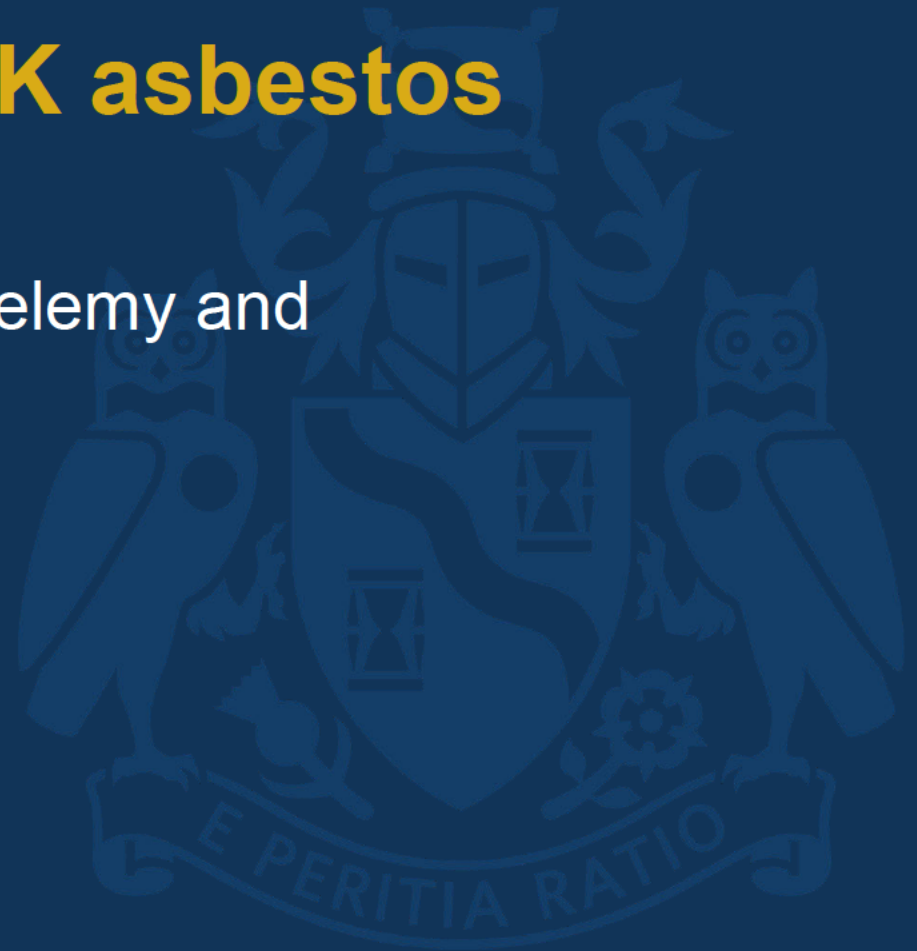# Update from the UK asbestos working party

John Wilson, Pauline Barthelemy and Robert Brooks

Update from the UK asbestos working party

- Market survey data YE2015

  - Status of claims

  - Mesothelioma Insights

  - Survey 2016 vs. 2009 market estimate

- Mesothelioma deaths: Age-Birth GLM model

- Mesothelioma claimants: CRU & Propensity to Claim

- Next steps

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Market survey data YE2015 (Survey 2016)

Status of claims

Market survey data – YE 2015 (Survey 2016)
Status of mesothelioma claims
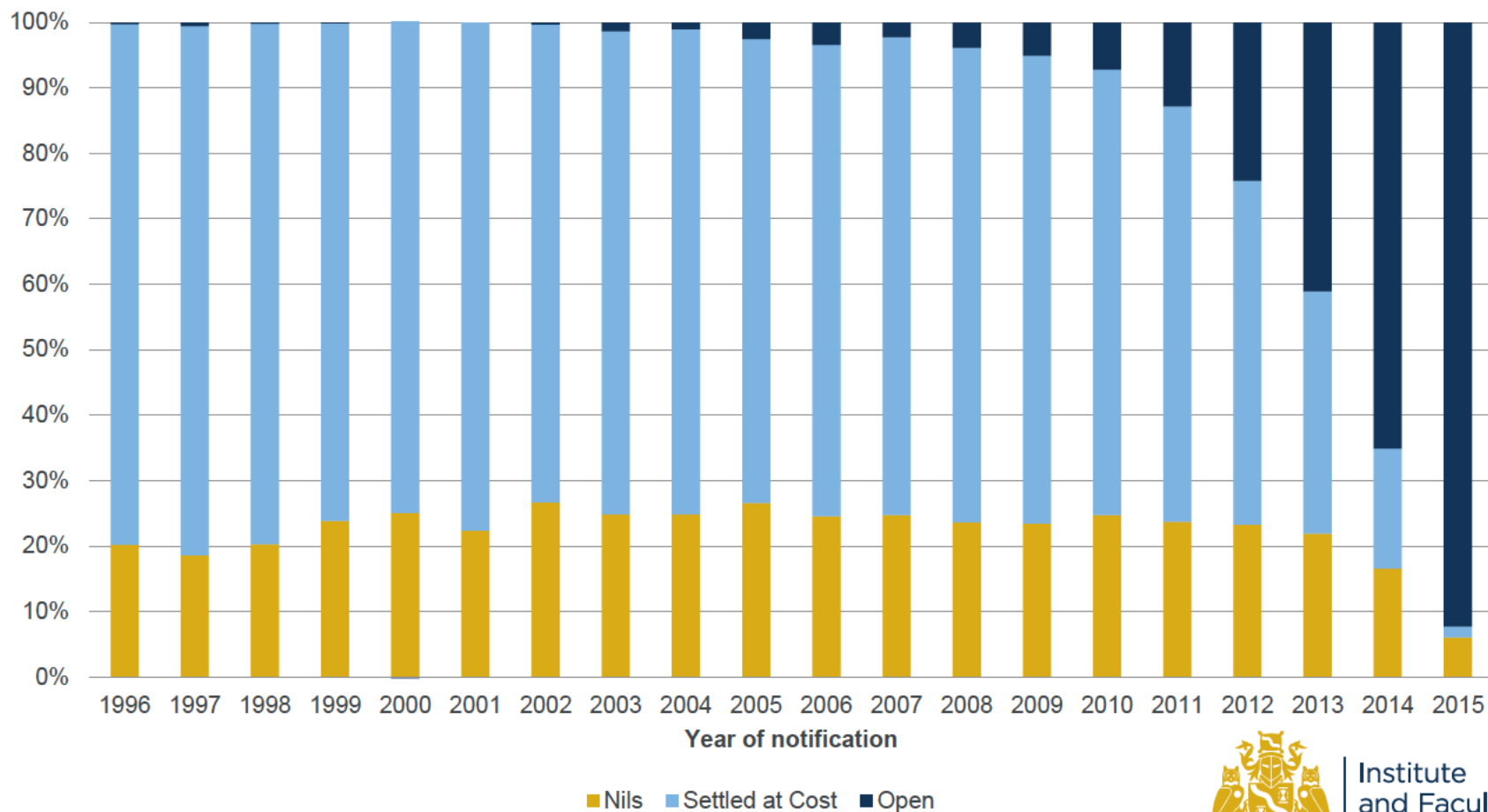
Market survey data – YE 2015 (Survey 2016)
Status of lung cancer claims
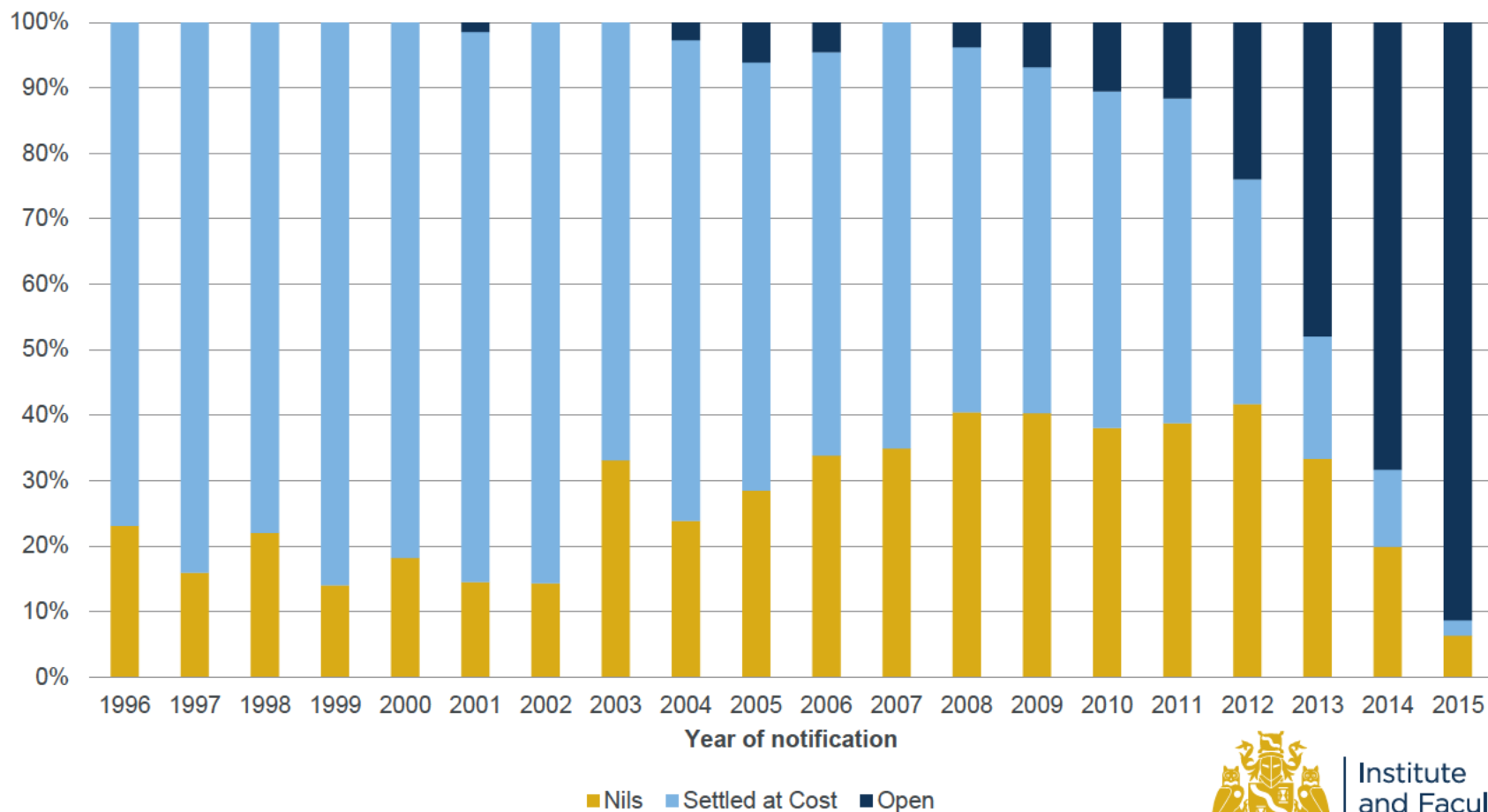
Market survey data – YE 2015 (Survey 2016)
Status of asbestosis claims
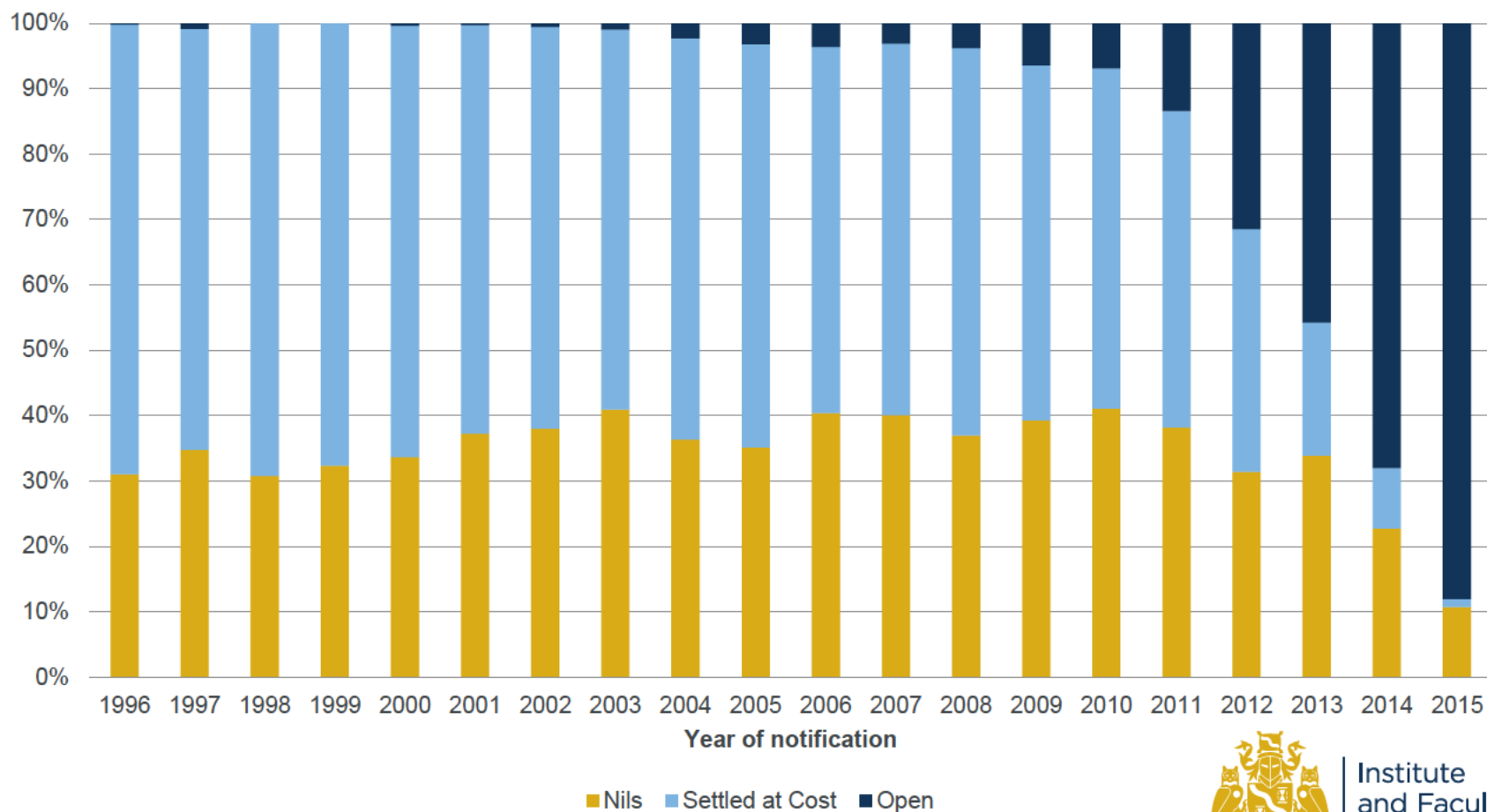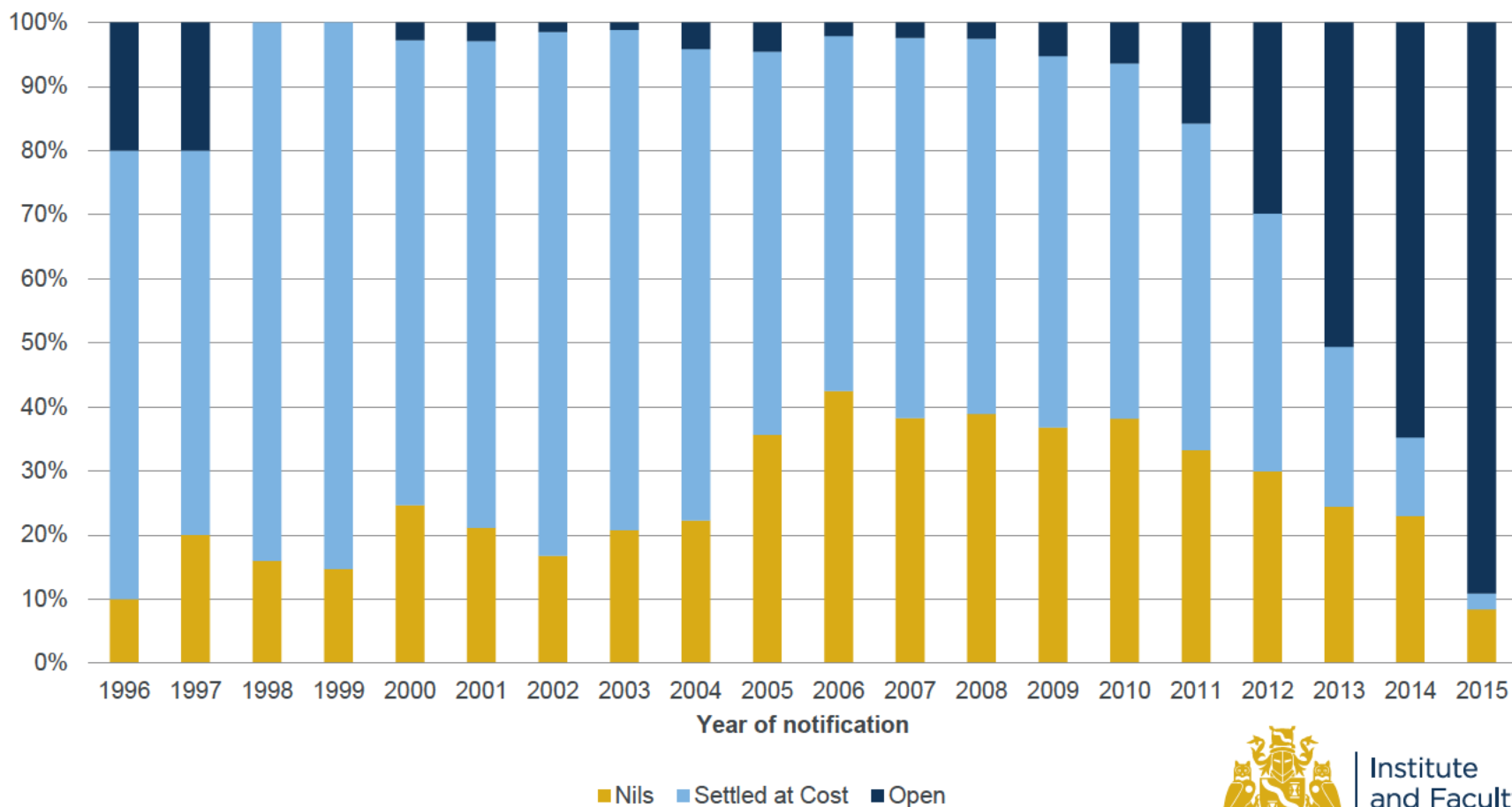
Market survey data – YE 2015 (Survey 2016)
Status of pleural thickening claims

Year of notification

■ Nils   ■ Settled at Cost   ■ Open

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Market survey data – YE 2015 (Survey 2016)
Asbestosis and Pleural Thickening

- Increasingly difficult to distinguish between these (from a legal / medical / claims handling perspective)

- An element of cross contamination from pleural plaques

- Figures still shown separately at this stage but we are moving towards a combined viewpoint going forwards

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Market survey data – YE 2015 (Survey 2016)
Status of combined asbestosis and pleural thickening
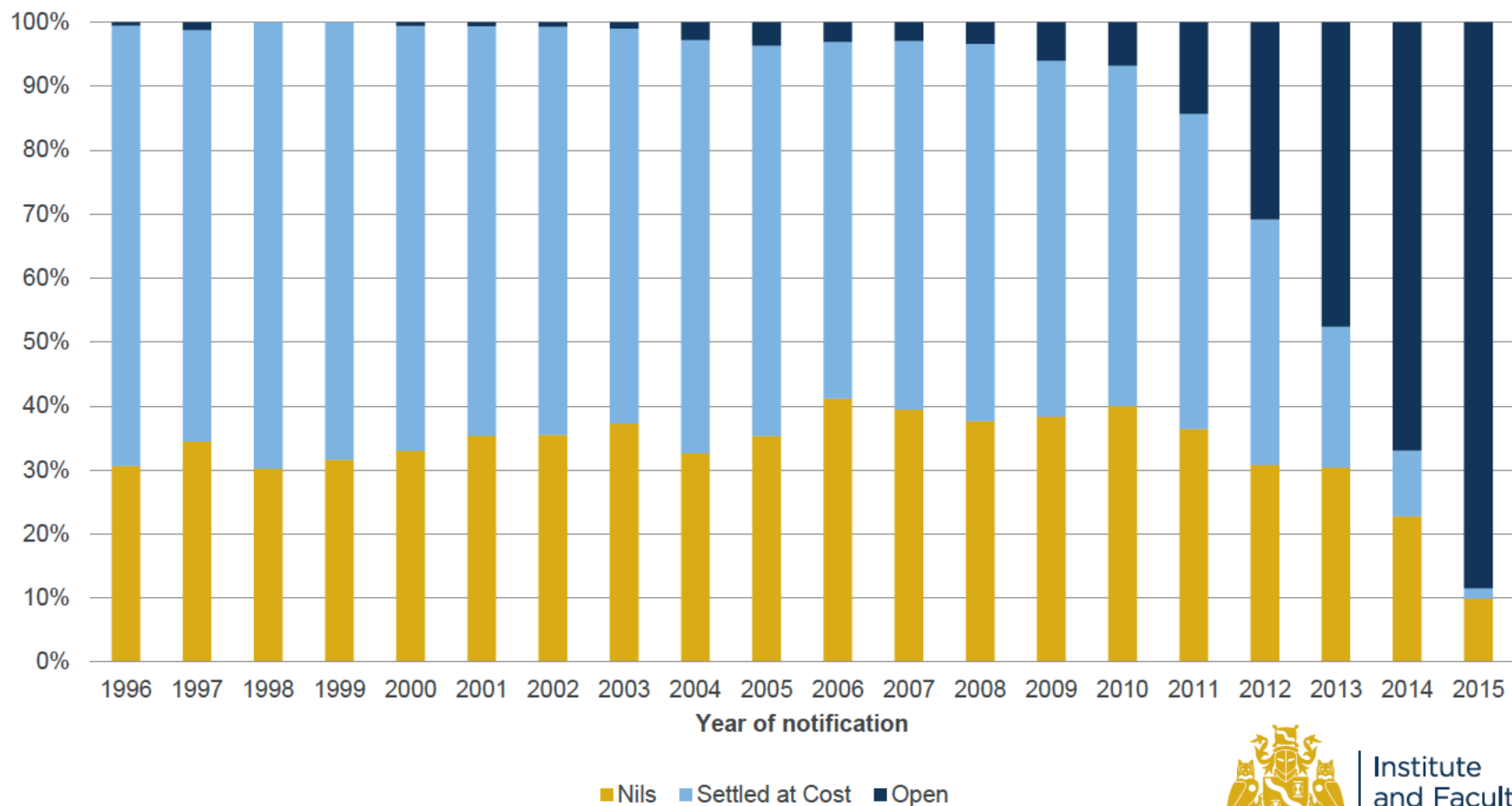
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Market survey data YE2015

Mesothelioma Insights

Survey 2016 – Mesothelioma Insights
Living / deceased claimants by notification year

Living   Deceased

Living   Deceased

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Data provided represents only a subset of the 2016 survey – i.e. less than the assumed 78% market share
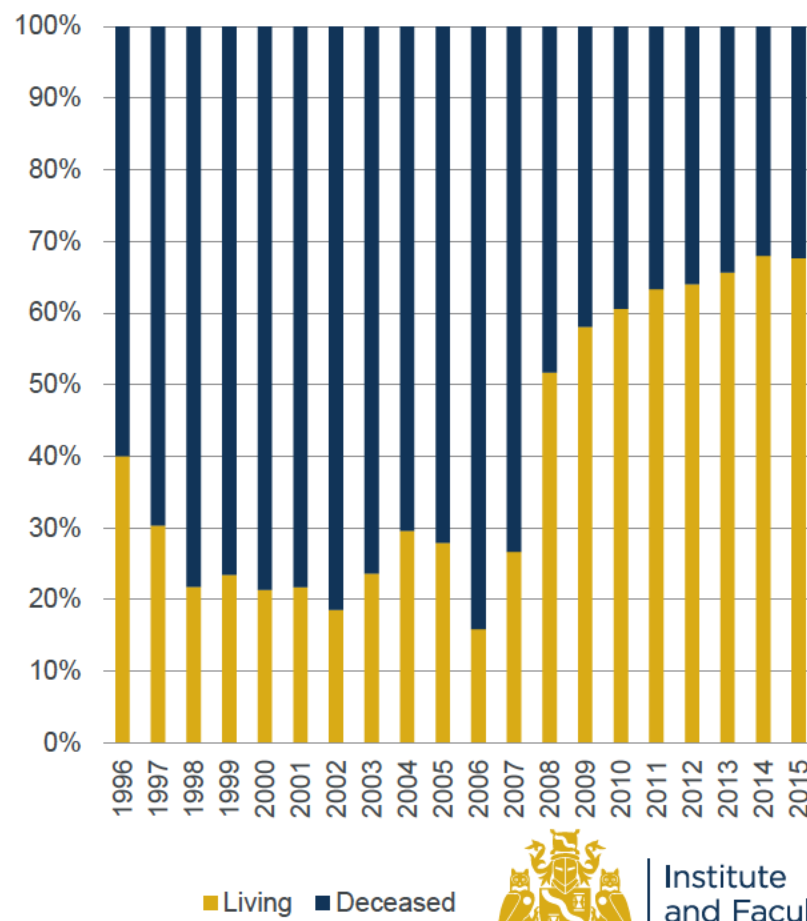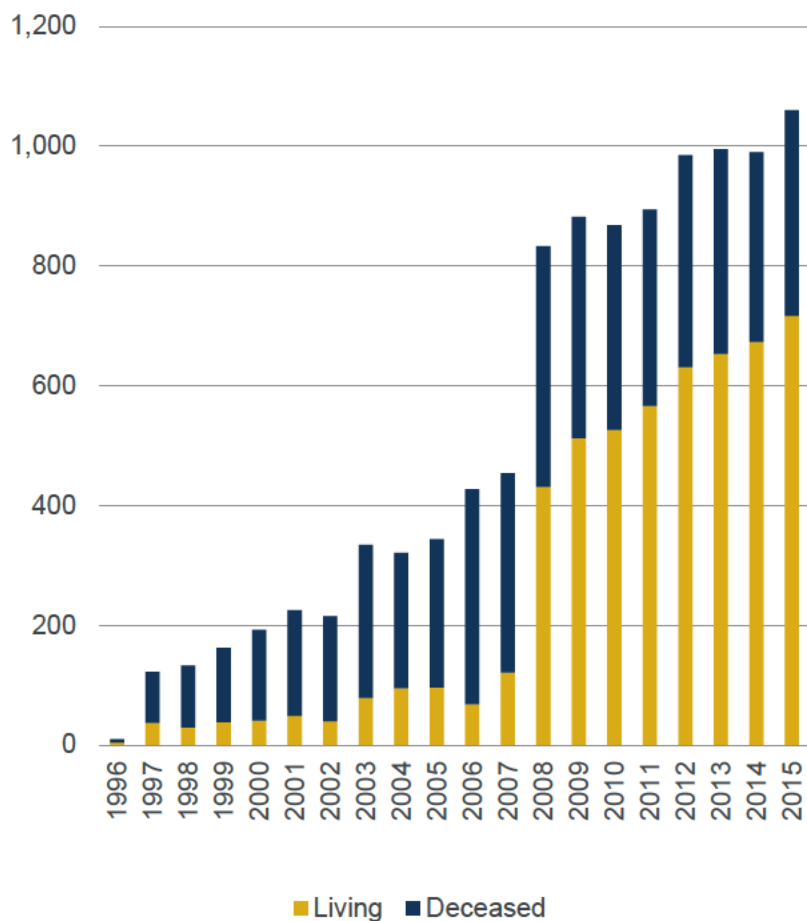
Survey 2016 – Mesothelioma Insights
Male / female claimants by notification year

Data provided represents only a subset of the 2016 survey – i.e. less than the assumed 78% market share
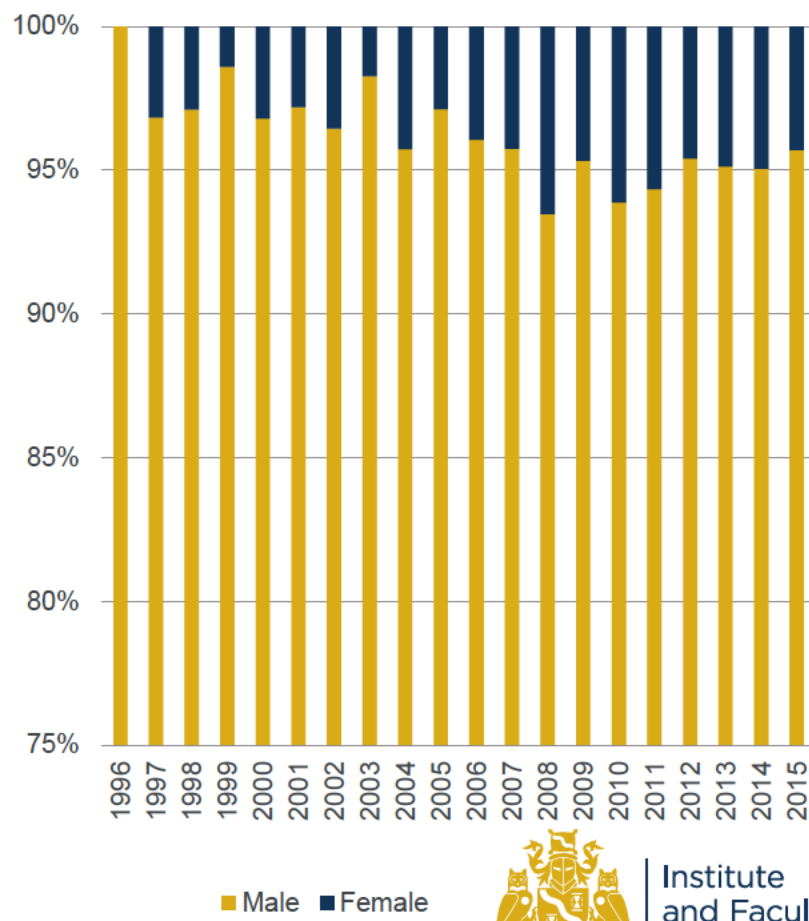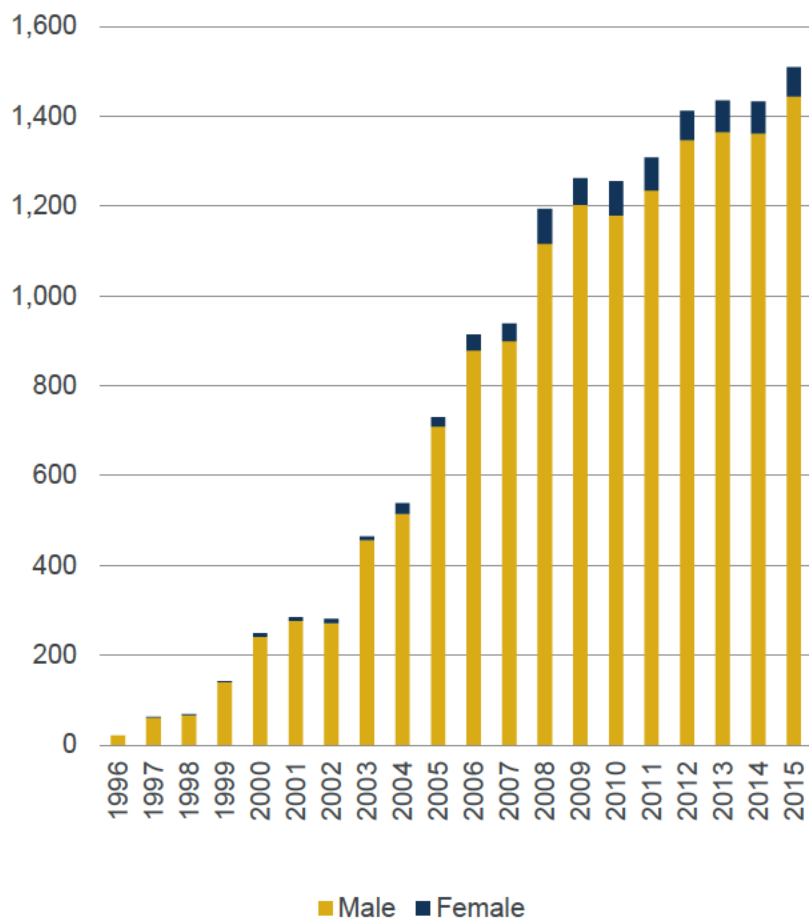
Survey 2016 – Mesothelioma Insights
Geographic split by notification year

Claim numbers notified
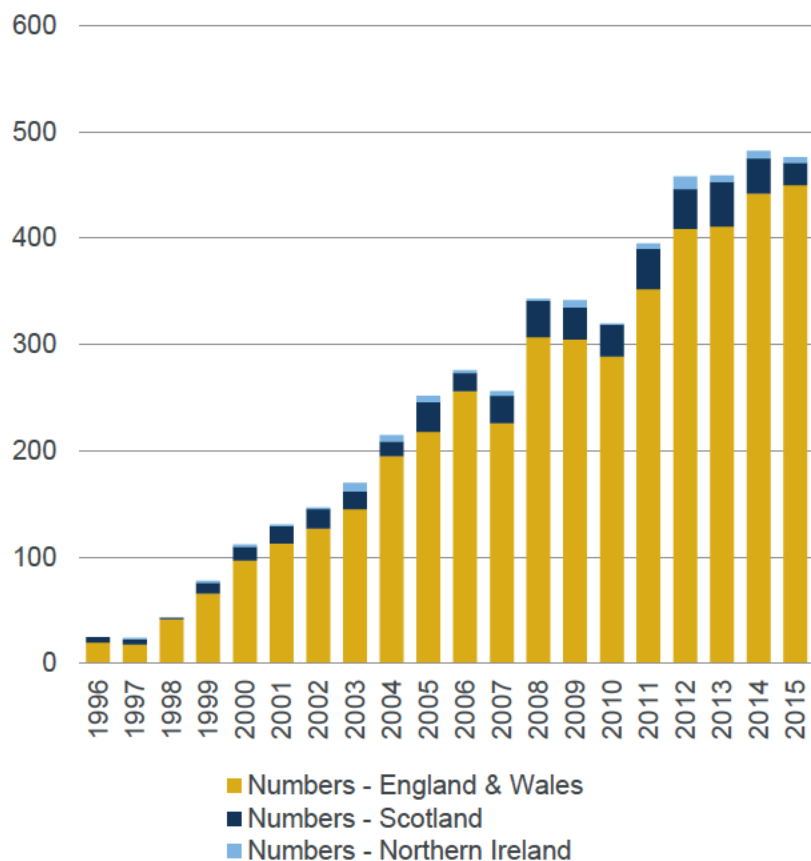
Incurred Costs £m
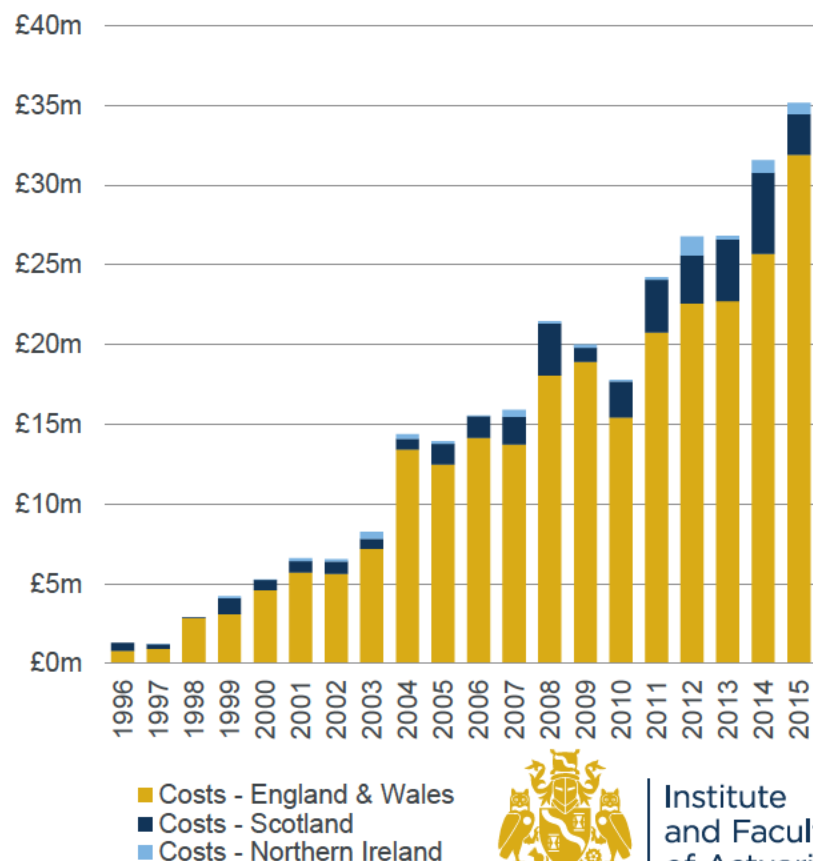
Numbers - England & Wales
Numbers - Scotland
Numbers - Northern Ireland

Costs - England & Wales
Costs - Scotland
Costs - Northern Ireland

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Data provided represents only a subset of the 2016 survey – i.e. less than the assumed 78% market share

Survey 2016 – Mesothelioma Insights
Cumulative proportion of settled claims (nil & non-nil)
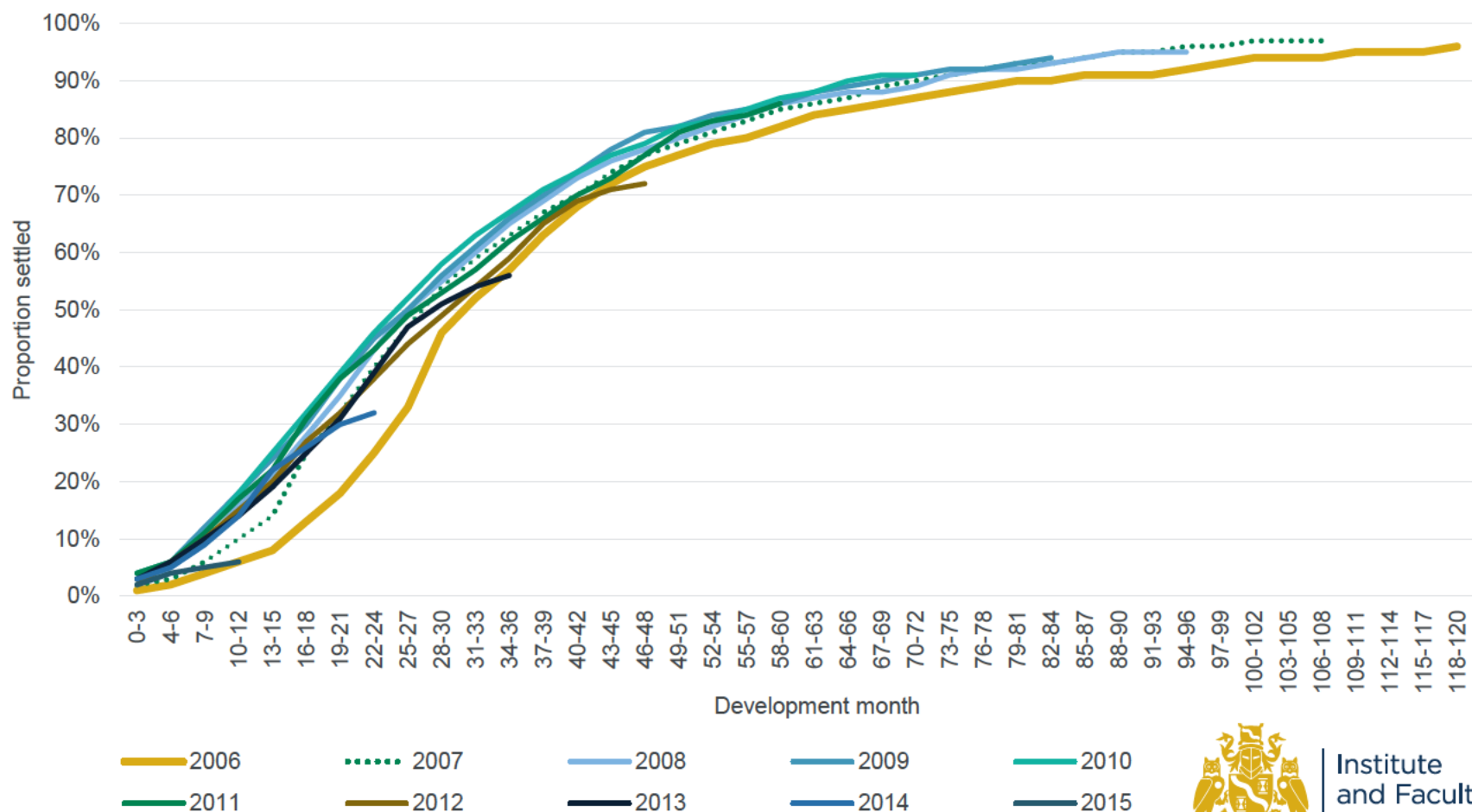
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Survey 2016 – Mesothelioma Insights
Cumulative proportion of nil settled claims (settled only)
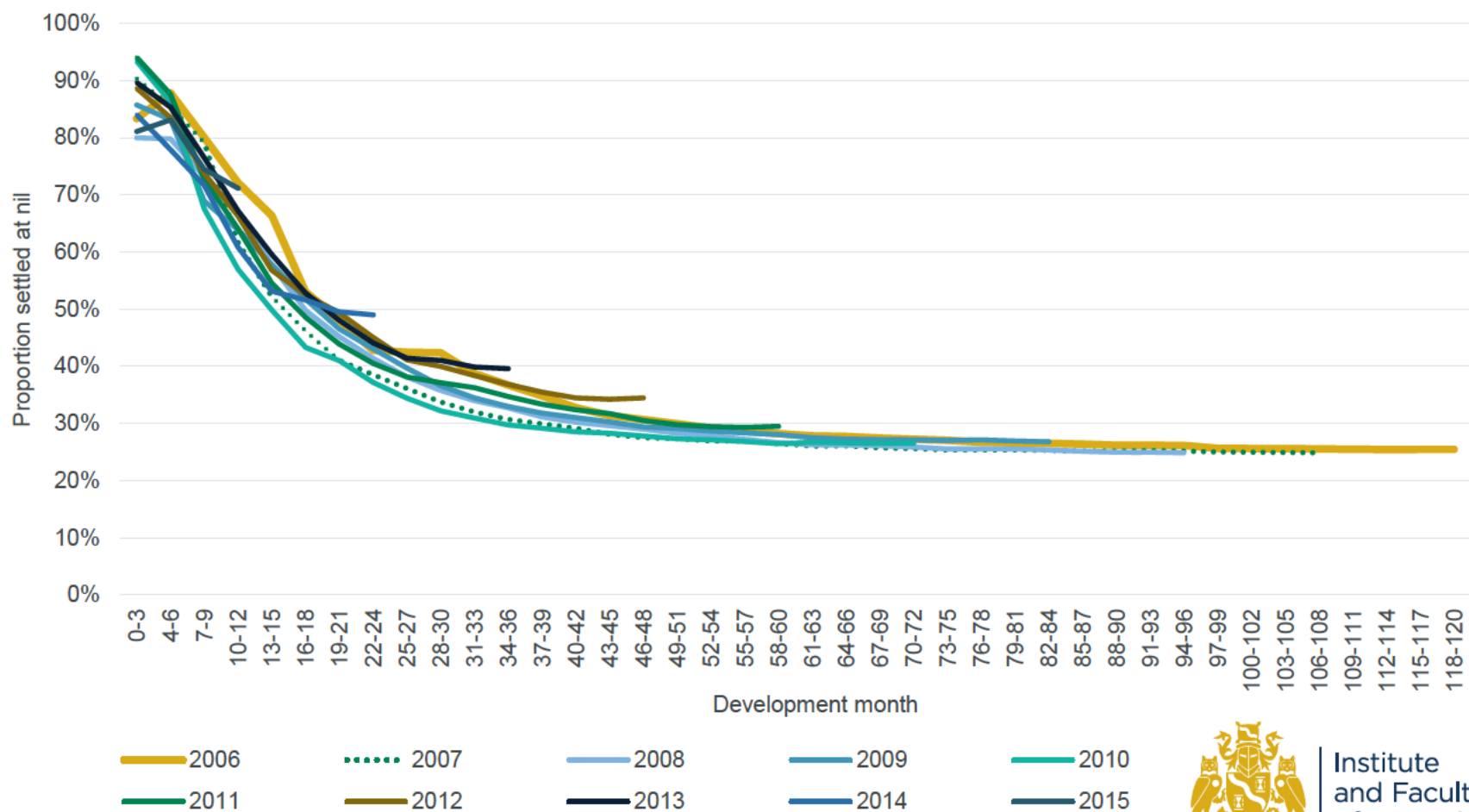
Update from the UK asbestos working party

Survey 2016 vs. 2009 market estimate

Number of claims and average costs

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Survey 2016 vs. 2009 market estimates
Mesothelioma

Number of claims (includes nils)

Legend: ■ Scenario 23* ■ Survey

Average claim size (includes nils)

Legend: ■ Scenario 23* ■ Settled basis ■ Incurred basis
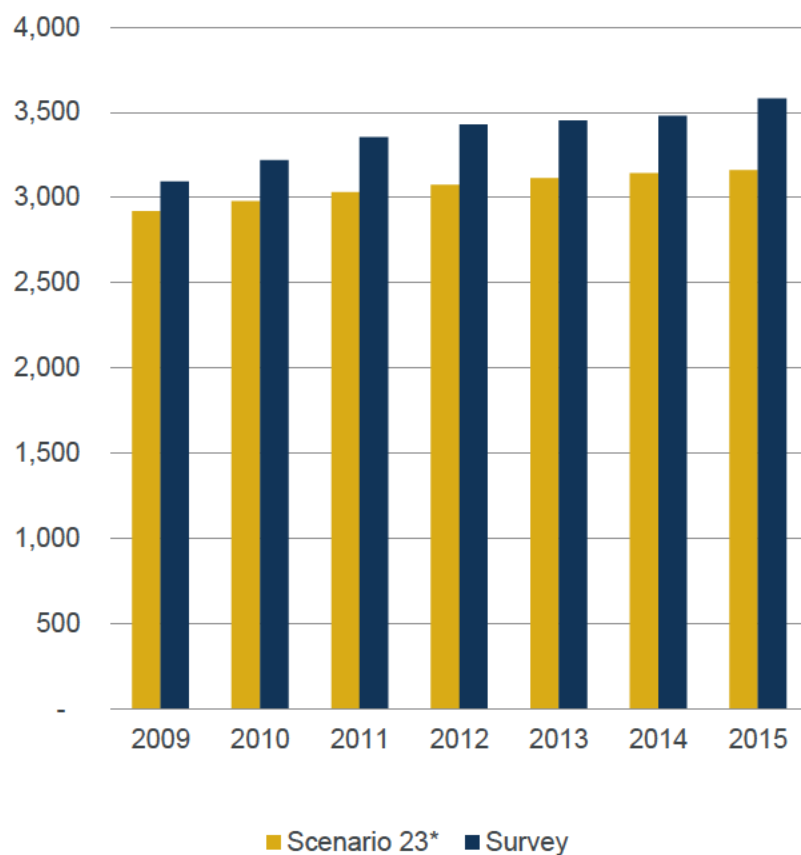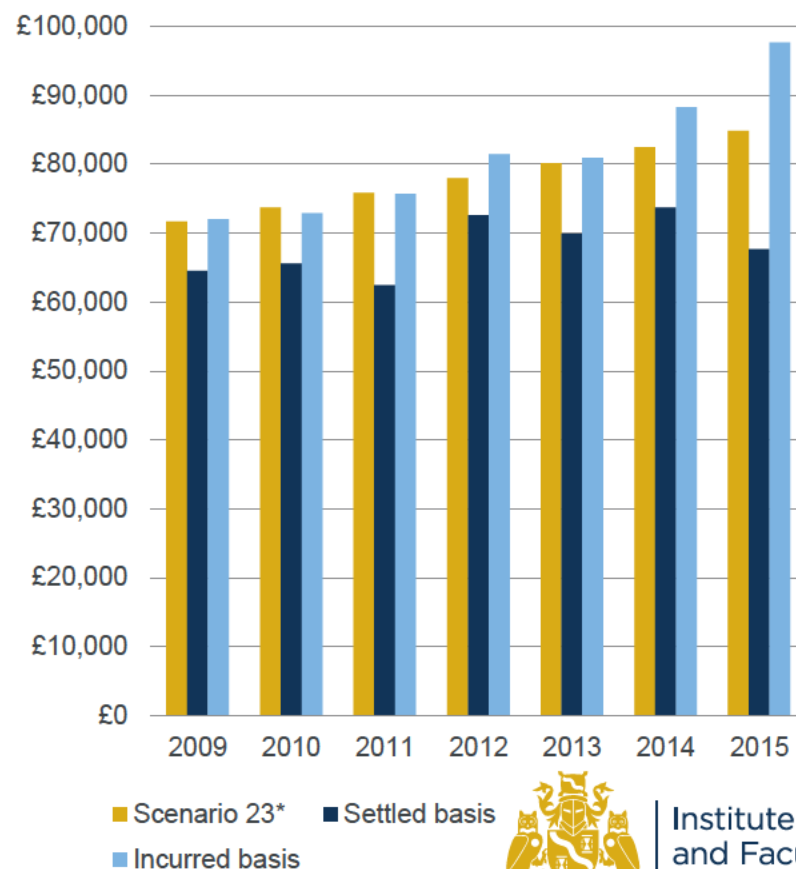
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* Assuming 25.7% nil rate based on 5 year weighted average form Survey 2016 data

Survey 2016 vs. 2009 market estimates
Asbestos related lung cancer

Number of claims (includes nils)

Legend: Scenario 2B* ■ Survey

Average claim size (includes nils)

Legend: ■ Scenario 2B* ■ Settled basis ■ Incurred basis
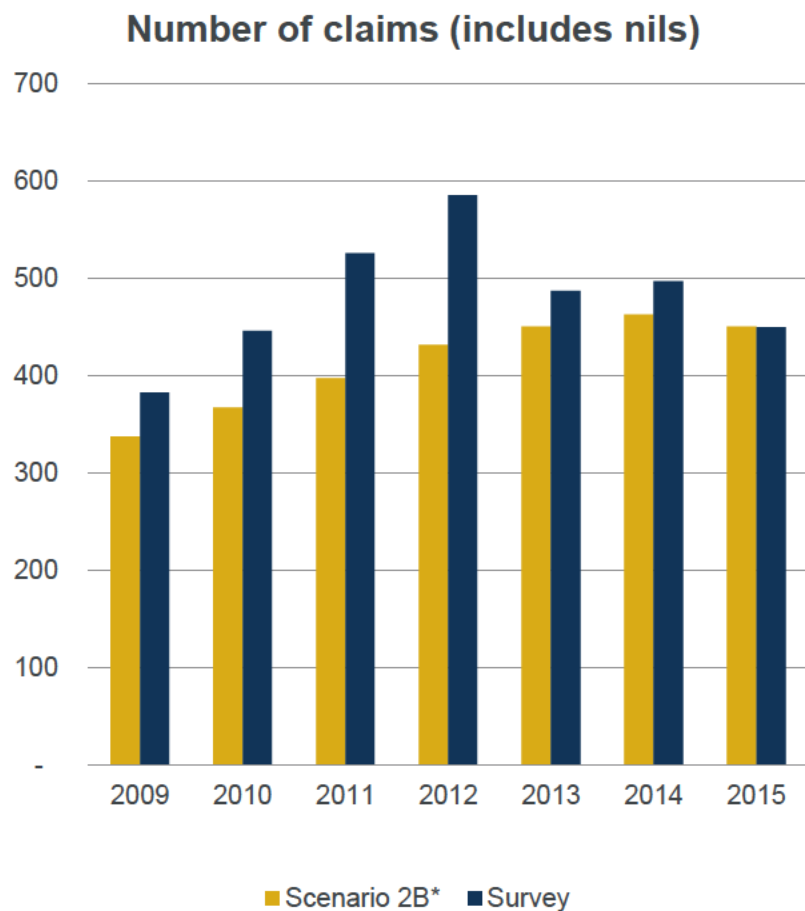
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* Assuming 42.4% nil rate based on 5 year weighted average form Survey 2016 data

Survey 2016 vs. 2009 market estimates
Asbestosis

Number of claims (includes nils)

Legend: Scenario 2B* ■ Survey

Average claim size (includes nils)

Legend: ■ Scenario 2B* ■ Settled basis ■ Incurred basis
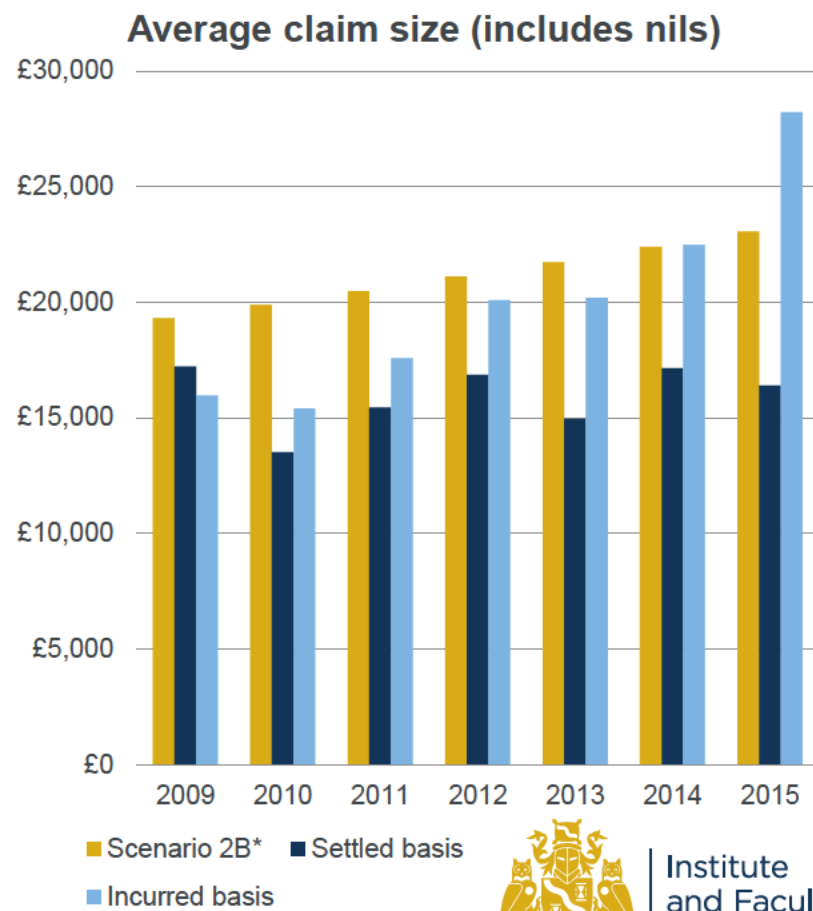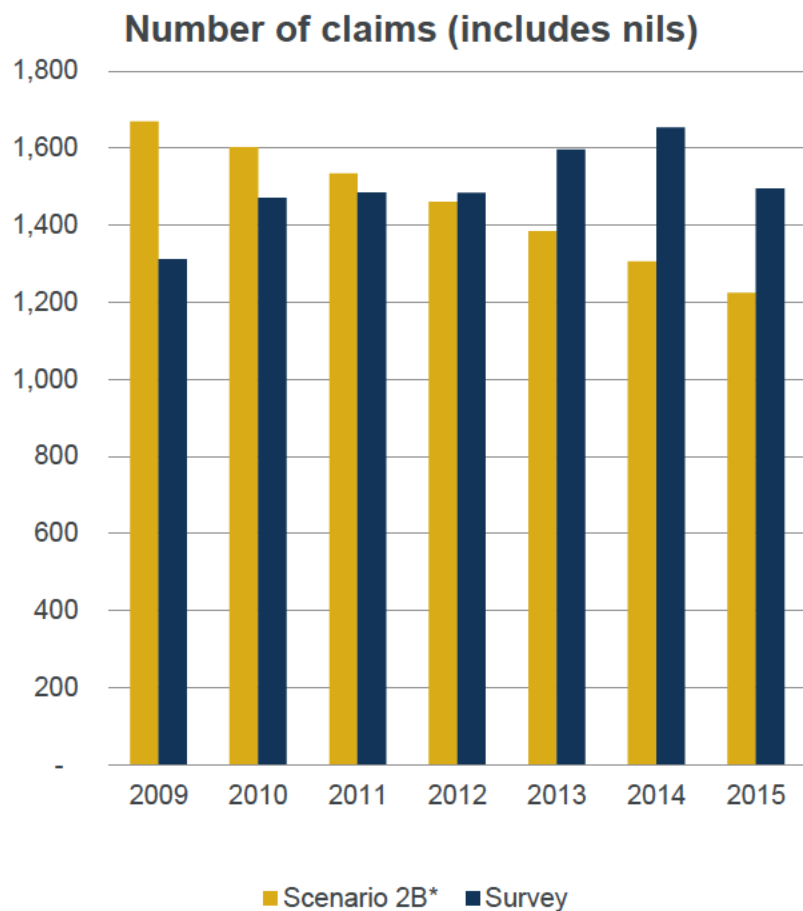
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* Assuming 40.3% nil rate based on 5 year weighted average form Survey 2016 data

Survey 2016 vs. 2009 market estimates
Pleural thickening

Number of claims (includes nils)

Legend: ■ Scenario 2B* ■ Survey

Average claim size (includes nils)

Legend: ■ Scenario 2B* ■ Settled basis ■ Incurred basis
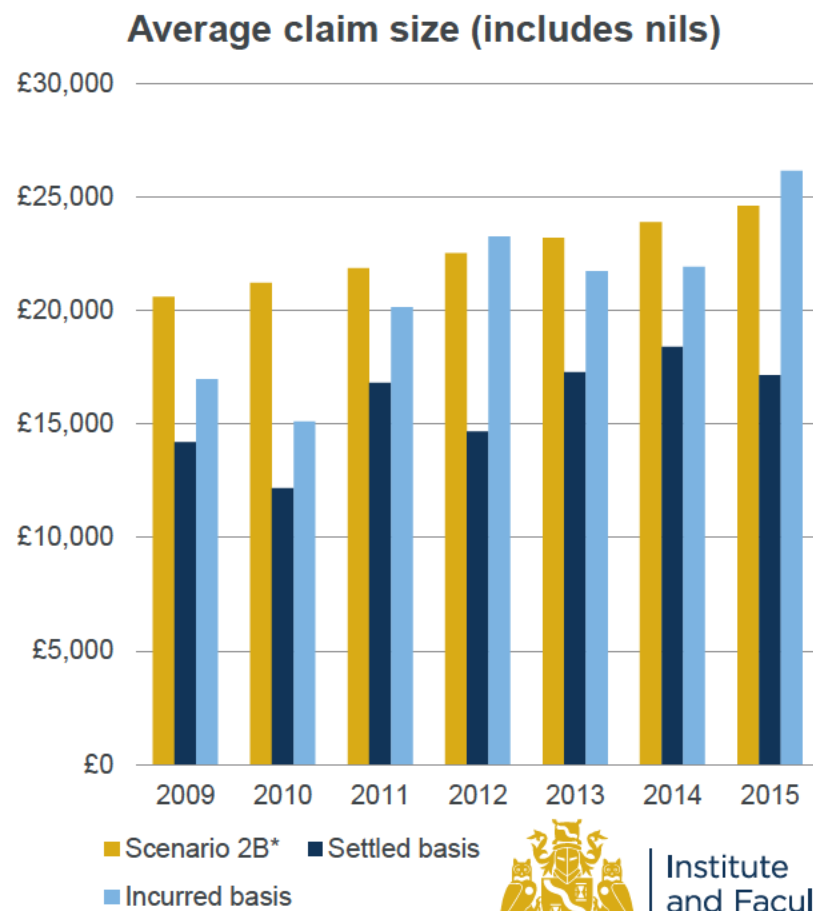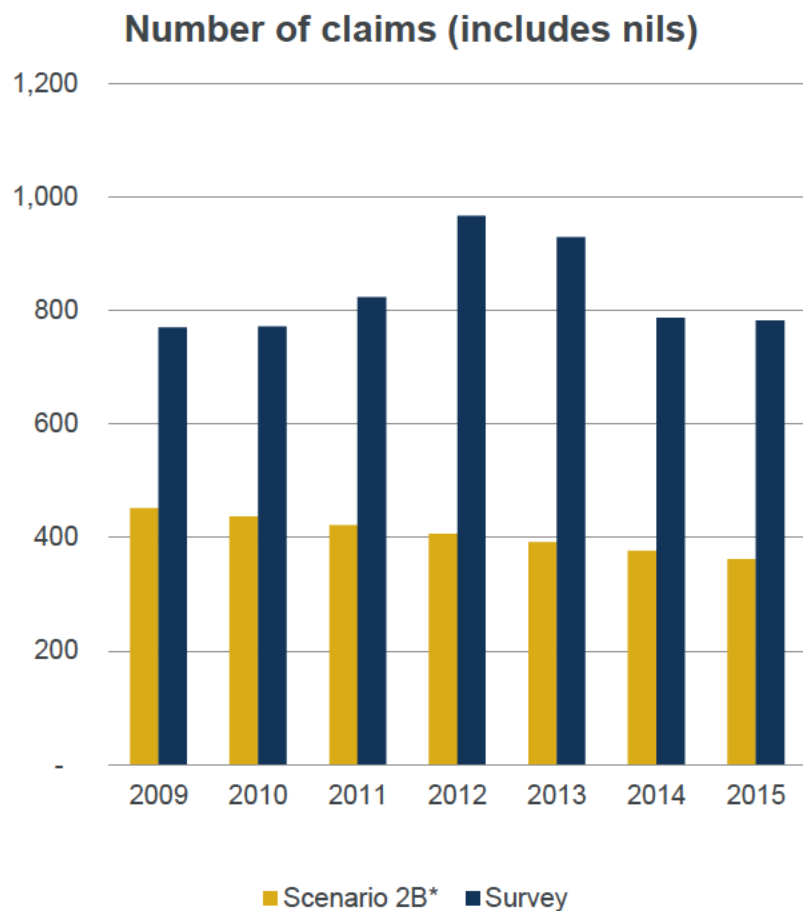
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* Assuming 37.1% nil rate based on 5 year weighted average form Survey 2016 data

Survey 2016 vs. 2009 market estimates
Asbestosis & pleural thickening combined

Number of claims (includes nils)

■ Scenario 2B* ■ Survey

Average claim size (includes nils)

■ Scenario 2B* ■ Settled basis
■ Incurred basis
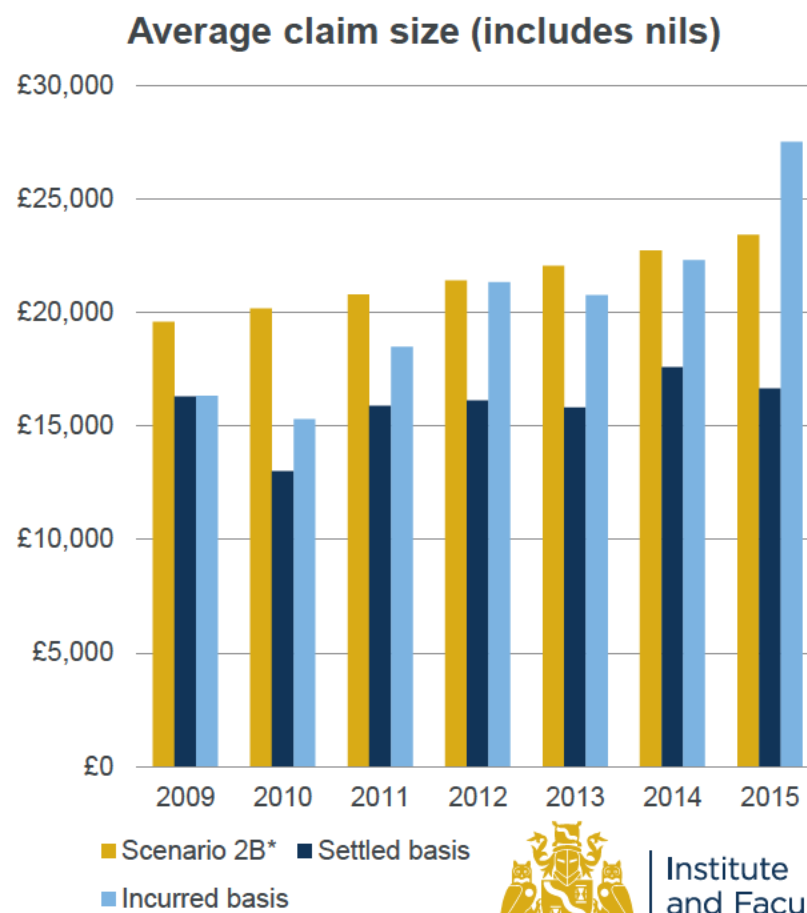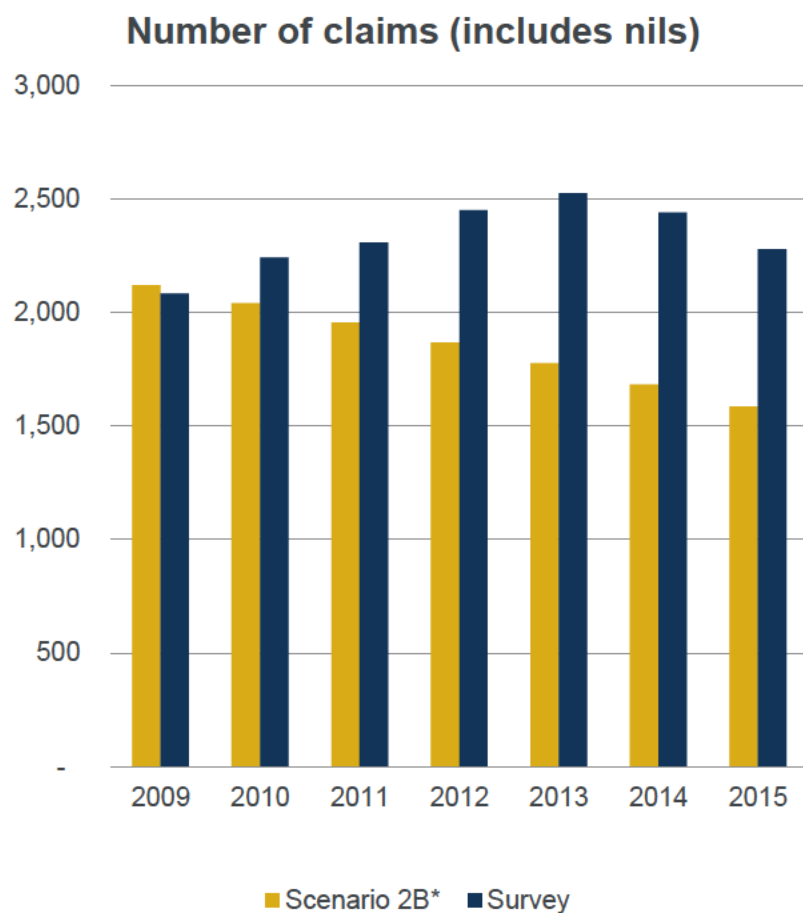
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* Assuming 39.2% nil rate based on 5 year weighted average form Survey 2016 data

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Survey 2015 vs. 2009 market estimate
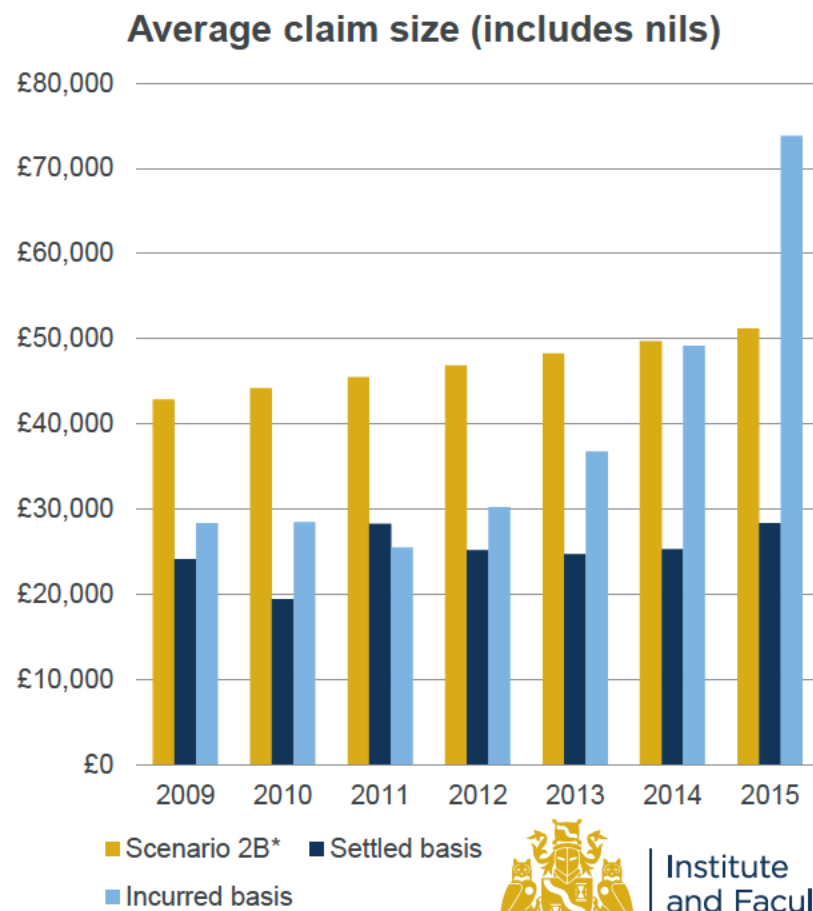
Total Insurance Costs

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Survey 2016 vs. 2009 market estimate
Total insurance costs 2009 - 2015 (£m)

Legend: Scenario 23 / Scenario 2B ■ Settled basis ■ Incurred basis
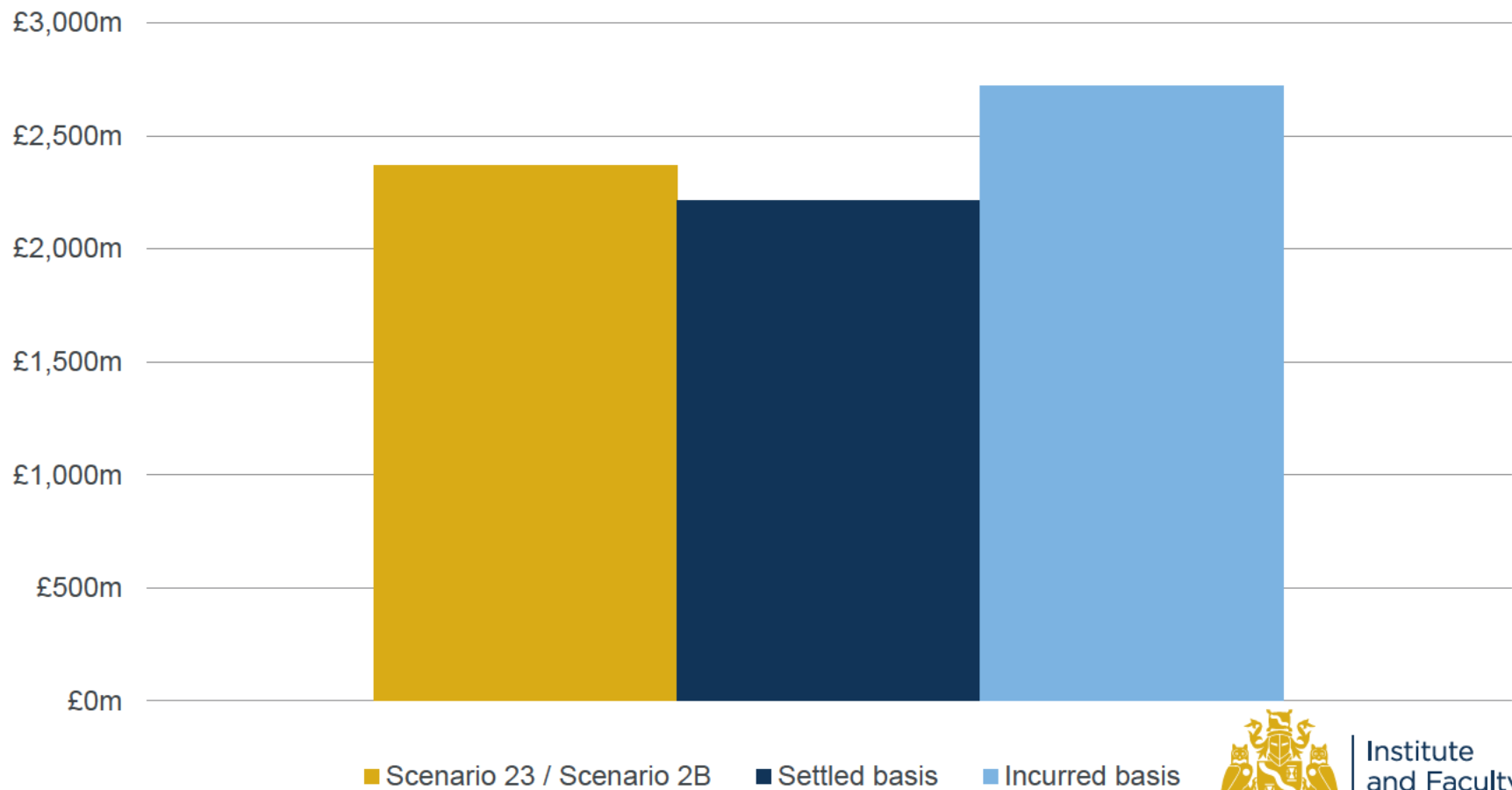
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Survey 2016 vs. 2009 market estimate
Insurance costs 2009 - 2015 by disease (£m)

Legend: Scenario 23 / Scenario 2B — Settled basis — Incurred basis

Categories: Mesothelioma, Asbestosis, Pleural Thickening, Lung Cancer, Asbestosis / pleural thickening combined
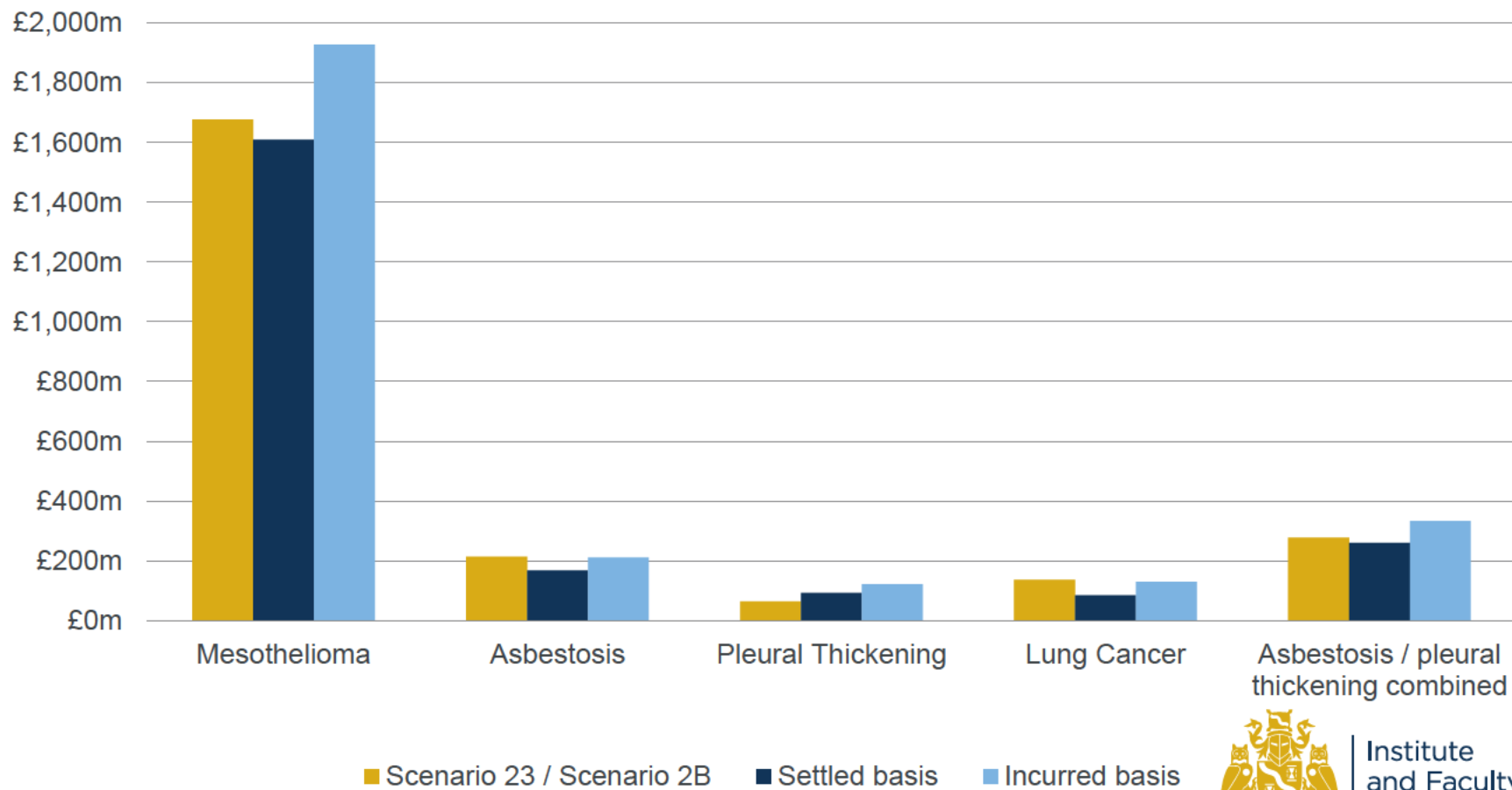
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Survey 2016 vs. 2009 market estimate
Mesothelioma - Insurance cost (£m)

Legend: Scenario 23* | Settled basis | Incurred basis
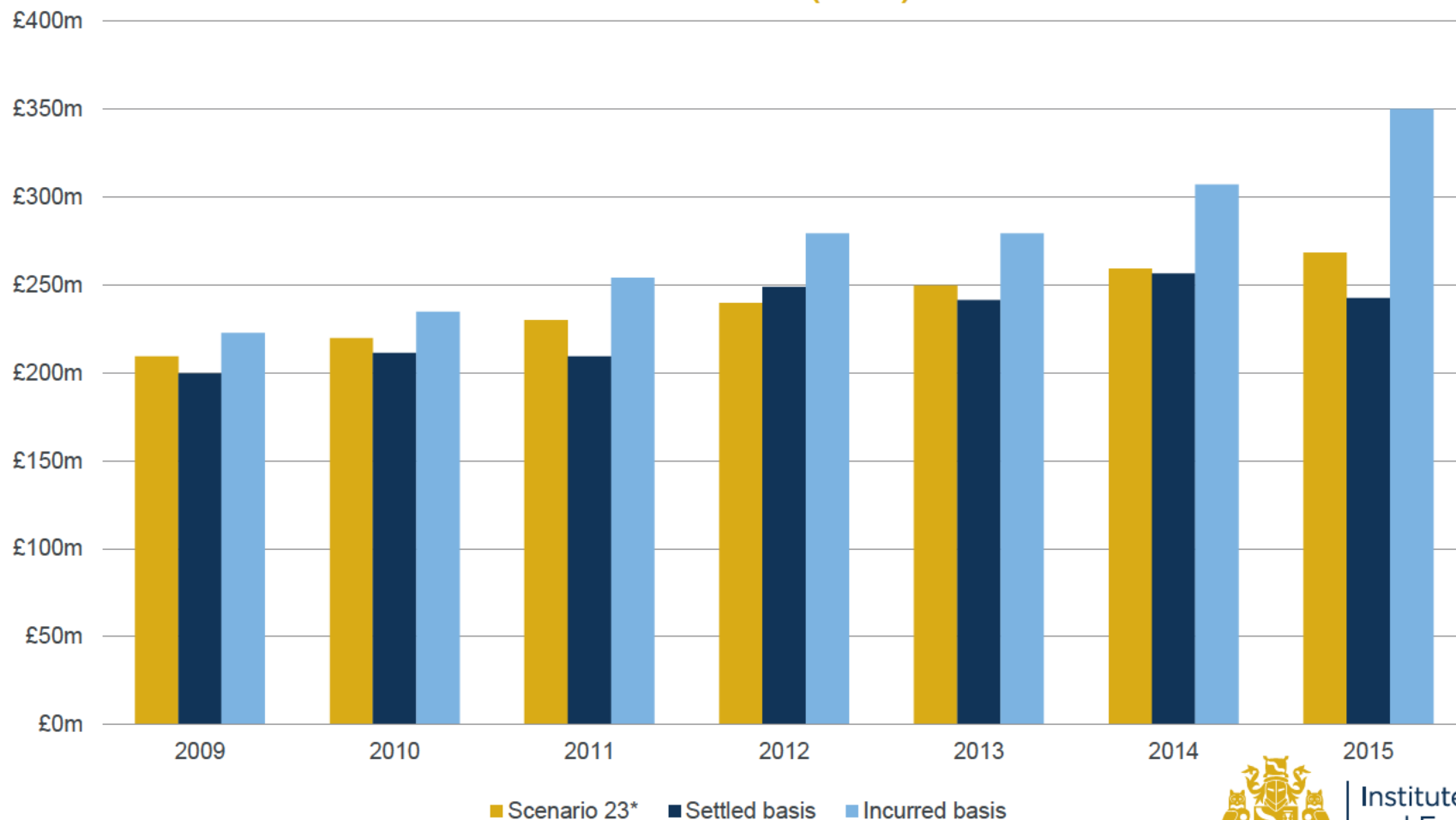
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Update from the UK asbestos working party

Mesothelioma deaths: Age-Birth GLM model

Martnez Miranda, M.D., Nielsen, B. and Nielsen, J.P. (2015) A simple benchmark for mesothelioma projection for Britain
http://www.cassknowledge.com/sites/default/files/article-attachments/asbestos-mesothelioma-benchmark-september-2015.pdf

Martnez Miranda, M.D., Nielsen, B. and Nielsen, J.P. (2013) Inference and forecasting in the age-period-cohort model with unknown exposure with an application to mesothelioma mortality
http://openaccess.city.ac.uk/4625/1/Final_Asbestos_JRSS_SerA-1.pdf

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Age-Birth GLM model
Overview

- No constructing exposure measures and no projecting of future populations

- Inspired by the chain ladder methodology

- Basically an age-period-cohort model using a GLM (Poisson regression with log link) in R[1] to fit the parameters

- Similar forecasts produced for age–cohort model and the age–period–cohort model, so used age–cohort model

- Simplifications taken : Discards cohorts younger than 1966, no future cohorts and only projecting ages 25–89

- Provides a simple benchmark method, checking the robustness of other more sophisticated methods

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[1] R package *apc*. https://cran.r-project.org/package=apc

Age-Birth GLM model
The maths

$$F_{A,T} = e^{\alpha_0 + \beta_A + \gamma_{T-A}}$$

Where:

$F_{A,T}$ = the deaths at age A in year T

α_0 = the intercept

β_A = the coefficient relating to age A

γ_B = the coefficient relating to birth year B

Age-Birth GLM model

β_A - Age parameters

Legend:
— Nielsen et al (2015) - using deaths up to 2013
····· Nielsen et al (2013) - using deaths up to 2007

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Age-Birth GLM model

γ_B - Birth year parameters

Nielsen et al (2015) - using deaths up to 2013

Nielsen et al (2013) - using deaths up to 2007

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Age-Birth GLM model
Comparison to HSE

	Nielsen 2015	HSE 2016
Peak year	2017	2016
Peak deaths	2,079	2,028
Post 2013 deaths	44,801	45,454

Legend:
- Nielsen et al (2013)
- Nielsen et al (2015)
- HSE (2016)
- Observed deaths

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Age-Birth GLM model
Goodness of fit – Nielsen et al 2015

	2008	2009	2010	2011	2012	2013
A-E	(29)	(3)	(29)	(98)	55	12
(A-E)/E	(2%)	(0%)	(2%)	(6%)	3%	1%

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Age-Birth GLM model
Goodness of fit – Nielsen et al 2015

Age-Birth GLM model
Summary

Pros:

- Good fit to the historical data

- Reasonably simple structure

- More flexible than the Birth-Cohort model

- Less parameters than other models such as the HSE/HSL

- Allows different death rates

Cons:

- Difficult to relate parameters to exposure

- Difficult to incorporate expert views or empirical evidence

- May underestimate the number of deaths from 80+ year olds in recent years

- Sensitivity to the post-1966 birth year parameters

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Age-Birth GLM model
AWP adjustments

An alternative view using the Age-Birth GLM model structure:

- Extended to include ages 90 to 95+

- Given the scarcity of data decided not projecting ages 20-25 like the HSE: (i) small historical volumes of deaths from these ages, (ii) limited likelihood of deaths from these ages in the future and (iii) the limited likelihood of these deaths relating to Employers' Liability claims

- Simplified parameters by smoothing parameters using polynomial functions. Also used to estimate post-1966 birth year parameters

- Trying not just to fit to the past given a high level model

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Age-Birth GLM model
Age parameters - AWP adjustments

Legend:
— Nielsen et al (2015) - using deaths up to 2013
······ AWP alternative
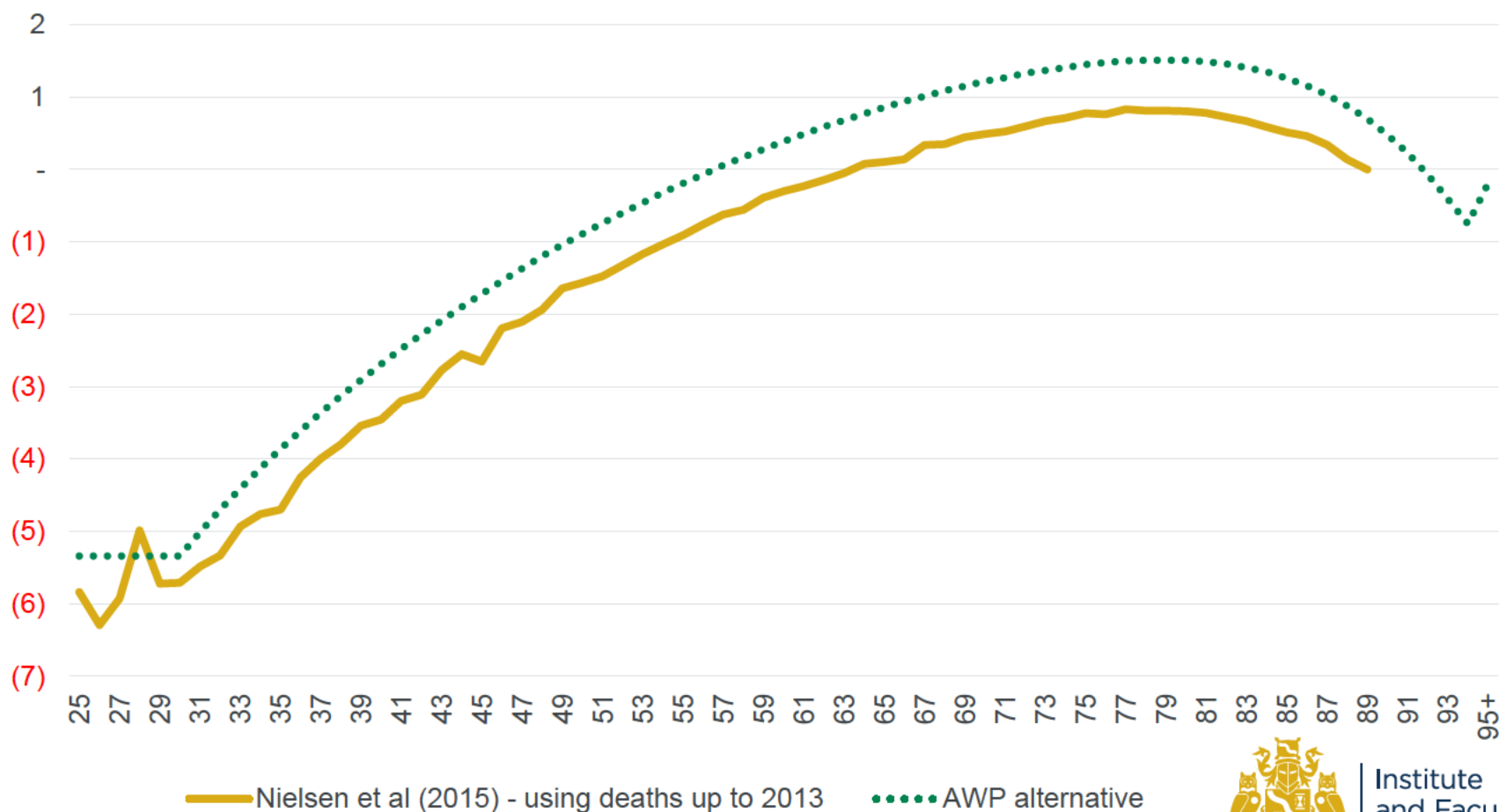
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Age-Birth GLM model
Birth year parameters - AWP adjustments
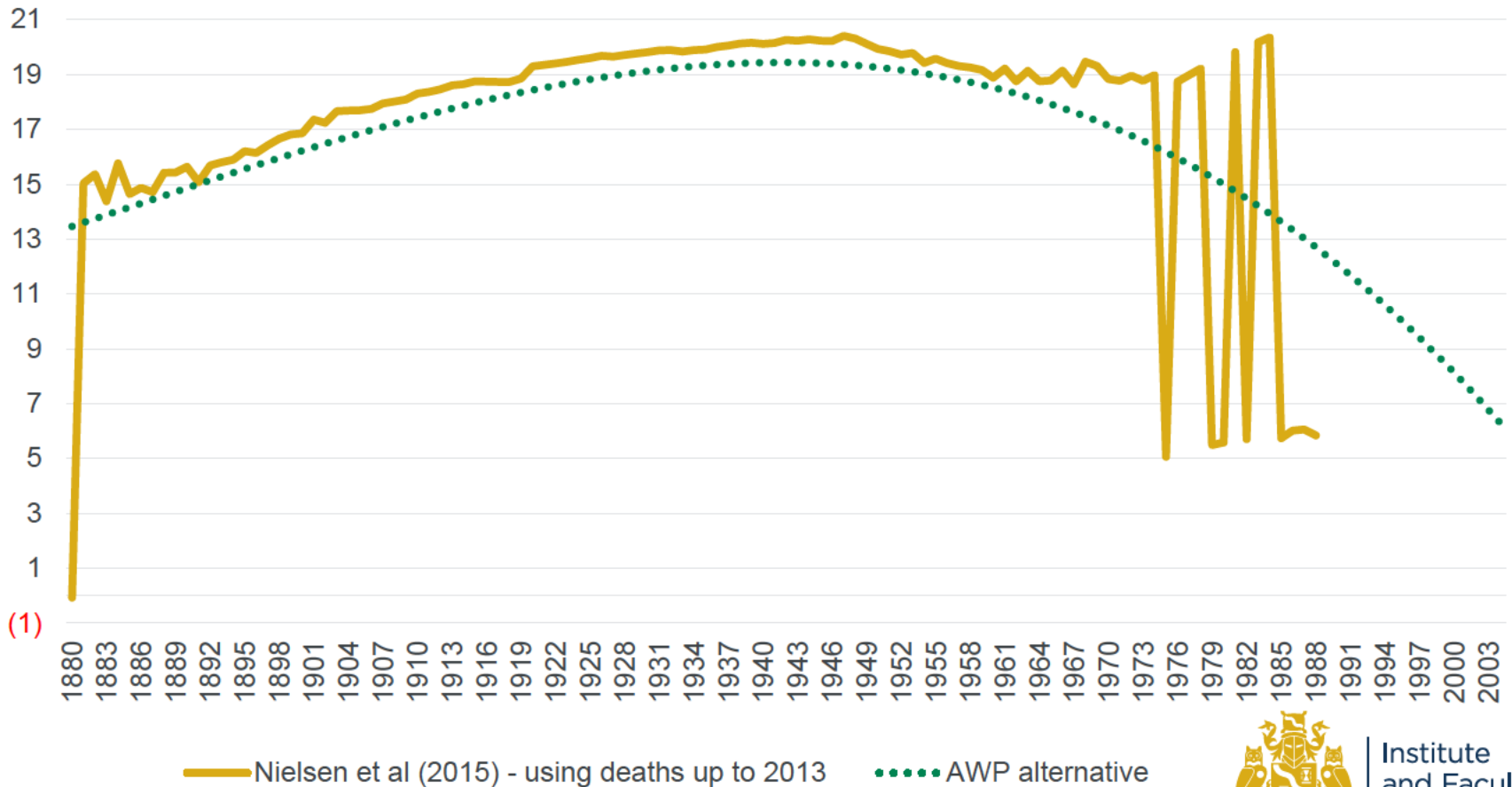
Age-Birth GLM model
Comparison to HSE
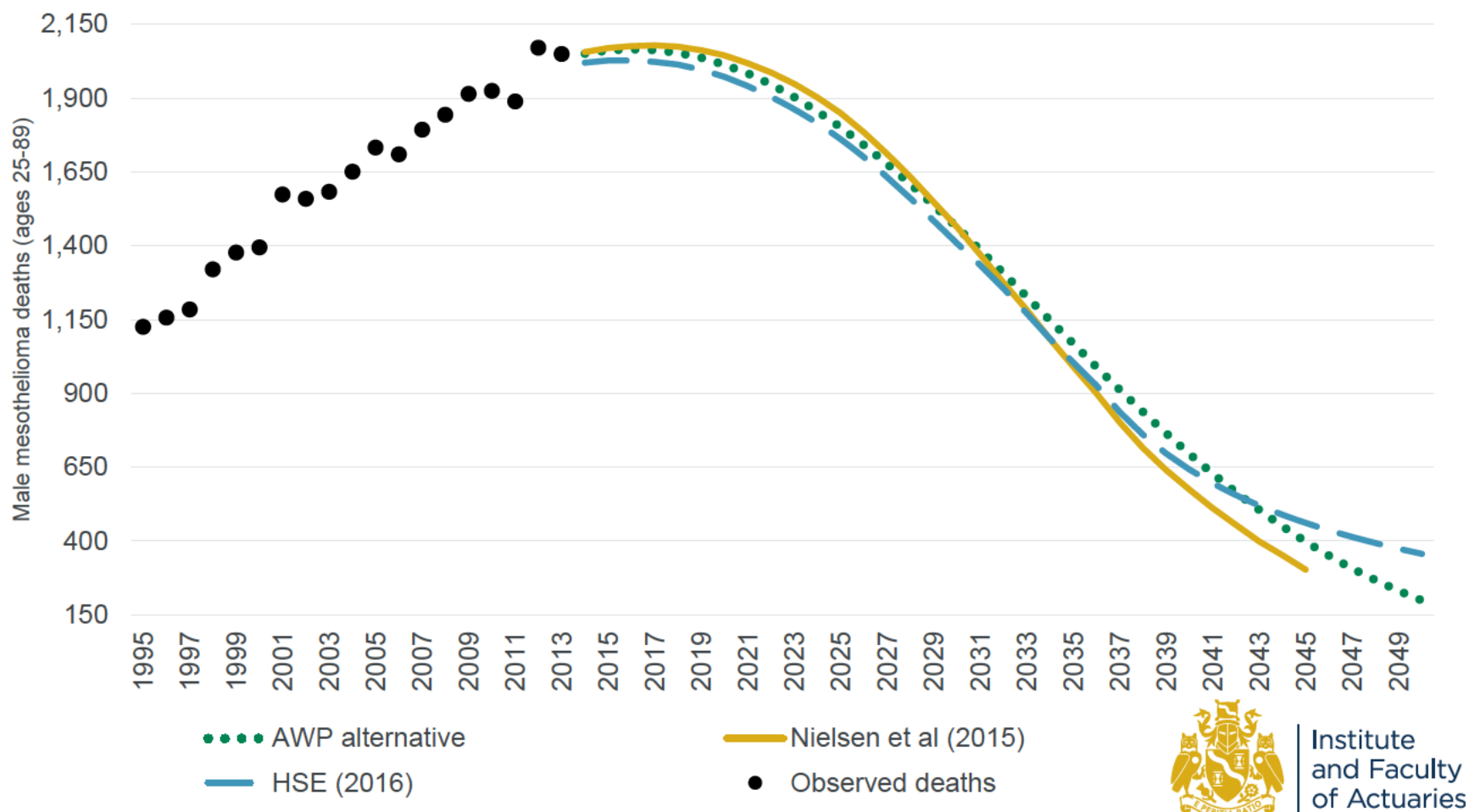
Age-Birth GLM model
Goodness of fit - AWP adjustments

	2008	2009	2010	2011	2012	2013
A-E	(22)	5	(24)	(94)	59	15
(A-E)/E	(1%)	0%	(2%)	(6%)	3%	1%
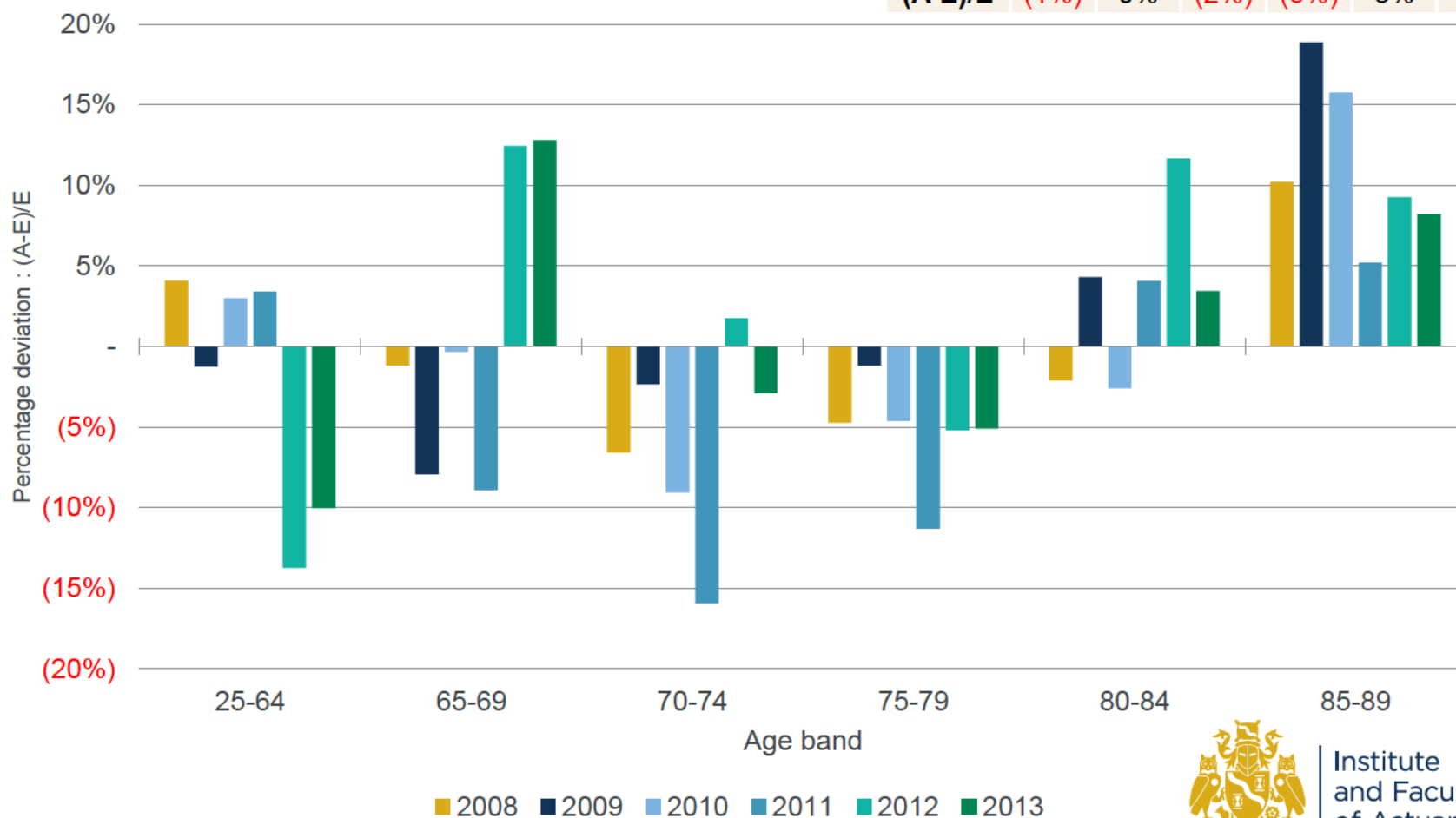
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Age-Birth GLM model
Goodness of fit - AWP adjustments

Ages

25   95+

1880

Birth year

1988
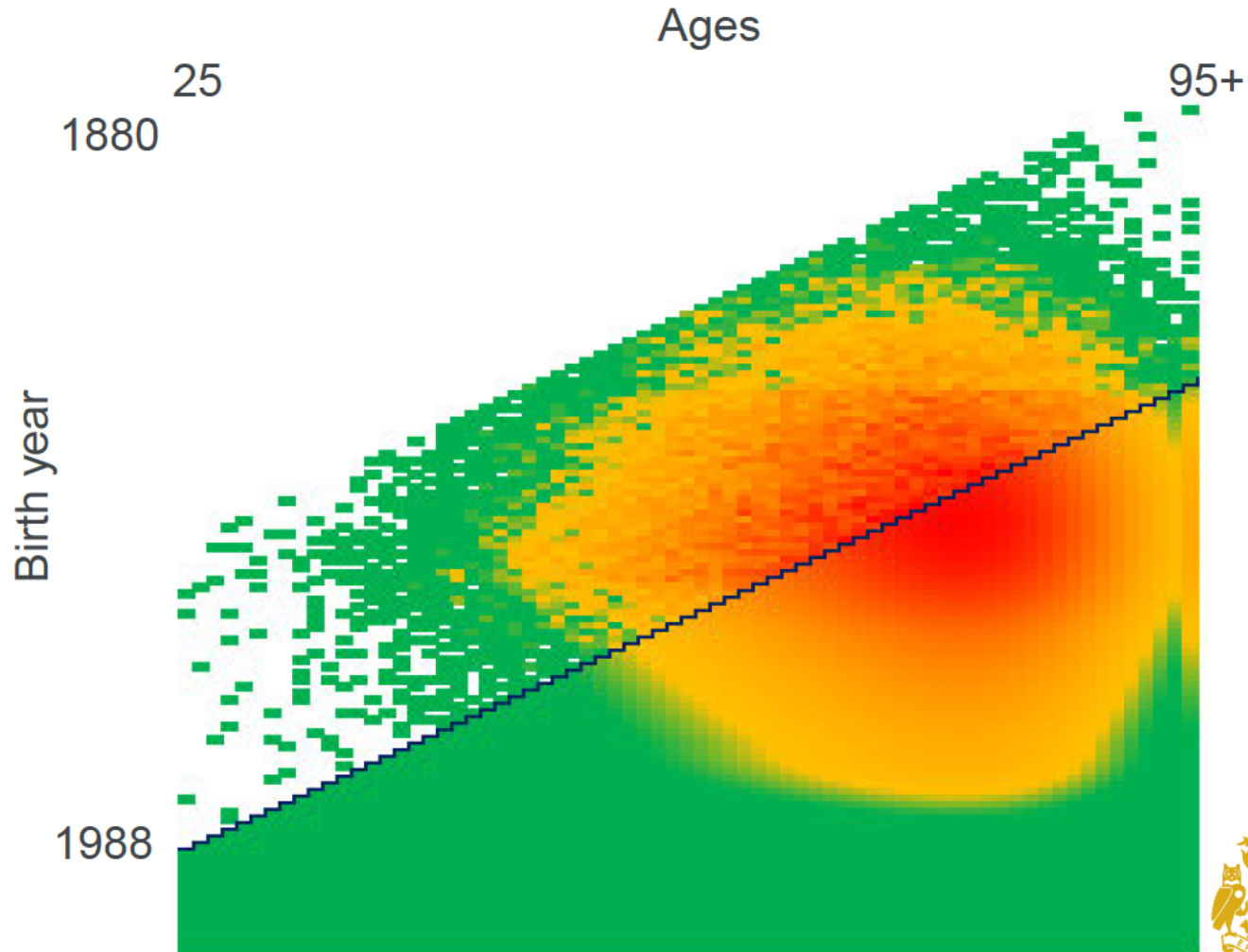
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Age-Birth GLM model
Conclusion

- Good high-level model, easy to understand how age and birth year influences the level of deaths

- Difficult to infer parameters for future
  - Birth years1960 and post
  - Ages 85+

- Using the Nielsen & AWP parameters, in the Age-Birth GLM model, produces curves that are similar to the HSE

- Good alternative estimate to sense check projections

- The AWP still prefer the structure of the HSE model, especially as it has a measure for exposure

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Update from the UK asbestos working party

CRU & Propensity to Claim

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CRU & Propensity to Claim
What is the CRU?

- The Compensation Recovery Unit (CRU) works with insurance companies, solicitors and DWP* customers to recover:

  - Amounts of social security benefits paid as a result of an accident, injury or disease if a compensation payment has been made (the Compensation Recovery Scheme)

  - Costs incurred by NHS hospitals and Ambulance Trusts for treatment from injuries from road traffic accidents and personal Injury claims (Recovery of NHS charges)

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(*) Department of Work and Pensions

CRU & Propensity to Claim
What does it do?

- The CRU is responsible for recoveries in England, Scotland and Wales. A separate unit, reporting to the Department for Social Development in Northern Ireland, is responsible for collection of recoveries in Northern Ireland

- When an insurer is notified of a claim, a standard claim form must be completed within 14 days of notification and submitted to the CRU

- The CRU will therefore be informed of all asbestos-related claims giving rise to compensation, whether from the insurance industry or the Government

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CRU & Propensity to Claim
Update on Propensity to Claim

- The AWP received new data from CRU in February 2016 covering Mesothelioma claims registered from January 2007 to December 2015

- To calculate the historical propensity to claim, the AWP aggregated the CRU data by claimant over the number of deaths from mesothelioma given by the HSE data:

$$\text{Propensity to claim} = \frac{\text{Number of claimants (CRU data)}}{\text{Number of deaths from meso (HSE data)}}$$

- As of now, the HSE data is available up to 2014. The analysis will be updated to obtain 2015 results once the HSE 2015 data is available

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CRU & Propensity to Claim
Propensity to claim by age band and calendar year

	to 59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Overall
2007	82%	85%	74%	71%	64%	49%	49%	42%	67%
2008	71%	84%	68%	66%	64%	51%	55%	33%	65%
2009	68%	84%	78%	64%	58%	49%	38%	29%	62%
2010	72%	72%	70%	73%	55%	50%	47%	53%	62%
2011	72%	77%	78%	76%	65%	56%	37%	44%	66%
2012	74%	75%	71%	61%	56%	45%	47%	34%	58%
2013	60%	74%	71%	60%	55%	43%	41%	27%	56%
2014	87%	69%	74%	64%	62%	51%	43%	41%	61%
Average	**73%**	**78%**	**73%**	**66%**	**60%**	**49%**	**44%**	**37%**	**62%**

- Although we observe volatility on a year by year basis, over age bands the propensity to make a compensation claim (PtC) tends to decrease from 60-64 year olds.

- If PtC remains constant by age, overall PtC will reduce due to ageing

- The AWP looking into future trends

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Note figures above exclude government unlike the 2009 AWP figures which included Government claims

CRU & Propensity to Claim
Diffuse Mesothelioma Payment Scheme (DMPS)

- The DMPS was launched throughout the UK on 6 April 2014. It provides payments to eligible sufferers of diffuse mesothelioma, or their eligible dependants, who were negligently exposed to asbestos during a period of employment, but who are unable to take legal action to seek financial redress via the civil courts

- Following this scheme, an increase of the number of government claims was observed in the CRU data as seen in the next two slides

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CRU & Propensity to Claim
CRU Data – Number of claims and claimants

- Number of claims and claimants including and excluding Government registrations

Calendar Year	No. Claims	No. Claimants	No. Claims excluding Gov	No. Claimants excluding Gov
2007	1,899	1,603	1,802	1,527
2008	2,211	1,730	2,114	1,659
2009	2,218	1,570	2,097	1,500
2010	2,357	1,560	2,230	1,486
2011	2,450	1,626	2,323	1,564
2012	2,484	1,591	2,368	1,529
2013	2,473	1,547	2,388	1,497
2014	2,995	1,904	2,563	1,576
2015	3,232	1,892	2,701	1,490
Total	**22,319**	**15,023**	**20,586**	**13,828**

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CRU & Propensity to Claim
CRU Data – Number of claims and claimants

CRU Mesothelioma registrations
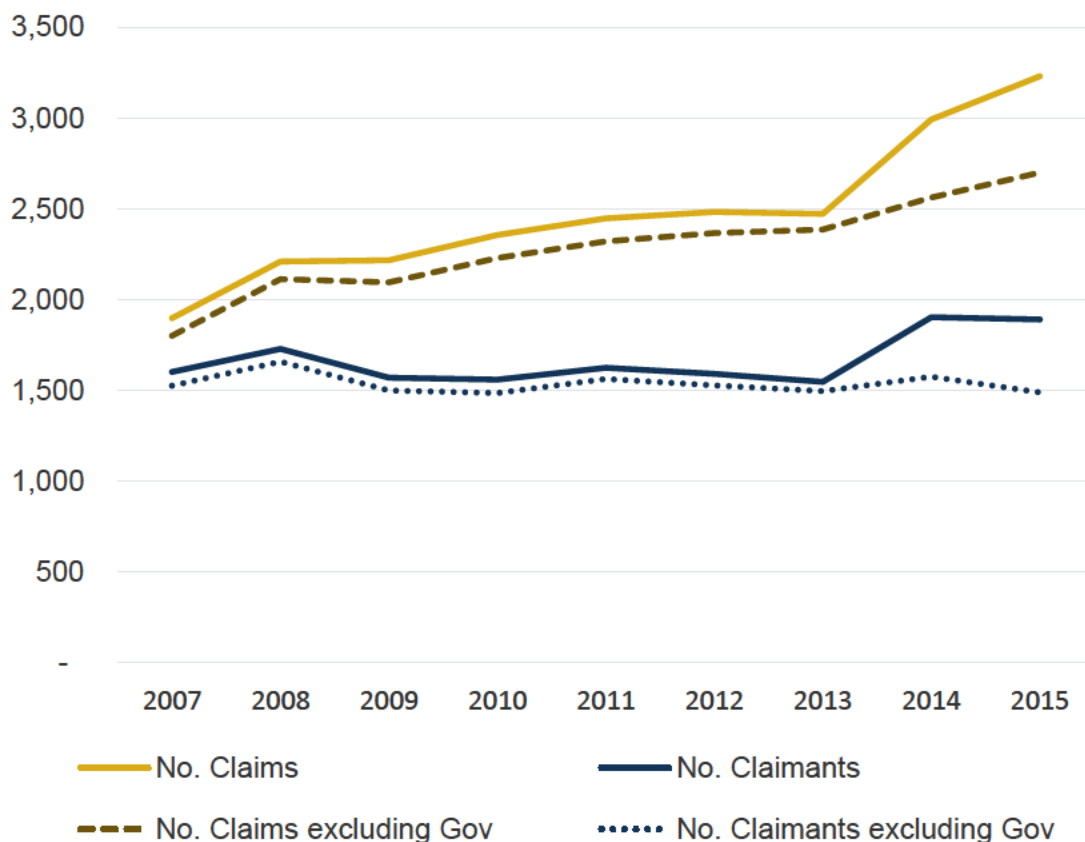
- The number of CRU claimants excluding Government has been stable at around 1,500 for years 2007-2015

- From 2013, the increase in the total number of claims is driven by the Government Mesothelioma scheme

- Government CRU claimants are removed from the AWP analysis to exclude the DMPS hump and as they are not generally insured by insurers

Legend:
— No. Claims
— No. Claimants
--- No. Claims excluding Gov
······ No. Claimants excluding Gov

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CRU & Propensity to Claim
Registration & Death years investigation

- One of the main assumptions taken by the AWP when calculating the propensity to claim was to assume a one-to-one relationship between the "**CRU registration year**" and the "**HSE year of death**"

- However, as suggested by the survey data on living/deceased claimants, this relationship could have been different in the past and could still change in the future

- As seen in the data, the decrease in PtC can be explained by the fact that the population gets older. However, if the relationship between years had changed at any point, would we observe the same pattern?

- The AWP is currently investigating the fact that this relationship might be different overtime

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CRU & Propensity to Claim
Conclusion and further investigations

- We observe an overall decreasing trend for the propensity to claim by age bands

  - Further investigations are needed to be able to discuss future trends

- Once the new 2015 HSE data (deaths) is received, some further work on propensity to claim will be carried out

- The AWP are undertaking further analysis using the CRU data to help determine any trends or changes in the propensity to claim, especially looking at the relationship between registration and deaths years and its evolution over time

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Update from the UK asbestos working party

Next steps

Next steps

- Partially complete paper includes key sections from previous papers

- Still investigating:

  – Propensity to make a claim

  – Parameterising the HSE model

  – Projecting non-mesothelioma using our mesothelioma curves

- New estimate and paper will not be out before Q1

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Questions

Comments

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