Review of selected performance indicators of the NSW CTP Scheme 2015

State Insurance Regulatory Authority

May 2016

Building a better working world

Contents

1. Executive summary

1.1 Introduction and purpose

EY has been requested by the State Insurance Regulatory Authority (SIRA) to review the performance of the NSW Compulsory Third Party (CTP) Scheme (the Scheme). EY is the independent Scheme actuary. We have performed the review by analysing key metrics agreed with the SIRA. Results of the review are documented in this report.

This is the fourth time that EY has conducted this review. The previous review is documented in a summary report "Selected indicators of the performance of the NSW CTP Scheme to 2014" dated 16 November 2015 and is referred to as the "previous report". The previous report is available on the SIRA website.

This review uses data up to 30 June 2015 in calculating the key metrics. Most key metrics are shown starting from late 2000 when the current scheme commenced its operations

The Lifetime Care & Support (LTCS) scheme is excluded from the analysis since it is managed by the Insurance & Care NSW (icare) instead of private insurers.

The SIRA has adopted two key indicators to assess the performance of the Scheme:

- Affordability - the premium charged for a CTP policy relative to average NSW weekly earnings. The lower the premium as a proportion of average earnings, the more affordable premiums are considered to be.

- Efficiency - the proportion of premiums that is returned to injured persons as claim benefits rather than service delivery costs and insurer profit. The higher the proportion, the greater the efficiency of the Scheme.

In addition to the above two key performance indicators of the Scheme, the SIRA is also monitoring the fairness of the premiums paid by vehicle owners. That is, subject to the objective for premiums to be affordable, they reflect the underlying claims experience of the relevant cohort of policies. To achieve the objective of affordable premiums the SIRA limits the extent to which insurers can vary premiums by applying loadings and discounts. Applying constraints on insurer's ability to apply loadings and discounts to premiums introduces cross-subsidies between different cohorts of policies. The extent of cross–subsidies is a measure of the extent to which premiums are not equitable. Unlike the previous report, there is no additional analysis of elements of the cross-subsidies in this report.

As agreed with the SIRA, this report does not measure the affordability of premiums as this work is being undertaken by the SIRA. However, our report does review measures of Scheme performance that impact premium affordability (e.g. claim frequency trends).

All of the results presented in this report are based on regular work that has been performed by the Scheme actuary for a number of years. These results include an analysis of the Scheme experience as well as actuarial projections of claims experience.

1.2 Structure of this report

We have analysed the main items of Scheme experience that impact the efficiency and affordability of the Scheme. These items include:

- Insurer risk premium (i.e., claims cost) in section 4, including:

  - Claim numbers, claims frequency, propensity to claim and casualty numbers

  - Average claims size and superimposed inflation

- Cost per policy which combines claim frequency and average claims size
- Experience by type of payment - legal costs and the remaining claims cost
- Additional analysis of claim payment duration and the impact of changes in claims inflation and interest rates.

- Insurer profitability in section 5. Profit loadings need to achieve a balance between an adequate return on capital for insurers to ensure a financially viable scheme and affordable premiums for vehicle owners. Insurer profitability depends on claims cost per policy.

We have provided in this report high level commentary and insights into the movements in the above metrics over time.

1.3 Summary of results

The following presents major results of our review. Conclusions regarding data, methods, assumptions and results in this executive summary should be made only after studying this report in its entirety, as conclusions based solely on a section or selected sections may be incorrect or misleading.

Section 4 discusses the claims experience of the Scheme. The main observations are:

- While casualty numbers have continued to fall in recent years (from around 25,000 in 2008 to around 20,500 in 2015), the number of full claims (excluding workers compensation recovery claims) has increased from around 7,500 to around 12,500 (over the same period). This is driven by an increase in the propensity to claim which has increased from 30% to just above to 60% over the last seven years.

- Minor severity injuries with legal representation, which increased by 4,700 claims from 2008 to 2015, account for almost all the increase in claim numbers

- Average claim sizes by for the injury severity groups other than minor severity injury claims have been stable after allowing for the effects of wage inflation. However increases in the number of minor severity injury claims with legal representation have resulted in a disproportionate increase in the claims cost per policy for this category of claims

- Superimposed inflation is the increase in claim costs over time, over and above wage inflation. Our analysis of superimposed inflation (SI) shows there has been a small reduction in the finalised claim sizes (a small negative SI of –2% p.a.) from 2010 to 2015. While there have been no material SI for claims of similar injury severities, we have observed a shift in the profile of claims settled – from moderate and serious severity injury claims to minor severity injury with legal representation claims. This shift reduces the average claim size by around 2% p.a., that is, excluding this shift in the mix of claims results in an absence of superimposed inflation in the scheme over the last 5 years. In the absence of any superimposed inflation in future years we expect average claims size for the scheme to reduce as the mix of claims settled reflects the increase in recent years of minor severity legally represented claims.

Section 5 discusses Scheme profitability which takes the difference between premiums and discounted claim costs and relevant expenses. Key findings are:

- Profit margins have been projected to be above the average filed profit margin of 8% across all accident years (ending 30 June) except 2009. The average profit margin for the five years from 2001 to 2005 is estimated to be 27%, the average for the next five years (2006 to 2010) is estimated to be 14% and the average for the most recent five years (2010 to 2015) is estimated to be 18%

- The main driver of the higher than target profit margin in the Scheme has been the level of superimposed inflation since 2010. If the superimposed inflation continues to be benign, then

the actual profit margin eventuating from the most recent five accident years (2010 to 2015) may potentially be higher.

1.4 Uncertainty

There is significant uncertainty associated with actuarial estimates shown in this report. Estimates of future claims experience (such as claims numbers and payments) are uncertain because they depend on outcomes of future events which cannot be forecast precisely. These outcomes include future social, economic and legal environments. Therefore, actual claims experience may emerge at levels higher or lower than actuarial estimates. There is considerable uncertainty in the estimates for recent years because a significant portion of claims are unpaid and hence based on actuarial estimates. In particular there is additional uncertainty around minor severity represented claims for the two most recent accident years due to an apparent change in the mix of these claims towards smaller claims sizes. We have relied on the insurer case estimates to project this trend as only a small proportion of these claims have been paid so far. Further comments on uncertainty are included throughout this report; however the most important ones are outlined in section 6.

1.5 Reliance and limitations

In undertaking this review, reliance has been placed upon the data provided to us mainly by the SIRA. We have also relied on supplementary information from Taylor Fry. The accuracy of SIRA data relies on the accuracy of insurer data have provided their data to the SIRA.

It is essential that any reader of this report understands its qualifications and limitations. These are described throughout the report; however the most important ones are outlined in section 7.

Glossary

Term	Definition
Accident Notification Forms (ANFs)	The form provides for the early payment of reasonable and necessary medical expenses and/or lost earnings up to a maximum of $5,000. ANFs can be lodged by at-fault and not at-fault injured parties.
Accident year	Denotes the year in which the vehicle accident giving rise to the claim occurred. Accident years generally run from 1 July to 30 June if not specifically stated otherwise.
Acquisition expenses	All expenses insurers incur to acquire and retain CTP business. These expenses include personnel costs and associated costs (e.g. rent, insurance premiums, etc.), IT costs, finance costs (e.g. accounting, audit, actuarial, etc.), stationery, marketing and advertising costs, commissions and other costs including overhead costs.
Affordability	Average premium (including levies but excluding GST) charged in the quarter divided by average weekly earnings in the quarter. This is consistent with the definition presented in the SIRA's annual report and that adopted by other schemes. The higher this ratio the less affordable the premium.
Agents' commission	Refers to payments made to agents/brokers by insurers for writing CTP insurance on behalf of the insurer. The maximum commission payable for CTP insurance is 5 per cent of the insurance premium.
Bulk-Billing	Under the Bulk Billing Agreement, CTP insurers pay an annual lump sum to the NSW Ministry of Health for public hospital and public road ambulance services.
Casualty	Any person killed or injured as a result of an accident attributable to the movement of a road vehicle on a road, as recorded by Roads and Maritime Services.
Claim frequency	Ultimate number of claims divided by the number of vehicles.
Claims handling expenses	Refers to expenses related to managing and administering CTP claims. These expenses include costs of claims staff managing claims, rehabilitation staff, managers and support staff.
Claim type	The claims in the NSW CTP scheme are split into full claims, ANFs and workers compensation recovery claims.
Contracted-out legal costs	Costs payable to the legal practitioner representing the claimant, by the claimant, under an agreed private arrangement i.e. those costs in excess of those specified in the SIRA Cost Regulation. These costs are not transparent in the insurer or Scheme data held by the SIRA.
Cost per policy	Total cost of claims divided by the number of insured motor vehicles in NSW.
Current value	Historical payments inflated to the current period based on a relevant price index.
Development year	This denotes the time elapsed since the year in which the accident occurred.
Green slips	The term 'Green Slip' dates back to the start of the NSW CTP scheme in 1989 where the CTP insurance invoice was a detachable green coloured slip.
Incurred But Not Reported (IBNR)	An actuarial term for the estimate of claims that will be received in the future in respect to accidents which have already occurred.
Incurred claims cost	Claim payments to date plus case estimates.

<table>
<tr><th>Term</th><th>Definition</th></tr>
<tr><td>Inflated cost per policy</td><td>Sum of past claim payments, in original dollar values, and future claim payments, including future wage inflation and superimposed inflation, divided by the number of policies.</td></tr>
<tr><td>Injury severity</td><td>The table below shows the injury severity level classifications. Specialised insurer staffs classify each claimant's injury severity based on the Abbreviated Injury Scale set by the Association for the Advancement of Automotive Medicine.
<table>
<tr><th>Injury severity level code</th><th>Description</th></tr>
<tr><td>1</td><td>Minor</td></tr>
<tr><td>2</td><td>Moderate</td></tr>
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<tr><td>4</td><td>Severe</td></tr>
<tr><td>5</td><td>Critical</td></tr>
<tr><td>6</td><td>Maximum</td></tr>
<tr><td>9</td><td>Unknown</td></tr>
</table>
We use "serious severity" to refer to claims for serious severity, severe severity, critical severity and maximum severity injuries under the Abbreviated Injury Scale. We use "minor severity" to refer to claims for minor severity and unknown severity injuries.</td></tr>
<tr><td>Life Time Care Support (LTCS) scheme</td><td>This scheme provides treatment, rehabilitation and attendant care services to people severely injured in motor accidents in NSW, regardless of who was at fault in the accident.</td></tr>
<tr><td>Medical Care and Injury Services (MCIS) levy</td><td>Refers to a levy applied to the CTP insurance premium to fund the cover provided by the Lifetime Care and Support scheme. Part of the MCIS levy is also used to fund the SIRA and Bulk Billing arrangements for ambulance and hospital services.</td></tr>
<tr><td>Net reinsurance cost</td><td>Refers to the net cost of reinsurance after allowing for recoveries (i.e. reinsurance claim payments).</td></tr>
<tr><td>Payment Per Claim Finalised (PPCF)</td><td>A standard actuarial model that assumes the average payments per finalised claim will progress in a reasonably steady fashion between accident years.</td></tr>
<tr><td>Personal Injury Register (PIR)</td><td>A database maintained by the SIRA which collates and records CTP claims related data provided by insurers.</td></tr>
<tr><td>Profit margin</td><td>Refers to the proportion of premium in excess of all insurer claims and expenses. Levies and GST are excluded from assessing the profit margin.</td></tr>
<tr><td>Projected case estimate</td><td>A standard actuarial method that focuses on anticipated relationships between future claim payments and case estimates.</td></tr>
<tr><td>Propensity to claim</td><td>Ultimate number of claims divided by the number of road casualties.</td></tr>
<tr><td>Risk premium</td><td>Expected claim payout without expenses and profit margin.</td></tr>
<tr><td>Superimposed inflation</td><td>The increase in claim costs over time, over and above wage inflation.</td></tr>
<tr><td>Underwriting year</td><td>The year in which the CTP policy is effective from.</td></tr>
</table>

2. Introduction

2.1 Introduction and purpose

EY has been requested by the State Insurance Regulatory Authority (SIRA) to review the performance of the NSW Compulsory Third Party (CTP) Scheme (the Scheme). EY is the independent Scheme actuary. We have performed the review by analysing key metrics agreed with the SIRA. Results of the review are documented in this report.

This is the fourth time that EY has conducted this review. The previous review is documented in the summary report "Selected indicators of the performance of the NSW CTP Scheme to 2014" dated 16 November 2015 and is referred to as the "previous report". The previous report is available on the SIRA website.

This review mostly uses data up to 30 June 2015 in calculating the key metrics. Most key metrics are shown starting from late 2000 when the current Scheme commenced its operations. Changes in the key metrics are analysed and discussed in this report.

The Lifetime Care & Support (LTCS) scheme is excluded from the analysis since it is managed by the Insurance & Care NSW (icare) rather than the SIRA.

The SIRA has adopted two key indicators to assess the performance of the Scheme:

- Affordability - the premium charged for a CTP policy relative to average NSW weekly earnings. The lower the premium as a proportion of average earnings, the more affordable premiums are considered to be

- Efficiency - the proportion of premiums that is returned to injured persons as claim benefits rather than service delivery costs and insurer profit. The higher the proportion, the greater the efficiency of the Scheme.

In addition to the above two key performance indicators of the Scheme, the SIRA is also monitoring the fairness of the premiums paid by vehicle owners. That is, subject to the objective for premiums to be affordable, they reflect the underlying claims experience of the relevant cohort of policies. To achieve the objective of affordable premiums the SIRA limits the extent to which insurers can vary premiums by applying loadings and discounts. Applying constraints on insurer's ability to apply loadings and discounts to premiums introduces cross-subsidies between different cohorts of policies. The extent of cross-subsidies is a measure of the extent to which premiums are not equitable. Unlike the previous report, there is no additional analysis of elements of the cross-subsidies in this report.

As agreed with the SIRA, this report does not measure the affordability of premiums as this work is being undertaken by the SIRA. However the report does review measures of Scheme performance that impact premium affordability (e.g. claim frequency trends).

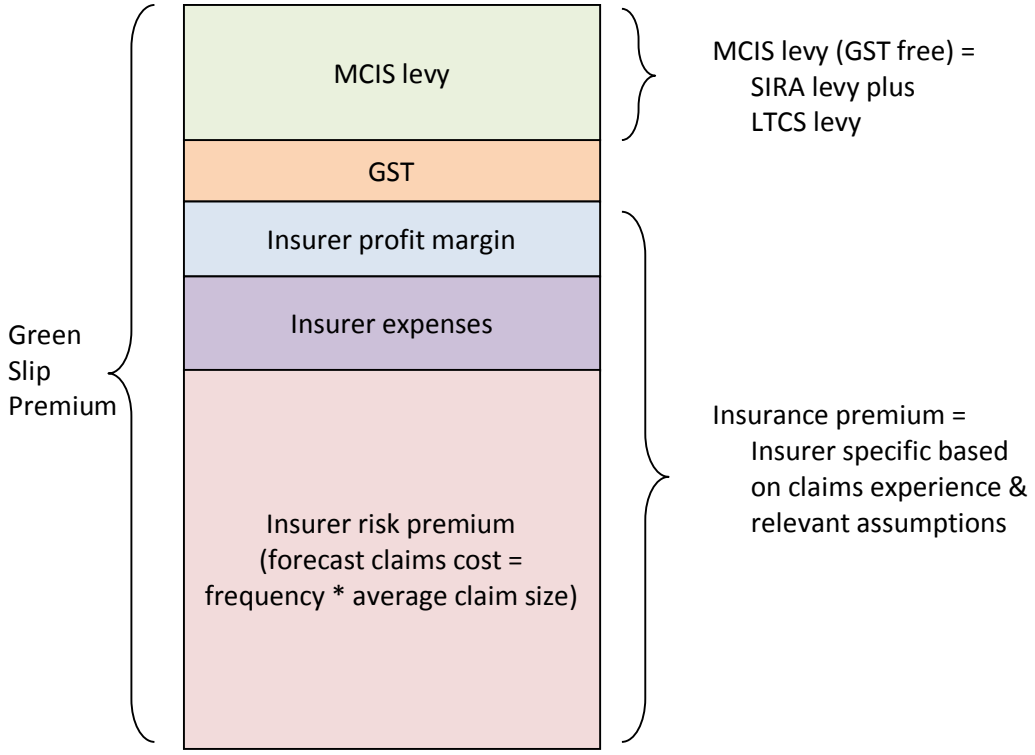
All of the results presented in this report are based on regular work that has been performed by the Scheme actuary for a number of years. These results include an analysis of Scheme experience as well as actuarial projections of claims experience.

2.2 Structure of this report

Section 3 of this report provides a summary of the data used and the methodology adopted.

The following figure sets out the underlying components of CTP premiums.

Figure 1: Components of the CTP Green Slip premium



We have analysed the main items of Scheme experience that impact the efficiency of the Scheme. These items include:

- Insurer risk premium (i.e. claims cost) in section 4
  - Claim numbers, claims frequency, propensity to claim, casualty numbers
  - Average claims size and superimposed inflation
  - Cost per policy, which combines claim frequency and average claims size
  - Experience by type of payment - legal costs and the remaining claims cost
  - Additional analysis of claim payment duration and the impact of changes in claims inflation and interest rates not discussed in the previous report.
- Insurer profitability in section 5. Profit loadings need to achieve a balance between an adequate return on capital for insurers to ensure a financially viable scheme and affordable premiums for vehicle owners. Insurer profitability depends on claims cost per policy.

We have provided in this report high level commentary and insights into the movements in the above metrics over time.

3. Data and methodology

This section outlines the data, data adjustments and methodology used to perform the analyses shown in this report.

All results in this report exclude GST and exclude levies.

Our analyses have been based on the following data:

- Insurer premium returns as at 30 June 2015
- Personal Injury Register information as at 30 June 2015
- Centre for Road Safety (CRS) Road Casualty data as at 29 July 2015
- Information from insurer premium rate filings as at 30 June 2015

3.1 Outstanding claims valuation of the Scheme

As the Scheme actuary, we have estimated the Scheme's outstanding claims liabilities as at 30 June 2015. This is our fourth outstanding claims valuation performed for the Scheme. The results of our valuation are documented in our valuation report "Outstanding Claims Liability Review of the NSW CTP Scheme as at 30 June 2015".

We have performed the valuation using unit record claims data as at 30 June 2015 provided by the SIRA (i.e. SIRA Personal Injury Register).

For claims which are not ANFs and workers compensation recoveries, we have analysed the claims based on the maximum injury severity level recorded. The table below shows injury severity level classifications. Specialised insurer staff classify each claimant's injury severity based on the Abbreviated Injury Scale set by the Association for the Advancement of Automotive Medicine.

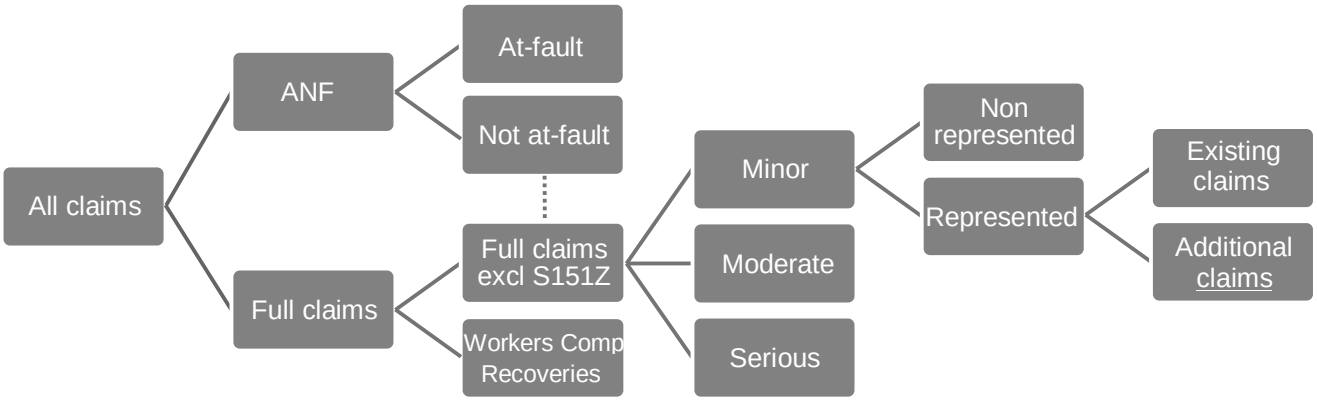
Table 1: Injury severity levels classification

Injury severity level code	Description
1	Minor
2	Moderate
3	Serious
4	Severe
5	Critical
6	Maximum
9	Unknown

Throughout this report, "serious severity" refers to serious, severe, critical and maximum severities. "minor severity" refers minor and unknown severities. For minor severity represented claims, we have split these further into "existing" and "additional" claims in our outstanding claims liabilities valuation as at 30 June 2015. Please refer to section 4.4.1.2 for further details. Remaining severities are "moderate."

We have separately analysed ANFs and full claims. We have separated out workers compensation recovery claims from full claims. The adopted claim categorisation is shown in the figure below.

Figure 2: Breakdown of claim categorisation



3.1.1 Claim numbers

Claim numbers for each accident quarter have been predominantly estimated using the chain ladder method. For recent accident quarters we have made assumptions on claim frequency for each period.

We have adjusted our projection assumptions to be in line with emerging experience and our view of future experience. For more details refer to our valuation report.

3.1.2 Scheme claims cost

We have assessed the total claims cost for each claim category using a mix of standard actuarial models (mainly payments per claim finalised and projected case estimates models).

The claims cost for each claim category as at 30 June 2015 was further split into:

- Legal (plaintiff and defendant) and investigation payments
- Other payments e.g. care payments, economic loss, non-economic loss, medical, hospital and rehabilitation.

We have adjusted our projection assumptions to be in line with emerging experience and our view of future experience. For more details refer to our valuation report.

We have adopted a set of rules to identify LTCS eligible claims and remove their related costs from historical payments for accident periods prior to the commencement of LTCS scheme in 2007. We have removed these costs so that our analysis and conclusions reflect the current Scheme.

3.2 Insurer profits

The table below shows the source of the data that was used to perform the analysis of insurer profits.

Table 2: Sources of data

Item	Source
Premiums	Insurers' premium returns
Expenses	Insurers' rate filings
Bulk-Billed ambulance and hospital costs	SIRA up to 30 September 2006

SIRA levy and Roads and Maritime Services (RMS) commission	SIRA up to 30 September 2006
Past and projected future claim payments	SIRA and EY

For periods up to 30 June 2011, all data used was provided by Taylor Fry (the SIRA's previous scheme actuary) in spreadsheets which summarise each of the components above by underwriting year. This data was originally provided to Taylor Fry by the SIRA. For periods after 30 June 2011, all data used was provided to us by the SIRA directly.

For policies written prior to 1 October 2006, insurers' CTP premiums included SIRA levy and RMS commission. For policies written thereafter, SIRA and LTCS levies have been a separate cost paid by policyholders in addition to insurer premiums. The SIRA levy aims to cover operating costs of the SIRA, the RMS commission and NSW Department of Health Bulk-Billed ambulance and hospital costs. Hence premiums and insurers' acquisition expenses exclude the SIRA levy, RMS commission and Bulk-Billed ambulance and hospital costs from 1 October 2006.

In this review we have continued to show insurer profitability results by accident year. Using an accident year basis allows results to be shown up to 2015 (ending 30 June), whereas using an underwriting year basis will only show results for policies attaching up to 2014 (ending 30 September). In addition using an accident year basis is consistent with the outstanding claims valuation.

3.3 Superimposed inflation

We have analysed superimposed inflation (SI) in the Scheme in this review. There are various definitions of SI and in this report we have defined SI as the increase in the average claims size of claims over time above wage inflation. For the purposes of measuring SI, we have defined claims cost as the total payments made at the time of claim payment, with each payment inflated by wage inflation to current (2015) dollar values.

4. Scheme experience

4.1 Introduction

The NSW Scheme experience analysis shown in this section is predominantly based on results documented in our annual Scheme outstanding claims valuation report. We have also performed additional analyses where required.

This section covers:

- Actual claims experience in the year ended 30 June 2015 compared to our expected experience based on our previous annual Scheme outstanding claims valuation at 30 June 2014
- Trends in ultimate claim numbers, propensity to claim and claims frequency by injury severity, claim type and legal representation (for minor injury severity claims)
- Trends in average claims size by injury severity, claim type and legal representation (for minor injury severity claims)
- Trends in superimposed inflation
- Trends in Scheme claims cost per policy (overall, legal and investigation and other) excluding the impact of interest rates, split by injury severity
- Impact of interest rates and inflation on insurer premiums
- Claim payment pattern and claim duration (the average time from accident to payment)

4.2 Actual versus expected experience

We performed a valuation of the Scheme's outstanding claims liabilities as at 30 June 2014. As part of the analyses we have performed, we formed a view on how claim numbers and claim payments, for accidents that have occurred prior to 30 June 2014, would develop in subsequent years. This view is based on the assumptions we have made in the valuation process and is also known as the expected development in the number of claims reported and expected development in the claim payments.

We have compared the actual experience in the year to 30 June 2015 with the expected experience from the 30 June 2014 valuation. Only accidents occurring up to 30 June 2014 are reflected in the comparisons (see tables 3 to 5 below).

The number of claims and ANFs reported in the year to 30 June 2015 was 1% higher than expected. This experience was primarily driven by minor severity injuries with legal representation being 57% higher than expected offset by the remaining claims being lower than expected particularly for moderate and serious severity claims in absolute number terms. In particular there were lower than expected claim numbers for minor severity injuries without legal representation, moderate severity and serious severity claims, especially in the 2010 to 2014 accident years.

Actual claim payments in the year to 30 June 2015 were lower than expected by $26m or 2%. This was due to moderate severity claims ($26m lower than expected), partly from a lower than expected number of finalisations. Minor severity claims with legal representation payments were similar to expected despite the significant differences between actual versus expected claim numbers discussed above. A higher number of finalisations were observed during the year to 30 June 2015 for minor severity legally represented claims resulting in the average claim size for these claims being lower than lower than expected. Section 4.4.1.2 provides more detail around the decreasing claim size of minor severity claims with legal representation. The overall effect of this offset resulted in the actual payments in the year to 30 June 2015 being similar to the expected payments at 30 June 2014.

Further details on actual and expected figures are shown in the tables below. For completeness the tables include ANFs and workers compensation recovery claims.

Table 3: Actual versus expected claim numbers in 2015 for prior accident years

Claim type group	Actual	Expected	Actual - Expected	Actual – Expected (%)
Minor severity (represented)	1,711	1,088	623	57%
Minor severity (not represented)	158	210	-52	-25%
Moderate severity	1,181	1,536	-355	-23%
Serious severity	630	741	-111	-15%
Subtotal	**3,680**	**3,575**	**105**	**3%**
ANFs	*-656*	*-658*	*2*	*0%*
Workers compensation recovery	*178*	*246*	*-68*	*-28%*
Grand total	**3,202**	**3,164**	**38**	**1%**

Table 4: Actual versus expected claim numbers finalised in 2015 for prior accident years

Claim type group	Actual	Expected	Actual - Expected	Actual – Expected (%)
Minor severity (represented)	5,103	4,607	496	11%
Minor severity (not represented)	1,142	1,169	-27	-2%
Moderate severity	1,996	2,023	-27	-1%
Serious severity	1,006	1,016	-10	-1%
Grand total	**9,247**	**8,814**	**433**	**5%**

Table 5: Actual versus expected claim payments (in $m) in 2015 for prior accident years

Claim type group	Actual	Expected	Actual - Expected	Actual – Expected (%)
Minor severity (represented)	525	527	-2	0%
Minor severity (not represented)	16	19	-3	-17%
Moderate severity	389	414	-26	-6%
Serious severity	414	413	1	0%
Subtotal	**1,343**	**1,373**	**-30**	**-2%**
ANFs	*1*	*0*	*2*	*-2918%*
Workers compensation recovery	*17*	*15*	*2*	*12%*
Grand total	**1,362**	**1,388**	**-26**	**-2%**

4.3 Claim numbers and claim frequency trends

This section shows our estimated ultimate number of claims for accidents up to 30 June 2015. This includes incurred but not yet reported claims. We have included results from the previous report using data up to 30 June 2014 as a comparison.

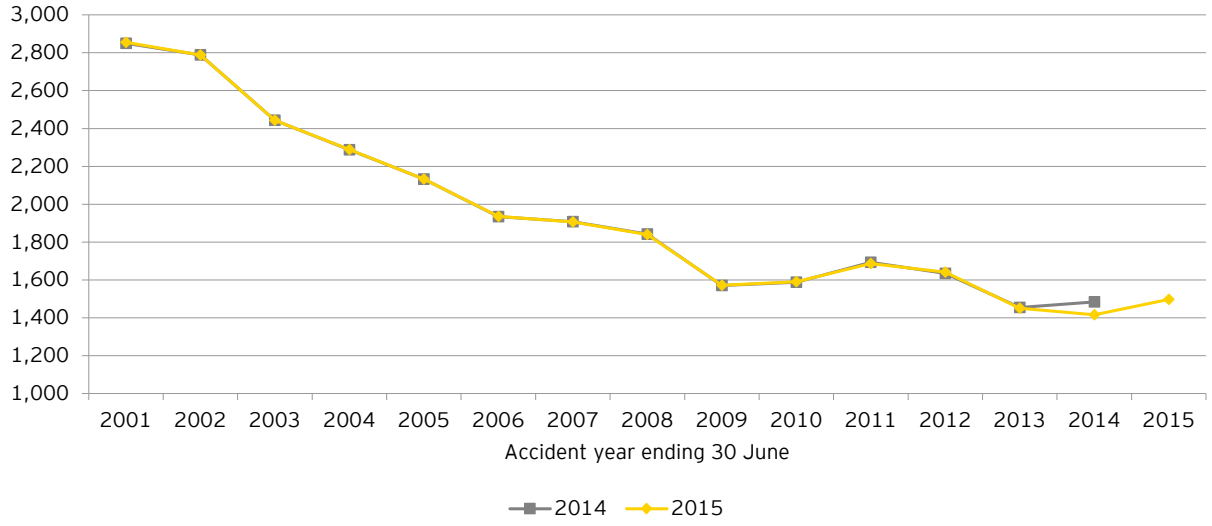
Information is shown by accident year starting from the year ended June 2001, the first full year of the Scheme, and is split by injury severity and claim type: minor severity injuries (legally and non-legally represented), moderate severity, serious severity, ANFs (at-fault and not at-fault), and workers compensation recovery claims. References to years in this section are accident years ending 30 June.

Historically a large majority of claims for moderate severity injuries and serious severity injuries are legally represented. These proportions have been reasonably stable, unlike minor claims. Therefore we have not split moderate and serious severity injury claims into legally and non-legally represented categories.

4.3.1 Claim number trends

4.3.1.1 *Non-legally represented minor severity injuries*

Figure 3: Ultimate number of claims for non-legally represented minor severity injuries

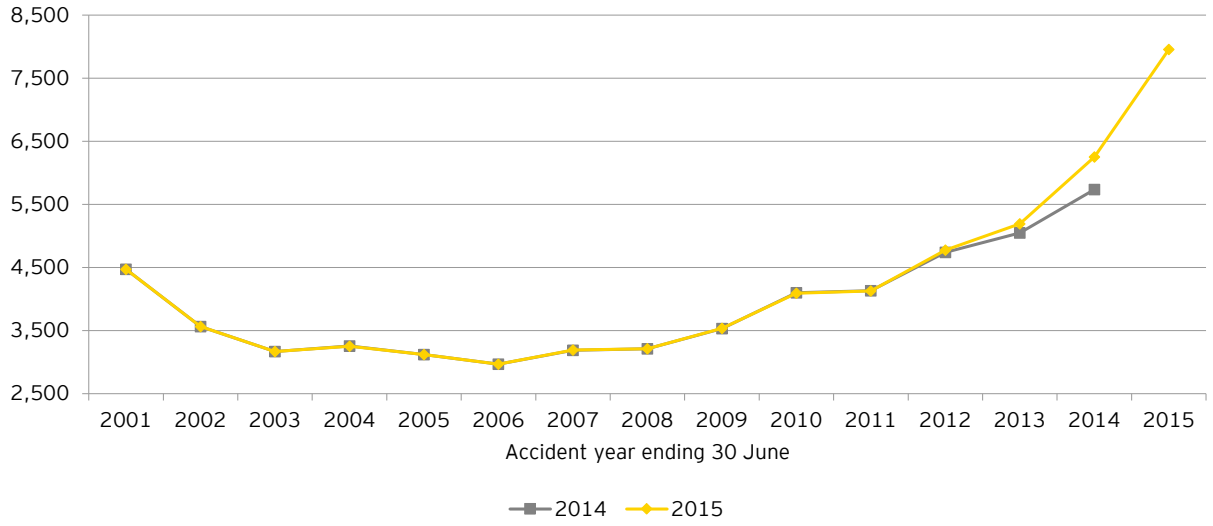


The number of claims for minor severity injuries that do not involve legal representation has decreased substantially since 2001, particularly from 2001 to 2009, and has been relatively stable since 2009 except for a slight increase in 2011 although the numbers have been lower in the last three years.

The ultimate number of claims for 2014 has reduced compared to the 30 June 2014 valuation, mainly due to lower than expected claim numbers reported during the year.

4.3.1.2 *Legally represented minor severity injuries*

Figure 4: Ultimate number of claims for legally represented minor severity injuries



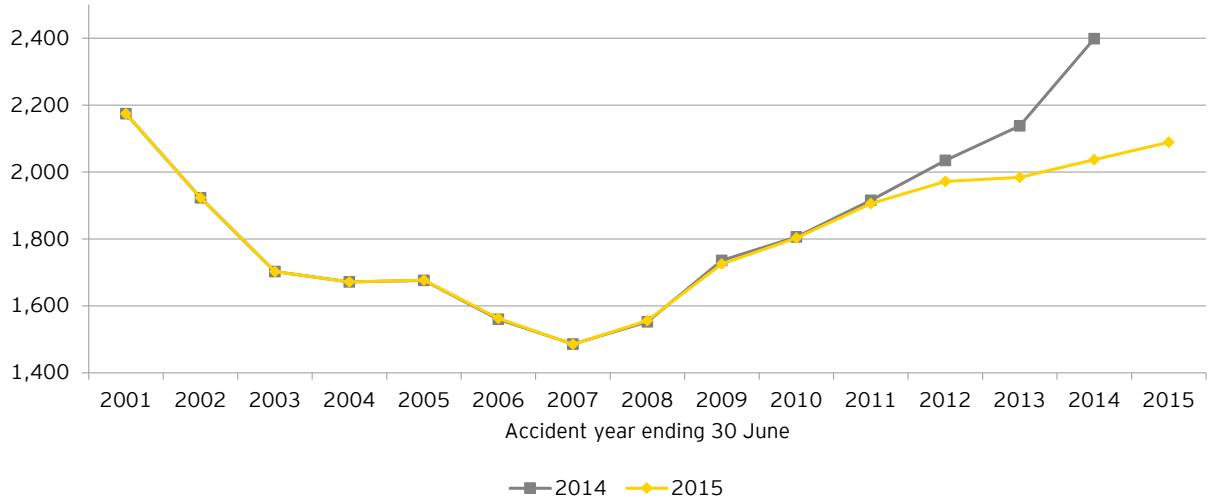
The number of claims for minor severity injuries that involve legal representation decreased sharply from 2001 to 2003 and remained relatively stable until 2008. Claim numbers climbed significantly thereafter, and have increased by 148% overall between 2008 and 2015. The increase in claim numbers was particularly significant in 2012 (649 or 16%), 2014 (1,058 or 20%) and 2015 (1,705 or 27%).

The ultimate number of claims for 2013 and 2014 has increased compared to the 30 June 2014 valuation, mainly due to higher than expected claim numbers reported during the year to 30 June 2015. This highlights that emerging experience can be difficult to predict and there is considerable uncertainty about how this trend will develop in the future.

From 2001 to 2009 overall, claim numbers for minor severity injuries with legal representation is approximately 1.5 times claim numbers for minor severity injuries without legal representation. This ratio increased to 3.1 for 2010 to 2014, and is 5.3 for 2015 alone.

4.3.1.3 *Moderate severity injuries*

Figure 5: Ultimate number of claims for moderate severity injuries

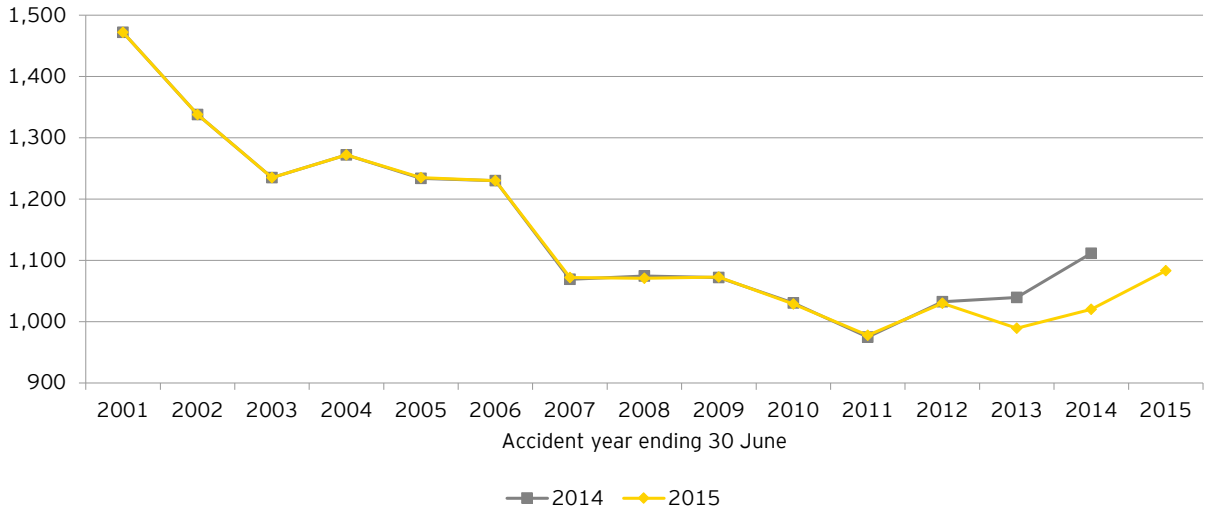


The number of claims for moderate severity injuries reduced by 32% from 2001 to 2007. Since 2007 claim numbers have increased consistently every year although the rate of increase has been decreasing in the last three years. The overall increase from 2007 to 2015 is 41% based on the latest projection.

The ultimate number of claims from 2010 to 2014 has reduced compared to the 30 June 2014 valuation, mainly due to lower than expected claim numbers reported during the year.

4.3.1.4 *Serious severity injuries*

Figure 6: Ultimate number of claims for serious severity injuries



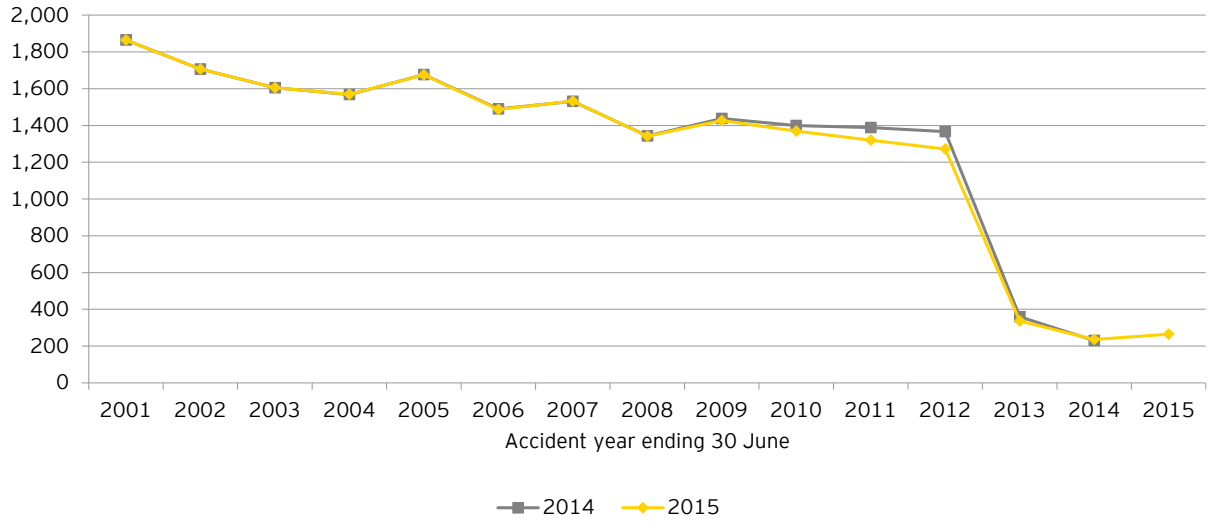
The number of claims for serious severity injuries reduced by approximately 26% from 2001 to 2015, reflecting falling casualty numbers.

Claim numbers for serious severity injuries have been volatile, partly due to a low frequency compared to other severity types. Claim numbers were stable between 2007 and 2009 but decreased in 2010 and 2011. We have projected a year on year increase for the number of claims from 2011 onwards with the exception of 2013. We have revised our projection downwards as reported numbers for 2013 and 2014 were much lower than expected.

The ultimate number of claims for accident years up to 2014 is lower than projected at the 30 June 2014 valuation due to lower than expected reported numbers in the 2013 and 2014 accident years leading us to revise the ultimate position downwards for these years.

4.3.1.5 *Workers compensation recoveries*

Figure 7: Ultimate number of claims for workers compensation recoveries

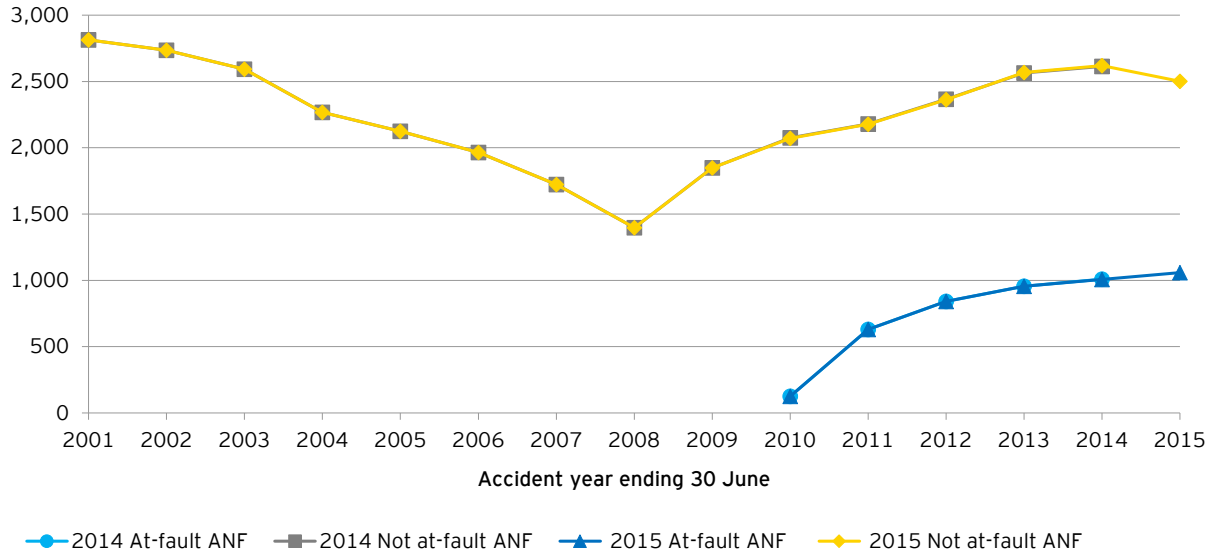


There has been a general reduction in ultimate number of workers compensation recovery claims from 2001 to 2012. This is consistent with the reduction in casualty numbers over the same period.

There was a substantial 79% decline in workers compensation recovery claim numbers from 2012 to 2015, reflecting the legislative changes to NSW workers compensation journey claims. There was very little change in our estimates for the majority of the accident years before 2015 compared to the 2014 valuation.

4.3.1.6 *ANFs*

Figure 8: Ultimate number of claims for ANFs



The ultimate number of not at-fault ANFs reduced between 2001 and 2008, but increased thereafter with the increase in the ANF maximum benefit from $500 to $5,000. Claim numbers increased by 79% overall from 2008 to 2015 although the rate of increase has slowed markedly in the last three years with a decrease in the 2015 year.

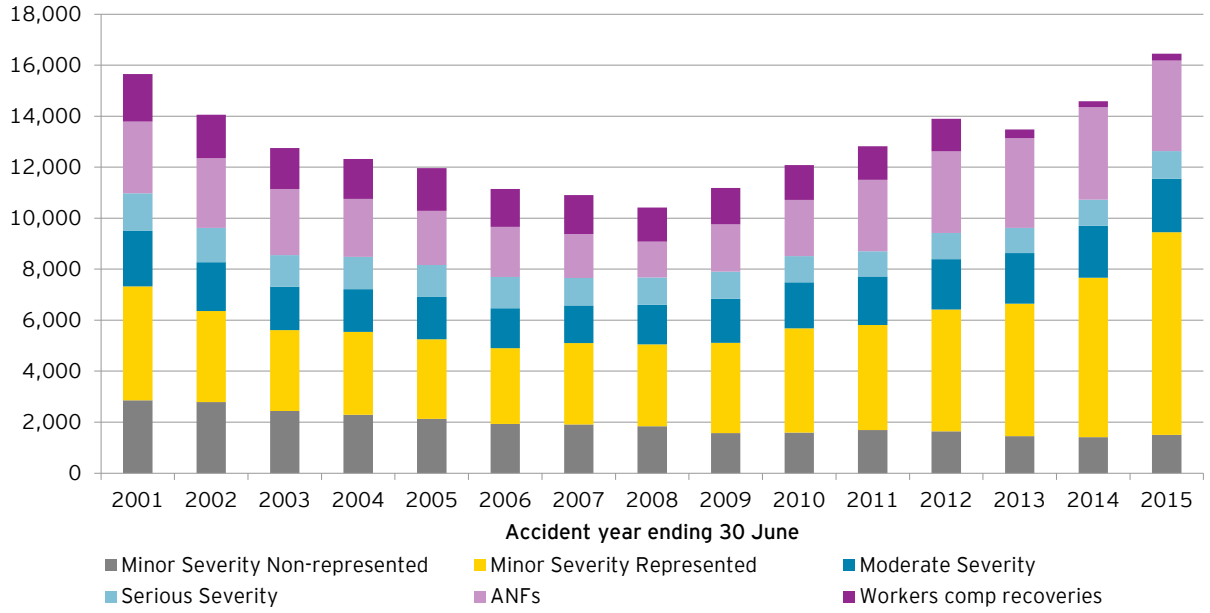
The ultimate number of at-fault ANFs has been increasing since they were introduced in 2010 but in the last three years the rate of increase has slowed. We expect the number of at-fault ANFs to continue to increase as the awareness of this benefit increases.

There have been minimal changes in our projections prior to 2015 since the last valuation.

4.3.1.7 *Ultimate number of full claims and ANFs*

The following figure combines claim numbers from various injury severities and claim types shown in sections from 4.3.1.1 to 4.3.1.6.

Figure 9: Ultimate number of full claims and ANFs



The total number of claims (including workers compensation recovery claims and ANFs) reduced between 2001 and 2008, and has been increasing thereafter. While the overall number of claims seem to have reduced in 2013, it was driven by legislative changes made in 2012 to NSW workers compensation journey claims. The increase in claim numbers resumed from 2014 onwards reaching an historic high in 2015. The overall increase between 2008 and 2015 was 58%.

The recent increase was almost solely driven by an increased number of claims for legally represented minor severity injuries and moderate severity injuries.

4.3.1.8 *Mix of claim numbers by severity and type*

The following figure shows the mix of claim numbers by injury severity and claim type. Claim numbers in sections from 4.3.1.1 to 4.3.1.6 are expressed as a percentage of the total.

Figure 10: Mix of claim numbers by injury severity and claim type

The proportion of claims for legally represented minor severity injuries has been increasing in recent years and represents close to 50% of total CTP claim numbers in 2015 compared to an average of about 27% between 2003 and 2007. In contrast the mix of minor severity injuries claims without legal representation has declined from approximately 18% of claims between 2003 and 2007 to 9% of claims for 2015.

The reduction in the proportion of workers compensation recovery claims in 2013 to 2015 is noticeable reflecting the legislative changes to NSW workers compensation journey claims.

The proportion of ANFs has also been increasing since 2010 to 2013 with decreases in the last two years resulting in ANFs being 22% of total CTP claim numbers in 2015. Most of the ANFs are not at-fault claims as shown above.

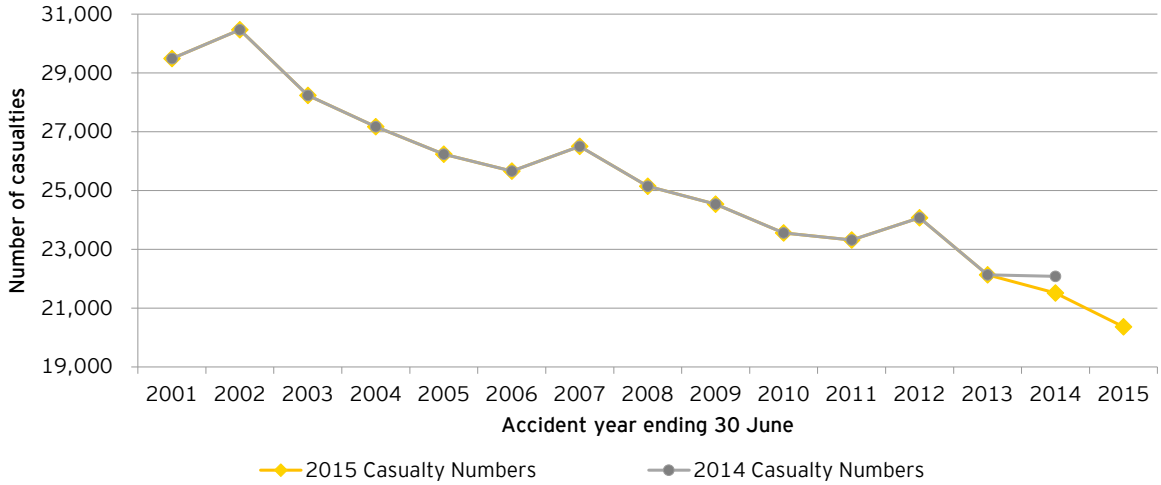
The proportion of claims arising from moderate and serious severity injuries has remained relatively stable over time, but has reduced more recently with the increase in numbers of minor severity represented claims.

4.3.2 Casualties

The following figures show the number of casualties and casualty frequency (per 10,000 registered vehicles) by accident year ending 30 June, since 2001. Casualties in this context are defined as individual with an injury category of 1-5 and this equates to the individual having been treated in the hospital system following the accident. This may differ from actual claimants from the accident as individuals not classified as injury category 1-5 could still be eligible to make a claim from the accident.

Due to the data entry delay of casualty data, where up to four months is required to process the casualty data from a particular accident quarter, casualty numbers for the latest two quarters are typically projected based on what has been processed so far. Projections from both 30 June 2015 and 30 June 2014 valuations are shown.

Figure 11: Casualty numbers

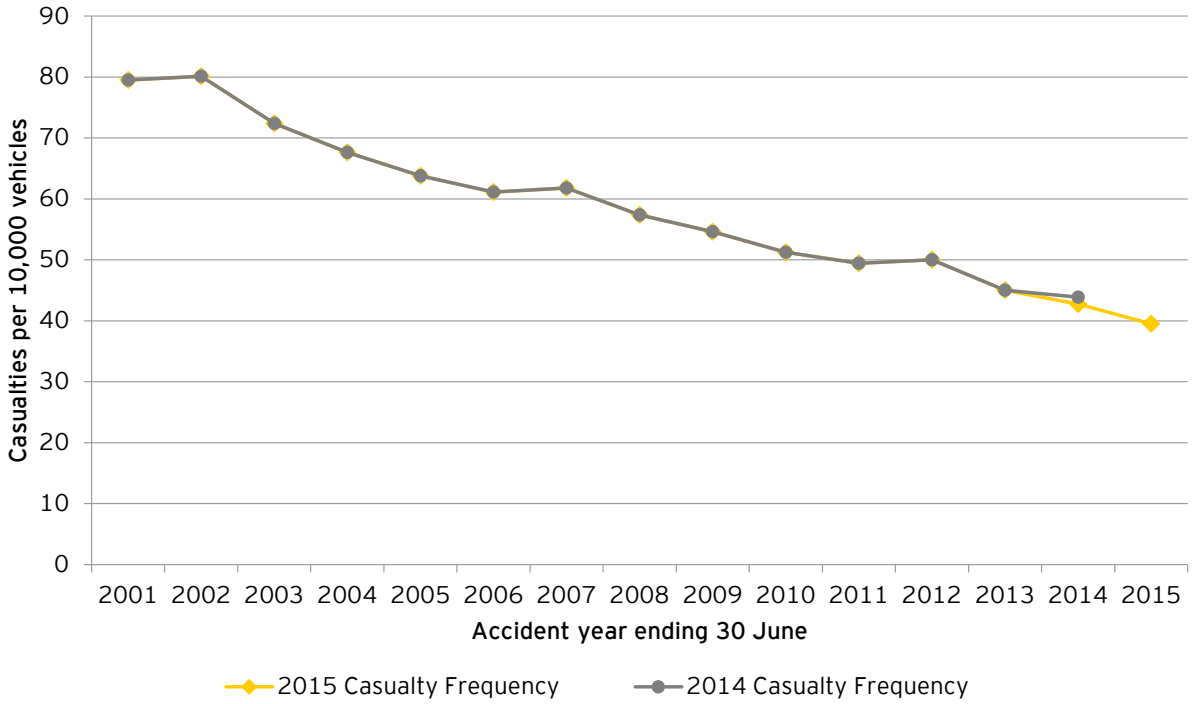


Casualty numbers have generally been decreasing since 2001 at a rate of around 2.6% p.a.; however, there have been some years which have observed spikes in the casualty numbers, such as, 2002, 2007 and 2012.

The spike in 2012 may be related to a change in the casualty data collection process which affects accident years 2010 to 2012. The SIRA has recently been notified by the RMS of a change in injury recording process of casualties from the middle of 2010 to the end of 2011. The injury recording process post calendar year 2011 had reverted to the process in place prior to the middle of 2010. We have adjusted the number of casualties in these affected years to remove the impact of the change to the injury recording process based on the information provided by RMS; however, a spike remains in the casualty numbers for the accident year ending 30 June 2012. Due to the adjustment process discussed above, this impacted the number of casualties for the 2010, 2011 and 2012 accident years.

In addition, casualty numbers in the 2014 accident year has reduced in our latest valuation as the actual number of casualties for this accident year is lower than the initial estimate as at 30 June 2014. There is increased uncertainty around the number of casualties for the 2015 accident year due to changes in the reporting process for this year, in particular self-reporting was introduced. We have assumed a development pattern for this year based on historic experience before the change to project this year.

Figure 12: Casualty frequency



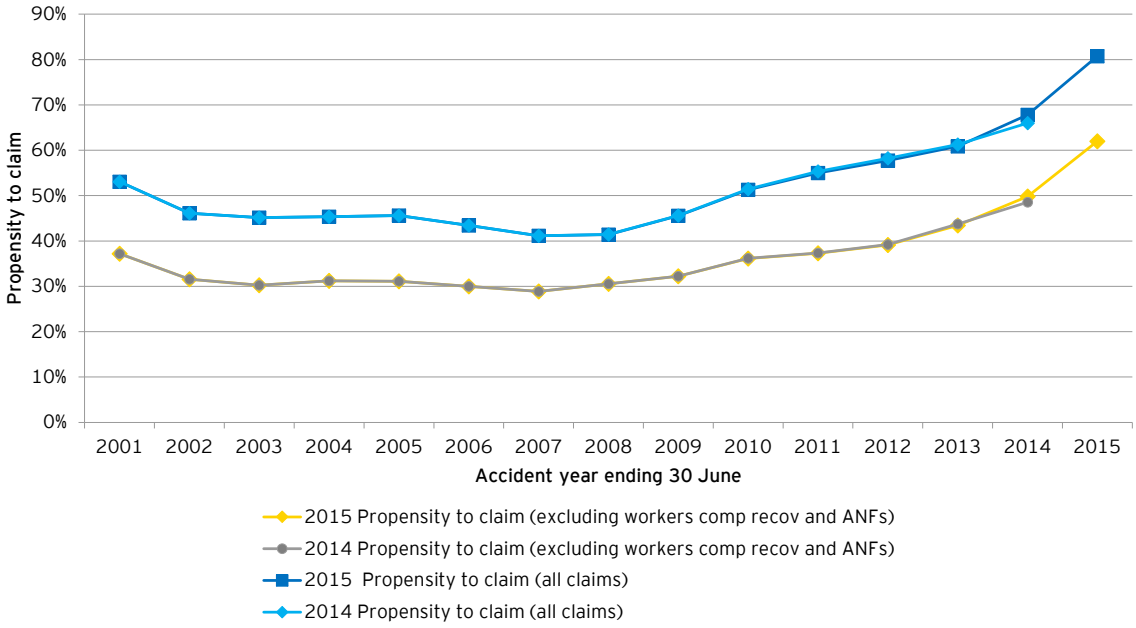
Similar to casualty numbers, casualty frequency (number of casualties per 10,000 registered vehicles) has been generally decreasing. This partially offsets the increase in claim propensity mentioned in the next section.

4.3.3 Propensity to claim

Propensity to claim is the ultimate number of claims divided by the number of road casualties. The figure below shows the propensity to claim since 2001 for:

- CTP claims excluding workers compensation recovery claims and ANFs
- All CTP claims.

Figure 13: Propensity to claim



The overall propensity to claim (all claims) reduced between 2001 and 2007 although it was stable between 2002 and 2007 for claims excluding ANFs and workers compensation recovery claims. The propensity to claim has been steadily increasing since 2008. The propensity to claim for 2015 is 81%, an average increase of 5% per year between 2008 and 2015. There has been an increase in our estimates of the propensity to claim between our estimates at 30 June 2014 and 2015 due mainly to the change in number of claims as explained in the earlier sections.

While casualty numbers have continued to fall in recent years (from around 25,000 in 2008 to around 20,500 in 2015), the number of full claims (excluding workers compensation recovery claims) has increased from around 7,500 to around 12,500 (over the same period). This is driven by an increase in the propensity to claim which has increased from 30% to just above to 60% over the last seven years as shown by the graph above.

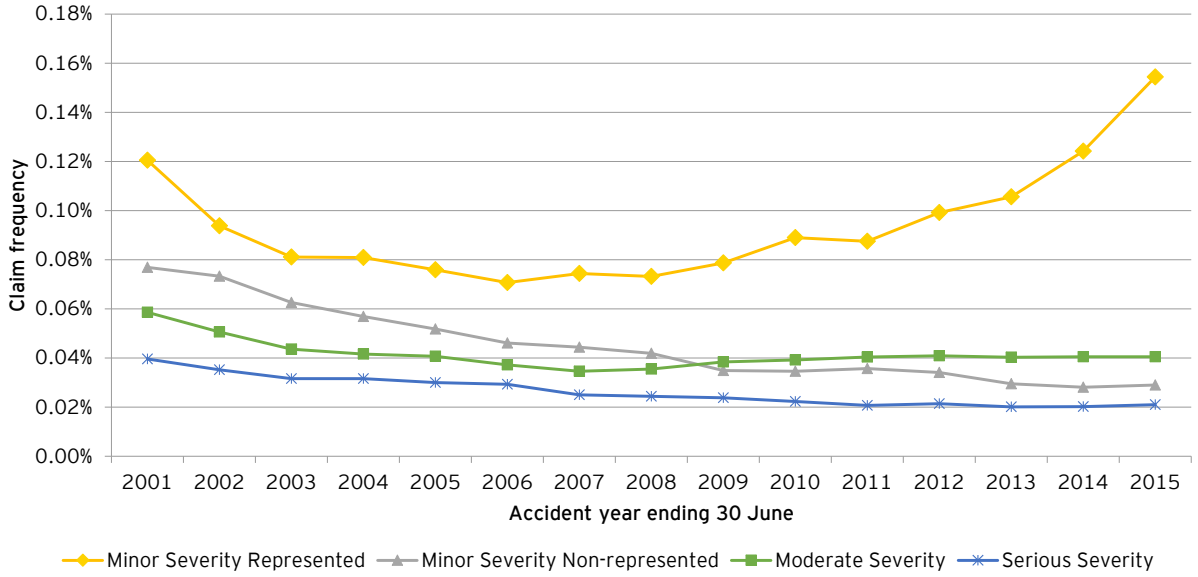
Overall, people injured in motor vehicle accidents are increasing likely to lodge a CTP claim (either ANF or a full claim).

4.3.4 Claim frequency

4.3.4.1 *Claim frequency by injury severity*

The figure below shows claims frequency since 2001 for CTP claims split by injury severity. Claims frequency is defined as number of claims divided by the number of policies exposed.

Figure 14: Claim frequency by injury severity



Claim frequency for minor severity injuries without legal representation, moderate severity, and serious severity injuries have decreased substantially since 2001, particularly from 2001 to 2008 but have generally stabilised since 2008. Over the period since 2008, there has been a further slight decrease in claim frequency for minor severity injuries without legal representation and serious severity injuries. Whereas for moderate severity injuries, the claim frequency has increased slightly. Claim frequency for these three severity groups have remained relatively stable in the past three accident years.

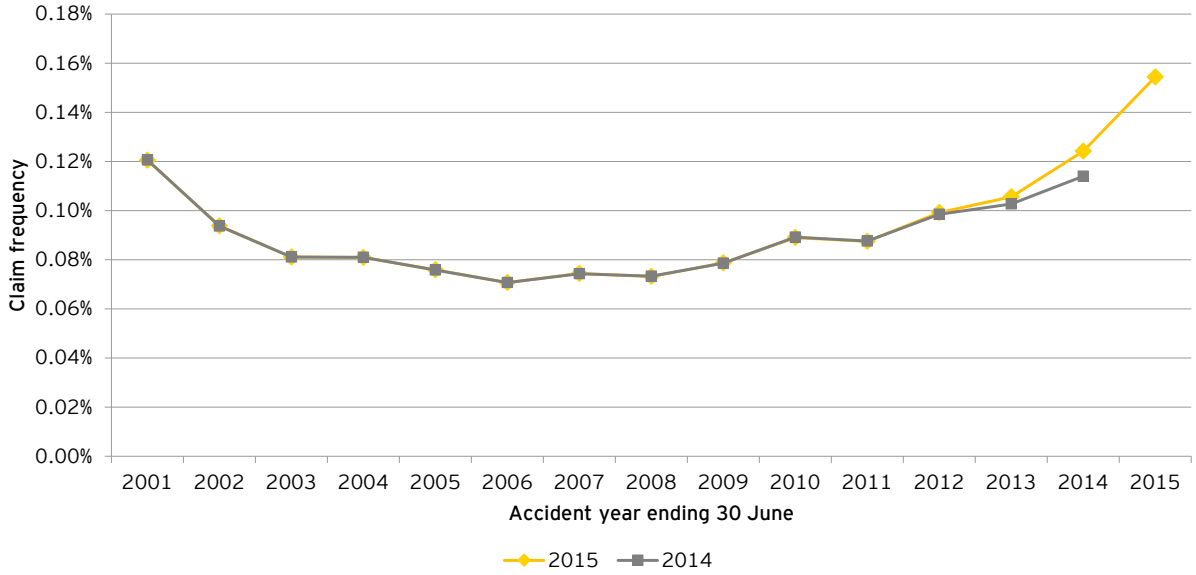
This contrasts with minor severity injuries with legal representation claim frequency where the claims frequency has increased significantly since 2011 resulting in a 76% increase since 2011. In particular there has been an 18% increase from 2013 to 2014 and a further 24% since 2014. The following section is a more detailed analysis into the claim frequency of this injury severity group.

The large increase in claim numbers for minor severity injuries with legal representation is driving down the overall average claim size since these more recent claims are assumed to be lower than the current scheme average. This is discussed later in section 4.4.1.2.

4.3.4.2 *Legally represented minor severity claims*

The figure below shows the claims frequency for minor severity represented claims and compares the current projection to the 2014 projection.

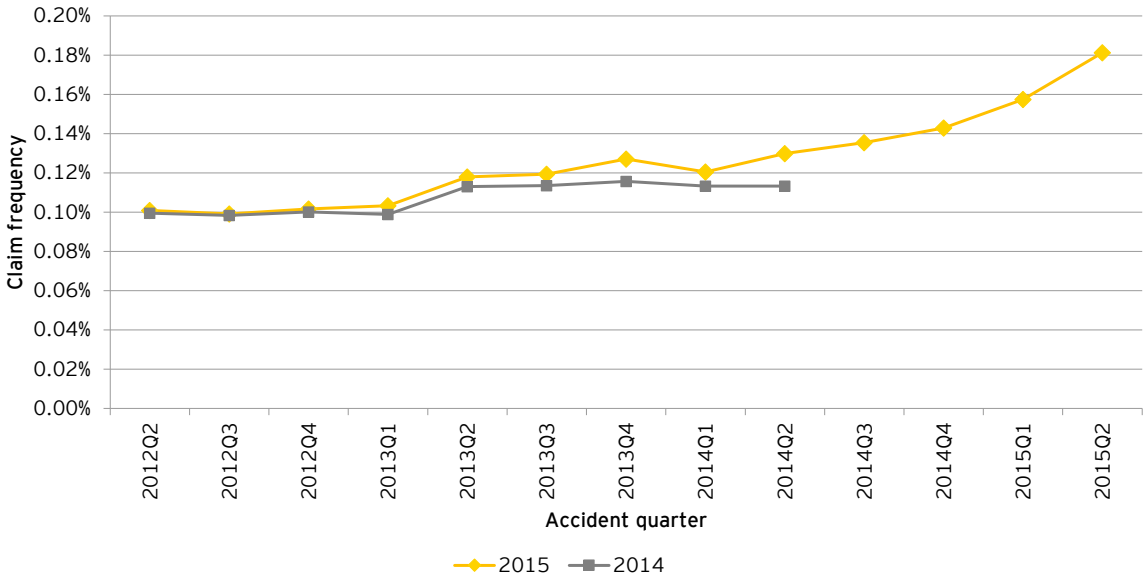
Figure 15: Claim frequency for legally represented minor severity claims



The claim frequency for minor severity injuries that involve legal representation decreased sharply from 2001 to 2003 and remained relatively stable until 2008. Claim frequency climbed significantly thereafter, and has increased by 111% overall between 2008 and 2015. The increase in frequency was particularly significant in 2014 (18%) and 2015 (24%).

The claim frequency projection for 2013 and 2014 has increased compared to the 30 June 2014 valuation, mainly due to a greater than expected number of claims emerging over the past year for these two accident years. The figure below shows the quarterly claims frequency since 2012 Q2 and highlights a stronger increasing frequency trend over the past year.

Figure 16 Quarterly claims frequency for minor severity represented claims



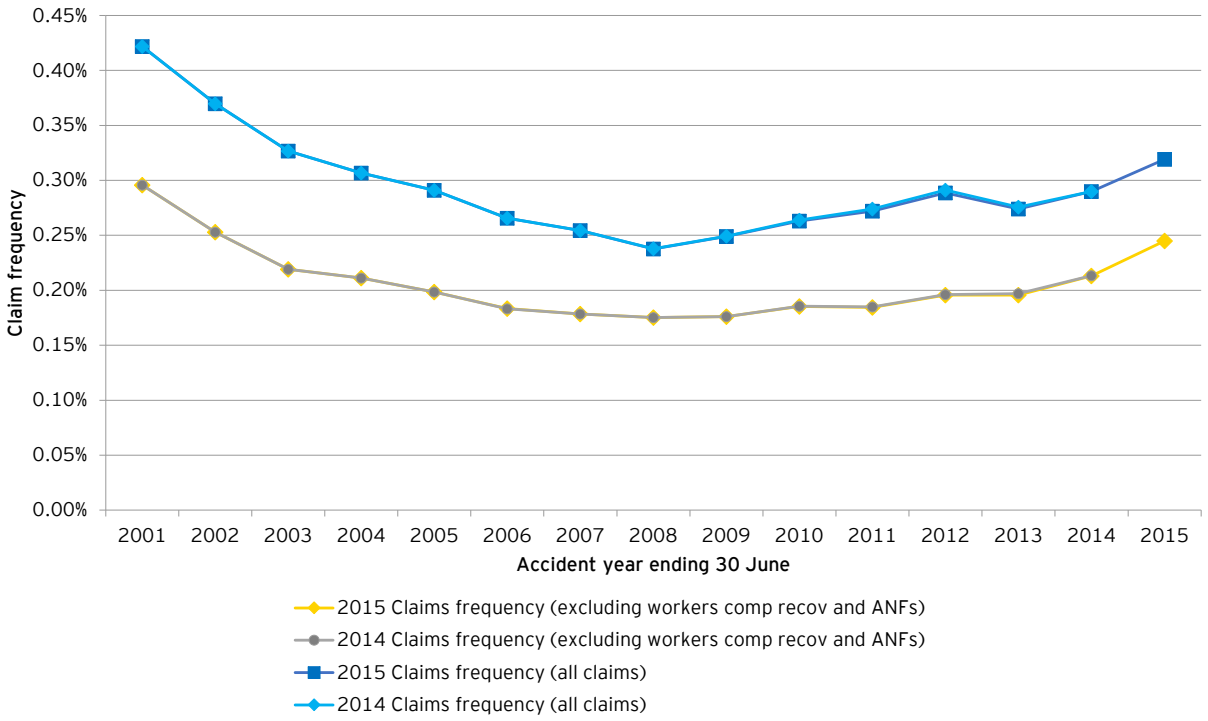
The quarterly view of the claim frequency increase shows the sustained increased in frequency from 2014Q1 onwards and in particular increase of 10% and 15% over the most recent two accident quarters.

4.3.4.3 *Claim frequency for all claims*

The figure below shows claims frequency since 2001 for:

- CTP claims excluding workers compensation recovery claims and ANFs
- All CTP claims.

Figure 17: Overall claim frequency



Overall claim frequency (all claims) reduced steadily between 2000 and 2008, and has been increasing thereafter except for a slight reduction in 2013 reflecting the legislative changes to NSW workers compensation journey claims. The increase in recent years is contributed by claims for legally represented minor severity injuries. There has been no material change in our projected claims frequency between our estimates at 30 June 2014 and 2015 at the overall level although it is noted that the mix of claims has changed.

Claim frequency excluding workers compensation recoveries and ANFs has also been increasing in recent years at a higher rate.

The recent increase in claim frequency is mainly contributed by an increasing propensity to claim, rather than the frequency of road accidents and casualties. These two components were discussed in the previous sections.

4.4 Scheme claims cost

This section shows the average claim size by injury severity and claim type.

To ensure comparability across accident years, average claim sizes are all shown at 30 June 2015 values, i.e. past claim payments have been adjusted to 30 June 2015 values using the historical Average Weekly Earnings (AWE) index.

Average claim sizes are gross of Input Tax Credits (ITC) and Decreasing Adjustment Mechanism (DAM).

Due to the uncertainty around superimposed inflation in the future no allowance for superimposed inflation on future claim payments has been made.

The results for average claim sizes, particularly for minor injury severity injuries, are to some extent influenced by:

- Delays in first assigning a severity level to a claim due to the change in the Abbreviated Injury Scale in 2008
- Changes in the Scheme in recent years including:
  - The increase to the maximum compensation for not at-fault-ANFs in 2008 from $500 to $5,000
  - The introduction in 2010 of compensation for at-fault ANFs to a maximum of $5,000
  - Changes to NSW workers compensation legislation in 2012 for journey to work claims.

4.4.1 Results

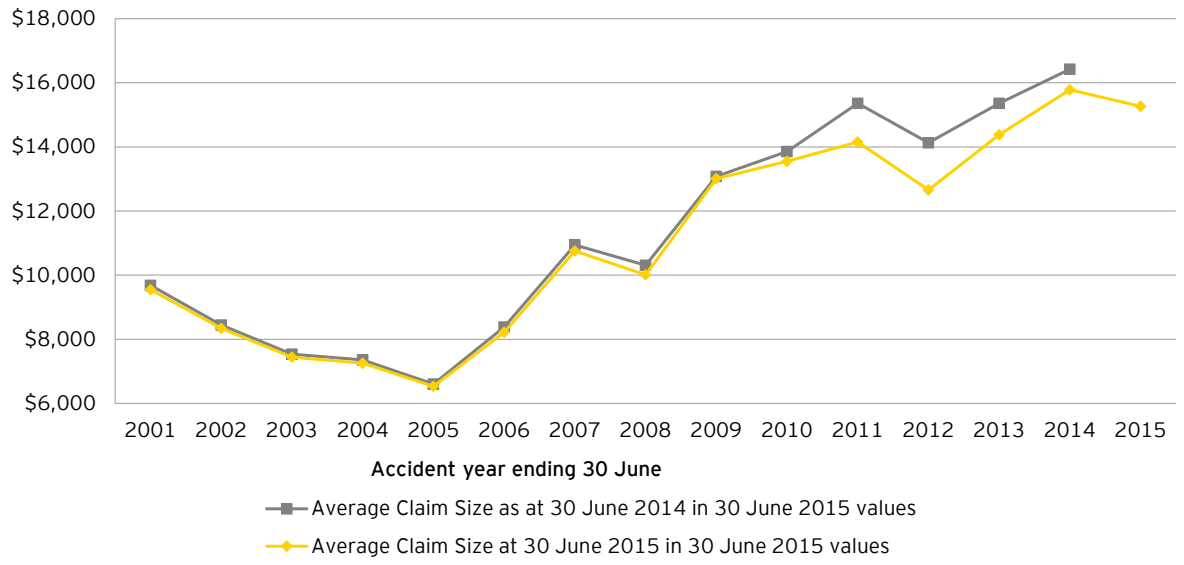
In the figures below, we have included results from the 30 June 2015 and 30 June 2014 outstanding claims liability valuations. We have inflated results from the 30 June 2014 valuation to 30 June 2015 values using wage inflation for the year to 30 June 2015.

References to years in this section are accident years ending 30 June.

Differences between results as at 30 June 2014 and 30 June 2015 valuations reflect a combination of claims experience in the latest year and changes to our view of future experience including economic inflation and settlement values. Differences are greater for more recent accident years where significant claim amounts are unpaid and thus based on actuarial estimates which are more heavily influenced by emerging claims experience and changes in our views.

4.4.1.1 *Non-legally represented minor severity injuries*

Figure 18: Average claim size (in 30 June 2015 values) for non-legally represented minor severity injuries

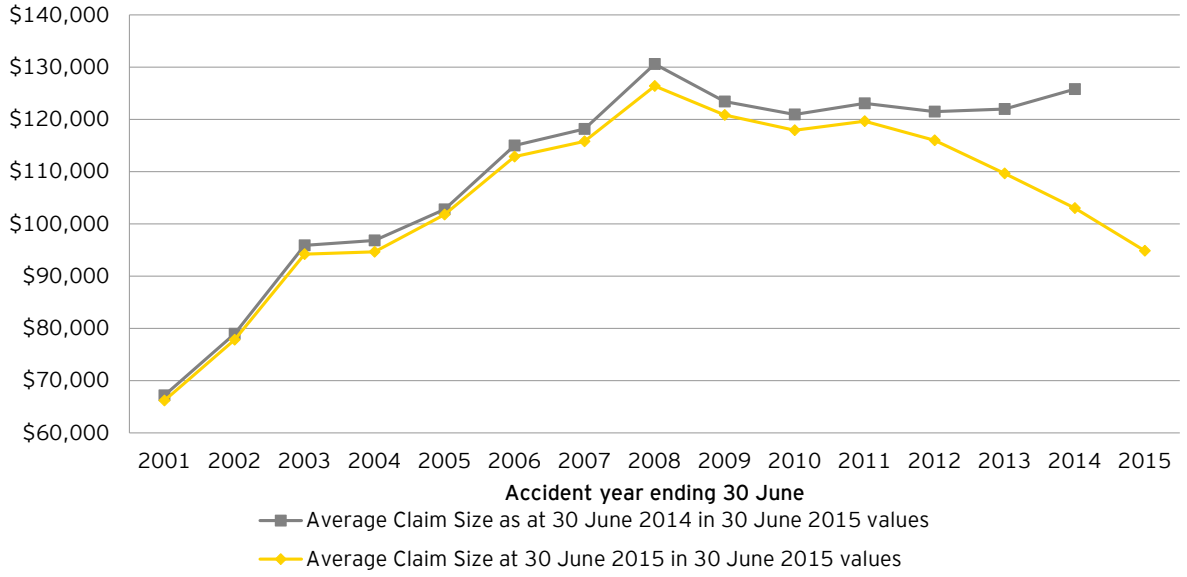


The average claim size for minor severity injuries that are not legally represented has increased substantially from $ 7,000 in 2005 to $15,000 in 2015 (in 30 June 2015 values).

Average claim sizes for 2008 onwards have reduced compared to the 30 June 2014 valuation due to lower than expected average claim payment experience in the past year.

4.4.1.2 *Legally represented minor severity claims*

Figure 19: Average claim size (in 30 June 2015 values) for legally represented minor severity claims



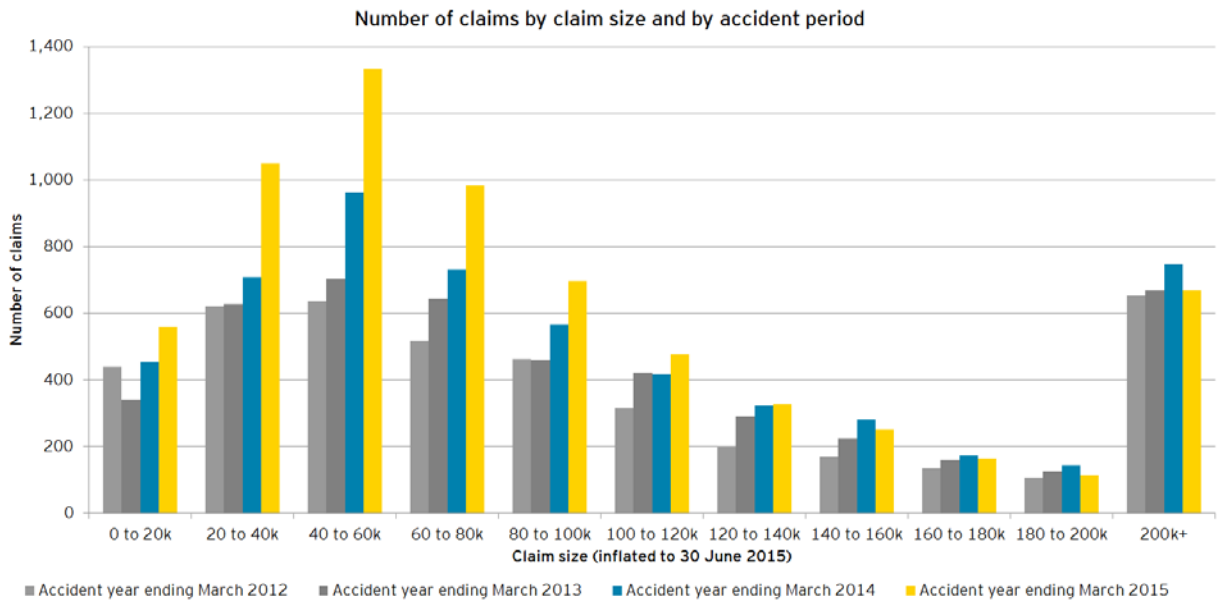
Average claim size for minor severity injuries that involve legal representation increased significantly from 2001 to 2008 but have trended downwards from 2008 to 2010. From 2011 onwards, average claim has reduced significantly due to the significant increase in the number of minor severity injuries with legal representation. The increase in claims numbers has mainly been driven by an increase in the number of claims at lower claim sizes resulting the proportion of smaller claims increasing and the average claims cost decreasing.

The decrease from 2011 to 2015 was 21%. Our estimates of average claims size at 30 June 2015 are generally lower than our estimates at 30 June 2014 for all accident years as we have now taken the change in mix of claims towards smaller claims into account and this better reflects emerging experience. In particular for our valuation of the scheme's outstanding claims liabilities at June 2015 we modelled the average claims size for minor severity claims with legal representation as follows:

- Existing claims with similar profile to those incurred in accident quarters to the end of March 2013
- Additional claims from the June 2013 accident quarter onwards which have been generated as a result of behaviour changes by participants and service providers in the scheme, which therefore have a different profile to the existing claims.

The chart below sets out the number of minor severity claims with legal representation which fall into various incurred costs (i.e. payments plus insurers case estimates) ranges at five quarters of development, in order to allow a comparison of the claims size mix. We assumed that the experience for the accident years ending March 2012 to March 2013 are stable and can be used as a point of reference. What is evident is that many more claims in the years since the claim frequency trend started are falling into lower size brackets than previous years and this supports the approach discussed above.

Figure 20: Average claim size experience (in 30 June 2015 values) across accident years ending 31 March for legally represented minor severity injuries



Based on this analysis for our outstanding claims estimates we selected the following average claim sizes in June 2015 dollars for the additional minor severity claims with legal representation that are driving the increase in minor severity legal representation claims:

- $74,000 for the accident year ending March 2014
- $63,000 from the June 2014 quarter onwards.

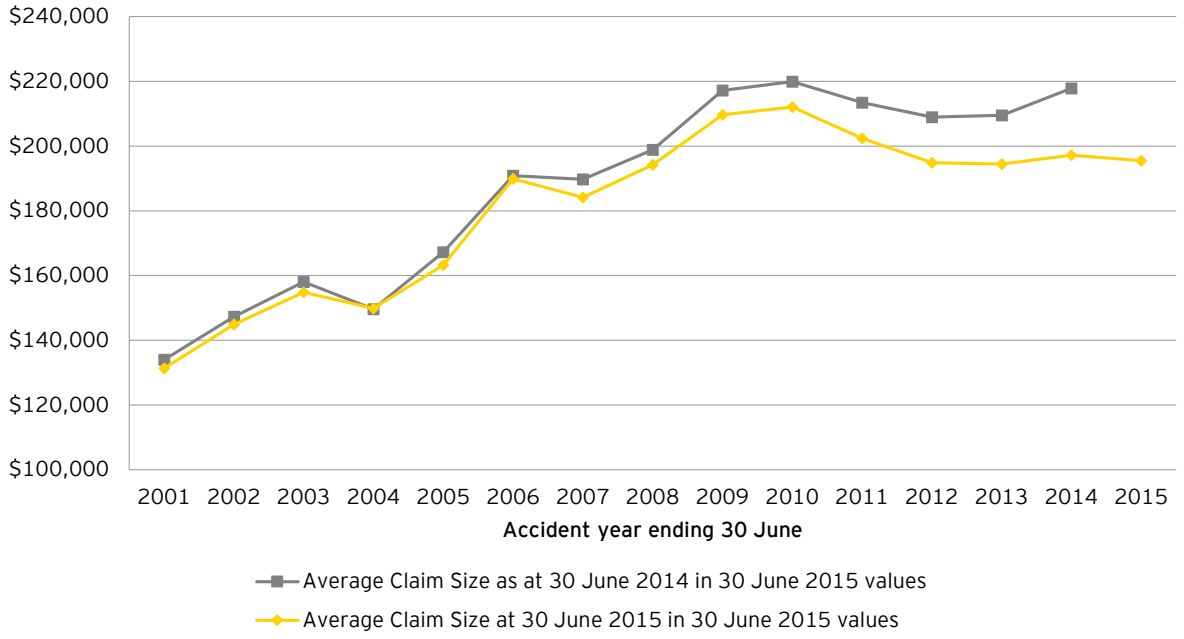
Figure 21: Existing and additional assumed average claims size for minor severity injuries

This compares to existing claims which follow the historic claims size profile and have a claims size of $112,000 in 2015 dollar based on our outstanding claims valuation at June 2015. Combining these two assumptions with our projected claims numbers produces an overall average claims size for all minor severity claims with legal representation for accident year 2015 of $95,000 in 30 June 2015 values.

Given that the average claim size for minor severity injuries with legal representation is close to six times that for minor severity injuries without legal representation, the recent increasing prevalence of legal representation amongst minor severity injury claims has contributed to an increase in overall Scheme claims cost.

4.4.1.3 *Moderate severity injuries*

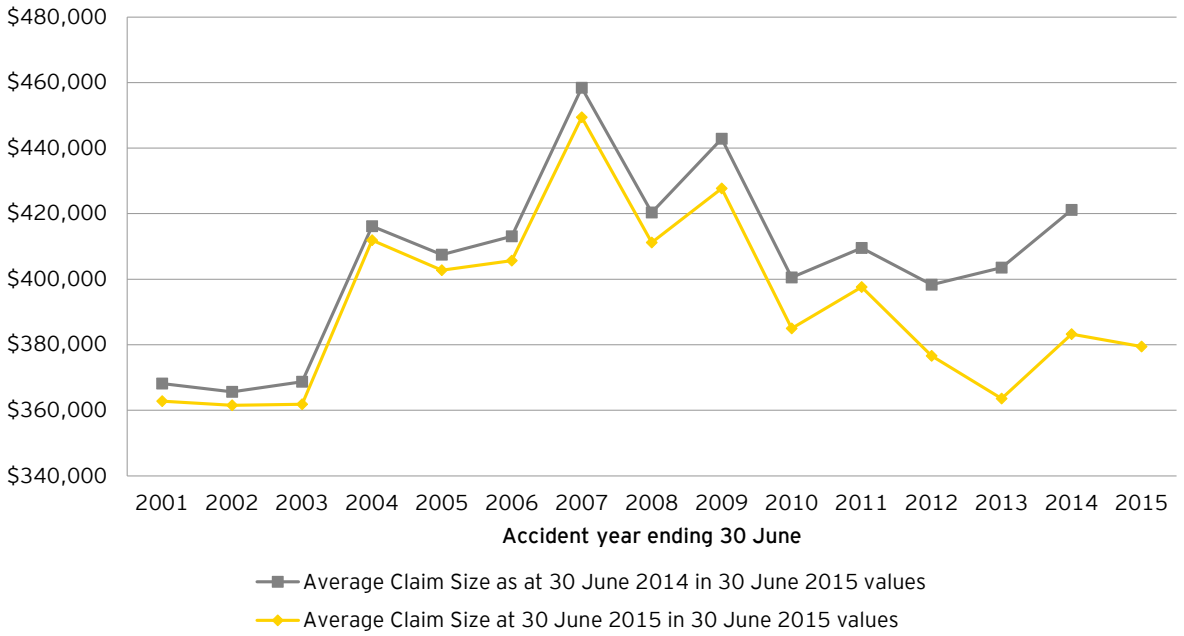
Figure 22: Average claim size (in 30 June 2015 values) for moderate severity injuries



The average claim size for moderate severity injuries has increased from approximately $131,000 in 2001 to $212,000 in 2010, an increase of 61% overall or approximately 5% p.a. Average claim size reduced and stabilised thereafter, and is $195,000 for 2015. Our estimates of average claim size at 30 June 2015 are generally lower than our estimates at 30 June 2014 due to lower payments per claim emerging during the year.

4.4.1.4 *Serious severity injuries*

Figure 23: Average claim size (in 30 June 2015 values) for serious severity injuries

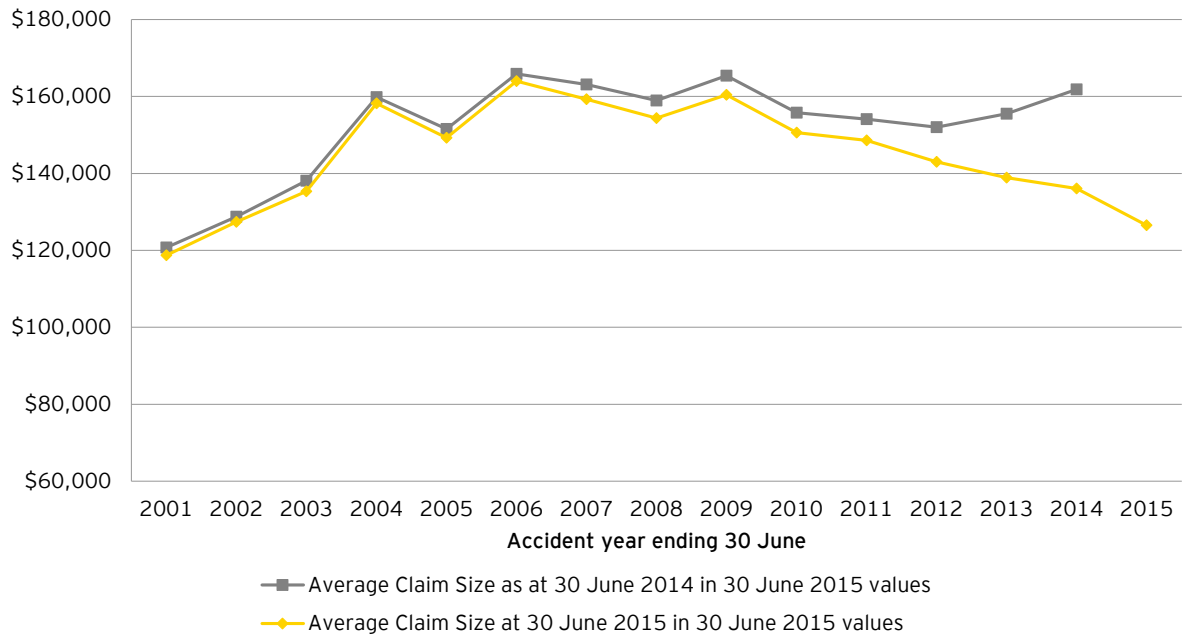


Average claim sizes for serious severity injuries are more volatile than other injury severities due to lower claim frequency, as well as greater projection uncertainty due to "lumpy payments."

There is an increasing trend from 2002 to 2007 and this appears to have been reversed since. The average claim size is $379,000 for 2015. Our estimates of average claim size at 30 June 2015 are generally lower than our estimates at 30 June 2014.

4.4.1.5 *Overall average claim size*

Figure 24: Average claim size (in 30 June 2015 values) for all claims excluding ANFs and workers compensation recovery claims



Overall average claim sizes (excluding ANFs and workers compensation recovery claims) have been relatively stable from 2004 to 2010. There is a steady downward trend thereafter of 3% p.a. This trend is partly driven by the increase in the prevalence of minor severity claims with legal representation with an increased proportion of these claims being of smaller claims sizes.

4.5 Superimposed inflation

Superimposed inflation has been a long-term feature of personal injury schemes in Australia over many decades especially in those with common law type benefit structures. Superimposed inflation is an increase in claims cost above normal inflation (usually wage inflation) and is usually caused by a combination of legal, judicial, social, medical and other external factors. In our work we have defined superimposed inflation to be the increase in the average claims size above wage inflation.

Superimposed inflation tends to be volatile over time. NSW CTP and workers compensation schemes have experienced very high levels of superimposed inflation for a number of years and also periods of benign or negative superimposed inflation.

During the operation of the privatised NSW CTP Scheme since 1989, various actuaries have assessed the levels of superimposed inflation by generally adopting similar underlying actuarial methods to the methods we have adopted. The results from those assessments are relatively consistent.

Based on the assessment of superimposed inflation by the previous Scheme actuary, insurer actuaries and EY, since the early 1990s the levels of superimposed inflation have been:

- For the previous Scheme for accidents up to September 1999 the average superimposed inflation from 1992 to 1996 was approximately 14% p.a. and around 3% from 1997 to 2003 (note before 1992 there was limited claims experience to measure superimposed inflation)

- It was difficult to measure the superimposed inflation in the early 2000s for the current Scheme because there were limited numbers of claims finalised. Assessments of the experience to 2004 for the current Scheme indicates negative superimposed inflation for some severity levels

- For the current Scheme the average superimposed inflation was around 6% from 2004 to 2009 based on assessment made by various actuaries. It has been benign since then and has been approximately zero or negative since 2008.

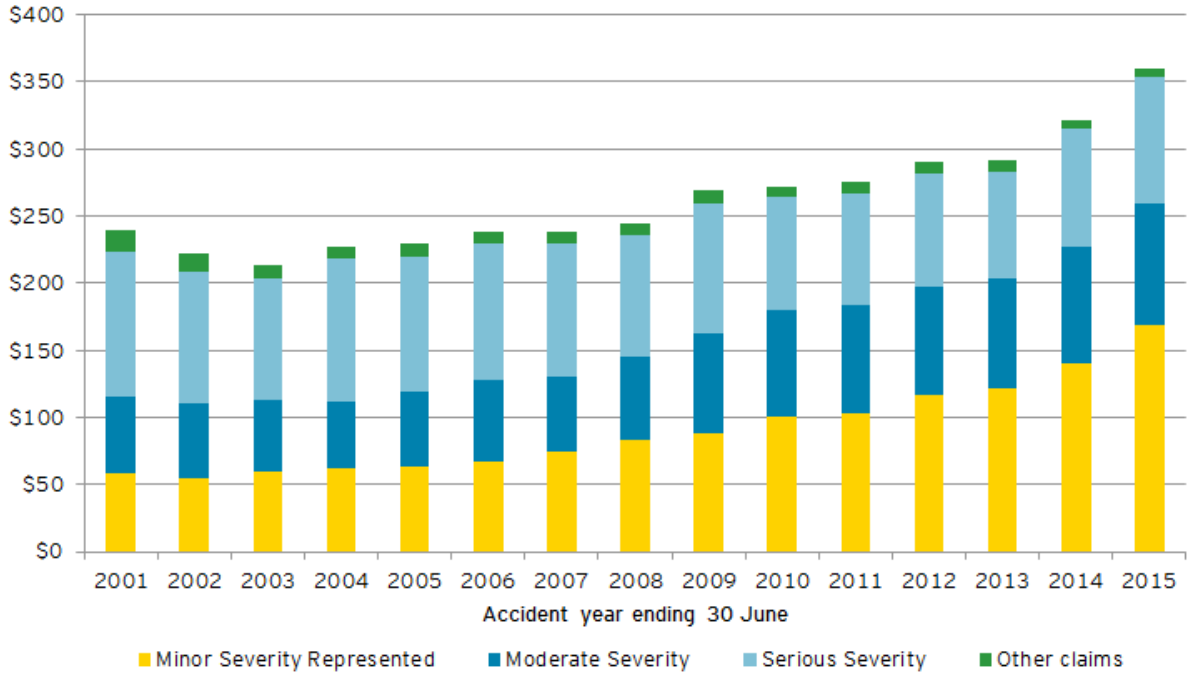
The average superimposed inflation since 1999 was around 3% but this is a mixture of the current Scheme and the previous Scheme experience. Superimposed inflation in claim sizes has been benign for the last six years and has been approximately zero from 2010 to 2012, negative in 2013 and 2014 and -9% for 2015. The figure for 2015 partly reflects a change in mix of settled claims towards the smaller minor severity legally represented claims as discussed in previous sections.

4.6 Claims cost per policy

The figure below shows the cost per policy for all Scheme claims, including ANFs and workers compensation recovery claims, by accident year ending 30 June since 2001. The cost per policy is the total cost of claims divided by the number of insured motor vehicles in the Scheme.

The claims cost is calculated by adding past claim payments and projected future claim payments allowing for wage inflation and an assumed level of future superimposed inflation.

Figure 25: Cost per policy for all claims and ANFs



The numbers in the figure are gross of ITC and DAM. The other claims segment includes non-legally represented minor injury severity claims, ANFs and workers compensation recovery claims.

Overall cost per policy was relatively stable until 2008 and has increased significantly thereafter. The cost per policy in 2015 is projected to be $360, compared to $240 in 2001. Of the $360, the highest contributor is legally represented minor severity injury claims ($168 or 47% of the total), followed by serious severity injury claims ($94 or 26% of the total), and moderate severity injury claims ($91 or

26% of the total). The percentage annual average increase in cost per policy from 2008 to 2013 was 3% and the increase from 2013 to 2015 was 7% p.a.

The main driver of the increase since 2008 is a higher frequency of claims from the minor severity injuries with legal representation. Claims cost from serious moderate and severity injuries have fluctuated upwards and downwards in recent years and there are no clear signs of a longer term trend, although moderate severity claims increased slightly in 2009 and 2010.

Other claims (workers compensation recovery claims, non-legally represented minor injury severity claims and ANFs) represent less than 5% of claims cost.

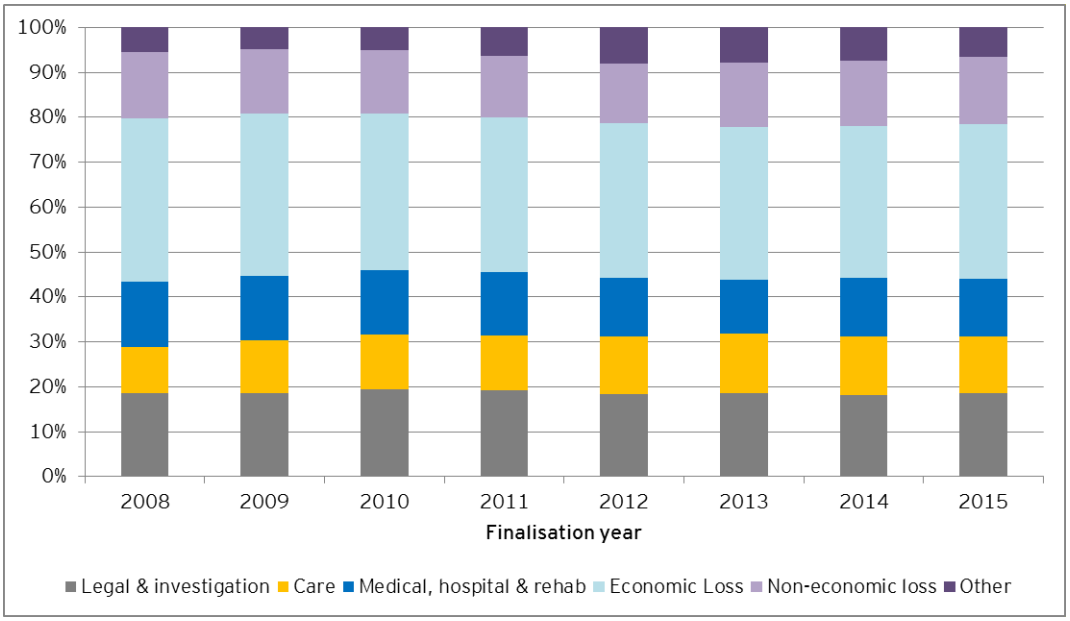
There is considerable uncertainty in the estimates for recent years because a significant portion of claims are unpaid and hence based on actuarial estimates. In particular there is additional uncertainty around minor severity represented claims for the two most recent accident years due to an apparent change in the mix of these claims towards smaller claims sizes. We have relied on the insurer case estimates to project this trend as only a small proportion of these claims have been paid so far. Actual claim payments may be higher or lower than the actuarial estimates.

4.6.1 Composition of claims payments by head of damage

The following figure shows a split of finalised claim costs by head of damage from 2008 to 2015. Information is shown by finalisation year ending 30 June. This is on a different basis to Figure 25: Cost per policy for all claims and ANFs which are based on projections on an accident year basis. Figure 26 is based on actual payments on a finalisation year basis.

There has been no obvious trend in the split since 2008. Economic loss forms the highest proportion of finalised claim costs (around 37%) followed by legal and investigation costs (around 20%). The composition of the claim payments has remained relatively stable over the last seven years.

Figure 26: Mix of finalised claim payments by heads of damage



4.7 Impact of interest rates and inflation on average Scheme premium

Insurance premiums are collected to pay future claims. Premiums are collected upfront and therefore earn an investment return which partly covers future claim payments. Interest rates affect investment returns and hence the premium amount charged by insurers. For instance, when interest rates are low, insurers earn less investment return on premiums, in turn putting upward pressure on premiums required to be charged (everything else equal).

In addition Scheme claim payments are typically linked to inflation. Hence future wage and superimposed inflation (although superimposed inflation has been zero in recent years) are important drivers of premium, with higher inflation increasing premium and vice versa.

The following analyses the impact of recent changes in interest rates and inflation on the average Scheme premium. The sensitivity of the average Scheme premium to future changes in interest rates and inflation is also analysed. Average Scheme premium is the average premium charged per policy written under the Scheme.

The weighted average interest rate reduced from 3.6% in the previous valuation (June 2014) to 2.5% in the current valuation (June 2015), while the average wage inflation expectation decreased, from 3.9% to 3.0%. The estimated impact of these changes on average Scheme premium relies on the following assumptions:

- An average claim payment duration of 4.2 years (refer to next section)
- Average premium of $419 excluding GST and MCIS levy (based on 2014 underwriting year)
- All premium components (including expenses) are impacted by wage inflation
- Only claim payments and claim handling expenses are paid after premium collection and hence affected by interest rates
- No change in insurers required return on capital.

The impact of the recent reduction in interest rates is a 4.6% or $19 increase in the average premium (excluding GST and MCIS levy), while the impact of the decrease in wage inflation expectation is a 3.6% or $15 decrease.

The following table shows the approximate change in average premium as a result of future changes in interest rate, wage inflation and superimposed inflation. The calculations are based on a risk premium analysis performed for the Scheme as at 30 June 2015. The current assumption for superimposed inflation is 1.75%, based on the June 2015 outstanding claims valuation. An average premium of $419 based on the 2014 underwriting year is again assumed (excluding GST and MCIS levy) although future premiums are likely to be higher due to inflation and claims experience deterioration.

Table 6: Sensitivity of average premium to changes in interest rate and inflation

Factor	Scenario	Percentage change in average premium	Dollar change in average premium
Interest rate	Increase by 1%	-3.5%	-$15
	Decrease by 1%	3.7%	$16
Wage inflation	Increase by 1%	3.7%	$15
	Decrease by 1%	-3.5%	-$15
Superimposed inflation	Increase by 1.75%	6.6%	$28
	Decrease by 1.75%	-6.1%	-$26

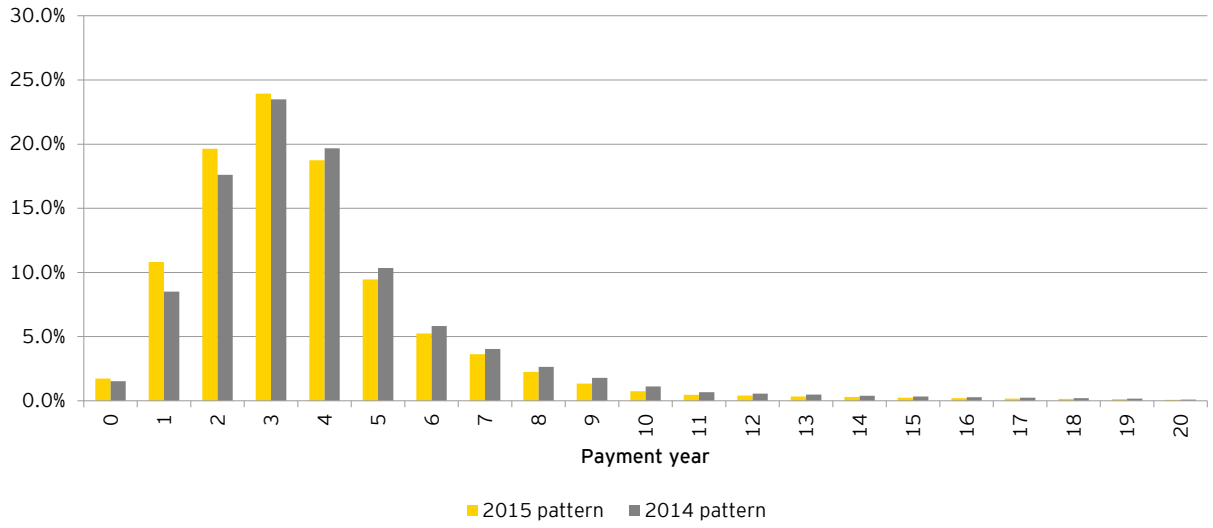
For example if interest rates fell by 1% the average premium would increase by 3.7% or about $16 (assuming an average premium of $419) before MCIS levy and GST and $21 after including both MCIS levy and GST. A similar calculation applies to other sensitivities in the above table. Adding GST and MCIS levy would increase the above impact by approximately a further 38%.

Also note there could be a combination of scenarios occurring, for example an increase in interest rate and wage inflation. In this case the overall impact is calculated by adding the above sensitivities although note that results are approximate.

4.8 Claim payment pattern and duration

The following figure shows the assumed payment patterns from the 2015 and 2014 outstanding claims valuations for the Scheme. Payment pattern refers to the timing of the cashflows leaving the Scheme for a cohort of claims rather than when the claims are finalised. Information is shown by payment year, and includes the impact of wage and superimposed inflation but excludes the impact of interest rates. The payment pattern relates to a cohort of claims from the current accident year.

Figure 27: Proportion of claim payments made in various years



Compared to the 2014 payment pattern, the 2015 payment pattern assumes a higher proportion of claim payments are made in earlier years after the date of accident. This is reflected in a reduction in implied average time to payment (2015: 4.2 years, 2014: 4.5 years). The reduction is observed across most of the severity type claims except for minor severity injuries with no legal representation.

5. Insurer profits

5.1 Introduction

This section provides estimates, based on analysis of Scheme claims data as at 30 June 2015, of the profitability of CTP policies underwritten by insurers since the Scheme commenced in October 1999.

The profitability of CTP policies is estimated as:

	Premium income
plus	Investment income on premiums
less	Insurers' expenses excluding claim handling expenses
less	Claim payments (which include plaintiffs' and defendants' legal costs and claim investigation costs)
less	Insurers' claim handling expenses.

Claim payments and claims handling expenses are discounted from the time of payment to the middle of each accident year using interest rate available at the time. This allows for investment income earned on the residual premium after deducting expenses, between the claim accident date and payment date. We have assumed that insurers investment income returns are equal to those included in their premium rate filing submitted to the SIRA.

In this report, we have shown figures by accident year ending 30 June.

The above profit calculation assumes that:

- The expenses excluding claims handling expenses were paid by insurers at the same time as the corresponding premiums were received
- Premium is earned uniformly across the underwriting year.

This approach is intentionally somewhat simplistic and is used for reporting purposes. It estimates profits or losses made by insurers without allowing explicitly for the cost of insurers' capital held in order to support the business.

The estimation of profit is uncertain and complicated by the fact that CTP claims take a number of years to settle, due to the involvement of medical, legal and judicial outcomes. Hence it can be many years before the profit earned on a CTP policy can be estimated with any certainty. Assessment of profit (especially for the more recent accident years) is largely based on models and assumptions on expected claims experience. Actual claim outcomes may eventuate to be materially different to the expected outcomes. As actual claims experience gradually replace the estimates from the models over time, the hindsight assessment of profit may change as a result.

Premium written, estimates of insurers' acquisition costs and net cost of reinsurance, Bulk-Billed ambulance and hospital costs, and discount rates for past underwriting years are assumed to remain unchanged over time. Therefore changes over time in profit or loss estimates are entirely attributable to changes in projections of claim payments.

5.2 Premium

The industry premium income excluding the MCIS levy and GST is shown in the following table. These premium figures are earned by accident year.

Table 7: Industry premium income for accident years ending 30 June

Accident year ended 30 June	Premium income* ($m)
2000	1,499
2001	1,321
2002	1,322
2003	1,355
2004	1,423
2005	1,474
2006	1,446
2007	1,387
2008	1,192
2009	1,207
2010	1,380
2011	1,574
2012	1,717
2013	1,841
2014	2,053
2015	2,157

** 2000 – 2006: includes SIRA levy*
2007 – 2015: excludes SIRA and LTCS levies

Premium income fell by 16% between 2004 and 2008, and increased thereafter. Premium continued to increase in 2015, by 5% to $2,157m. Please refer to the 2013 report for further discussion of possible reasons behind the historical movements.

5.3 Expenses excluding claims handling expenses

Insurer expenses excluding claims handling expenses (CHE) include business acquisition expenses and the net cost of reinsurance. These expenses are estimated based on the weighted average of insurers' rate filings for each year.

Acquisition expenses are expenses incurred by insurers to acquire and retain CTP business. These expenses include personnel costs and associated costs (e.g. rent, insurance premiums), IT costs, finance costs (e.g. accounting, audit, actuarial), stationery, marketing and advertising costs, commissions, reinsurance and other costs including overheads.

The following table shows the adopted business acquisition expenses, commission and net cost of reinsurance in estimating profitability of the Scheme.

Table 8: Insurers' business acquisition expenses and net cost of reinsurance by accident year ending 30 June

Accident year ended 30 June	Insurers' acquisition expenses excluding commission and reinsurance* ($m)	Commission ($m)	Net cost of reinsurance ($m)	Insurers' acquisition expenses and net cost of reinsurance* ($m)	Year on year change (%)	Percentage of earned premium (%)
2000	117	42	20	179	0	12%
2001	130	30	17	177	-1%	13%
2002	135	26	19	181	2%	14%
2003	137	27	24	187	4%	14%
2004	144	26	35	205	9%	14%
2005	155	26	42	223	9%	15%
2006	159	24	40	223	0%	15%
2007	144	24	35	203	-9%	15%
2008	133	23	26	182	-10%	15%
2009	128	24	20	171	-6%	14%
2010	139	27	18	185	8%	13%
2011	152	32	18	202	9%	13%
2012	164	34	18	216	7%	13%
2013	171	37	13	221	2%	12%
2014	180	40	9	229	4%	11%
2015	190	42	10	242	5%	11%

** 2000 – 2006: includes SIRA levy, RMS commission*

As a percentage of premiums, expenses excluding CHE increased from 12% to 15% between 2000 and 2005, and have since remained steady until 2008. The expense percentage started to decrease from 2009, and is currently 11% of premium.

The composition of expenses varies by insurer due to different operational structures. Insurers may also report expenses on different bases, partly due to their different approaches to internal expense reporting.

Bulk-Billed ambulance and hospital costs, which are part of the SIRA levy, have been paid by the SIRA after 30 September 2006. Therefore, no cost has been assumed for accident years associated with underwriting year 2007 and onwards.

5.4 Claim payments

We have estimated the discounted value of claim payments which consists of:

- Actual claim payments made up to 30 June 2015 – claim payment information is provided by the SIRA
- Estimated outstanding claim payments as at 30 June 2015 based on our outstanding claims valuation as at 30 June 2015. These are intended to be central estimates in the sense that they are represent the average outcome of future claims experience with no over or under bias.

For each accident year the table below shows our estimate claim payments discounted to the middle of each accident year (in dollar values and as a percentage of earned premium) and the proportion of the claim payments that are attributable to actual payments made up to 30 June 2015.

Table 9: Discounted value of claim payments by accident year ending 30 June

Accident year ended 30 June	Discounted claim payments* ($m)	Percentage of premium (%)	Proportion attributable to claim payments up to 30 June 2015
2000	775	52%	99%
2001	687	52%	99%
2002	702	53%	98%
2003	674	50%	97%
2004	823	58%	98%
2005	775	53%	97%
2006	834	58%	95%
2007	808	58%	96%
2008	798	67%	95%
2009	905	75%	92%
2010	969	70%	88%
2011	1,008	64%	80%
2012	1,115	65%	61%
2013	1,197	65%	37%
2014	1,340	65%	16%
2015	1,546	72%	3%

**Discounted to the middle of each accident year using prevailing interest rates. This is to allow for investment income earned by insurers on premium after deducting acquisition expenses.*

Total discounted claim payments have been increasing steadily since the beginning of the Scheme. Discounted claim payments are $1,546m for accident year 2015.

Claim payments as a percentage of premiums have also been increasing. This proportion ranged from 50% to 53% from 2000 to 2003, and generally increased thereafter (although with volatility in between). Claim payments were 64% to 72% of premium for the past five accident years up to 2015.

For recent accident years, a smaller proportion of estimated claim payments have been paid by 30 June 2015. In particular only 3% of estimated claim payments for accident year 2015 have been paid and the remaining 97% is outstanding. This implies that estimated claim payments for recent accident years are relatively more uncertain and may change subsequently as claims experience emerges.

Further information and commentary on the Scheme's claims experience are found in section 4.

5.4.1 Claims handling expenses

We have calculated claims handling expenses (CHE) as a percentage of total risk premium and then applied the selected percentage to discounted claim payments.

The following table shows the adopted CHE percentage allowance and discounted CHE amount (in dollar values and as a percentage of earned premium).

Table 10: Adopted CHE percentage allowance, CHE amounts by accident year ending 30 June

Accident year ended 30 June	Adopted CHE allowance (%)	Discounted CHE ($m)	Percentage of earned premium (%)
2000	6.5%	50	3%
2001	6.5%	45	3%
2002	6.5%	46	3%
2003	6.5%	44	3%
2004	6.5%	53	4%
2005	7.3%	57	4%
2006	7.3%	61	4%
2007	7.3%	59	4%
2008	7.3%	58	5%
2009	7.3%	66	5%
2010	7.3%	71	5%
2011	6.5%	66	4%
2012	6.5%	72	4%
2013	6.0%	72	4%
2014	5.7%	76	4%
2015	5.7%	88	4%

There has been a steady increase in the discounted CHE percentage (of claims) from 6.5% in 2000 to 7.3% in 2010. Since then the percentage has decreased and is around 5.7% for 2015. When expressed as a percentage of earned premium, CHE increased from 3% in 2000 and is currently 4% for 2015.

5.5 Results

Based on the above results, the estimated insurer profitability for CTP policies from 2000 to 2015 accident years ending 30 June is shown in the following table. Note this assessment excludes the MCIS levy and GST in the assessment of premium and profits. This differs to profit margin assessment in the "On the road to a better CTP scheme Options for reforming Green Slip insurance in NSW" paper, which includes the MCIS levy in the assessment and this is discussed further below.

Table 11: Estimate of profitability of past NSW CTP premiums written by licensed insurers, by accident year ending 30 June

Accident year ended 30 June	Premium earned (a)	Estimate of insurers' acquisition expenses and net cost of reinsurance (b)	Bulk-Billed ambulance and hospital costs (c)	Estimated discounted value of:		Estimate of discounted value of profit/(loss) for insurers:	
				Central estimate of claim payments (d)	Insurers' claims handling expenses (e)	Profit (f)	Percentage of premium (g)
	($m)	($m)	($m)	($m)	($m)	($m)	(%)
2000	1,499	179	36	775	50	459	31%
2001	1,321	177	36	687	45	376	28%
2002	1,322	181	36	702	46	357	27%
2003	1,355	187	39	674	44	411	30%
2004	1,423	205	42	823	53	301	21%
2005	1,474	223	41	775	57	378	26%
2006	1,446	223	42	834	61	286	20%
2007	1,387	203	0	808	59	317	23%
2008	1,192	182	0	798	58	154	13%
2009	1,207	171	0	905	66	66	5%
2010	1,380	185	0	969	71	156	11%
2011	1,574	202	0	1,008	66	298	19%
2012	1,717	216	0	1,115	72	314	18%
2013	1,841	221	0	1,197	72	351	19%
2014	2,053	229	0	1,340	76	408	20%
2015	2,157	242	0	1,546	88	281	13%

(a) Refer to Section 5.2.

(b) Refer to Section 5.3.

(c) Refer to Section 5.3.

(d) Refer to Section 5.4.

(e) Refer to Section 5.4.1.

(f) (a)-(b)-(c)-(d)-(e)

(g) (f)/(a)

There was one accident year which had a profit margin below 8% (2009) and another accident year with a profit margin between 8% and 11% (2010). Note that the average premium profit margin filed by insurers since 2000 has been approximately 8%.

The subsequent table compares estimated profit:

- By accident year ending 30 June using data up to 30 June 2014. This information can be found in the previous report
- By accident year ending 30 June using data up to 30 June 2015.

Table 12: Comparison of profit by accident year ending 30 June

Accident year	Profit by accident year using June 2014 data		Profit by accident year using June 2015 data	
	Profit	Profit margin	Profit	Profit margin
	($m)	(%)	($m)	(%)
2000	461	31	459	31
2001	378	29	376	28
2002	362	27	357	27
2003	412	30	411	30
2004	305	21	301	21
2005	378	26	378	26
2006	281	19	286	20
2007	316	23	317	23
2008	144	12	154	13
2009	44	4	66	5
2010	125	9	156	11
2011	269	17	298	19
2012	253	15	314	18
2013	214	12	351	19
2014	166	8	408	20
2015			281	13
Total	**4,108**	**19**	**4,911**	**20**
Total excluding 2015	**4,108**	**19**	**4,630**	**21**

The table above shows that our estimate of insurer profit on accident years prior to 2015 have increased since the previous valuation. In particular this is the case for the 2014, 2013 and 2012 accident years where we projected profits that are $242m, $137m and $61m higher respectively for these years. This produces a significant increase in the profit margin for these years in particular the 2014 profit margin increases by 12%. The increased profit assessment for these years is mainly driven by a reduction is the average claims size cost estimate for these years and reflects the inherent uncertainty in projecting claims cost for the less developed year with sizeable claims outstanding. Overall the profit projected this year for accident years prior to 2015 is 13% higher than projected at the previous valuation.

It should be noted that the total profit margin figure of 20% shown above based on the 2015 analysis differs from the profit margin of 19% quoted in the "On the road to a better CTP scheme Options for reforming Green Slip insurance in NSW" paper. This is because they are not directly comparable as they are calculated on different bases. The options paper considers premiums including the MCIS levy and bulk billing costs whereas we have excluded them from this analysis.

In the estimate of outstanding claims liabilities the major uncertainty is the average claims size as it takes many years for all claim payments to be made under the NSW CTP Scheme (i.e. over 10 years). One measure of the impact of variations in average claims size have on the level of outstanding claims liabilities and hence insurer profits is the change in level of superimposed inflation as we have defined it. Future variations in the number of late reported claims will have a relatively small impact on the level of outstanding claims liabilities and hence insurer profits.

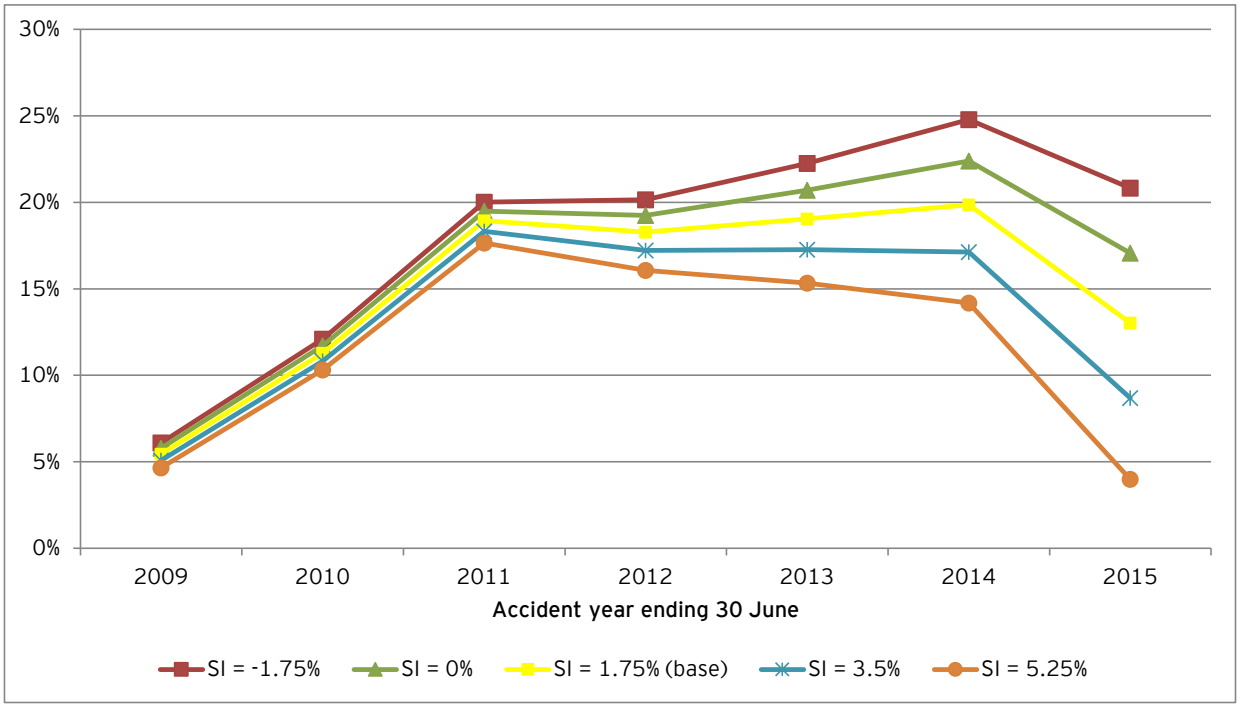
The following illustrates the variability in profit from accident years 2009 to 2015 if superimposed inflation were to unexpectedly improve or deteriorate compared to the current assumption of 1.75%.

Profit is presented under five scenarios:

1. Superimposed inflation reduces to -1.75% p.a.
2. Superimposed inflation reduces to 0% p.a.
3. Superimposed inflation remains at 1.75% p.a.
4. Superimposed inflation increases to 3.50% p.a.
5. Superimposed inflation increases to 5.25% p.a.

The following figure shows profit margin under each of the above five scenarios. Recent accident years are expected to have larger profit variability as a significant portion of claims cost is unpaid. For accident year 2015, profit margin varies by approximately 4% for every 1.75% change in superimposed inflation.

Figure 28: Expected profit margin under different superimposed inflation scenarios



5.6 History of insurers' profit

The figure below shows the hindsight assessment of profit margins for each accident year ending 30 June from 2000 to 2015. The hindsight assessment is made for each reporting year starting from 2001.

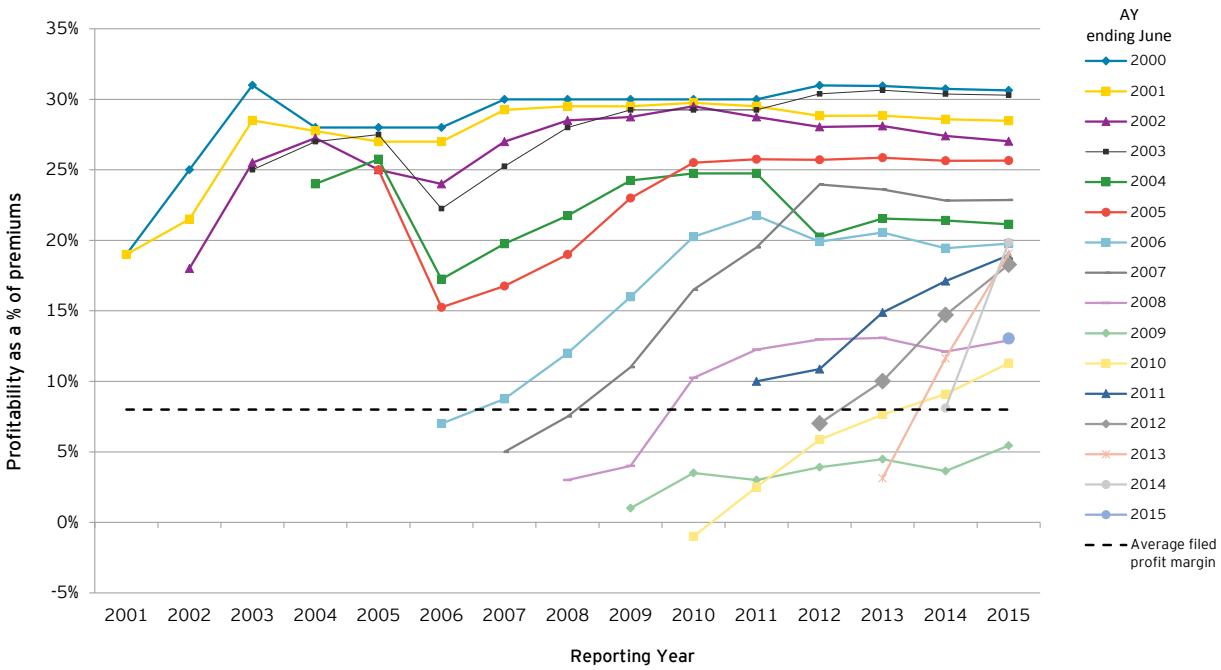
For a given accident year, premiums earned, acquisition costs, net cost of reinsurance, Bulk-Billed ambulance and hospital costs and discount rates are assumed to remain unchanged in subsequent reporting years. Hence changes in profit margins for a given accident year over time are entirely attributed to changes in projected outstanding claim payments and claim handling expenses.

The profit estimates are based on the SIRA's (previously Motor Accidents Authority) annual report except for reporting years from 2004 to 2006. For reporting years from 2004 to 2006, SIRA's published profit estimates allow a 15% margin on the central estimate of outstanding claims liabilities. Therefore, for these reporting years, we have used profit estimates from a letter prepared by Taylor Fry titled "Hindsight estimates of insurers' profit referred to in submissions to the Standing Committee on Law and Justice from the Australian Layers Alliance ("ALA") and the NSW Bar Association ("NSW BA")", dated 10 June 2010.

For 2012 to 2015 reporting years, profit margins by accident year are calculated ground-up by assuming a uniform earning pattern of premium, acquisition costs and other initial expenses. For earlier reporting years, we estimated the profit margin on an accident year basis as a weighted average of the profit margins from the relevant underwriting year.

The average filed profit margin since 2000 is also shown.

Figure 29: History of CTP profit for each accident year



It can be seen from the figure above that the profit margin was very high for accident years 2000 to 2005, i.e. first five years of the MACA scheme, but it is not without precedent. Premium written during the first two years of the amended Motor Accidents Act 1988 (the Old Act) produced very high profits for insurers. This is because premium rates were fixed for the first two years and actual claims costs turned out to be much lower than projected before the Old Act commenced. There was a reduction in claim frequency after MACA came into effect due to a range of arguably non-recurring factors. This appears to have led to the high profitability in the first five years since MACA commenced.

Profit margins for more recent accident years are lower and closer to the average filed profit margin of 8% but on average still significantly above 8%.

For Scheme profitability prior to 2000, refer to a Taylor Fry letter titled "Hindsight estimates of insurers' profits referred to in submissions to the Inquiry into the Exercise of the Functions of the Motor Accidents Authority and the Motor Accidents Council – Eleventh Review", dated 14 October 2011. Policies written from 1990 to 1992 and 1996 to 1999 underwriting years were profitable whereas policies written from 1993 to 1995 were loss making.

We have explored the reasons for the high profits, significant variability in profits between accident years and variable assessments of insurer's profits over time. Our insights at a high level of the drivers

of the results are summarised below. We have divided our comments for the five underwriting years from 2000 to 2004 and from 2005 and later as the patterns of the emerging profits are different.

For accident years 2000 to 2004 there are three key reasons for the high profits emerging. It is not possible to quantify the impact of each as there are significant interaction impacts:

- In the original costings for the current Scheme in 1999, claims frequency was assumed to be at a level similar to the recent experience for the previous Scheme since claimants were still entitled to economic loss and medical and associated benefits under the current Scheme. However experience emerged at a much lower level in the current Scheme compared to 1999 as illustrated in section 4.3 above. The claims frequency did not reduce to a new level at the start of the current Scheme, nor align with casualty numbers. Instead it continued to reduce from 1999 for four years and during that time it nearly halved. The reduction in claims frequency was substantially more than the reduction in casualties during this period. The causes of the reduction in claim frequency are unclear.

  In personal injury schemes, delays in reporting of claims defer the understanding of emerging claims experience for a significant period. Consequently except for some small reductions it took about two years for insurers to recognise the significance of the reduction in claims frequency and adjust assumptions in rate filings (note there is up to a six month delay between an insurer analysing claims experience to the date new premium rates are effective). However the continued reduction in claims frequency resulted in claims frequency assumptions being too high for a number of years in insurer's premium rate filings.

  Additional uncertainty is associated with a significant reduction in claims frequency as the impact on average claims size can be unclear for many years. In absence of contrary evidence, in situations where a significant reduction cannot be explained by a corresponding reduction in casualties, it is logical for actuaries to assume the reduction in claims is due to minor severity claims not being reported. The reasoning is that these claims forgo little benefits by not reporting a claim compared to moderate and serious severity claims.

- Past superimposed inflation experience for both the previous and current Scheme from late 1999 until 2003 was benign. As the basis of premiums for the current Scheme from 1999 for a number of years was the previous Scheme claims costs adjusted for changes to allow for the reforms, the absence of superimposed inflation reduced the assessed hindsight cost of claims.

  In addition, actuarial assumptions of superimposed inflation in the early years of the current Scheme were on average about 4% to 4.5% p.a. while actual experience was much less.

  The difference in the assumed average claim size experience and superimposed inflation compared to the adopted assumptions contributed significantly to the additional insurer profits in the first five years of the Scheme. Relatively small changes in assumptions and changes in the superimposed claims experience over a few years can have a significant impact on premiums, outstanding claims liabilities and emerging insurer profits.

- In insurer premium rate filings from 1999 for up to five years, insurers generally assumed the 1999 legislative changes would only be about 80% to 85% effective which increased premiums. As the experience of the Scheme emerged it became apparent the legislative reforms were more effective than had been assumed by the insurers and allowed for in premium rate filings and in the initial costing of the reforms by actuaries in 1999.

  This is not unusual as costing of legislative reforms is very difficult and the results are much more uncertain than normal premium rating assessments of an established scheme with considerable past claims experience.

  This assumption made a significant contribution to the additional profits in the first five years of the Scheme.

For accident years from 2005 to 2015 the main reasons for the high profits emerging and the increase in assessed profits over time are noted below. It is not possible to quantify the impact of each source of additional profits as there are significant interaction impacts:

- For accident years 2005 to 2007 the main reasons for high profits were:
  - The decline in claims frequency continued from 2004 until 2007 and was greater than insurers and actuaries anticipated
  - The benign levels of superimposed inflation in the last five years also contributed to higher profits in 2005 and 2006 accident years but to a lesser extent than later accident years
  - The slow recognition of the low superimposed inflation from years 2000 to 2003, where the assumptions adopted for premiums in the years 2005 to 2007 were higher than what emerged in hindsight.
- For accident years 2008 to 2015 - The benign level of superimposed inflation since 2010 is the main contributor to the higher profits. Each year of superimposed inflation experience that was less than that assumed when the business was written increased the estimated profit, hence the upward slope of the profit lines in the above chart. As the actuaries adjust the assumed superimposed inflation down the estimated profit increases. As noted above the impact of this experience is significant on premiums and insurer profits.

  Offsetting the impact of superimposed inflation has been the increased claims frequency and increased claims with legal representation since 2008.

6. Uncertainty

There are several sources of uncertainty within this report.

6.1 Actuarial estimates

There is significant uncertainty associated with actuarial estimates. Estimates of future claims experience (claims numbers and payments) are always inherently uncertain because they depend on the outcome of future events which cannot be forecast precisely. Examples of claims experience that are particularly challenging to forecast include changes to social, economic and legal environments. This uncertainty is higher for more recent accident periods, which are more heavily reliant on actuarial projections. In particular there is additional uncertainty around minor severity represented claims for the two most recent accident years due to an apparent change in the mix of these claims towards smaller claims sizes. We have relied on the insurer case estimates to project this trend as only a small proportion of these claims have been paid so far. Therefore, actual claims experience may emerge at levels higher or lower than the actuarial estimates.

7. Reliance and limitations

In undertaking this review, reliance has been placed upon the data provided to us by the SIRA. With regards to the SIRA data we are specifically relying on the accuracy by which insurers have provided their data and classified appropriate payment types and injury severity coding and that this allocation has been accurate over time. We note that because claim payments are made as a lump sum to claimants the amounts that insurers allocate to a particular payment type doesn't necessarily reflect the eventual use of the money. For example, claimants may use more or less than the allocated amount of medical payments for medical services as per their needs.

We have also made judgements and estimates where the information provided here was not part of the analysis conducted as part of the review. In general, reliance was placed on but not limited to the information provided. Except where indicated, the information has been used without independent verification. However, it was reviewed where possible for reasonableness and consistency.

We have performed the work assigned and have prepared this document in conformity with its intended utilisation by persons technically familiar with the areas addressed and for the stated purposes only. Judgements based on the data, methods and assumptions contained in the report document should be made only after studying the report in its entirety, as conclusions reached by a review of a section or sections on an isolated basis may be incorrect. EY staffs are available to explain or amplify any matter presented herein.

We have described certain limitations of our analysis throughout this report.

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