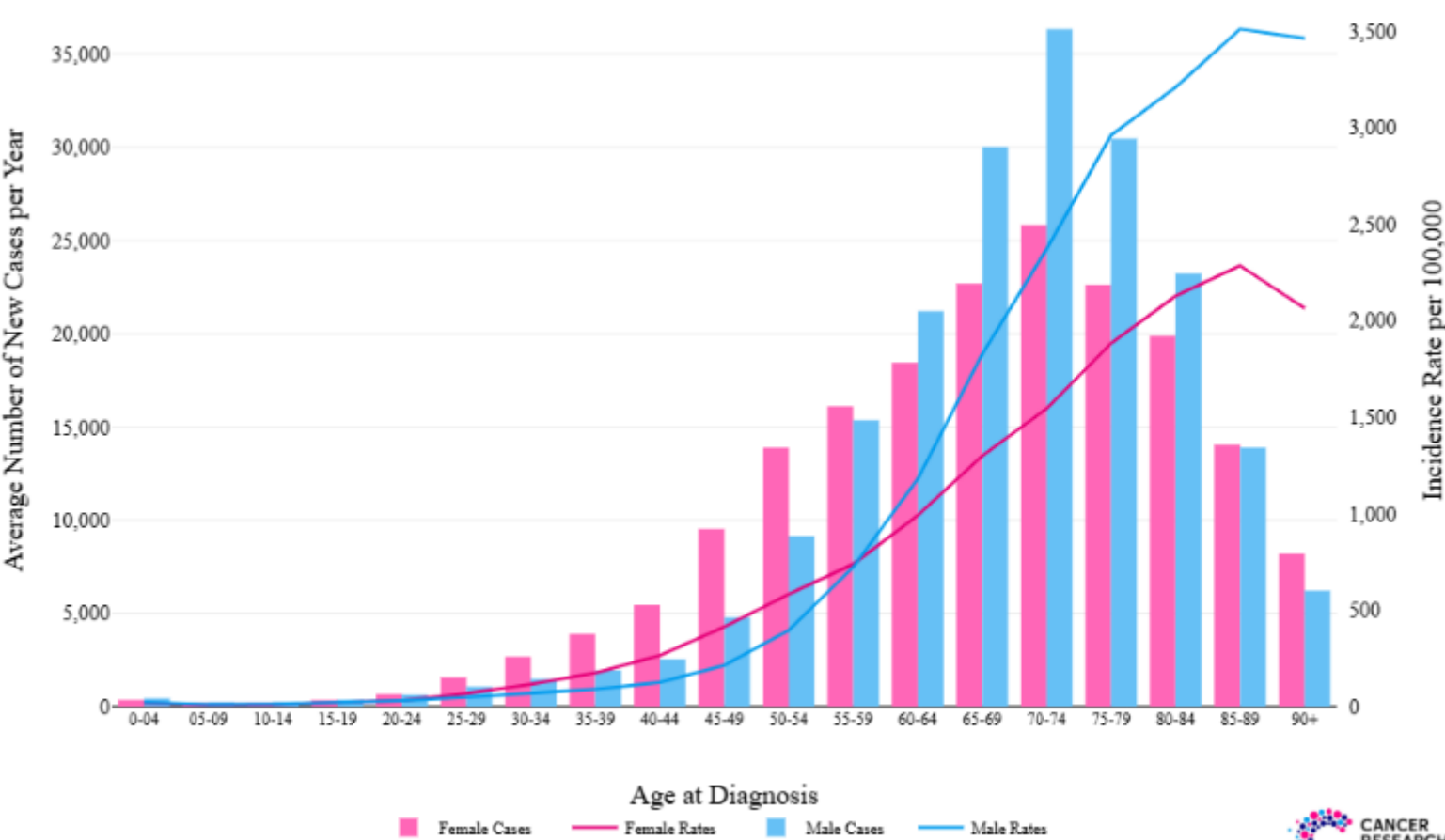
CANCER

“Cancer – excluding less advanced cases Any malignant tumour positively diagnosed with histological confirmation and characterised by the uncontrolled growth of malignant cells and invasion of tissue. The term malignant tumour includes leukaemia, sarcoma, and lymphoma except ~~cutaneous lymphoma (lymphoma those that arise from or are confined to the skin) (including cutaneous lymphomas and sarcomas)~~. For ~~the above~~ this definition of cancer, the following are not covered: • All cancers which are histologically classified as any of the following: - pre-malignant; - - - ~~non-invasive~~; cancer in situ; having borderline malignancy; or having low malignant potential; • All tumours of the prostate unless histologically classified as having a Gleason score ~~greater than 6 of 7 or above~~ or having progressed to at least ~~clinical~~ TNM classification ~~T2N0M0. Chronic lymphocytic leukaemia T2bN0M0 or pT2N0M0 following prostatectomy (removal of the prostate).~~ • All urothelial tumours unless histologically classified as having progressed to at least ~~Binet Stage A. Any TNM classification T1N0M0.~~ • Malignant melanoma skin cancer ~~(including cutaneous lymphoma) cancers that are confined to the epidermis (outer layer of skin).~~ • All cancers (other than malignant melanoma ~~that has been~~) that arise from or are confined to one or more of the epidermal, dermal, and subcutaneous tissue layers of the skin ~~(including cutaneous lymphomas and sarcomas).~~ All thyroid tumours unless histologically classified as having ~~caused invasion beyond the epidermis (outer layer of skin).~~ progressed to at least TNM classification T2N0M0. • Neuroendocrine tumours without lymph node involvement or distant metastases unless classified as WHO Grade 2 or above. • Gastrointestinal stromal tumours without lymph node involvement or distant metastases unless classified by either AFIP/Miettinen and Lasota as having a moderate or high risk of progression, or as UICC/TNM8 stage II or above.”

Critical Illness

Population Incidence – Cancer developments since 2008

Year	All Cancer Crude Rate (per 100,000)	Age Standardised Rate	All Cancer Age Standardised Mortality
2007-2009	519.0	593.2	294.1
2017-2019	576.4	614.3	267.6



Critical Illness

ABI Definition 2011 to 2023: Three Core – Heart Attack

- ~ 10% of claims counts & amounts
- Definition changes:
 - Clarity on scope: what is not covered
 - Claim ease: evidence accepted
 - Medical diagnosis: Troponin levels
- Research implications:
 - Nonmaterial definition change
 - No change to data extraction

HEART ATTACK

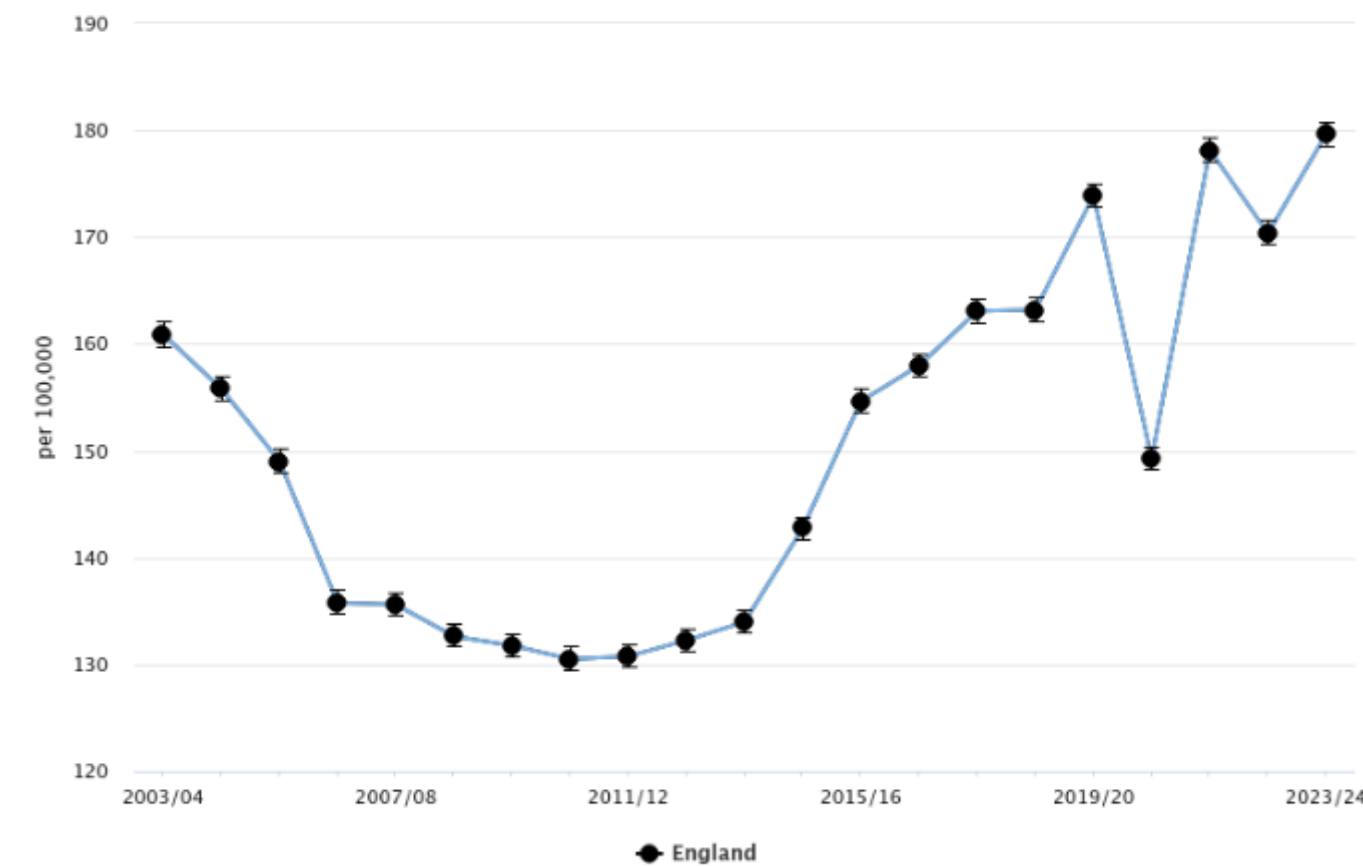
“Heart attack – of specified severity ~~Death~~ A definite diagnosis of acute myocardial infarction with death of heart muscle, ~~due to inadequate blood supply, that has resulted in as evidenced by~~ all of the following ~~evidence of acute myocardial infarction~~: • Typical clinical symptoms (for example, characteristic chest pain). • New characteristic electrocardiographic changes ~~or new diagnostic imaging changes~~. • The characteristic rise of cardiac enzymes or Troponins recorded at the following levels or higher: - Troponin T > ~~1.0~~ 200 ng/ml ~~- AccuTnt > L (0.2 ng/ml or 0.2 ug/L)~~ - Troponin I > 500 ng/L (0.5 ng/ml or equivalent threshold with other Troponin I methods: 0.5 ug/L) The evidence must show a definite acute myocardial infarction. For the above definition, the following are not covered: ~~Other acute coronary syndromes including but not limited to angina~~ • Myocardial injury without myocardial infarction.” • Angina without myocardial infarction.”

Critical Illness

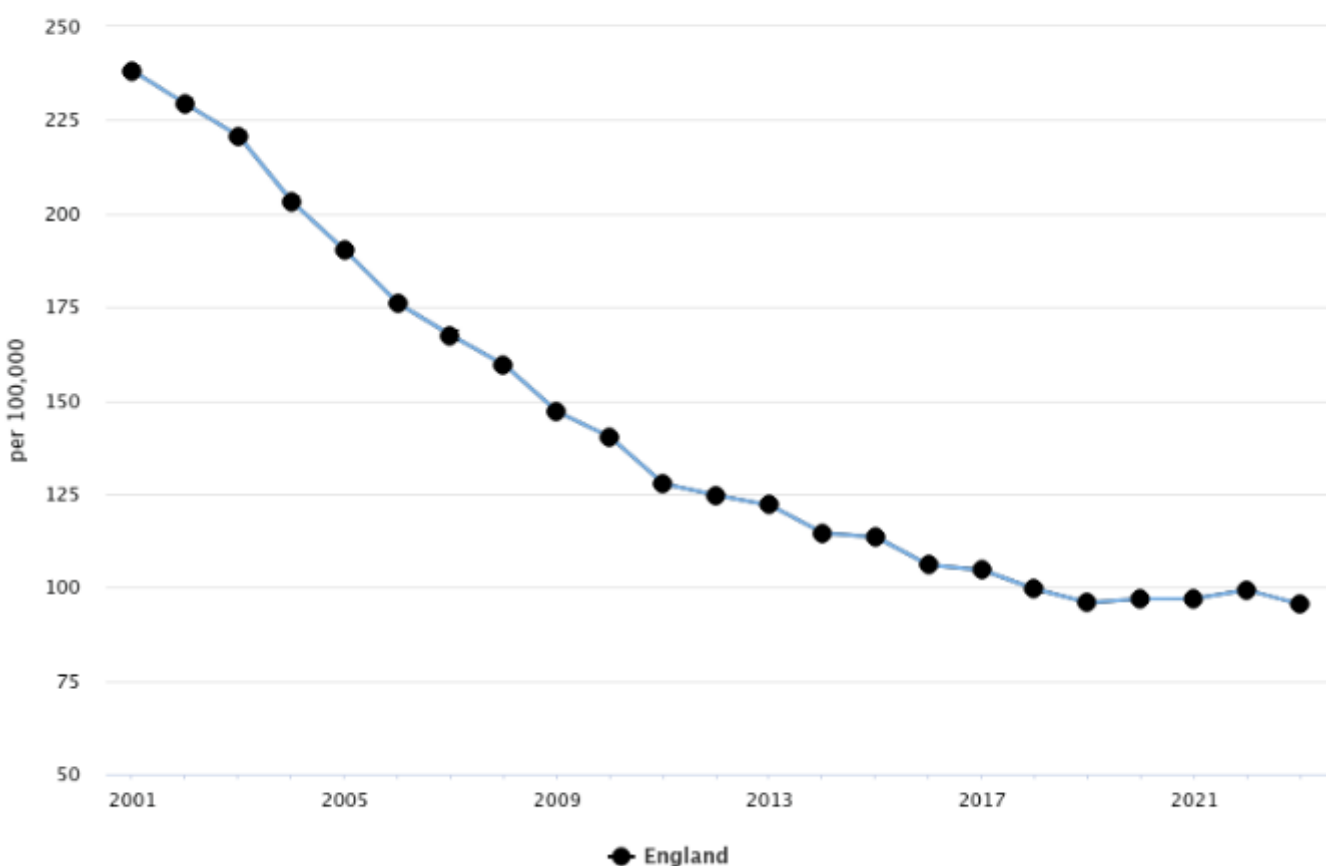
Population Incidence – Heart Attack developments since 2008

Year	Hospital Admissions due to Heart Failure Crude Rate (per 100,000)	Age Standardised Rate	Ischaemic Heart Disease Age Standardised Mortality
2007/08	114.4	135.6	159.5 (2008)
2023/24	176.8	179.6	95.4 (2023)

Hospital admissions due to heart failure for England



Mortality rate from ischaemic heart disease, all ages (Persons, 1 year range) for England



Critical Illness

ABI Definition 2011 to 2023: Three Core – Stroke

- ~6% of claims counts & amounts
- **Definition changes:**
 - Clarity on scope: what is not covered
- **Research implications:**
 - Nonmaterial definition change
 - No change to data extraction
- **Future considerations**
 - Eye stroke included as ‘additional benefit’ by the industry.

STROKE

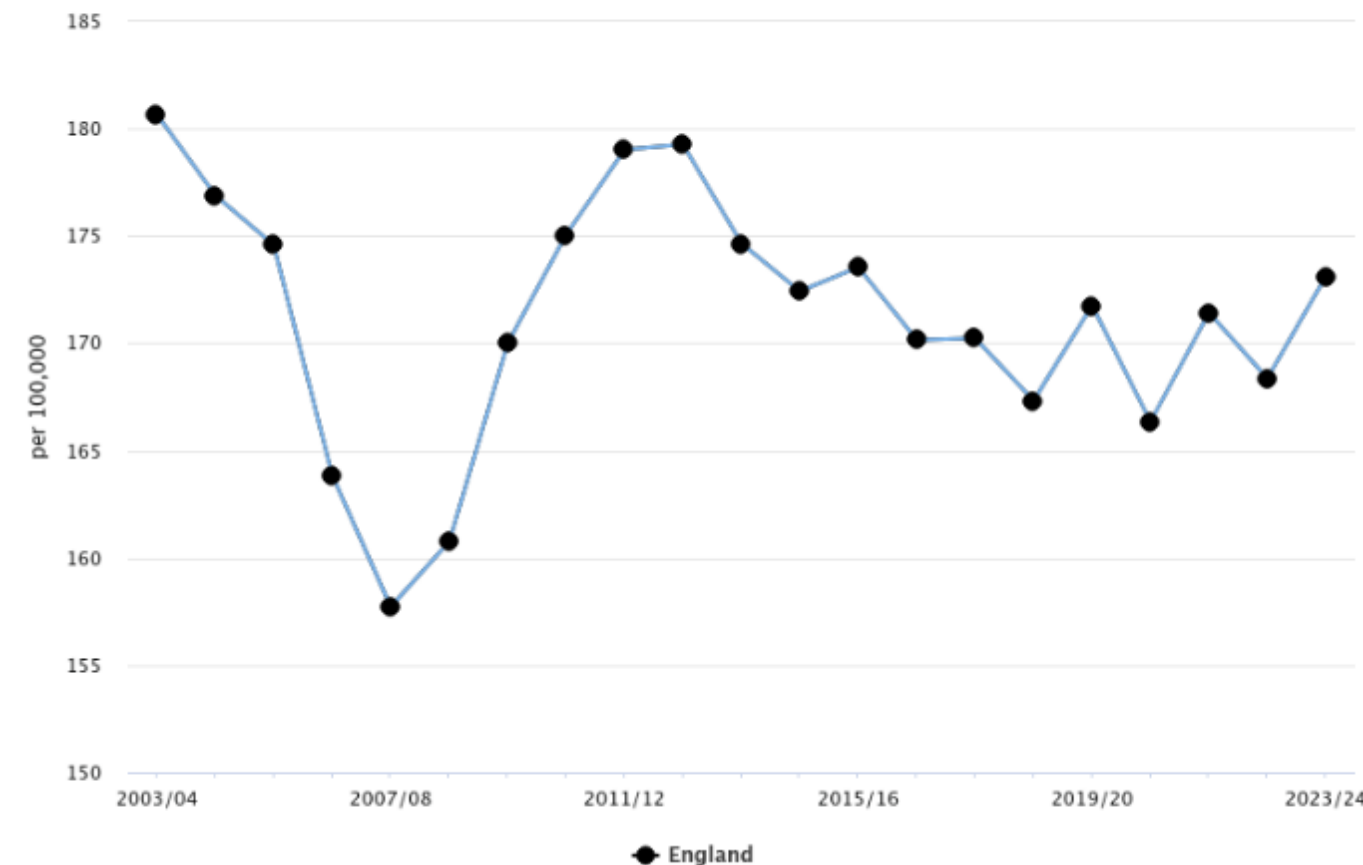
“Stroke – resulting in permanent symptoms Death of brain tissue due to inadequate blood supply or haemorrhage within the skull resulting in permanent neurological deficit with persisting clinical symptoms. For the above definition, the following are not covered: • Transient ischaemic attack. • Traumatic injury to brain tissue or blood vessels. • Death of tissue of the optic nerve or retina / eye stroke.”

Critical Illness

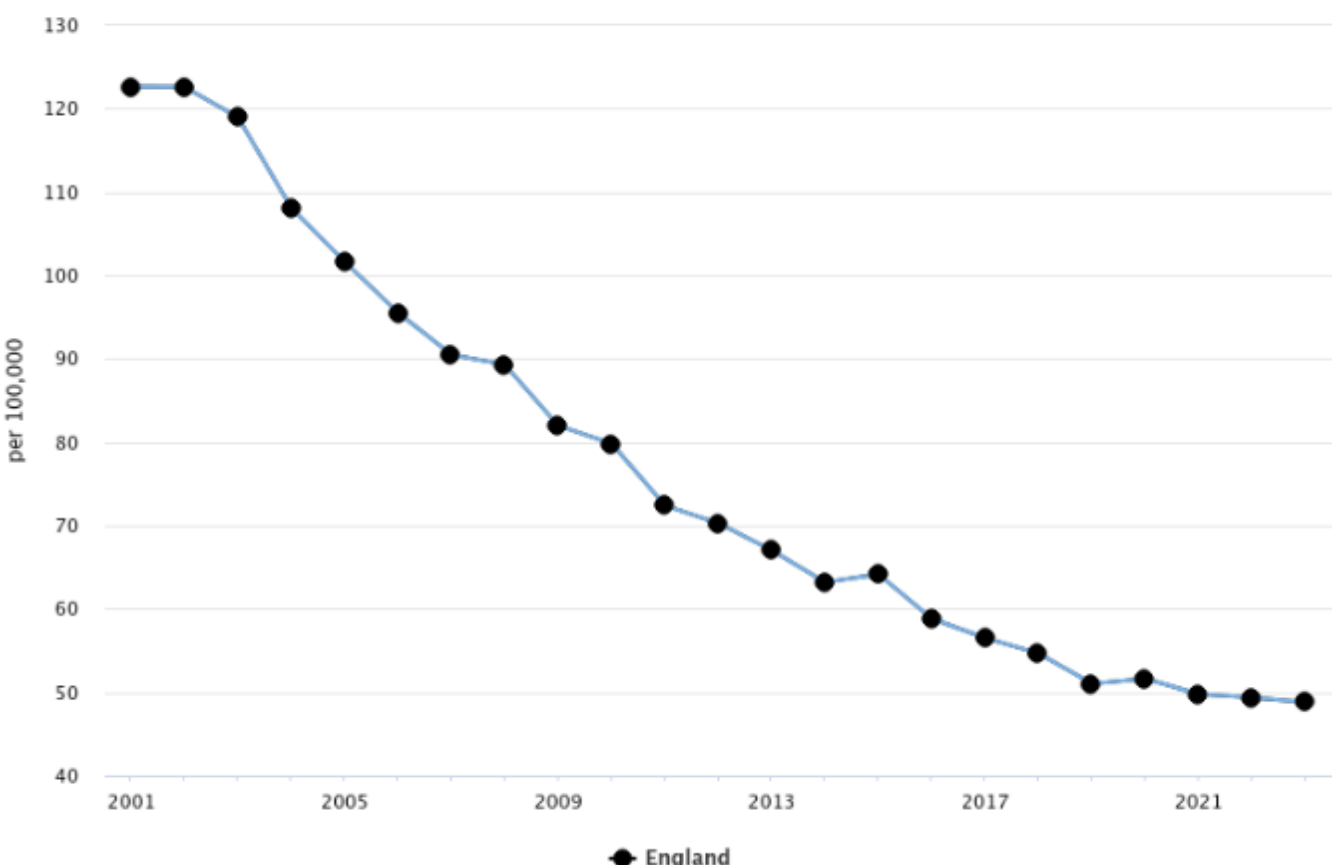
Population Incidence – Stroke developments since 2008

Year	Hospital Admissions due to Stroke Crude Rate (per 100,000)	Age Standardised Rate	Stroke Age Standardised Mortality
2007/08	134.5	157.7	89.4 (2008)
2023/24	169.6	173.1	48.2 (2023)

Hospital admissions due to stroke for England



Mortality rate from stroke, all ages (Persons, 1 year range) for England



Critical Illness

ABI Definition 2011 to 2023: Further Conditions

- **Remaining 19 conditions, ~20% of claims counts & amounts**

- **No change**

- Aorta graft surgery
- Blindness
- Coronary artery by-pass surgery
- Deafness
- Heart valve replacement or repair
- Multiple sclerosis

- **Change: better match intention**

- Benign brain tumour
- Loss of hand or foot
- Loss of speech
- Third degree burns
- Paralysis of limb

- **Change: clarity to scope**

- Coma
- Kidney failure
- Major organ transplant
- Motor neurone disease
- Traumatic brain injury

- **Change: ease of claim / medical diagnosis**

- Dementia including Alzheimer's disease
- Parkinson's disease
- Total permanent disability

- **Research implications:**

- No change to codes for data extraction: Parkinson's, Dementia + Alzheimer's
- CIBT08 excluded from scope: TPD

A New Working Party

Why Now?

- CI insurance products continue to be a vital solution in many markets for protecting individuals against the financial risks associated with a critical illness diagnosis.
- There is potential to build on the industry's understanding of CI rates by researching population health datasets and developing CI incidence rates for the general population.
- CIBT08 is centred around 2008, the table is 16 years old and there are questions about how relevant it is when considering today's experience.
- In addition to the traditional audience of actuaries working within Life & Health, the Working Party can deliver output that is of interest to those working within the field of population health management. For example, presenting results of the analyses in formats that would appeal to NHS and social care audiences in England.
- Demonstrate the key responsibility of IFoA members to work in the public interest and demonstrate how actuarial techniques can be useful for public health organisations. Help raise the profile of the Profession and showcase the value that actuaries can bring when working with anonymised health data.

The Terms of Reference

Produce a WP paper that, as with output from other working parties, will be in the public domain, focusing on the most material critical illnesses impacting the general population:

- **To explore the market developments** of critical illness in the U.K. over the last 15 years.
- **Assess current industry definitions** of CI conditions covered by insurance products and identifying how these can be mapped to ICD10 codes and where they cannot.

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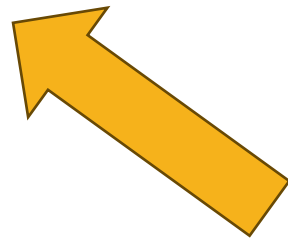
- **To explore the market developments** of critical illness in the U.K. over the last 15 years.
- **Assess current industry definitions** of CI conditions covered by insurance products and identifying how these can be mapped to ICD10 codes and where they cannot.
- To **estimate general population CI incidence rates** for the most material conditions (in terms of proportions of overall claims). As a **minimum** we expect to cover Cancer, Heart related, Stroke, Multiple Sclerosis, Benign Brain Tumour and Parkinsons, but the final list will be determined by the Working Party
- To **analyse variations in CI incidence rates for the material conditions** by available factors including gender, age, regional, etc.
- To analyse the **difference in incidence rates between period impacted by the COVID19 and rates outside this period.** For the avoidance of doubt the Working Party is not proposing to analyse trends in CI incidence rates.

The Challenges

- Determining the **minimum viable dataset** that is required

The Challenges

- Determining the **minimum viable dataset** that is required



In prior work 4 count types were determined:

- 1) All counts by financial year;
- 2) All counts by calendar year;
- 3) First ever count by calendar year (i.e. each patient is permitted only a single count for the considered condition in their lifetime)
- 4) First ever CI counts by calendar year (i.e. each patient is permitted only a single condition covered under a CI policy in their lifetime)

The Challenges

- Determining the **minimum viable dataset** that is required
- **Accessing the data** – who and how?
- **Positively raising the profile** of the Profession

The Challenges

- Determining the **minimum viable dataset** that is required
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Interested in
Joining?



Q&A



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Thank you

For more information, please contact:

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Co-Chair: Josephine Robertson

<https://www.linkedin.com/in/josephinerobertson/>