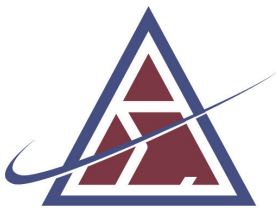

Institute of Actuaries of Australia

An ageing workforce and workers compensation – what are the implications, in particular with an increasing national retirement age?

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Abstract

This paper attempts to examine claim occurrence and cost with reference to past changes in the workforce age profile. This analysis is then used to consider the potential impacts of future changes in the workforce profile on workers compensation costs. Finally, a number of changes to the status quo are considered, primarily around the move to an increased national retirement age, to examine the impact such changes would have on future workers compensation costs.

While the implications discussed in this paper are intended to apply at a multi-jurisdictional level, the analysis contained in this paper is primarily based on the South Australian WorkCover scheme (unless otherwise noted).

Keywords: workers compensation, ageing populations, claims frequency, claims duration, retirement age

An ageing workforce and workers compensation

1 Introduction

1.1 Overview

This paper is comprised of six sections:

- Section 1 provides an "Introduction" and overview of the paper, and summarises what is covered in each section.
- Section 2 covers "Ageing Populations". The majority of this section is related to the Australian population, which is used to explain general demographic trends. The main items covered are:
  - historical population trends for the last fifty years
  - the various factors which create a workforce from the population, and any trends in these over time
  - changes in industry mix over time, and their impact on workforce exposures
  - future population projections, and the impacts of these changes on the workforce out to 2050.
- Section 3 covers "What's been happening in workers compensation?". This section provides:
  - brief commentary on the recent experience in Australian workers compensation
  - detailed analysis of claim experience in one Australian workers compensation scheme, South Australia, which is used to decompose the key claim cost drivers into age specific assumptions and identify any trends which may impact on future claims costs
  - a summary of claim frequency trends for male and female weekly compensation claims, as well as for non-weeklies claims
  - a summary of average claim cost trends for male and female weekly compensation claims, as well as for non-weeklies claims, including an estimated ultimate claim cost relativity by age band
  - an overview of the differences in the current cost per claim by age band for each of the components described above.
- Section 4 provides a "Baseline Projection of Future Workers Compensation Costs". This shows:
  - the future assumptions for claim frequency and claim size which are applied to the workforce projections from section 2 to project the future cost of claims
  - summary results explaining the relative change in claim costs over time, both on a per unit cost and an overall cost basis.

- Section 5 provides a number of "Scenarios for Future Workers Compensation Costs"
  - Scenario 1 explores the potential cost impacts of increases in the national retirement age following the changes announced in the 2009 Federal budget, both on new claims as they emerge as well as on the existing outstanding claims
  - Scenario 2 looks at the further potential cost impacts that would eventuate if the trend of improving claim frequencies were to reduce or cease at some point in the future.
- And Section 6 notes some of the "Implications for Scheme Design" that have been raised on the way through the paper. While answers have not been given to all the questions raised, the objective is to identify relevant points for further consideration.

Appendix A lists information and other sources the author has utilised in preparing this paper.

Appendix B details a number of definitions and labelling conventions adopted through the paper.

1.2 Acknowledgement

Thanks is given to WorkCover South Australia for permission to make use of their claims experience for the purpose of undertaking the analysis necessary for this paper.

Particular thanks is given to those members of the analytical services and policy departments who assisted in the interpretation of the experience.

While this paper is not a study of the South Australian workers compensation Scheme, the ability to make use of actual claims experience to differentiate characteristics by worker age makes the results more meaningful and hence more useful to readers.

2 Ageing Populations

2.1 Overview and Background

The impacts of an ageing population on Australia have gained increased media prominence in recent years, reflecting increasing awareness and concern about the impacts of these changes across the economy. This was highlighted with the increase in national retirement (pension) age announced in the 2009 Federal budget.

Along with the ageing population, Australia's workforce has been undergoing demographic change.

This paper is not presented as a comprehensive study on population ageing, nor is the author claiming any significant expertise in the area. Rather this paper relies upon a number of publicly available information sources regarding the future projected population, and attempts to make use of these for the purpose of considering the impacts on workers compensation over time.

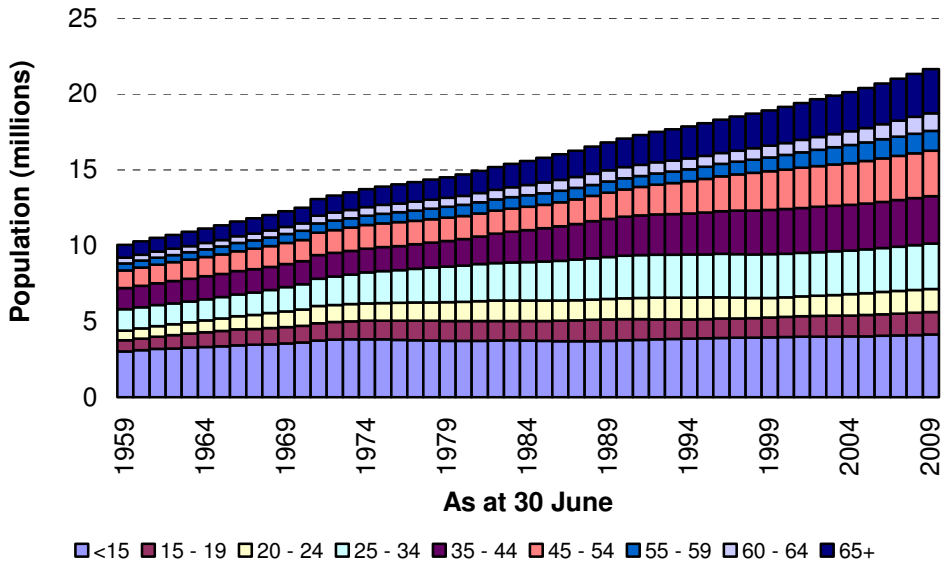
The following sections attempt to draw out what the author sees as some of the key features of population ageing in Australia, and where relevant, the impacts of these on the workforce and ultimately on workers compensation costs.

2.2 Population and Workforce Changes over Time

2.2.1 Population Changes

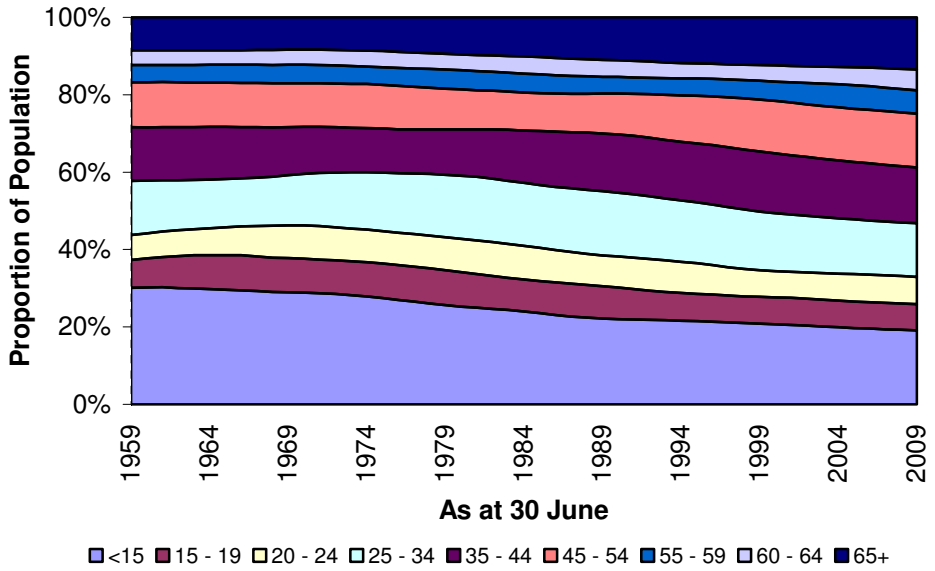
Over the last fifty years the Australian population has roughly doubled in size, from 10.1 million people in 1959 to 21.7 million people in 2009, as shown in Figure 2.1 below.

Figure 2.1 – Historical Australian Population by Age Band



Over this time the mix of ages has shifted, such that older people make up an increasing share of the population. This is the result of both decreasing mortality (and subsequent increased life expectancy) as well as reductions in the birth rate (reducing the rate at which young people join the population).

Figure 2.2 – Proportion of Australian Population in Age Band



As Figure 2.2 shows, the share of the population aged below 24 has reduced from a peak of around 46% of the population to around 33% currently. On the other side of the demographic mix, the share of the population over 45 years has increased from 28% fifty years ago to 39% now.

2.2.2 Implications for Workforce

Figure 2.3 shows the Australian workforce over the last thirty years, split by age band. The workforce has increased from around 6.1 million in 1979 to 10.8 million in 2009.

Figure 2.3 – Historical Australian Workforce by Age Band

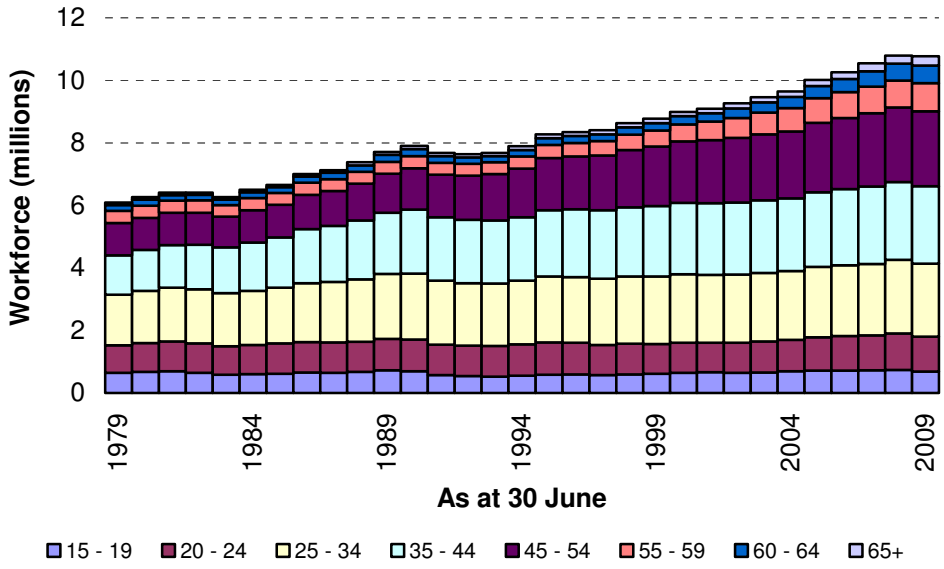
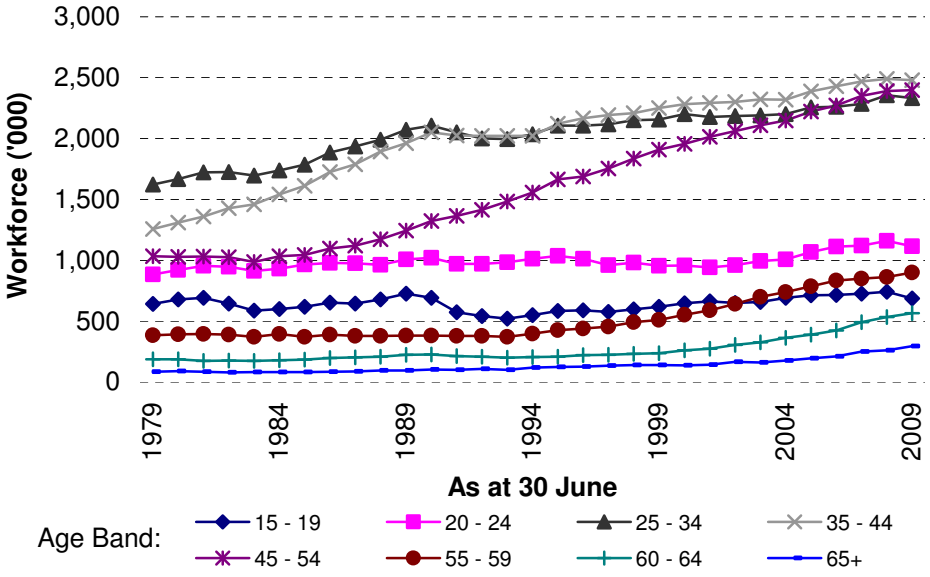


Figure 2.4 shows the same information, however for comparison the age groups are all shown on the same scale.

Figure 2.4 – Historical Australian Workforce by Age Band



As this shows:

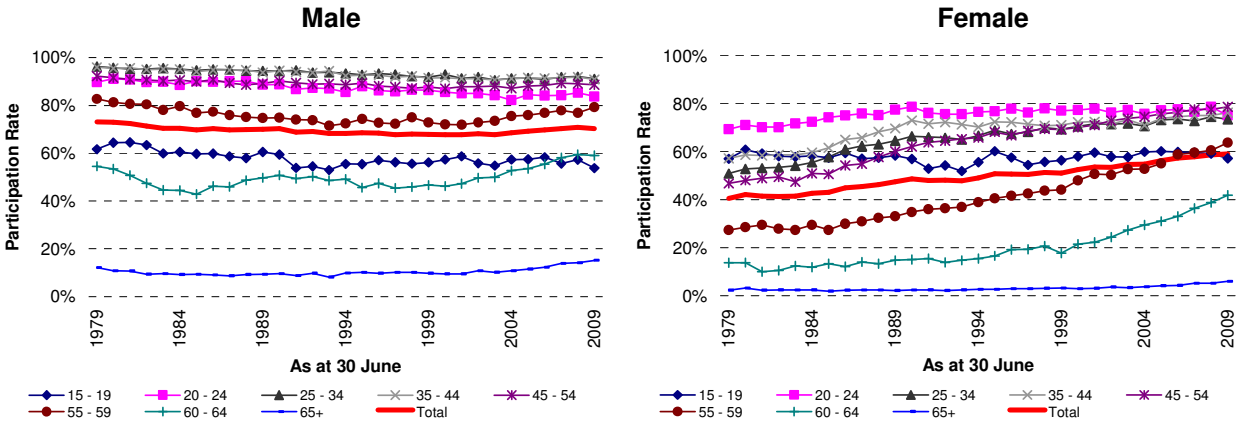
- the 35-44 year age group grew strongly from the late 1970's – reflecting births from the mid-1930's to mid-1940's
- from the mid to late 1980's the 45-54 year group began to exhibit similar growth as was seen earlier for the 35-44 year group – this represents the ageing of the 1930/1940's birth cohort as they move into this older age band

- from the mid-1990's the 55-59 year group began a similar upward growth, although from a much lower base
- from the early-2000's the 60-64 year group has been following a similar upward pattern
- for the three age groups under 34, there has been far less significant growth than for the other groups.

As this shows, as the population has undergone demographic change so too has the workforce – over the 30 years shown the average worker age has increased by around five years.

As part of understanding the reasons for the change in workforce, the participation rates are shown for males and females below. For males, the overall participation rate has not moved significantly over the last thirty years, with minor reductions in participation at younger ages being offset by increases of around 10% for the 55-59 and 60-64 groups. For females however there has been a significant increase in the participation rate, with increases in most age bands over the thirty years shown. In particular, participation rates for 55-59 year females have increased of 37%, and for 60-64 year females by around 30%.

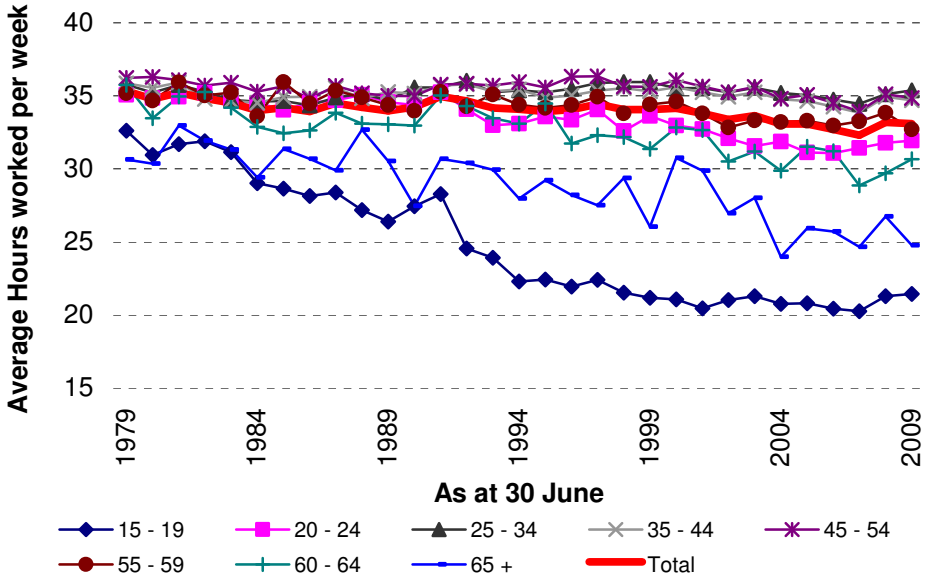
Figure 2.5 – Participation Rates (Australia) by Age Band – Male v Female



One consequence of the increased participation rate of older females is that the number of females in the workforce has increased significantly. Since 1979 the share of the workforce who are male has reduced from around two-thirds, to be around 55% currently.

In getting to a final workforce exposure measure the remaining variable is the average hours worked. This takes into account the mix of full time and part time workers, and shows that over time the average hours worked has decreased. Most of the decrease is driven by older workers, particularly for females where there is a higher rate of part time work. There is also a decrease for 15-19 year olds, where there are fewer apprentices working a full week and more part time workers in this group than in the past.

Figure 2.6 – Average Hours Worked (Australia) by Age Band



2.2.3 Industry mix changes

An important consideration in the projection of future workers compensation claim costs is the changing industry mix over time. It is generally accepted that over recent years there has been a move away from more 'risky' occupations (noting that the data below is based on the industry of the employer, not the occupation of the employee). As Figure 2.7 shows, there have not been massive changes in the industry mix, though there have been reductions in "manufacturing" and "agriculture, forestry and fishing", with an increasing share of the workforce involved in "health and community services" and "property and business services".

Figure 2.7 – Australian Workforce by Industry

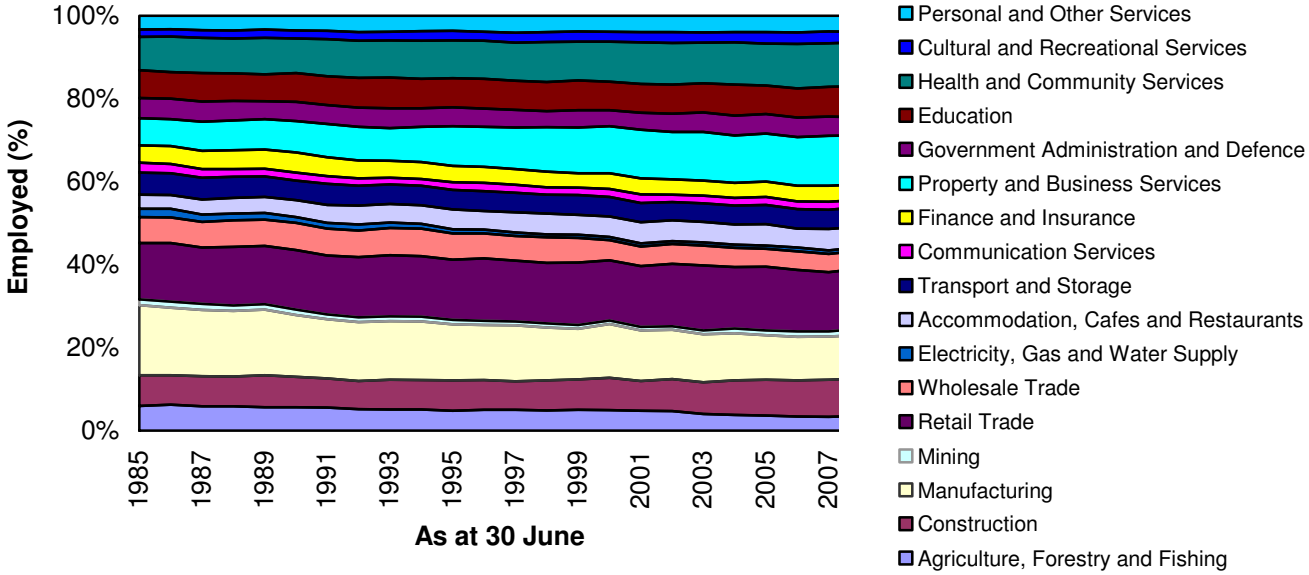
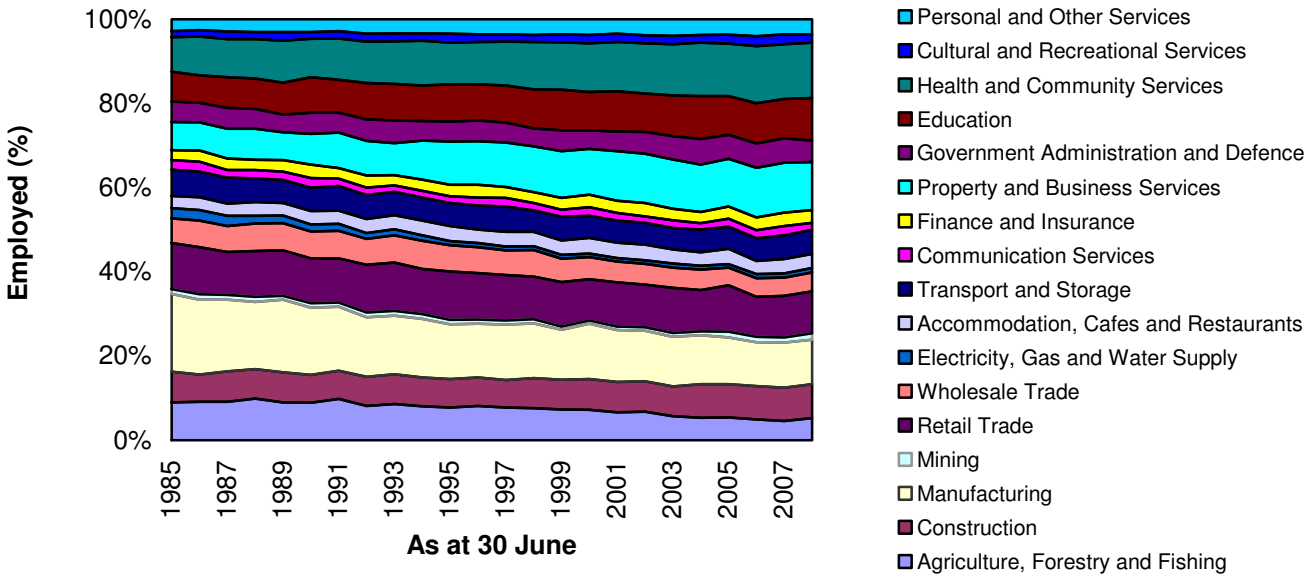


Figure 2.8 shows a similar split of the workforce, however only for those who are aged over 45.

Figure 2.8 – Australian Workforce by Industry for over 45's



This shows there has been a much larger change in the workforce composition for over 45's, with most of the large changes in the same groups as noted for the overall population.

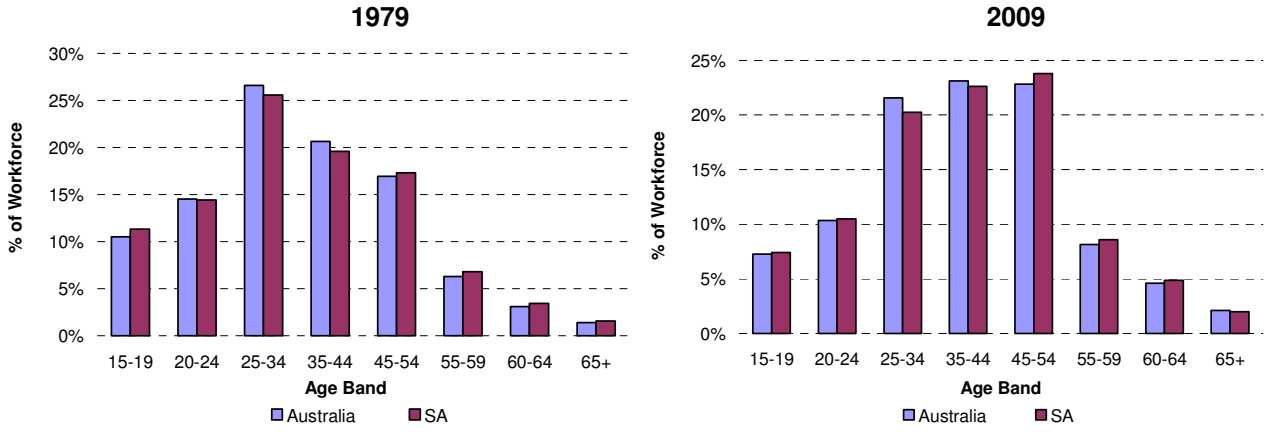
While not answered in this paper, a key question for future claim costs is how future changes in the industry mix will impact on the workforce composition by age band, and whether or not long term trends of improving claim frequency can be maintained into the future.

2.2.4 Changes in the South Australian Workforce Over Time

Given the claims information used in this paper is primarily from the South Australian Scheme, some statistics require comparison to the SA workforce.

The South Australian workforce is slightly older than the Australian workforce, as has been the case since the 1970's. Overall the demographic changes are similar between the Australian and South Australian data.

Figure 2.9 – South Australian v Australian Workforce – 1979 and 2009

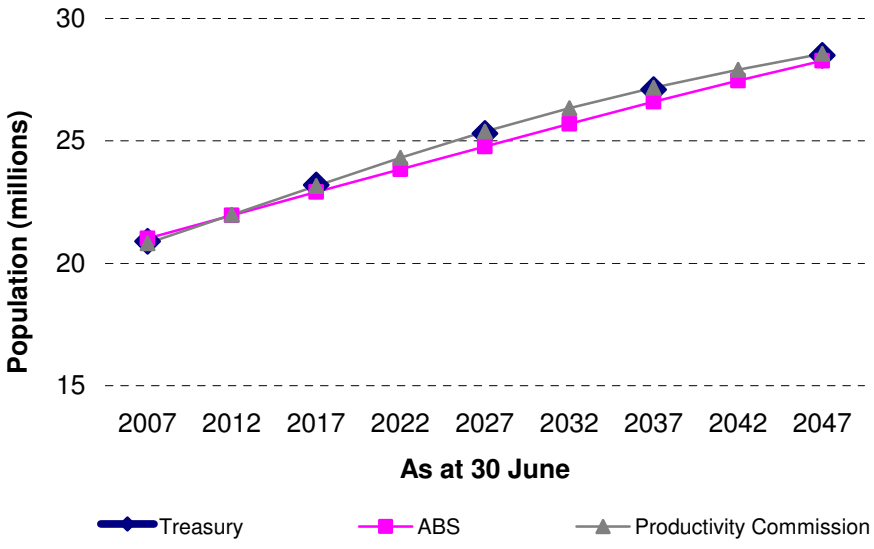


2.3 Projections for Future Population and Workforce Changes

Over recent years there have been a number of long term population projections either published or referred to in publicly available information. This includes projections by the Department of Treasury (as used in the Intergenerational Report), the Australian Bureau of Statistics, and the Productivity Commission (as used in their report "Economic Implications of an Ageing Australia").

Figure 2.10 shows a comparison of the population projections from each of these sources.

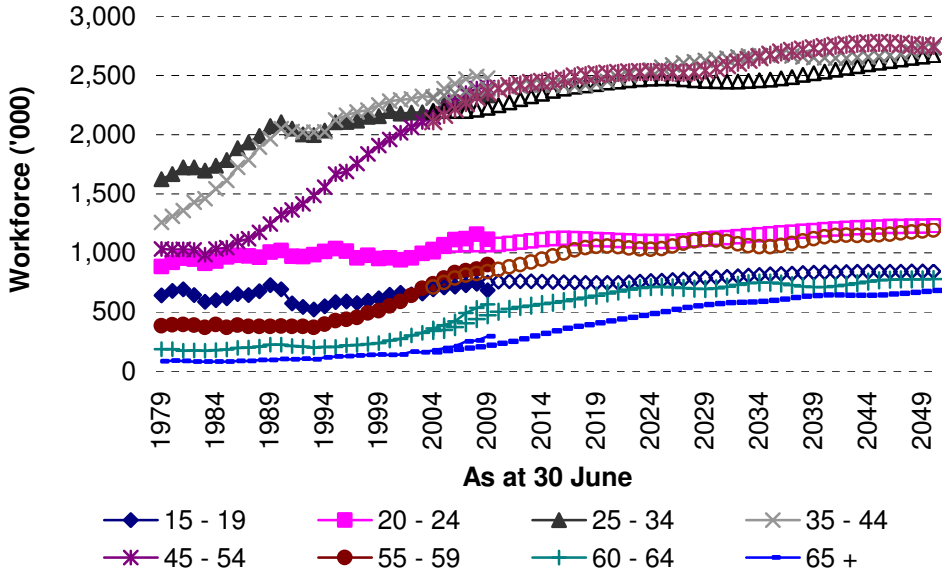
Figure 2.10 – Australian Population Projections from Different Sources



At a total level the differences between the overall population projections are relatively minor. As such, despite being developed in 2004/2005, the projections from the Productivity Commission have been used for the remainder of this work, as they are the only version for which working Excel models were made available to the public.

Figure 2.11 shows the workforce projected in the Productivity Commission models, with hollow points showing projected values, and the solid data points showing actual values.

Figure 2.11 – Projected Australian Workforce by Age Band



Based on the above information:

- The Australian population is projected to grow by 36% between 2009 and 2050. Over the same period the workforce is projected to grow by 25%. The difference between the two is a result of the increasing share of retirees in the population, which is not being offset by growth in the number of younger persons entering the workforce.
- Even before allowing for increases in the retirement age, the number of workforce participants aged >60 years is expected to more than double.
- As can be seen, for some of the age groupings the workforce has already increased above the Productivity Commission models (eg. 55-59, 60-64), which is mainly the result of participation rates increasing above those assumed in the projection.

While not shown, the missing piece in converting the workforce to a workers compensation exposure is the average number of hours worked per worker. There is only minor change over time for these assumptions from the recent values in the Productivity Commission models, so they have not been re-produced here.

2.4 Summary

The Australian population has changed considerably over the last thirty years, both in terms of absolute number and mix between age bands.

Not surprisingly, the workforce has also undergone demographic change over this time, with the 2009 workforce being older than in the past. It is also noted that changes in industry mix mean that not only are the ages of workers changing, but also the jobs they are undertaking have also changed over time.

In looking to the future, a population model developed by the Productivity Commission provides insight into the changes that are projected still to come. These models are used later in the paper for the purpose of analysing future workers compensation claims costs.

3 What's been happening in workers compensation?

This section summarises recent workers compensation claim experience, which is then decomposed this into a number of key claim cost drivers by age band.

3.1 Recent Australian Experience

Over the ten years to June 2007, for serious injury claims (those with one week or more of lost time) at a national level, claim incidence and claim frequency have fallen by around 30%. Without being definitive in the attribution to sources, it is generally accepted that such reductions are the result of improved injury prevention and occupational health & safety, as well as a general trend in employment toward less risky industries.

For the majority of this period the rates of durable RTW, as measured by Campbell in their Return to Work Monitor, had been relatively stable in a band of between 73% and 80%. However in the three years since peaking at 80% in 2006, durable RTW rates have since decreased to be at 72% in 2009.

Claim sizes have increased at above inflationary levels in recent years, which is consistent with reducing RTW outcomes, and also suggests that some of the reduction in claim incidence/frequency is a result of the removal of less severe claims on average.

The detailed analysis to follow relies on the experience of the South Australian scheme. Relative to the national average experience South Australia has historically had slightly higher rates of injury, combined with worse rates of durable RTW i.e. a higher percentage of claims have historically stayed to longer durations in South Australia.

From around 2005 the South Australian experience has moved toward Australian average experience, although it has still been a higher than average costing scheme. While the comments and conclusions drawn below on relativities between age bands are based on the South Australian scheme, it is thought that the South Australian experience is similar enough to that of most other Australian jurisdictions so as to be indicative of trends and expected impacts elsewhere for the matters being considered in this paper.

3.2 South Australian Claim Experience over the last 20 years

Prior to June 2008, the South Australian scheme had undergone only relatively minor changes over its twenty year history – as such, there is a relatively long period of 'consistent' data available upon which to examine claim outcomes. In June 2008 there were significant amendments to the scheme, which are expected to impact on claim outcomes.

The 2008 legislative changes have not been considered as part of this paper. Rather, the focus is on making use of the pre-legislative change data to examine claims experience, and where possible to examine this data over time so as to observe longer term trends.

Unless otherwise noted, all following commentary is in relation to the claims experience and scheme design prior to the June 2008 legislative changes.

In order for the paper to be as relevant as possible, the focus of the analysis is on relative change, as opposed to the raw numbers from the South Australian experience.

3.2.1 Claims Data Used

Impact of Self Insurance

The analysis is primarily based on claim data for non-self insured employers. While self insured data is collected by the scheme, both the period of availability and the ability to segment this into different payment types are not as comprehensive as what can be done using non-self insured data, and so this has largely not been relied upon.

Claim count and total level payment data were used to compare incidence rates and average claim sizes between self-insured and non-self insured claims over the ten years to 2007, which showed similar results for the two sources of claims. As such, it is not thought that there is any particular bias introduced by comparing industry wide exposure data (normalised for the share covered by the scheme) to non-self insured data.

Over the history of the scheme, the level of remuneration insured through the scheme (i.e. the non-self insured share) has been between 58% and 64% of the state total. Where relevant, state wide exposure information (from the Australian Bureau of Statistics) has been adjusted using the share of remuneration that was covered by the scheme in that year. In interpreting the claims experience shown:

- industries that are predominantly self insured include those services primarily provided by government for example education, government administration and utilities provision
- those industries with a mix of self-insured and non-self insured are generally those involving bigger business (eg. mining, manufacturing, health, finance)
- the remaining industries are primarily non-self insured (eg. agriculture, construction, trade, hospitality, transport, recreational).

Data Used

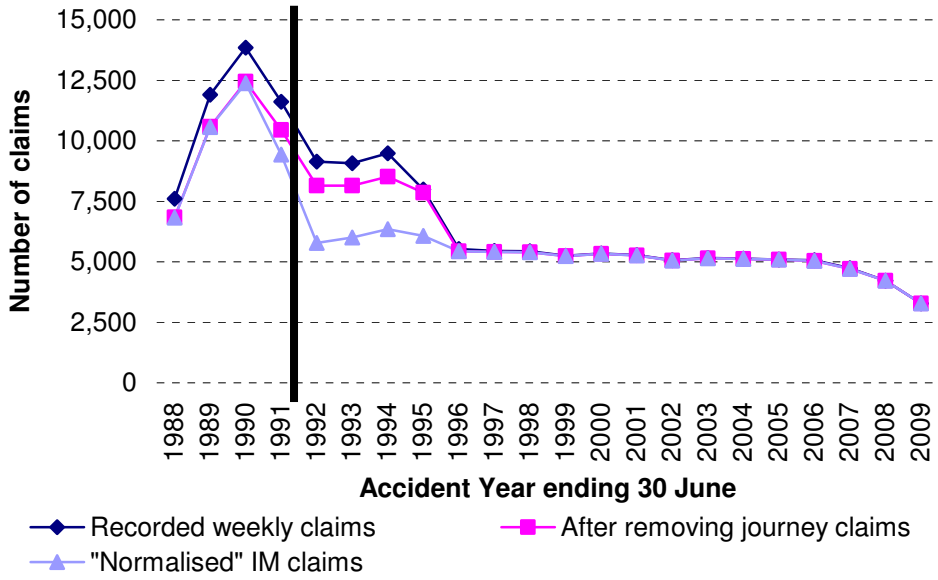
In identifying the key drivers of claims costs, the analysis has been separated into those claims who have received weekly benefits and those who have not received weekly benefits, given the differences in claim incidence and claim sizes for the two.

The first aim of the historical data analysis was to develop a time series of comparable data that could be used to undertake trend analysis. Focusing on the weekly claim numbers, this involved developing a "normalised" claim definition that made allowance for scheme changes over time. In particular:

- prior to the June 2008 legislative changes, claims only received weekly benefits after a two week excess period paid by the employer[1]. There had been no significant legislative changes for more than ten years prior to this, so this was set as the standard for a "normal" weekly claim
- the excess period was increased from one week to two weeks in May 1995. For claims prior to this date, if the total amount of weeklies paid was less than twice the pre-injury earnings of the employee, then the claim was not counted under the "normalised" weekly definition
- journey and recess claims were no longer compensated from July 1994. Any claims coded as being either journey or recess (via a data flag) were not counted under the normalised weekly definition
- prior to 1991 there were other changes in scheme and benefit design that cannot be easily captured or adjusted for with the available data, so further changes for earlier claims have not been made.

Figure 3.1 summarises the number of weekly claims counted under each of the steps described above. Based on this, it appears as though the normalised claim count is producing a consistent data set back to 1991.

Figure 3.1 – "Normalised" Count of Weekly Claims



All following analysis makes use of claims data for claims from 1992 accident year and later, and categorises claims between those who do/don't receive weeklies based on the normalised count described above.

In determining the focus points for the analysis, examination was undertaken on the number of claims and share of total cost for both the do and don't receive weekly benefits

[1] A small number of employers "buy out" the obligation to pay the first two weeks excess. Given the small number of claims impacted, this impact has been ignored.

groups. This showed that while weeklies claims have only been between 15-22% of total claims reported, almost 90% of the total claims cost paid to date was for these claims. Given this, the bulk of the analysis was focused on the weeklies claims as the biggest single driver of scheme costs.

All analysis shown below relies only on the reported claims data i.e. there is no allowance for future IBNR claims nor further payments on those claims already reported. In order to try and normalise for differences in claims development:

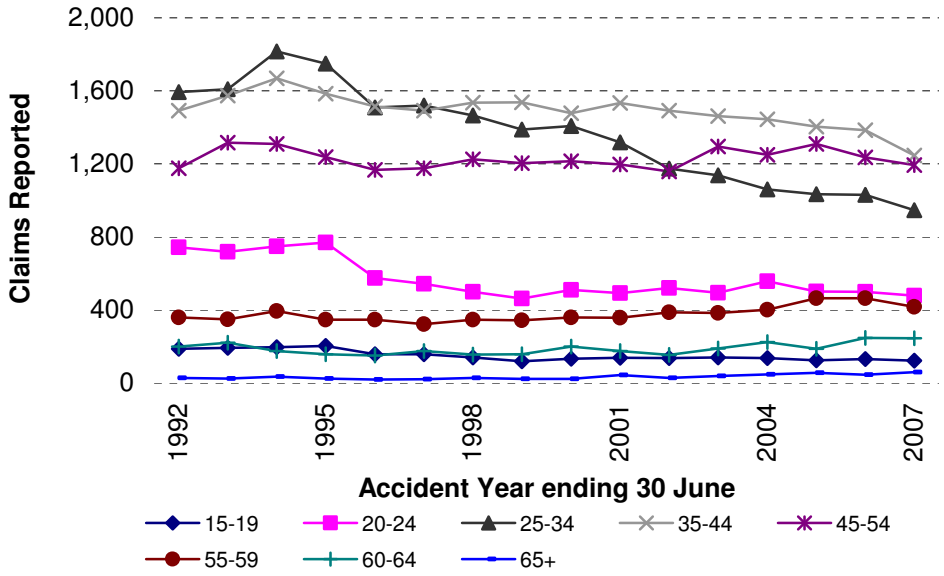
- only claims with date of injury prior to 30 June 2007 have been included (noting that this is also prior to the June 2008 legislative changes)
- claim number analysis is based on claims reported within two years of injury date (which is the significant majority of claims). On this definition, all accident years will have equivalent time periods for development based on the data used
- claim cost measures are examined in two ways:
  - the paid cost up to two years from injury date (again, allowing equal time for development across accident years)
  - the total paid to date, in which case claims from more recent accident years are less developed than those from the older years. While this data is not necessarily comparable as a time series, it gives guidance as to the ultimate cost (assuming that the paid to date on older accident years is getting close to the ultimate cost for those periods) relative to the two year paid cost.

Unless otherwise noted, claim payments have been inflated to June 2009 values using AWE.

3.2.2 Weeklies Claim Numbers

As shown in Figure 3.1, the number of weeklies claims (those that receive income replacement benefits) has reduced from around 6,000 in 1992 to slightly below 5,000 in 2007. Figure 3.2 splits these claims by age band at the time of injury.

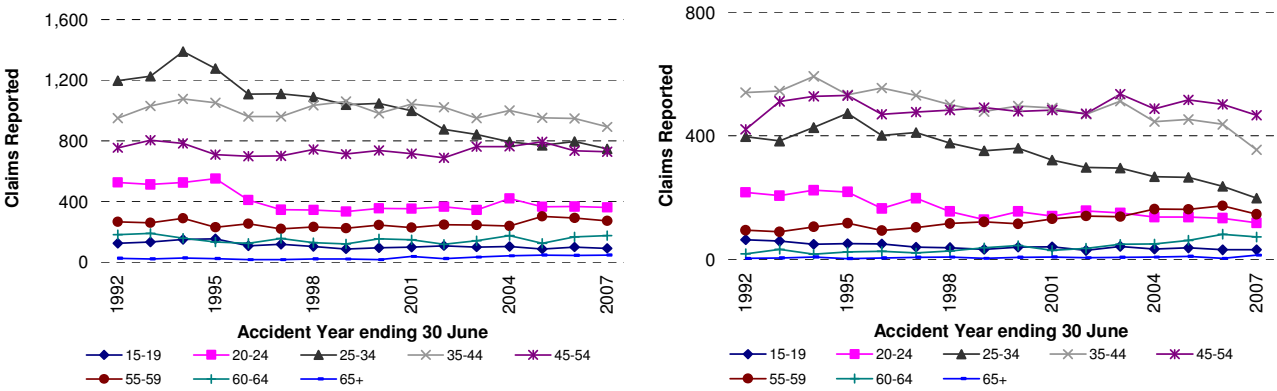
Figure 3.2 – Number of Weeklies Claims Reported by Age Band



This shows that there has been a significant reduction in claim numbers for 25-34 year olds, with less significant reductions for the 20-24 and 35-44 year groups. For older ages, notably 55-59, 60-64 and 65+, there has been an increase in claim numbers for these groups in recent years.

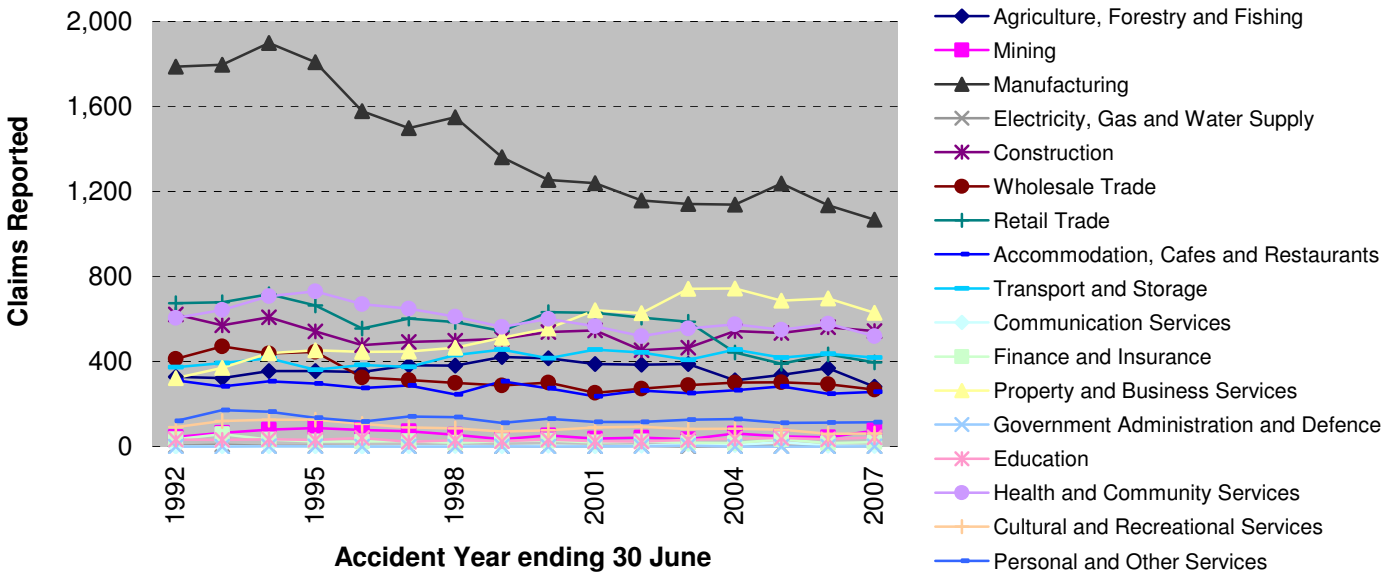
Figure 3.3 then separates the weeklies claim numbers between males and females. While the scale is different between the two figures, the trends in raw claim numbers are largely similar between the two.

Figure 3.3 – Number of Weeklies Claims Reported by Age Band – Male v Female



Finally, Figure 3.4 shows the claim numbers by industry group (remembering that some industries will be under-represented in the scheme data due to high levels of self insurance). This shows that the largest contributor to claim numbers has been the manufacturing sector, although this has also shown the biggest reduction in claims reported. While most other industries have generally been flat or decreasing, "Property and business services" has had an increase in the number of claims reported over the sixteen years shown.

Figure 3.4 – Number of Weeklies Claims Reported by Industry Group



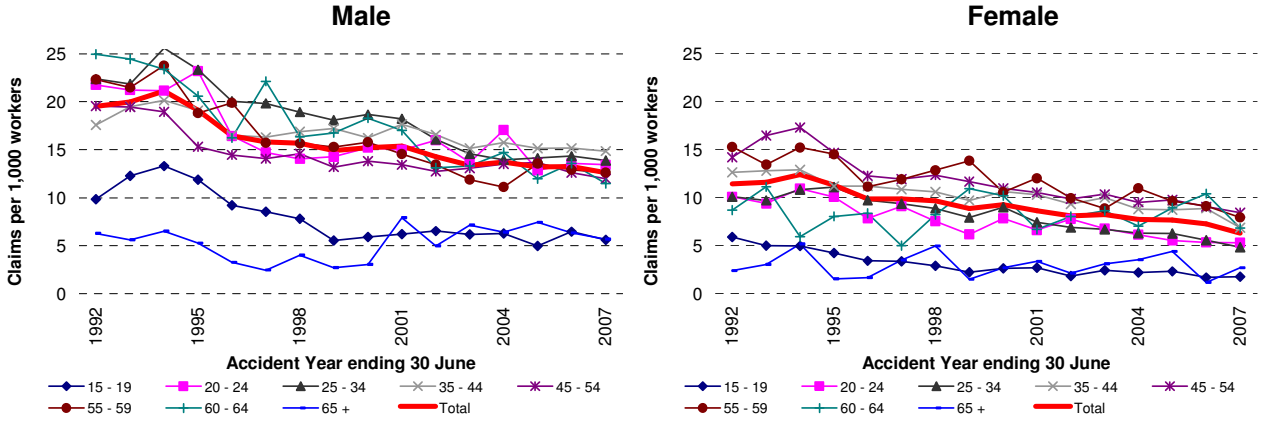
The impact of industry mix changes is not considered further in this paper. A potential further improvement would be to decompose the claims experience into multi-way analysis by industry and age over time.

3.2.3 Weeklies Claim Incidence and Claim Frequency

The weeklies claim numbers from above are then normalised for changes in exposure over time to give measures of the claim incidence and claim frequency over time. Prima facie, given the generally flat or decreasing claim numbers over time, it would be expected that there have been reasonable improvements in claim rates given the increase in workforce numbers over time.

Figure 3.5 shows the claim incidence per 1,000 workers, split by age band between males and females.

Figure 3.5 – Weeklies Claim Incidence per 1,000 Workers by Age Band – Male v Female

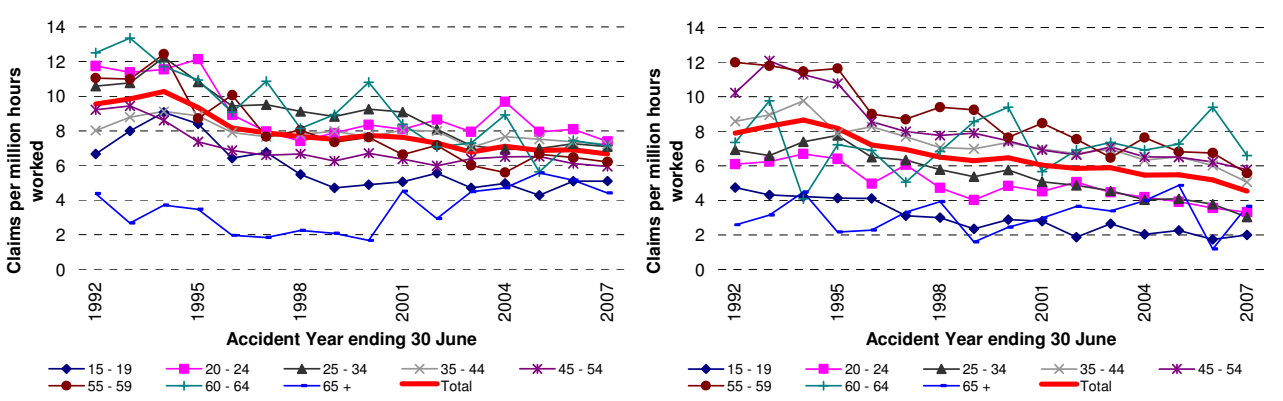


This shows that:

- between 1992 and 2007, total claim incidence has reduced by 35% for males and 45% for females
- for both males and females, apart from the very old (65+) and the very young (15-19), claim incidence by age band has generally followed a similar level and pattern
- claim incidence is around 70% higher for males than females:
  - this difference is most pronounced at younger ages, where males under 34 have more than double the incidence of females in the corresponding age bracket
  - the difference reduces to between 35% and 40% higher incidence for males between 35 and 59, before increasing again at older ages.

Taking the final step of normalising for changes in the level of hours worked, Figure 3.6 shows the claim frequency per million hours worked.

Figure 3.6 – Weeklies Claim Frequency per million hrs worked by Age Band– Male v Female



This shows that:

- between 1992 and 2007, total claim frequency has reduced by 30% for males and 43% for females. This equates to reductions over the period of 2.5% to 3.5% per annum
- for males:
  - the overall frequency has been flat over the last five years
  - the range of frequencies by age band appears to have narrowed over time, with the age groups 55-59 and 60-64 reducing from levels around 20% higher than the total average to be similar to the average over the most recent few years
- for females:

- there is a greater spread of frequencies by age band than for males, and there does not appear to be the same convergence toward a common level across age bands
- the older age groups of 45-54 and 55-59 have had consistently higher frequencies than for the younger age groups, with the 60-64 frequency showing no apparent reduction over time to now also be above the overall female average. For these three age groups the frequencies over recent years have been at or above the levels observed for males.

3.2.4 Weeklies Claim Sizes

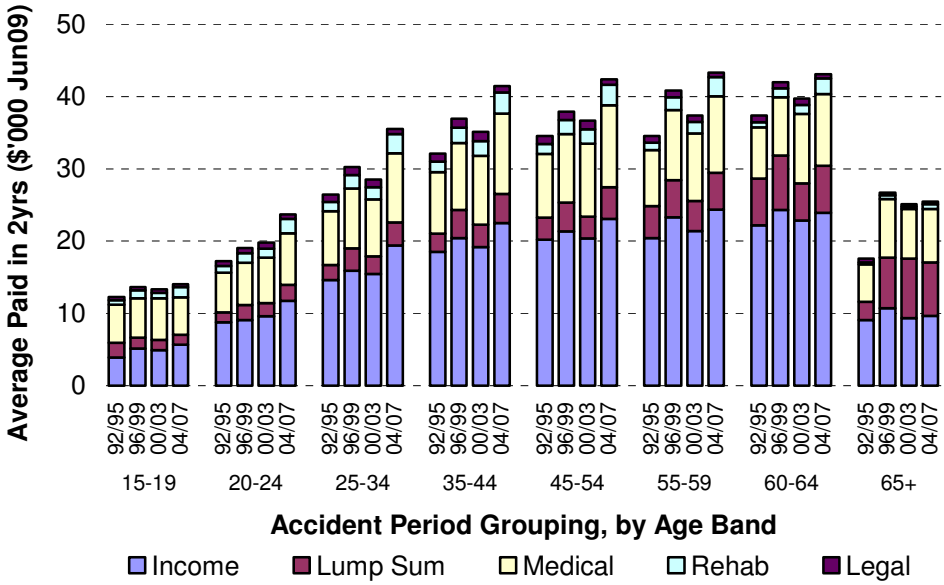
For presenting claim payment information, the following groupings have been used:

- income replacement related (weeklies and redemptions of weeklies)
- permanent impairment lump sums
- medical and like (eg. physiotherapy, hospital)
- legal and investigation
- rehabilitation costs
- recoveries.

In examining average claim sizes, all data is shown inflated to June 2009 values, and accident years have been grouped up into bands of four year periods to reduce the volatility.

Figure 3.7 shows the average amounts paid within two years of injury, by age band at date of injury, for claims who received a weekly benefit payment. Given all claims have the same period for claim payment development, and that payments are inflated to common monetary values at June 2009, any increasing trend in the column height for an age band reflects above AWE inflationary pressure on the claim size.

Figure 3.7 – Weeklies Claims, Average paid in First Two Years from Injury by Age Band ($ Jun-09)



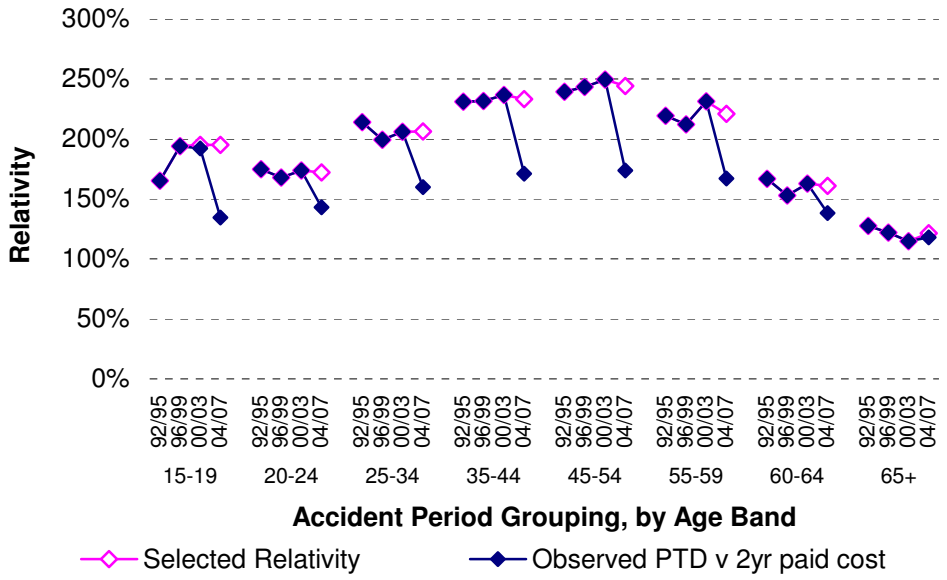
Some observations from Figure 3.7 are:

- the average amount paid in the first two years is least for younger claims and for those over 65 years
  - for younger claims this is driven by lower amounts of income replacement benefits compared to older claimants
  - for claims aged above age 65 at injury, "retirement age" restrictions[2] on how long income benefits will be paid also act to keep the average size down. These restrictions do not apply to medical or other treatment costs, which are similar to those seen for other age bands (although from discussions with claim managers, it is much more likely for a claimant's medical expenses to reduce once the weeklies benefits are ceased)
- for claims coming from the 35-44 to 60-64 year age bands, there is a similar amount paid in the first two years, and a similar balance between the benefit types
- for all age bands up to age 64 there has been an increase in average size over the four accident period groups shown. The above inflationary increases have been between 1% and 3% per annum depending on the age group, with an average increase of slightly above 2% per annum. Increases in cost have been driven by:
  - some additional income payments (remembering that claim frequencies have reduced, this may be a result of the frequency reduction coming from smaller size claims)
  - higher per claim medical and rehabilitation expenditure.

[2] Historically the maximum a person could receive for an injury after age 64.5 was six months of income replacement (and sometimes less if there was a standard retirement age below 65 for an industry).

To make use of the data for the projection component of this paper, ultimate claim costs are required by age band. Given the differential impact of some factors that determine how the two year paid cost develops to an ultimate cost (eg. the impact of the retirement age provisions), it is not sufficient to assume a uniform pattern of development by age band. Figure 3.8 compares the total paid to date (which is close to an ultimate cost for the older periods) to the two year paid cost. A "selected relativity" is then made, which is used to estimate an ultimate cost by age band for recent claims, upon which the future projection is made.

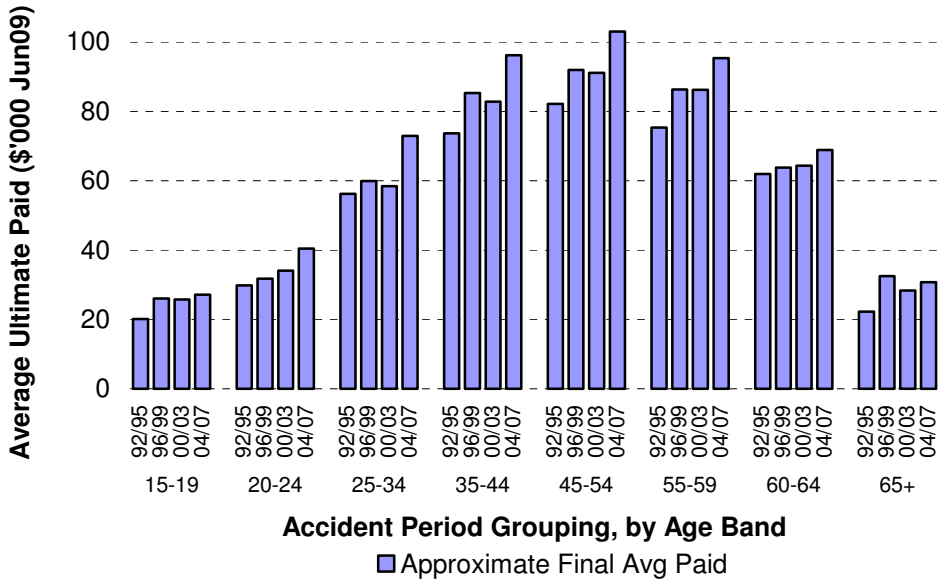
Figure 3.8 – Comparison of Total Paid to Date v Paid in First Two Years from Injury



As Figure 3.8 shows, the degree of scale-up (relativity) increases as you move from the younger ages to peak for the 45-54 year age band, before reducing again for older claims. The reduced scale-up for older claims is primarily driven by the retirement age provisions, which for most claimants mean they are not entitled to income replacement after the age of 65. The selected relativities allow for minimal further development on the 00/03 and earlier claims – given these claims are all at least six years old, this approach seems reasonable (to the extent that there is additional development above what has been allowed, this would suggest that the calculated superimposed inflation is understated).

Applying the selected relativities from Figure 3.8 to the cost paid in the first two years from Figure 3.7, gives an approximate 'ultimate' average paid by age band, as shown in Figure 3.9 below. As this shows, the above AWE inflation cost pressures seen for payments in the first two years from injury are also evident in the approximate 'ultimate' average paid, with a similar level of superimposed inflation as was evident in the capped 2yr paid measure.

Figure 3.9 – Weeklies Claims, Approximate Final Average Paid by Age Band ($Jun09)



While not shown, the above process has been undertaken separately for male and female weeklies claims. Average sizes, along with broad inflation assumptions based on the growth seen over the sixteen years shown, are then used in section 4 to project the future cost of claims under the future workforce projection.

3.2.5 Non-Weekly Claims

Figure 3.10 shows the claim frequency for non-weeklies claims by age band – overall the non-weeklies claim frequency has reduced by 60% from 1992 to 2007. This shows that younger age groups have historically had a higher frequency than for older age groups, although the gap has narrowed over time.

Figure 3.10 – Claim Frequency per million hours worked by Age Band for Non-Weekly Claims

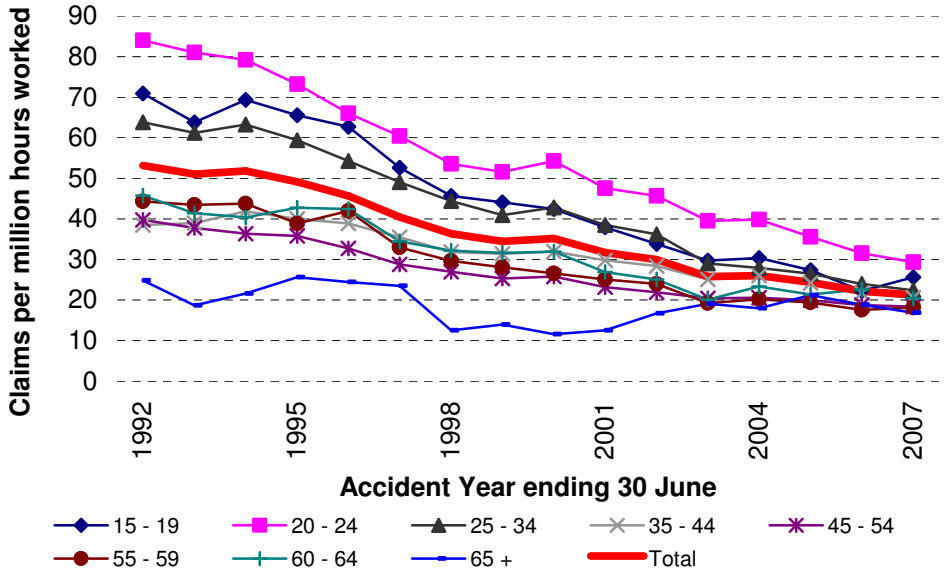
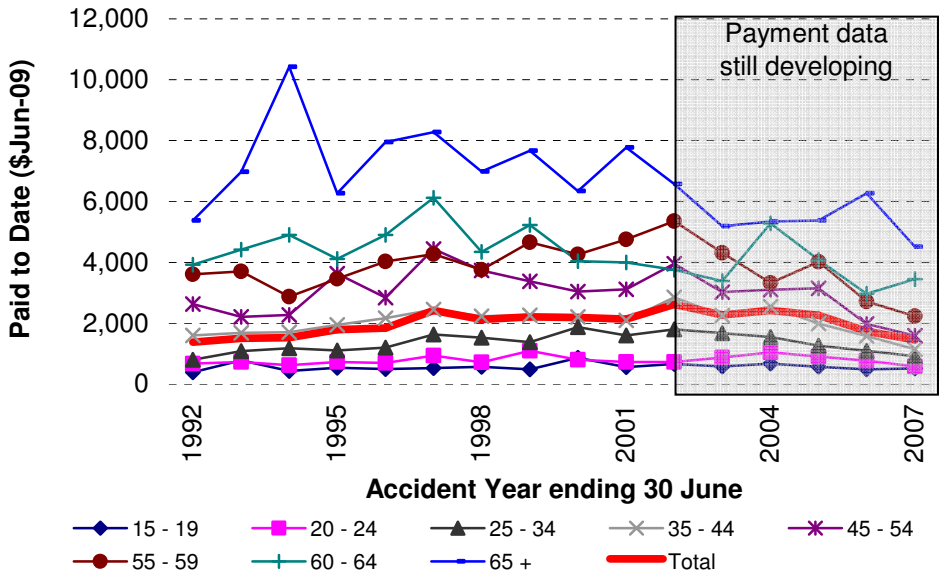


Figure 3.11 then shows the average amount paid to date on non-weeklies claims (inflated to Jun-09 values). While not focusing on the last (say) five years given the relative immaturity of the data, it can be seen that there is clear differentiation in the claim size by age band. Without being definitive, it also appears as though there is above inflationary pressure on average claim sizes for these claims (i.e. superimposed inflation) as the claim frequency has reduced.

Figure 3.11 – Non-Weekly Claims, Average Paid to Date ($Jun09) by Age Band



3.3 Where are we now?

Based on the above frequency and average size experience, a "baseline" unit cost of workers compensation claims has been constructed by age band. This shows an approximate claims cost per million hours worked for new claims in the current accident year, by age band. Figure 3.12 shows a split of the unit cost by each of the three components analysed – male weeklies claims, female weeklies claims, and non-weeklies claims (all) – with Figure 3.13 showing the implied total unit cost by age band.

[Note that the male weeklies unit cost is relative to the male exposure, and likewise for the female weeklies and non-weeklies unit costs. In order to convert to an overall unit cost a weighted average must be calculated]

Figure 3.12 – Baseline Unit cost of workers compensation claims per million hours worked – by Component

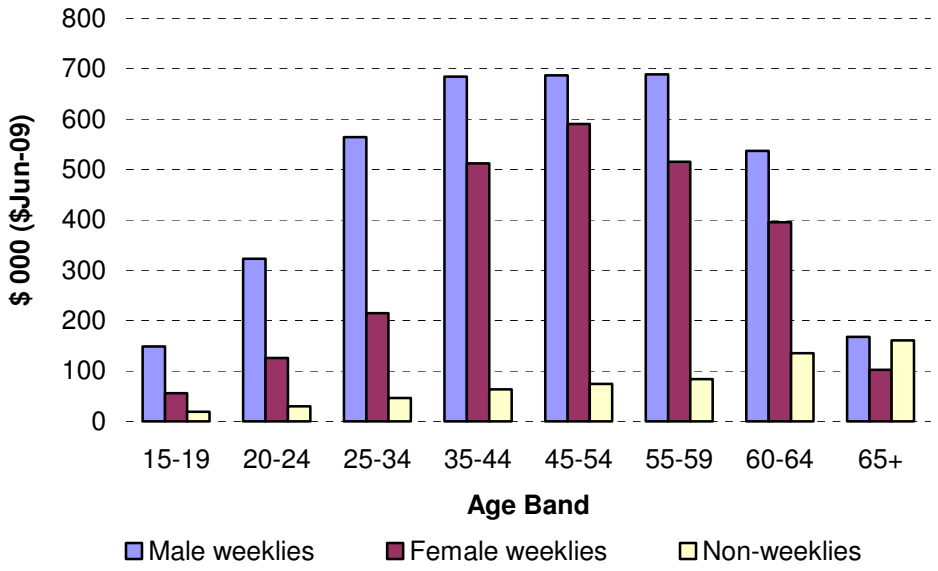
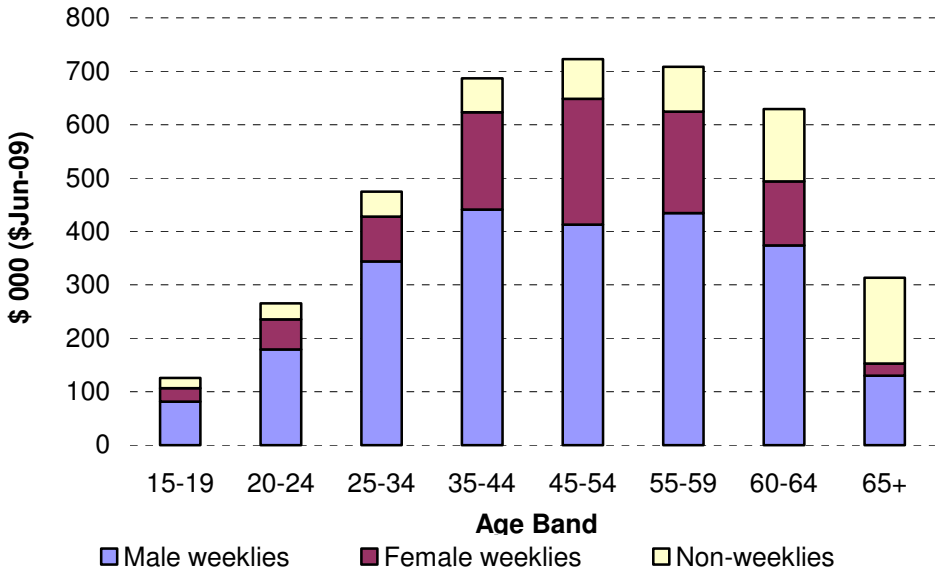


Figure 3.12 shows that:

- at younger ages, the unit cost of male weeklies is considerably higher than the unit cost of female weeklies
- by age 35 this differential in weeklies cost reduces, with a similar differential between males and females through to age 64. While it has not been analysed, it is hypothesised that some of this difference will relate to males having higher rates of pay than females on average (differences in working hours is normalised for in the measure, but higher hourly rates of pay are not), and that males work in industries with higher injury rates
- the unit cost of weeklies claims for 60-64 year olds is around 20-25% below the unit cost for claims aged between 35 and 59
- for the 65+ age band, the unit cost of weeklies claims is low, which is a result of the retirement age restrictions on income replacement benefits
- for non-weeklies claims, the unit cost increases with age.

Figure 3.13 – Total Baseline Unit cost per million hours worked – by Age Band



Combining the three components to produce an overall implied unit cost, Figure 3.13 shows that the overall unit cost is similar for the 35-44 to 55-59 age bands, with the two older bands moving close to this level once the cost of non-weeklies claims is allowed for.

Focusing only on the above baseline unit cost differentials, and all else being equal, an increase in the proportion of work performed by older workers (i.e. the 60-64 and 65+ age bands) would only lead to increases in overall unit costs if it was at the expense of a reducing share of younger workers (i.e. the 15-19, 20-24 and 25-34 age bands) where the unit cost is lower.

4 Baseline Projection of Future Workers Compensation Costs

This section focuses on the impact of future changes in the workforce, which is the result of projected population changes, on the future costs of workers compensation, all else being equal.

4.1 Overview of Approach to Future Claim Cost Projection

The following approach has been taken to projecting the future cost of workers compensation claims:

- future workforce information, including hours worked, are taken from the Productivity Commission's 2005 "Economic Implications of an Ageing Australia" Australian population projection by age band
- claim numbers are projected using a selected claim frequency per million hours worked. Claim frequencies have been selected separately for male weeklies claims, female weeklies claims and non-weeklies claims (in total), by age band
- claim costs are then projected by applying an assumed average claim payment to the number of claims for each of the three groups. "Claim payments" are expressed in June 2009 values given the focus of the paper is on relative changes in expected claim costs under different scenarios (i.e. it was not regarded as necessary to convert these to values at the time of payment, or as present values).

4.2 Key Variables

Figure 4.1 to Figure 4.3 show the selected baseline claim frequencies for the three groups. Future frequencies have initially been selected by applying an overall rate of improvement of 1.5% per annum to each age band, which was based on analysis of the historical experience for weeklies claims.

Figure 4.1 – Claim Frequency per million hours worked by Age Band – Male Weeklies

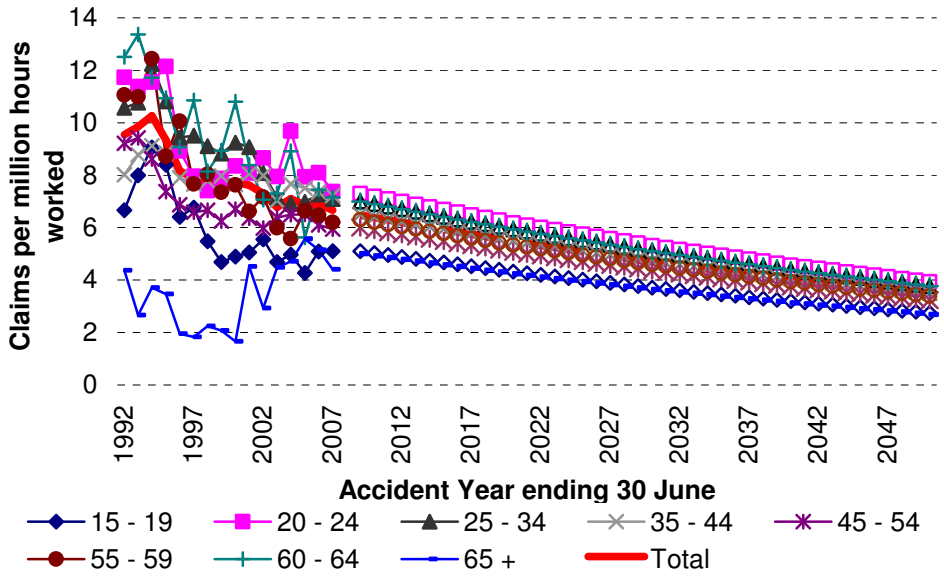


Figure 4.2 – Claim Frequency per million hours worked by Age Band – Female Weeklies

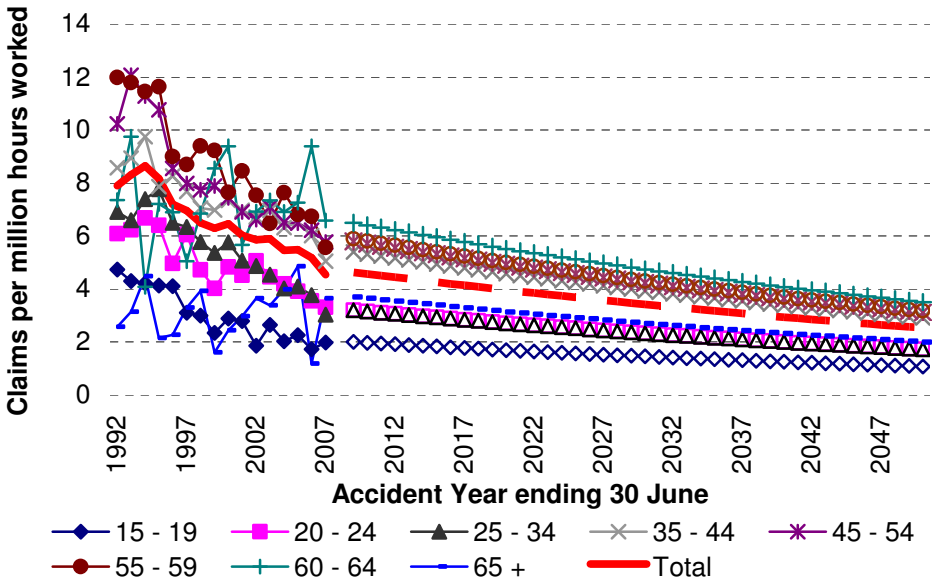
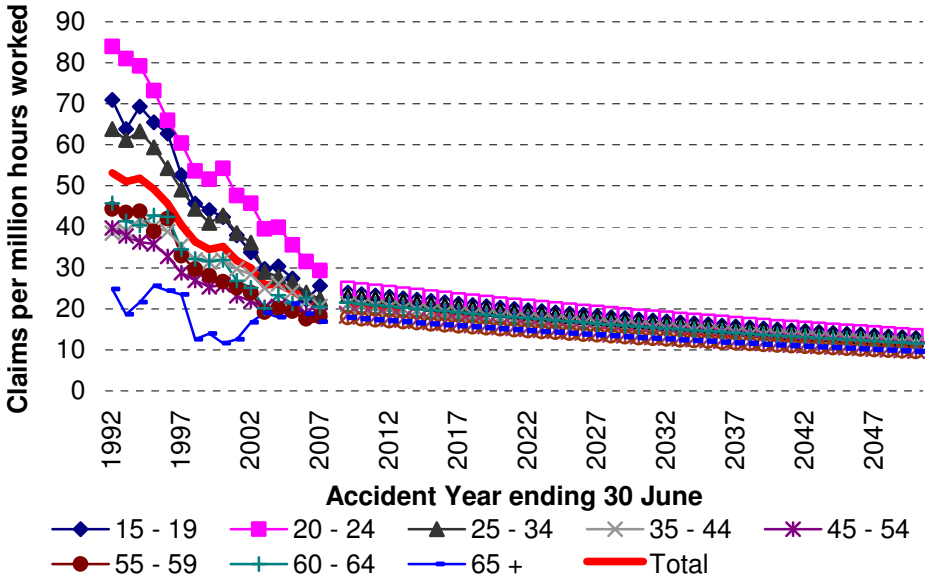


Figure 4.3 – Claim Frequency per million hours worked by Age Band – Non-Weeklies (All)



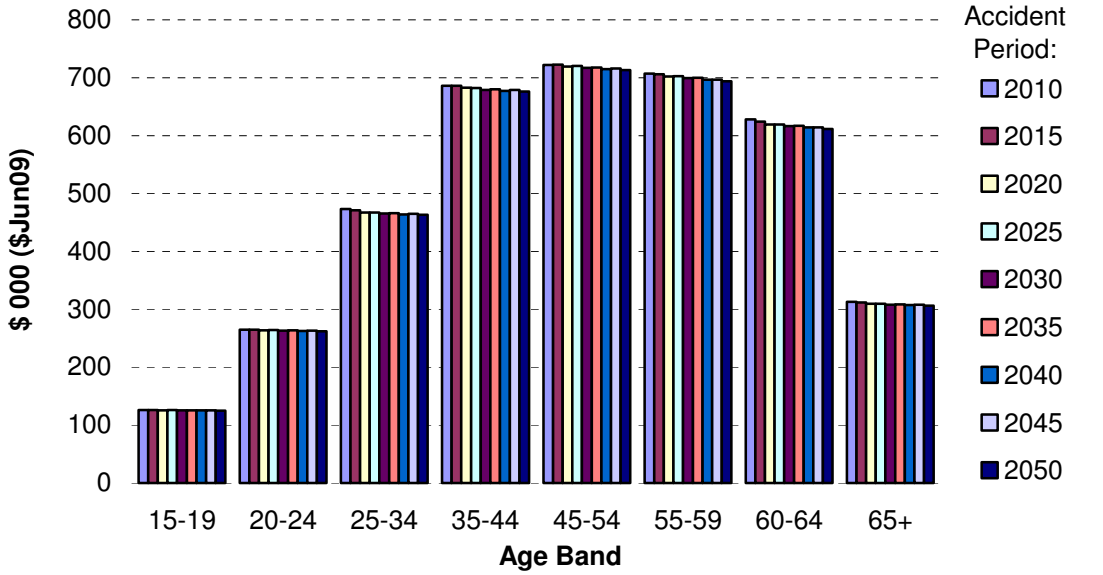
Similarly, for the applied average payment amounts starting values have been selected based on the recent experience, from which an above inflationary growth assumption of 1.5% is used to project the costs for claims that occur in future periods. Table 4.1 shows the historical observed approximate final average paid amounts, together with the selected above AWE inflation for future accident periods.

Table 4.1 – Approximate Final Average Paid by Age Band ($Jun09)

	Male Weeklies		Female Weeklies		Non-Weeklies	
	Starting	Inflation	Starting	Inflation	Starting	Inflation
Age Band	Size	Rate	Size	Rate	Size	Rate
15 - 19	29,200	1.5%	28,000	1.5%	800	1.5%
20 - 24	44,200	1.5%	39,300	1.5%	1,200	1.5%
25 - 34	80,600	1.5%	67,000	1.5%	2,000	1.5%
35 - 44	105,300	1.5%	94,900	1.5%	3,000	1.5%
45 - 54	114,400	1.5%	101,800	1.5%	4,000	1.5%
55 - 59	109,300	1.5%	87,300	1.5%	4,700	1.5%
60 - 64	76,700	1.5%	60,800	1.5%	6,300	1.5%
65 +	33,500	1.5%	27,600	1.5%	9,000	1.5%

Initially claim frequency improvements and claim size increases have been selected so as to produce an offsetting impact – i.e. the combined impact of changes in the two assumptions over time is that the unit cost is essentially constant for an age band, as shown in Figure 4.4 below (the heights are not precisely flat due to model simplification). This approach is broadly consistent with the observed experience over the last sixteen years.

Figure 4.4 – Baseline Unit cost (Total) per million hours worked Over Time ($Jun-09)

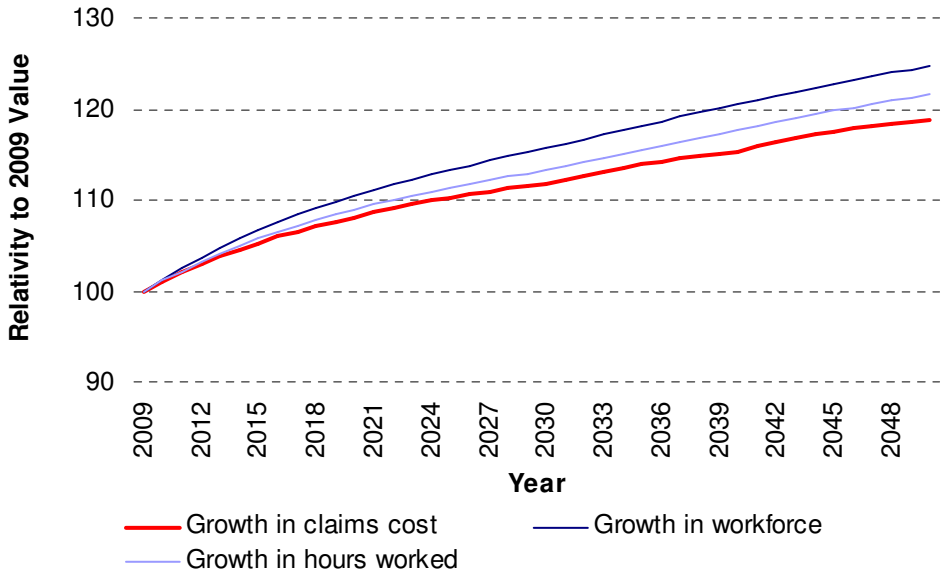


Obviously, if the counter-balancing forces of frequency improvements and above inflationary claim growth fall out of alignment, then the impacts on claim costs over a forty year projection can be significant. Further discussion around these impacts follows in section 5.2.

4.3 Summary of Projections

Based on the population and workforce projections and selected claim assumptions, a total incurred claim cost can be projected by future year. Figure 4.5 compares the growth in claim costs to both the growth in workforce and in hours worked.

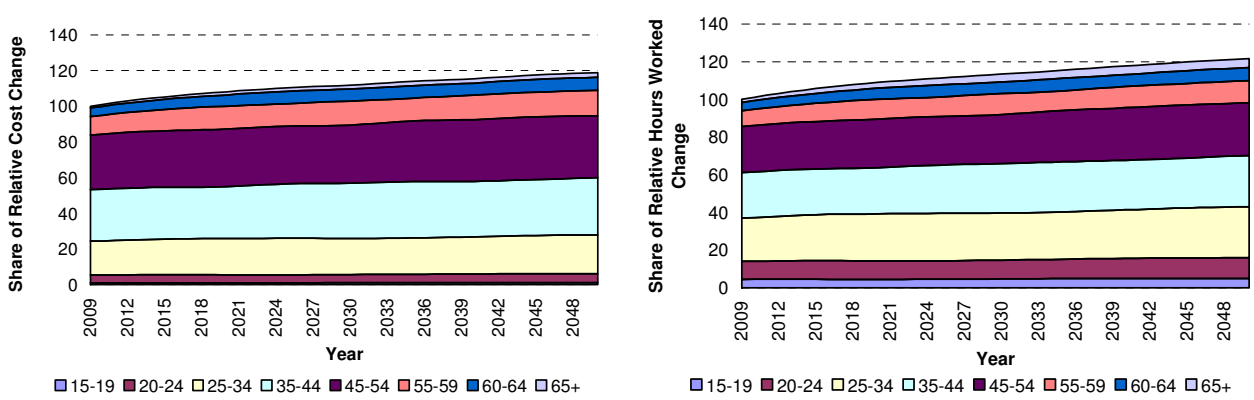
Figure 4.5 – Relative Change in Claims Cost and Workforce Over Time



As this shows, all else being equal, the impact of population ageing on the shape of the workforce would not on its own lead to any deterioration in claims cost relative to the exposure base – indeed there is marginal improvement based on the lower average cost of the older claims. On the assumption that average wages are unchanged by hours worked (this has not been tested) then this would suggest a slight reduction in average premium rates (claim costs divided by remuneration).

Figure 4.6 shows the split of the relative change for claims cost and hours worked (from above) by age band component. For both the hours worked and the claims cost there is a similar shape in the changes by age band.

Figure 4.6 – Components of Change in Claims Cost and Hours Worked Relativities



There are however a number of significant assumptions required to be met in order to meet this projection, as noted throughout this report. In particular the general "all else being equal" may not prove to be a valid assumption to make as demographic changes begin to impact on the exposed workforce and the many variables which contribute to its make-up (eg. mix of workers by sex, participation rates, 'riskiness' of industries over time, improvements in OH&S, etc).

5 Scenarios for Future Workers Compensation Costs

This section hypothesises on what the impacts of changes to some of the key variables might mean for workers compensation costs.

5.1 Scenario 1 – Increasing the National Retirement (pension) Age

5.1.1 Background

In May 2009 the Federal Budget announced increases in the national retirement (pension) age. To quote the Treasury:

"With advances in medical technology and changes in lifestyle, people are living longer and spending more retirement years in good health.

Despite this, the Age Pension age has not been increased above 65 years since its inception in 1909.

When the Age Pension was introduced, a male retiring at age 65 would have expected to spend 11 years in retirement. At that time, around half of the male population reached retirement age.

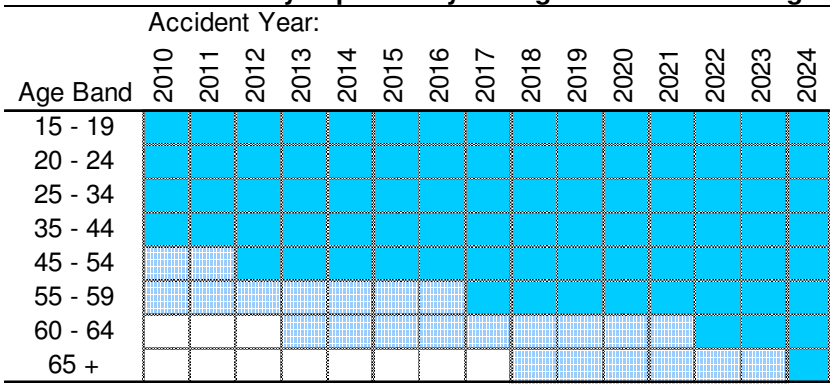
Today over 85 per cent of the male population reaches retirement age and can expect to spend over 19 years in retirement.

To respond to the long-term cost of demographic change, and to reflect improvements in life expectancy, the Government will progressively increase the qualifying age for the Age Pension.

The Age Pension age will be increased to 67 years, at a rate of six months every two years, beginning in 2017. This change will eventually apply to all age pensioners."

The impact of these changes is that from 1 July 2023 all persons will need to reach age 67 to qualify for an age pension. Given the staged increase, this change will have a differential impact on people born at different times. Figure 5.1 shows the modelled age bands out to 2024 by when the new retirement age provision are fully implemented, and colour codes these to indicate where claims are potentially impacted by the changes to retirement age. Solid colouring indicates a group will be wholly under the new provisions when they reach retirement, and shaded colouring indicates that some of the claims will be impacted over some of the transitionary period.

Figure 5.1 – Claimants Potentially Impacted by Changes to Retirement Age Provisions



With an increasing retirement age, those claims who would have remained on income replacement benefits until retirement are now likely to remain on these benefits for an additional two years (subject to the transition arrangements noted above). While not quantified directly, it is also likely that the associated medical and treatment related expenditure will also rise.

Based on the available South Australian data (i.e. given we are only working with sixteen years of a potentially fifty plus year projection for an accident year to runoff), and given the existence of redemptions/commutations over much of the period, it is difficult to be definitive about the number of claims who remain on the scheme until retirement age in any given accident year.

Based on the available information, as a broad range it is suggested that between 5% and 10% of weeklies claims either reach retirement age, or would have reached retirement age in the absence of an earlier redemption. The biggest single driver of the probability of staying on benefits is, not surprisingly, the age at which a person was injured – in round numbers:

- fewer than 3% of those injured below age 44 would be expected to remain on benefits to retirement age, which reduces to 1% or lower for those injured at very young ages
- for those injured between ages 45 and 60, an increasing portion of weeklies claimants are expected to remain on benefits to retirement age – from say 15% of the 45-54 age band, increasing to 33% for the 60-64 age band
- for those injured above age 65, a material share stay on benefits until retirement age provisions act to cease future income replacement payments.

5.1.2 Cost Effect for a New Accident Year

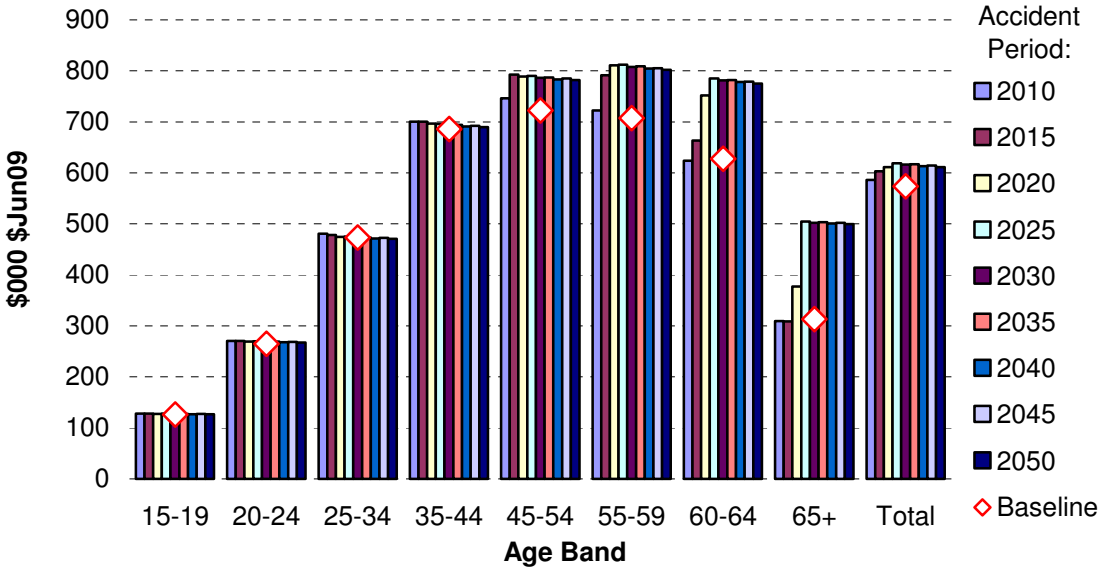
Based on the estimated proportion of claims remaining on benefits until retirement age, the projected cost of claims was increased by age band to allow for the expected additional cost under an increased retirement age. The modelling of these changes also allowed for the transitionary impacts whereby different age groups will fall under

different rules out to 2024 when the changes are complete. While not being precise in the application, there was also an attempt to allow a present value type weighting to the allowance i.e. for a very young claimant the impact of an extra two years income a long way into the future is quite different to the impact of two years extra payment on a claimant who is already aged 60.

With an increased retirement age, it was also regarded as sensible to increase the participation rates at older ages. Participation rates in the Productivity Commission models were increased by 2% for 50-54 year olds, 5% for 55-59 year olds, 7-10% for 60-70 year olds (females were increased by more than male in line with recent trends), and over 70's were increased by 1%.

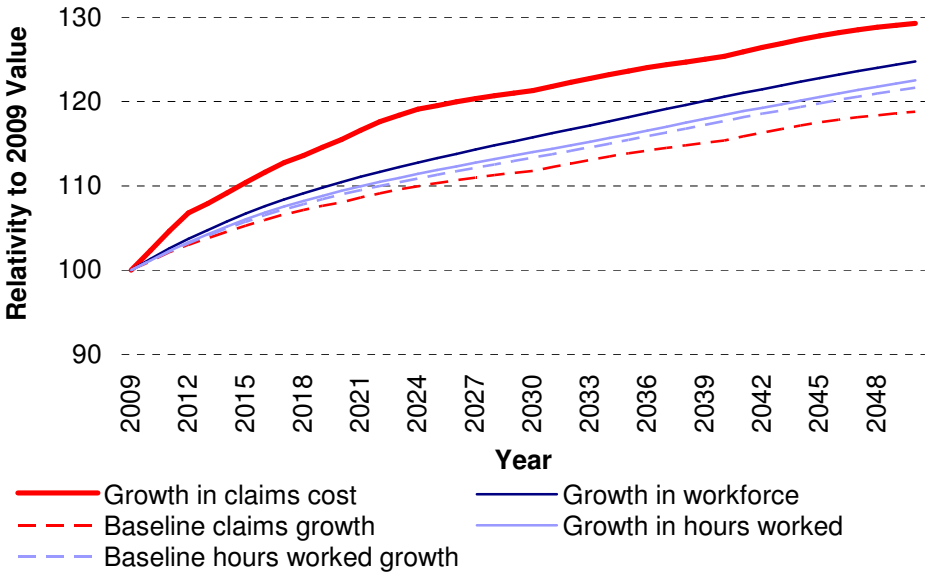
Figure 5.2 shows the implied unit cost per million hours worked by age band, and also compares this to the Baseline projection (which was constant across all future periods). This shows that the impact of an increased retirement age impacts most on the older age bands, with the 60-64 group over time moving to have a similar size to the 35-44 to 55-59 year groups. There is also a large percentage increase in the average cost for the 65+ year claims, as these claims would now have access to an additional one to two years of income replacement benefits.

Figure 5.2 – Unit cost (Total) per million hours worked Over Time With an Increased Retirement Age ($Jun09)



Based on the above claim sizes, and using the same claim frequencies as per the Baseline projection, when applied to the projected workforce (allowing for increased workforce participation at older ages) this produces an increased annual claim cost relative to the Baseline projection, as shown in Figure 5.3 below.

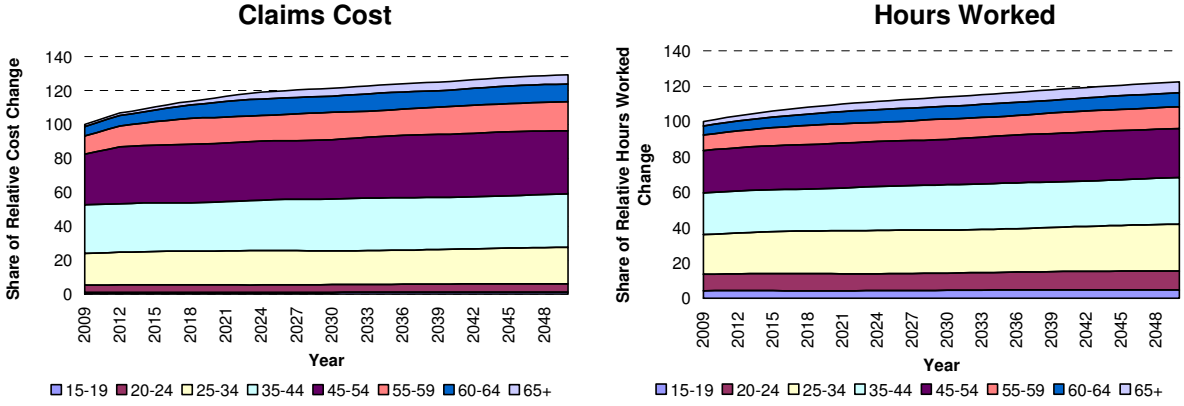
Figure 5.3 – Relative Change in Claims Cost and Workforce Over Time With an Increased Retirement Age



The impacts of the changes emerge out to 2024, by when the retirement age changes are completely operational. At this time the modelling projects annual claim costs to be around 10% higher than the Baseline case. As can be seen in the graph, the allowances for higher participation rates at older ages produce only a relatively minor increase in the exposed workforce i.e. the majority of the cost increase is due to the average payment amount assumptions and the already projected change in workforce profile, rather than the further assumed increase in older workers.

Figure 5.4 decomposes the change in relativity for both the claims cost and the hours worked by age band. This shows that the growth in claims cost is larger than the growth in hours worked for the older age groups.

Figure 5.4 – Components of Change in Claims Cost and Hours Worked Relativities



As noted above, the above modelling is based on the Baseline claim frequencies, and makes no allowance for any reduction in the rate of improvement seen in claim frequencies over time – it should be noted that for some older ages, there does not appear

to have been the same level of improvement as seen at the overall level, which is discussed further in the following section.

5.1.3 One-off Impact on Outstanding Claims

In addition to the increased annual cost for new claims, there would also be a one-off increase in the outstanding claims at the time when any legislation was changed to reflect the increased benefits period (assuming of course that the *state* based schemes were to compensate up to the increased *federal* pension age).

The exact quantification of such a change is a significant exercise and is beyond the scope of this paper. However, as an indication the author suspects a change of up to 5-10% could result in the income and related liabilities component of the outstanding claims provisions, depending on the profile of the pool of outstanding claims.

5.2 Scenario 2 – Reduction to Claim Frequency Improvements Over Time, in Addition to an Increased Retirement Age

5.2.1 Background

As discussed in section 3, overall claim frequencies have shown consistent improvement over the sixteen years of observed experience. These improvements have been paramount in maintaining scheme costs while claim sizes have increased.

In the absence of such improvements, and if claim costs were to continue increasing, this would place significant pressure on the overall costs to workers compensation schemes.

To construct a 'plausible' scenario of future costs, the following assumptions have been used for male and female weeklies claims (no change was made for non-weeklies claims):

- assume no future improvement in claim frequencies for those aged 65 and over – this could be interpreted as a deterioration in experience as a result of much larger numbers of workers being required to work to older ages than have been in the past. The net result of this change is to increase the unit cost per hour worked for these claims by 1.5% p.a.
- assume only half the improvement in claim frequency for those aged 60-64. This increases the unit cost per hour worked for these claims by 0.75% p.a.
- for those aged 59 and under, reduce the rate of improvement in claim frequency from 1.5% p.a. to 1.25% p.a. The net impact of this change is to increase the unit cost per hour worked by 0.25% p.a. for these younger age bands.

The resulting overall weeklies claim frequencies are shown separately for males and females in the following two figures. These are compared to the baseline frequencies as shown in Figure 4.1 and Figure 4.2 respectively.

Figure 5.5 – Claim frequency per million hours worked by Age Band – Male Weeklies

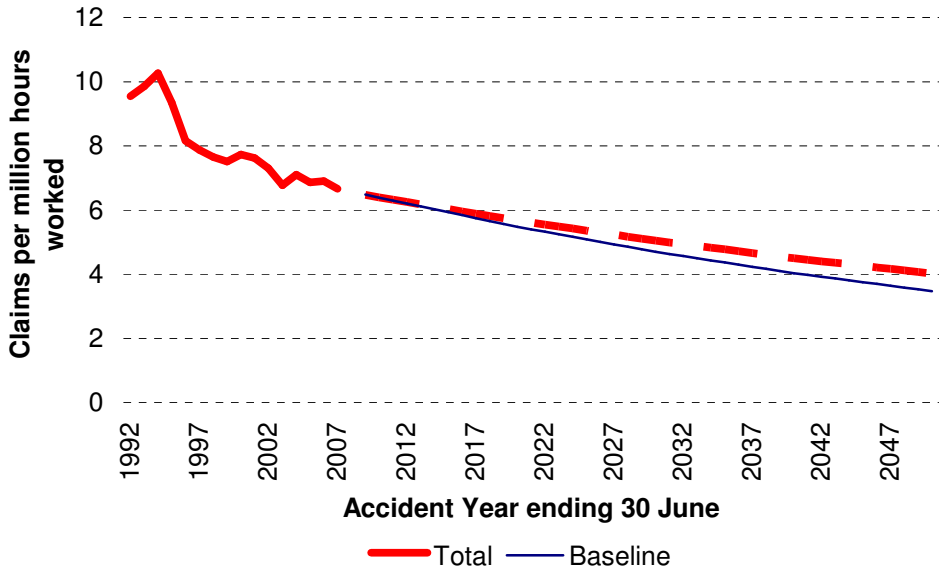
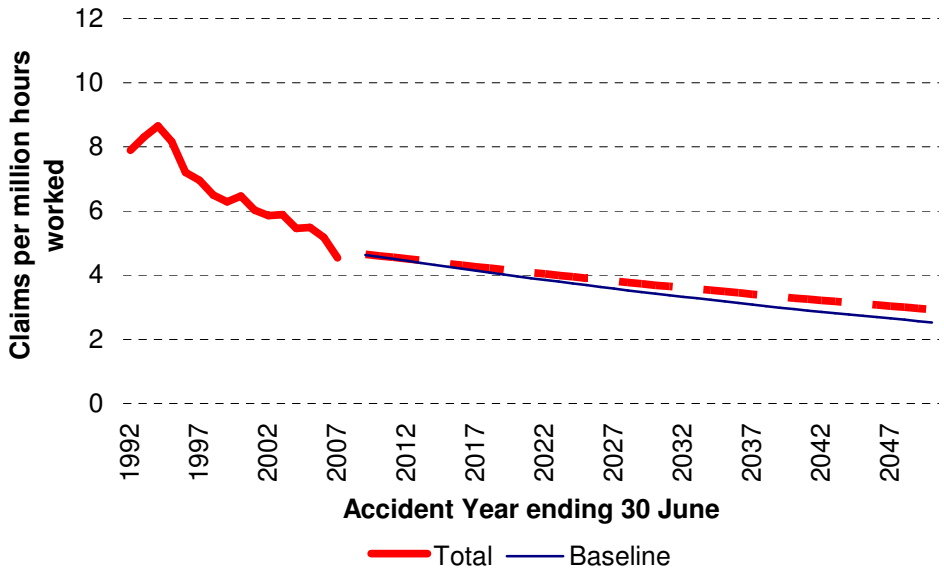


Figure 5.6 – Claim frequency per million hours worked by Age Band – Female Weeklies



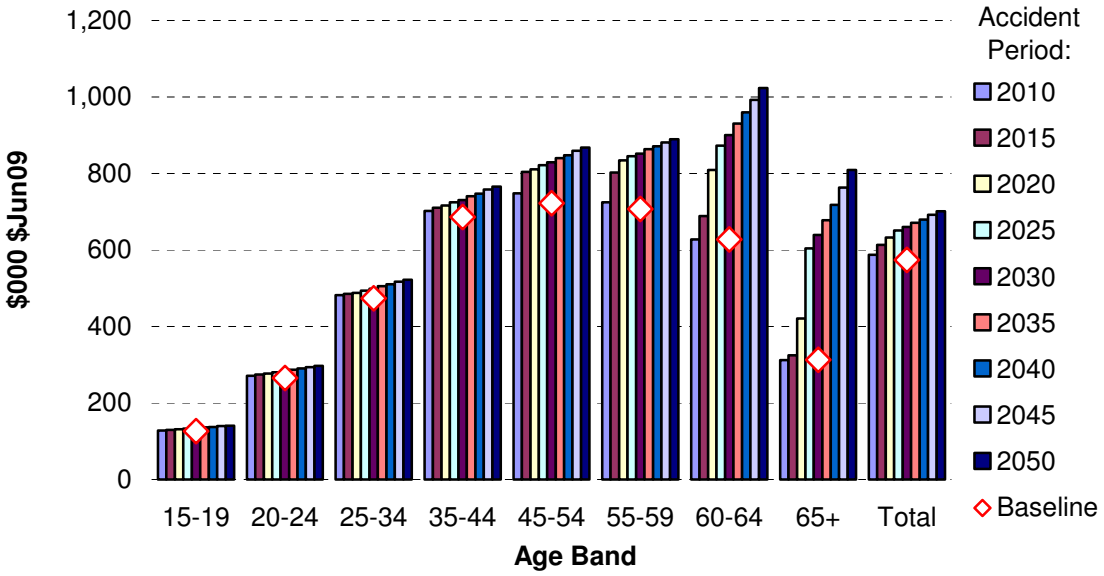
As this shows, at a total level the changes made to claim frequencies for this scenario do not appear to be implausible.

5.2.2 Cost Effect for a New Accident Year

The claim cost projections were re-done based on the above weeklies claim frequencies, and assuming no change in average claim sizes from scenario 1 (i.e. these are higher than the Baseline to allow for the increased retirement age). The workforce assumptions are unchanged from those used in scenario 1.

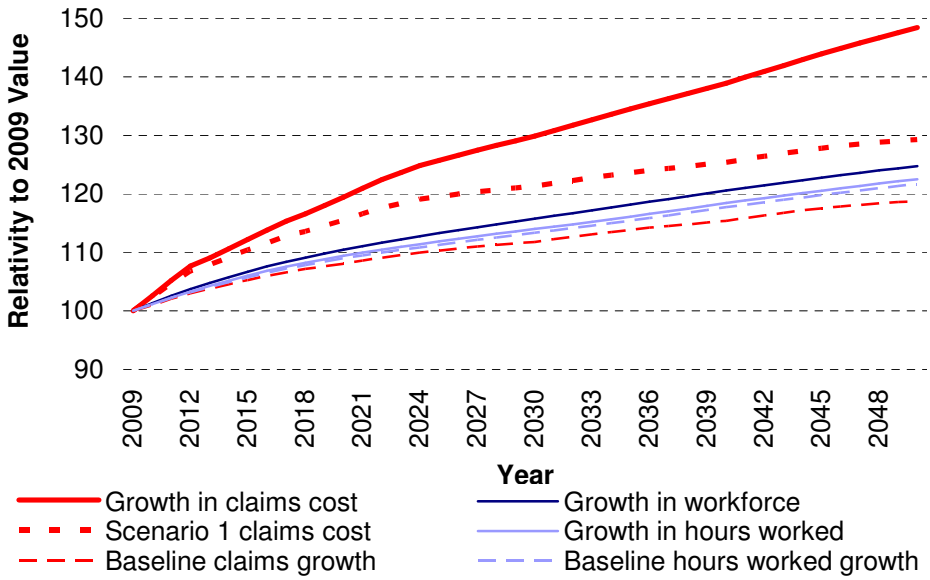
Figure 5.7 shows the implied unit cost per million hours worked by age band, and also compares this to the Baseline projection (which was flat across all future periods). This shows the compounding impact of a small year on year change in the younger age bands, along with sizeable increases for the older claims where the largest changes to frequency assumptions have been made. As shown, the Total unit cost in this scenario increases by around 20% in real terms over the term of the projection.

Figure 5.7 – Unit cost (Total) per million hours worked Over Time with an Increased Retirement Age and Reduced Claim Frequency Improvements ($Jun09)



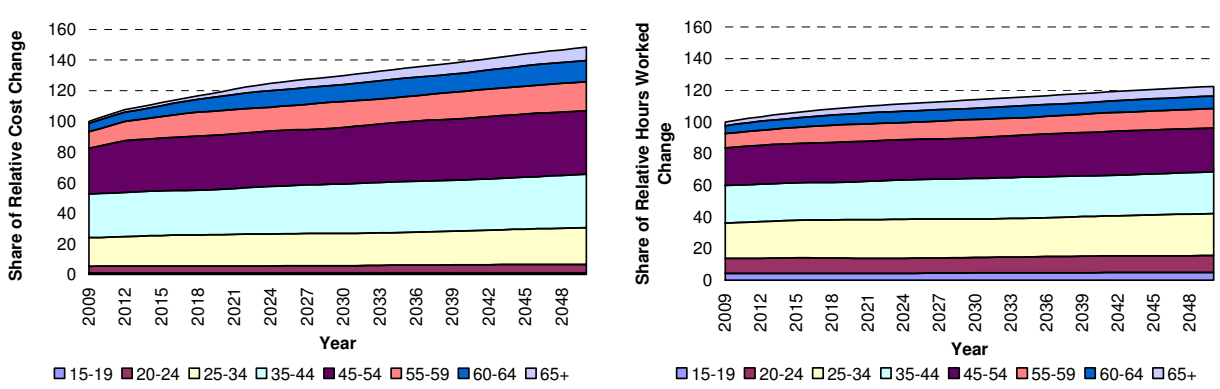
When applied to the projected workforce (allowing for increased workforce participation at older ages as per scenario 1) this produces an increased annual claim cost relative to both the Baseline projection and to scenario 1, as shown in Figure 5.8 below.

Figure 5.8 – Relative Change in Claims Cost and Workforce Over Time with an Increased Retirement Age and Reduced Claim Frequency Improvements



Under this scenario, over the forty year projection the claim cost increases by 48% in real terms, which is above the 29% growth seen in scenario 1. This compares to a projected growth in hours worked of 23%. Figure 5.9 decomposes this by age band, and emphasises the growth in cost for the older age bands under this scenario of reduced frequency improvements combined with an increased retirement age.

Figure 5.9 – Components of Change in Claims Cost and Hours Worked Relativities



6 Implications for Scheme Design

This section does not attempt to answer all the questions raised, but rather to note observations and areas for potential further work.

This paper has not considered further increases in the retirement age over the next forty years above those already announced in the 2009 budget. It may be that some of the items below could be viewed with even greater emphasis if further increases in retirement age are expected in the future.

The key points noted are:

- Management of older claims
  - There is a need to challenge any "pension" mentality for older claimants – both from a claim management perspective and from a worker perspective (i.e. no one should view a 50+ year old claimant as too hard to get back to work).
  - Rehabilitation effectiveness – the ability to obtain return to work outcomes from older claims will impact crucially on the cost increase from an increasing retirement age. This is likely to require consistent operation at a best practice level, as well as successful innovation in achieving rehabilitation and return to work to obtain further improvements over time.
- Proactive management of claim frequencies via occupational health and safety initiatives
  - As noted throughout the paper, reductions in claim frequency have been and will continue to be a key component of controlling workers compensation costs. Injury prevention is likely to be a key part of continuing to achieve reductions in claim frequencies – in particular, with an increase in the number of older workers there is likely to be a resulting increase in older people working in industries which have not traditionally made large use of older workers.
- Management of above inflationary cost pressures eg. Medical
  - The existence or absence of above inflationary claim cost growth is the other dimension of maintaining overall costs. Tight controls on areas such as medical and treatment related expenditure will likely be necessary over the longer term.
- Other incentives to reduce claim occurrence and duration
  - The role of employers in minimising workers compensation costs will continue to be an important determinant of claim costs. Whether this is obtained via "carrot" or "stick", the interests of the employer in minimising claim costs needs to be correctly incentivised. Examples include:

- the wording of legislated requirements for the employer to participate in the return to work process (eg. via the provision of alternative duties)
- the structure of experience rating arrangements
- the degree of cross-subsidisation across employers in the premium system (whether based on size, industry, etc).

- Funding of workers compensation costs
  - As touched on above, issues around cross-subsidisation may arise in premium setting decisions over time with changes in industry and age structure amongst employers (i.e. if premiums are set based on say five to ten years of historical data, will this produce anomalies in the future premiums)
  - Balance of federal and state based responsibilities.
- Whether there are (or may be in the future) areas of inefficiency in the treatment of part time as opposed to full time workers – in particular given the higher rate of part time work from older workers.
- The incidence and/or claim propensity for chronic and latent disease (as opposed to "injuries") may increase over time with higher numbers of older workers in the workforce
- As more than a purely workers compensation issue, there is a question of whether Government has a role (and the ability?) to take in the creation of workforce demand for older workers
  - i.e. given the increased number of older workers in the workforce, should government attempt to influence/encourage the provision of this labour in any way, or should its allocation be left to market forces?
  - If Governments were to become active in this regard, then there may be potential feedback loops into the management of claims for older claimants (eg. requirements on job creation for older injured workers), and in the incentives built into workers compensation systems.

Areas for potential further work include:

- Additional detail in the modelling of claim outcomes by introducing the industry mix as a projection variable. Given changes in workforce structure over the coming forty years are likely to be different from those seen over the last twenty years, it is likely that the mix of industries employing older workers will change over time. As such, there may be additional learnings available from more detailed analysis in this regard.
- The Productivity Commission models upon which this paper is based were published in 2005. As updated projections become available there may be additional updating of the projections.

Appendices

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B Definitions and Labelling Conventions Used in this Paper

Unless otherwise noted, the following labelling conventions have been used in this paper:

- "workforce" is the number of employed persons as at 30 June of the relevant year
- "participation rate" is the number of persons in the labour force divided by the civilian population
- "hours worked" are based on an annualised figure of hours employed over the relevant year
- "industry groups" are based on the ANZSIC 1993 definitions
- "claim incidence" is defined as claim numbers divided by the number of employed persons (adjusted for the level of self-insurance)
- "claim frequency" is defined as claim numbers divided by the number of hours worked (adjusted for the level of self-insurance), multiplied by 1,000,000.

"Weeklies" claims are used to refer to those claimants who have at some point received income replacement benefits, as described in section 3.2.1. "Non-weeklies" claims are those who do not fit the above weeklies definition.