

NT WorkSafe

Actuarial review of Northern Territory workers compensation scheme as at 30 June 2019

March 2020

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17 March 2020

Dear Melissa

Please find our report attached which details our findings from the following analyses for NT WorkSafe:

- Calculation of the funding ratio based on 30 June 2019 outstanding claims liability valuations for insurers and self-insurers
- Calculations of the break-even premium rate for each prior accident year using data to 30 June 2019, including a review of the trends in the required premium and a comparison to the premium rates actually charged by insurers
- An estimate of the break-even premium rate for the 2019/20 underwriting year.

Yours sincerely

A handwritten signature in black ink that reads 'Lisa Simpson'.

Lisa Simpson

A handwritten signature in black ink that reads 'Kathryn Cannon'.

Kathryn Cannon

Fellows of the Institute of Actuaries of Australia

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Executive summary

Key findings

The review indicates that the scheme is fairly stable on a financial basis with the break-even premium rate similar to the actual premium rate charged. However, the profitability on a financial year or 'Form A' basis is variable with the most recent four out of five financial years incurring a loss. The insurer funding ratio has increased this year to 107% from 102% at the previous valuation, so in aggregate the insurers' reserves may be sufficient.

Funding ratio

The funding ratio measures the liabilities held by the insurers (the notional assets) compared to the aggregate outstanding claims liability calculated by the scheme actuary. This is used to represent the ability of the scheme in aggregate to meet its liabilities.

The following table shows the funding ratio as at 30 June 2019 for insurers, self-insurers and for the whole scheme. The PwC central estimate excludes any risk margin. By comparison, the insurers' provisions include a risk margin, and the self-insurers' provisions include the 50% loading for the bank guarantee.

Funding ratio (\$000s)				
	Actual provisions (a)	PwC central estimate (b)	Difference (\$000) (b) - (a)	Funding ratio (a) / (b)
Insurers	414,760	388,118	-26,642	107%
Self-insurers	5,922	4,278	-1,644	138%
Total	420,682	392,397	-28,286	107%

Notes: see section 2 of this report

As at 30 June 2019 the insurers' funding ratio was 107% while the self-insurers' funding ratio was 138%. The insurers' funding ratio increased from 102% as at 30 June 2018 and the self-insurers' funding ratio decreased from 145%.

The increase in the insurers' funding ratio was due to the insurers' provisions increasing by \$31.1 million while our central estimate increased by \$10.8 million compared to 30 June 2018. We are not provided with a reconciliation for the insurers' provisions, so cannot identify the drivers of the insurers' increase.

The decrease in the self-insurer funding ratio is due to the self-insurers' provisions increasing by less than our central estimate compared to 30 June 2018. We are not provided with a reconciliation for the self-insurers' provisions, so cannot identify the drivers of the self-insurers' increase.

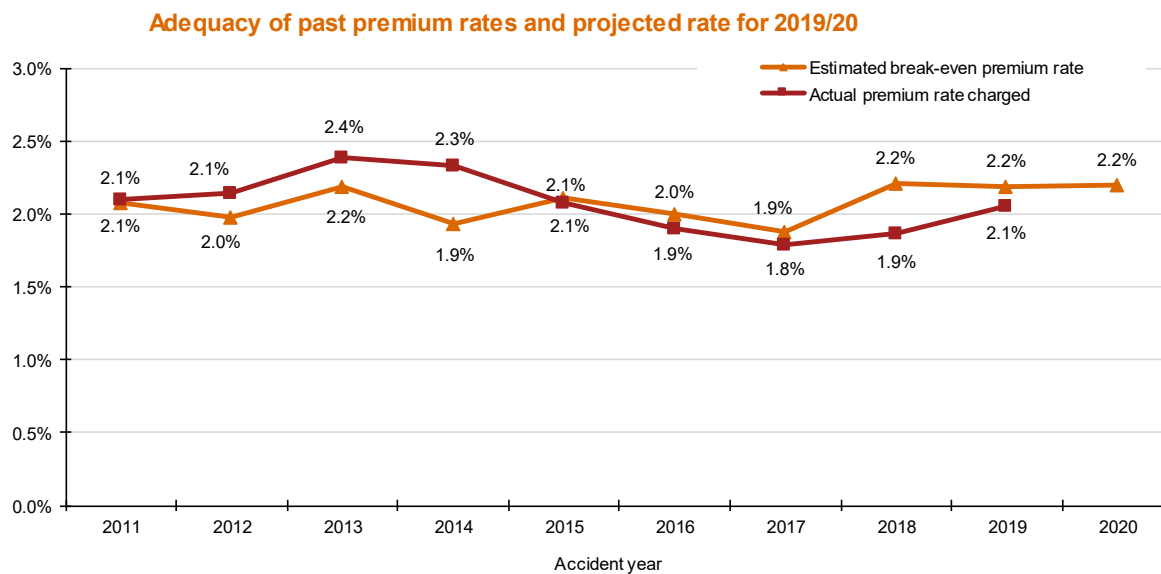
A ratio above 100% implies that, in aggregate, insurers are holding sufficient reserves to be likely to meet our central estimate of future claims costs. This year, the funding ratio has increased to slightly above 100%. We make the following comments which should be borne in mind when considering the funding ratio:

- The insurers' actuaries have access to more detailed claims data than we have to estimate the liabilities
- Insurers hold assets in excess of liabilities due to APRA capital requirements and their own risk appetite
- Some insurers may be holding greater than 100% of our notional allocation to them, while others may be holding less. Of concern would be any insurers who are well below 100%.

The above projections involve assumptions about future uncertain claim events and economic, social and legislative conditions and hence the actual outcome may well be different from the results shown above. This should be borne in mind whenever using the results. In particular, the 2018 and 2019 accident year costs are more uncertain than those for earlier accident years, and hence could ultimately be notably different to those estimated.

Insurer premium adequacy

The following graph shows the estimated break-even premium rates, using all experience to date, and compares this to the actual premium rates charged by insurers. The graph also shows our projected break-even premium rate for 2019/20.



The break-even premium rate is calculated on an inflated and discounted basis, gross of reinsurance, and does not allow for a profit margin.

There has been mixed experience in the sufficiency of actual premium rates charged by insurers over 2011 to 2019 shown in the graph above. Actual premium rates charged by insurers were more than sufficient in 2012 to 2014, were similar to estimates of break-even rates in 2011 and 2015 but were not sufficient to cover the estimated break-even cost for the 2016 to 2019 accident years.

We estimate that the 2019 developed premiums charged of \$144.7 million were \$9.6 million (6.2%) lower than the estimated break even premiums of \$154.3 million. The 2019 developed premiums charged are also less than the estimated break-even premium rate in last year's report of \$166.0 million, but above the 2018 developed premium charged. Therefore, insurers increased their premium rates between 2018 and 2019 and are responding in a moderate fashion to the increasing costs in the scheme, indicating that competitive pressures in the market are active to curb large annual premium increases in aggregate.

The pattern demonstrated in the actual premium rate charged could be driven by changes in the underwriting or economic cycle. The start of a new upwards trend in a cycle could potentially drive an increase in the actual premium charged in 2020.

Our projected break-even premium rate for 2020 is 2.2%, which is in line with the estimated break-even premium rates and actual premium rates charged over the most recent two years. We estimated the 2019/20

break-even premium rate to be similar to the most recent two years after considering the economic indicators in the 2019/20 Northern Territory mid-year report.

The increase in the projected break-even premium rate has been driven by a high estimated average claim size, due to high payments and case estimates for the 2018 and 2019 accident years.

The estimated break-even premium rates for accident years 2016 to 2019 include an allowance for the 2015 legislative changes. See Appendix B6 for a summary of the changes.

The change in the break-even premium is the average change across all policies. Actual premiums charged to an employer could have greater volatility each year, particularly for small employers, and their change will depend on their experience and size.

Key scheme trends

Claim statistic	Insurer	Self-insurers
Number of claims incurred	<p>Decreasing trend in claim numbers since peak in 2013, 2019 claim numbers (2,238) lower than 2018 (2,420).</p> <p>Similar to claim numbers, the claim frequency demonstrated a decreasing trend from 2013 to 2018 with a slight increase in 2019. Frequency is estimated to be 2.8% in 2017, 2.6% in 2018 and 2.7% in 2019.</p>	<p>General decreasing trend from high 2011 to 2019. In 2019 there are estimated to be 78 claims incurred which is 7% lower than 2018.</p>
Average claim size	<p>2019 average claim size is \$57,000, which is significantly higher than all prior years (except 2018), driven by high payments and case estimates to 30 June 2019.</p>	<p>Significantly lower than insurers, at \$28,500 for the 2019 accident year, which is similar to 2018 but higher than most years.</p>
Incurred cost	<p>2019 incurred cost is \$128.0 million, which is higher than all prior years, except 2018.</p>	<p>The incurred cost for 2019 of \$2.2 million, which is lower than the incurred cost for 2017 and 2018 but higher than 2014 to 2016.</p>
Gross loss ratio	<p>2019 is 86.6%, which is higher than loss ratio for all accident years since 2011, except for 2018 (98.6%).</p>	n/a
Distribution by payment type	<p>Redemption and non-economic lump sums and weekly benefits combined account for approximately two-thirds of the total incurred cost and payments each financial year.</p> <p>The distribution of payments for the last eight accident years has remained stable.</p>	n/a

Risks and uncertainties

The key risks and uncertainties to the Northern Territory (NT) scheme are:

- **Inpex project**

Significant increases in wages up to 2018 have been driven by the Inpex project and the associated contracts, and wages have subsequently decreased by 15% in 2019. Up to and including the 2017 year, the number of claims incurred and claims cost have not reflected the increase in wages, causing the claim frequency and premium rate to reduce. In 2018, the average claim size and incurred cost increased. We understand that over the 2018 financial year the construction phase wound down with production starting in October 2018. Therefore, the number of workers has reduced significantly in the 2019 financial year. The premium pool decreased by 6% in 2019 as the project moved into production phase and may further decrease in the premium pool for the NT scheme in future years.

In the previous valuation we had estimated that the 2018 accident year would be significantly higher than prior years, however, the payments and case estimates development over the 2019 financial year were even higher than expected. This could be due to people being unable to return to work (with fewer jobs available) and unable to find alternative work, in the absence of new contracts commencing. Over the 2019 financial year there were also more late claims reported for the 2014 to 2016 accident years, which may also relate to people being unable to find alternative work.

- **Changing economic environment**

There is considerable uncertainty associated with the current economic environment and what it will mean for Australia over the near future. Aside from the Inpex project discussed above, there may be more general real wage decreases or increases in bad debts for insurers. The 2019/20 Northern Territory mid-year report refers to soft economic conditions in the short-term, which we have reflected in the estimates for the 2019/20 premium rate.

Over the last three to five financial years, there has been a reduction in the number of small claims lodged with other schemes. At the same time, there has not been a reduction in the number of medium to large claims. This has impacted the overall average claim size and incurred cost for other schemes. We will continue to monitor the mix by size of claims lodged in NT to ensure that we adequately allow for any change in claiming behaviour, particularly as it relates to the high average claim size for insurers for the 2018 and 2019 accident year due to higher payments and outstanding case estimates to 30 June 2019.

- **Large claims**

The incurred cost and break-even premium for each accident year are heavily influenced by the presence or absence of any large claims. This is particularly prevalent in the NT due to the small scheme size and the prevalence of very large settlements. Future claims costs will continue to be impacted by very large settlements, with net costs to insurers impacted by the nature and adequacy of any reinsurance arrangements in place.

Large claims can also have an impact on superimposed inflation. While superimposed increased slightly this year, it can be volatile due to the impact of large settlements and the relatively small scheme size. Superimposed inflation should be monitored to make sure increases in costs are understood and ensure that a payment type is not unexpectedly driving an increase in costs.

- **2015 legislative amendments**

The 2015 legislative amendments are for prospective claims only and were introduced in two stages. The main changes are effective from 1 July 2015, with additional changes effective from 1 October 2015. This creates additional uncertainty in the outstanding claims liabilities for the 2015/16 to 2017/18 accident years and the future costs for the 2018/19 accident year. In separate advice, PwC estimated that there would be a 2.8% reduction in respect of the most significant benefit changes (excluding death benefit increases). In

this valuation, we have also allowed for the increase in death and funeral benefits, so the net reduction is 2.4%. We have not estimated the impact of other changes. As the changes are not retrospective, this should not impact outstanding claims liabilities for accident years prior to 2015/16.

We recommend NT WorkSafe and insurers closely monitor the experience to ensure that there are no unintended consequences. See Appendix B6 for more information.

- **Silicosis claims**

There have been a significant number of silicosis claims in other Australia states that have been reported over the past year. In the NT, there have been no silicosis claims reported to date. An Occupational Health and Safety campaign in the NT identified 36 businesses where workers could have potentially been exposed to Silica. There are 24 businesses which have current policies and these business account for 0.6% of the total premium pool and 0.4% of the total wages.

Therefore, due to the lack of historical claims and small percentage of business with potential exposure, we have not made a special allowance for these claims in our valuation, as they are unlikely to have a material impact on the total scheme outstanding claims liability or scheme break-even premium rate. Any silicosis claims could impact the premium rates for individual classes.

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1 About this report

1.1 Context for our review

This report has been prepared for NT WorkSafe and the Scheme Monitoring Committee in accordance with contract number D19-0182, dated 1 October 2019. Under this contract we have conducted the following analyses which are detailed in this report:

- Calculation of the funding ratio based on 30 June 2019 outstanding claims liability valuations for insurers and self-insurers
- Calculations of the break-even premium rate for each prior accident year using data to 30 June 2019, including a review of the trends in the required premium and a comparison to the actual premium rates charged by insurers
- An estimate of the break-even premium rate for 2019/20 based on historic data and future inflation assumptions.

This is the seventh time we have prepared this report for the NT workers compensation scheme. Our previous valuation was conducted using data as at 30 June 2018, the findings of which are detailed in our 28 February 2019 report titled Actuarial review of Northern Territory workers compensation scheme as at 30 June 2018.

Our review is for the following four active insurers:

- Allianz Australia Insurance Limited (including Territory Insurance Office (TIO))
- CGU Insurance Australia (Part of Insurance Australia Limited)
- GIO Insurance Australia (also known as AAI)
- QBE Insurance Australia

and the following five active self-insurers:

- Catholic Church Insurance
- Coles Supermarkets Australia Pty Ltd
- Wesfarmers Retail Holdings Pty Ltd
- Westpac Banking Corporation
- Woolworths Supermarkets.

The analysis excludes Government Self Insurance and uninsured claims.

At 30 June 2014, TIO was a separate insurer. However, over the 2015 financial year it was purchased by Allianz. Over the 2019 financial year, Wesfarmers Retail Holdings Pty Ltd has been separated from Coles Supermarkets Australia Pty Ltd as a result of its demerger.

The report is structured as follows:

- Sections 2 and 3 of this report present the outstanding claims liability valuations for insurers and self-insurers respectively

- Section 4 analyses the break-even premium rates for past underwriting years and the adequacy of the rates actually charged by insurers
- Section 5 details the data and methodology we have used
- Section 6 and section 7 outline the assumptions adopted in this review and considers the uncertainty in the work we have carried out, including some key risks faced.

1.2 Compliance with standards

1.2.1 Outstanding claims liabilities

The approach for calculating the outstanding claims liabilities is consistent with that required by the Accounting Standards for private and State Government general insurers (AASB1023), and APRA's prudential standard GPS320 Actuarial and Related Matters where applicable. It also complies with the Institute of Actuaries of Australia's Professional Standard PS300 to the extent possible given the data available.

We have not performed a full review of asbestos liabilities due to lack of available data.

1.2.2 Premium rates

Our advice to you constitutes Actuarial Advice as defined in the Code of Professional Conduct (the Code) issued by the Institute of Actuaries of Australia and our advice complies with the Code in this respect.

2 Insurer outstanding claims liabilities

2.1 Outstanding claims liability

2.1.1 Our estimates

The table below shows our central estimate results by payment type group in current values, including 2015 legislative amendments and excluding claims handling expenses:

Estimates of outstanding claims at 30 June 2019 (\$000s) (a) (b)										
Accident year	By payment type method						Sum of individual payment methods (c)	All payments		Total (e)
	Weekly Benefits	Medical And Hospital	Allied Health, Vocational Rehabilitation, Non-Compensation Payments (Other), Death	Other Goods And Services	Legals	Redemptions And Non-Economic Lump Sum		Combined PCE method (d)	Allowance for active large claims	
2019	35,040	9,143	12,417	3,229	5,639	36,803	102,271	74,707	0	102,271
2018	18,541	4,851	7,650	2,068	5,419	38,295	76,823	67,372	0	76,823
2017	6,543	1,399	2,493	831	2,959	24,185	38,409	21,036	0	38,409
2016	4,107	933	1,690	520	2,159	17,315	26,724	9,430	5,856	32,580
2015	4,850	1,165	1,255	722	1,472	13,606	23,068	18,026	5,727	28,795
2014	3,556	775	857	557	906	9,531	16,181	5,174	0	10,677
2013	3,909	767	857	623	839	9,211	16,206	6,748	0	11,477
2012	2,576	487	539	400	405	5,920	10,328	5,534	0	7,931
2011	1,813	302	368	262	283	4,115	7,143	2,683	0	4,913
2010 & earlier	12,136	2,140	2,333	1,574	1,820	26,495	46,500	37,476	22,137	64,124
Total	93,070	21,962	30,459	10,786	21,900	185,476	363,653	248,185	33,720	378,001

Notes: (a) to (e) from appendix C4

The table shows that the largest component of the outstanding claims liability relates to the redemptions and non-economic lump sum payment group (49% of the total), followed by weekly benefits (25% of the total).

Further detail on the parameters adopted to calculate the outstanding claims can be found in Appendix C. For further analysis on the composition of the incurred cost of claims by payment group see Appendix E2.

To generate the gross central estimates, the current value estimates are inflated and discounted, as follows:

Gross estimates at 30 June 2019 excluding expenses (\$000s)			
Accident year ending 30 June	30 June 2019 values	Inflated values	Infl/disc values
2019	102,271	108,602	104,568
2018	76,823	82,012	78,658
2017	38,409	41,633	39,512
2016	32,580	35,656	33,672
2015	28,795	31,764	29,840
2014	10,677	11,751	11,045
2013	11,477	12,710	11,906
2012	7,931	8,797	8,238
2011	4,913	5,464	5,108
2010 & earlier	64,124	69,712	66,313
Total	378,001	408,100	388,859

An allowance for reinsurance recoveries, claims handling expenses and a risk margin are included in the gross inflated/discounted estimates to arrive at the net outstanding claims provision:

Estimates at 30 June 2019 (\$000s)							
	Gross o/s liability (a)	Reinsurance recoveries (b)	Net o/s liability (c)	Claims handling expenses (d)	Net central estimate (e)	Risk margin (f)	Net Provision (g)
Total	388,859	22,710	366,149	21,969	388,118	46,852	434,970

- Notes:**
- (a) from table above
 - (b) based on the reinsurance information provided by insurers on large claims
 - (c) = (a) – (b)
 - (d) = (c) x 6%, see section 6.3 for details of the claims handling expenses
 - (e) = (c) + (d)
 - (f) = (e) x 12.07%, see section 7.2.2 for details on the risk margin
 - (g) = (e) + (f)

The inflated and discounted gross central estimate of \$388.9 million is \$7.6 million (2.0%) higher than the equivalent estimate as at 30 June 2018. This increase is driven by the high outstanding liability for the 2018 and 2019 accident years due to the high average claim size and the decrease in the real rates of return.

Net results have only been provided in total, as reinsurance recoveries depend on the large claims experience in each accident year and individual insurers' reinsurance treaties. The net provision at 30 June 2019 is \$435.0 million, which is \$12.1 million (2.9%) higher than 30 June 2018. The increase in the net provision is more than the increase in the gross central estimate, due to a lower expected reinsurance recoveries.

Since the 2016 financial year, insurers have provided us with more information about which claims are likely to receive a reinsurance recovery, to better allow for the estimate of reinsurance recoveries. However, we are not providing this information on an accident year basis in the report due to commerciality reasons.

2.1.2 Comparison with insurers

We have compared our gross and net outstanding claim estimates to the insurers' estimates in total. As mentioned above, we have not compared the results by accident year, due to insurer commerciality reasons.

Gross estimates at 30 June 2019 excluding expenses (\$000s)				
	Insurers' estimate (a)	PwC estimate (b)	Difference (\$000) (b) - (a)	Difference (%) (b) / (a) - 1
Total	382,429	388,859	6,431	1.7%

- Notes:**(a), (b) = gross inflated and discounted values excluding claims handling expenses

As at 30 June 2019, our gross estimate is \$6.4 million (1.7%) higher than that of the insurers. This compares to our estimate being \$17.4 million (4.8%) higher than that of the insurers at 30 June 2018. The difference is due to different underlying methods and assumptions used by the insurers compared to us in the valuation. A key driver of this difference may relate to the uncertainty associated with large claims and future development on these.

Our net provision is higher than that of the insurers due to different reinsurance recoveries and risk margin assumptions. Individual insurers would be expected to have a lower risk margin than the scheme, due to diversification benefits from writing other classes of business.

Funding ratio

The funding ratio measures the liabilities held by the insurers (the notional assets) compared to the aggregate outstanding claims liability calculated by the scheme actuary. This is used to represent the ability of the scheme in aggregate to meet its liabilities.

For insurers, the funding ratio compares the insurers' net provision (i.e. including risk margin) with our central estimate (i.e. excluding risk margin). This is shown in the table below:

Funding ratio (\$000s)				
	Actual provisions (a)	PwC central estimate (b)	Difference (\$000) (b) - (a)	Funding ratio (a) / (b)
Insurers	414,760	388,118	-26,642	107%

Notes: (a) as per table above, net provision including risk margin

(b) net central estimate, excluding risk margin

The aggregate funding ratio is 107%, which is an increase from 102% last year. Compared to the valuation result at 30 June 2018 our central estimate increased by \$10.8 million while the insurers' provisions increased by \$31.1 million, which is why the funding ratio increased. We are not provided with a reconciliation for the insurers' provision so cannot identify the drivers of the insurers' increase. Part of this may be due to differences in allowances for the valuations by payment type and future large claims development.

A ratio above 100% implies that, in aggregate, insurers are holding sufficient reserves to be likely to meet our central estimate of future claims costs. This year, the funding ratio has increased from 102% to 107%. We make the following comments which should be borne in mind when considering the funding ratio:

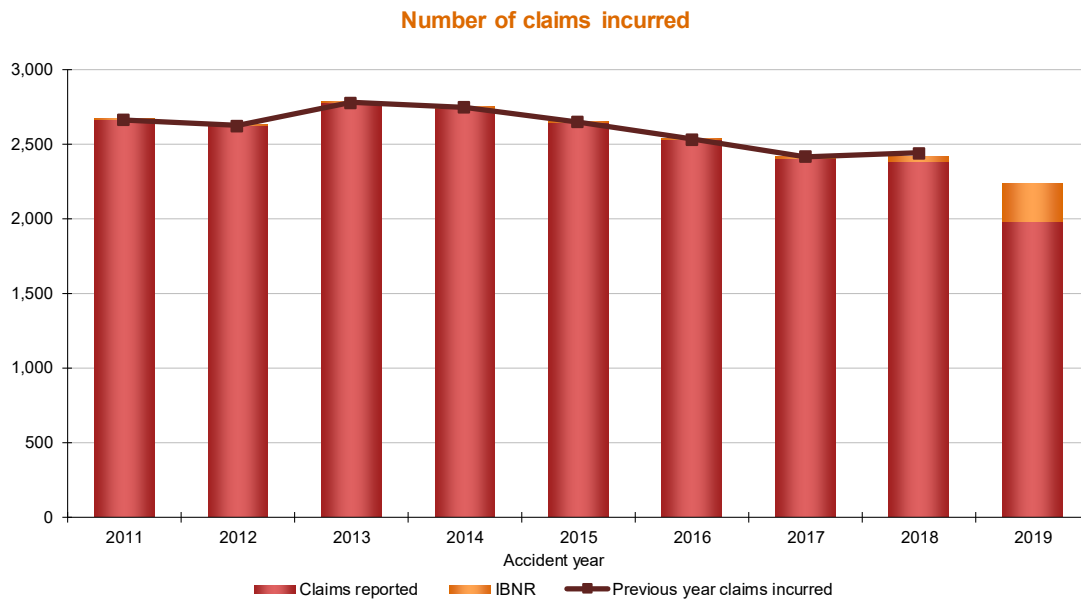
- The insurers' actuaries have access to more detailed claims data than we have to estimate the liabilities
- Insurers hold assets in excess of their liabilities due to APRA capital requirements and their own risk appetite
- Some insurers may be holding greater than 100% of our notional allocation to them, while others may be holding less. Of concern would be any insurers who are well below 100%.

2.2 Claims statistics

The following sub-sections show the claims experience by accident year. For more graphs of claims statistics, including by financial year, see appendices D and E.

2.2.1 Number of claims incurred

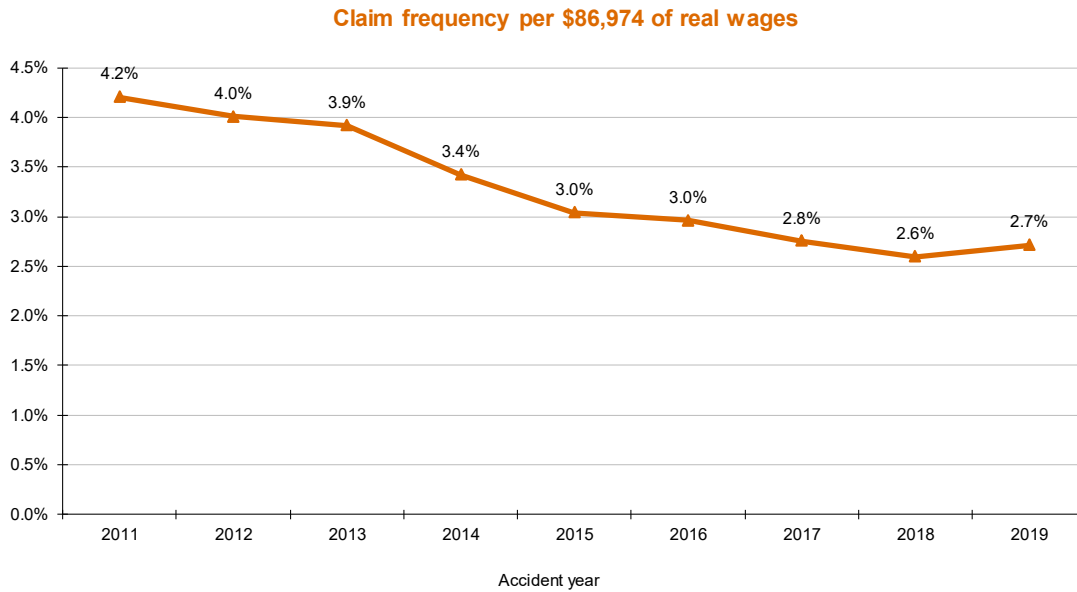
Decreasing trend from 2013 peak to 2019



The main points to highlight from this chart are:

- For the 2011 and 2012 accident years, the number of claims incurred was between 2,600 and 2,700
- There was a spike in the number of claims incurred for the 2013 accident year to just under 2,800
- From the 2013 to 2017 accident years, there has been a decreasing trend in the number of claims incurred, however 2017 and 2018 are very similar
- For 2019, the number of incurred claims is estimated to be lower than all prior years at 2,238 claims
- The number of claims are similar to estimated at the previous valuation.

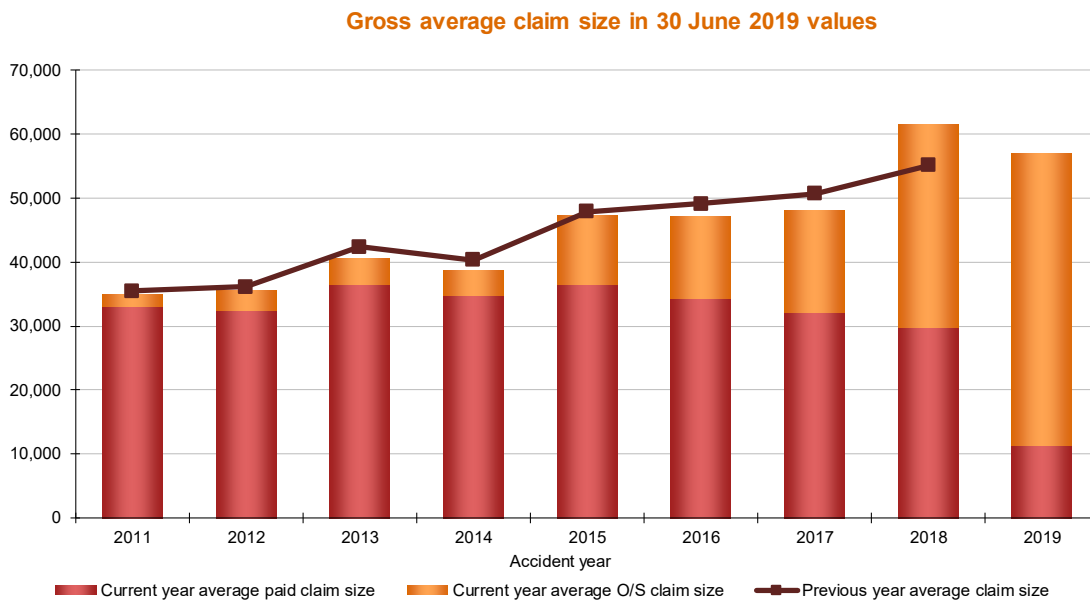
Declining claim frequency due to significant increases in wages up to 2015 and more recently reducing numbers of claims incurred. 2019 is higher than 2018 as the wages decreased by more than the number of claims



See Appendix D1 for the formula to calculate the claim frequency.

2.2.2 Gross average claim size

2019 is estimated to be higher than all prior years except for 2018



Since 2011 the gross average claim size (in 2019 values):

- Exhibited volatility due in part to large claims
- Exhibited a broadly increasing trend from around \$34,900 in 2011 to around \$48,000 in 2017
- Increased significantly to \$61,600 in 2018 due to high payments and case estimates to 30 June 2018

- Dropped to around \$57,000 in 2019 given lower total estimates report in the first development year than 2018 at the same point in time.

The uncertainty about the future development means that the ultimate level and our estimates may differ from those projected for recent accident years. This is especially true for the 2019 accident year, where a high proportion (80%) of the average claim size relates to uncertain future claims development.

Compared to the previous valuation, the gross average claim size is similar or lower for most years except for 2018, where estimates increased. This reflects changes in total estimates over the year.

Appendix E contains the average claim size split by payment type. The mix of payment types across the accident years has remained stable. Redemptions and non-economic lump sums are the largest payment type, closely followed by weekly benefits. These two payment types account for approximately two thirds of total incurred costs.

2.3 Actual vs expected claims experience over 2018/19

2.3.1 Claims incurred up to 30 June 2018

Actual experience compared to the expected experience over 2018/19 for claims incurred up to 30 June 2018 showed:

- Claim reports were lower than expected (273 actual compared to 292 expected)
- The proportion of claims finalised was faster than expected (64.8% compared to 63.2%)
- Claim payments were higher than expected (\$109.9 million actual compared to \$107.7 million expected).

Expected experience is taken from the previous scheme report dated 28 February 2019. See appendix C2 for full details.

The impact of this experience is quantified in the reconciliation in section 2.4.

2.3.2 Claims incurred over 2018/19

The actual experience for claims incurred over 2018/19 compared to expected showed:

- The number of incurred claims was 7.5% less than the 2018 accident year
- There were 821 claims active as at 30 June 2019, which is 7.4% lower than the 887 expected
- The average payment per claim was \$11,357, which is 1.7% lower than the \$11,557 expected.

The expected experience is based on the adopted parameters used for our 30 June 2018 valuation.

2.4 Reconciliation of estimates

The table below reconciles the gross outstanding claims central estimate, excluding expenses, with the equivalent result as at 30 June 2018.

Reconciliation of gross actuarial estimates, excluding expenses (\$000s)										
Accident year ending 30 June		2018	2017	2016	2015	2014	2013	2012	2011 & earlier	Total
A.	Gross estimates at 30 June 2018 (a)	103,394	62,868	47,401	38,231	20,344	20,893	10,624	77,473	381,228
B.	Gross payments 1 July 2018 to 30 June 2019	43,761	20,511	12,035	9,572	5,422	5,719	2,155	10,761	109,935
C.	Assumed investment return (b)	1,544	996	783	633	334	341	181	1,364	6,176
D.	= A - B + C	61,176	43,354	36,149	29,292	15,257	15,516	8,650	68,076	277,469
	Updated gross estimates at 30 June 2019									
E.	Revised gross estimates at 30 June 2019 (c)	78,658	39,512	33,672	29,840	11,045	11,906	8,238	71,421	284,291
F.	= E - D	17,481	-3,842	-2,477	548	-4,212	-3,610	-412	3,345	6,822
	Change 01 July 2018 to 30 June 2019									
G.	Proportion of change attributable to									
	Changes in real rates of return	2,785	1,665	1,598	1,531	685	862	653	4,830	14,607
	Change in experience	11,317	-5,731	-1,374	-2,262	-403	-1,207	325	-3,230	-2,565
	Change in actuarial assumptions	3,379	225	-2,701	1,280	-4,494	-3,264	-1,389	1,745	-5,221
H.	Gross amount incurred and outstanding for 2018/19 accident year (e)									104,568
I.	= E + H									388,859
	Total gross outstanding liability, excluding expenses at 30 June 2019									

- Notes:**
- (a) from section 2.1 of our previous report dated 28 February 2019
 - (b) calculated using 1.9% p.a. being the one year forward rate from section 6.1 of our previous report dated 28 February 2019
 - (c) from appendix C4 of this report.

The table shows that:

- Overall estimates show a strain on reserves of \$6.8 million, which is 1.8% of the opening 30 June 2018 estimates. This increase is made up:
 - \$14.6 million increase (3.8% of opening estimates) due to decrease in the real rates of return
 - Partially offset by a \$2.6 million decrease (0.7%) due to change in experience and,
 - A \$5.2 million release (1.4%) due to changes in underlying assumptions
- The decreased in real rates of return is due to a decrease in discount rates more than offsetting the decrease in inflation rates, as described in Section 6.1
- The change in experience is due to:
 - Releases for most accident years as the claim's development was lower than expected
 - A significant strain for the 2018 accident year arising from higher than expected payments and case estimates
- The release due to actuarial assumptions for 2012 to 2014 is due to the use of combined PCE method introduced this year, details discussed in section 6. This is partially offset by the \$3.4 million strain for 2018, where we increased the assumptions to reflect the higher claims experience.

3 Self-insurer outstanding claims liabilities

3.1 Outstanding claims liability

3.1.1 Outstanding claims provision

The provision below is based on cumulated claims data across all payment types and self-insurers. Projected payments are inflated and discounted to get to the gross central estimate before application of an allowance for claims handling expenses and a risk margin to calculate the provision.

A breakdown of our results are shown in the table below:

Estimates at 30 June 2019 (\$000s)							
Accident year ending 30 Jun	Gross o/s liability (a)	Reinsurance recoveries (b)	Net o/s liability (c)	Claims handling expenses (d)	Net central estimate (e)	Risk margin (f)	Net Provision (g)
Total	3,999	0	3,999	280	4,278	1,070	5,348

- Notes:**
- (a) in inflated and discounted values
 - (b) (a) x 0%
 - (c) (a) + (b)
 - (d) assumed to be 7% of the net outstanding liability
 - (e) = (c) + (d)
 - (f) a risk margin to increase the provision to a 75% level of sufficiency, = (d) x 25.0%
 - (g) = (e) + (f)

The inflated and discounted net provision at 30 June 2019 is \$5.3 million, which is \$0.7 million (15.0%) higher than the \$4.7 million provision as at 30 June 2018.

3.1.2 Comparison with self-insurers' estimates

We have compared our assessment of the net central estimate to self-insurers' estimates. The results are shown in the table below:

Estimates at 30 June 2019 (\$000s)					
Accident year ending 30 Jun	Self-insurers' estimate (a)	PwC estimate (b)	Difference (\$000s) (b) - (a)	Difference (%) (b) / (a) - 1	
2013 & earlier	56	57	1	2.2%	
2014	11	12	1	8.5%	
2015	37	21	-16	-42.3%	
2016	182	172	-10	-5.4%	
2017	871	1,024	153	17.6%	
2018	1,236	1,284	48	3.9%	
2019	1,555	1,708	153	9.8%	
Total	3,948	4,278	330	8.4%	

- Notes:** (a), (b) in inflated and discounted values, including claims handling expenses

This comparison shows that our net central estimate is higher than the self-insurers' estimate by \$0.33 million (8.4%). This is largely due to the difference for the 2017 and 2019 accident years.

Self-insurer funding ratio

For self-insurers, the funding ratio compares the self-insurers' bank guarantee provision (the central estimate times 1.5) with our estimate, which excludes any risk margin.

Funding ratio (\$'000s)				
	Actual provisions (a)	PwC central estimate (b)	Difference (\$'000) (b) - (a)	Funding ratio (a) / (b)
Self-insurers	5,922	4,278	-1,644	138%

Notes: (a) bank guarantee provision, net central estimate (from table above) x 1.5
 (b) as per table above, net central estimate excluding risk margin

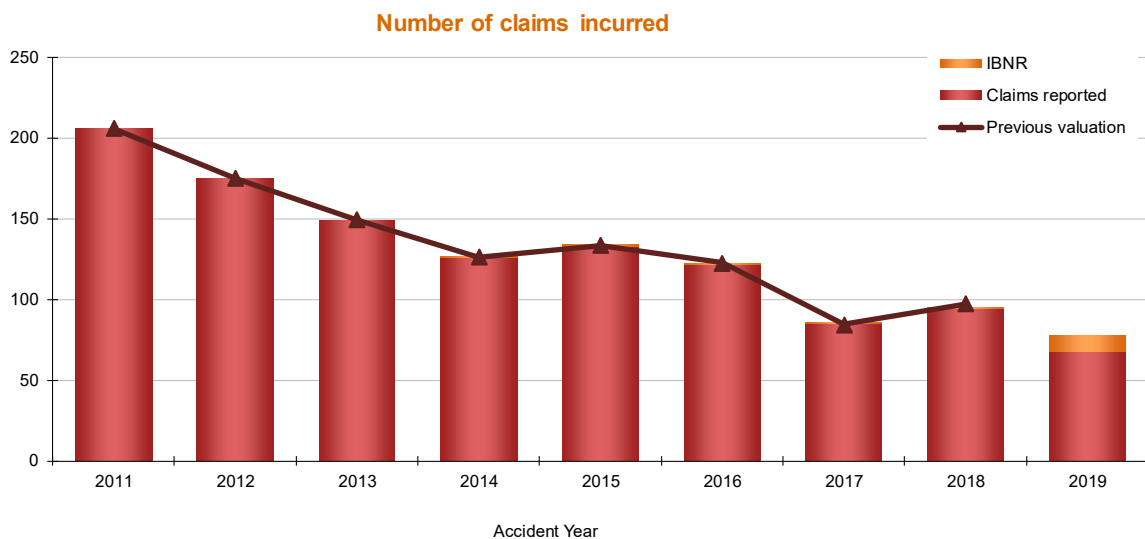
The aggregate funding ratio is 138%, which is lower than 145% as at 30 June 2018. This indicates that the current bank guarantee provisions held by self-insurers in aggregate are likely to be adequate to cover future claims costs.

3.2 Claims statistics

The following sub-sections show the claims experience by accident year. For more graphs of claims statistics, see Appendix G.

3.2.1 Number of claims incurred

General decreasing trend from 2011 peak to 2019 at 78 claims



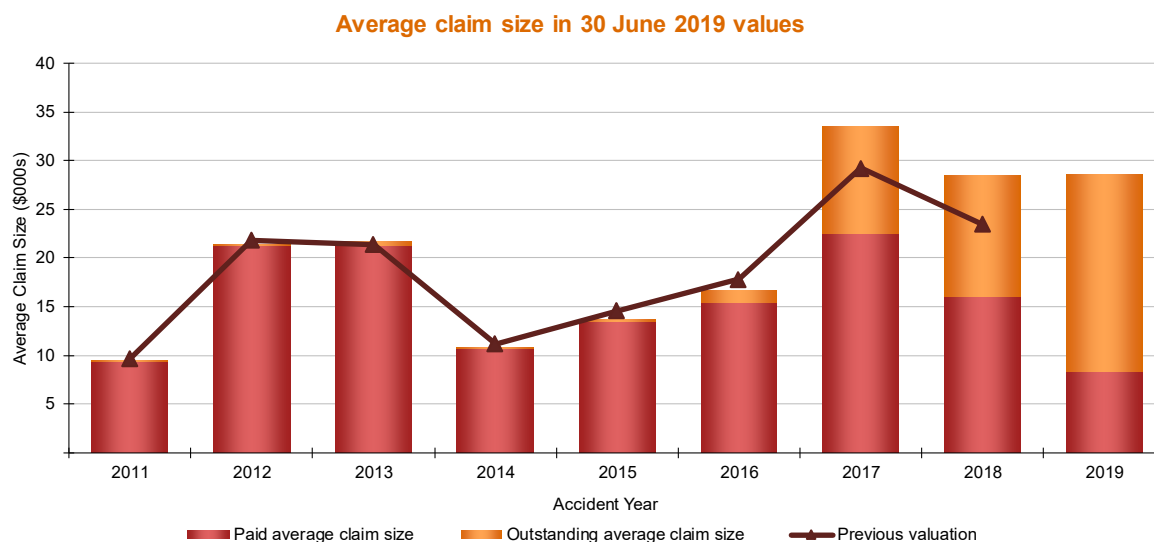
The main points to highlight from this chart are:

- Since the high in 2011, the number of claims has reduced each year to a level of 126 claims in 2014. From a review of the self-insurer reports, we understand that one self-insurer has changed its management and recording of small claims, which has contributed to the decrease
- The number of claims was fairly stable over 2014 to 2016 at around 130 claims
- For 2017, the total estimated claims is 85, which is significantly lower than all prior years shown
- The number of claims incurred increased to 95 for the 2018 year
- For 2019, number of claims incurred decreased to 78 the lowest level over the period shown, of which 10 are IBNR claims

- The number of claims is similar to estimates at the previous valuation, however 2018 is slightly lower.

3.2.2 Gross average claims size

2019 average claim size is around \$28,500, on par with 2018 year and higher than all prior years except for 2017



The average claim size has been volatile between accident years and there has been no discernible trend. From 2011 to 2016, the average claim size has ranged between \$9,000 and \$21,500, with lows in 2011 and 2014 surrounding highs in 2012 and 2013. This implies that the spike in incurred claim numbers in 2011 shown in 3.2.1 is related to smaller claims.

Our estimated average claim size for the 2017 accident year is significantly higher than our previous valuation due to higher than expected payments and high case estimates as at 30 June 2019.

Our estimated average claim size for the 2019 accident year is just over \$28,500, which is relatively on par to 2018 accident year.

The uncertainty about the future development means that the ultimate level and our estimates may differ from that projected for recent accident years. This is especially true for the 2019 accident year, where a high proportion (71%) of the average claim size consists of the uncertain future estimate.

3.3 Actual vs expected claims experience over 2018/19

Actual experience compared to the expected experience over 2018/19 for claims incurred up to 30 June 2018 showed:

- Claim reports were lower than expected (11 actual compared to 12.6 expected)
- Claim payments were significantly higher than expected (\$1.73 million actual compared to \$1.51 million expected).

The expected experience is taken from our previous report dated 28 February 2019. See appendix F for full details.

The impact of this experience and our adjustments to future development is quantified in the reconciliation below.

3.4 Reconciliation of central estimates

The table below reconciles the gross outstanding claims central estimate, excluding expenses, with the equivalent result as at 30 June 2018.

Reconciliation of gross actuarial estimates, excluding expenses (\$000s)									
Accident year ending 30 June (\$000s)	2018	2017	2016	2015	2014	2013	2012	2011 & earlier	Total
A. Gross estimates at 30 Jun 2018 (a)	1,658	1,115	469	122	66	12	28	8	3,477
B. Gross payments 1 July 2018 to 30 June 2019	914	582	210	1	3	1	0	17	1,728
C. Expenses (b)	0	0	0	0	0	0	0	0	0
C. Assumed investment return (b)	23	16	7	2	1	0	1	0	50
D. = A - B + C Updated gross estimates at 30 June 2019	767	548	265	124	64	12	29	-9	1,799
E. Revised gross estimates at 30 June 2019 (c)	1,200	957	161	20	11	48	3	2	2,402
F. = E - D Change 1 July 2018 to 30 June 2019	433	409	-104	-104	-52	36	-25	11	604
G. Proportion of change attributable to									
Changes in real rates of return	24	21	4	0	0	2	0	0	52
Change in experience	78	94	-65	-48	-37	39	-23	12	49
Change in actuarial assumptions	331	294	-43	-56	-15	-4	-2	-1	503
H. Gross amount incurred and outstanding for 2018/19 accident year (c)									1,596
I. = E + H Total gross outstanding liability, excluding expenses at 30 June 2019									3,999

- Notes:**
- (a) from section 3.1 of our previous report dated 28 February 2019
 - (b) calculated using 1.9% p.a. being the one year forward rate from section 6.1 of our previous report dated 28 February 2019
 - (c) from appendix F4.4 of this report.

The table shows that:

- Overall estimates show a strain on reserves of \$0.60 million, which is 17.4% of the opening 30 June 2018 estimates. This strain is made up of:
 - \$0.50 million strain (14.5% of opening estimates) due to changes in actuarial assumptions
 - \$0.05 million strain (1.5%) due to decrease in the real rates of return
 - \$0.05 million strain (1.4%) due to change in experience.
- The biggest cause of the strain were the 2017 and 2018 accident years, which increased due to higher than expected payments and case estimates development.

4 Break-even premium rates

4.1 Adequacy of past premiums

The break-even premium rate is calculated on an inflated and discounted basis and is gross of reinsurance, given that each insurer will have a unique reinsurance treaty in place. No allowance for a profit margin has been made, as insurers will set their own margin based on a multitude of factors, and we are interested in the “break-even” premium, which excludes any consideration of profit.

For this analysis, we have allowed for the claims costs and expenses to be discounted to the point that the premium is received. We have used all claims experience available to date to calculate the break-even premium rate.

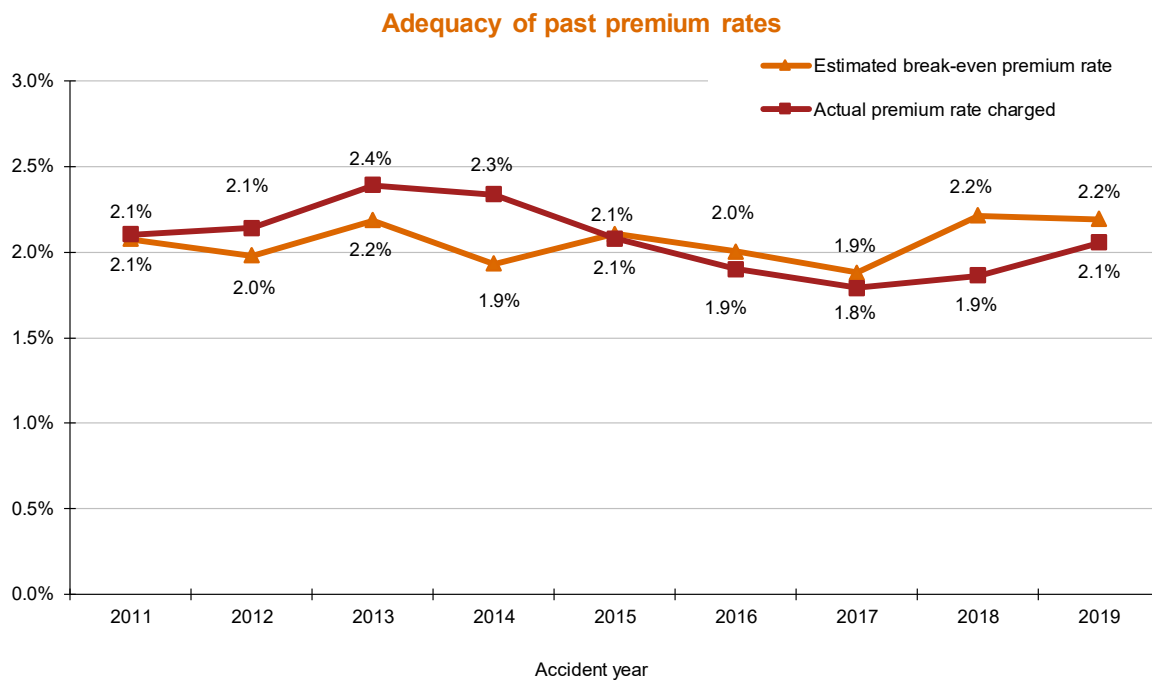
The following table shows our estimated break-even premium rates and the actual rates charged by insurers:

Accident year	Calculated break even premium						Actual premium					Difference (break even - actual)
	Reported earned wages (a) (\$000s)	Developed earned wages (b) (\$000s)	Discounted gross incurred cost (c) (\$000s)	Commission in financial year (d) (\$000s)	Discounted other expenses in the fin year (e) (\$000s)	Premium (f) (\$000s)	Estimated premium rate (g)	Reported earned premium (h) (\$000s)	Developed earned premium (i) (\$000s)	Actual premium rate charged (j)		
2019	6,610,987	7,040,906	128,390	4,701	20,885	154,349	2.2%	135,305	144,727	2.1%	-9,622	
2018	7,817,632	7,902,694	145,961	5,534	22,548	174,859	2.2%	145,250	147,190	1.9%	-27,669	
2017	7,308,717	7,324,674	111,967	4,489	20,653	137,665	1.9%	131,071	131,071	1.8%	-6,594	
2016	6,837,989	6,837,989	112,149	4,163	20,086	137,061	2.0%	129,901	129,901	1.9%	-7,160	
2015	6,582,845	6,582,845	112,950	4,558	20,288	138,640	2.1%	136,774	136,774	2.1%	-1,866	
2014	5,929,595	5,929,595	91,857	4,775	17,098	114,445	1.9%	138,578	138,578	2.3%	24,133	
2013	5,199,017	5,199,017	94,137	3,697	15,016	113,629	2.2%	124,326	124,326	2.4%	10,697	
2012	4,633,724	4,633,724	73,834	2,864	14,015	91,774	2.0%	99,113	99,113	2.1%	7,340	
2011	4,138,004	4,138,004	70,116	2,863	11,998	85,912	2.1%	86,936	86,936	2.1%	1,023	

Notes:

- (a) earned wages provided by insurers
- (b) (a) x development factors in Appendix B7
- (c) calculated in Appendix H1
- (d) actual commission, from the consolidated Form A returns
- (e) other expenses, from the consolidated Form A returns, discounted by half a year
- (f) = (c) + (d) + (e) x (1+ one year historical interest rate) ^ (3/12) to allow for the fact that premiums are on average received 3 months after the commencement of the underwriting period
- (g) = (f) / (b)
- (h) earned premium, including earned but not yet reported premium provided by insurers
- (i) (h) x development factors in Appendix B7
- (j) = (i) / (b)

We estimate that the 2019 developed premiums charged of \$144.7 million were \$9.6 million (6.2%) lower than the estimated break even premiums of \$154.3 million.



The key points to highlight from the above chart and table may be summarised as follows:

- The actual premium rate charged from 2011 to 2015, ranges between 2.1% and 2.4%
- Since 2011, the actual premium rate and the estimated break-even premium rate have been close to each other, except in 2014 when the actual premium rate charged was significantly higher
- Following the Act changes in July 2015, both the actual premium rate and the estimated break-even premium rate have fallen. The actual premium rate charged was 1.9% in 2016, 1.8% in 2017, 1.9% in 2018
- For 2019, actual premium rate charged had increased to 2.1% but is still lower than the estimated break-even premium rate of 2.2% for the year
- With hindsight, the actual premium rate charged was more than sufficient to cover the break-even cost for accident years 2012 to 2014, were similar to estimates of break-even rates in 2011 and 2015, but less than sufficient for all other years
- In the previous valuation there was an estimated 4.5% increase required in the best estimate premium rate from 2018 to 2019 (2.09% to 2.18%). The actual increase applied by the insurers is 10.4% from the actual premium rates charged of 1.86% in 2018 to 2.06% in 2019. This means that the difference between actual premium charged and break-even premium rate is smaller for 2019 than in 2018 even though the actual premium charged is still lower than the break-even premium rate.

Historically, the actual rate has fluctuated around the estimated break-even premium rate. However, we would expect the premium charged by insurers to be consistently higher than the break-even premium, to incorporate an appropriate profit margin. Insurers' will likely use a higher discount rate than Commonwealth yields in their pricing based on a higher expected rate of investment return. This reduces the actual premium rate charged.

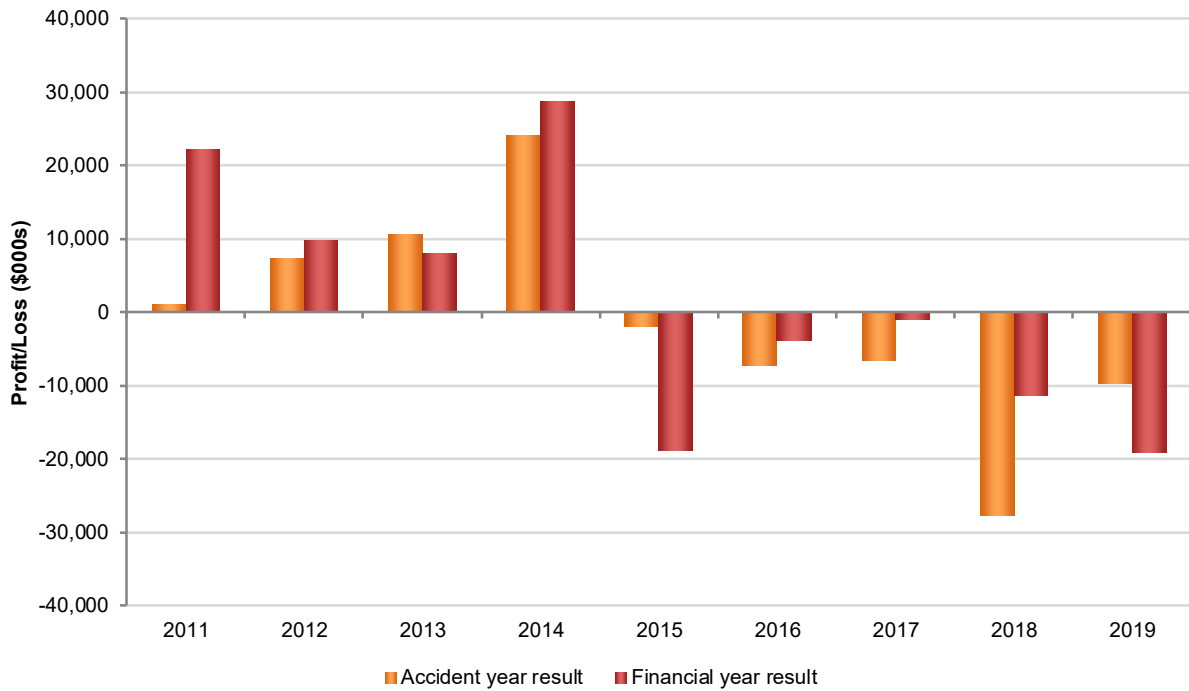
Another source of difference between the two rates is reinsurance. We have estimated the break-even rate based on the gross risk cost, whereas the premium rate charged by insurers would factor in reinsurance (both recoveries and cost of a treaty). Assuming that reinsurance is priced to deliver a profit above the expected

Break-even premium rates

reinsurance recoveries, then the break-even rate would be expected to increase if an allowance was made for reinsurance.

Using the difference between the actual premium and break-even premium as shown in the table above we have graphed the insurer performance on an accident year basis. The financial year basis comes from the Form A supplied by insurers.

Insurer performance by accident year and financial year



Over the nine years shown in the chart above there is no discernible trend in the insurer profitability. In general, the insurer performance on a financial year basis has been more variable than the performance on an accident year basis.

4.2 Forecast break-even premium rate

The following table shows the break-even premium rate projected for the next financial year. For comparative purposes, we have also shown the last five underwriting years.

Underwriting year	Actual wages (a) (\$000s)	Discounted gross incurred cost (b) (\$000s)	Expenses (c) (\$000s)	Premium (d) (\$000s)	Calculated premium rate (e)
2020	7,139,479	126,460	29,994	156,833	2.2%
2019	7,040,906	128,390	25,586	154,349	2.2%
2018	7,902,694	145,961	28,082	174,859	2.2%
2017	7,324,674	111,967	25,142	137,665	1.9%
2016	6,837,989	112,149	24,248	137,061	2.0%
2015	6,582,845	112,950	24,846	138,640	2.1%

- Notes:**
- (a) 2019 = developed wageroll for 2018 x (1 + 1.4%)
 - (b) 2019 = adopted claims incurred x adopted average claim size in 30 June 2019 values x (1 + wage inflation) x (1 + superimposed inflation) x inflation/discounting factor
2,262 x 53,305 x (1 + 1.4%) x (1 + 2.9%) x 1.0055
 - (c) = (b) / (1 – commission rate (3.5%) – other expense rate (15.6%)) – (b)
 - (d) = (b) / (1 – commission rate (3.5%) – other expense rate (15.6%)) x (1 + interest rate (1.0%)) ^ (3/12) to allow for the fact that premiums are received on average 3 months after the commencement of the underwriting period
 - (e) = (d) / (a)

Our projection of the break-even rate for the 2019 underwriting year is reliant on three key items:

- Actual wages are forecast to increase at 1.40%, being the adopted level of future wage inflation
- The future gross incurred cost is the product of the number of incurred claims and an average claim size, allowing for future inflation, superimposed inflation and discounting to reflect the timing of payments
- Expenses are the sum of commission and other expenses, which are both set as a percentage of the total premium.

Superimposed inflation is a measure of the growth in claims cost in excess of wage inflation.

More detailed analysis on the derivation of the four adopted assumptions for the projection (incurred claim numbers, average claim size in 30 June 2019 values, commission rate and other expense rate) are shown in Appendix H.

We considered the economic indicators in the 2019/20 Northern Territory mid-year report, in adopting the assumptions for the 2019 break-even premium rate.

The adopted average claim size includes an allowance for a 2.4% reduction for the 2015 legislative changes (including death benefit increases). See Appendix B for more details.

5 Data and methods

5.1 Data provided

NT WorkSafe supplied data to us from two sources:

- The internal WIMS database which records details of all claims lodged under the NT scheme
- Insurers' own systems giving details of claims lodged.

The following list sets out the information we received for our review. All data was supplied in electronic form.

- Report 1 – Reconciliation to Form B. NT WorkSafe's comparison of the payments and reports in the WIMS system and provided from insurers' systems
- Report 2 – Data based on date of accident. Unit claims data for all claims lodged by insurers and self-insurers, with accidents grouped by financial year and presented in separate files. This data contained payment information by payment type and development year
- Report 3 – Number of new claims received
- Report 4 – History of payments based on injury date. Claim triangles for reports and payments for each insurer and in total
- Report 5 – List of claims and insurers. Lists all claims since scheme inception by unique identification number and the insurer the claim was lodged with
- Insurer data templates. This included the following information for each insurer:
 - Form A. A simplified profit and loss account showing only the insurance aspects
 - Form B. The number of claims reported and paid during the most recent financial year, and the number of active claims, the case estimates, and the outstanding provision (split by reported and unreported claims) at the end of the most recent financial year, by accident year. This also includes a summary of payments to date and case estimates by accident year for claims with a total incurred cost higher than \$500,000
 - Outstanding claims. Specifies the gross outstanding estimate, reinsurance recoveries, claims handling expenses and prudential margin as at 30 June 2019
 - ANZSIC data. Policies, employees, premiums, wages for each ANZSIC category. This is provided on the current processing year and for the most recent five underwriting years
 - Earned but not yet raised premium. Earned but not yet raised premium for each of the five most recent earned years.
 - Large claims. Insurers provided information on each open large claim with total estimates over \$2 million and provide information on the claim number, accident date, payments to date, case estimates, total gross estimates, estimated reinsurance recoveries, other information

We were also provided with copies of valuation reports for some insurers and self-insurers.

We have separated the data to only include the information for the four insurers and five self-insurers, which are active in the scheme. These nine companies are:

- Allianz Australia Insurance Limited (including Territory Insurance Office)
- CGU Insurance Australia (Part of Insurance Australia Limited)

- GIO Insurance Australia (also known as AAI)
- QBE Insurance Australia
- Catholic Church Insurance
- Coles Supermarkets Australia Pty Ltd
- Wesfarmers Retail Holdings Pty Ltd
- Westpac Banking Corporation
- Woolworths Supermarkets.

We have not included Government Self Insurance or uninsured data. The total of nine companies over the financial year of 2019 is more than the eight companies over 2018. This is due to the demerger between Coles and Wesfarmers that occurred over that period.

For our analyses we have used the data described in the following way:

- Form B returns have been used to find the number of claims reported, the number of claims active and case estimates
- Report 2 files have been combined to obtain payments by payment type for all accident years back to 2002 and up to development year nine. We have used the total payments from Report 4 for development year 10+ and have spread the payments in the tail across payment types based on the distribution of payments in development years eight and nine
- Outstanding claim estimates have been taken from insurers' data templates and self-insurers' actuarial reports
- Assumptions regarding reinsurance recoveries and claims handling expenses have been set by considering the large claim data, insurers' actuarial reports, the Form A returns provided, and with our knowledge and experience of other similar schemes
- ANZSIC data has been used to find the premiums collected and associated wages for our assessment of the adequacy of historic premium rates.

For further details on the data provided, see Appendix A.

5.2 Data quality and reconciliation

Overall, the data NT WorkSafe provided to us was suitable for our purposes, and we found it was broadly consistent across forms.

NT WorkSafe performs an initial set of data quality checks before the data is sent to us. We also conducted a high-level check of the total payments and number of claims between the Form B returns and the WIMS system and found them to be broadly consistent.

The table of the results from these checks can be found in Appendix A.

5.3 Data enhancements and additional data

To enhance the quality of future reviews we suggest the following data enhancements:

- For self-insurers, extend the number of separate historical accident years on the Form B. This will help us understand if there has been any movement for underwriting years older than five years

- For report 4, split the total payments triangle into different payment types. Currently we estimate what proportion of payments relate to each payment type based on the proportions paid in development year's seven to nine.
- For self-insurers, a better reconciliation of the total case estimates between the values on the self-insurers' Form B, compared to their respective annual reports.

5.4 Projection methods for outstanding claims

We performed two separate valuations for this review, one for insurers and one for self-insurers. The sections below explain the different methodologies used for each valuation.

5.4.1 Insurers' outstanding claims valuation

We assessed the outstanding claims liability for insurers by projecting cash-flows separately for the following groupings of payment types:

- Weekly benefits
- Medical and hospital expenses
- Allied health, vocational rehabilitation, non-compensation other and death
- Other goods and services
- Non-compensation legal
- Redemptions and non-economic lump sum.

These groups are the same as for our previous review. They were selected based on similarities in the underlying nature of the claims likely to arise under each payment type and the payment patterns across development years.

We used a blend of the payments per active claim (PPAC) and payments per claim incurred (PPCI) methods to project payments for the first four of our groups listed above. For the other two groups we used a blend of the payments per claim finalised (PPCF) and PPCI methods.

In addition, this year we have added a combined (of all payment types) projected case estimate (PCE) method. This enhancement in methodology was used for the older accident years, placing more reliance on case estimate information that are set by claims managers.

Payments per claim finalised method

All payments were brought to current values and divided by the numbers of claims finalised in their respective accident years and years of payment. Averages of payments per claim finalised were formed from these figures. These averages were then combined with a projection of future numbers of claims finalised to produce projected future payments.

Payments per active claim method

As described for the payments per claim finalised method, but with a denominator of numbers of claims active at the beginning of the period.

Payments per claim incurred method

All claim payments were brought to current values and divided by the numbers of claims incurred in their respective accident years. A pattern of past payments per claim incurred was derived in respect of each

accident year. These payment patterns were then extended into future years and used to project future payments.

Projected case estimates method

We used details of case estimates established at the end of each accounting period, subdivided by accident period. We brought each of these estimates to current values and examined them in comparison with payments made in the subsequent accounting period and the case estimates established at the end of the period (also in current values). Using this we derived an average pattern of the extent to which past case estimates had proven to be too high or too low in relation to the claim payments subsequently made. We used this pattern to project the future development of the case estimates held at 30 June 2019, and to project the future claim payments corresponding to these estimates.

The above methods calculate the projected liability in current values, including allowance for superimposed inflation.

The projected liability in current values is used to calculate the present value of the future claim payments by allowing for:

- a Future increases prior to payment, due to claims inflation
- b Discounting to take into account the time value of money
- c Reinsurance recoveries on the gross future payment amounts
- d Expenses associated with administering claims during the run-off period.

To estimate the reinsurance recoveries, we have allowed for the reinsurance recovery information provided by insurers on large claims.

This overall approach is consistent with that required by the Accounting Standards for private and State Government general insurers (AASB1023), and APRA's prudential standard GPS320 for liability valuations for general insurance. It also complies with the Institute of Actuaries of Australia's Professional Standard PS300 to the extent possible given the data available.

The question of uncertainty in the estimates and the determination of provisions are discussed in sections 7.1 and 7.2.

5.4.2 Self-insurers' outstanding claims valuation

All analyses were performed after inflating past payments to current values as at 30 June 2019. We have used the PPCI method for our analysis and compared this to projected case estimates based on past development of case estimates for both insurers and self-insurers. We have adopted a blend of the PPCI and PCE methods for all years.

The PPCI and PCE methods are defined above.

We then used the same method applied to insurers to calculate the future claim payments, allowing for (a) to (d) above.

5.5 Approach to estimate break-even premium rates

We take the following steps to estimate the break-even premium rate for historic years:

- a Using historic one-year forward rates, discount actual claim payments back to the start of each year

- b Using the same set of discount factors, discount the inflated/discounted outstanding claims central estimate (excluding claims handling expenses) from this valuation for each year back to the start of each year
- c Sum (a) and (b) to find the total discounted gross incurred cost for each year
- d Using the Form A returns find the levels of commission and other expenses for each financial year
- e Sum the discounted gross incurred cost, commission and other expenses, and divide this by the developed earned wages to find the break-even premium rate.

We have allowed for the following timing aspects in the estimated premium:

- Other expenses have been discounted by half a year, to allow for the fact that they are incurred evenly through the year and so on average are paid half way through the year
- Commission is assumed to be received at the same time as the premium
- Premiums have been inflated by a quarter of a year to allow for a timing delay for when they are actually received by insurers from brokers.

We have used the actual earned premiums from insurers and wages from the ANZSIC data to calculate the actual premium rate charged.

To project the break-even premium rate for 2019/20, we take the following steps:

- a From historical data, estimate the incurred number of claims using average claim frequency and projected wages, average claim size, as well as a commission rate and other expenses rate as a proportion of premium
- b Calculate the discounted gross incurred cost for the next year by multiplying the incurred number of claims by the average claim size, allowing for one year's inflation and superimposed inflation and discounting
- c Calculate the appropriate allowance for expenses using the following formula:
expenses = incurred cost / (1 – commission rate – other expense rate) – incurred cost
- d Sum the estimated incurred cost and expense allowances, and divide this by projected wages for the next year, which are estimated as the 2018/19 developed wages inflated by one year. Also, allow for the timing adjustment, as premiums will be received one quarter after policy commencement.

6 Assumptions

6.1 Financial assumptions

Future inflation and interest rates

The financial assumptions of future inflation and market rates of interest are as follows:

Years ahead	Interest rate 30 Jun 2019	Inflation rate 30 Jun 2019	Real rate 30 Jun 2019	30 Jun 2018
1	0.97%	1.40%	-0.43%	0.69%
2	1.00%	2.30%	-1.30%	0.39%
3	1.06%	2.40%	-1.34%	0.07%
4	1.14%	2.50%	-1.36%	-0.19%
5	1.22%	2.43%	-1.20%	0.07%
6	1.32%	2.35%	-1.03%	0.28%
7	1.45%	2.28%	-0.83%	0.44%
8	1.62%	2.21%	-0.58%	0.54%
9	1.82%	2.13%	-0.31%	0.64%
10	2.00%	2.06%	-0.06%	0.78%
11	2.15%	1.99%	0.16%	0.95%
12	2.27%	1.92%	0.35%	1.12%
13	2.36%	1.84%	0.51%	1.28%
14	2.42%	1.77%	0.65%	1.42%
15	2.45%	1.70%	0.75%	1.56%
16	2.45%	1.62%	0.83%	1.67%
17 & onwards	2.45%	1.55%	0.90%	1.75%

For this valuation, there has been a decrease in the real rate of return for all future years, which increases the liabilities. This is because reductions in discount rate are greater than the decrease in inflation rates.

The interest rate for one quarter of DY0 $((1 + 0.97\%)^{0.25} - 1) = 0.24\%$ is included in the calculation of the average premium rate. This is because insurers receive premiums on average three months after the policy commencement date.

See Appendix B1 for further information.

Past wage inflation

Payments and case estimates are inflated to current values based on the ABS Cat 6302.0 Average Weekly Earnings for the Northern Territory (persons full-time adult ordinary time earnings). These are detailed in Appendix B1.

6.2 Superimposed inflation

The superimposed assumptions for each payment category are as follows:

Superimposed Inflation							
	Weekly Benefits	Medical And Hospital	Allied Health, Vocational Rehabilitation, Non-Compensation Payments (Other), Death	Other Goods And Services	Legals	Redemptions And Non-Economic Lump Sum	Total
30 Jun 19	2.8%	4.5%	3.3%	0.9%	4.1%	2.7%	2.9%
30 Jun 18	2.4%	4.5%	2.4%	1.2%	4.0%	2.5%	2.7%

Assumptions

In total, our superimposed inflation estimate of 2.9% p.a. is 0.2% more than the 2.7% p.a. adopted for the previous valuation. Our estimate of superimposed inflation is higher or on par to the previous valuation for all payments type with the exception of Other Goods and Services.

Due to the volatility for redemptions and non-economic lump sums, we also reviewed the calculation if we were to exclude claims with cumulative payments over \$1 million when calculating the superimposed inflation assumption. This approach was previously introduced as it reduces the volatility, in order to better assess the underlying superimposed inflation rate for the payment group.

We calculate the total as a weighted average across the payment groups, weighted by the total outstanding claims estimate.

See Appendix B2 for more details.

6.3 Expenses

Claims handling expenses

We have reviewed the allowances made for claims handling expenses in the insurers' and self-insurers' returns provided to us, and used our knowledge and experience of other workers compensation schemes in Australia to set the following claims handling expense assumptions for use in the outstanding claims liability:

- 6% of projected future claim payments for insurers
- 7% of projected future claim payments for self-insurers.

These are the same as the previous valuation.

Commission and other expenses¹

Insurers have provided data on historic gross written premiums, earned premiums, commission payments and other expenses as part of their Form A returns. We have used an average of the last three years to set the commission rate, as a proportion of earned premium, and a three year average for the other expense rate, as a proportion of written premium, as follows:

(\$000s)	Underwriting year					
	2019	2018	2017	2016	2015	Adopted
Gross written premium (a)	142,690	135,842	134,286	114,332	140,232	
Earned premium (b)	144,321	146,280	126,442	119,514	141,354	
Commission paid (c)	4,701	5,534	4,489	4,163	4,558	
Other expenses (d)	20,986	22,760	20,821	20,282	20,537	
Commission rate (e)	3.3%	3.8%	3.6%	3.5%	3.2%	3.5%
Other expense rate (f)	14.7%	16.8%	15.5%	17.7%	14.6%	15.6%

Notes: (a), (b), (c), (d) actual values taken from *Consolidated Form A*

(e) = (c) / (b)

(f) = (d) / (a)

The adopted rate is used in our calculation of the break-even premium rate for the next financial year. To show the adequacy of past rates we have used the actual dollar values of commission and other expenses paid.

¹ Other expenses include claims handling expenses

Compared to the previous valuation, the adopted commission rate has decreased from 3.7% to 3.5%, and the other expense rate has decreased from 16.6% to 15.6%. The decrease in the commission and other expense rate is due to lower expense ratios for the 2019 financial year, as expenses reduced by more than premium.

In total, the commission and other expense rate make up 19.2% of the break-even premium rate, which is lower than the 20.2% adopted for the 30 June 2018 valuation.

6.4 Reinsurance

We have used the additional information provided by insurers to allow for reinsurance recoveries on large claims, which are expected to exceed the retention limit. This is equivalent to 6% of all claims. We compared the reinsurance recoveries based on the large claims with insurers' total reinsurance recoveries and they were similar, though slightly higher, so we did not feel it was necessary to allow for any further reinsurance recoveries on the smaller claims. This is similar approach to last year's valuation.

We reviewed the self-insurers' reports and noted that none of them have allowed for any reinsurance recoveries. Therefore, we have not allowed for any reinsurance recoveries for self-insurers.

6.5 2015 legislative amendments

The 2015 legislative amendments were set out in two parts. The first amendment bill, Workers' Rehabilitation and Compensation Legislation Amendment Bill 2015, passed in March 2015 and came into effect 1 July 2015. The second amendment bill, the Return to Work Legislation Amendment Bill 2015, was passed in August 2015 and came into effect on 1 October 2015.

We costed the following changes in our report titled Actuarial costing of Northern Territory workers compensation scheme changes dated 11 September 2014:

- For claimants with less than 15% permanent impairment (PI) capping weekly benefits to five years and all other benefits to six years
- Extending weekly benefits from 26 weeks to 104 weeks for workers within 6 months of pension age or older than it.

We also provided commentary on some other proposed scheme changes.

The estimated cost of the above changes was a 2.8% reduction. We have also allowed for a 0.4% increase due to higher death benefits. Therefore, the combined allowance included in this valuation is a 7.3% reduction. This has been allowed for in our calculations of the outstanding claims liabilities as at 30 June 2019 for the 2015/16 to 2018/19 accident years and the future costs for the 2019/20 accident year. There is no allowance for the 2015 legislative changes in the outstanding claims liability as at 30 June 2019 for accident years before 2015/16.

As the scheme changes were broader than covered by our 11 September 2014 report, the actual impact could be different to estimated. We recommend NT WorkSafe and insurers closely monitor the experience to ensure that there are no unintended consequences.

7 Uncertainty

7.1 Uncertainty in the estimates

Actuarial estimates are obtained after analysis of past claims experience. From these analyses, models of the claim payment process can be established and used to project future payments on claims outstanding at the valuation date.

The estimates of outstanding claims obtained in this manner are indeed estimates in the sense that there is a degree of uncertainty as to the difference, which will ultimately arise between the estimates and the final result of the experience. This uncertainty arises from four sources:

- a Because the nature of the claims process is not fully understood, it might be that none of the various models used is an entirely accurate representation of reality
- b Because there are components of randomness in the claims process, it is not possible to estimate the parameters of that process with complete precision even if complete confidence were felt in the nature of the model
- c Any erroneous data will similarly have introduced uncertainties into the estimates of those parameters
- d Even if the parameters could be estimated with precision, it would not be possible to predict outstanding claims with the same precision because of the random component in future experience.

For some portfolios, errors associated with b and d above can be quantified in a formal way (estimation and statistical errors). However, a large part of the uncertainty is associated with a (model specification error), and it is difficult to quantify this component.

The investigation and application of different models to the data is intended to reduce the model specification error, although the extent to which this is achieved is unknown.

The initial estimates obtained from the calculations are "central" estimates in the sense that they incorporate no deliberate bias towards over or under estimation. By definition, the estimates are intended to have about an even chance of ultimately turning out to be sufficient.

7.2 Determination of provisions

7.2.1 Background

This valuation is not required to comply with any accounting standards. However, we have considered the requirements of Accounting Standard AASB 1023 on General Insurance Contracts which insurers are required to comply with for their annual valuation.

AASB1023 requires the determination of a central estimate of the present value of the expected future payments for claims incurred with an additional prudential margin to allow for the inherent uncertainty in the central estimate.

It should be realised that, by definition, any margins over central estimates are intended to have a better than even chance of falling into future surplus, provided that future experience is consistent with that of the recent past. This should be considered in making management decisions.

7.2.2 Levels of sufficiency

The nature of insurance claims is such that the actual value of the liabilities is unknown because claims experience is subject to random fluctuations. The amount of the claim liability cannot be estimated with

certainty. Also, it is very difficult to determine the central estimate with a reasonable degree of precision. For this reason, the inherent uncertainty in the central estimate must also be considered.

Determination of a risk margin allows for some part of the uncertainties in the claim process and also it ensures as far as possible that surplus is not released until it is reasonably certain that the surplus is real.

The adopted method was tested for its sensitivity to changes in the claim rates assumed and a measure of the variation in the results was obtained. This analysis indicated that the distribution of likely results was skewed to the right. This means that the variation upwards in the provision is expected to be greater than the variation downwards.

The dispersion of expected results is added to by:

- The variable nature of the claim experience
- Very large common law claims can sometimes occur.

The variation analysed together with benchmarking against reports published by APRA and the Institute of Actuaries leads to the assumption of a 20% coefficient of variation of the distribution of results for insurers and 50% for self-insurers, which allows for the skew distribution and systemic variation. The lognormal distribution was then assumed to apply when calculating the prudential margin required to increase the level of sufficiency above 50%.

The coefficient of variation for insurers was 25%, on par to previous valuation. There was a slight reduction in the assumed independent risk following an analysis of past payments but not material enough for us to reduce our assumption.

The risk margin applied for self-insurers was 25% for this valuation, as per our previous valuation. We also set the risk margin subject to a minimum of half the co-efficient of variation in line with the 'APRA Risk Margin Analysis' paper.

The coefficient of variation calculated as described above is taken as 20% for insurers and 50% for self-insurers. This leads to the following prudential margins.

Level of sufficiency and risk margins			
Level of sufficiency	75%	80%	85%
Risk margin (insurers)	12.07%	15.84%	20.40%
Risk margin (self-insurers)	25.00%	33.11%	45.94%

7.2.3 Sensitivity

The adopted method was tested for its sensitivity to changes in the assumptions about future interest and inflation rates, adopted reporting rates, and superimposed inflation, and a measure of the variation in the results was obtained. The results of this analysis for insurers are shown below:

NT WorkSafe Insurers - sensitivity analysis		
Assumption varied	Variation	% Change in total provision
Future interest rates	1% increase	-3.45%
	1% decrease	3.77%
Future inflation rates	1% increase	3.70%
	1% decrease	-3.45%
Adopted claim reporting rates	DY0 rate decreased from 11.35% to 5.67%	-0.99%
Superimposed inflation	1% increase	3.35%
	1% decrease	-3.11%
PPCI and PPAC values	10% increase	8.56%
Finalisation rate	10% decrease	11.34%

The increase in PPCI and PPAC factors illustrates a potential impact of an increase in the average claim size either due to claims remaining on benefits for longer or an increase in the frequency of large claims. The decrease in the finalisation rate illustrates a potential impact if claims remain on benefits for longer.

The corresponding results for our self-insurer analysis are as follows:

NT WorkSafe self-insurers - sensitivity analysis		
Assumption Varied	Variation	% Change in total provision
Future interest rates	1% increase	-1.71%
	1% decrease	1.79%
Future inflation rates	1% increase	1.75%
	1% decrease	-1.71%
Incurred claims	10% increase in IBNR claims	0.43%
	10% decrease in IBNR claims	-0.43%
Superimposed inflation	1% increase	0.74%
	1% decrease	-0.73%

The percentage change in the outstanding claim provisions as at 30 June 2019 is shown in the table above. The inherent robustness of the various assumptions in the table above means that the variations shown are not necessarily cumulative. Hence care needs to be exercised in developing any best or worst case scenario.

7.3 Key risks for NT WorkSafe scheme

The following paragraphs detail some of the key risks for the NT WorkSafe scheme.

- **Inpex project**

Significant increases in wages up to 2018 have been driven by the Inpex project and the associated contracts, wages have decreased 15% in 2019. Up to and including the 2017 year, the number of claims incurred and claims cost have not reflected the increase in wages, causing the claim frequency and premium rate to reduce. In 2018, the average claim size and incurred cost increased. We understand that over the 2018 financial year the construction phase wound down with production starting in October 2018. Therefore, the number of workers has reduced significantly in the 2019 financial year. The premium pool decreased by 6% in 2019 as the project moved into production phase and may further decrease in the premium pool for the NT scheme in future years.

In the previous valuation we had estimated that the 2018 accident year would be significantly higher than prior years, however, the payments and case estimates development over the 2019 financial year were even higher than expected. This could be due to people being unable to return to work (with fewer jobs available) and unable to find alternative work, in the absence of new contracts commencing. Over the 2019 financial year there were also more late claims reported for the 2014 to 2016 accident years, which may also relate to people being unable to find alternative work.

- **Changing economic environment**

There is considerable uncertainty associated with the current economic environment and what it will mean for Australia over the near future. Aside from the Inpex project discussed above, there may be more general real wage decreases or increases in bad debts for insurers. The 2019/20 Northern Territory mid-year report refers to soft economic conditions in the short-term, which we have reflected in the estimates for the 2019/20 premium rate.

Over the last three to five financial years, there has been a reduction in the number of small claims lodged with other schemes. At the same time, there has not been a reduction in the number of medium to large claims. This has impacted the overall average claim size and incurred cost for other schemes. We will continue to monitor the mix by size of claims lodged in NT to ensure that we adequately allow for any change in claiming behaviour, particularly as it relates to the high average claim size for insurers for the 2018 and 2019 accident year due to higher payments and outstanding case estimates to 30 June 2019.

- **Large claims**

The incurred cost and break-even premium for each accident year are heavily influenced by the presence or absence of any large claims. This is particularly prevalent in the NT due to the small scheme size and the prevalence of very large settlements. Future claims costs will continue to be impacted by very large settlements, with net costs to insurers impacted by the nature and adequacy of any reinsurance arrangements in place.

Large claims can also have an impact on superimposed inflation. While superimposed increased slightly this year, it can be volatile due to the impact of large settlements and the relatively small scheme size. Superimposed inflation should be monitored to make sure increases in costs are understood and ensure that a payment type is not unexpectedly driving an increase in costs.

- **2015 legislative amendments**

The 2015 legislative amendments are for prospective claims only and were introduced in two stages. The main changes are effective from 1 July 2015, with additional changes effective from 1 October 2015. This creates additional uncertainty in the outstanding claims liabilities for the 2015/16 to 2017/18 accident years and the future costs for the 2018/19 accident year. In separate advice, PwC estimated that there would be a 2.8% reduction in respect of the most significant benefit changes (excluding death benefit increases). In this valuation, we have also allowed for the increase in death and funeral benefits, so the net reduction is 2.4%. We have not estimated the impact of other changes. As the changes are not retrospective, this should not impact outstanding claims liabilities for accident years prior to 2015/16.

We recommend NT WorkSafe and insurers closely monitor the experience to ensure that there are no unintended consequences. See Appendix B6 for more information.

- **Silicosis claims**

There have been a significant number of silicosis claims in other Australia states that have been reported over the past year. In the NT, there have been no silicosis claims reported to date. An Occupational Health and Safety campaign in the NT identified 36 businesses where workers could have potentially been exposed to Silica. There are 24 businesses which have current policies and these business account for 0.6% of the total premium pool and 0.4% of the total wages.

Uncertainty

Therefore, due to the lack of historical claims and small percentage of business with potential exposure, we have not made a special allowance for these claims in our valuation, as they are unlikely to have a material impact on the total scheme outstanding claims liability or scheme break-even premium rate. Any silicosis claims could impact the premium rates for individual classes.

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Appendix A Detailed data description

A 1 Data supplied by NT WorkSafe

NT WorkSafe supplied data to us from two sources:

- The internal WIMS database which records details of all claims lodged under the NT scheme
- Insurers' own systems giving details of claims lodged with them.

All data was provided in electronic format.

NT WorkSafe perform their own initial reconciliations between the data sources, the main of these being the check of the payments in the WIMS system against payments recorded on the insurers' Form B. We have also performed our own checks between data sources, and these are detailed below.

The data descriptions below fall under two sections; Actuarial data, which is the data supplied from the WIMS system, and Template data which is the data received from insurers.

We were also provided with copies of actuarial valuation reports for some insurers and self-insurers. However, this data is not uniformly presented and so we have not commented on it.

A 1.1 Actuarial data

Five different types of report are run and extracted from the WIMS system. These are each supplied as separate data files.

Report 1 – Reconciliation to Form B

This report contains three items of data:

- NT WorkSafe's reconciliation of payments for the current financial year between the WIMS system against payments recorded on each insurers' Form B. This is done by insurer and in total
- A list of the total payments under each benefit code for the most recent financial year
- A list of all claims on which payments have been made, including details of the claim number, claimant name and amount paid.

We understand that the first sheet listed above is used by NT WorkSafe to reconcile the data before it is provided to us. A target of an absolute difference of no more than 1% is set, and if this is exceeded a manual process is followed to adjust the data on the WIMS system for any human error which has crept in upon data entry. For this valuation, the absolute difference was 0.61%.

Report 2 – Data based on date of accident

We were provided with 10 different files of Report 2 from NT WorkSafe, one for each accident year from 2010. Each of the files contain unit claims data with the following information:

- Unique record identifier

Detailed data description

- Claim status (accepted, pending or rejected)
- Dates of report to the employer, lodgement with NT WorkSafe and acceptance or rejection
- Work status of the claimant
- ANZSIC industry classification of the claimant's employer
- Total number of FTE workers for the claimant's employer
- Claimant date of birth
- Claimant sex
- Claimant postcode of residency
- ASCO occupation of claimant
- Duty being performed when injury occurred (for example commuting, on a break)
- Hours normally worked each week
- Normal weekly earnings
- Nature, bodily location, mechanism, agency and breakdown agency of the injury
- Time lost
- Payments for each development year (DY) and grouped for DY10+ for each of the following payment categories:
 - Weekly benefits
 - Lump sum death benefits
 - Lump sum redemptions/commutations
 - Lump sum impairment/non-economic
 - Medical
 - Hospital
 - Allied health services
 - Vocational rehabilitation
 - Other goods and services
 - Non-compensation legal
 - Non-compensation other.
- Name of the insurer or self-insurer who the claim was lodged with.

Several of the above fields (for example claim status, work status) are coded using NT WorkSafe's own coding system. We were provided with the key to this system.

Report 3 – Number of new claims received

This gives a summary of the number of new claims lodged by each insurer in the most recent financial year. The data is summarised in the following three ways:

- Total number of new claims lodged with each insurer
- Number of new claims lodged for each accident year with each insurer

- Number of new claims lodged for each calendar year of injury with each insurer.

Report 4 – History of payments based on injury date

Summarised in this report are the claim payments and reports for insurers. These are shown in the following format:

- Claim triangles of payments for each accident year since 1990 and combined for the pre-1990 accident years, for each insurer and in total
- Claim triangles of reports for each accident year since 1990 and combined for the pre-1990 accident years, for each insurer and in total
- Summary of the number of claim reports and payments made in the current financial year for each insurer for each accident year since 1990 and combined for the pre-1990 accident years.

Report 5 – List of claim and insurers

This report presents a list of all the claims, which have ever been lodged with the scheme, giving the unique claim number and the insurer with which, the claim was lodged.

A 1.2 Template data

Insurers operating under the NT WorkSafe scheme are required to complete and return two statutory forms on an annual basis, Form A and Form B, and are requested to provide extra information to assist in the monitoring of the scheme.

Insurers were provided with a data template in the form of an Excel workbook. This contained Form A and Form B, and tables to record the current outstanding claims liability, and policies, employees, wages and premium by ANZSIC class on both a processing and underwriting year basis, earned but not yet raised premium and large claims.

NT WorkSafe has provided each of the completed template workbooks to us.

Self-insurers provide a shortened version of Form B.

Form A

Form A is a simplified version of the profit and loss account for the insurance aspects of the entity only. The following data items are given for the current financial year:

- Gross premiums
- Re-insurance premiums paid
- Unearned premium at start and end of the year
- Claims paid
- Reinsurance recoveries on claims paid
- Outstanding claims at start and end of the year
- Underwriting profit/loss
- Commission paid
- Other expenses

Detailed data description

- Investment income
- Profit/loss.

Form B

Form B contains the following data items in relation to the insurers' claims experience:

- Claims reported
- Claims paid
- Number of reported claims outstanding (active claims)
- Provisions for outstanding claims, broken down by:
 - Provisions for claims already reported
 - Provisions for unreported claims
- Case estimates for all claims
- For claims with an incurred cost over \$500,000:
 - Cumulative payments to date
 - Case estimates outstanding.

Claims reported and paid are presented broken down by accident year and give the total amount over the year. Active claims, the outstanding provision, and case estimates are also broken down by accident year but show the position as at the end of the year. The large claim information shows payments made in total to date and the case estimate position at the end of the year.

The case estimates for all claims and cumulative payments and case estimates for claims with an incurred cost over \$500,000 was added this year.

Outstanding claims

This contains the following information for the insurers' outstanding claim liability at the end of the year:

- Gross central estimate
- Reinsurance recoveries
- Claims handling expense
- Prudential margin.

ANZSIC data

The file presents a breakdown of the following five data items by each ANZSIC category:

- Policies
- Employees
- Premiums
- Wages.

This information is given for the current processing year, and for the most recent five underwriting years.

Earned but not yet raised premium

The file contains information of earned but not yet raised premium as at 30 June 2019 for each of the five most recent earned years.

Large claims

Insurers provided information on each open large claim with total gross estimates over \$2 million and provide information on:

- Claim number
- Accident date
- Payments to date
- Case estimates
- Total gross estimates
- Estimated reinsurance recoveries
- Other information.

A 2 Data quality

Overall, the data NT WorkSafe provided to us was suitable for our purposes.

NT WorkSafe performed an initial set of data quality checks before sending it to us. We also conducted a high-level check of the total payments and number of claims between the Form B returns and the WIMS system and found them to be broadly consistent.

The following table shows the difference between the cumulative claim payments and reports on Form B and on the WIMS system for insurers only.

Accident year	Payments				Reports					
	Form B	WIMS	Difference (\$)	Difference (%)	Form B	WIMS	Difference (\$)	Difference (%)	Difference (%)	
2019	24,904	24,950	46	0.2%	1,982	1,913	-69	-3.5%		
2018	43,311	43,761	450	1.0%	235	253	18	7.7%		
2017	20,632	20,511	-121	-0.6%	17	17	0	0.0%		
2016	11,837	12,035	198	1.7%	11	11	0	0.0%		
2015	9,660	9,572	-88	-0.9%	4	3	-1	-25.0%		
2014	5,623	5,422	-202	-3.6%	2	3	1	50.0%		
2013	5,274	5,719	445	8.4%	0	1	1	0.0%		
2012	2,592	2,155	-437	-16.9%	1	1	0	0.0%		
2011	1,368	1,360	-8	-0.6%	2	0	-2	-100.0%		
2010	915	1,418	503	54.9%	0	1	1	0.0%		
2009 & prior	7,948	7,979	32	0.4%	1	0	-1	-100.0%		
Total	134,064	134,882	818	0.6%	2,255	2,203	-52	-2.3%		

This table shows that in total the two systems reconcile reasonably well, with generally minor discrepancies across all accident years.

This is the fourth year for which self-insurers have completed Form B. Previously they completed Form 1, which took a slightly different form.

The following table shows the difference between the claim payments and reports for this financial year by accident year on Form B and on the WIMS system for self-insurers only.

Detailed data description

Accident year	Payments (\$000s)				Reports			
	Form B	WMS	Difference	Difference (%)	Form B	WMS	Difference	Difference (%)
2019	631	637	7	1.1%	66	68	2	3.0%
2018	872	914	41	4.7%	8	10	2	25.0%
2017	644	582	-62	-9.6%	2	1	-1	-50.0%
2016	211	210	-1	-0.3%	0	0	0	0.0%
2015	1	1	0	0.1%	0	0	0	0.0%
2014	3	3	0	0.0%	0	0	0	0.0%
2013 & earlier	20	18	-2	-12.1%	0	0	0	0.0%
Total	2,382	2,365	-17	-0.7%	76	79	3	3.9%

The information from Form B for the 2019 financial year reconciles fairly well with the WIMS.

We relied upon the WIMS data for this valuation as per previous valuations.

Appendix B Assumptions

B 1 Financial assumptions

Future inflation and interest rates

Years ahead	Interest rate 30 Jun 2019	Inflation rate 30 Jun 2019	Real rate 30 Jun 2019	30 Jun 2018
1	0.97%	1.40%	-0.43%	0.69%
2	1.00%	2.30%	-1.30%	0.39%
3	1.06%	2.40%	-1.34%	0.07%
4	1.14%	2.50%	-1.36%	-0.19%
5	1.22%	2.43%	-1.20%	0.07%
6	1.32%	2.35%	-1.03%	0.28%
7	1.45%	2.28%	-0.83%	0.44%
8	1.62%	2.21%	-0.58%	0.54%
9	1.82%	2.13%	-0.31%	0.64%
10	2.00%	2.06%	-0.06%	0.78%
11	2.15%	1.99%	0.16%	0.95%
12	2.27%	1.92%	0.35%	1.12%
13	2.36%	1.84%	0.51%	1.28%
14	2.42%	1.77%	0.65%	1.42%
15	2.45%	1.70%	0.75%	1.56%
16	2.45%	1.62%	0.83%	1.67%
17 & onwards	2.45%	1.55%	0.90%	1.75%

The 30 June 2019 real rates are lower than the 30 June 2018 rates for all future years, which increases the liabilities. This is predominantly because the decrease in interest rates are greater than the decrease in our estimate of future wage inflation compared to our 30 June 2018 valuation.

The real rate is estimated to be negative, i.e. interest earned is less than wage inflation, for the first tenth projection years and positive for all other projection years. In our previous valuation, all projection years had a positive real rate of return with exception of the fourth year, which were negative.

The interest rate for one quarter of the first year ahead $(((1 + 0.97\%)^{\wedge} 0.25 - 1) = 0.24\%)$ is included in the calculation of the average premium rate. This is because premiums are received on average three months earlier than the point to which claims are discounted.

Forward interest rates are those estimated to be anticipated over future years by the Commonwealth bond market as it stood at 30 June 2019.

The interest rates are obtained by fitting a curve to the 30 June 2019 Commonwealth Government Bond yield curve, to derive the one year forward rates of interest, which are then independent of the cash flows of a particular portfolio of risks.

The inflation and interest rates are chosen to be consistent with those currently used in our actuarial assessments for long tail classes.

The wage inflation assumptions we have adopted are lower than those used for the previous valuation. We have based future wage inflation on Deloitte Access Economics forecasts for NT as published on NT Treasury's website. Our analysis this year have adopted a step-wise inflation rate, consistent with the previous valuation. Adopting based on Deloitte Access Economics forecast for the first four projection years i.e. 1.4% inflation rate for 2019 (i.e. one year ahead), up to 2.5% for four years ahead.

Assumptions

From projection year 17 onwards, we used a long term 'gap' assumption, the inflation rate is set to achieve a real rate of interest of 0.90%. From projection years five to 17, we allow for a steady linear adjustment in the inflation rate to reach the long-term rate.

Past wage inflation

Past wage inflation for bringing past payments and case estimates into current values is taken from ABS Cat 6302.0 Average Weekly Earnings for Northern Territory (persons full-time adult ordinary time earnings), as shown below:

Year to 30-Jun	Mid Quarter AWE	End Quarter AWE	Claims escalation factors		
			% Change p.a.	For payments	For case estimates
2005	1,000.2	1,003.8		1.740	1.689
2006	1,016.0	1,016.9	1.3%	1.673	1.667
2007	1,043.0	1,052.0	3.4%	1.649	1.611
2008	1,107.4	1,114.0	5.9%	1.562	1.522
2009	1,150.9	1,158.6	4.0%	1.491	1.463
2010	1,224.2	1,235.3	6.6%	1.420	1.372
2011	1,289.3	1,311.1	6.1%	1.334	1.293
2012	1,408.6	1,410.8	7.6%	1.230	1.201
2013	1,449.3	1,449.2	2.7%	1.187	1.170
2014	1,417.2	1,426.3	-1.6%	1.180	1.188
2015	1,513.5	1,523.3	6.8%	1.152	1.113
2016	1,569.7	1,586.6	4.2%	1.091	1.068
2017	1,616.5	1,624.3	2.4%	1.045	1.044
2018	1,668.5	1,662.2	2.3%	1.026	1.020
2019	1,690.3	1,695.0	2.0%	1.019	1.000

B 2 Superimposed inflation

A realistic level of superimposed inflation is allowed for in the outstanding claim reserves and projected break-even premium rate.

We have analysed the superimposed inflation separately for each payment type, and for each valuation method.

The recent trends in real growth, i.e. superimposed inflation, are shown in the charts below.

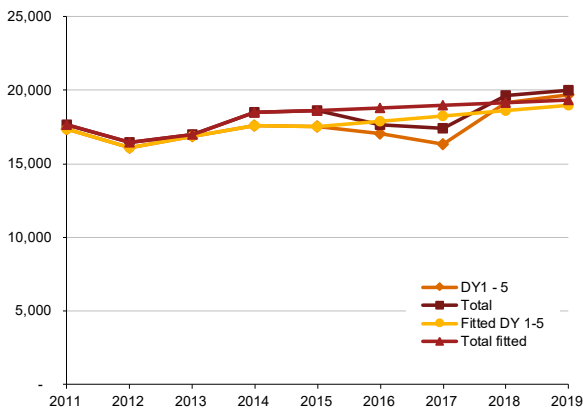
We have used the following averaging periods to analyse the superimposed inflation:

Superimposed Inflation - averaging periods (years)							
	Weekly Benefits	Medical And Hospital	Allied Health, Vocational Rehabilitation, Non- Compensation Payments (Other), Death	Other Goods And Services	Legals	Redemptions And Non-Economic Lump Sum	
PPAC/PPCF	5	4	6	5	6	8	
PPCI	9	9	8	5	7	8	

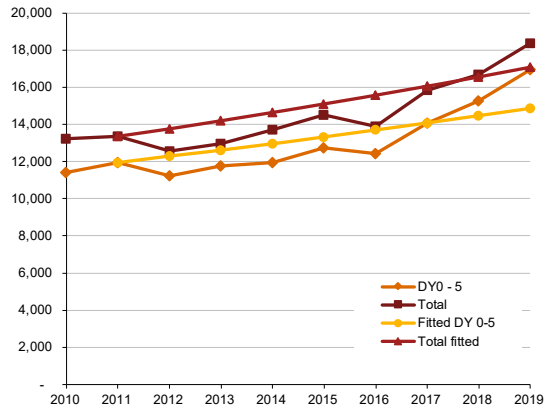
Assumptions

Weekly benefits

PPAC

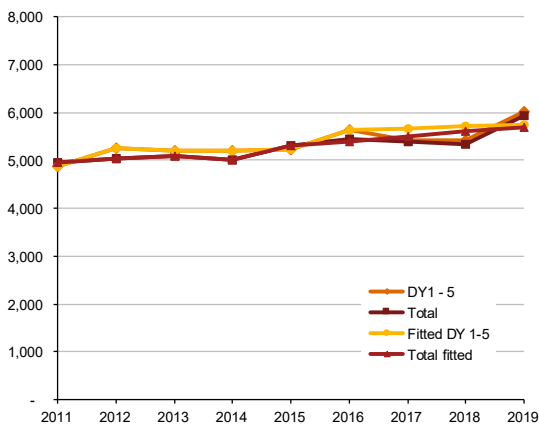


PPCI

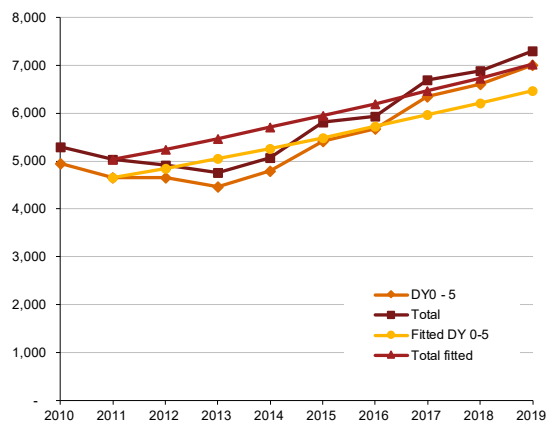


Medical and hospital

PPAC

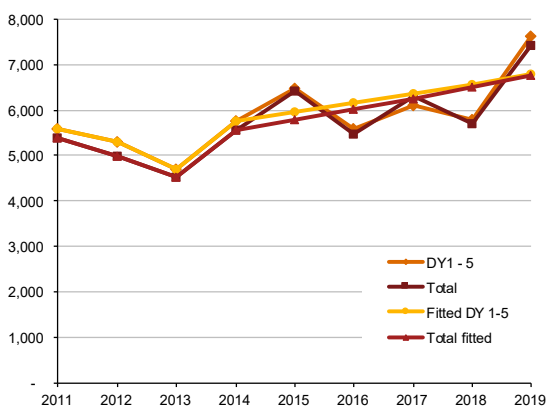


PPCI

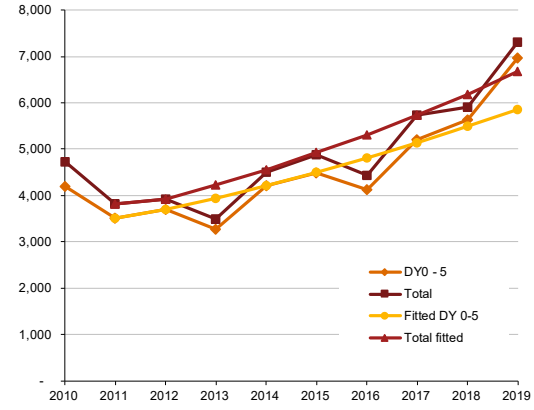


Allied health, vocational rehabilitation, non-compensation other and death

PPAC



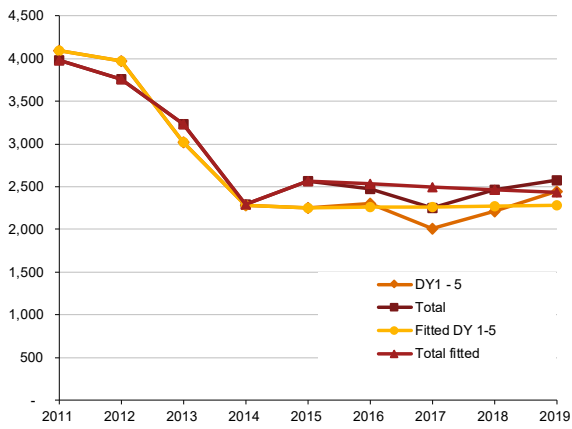
PPCI



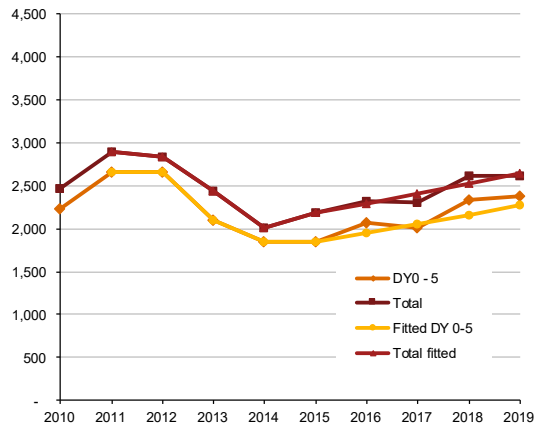
Assumptions

Other goods and services

PPAC

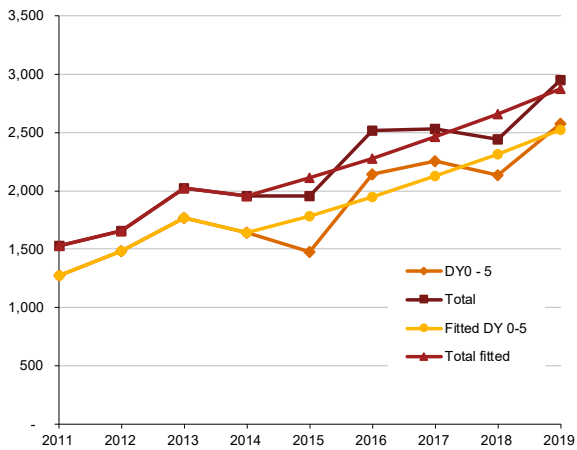


PPCI

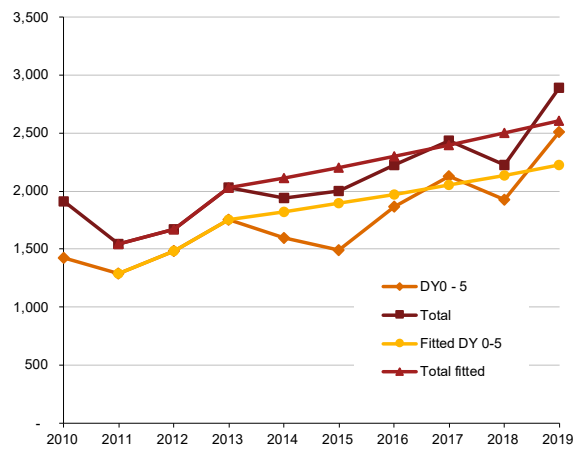


Legal

PPCF

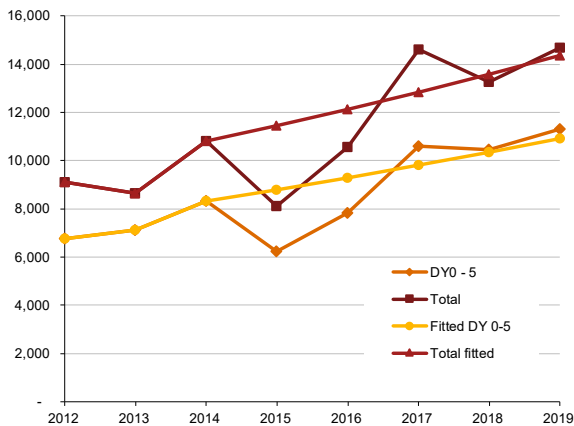


PPCI

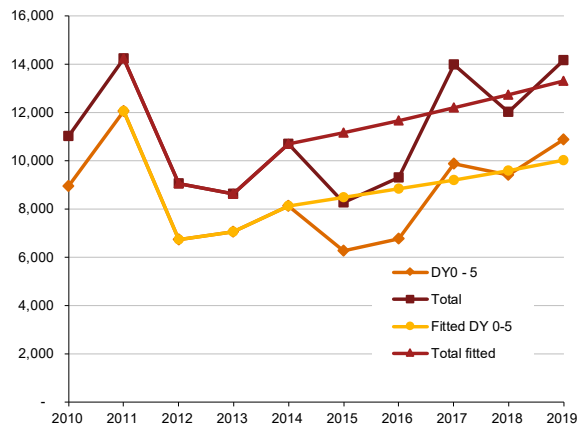


Redemptions and non-economic lump sum

PPCF



PPCI



The above graphs for Redemptions and Non-Economic Lump Sum payment group we have excluded claims with cumulative payments to date over \$1 million. This has been done to try to reduce the volatility to find a true underlying superimposed inflation rate for the payment group.

This analysis of trends leads to the following assumed rates of superimposed inflation.

Superimposed Inflation								
	Weekly Benefits	Medical And Hospital	Allied Health, Vocational Rehabilitation, Non-Compensation Payments (Other), Death	Other Goods And Services	Legals	Redemptions And Non-Economic Lump Sum	Total	
PPAC/PPCF	2.8%	4.5%	3.3%	0.0%	4.1%	2.7%		
PPCI	2.8%	4.5%	3.3%	4.7%	4.1%	2.7%		
30 Jun 19	2.8%	4.5%	3.3%	0.9%	4.1%	2.7%		2.9%
30 Jun 18	2.4%	4.5%	2.4%	1.2%	4.0%	2.5%		2.7%

Note a minimum of zero is applied to the superimposed inflation, hence classes with a revealed negative superimposed inflation have had a value of 0% applied. For all payment types, we adopted the PPCI superimposed inflation for the PPAC/PPCF methods except for:

- Other goods and services
- Allied health, Vocational Rehabilitation, Non-Compensation payments (other) and Death we adopted the PPAC superimposed inflation for the PPCI method.

In total, our superimposed inflation estimate of 2.9% p.a. is a 0.2% increase on the 2.7% p.a. adopted for the previous valuation. Our estimate of superimposed inflation is higher or on par with the previous valuation for all payment type, with the exception of Other Goods and Services.

We calculate the total as a weighted average across the payment groups, weighted by the total outstanding claims estimate.

B 3 Expenses

Claims handling expenses

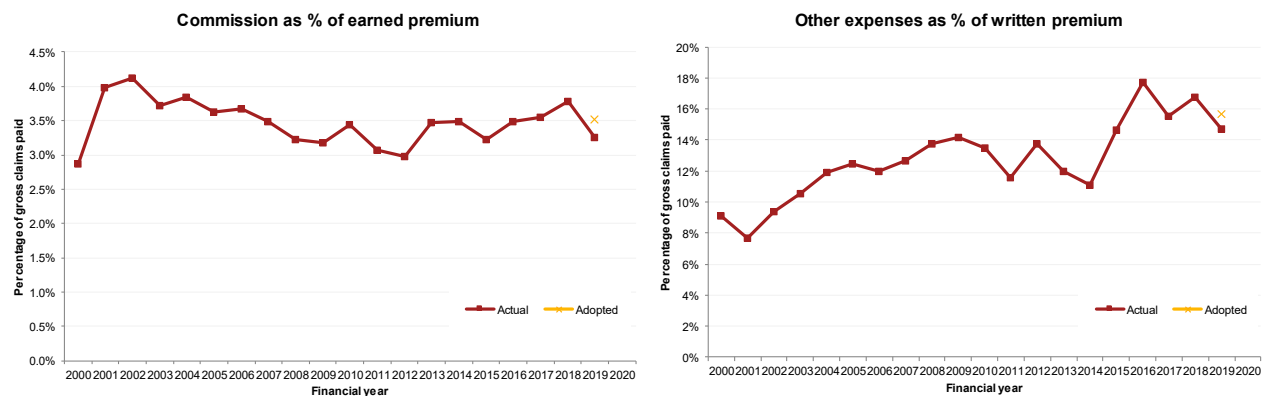
We have reviewed the allowances made for claims handling expenses in the insurers' and self-insurers' returns provided to us, and used our knowledge and experience of other workers compensation schemes in Australia to set the following claims handling expense assumptions for use in the outstanding claims liability:

- 6% of projected future claim payments for insurers
- 7% of projected future claim payments for self-insurers.

These are the same as the previous valuation.

Commission and other expenses (including claims handling expenses)

The historical commission rate as a percentage of earned premium and other expenses as a percentage of written premium are:



The commission as a percentage of earned premium decreased from 2001 to 2012, it increased to 3.5% in 2013 and has been stable since. Over 2001 to 2009, other expenses as a percentage of written premium increased significantly, and have been volatile since then, increasing significantly in 2015 and 2016. We do not know what has driven the increase in other expenses since 2015 but it could be due to increases in IT costs and reallocation of expenses amongst the lines of insurance.

For the break-even premium we have used an average of the last three years to set the commission rate, as a proportion of earned premium, and average of three years for the other expense rate, as a proportion of written premium, as follows:

(\$000s)	Underwriting year					Adopted
	2019	2018	2017	2016	2015	
Gross written premiums (a)	142,690	135,842	134,286	114,332	140,232	
Earned premiums (a)	144,321	146,280	126,442	119,514	141,354	
Commission (a)	4,701	5,534	4,489	4,163	4,558	
Other expenses (a)	20,986	22,760	20,821	20,282	20,537	
Commission rate (b)	3.3%	3.8%	3.6%	3.5%	3.2%	3.5%
Expense rate (c)	14.7%	16.8%	15.5%	17.7%	14.6%	15.6%

Notes: (a), (b), (c), (d) actual values taken from *Consolidated Form A*

(e) = (c) / (b)

(f) = (d) / (a)

Assumptions

The adopted rate is used in our calculation of the break-even premium rate for the next financial year. To determine the adequacy of past rates we have used the actual dollar values of commission and other expenses paid.

Compared to the previous valuation, the adopted commission rate has decreased from 3.7% to 3.5%, and the adopted other expense rate has decreased from 16.6% to 15.6%. The decrease in the commission and other expense rate is due to lower expense ratios for the 2019 financial year, as expenses reduced by more than premium.

The actual 2019 financial year commission and other expenses rates are lower than we had adopted in our projections last year.

In total, the commission and other expense rate make up 19.2% of the break-even premium rate, which is higher than the 20.2% adopted for the 30 June 2018 valuation.

B 4 Reinsurance

We have used the additional information provided by insurers to allow for reinsurance recoveries on large claims, which are expected to exceed the retention limit. This is equivalent to 6% of all claims, which is less than the 7% of all claims in our previous valuation. We compared the reinsurance recoveries based on the large claims with insurers' total reinsurance recoveries and they were similar, though slightly higher, so we did not feel it was necessary to allow for any further reinsurance recoveries on the smaller claims.

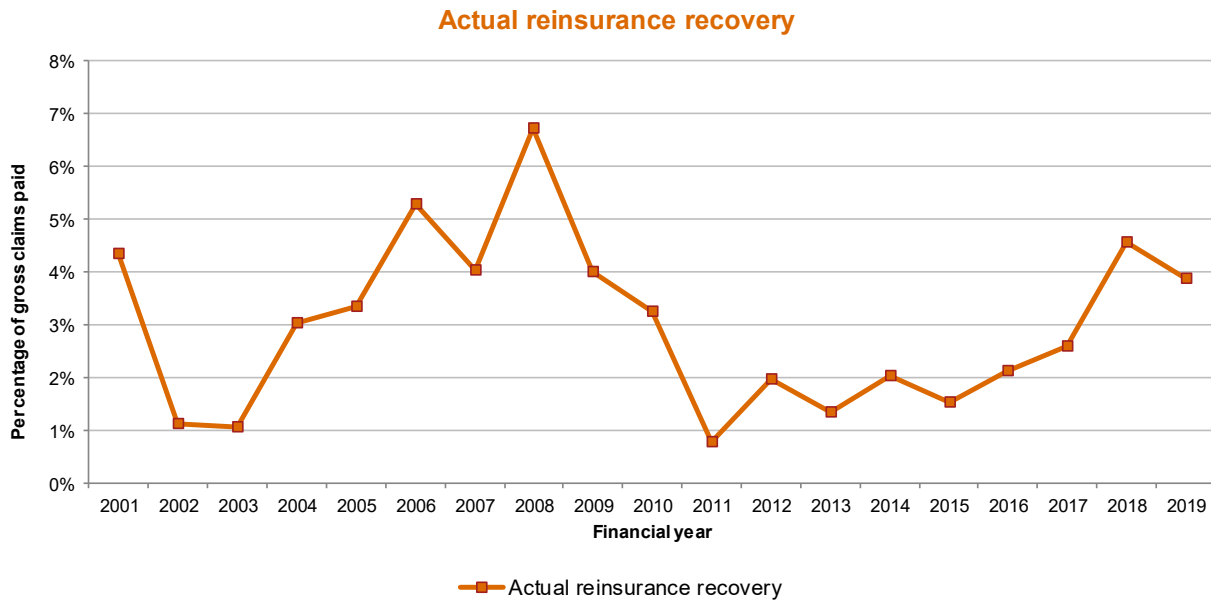
We reviewed the self-insurers' reports and as none of them allowed for any reinsurance recoveries, we have not allowed for any reinsurance recoveries for self-insurers.

The following table and chart show the historical reinsurance recoveries received by approved insurers. The reinsurance recovery rate is defined as a proportion of the gross claims paid. This is provided for information purposes and was not used for this valuation.

Financial year	Gross claims paid (a) (\$000s)	Reinsurance recoveries (b) (\$000s)	Reinsurance recovery (c) (%)
2001	44,638	1,941	4.3%
2002	38,683	432	1.1%
2003	40,584	429	1.1%
2004	47,842	1,457	3.0%
2005	49,586	1,658	3.3%
2006	45,946	2,431	5.3%
2007	52,003	2,106	4.0%
2008	57,010	3,837	6.7%
2009	71,840	2,886	4.0%
2010	77,791	2,537	3.3%
2011	83,908	649	0.8%
2012	82,569	1,630	2.0%
2013	89,191	1,199	1.3%
2014	91,942	1,876	2.0%
2015	91,120	1,398	1.5%
2016	102,891	2,189	2.1%
2017	122,608	3,178	2.6%
2018	121,156	5,542	4.6%
2019	134,064	5,223	3.9%

Notes: (a), (b) actual values taken from *Consolidated Form A*

(c) = (b) / (a)



B 5 GST

No explicit allowance has been made for GST net of ITC and/or DAM as our adopted bases rely on data, which includes GST net of ITC and/or DAM. The 10% GST on the workers' compensation premium itself (which employers will generally be able to recover via an input tax credit) is not included in our analysis or the recommended premium rates.

B 6 2015 legislative amendments

The 2015 legislative amendments were set out in two parts.

The first amendment bill, Workers' Rehabilitation and Compensation Legislation Amendment Bill 2015, passed in March 2015 and came into effect 1 July 2015. The benefit changes that were part of this bill include:

- Presumptive legislation for firefighters and volunteers to make it easier for firefighters and volunteer firefighters to claim workers' compensation if they are diagnosed with one of the 12 cancers listed in the legislation schedule
- A change in the definition of work to align with the PAYG definition used by the Australian Taxation Office (ATO)
- Increased period of compensation for older workers by extending weekly benefits from 26 weeks to 104 weeks for workers aged 67 years and older
- Five year cap on weekly benefits for claimants with a permanent impairment of less than 15% and all medical and other costs are limited to one additional year
- Increase in death and funeral benefits to 364 times the average weekly earnings
- Compensation will not be provided for stroke or heart attacks that are not caused by work
- Capping the calculation for normal weekly earnings. During the first 26 weeks when a worker is unable to work, their compensation payments are paid at their normal weekly earnings. After 26 weeks, compensation payments are paid at 75% of their normal weekly earnings. There is now a cap on the

Assumptions

calculation of a worker's normal weekly earnings after 26 weeks to 250% of the ABS average weekly earnings.

The second amendment bill, the Return to Work Legislation Amendment Bill 2015, was passed in August 2015 and came into effect on 1 October 2015. This bill included:

- Payment of up to 1.5 times Average Weekly Earnings for counselling and support
- While a claim is deferred, the employer is required to make weekly payments of compensation and, in the case of claims for mental stress, engage in rehabilitation
- Formal notice be provided to the worker of any pending step down or cancellation 14 days prior to it taking effect
- A mediator may recommend workers receive legal advice paid for by the employer.
- Negotiated settlements. There will be provision for the finalisation of the claim by the payment of a lump sum through negotiated settlement. The legislation requires a qualifying period of 104 weeks before a negotiated settlement
- Settlement of disputed claims. There is provision to allow for the settlement of disputed claims for compensation (whether disputed on a question of fact or law or both) and settlement of contested applications to the Work Health Court
- Exclusion of journey claims to and from work. Journeys that are considered to be in the course of employment are not excluded.

We costed the following changes in our report titled Actuarial costing of Northern Territory workers compensation scheme changes dated 11 September 2014:

- Increased period of compensation for older workers by extending weekly benefits from 26 weeks to 104 weeks for workers aged 67 years and older
- Five year cap on weekly benefits for claimants with a permanent impairment of less than 15% and all medical and other costs are limited to one additional year.

We also provided commentary on some other proposed scheme changes including:

- Increase in death and funeral benefits
- New settlement regime
- Exclusion of journey claims
- Weekly benefit cap of 250% of normal weekly earnings.

Our 2014 report, estimated cost of the two first changes above as a 2.8% reduction. In this valuation, we have also allowed for the increase in death and funeral benefits, so the net reduction is 2.4%. This has been allowed for in our calculations of the outstanding claims liabilities as at 30 June 2019 for the 2015/16 to 2018/19 accident years and the future costs for the 2019/20 accident year. There is no allowance for the 2015 legislative changes for accident years before 2015/16.

As the scheme changes were broader than covered by our report the actual impact could be different to estimated. We recommend NT WorkSafe and insurers closely monitor the experience to ensure that there are no unintended consequences.

B 7 Wage and premium development factors

This year we have used earned wages and premium for the fourth time. Earned wages and premium develop over time as wages are initially estimated at the beginning of the underwriting year and are updated with actual wages when known and reported to the insurers. Earned premium develops based on the development of earned wages but also based on adjustments for burner policies as the claim experience emerges.

The table below shows the development factors applied to earned wages. These are based on three year averages of the development of wages, with development year 3 assuming no more development. The development factor is slightly higher than last year for DY0 but lower for DY1 and 2.

Earned wages development factors			
Development year	2019	2018	2017
0	1.054	1.035	1.030
1	1.009	1.016	1.017
2	1.002	1.006	1.007
3	1.000	1.000	1.000

The table below shows the development factors applied to earned premium, including the earned but not yet raised (EBNYR) premium. These are based on three year averages of the development of premium, with development years 2 and 3 assuming no more development. The development factor is slightly higher than last year for DY0 but lower for DY1.

Earned premium development factors			
Development year	2019	2018	2017
0	1.056	1.040	1.030
1	1.013	1.028	1.024
2	1.000	1.000	1.000
3	1.000	1.000	1.000

Appendix C Insurer outstanding claim valuation

C 1 Data used in the valuation

C 1.1 Number of claims reported

Financial Year	Number of claims reported (a) for development year:											Total
	0	1	2	3	4	5	6	7	8	9	10 onwards	
2010	2,257	230	9	4	1	0	1	0	0	0	19	2,521
2011	2,385	240	18	6	2	1	1	0	0	0	3	2,656
2012	2,348	254	10	5	3	2	1	0	1	1	2	2,627
2013	2,423	256	13	9	1	1	0	0	0	1	1	2,705
2014	2,385	320	15	6	4	0	0	1	1	1	4	2,737
2015	2,335	335	21	4	2	3	2	0	0	0	2	2,704
2016	2,257	280	16	7	1	1	2	0	0	0	0	2,564
2017	2,141	244	18	7	3	0	2	0	0	0	2	2,417
2018	2,151	249	19	9	2	3	0	0	0	1	1	2,435
2019	1,982	235	17	11	4	2	0	1	2	0	1	2,255

Note: From summary of Form B returns up to 30 June 2019

C 1.2 Cumulative claims reported

Financial Year	Cumulative number of claims reported (a) for development year:										10
	0	1	2	3	4	5	6	7	8	9	
2010	2,257	2,591	2,720	2,467	2,711	2,750	2,572	2,866	2,896	2,864	2,983
2011	2,385	2,497	2,609	2,726	2,469	2,712	2,751	2,572	2,866	2,896	2,867
2012	2,348	2,639	2,507	2,614	2,729	2,471	2,713	2,751	2,573	2,867	2,898
2013	2,423	2,604	2,652	2,516	2,615	2,730	2,471	2,713	2,751	2,574	2,868
2014	2,385	2,743	2,619	2,658	2,520	2,615	2,730	2,472	2,714	2,752	2,578
2015	2,335	2,720	2,764	2,623	2,660	2,523	2,617	2,730	2,472	2,714	2,754
2016	2,257	2,615	2,736	2,771	2,624	2,661	2,525	2,617	2,730	2,472	2,714
2017	2,141	2,501	2,633	2,743	2,774	2,624	2,663	2,525	2,617	2,730	2,474
2018	2,151	2,390	2,520	2,642	2,745	2,777	2,624	2,663	2,525	2,618	2,731
2019	1,982	2,386	2,407	2,531	2,646	2,747	2,777	2,625	2,665	2,525	2,619

Note: Cumulative claim reports from table above

C 1.3 Active claims

Financial Year	Active claims (a) at the end of development year:											Total
	0	1	2	3	4	5	6	7	8	9	10 onwards	
2010	760	241	132	74	46	34	28	22	14	19	81	1,451
2011	778	238	112	70	42	31	29	19	22	12	87	1,440
2012	793	213	123	67	49	34	22	15	13	17	82	1,428
2013	844	231	110	72	44	37	26	15	14	10	83	1,486
2014	931	293	100	52	45	27	28	25	11	13	72	1,597
2015	854	279	145	57	37	35	25	23	19	10	59	1,543
2016	1,007	288	140	81	48	24	27	19	19	14	63	1,730
2017	912	281	152	68	52	26	14	22	16	16	65	1,624
2018	1,011	286	125	74	42	39	19	12	17	12	66	1,703
2019	821	332	106	59	43	25	25	16	11	14	65	1,517

Note: From summary of Form B returns up to 30 June 2019. Active claims were provided for the first time at 30 June 2010

C 1.4 Claim payments

Financial Year	Claim payments (a) for development year (\$000):											Total
	0	1	2	3	4	5	6	7	8	9	10 onwards	
2010	14,501	17,059	11,438	10,416	6,032	3,518	1,703	5,410	1,243	1,327	0	72,647
2011	15,305	18,856	13,739	9,562	7,328	7,050	1,695	1,446	3,003	2,297	3,724	84,005
2012	16,961	19,034	12,645	9,217	6,019	6,525	2,406	2,350	1,204	2,307	4,390	83,057
2013	18,489	22,422	11,397	7,690	16,149	3,794	2,519	661	726	1,124	4,351	89,322
2014	19,248	24,267	9,748	10,448	6,810	5,760	3,421	4,773	1,958	476	5,038	91,947
2015	19,208	24,967	15,549	9,393	3,877	4,146	3,315	2,818	1,704	1,546	5,972	92,495
2016	21,250	24,653	15,461	14,452	5,199	4,980	2,903	2,253	4,170	2,208	4,819	102,348
2017	23,630	30,409	20,553	12,743	7,264	5,041	5,830	2,783	1,629	2,446	9,719	122,047
2018	26,883	31,677	19,225	15,764	8,433	3,474	2,472	1,126	2,207	1,180	8,246	120,687
2019	24,950	43,761	20,511	12,035	9,572	5,422	5,719	2,155	1,360	1,418	7,983	134,885

Note: Data extracted from the WIMS system up to 30 June 2019

C 1.5 Case estimates

Financial Year	Case estimates (a) for development year (\$000):											Total
	0	1	2	3	4	5	6	7	8	9	10 onwards	
2014	41,909	30,987	25,229	11,474	13,213	7,832	18,376	10,870	3,624	4,128	33,758	201,399
2015	49,148	25,816	20,696	16,394	10,023	7,330	9,704	15,151	8,164	2,212	32,364	197,002
2016	43,796	39,453	16,396	15,291	13,782	7,456	6,243	9,415	12,568	4,855	32,279	201,533
2017	46,664	33,128	33,218	12,093	12,531	7,468	4,042	5,589	8,461	10,207	31,103	204,503
2018	66,003	34,783	23,594	20,199	7,580	10,483	5,693	3,782	4,443	8,451	31,866	216,879
2019	44,442	46,620	18,260	13,031	13,916	3,887	5,096	4,886	2,488	3,427	32,511	188,564

Note: From summary of Form B returns up to 30 June 2019. Case estimates were provided for the first time at 30 June 2014

C 2 Actual and projected claims experience during 2018/19

This section compares the actual experience over the 2019 financial year with the expected experience based on the previous scheme valuation as at 30 June 2018.

C 2.1 Number of claims reported

Accident year ended 30 June	Number of claims reported			Actual / expected (c)
	Combined total			
	Actual (a)	Projected (b)		
2018	235	261		90%
2017	17	17		102%
2016	11	6		177%
2015	4	2		168%
2014	2	1		137%
2013	0	1		0%
2012	1	0		496%
2011	2	0		981%
2010	0	0		0%
2009 and earlier	1	2		56%
Total	273	292		94%

Notes: (a) Extracted from the WIMS database to 30 June 2019

(b) Derived using the reporting rates in Appendix C3.1 of our previous scheme report dated 28 February 2019

(c) = (a) / (b) x 100

C 2.2 Proportion of claims finalised

Proportion of claims finalised (a) during 2018/19			
Accident year ended 30 June	Actual	Projected (b)	Actual / expected (c)
2018	73%	76%	97%
2017	65%	55%	119%
2016	57%	51%	111%
2015	45%	35%	130%
2014	43%	35%	123%
2013	36%	27%	132%
2012	20%	17%	121%
2011	21%	22%	98%
2010	18%	20%	89%
2009 and earlier	18%	20%	90%
Total	64.8%	63.2%	102%

Note: (a) Defined as:

number of claims finalised during the year

number outstanding at beginning of year + number reported during the year

(b) According to claim finalised per handled rate in appendix C3.1 of previous scheme report dated 28 February 2019. Total is weighted average using the current year's actual number of claims handled by occurrence year as the weights

C 2.3 Claim payments

Amount of claim payments during 2018/19			
Accident year ended 30 June	Combined total (\$000)		Actual / expected (c)
	Actual (a)	Projected (b)	
2018	43,761	36,300	121%
2017	20,511	19,876	103%
2016	12,035	14,511	83%
2015	9,572	9,033	106%
2014	5,422	4,477	121%
2013	5,719	4,747	120%
2012	2,155	1,749	123%
2011	1,360	1,226	111%
2010	1,418	1,713	83%
2009 and earlier	7,983	14,078	57%
Total	109,935	107,710	102%

Notes: (a) Extracted from the WIMS database to 30 June 2019

(b) From previous scheme report dated 28 February 2019, in 30 June 2019 values

(c) = (a) / (b) x 100.

C 3 Analysis and projection models

C 3.1 All payment types

Claim notification pattern

Financial Year	Chain ladder ratio (a) for development year:									
	1	2	3	4	5	6	7	8	9	10 onwards
2010	1.097	1.003	1.002	1.000	1.000	1.000	1.000	1.000	1.000	1.006
2011	1.106	1.007	1.002	1.001	1.000	1.000	1.000	1.000	1.000	1.001
2012	1.106	1.004	1.002	1.001	1.001	1.000	1.000	1.000	1.000	1.001
2013	1.109	1.005	1.004	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2014	1.132	1.006	1.002	1.002	1.000	1.000	1.000	1.000	1.000	1.002
2015	1.140	1.008	1.002	1.001	1.001	1.001	1.000	1.000	1.000	1.001
2016	1.120	1.006	1.003	1.000	1.000	1.001	1.000	1.000	1.000	1.000
2017	1.108	1.007	1.003	1.001	1.000	1.001	1.000	1.000	1.000	1.001
2018	1.116	1.008	1.003	1.001	1.001	1.000	1.000	1.000	1.000	1.000
2019	1.109	1.007	1.004	1.002	1.001	1.000	1.000	1.001	1.000	1.000
Adopted (b)	1.113	1.007	1.004	1.001	1.001	1.000	1.000	1.000	1.000	1.000

Notes: (a) Using cumulative claim report numbers from data

(b) Adopted for 30 June 2019 valuation

Numbers of claims incurred

Accident Year	Number of claims		Incurred (c)
	Reported to 30 June 2019 (a)	IBNR at 30 June 2019 (b)	
2007	2,474	0	2,474
2008	2,731	0	2,731
2009	2,619	0	2,619
2010	2,525	1	2,526
2011	2,665	1	2,666
2012	2,625	2	2,627
2013	2,777	2	2,779
2014	2,747	3	2,750
2015	2,646	5	2,651
2016	2,531	7	2,538
2017	2,407	16	2,423
2018	2,386	34	2,420
2019	1,982	256	2,238

Notes: (a) from number reported in appendix C1.1

(b) from pattern in chain ladder ratio table above

(c) = (a) + (b)

Claim finalised per handled rate

Financial Year	Finalisation rate (a) for development year:										
	0	1	2	3	4	5	6	7	8	9	10 onwards
2011	0.674	0.762	0.568	0.493	0.447	0.340	0.171	0.321	0.000	0.143	0.155
2012	0.662	0.794	0.504	0.427	0.329	0.227	0.313	0.483	0.350	0.261	0.188
2013	0.652	0.780	0.513	0.455	0.353	0.260	0.235	0.318	0.067	0.286	0.170
2014	0.610	0.748	0.593	0.552	0.408	0.386	0.243	0.074	0.313	0.133	0.258
2015	0.634	0.780	0.538	0.452	0.315	0.271	0.138	0.179	0.240	0.091	0.322
2016	0.554	0.746	0.525	0.467	0.172	0.368	0.270	0.240	0.174	0.263	0.087
2017	0.574	0.775	0.503	0.537	0.381	0.458	0.462	0.185	0.158	0.158	0.177
2018	0.530	0.754	0.583	0.540	0.400	0.291	0.269	0.143	0.227	0.294	0.195
2019	0.586	0.734	0.650	0.566	0.449	0.432	0.359	0.200	0.214	0.176	0.177
Adopted (b)	0.563	0.754	0.579	0.547	0.409	0.361	0.299	0.193	0.204	0.205	0.197

Notes: (a) Defined as: Number of claims finalised / number of claims handled

(b) Adopted for 30 June 2019 valuation

C 3.2 Weekly benefits

Claim payments

Financial Year	Claim payments (a) for development year:											
	0	1	2	3	4	5	6	7	8	9	10 onwards	Total
2010	6,456,241	6,548,963	3,445,777	2,485,146	1,484,384	465,078	531,917	801,976	407,221	613,423	1,283,008	24,523,134
2011	7,024,860	8,365,356	2,792,467	2,222,666	1,470,556	1,455,385	512,217	523,367	686,608	257,529	931,045	26,242,056
2012	7,653,496	7,579,813	3,964,698	1,803,241	1,270,971	1,584,552	642,719	349,971	409,600	551,010	1,097,617	26,907,688
2013	8,823,088	8,886,932	3,561,415	2,734,261	1,115,920	1,368,720	967,895	4,494	372,833	302,744	1,087,873	29,226,175
2014	8,093,103	10,405,904	3,401,196	2,381,386	2,125,933	1,102,380	1,214,201	678,973	358,515	389,871	1,259,486	31,410,948
2015	8,231,451	11,084,377	5,600,318	2,512,465	1,283,333	1,155,455	573,282	805,123	922,606	332,210	1,492,877	33,993,497
2016	8,763,241	10,688,103	5,402,234	3,189,781	1,338,501	815,046	614,507	474,422	522,645	679,442	1,204,803	33,692,725
2017	9,888,087	13,191,879	5,918,120	2,681,584	1,987,221	649,422	520,104	558,092	441,730	423,495	2,429,708	38,689,442
2018	9,548,417	14,918,084	5,975,439	3,766,731	1,707,889	998,863	612,951	296,451	325,736	390,855	2,061,576	40,602,992
2019	9,971,409	19,098,793	6,699,315	2,510,503	680,402	701,865	677,456	511,424	304,923	211,340	1,995,686	43,363,116

Notes: (a) Data extracted from the WIMS system up to 30 June 2019. DY10+ using the Report 4 payments

Average real payment per active claim

Financial Year	Weekly Benefits PPAC (a) for development year:									
	1	2	3	4	5	6	7	8	9	10 onward
2011	14,679	15,453	22,456	26,502	42,194	20,091	24,927	41,621	24,532	12,417
2012	11,982	20,487	19,800	22,329	46,397	25,497	14,841	26,512	30,802	13,635
2013	13,301	19,844	26,383	19,768	33,152	33,787	242	29,500	27,639	13,042
2014	14,543	17,368	25,537	34,829	29,553	38,709	30,804	28,193	32,849	15,975
2015	13,717	22,021	28,946	28,433	29,582	24,462	33,128	42,517	34,794	20,234
2016	13,649	21,117	23,991	25,610	24,024	19,148	20,696	24,782	39,000	19,043
2017	13,694	21,481	20,023	25,646	14,143	22,654	21,607	24,303	23,300	32,985
2018	16,787	21,824	25,432	25,776	19,714	24,195	21,732	15,195	25,070	26,120
2019	19,244	23,862	20,459	9,366	17,023	17,695	27,420	25,885	12,664	26,064
Adopted (b)	16,787	23,486	22,607	26,234	17,035	20,931	23,477	24,859	24,109	26,238

Notes: (a) In 30 June 2019 values

(b) Adopted for 30 June 2019 valuation. We increased these factors by 15% for the 2018 AY & 28% for the 2019 AY to reflect the significantly higher experience to date for these years.

Average real payment per claim incurred

Financial Year	Weekly Benefits PPCI (a) for development year:											
	0	1	2	3	4	5	6	7	8	9 10 onwards	Total	
2010	3,629	3,551	1,792	1,426	777	240	293	397	200	304	611	13,218
2011	3,514	4,416	1,422	1,085	793	715	248	271	319	119	433	13,335
2012	3,583	3,496	1,930	847	572	788	291	156	195	236	466	12,561
2013	3,768	4,015	1,585	1,285	506	595	464	2	161	139	450	12,970
2014	3,471	4,417	1,527	1,053	993	497	524	324	156	167	576	13,705
2015	3,577	4,643	2,322	1,102	554	527	252	340	430	141	625	14,512
2016	3,766	4,397	2,142	1,252	556	333	265	198	209	300	484	13,901
2017	4,266	5,433	2,334	1,019	747	258	204	231	176	162	1,027	15,858
2018	4,050	6,318	2,416	1,458	637	369	239	114	132	153	775	16,663
2019	4,539	8,041	2,816	1,008	261	260	248	198	116	85	776	18,350
Adopted (b)	4,285	6,318	2,684	1,185	625	297	231	180	142	134	775	16,857

Notes: (a) In 30 June 2019 values

(b) Adopted for 30 June 2019 valuation. We increased these factors by 14% for the 2018 AY & 28% for the 2019 AY to reflect the significantly higher experience to date for these years.

Estimates from models

Accident Year	Estimated outstanding claims at 30 June 2019 (\$000s) (a)			Weighting	
	PPAC	PPCI	Adopted	PPAC	PPCI
2019	37,244	38,588	37,647	70%	30%
2018	21,297	19,012	21,297	100%	0%
2017	7,773	9,814	8,794	50%	50%
2016	5,825	7,046	6,191	70%	30%
2015	4,850	5,536	4,850	100%	0%
2014	3,556	4,792	3,556	100%	0%
2013	3,909	4,087	3,909	100%	0%
2012	2,576	3,298	2,576	100%	0%
2011	1,813	2,890	1,813	100%	0%
2010 & earlier	12,136	16,285	12,136	100%	0%
Total	100,978	111,348	102,768		

Notes: (a) From models described above, in 30 June 2019 values and includes superimposed inflation but excludes the 2015 legislative amendments

C 3.3 Medical and hospital

Claim payments

Financial Year	Claim payments (a) for development year:											
	0	1	2	3	4	5	6	7	8	9 10 onwards	Total	
2010	4,118,456	2,539,692	1,039,031	655,342	466,859	170,986	145,452	112,152	150,648	66,583	218,576	9,683,777
2011	4,550,111	2,725,107	722,979	478,082	334,251	318,953	124,344	65,743	323,875	142,187	158,615	9,944,247
2012	4,665,246	3,373,754	928,296	474,053	265,961	250,060	137,885	60,493	51,395	158,574	186,992	10,552,709
2013	4,662,619	3,602,423	1,043,761	442,068	197,289	183,961	255,237	28,860	19,463	157,285	185,332	10,778,298
2014	5,388,891	3,830,875	764,401	626,585	314,940	213,159	120,997	185,779	39,070	17,751	214,568	11,717,016
2015	6,208,388	4,219,249	1,174,615	357,453	435,689	255,130	148,729	174,226	296,992	34,874	254,330	13,559,675
2016	6,477,554	4,973,442	1,232,934	423,421	200,775	253,076	151,932	125,883	95,932	50,978	205,253	14,191,180
2017	7,120,072	5,342,336	1,788,321	450,211	349,532	162,219	232,516	64,108	108,095	27,720	413,930	16,059,060
2018	8,090,556	4,686,904	1,502,564	802,830	364,164	372,351	121,715	110,074	113,687	25,397	351,214	16,541,456
2019	7,030,615	6,601,361	1,552,683	436,294	349,840	168,751	307,367	54,339	66,674	29,766	339,989	16,937,679

Note: Data extracted from the WIMS system up to 30 June 2019. DY10+ using the Report 4 payments

Average real payment per active claim

Financial Year	Medical And Hospital PPAC (a) for development year:									
	1	2	3	4	5	6	7	8	9	10 onward
2011	4,782	4,001	4,830	6,024	9,247	4,877	3,131	19,633	13,544	2,115
2012	5,333	4,797	5,205	4,673	7,322	5,470	2,565	3,327	8,864	2,323
2013	5,392	5,816	4,266	3,495	4,456	8,910	1,557	1,540	14,360	2,222
2014	5,354	3,903	6,719	5,160	5,714	3,857	8,428	3,072	1,496	2,721
2015	5,221	4,619	4,118	9,653	6,532	6,346	7,169	13,686	3,653	3,447
2016	6,351	4,819	3,185	3,841	7,460	4,734	5,491	4,549	2,926	3,244
2017	5,546	6,491	3,362	4,511	3,533	10,127	2,482	5,947	1,525	5,619
2018	5,274	5,488	5,421	5,496	7,349	4,804	8,069	5,303	1,629	4,450
2019	6,652	5,530	3,556	4,816	4,093	8,028	2,913	5,660	1,784	4,440
Adopted (b)	5,583	5,840	4,170	4,913	5,775	6,743	5,074	7,370	2,209	4,247

Notes: (a) In 30 June 2019 values

(b) Adopted for 30 June 2019 valuation. We increased these factors by 26% for the 2018 AY & 18% for the 2019 AY to reflect the significantly higher experience to date for these years.

Average real payment per claim incurred

Financial Year	Medical And Hospital PPCI (a) for development year:											
	0	1	2	3	4	5	6	7	8	9	10 onwards	Total
2010	2,315	1,377	540	376	244	88	80	56	74	33	104	5,287
2011	2,276	1,439	368	233	180	157	60	34	151	65	74	5,037
2012	2,184	1,556	452	223	120	124	62	27	25	68	79	4,920
2013	1,991	1,628	465	208	89	80	122	13	8	72	77	4,753
2014	2,311	1,626	343	277	147	96	52	89	17	8	98	5,064
2015	2,698	1,767	487	157	188	116	65	73	138	15	106	5,812
2016	2,783	2,046	489	166	83	104	66	52	38	22	82	5,933
2017	3,072	2,200	705	171	131	65	91	27	43	11	175	6,691
2018	3,432	1,985	608	311	136	138	48	42	46	10	132	6,887
2019	3,200	2,779	653	175	134	63	113	21	25	12	132	7,308
Adopted (b)	3,320	2,078	630	175	134	97	77	44	57	14	125	6,750

Notes: (a) In 30 June 2019 values

(b) Adopted for 30 June 2019 valuation. We increased these factors by 23% for the 2018 AY & 15% for the 2019 AY to reflect the significantly higher experience to date for these years.

Estimates from models

Medical And Hospital					
Estimated outstanding claims					
Accident Year	claims at 30 June 2019 (\$000s) (a)			Weighting	
	PPAC	PPCI	Adopted	PPAC	PPCI
2019	9,702	9,547	9,656	70%	30%
2018	5,476	4,554	5,476	100%	0%
2017	1,693	2,062	1,878	50%	50%
2016	1,332	1,634	1,423	70%	30%
2015	1,165	1,286	1,165	100%	0%
2014	775	1,017	775	100%	0%
2013	767	774	767	100%	0%
2012	487	589	487	100%	0%
2011	302	423	302	100%	0%
2010 & earlier	2,140	996	2,140	100%	0%
Total	23,840	22,883	24,068		

Notes: (a) From models described above, in 30 June 2019 values and includes superimposed inflation but excludes the 2015 legislative amendments

C 3.4 Allied health, vocational rehabilitation, non-compensation (other) and death

Claim payments

Financial Year	Claim payments (a) for development year:											
	0	1	2	3	4	5	6	7	8	9	10 onwards	Total
2010	2,415,588	2,698,696	1,323,850	673,720	415,171	157,705	116,269	183,296	126,476	382,779	252,826	8,746,376
2011	1,619,391	2,839,141	969,159	764,929	342,332	321,059	136,660	81,571	145,650	70,965	183,469	7,474,326
2012	2,535,477	2,491,268	1,288,794	403,986	640,432	507,062	102,063	41,001	58,384	93,257	216,293	8,378,017
2013	2,449,292	2,841,820	1,100,827	468,853	298,929	216,879	143,948	94,135	33,874	30,464	214,373	7,893,394
2014	3,361,733	3,610,202	1,477,203	703,511	351,251	214,183	243,243	65,783	62,260	39,744	248,190	10,377,303
2015	2,555,439	4,056,759	2,099,504	995,769	445,876	386,029	138,582	191,187	166,531	116,635	294,182	11,446,493
2016	2,990,501	3,909,402	1,884,686	795,887	242,863	193,909	140,751	96,043	114,604	118,250	237,415	10,724,311
2017	3,552,224	5,277,792	2,358,311	884,795	391,634	204,910	482,730	165,590	65,307	121,999	478,791	13,984,083
2018	5,238,764	4,864,369	1,859,859	930,797	414,971	201,224	150,338	67,566	76,500	52,431	406,248	14,263,067
2019	4,764,770	7,114,518	2,784,066	799,202	593,444	237,765	161,774	139,308	125,318	65,871	393,264	17,179,300

Note: Data extracted from the WIMS system up to 30 June 2019. DY10+ using the Report 4 payments

Average real payment per active claim

Financial Year	Allied Health, Vocational Rehabilitation, Non-Compensation Payments (Other), Death PPAC (a) for dev year										
	1	2	3	4	5	6	7	8	9	10 onward	
2011	4,982	5,363	7,728	6,169	9,308	5,360	3,885	8,829	6,760	2,447	
2012	3,938	6,660	4,436	11,251	14,847	4,049	1,739	3,779	5,213	2,687	
2013	4,253	6,134	4,524	5,295	5,253	5,025	5,078	2,680	2,781	2,570	
2014	5,046	7,543	7,544	5,755	5,742	7,755	2,984	4,896	3,349	3,148	
2015	5,020	8,255	11,472	9,879	9,883	5,913	7,867	7,674	12,216	3,987	
2016	4,992	7,367	5,986	4,647	5,716	4,386	4,190	5,434	6,787	3,752	
2017	5,479	8,560	6,607	5,054	4,463	21,026	6,411	3,593	6,712	6,500	
2018	5,474	6,793	6,285	6,263	3,971	5,934	4,953	3,569	3,363	5,147	
2019	7,169	9,916	6,513	8,169	5,767	4,226	7,469	10,638	3,947	5,136	
Adopted (b)	5,476	8,171	7,114	6,682	5,889	7,529	6,278	5,854	6,241	4,913	

Notes: (a) In 30 June 2019 values

(b) Adopted for 30 June 2019 valuation. We increased these factors by 31% for the 2018 AY & 28% for the 2019 AY to reflect the significantly higher experience to date for these years.

Average real payment per claim incurred

Financial Year	Allied Health, Vocational Rehabilitation, Non-Compensation Payments (Other), Death PPCI (a) for development year:											
	0	1	2	3	4	5	6	7	8	9	10 onwards	Total
2010	1,358	1,463	688	387	217	81	64	91	62	190	120	4,721
2011	810	1,499	494	374	185	158	66	42	68	33	85	3,812
2012	1,187	1,149	627	190	288	252	46	18	28	40	92	3,918
2013	1,046	1,284	490	220	135	94	69	41	15	14	89	3,498
2014	1,442	1,532	663	311	164	96	105	31	27	17	114	4,503
2015	1,111	1,699	870	437	193	176	61	81	78	50	123	4,877
2016	1,285	1,608	747	312	101	79	61	40	46	52	95	4,427
2017	1,532	2,174	930	336	147	82	189	69	26	47	202	5,734
2018	2,222	2,060	752	360	155	74	59	26	31	21	153	5,913
2019	2,169	2,995	1,170	321	228	88	59	54	48	27	153	7,312
Adopted (b)	2,269	2,118	894	341	165	99	86	54	45	39	144	6,255

Notes: (a) In 30 June 2019 values

(b) Adopted for 30 June 2019 valuation. We increased these factors by 45% for the 2018 AY & 42% for the 2019 AY to reflect the significantly higher experience to date for these years.

Estimates from models

Allied Health, Vocational Rehabilitation, Non-Compensation Payments (Other), Death					
Accident Year	Estimated outstanding claims claims at 30 June 2019 (\$'000s) (a)			Weighting	
	PPAC	PPCI	Adopted	PPAC	PPCI
2019	11,790	13,513	12,307	70%	30%
2018	7,521	7,168	7,521	100%	0%
2017	2,153	2,654	2,403	50%	50%
2016	1,505	1,841	1,606	70%	30%
2015	1,255	1,432	1,255	100%	0%
2014	857	1,172	857	100%	0%
2013	857	912	857	100%	0%
2012	539	695	539	100%	0%
2011	368	564	368	100%	0%
2010 & earlier	2,333	2,024	2,333	100%	0%
Total	29,178	31,974	30,046		

Notes: (a) From models described above, in 30 June 2019 values and includes superimposed inflation but excludes the 2015 legislative amendments

C 3.5 Other goods and services

Claim payments

Financial Year	Claim payments (a) for development year:											Total
	0	1	2	3	4	5	6	7	8	9	10 onwards	
2010	1,119,511	1,914,284	577,979	294,112	114,282	56,387	44,834	191,069	30,123	19,473	199,698	4,561,752
2011	1,357,320	1,419,816	1,773,413	370,817	199,111	85,453	59,446	48,905	211,722	15,125	144,916	5,686,044
2012	1,626,314	1,487,961	539,124	1,014,463	182,189	779,617	49,111	41,856	18,135	118,795	170,843	6,028,408
2013	1,568,276	1,464,369	610,500	294,071	630,061	166,282	509,228	22,570	12,114	7,029	169,326	5,453,826
2014	1,742,105	1,401,922	430,785	347,657	149,912	187,116	156,222	-13,833	12,821	19,453	196,037	4,630,197
2015	1,547,585	1,685,959	452,554	202,359	316,201	119,758	154,664	240,214	135,516	14,040	232,364	5,101,214
2016	2,059,178	1,974,264	484,315	233,491	96,505	114,752	80,054	92,629	146,768	89,762	187,526	5,559,244
2017	1,847,746	1,840,747	823,543	194,073	112,408	43,362	88,568	47,582	148,294	56,237	378,181	5,580,741
2018	2,439,391	1,763,111	768,992	380,347	119,088	122,482	44,067	56,536	36,721	290,716	320,881	6,342,332
2019	1,832,397	2,307,090	832,108	274,459	225,949	53,408	134,704	61,567	75,089	32,693	310,626	6,140,090

Note: Data extracted from the WIMS system up to 30 June 2019. DY10+ using the Report 4 payments

Average real payment per active claim

Financial Year	Other Goods And Services PPAC (a) for development year:									
	1	2	3	4	5	6	7	8	9	10 onward
2011	2,491	9,813	3,746	3,588	2,477	2,332	2,329	12,834	1,441	1,933
2012	2,352	2,786	11,139	3,201	22,828	1,948	1,775	1,174	6,641	2,122
2013	2,192	3,402	2,838	11,161	4,028	17,776	1,218	959	642	2,030
2014	1,959	2,200	3,728	2,456	5,016	4,980	-628	1,008	1,639	2,486
2015	2,086	1,779	2,331	7,006	3,066	6,600	9,884	6,245	1,470	3,149
2016	2,521	1,893	1,756	1,846	3,382	2,494	4,041	6,959	5,152	2,964
2017	1,911	2,989	1,449	1,451	944	3,858	1,842	8,159	3,094	5,134
2018	1,984	2,809	2,568	1,797	2,417	1,739	4,144	1,713	18,647	4,066
2019	2,325	2,964	2,237	3,110	1,295	3,518	3,301	6,374	1,959	4,057
Adopted (b)	1,946	2,887	2,055	2,830	2,181	3,580	4,852	5,796	6,153	3,880

Notes: (a) In 30 June 2019 values

(b) Adopted for 30 June 2019 valuation. We increased these factors by 17% for the 2018 AY to reflect the significantly higher experience to date for that years.

Average real payment per claim incurred

Financial Year	Other Goods And Services PPCI (a) for development year:											Total
	0	1	2	3	4	5	6	7	8	9	10 onwards	
2010	629	1,038	301	169	60	29	25	95	15	10	95	2,464
2011	679	750	903	181	107	42	29	25	98	7	67	2,889
2012	761	686	262	476	82	388	22	19	9	51	72	2,829
2013	670	662	272	138	286	72	244	10	5	3	70	2,432
2014	747	595	193	154	70	84	67	-7	6	8	90	2,008
2015	673	706	188	89	137	55	68	101	63	6	97	2,182
2016	885	812	192	92	40	47	35	39	59	40	75	2,314
2017	797	758	325	74	42	17	35	20	59	22	160	2,308
2018	1,035	747	311	147	44	45	17	22	15	114	121	2,618
2019	834	971	350	110	87	20	49	24	29	13	121	2,608
Adopted (b)	890	753	328	102	70	37	41	42	45	39	114	2,459

Notes: (a) In 30 June 2019 values

(b) Adopted for 30 June 2019 valuation. We increased these factors by 30% for the 2018 AY & 5% for the 2019 AY to reflect the significantly higher experience to date for these years.

Estimates from models

Other Goods And Services					
Accident Year	Estimated outstanding claims at 30 June 2019 (\$000s) (a)			Weighting	
	PPAC	PPCI	Adopted	PPAC	PPCI
2019	3,313	4,222	3,586	70%	30%
2018	2,553	3,097	2,553	100%	0%
2017	917	1,504	1,210	50%	50%
2016	783	1,252	924	70%	30%
2015	722	1,069	722	100%	0%
2014	557	961	557	100%	0%
2013	623	817	623	100%	0%
2012	400	631	400	100%	0%
2011	262	494	262	100%	0%
2010 & earlier	1,574	1,633	1,574	100%	0%
Total	11,704	15,679	12,410		

Notes: (a) From models described above, in 30 June 2019 values and includes superimposed inflation but excludes the 2015 legislative amendments

C 3.6 Legals

Claim payments

Financial Year	Claim payments (a) for development year:											Total
	0	1	2	3	4	5	6	7	8	9	10 onwards	
2010	110,485	572,976	563,716	752,159	321,759	303,526	171,042	341,489	66,246	222,859	173,887	3,600,144
2011	119,748	435,187	911,353	435,657	327,544	296,488	143,894	73,735	73,122	116,630	126,185	3,059,543
2012	189,595	633,460	574,349	768,389	248,978	705,228	75,826	105,448	52,297	46,709	148,760	3,549,039
2013	188,116	592,132	775,905	604,921	1,139,497	588,270	216,238	139,320	58,533	56,996	147,440	4,507,368
2014	200,375	738,137	873,295	638,026	499,375	640,462	282,056	219,827	80,257	8,704	170,699	4,351,213
2015	143,327	946,238	880,787	499,253	660,560	354,353	344,651	349,078	114,010	181,815	202,330	4,676,402
2016	419,783	899,214	1,228,238	1,163,680	445,297	450,979	136,629	497,577	66,402	13,080	163,287	5,484,166
2017	388,426	1,419,215	1,561,753	1,086,107	484,070	420,027	231,269	88,302	34,962	69,404	329,299	6,112,834
2018	481,374	1,099,085	1,070,566	795,370	953,777	429,932	292,035	76,783	46,549	79,046	279,406	5,603,923
2019	638,816	1,890,038	1,359,027	825,254	1,061,168	308,739	369,886	263,195	54,143	31,269	270,476	7,072,011

Note: Data extracted from the WIMS system up to 30 June 2019. DY10+ using the Report 4 payments\

Average real payment per claim finalised

Financial Year	Legals PPCF (a) for development year:										
	0	1	2	3	4	5	6	7	8	9	10 onwards
2011	99	762	8,268	8,544	12,848	24,712	31,983	10,926	0	77,770	10,518
2012	150	951	5,651	18,899	12,758	86,729	9,325	9,263	9,188	9,574	9,629
2013	141	859	7,939	11,966	56,351	53,707	32,080	23,622	69,470	16,911	10,293
2014	163	1,000	7,056	11,759	19,002	44,440	36,967	129,651	18,934	5,134	8,054
2015	111	1,105	6,004	12,238	44,766	31,404	99,267	80,434	21,892	209,467	8,325
2016	366	1,159	8,642	17,875	48,564	35,131	14,901	90,442	18,104	2,853	29,680
2017	330	1,529	10,601	14,372	15,813	19,958	20,146	18,461	12,182	24,184	24,588
2018	433	1,289	6,278	9,382	34,959	27,577	42,816	39,400	9,554	16,225	17,922
2019	561	2,107	7,028	10,918	30,886	16,553	26,914	67,028	18,385	10,618	19,681
Adopted (b)	518	1,415	7,612	12,844	31,250	24,939	31,156	62,911	18,659	18,659	18,659

Notes: (a) In 30 June 2019 values

(b) Adopted for 30 June 2019 valuation. No special allowance was made for AY18 and AY19.

Average real payment per claim incurred

Financial Year	Legals PPCI (a) for development year:											Total
	0	1	2	3	4	5	6	7	8	9	10 onwards	
2010	62	311	293	432	168	156	94	169	32	110	83	1,911
2011	60	230	464	213	177	146	70	38	34	54	59	1,543
2012	89	292	280	361	112	351	34	47	25	20	63	1,674
2013	80	268	345	284	516	256	104	61	25	26	61	2,027
2014	86	313	392	282	233	288	122	105	35	4	78	1,939
2015	62	396	365	219	285	162	152	147	53	77	85	2,004
2016	180	370	487	457	185	184	59	207	27	6	66	2,227
2017	168	585	616	413	182	167	91	37	14	27	139	2,437
2018	204	466	433	308	356	159	114	30	19	31	105	2,224
2019	291	796	571	331	408	114	136	102	21	13	105	2,887
Adopted (b)	303	526	574	352	314	146	114	56	18	24	116	2,542

Notes: (a) In 30 June 2019 values

(b) Adopted for 30 June 2019 valuation. No special allowance was made for AY18 and AY19.

Estimates from models

Legals					
Accident Year	Estimated outstanding claims at 30 June 2019 (\$000s) (a)			Weighting	
	PPCF	PPCI	Adopted	PPCF	PPCI
2019	5,614	5,697	5,639	70%	30%
2018	5,419	4,673	5,419	100%	0%
2017	2,782	3,135	2,959	50%	50%
2016	2,106	2,282	2,159	70%	30%
2015	1,472	1,477	1,472	100%	0%
2014	906	1,079	906	100%	0%
2013	839	739	839	100%	0%
2012	405	527	405	100%	0%
2011	283	469	283	100%	0%
2010 & earlier	1,820	2,250	1,820	100%	0%
Total	21,646	22,327	21,900		

Notes: (a) From models described above, in 30 June 2019 values and includes superimposed inflation but excludes the 2015 legislative amendments

C 3.7 Redemptions and non-economic lump sum

Claim payments

Financial Year	Claim payments (a) for development year:											
	0	1	2	3	4	5	6	7	8	9	10 onwards	Total
2010	280,698	2,784,712	4,487,364	5,555,307	3,229,869	2,364,519	693,696	3,779,622	462,428	21,995	3,004,037	26,664,247
2011	633,217	3,071,083	6,569,632	5,289,766	4,654,321	4,572,384	718,199	652,827	1,562,328	1,694,999	2,179,950	31,598,706
2012	290,423	3,467,687	5,349,468	4,752,877	3,410,329	2,698,787	1,398,278	1,750,848	614,058	1,338,167	2,569,961	27,640,883
2013	798,093	5,034,020	4,304,159	3,146,178	12,767,423	1,269,418	426,392	371,696	228,690	569,448	2,547,148	31,462,665
2014	461,434	4,280,116	2,801,334	5,751,145	3,368,411	3,402,835	1,404,766	3,636,688	1,404,997	0	2,948,962	29,460,688
2015	522,306	2,974,003	5,341,548	4,826,066	735,591	1,874,791	1,954,630	1,058,632	68,471	866,380	3,495,426	23,717,844
2016	539,312	2,208,806	5,228,454	8,645,902	2,874,708	3,152,006	1,778,661	966,730	3,223,685	1,256,746	2,820,927	32,695,937
2017	833,335	3,337,204	8,102,884	7,446,525	3,939,263	3,561,253	4,274,513	1,859,084	830,709	1,746,804	5,688,922	41,620,496
2018	1,084,900	4,345,693	8,047,510	9,087,783	4,872,947	1,349,024	1,251,323	518,297	1,608,148	341,066	4,826,977	37,333,668
2019	712,246	6,749,440	7,283,322	7,189,507	6,661,238	3,951,044	4,067,511	1,124,902	733,979	1,047,184	4,672,702	44,193,075

Note: Data extracted from the WIMS system up to 30 June 2019. DY10+ using the Report 4 payments

Average real payment per claim finalised

Financial Year	Redemptions And Non-Economic Lump Sum PPCF (a) for development year:											
	0	1	2	3	4	5	6	7	8	9	10 onwards	Total
2011	525	5,375	59,601	103,742	182,560	381,111	159,633	96,735	0	1,130,235	181,700	
2012	230	5,207	52,630	116,902	174,751	331,897	171,961	153,800	107,881	274,280	166,344	
2013	600	7,304	44,038	62,234	631,377	115,893	63,258	63,021	271,421	168,963	177,829	
2014	374	5,796	22,633	105,998	128,171	236,111	184,114	2,144,870	331,459	0	139,141	
2015	406	3,471	36,414	118,299	49,851	166,148	562,977	243,928	13,147	998,147	143,823	
2016	471	2,847	36,788	132,804	313,512	245,539	193,979	175,717	878,928	274,118	512,745	
2017	709	3,596	55,002	98,534	128,684	169,215	372,361	388,677	289,459	608,671	424,777	
2018	977	5,097	47,194	107,202	178,607	86,530	183,458	265,959	330,082	70,006	309,614	
2019	625	7,522	37,662	95,115	193,877	211,835	295,965	286,480	249,231	355,584	340,001	
Adopted (b)	768	6,336	45,910	100,554	167,417	160,212	299,881	329,202	296,953	294,799	291,849	

Notes: (a) In 30 June 2019 values

(b) Adopted for 30 June 2019 valuation. No special allowance was made for AY18 and AY19.

Average real payment per claim incurred

Financial Year	Redemptions And Non-Economic Lump Sum PPCI (a) for development year:											
	0	1	2	3	4	5	6	7	8	9	10 onwards	Total
2010	158	1,510	2,333	3,188	1,690	1,219	382	1,871	227	11	1,430	14,018
2011	317	1,621	3,345	2,583	2,509	2,247	348	338	726	780	1,014	15,828
2012	136	1,599	2,604	2,232	1,536	1,342	634	782	293	574	1,091	12,821
2013	341	2,275	1,916	1,478	5,786	552	205	163	99	262	1,054	14,129
2014	198	1,817	1,258	2,544	1,573	1,533	607	1,734	611	0	1,349	13,223
2015	227	1,246	2,214	2,117	318	855	860	447	32	368	1,462	10,145
2016	232	909	2,073	3,393	1,194	1,289	768	403	1,287	554	1,134	13,235
2017	360	1,374	3,195	2,830	1,482	1,417	1,676	769	332	669	2,404	16,507
2018	460	1,841	3,254	3,518	1,818	498	489	199	653	134	1,814	14,679
2019	324	2,842	3,062	2,886	2,560	1,463	1,491	436	280	422	1,817	17,584
Adopted (b)	383	1,841	3,172	3,078	1,944	1,120	1,226	463	418	412	1,499	15,555

Notes: (a) In 30 June 2019 values

(b) Adopted for 30 June 2019 valuation. No special allowance was made for AY18 and AY19.

Estimates from models

Redemptions And Non-Economic Lump Sum					
Estimated outstanding claims					
Accident Year	claims at 30 June 2019 (\$'000s) (a)			Weighting	
Year	PPCF	PPCI	Adopted	PPCF	PPCI
2019	36,336	37,892	36,803	70%	30%
2018	38,295	35,524	38,295	100%	0%
2017	21,292	27,078	24,185	50%	50%
2016	16,195	19,927	17,315	70%	30%
2015	13,606	15,195	13,606	100%	0%
2014	9,531	12,323	9,531	100%	0%
2013	9,211	8,771	9,211	100%	0%
2012	5,920	6,878	5,920	100%	0%
2011	4,115	5,703	4,115	100%	0%
2010 & earlier	26,495	20,236	26,495	100%	0%
Total	180,997	189,528	185,476		

Notes: (a) From models described above, in 30 June 2019 values and includes superimposed inflation but excludes the 2015 legislative amendments

C 3.8 Combined PCE method

Case estimates development factors

Financial Year	Case estimate development factors (a) for development year:									
Year	1	2	3	4	5	6	7	8	9	10 onward
2015	1.154	1.112	0.969	1.146	0.824	1.570	0.921	0.855	0.985	0.953
2016	1.262	1.197	1.394	1.118	1.201	1.206	1.159	1.066	0.836	1.033
2017	1.418	1.332	1.481	1.265	0.887	1.295	1.311	1.047	0.984	1.074
2018	1.396	1.267	1.061	1.298	1.090	1.070	1.188	1.165	1.113	0.950
2019	1.355	1.104	1.051	1.149	1.217	1.022	1.220	1.004	1.075	0.989
Adopted (b)	1.354	1.231	1.210	1.196	1.074	1.139	1.213	1.070	1.042	1.010

Notes: (a) defined as: (CE at end of year + payments in the year) / CE at beginning of year adjusted for normal inflation

(b) In 30 June 2019 values, adopted for 30 June 2019 valuation

Payment factors for case estimates outstanding

Financial Year	Payments to case estimates (a) for development year:									
Year	1	2	3	4	5	6	7	8	9	10 onward
2015	0.578	0.486	0.361	0.328	0.304	0.410	0.149	0.152	0.414	0.153
2016	0.492	0.587	0.684	0.311	0.487	0.388	0.228	0.270	0.265	0.137
2017	0.679	0.510	0.761	0.465	0.358	0.765	0.436	0.169	0.190	0.256
2018	0.668	0.571	0.467	0.686	0.273	0.326	0.274	0.388	0.137	0.196
2019	0.662	0.589	0.510	0.473	0.714	0.545	0.378	0.359	0.319	0.198
Adopted (b)	0.665	0.580	0.484	0.525	0.404	0.547	0.375	0.271	0.195	0.216

Notes: (a) defined as: Payments made in the year / case estimates at beginning of the year

(b) In 30 June 2019 values, adopted for 30 June 2019 valuation

Estimates from model

Combined (all payment types) PCE method	
Estimated outstanding claims	
Accident Year	claims at 30 June 2019 (\$000s) (a) PCE method
2019	77,189
2018	72,456
2017	27,324
2016	18,177
2015	18,026
2014	5,174
2013	6,748
2012	5,534
2011	2,683
2010 & earlier	37,476
Total	270,784

Notes: (a) From models described above, in 30 June 2019 values, excluding the 2015 legislative amendments

Large claims

Large claims (\$000s)			
	Case estimates (a)	Development factor (b)	Current values (c)
2019	0	0.00	0
2018	3,260	0.00	0
2017	1,096	0.00	0
2016	5,856	1.00	5,856
2015	5,727	1.00	5,727
2014	0	0.00	0
2013	0	0.00	0
2012	1,735	0.00	0
2011	817	0.00	0
2010 & earlier	22,137	1.00	22,137
Total	40,627		33,720

Notes: (a) Provided by the insurers

(b) We have adopted a development factor of 1 where we consider that the valuation by payment types include insufficient allowance for the large claims. Where the valuation by payment type has sufficient allowance, we have adopted a development factor of 0

(c) = (a) x (b)

C 4 Adopted estimates of outstanding claims

C 4.1 Gross central estimates from models in 30 June 2019 values, excluding allowance for Act changes

Estimates of outstanding claims at 30 June 2019 (\$000s) (a) (b)										
Accident year	By payment type method						Sum of individual payment methods (c)	All payments		Total (e)
	Weekly Benefits	Medical And Hospital	Allied Health, Vocational Rehabilitation, Non-Compensation Payments (Other), Death	Other Goods And Services	Legals	Redemptions And Non-Economic Lump Sum		Combined PCE method (d)	Allowance for active large claims	
2019	37,647	9,656	12,307	3,586	5,639	36,803	105,637	77,189	0	105,637
2018	21,297	5,476	7,521	2,553	5,419	38,295	80,561	72,456	0	80,561
2017	8,794	1,878	2,403	1,210	2,959	24,185	41,428	27,324	0	41,428
2016	6,191	1,423	1,606	924	2,159	17,315	29,617	18,177	5,856	35,473
2015	4,850	1,165	1,255	722	1,472	13,606	23,068	18,026	5,727	28,795
2014	3,556	775	857	557	906	9,531	16,181	5,174	0	10,677
2013	3,909	767	857	623	839	9,211	16,206	6,748	0	11,477
2012	2,576	487	539	400	405	5,920	10,328	5,534	0	7,931
2011	1,813	302	368	262	283	4,115	7,143	2,683	0	4,913
2010 & earlier	12,136	2,140	2,333	1,574	1,820	26,495	46,500	37,476	22,137	64,124
Total	102,768	24,068	30,046	12,410	21,900	185,476	376,669	270,784	33,720	391,017

- Notes:**
- (a) From models described in appendix C3, excluding allowance for the 2015 legislative amendments
 - (b) In 30 June 2019 values and includes superimposed inflation
 - (c) sum of all estimates from the individual by payment type method
 - (d) result from the combined PCE method described in appendix C3.8
 - (e) weighted average of (c) and (d) plus the allowance for active large claims. The weights for 2014 and earlier years are 50% x (c) + 50% x (d) while, the weights for 2015 and onwards are 100% x (c).

C 4.2 Gross central estimates from models in 30 June 2019 values, including allowance for Act changes

Estimates of outstanding claims at 30 June 2019 (\$000s) (a) (b)										
Accident year	By payment type method						Sum of individual payment methods (c)	All payments		Total (e)
	Weekly Benefits	Medical And Hospital	Allied Health, Vocational Rehabilitation, Non-Compensation Payments (Other), Death	Other Goods And Services	Legals	Redemptions And Non-Economic Lump Sum		Combined PCE method (d)	Allowance for active large claims	
2019	35,040	9,143	12,417	3,229	5,639	36,803	102,271	74,707	0	102,271
2018	18,541	4,851	7,650	2,068	5,419	38,295	76,823	67,372	0	76,823
2017	6,543	1,399	2,493	831	2,959	24,185	38,409	21,036	0	38,409
2016	4,107	933	1,690	520	2,159	17,315	26,724	9,430	5,856	32,580
2015	4,850	1,165	1,255	722	1,472	13,606	23,068	18,026	5,727	28,795
2014	3,556	775	857	557	906	9,531	16,181	5,174	0	10,677
2013	3,909	767	857	623	839	9,211	16,206	6,748	0	11,477
2012	2,576	487	539	400	405	5,920	10,328	5,534	0	7,931
2011	1,813	302	368	262	283	4,115	7,143	2,683	0	4,913
2010 & earlier	12,136	2,140	2,333	1,574	1,820	26,495	46,500	37,476	22,137	64,124
Total	93,070	21,962	30,459	10,786	21,900	185,476	363,653	248,185	33,720	378,001

- Notes:**
- (a) From models described in appendix C3, including allowance for the 2015 legislative amendments
 - (b) In 30 June 2019 values and includes superimposed inflation
 - (c) sum of all estimates from the individual by payment type method
 - (d) result from the combined PCE method described in appendix C3.8
 - (e) weighted average of (c) and (d) plus the allowance for active large claims. The weights for 2014 and earlier years are 50% x (c) + 50% x (d) while, the weights for 2015 and onwards are 100% x (c).

C 4.3 Average claim size

Average claim size at 30 June 2019 (\$) (a)										
Accident year	By payment type method						Sum of individual payment methods (b)	All payments		Adopted (d)
	Weekly Benefits	Medical And Hospital	Allied Health, Vocational Rehabilitation, Non-Compensation Payments (Other), Death	Other Goods And Services	Legals	Redemptions And Non-Economic Lump Sum		Combined PCE method (c)	Allowance for active large claims	
2019	20,196	7,286	7,717	2,277	2,810	16,769	57,055	45,847		57,055
2018	19,753	8,216	8,379	2,861	3,240	19,129	61,577	59,772		61,577
2017	16,101	6,287	5,792	2,237	2,425	15,243	48,085	43,510		48,085
2016	14,241	6,134	5,197	2,269	2,380	14,568	44,789	41,421		47,096
2015	13,857	6,334	4,710	2,316	2,319	15,541	45,077	43,175		47,237
2014	13,466	5,219	4,779	1,986	2,182	13,094	40,725	36,723		38,724
2013	14,529	4,928	4,350	1,905	1,994	14,550	42,256	38,853		40,555
2012	12,461	4,714	4,072	1,956	1,690	11,575	36,466	34,641		35,554
2011	11,650	5,138	3,433	2,158	1,696	11,682	35,758	34,085		34,921

- Note:**
- (a) In 30 June 2019 values, from results in appendix C4.2, includes superimposed inflation and 2015 legislation amendments
 - (b) In 30 June 2019 values, from the results based on individual payment type methods
 - (c) In 30 June 2019 values, based on the combined (all payment types) PCE method
 - (d) Adopted average claim size is based on (e) in table C4.2 divided by (c) in C3.1 number of claims incurred.

C 4.4 Relationship to case estimates

Ratio of outstanding to case estimates at 30 June 2019 (%) (a)										
Accident year	By payment type method						Sum of individual payment methods (b)	All payments		Adopted (d)
	Weekly Benefits	Medical And Hospital	Allied Health, Vocational Rehabilitation, Non-Compensation Payments (Other), Death	Other Goods And Services	Legals	Redemptions And Non-Economic Lump Sum		Combined PCE method (c)	Allowance for active large claims	
2019	79%	21%	28%	7%	13%	83%	230%	168%	0%	230%
2018	40%	10%	16%	4%	12%	82%	165%	145%	0%	165%
2017	36%	8%	14%	5%	16%	132%	210%	115%	0%	210%
2016	32%	7%	13%	4%	17%	133%	205%	72%	45%	250%
2015	35%	8%	9%	5%	11%	98%	166%	130%	41%	207%
2014	91%	20%	22%	14%	23%	245%	416%	133%	0%	275%
2013	77%	15%	17%	12%	16%	181%	318%	132%	0%	225%
2012	53%	10%	11%	8%	8%	121%	211%	113%	0%	162%
2011	73%	12%	15%	11%	11%	165%	287%	108%	0%	197%
2010 & earlier	34%	6%	6%	4%	5%	74%	129%	104%	62%	178%

- Note:**
- (a) In 30 June 2019 values, from results in appendix C4.2, includes superimposed inflation and 2015 legislation amendments
 - (b) In 30 June 2019 values, from the results based on individual payment type methods
 - (c) In 30 June 2019 values, based on the combined (all payment types) PCE method
 - (d) Adopted is based on (e) in table C4.2 divided by case estimates in 30 June 2019 values

C 4.5 Summary of gross adopted estimates in 30 June 2019 values

Accident year	Estimate of outstanding claims (a) \$000s	Estimate of outstanding claims (b) \$000s	Average claim size (b): \$	Ratio of outstanding to base estimates (b)
2019	105,637	102,271	57,055	230%
2018	80,561	76,823	61,577	165%
2017	41,428	38,409	48,085	210%
2016	35,473	32,580	47,096	250%
2015	28,795	28,795	47,237	207%
2014	10,677	10,677	38,724	275%
2013	11,477	11,477	40,555	225%
2012	7,931	7,931	35,554	162%
2011	4,913	4,913	34,921	197%
2010 & earlier	64,124	64,124		178%
Total	391,017	378,001		200%

Notes: (a) In 30 June 2019 values, including superimposed inflation but excluding the 2015 legislative amendments
 (b) Including the 2015 legislative amendments

C 4.6 Gross adopted estimates excluding expenses

Gross estimates at 30 June 2019 excluding expenses (\$000s)			
Accident year ending 30 June	30 June 2019 values	Inflated values	Infl/disc values
2019	102,271	108,602	104,568
2018	76,823	82,012	78,658
2017	38,409	41,633	39,512
2016	32,580	35,656	33,672
2015	28,795	31,764	29,840
2014	10,677	11,751	11,045
2013	11,477	12,710	11,906
2012	7,931	8,797	8,238
2011	4,913	5,464	5,108
2010 & earlier	64,124	69,712	66,313
Total	378,001	408,100	388,859

Note: Includes superimposed inflation and 2015 legislative amendments

C 4.7 Net outstanding claims provision

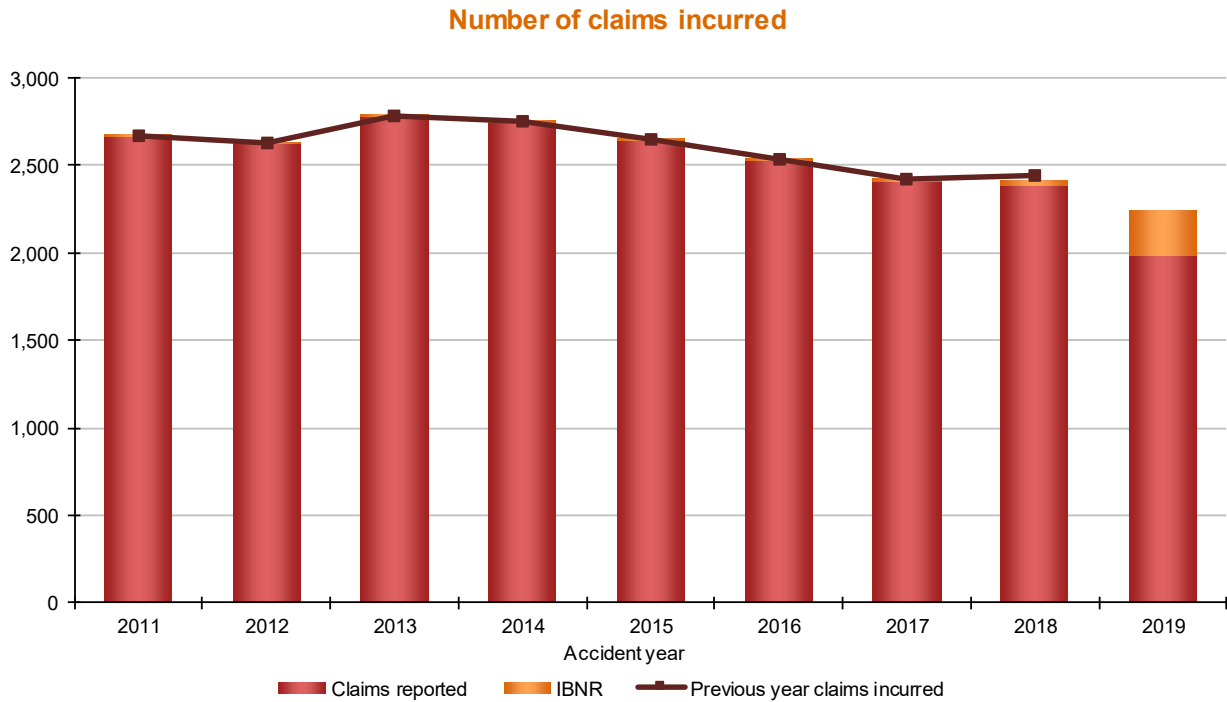
Estimates at 30 June 2019 (\$000s)							
	Gross o/s liability (a)	Reinsurance recoveries (b)	Net o/s liability (c)	Claims handling expenses (d)	Net central estimate (e)	Risk margin (f)	Net Provision (g)
Total	388,859	22,710	366,149	21,969	388,118	46,852	434,970

Notes: (a) from table above
 (b) based on the reinsurance information provided by insurers on large claims
 (c) = (a) – (b)
 (d) = (c) x 6%
 (e) = (c) + (d)
 (f) = (e) x 12.07%
 (g) = (e) + (f)

Appendix D Insurer claims statistics

D 1 Number of claims incurred

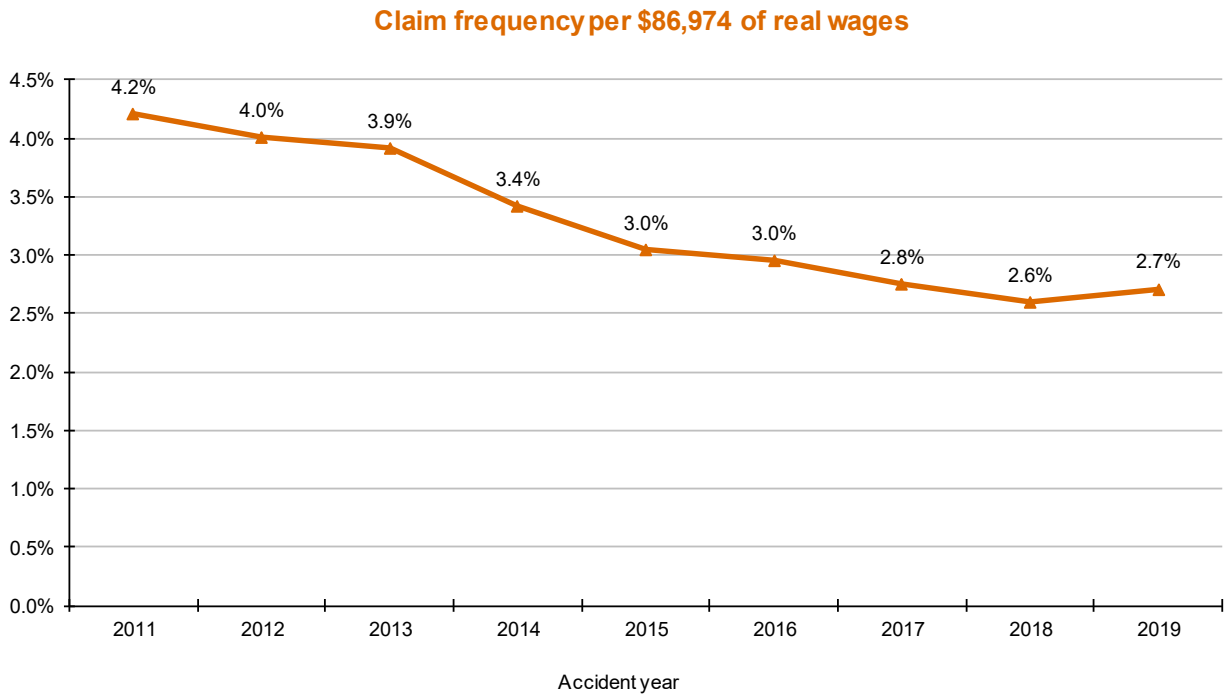
Decreasing trend from 2013 peak to 2019



The main points to highlight from this chart are:

- For the 2011 and 2012 accident years, the number of claims incurred was between 2,600 and 2,700
- There was a spike in the number of claims incurred for the 2013 accident year to just under 2,800
- From the 2013 to 2017 accident years, there has been a decreasing trend in the number of claims incurred, however 2017 and 2018 are very similar
- For 2019, the number of incurred claims is estimated to be lower than all prior years at 2,238 claims
- The number of claims are similar to estimated at the previous valuation.

Declining claim frequency due to significant increases in wages up to 2015 and more recently reducing number of claims incurred. 2019 is higher than 2018 as the wages decreased by more than the number of claims



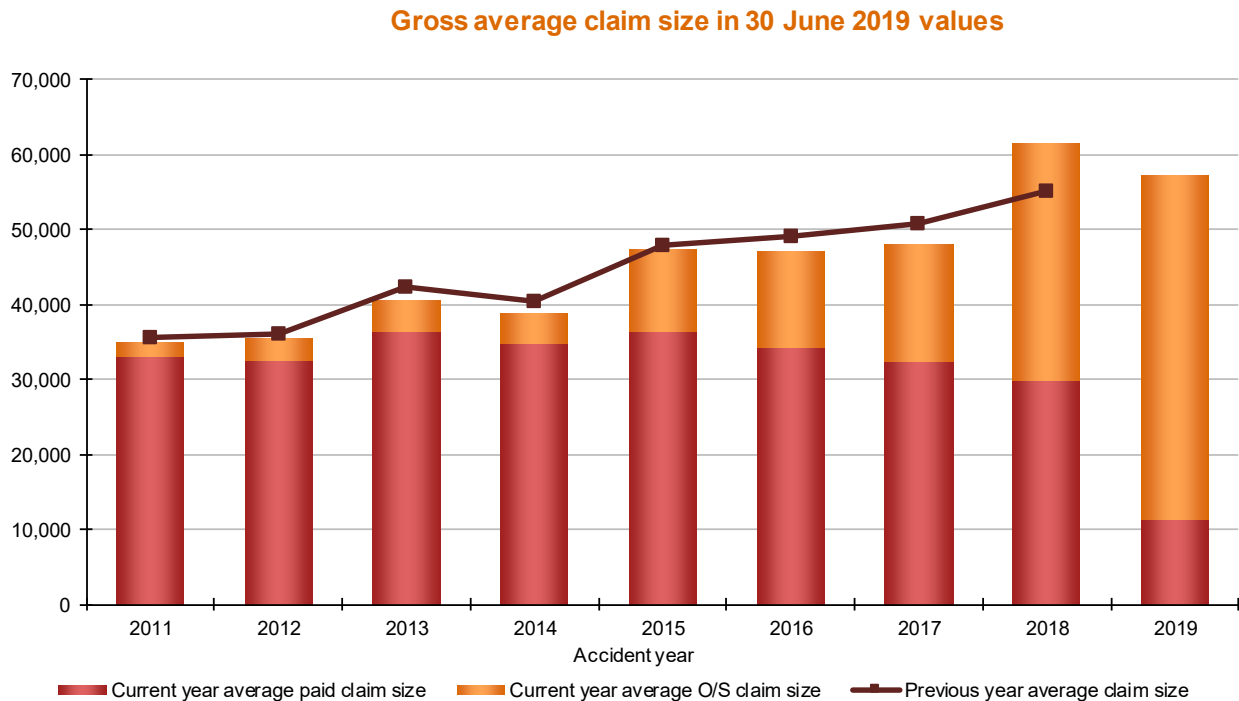
The claim frequency is calculated as:

$$\frac{\text{the number of claims incurred}}{\text{estimated number of full time equivalent employees}}$$

To estimate the number of employees we have used the wages provided, inflated this to 2019 values and divided by \$86,974 (the full time average weekly earnings for the NT from the ABS catalogue 6302). We have not used the number of employees provided in the ANZSIC data, as these are not full time equivalent.

D 2 Gross average claim size

2019 is estimated to be higher than all prior years except for 2018



Since 2011 the gross average claim size (in 2019 values):

- Exhibited volatility due in part to large claims
- Exhibited an increasing trend from around \$34,900 in 2011 to around \$48,000 in 2017
- Increased significantly to \$61,600 in 2018 due to high payments and case estimates to 30 June 2018
- Dropped to around \$57,000 in 2019 given lower total estimates report in the first development year than 2018 at the same point in time.

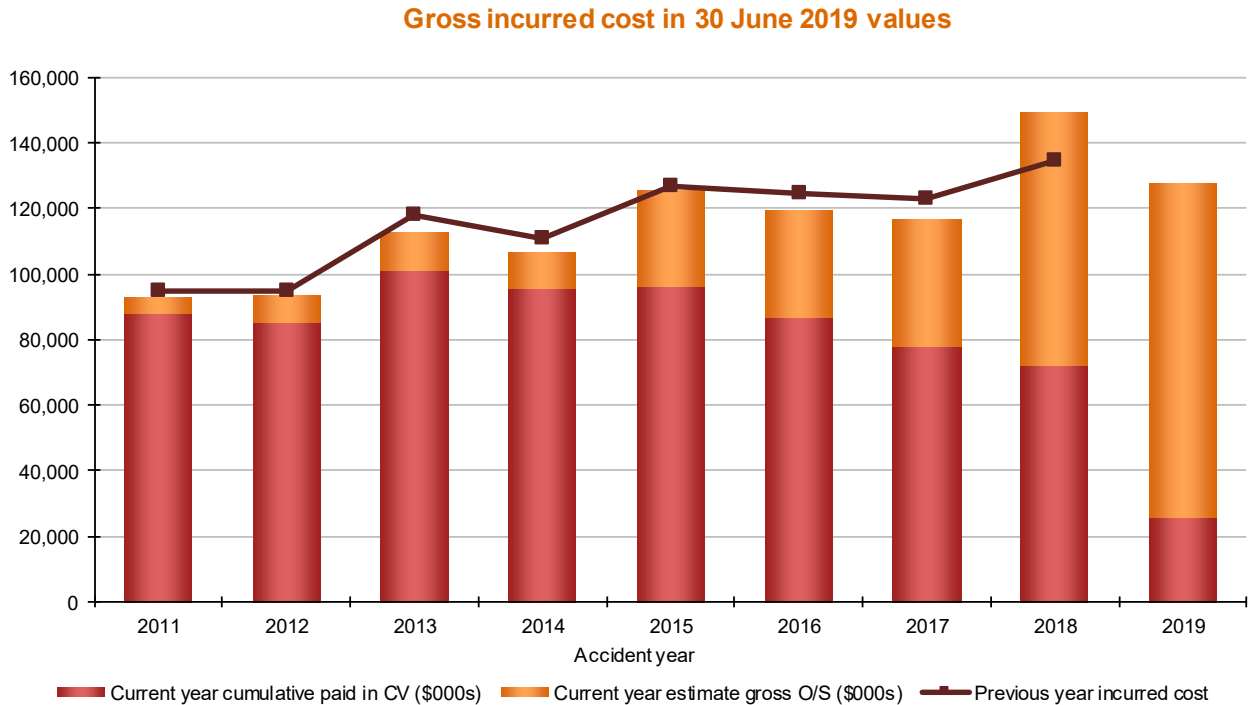
The uncertainty about the future development means that the ultimate level and our estimates may differ from those projected for recent accident years. This is especially true for the 2019 accident year, where a high proportion (80%) of the average claim size relates to uncertain future claims development.

Compared to the previous valuation, the gross average claim size is similar or lower for most years except for 2018, where estimates increased. This reflects changes in total estimates over the year.

Appendix E contains the average claim size split by payment type. The mix of payment types across the accident years has remained stable. Redemptions and non-economic lump sums are the largest payment type, closely followed by weekly benefits. These two payment types account for approximately two thirds of total incurred costs.

D 3 Gross incurred cost

2019 incurred cost is \$128.0 million, which is higher than all years since 2011 but, lower than the 2018 incurred cost



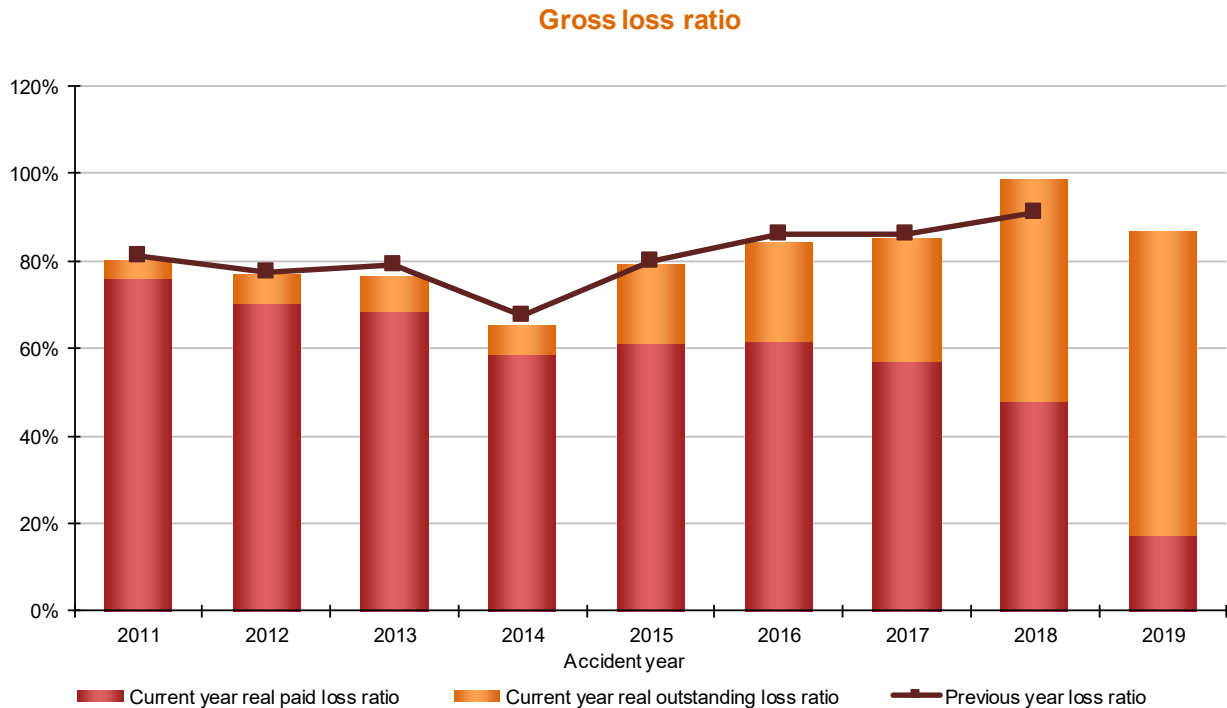
The gross incurred cost in 30 June 2019 values follows a similar pattern to the average claim size.

Over the period shown in the graph, the proportion outstanding increases from 5% of the total incurred cost in 2011 to 80% of the total incurred cost for 2019.

As for the average claim size graph, the changes since the previous valuation are mostly due to higher or lower claims payments and development than expected over the year.

D 4 Gross loss ratios

Loss ratio for 2019 estimated at 87%, which is higher than all years with the exception of 2018



The gross loss ratios are calculated for each accident year using the following formula:

$$\frac{\text{(Past claim payments to 30 June 2019+ estimated outstanding liability at 30 June 2019)}}{\text{Gross developed earned premium}}$$

The past claim payments, estimated outstanding liability and gross developed earned premium are all in 30 June 2019 values i.e. current values, and the estimated outstanding liability includes allowance for future superimposed inflation.

These ratios are not a proper measure of profitability, as they do not allow for investment returns or expenses. Nevertheless, as a crude measure, they do provide an indication of trends in the experience.

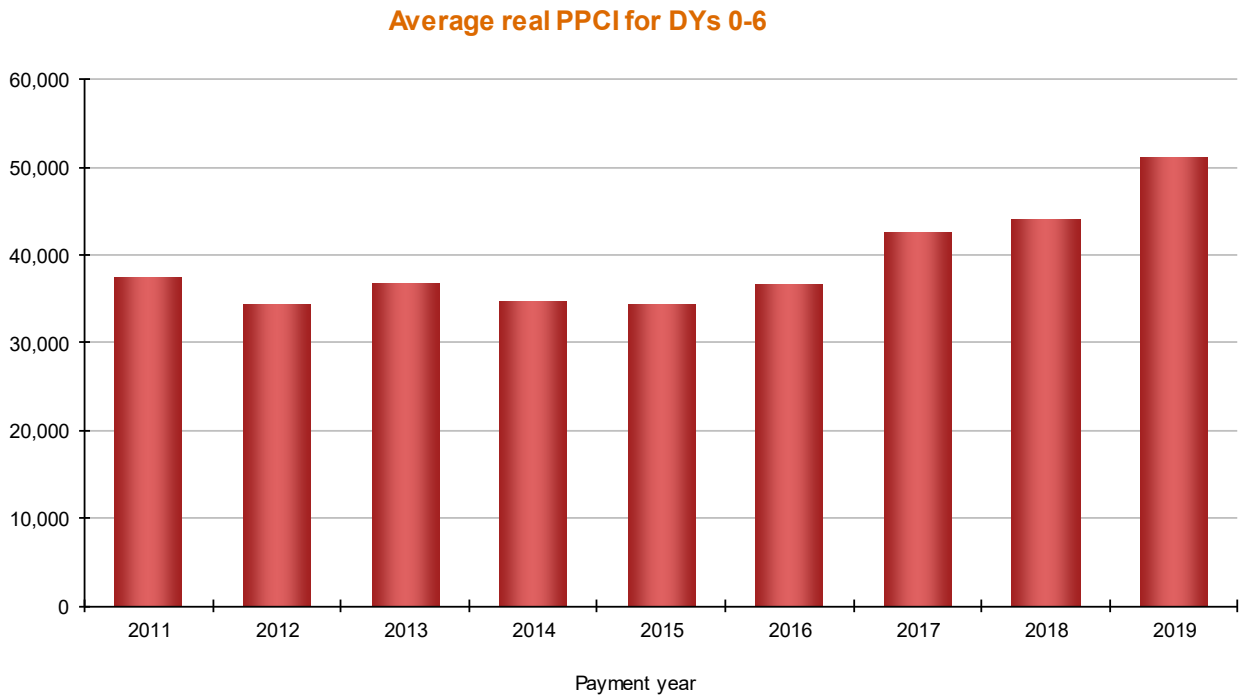
The chart shows:

- There was a decreasing trend in the loss ratio from 80% in 2011 to the low of 65% in 2014 due to premium and wages growth exceeding claims cost increases
- The loss ratio increased from 2014 to 80% in 2015 before stabilising over 2016 and 2017 at 85%
- The 2018 loss ratio of 99% is higher than all prior years, due to the high payments and case estimate as at 30 June 2019
- For 2019, loss ratio is 87%, lower than the 2018 year but higher than all other years.

D 5 Payment per claim incurred

By payment year

2019 payment year is significantly higher compared to all prior years



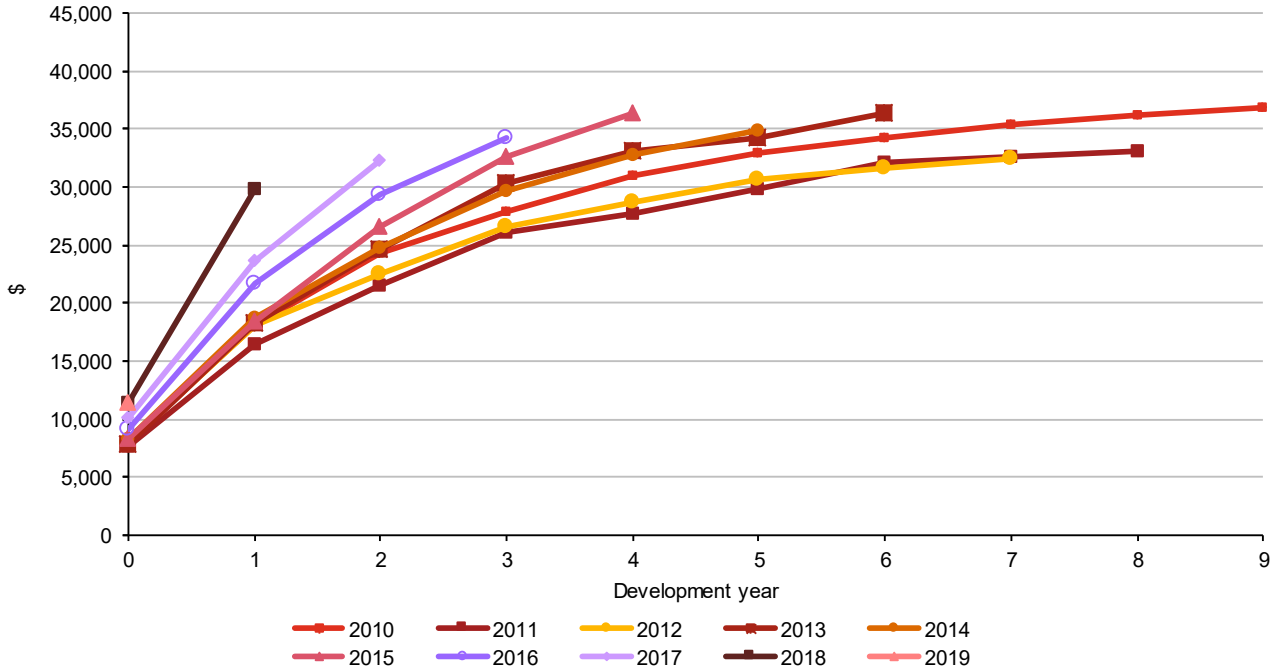
The average PPCI for DYs 0 to 6 was relatively stable between \$33,800 and \$36,500, up until 2016.

The average PPCI increased by 17% in 2017 due to higher payments for the three most recent accident years. The 2018 payment year is \$44,100, while 2019 payment year is \$51,000, (16.0%) higher than the 2018 payment year, due to payments for the three most recent accident years (particularly 2018).

By accident year

Increasing evidence of superimposed inflation from 2015 to 2019

PPCI Average Claim Size by Accident year



The chart above shows cumulative PPCI by accident year. This is calculated as:

$$\frac{\text{sum of claim payments by development year made to date (in 30 June 2019 values)}}{\text{number of claims incurred to date}}$$

As the values in the chart are all in current values, any differences are the result of a change in the real cost of each claim. This is also referred to as superimposed inflation. The chart is based entirely on actual experience, and there are no future projections included in this graph.

The experience by accident year has been variable, and there is increasing evidence of superimposed inflation over recent years from 2015.

Appendix E Insurer financial year claims experience

E 1 Aggregate claims experience during 2018/19

E 1.1 Summary of overall claim experience over 2018/19

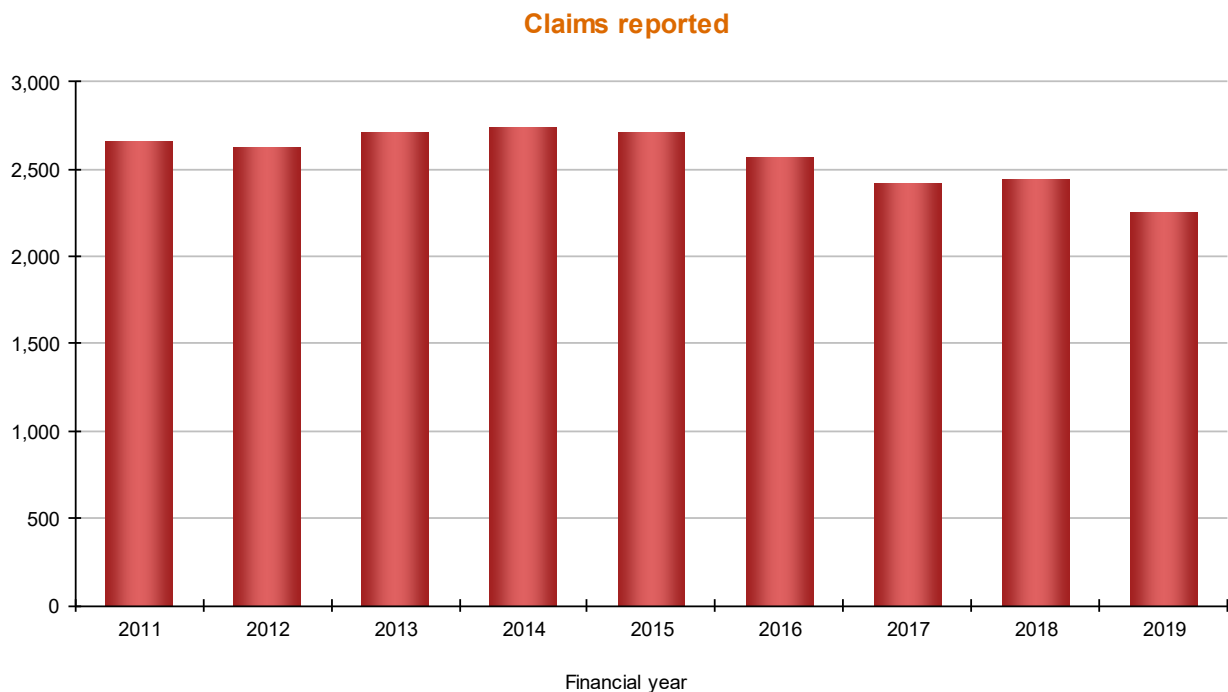
The overall claims experience over 2018/19 is generally better compared to 2017/18, however the experience is mixed by accident year.

- A decrease (7.4%) in the number of claims reported
- An increase (10.9%) in the amount of real claim payments
- A decrease (10.9%) in the number of active claims at the end of the year
- A faster finalisation rate (61.7% compared to 58.0%)
- A decrease (13.1%) in case estimates.

The experience for each of these items is described in more detail below.

E 1.2 Claim reports

Claim reports have decreased by 7.4% in 2019

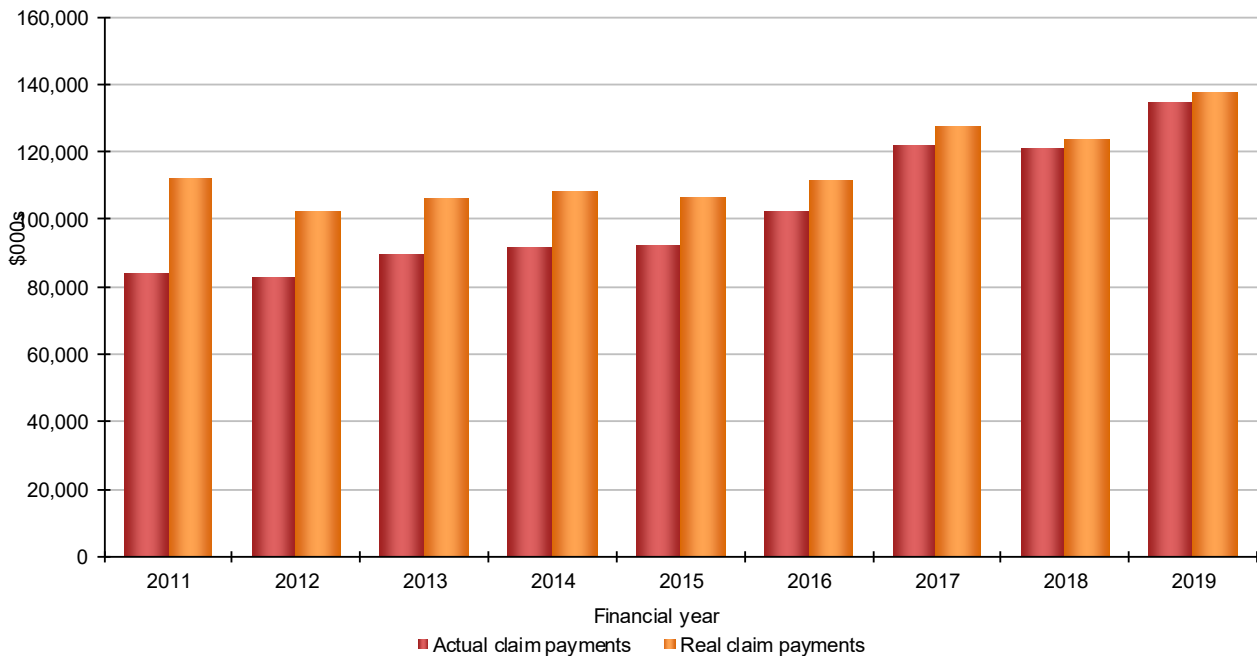


In 2019 there were 2,255 claims reported, which was 180 (7.4%) fewer than 2018.

E 1.3 Claim payments

Real payments in 2019 of \$137.4 million, \$13.5 million higher than 2018

Total payments made each financial year, actual and in 30 June 2019 values



The red bars of payments have been adjusted for wage inflation to allow for comparison between the financial years.

Claim payments in 30 June 2019 values have varied between \$102 million and \$137 million over the period shown.

Total actual payments in 2018/19 were \$134.9 million, which is \$14.2 million (11.8%) higher than actual payments 2017/18. In real values, this is an increase of \$13.5 million (10.9%).

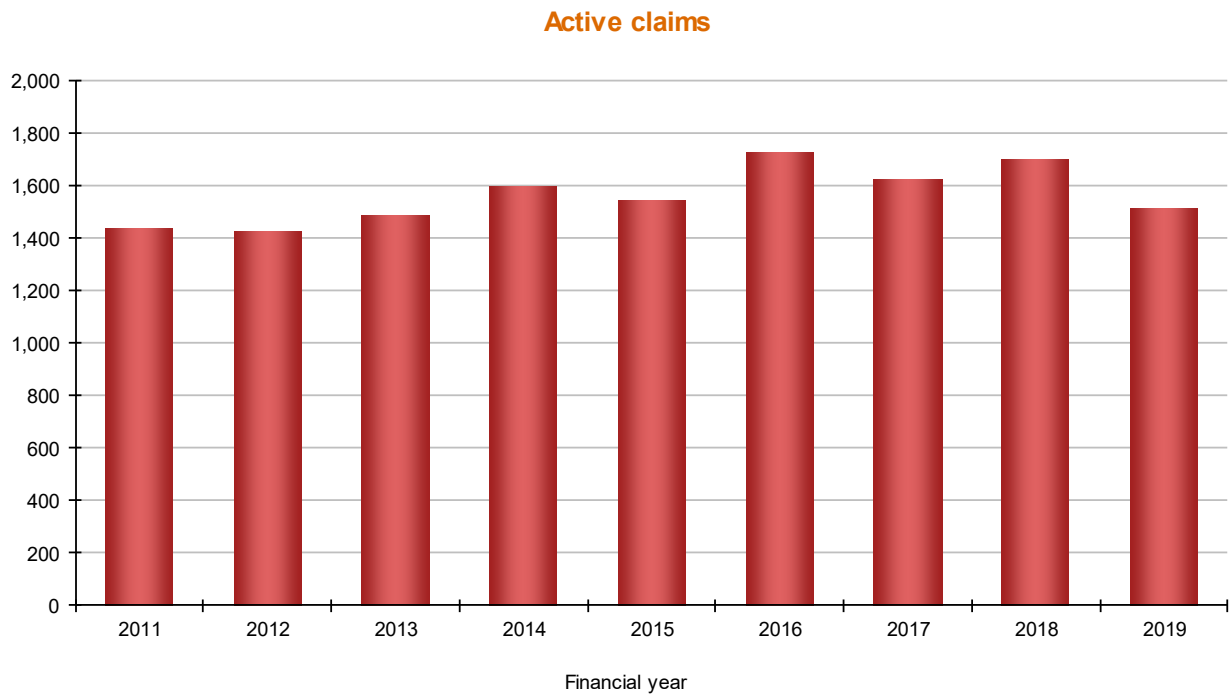
A breakdown of the change in actual payments by payment group is presented in the table below.

Payment group	Payments in 2018/19 (\$'000s)	Payments in 2017/18 (\$'000s)	Difference	Difference (%)
Weekly benefits	43,363	40,603	2,760	6.8%
Medical and hospital	16,938	16,541	396	2.4%
Allied health, vocational rehabilitation, non-compensation payments (other), death	17,179	14,263	2,916	20.4%
Other goods and services	6,140	6,342	-202	-3.2%
Legals	7,072	5,604	1,468	26.2%
Redemptions and non-economic lump sum	44,193	37,334	6,859	18.4%
Total	134,885	120,687	14,198	11.8%

Most payments groups had an increase with the 88% of the increase related to the three categories of: redemptions and non-economic lump sum, weekly benefits and allied health, vocational rehabilitation, non-compensation payments (other) and death.

E 1.4 Active claims

Active claim numbers decreased by 10.9% from 1,703 in 2018 to 1,517 in 2019

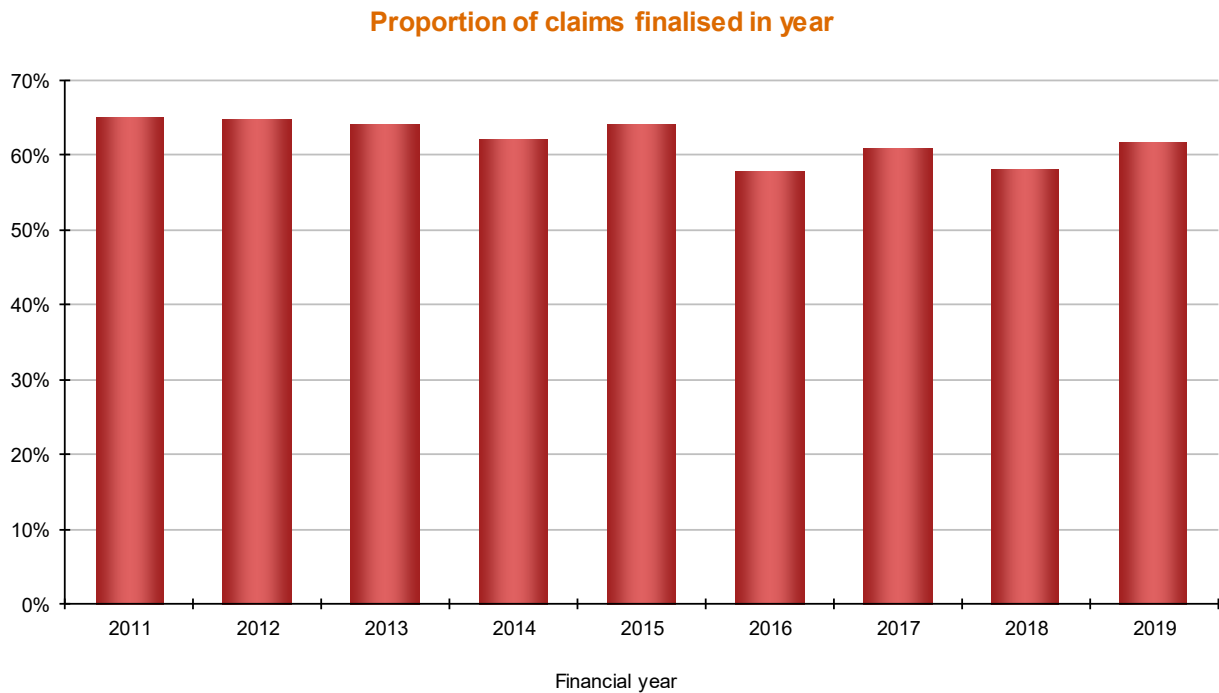


From 2011 to 2012, the number of active claims at the end of each financial year was stable at just over 1,400 active claims. From 2012 to 2016, there has been an increasing trend.

From 2018 to 2019, there has been a decrease from 1,703 to 1,517, a 10.9% decrease due to a faster finalisation in the financial year.

E 1.5 Proportion of claims finalised

2019 finalisation rate was 61.7%, which is higher than 58.0% in 2018 but in line with 2017



Probabilities of claim finalisation is defined as:

$$\frac{\text{Number of claims finalised in year}}{\text{(Number of outstanding at beginning of the year plus number reported during the year)}}$$

From 2011 to 2018, the finalisation rate has a decreasing trend. In 2019, the finalisation rate is 61.7%, which is higher than 2018 but line with 2017.

E 1.6 Claims incurred in 2018/19

There were 1,982 claims reported to 30 June 2019 for the 2018/19 accident year and the projected number of incurred claims is 2,238. This is 7.5% lower than the 2,420 projected incurred for the 2017/18 accident year.

The expected number of open claims for the 2018/19 accident year at 30 June 2019 is $1,982 \times (1 - 0.553) = 887$. The actual number of open claims for the 2018/19 accident year at 30 June 2019 is 821, which is 7.4% lower than expected.

The 30 June 2018 projection basis lead to an expected $\$11,124 \times (1.012 \times 1.027) = \$11,557$ to be paid on each of the 2018/19 accident year claims in the year of claim. The actual amount paid per claim was \$11,357 i.e. \$200 (1.7%) less in real values.

The 2018/19 accident year shows favourable experience compared to 2017/18 with lower claims incurred, fewer than expected open claims, payments per claim and case estimates. However, 2018/19 is higher than most other accident years.

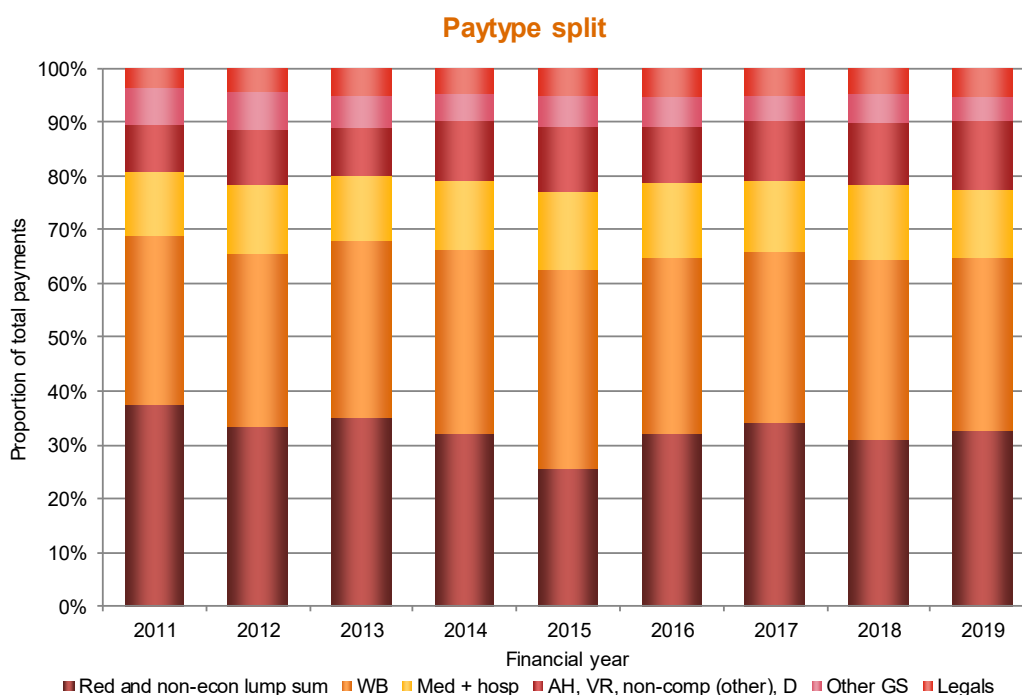
For details of the claims experience over 2018/19 for claims incurred up to 30 June 2018 see appendix C2.

E 2 Analysis by payment group

The purpose of this section is to investigate trends in the composition of incurred costs by benefit type. We use higher level groups to explore the relative movement of periodic and lump sum benefits. We have performed this analysis based on the claim payment data and our outstanding claims valuation results.

E 2.1 Distribution by financial year

The following chart shows how the actual payments made in a financial year are split between the payment groups over the past nine years.



Payment type split	2011	2012	2013	2014	2015	2016	2017	2018	2019
Legals	4%	4%	5%	5%	5%	5%	5%	5%	5%
Other GS	7%	7%	6%	5%	6%	5%	5%	5%	5%
AH, VR, non-comp (other), Death	9%	10%	9%	11%	12%	10%	11%	12%	13%
Med + hosp	12%	13%	12%	13%	15%	14%	13%	14%	13%
WB	31%	32%	33%	34%	37%	33%	32%	34%	32%
Red and non-econ lump sum	38%	33%	35%	32%	26%	32%	34%	31%	33%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Over the last nine years, the split of payments by type have been variable, but there has been no maintained increase or decrease in any group. The key trends have been:

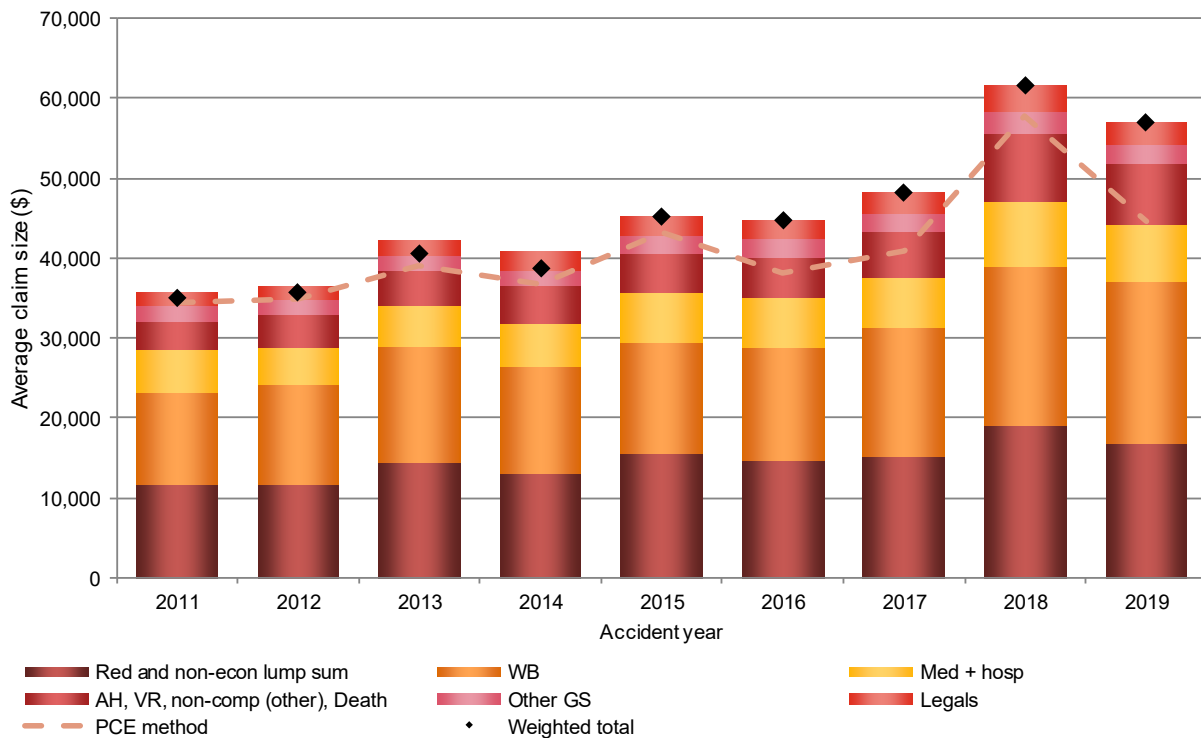
- Redemptions since 2012 has since ranged from 31% to 35%, except for the low in 2015 of 26%
- Any increases or decreases in redemptions payments have been matched by decreases or increases in weekly benefits payments, such that in total the proportion of total payments which are weekly benefits or redemptions has been relatively stable between 64% and 66%, except 2015 which is lower at 62% and 2011 at 69%
- The proportion of payments attributable to the other payment types has been stable over the last nine years.

This sort of analysis is important as it gives an indication of the cost drivers for the scheme and how these are changing, whether there is more use of periodic type payments, such as weekly benefits, or more lump sum payments, such as redemptions and non-economic lump sum. The dominance of one payment type over another will influence other cost drivers such as the total aggregate superimposed inflation.

E 2.2 Gross average claim size by payment group

Mix by payment type is relatively stable with weekly benefits and redemptions and non-economic lump sum combined accounting for around two thirds of the total

Average claim size in 30 June 2019 values by payment type



Average claim size (exclude explicit large claims) (\$)	2011	2012	2013	2014	2015	2016	2017	2018	2019
Legals	1,696	1,690	1,994	2,182	2,319	2,380	2,425	3,240	2,810
Other GS	2,158	1,956	1,905	1,986	2,316	2,269	2,237	2,861	2,277
AH, VR, non-comp (other), Death	3,433	4,072	4,350	4,779	4,710	5,197	5,792	8,379	7,717
Med + hosp	5,138	4,714	4,928	5,219	6,334	6,134	6,287	8,216	7,286
WB	11,650	12,461	14,529	13,466	13,857	14,241	16,101	19,753	20,196
Red and non-econ lump sum	11,682	11,575	14,550	13,094	15,541	14,568	15,243	19,129	16,769
Total	35,758	36,466	42,256	40,725	45,077	44,789	48,085	61,577	57,055
PCE method	34,349	34,792	38,956	36,841	43,192	38,069	40,970	57,643	44,661
Weighted total	35,053	35,629	40,606	38,783	45,077	44,789	48,085	61,577	57,055

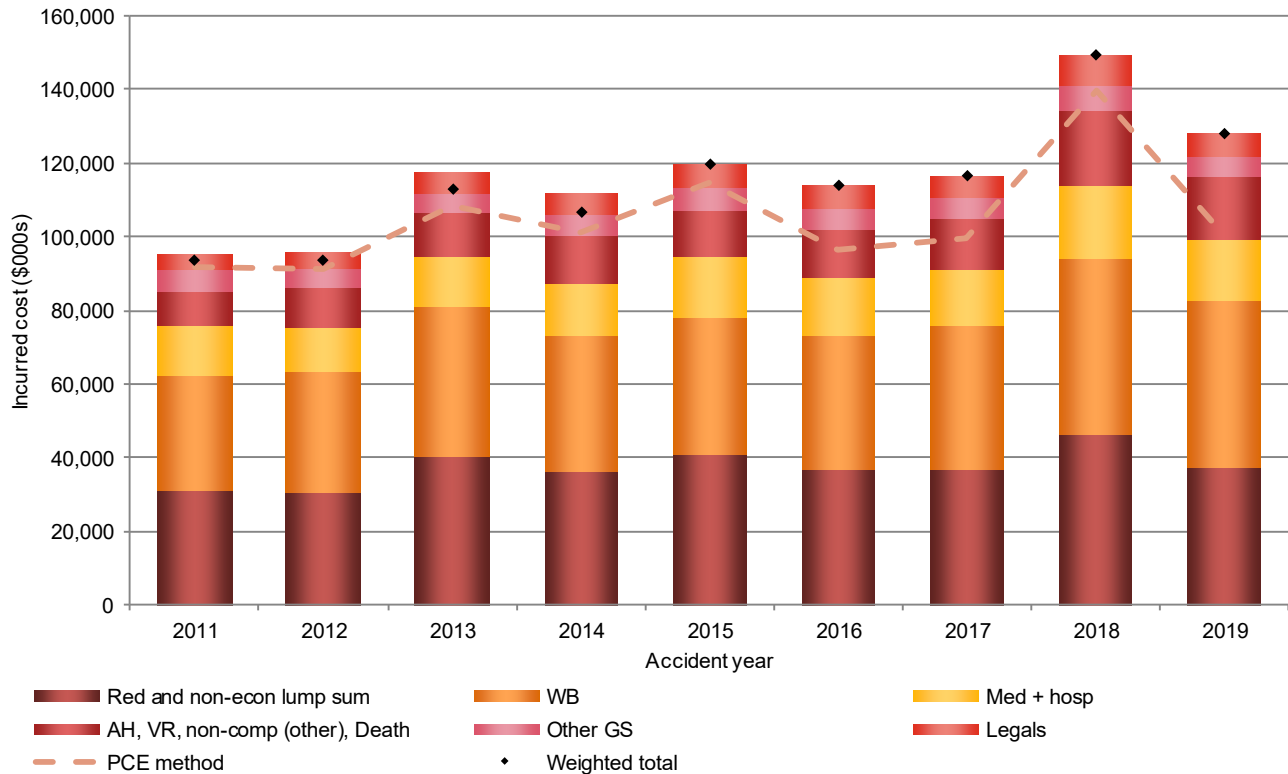
Note: weighted total is based on the weighted given to the sum of individual methods by payment type (Total) and the combine PCE method. For 2014 and prior years, the weights are 50% total of individual payment type methods and 50% PCE method, while for 2015 and onwards, we have adopted 100% total of individual payment type methods.

The mix of payment types across the accident years has remained stable. Redemptions and non-economic lump sums and weekly benefits are the two largest payment types. These two groups combined account for around two thirds of total payments.

E 2.3 Gross incurred cost by payment group

Stable distribution by payment type across accident years

Incurred cost in 30 June 2019 values by payment type



Incurred cost in current values (exclude explicit large claims) (\$'000s)									
	2011	2012	2013	2014	2015	2016	2017	2018	2019
Legals	4,523	4,439	5,541	6,000	6,148	6,040	5,877	7,839	6,290
Other GS	5,753	5,137	5,295	5,462	6,139	5,759	5,419	6,922	5,096
AH, VR, non-comp (other), Death	9,155	10,695	12,090	13,144	12,487	13,191	14,034	20,274	17,271
Med + hosp	13,699	12,383	13,695	14,353	16,791	15,569	15,233	19,878	16,305
WB	31,065	32,731	40,378	37,035	36,734	36,144	39,015	47,796	45,198
Red and non-econ lump sum	31,150	30,404	40,436	36,014	41,199	36,975	36,935	46,284	37,528
Total	95,345	95,790	117,435	112,008	119,499	113,677	116,514	148,992	127,688
PCE method	91,588	91,390	108,262	101,324	114,502	96,620	99,273	139,473	99,949
Weighted total	93,467	93,590	112,849	106,666	119,499	113,677	116,514	148,992	127,688

Percentage of incurred cost by paytype									
	2011	2012	2013	2014	2015	2016	2017	2018	2019
Legals	5%	5%	5%	5%	5%	5%	5%	5%	5%
Other GS	6%	5%	5%	5%	5%	5%	5%	5%	4%
AH, VR, non-comp (other), Death	10%	11%	10%	12%	10%	12%	12%	14%	14%
Med + hosp	14%	13%	12%	13%	14%	14%	13%	13%	13%
WB	33%	34%	34%	33%	31%	32%	33%	32%	35%
Red and non-econ lump sum	33%	32%	34%	32%	34%	33%	32%	31%	29%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

The table above shows that the proportion of the incurred cost attributable to each payment group has been variable between accident years, though with more stability between the accident years than the percentage by financial year in E2.1. Redemptions and non-economic lump sum payment group in particular is more stable as a percentage of the incurred cost.

Appendix F Self-insurer outstanding claims valuation

F 1 Data used in the valuation

F 1.1 Numbers of claims reported

Year to 30 June	NT WorkSafe self-insurers - Incremental Claims Reported												
	0	1	2	3	4	5	6	7	8	9	10	Total	
2011	180	10	0	1	0	0	0	0	0	0	0	0	191
2012	153	23	1	1	0	0	0	0	0	0	0	0	178
2013	121	22	2	1	0	0	0	0	0	0	0	0	146
2014	114	26	0	0	0	0	0	0	0	0	0	0	140
2015	114	12	1	0	0	0	0	0	0	0	0	0	127
2016	104	19	0	1	0	0	1	0	0	0	0	0	125
2017	76	17	0	0	0	0	1	0	0	0	0	0	94
2018	84	8	1	0	0	0	0	0	0	0	0	0	93
2019	68	10	1	0	0	0	0	0	0	0	0	0	79

Note: Data extracted from the WIMS system up to 30 June 2019

F 1.2 Cumulative claims reported

Year to 30 June	NT WorkSafe self-insurers - Cumulative Claims Reported											
	0	1	2	3	4	5	6	7	8	9	10	Total
2011	180	149	116	115	123	123	117	92	102	89	23	1,229
2012	153	203	150	117	115	123	123	117	92	102	112	1,407
2013	121	175	205	151	117	115	123	123	117	92	214	1,553
2014	114	147	175	205	151	117	115	123	123	117	306	1,693
2015	114	126	148	175	205	151	117	115	123	123	423	1,820
2016	104	133	126	149	175	205	152	117	115	123	546	1,945
2017	76	121	133	126	149	175	206	152	117	115	669	2,039
2018	84	84	122	133	126	149	175	206	152	117	784	2,132
2019	68	94	85	122	133	126	149	175	206	152	901	2,211

Note: Cumulative claim reports from table above

F 1.3 Active claims

Year to 30 June	NT WorkSafe self-insurers - Active Claims											
	0	1	2	3	4	5	6	7	8	9	10	Total
2016	43	15	3	0	1	2	0	0	0	0	0	64
2017	33	11	4	3	0	0	2	0	0	0	0	53
2018	29	12	10	1	1	0	2	0	0	0	0	55
2019	28	12	11	4	0	1	2	0	0	0	0	58

Note: From the self-insurers' Form B as at 30 June 2019

F 1.4 Claim payments

Year to 30 June	NT WorkSafe self-insurers - Incremental Actual Claim Payments (\$000s)											Total
	0	1	2	3	4	5	6	7	8	9	10	
2011	401	740	496	236	318	0	349	0	7	5	15	2,566
2012	646	754	80	189	205	0	0	0	0	82	0	1,955
2013	379	1,145	184	72	8	170	0	16	0	0	195	2,169
2014	334	1,029	565	99	0	61	24	0	2	0	0	2,115
2015	425	430	622	574	86	0	5	189	0	12	0	2,343
2016	706	464	178	728	233	3	2	5	0	0	0	2,320
2017	555	544	474	77	0	0	4	3	4	0	0	1,662
2018	573	724	323	300	178	0	0	2	11	6	0	2,117
2019	637	914	582	210	1	3	1	0	10	5	2	2,365

Note: Data extracted from the WIMS system up to 30 June 2019

F 1.5 Case estimates

Year to 30 June	NT WorkSafe self-insurers - Case Estimates Outstanding (\$000s)											Total
	0	1	2	3	4	5	6	7	8	9	10	
2013	333	406	373	4	40	199	14	0	0	0	0	1,369
2014	349	525	461	45	4	20	192	0	0	0	0	1,596
2015	340	216	482	239	50	4	58	0	0	0	0	1,389
2016	565	274	79	3	15	40	33	0	0	0	0	1,009
2017	540	319	143	85	6	0	14	0	0	0	0	1,108
2018	999	694	293	22	40	0	21	0	0	0	0	2,070
2019	512	766	636	139	9	5	47	0	0	0	0	2,114

Note: From the self-insurers' Form B as at 30 June 2019 and prior years

F 2 Actual and projected claims experience during 2018/19

F 2.1 Numbers of claims reported

Accident year ended 30 June	Number of claims reported during 2018/19		Actual / projected %
	Actual	Projected (a)	
2011	0	0	0.0%
2012	0	0	0.0%
2013	0	0	0.0%
2014	0	0	0.0%
2015	0	0	0.0%
2016	0	0	0.0%
2017	1	0	4387.5%
2018	10	13	79.5%
Total	11.0	12.6	87.3%

Note: (a) From previous scheme report dated 28 February 2019

F 2.2 Claim payments

Accident year ended 30 June	Actual payments (\$000s)	Expected Payments (\$000s) (a)	Actual / expected %
2011	10	4	270.0%
2012	0	10	0.0%
2013	1	4	18.1%
2014	3	22	15.2%
2015	1	49	1.1%
2016	210	307	68.6%
2017	582	451	129.2%
2018	914	663	137.7%
Total	1,721	1,509	114.0%

Note: (a) From previous scheme report dated 28 February 2019

F 3 Analysis and projection models

F 3.1 Payment per claim incurred model

Claim notification pattern

Financial year ending 30 June	Chain ladder ratio (a) for development year:										
	1	2	3	4	5	6	7	8	9	10 onwards	
2011	1.07	1.00	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2012	1.13	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2013	1.14	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2014	1.21	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2015	1.11	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2016	1.17	1.00	1.01	1.00	1.00	1.01	1.00	1.00	1.00	1.00	1.00
2017	1.16	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2018	1.11	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2019	1.12	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adopted (b)	1.13	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Notes: (a) Using cumulative claim report numbers from data

(b) Adopted for 30 June 2019 valuation

Numbers of claims incurred

Accident year ending 30 June	Number of claims		
	Reported to 30 Jun 2019 (a)	IBNR at 30 Jun 2019 (b)	Incurred (c)
2011	206	0	206
2012	175	0	175
2013	149	0	149
2014	126	0	126
2015	133	0	133
2016	122	0	122
2017	85	0	85
2018	94	1	95
2019	68	10	78

Notes: (a) from number reported in appendix F1.1

(b) from pattern in chain ladder ratio table above

(c) = (a) + (b)

Average real payment per claim incurred

Financial year ending 30 June	Average Real Payment Per Claim Incurred (a) for development year:											Total
	0	1	2	3	4	5	6	7	8	9	10 onwards	
2011	2,596	6,494	5,654	2,742	3,445	0	3,976	0	87	72	842	25,909
2012	4,540	4,498	648	1,988	2,192	0	0	0	0	985	0	14,851
2013	3,015	7,768	1,059	561	77	1,758	0	159	0	0	2,274	16,672
2014	3,119	8,146	3,808	570	0	618	247	0	22	0	0	16,529
2015	3,674	3,919	4,811	3,777	479	0	51	1,889	0	116	0	18,717
2016	6,300	3,792	1,538	5,331	1,454	17	13	44	0	0	0	18,490
2017	6,799	4,653	3,720	636	0	0	21	17	37	0	0	15,884
2018	6,191	8,712	2,712	2,306	1,444	0	0	12	74	51	0	21,501
2019	8,350	9,803	6,953	1,752	4	27	5	0	51	35	14	26,993
Adopted (b)	7,163	9,287	4,455	2,914	679	239	190	106	107	84	0	25,223

Notes: (a) In 30 June 2019 values

(b) Adopted for 30 June 2019 valuation

F 3.2 Projected case estimates model

Case estimate development

Financial year ending 30 June	Case Estimate Development (a) for development year:									
	1	2	3	4	5	6	7	8	9	10 onwards
2011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2014	4.721	2.559	0.391	1.016	2.054	1.102	0.000	0.000	0.000	0.000
2015	1.772	2.009	1.692	2.884	0.936	2.968	0.952	0.000	0.000	0.000
2016	2.109	1.160	1.486	1.018	0.830	8.381	0.079	0.000	0.000	0.000
2017	1.494	2.205	2.003	1.954	0.000	0.443	0.075	0.000	0.000	0.000
2018	2.575	1.893	2.211	2.516	0.000	0.000	0.168	0.000	0.000	0.000
2019	1.666	1.736	1.181	0.426	0.205	0.000	0.000	0.000	0.000	0.000
Adopted (b)	1.666	1.736	1.181	1.196	1.074	1.000	1.000	1.000	1.000	1.000

Notes: (a) defined as: (CE at end of year + payments in the year) / CE at beginning of year adjusted for normal inflation

(b) In 30 June 2019 values, adopted for 30 June 2019 valuation

Payment factors for case estimates outstanding

Financial year ending 30 June	Payments to case estimates (a) for development year:									
	1	2	3	4	5	6	7	8	9	10 onwards
2011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2014	3.118	1.404	0.269	0.000	1.546	0.122	0.000	0.000	0.000	0.000
2015	1.193	1.149	1.207	1.843	0.000	0.252	0.952	0.000	0.000	0.000
2016	1.336	0.808	1.480	0.957	0.062	0.461	0.079	0.000	0.000	0.000
2017	0.942	1.695	0.952	0.000	0.000	0.101	0.075	0.000	0.000	0.000
2018	1.319	0.995	2.061	2.056	0.000	0.000	0.168	0.000	0.000	0.000
2019	0.914	0.838	0.716	0.024	0.082	0.000	0.000	0.000	0.000	0.000
Adopted (b)	0.914	0.838	0.716	0.525	0.404	0.547	0.375	0.271	0.195	0.216

Notes: (a) defined as: Payments made in the year / case estimates at beginning of the year

(b) In 30 June 2019 values, adopted for 30 June 2019 valuation

F 4 Adopted estimates of outstanding claims

F 4.1 Gross central estimates from models in current values

Accident year ending 30 June	Estimates of Outstanding Claims (\$000s) at 30 June 2019 (a)(b)	
	PPCI	PCE
2011 & earlier	18	0
2012	34	0
2013	46	47
2014	64	5
2015	102	10
2016	181	211
2017	382	1,080
2018	866	2,767
2019	1,463	3,090
Total	3,156	7,211

Notes: (a) From models described in appendix F3

(b) In 30 June 2019 values and includes superimposed inflation and excluding 2015 legislative changes

F 4.2 Average claim size

Accident year ending 30 June	Average Claim Size (\$000s) at 30 June 2019 (a)(b)	
	PPCI	PCE
2011	9	9
2012	22	21
2013	22	22
2014	11	11
2015	14	14
2016	17	17
2017	27	35
2018	25	45
2019	27	48

Note: (a) In 30 June 2019 values, from results in appendix F4.1, includes superimposed inflation and excluding 2015 legislative changes

F 4.3 Adopted estimates in 30 June 2019 values

Accident year ending 30 June	Estimate of o/s claims (\$000s)(a)(b)	Estimate of o/s claims (\$000s)(b)(c)	Average claim size (\$000s)(b)(c)	Ratio to case estimates (b)(c)
2011 & earlier	2	2		0%
2012	3	3	21	0%
2013	47	47	22	100%
2014	11	11	11	219%
2015	20	20	14	217%
2016	208	158	17	114%
2017	1,010	939	33	148%
2018	1,246	1,179	28	154%
2019	1,625	1,570	29	307%
Total	4,173	3,930		186%

Notes: (a) in 30 June 2019 values, including superimposed inflation and excluding 2015 legislative changes

(b) in 30 June 2019 values, including superimposed inflation and including 2015 legislative changes

(c) The adopted model is a composite weighted average of the statistical models. The weights attached to the models reflect the extent to which they are considered to appropriately project the experience of each accident year. We have used the PPCI method, except where the result is less than the case estimates.

Self-insurer outstanding claims valuation

Accident year ending 30 June	Weights Adopted For Estimates (a)(b) Method		
	PPCI	PCE	Total
2011 & earlier	0.10	0.90	1.00
2012	0.10	0.90	1.00
2013	0.10	0.90	1.00
2014	0.10	0.90	1.00
2015	0.10	0.90	1.00
2016	0.10	0.90	1.00
2017	0.10	0.90	1.00
2018	0.80	0.20	1.00
2019	0.90	0.10	1.00

F 4.4 Gross adopted estimates including expenses

NT WorkSafe self-insurers Estimates (\$000s) at 30 June 2019					
Accident year ending 30 June	30 June 2019 values (a)	Inflated values (b)	Inflated & discntd values (b)	Case estimates (c)	Ratio % (d)
2011 & earlier	2	2	2	0	-
2012	3	4	4	0	-
2013	47	53	52	47	100%
2014	11	12	12	5	219%
2015	20	22	21	9	217%
2016	158	176	172	139	114%
2017	939	1,047	1,024	636	148%
2018	1,179	1,308	1,284	766	154%
2019	1,570	1,737	1,708	512	307%
Total	3,930	4,361	4,278	2,114	186%

- Note:**
- (a) In 30 June 2019 values, includes superimposed inflation
 - (b) includes 7% claims handling expenses, inflation and discounting assumptions in Appendix B 1
 - (c) as at 30 June 2019 as provided by the self-insurers
 - (d) = (a) / (c)

F 4.5 Net outstanding claims provision

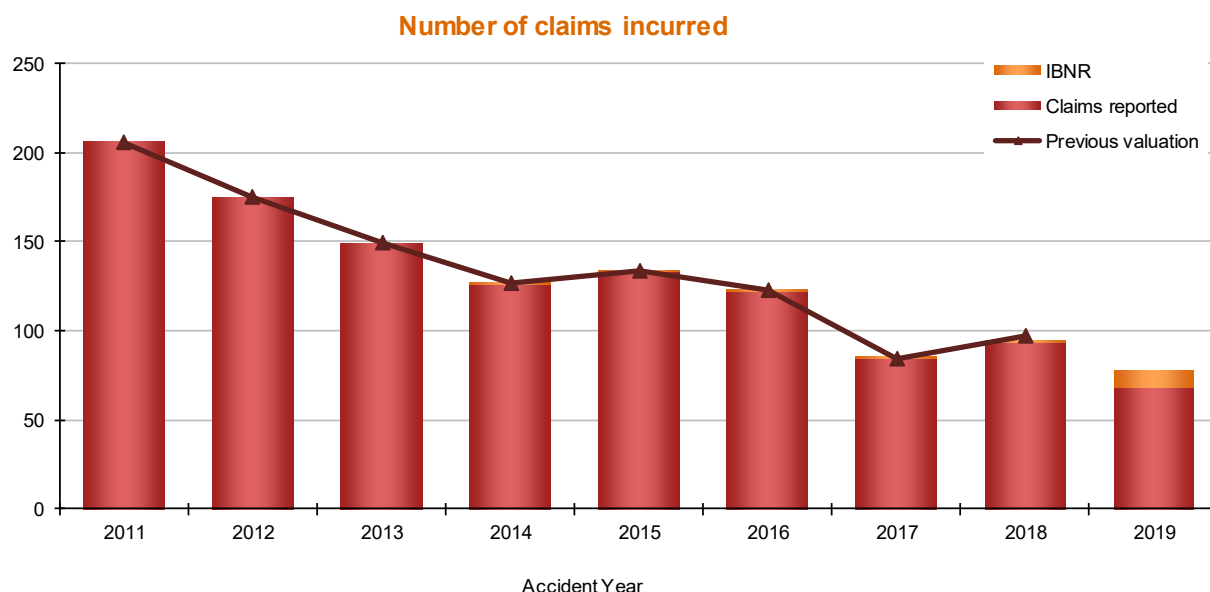
Estimates at 30 June 2019 (\$000s)							
Accident year ending 30 Jun	Gross o/s liability (a)	Reinsurance recoveries (b)	Net o/s liability (c)	Claims handling expenses (d)	Net central estimate (e)	Risk margin (f)	Net Provision (g)
Total	3,999	0	3,999	280	4,278	1,070	5,348

- Notes:**
- (a) from table above
 - (b) there are no expected reinsurance recoveries in the self-insurers actuary's valuations
 - (c) = (a) – (b)
 - (d) = (c) x 7%
 - (e) = (c) + (d)
 - (f) = (e) x 25.0%
 - (g) = (e) + (f)

Appendix G Self-insurer claims statistics

G 1 Number of claims incurred

General decreasing trend from 2011 peak to 2019 at 78 claims

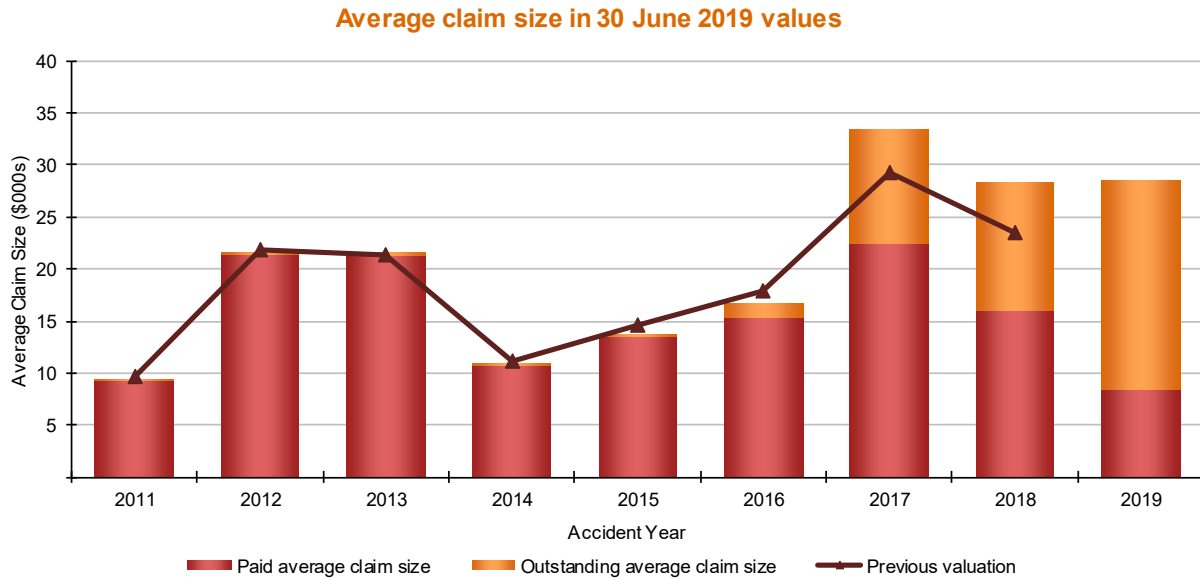


The main points to highlight from this chart are:

- Since the high in 2011, the number of claims has reduced each year to a level of 126 claims in 2014. From a review of the self-insurer reports, we understand that one self-insurer has changed its management and recording of small claims, which has contributed to the decrease
- The number of claims was fairly stable over 2014 to 2016 at around 130 claims
- For 2017, the total estimated claims is 85, significantly lower than all prior years shown
- The number of claims incurred increased to 95 for the 2018 year, higher than 2017 but lower than all prior years
- For 2019, the total estimated claims is 78 the lowest level over the period shown, of which 10 are IBNR claims
- The number of claims is similar to estimates at the previous valuation, however 2018 is slightly lower.

G 2 Gross average claim size

2019 average claim size is around \$28,500, on par with 2018



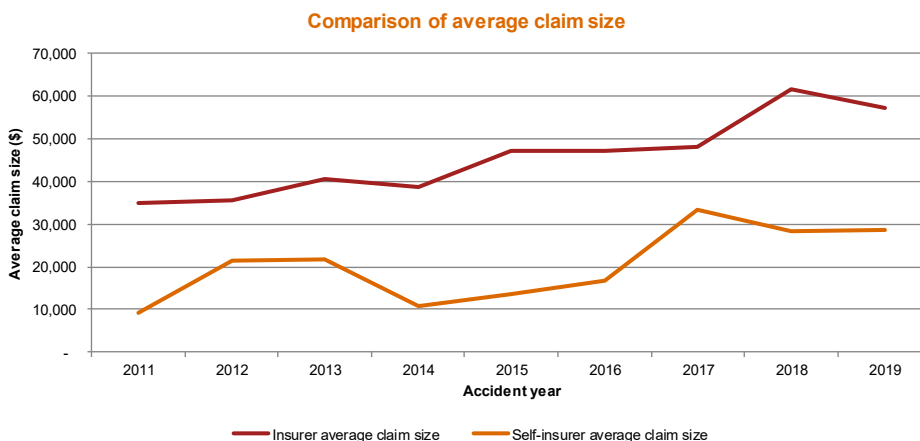
The average claim size has been volatile between accident years and there has been no discernible trend. Since 2009, the average claim size has ranged between \$9,000 and \$21,500, with lows in 2011 and 2014 surrounding highs in 2012 and 2013. This implies that the spike in incurred claim numbers in 2011 shown in 3.2.1 is related to smaller claims.

Our estimated average claim size for the 2017 and 2018 accident year is significantly higher than our previous valuation due to higher than expected payments and high case estimates as at 30 June 2019.

Our estimated average claim size for the 2019 accident year is just over \$28,500, on par with 2018 accident year.

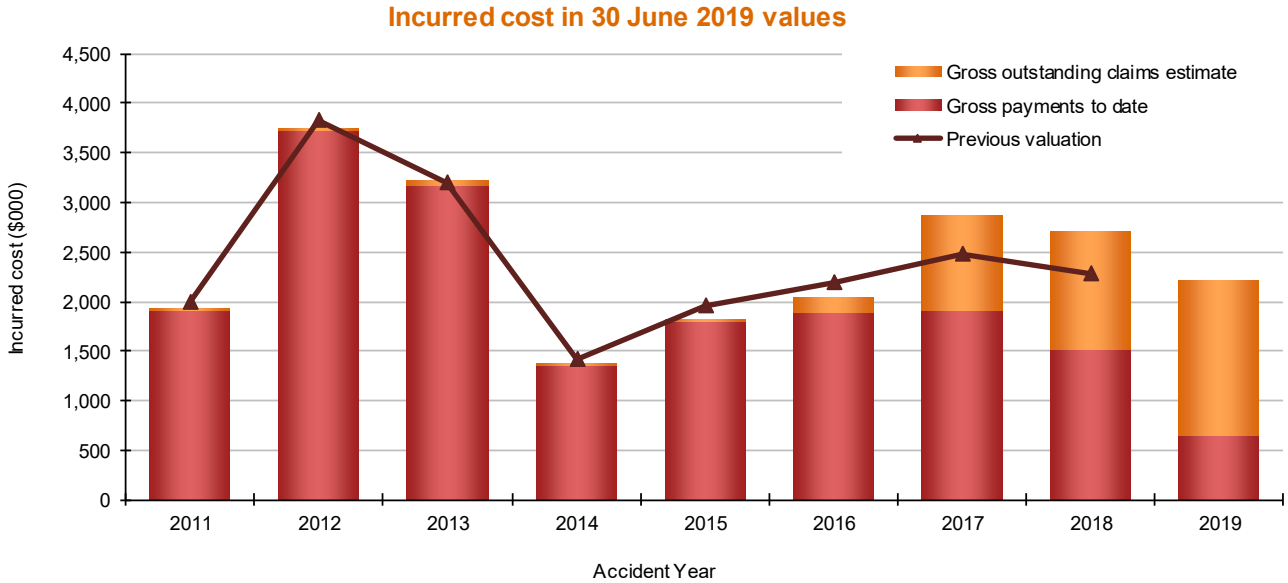
The uncertainty about the future development means that the ultimate level and our estimates may differ from that projected for recent accident years. This is especially true for the 2019 accident year, where a high proportion (71%) of the average claim size consists of the uncertain future estimate.

The chart below compares the average claim size of self-insurers to insurers.



G 3 Incurred cost

2019 incurred cost is \$2.2 million, which is lower than the incurred in 2017 and 2018 but higher than 2014 to 2016



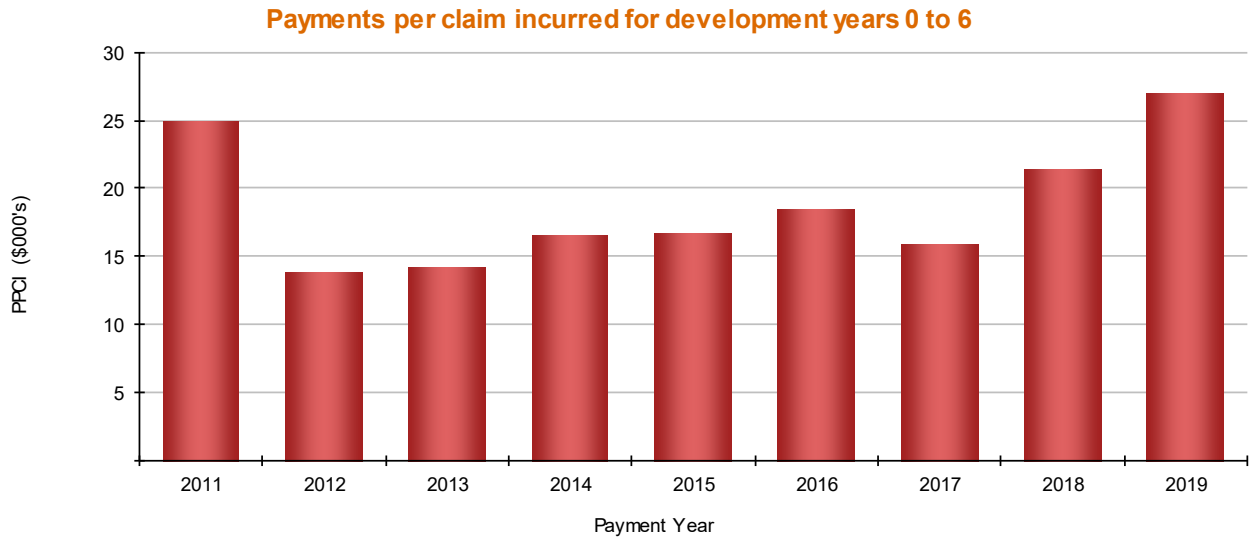
Compared to our previous valuation, there has been a significant increase in the incurred costs for the 2017 and 2018 accident years due to higher than expected claim development, both higher payments and case estimates at 30 June 2019.

The incurred cost for 2019 is \$2.2 million, which is \$0.5 million (18%) lower than the 2018 accident year incurred cost of \$2.7 million.

Over the period shown in the graph, the proportion outstanding increases from 0% of the total incurred cost to 71% of the total incurred cost for 2019.

G 4 Payment per claim incurred

2012 to 2018 exhibits a broadly increasing trend



Payments per claim incurred for development years 0 to 6 spiked to \$24,900 in 2011 due to multiple large claim payments. After this spike, there was a sharp reduction to \$13,900 in 2012, but since then there has been an increasing trend, to \$26,900 in 2019.

The 2019 payment per claim incurred for development years 0 to 6 increased \$5,500 (26%) compared to the 2018 financial year, due to high payments across multiple years.

Appendix H Insurer break-even premium rate

H 1 Calculation of discounted gross incurred cost

The following tables present the data and assumptions we have used to calculate the discounted gross incurred cost, which when combined with the actual expenses give a break-even premium to compare to the actual premium rates charged.

H 1.1 Actual claim payments

Accident Year	Claim payments (\$000s) (a) for development year:											Total
	0	1	2	3	4	5	6	7	8	9	10	
2007	10,102	13,041	10,630	10,416	7,327	6,313	2,519	4,846	1,704	2,208	5,260	74,367
2008	12,607	17,178	11,431	9,562	6,019	3,793	3,390	2,818	4,170	2,445	1,932	75,345
2009	13,725	17,096	13,682	9,202	16,074	5,726	3,315	2,253	1,629	1,180	2,413	86,294
2010	14,500	18,976	12,675	7,691	6,810	4,146	2,903	2,783	2,207	1,418	0	74,109
2011	15,305	19,100	11,397	10,450	3,877	4,980	5,830	1,126	1,360	0	0	73,424
2012	16,961	22,429	9,748	9,393	5,214	5,062	2,473	2,161	0	0	0	73,441
2013	18,489	24,300	15,556	14,452	7,264	3,474	5,719	0	0	0	0	89,254
2014	19,230	25,143	15,493	12,743	8,433	5,422	0	0	0	0	0	86,464
2015	19,207	24,693	20,553	15,764	9,575	0	0	0	0	0	0	89,792
2016	21,239	30,654	19,269	12,035	0	0	0	0	0	0	0	83,197
2017	23,630	31,738	20,580	0	0	0	0	0	0	0	0	75,948
2018	26,883	43,898	0	0	0	0	0	0	0	0	0	70,781
2019	24,950	0	0	0	0	0	0	0	0	0	0	24,950

Notes: (a) from data extracted from the WIMS system as at 30 June 2019

Note that the data in the table presented above is in a different form to the claim payments data in Appendix C1. Each row in the table shows the payments relating to that specific accident year, i.e. development year 1 for 2012 shows the actual payments made in 2013 financial year in relation to incidents, which occurred in 2012. In the previously presented table, this same cell represented payments made in 2012 financial year for incidents, which occurred in 2011. It also comes from Form 4 which has slight differences to the WIMS data.

H 1.2 Historic one year forward rates

	One year forward rate for the year to 30 June												
	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007
Forward rate	0.97%	1.89%	1.63%	1.96%	2.47%	2.54%	2.79%	4.76%	4.48%	3.44%	7.07%	6.50%	6.00%

These rates are the one year forward rate, projected from one year prior, e.g. the rate to 30 June 2019 is the one year forward rate from the Commonwealth Bond yield curve as at 30 June 2018.

H 1.3 Discounted claim payments

Accident Year	Claim payments (\$000s) (a) for development year:											Total
	0	1	2	3	4	5	6	7	8	9	10	
2007	9,812	11,921	9,121	8,535	5,705	4,664	1,783	3,290	1,110	1,384	3,095	60,421
2008	12,216	15,588	9,882	7,837	4,670	2,813	2,406	1,915	2,718	1,532	1,141	62,718
2009	13,265	15,699	11,879	7,544	12,562	4,270	2,360	1,536	1,064	738	1,452	72,369
2010	14,257	17,948	11,516	6,776	5,826	3,445	2,349	2,196	1,697	1,067	0	67,076
2011	14,973	17,862	10,284	9,111	3,267	4,066	4,619	864	1,017	0	0	66,063
2012	16,571	21,118	8,856	8,236	4,423	4,162	1,968	1,672	0	0	0	67,005
2013	18,236	23,345	14,562	13,214	6,498	3,036	4,906	0	0	0	0	83,797
2014	18,990	24,223	14,597	11,761	7,614	4,811	0	0	0	0	0	81,998
2015	18,974	23,864	19,464	14,610	8,724	0	0	0	0	0	0	85,637
2016	21,034	29,821	18,391	11,321	0	0	0	0	0	0	0	80,566
2017	23,439	30,937	19,803	0	0	0	0	0	0	0	0	74,179
2018	26,633	42,875	0	0	0	0	0	0	0	0	0	69,507
2019	24,830	0	0	0	0	0	0	0	0	0	0	24,830

Notes: (a) payments from I1.1 above, discounted using the rates in I1.2

H 1.4 Discounted gross incurred cost

Underwriting year	Discounted gross claim payments (a) (\$000s)	Discounted gross outstanding claims (b) (\$000s)	Discounted gross incurred cost (c) (\$000s)
2019	24,830	103,560	128,390
2018	69,507	76,453	145,961
2017	74,179	37,788	111,967
2016	80,566	31,582	112,149
2015	85,637	27,313	112,950
2014	81,998	9,859	91,857
2013	83,797	10,339	94,137
2012	67,005	6,829	73,834
2011	66,063	4,053	70,116

Notes: (a) from I1.3 above

(b) outstanding claims inflated/discounted from Appendix C4, discounted to the start of the underwriting year using rates in Appendix H1.2 above

(c) = (a) + (b)

H 2 Estimated historic break-even premium rate

Accident year	Calculated break even premium						Actual premium				
	Reported earned wages (a) (\$'000s)	Developed earned wages (b) (\$'000s)	Discounted gross incurred cost (c) (\$'000s)	Commission in financial year (d) (\$'000s)	Discounted other expenses in the fin year (e) (\$'000s)	Premium (f) (\$'000s)	Estimated premium rate (g)	Reported earned premium (h) (\$'000s)	Developed earned premium (i) (\$'000s)	Actual premium rate charged (j)	Difference (break even - actual)
2019	6,610,987	7,040,906	128,390	4,701	20,885	154,349	2.2%	135,305	144,727	2.1%	-9,622
2018	7,817,632	7,902,694	145,961	5,534	22,548	174,859	2.2%	145,250	147,190	1.9%	-27,669
2017	7,308,717	7,324,674	111,967	4,489	20,653	137,665	1.9%	131,071	131,071	1.8%	-6,594
2016	6,837,989	6,837,989	112,149	4,163	20,086	137,061	2.0%	129,901	129,901	1.9%	-7,160
2015	6,582,845	6,582,845	112,950	4,558	20,288	138,640	2.1%	136,774	136,774	2.1%	-1,866
2014	5,929,595	5,929,595	91,857	4,775	17,098	114,445	1.9%	138,578	138,578	2.3%	24,133
2013	5,199,017	5,199,017	94,137	3,697	15,016	113,629	2.2%	124,326	124,326	2.4%	10,697
2012	4,633,724	4,633,724	73,834	2,864	14,015	91,774	2.0%	99,113	99,113	2.1%	7,340
2011	4,138,004	4,138,004	70,116	2,863	11,998	85,912	2.1%	86,936	86,936	2.1%	1,023

- Notes:**
- (a) earned wages provided by insurers
 - (b) (a) x development factors in Appendix B7
 - (c) calculated in Appendix H1
 - (d) actual commission, from the consolidated Form A returns
 - (e) other expenses, from the consolidated Form A returns, discounted by half a year
 - (f) = (c) + (d) + (e) x (1+ one year historical interest rate) ^ (3/12) to allow for the fact that premiums are received 3 months after the commencement of the underwriting period
 - (g) = (f) / (b)
 - (h) earned premium, including earned but not yet reported premium provided by insurers
 - (i) (h) x development factors in Appendix B7
 - (j) = (i) / (b)

H 3 Calculation of break-even premium rate for 2019/20

H 3.1 Discounted incurred cost for 2019/20

We selected the number of incurred claims and average claim size for 2019/20 based on the recent experience and allowing for future inflation and superimposed inflation. The following table shows the number of incurred claims, claim frequency and average claim size over the last five years and our adopted values.

	Accident year					
	2019	2018	2017	2016	2015	Adopted
Number of claims incurred (a)	2,238	2,420	2,423	2,538	2,651	2,262
Claim frequency per \$86,974 of wages (b)	2.7%	2.6%	2.8%	3.0%	3.0%	2.8%
Average claim size (in 30 June 2019 values) (c)	57,055	61,577	48,085	47,096	47,237	53,305

- Notes:**
- (a) The adopted number of claims incurred is based on the adopted claim frequency in (b) times the projected wages.
 - (b) The adopted claim frequency is a four year average
 - (c) The adopted average claim size is also on a four year average, which includes the 2015 legislative amendments

Allowing for inflation of 1.40%, superimposed inflation of 2.90% and an inflation/discount factor to allow for the timing of payments of 1.0055 the discounted incurred cost for 2019/20 can be calculated as:

$$2,262 \times [53,305 \times (1 + 1.40\%) \times (1 + 2.90\%) \times 1.0055] = \$126.5 \text{ million.}$$

H 3.2 Expense loadings

To calculate the break-even premium rate the discounted incurred cost must be loaded for expenses. To calculate an appropriate allowance for expenses in the premium rate we have analysed the commission rate and the other expenses (including claims handling) separately over a five year period.

This analysis is shown in the following table.

(\$000s)	Underwriting year					Adopted
	2019	2018	2017	2016	2015	
Gross written premiums (a)	142,690	135,842	134,286	114,332	140,232	
Earned premiums (a)	144,321	146,280	126,442	119,514	141,354	
Commission (a)	4,701	5,534	4,489	4,163	4,558	
Other expenses (a)	20,986	22,760	20,821	20,282	20,537	
Commission rate (b)	3.3%	3.8%	3.6%	3.5%	3.2%	3.5%
Expense rate (c)	14.7%	16.8%	15.5%	17.7%	14.6%	15.6%

- Notes:** (a), (b), (c), (d) from the consolidated Form A returns
 (e) commission / earned premium, the adopted value uses a three year average
 (f) other expenses / gross written premium, the adopted value uses a three year average

H 3.3 Projected break-even premium for 2019/20

Using the analysis above, the projected break-even premium rate for 2019/20 is:

Underwriting year	Discounted			Premium (d) (\$000s)	Calculated premium rate (e)
	Actual wages (a) (\$000s)	gross incurred cost (b) (\$000s)	Expenses (c) (\$000s)		
2020	7,139,479	126,460	29,994	156,833	2.2%

- Notes:** (a) 2019 developed earned wages, inflated for one year's wage inflation at 1.40%
 (b) from H3.1 above
 (c) = (b) / (1 – commission rate (3.5%) – other expense rate (15.6%)) – (b)
 (d) = (b) / (1 – commission rate (3.5%) – other expense rate (15.6%)) x (1 + interest rate (1.0%)) ^ (3/12) to allow for the fact that premiums are received 3 months after the commencement of the underwriting period
 (e) = (d) / (a)

This break-even premium rate allows for the same timing aspects as the historic calculations of the break-even rate.

We considered the economic indicators in the 2019/20 Northern Territory mid-year report, in adopting the assumptions for the 2019 break-even premium rate.

H 4 Historical rates by industry

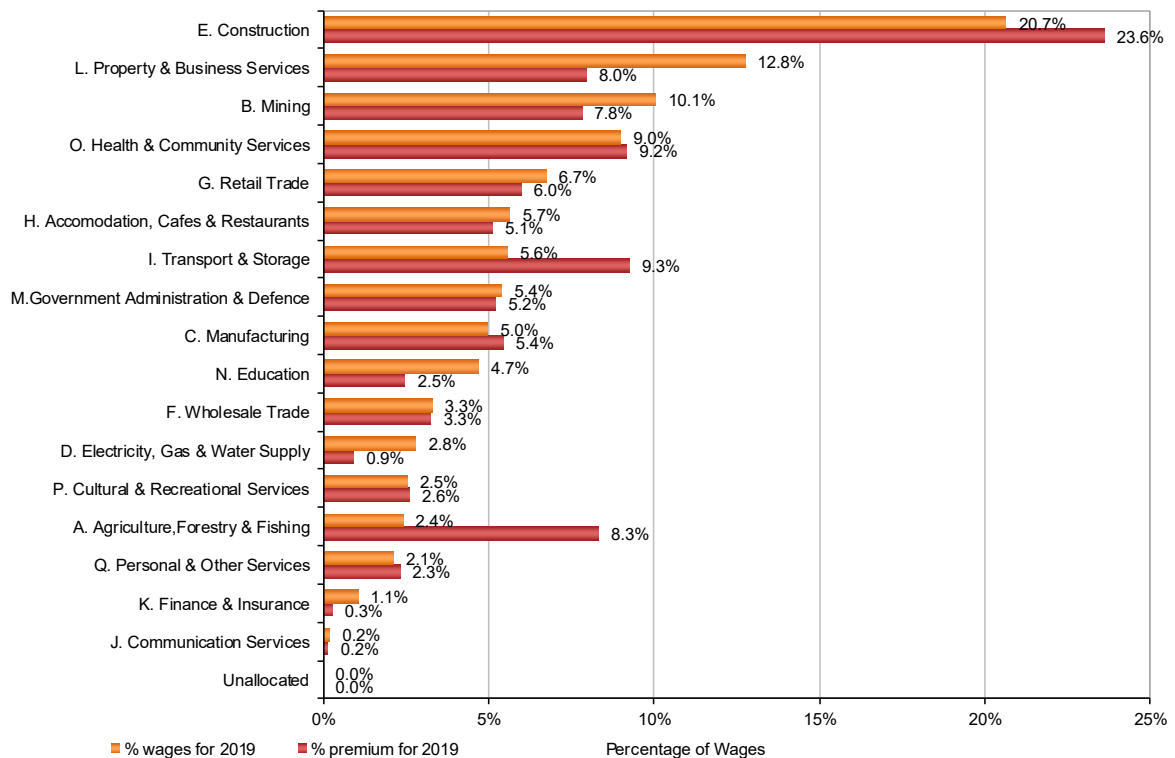
The following tables show the historical premium rates charged by industry (excluding self-insurers) on an underwriting/earned year basis.

The below table does not use developed wages or premium and does not contain an allowance for earned but not yet raised premium.

Underwriting year basis					Difference	
Premium rate by ANZSIC division	2015	2016	2017	2018	2019	2019 / 2018
A. Agriculture, Forestry & Fishing	6.31%	5.67%	5.52%	6.10%	7.02%	14.9%
B. Mining	1.66%	1.57%	1.31%	1.18%	1.58%	33.9%
C. Manufacturing	2.83%	2.39%	2.27%	2.31%	2.22%	-3.6%
D. Electricity, Gas & Water Supply	0.84%	0.84%	0.87%	0.78%	0.67%	-14.0%
E. Construction	2.33%	2.01%	1.88%	1.93%	2.32%	20.3%
F. Wholesale Trade	2.24%	1.92%	1.81%	1.86%	2.01%	8.0%
G. Retail Trade	2.10%	1.84%	1.76%	1.82%	1.81%	-0.7%
H. Accommodation, Cafes & Restaurants	2.14%	1.91%	1.92%	1.94%	1.84%	-4.8%
I. Transport & Storage	3.01%	2.99%	2.84%	3.42%	3.38%	-1.3%
J. Communication Services	1.62%	1.51%	1.31%	1.35%	1.57%	15.9%
K. Finance & Insurance	0.88%	0.72%	0.66%	0.58%	0.53%	-8.7%
L. Property & Business Services	1.14%	1.04%	1.00%	1.09%	1.27%	16.2%
M. Government Administration & Defence	2.30%	2.05%	1.78%	1.92%	1.96%	2.3%
N. Education	1.06%	1.00%	0.97%	1.05%	1.07%	2.4%
O. Health & Community Services	2.22%	2.05%	1.85%	1.82%	2.07%	14.0%
P. Cultural & Recreational Services	1.65%	2.03%	2.22%	1.96%	2.09%	6.6%
Q. Personal & Other Services	2.42%	2.44%	2.16%	2.52%	2.22%	-12.0%
Unallocated	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total	2.08%	1.89%	1.78%	1.83%	2.03%	11.2%

The percentage of wages and premium by industry, on an underwriting year basis for the current year are:

Percentage of wages and premium by industry for the 2018/19 accident year only



Insurer break-even premium rate

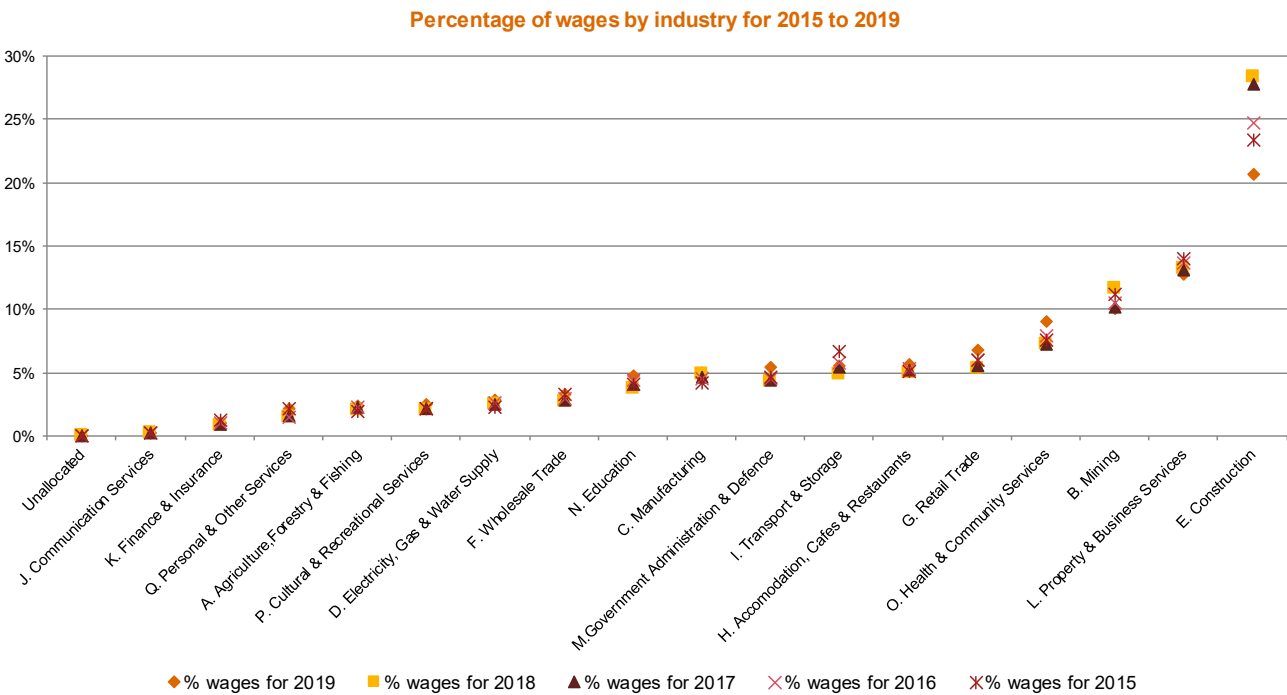
This shows that the sectors with significantly higher premium rate than the scheme average are:

- Agriculture, forestry and fishing
- Transport and storage

Meanwhile the sectors with significantly lower premium rate than the scheme average are:

- Property and business services
- Mining
- Education
- Electricity, gas and water supply
- Finance and insurance.

The chart below shows wages by ANZSIC class on an underwriting year basis. This split requires insurers to split wages and premium across the years that a multi-year policy is in force for.



Presenting the information in this way acts to smooth the variation in wages by industry from one year to the next. Of note is the strong increase in Construction over the last five years, driven by the Inpex project, however we note the significant decrease in the percentage of wages from 2018 to 2019 for Construction, as the Inpex project has moved in to the production phase.

Appendix I Glossary

AASB

Australian Accounting Standards Board

ABS

Australian Bureau of Statistics

Accident year

The financial year ending 30 June, in which the accident event leading to a claim occurs, irrespective of when the claim is reported, paid and finalised.

APRA

Australian Prudential Regulation Authority

Break-even premium rate

This is the expected cost for policies, including an allowance for associated expenses and timing of premium payments. It is calculated as:

Break-even premium rate = Discounted incurred cost / (1 – commission rate – other expense rate) x (1 + interest rate) ^{3 / 12}

Central estimate

Unbiased actuarial estimate, which has 50% probability of being sufficient. It is the median of the range of possible outcomes. The central estimate is inflated and discounted and includes claims handling expenses (unless where specified) and does not include a risk margin.

Development year

The number of completed years since the end of the accident year. Development year zero refers to the financial year ending 30 June in which the accident event occurs. Development year is also abbreviated to DY in this report.

EBNYR premium

Earned but not yet raised premium.

The earned but not yet raised premium is the aggregate of the burner policy premium adjustments where the estimated claims experience suggests that either more premium will need to be collected or some premium will be refunded.

Funding ratio

The funding ratio is measuring the liabilities held by the insurers or self-insurers (the notional assets) compared to the aggregate outstanding claims liability calculated by the scheme actuary. The funding ratio is as defined by the Comparative Monitoring Committee.

For the insurers this is calculated as:
$$\frac{\text{inflated and discounted provision (including risk margin)}}{\text{inflated and discounted central estimate (excluding risk margin)}}$$

For the self-insurers this is calculated as:
$$\frac{\text{bank guarantee provision (1.5 x central estimate)}}{\text{inflated and discounted central estimate (excluding risk margin)}}$$

Inflated and discounted values

The estimates in current values are inflated to the dollar values in the estimated future year of payment. These values are discounted to 30 June 2019 values to allow for future investment income that will be earned until the claim is paid. The inflation and discount rates are outlined in appendix B1.

NT

Northern Territory

Provision

The central estimate plus the risk margin.

Risk margin

The margin added to the central estimate to increase its level of adequacy to above 50%.

Risk premium

The risk premium is an estimate of the pure risk cost of claims and does not include allowance for expenses or margins.

Risk Premium = estimated incurred cost of the risk covered i.e. of the claims with dates of occurrence in the risk/cover period
= number of claims x average claim size

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