

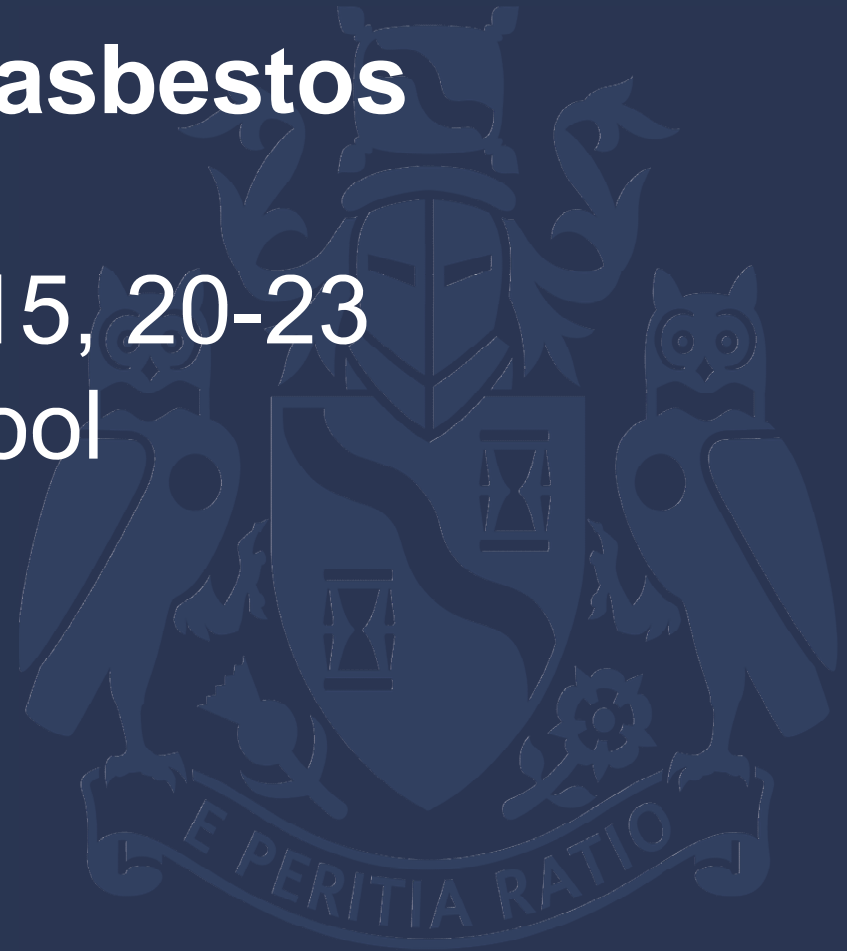


Institute
and Faculty
of Actuaries

Update from the UK asbestos working party

GIRO Conference 2015, 20-23

October, ACC, Liverpool





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Update from the UK asbestos working party

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ponsorship
Thought leadership
Progress
Community
Sessional Meetings
Education
Working parties
Volunteering
Research
Shaping the future
Networking
Professional support
Enterprise and risk
Learned society
Opportunity
International profile
Journals
Support

Agenda

- Market survey data YE2014 (Survey 2015)
- Survey 2015 vs. 2009 market estimate
- Mesothelioma deaths
- CRU data / Propensity to Claim
- Things to consider when looking at extremes
- Legal and Other Developments
- Key points and plan for next year

Update from the UK asbestos working party

Market survey data YE2014 (Survey 2015)

Comparison to previous surveys

Comparing the numbers and average costs between surveys for each disease type.

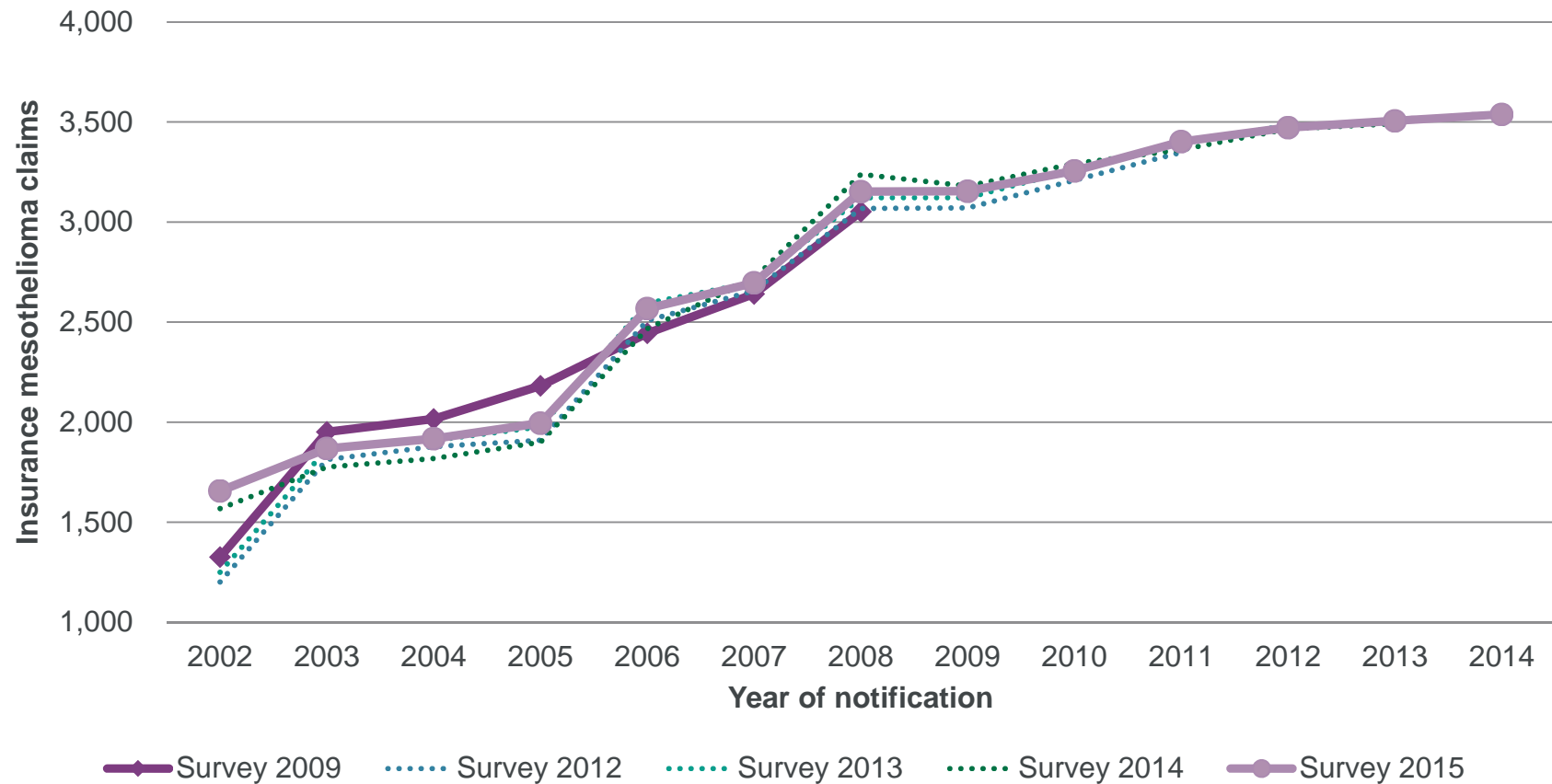
Insurance claim numbers include nil claims and are by year of notification. We have grossed-up the numbers from each survey based on our assumed coverage of each survey.

Average insurer settled claim costs exclude nil claims and are by year of settlement. We have analysis average costs this way so that trends are not distorted by changes in nil claim ratios, the times taken in settling nil & non-nil claims and any changes to the adequacy of case estimates.

Market survey data YE2014 (Survey 2015)

Comparison to previous surveys: Claim numbers

Mesothelioma claims (including nils)



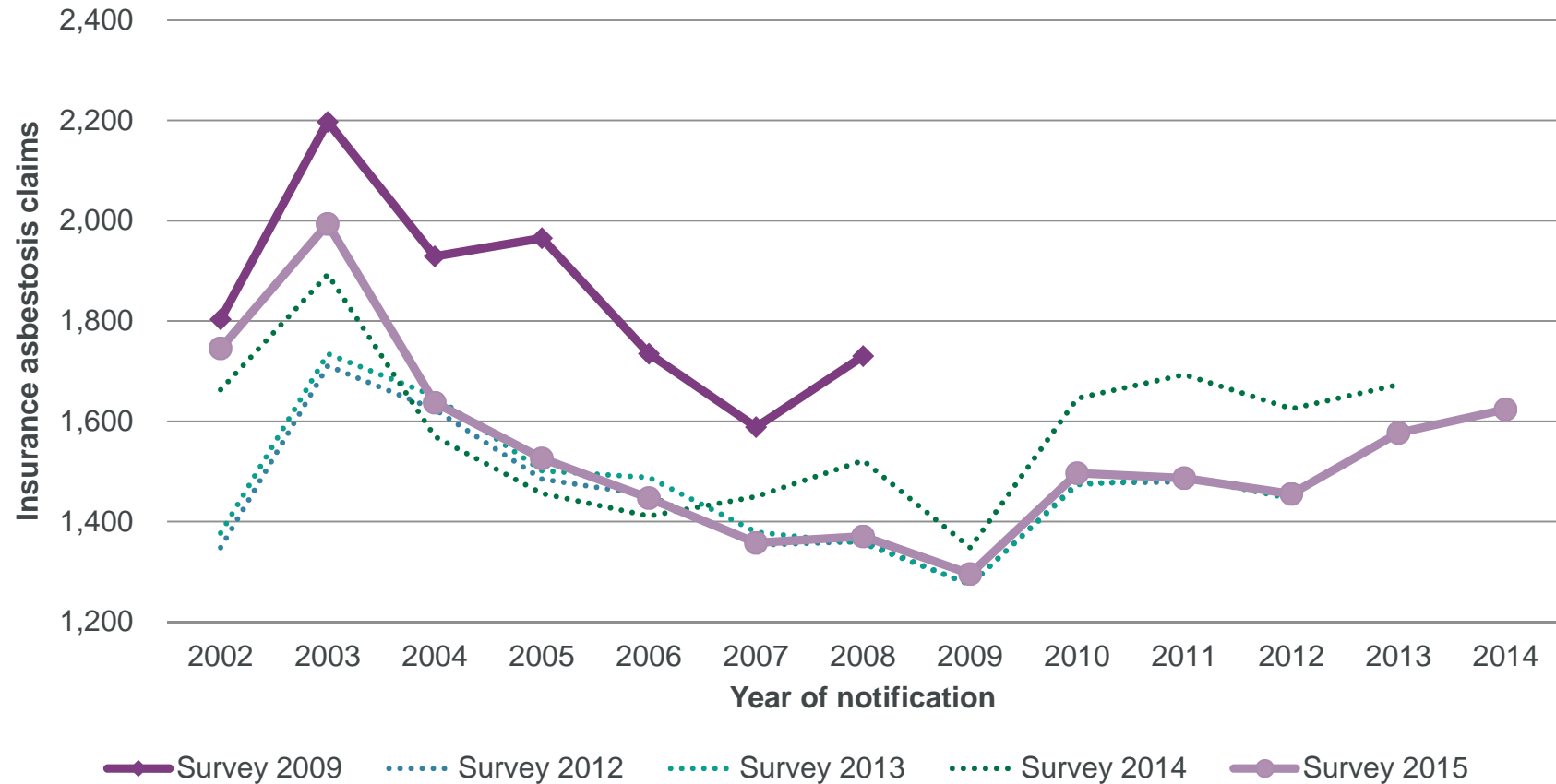
Assuming all surveys covered 80% of the insurance market, except Survey 2014 where we assume 87% coverage

- The more recent surveys (2012-2015) are consistent with the notification experience in the 2009 survey and consistent with each other.
- Recent experience shows a stable but increasing notification trend of mesothelioma claims.
- The increases in claims notified appears to be slowing down.

Market survey data YE2014 (Survey 2015)

Comparison to previous surveys: Claim numbers

Asbestosis claims (including nils)

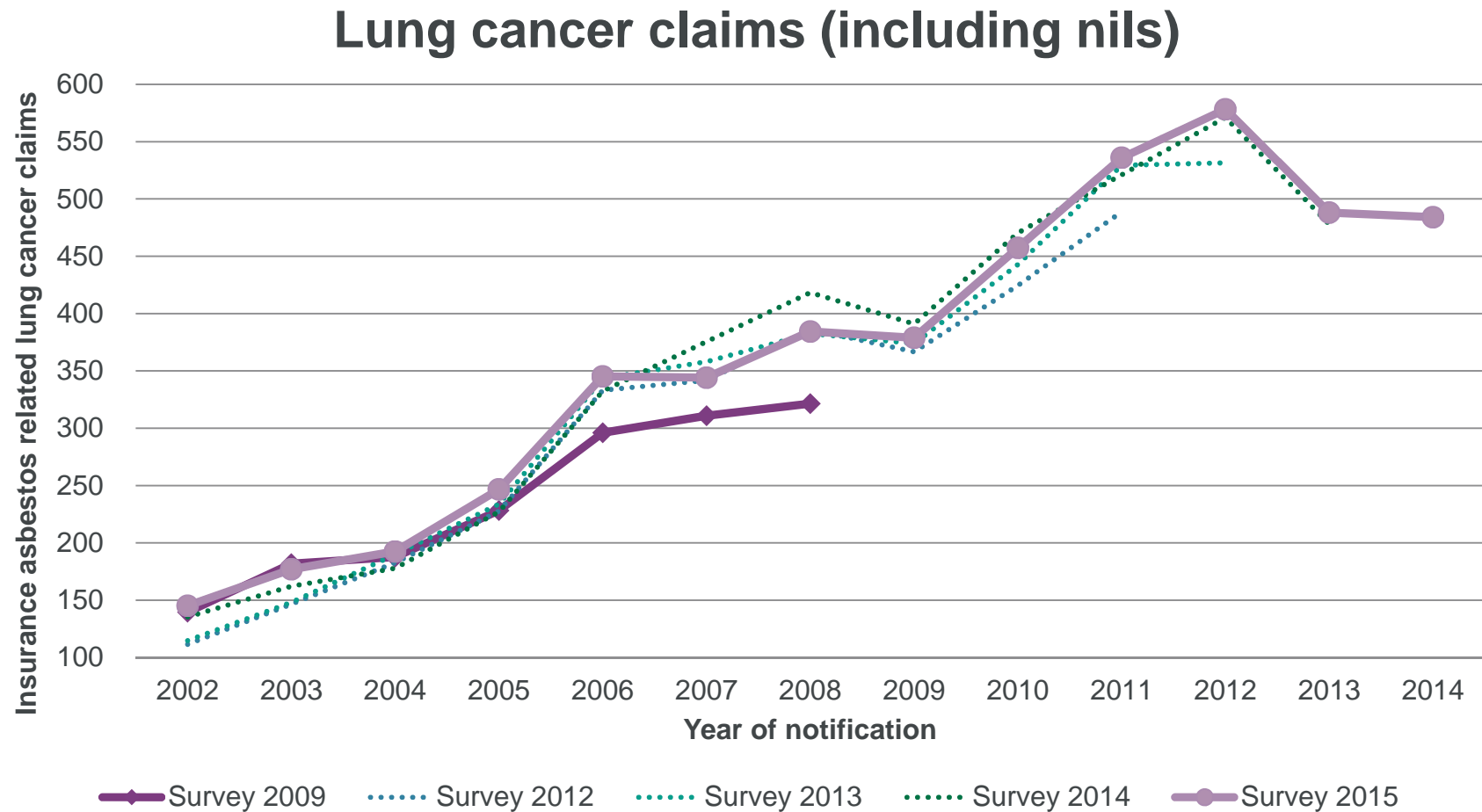


Assuming all surveys covered 80% of the insurance market, except Survey 2014 where we assume 87% coverage

- The more recent surveys are inconsistent with the notification experience in the 2009 survey.
- Difference is due to participants re-classifying asbestosis claims to pleural thickening claims since the 2009 survey.
- Most recent surveys are broadly consistent experience with each other.
- Recent experience shows a stable but increasing trend of claims since 2009.
- This is different to what was expected given the average latency of asbestosis (relative to the other diseases).
- Anecdotal evidence from claims handlers and doctors suggests that the continuing levels of asbestosis claims is related to i) the wider and better use of scanning which picks up asbestosis caused by low level exposure and ii) scans can't diagnose the condition beyond pulmonary fibrosis in the lung and it is often classified as asbestosis if there was any asbestos exposure.

Market survey data YE2014 (Survey 2015)

Comparison to previous surveys: Claim numbers

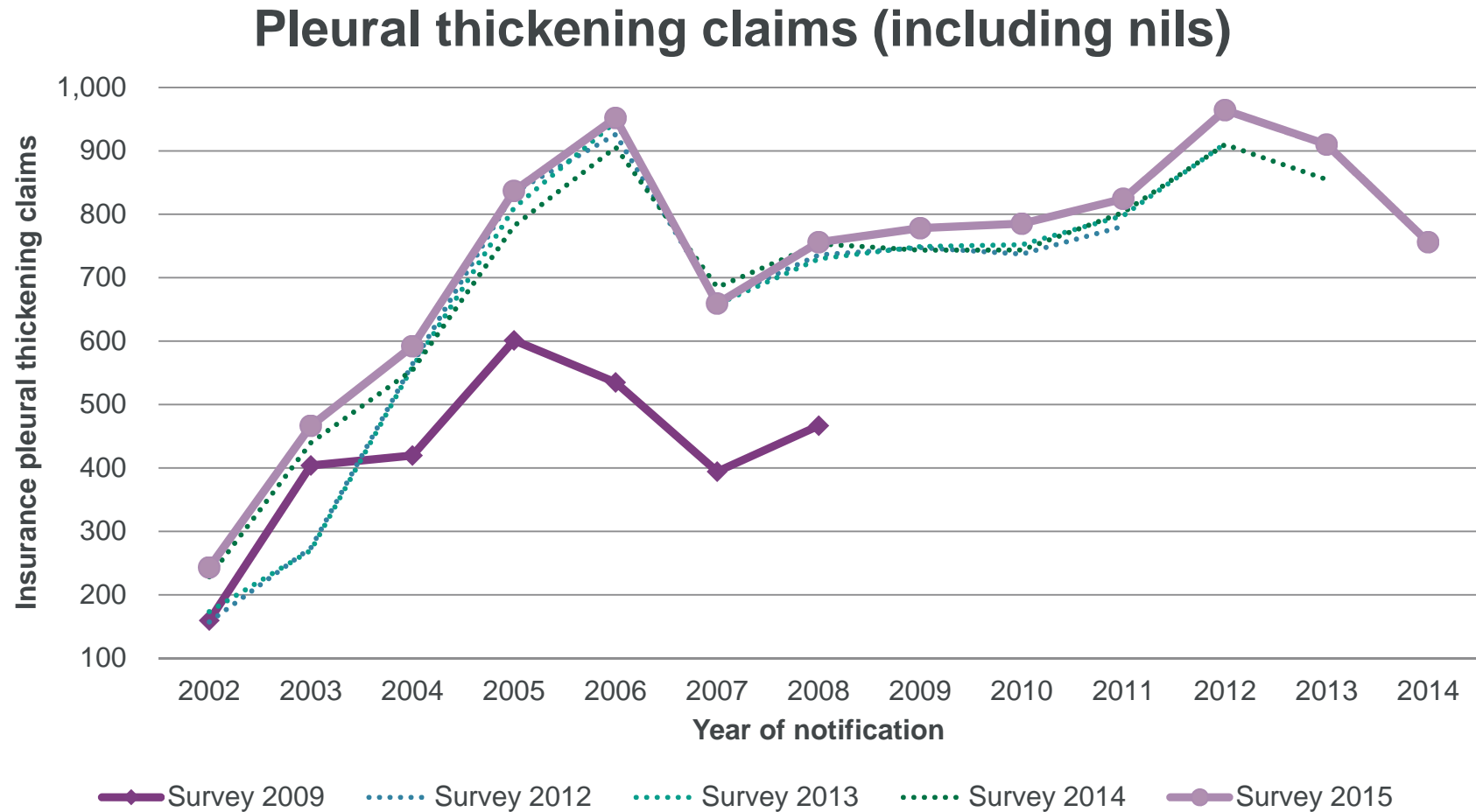


Assuming all surveys covered 80% of the insurance market, except Survey 2014 where we assume 87% coverage

- The more recent surveys are consistent with the notification experience in the 2009 survey and consistent with each other.
- There has been an increase in claims notified, which we believe is due to an increased propensity to claim for asbestos related lung cancer.
- Recent experience shows a levelling of claim notifications which could mean that the propensity to claim has stabilised after increasing over the last ten years.

Market survey data YE2014 (Survey 2015)

Comparison to previous surveys: Claim numbers

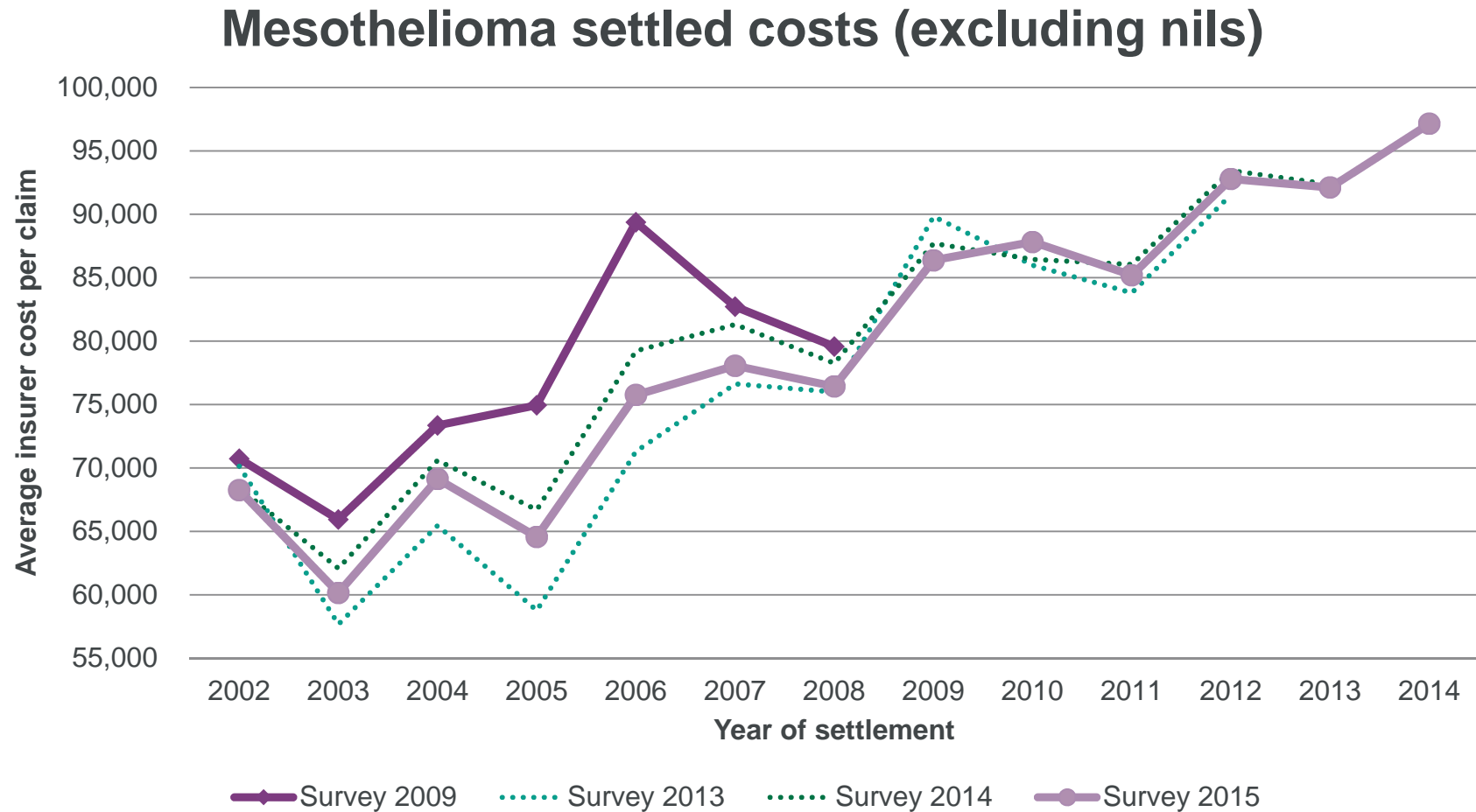


Assuming all surveys covered 80% of the insurance market, except Survey 2014 where we assume 87% coverage

- The more recent surveys are inconsistent with the notification experience in the 2009 survey.
- This is due to participants re-classifying asbestosis claims to pleural thickening claims since the 2009 survey.
- Most recent surveys show broadly consistent experience with each other.
- Recent experience shows a relatively stable level of claims being notified.

Market survey data YE2014 (Survey 2015)

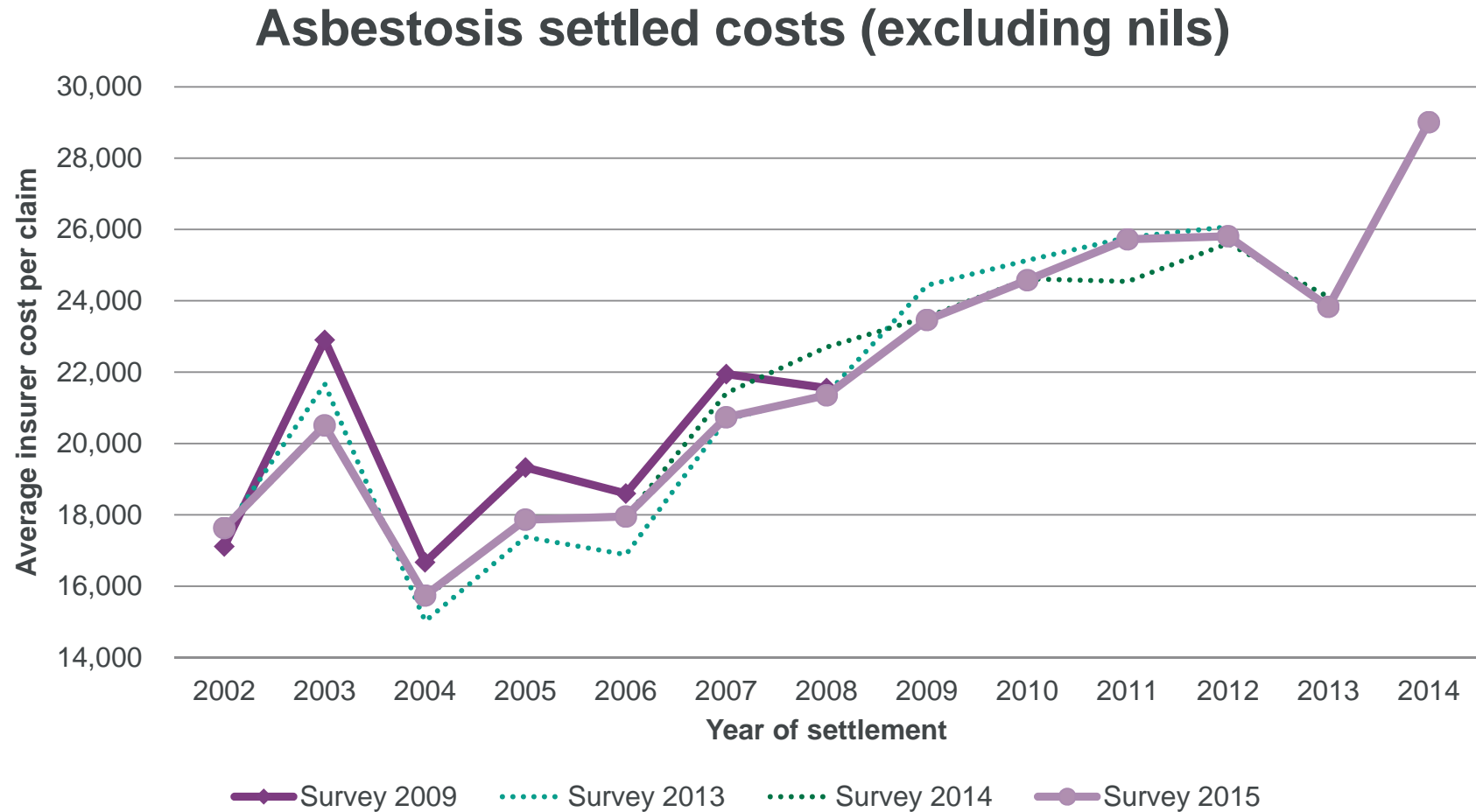
Comparison to previous surveys: Average costs



- The more recent surveys are broadly consistent with the settled average cost experience in the 2009 survey and consistent with each other.
- Data in the most recent survey would imply inflation of around 3-4% p.a.

Market survey data YE2014 (Survey 2015)

Comparison to previous surveys: Average costs



- The more recent surveys are broadly consistent with the settled average cost experience in the 2009 survey and consistent with each other.
- Data in the most recent survey would imply inflation of around 3.5-4.5% p.a.

Market survey data YE2014 (Survey 2015)

Comparison to previous surveys: Average costs

Lung cancer settled costs (excluding nils)

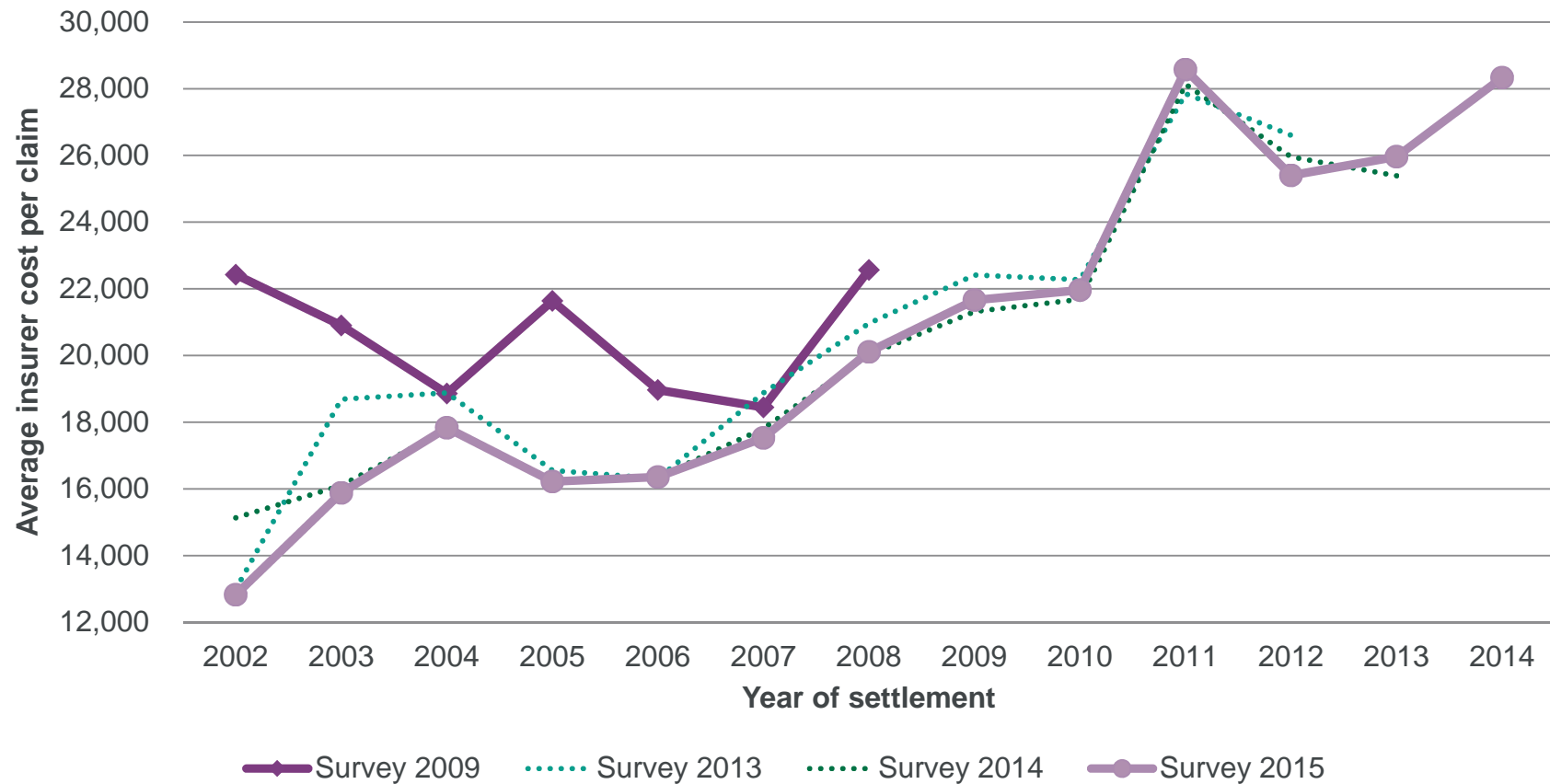


- The more recent surveys are broadly consistent with the settled average cost experience in the 2009 survey and consistent with each other.
- Data in the most recent survey would imply inflation of around 4-5% p.a.

Market survey data YE2014 (Survey 2015)

Comparison to previous surveys: Average costs

Pleural thickening settled costs (excluding nils)



- The more recent surveys are inconsistent with the settled average cost experience in the 2009 survey, but consistent with each other.
- We believe that difference to the 2009 survey is due to participants re-classifying asbestosis claims to pleural thickening claims.
- Given the small volumes of pleural thickening claims in the 2009 survey, there is a greater impact on the pleural thickening average settled costs when claims were re-classified from asbestosis.
- Data in the most recent survey would imply inflation of around 5-6% p.a.

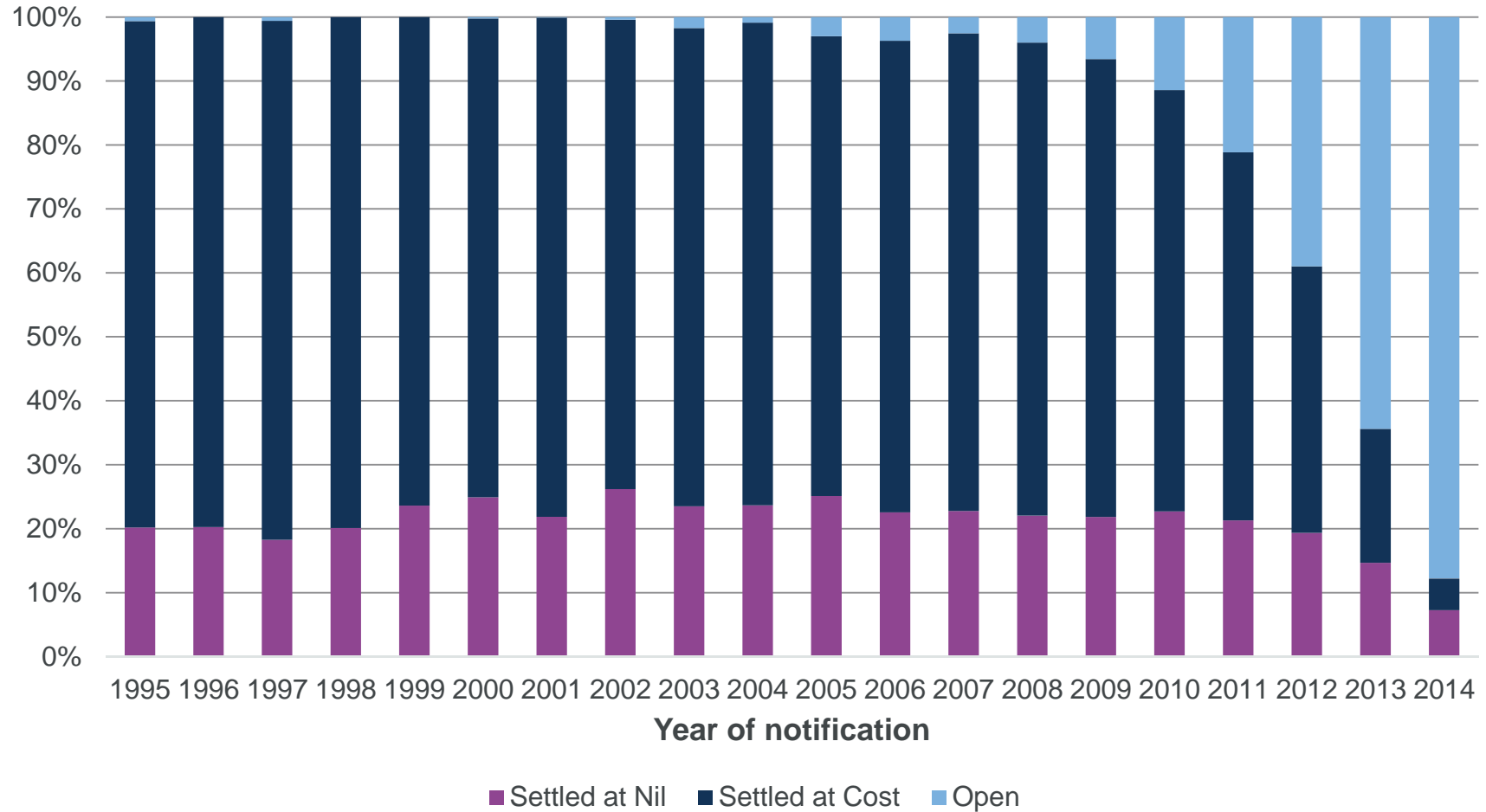
Update from the UK asbestos working party

Market survey data YE2014 (Survey 2015)

Nil, settled at cost and open status by notification year

Market survey data YE2014 (Survey 2015)

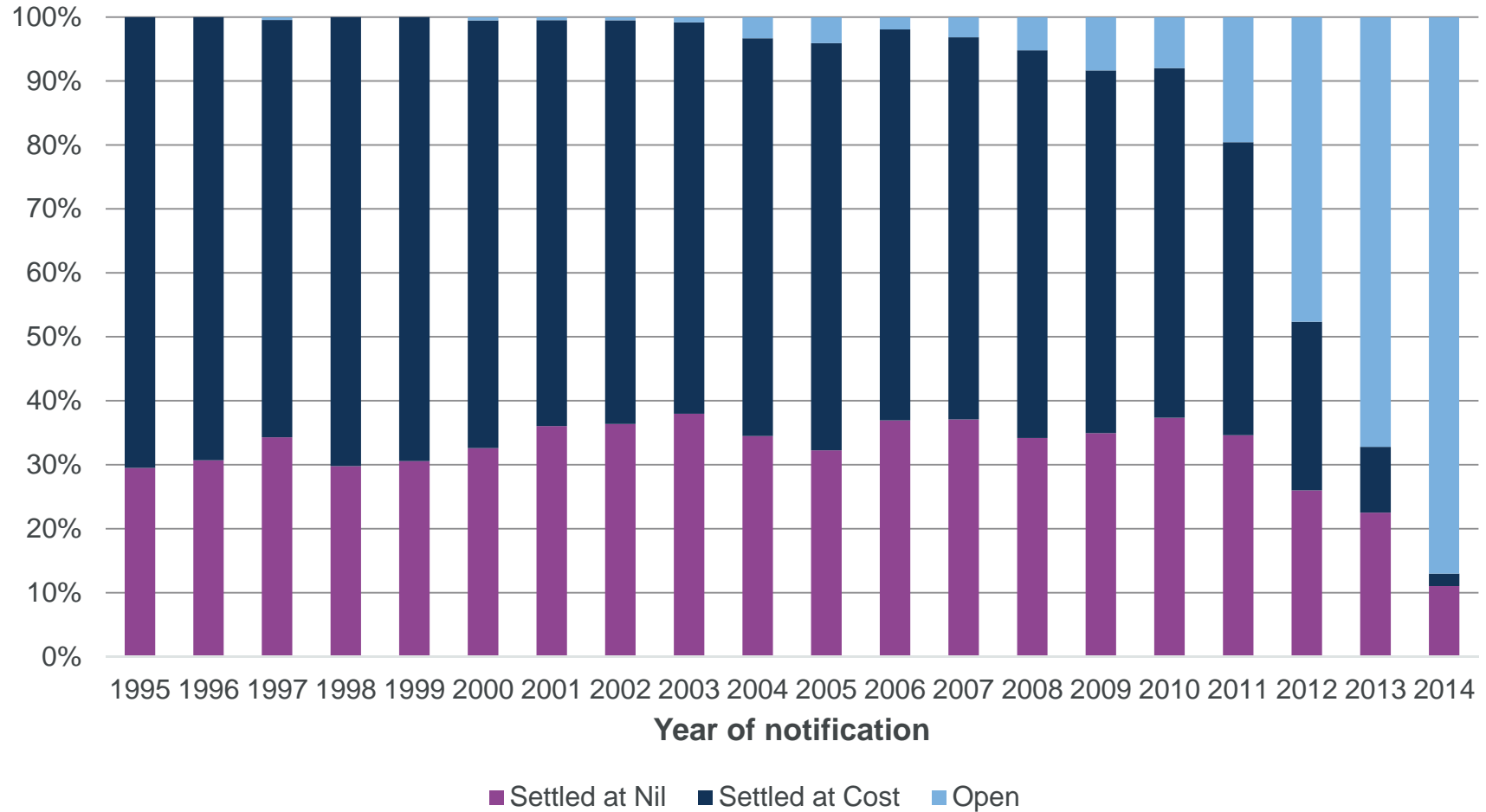
Status of mesothelioma claims



- In the 2009 market estimates it was assumed the ultimate nil rate mesothelioma claims reported to insurers was 21%.
- From the 2015 survey the average nil rates look consistent at between 21%-23%.
- There is no change in the nil rates over notification periods.
- Please note that for the most recent years, 2011 and onwards, still have a lot of open claims (over 20%), so it is difficult to see if nil rate has changed in these years.

Market survey data YE2014 (Survey 2015)

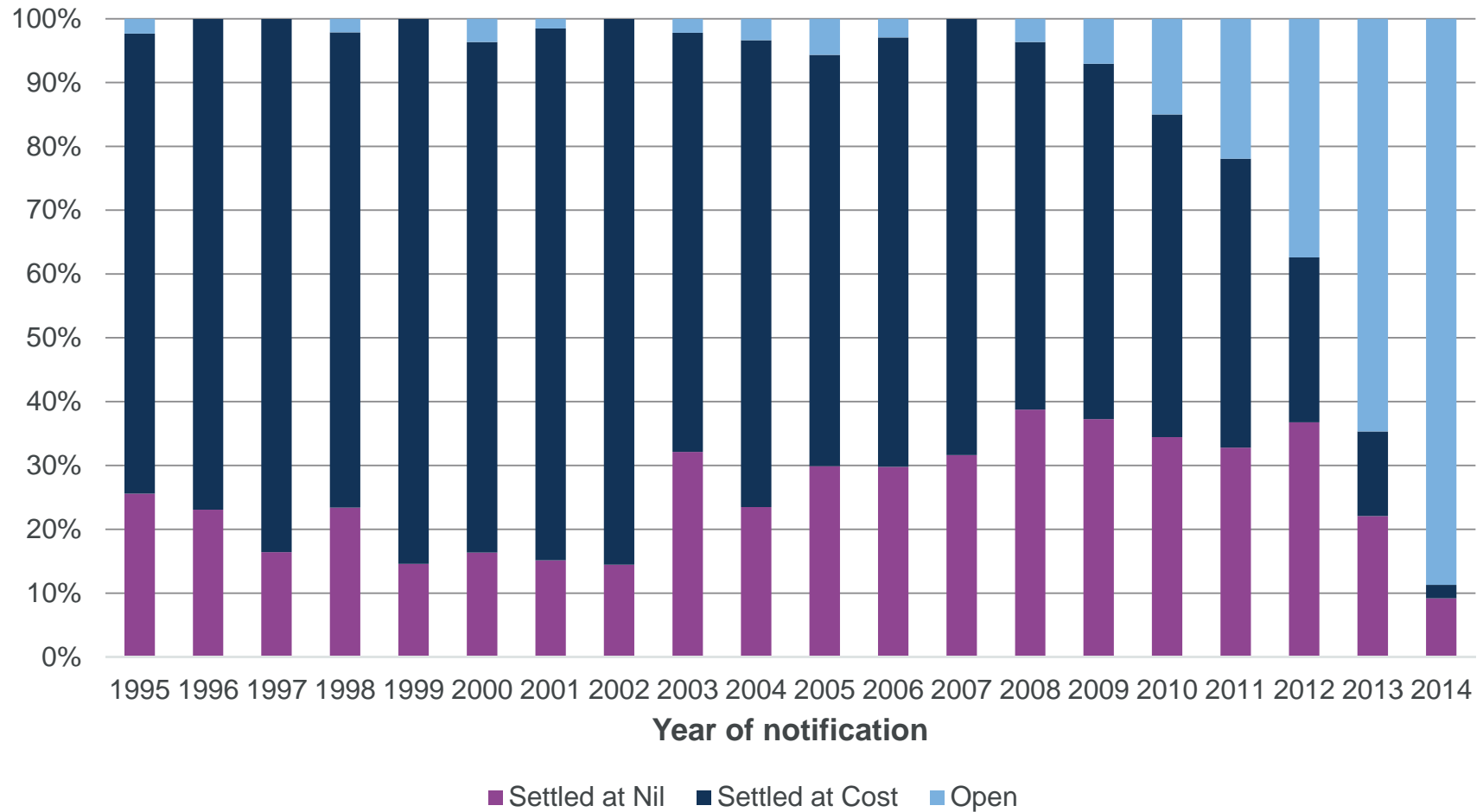
Status of asbestosis claims



- From the 2015 survey the average nil rates look consistent at between 34%-36%.
- There is no change in the nil rates over the notification periods.
- Please note that for the most recent years, 2011 and onwards, still have a lot of open claims (over 20%), so it is difficult to see if nil rate has changed in these years.

Market survey data YE2014 (Survey 2015)

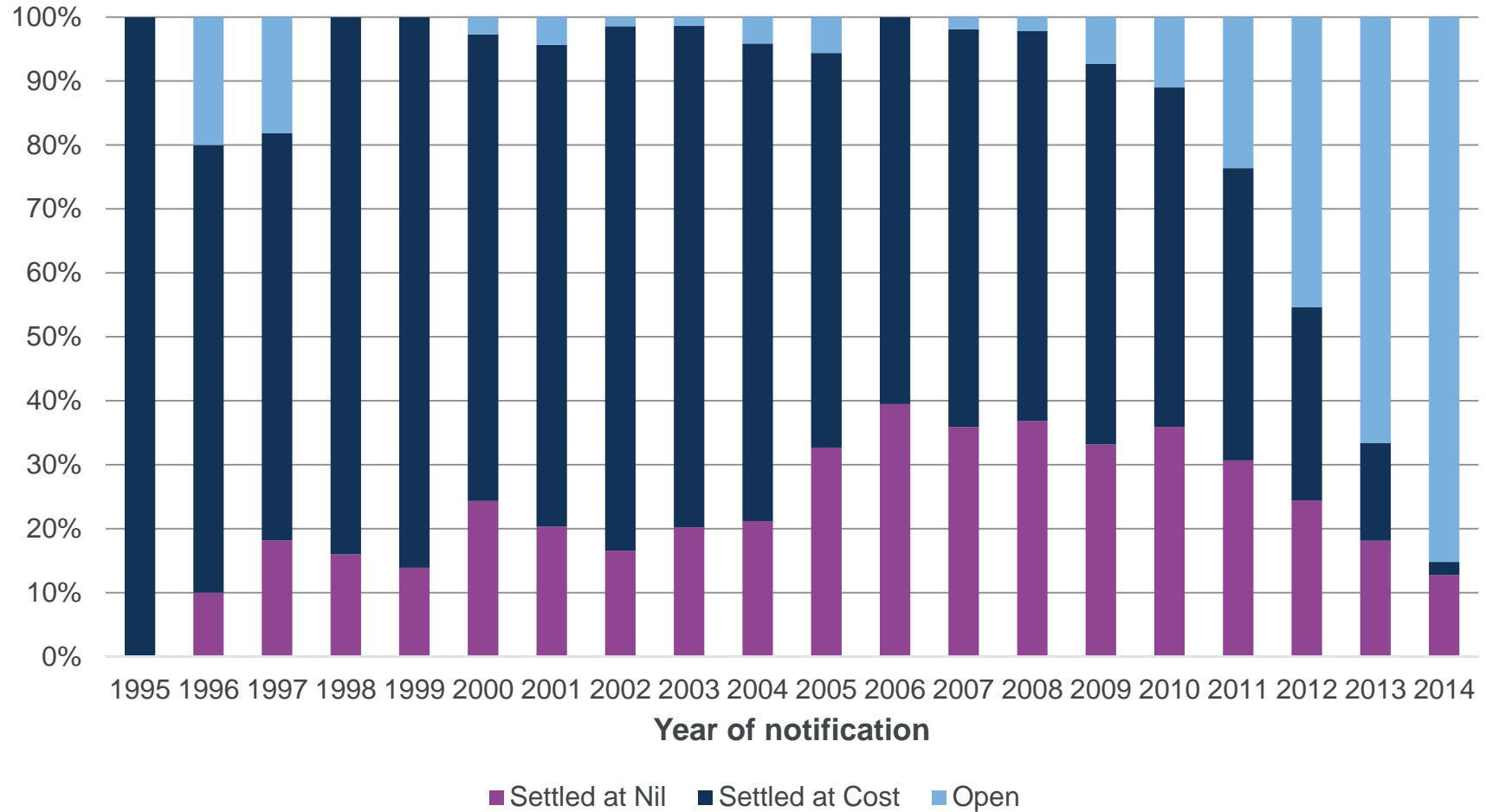
Status of lung cancer claims



- From the 2015 survey the average nil rates for more recent notification years are between 33%-38%.
- The nil rates have increased since 2002, this could be due to the increasing volumes in claims notified (from average of 60 claims per year between 1998 to 2002 to an average 400 claims per year between 2010 to 2014).
- Please note that for the most recent years, 2011 and onwards, still have a lot of open claims (over 20%), so it is difficult to see if nil rate has changed in these years.

Market survey data YE2014 (Survey 2015)

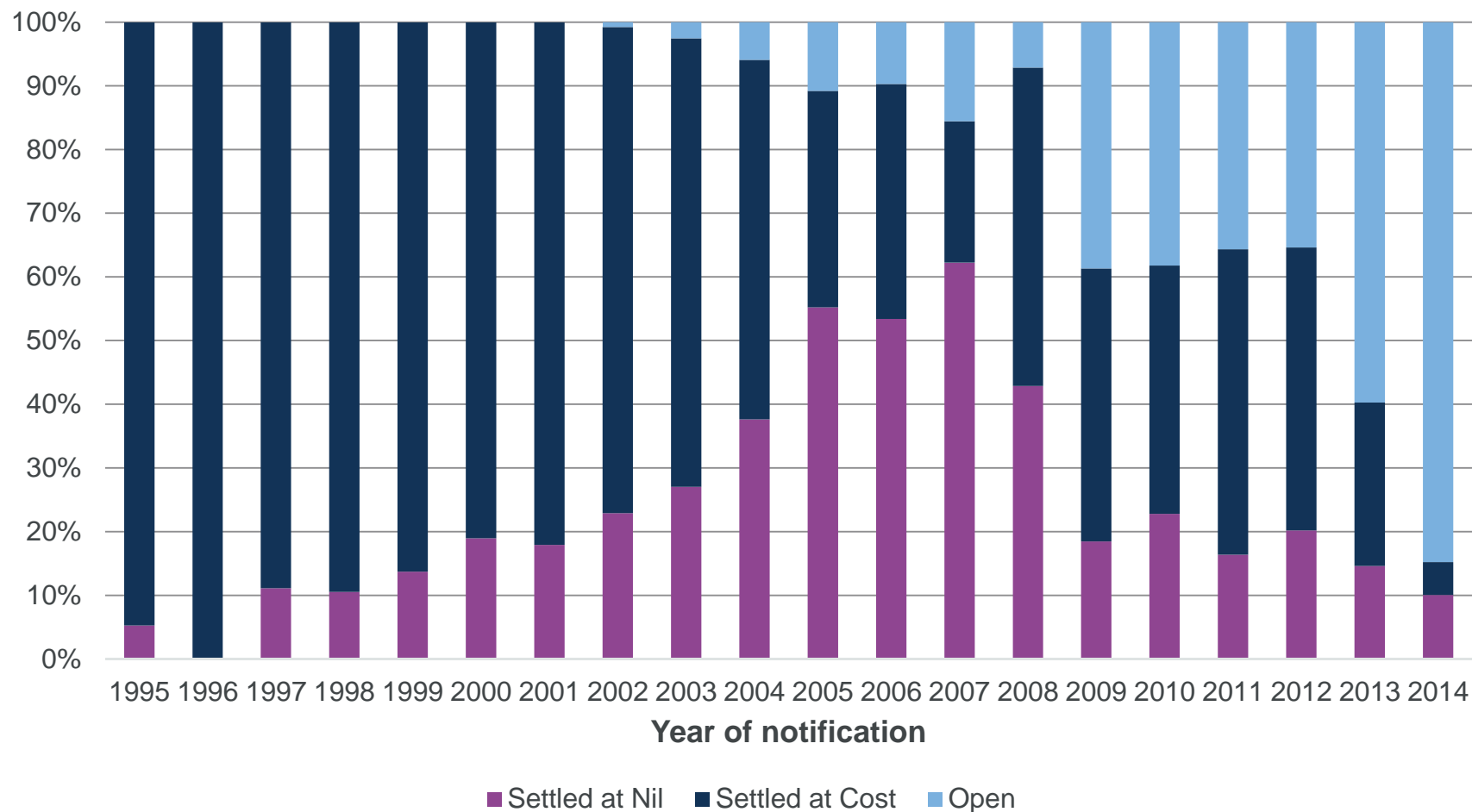
Status of pleural thickening claims



- From the 2015 survey the average nil rates in the more notification years is around 36%.
- The nil rates have increased since 2004, this could be due to the increasing volumes in claims notified (under 450 claims for 2004 and prior compared to over 600 claims post 2004).
- Please note that for the most recent years, 2011 and onwards, still have a lot of open claims (over 20%), so it is difficult to see if nil rate has changed in these years.

Market survey data YE2014 (Survey 2015)

*Status of pleural plaques claims**



* Scottish and Northern Irish pleural plaques only

- While our data survey specifies Scottish and Northern Irish pleural plaques claims only, it is likely that the data from older years contains claims from all of the UK.
- The nil rate was very high up until 2008 (peaking just above 60% in 2007), which may be linked to changes in the compensability of these claims through the pleural plaque test cases (Johnston v NEI International Combustion Ltd & Others. [2007] UKHL 39) and changes to the legislation in Scotland and Northern Ireland to make them compensable again.
- Please note that for the most recent years, 2009 and onwards, still have a lot of open claims (over 35%), so it is difficult to see if nil rate has changed in these years.
- There are a greater proportion of open pleural plaques claims present in the 2009-2011 notification years than for the other disease types.

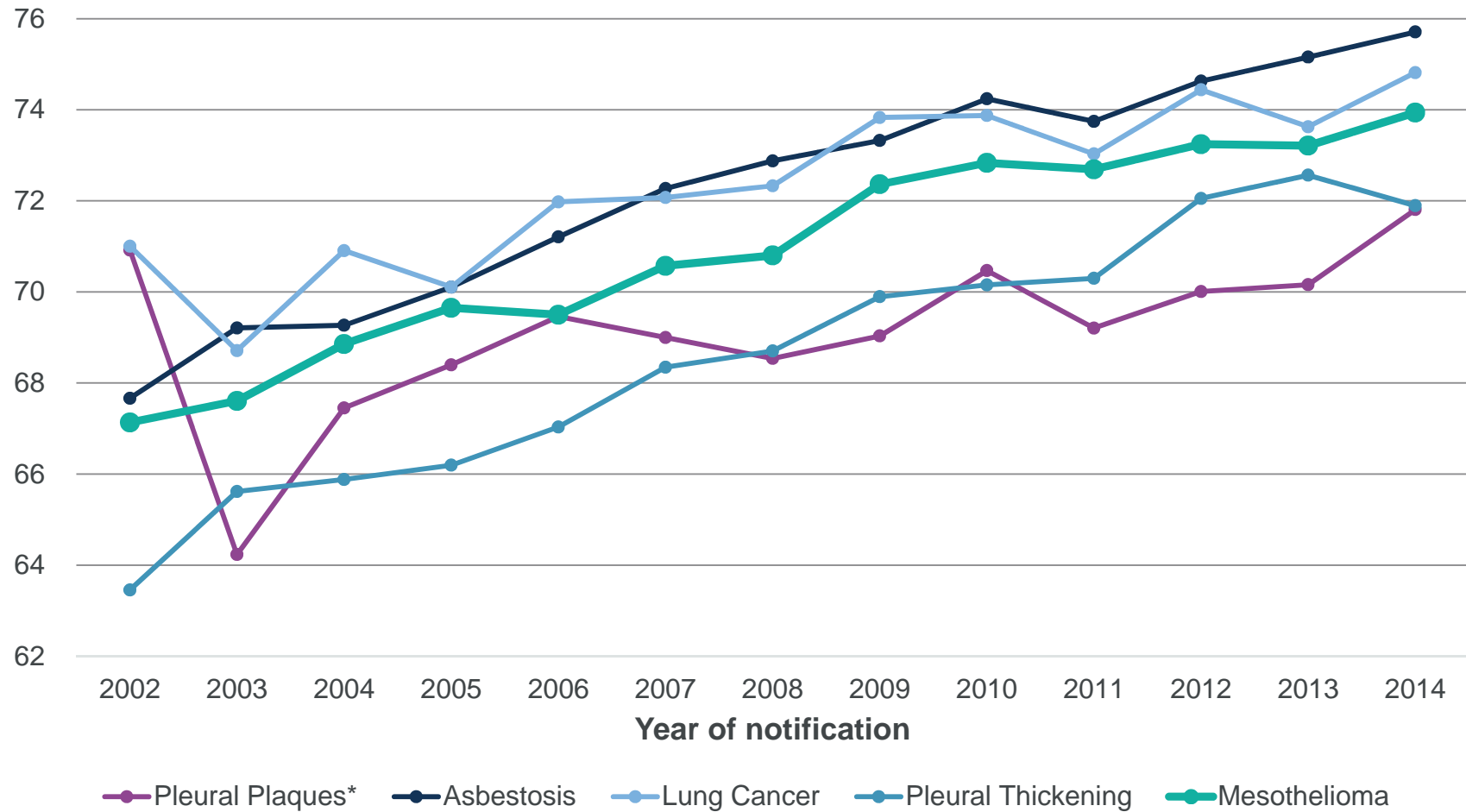
Update from the UK asbestos working party

Market survey data YE2014 (Survey 2015)

Average age

Market survey data YE2014 (Survey 2015)

Claimant average age at notification



* Scottish and Northern Irish pleural plaques only

- Consistent increasing trend across all disease types.
- From the 2015 survey, for every year of notification that passes the average age of claimants increases by half a year.

Update from the UK asbestos working party

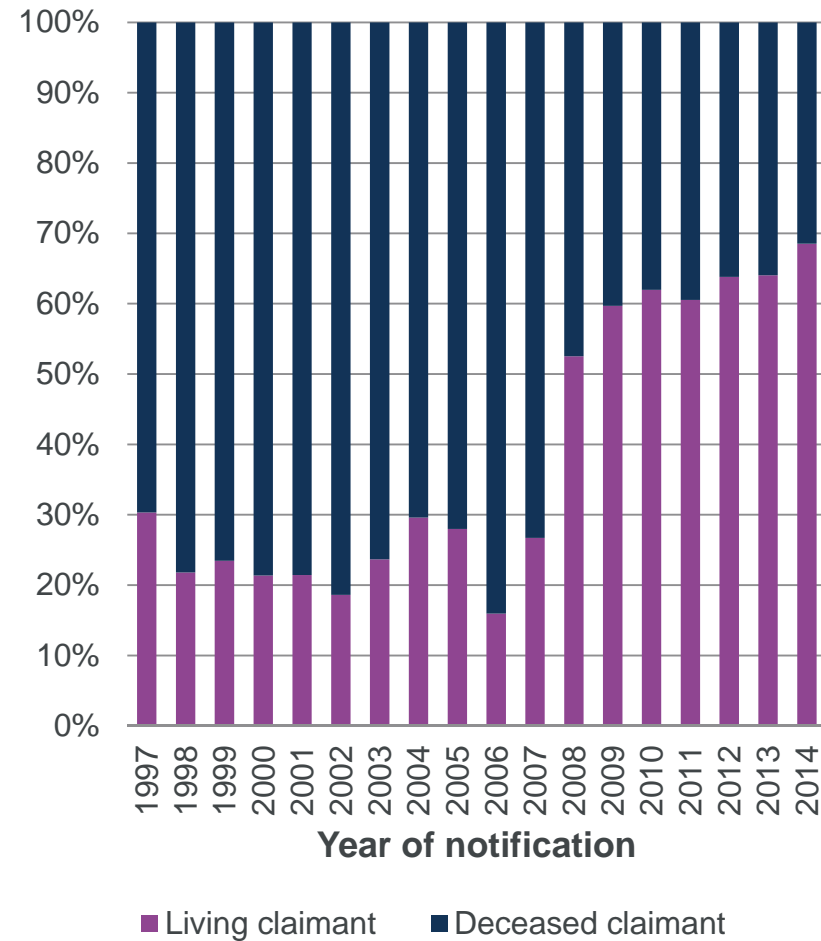
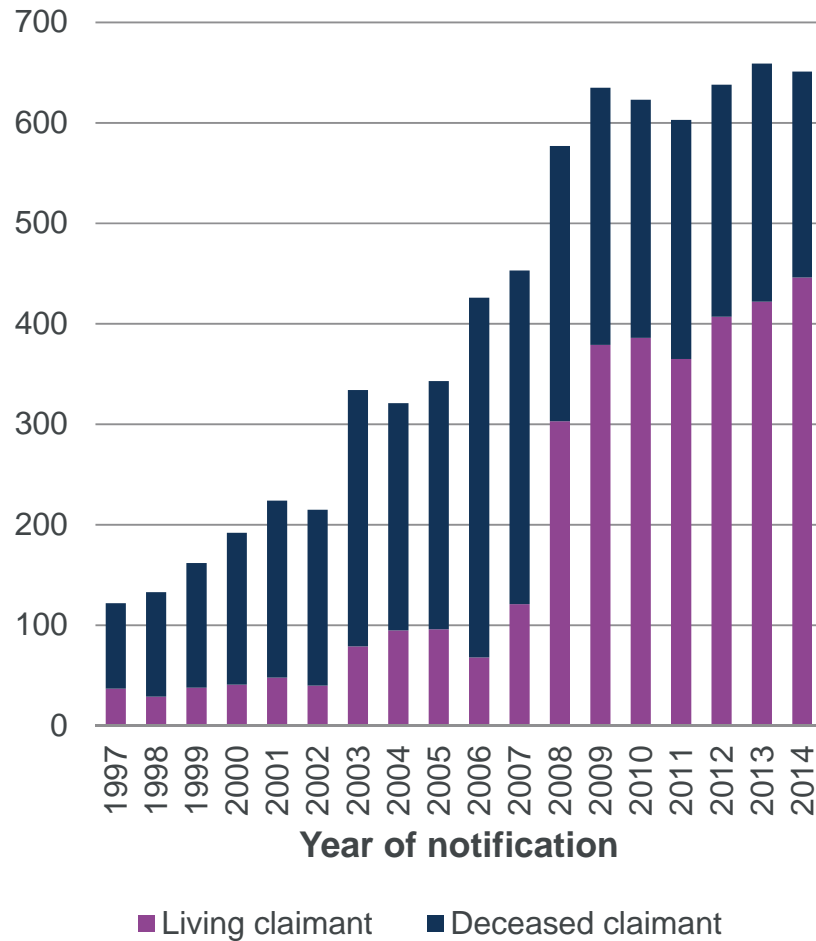
Market survey data YE2014 (Survey 2015)

Mesothelioma insights

Please note that the mesothelioma insight analyses are based on a subset of the 2015 survey data.

Survey 2015 – Mesothelioma insights

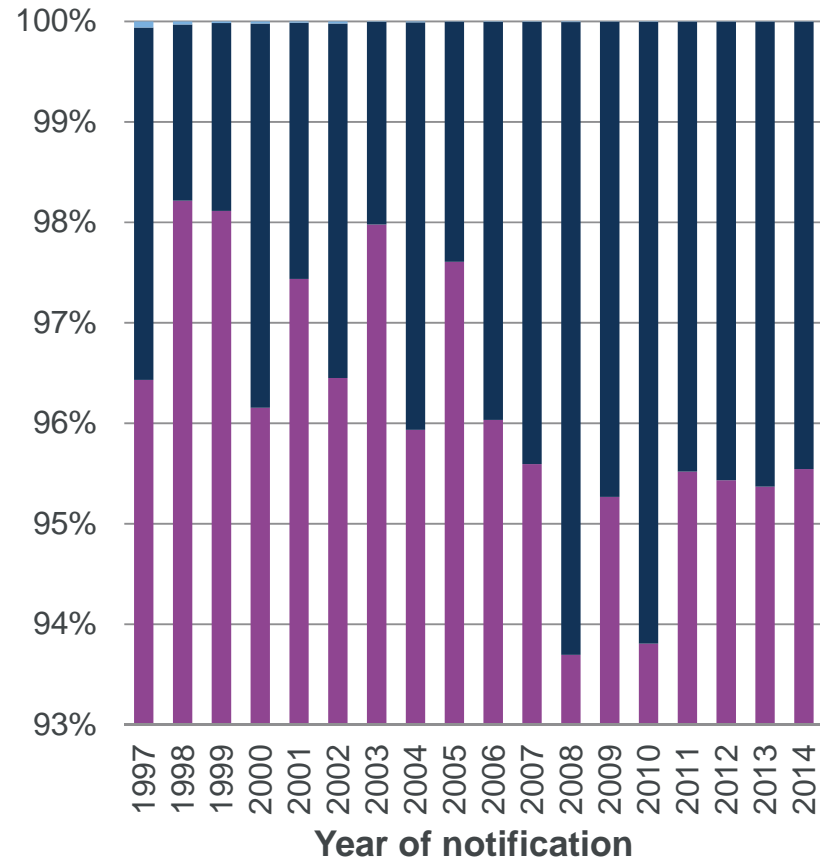
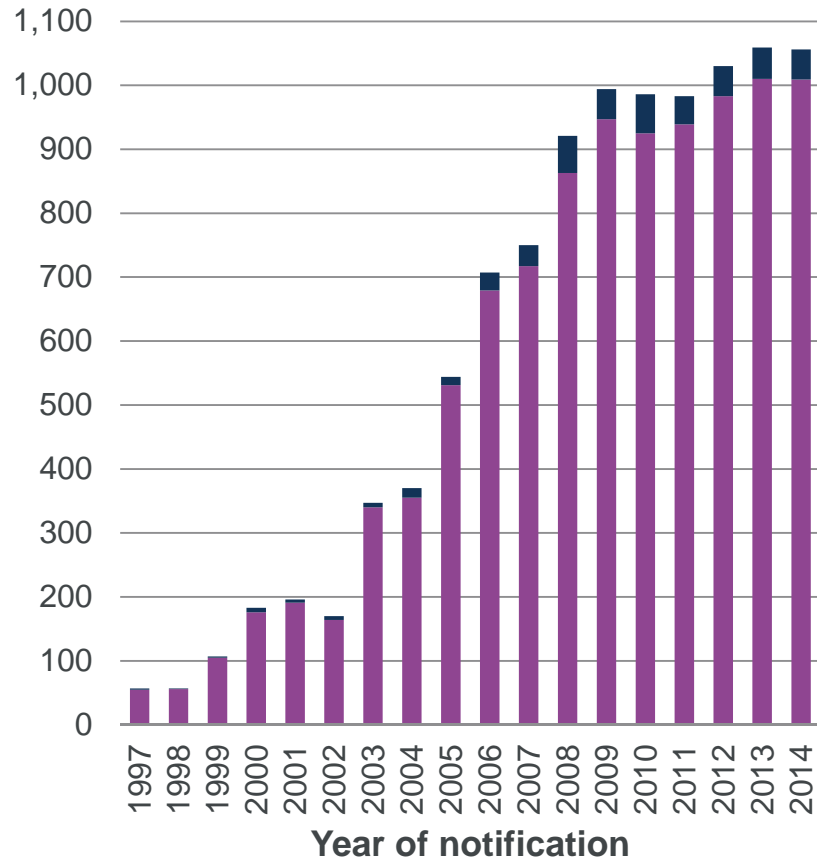
Living / deceased claimant by notification year



- There is a clear trend pre and post 2007; with a jump in the level of claimants still living (from below 30% to over 50%).
- This is consistent with the introduction of the NHS' mesothelioma framework in 2007 which served to increase awareness and improve diagnosis of mesothelioma claims.
- The proportion of living mesothelioma claimants has been gradually increasing over time.
- Based on the 2015 survey the proportion of living mesothelioma claimants is around 60%-65%.
- In the 2009 market estimate it was assumed that living mesothelioma claimants make up 50% of mesothelioma sufferers.

Survey 2015 – Mesothelioma insights

Male / Female claimant by notification year



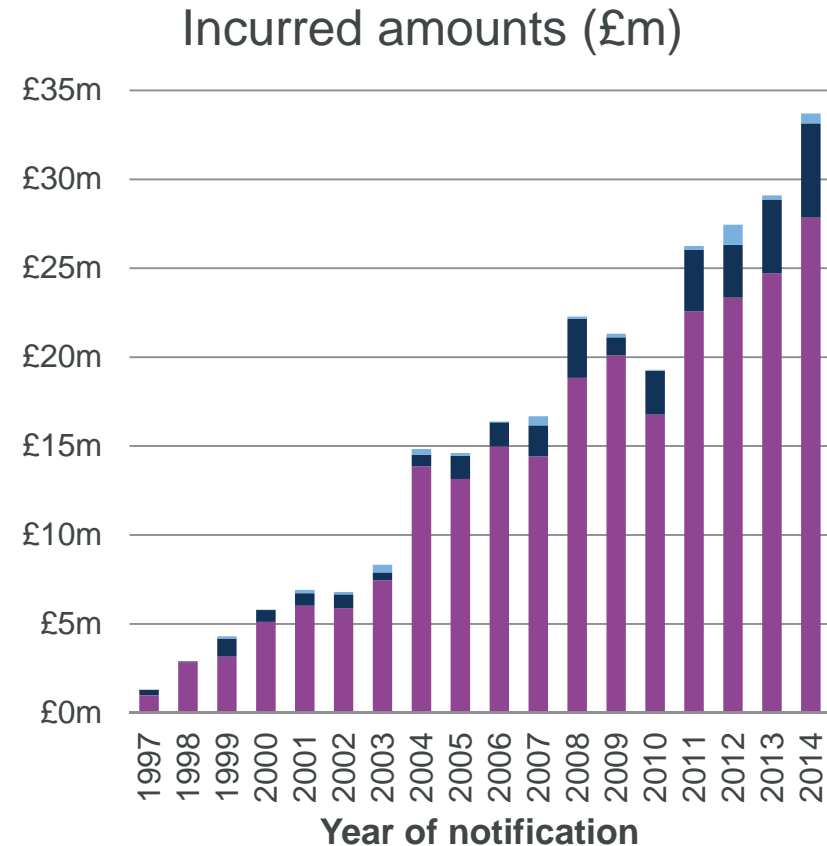
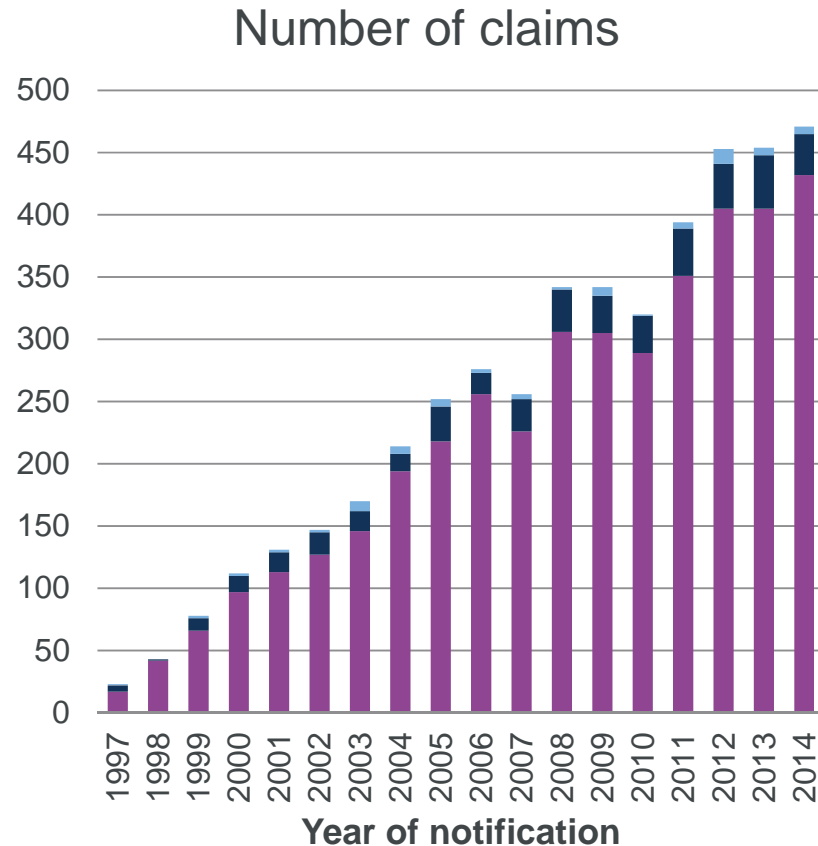
■ Male claimant ■ Female claimant

■ Male claimant ■ Female claimant ■ Column1

- The proportion of female to male claims has been relatively consistent over time
- It has been increasing slightly over the most recent years, with claims from females making around 4% to 5% of all mesothelioma claims.
- In the 2009 market estimate it was assumed that claims from females made up 5% of the total claims.

Survey 2015 – Mesothelioma insights

Location of exposure by notification year



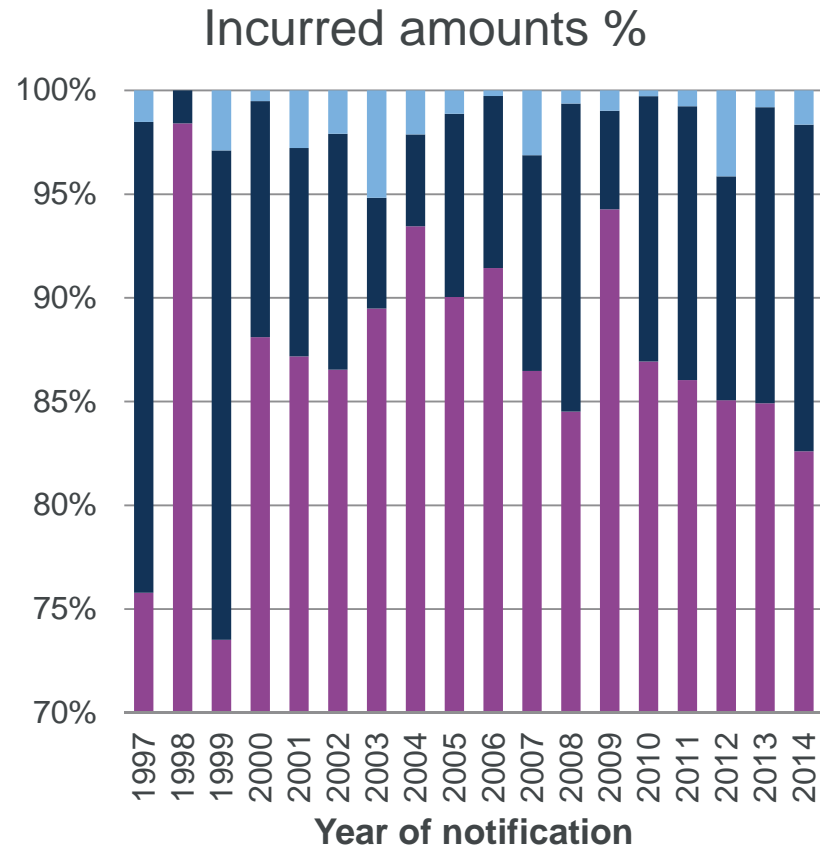
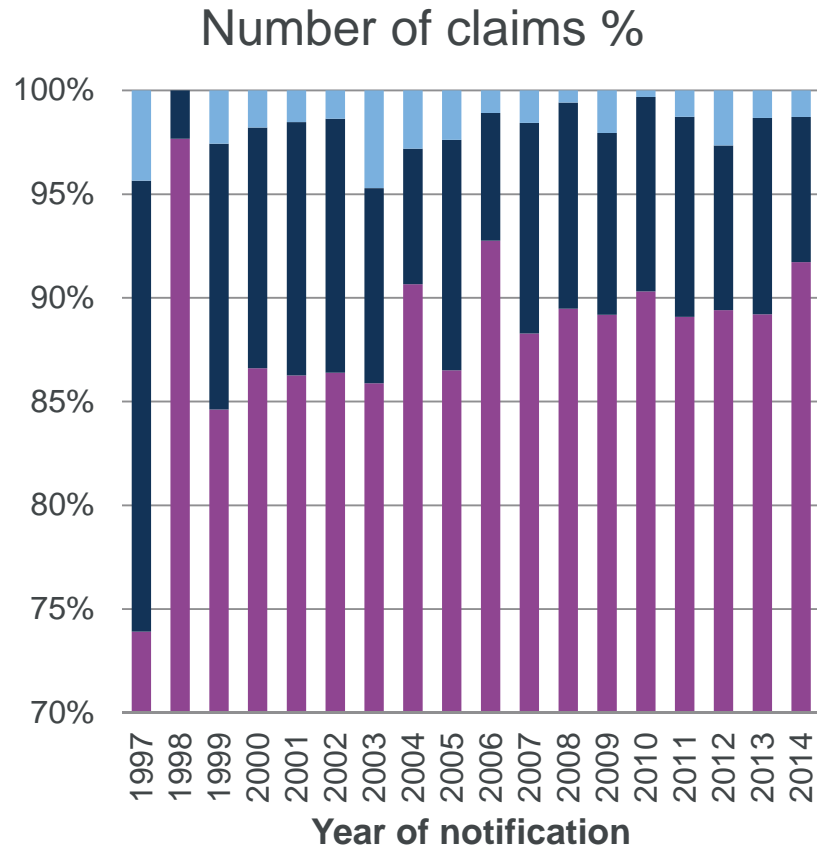
■ England & Wales ■ Scotland ■ Northern Ireland

■ England & Wales ■ Scotland ■ Northern Ireland

- The majority of mesothelioma claims are from exposures in England & Wales.
- Incurred costs in Scotland have been increasing over time, driven by higher awards (e.g. Loss of Society).

Survey 2015 – Mesothelioma insights

Location of exposure by notification year



■ England & Wales ■ Scotland ■ Northern Ireland

■ England & Wales ■ Scotland ■ Northern Ireland

- The split by number of claims has been roughly constant over the last 10 years, with about 10% coming from outside England & Wales.
- In recent years Scottish incurred costs are a greater proportion of incurred costs compared the proportion of claim numbers (2013: 14% total costs, 2014: 16% total costs).

Update from the UK asbestos working party

Survey 2015 vs. 2009 market estimate

Number of claims and average costs

A comparison between the AWP's 2009 estimates (Scenario 23 for mesothelioma and Scenarios 2B for all other disease types which make up the £11.3bn market estimate in the 2009 paper) and the 2015 survey.

All charts are including nil claims.

Claim number charts are by year of notification. Estimated and incurred average costs are by year of notification whereas settled average costs are by year of settlement.

Generally case estimates contain negative IBNER (as there is limited information when a claim is first notified especially on an insurers share of the claim). Therefore the incurred average cost (by year of notification) will generally fall over time as more information is obtained and claims settle. When comparing the settled average costs (by year of settlement) to the averages by year of notification you need to allow for the inflationary impact that claims notified in year X settle across a number of settlement years (i.e. X, X+1, ...)

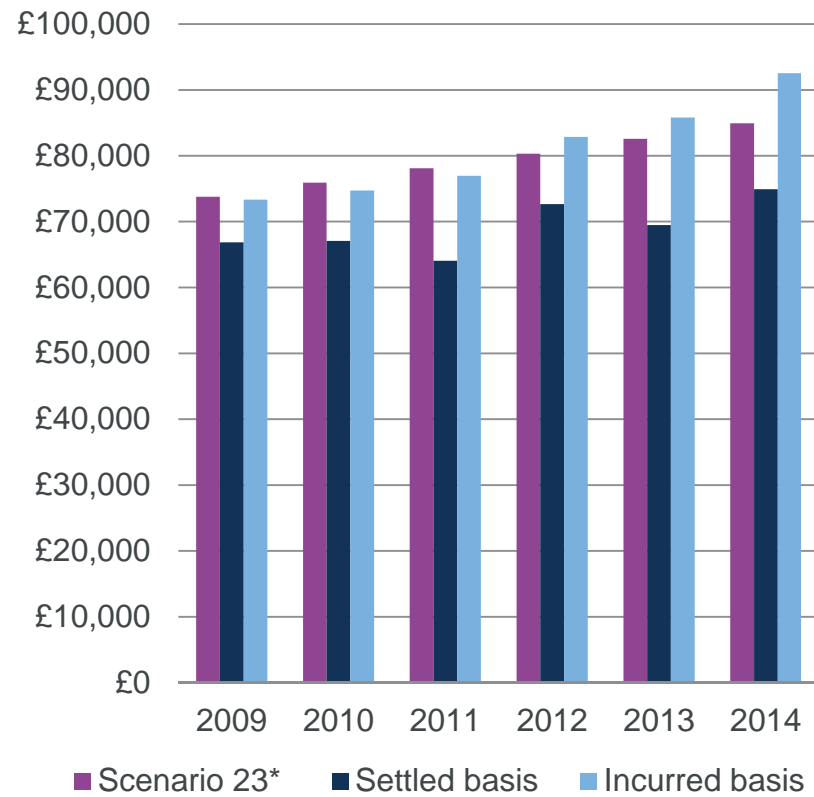
Survey 2015 vs. 2009 market estimate

Mesothelioma

**Number of claims
(includes nils)**



**Average Claim Size (£)
(includes nils)**



* Assuming 23% nil rate based on 5yr weighted average from Survey 2015

- The number of mesothelioma claims have been consistently higher than those estimated in Scenario 23.
- Settled average costs have been consistently lower than those estimated in Scenario 23.
- Whereas the incurred average cost for years with few open claims are in line with those estimated in Scenario 23.

Survey 2015 vs. 2009 market estimate

Asbestosis

Number of claims (includes nils)



Average Claim Size (£) (includes nils)

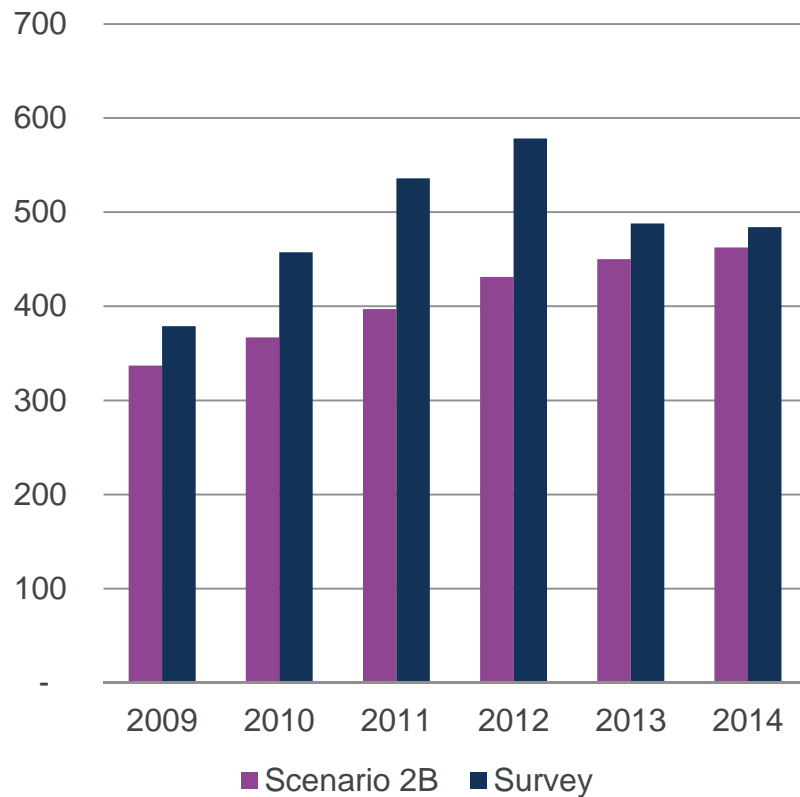


- The number of asbestosis claims in the most recent years are higher than those estimated in Scenario 2B
- In the earlier years 2009-2010 the number of asbestosis claims notified are lower than those estimated in Scenario 2B (this is due to the re-classifying of asbestosis claims to pleural thickening claims since the 2009 survey which the AWP's market estimates are based on).
- Settled average costs (and incurred average cost for years with few open claims) have been consistently lower than those estimated in Scenario 2B.

Survey 2015 vs. 2009 market estimate

Lung Cancer

**Number of claims
(includes nils)**



**Average Claim Size (£)
(includes nils)**

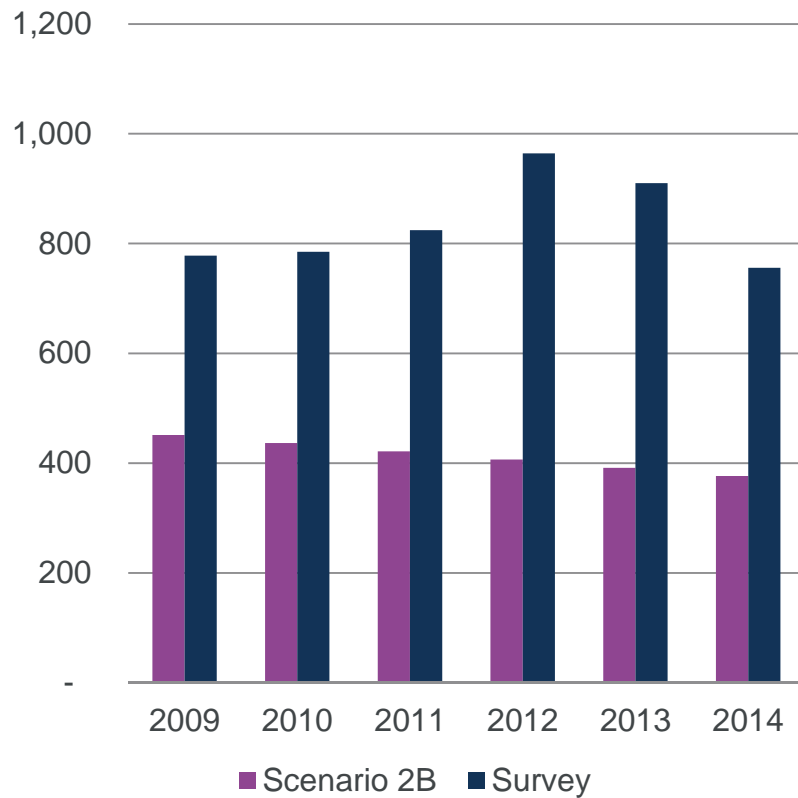


- The number of asbestos related lung cancer claims have been consistently higher than those estimated in Scenario 2B (although they are more in line with the estimates for notification years 2013 and 2014).
- Settled average costs (and incurred average cost for years with few open claims) have been consistently lower than those estimated in Scenario 2B.

Survey 2015 vs. 2009 market estimate

Pleural Thickening

**Number of claims
(includes nils)**



**Average Claim Size (£)
(includes nils)**



- The number of pleural thickening claims have been consistently higher than those estimated in Scenario 2B (this is due to the re-classifying of asbestosis claims to pleural thickening claims since the 2009 survey which the AWP's market estimates are based on).
- Settled average costs (and incurred average cost for years with few open claims) have been consistently lower than those estimated in Scenario 2B.

Update from the UK asbestos working party

Survey 2015 vs. 2009 market estimate

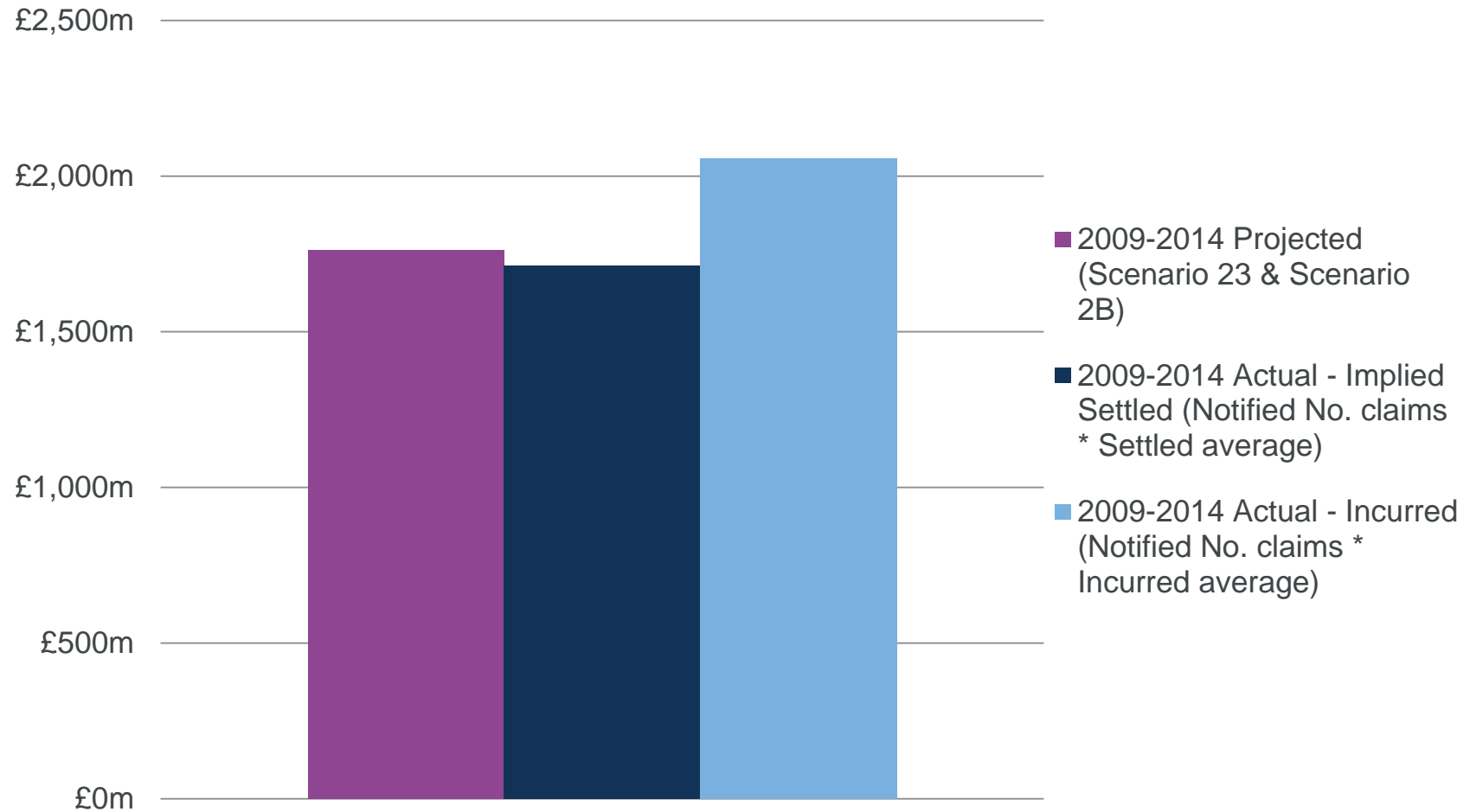
Total Costs

Comparing the total insurance costs from the 2015 survey on an implied settled (notified claims in each notification year multiplied by average settled cost for settlement year) and incurred basis; against the AWP's 2009 estimates (Scenario 23 for mesothelioma and Scenarios 2B for all other disease types).

As case estimates generally contain negative IBNER (as there is limited information when a claim is first notified especially on an insurers share of the claim), the incurred average cost (by year of notification) will generally fall over time as claims settle. Therefore it tends to represent an upper bound of the total insurance costs. When comparing to the implied settled basis, you need to consider the inflationary impact that claims notified in year X settle across a number of years (i.e. X, X+1, ...). Therefore the implied settled basis represents tends to represent a lower bound of the total insurance costs.

Survey 2015 vs. 2009 market estimate

Insurance costs 2009 to 2014 (£m)

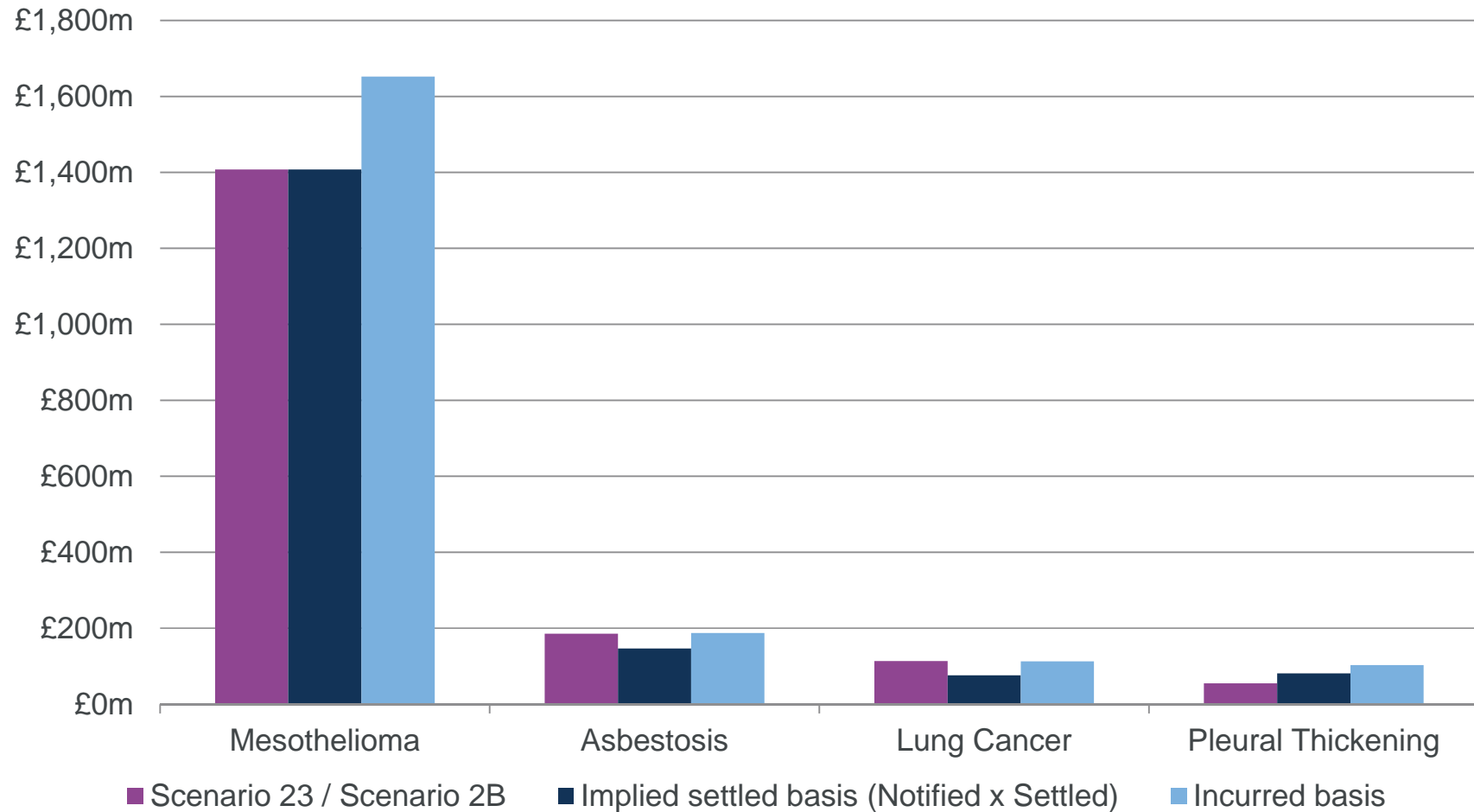


Assuming the 2015 survey covers 80% of the insurance market

- Over the period 2009-2014, the 2015 survey implied settled costs to the industry have been slightly lower than those estimated (by £50m)
- The estimated costs are £290m lower than the incurred position from the survey
- This period represents around 15-18% of the £11.3bn market estimate in the 2009 paper.

Survey 2015 vs. 2009 market estimate

Insurance costs 2009 to 2014 (£m)

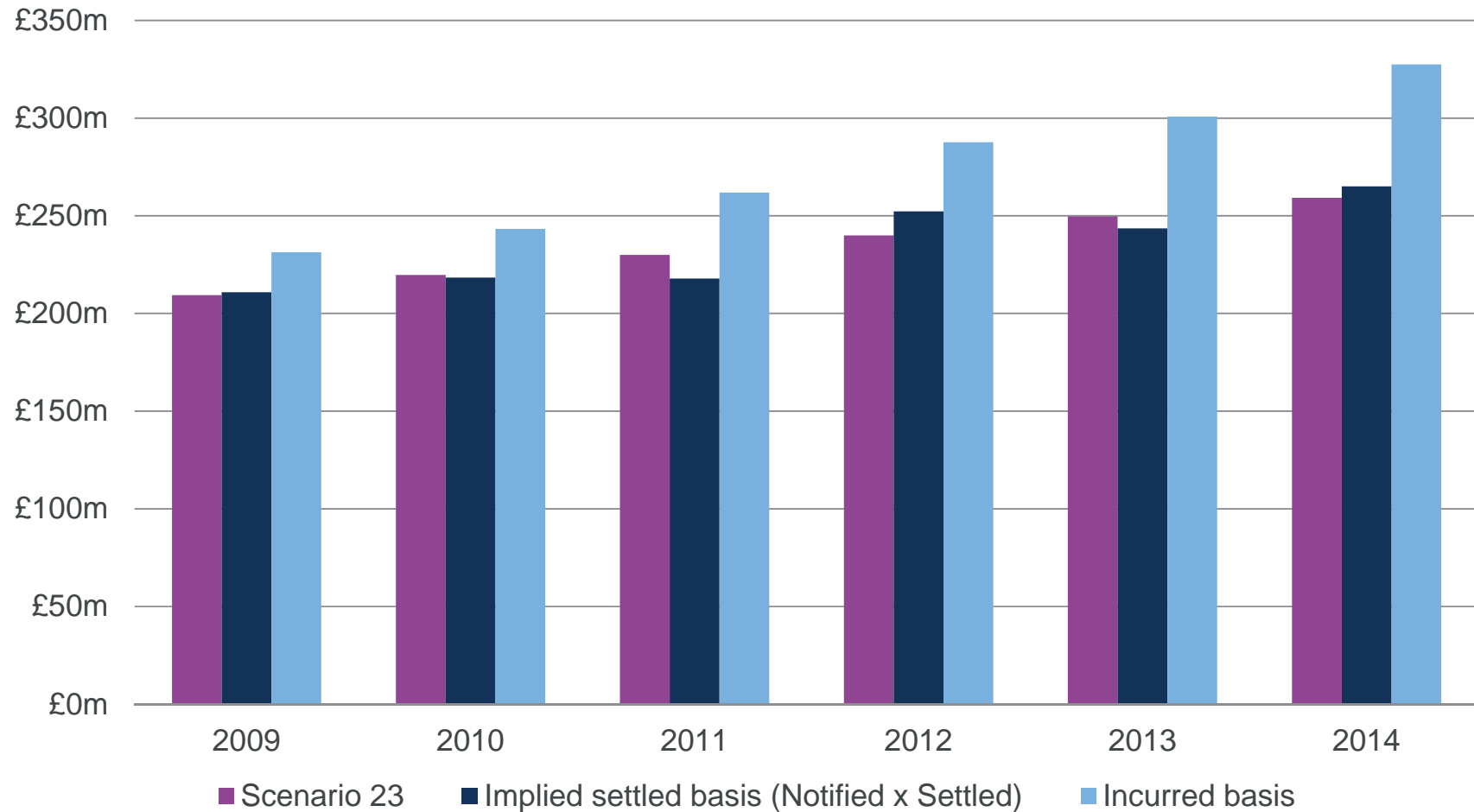


Assuming the 2015 survey covers 80% of the insurance market

- Mesothelioma claims make up the largest part of the costs to the insurance industry around 80% on an estimated and implied settled basis (94% on an incurred basis)
- For mesothelioma claims the 2015 survey implied settled costs to the industry in line with those estimated (by Scenario 23).
- However the estimated costs for mesothelioma are lower than the incurred costs (by £245m or 18%).

Survey 2015 vs. 2009 market estimate

Mesothelioma - Insurance costs (£m)

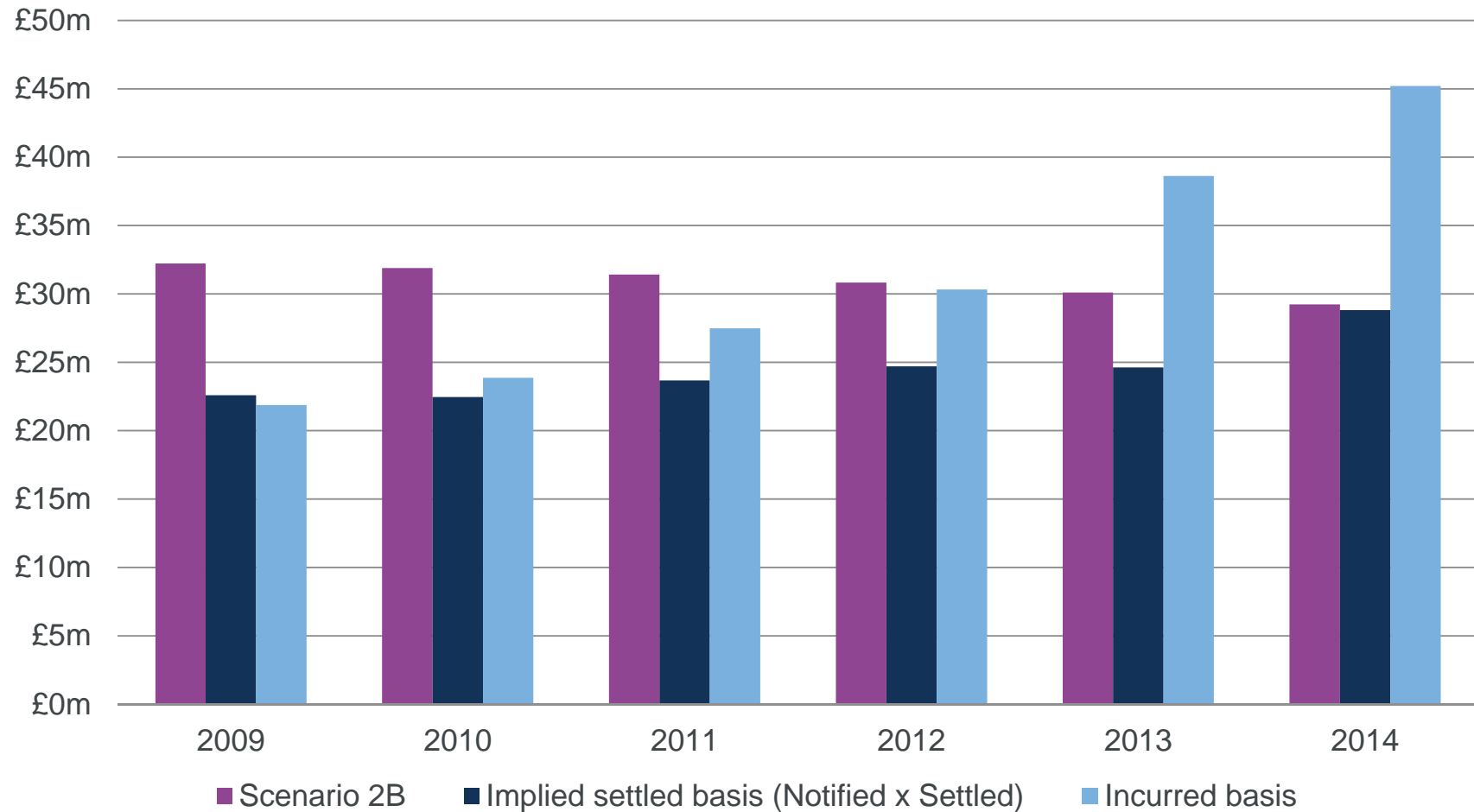


Assuming the 2015 survey covers 80% of the insurance market

- The insurance costs estimated under Scenario 23 are roughly inline with the cost from the implied settled basis.
- For the years with few open claims (2009 and 2010 both under 11%) the incurred is higher than insurance costs estimated under Scenario 23.

Survey 2015 vs. 2009 market estimate

Asbestosis - Insurance costs (£m)

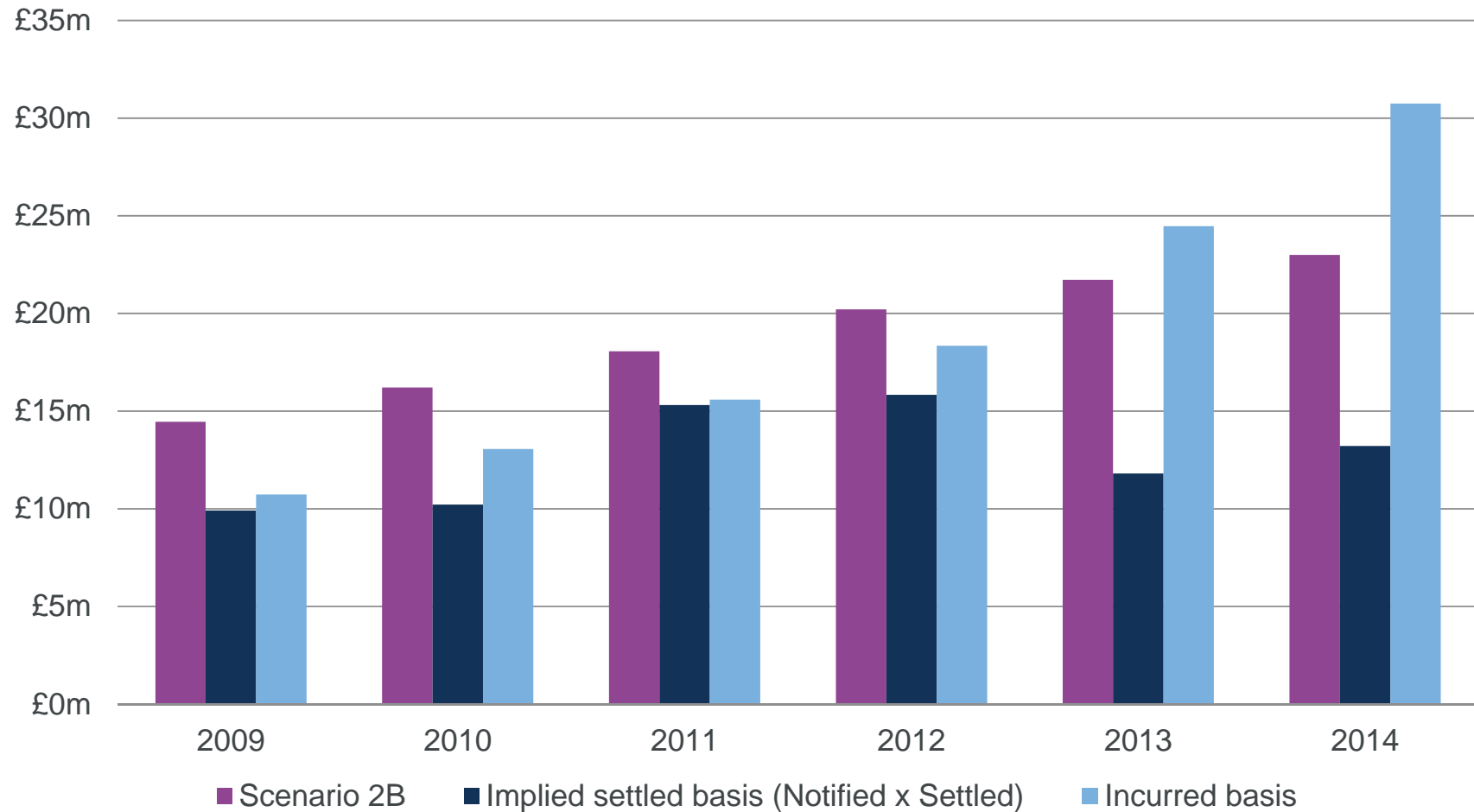


Assuming the 2015 survey covers 80% of the insurance market

- The insurance costs estimated under Scenario 2B are higher than those under the implied settled and incurred bases, in years 2009 to 2011.
- This is due to the lower than estimated average costs numbers (numbers are lower due to participants re-classifying asbestosis claims to pleural thickening claims since the 2009 survey which the estimates are based on).

Survey 2015 vs. 2009 market estimate

Lung Cancer - Insurance costs (£m)

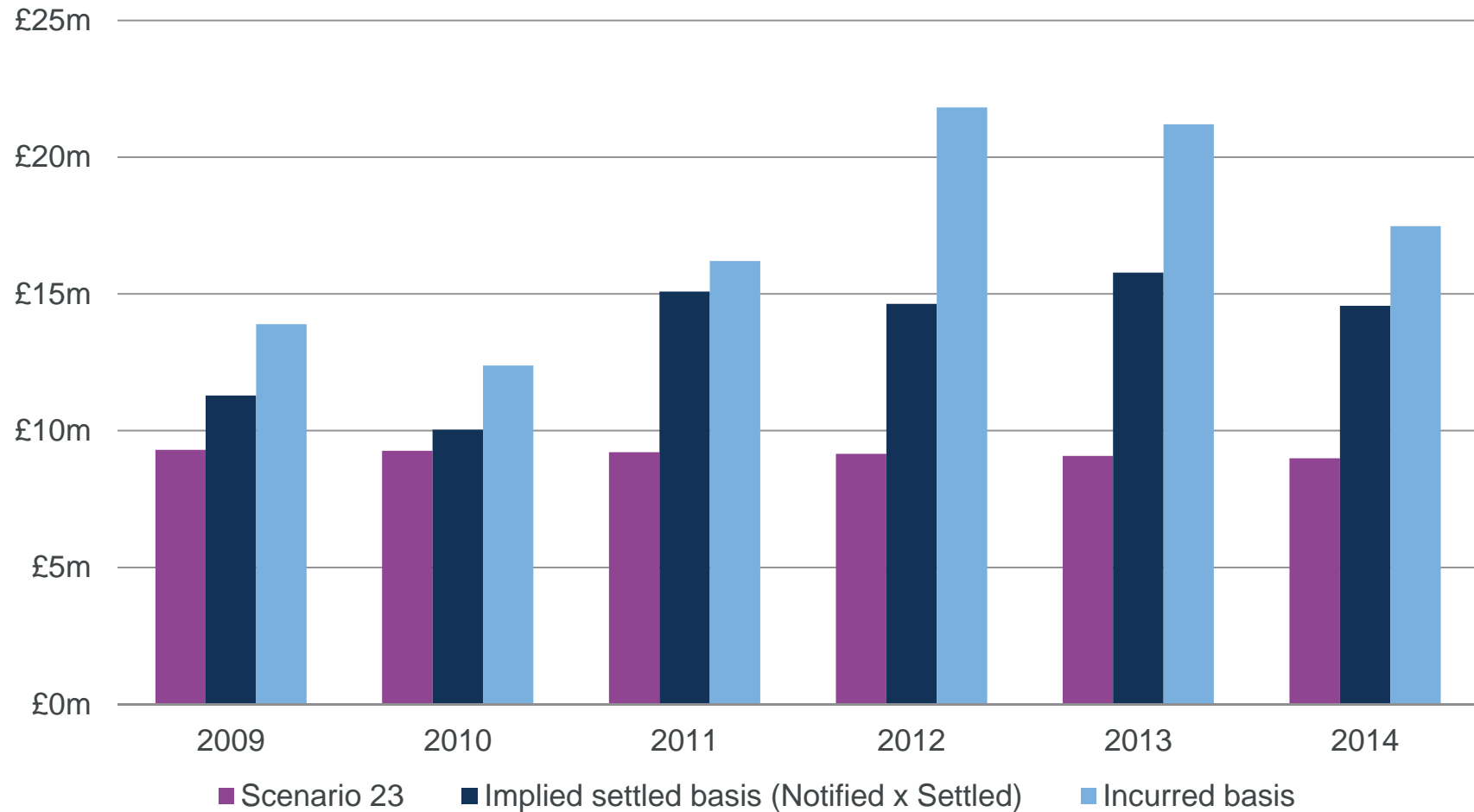


Assuming the 2015 survey covers 80% of the insurance market

- The insurance costs estimated under Scenario 2B are higher than those under the implied settled basis.
- This is also true on an incurred basis, except for years 2013 and 2014 where they are still a very high proportion of open claims.
- This difference is principally due to the lower than expected average costs, which more than offset the greater than estimated number of asbestos related lung cancer claims.

Survey 2015 vs. 2009 market estimate

Pleural Thickening - Insurance costs (£m)



Assuming the 2015 survey covers 80% of the insurance market

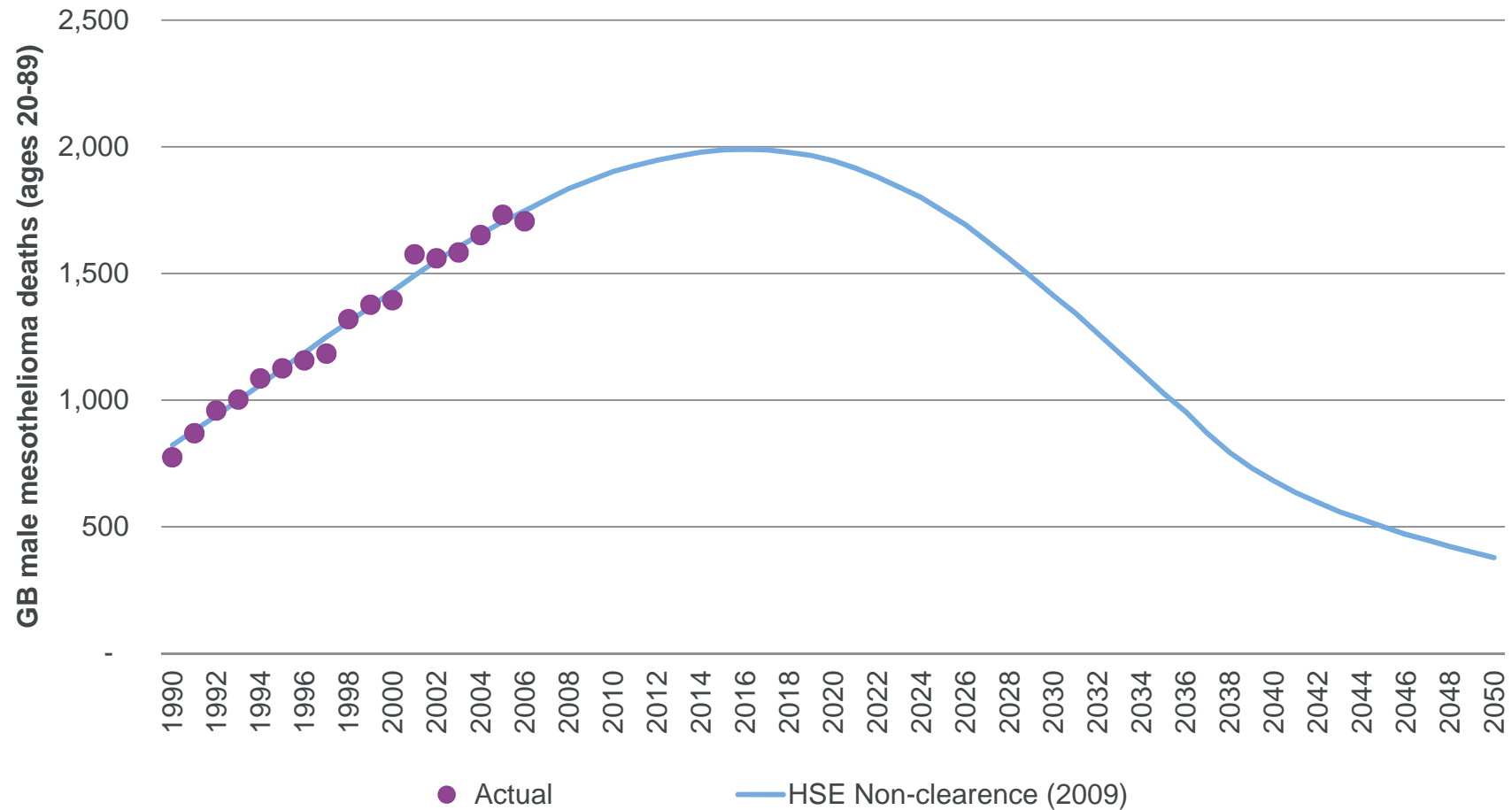
- The insurance costs estimated under Scenario 2B are lower than those under the implied settled and incurred bases.
- This is due to the higher than expected claim numbers due to participants re-classifying asbestosis claims to pleural thickening claims since 2009 survey.

Update from the UK asbestos working party

Mesothelioma deaths

Mesothelioma deaths

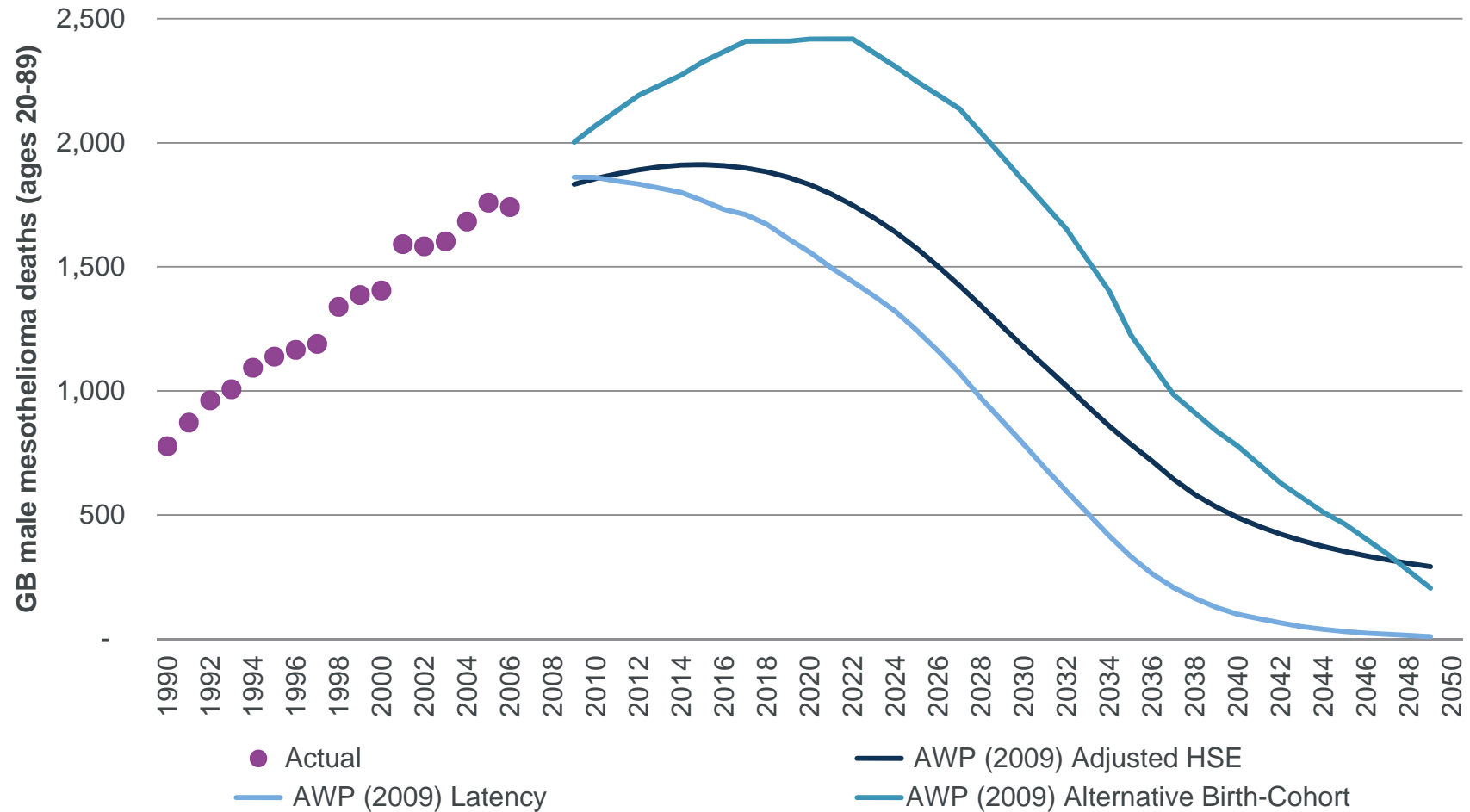
Actual experience up to 2006 and HSE projection



- HSE published projected GB male mesothelioma deaths in 2009 based on the experience up to 2006.
- Projections are a good fit to past data.
- Estimated peak of deaths in 2016 (around 2,000 GB male deaths)

Mesothelioma deaths

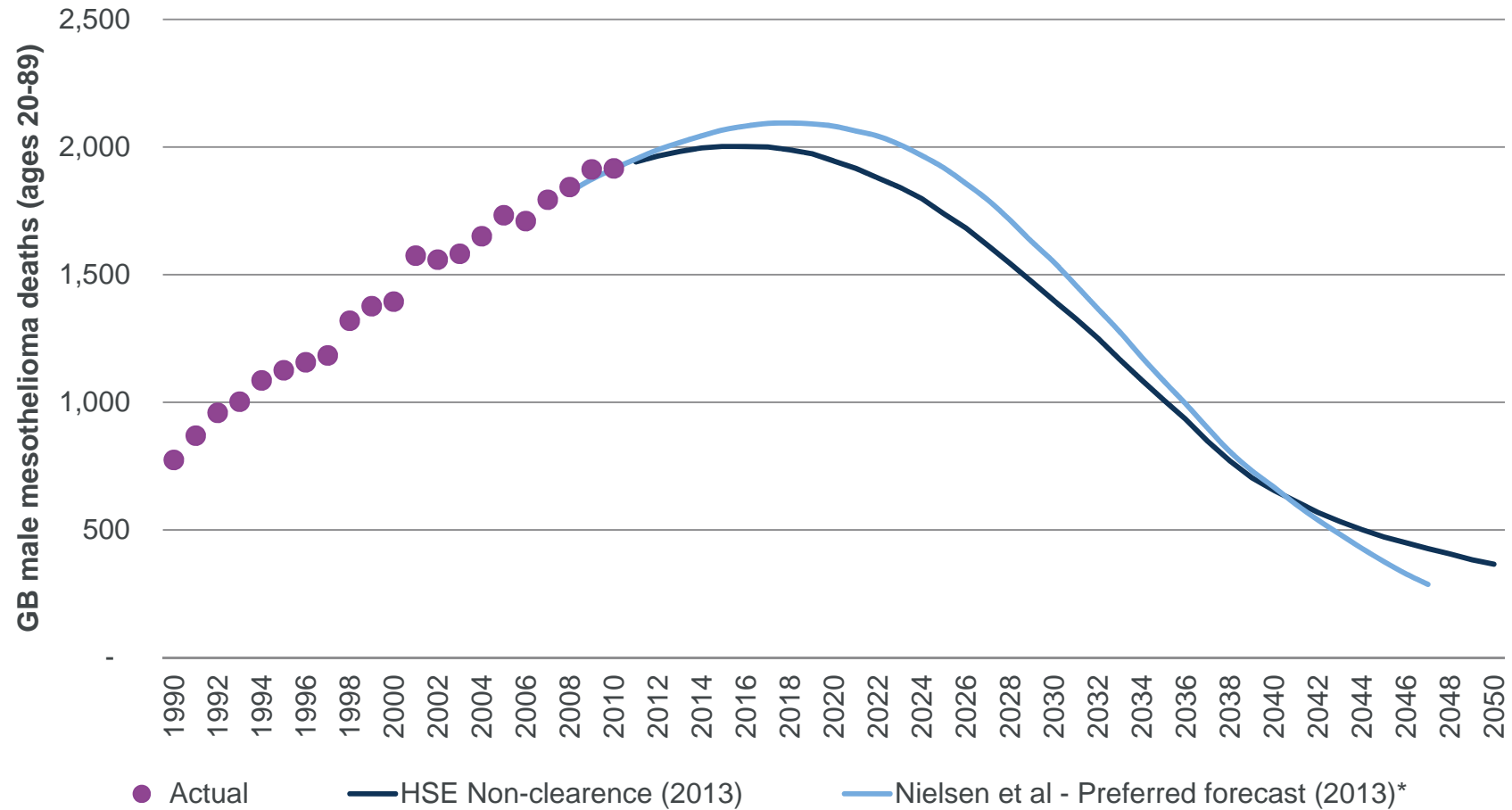
Actual experience up to 2006 and AWP projections



- AWP developed three models for estimating future GB male mesothelioma deaths in the 2009 market estimates.
- Each model had different pros and cons.
- Each model used different parameters.
- This helped the AWP to understand the uncertainty around estimating future mesothelioma deaths.

Mesothelioma deaths

Actual experience up to 2010 and new HSE projection



* Inference and forecasting in the age-period-cohort model with unknown exposure with an application to mesothelioma mortality - Jens Nielsen et al - 8 March 2013

- In 2013 Jens Nielsen et al, publishes an alternative projection, using a model structure different to HSE and AWP and deaths experience up to 2007.
- Jens Nielsen et al projection has a higher peak than HSE and later (in 2018).
- HSE publishes an update to their projections following more experience, in 2013, using deaths up to 2010.
- HSE projected peak of deaths moves back one year to 2015 but the level of the peak increases by about 1%.

Mesothelioma deaths

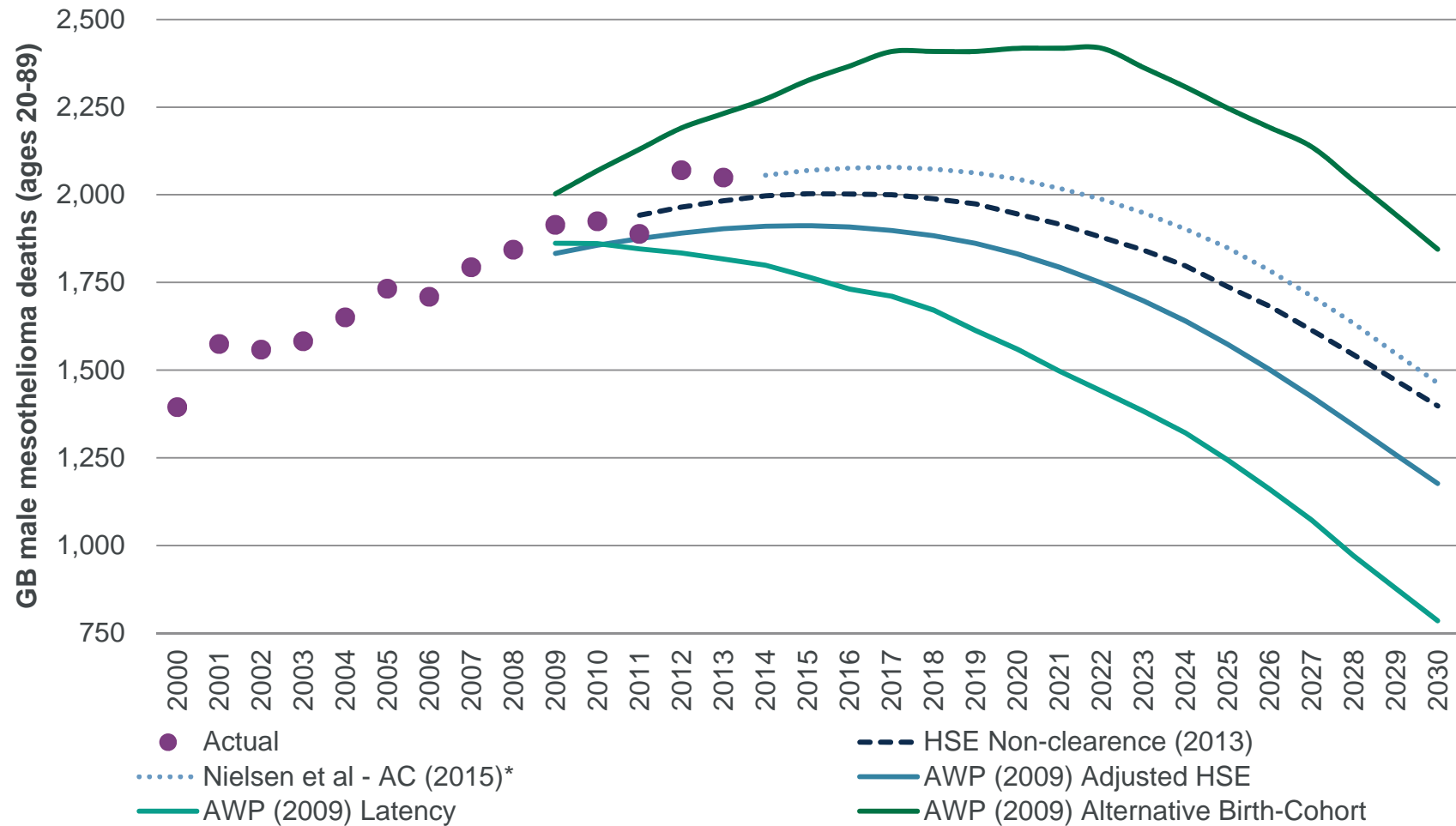
Age-cohort model - Nielsen et al (2013)

- 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 in R to fit 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 35–89.
- Provides a simple benchmark method, checking the robustness of other more sophisticated methods.

- Nielsen et al approach is similar the birth cohort models used by Professor Peto, the AWP and others, but does not involve populations.

Mesothelioma deaths

Actual experience up to 2013 and all recent projections

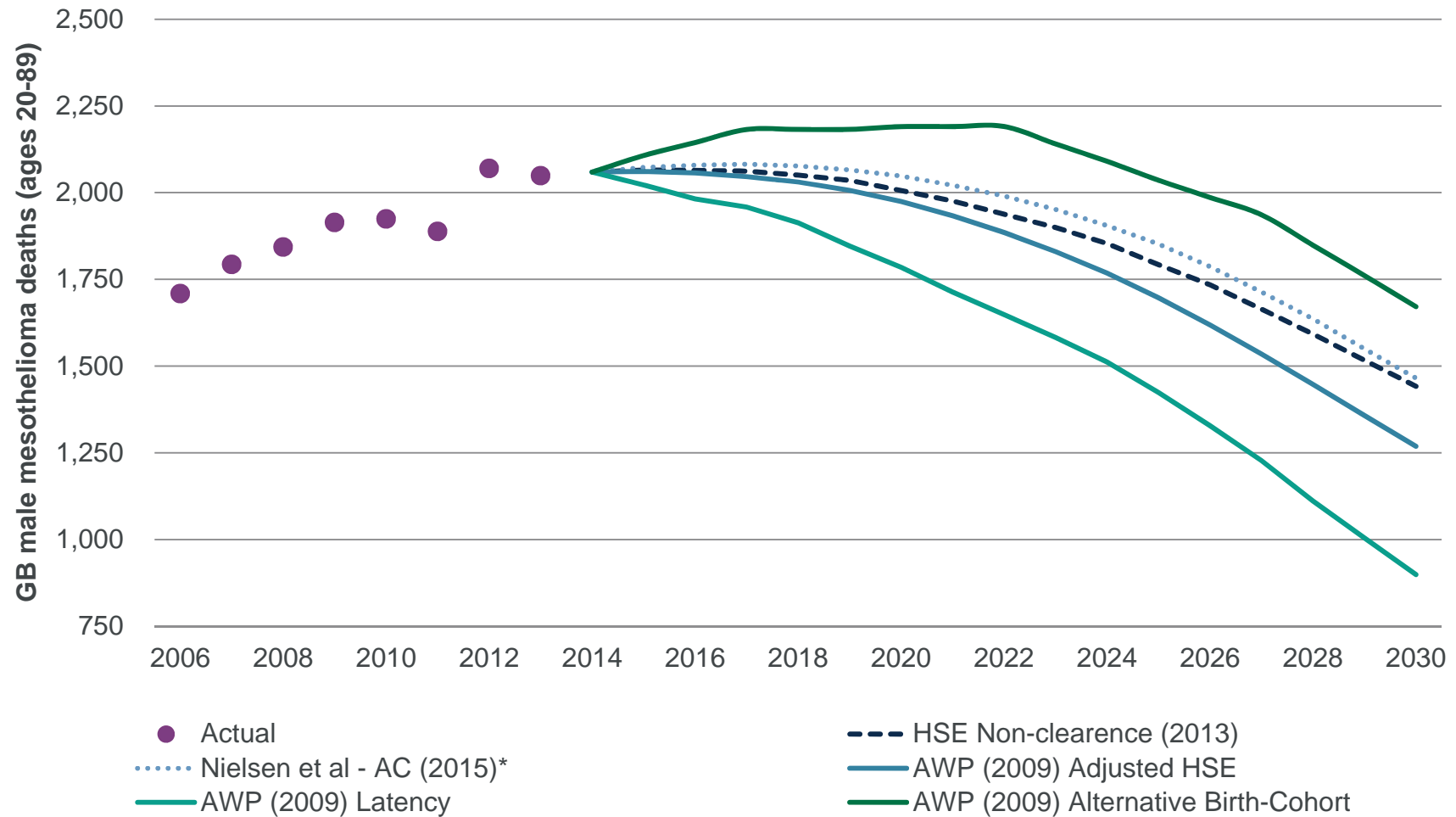


* A simple benchmark for mesothelioma projection for Britain - Jens Nielsen et al - September 2015

- Nielsen et al updated their projections this year based on the 2013 deaths. Peak is one year earlier (in 2017) and slightly lower at 2,079 deaths (a 1% decrease).
- Most recent 2 years of deaths experience is above the HSE 2013 projection.
- Since the AWP projections were developed there have been 6 additional years of experience.
- Key question is whether the shape of the projection is still correct (i.e. when claims peak and how they run-off). If the shape is OK then should be no impact on insurers reserves as they should be scaling the AWP curves to their claims experience, whereas if the shape of the AWP curves needs to change then this may impact insurers reserves.
- AWP latency model looks as though it will underestimate the total number of future deaths.

Mesothelioma deaths

Actual experience up to 2013 – Rescaled projections

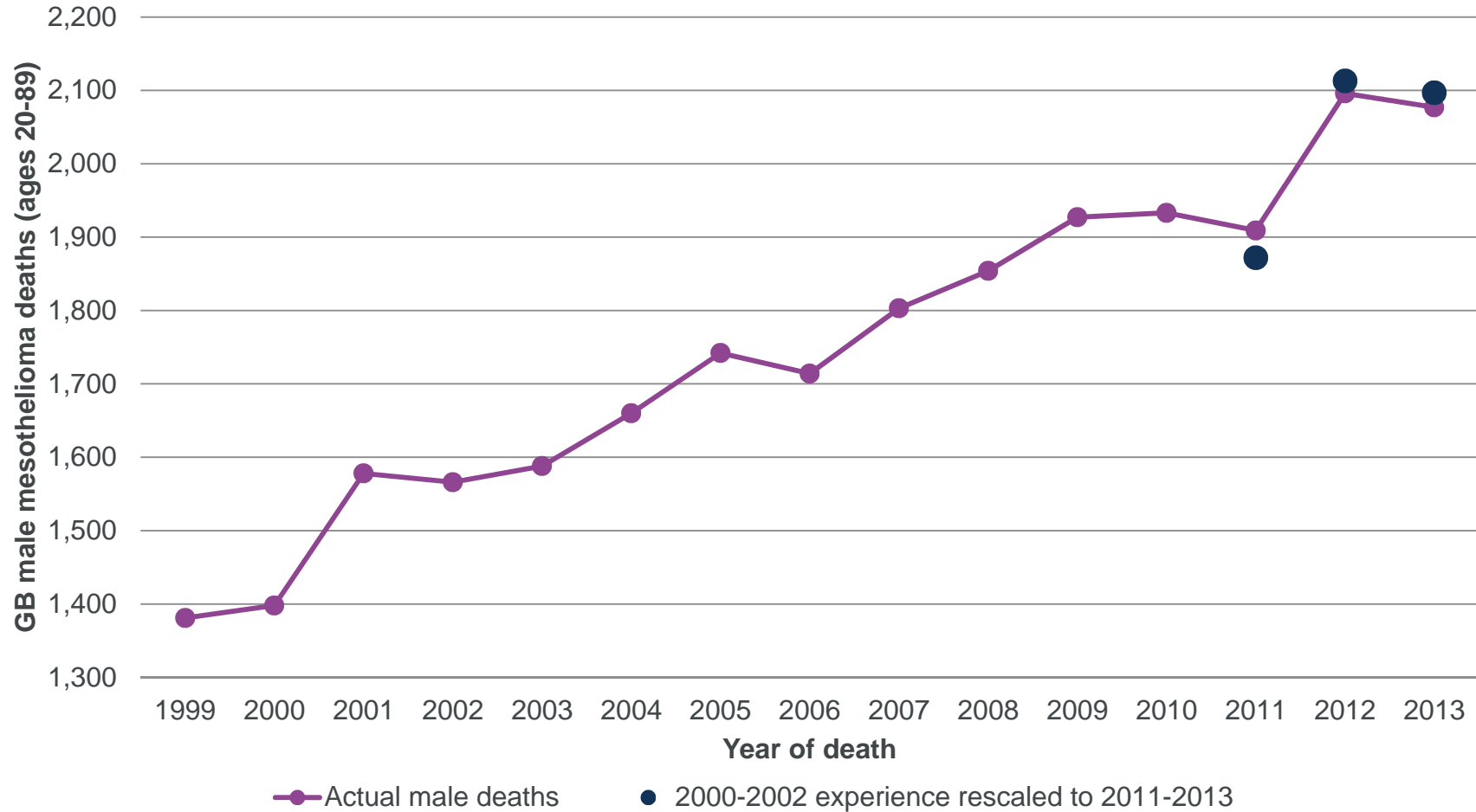


* A simple benchmark for mesothelioma projection for Britain - Jens Nielsen et al - September 2015

- Rescaling the AWP and HSE projections to the 2013 year on Nielsen et al (2015) we can see how the difference in the shape of each projection.
- The HSE, Nielsen et al and AWP adjusted HSE projections are fairly similar, with the AWP adjusted HSE tailing off the faster.
- The AWP latency model still looks as though it will underestimate the total number of future deaths, due to the shape of the curve.
- **Further investigations to be undertaken by AWP on the recent experience, the deviation from previous projections and understanding new models / projections (such as the Nielsen et al model and any new HSE estimate).**

Mesothelioma deaths

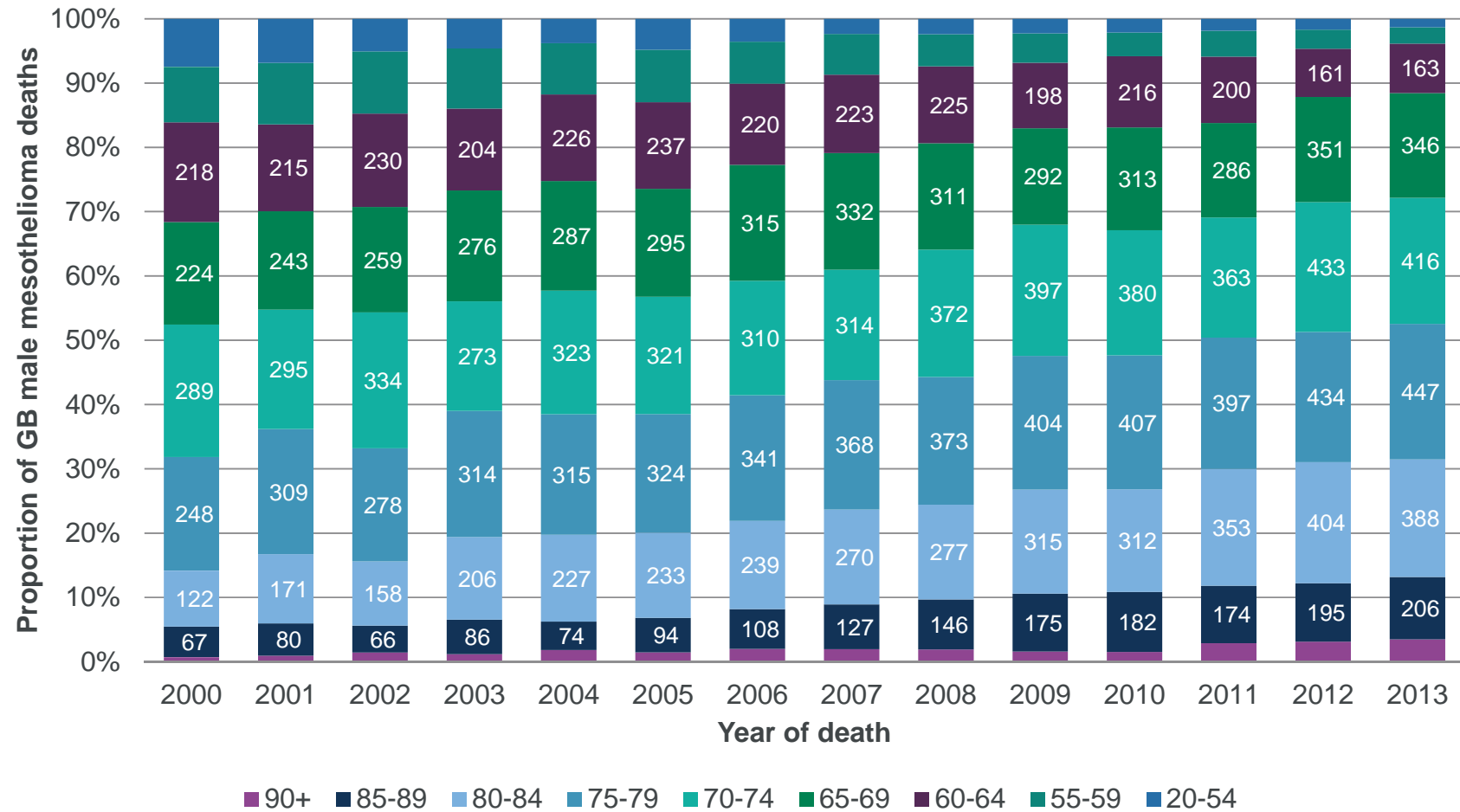
Experience of sudden increases in deaths



- If we compare the number of GB male deaths observed in 2001 to 2000 we see that there was an increase of 180 deaths and the following year showing a small reduction.
- The following years then returned to the projected track.
- Looking at the 2012 increase relative to 2011, this jumps by 182 with the following year slightly reducing.
- In fact, if we were to transpose the 2000-2002 experience and sit it on top of the 2011-2013 data points, we can see that the experience is almost identical.

Mesothelioma deaths

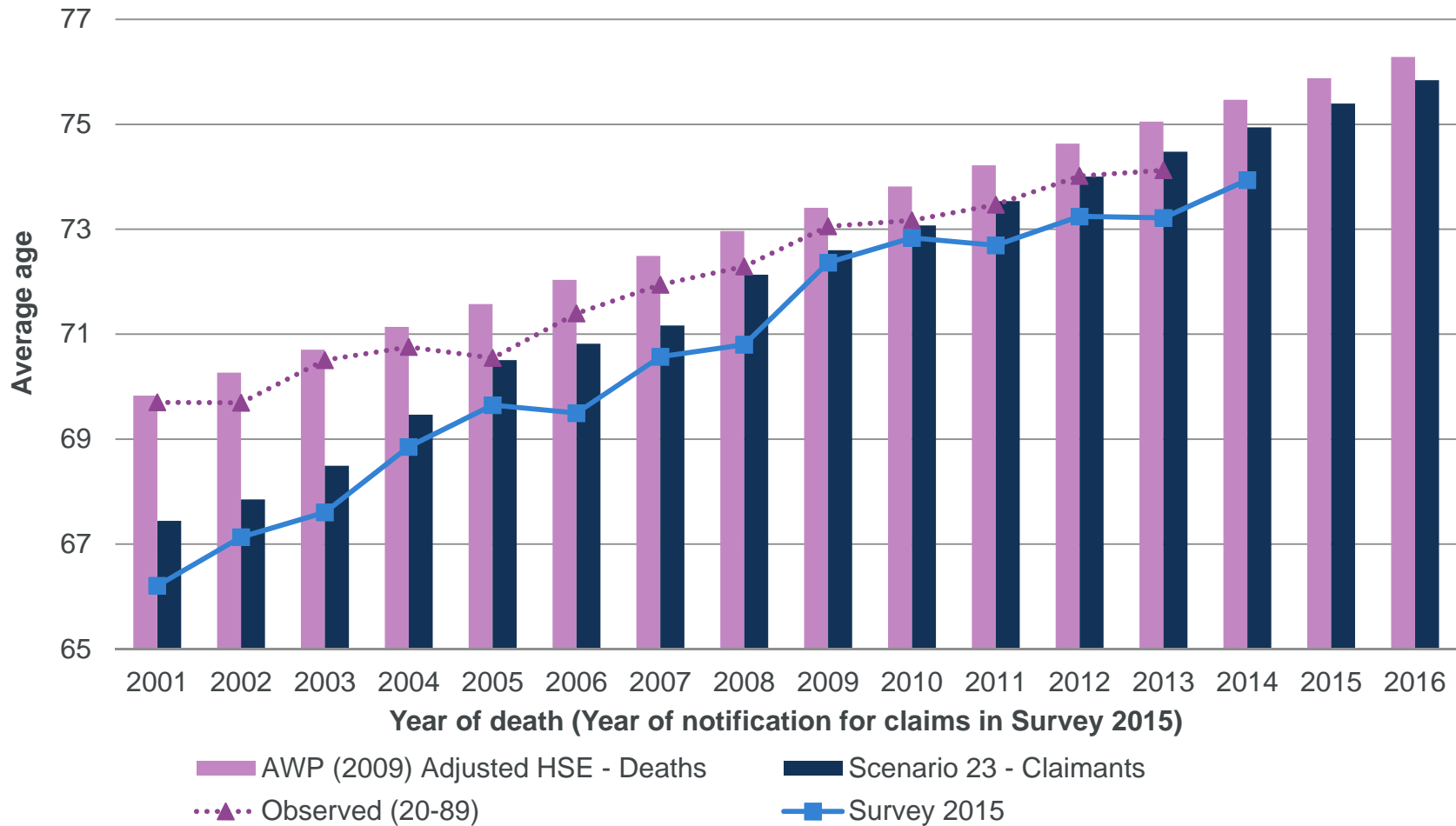
Distribution of actual age by year of death



- The AWP adjusted HSE model, used in Scenario 23, does not project mesothelioma deaths for those of ages 90+, which in 2013 made up 3.5% of the total GB male mesothelioma deaths.
- From the trends we can see the deaths from ages 70+ are increasing year on year, whereas the deaths from ages 64 and younger are decreasing.
- The deaths relating the 65-69 age band are reasonably stable in number each year (increasing in the last 2 years), but are decreasing as a proportion of total deaths.

Mesothelioma deaths

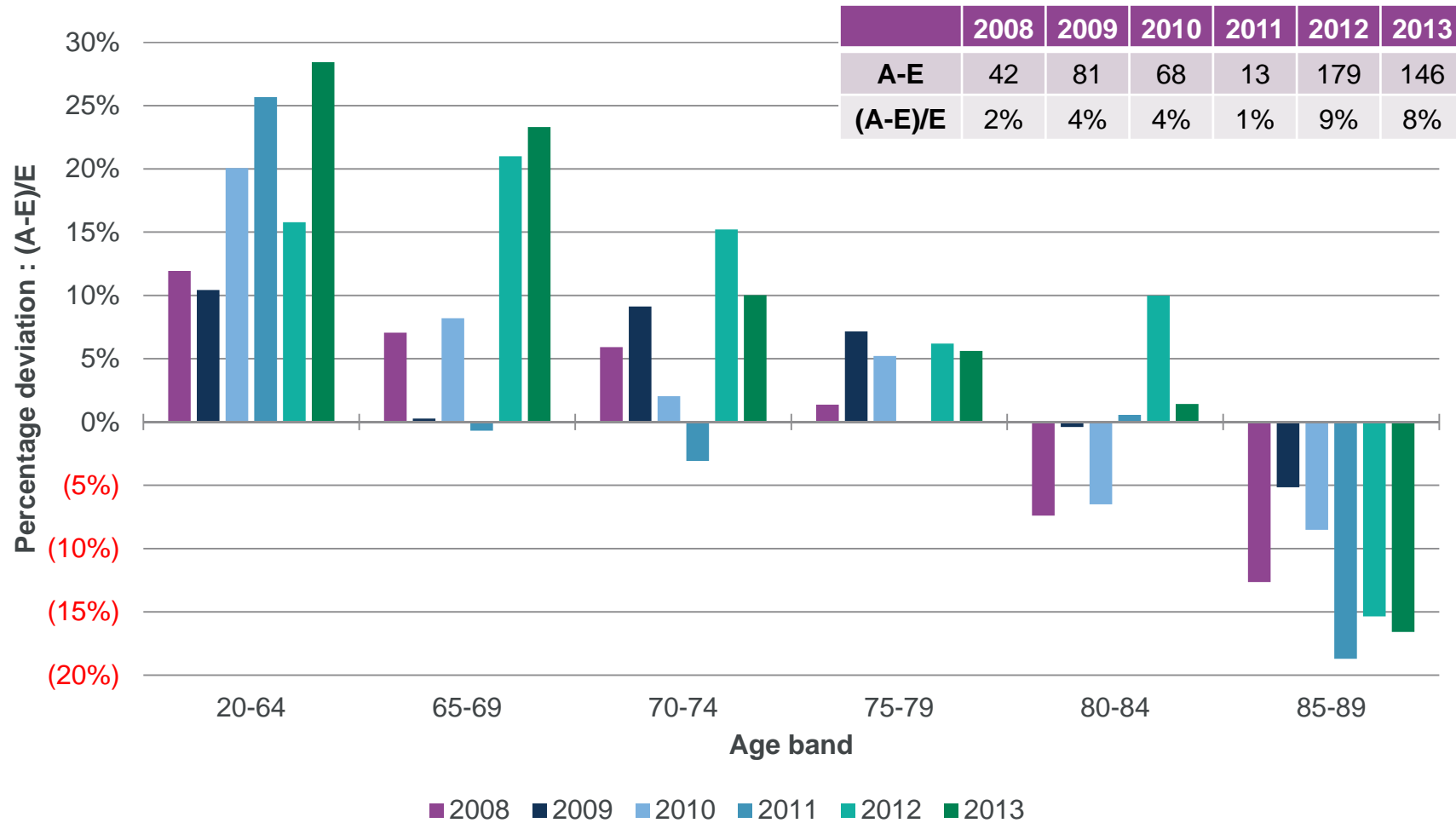
Average age: AWP (2009) adjusted HSE vs experience



- Average age profile implied by the AWP adjusted HSE model against the actual average age of deaths, shows that the average age is generally lower than estimated by on average 0.6 years.
- The average age of claimants is below the average age of deaths due to the propensity of mesothelioma sufferers to make a claim (and possibility the data in earlier years not being as complete), although the gap has narrowed over time, as the propensity has increased.
- There is also a difference in the average age of claimants predicted in Scenario 23 and the 2015 survey data, with Scenario 23 generally being higher by on average 0.8 years.
- This will have an impact of the average costs assumed.

Mesothelioma deaths

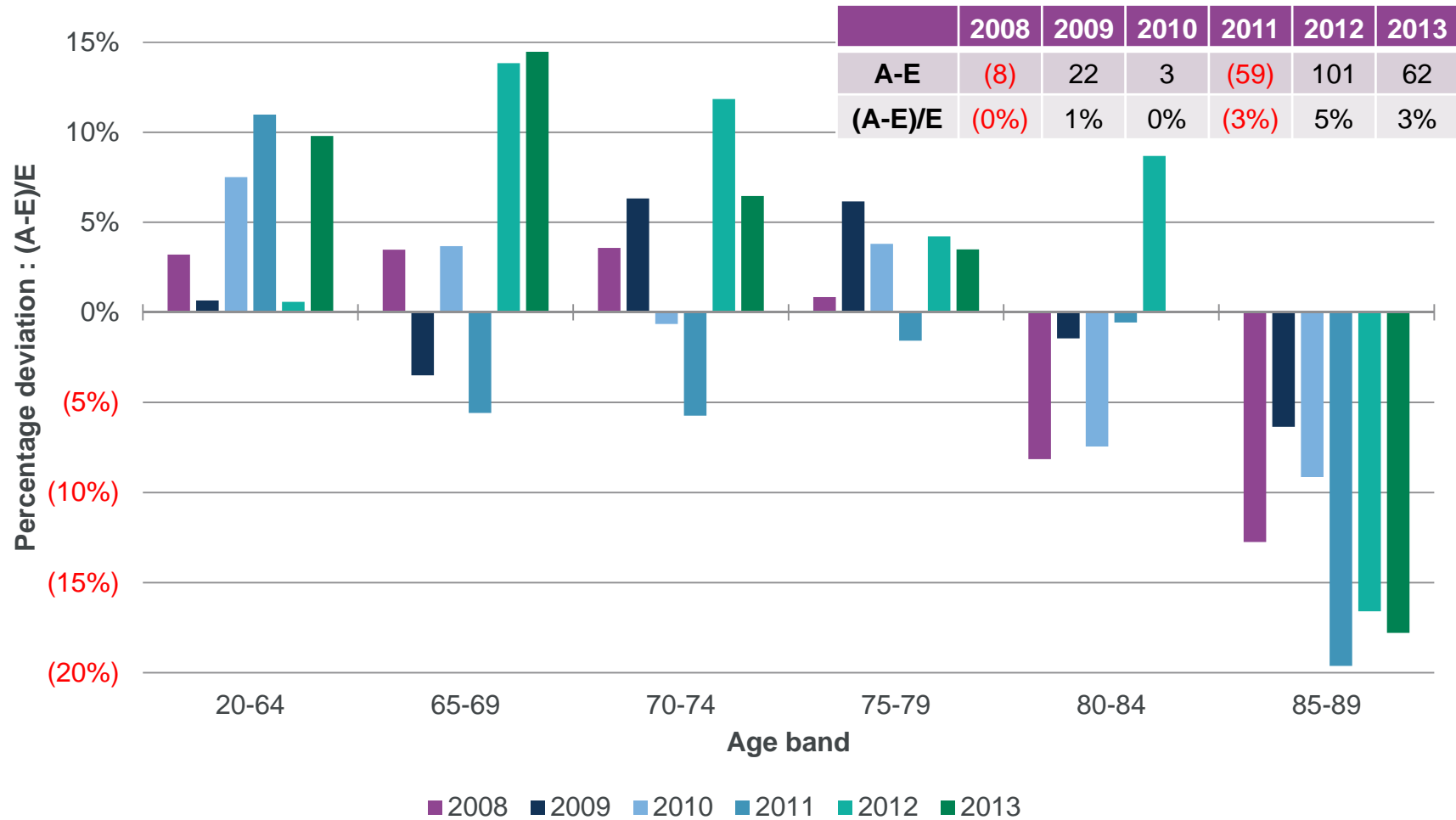
Average age: AWP Adjusted HSE vs. experience



- The graph shows the percentage deviation at each age band for years 2008 through to 2013 i.e. $(\text{actual} - \text{model}) / \text{model}$ for the AWP adjusted HSE model.
- A positive percentage deviation means the model has underestimated the number of deaths.
- You can see that AWP adjusted HSE model consistently underestimates the number of deaths at lower age bands and overestimates the number at the higher age bands.
- This has implications on the average cost one would expect that the lower age bands would incur a higher average cost.

Mesothelioma deaths

Average age: HSE (2013)* vs. experience

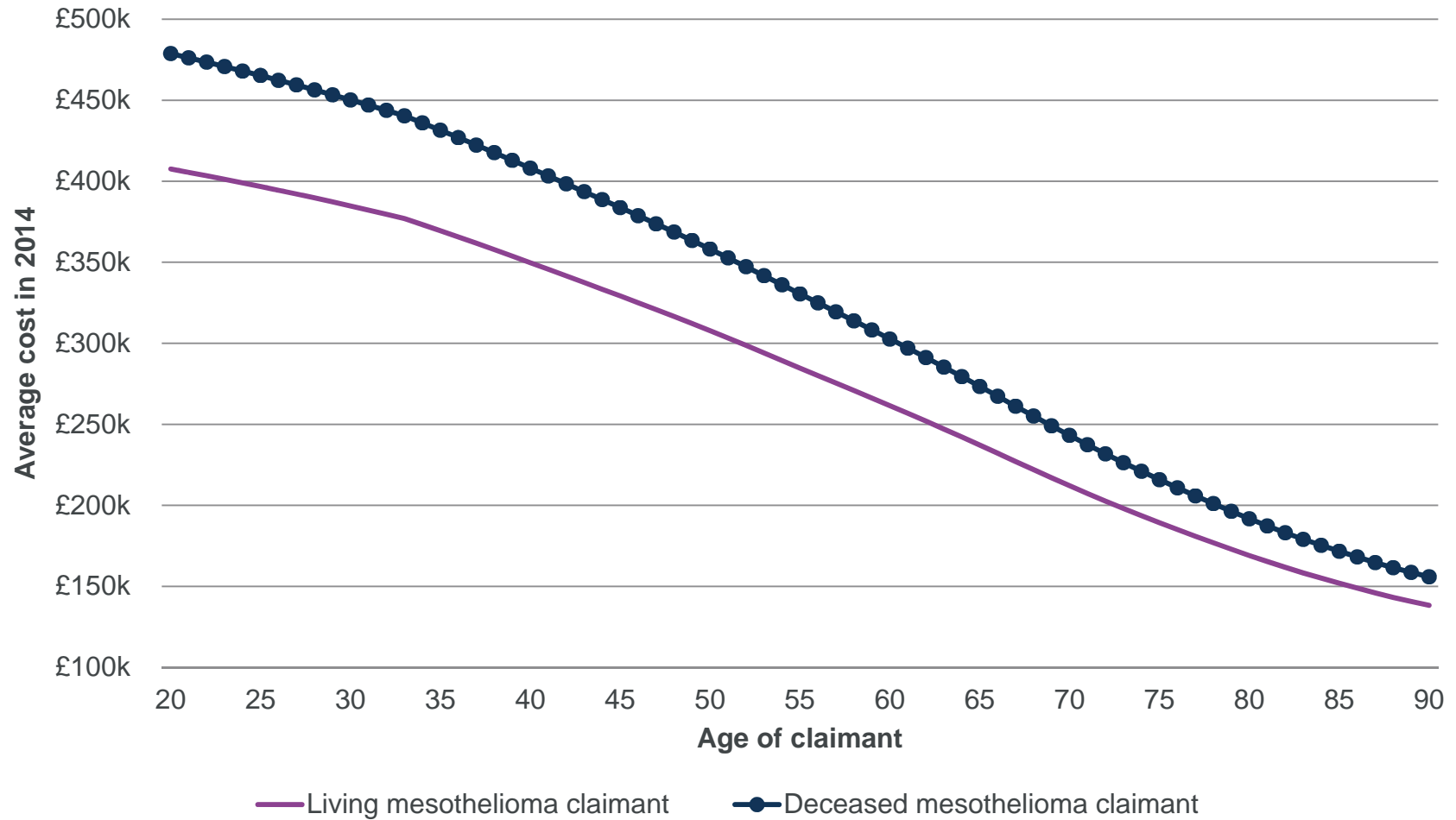


* AWP recreation of HSE central estimate less than 0.3% difference

- The graph here shows the percentage deviation at each age band for years 2008 through to 2013 i.e. $(\text{actual} - \text{model}) / \text{model}$ for the HSE 2013 model.
- A positive percentage deviation means the model has underestimated the number of deaths.
- You can see that the HSE 2013 parameters underestimates the number of deaths at lower age bands and overestimates the number at the higher age bands.
- The issue at the 85-89 age band is same as in the AWP 2009 adjusted parameters.

Mesothelioma deaths

Age difference implication on ACPC



- The graph details the modelled average cost per claim for 2014 for each year of age.
- Compare the cost of a claimant at age 73.9 (our observed value) against the age which we expected in Scenario 23 (74.9) results in approximately a £4-5k increase in the ACPC.

Update from the UK asbestos working party

Compensation Recovery Unit (CRU) data / Propensity to Claim

CRU data / Propensity to Claim

What is 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).

CRU data / Propensity to Claim

What does the CRU do?

- Compensators who receive a claim for compensation must send form CRU1 to the CRU within 14 days to register the claim.
- The CRU will send an acknowledgement form when the compensator registers a claim.
- The Compensator must request a certificate of recoverable benefits from the CRU before the claim can be settled.
- CRU will issue a certificate of recoverable benefits to the compensator within 28 days of receiving the request which contains all the required information.
- The compensator will be asked to make payments to the DWP CRU once the claim is settled.

CRU data / Propensity to Claim

How does the CRU work?

- The Compensator reduces the full compensation to the claimant due to the CRU if the claimant has received benefits to meet the same need.
- Heads of compensation are defined in Schedule 2 to the Social Security (Recovery of Benefits) Act 1997. There are three types of claims and deductions:
 1. Loss of earnings
 2. Loss of mobility
 3. Care
- Compensation for other heads of damage (e.g. pain and suffering) cannot be reduced by the CRU.

CRU data / Propensity to Claim

Example of CRU recoveries

- Example: Assume compensation of £155,000 split according to the following heads of compensation:

Head of compensation	Full Compensation	CRU	Net Compensation
General Damages - Pain and suffering	£60,000		£60,000
Special Damages - Loss of earnings	£70,000	£ 20,000	£50,000
Care Cost	£10,000	£1,600	£8,400
Loss of mobility	£5,000	£1,400	£3,600
Other	£10,000		£10,000
Total	£155,000	£23,000	£132,000
Social Benefit			
Pneumoconiosis Workers' Compensation Act 1979 (PWCA)		£20,000	
Disability Living Allowance (DLA): Care		£1,600	
Disability Living Allowance (DLA): Mobility		£1,400	
Total		£23,000	

- The CRU calculate £23,000 in past benefits may be recovered.
- Where the amount of compensation in respect of a particular head of compensation is less than the amount of a listed benefit to be recovered, the compensator is liable to pay the difference.

CRU data / Propensity to Claim

Breakdown of recoveries

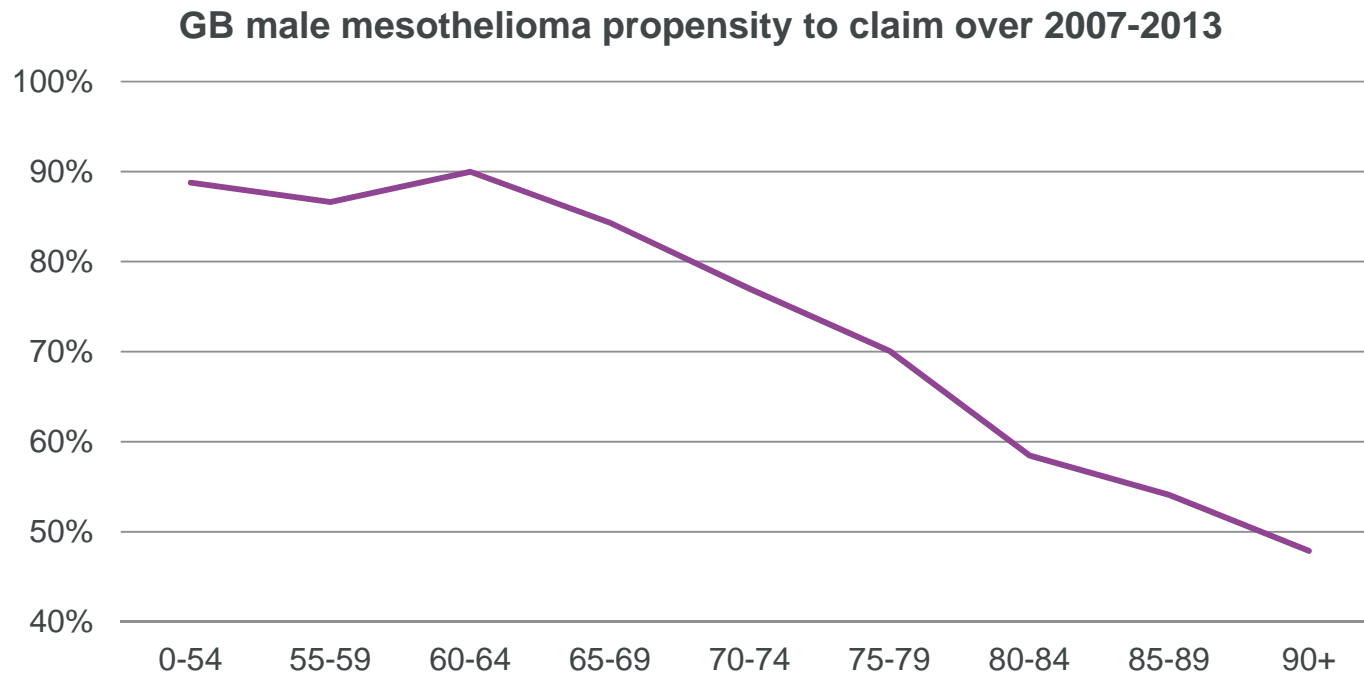
- Freedom of information request: All mesothelioma claims registered by the CRU between 1 January 2007 and 30 November 2014.
- This data indicates that the CRU has recovered £173m from mesothelioma claims registered in this period.

Benefit Code	Full Benefit Name	CRU Recovery
PWCA	Pneumoconiosis Workers' Compensation Act 1979	£90,114k
IIDB	Industrial Injuries Disablement Benefit	£38,486k
MESO	Diffuse mesothelioma payments (2008 Scheme)	£18,384k
AA	Attendance Allowance	£8,430k
CAA	Constant Attendance Allowance	£5,198k
DLAC	Disability Living Allowance (DLA): Care	£4,069k
DLAM	Disability Living Allowance (DLA): Mobility	£3,251k
ESDA	Exceptionally Severe Disablement Allowance	£2,312k
ESAC	Employment and Support Allowance (ESA): contribution-based	£1,053k
IB	Incapacity Benefit	£828k
PIPL	Personal Independence Payment (PIP): Living component	£121k
PIPM	Personal Independence Payment (PIP): Mobility component	£117k
OCAB	Old Case Act Benefit	£69k
ESAI	Employment and Support Allowance (ESA): income-related	£60k
IS	Income Support	£14k
REA	Reduced Earnings Allowance	£4k
Total		£172,510k

- The table shows how the CRU recoveries of £173m are split by benefit type
- The PWCA and IIDB make up about 75% CRU recoveries.

CRU data / Propensity to Claim

Comparing CRU male mesothelioma registered claimants to HSE male mesothelioma deaths gives an indication of how the propensity for a mesothelioma sufferer to claim varies by age.



- Propensity to claim by age by notification year is one of the assumptions contained in the AWP 2009 model.

- **Further investigations to be undertaken by AWP to analyse how CRU data can help project future trends in propensity of mesothelioma sufferers to make a claim.**
- **Investigations ongoing, looking at trends by notification year.**

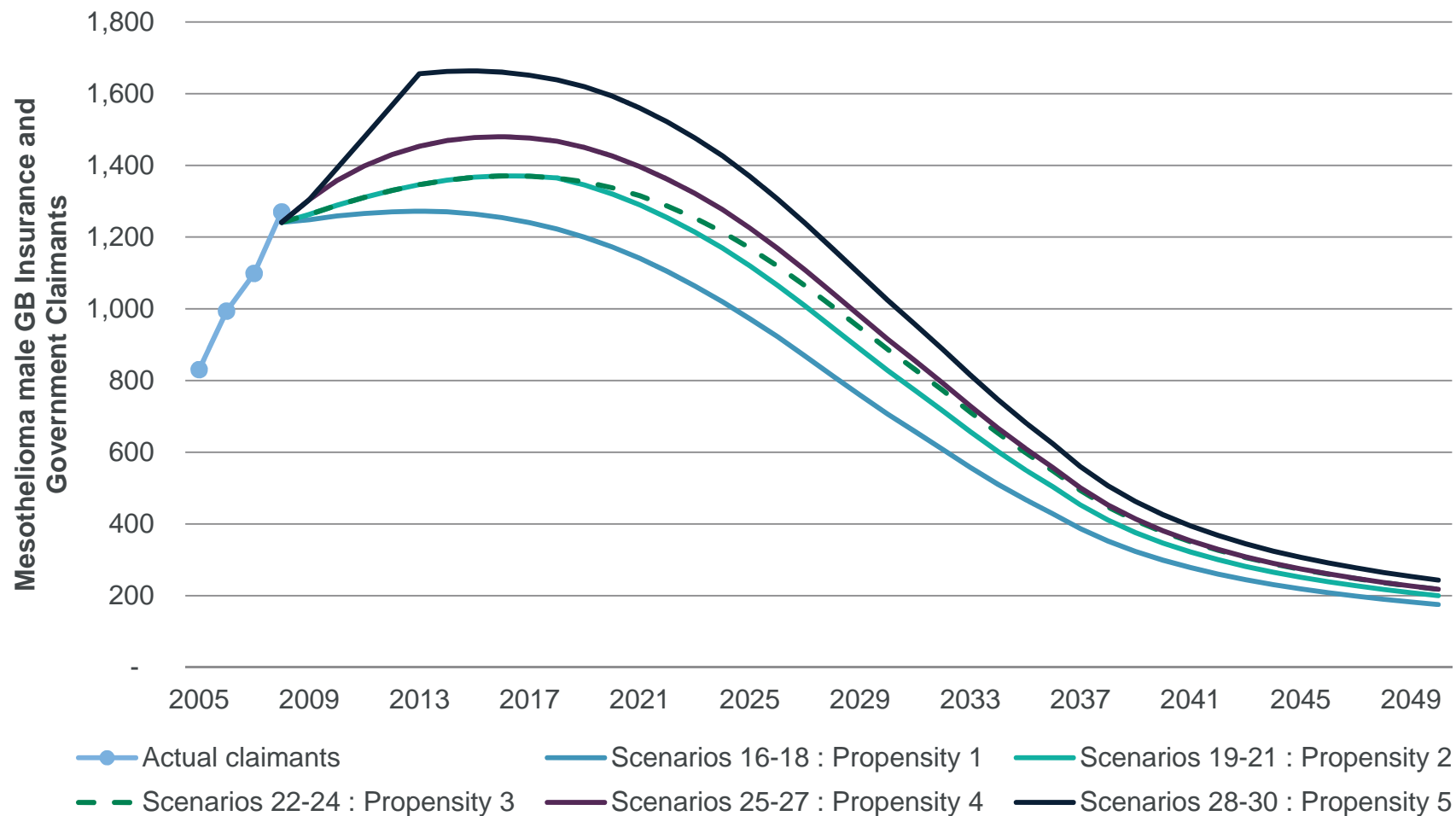
CRU data / Propensity to Claim

Propensity to Claim scenarios

- AWP 2009 mesothelioma model uses five different propensity to claim scenarios PtC 1-5.
 - PtC 1: Stays constant at 2008 level
 - PtC 2: Proportionate increases for 10 years, eligible ratio to 75% in 10 years
 - PtC 3: Proportionate increases for 50 years, eligible ratio to 75% in 10 years
 - PtC 4: Proportionate increases for 10 years, max eligible ratio reached by oldest band too
 - PtC 5: Max (assuming 100% propensity) reached linearly by 2013

CRU data / Propensity to Claim

Propensity to Claim: AWP (2009) Adjusted HSE



- The five different AWP propensity for mesothelioma sufferers to make a claim scenarios PtC 1-5.
- These produce five different future number of mesothelioma claimant projections, when applied to the projected deaths.

CRU data / Propensity to Claim

Rescaling scenarios to 2015

- The range of the propensity to claim scenarios PtC 1-5 is substantially reduced.
- The order of the propensity to claim scenarios also changes:

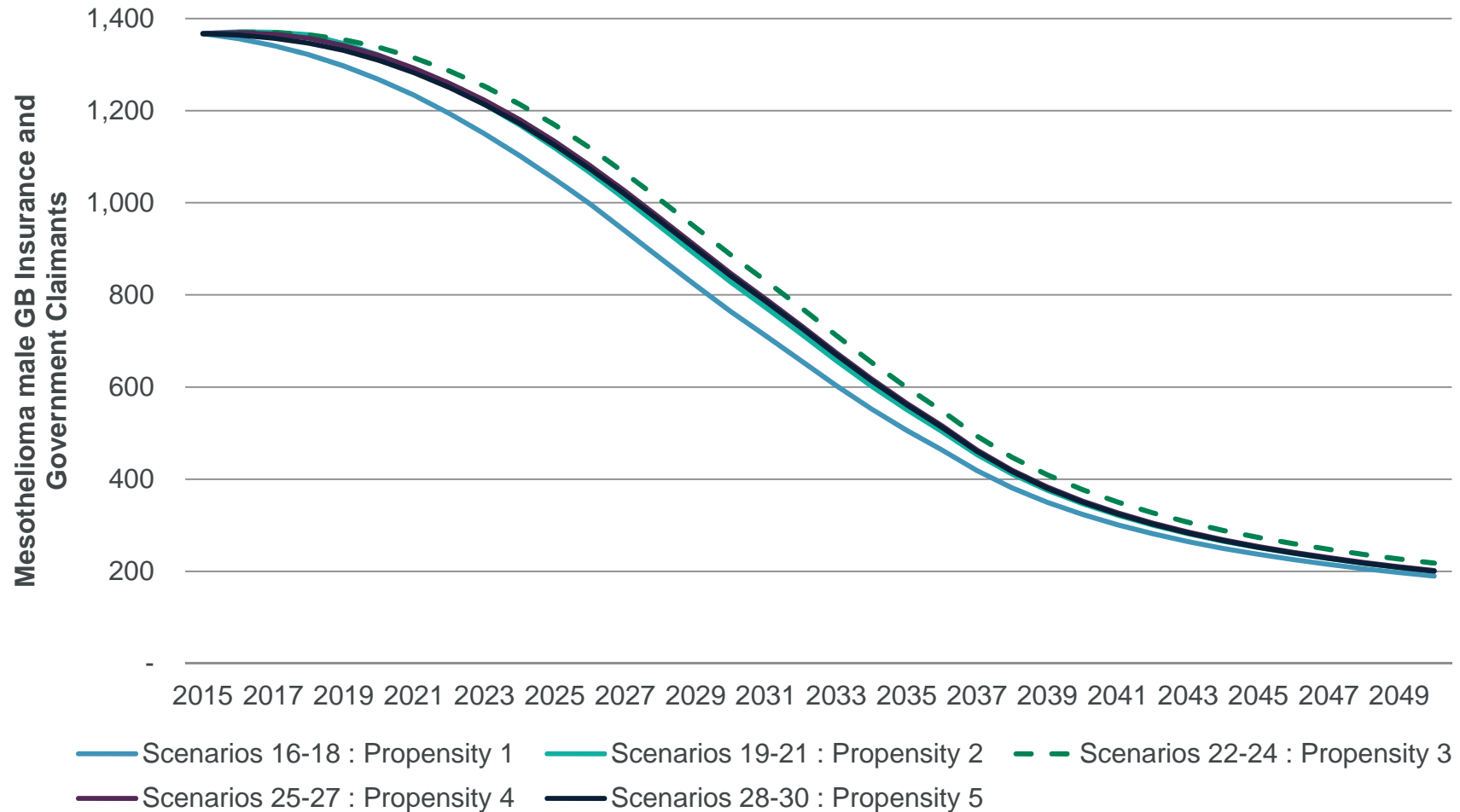
PtC 1 < PtC 2 < PtC 5 < PtC 4 < PtC 3

AWP scenario	Propensity to Claim scenario	Male GB insurance & government claimants (2009-2050)	Percentage to Scenario 23 (2009-2050)	Male GB insurance & government claimants rescaled in 2015 (2015-2050)	Percentage to Scenario 23 (2015-2050)
16-18	PtC 1	31,088	87%	25,418	91%
19-21	PtC 2	34,721	97%	26,824	96%
22-24	PtC 3	35,905	100%	28,008	100%
25-27	PtC 4	37,697	105%	27,089	97%
28-31	PtC 5	41,809	116%	26,917	96%
Range between PtC scenarios			30%		9%

- If you just scale projections to the latest point of your data:
- **Note 1**: the range of total future claimants under scenarios PtC1-5 is substantially reduced compared to the original 2009 results. Range of PtC1-5 is only 9% compared to 30% for the original 2009 results.
- **Note 2**: Scenarios 28-31 (using propensity to claim assumption PtC5) are no-longer the most prudent scenario. In fact, it is below both Scenarios 22-24 and Scenarios 25-27.

CRU data / Propensity to Claim

Propensity to Claim: AWP (2009) Adjusted HSE



- Propensity for mesothelioma sufferers to make a claim scenarios PtC 1-5 are rescaled to 2015 (using Scenario 23 as a base).

CRU data / Propensity to Claim

Further investigations

- AWP undertaking further investigations of the CRU data to help determine any trends or changes in the propensity to claim.
 - Historically, the AWP has seen increases in the propensity of mesothelioma sufferers to make claim. This was the main driver behind revising the 2004 insurance market estimates.
 - Initial indications are that the level of CRU mesothelioma claimants has been fairly stable over recent years (2007-2013).
 - With HSE mesothelioma deaths increasing, this implies that the propensity to claim may be decreasing.
 - From 10 February 2015, the government's DMPS compensation increased to match 100% of average civil claims, up from the previous 80%. Has this change in DMPS had an impact on propensity to make an insurance claim?

Update from the UK asbestos working party

Things to consider when looking at extremes

Extreme scenarios

Overview

- Medical advances
 - Longevity
 - Cure
- Model risk : Number of claims
- Inflation
- Legal developments
 - Devolution / National assembly
 - Non mesothelioma diseases
 - Impact of more general legal changes
- Reserving basis change

- The examples in this section are not intended to be a comprehensive list of the scenarios an actuary should consider when assessing extreme uncertainty, but a starting point for things to consider when looking at a portfolio of UK asbestos claims.

Extreme scenarios

Medical advances - Longevity

An improvement in longevity for mesothelioma sufferers

- Improvement in the life expectancy could be caused by:
 - The invention of a new drug which reduces the speed of deterioration;
 - A new medical procedure which is able to partially repair the damage caused by mesothelioma; and/or
 - Early diagnosis as a result of a screening programme.
- Currently, 40% of mesothelioma sufferers survive beyond one year from diagnosis and 20% survive beyond two years¹.

Extreme scenarios

Medical advances - Longevity

Consider improvement in other cancers²:

Breast cancer

- In 1971-72, a woman diagnosed with breast cancer had a 40% chance of survival for 10 years.
- By 1990-91 this was 60% and by 2010-11, it increased to 80%.

Prostate cancer

- In 1971-72, a man diagnosed with prostate cancer had a 37% change of survival for 5 years.
- By 1990-91 this was 49% and by 2010-11 it increased to 85%.

² Source: cancerresearchuk.org

Extreme scenarios

Medical advances - Cure

A cure for mesothelioma is developed

- A cure for mesothelioma could be found by:
 - The invention of a new drug or procedure which stops and/or reverses the damage caused by mesothelioma;
 - The availability of artificial lung transplants.
- Whether this would result in a net increase or decrease in the cost of mesothelioma claims depends on how the cost of this cure compares to the cost of death benefits currently payable to claimants.

Extreme scenarios

Medical advances - Cure

- The 20th century saw cures for a number of diseases including tetanus, yellow fever, whooping cough and small pox.
- How much might a cure cost?
 - In 2007, the cost for a single-lung transplant was almost £260,000 and for a double-lung transplant was approximately £357,750.
 - The cost of chemotherapy and radiotherapy is highly variable, but the average cost of chemotherapy for lung cancer patients is reported to be around £26,000.

Extreme scenarios

Model risk – Claim numbers

Underestimation of future claim numbers

- Reserves set using a frequency x severity approach.
- Current frequency based on recent experience, with future claim numbers based on a model.
- Mesothelioma claims, most of probably use a variation of the HSE/AWP model:
 - What if this model proves to be wrong?
 - How to translate deaths to claims i.e. Propensity to claim
- Even if the theory of the model is “correct” and sound, there are a number of underlying parameters which are estimates rather than known facts:

Extreme scenarios

Model risk – Claim numbers

- **Exposure pattern**
 - Due to the long latency period, past claims experience allows us to infer little about the level of underlying exposure from the late 1970s onwards.
- **Mortality, and in particular mortality improvements**
 - Increased longevity would mean more exposed lives developing mesothelioma.
- **Deaths from mesothelioma at age 90+**
 - Excluded from the AWP model, but could be material.
- **Propensity to claim**
 - What is the current claims to death ratio, and how may this change in the future?

Extreme scenarios

Model risk – Claim numbers

- We are about to reach the peak of modelled mesothelioma deaths, but hypothetically what would happen if notifications don't then start to decrease?
- The realisation that we are using the “wrong” model may be slow to emerge.
- Increases in reserves likely to be gradual, but with a sudden step change, when deviating experience compels us to change our view, or when new epidemiological studies are published.

Extreme scenarios

Inflation risk

Inflation shocks and long term impacts

Possible Shocks *(some covered in other areas):*

- **Medical costs** – *cost of drugs / patent legislation, novel drugs on market.*
- **Legal** - *requirement for additional carers.*
- **Macroeconomic / Political** – *Scottish independence.*
- Failure of other insurers / loss of shares.

Cohort Model Considerations:

- Interaction with age of claimants – potential impact on suitability of inflation index as average age of claimant increases.

Extreme scenarios

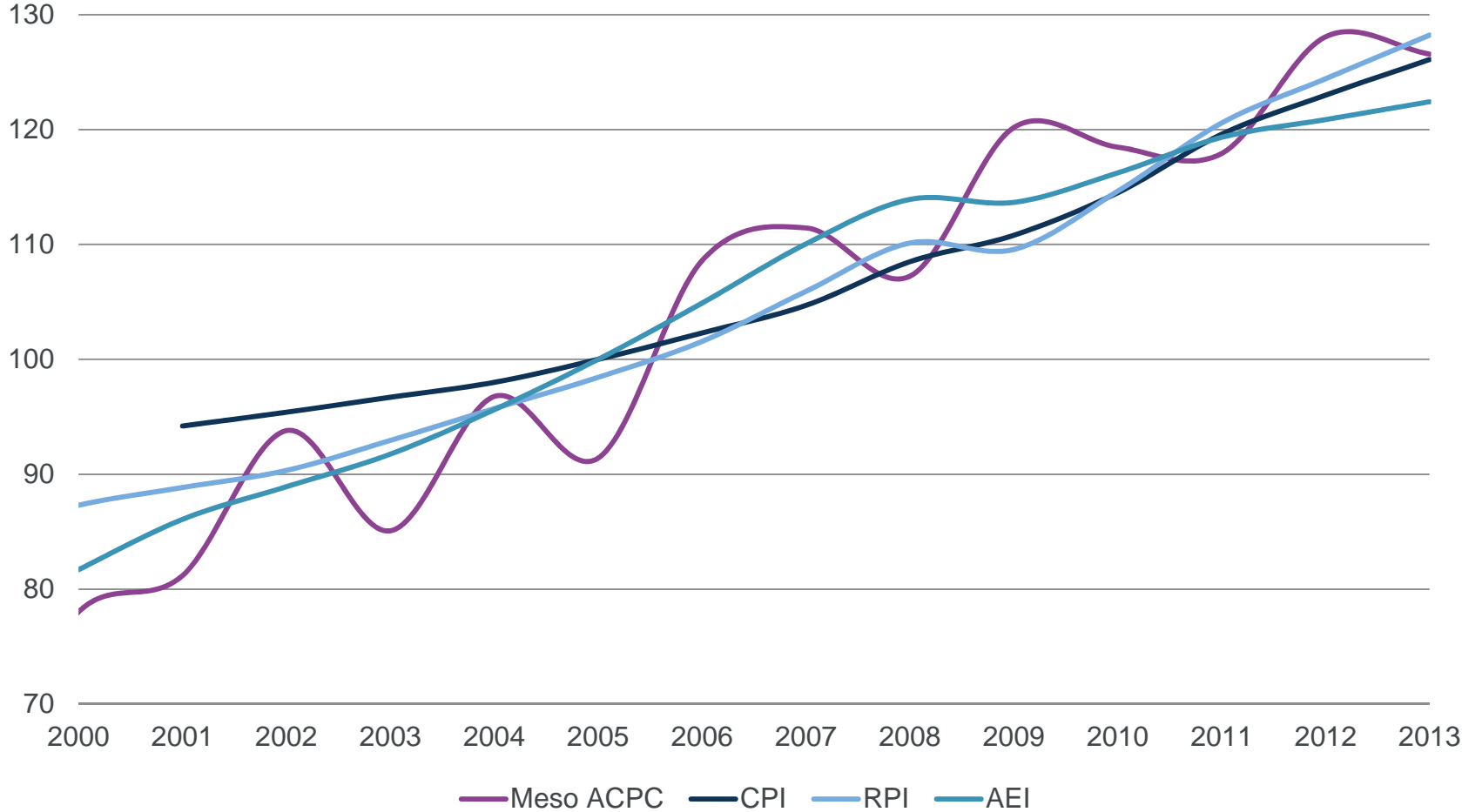
Inflation risk

Basis Risk

- Split of historical inflation into judicial inflation and cost of living inflation.
- Interaction between cost of living inflation and discount rates used to discount reserves.
- Use of different indices to reflect cost of living inflation.
- Company experience vs. industry.
- Consider estimation error for one-year view / actuary-in-a-box.

Extreme scenarios

Inflation risk



Rebased: average of 2005 / 2006 = 100
AEI based on KAB9 series (weekly earnings, total pay, all sectors)

- CPI, RPI and AWE data from ONS

Extreme scenarios

Legal developments

Claims have been significantly affected by legal and judicial changes over the last 12 years and may continue to be so in the future.

- Can have an immediate impact on liabilities.
 - Also lead to secondary consequences that might not be foreseen at the time of enactment.
- This means that a change in the law can lead to step changes in reserve levels.
- Important in considering legal changes to think about the wider impact on claim volumes as well as average costs.

Examples of legal changes impacting reserves.

- Immediate impact: MoJ announced in March this year an increase in UK Court issue fees for larger claims. Court issue fees on UK asbestos claims are recovered from the compensator and so this change has an immediate (if relatively small) impact on average costs.
- Secondary consequences (though not itself UK asbestos) the enactment of LASPO in 2013 led to an influx of 'pre-LASPO' claims as solicitors sought to maximise income under the pre-LASPO regime.

Extreme scenarios

Legal developments

- Maintain in close contact with the team handling claims who are in the best position to comment on current and proposed changes.
- Consider the reserving basis particularly where a case is heard successively through the High Court, the Court of Appeal and the Supreme Court.
 - An example of this may have occurred over the IEG v Zurich case or PL Trigger Litigation which had different outcomes at the High Court, Court of Appeal and Supreme Court.

- An example on reserving basis changing over time is the IEG v Zurich case was ruled in 2012 (on jurisdiction grounds) in favour of insurers in the High Court.
- The ruling was overturned in the Court of Appeal in 2013 but the original verdict reinstated (not only on jurisdiction but also in relation to the UK implications) in the Supreme Court in 2015.
- At the end of 2013 (although the case scheduled to be heard in the Supreme Court) was the then law was that solvent employers could elect to 'spike' their insurance cover, potentially significantly impacting costs.

Extreme scenarios

Legal developments - Devolution / National assembly

- There are some major differences in how asbestos claims in the UK:
 - In Scotland and Northern Ireland pleural plaques are compensable.
 - Scotland has on average higher awards for mesothelioma claims due loss of society damages.
 - The Welsh Assembly and Scottish Government considered legislation to recover NHS spend on asbestos-related diseases.
 - The proposals are an example of an increasingly independent approach to legislation in Scotland and Wales.
- A more remote though possible scenario would involve England adopting proposals enacted in other parts of the UK.
- Further differences caused by Devolution and National assemblies.

Extreme scenarios

Legal developments - Non mesothelioma diseases

- A lengthy series of legal cases and Acts of Parliament have established some clarity on the liability for mesothelioma claims.
- Rulings on other diseases have been more sporadic.
- Current practice in relation to amongst other things contributory negligence and compensation for untraced periods of cover may be subject to increasing legal challenge in the future.
 - Potential for non-mesothelioma claims to be treated the same way as mesothelioma claims.

Extreme scenarios

Legal developments – General changes

- Changes in Ogden discount rates and tables would impact asbestos related claims.
 - Though not to the same extent as, say, fatal motor injury claims.
- The law in Scotland covering such things as wrongful death and limitation varies from that in England and Wales.
 - In some cases, awards are determined by precedent rather than statute. Scotland therefore presents a higher continuing risk of changes.

Extreme scenarios

Reserving basis change

Management change the basis for which asbestos is reserved

- Reserve setting for asbestos claims is heavily driven by expert judgement due to the highly uncertain nature of the liabilities.
- There is a large range of reasonable estimates which could be selected as best estimate reserve figures.
- Over one year, a change in reserving assumptions or approach could have a significant impact on reserves.
- Changes to reserving assumptions will impact balance sheet own funds and are therefore a driver of Reserve Risk.

Extreme scenarios

Reserving basis change

- Deterioration in claims experience, could lead to changes in key assumptions, that take a different view on around the level of uncertainty.
- This could be either changes in management roles or the changes in views of existing management.

1 year vs ultimate

- Risk only relates to one year.
- Over an ultimate basis there is no impact on the basis of the reserves.

Update from the UK asbestos working party

Legal and Other Developments

Legal and Other Developments

Overview

- **Scotland & Wales: recoverability of NHS costs**
- **Diffuse Mesothelioma Payment Scheme** – 100% rate of compensation
- **Mesobank** – Providing samples for researchers
- **IEG vs Zurich** – apportionment of mesothelioma
- **Heneghan v Manchester Dry Docks** – apportionment of asbestos-related lung cancer
- **LASPO / Simmons v Castle** – Ministry of Justice (“MoJ”) position on mesothelioma
- **Others - Court Issue Fee and Insurance Act 2015**

Legal and Other Developments

Scotland & Wales: recoverability of NHS costs

- In 2012, the Welsh Assembly has proposed a Bill to recover NHS costs for asbestos related disease from insurers
- The Bill was passed on 20 November 2013, but referred to the Supreme Court, owing to legal disputes over whether the Bill was within the competence of the Welsh Assembly.
- In May 2014, the Scottish Parliament considered a similar bill.
- February 2015 - Supreme Court ruled, by a majority of 3 to 2:
 - Outside the Welsh Assembly's specific powers; and
 - Contrary to the European Convention on Human Rights.

Legal and Other Developments

Diffuse Mesothelioma Payment Scheme

- Compensation scheme launched under the Mesothelioma Act 2014:
 - diagnosed diffuse mesothelioma on or after 25 July 2012;
 - caused by exposure to asbestos when working in the UK;
 - can't trace your employer or their insurers.
- The payment tariff previously set 80% of average payments.
- From February 2015, compensation payments increased to 100%.
 - New stipulation: Demonstrate they would have had a good case if the employer or its insurer could have been traced.

You may be able to make a DMPS claim if all of the following apply:

- You were diagnosed with diffuse mesothelioma on or after 25 July 2012
- Your mesothelioma was caused by exposure to asbestos when working in the UK
- You can't trace the employer that exposed you to asbestos, or their insurers
- You haven't made a civil claim against any employer or insurer
- You haven't received damages or a specified payment for mesothelioma and you're not eligible to a specified payment
- You may also be able to claim if you were the dependant of a sufferer who has died.
- You can claim for DMPS even if you have already claimed from the 2008 scheme or under the 1979 Pneumoconiosis Act. If you've already got a payment from the 2008 scheme or the Pneumoconiosis Act, it will be deducted from the amount you get from DMPS.

Legal and Other Developments

Mesobank

- Established in 2012 - Provided with £500m to run for 3 years.
- Collaborates with hospitals around the UK to identify patients with mesothelioma and collect samples:
 - Tissue, blood and data from over 300 patients;
 - New cell line culture collection;
 - Provides kits to operating teams to make tissue collection easier;
 - Online data management system to collect useful facts on patients that provide samples.
- Data made available for researchers undertaking biomedical research.

- Mesobank is in memory of Mick Knighton and initially funded by voluntary industry contributions.
- Mesobank supports biomedical research being undertaken across a wide range of institutions within the UK, EEA, USA, Canada, Australia and New Zealand and applications from researchers undertaking biomedical research directly concerned with asbestos related disease diagnosis and treatment.
- Website: <http://www.mesobank.com/>

Legal and Other Developments

IEG vs Zurich

- Employee of IEG died from mesothelioma after exposure to asbestos in Guernsey.
- IEG settled claim and then sought recovery from its insurer under EL policies covering 6 of the 27 years of exposure.
- Commercial court ruled in Guernsey law applied: UK Compensation Act 2006 (“2006 Act”) did not apply and insurer’s liability limited to the period under which the claimant had been insured.
- IEG appealed - Court of Appeal ruled in February 2013:
 - Insurer to provide a complete indemnity.
 - No contribution by solvent insured to insurer - contrary to the ABI guidelines - ‘All sums without contribution’.
- Appealed to the Supreme Court.

Legal and Other Developments

IEG vs Zurich

- May 2015 - The Supreme Court of 7 Justices, and after 2 hearings, ruled unanimously in favour of insurers.
- 95 page judgement wrestles with difficult issues arising from previous rulings and “*representing a fair balance of the interest of victims, insured and insurers*”¹.
- Key points which also apply to the UK as a whole, not just Channel Islands:
 - *Barker*² is remains good law in Guernsey where the 2006 Act does not apply.
 - Therefore insurer only liable for 22% share (i.e. the 6 years it covered).

¹ Lord Mance.

² *Barker v. Corus (UK) Plc* [2006] UKHL 20 (3 May 2006).

- Full Supreme Court judgement can be found at:
- <https://www.supremecourt.uk/cases/docs/uksc-2013-0057-judgment.pdf>

Legal and Other Developments

IEG vs Zurich

- Split 4-3 on the mechanism for ‘equitable right of recoupment’ against solvent insureds, if the 2006 Act applied:
 - **Majority:** Insurer would have been liable in the first instance but would then have been entitled to recoveries from others including IEG itself.
 - **Minority:** Insurer would only have to pay its 22% as 2006 Act only applies to the compensator. But accepted this would likely lead to further Government intervention.

Legal and Other Developments

Heneghan v Manchester Dry Docks

- Claimant died of lung cancer due to asbestos exposure from many employers.
 - Including the 6 defendants with 35.2% of the exposure.
- Liability and each employer's percentage responsibility already agreed.
- The judgment related to whether each defendant was responsible in full or only in part.
- Claimant solicitors argued damages are indivisible and that medical causation of asbestos related lung cancer should allow full recovery.

Legal and Other Developments

Heneghan v Manchester Dry Docks

- In 2014 the High Court found, for multi defendant lung cancer claims, where no one party has the majority of the responsibility (>50%), each defendant can only potentially be liable for their percentage responsibility, where this is proven.
- *Fairchild*¹ applies to lung cancer claims and *Barker* applies for proportionality.
- The Compensation Act does not apply as it is not a mesothelioma claim.
- Had there been >50% responsibility for one defendant, they could be fully liable.

¹ *Fairchild v Glenhaven Funeral Services Ltd* [2002] UKHL 22.

Legal and Other Developments

LASPO / Simmons v Castle

- MoJ published their position late 2014 that mesothelioma remains outside LASPO.
- Mesothelioma should not be subject to the *Simmons v Castle* General Damages uplift.
- That increase of 10% post the April 2013 Court of Appeal ruling does apply for non-mesothelioma claims
- This would be for the PSLA portion of the award.
- Latest Judicial College Guidelines highlight the post uplift values.

Legal and Other Developments

Others

- Civil court fees increase from March 2015: fees now 5% of claims, where above £10k, capped at £10k max fee.
 - Could reduce numbers of cases taken to court or increase the cost of claims transferred to insurers.
 - MoJ clarifying scope of waiver from fees for sufferers whose assets exceed the fee thresholds because of a PWCA award.
- **Insurance Act 2015 : Comes in to force on August 2016**
 - Affects the writing of new policies or endorsements.
 - Potentially may affect any new reinsurance agreements.

Update from the UK asbestos working party

Key points and plan for next year

Key points and plan for next year

Key points

- After 5 years our market estimates are reasonably in line at the total level.
- However we are beginning to see deviations from our assumptions.
 - The propensity for mesothelioma sufferers to make a claim.
 - Age of mesothelioma claimants.
- GB male mesothelioma deaths still to peak
 - Key questions still: When will deaths peak? How will they run off from the peak?
 - HSE recalibrating their “non-clearance” model expected 27th Oct.

Key points and plan for next year

What will the AWP do now?

- Investigative initial findings and potentially a new insurance market estimate for GIRO 2016.
 - Focus on the estimation of mesothelioma deaths and propensity for mesothelioma sufferers to make a claim.
- Continue to collect market data to support a new market estimate.
 - Announced via the GI newsletter.
- Looking for new members.



Questions



Comments

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