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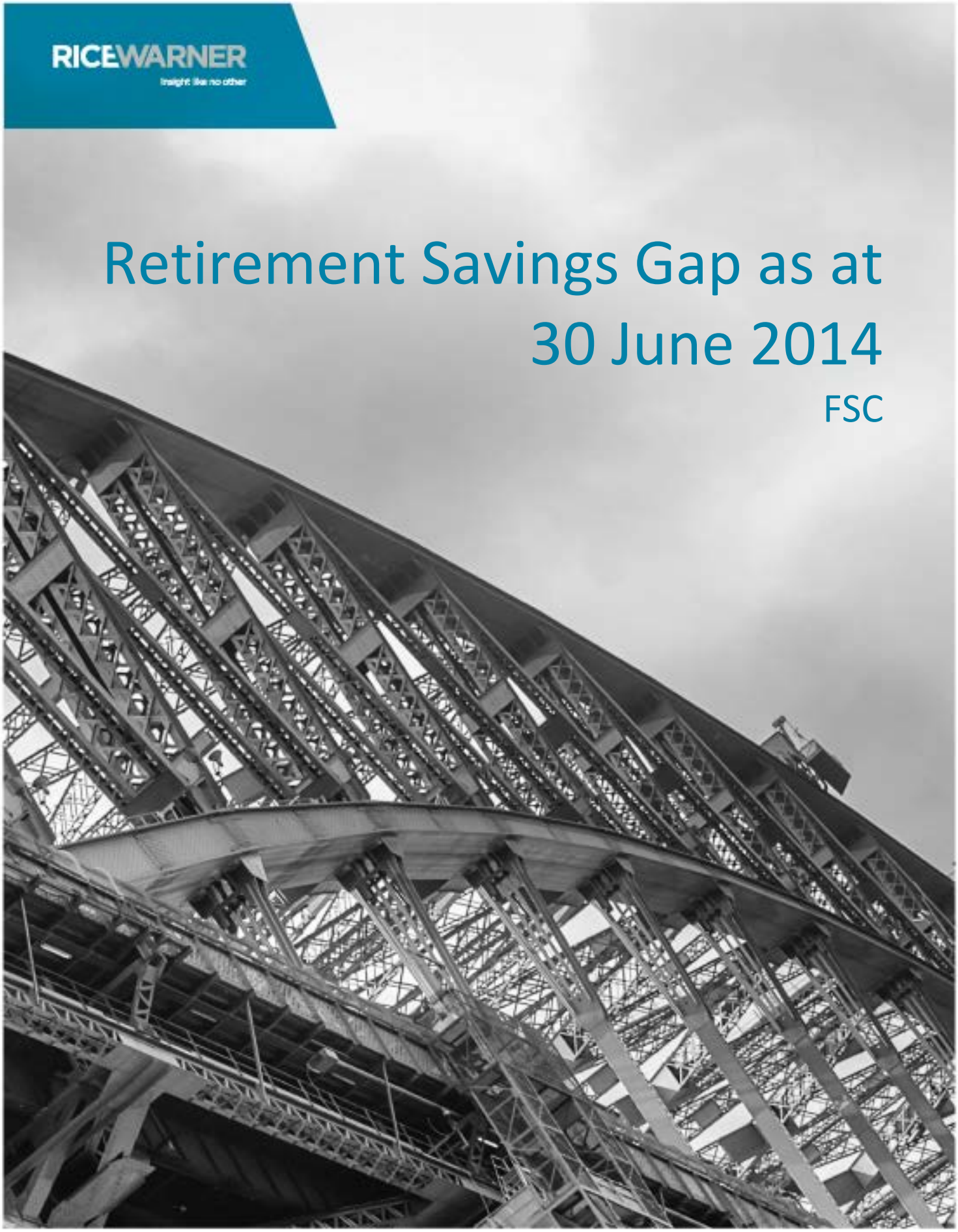
Retirement Savings Gap as at 30 June 2014

FSC



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1. Executive Summary

1.1 Introduction

This report provides a snapshot of Australia's progress as a nation towards funding a comfortable retirement. The figures calculated serve as indicators of the shortfall in adequate retirement savings for the working population, measuring the shortfall they will have in building an adequate (reasonable) retirement benefit.

The *Retirement Savings Gap* (RSG) is a measure of the shortfall between the amount the working population will accumulate by retirement and the amount required for an adequate (reasonable) retirement benefit for their life expectancy.

Most members take on all their own longevity risks as there are very few Australian superannuation funds which pay defined pension benefits[1]. Consequently, we also examined the *Longevity Savings Gap* (LSG), which is the shortfall in adequate retirement savings for those Australians who live considerably longer than average life expectancy.

This report further examines the impact of various actions which may be taken by either individuals or governments to reduce the RSG and improve the associated retirement outcomes.

The RSG and LSG examine the required savings needed to pay a targeted retirement income under three different scenarios:

1. The target income is required up until life expectancy, the age at which 50% of retirees will survive.

2. The target income is required to the age where 25% of retirees will survive (75^{th} survival percentile).

3. The target income is required to the age to which 10% of retirees will survive (90^{th} survival percentile).

Note that a member purchasing an annuity effectively funds a benefit for average life expectancy (the first scenario). However, the pooling of mortality means that those who live beyond life expectancy still receive their benefit until death.

Trends over time will show whether the relative position is improving. The Australian Federal Government encourages Australians to save for their retirement through a range of tax concessions. It also provides the Age Pension which is an integral part of the retirement income for nearly 80% of retired Australians. The financial services industry has an important role to play in educating fund members about retirement matters and assisting individuals to improve their personal situations. Community success can be measured through a reduction in the RSG over time.

The government has recently moved to tighten eligibility for the means testing of the Age Pension. We expect that future governments will continue to tighten the eligibility for the Age Pension in order to cut the growing costs of providing this benefit and to better target low income earners. For this reason, in this year's research we have focused on the Savings Gap which excludes Age Pension payments from members' retirement incomes.

This report sets out the results based on data as at 30 June 2014.

[1] There are still about $175 billion of defined benefit assets (at June 2013) but almost all funds are closed to new members.

1.2 Results

We estimate that there is a deficit of some $2.052 trillion at 30 June 2014 (excluding the impact of the Age Pension). This is the amount that would be needed to make all Australians bar low income earners self-sufficient in retirement. When the Age Pension is taken into account, the Savings Gap would be $1.284 trillion lower at $768 billion.

This result allows for the impact of the Government's September 2014 announcement that the Superannuation Guarantee (SG) rate will remain at 9.5% for seven years, and will then increase gradually to 12% by July 2025. Without this further four years delay in SG, the estimated RSG (including the Age Pension benefit) would be $118 billion lower at $650 billion.

Table 1 shows the difference between the RSG at the 50th percentile and the LSG which calculates the cost of retirees surviving to the 75th and 90th percentile respectively.

Table 1. Retirement and Longevity Savings Gaps

As at 30 June 2014	Amount excluding Age Pension ($b)	Difference from RSG ($b)	Percentage (%) difference
50th Percentile (RSG)	2,052	N/A	N/A
75th Percentile (LSG)	2,920	875	43%
90th Percentile (LSG)	4,005	1,960	96%

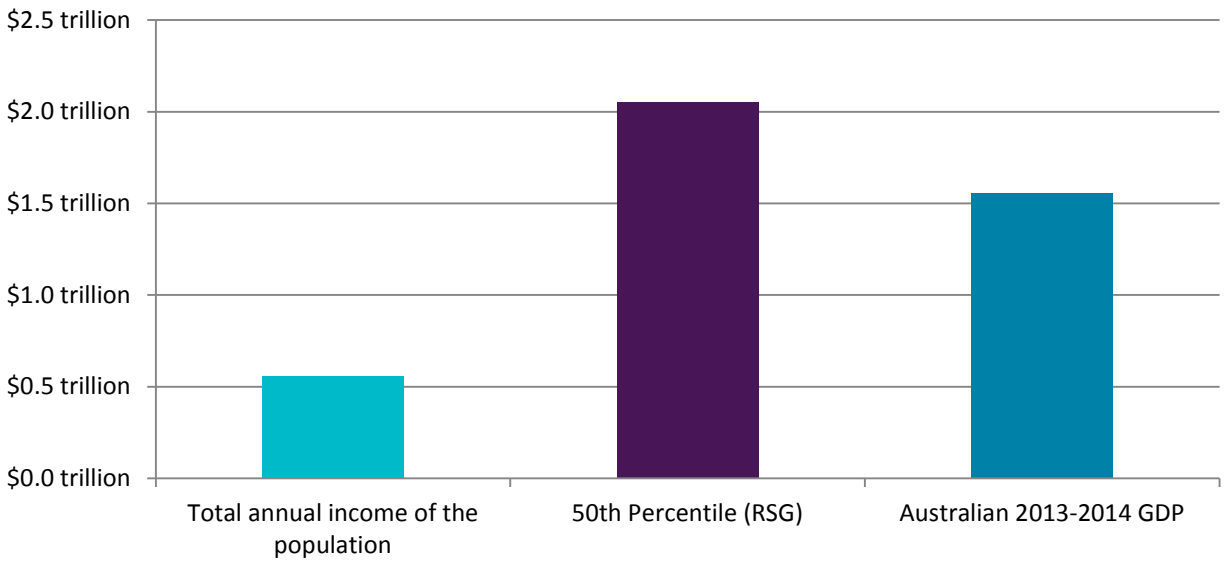
It is evident that the task of getting all individuals to save beyond their life expectancy is very expensive. It would also be inefficient as those retirees dying at younger ages would leave large balances behind.

The average RSG per person (excluding the Age Pension) is estimated to be $187,200, showing a sizable gap for those seeking retirement adequacy up to life expectancy. If we take into account the Age Pension this figure is much lower at $70,100. This grows to $266,400 at the 75th survival percentile and $365,400 at the 90th survival percentile. The estimated RSG (excluding the Age Pension) has increased by $231 billion in dollar terms since 2013 (from $1,814 billion); when it stood at $167,200 per person at 30 June 2013. This represents an increase of approximately $20,000 per person in nominal terms. This increase is mainly due to the further delay in SG rate increases.

The RSG is equivalent to approximately 1.3 times GDP. [2] .

[2] GDP was approximately $1.5 trillion in the 2013-14 financial year.

Graph 1. Comparison of Savings Gap to GDP and annual income of Australia



The increasing Superannuation Guarantee has helped reduce the RSG. However, the delay in SG increase has significantly diminished its benefits. The SG increase in itself is not a full solution for the current working cohort since it will not eliminate the total RSG. Increased contributions levels above this will be needed if more Australians are to save for an adequate retirement income. Alternatively, Australians will need to retire at a later age.

The RSG figures are lump sum amounts, expressed in today's dollars. In the report, we also express them as additional regular savings (over and above current contribution levels) which need to be made to ensure that current working Australians have a reasonable chance of retiring with the set target.

It is interesting to note that the RSG is highest for those on middle incomes. Those on lower incomes receive a greater proportion of their income from the Age Pension resulting in a lower savings requirement from their superannuation. Those on higher incomes generally have enough savings to provide themselves with an adequate retirement income.

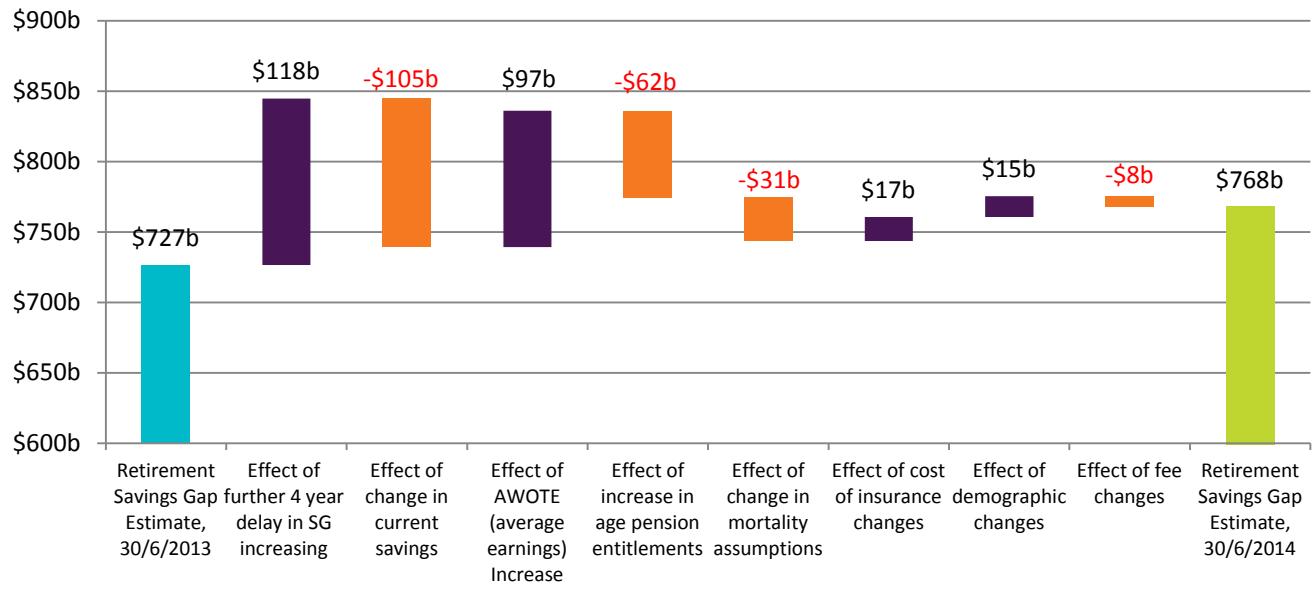
Table 2 and Graph 2 (refer to Section 6, *Differences from Previous Report*, for greater detail) show that the increase in the RSG reflects a complex relationship between:

- changes in the underlying population mortality
- increases in earnings
- changes in the population income distribution
- changes in the underlying population demographics
- changes in the estimate of pre-retirement savings
- changes in assumptions in the model to reflect changes to the underlying economic variables.

Table 2. Analysis of Difference of Retirement Savings Gap (including the Age Pension)

	$ billion
Retirement Savings Gap Estimate, 30/06/2013	**727**
Effect of further 4 year delay in SG increasing	118
Effect of change in current savings	-105
Effect of AWOTE (average earnings) Increase	97
Effect of increase in age pension entitlements	-62
Effect of change in mortality assumptions	-31
Effect of cost of insurance changes	17
Effect of demographic changes	15
Effect of fee changes	-8
Retirement Savings Gap Estimate, 30/06/2014	**768**

Graph 2. Analysis of Difference of RSG (including the Age Pension)



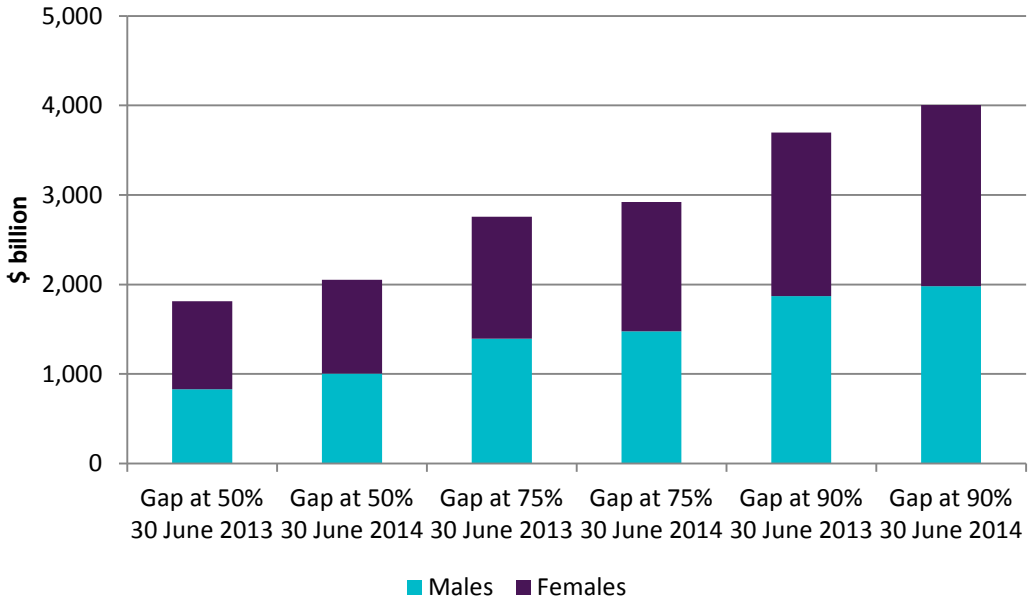
1.3 Comparison with Previous Results

The results of the previous RSG and LSG reports are detailed in Table 3. The modest increase in the RSG at 50% life expectancy is partly due to the delay in SG rate increases. The slight decrease in the savings gap at 75% and 90% life expectancy is partly due to the change in the mortality assumption.

Table 3. Results of the Rice Warner Savings Gap and Longevity Savings Gap – excluding the Age Pension ($ billion)

	Males	Females	Total
Retirement Savings Gap - 50% at 30 June 2013	831	983	1,814
Retirement Savings Gap - 50% at 30 June 2014	1,005	1,047	2,052
Longevity Savings Gap - 75% at 30 June 2013	1,395	1,362	2,757
Longevity Savings Gap - 75% at 30 June 2014	1,475	1,446	2,920
Longevity Savings Gap - 90% at 30 June 2013	1,869	1,827	3,696
Longevity Savings Gap - 90% at 30 June 2014	1,981	2,023	4,005

Graph 3. Results of the Rice Warner Savings Gap and Longevity Savings Gap excluding the Age Pension ($billion)



1.4 Main Assumptions

We have made a number of assumptions in calculating the RSG, and these should be considered carefully. The full range of assumptions is available in Section 4 (Methodology and Assumptions and Section 6 (Difference from Previous Report).

Future contributions, retirement age, demographic and economic assumptions have the most impact on the model. Where appropriate, we retain the assumptions to be consistent with previous reports.

1.5 Sensitivities

The sensitivities of the assumptions that have the most impact on the RSG are detailed in Table 4, together with the effect on the RSG.

Table 4. Sensitivity Analysis of RSG (including the Age Pension)

	Adjustment	RSG	Difference from Base RSG	
	(%)	($billion)	($)	(%)
Gross Retirement Savings Gap	N/A	768	N/A	N/A
Ignore Post-retirement Mortality Improvements	N/A	537	-230	-30.0
Target Replacement Rate = 62.5%	+2.50	925	157	20.4
	-2.50	621	-147	-19.1
Long-term Expense Rate = 0.65%	+0.10	803	36	4.6
	-0.10	733	-35	-4.6
Real Investment Return = 3.0%	+0.25	645	-122	-15.9
	-0.25	893	125	16.3
Average Employer Contributions = 14.0%	+1.00	687	-80	-10.5
	-1.00	851	83	10.8
Two years delay in SG (Increase to 12% in 2021)	N/A	650	-118	-15.4
No delay in SG (Increase to 12% in 2019)	N/A	632	-135	-17.6
No SG increase	N/A	836	68	8.8

It is important to recognise that the effect of each of the assumptions listed in Table 4 has been considered in isolation to all other changes, i.e. the effect of the sensitivities is not cumulative.

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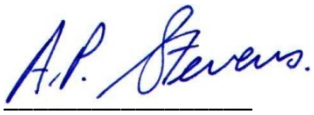

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30 July 2015

2. Background

2.1 Previous Reports

Since August 2003, Rice Warner has prepared a series of reports for the Financial Services Council on the RSG for the Australian population. In 2011/2012, the Financial Services Council requested that Rice Warner provide further research on the LSG, to measure the additional saving required collectively for Australia as a nation to achieve adequacy beyond life expectancy.

The first (*The Retirement Savings Gap, based on data at 31 December 2002*) and second (*The Retirement Savings Gap – Two Years On, based on data at 30 June 2004*) reports deemed adequacy to be an income stream at retirement equal to 62.5% of gross earnings, commencing from age 65. We note that the Financial Services Council chose this figure as it was within the range (60% to 65% of pre-retirement income) at which people can maintain their standard of living in retirement, chosen by the late Senate Select Committee on Superannuation and Financial Services. This equates to approximately 75% of pre-retirement expenditure and is a level which provides an adequate income in retirement, though it is modest for many people.

However, for the third, fourth and fifth reports (*Superannuation Savings Gap at June 2008, 2009, 2011 and 2013*) and this report adequacy has been defined as the savings required at retirement to provide 62.5% of pre-retirement earnings (in real terms) for each year until life expectancy from an account-based pension[3]. We believe that the revised definition of adequacy is a better reflection of reality, where the majority of members take their retirement benefit as a lump sum or roll it over to an account-based pension.

The results of the previous RSG reports are summarised in Table 5. The figures *Before Age Pension* show how much would need to be saved if the Age Pension were designed to be a safety net. However, this state benefit is an integral part of the retirement income of most Australians, so its value must be included in overall retirement income. Consequently, the figures *After Age Pension* are the appropriate figures for the RSG.

[3] An account based pension allows greater flexibility in an individual's drawdown pattern. For example, individuals are able to adjust their drawdown to maximise their Age Pension benefits (if eligible).

Table 5. Results of the Rice Warner Retirement Savings Gap Over Time

Basis	Data at	Retirement Savings Gap ($billion)		
		Males	Females	Total
Before Age Pension	December 2002	198	548	746
	June 2004	347	476	823
	June 2008	719	860	1,579
	June 2009	864	961	1,825
	June 2011	897	968	1,845
	June 2013	831	983	1,814
	June 2014	1,005	1,047	2,052
After Age Pension	December 2002	n/a	n/a	375*
	June 2004	237	216	452
	June 2008	358	337	695
	June 2009	479	418	897
	June 2011	453	383	836
	June 2013	377	350	727
	June 2014	435	333	768

* The Age Pension was broadly estimated to reduce the savings gap at December 2002 by between $100 billion to $200 billion which was an under-estimate of the impact. If we apply the same modelling method used as calculated at June 2004, then the 2002 After Age Pension savings gap is considerably less.

2.2 Background to the Retirement Savings Gap

2.2.1 Measurement Criteria

The RSG is a measure of the current shortfall in national savings between two amounts:

- The amount required to be saved by the nation as a whole to ensure 'adequacy' in retirement to life expectancy.
- The amount currently saved in the superannuation system, and the further amounts estimated to be saved in future years accumulated with earnings up to retirement, by the current workforce.

The shortfall can be expressed as a lump sum amount, or an amount that needs to be saved on an annual basis over the future working lifetime of the current workforce. In this report, we have presented the figure as a lump sum in present day dollars in line with the Financial Services Council's requirements and consistent with our previous reports.

The term 'adequacy' in retirement can have different meanings for different people. In this report, we have determined adequacy to be the savings required at retirement to provide 62.5% of pre-retirement earnings (in real terms) for each year until life expectancy. We have ignored the cohort which earns more than twice average earnings as it is probable that they will have adequate provision in retirement.

The amount saved has been determined by reference to the current level of superannuation savings and the likely level of future superannuation savings based on current contribution trends. In deriving this figure, we have ignored superannuation savings in respect of those people who are already retired.

2.2.2 Pension Age and Age Pension

Eligibility for the Age Pension currently commences at age 65 . However, the Government announced in its 2009 Budget that the Age Pension eligibility age would gradually increase to age 67 by 1 July 2023. At that time, the age may well be increased further.

We expect that younger members will need to stay in the workforce until the new Age Pension eligibility age of 67. In reality, most Australians currently retire before age 65, with the median retirement age being about 62. However, if members continue to retire earlier, they will need to live entirely off their superannuation and other savings until they reach the Age Pension eligibility age. This will reduce their savings available to fund later years - when the Age Pension will form a significant part of their income.

In calculating the RSG, we recognise that in the future around 40% of the Australian population will retire on a full Age Pension and a similar number will receive a part pension (Treasury expects approximately 75% of people above age 65 to receive some form of the Age Pension in 2050). Adequacy in retirement is a function of Age Pension entitlement, superannuation benefits and income from other investments.

We have made explicit allowance for the Age Pension by modelling the retirement income RSG separately for different income cohorts and calculating the Age Pension offset for each cohort *at all ages in retirement*.

Section 2 (Results) shows the modelling results both before and after taking the Age Pension into account.

The government has proposed policies to change the Age Pension age and the Age Pension indexation rules. However we understand these proposed policies are still subject to legislation, hence they have not been taken into account in this report.

2.2.3 Adequacy

The model is heavily dependent on the definition of 'adequacy' in retirement. As stated above, this has been determined to be the savings required at retirement to provide 62.5% of pre-retirement earnings (in real terms) for each year until life expectancy.

We note that the Financial Services Council has chosen the 62.5% figure as it is within the range chosen by an earlier Senate Select Committee on Superannuation and Financial Services within which people can maintain their standard of living in retirement. It concluded that an adequate retirement income would fall between 60% and 65% of pre-retirement income. This equates to approximately 75% of pre-retirement expenditure and is a level which provides an adequate income in retirement, though it is a modest target for many people.

This year we have reviewed the definition of adequacy to ensure that it is still appropriate; in doing so we recognise the term 'adequacy' in retirement is difficult to define as there is no consensus view on how much is considered to be 'adequate'. However, we need to define a general level of 'adequate' retirement income before we can make any assessment of the current superannuation system's ability to provide such a retirement income.

We note the following regarding expense requirements in retirement:

- Expenses such as tax, mortgage repayments (for home owners) and expenses related to raising children are usually reduced or eliminated by retirement, other expenses may become cheaper through pensioner discounts – this means a lower level of income can support the same living standards.
- Those who rent will require a greater level of income in retirement as expenditure in retirement will not reduce by as much.
- Most studies consider adequacy for an individual even though a significant number of retirees are couples with different income and expenditure needs. For example, 43% of people claiming the Age Pension (whole or part) are single (and the rest receive a 'couples' benefit). Many other retirees become single later in life when their partner dies.

The common measures of stating adequacy are Replacement Rates and Budgetary Standards.

- The replacement rate is the ratio of a person's income or spending power after retirement compared to the period just before retirement. It is usually expressed as a fixed percentage of the retiree's pre-retirement income.
- A budgetary standard represents what will be the likely costs to maintain a certain living standard. The living standard is often represented by a basket of goods and services.

Both methods have their advantages and disadvantages. We continue to suggest that a replacement rate is appropriate for the Savings Gap research (rather than a budgetary standard) for the following reasons:

- Budgetary standards are unrelated to an individual's income and are more difficult to target (especially given legislated contributions are set as a percentage of salary).
- Budgetary standards represent a basket of goods and tend to increase at a rate closer to CPI than wage inflation. This means that unless refactored, retirees would not participate in increases in living standards over time as these are driven by wages.
- A replacement rate measure is the appropriate measure when adequacy is focused on the maintenance of a standard of living.
- A budgetary standard is the appropriate measure when adequacy is focused on providing a minimum benchmark only.

With regards to the percentage of pre-retirement income required to maintain living standards, we recognise that there is no single correct answer. However, we advocate that 62.5% remains appropriate. Since the Senate Select Committee we are aware of the following research:

- The ASFA standard (single, comfortable) when expressed as a percentage of AWOTE is roughly 56%.
- The Charter Group appointed by the previous government (and disbanded by the current government) tasked with the development of the Charter of Superannuation Adequacy and Sustainability suggested that 60-70% is appropriate using OECD data.

Given this evidence we believe 62.5% continues to be appropriate for the Savings Gap research as at 2014.

2.2.4 Non-superannuation Assets

Our model examines the RSG mainly in terms of superannuation savings. However, there will be other savings in addition to superannuation held by the general population that will impact upon the 'pure' RSG presented in this report. Detailed research and analysis of these savings is beyond the scope of this report. Nonetheless, some comment on the effect that non-superannuation assets might have on the RSG is considered with the results in Section 3 (Results). We have made some broad allowance for investment properties of wealthier individuals, as discussed in Section 4.7.3 (Non-superannuation Assets).

2.2.5 Population

We have ignored that portion of the population which has already reached age 65. Whilst a large number of this cohort has inadequate provision for retirement, there is little scope to improve this situation through further savings. A small number within this group is still working and may generate some additional savings within superannuation, however most have no capacity to improve their financial position.

Similarly, we have ignored people under the age of 25. The younger generation has a focus on education and work training and need not be concerned about superannuation as a priority at this time. We note that ignoring those aged below age 25 serves to decrease the estimated RSG.

We have also ignored wealthier individuals on pre-retirement incomes in excess of twice average earnings. These individuals hold much of Australia's private wealth and most should be self-sufficient in retirement.

2.2.6 Background to the Longevity Savings Gap

The key difference between the RSG and the LSG is the amount of time retirees will require an adequate income in retirement. For the RSG, we have determined adequacy to be the savings required at retirement to provide 62.5% of pre-retirement earnings (in real terms) for each year until life expectancy, ignoring people who earn more than twice average earnings as it is probable that they will have adequate provisions in retirement.

It is expected that half of all Australians will live beyond their life expectancy. Consequently, it is likely that many Australians would prefer to have sufficient retirement savings to provide themselves with an adequate retirement income well beyond life expectancy. For this reason, in this report we have modelled the savings shortfall to provide replacement income of 62.5% of pre-retirement earnings (in real terms) for those who survive until both the 75th survival percentile and the 90th survival percentile.

This approach allows us to assess the shortfall in savings for Australians to have adequate incomes in retirement even when they live beyond the average number of years.

The current absence of any pooling of longevity risk results in retirees needing enough savings to fund their entire retirement, the length of which can vary considerably. Retirees who survive well beyond their life expectancy may exhaust their savings early and be unable to draw an adequate income, resulting in a rapid deterioration in their living standard and an increased drawdown on the Age Pension which will have a negative impact on the Commonwealth Budget.

Individuals can address their own LSG by:

- delaying retirement
- saving more in superannuation
- exhausting existing assets including the family home
- deferring consumption of their superannuation savings, through taking the minimal pension payment each year
- purchasing longevity products, such as lifetime or deferred annuities.

This report explores the impact of the above actions on the LSG and the associated retirement outcomes.

3. Results

3.1 Retirement Savings Gap

The RSG as at 30 June 2014 is calculated as $2,052 billion before allowance for the Age Pension, compared to our estimate of $1,814 billion as at 30 June 2013. It is important to note that this amount is not a lump sum that is required immediately, but an amount that would need to be funded over the expected term to retirement of the current workforce. The underlying population measured (ages 25 to 65), has grown from 10.8 million to 11.0 million. The estimated RSG has increased by $231 billion in dollar terms; it stands at $187,200 per person as compared to $167,200 per person as at 30 June 2013. This represents an increase of approximately $20,000 per person in nominal terms.

The RSG including the Age Pension at 30 June 2014 is calculated as $768 billion. This is an increase of $41 billion since June 2013. The RSG can be subdivided by gender as outlined in Table 6.

Table 6. Retirement Savings Gap by Gender ($Units) (including the Age Pension)

As at 30 June	2013			2014		
	Males	Females	Total	Males	Females	Total
Asset (accumulated savings plus future contributions)	1,852	1,440	3,291	1,830	1,468	3,298
Contribution from Age Pension	454	633	1,087	571	714	1,284
Projected value of all benefits	2,306	2,073	4,379	2,401	2,181	4,582
Liability (target benefits)	2,682	2,423	5,105	2,835	2,514	5,350
Retirement Savings Gap	**377**	**350**	**727**	**435**	**333**	**768**

The Senate Select Committee on Superannuation and Financial Services suggested a range for 'adequacy' of 60% to 65% of gross earnings. This gives a range for the RSG of $621 billion to $925 billion with a mid-point of $768 billion.

We note that the RSG (after the Age Pension) is higher for males. Males tend to receive lower Age Pension benefits as they generally have greater superannuation savings at retirement. Further, fewer males survive to advanced ages (where most retirees receive a full Age Pension). In contrast, females tend to have a lower RSG as a result of the Age Pension forming a higher proportion of their retirement income (females tend to have lower pre-retirement incomes and therefore lower required adequate retirement incomes on our measure).

However, if we do not allow for the Age Pension, the RSG is higher for females. This reflects the combination of lower superannuation savings at retirement and their longer expectation of life (and thus the longer period over which to provide an adequate income) relative to males.

3.1.1 Results by Age (including the Age Pension)

The results can be expressed in quinquennial age groupings, together with the required additional annual contribution rate required by each age cohort to achieve the target standard of living in retirement.

Table 7 shows the composition of the RSG (after allowing for the Age Pension) by quinquennial age group. Table 8 and Graph 4 display the RSG per person in each group as at 30 June 2014.

Table 7. Retirement Savings Gap ($M) (including the Age Pension)

As at 30 June Age	2013		2014	
	Males	Females	Males	Females
25-29	74,516	77,885	84,846	83,347
30-34	63,947	58,746	81,780	58,733
35-39	64,064	50,765	70,890	49,873
40-44	52,933	41,391	54,566	35,053
45-49	37,494	45,896	47,806	39,062
50-54	38,925	43,286	44,580	35,247
55-59	28,366	24,388	27,718	24,433
60-64	16,670	7,446	22,448	7,495
Total	**376,916**	**349,803**	**434,635**	**333,243**

Table 8. Retirement Savings Gap Per Person by Age and Gender ($) (including the Age Pension)

As at 30 June 2014	Males	Females
25-29	$115,554	$107,867
30-34	$130,513	$81,441
35-39	$108,875	$62,983
40-44	$87,084	$46,341
45-49	$71,022	$49,464
50-54	$71,737	$48,331
55-59	$46,222	$36,149
60-64	$38,870	$12,206
Total	**$85,050**	**$56,954**

Graph 4. Retirement Savings Gap Per Person by Age and Gender ($) (including the Age Pension)

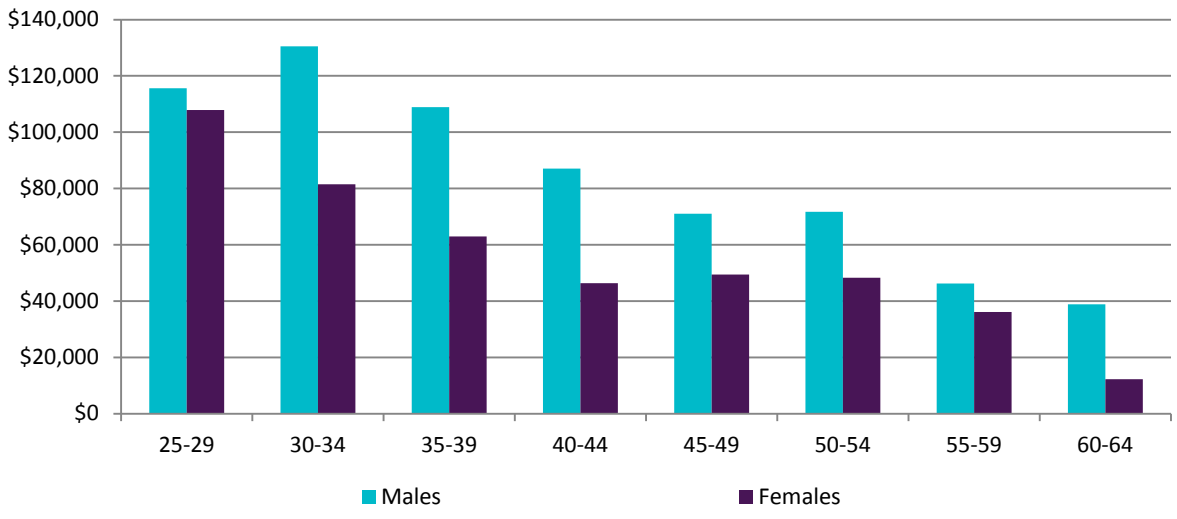


Table 9 and Table 10 show the additional contribution required to offset the RSG over the future lifetime of each age/gender cohort. This is shown both as an average additional contribution (above the assumed average employer and member contribution) and as a contribution in addition to the Superannuation Guarantee rate.

3.1.2 Required contribution rates by cohort (including the Age Pension)

Table 9. Required Additional Contribution – 30 June 2014 - Males

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
	(%)			
25-29	0.00%	9.50%	2.86%	12.36%
30-34	0.74%	10.66%	3.86%	15.25%
35-39	1.60%	12.01%	3.93%	17.54%
40-44	2.58%	13.55%	3.97%	20.10%
45-49	5.68%	15.29%	4.29%	25.26%
50-54	4.79%	17.03%	6.21%	28.03%
55-59	5.89%	18.76%	6.74%	31.39%
60-64	7.00%	20.50%	15.64%	43.14%

Table 10. Required Additional Contribution – 30 June 2014 - Females

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
	(%)			
25-29	0.00%	9.50%	3.27%	12.77%
30-34	0.74%	10.66%	2.95%	14.34%
35-39	1.60%	12.01%	2.79%	16.39%
40-44	2.58%	13.55%	2.59%	18.72%
45-49	3.68%	15.29%	3.66%	22.63%
50-54	4.79%	17.03%	5.13%	26.94%
55-59	5.89%	18.76%	6.45%	31.11%
60-64	7.00%	20.50%	6.01%	33.51%

The rates increase with age, as one would expect. The older age groups suffer from the fact that they have not enjoyed Superannuation Guarantee contributions over their working lifetimes and they have less time over which to amortise the RSG.

The generally lower rates for females reflect the lower income distribution which increases eligibility for the Age Pension. If the Age Pension is ignored, the rates for females are considerably higher.

3.1.3 Impact of Age Pension

If there were no Age Pension, the rates required would be considerably higher as shown in Table 11 and Table 12.

Table 11. Required Additional Contribution – 30 June 2014 before Age Pension – Males

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
	(%)			
25-29	0.00%	9.50%	6.66%	16.16%
30-34	0.74%	10.66%	7.88%	19.28%
35-39	1.60%	12.01%	8.15%	21.76%
40-44	2.58%	13.55%	8.65%	24.79%
45-49	3.68%	15.29%	10.24%	29.21%
50-54	4.79%	17.03%	14.54%	36.36%
55-59	5.89%	18.76%	18.34%	42.99%
60-64	7.00%	20.50%	56.00%	83.50%

Table 12. Required Additional Contribution – 30 June 2014 before Age Pension - Females

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
	(%)			
25-29	0.00%	9.50%	8.53%	18.03%
30-34	0.74%	10.66%	7.95%	19.35%
35-39	1.60%	12.01%	8.34%	21.95%
40-44	2.58%	13.55%	8.75%	24.89%
45-49	3.68%	15.29%	12.13%	31.10%
50-54	4.79%	17.03%	17.09%	38.91%
55-59	5.89%	18.76%	24.64%	49.30%
60-64	7.00%	20.50%	50.02%	77.52%

The differences for females reflect a number of factors:

- The pool of current savings in general will be less than for males due to career breaks.
- The accumulated future contributions will be less than for males due to the lower average income for females relative to males.
- A larger pool of assets will be required at retirement to fund income payments relative to males given the longer life span in retirement for females.

- On the other hand, because females have lower salaries on average they also have lower requirements when assuming the post-retirement expenditure to be 62.5% of pre-retirement salary.

3.1.4 Results by Income (including the Age Pension)

The results can also be expressed by income band.

Table 13 shows the composition of the RSG (after the Age Pension) in terms of income.

Table 13. Retirement Savings Gap ($M) by Income and Gender

Annual Income	Males	Females
under 44,400	0	0
44,400 - 55,500	2,916	8,106
55,500 - 62,900	12,132	18,283
62,900 - 74,000	53,876	66,960
74,000 - 88,800	113,526	100,659
88,800 - 133,200	178,345	112,250
over 133,200	73,839	26,986
Total	**434,635**	**333,243**

Most of the RSG is attributable to individuals earning over about $55,500, or approximately 70% of average earnings. These individuals would seek to maintain a higher standard of living in retirement compared to lower income earners and would have reduced eligibility for the Age Pension and Co-contribution.

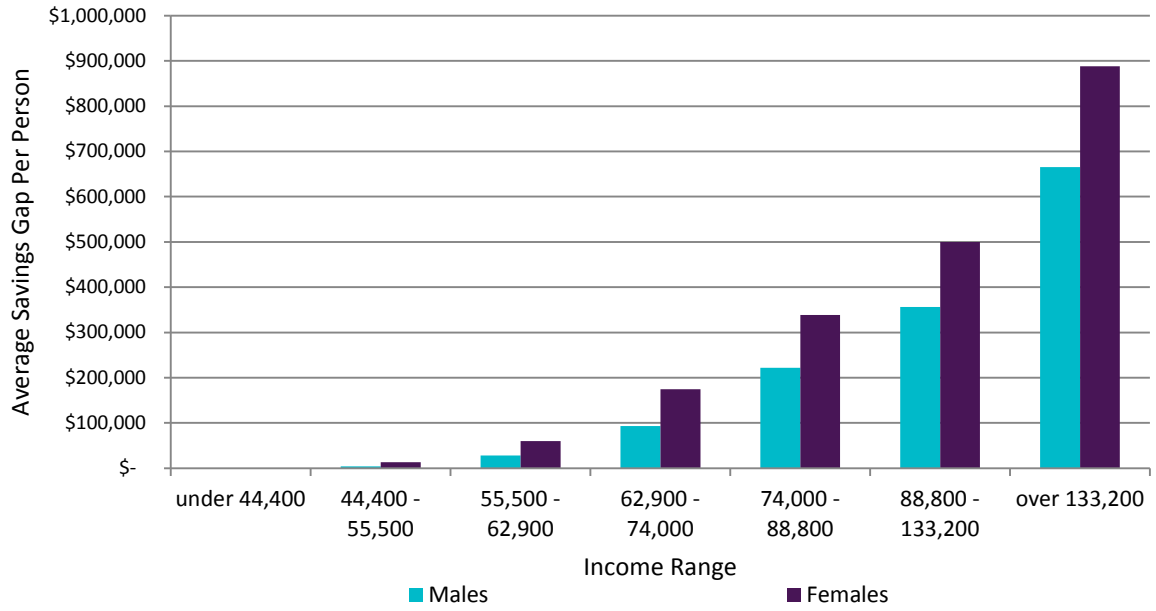
There is no gap for individuals earning under $44,400 p.a. and the gap is small for individuals earning up to $55,500 p.a. Some may even experience an increase in living standards, as the Age Pension can provide an approximate maximum of $22,200 p.a.

Table 14 and Graph 5 examine the RSG per person by gender and income.

Table 14. RSG per Person by Gender and Average Income ($)

Annual Income	Males	Females
under 44,400	0	0
44,400 - 55,500	3,937	13,639
55,500 - 62,900	27,925	60,089
62,900 - 74,000	93,359	174,760
74,000 - 88,800	222,253	338,833
88,800 - 133,200	356,267	499,582
133,200 – 148,000	665,511	888,004

Graph 5. RSG per Person by Gender and Average Income



The RSG for females in these comparisons is higher than for males because we are comparing individuals at specific salaries rather than groups at average salaries. Females have longer life expectancies and therefore require greater assets to maintain the same income for life expectancy.

3.1.4 Other Assets

In Section 4.7.3 (Non-superannuation Assets), we discuss the impact on the RSG of non-superannuation assets which have not been considered in detail in this report.

Any assessment of the effect of non-superannuation assets on the RSG would need to consider the associated reduction in Age Pension entitlement which would mitigate the effect. Assessment of the overall effect would necessitate having a breakdown of non-superannuation assets by age, gender and income, as the Age Pension entitlement would vary with these variables.

However, we expect that for most individuals considered in this report, non-superannuation assets (other than the family home) would form a relatively small proportion of total assets at retirement. That is, individuals earning less than twice average earnings generally do not have a sufficient disposable income to accumulate significant assets outside superannuation.

Given the offsetting effect of the reduction in the Age Pension entitlement, we do not expect non-superannuation assets to have an overly large impact on the retirement savings position of individuals in the model.

3.1.5 Varying retirement age

In our model, we have assumed that all members of the population retire at the future pension eligibility age of 67, however, in reality the median age of retirees leaving the workforce is around age 61. If this current trend continues, the RSG would be much higher. This can be attributed to a variety of factors:

- lower savings at retirement due to less time spent in the workforce
- higher required savings due to a longer time spent in retirement
- the inability to draw on the Age Pension for the first six years of retirement, before reaching the Age Pension age
- larger numbers of people surviving to age 61 than surviving to age 67.

It is unrealistic for people to fund an adequate benefit if they retire at the current average retirement age. The government has introduced policies that increase the preservation age and Age Pension age in the future, in order to provide incentives for people to delay retirement. We have modelled the effect of delaying the retirement age.

The results show (as expected) a decrease in the RSG. Table 15 shows a reduction in the RSG at life expectancy for changes in the retirement age from age 60 to 70. A similar reduction can be expected for the Longevity Saving Gap at the 75th and 90th survival percentiles.

Table 15. Total Retirement Savings Gap including the Age Pension – delaying retirement age ($billion)[4]

As at 30 June 2014	Males	Females	Total
Retire at age 60	998	700	1,698
Retire at age 61	920	648	1,568
Retire at age 62	834	590	1,424
Retire at age 63	746	533	1,279
Retire at age 64	669	478	1,147
Retire at age 65	594	429	1,023
Retire at age 66	513	383	897
Retire at age 67	**435**	**333**	**768**
Retire at age 68	377	289	666
Retire at age 69	307	250	557
Retire at age 70	242	209	451

It is important to note that many of those retiring before the Age Pension age will receive income from the Disability Support Pension so they will not necessarily draw on their retirement savings. This would reduce the RSG shown in Table 15, but would conversely increase the cost to the government. We have not modelled the impact of the Disability Support Pension on the RSG or the total Pension payments made by the government in this report.

It is evident that delaying retirement is an effective way to close the RSG. However, some people will not be able to do this due to ill health. Even with an assumed retirement age of 67, the gap is still significant.

[4]Note that our Savings gap model is based on quinquennial groupings of lives with one group aged between 60 and 64. In order for the results of the early retirement scenarios to be comparable with the other Longevity Savings Gap figures, we have assumed that individuals older than one of the above retirement ages retire with immediate effect

3.2 Longevity Savings Gap

The LSG as at 30 June 2014 is outlined in Table 16. The gap by age and gender is represented in Table 17, Table 18 and Graph 6, Graph 7 and Graph 8.

Table 16. Longevity Savings Gap

Gender	RSG at 50% ($b)	LSG at 75% ($b)	LSG at 90% ($b)
Males	435	736	1,061
Females	333	529	760
Total	**768**	**1,265**	**1,821**

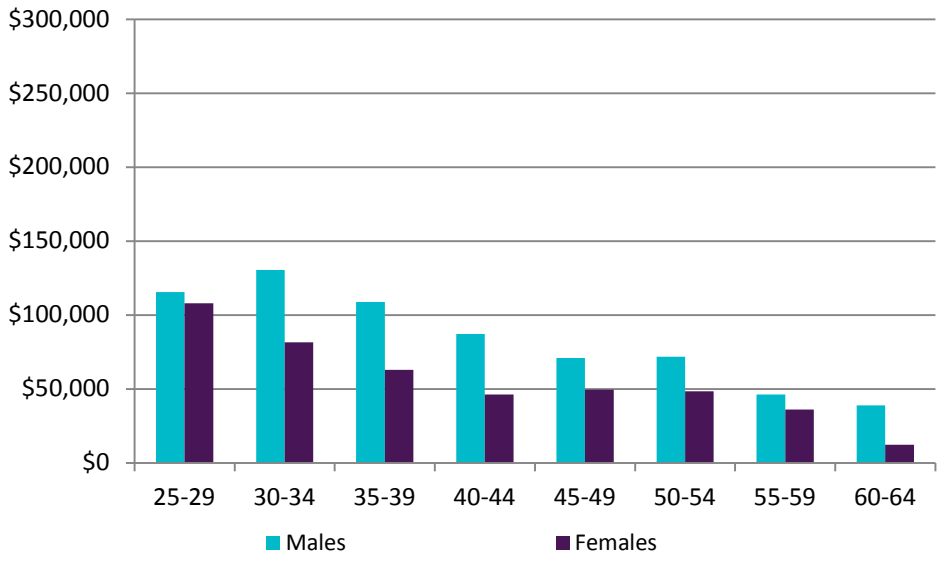
Table 17. Longevity Savings Gap by Age and Percentile

$million	50%	75%	90%
Males			
25-29	84,846	131,313	179,571
30-34	81,780	128,586	179,139
35-39	70,890	108,918	157,952
40-44	54,566	97,241	141,131
45-49	47,806	87,857	130,251
50-54	44,580	75,664	115,027
55-59	27,718	63,567	95,573
60-64	22,448	42,574	62,736
Females			
25-29	83,347	122,281	161,756
30-34	58,733	83,482	122,877
35-39	49,873	77,388	116,452
40-44	35,053	59,308	94,147
45-49	39,062	65,206	88,780
50-54	35,247	63,889	85,297
55-59	24,433	41,374	64,420
60-64	7,495	15,957	26,355

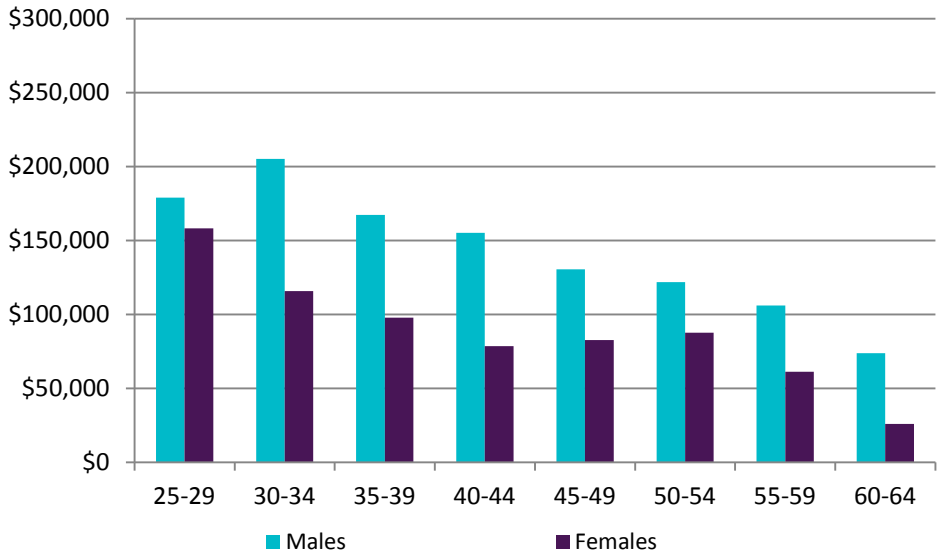
Table 18. Longevity Savings Gap per Person by Age and Percentile

$	50%	75%	90%
Males			
25-29	115,554	178,837	244,560
30-34	130,513	205,211	285,890
35-39	108,875	167,280	242,589
40-44	87,084	155,191	225,238
45-49	71,022	130,522	193,502
50-54	71,737	121,755	185,097
55-59	46,222	106,002	159,374
60-64	38,870	73,719	108,630
Females			
25-29	107,867	158,254	209,342
30-34	81,441	115,759	170,385
35-39	62,983	97,731	147,063
40-44	46,341	78,408	124,466
45-49	49,464	82,570	112,420
50-54	48,331	87,605	116,960
55-59	36,149	61,213	95,311
60-64	12,206	25,986	42,920

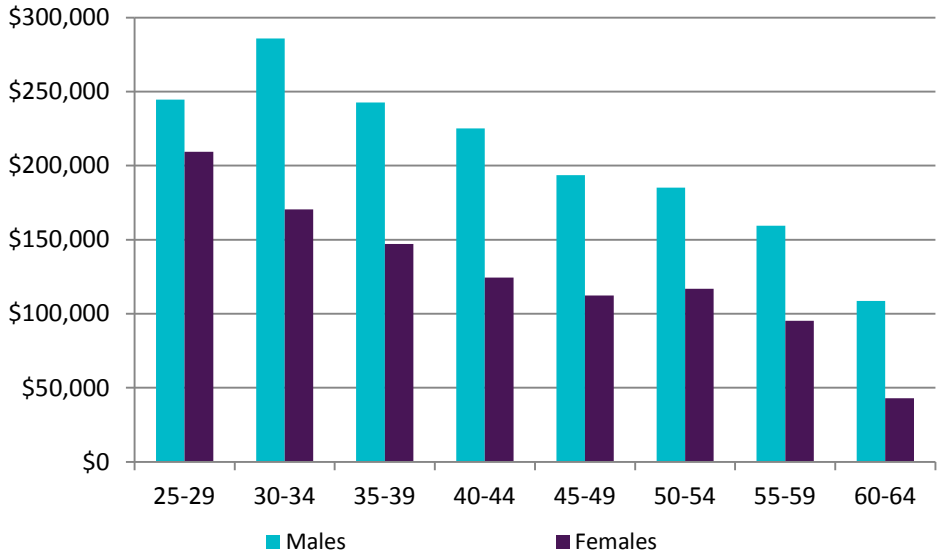
Graph 6. Savings Gap per Person 50th Percentile



Graph 7. Savings Gap per Person 75th Percentile



Graph 8. Savings Gap per Person 90th Percentile



4. Methodology and Assumptions

4.1 Overview

- Economic:
  - 7.5% p.a. gross return on the accumulation of assets
  - 4.5% p.a. increase in salaries
  - 3.0% p.a. general price inflation increase in costs
  - 1.12% expense rate, reducing to 0.65% over 15 years
  - 0.53% cost of insurance
  - 15.0% tax on all future employer contributions
  - 6.0% investment tax on the investment roll up.
- Long-term real return net of fees, insurance, taxes and wage inflation of 1.4% using the economic assumptions above:
  - This is calculated as (7.50% - 0.65% - 0.53%) x (1 - 6.0%) - 4.5%.
- Demographic:
  - Mortality in accordance with the Australian Life Tables 2010-2012 published by the Australian Government Actuary.
  - Future improvement to post-retirement mortality in accordance with the 125 year improvement rates published by the Australian Government Actuary in the Australian Life Tables 2010–2012.
- Future contributions:
  - Average current employer contribution (including salary sacrifice) of 14.0%.
  - 3.0% gradual increase of employer contribution from 2014 to 2025 (with consideration for a further four years delay).
  - Average member contribution of 3.2%.
- Retirement at age 67.

The RSG model begins with an analysis of the current size of superannuation industry assets and projected future superannuation contributions and assets (excluding post retirement products) arising from the current workforce. Future entrants to the workforce are not considered and the position of those over retirement age is ignored.

We have also ignored those people currently in receipt of welfare benefits, since calculation of a RSG for these individuals would be meaningless. This effectively assumes that the proportion of people on welfare benefits would remain constant in future. The model uses projections of the workforce for quinquennial age groups subdivided by bands of income.

By combining growth of the current superannuation market with accumulated projected future contributions, an estimate of likely total future savings – or the 'Asset' in the context of this report – is determined. Furthermore, by projecting the workforce to age 67, an estimate of the number of people requiring 'adequate provision' can be determined. Age 67 is used as a proxy for retirement age, although we note that a number of individuals will formally retire before this age. This leads to an estimate of likely required savings, or the 'Liability' in the context of this report.

The difference between the liability and the asset is the RSG. Once the size of the gap is known, the additional contributions required to bridge the gap can be determined.

4.2 Population Model

A projection of the underlying population forms the basis for the RSG model, producing the distribution of incomes in each year over the future working lives of different cohorts in the population. This allows determination of the amount of superannuation savings through future contributions, as well as the size of the liability, which depends directly on pre-retirement earnings due to the adopted definition of 'adequacy'.

We measure cohorts by age and income in our projection. This is necessary as:

- Younger individuals will have a longer period to make future superannuation contributions than individuals closer to retirement.
- Measurement of the impact of the social security Age Pension necessitates consideration of different income groups, as lower income earners are likely to have a greater dependence on the Age Pension in retirement than higher income earners.

We have further segmented each cohort by gender, as this allows a comparison of the differences in the RSG between males and females.

We measure the RSG in terms of the current population of working age, excluding those earning over twice average earnings. For the purposes of this model, we have assumed the working age population to be the population aged 25 to 64. The population aged 25 to 64 as published by the Australian Bureau of Statistics (ABS) was 12.5 million in 2014.

The number of persons by age and gender as provided by the ABS is shown in Table 19.

Table 19. Population Aged 25 to 64 in 2014

Age Band	Males	Females	Total
25-29	887,788	868,171	1,755,959
30-34	845,858	837,506	1,683,364
35-39	785,756	790,174	1,575,930
40-44	837,616	851,957	1,689,574
45-49	769,965	782,633	1,552,598
50-54	778,266	794,818	1,573,084
55-59	698,885	716,111	1,414,996
60-64	623,912	635,974	1,259,886
Total	**6,228,047**	**6,277,344**	**12,505,391**

These individuals are allocated further to income bands. This allocation was based on data provided by the ABS in the 2013 ABS Census Statistics.

We have adjusted the income bands for general wage inflation over the one year to 30 June 2014, and have applied the resulting income distribution to the population at 30 June 2014 as published by the ABS.

To project the population, we have made assumptions about the expected transfers between income groups (for example, individuals moving from the $30,200 to $37,700 income band to the $37,700 to $45,200 income band) over time. This makes allowance for future promotional increases expected in a normal ageing workforce, and therefore higher levels of contributions to be saved in future years. The net effect of the assumed transfers is an average 0.5% p.a. increase in income above general wage inflation.

This method of projecting the number of individuals to retirement age makes no allowance for individuals re-entering the workforce at a later time or for individuals leaving the workforce. It also makes no allowance for broken careers for parents following the birth and the subsequent years of raising children.

This effectively means we assume no change in the level of unemployment, which is unlikely in practice. If we enter a period of higher unemployment, it will increase the RSG as individuals with broken periods of service would tend to have lower average account balances at retirement and therefore tend to be more reliant on the Age Pension.

4.3 Current Savings

Our starting point for calculating the asset value at retirement is to determine the amount of current savings in superannuation. The major distributions by market segment have been sourced from the Rice Warner *2014 Superannuation Market Projections* report which utilises the APRA *Quarterly Superannuation Performance* report as at 30 June 2014.

Total assets for the various market segments are shown in Table 20.

Table 20. Superannuation Market Breakdown at June 2014

Market Segment	Assets ($ millions)	Market Share (%)
Not for Profit Funds		
Corporate Funds	72,594	3.9
Industry Funds	398,210	21.6
Public Sector Funds	287,455	15.6
Total Not for Profit[1]	**758,259**	**41.2**
Commercial Funds		
Employer Master Trusts	127,343	6.9
Personal Superannuation	208,536	11.3
Post Retirement Products*	178,253	9.7
Eligible Rollover Funds	4,986	0.3
Unallocated Reserves**	2,300	0.1
Commercial Funds[1]	**521,419**	**28.3**
Self-Managed Funds	**559,800**	**30.4**
Total Superannuation	**1,839,478**[#]	

* Most of these assets represent retail account-based pensions but the figure also includes term certain and lifetime annuities.

** This amount is held within the Statutory Funds of life insurance companies to back annuities and capital guaranteed business.

Total superannuation savings at 30 June 2014 amounted to $1,839 billion. However, for the purposes of this model, an adjustment to this figure is required to take account of:

- assets in respect of post-retirement members, e.g. allocated pensioners and annuitants
- unfunded public sector liabilities
- assets in respect of individuals who earn more than twice average earnings
- assets in respect of pre-retirement members, engaging in a transition to retirement strategy with assets in the post-retirement sector.

4.3.1 Post-retirement assets

We have estimated the assets held in retirement products based on the *Rice Warner 2014 Superannuation Market Projections Report*.

Our analysis indicates a total retirement market of $581 billion at 30 June 2014 which has been allocated to the various market segments in Table 21.

Table 21. Post-retirement Assets

Market segment	Post-retirement Assets ($million)
Corporate Funds	6,119
Industry Funds	14,268
Public Sector Funds	65,890
Retail Funds	178,253
Self-Managed Funds	316,870
Total Post-retirement Assets	**581,400**

4.3.2 Unfunded Public Sector Liabilities

Unfunded public sector liabilities need to be taken into account as an Asset in the RSG calculation as they represent guaranteed benefits promised by the various State and Commonwealth governments and paid out of revenue to individuals when benefit payments fall due. These liabilities declined after the closure of many generous defined benefit arrangements.

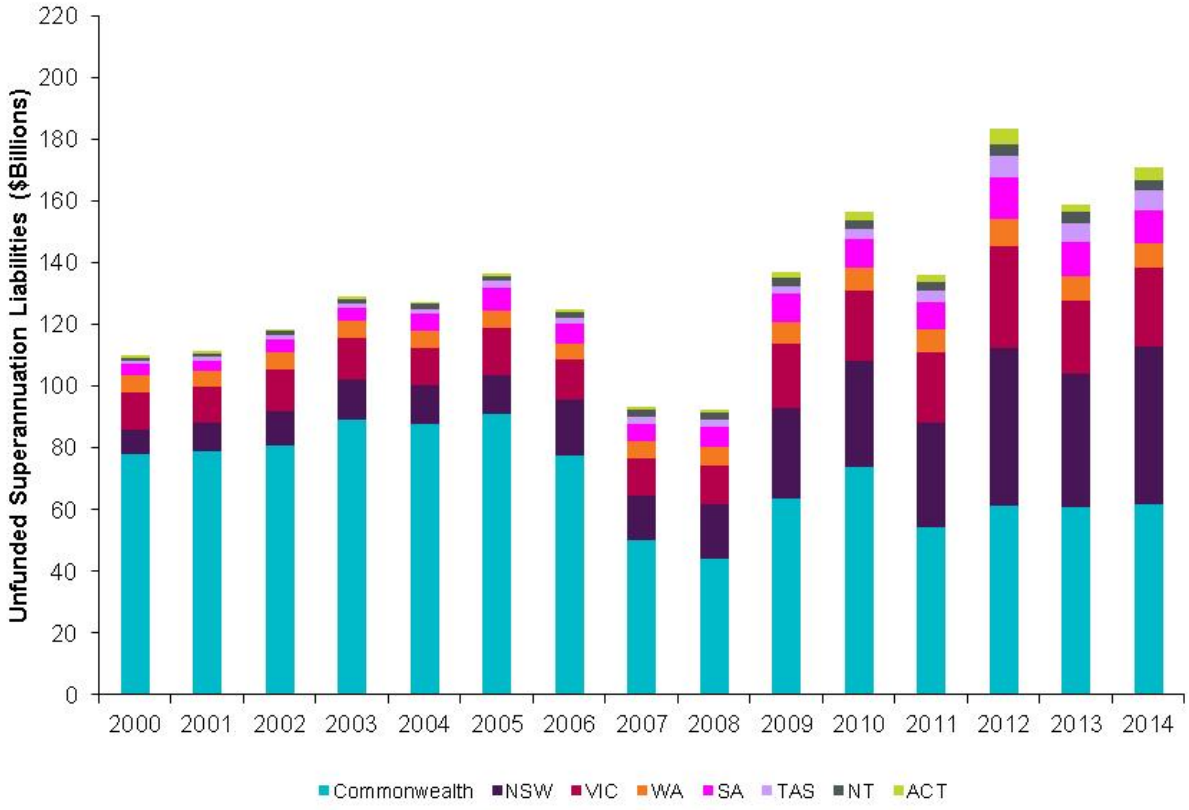
The following data has been collated from state and federal budgets up to 30 June 2014.

Table 22. Unfunded Superannuation Liabilities ($billions)

	C'wealth	NSW	VIC	WA	SA	TAS	NT	ACT	Total
2000	77.9	7.9	12.3	5.4	3.5	1.2	1.0	0.7	**110**
2001	78.7	9.3	11.8	5.2	3.2	1.3	1.2	0.7	**111.4**
2002	80.8	11.4	13.4	5.5	4.0	1.3	1.4	0.5	**118.3**
2003	89	13.1	13.4	5.6	4.4	1.4	1.4	1.0	**129.3**
2004	87.9	12.6	11.7	5.7	5.7	1.5	1.5	0.7	**127.3**
2005	91.1	12.5	15.3	5.6	7.2	2.5	1.5	1.0	**136.6**
2006	77.8	17.8	12.9	5.5	6.1	2.1	1.7	1.1	**125.1**
2007	50.3	14.4	11.9	5.5	5.7	2.5	2.2	0.8	**93.3**
2008	44.0	17.6	12.9	5.8	6.5	2.5	2.1	1.1	**92.5**
2009	63.6	29.4	20.7	7.2	8.9	2.7	2.4	2.2	**137.2**
2010	73.7	32.7	22.5	7.4	9.5	3.5	2.7	2.6	**154.6**
2011	54.2	32.3	22.8	7.4	8.7	3.5	2.7	2.6	**134.3**
2012	61.5	50.9	32.8	8.9	13.5	6.9	3.8	5.2	**183.6**
2013	60.9	43.2	23.6	8.0	11.1	6.1	3.5	2.6	**158.9**
2014	61.7	51.0	25.7	7.9	10.5	6.6	3.2	4.5	**171.1**

Notes: Queensland does not have unfunded superannuation liabilities.
These figures do not include 'Other employee entitlements and provisions' liabilities.
Commonwealth figures are net of Future Fund assets from 2006 onwards

Graph 9. Unfunded Superannuation Liabilities



Unfunded public sector liabilities amounted to $273 billion at 30 June 2014. If we allow for the value of assets held by the Future Fund (valued at approximately $102 billion at 30 June 2014), these unfunded liabilities stood at almost $171 billion at 30 June 2014. Allowance is made in our model by adding this amount to the 'Public Sector Funds' assets from the APRA *Quarterly Superannuation Performance* report as at 30 June 2014.

4.3.3 Transition to Retirement Post Retirement Assets

After subtracting $581 billion in pension assets we then have to add back any assets held in respect of pre-retirement members who have a Transition To Retirement pension account.

Based on an industry survey of TTR accounts and assets we have estimated that approximately $31 billion of post-retirement assets in respect of members aged between 55 and 64 are attributable to TTR pensions. These assets have been allocated to both males and females aged between 55 and 64 in a manner consistent with the results of our survey.

After adjusting for post-retirement assets, unfunded public sector liabilities and TTR assets, the current savings amount decreases to $1,562[5] billion for the purposes of this model.

4.3.4 Distribution of Assets by Age and Income

The total amount of superannuation assets need to be allocated to each projected population group, i.e. to each age/gender/income cohort, before the amount of assets in respect of individuals earning more than twice average earnings can be identified and removed.

We have allocated the remaining $1,258 billion of current pre-retirement superannuation assets to quinquennial age groups and gender based on a survey of superannuation funds used for the *2014 Superannuation Market Projections Report*.

To allocate the amount of superannuation savings in each age/gender cohort further to income bands, we calculated notional fund build-ups in each age/gender/income cohort based on possible past contribution rates. The actual amount of superannuation savings for each age/gender cohort was then distributed further to each income band, pro-rata to the notional accumulations.

The result is a segmentation of current pre-retirement superannuation savings by quinquennial age group, gender and income band. Savings in respect of individuals whose earnings will eventually exceed twice the average were eliminated by deducting the average account balance for each person eliminated from the respective age/gender/income cohort as determined by the population model.

This reduces current savings in respect of the relevant working age population to $1,008 billion at 30 June 2014. This results in the following data in respect of current savings for the relevant population.

[5] This figure is calculated as Total Superannuation Market assets – Post-retirement Assets + Public Sector Unfunded Liabilities + TTR Post Retirement Assets (i.e. $1,839b - $581b + $273b + $31b = $1,562b).

Table 23. Savings at 30 June 2014 excluding people earning more than twice AWOTE

Age Band	Savings ($million)	
	Males	Females
25 – 29	17,583	16,590
30 – 34	28,327	27,111
35 – 39	42,066	38,949
40 – 44	61,168	53,424
45 – 49	79,390	64,527
50 – 54	102,951	77,969
55 – 59	121,155	87,713
60 – 64	108,781	79,947
Total	**561,421**	**446,230**

4.4 Future Savings and Contribution Rates

The second component of the Asset is the roll-up of future contributions.

Likely future contributions can be determined by applying contribution rates to the total income in each age/gender/income cohort in the population model. However, for the purposes of this study, we have varied the contribution rate by age only.

Note that Employer Contributions are effectively concessional contributions and include salary sacrifice as well as SG payments. Similarly, Member contributions are all non-concessional contributions including large one-off payments made (e.g. from asset sales).

The Employer Contributions take the Government's May 2010 commitment to increase the Superannuation Guarantee contribution rate from 9% to 12% into account and the subsequent September 2014 decision to delay the SG increase by a further four years.

The assumed contributions by age group are outlined in Table 24.

Table 24. Assumed Contribution Rates - June 2014

Age Group	Employer	Member
	(%)	
25-29	9.50	0.00
30-34	10.66	0.74
35-39	12.01	1.60
40-44	13.55	2.58
45-49	15.29	3.68
50-54	17.03	4.79
55-59	18.76	5.89
60-64	20.50	7.00
Average	**14.46**	**3.15**

These contribution rates reflect the fact that individuals closer to retirement tend to contribute more towards superannuation. These individuals have fewer other priorities for their disposable income (such as saving for a car or buying a house) than the younger age groups, and saving for retirement is a more pressing issue.

We consider that the above contribution rates better reflect the ability and propensity of individuals at different ages to make contributions to superannuation. We note that these contribution rates still produce contribution levels that are broadly consistent with the current contribution levels as published in APRA's *Quarterly Superannuation Performance* Report dated 30 June 2014 (after allowing for contributions made by high income earners).

The average contribution rates do not show the skewness in contributions between members. The majority of members rely entirely on the 9.50% Superannuation Guarantee contribution – which is inadequate. However, many members make salary sacrifice contributions which pull up the average. As these are deducted from salary, they decrease the underlying earnings base thereby increasing the percentage of salary paid into superannuation.

The level of member contributions is relatively low, but many members transfer other assets into superannuation. These are recorded as contributions even though they are not deducted from payroll.

The model is sensitive to the assumptions employed for future contribution rates. By way of example, a 1% increase in employer contributions results in a reduction in the RSG (allowing for the Age Pension) of about $80 billion or approximately 11%.

4.4.1 Delay of SG increase by a further 4 years

In this report we take into account the Government's September 2014 announcement that it will delay the gradual increase of the Superannuation Guarantee contribution rate from 9% to 12%. This will have the increase occur from 2013 to 2025 rather than the previous 2013 to 2021.

We have assumed all future employer contributions will increase from year 2014 as shown in Table 25. We have also assumed that the tabled increases will not impact on our wage inflation assumption of

4.5%. For example, in 2021 wages will increase by 4.5% and the superannuation guarantee will also increase by 0.5%.

Table 25. Changes to SG contribution

Year	Increase in Employer contribution (September 2014)	Increase in Employer contribution (old)
	(%)	(%)
2012	0.00	0.00
2013	0.25	0.25
2014	0.50	0.25
2015	0.50	0.25
2016	0.50	0.50
2017	0.50	1.00
2018	0.50	1.50
2019	0.50	2.00
2020	0.50	2.50
2021	1.00	3.00
2022	1.50	3.00
2023	2.00	3.00
2024	2.50	3.00
2025	3.00	3.00
After 2025	**3.00**	**3.00**

4.5 Required Level of Funding

The required level of funding is the Liability component of the RSG calculation.

This component of the model uses the projected number of individuals to retirement age as produced by the underlying population model. The Liability is determined as the savings required at retirement to provide 62.5% of pre-retirement earnings (in real terms) for each year until life expectancy.

4.5.1 Effect of the Age Pension

The continuation of Social Security (the Age Pension) in its present form indefinitely into the future significantly reduces the Liability.

The effect of the Age Pension was calculated for each age/gender/income cohort by:

- Calculating the year-by-year Age Pension to which each individual would be entitled based on their remaining pension account balance and their defined adequate income.
- Calculating the difference between the savings required to be adequate without the Age Pension and with the Age Pension.

Our analysis makes the following assumptions:

- We have assumed that assets outside superannuation would be negligible for the population in question for the purposes of the Age Pension means test. This is not unreasonable if one considers that for most people considered in the model, the family home will be the only significant non-superannuation asset at retirement, and it is exempt from the means tests.
- We have assumed that 57% of retirees qualify for the Couples pension, and the balance for the Singles pension. This is consistent with the current experience according to Age Pension statistics sourced from Centrelink.

As detailed in Section 3 (Results), the calculated effect of the Age Pension is a reduction in the RSG of $1,284 billion (rounded).

4.6 Retirement at 67

We expect that younger members will need to stay in the workforce until age 67 (the new Age Pension age from 1 July 2023). If they do not do so and retire earlier, they will need to live entirely off their superannuation and other savings until they reach that age. This will reduce the benefit available to fund later years - when the Age Pension will form a part of their income.

In practice, most Australians currently retire before age 65, the median age is increasing slowly and is now about age 62. However, we have started with a base case that members will delay retirement until age 67. Naturally, this significantly reduces the benefit required compared to that needed for an earlier retirement.

By retiring at age 67, members benefit both from the extra savings accumulated during their extended working life and the shorter period over which their retirement income will be consumed. Furthermore, there will not be any delay between the start of actual retirement and the eligibility date to receive the (means-tested) Age Pension. However, we note the practical difficulties in keeping most people within the workforce to such an advanced age.

The Henry Review noted the savings that could be made from shifting members to a later retirement age and recommended shifting the Preservation Age to 67. This would preserve most superannuation benefits for longer and improve overall adequacy. However, it does not seem practical to do this over the next 15 years without generating significant employment opportunities for older workers. Further, this would require a major shift in retirement planning for the whole population.

When the Age Pension eligibility age was raised from 65 to 67, it was noted that this age would be reviewed again in 2023.

Note that if we had used the current median retirement age of 62 to calculate the RSG then the RSG would be much larger than the estimated headline figure of $768 billion.

4.7 Assumptions

4.7.1 Taxation

The model allows for taxation as follows:

- 15% contributions tax on all future contributions
- 6% investment tax on the investment roll up.

The investment tax assumption is less than the 15% levied on investment income for superannuation products because it makes implicit allowance for imputation credits used by funds to offset the tax and the 10% concessional tax rate on capital gains available to superannuation funds. A 1% shift in the investment tax assumption affects the RSG by approximately $17 billion (or 2.2%).

4.7.2 Mortality

We have allowed for mortality pre-retirement using the Australian Life Tables 2010-12 (ALT2010-12) published by the Australian Government Actuary. For the quinquennial groupings in this projection, this results in the following probabilities of each age cohort surviving to age 67.

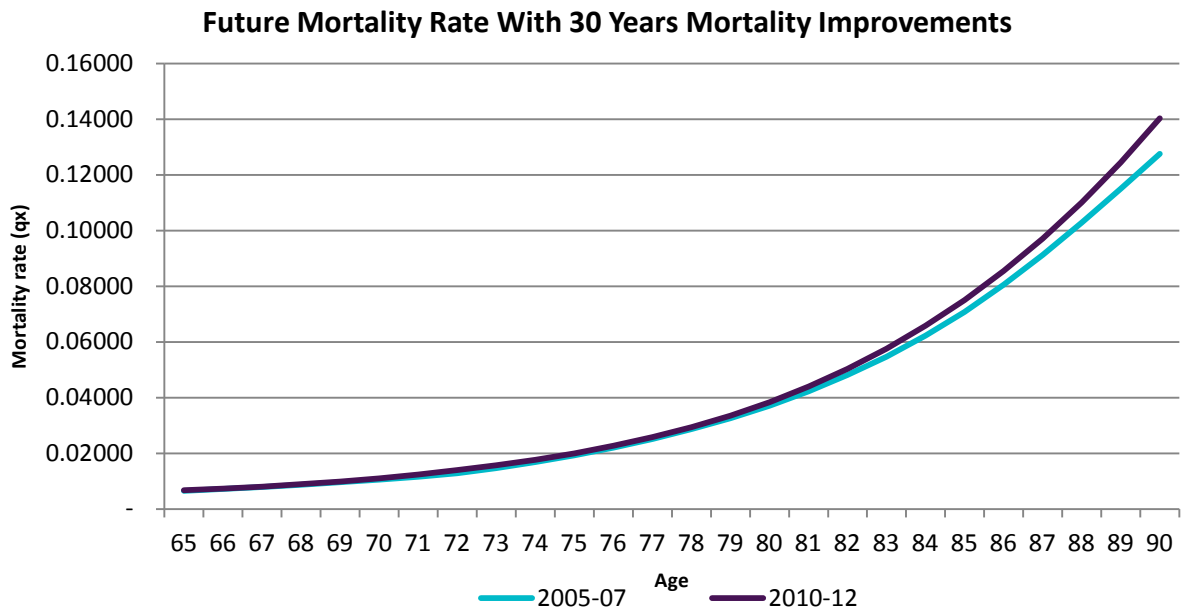
Table 26. Probability of Survival to Age 67

Age Band	ALT 10 – 12	
	Males	Females
25 – 29	0.88	0.93
30 – 34	0.88	0.93
35 – 39	0.88	0.93
40 – 44	0.89	0.93
45 – 49	0.90	0.94
50 – 54	0.91	0.94
55 – 59	0.93	0.96
60 - 64	0.95	0.97

We have also allowed for mortality post retirement in accordance with ALT2010-12. Allowance has been made for improvement in mortality after retirement to permit a more plausible valuation of the income stream in retirement. This allowance has been made by applying the '125-Year Future Percentage Mortality Improvement Factors' published in ALT 2010-12. These factors were derived from the historical trends in Australian mortality improvement over the last 125 years for the purpose of producing estimates of future mortality and life expectancy scenarios.

This effectively assumes that future mortality will improve at the rate of 1.18% p.a. for a 67 year old male and 1.42% p.a. for a 67 year old female. Mortality according to Australian Life Tables 2005-07 was used for the 2013 report. The 2010-12 life tables apply lower future mortality improvement factors which means that the mortality likely to be experienced by younger cohorts when they reach retirement is assumed to be lower for this report than the 2013 report. Graph 10 shows the mortality rates in 30 years' time expected under the two life tables.

Graph 10. Future Mortality Rate With 30 Years Mortality Improvements



The impact of improving mortality has a significant effect on the model. If no allowance were made for improving mortality, the RSG would reduce by approximately $230 billion (or 30%).

4.7.3 Non-superannuation Assets

We have made some allowance for non-superannuation assets by allowing for investment properties held by the wealthier individuals in the model. We have assumed that 10% of individuals on incomes over $111,000 own an investment property. In our 2013 report we assumed that the mean value of investment properties was equal to $529,000. This year we adjusted the mean according to the increase in the ABS house price index over one year, resulting in an assumed mean value of $582,000 in 2014 dollars.

These assumptions reduce the calculated RSG for those individuals in the model earning between $111,000 and twice the average income (or approximately $148,000). These are broad assumptions only, but our modelling indicates that their impact on the RSG is relatively small, so they are not inappropriate. For example, a 10% increase in the value of the investment property reduces the RSG by $2.3 billion (or 0.30%). The relatively small effect is due to the fact that any reduction in the RSG due to income derived from these assets is partially offset by a reduction in the Age Pension entitlement.

4.7.4 General

There are a number of items for which we have made implicit assumptions. Whilst it is impossible to be dogmatic about every single possibility and outcome that affects the model, there are a number of items that deserve comment.

For instance, the model assumes that female workers will have a full history of employment, with no breaks in service for maternity leave, career breaks etc. Similarly, it assumes that those women currently off work to bear and raise children will not return. Of course, in practice, some will leave and be replaced by others returning to the workforce. Unfortunately, there are no reliable statistics showing the extent and incidence of broken service so we have not carried out this more complex modelling. As a result, the model will understate the RSG for younger females.

The model projects at the individual income level rather than the household income level. Consequently, the results will include those low income 'secondary earners' who do not require an 'adequate' income stream in retirement when total household income is taken into account. This will serve to overstate the RSG, although we would expect the overall impact to be small since low income earners have a limited effect on the projection results.

5. Comment on Assumptions

5.1 General

With any model, the results that emerge will be sensitive to the assumptions employed. In particular, difficulties can arise where insufficient data exists to justify a particular assumption or methodology adopted. This section sets out those parts of the model where these difficulties have arisen.

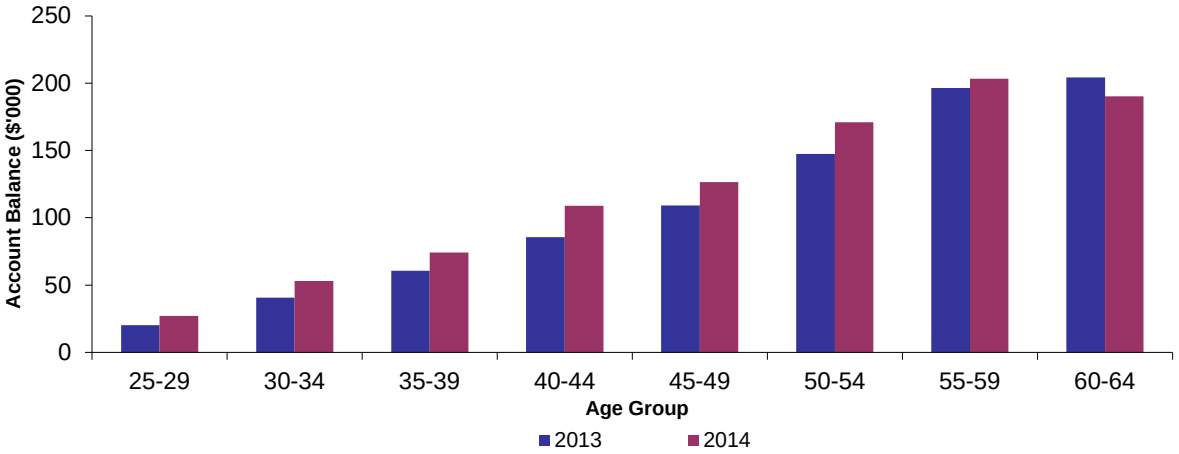
5.2 Current Savings by Age Cohort

The population model provides a mechanism for generating future contributions for the individuals in respect of whom the RSG is calculated. The distribution of members and current savings by age and gender was determined from the Rice Warner *2014 Superannuation Market Projections Report*. This allocation in the projections report was made as follows:

- APRA's Annual Superannuation Bulletin, June 2013 indicates 29.8 million member accounts as at 30 June 2013. The APRA report gives the breakdown of member accounts by the five main industry segments – Corporate Funds, Industry Funds, Public Sector Funds, Small Funds and Retail Funds.
- We have estimated the number of accounts as at 30 June 2014 from the trend in APRA data.
- We have adjusted the number of commercial fund members to reflect members of retirement savings accounts and holders of annuities which are not included in the APRA statistics.
- We have allocated the commercial fund members to the sub-sectors of the commercial market identified in this report – employer master trusts, personal superannuation, post retirement products, retirement savings accounts and eligible rollover funds. This is a difficult exercise as there are many legacy products, particularly within the life insurance companies.
- Within each industry sector, we have made assumptions about the number of active, inactive and retired members respectively. We have assumed that the number of active members would be approximately equal to the size of the employed labour force.
- We have further allocated the number of members within each sector to each age/gender cell. This was done by reference to membership profiles sourced from a number of industry funds, public sector funds and master trust providers.
- Finally, we have rebalanced the profile of 'active' members to approximate the demographic profile of the labour force as published by the ABS.

The resulting distribution of assets by age is shown in Graph 11.

Graph 11. Assets Per Person By Age at 30 June 2013 and 30 June 2014



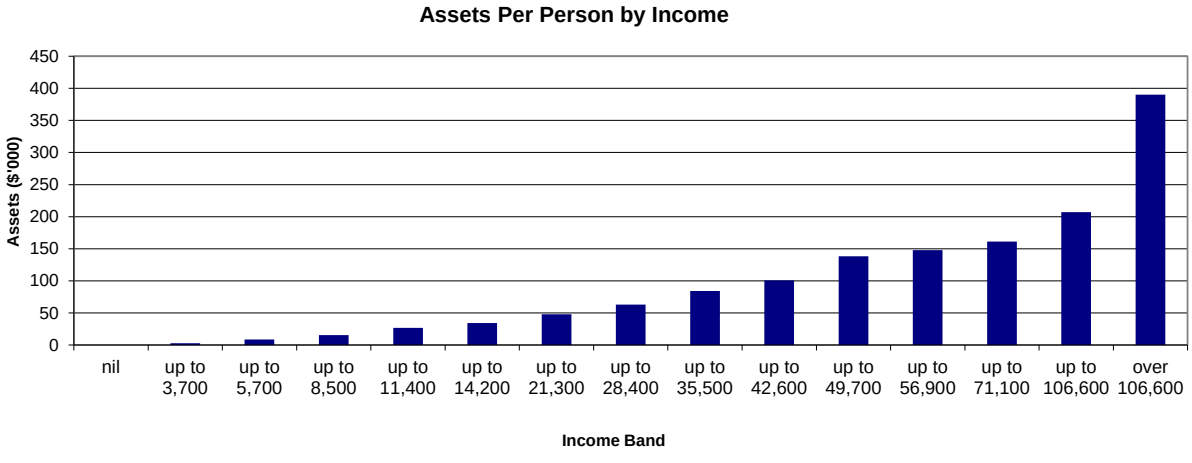
The average account balances are generally higher than in our previous report. This reflects a recovery in investment markets until the end of the 2013-14 financial year.

The distribution of members by income has been derived from data within the 2011 census as detailed in Section 4.2 (Population model).

The total superannuation assets by age and gender now need to be segmented further by income group. As there are no reliable statistics for this purpose available, we have based this allocation on what we consider a plausible past pattern. We considered notional fund balances in each age/gender/income cohort as a basis for distributing the assets in each age/gender cohort (details in Section 4.3.4 *Distribution of Assets by Age and Income).*

The adjusted notional fund balances produced in respect of current members of the workforce results in an overall distribution of assets by income band as illustrated in Graph 12. This is the distribution across all ages; the actual distribution in each age group would vary.

Graph 12. Assets Per Person by Income



The modelling results for individuals close to retirement are sensitive to the assumed distribution of assets, as these are the bulk of assets in the RSG calculation. Conversely, the modelling results for younger individuals are not sensitive to the assumed distribution of assets, as the bulk of the assets in this case consist of savings through future contributions.

5.3 Future Population Movements

The RSG model is built on a projection of the population by age, gender and income. The population projection provides the framework which allows the model to calculate the future level of savings through contributions, pre-retirement income for adequacy and eligibility for the Age Pension for population cohorts.

With any model, the difficulty with the projection is determining likely future movement between income-band cohorts. For example, a young professional who joins the workforce after completing tertiary education will be on a low income initially. However, as they progress through professional examinations or gain promotion, that income will rise steadily over time over and above ordinary wage inflation. We call this 'promotional increases'. By the mid-point of a working career, experience indicates that promotional increases flatten out.

To allow for such promotional increases, we have assumed a pattern of movement between each income band cohort over time. In brief, we have developed a 'transition matrix' which details for people in each income band the income distribution of those people in five years' time. Successive application of the transition matrix gives the income distribution for individuals for successive five-year periods.

Adopting promotional increases means that some individuals will eventually reach income levels in excess of twice average earnings, and, where this occurs, they are excluded from the model.

The adopted 'transition matrix' effectively assumes that 15% of individuals in each income band will progress to the next income band over a five-year period. The average effect of this assumption is approximately a 0.5% increase in salaries above general wage inflation. This is a broad-brush approach, but the calculated RSG is only moderately sensitive to the assumption. For example, increasing the proportion from 15% to 20% decreases the RSG by approximately 13% (note that the increase in the RSG due to increases in wages is overwhelmed by the decrease in the RSG due to the increase in the number of individuals that reach 2 x AWOTE whom we exclude from our model).

A summary of the proportion of people in each age cohort whose earnings will exceed twice the average by age 67 (both those currently earning more than twice the average and those projected to rise above twice the average in future) is shown Table 27.

Table 27. Proportion of Population Earning 2x Average Earnings by Age 67

Age Cohort	Current	Future	Total
	(%)		
25-29	2.9	8.2	11.0
30-34	6.1	9.4	15.5
35-39	7.9	8.3	16.2
40-44	8.3	6.9	15.3
45-49	7.4	5.4	12.8
50-54	7.9	4.2	12.2
55-59	6.2	2.4	8.6
60-64	4.0	0.7	4.7
Overall	**6.4**	**5.9**	**12.3**

5.4 Future Contribution Rates

There is little reliable data on the current contribution level by age and income band. While there is a floor equal to the current Superannuation Guarantee level, our best estimate of the market would be that contributions will be higher for people with higher disposable incomes and higher for individuals closer to retirement. For the purposes of this model, we assume that contribution rates do not vary by income.

We note that the assumed contribution rates may seem high especially since the Superannuation Guarantee contribution is the only contribution for the majority of individuals. However, it is important to appreciate that contributions vary significantly by income and age and that the relatively small group of individuals that do make contributions in excess of the 9% Superannuation Guarantee skew the average contributions rate significantly.

In the absence of better data we consider it more prudent to over-estimate the assumed contribution rates, which results in an under-estimation of the RSG.

6. Differences from Previous Report

Comparison of the modelling results to those presented in the previous report requires an appreciation of the differences between the models in the two reports before any conclusions can be drawn regarding trends over the period.

6.1 Analysis of Differences from Previous Report

A broad analysis of the difference between the estimated RSG (allowing for the Age Pension) from the previous report is outlined in Table 28.

Table 28. Analysis of Difference of Retirement Savings Gap (Allowing for the Age Pension)

	$ billion
Retirement Savings Gap Estimate, 30/06/2013	**727**
Effect of further 4 year delay in SG increasing	118
Effect of change in current savings	-105
Effect of AWOTE (average earnings) Increase	97
Effect of increase in age pension entitlements	-62
Effect of change in mortality assumptions	-31
Effect of cost of insurance changes	17
Effect of demographic changes	15
Effect of fee changes	-8
Retirement Savings Gap Estimate, 30/06/2014	**768**

Each item in Table 28 is discussed below.

6.2 Effect of further four year delay in SG increasing from 9.5% to 12%

In this update of the Retirement Savings Gap report we have taken into account the proposed delay of the SG rate increase. The SG rate increase of 0.50% applied in 2014, but further increases will undergo a further four-year delay before continuing to increase to 12% by 2025 (previously 2021).

This change has a negative effect on the estimated RSG, as it results in lower estimated future contributions. This causes an increase to the RSG of approximately $118 billion.

6.3 Effect of change in current savings

Estimation of the RSG involves determining individuals' savings at retirement. This involves the accumulation of individuals' current savings and future contributions. The increase in population and growth in the market from 2013 has resulted in an increase in savings held by pre-retirement members which reduced the RSG by approximately $105 billion.

Note the increase in savings includes the appreciation of non-superannuation assets as noted in Section 0 (Non-superannuation Assets).

6.4 Effect of AWOTE (average earnings) Increase

In this report 'adequacy' has been defined as the savings required at retirement to provide a proportion of pre-retirement earnings (in real terms) for each year until life expectancy. Consequently, as earnings increase, the savings required (the liability) to fund an adequate retirement also increases in nominal terms (as opposed to increases in real terms). However, the increase in earnings also corresponds to an increase in the estimated savings at retirement (the asset) due to the increase in the dollar amount of contributions paid. The increase in AWOTE also leads to the increase in Age Pension payment rates.

Statistics published by the ABS[6] show that AWOTE increased by 2.2% between 2013 and 2014. This increase was lower than our long-term salary inflation assumption of 4.5% per year. We believe the lower AWOTE increase is due to short term economic factors, and the long-term assumption remains a reasonable estimate.

We estimate that the overall effect of the increase in wages over one year to 30 June 2014 increases the RSG by approximately $97 billion.

6.5 Effect of increase in age pension entitlements

Age pension payment rates are regularly indexed against Male Total Average Weekly Earnings (MTAWE). While MTAWE grows at a slower rate than our assumed rate of salary growth (4.5%), the pension payment rates of 2014 have still increased approximately 3.3% from 2013. The net result is an approximately $62 billion decrease in the RSG.

6.6 Effect of change in mortality assumptions

In this update of the RSG report we have used Australian Life Tables 2010-12, which is different to the life tables we used in the previous report in 2013 (Australian Life Tables 2005-2007). The new life table applies lower future mortality improvement factors, thus higher mortality rates for future years than the previous rates. This has the effect of reducing the RSG by approximately $31 billion at 50% life expectancy, and have a more significant effect on the RSG at 75% and 90% life expectancy.

6.7 Effect of cost of insurance changes

The annual cost of insurance for superannuation funds was estimated to be approximately 0.53% of pre-retirement superannuation assets over the year to 30 June 2014. In our previous report (*Retirement RSG at 30 June 2013*) we had assumed that insurance would cost 0.47% of assets. This has the effect of increasing the RSG by approximately $17 billion.

6.8 Effect of demographic changes

Our calculation of the RSG considers the working population earning less than twice average earnings. The population underlying the current calculation would differ from that at the previous calculation because:

- New entrants into the labour force over the intervening period are now included in the population, and conversely individuals who have left the labour force due to retirement or other reasons are now excluded.
- The underlying population has changed as a result of ageing, mortality and migration.

[6] ABS, May 2014, Catalogue Number 6302.0, Average Weekly Earnings.

An increase in population increases future contributions, however also increases the total savings required. The working population increased by 1.8% over one year to 30 June 2014 resulting in a net increase to the RSG of approximately $15 billion.

When comparing the results in this report to the results in the previous report, it is also important to remember that the results are in respect of a slightly different population cohort, and improved mortality rates.

6.9 Effect of fee changes

In our previous reports we have set the initial expense rate to be 1.20% based on the *2011 FSC Fees Report* and will have this number trend towards the long term rate of 0.65%.

In this report, we have set the initial expense rate to be 1.12% based on the *2013 FSC Fees Report* and will have this number trend towards the long term rate of 0.65%. This has the effect of reducing the RSG by approximately $8 billion.