

Valuation Report 30 June 2015 Baseline Valuation



Department of Social Services

Final Report 2016





Part I: Executive summary

1. Introduction

Context of this report

In its May 2015 Budget, the Commonwealth Government announced an intention to implement the Australian Priority Investment Approach to welfare in Australia. The development of this approach was one of the recommendations of the review of Australia's welfare system, *A New System for Better Employment and Social Outcomes* (the McClure Report), along with the broader recommendation for reform, to simplify the system and reward work. Given strong evidence that work is beneficial to individual wellbeing, a major objective of the Australian Priority Investment Approach is to inform policy settings and interventions that effectively help individuals with capacity to work, to do so.

The Department of Social Services (the Department) has set up an Investment Approach Taskforce to implement the Australian Priority Investment Approach to social welfare with the aim of reducing welfare dependence, and improving the lifetime wellbeing of people and families in Australia.

PricewaterhouseCoopers (PwC), in conjunction with Data Analysis Australia (DAA) has been engaged to undertake the actuarial analysis supporting the Australian Priority Investment Approach. This will involve four annual actuarial valuations of the Commonwealth's social security and income support system, the first of which is known as the 'baseline valuation', and estimates the total lifetime costs for the Australian population as at 30 June 2015. This report documents the baseline valuation.

PwC's engagement commenced on 14 September 2015, and a draft report outlining the valuation method was prepared in October, discussed with the Department during November and revised in late November to incorporate feedback. The project is being overseen by the Investment Approach Inter-Departmental Committee (IDC), and the members of this Committee along with members of the Department's own Internal Reference Group came together with PwC at a design session on 23 November to discuss the actuarial model that will support the Australian Priority Investment Approach, how it will work and what is important to stakeholders.

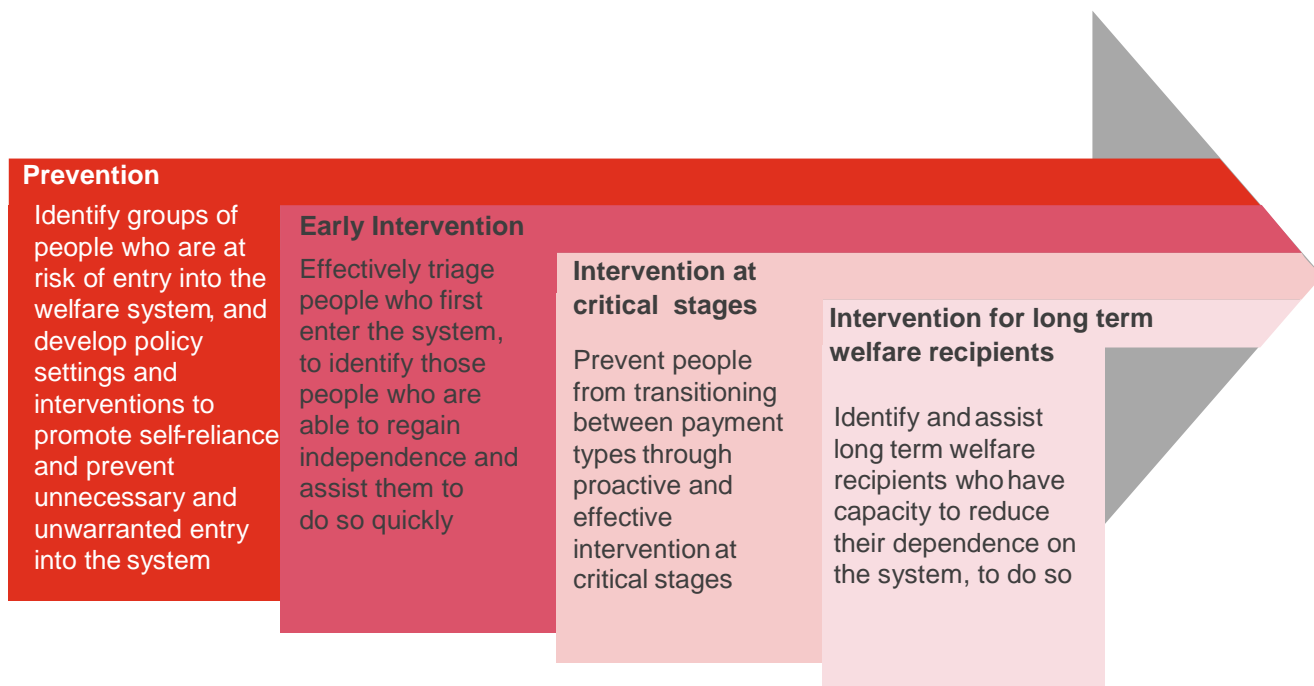
A draft baseline valuation report was then prepared and delivered in mid-December, which built on the draft method report and on the discussion at the design session. Its purpose was to start documenting the assumptions being developed, to explore early insights coming out of the analysis, and to bring to life the format for communicating results and outputs from the model. The draft baseline valuation report documented results from the foundation model which applied assumptions by age, gender and class. The next phase of the project involved refining the model to incorporate risk factors, and this final baseline report documents the final baseline model incorporating these risk factors, and takes into account feedback on the format, structure, content and terminology contained in the draft report.

Purpose of valuation and report

The purpose of the actuarial valuation is to underpin the Australian Priority Investment Approach, by informing decisions on the management of the welfare system that are effective in increasing the capacity of individuals to live independently of welfare; in addressing the risk of intergenerational welfare dependence; and in decreasing Commonwealth long term social security costs. At the macro level the actuarial valuation can be used as a governance tool – to measure and monitor long term costs of the system and evaluate the effectiveness of new policies in improving financial and social outcomes. At the micro level it can provide information on the past experience and expected future cost of specific groups, to help inform targeted policy for people in these groups.

The intention of the Australian Priority Investment Approach is to ensure funding is directed towards evidence based policy interventions which increase the chances of sustained employment and self-reliance. Over time, this may include ceasing policy settings or interventions that are shown not to reduce the lifetime costs of welfare for particular groups; introducing policy settings or interventions that encourage self-reliance for particular groups; or investing in more tailored and effective policy settings or interventions for individuals and families who are identified as being most at risk of long-term welfare dependency. A key output of the valuation is therefore to quantify lifetime costs for groups with similar characteristics, to inform evidence-based decisions regarding policy settings and potential interventions for these groups.

The following framework for considering these groups and developing interventions has been adapted from the workers' compensation field, which shares the overarching objective of assisting people with capacity to work, to do so.



This report is intended to describe the assumptions and results of the valuation in relatively simple language, highlighting key features of the model and its outputs, providing early insights and discussing some groups of interest for potential policy priority through the lens of the investment approach.

Note that separate to this report, we are developing technical documentation that will cover matters such as more detailed aspects of the model structure, statistical fitting techniques, and so on.

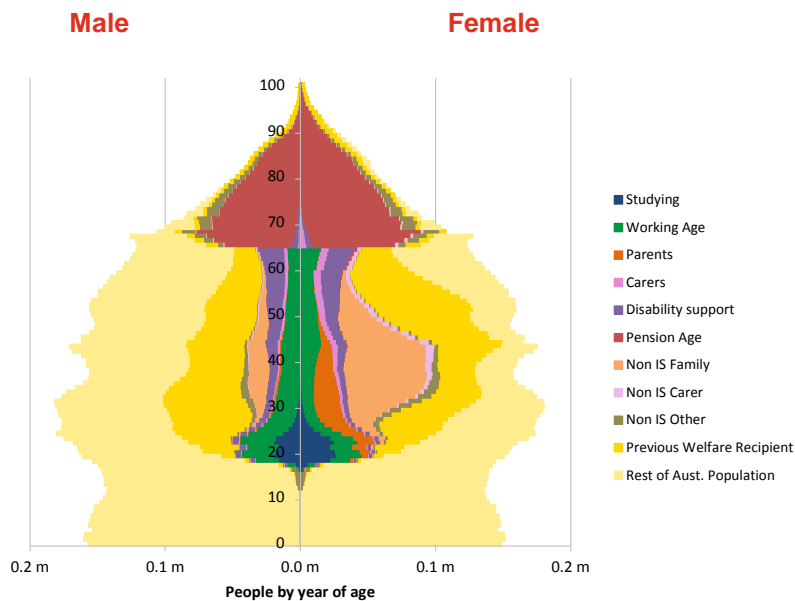
Scope of work

We have valued the payments for which the Department has policy responsibility as at 30 June 2015, and have developed the valuation on the basis that the currently legislated policy continues indefinitely. For example, future changes to increase the qualifying age for the age pension have been allowed for (as these were already reflected in legislation at 30 June 2015), while changes to the Family Tax Benefit that were proposed in the 2015 Budget are not allowed for (as these were not reflected in legislation at 30 June 2015).

The valuation covers all future welfare payments to a closed population for the rest of their natural lives (which is currently capped at 110 years in the model). The population used in the valuation model includes all current Australian residents and any current welfare recipients residing overseas.

The demographic profile of this population and their welfare class at the valuation date is shown below.

Figure 1: Model population with class utilisation (June 2015)



This population pyramid illustrates a number of broad features of the welfare payment system, such as the way in which males and females access different supports at different stages of life, and the large proportion of the population at older ages who access the age pension.

Evolution of the actuarial valuation model

The actuarial valuation model has been designed to provide the Department with a comprehensive and flexible platform that can be further developed over time.

This platform includes the ability to generate results for the whole population, for sub-groups, for different scenarios and for different sets of assumptions. It provides the Department with the option of extending the model by including more data or refining it through the inclusion of more sophisticated assumptions as time progresses.

The foundation version of the actuarial model, by class, age and gender, was documented in the December 2015 draft report, and still forms an important role in the final baseline valuation. Building on the foundation model, considerable work has been undertaken to incorporate more detailed assumptions into the model – such as life circumstances and risk characteristics – with the aim of further differentiating the experience and costs by class, age, and gender groups for the final baseline valuation. However, as discussed in the report, in preparing the final baseline model it has been necessary to balance the time and complex analysis required to introduce each risk characteristic, with the need for robust, timely results. As agreed with the Department, during this phase of work we have applied the principle of optimising the utility of the model without compromising its quality or the timeliness of its delivery.

The resulting final baseline model uses more sophisticated assumptions in many areas – for example, whether someone is partnered or not, how many children they have and at what ages, their highest attained level of education, duration in class, and other important factors affecting their payment eligibility and risk profile. We have tested the prediction success of the final baseline model compared to the foundation version, and confirmed that this has improved materially. However, we have continued to adopt foundation assumptions in a number of areas where we felt more detailed risk modelling would be of limited value, and these areas are discussed throughout the report.

The model will continue to be further developed in conjunction with the Department over the remaining years of PwC’s contract, refining the analysis and exploring the use of more data. The priorities for model improvement ahead of the next (30 June 2016) valuation will be discussed and agreed with the Department and IDC. As the model evolves to include more detailed risk factors the total lifetime cost would be expected to remain similar, however it will differentiate more between groups of people and achieve greater accuracy in the average lifetime cost information for increasingly refined groups.

For this baseline valuation we agreed with the Department that the valuation of the age pension component of the lifetime costs would be indicative and that further refinement of this component of the valuation would be undertaken for the 30 June 2016 valuation. These costs are influenced by factors such as levels of superannuation savings and investment values and we have not yet had the opportunity to fully research and analyse the expected longer term trends in these cost drivers.

2. Results

Total lifetime cost

The key result of the actuarial valuation is the total lifetime cost, which is defined at the valuation date as the net present value of future in-scope payments made to all people in the model population over the remainder of their natural lifetimes (capped at 110 years of age).

The total lifetime cost can be assessed for any group of people within the model population. In the discussion on the results we examine the total lifetime cost for the whole model population and for four groups of people in the starting population:

- Current welfare recipients - this includes any person who received a payment in the 2014/15 year.
- Recent exits – people who exited in the last three years. This is people who received a payment in 2011/12, 2012/13 or 2013/14 but no payment in the current year
- Older exits – other people who are known to have previously received a payment
- Rest of the Australian Population – the remainder of the model population.

Future migrants and unborn children are not included in the estimate of total lifetime cost, but will appear in future valuations once they migrate or are born, and at that time will contribute to an increase in the total lifetime cost.

Average lifetime cost

For any group of people the lifetime cost can be considered in terms of the number of people in the group and the lifetime cost per person. Through this report we use the term **average lifetime cost** to refer to the per person lifetime cost for a group of people.

Note that while the model does simulate the lifetime trajectory of each individual, it is only intended that results ever be considered for a similar group of individuals – either in total or on average for that group.

Lifetime cost results by class

The total lifetime cost for the model population is estimated to be **\$4,764 billion** as at 30 June 2015, in respect of the 23.9 million people included in the model population. This is a substantial and somewhat uncertain figure, but does lend itself to longer term thinking about the dynamics and cost of the welfare system. This figure can be considered a baseline figure against which the potential impact on the total lifetime cost of policy changes can be assessed. The following table summarises some key figures underpinning this figure, by the sub groups discussed above and by class:

Table 1: Summary of key valuation results (30 June 2015 baseline valuation)

| Population segment | Number in starting population | Avg. age | Lifetime cost (\$Bn) | Average payment in 2014/15 (a) | Average lifetime cost (\$'000) non-age pension part | Average lifetime cost (\$'000) age pension part | Total Average lifetime cost (\$'000) (b) | Ratio = (b) / (a) |
|---|-------------------------------|-----------|----------------------|--------------------------------|---|---|--|-------------------|
| Current welfare recipients | | | | | | | | |
| - Studying payment recipients | 392,000 | 24 | 97 | 8,500 | 157 | 90 | 247 | 29 |
| - Working age payment recipients | 1,302,000 | 39 | 410 | 10,900 | 174 | 141 | 315 | 29 |
| - Parenting payment recipients | 432,000 | 33 | 191 | 29,100 | 324 | 118 | 441 | 15 |
| - Carer payment recipients | 265,000 | 51 | 109 | 25,600 | 244 | 168 | 411 | 16 |
| - Disability support pensioners | 813,000 | 50 | 338 | 21,300 | 258 | 157 | 416 | 20 |
| - Age pensioners | 2,495,000 | 76 | 507 | 16,600 | 1 | 202 | 203 | 12 |
| - Family non IS clients | 1,547,000 | 40 | 342 | 5,500 | 103 | 118 | 221 | 40 |
| - Carer non IS clients | 199,000 | 51 | 42 | 6,800 | 99 | 114 | 213 | 31 |
| - Other non IS clients | 561,000 | 54 | 87 | 2,500 | 72 | 84 | 155 | 62 |
| <i>Total current welfare recipients</i> | <i>8,006,000</i> | <i>52</i> | <i>2,123</i> | <i>13,400</i> | <i>115</i> | <i>150</i> | <i>265</i> | <i>20</i> |
| Previous welfare recipients | | | | | | | | |
| - Exited 1-3 years | 1,351,000 | 39 | 270 | n/a | 84 | 115 | 200 | n/a |
| - Exited 4+ years | 2,560,000 | 46 | 410 | n/a | 47 | 113 | 160 | n/a |
| <i>Total previous welfare recipients</i> | <i>3,911,000</i> | <i>43</i> | <i>680</i> | <i>n/a</i> | <i>60</i> | <i>114</i> | <i>174</i> | <i>n/a</i> |
| Rest of Australian resident population | | | | | | | | |
| - Rest of Australian resident population | 11,949,000 | 28 | 1,961 | n/a | 77 | 88 | 164 | n/a |
| Australian resident population | 23,866,000 | 39 | 4,764 | | | | | |

Notes:

The valuation model considers people's basic age pension, energy supplement and pension supplements and models each of these elements separately. The information shown above for the age pension part of the average lifetime cost reflects all the payments made to people whilst in receipt of the age pension.

The average payment in 2014/15 is understated owing to the data maturity issues with FTB and family payment data. This has a particular impact on the average payments for people in the family non IS and other non IS classes; we would expect these amount to ultimately be larger than the figures shown.

The total lifetime cost represents a multiple of over 40 times the total amount of 2014/15 in-scope payments, which was \$108.8 billion. Such a multiplier is perhaps not unreasonable given that we have included the age pension in the valuation, which a significant proportion of the model population are expected to receive in the future for many years post retirement.

As an alternative frame of reference we could compare the lifetime cost to the latest GDP figure, which is \$1,620 billion¹ as at June 2015.

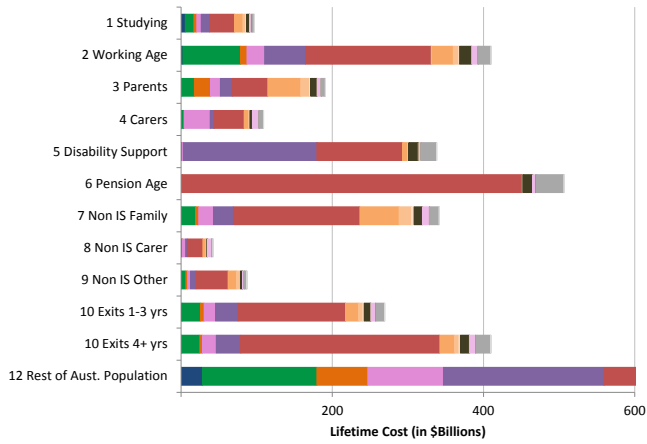
The table shows the contribution of each class and population group to the total lifetime cost, which reflects the number of people in that class and their average lifetime cost. The average lifetime cost for people in each class is driven by the probability of an average person in that starting population entering, remaining in or leaving the system in each future year; combined with the type and amount of payments they are likely to receive whilst they are active in the system. We have also shown the breakdown of the average lifetime cost between the pre and post retirement life stages.

Unsurprisingly, the current welfare recipient class with the largest total lifetime cost is age pensioners, owing to the number of people in this class and the fact that once in that class, most people remain there for the rest of their lives. Furthermore, the projected future cost of age pension and related payments for current welfare recipients is a significant component of the lifetime costs for all other classes, and for this reason we have

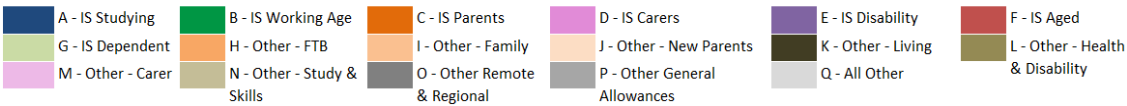
¹ <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5204.02014-15?OpenDocument>

separated it out in the table. This is shown more clearly in the graph below, which further splits the lifetime costs by class shown in the above table, into the 17 payment categories that we have included in the model.

Figure 2: Composition of lifetime cost (\$billion) by welfare class and payment category



Payment category key:

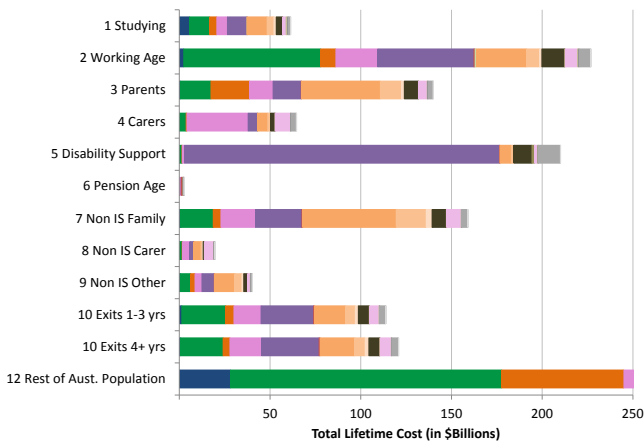


Note: Class 12, the rest of the Australian population, is much larger than other classes and has not been shown in full in the chart. The total lifetime cost for this class is \$1,961 billion and (owing to the truncation of the chart) includes a broader range of payment categories than have been shown.

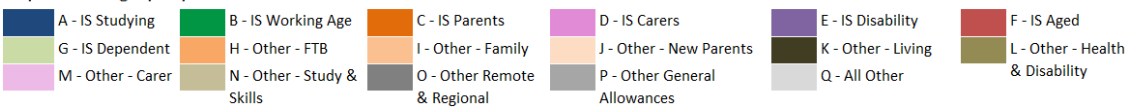
The age pension component of the lifetime cost is generally lower for younger people, as their retirement is further into the future and the projected payments are discounted more. It is also lower for groups which are expected to include a lower proportion of future age pensioners.

Given the dominance of age pension payments, we have also shown the chart excluding payments received whilst individuals are in the pension age class.

Figure 3: Composition of lifetime cost (\$billion) by welfare class and payment category, excluding payments received whilst in the pension age class



Payment category key:



Note: Class 12, the rest of the Australian population, is much larger than other classes and has not been shown in full in the chart. The total lifetime cost (excluding age pension costs) for this class is \$915 billion.

For the pre-retirement part of the total lifetime cost, we can see that:

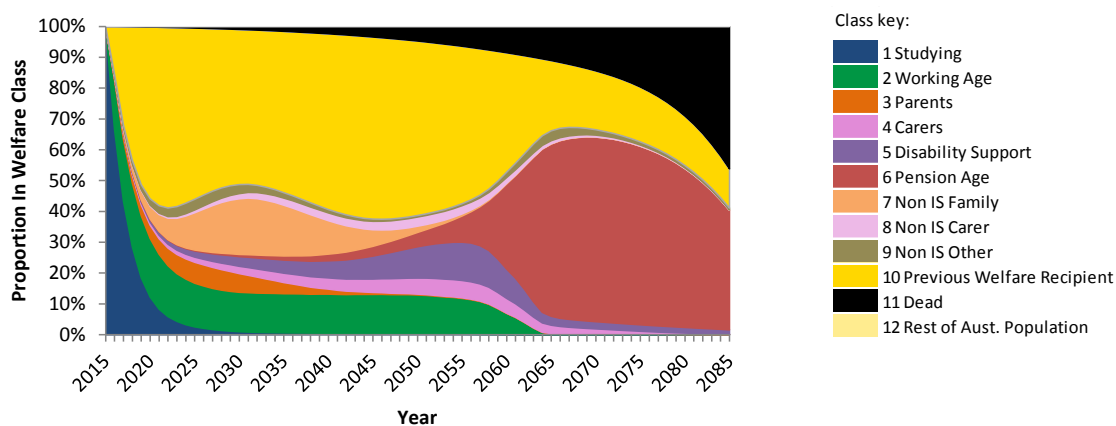
- the costs for the carer and disability classes include a significant cost element relating to each group’s main current payment together with contributions from a range of supplements
- the pattern for the parenting and working age classes includes a material cost element from the related payment category but also shows a greater contribution from other income support payment types and from the costs of FTB and family payments. This reflects the probability of people in these classes moving into other income support classes in the future, and their lower current average age
- for people in the studying class, the costs of studying payments are relatively low and the lifetime cost includes contributions across most payment types reflecting the potential for entering these other classes at a later life stage.
- finally, for both the exits and the rest of the Australian population group the costs include a mix of payment types, including both income support payments and FTB and family payments. These groups include many younger people as well as those people who enter the system only to receive FTB and child care payments during their pre-retirement years.

Development of group results

While the total lifetime cost results for current welfare recipients are interesting and provide a useful framework for measuring the impact of future changes, they are generally quantifying fairly broad and well-known features of the system rather than introducing new insights. The more interesting question is: what are the factors that will influence one group of people to leave the system quickly and another to remain on benefits for a long time?

By way of example, if you look at the ‘studying’ class in the Figure 2 above, you can see that the lifetime cost of \$97 billion actually comprises a relatively small component of income support for people while they are actually studying (the blue portion of the bar). The majority of the cost relates to future welfare payments for people who transition from studying into working age, parenting or other income supports, then costs of FTB and family payments, and eventually the age pension cost. Drilling further into this example, below is a projection of the expected future trajectory for the 392,000 people currently in the ‘studying’ class.

Figure 4: Expected trajectory of people in studying class



Explanation of chart:

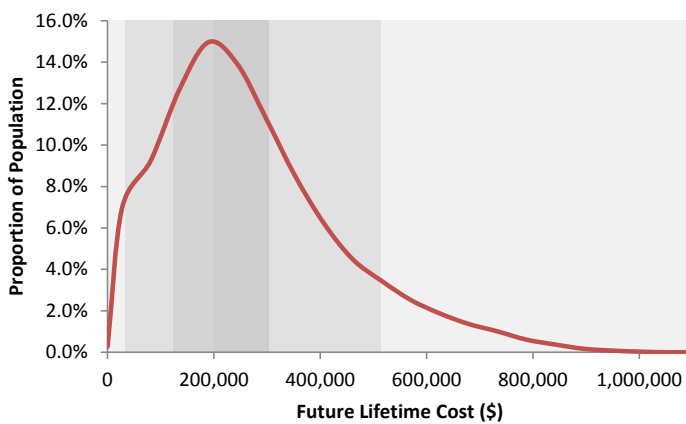
This trajectory chart starts with all the people in the studying class at June 2015 and shows the proportions of them who are expected to be in each of the 12 classes at each subsequent year end:

- The blue area represents the proportion of people staying in the studying class or returning to it in later years
- The yellow area represents proportions of people who have exited
- The other coloured areas are the proportions of people who have moved to other active classes
- The black area shows the proportion of people who have died
- While the projected trajectory for each person continues till death, the chart has been truncated at the year 2085; after this point, the proportion represented by the black area continues to increase as people age and die.

This shows that while about 85% of people are expected to exit this class over the next 5 years, only about half of the people in the starting population will leave the system completely over this timeframe – with the remainder moving into other classes. Between 20 and 30% of the starting population are expected to be on some form of income support for the next 40-50 years and at retirement a number of those who exited will re-enter and receive the age pension. Note that the chart is simplified to show proportions rather than actual people, so there will be some people who (for example) move from studying to working age payments then back to studying, or into and out of the system, however our analysis does show a core of actual people who will start on studying payment and never leave the system.

To sum up, while the average lifetime cost of people in the ‘studying’ class at the time of the valuation is \$247,000, the variability of actual lifetime costs around this average will be considerable – some people will exit promptly with an individual lifetime cost of less than \$20,000, while some remain on some form of income support for life, with an individual cost approaching \$1 million. This variability is illustrated in the graph below, which shows the average lifetime cost and distribution around this for a female aged 20-24 currently in the ‘studying’ class.

Figure 5: Distribution of illustrative range of lifetime cost outcomes – female studying age 20-24



Note: the grey bars in this chart represent the upper and lower quartiles and median points of the cost distribution

In respect of this example, the aim of the risk modelling phase of the baseline valuation was to determine whether statistical analysis of the data could predict which groups of people are more likely to transition from studying to other forms of welfare support over their lifetime (with high lifetime cost), rather than exiting the studying class and remaining out of the system for the remainder of their lifetime (with low lifetime cost).

This highlighted that some factors that predicted higher lifetime costs within the studying class were: parents - who are more likely to stay within the system and potentially move to the parenting or family non IS classes; both the very youngest and oldest people in the class – who are predicted to be more likely to stay within the system; and people receiving a number of other supplements – which may be a proxy for having particular circumstances that increase the chance of transitioning to a different form of income support.

Our intention is to continue to evolve the model over subsequent valuations, in line with the Department’s priorities. In this example, the model may be improved by incorporating more detailed Education data, or other risk characteristics, to better predict the composition of the group of people who are likely to transition from studying into other classes.

Section 9 of this report examines each class in more detail, with reference to the relevant charts. Note that our model outputs include a range of charts that are available by age, gender and other characteristics, using drop-down boxes. This report includes some of these to illustrate how to interpret the charts and highlight interesting points, however the real value of the outputs will be to facilitate discussion amongst experts about long term dynamics of the system, discuss groups and develop ideas for potential policy changes or interventions.

3. Assumptions and sensitivity

Many of the assumptions underlying the actuarial valuation are developed by considering patterns of past use of the welfare system. In some cases the past experience has been volatile and in others the experience has trended from year to year, most likely as a result of policy changes. Some policy changes are recent and not fully reflected in the observed experience; people may also behave differently in the future than they have in the past. These considerations mean that the assumptions are inherently uncertain, and the actual future experience may differ from that modelled.

This is particularly so when considering assumptions relating to experience far into the future. One example is the future trends in age pension entry and payment, and setting the probability that someone who either is or is not in the system now at age 25, will eventually go on to age pension in 40+ years' time. Research suggests that the proportion of part pensioners is expected to increase as younger generations will have a greater opportunity to build superannuation savings. We have allowed for this trend by assuming an increasing trend in the proportions of part pensioners at retirement and this reduces the lifetime cost by 1% compared to the scenario where no adjustment is made. Whilst the direction of this trend is well evidenced, the quantum of the shift is relatively uncertain and a range of scenarios could be considered to be reasonable.

The long term nature of the lifetime cost results means they are highly sensitive to some of the assumptions, as quantified in section 8. For example, a reduction in the assumed discount rate from 6% (which has been adopted for the baseline valuation) to 5%, would add around \$1,600 billion to the total lifetime cost. The results are also quite sensitive to indexation assumptions and to the mortality rates selected. For instance, we have assumed mortality improvements in line with long term forecasts for the population. These have the effect of increasing the assessed lifetime costs by around \$600 billion compared to a scenario where no improvement is adopted.

4. Dynamics of the system

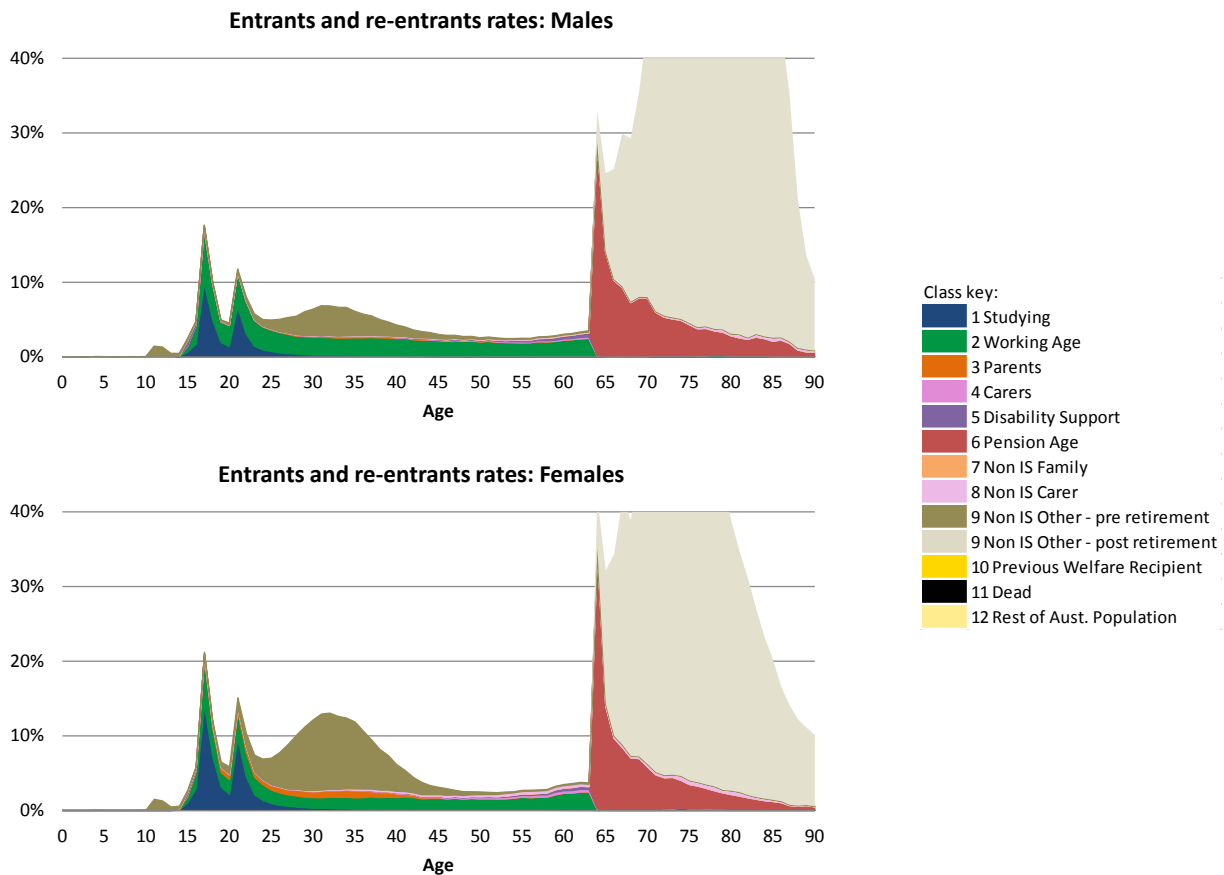
Our understanding is that to date, analysis of the welfare system has tended to focus on a series of "snapshot" views of the active population at different times, and on immediate or short term impacts on this active population. Where longitudinal analysis (i.e. tracking the same people over time) has been conducted, this has usually been done on sample data, not for the whole welfare recipient population.

The longitudinal data suite that has been developed by the Department provides the facility to conduct more comprehensive longitudinal analysis on the whole welfare recipient population. When combined with the broader census data, further insights can be gleaned about movements into and out of the system. As a prelude to identifying and understanding "groups of interest", it is informative to examine the dynamics of how people move into, through and out of the system.

Entry to the system

The graph below illustrates the key points of entry into the welfare system – by age and gender, and which class they first enter into.

Figure 6: Illustration of New Entrants and Re-Entrants 2014/15



Notes:

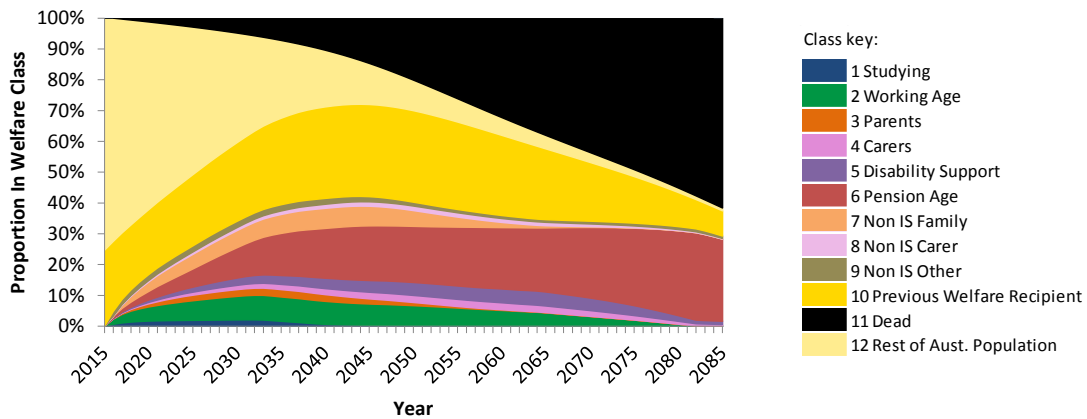
- For both the male and female charts shown above in 2014/15 there were a large number of new entrants to class 9 over the age of 65. As discussed later in the report, this experience is not expected to persist in future years and as such it has been separately identified and shaded in a pale sand colour, in order to differentiate it from the ongoing new entry rates for this class. These people typically entered to receive a small energy supplement payment.
- The information shown for new entrants to other classes has been more consistent from year to year.

These charts show the “spikes” in entry at particular ages, based on the payment eligibility rules, and show the noticeable effect of family tax benefit receipt, especially for females (noting these people first come into ‘Non-IS Other’ in the year they first receive FTB, family or parental payments then are reallocated to ‘Non-IS Family’ in the following year). People only enter the system in their own right once they reach their teenage years, though some of these people would come from families who have received income support throughout the teenager’s childhood. One of the benefits of considering the whole population in the model, not just current welfare recipients, is the ability to quantify the future lifetime cost of today’s children as they grow older, and to identify groups at risk of long-term welfare dependency well before they reach adulthood. Our analysis shows that people entering the system at very young ages on average have a lower probability of eventually becoming self-reliant than those entering at slightly older ages, regardless of which class they first enter.

The graphs also show a gradual drift up in entry rates to the income support classes after age 55, up until retirement age when another large spike of entrants occurs as people qualify for the age pension.

The chart below illustrates the expected pattern of movements into the system for the 15.9 million people who did not receive any payment in the 2014/15 year.

Figure 7: Expected future trajectories for people in previous welfare recipient and non-welfare recipient classes (10 and 12)



We can see that around 10% of this group would be expected to start receiving payments over the next 5 years, with working age payments, FTB and the age pension being the most common main payment types they will receive.

Looking further into the future, around 30% of this group, or more than 5 million people, are expected to be receiving some type of payments for most of the next 50 years.

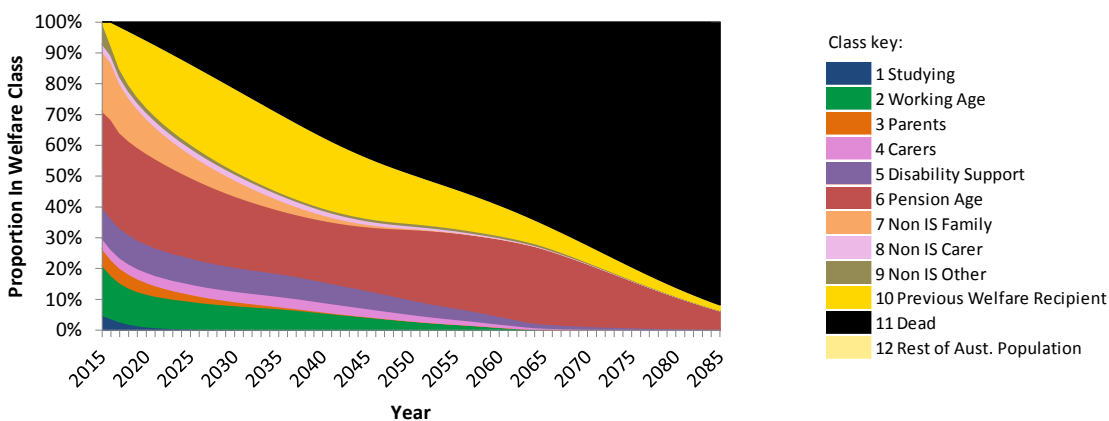
Movements through the system

As part of our exploratory analysis, we prepared a set of charts which started with the people who received a payment in 2010/11, and tracked their subsequent movement between classes or out of the system. We also looked backwards at people who received a payment in 2014/15, to see where they had come from.

These charts have been shared with the Department and are discussed later in this report. Overall, they show that the studying, working age and parenting income support classes, plus the non-income support classes, are more “mobile” than age pension, disability support pension and carers payment classes.

The past patterns of movement through classes have been used to inform assumptions about future movements, and for people who are in the system at the valuation date, the following chart shows their projected “movement” through the system in total, including exits via death.

Figure 8: Expected trajectory of all current welfare recipients (classes 1-9)



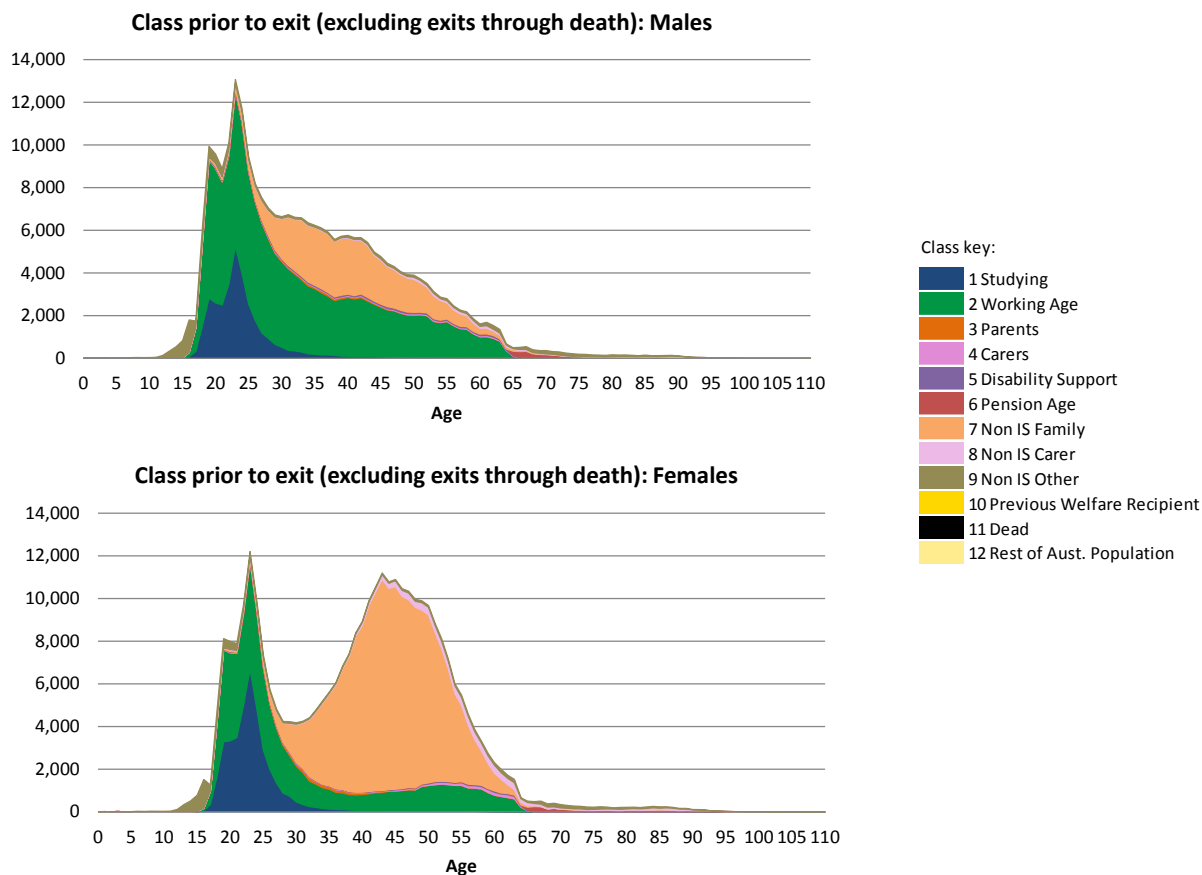
The persistency of the current welfare recipient population is noticeable with over 50% of current welfare recipients projected to be receiving some form of payment at any point over the next 15 years. The dominance of the age pension is also very apparent – as current age pensioners die, more transition in from other classes until towards the end of the graph, anyone who remains on benefit is generally receiving age pension.



Exits from the system

Finally, we examine the exits from the system (other than death).

Figure 9: Summary of recent exits



We can see that the main classes from which people exit the system (other than death) are studying, working age and Non-IS Family (noting that most people who are on parenting payment will transition to family tax benefit only as their children get older, before exiting the system).

These two graphs further illustrate the earlier points that few people exit disability support pension, age pension or carer categories directly, other than by death.

5. Model use and limitations

As well as understanding what the model can do, it is important to bear in mind what the model is not intended to do. Essentially, it is a tool for understanding the long term impact of decisions made today and in the future, at a fairly high system level, and for groups of interest. It is a dynamic model that projects a limited number of factors over a long time period, taking into account how the population will change over that time and considering uncertainty. This contrasts with static models that quantify, at a much more detailed or precise level, the overnight impact of decisions or changes on today's population. The models can and should work in tandem.

Further, the actuarial model, particularly at this stage of its development, is quite financially-focussed. An important aim of the investment approach, supporting the mission of the Department, is to positively impact the lifetime wellbeing of people and families in Australia, as well as reduce welfare costs. It will therefore be important, in using the actuarial model to develop interventions, to adopt a framework that considers not just the lifetime cost information generated by the valuation model, but also costs and benefits that are beyond the scope of the model. In particular, as well as outputs from the model, in developing potential policy interventions it will be important to consider:

- Short term impacts over the budget forecast period, as determined by detailed overnight costing models

- Broader costs and benefits to other parts of the system, using more traditional economic approaches such as cost/benefit analysis
- Qualitative impacts on people’s lives and their lifetime wellbeing

Particularly for the baseline, it will be important that the actuarial valuation model is used to identify policy priorities in a systematic way, in conjunction with appropriate expertise and dovetailing with existing policy and investment frameworks. The actuarial valuation model results should be validated in the context of broader qualitative evidence, wellbeing measures, existing policy evaluation frameworks and expertise.

6. Other insights

In addition to the results shown above, helpful information and insights can be gleaned from the statistical analysis underlying the model, the model outputs themselves and from exploration of the historical data. These include:

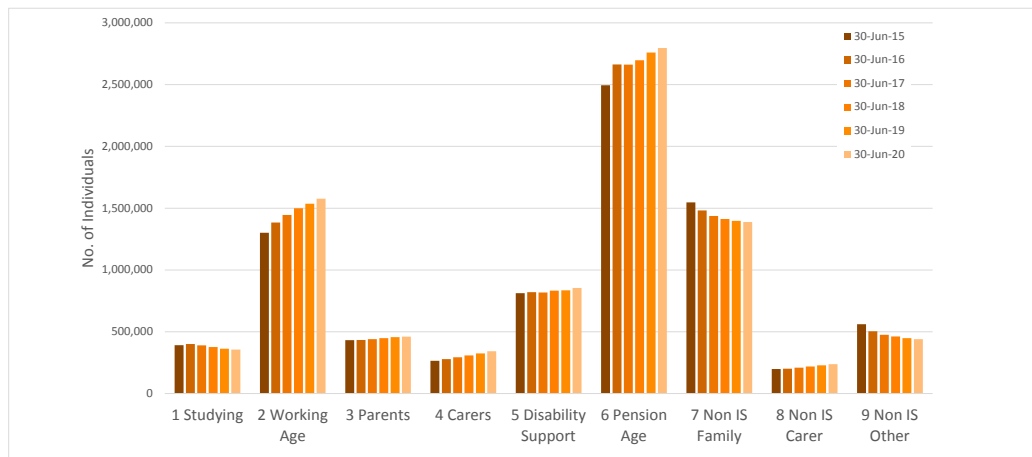
- Forecasts of numbers of welfare recipients expected to enter and leave the system, or move through different welfare classes, against which subsequent experience can be monitored
- Risk factors that increase or decrease predicted lifetime costs
- Interesting trends or features of the data
- Groups of interest based on their risk profile and predicted pathways through the system

The report highlights some of these insights by way of example in explaining the results, and further insights will be gained as the model outputs are further explored with the Department.

Forecasts

The chart below shows the expected numbers of people in each active welfare class in each of the next 5 years.

Figure 10: Projected numbers of people in each active welfare class



Notes:

- The actual numbers will be slightly higher than this as the population is expected to grow through migration and births. Over this 5 year timeframe migration will have the bigger impact as most people only enter the payment system in their own right in their teenage years.
- Consequently the Department should use this information with care and consider making adjustments for the undercount before using them for purposes such as planning or budgeting.

The most notable feature of this forecast is the expected growth in numbers of age pensioners and working age payment recipients. The changing age profile of the population is a big driver of these forecasts. However, future increases in pension age together with the tightening eligibility for disability support pension are expected to drive an increase in the numbers of people staying in the Working Age class.

Groups of Interest

An important purpose of the actuarial valuation is to identify “groups of interest”, who have relatively high lifetime costs, but where, with more effective policy settings or effective intervention (particularly at welfare entry and transition points), those costs could be reduced and the lifetime wellbeing of the people in the group improved. These groups will effectively be candidates for the application of the investment approach, and the report identifies some groups worthy of more detailed exploration, based on these criteria. Note that the way in which these groups are identified and described in this report (for example, their age bracket, gender, class, life circumstances or characteristics) is informed by the model structure and data. Further groups are likely to be identified or existing groups modified or narrowed as the model results are explored more fully in conjunction with the Department’s social policy experts and external stakeholders.

We expect that more detailed exploration of these groups will assist in better understanding the factors affecting their life chances and choices, to inform potential interventions or policy adjustments. In this regard, the model can be combined with targeted analysis of the past experience of groups of interest.

In identifying groups of interest, we have put forward an intervention framework (shown above at page iii) that considers groups currently outside the system, who could be prevented from entering; as well as early intervention for people when they first enter; intervention at critical stages; and support for long term welfare recipients who have capacity to reduce their dependence on welfare.

Some candidate groups for further exploration and consideration using this framework, and based on the actuarial analysis, are:

- **People who have exited the system within the last 2 years** – this group is quite large, and the analysis suggests there is quite a high probability of these people re-entering the system, which could be reduced if policy settings, obligations and supports were able to be tailored to achieve more sustainable exit from the system.
- **Young people who enter the system 18 or under** – this group are predicted to have a higher probability of remaining in the system and moving through different classes without exiting the system than people who enter a year or two later - and are more likely to have risk characteristics, such as a lower educational attainment, that predict higher lifetime costs. Particular groups of interest are young parents and young carers – although these do not represent large numbers of the population, they are at particular risk of remaining reliant on welfare.
- **Students who transition to working age payments** – a significant subset of the people who are currently studying, will go on to other income support payments and remain in the system for many years, with a high lifetime cost.
- **People on parenting income support whose youngest child is approaching the age at which eligibility for this support will cease** – a large proportion of these people move onto other income supports, particularly those with multiple children who have often been in the class for a longer time, and those in receipt of a carer supplement.
- **People who are at risk of first entry to the system in their late 50s** – the analysis shows an increasing trend in first entry to the Working Age support after age 55.
- **People on working age income supports who are at risk of moving to the disability support pension** – people in the disability support class have a high average lifetime cost, however given the high persistency of people in that class, it would be valuable to identify earlier those people at risk of entering this class from elsewhere in the system.
- **Older people entering the Carer income support class** – a number of people well over the age pension age enter the Carer class each year, and have a higher average lifetime cost than those on age pension.
- **Long term welfare recipients** – the analysis shows that the longer people stay in an income support class, the more likely they are to stay in the system, leading to higher lifetime cost.

We highlight that the groups of interest identified and discussed in the report are not exhaustive, and that further groups are likely to be identified or existing groups modified or narrowed as the model results are explored more fully in conjunction with the Department’s social policy experts and external stakeholders.

Contents

| | |
|---|-----------|
| Part I: Executive summary | i |
| Part II: Valuation results | 1 |
| 1 Introduction | 2 |
| 1.1 Background | 2 |
| 1.2 Purpose of the valuation | 2 |
| 1.3 Reliances | 3 |
| 1.4 Professional standards | 3 |
| 2 Method | 4 |
| 2.1 Overview of valuation method | 4 |
| 2.2 Development of the baseline valuation results | 5 |
| 3 Data | 7 |
| 3.1 Data provided by the Department | 7 |
| 3.2 Other data sources | 9 |
| 3.3 Data limitations | 10 |
| 3.4 Summary of the data used for assumption development | 11 |
| 4 Model population | 12 |
| 4.1 Scope of population | 12 |
| 4.2 Summary of current population | 12 |
| 4.3 Development of model population dataset | 13 |
| 4.4 Model segmentation | 14 |
| 4.5 Approved care organisations | 18 |
| 5 Scope and categorisation of payments | 19 |
| 5.1 Scope of payments | 19 |
| 5.2 Payment type categorisation | 19 |
| 6 Assumptions | 24 |
| 6.1 Overview of assumptions | 24 |
| 6.2 Policy basis | 24 |
| 6.3 Flow assumptions | 25 |
| 6.4 Welfare class movement assumptions | 28 |
| 6.5 Payment category utilisation assumptions | 30 |
| 6.6 Payment assumptions | 32 |
| 6.7 Economic and other adjustments | 36 |
| 6.8 Economic assumptions | 38 |
| 7 Model outputs, validation and limitations | 40 |
| 7.1 Outputs and model use | 40 |
| 7.2 Limitations of the actuarial model | 40 |
| 7.3 Model validation and risk mitigation | 41 |
| 8 Overall results | 43 |
| 8.1 Scope of valuation | 43 |
| 8.2 Terminology | 43 |
| 8.3 Total lifetime cost | 44 |

| | | |
|------------|--|------------|
| 8.4 | Areas of sensitivity and uncertainty | 48 |
| 9 | Results for current welfare recipient classes | 51 |
| 9.1 | Studying Payment recipients | 53 |
| 9.2 | Working Age Payment recipients | 57 |
| 9.3 | Parenting Payment recipients | 61 |
| 9.4 | Carers (Income Support) | 66 |
| 9.5 | Disability Support Pensioners | 70 |
| 9.6 | Age Pensioners | 74 |
| 9.7 | Non income support – Family | 78 |
| 9.8 | Non income support – Carers | 82 |
| 9.9 | Non income support - Other | 86 |
| 10 | Analysis of exits and entrants | 91 |
| 10.1 | Exits from the system | 91 |
| 10.2 | Past new entrant experience | 92 |
| 10.3 | Expected new entrants | 95 |
| 11 | Results for non-welfare recipient classes | 97 |
| 11.1 | Previous welfare recipients | 97 |
| 11.2 | Rest of the Australian population | 101 |
| 12 | Forecasts | 105 |
| 12.1 | Background | 105 |
| 12.2 | Lifetime cost forecasts | 106 |
| 12.3 | Forecasts of other information | 107 |
| 13 | Dynamics of the system | 108 |
| 13.1 | Introduction | 108 |
| 13.2 | Trajectories through the system | 108 |
| 14 | Groups of interest | 111 |
| 14.1 | Introduction | 111 |
| 14.2 | Application to classes | 112 |
| 14.3 | A framework for further analysis | 116 |
| Appendix A | Policy changes | 118 |
| Appendix B | Exploratory analysis | 121 |
| Appendix C | Model factors | 122 |
| Appendix D | Glossary | 130 |



Part II: Valuation results

1 Introduction

1.1 Background

In its May 2015 Budget, the Commonwealth Government announced an intention to implement the Australian Priority Investment Approach to welfare in Australia.

The Department of Social Services (the Department) has set up an Investment Approach Taskforce to implement the Australian Priority Investment Approach to social welfare with the aim of reducing welfare dependence, and improving the lifetime wellbeing of people and families in Australia.

PricewaterhouseCoopers (PwC), in conjunction with Data Analysis Australia (DAA) has been engaged by the Department to undertake the actuarial analysis supporting the Australian Priority Investment Approach. PwC will undertake four annual actuarial valuations of the Commonwealth's social security and income support system, the first of which is known as the 'baseline valuation', and estimates the total lifetime costs for the Australian population as at 30 June 2015. This report documents the baseline valuation.

1.2 Purpose of the valuation

The purpose of the actuarial valuation is to underpin the Australian Priority Investment Approach ("the investment approach"), by informing decisions on the management of the welfare system that are effective in increasing the capacity of individuals to live independently of welfare; in addressing the risk of intergenerational welfare dependence; and in decreasing Commonwealth long term social security costs. At the macro level the actuarial valuation can be used as a governance tool – to measure and monitor long term costs of the system and evaluate the effectiveness of new policies in improving financial and social outcomes. At the micro level it can provide information on the past experience and expected future cost of specific groups, to help inform targeted policy for people in these groups.

The intention of the investment approach is to ensure funding is directed towards evidence based policy interventions which increase the chances of sustained employment and self-reliance. Over time, this may include ceasing policy settings or interventions that are shown not to reduce the lifetime costs of welfare for particular groups; introducing or strengthening policy settings or interventions that encourage self-reliance for particular groups; or investing in more tailored and effective policy settings or interventions for individuals and families who are identified as being most at risk of long-term welfare dependency. A key output of the valuation is therefore to quantify lifetime costs for groups with similar characteristics, to inform evidence-based decisions regarding policy settings and potential interventions for these groups.

The actuarial analysis underpinning the investment approach draws on actuarial techniques that were developed for work within the insurance industry and that have successfully been applied in contexts such as injury schemes, and other social policy areas. In the insurance context it is recognised that the long term nature of the commitments made under many insurance contracts make it challenging to obtain a good understanding of an insurer's financial position. The role of actuaries in valuing insurance liabilities is now a well-established statutory requirement. Such valuations of insurance liabilities help quantify the size of claims reserves needed by the insurer and help ensure the financial solvency of the insurer.

For the Australian social security system there is no requirement to undertake a valuation for financial reporting purposes and the future cost of the system is not a technical or accounting liability, but rather the present value of a payment stream that will be funded out of future revenue. This is an important point, as actuarial valuations in other contexts, such as general or life insurance, injury schemes, or defined benefit superannuation funds, are subject to a range of requirements and standards that do not apply in the social security system context. Furthermore, the order of magnitude of the Commonwealth's social security system is far greater than is the case for most actuarial valuations conducted in Australia.

The actuarial valuation provides a longer term perspective of the financial commitments implicit in the current system and provides information on:

- The future cost of the system (lifetime cost).
- How the different payment types (programs) contribute to this overall cost.
- Which factors drive the overall lifetime cost and annual expenditures.
- How different groups of people within the system contribute to the cost.

- The factors which explain why some groups are more or less costly than others.

And, as new valuations are undertaken in future years:

- How the cost is changing and a view as to the financial sustainability of the system.
- The impacts of changes, including: demographic changes, policy changes, economic changes.

1.3 Reliances

This report has been prepared at the request of the Department to document the Actuarial Valuation of Australia's social security and income support system as at 30 June 2015. It is not intended, or necessarily suitable, for any other purpose.

The report relies on the completeness and accuracy of information compiled and provided by the Department. We have not verified that data is accurate or complete, but we have checked it for internal consistency and for consistency with other information summaries produced by the Department. We note that the Department also does not give any warranty as to the reliability or accuracy of the data provided to PwC for the valuation.

There is a limitation to the accuracy of the results contained in this report because of the inherent uncertainty of any estimation of such long term costs. The issue of uncertainty is expanded upon in Section 8.4 of this report.

We accept no liability for loss or damage howsoever arising in the use of this report by the Department for other than the purpose stated above, nor for any use of this report, without full understanding of the reliances and limitations noted above, or for errors or omissions arising from the provision of inaccurate or incomplete information to us. We accept no liability for loss or damages howsoever arising in the use of this report by third parties.

The report has been prepared by the PwC Actuarial team led by Christa Marjoribanks and Rosi Winn. The PwC team has been provided with statistical modelling assistance by a team of statisticians from Data Analysis Australia, led by Dr John Henstridge.

1.4 Professional standards

The advice in this report is Prescribed Actuarial Advice as defined in the Code of Professional Conduct issued by the Actuaries Institute. The advice is intended to satisfy that Code.

The International Actuarial Association has published an International Standard of Actuarial Practice 2 (ISAP 2) "Financial Analysis of Social Security Programs". It is our view that the standard is not intended to cover the type of social benefit system in Australia; it focuses on schemes with narrower scopes and elements of funding. As such, we do not consider it relevant to this valuation.



2 Method

2.1 Overview of valuation method

The development of an actuarial valuation model for the Australian social security and income support system is a new endeavour. The valuation approach was selected after consideration of the Department’s objectives which included:

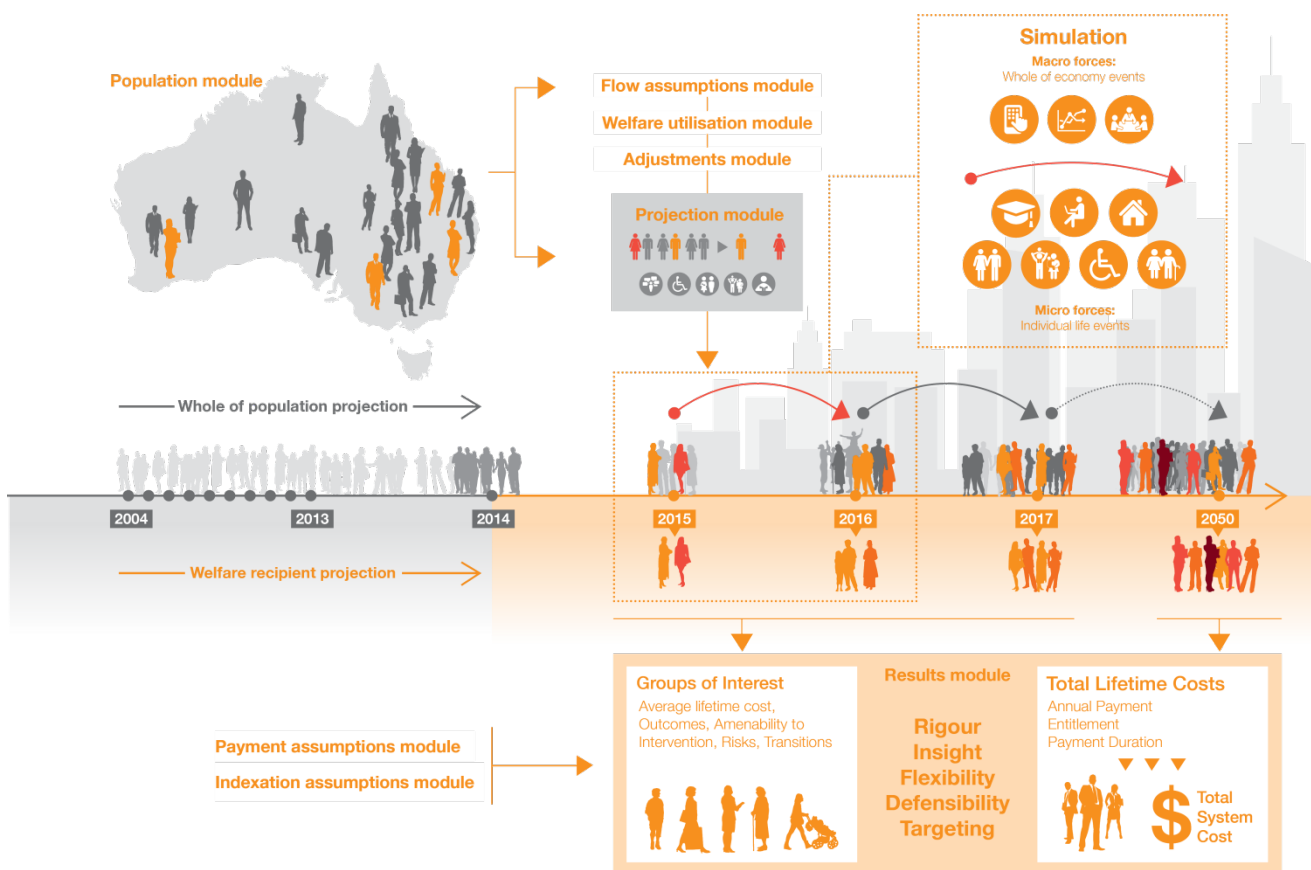
- Provide estimates of the future costs of the social security system (lifetime cost)
- Provide average lifetime cost estimates for groups of people
- Provide insights into the behaviour of groups of welfare recipients
- Provide insight into key drivers of lifetime cost and their respective influence, and
- Flexibility for the model to develop over time

These requirements suggested an individual person approach is needed rather than an aggregate approach and we have used a full population model and a simulation modelling approach as we consider that this provides maximum flexibility and will be able to provide information on all possible groups.

The model uses annual data and projects annual payments.

Figure 11 below represents the components of the valuation model and how the component modules that comprise the model interact with each other.

Figure 11: Overview of Method



A description of each of the modules follows.

Projection module

The projection module is at the heart of the modelling and is used to project the path of each individual through their lifetime. The projections include individual characteristics such as basic demographics, partnering and children and the person's interaction with the welfare system and the payments received.

The module operates by applying assumptions to simulate the future trajectory of each person in the population, their welfare utilisation and payments in each future year. It operates iteratively with the experience in one year providing the starting point for the next year's iteration.

The model population and all of the model assumptions feed into this central module.

Population module

The population module is used to generate an individual welfare recipient dataset for use in the simulation model. It represents the population at the valuation date and contains person records for all current and previous welfare recipients as well as all potential future welfare recipients i.e. representative of the full resident population of Australia.

It includes actual and imputed data for current and recent welfare recipients and representative data for the rest of the population.

For the baseline model we included people solely as individuals: we identified existing partners and children and modelled these going forward to allow us to examine how changes in these may influence people's interactions with the welfare system. However we have not modelled people in households, nor have we taken into account specific information on the use of welfare by related people whether partners, parents or children.

Assumptions modules

There are a number of modules which are used to develop the key assumptions for projecting individuals' trajectories through life and their interactions with the welfare system.

These assumptions include:

- Flow assumptions
- Welfare utilisation – class movement assumptions and payment category utilisation assumptions
- Payment assumptions
- Adjustments
- Indexation and discounting assumptions

They are discussed in section 6.

Results module

The projection module produces detailed outputs which include information on each person's welfare utilisation for each future year.

The results module is the tool used to summarise these detailed outputs and develop information for use by the Department, and produce the total lifetime costs and class level results presented in this report.

Further information on the valuation method is provided in our report "Method Report 30 June 2015 Baseline Valuation", dated January 2016.

2.2 Development of the baseline valuation results

Evolution of the baseline valuation

This baseline valuation has been undertaken over the period from the middle of September 2015 to the end of January 2016. The valuation was developed and implemented with oversight from the Department and the Investment Approach Inter-Departmental Committee (IDC). Input was sought from the Department and IDC on the method and regular conversations were held throughout the development period to consider the information emerging from the analysis and provide expert views on features of the experience.

To facilitate this process the project had the following key milestones:

- 31 October 2015 – development of first draft method report for discussion and input by the Department and IDC
- 23 November 2015 – design forum session to discuss and obtain feedback on the method
- 30 November 2015 – provision of second draft of method report
- 15 December 2015 – provision of draft baseline valuation report, the purpose of which was to start documenting the assumptions being developed, to explore early insights coming out of the analysis, and to “bring to life” the format for communicating results and outputs from the model. The draft baseline valuation report documented results from the “foundation model” which applied assumptions by age, gender and class.
- 31 January 2016 – provision of final draft of baseline valuation report, which documents the final baseline model incorporating risk-based assumptions.

Staged development of model

The actuarial valuation model has been designed to provide the Department with a comprehensive and flexible platform that can be further developed over time. During the baseline phase, the model has been built in stages, adopting a “try, test, learn” philosophy from the start, in collaboration with the Department. It will continue to evolve over subsequent valuations.

The model to date has been built in stages by:

- First developing a simplified version of the model which contains each of the main modules but calibrated with assumptions which only reflect each person’s age, gender and starting class. We refer to this as the foundation model and the assumptions used as foundation assumptions.
- Then refining each module to include more detailed information on each person’s individual characteristics and welfare history. This included extending the population module to include the full range of person characteristics included in the baseline model (discussed further in section 4) and undertaking detailed analyses to refine key parts of each set of assumptions to reflect these individual characteristics and the person’s welfare history in the model assumptions.

This approach was valuable as it allowed us to progress quickly to a view of the overall costs and understand the relative contribution of each population segment and payment category. With a limited window of time for model development this helped ensure that the complex modelling effort was focussed on the more important assumptions. In preparing the final baseline model it has been necessary to balance the time and complexity required to introduce each risk characteristic, with the need for robust, timely results. As agreed with the Department, during this phase of work we have applied the principle of “optimising” the utility of the model without compromising its quality or the timeliness of its delivery. This has resulted in us continuing to adopt foundation assumptions in a number of areas where we considered the risk based models to be of less value, or where data was sparse. These areas are discussed throughout the report, and we note that risk based models underlie the majority of the estimated total lifetime costs.

The foundation model and assumptions provided additional benefit in that they assisted with the risk management and model validation by providing a model form that was easy to replicate and check and could then form a point of comparison for the final more complex risk based model. Further, the foundation assumptions are in a form that is practical to present and visualise, and this was useful in supporting the discussions we had with the Department on the past experience.

The model will continue to be further developed in conjunction with the Department over the remaining years of PwC’s contract, refining the analysis and exploring the use of more data. The priorities for model improvement ahead of the next (30 June 2016) valuation will be discussed and agreed with the Department and IDC.

As the model evolves to include more detailed risk factors, the total lifetime cost would be expected to remain similar; however it will differentiate more between groups of people and achieve greater accuracy in the average lifetime cost information for increasingly refined groups.

3 Data

A pre-requisite for the implementation of the method is the availability of administrative system data which:

- is at an individual person level,
- shows the payments made to each person, and
- provides longitudinal information about each person's life situation and other characteristics.

This data needs to be complete and accurate so that it can support a model which is reliable and trusted.

The method also requires information about the people in the rest of the population and their characteristics.

3.1 Data provided by the Department

The Investment Approach Taskforce has developed a longitudinal data suite to support its work. This has been developed from administrative data extracted by the Taskforce from the Department of Human Services. It consists of a large series of datasets which contain the information required for the analysis.

The data includes:

- Entitlements data for regular payments, one-time payments and family tax benefit (178 individual datasets).

This information is captured on an episodic basis with records for each payment type provided to each person and details of the start date, end date and payment rates applying. These rates relate to the actual amounts that people were entitled to receive during the episode of entitlement, not the confirmed amounts that people did receive in the period. The payment types are identifiable through a combination of appropriation and payment type codes.

- Characteristics data for a large number of different characteristics (81 individual datasets).

This information relates to the individual characteristics of payment recipients with data items being captured as relevant for each payment type. It is captured at the point of application for payments and updated as new information is received.

The data extracted covers the 14 financial years from 2001/02 to 2014/15. We have not used earlier time periods as we have been advised by the Department that the information that is currently included in the longitudinal data suite for earlier time periods is of limited completeness and quality.

The extracted data represents a selection of the data available in the Department of Human Services' Enterprise Data Warehouse. The selected data includes detailed historic entitlement information as well as higher priority historic demographic information. Moving forward, the Department and PwC are identifying areas to enhance the modelling dataset. As more questions are asked of the model, and as the sophistication of the questions asked also increases, the analysis of more detailed historic data is likely to be required. The data extraction and inclusion process will be one of continuous improvement.

Maturity of data

The data was extracted with an 'as at' date (the date at which data is cut-off) of 30 June 2015 (aligning to the valuation date) and an 'as known as' date (the date to which information known is recorded) of 30 June 2015.

The selection of 30 June 2015 as the 'as known as' date gives rise to the possibility of new information being received after this point in time which changes the data and in particular that for the most recent financial year. We reviewed the historic data to examine the magnitude of this and also considered previous studies on data maturity undertaken by the Department.

These investigations indicated that there are very significant maturity issues for Family Tax benefits, child care benefit and child care rebate as people's entitlements for all these payment types are updated as new claims are made and information for existing claimants updated as people submit their tax returns. It would be necessary to wait until the end of September or later to obtain materially more complete data for these payment categories.

There is also the potential for more minor immaturity issues in other payment types as a result of a number of factors, including: people making applications for payments which then take time to be approved and the payments subsequently being backdated; time taken to adjust partial payments as people provide information

on their income; changes as people have payments suspended or reinstated; and late reporting of deaths. The analyses suggest factors result in the numbers of people receiving each income support payment to vary by 1-2% between those immediately being observed as receiving payments for any fortnight and a retrospective view of this. A significant part of the change relates to people moving between payment types rather than on and off benefit. These data changes occur gradually over a number of months. We also note that the change in the numbers of people receiving these income support payment types would be somewhat less when considered over a full financial year rather than for a single fortnightly payment period.

The 'as known as' date of 30 June was selected after consideration of the Department's requirements for timely results and consideration of the patterns of future changes to the data beyond the date chosen which indicate that a three month lag would be needed to resolve the most major impacts.

The maturity issues have instead been managed through development of modelling classes which recognise the delay in receipt of information for Family Tax benefits and child care benefits (see section 4.4); through the careful selection of the time periods over which the experience has been analysed in developing assumptions; and through making some adjustments to the population data reflect the undercount of FTB and child care in the 2014/15 records.

We note that this type of data maturity issue is quite common in actuarial work. Analysis to date has highlighted areas where the data maturity should be considered further for future valuations. PwC are working with the Department in order to improve on the process and consider any further adjustments which could be made to allow for the maturity issue.

Manipulation of the data

A number of the tables from the longitudinal administrative data have been used to construct a consolidated longitudinal modelling data set to support the actuarial analysis. This consists of one record for each person for each financial year during which they are in the payment system, and each financial year subsequent to their death or exit from the system. The records reflect the information for a financial year and contain:

- A unique but confidentialised identifier for each person
- Details of a number of static variables (e.g. date of birth) for the individual
- Details of a selected number of the individuals characteristics as at 30 June each year
- Details of the entitlements paid over the financial year mapped to the payment types proposed for modelling purposes
- A number of derived variables for use in modelling (e.g. model class, duration in class, age pension qualifying date).

This is the primary data source used to develop information for current people in receipt of Commonwealth welfare payments and for people who have recently exited the system.

All personal data used here was de-identified prior to its use in this project, in order to help maintain the confidentiality of personal data. The de-identification of this data involved the Department scrambling the person-identifier attached to each record as well as excluding sensitive information such as names, detailed address information, and Australian Business Numbers.

Mapping of payment entitlements

The payment data provided by the Department includes information whose purpose is explained through a combination of 3 codes of which there are circa. 1900 combinations.

PwC have worked together with the Department's staff to map these codes into a number of payment types for consideration for modelling. There are around 100 payment types that were considered in this process.

Data items included for baseline valuation

The construction of this longitudinal modelling dataset was a very substantial task in itself. The format of the source data was such that each variable included needed to be developed on a stand alone basis before being compiled into the main dataset. Variables also needed to be assessed for completeness and grouped into sensible levels for modelling.

For the baseline valuation we have focussed the data development on developing the entitlement data and a limited number of key characteristic variables which were identified as important for modelling purposes.

Reconciliation and validation of data

The information extracted from the administrative data suite has not been audited by PwC.

We have however undertaken a high level reconciliation of the payments and examined the information for internal consistency prior to its use. The reconciliation covered the last four years of payments and checked the payment information extracted against the Department's financial reporting information. At an overall level the data reconciled within 1% for all years except 2014/15. For 2014/15 the majority of the difference is explained by timing differences related to the Family Tax Benefit.

We have also worked with staff from the Department to perform quality assurance checks on the process of extracting and manipulating the data. Any issues identified through this process have been resolved prior to the data being used for developing the valuation results.

The department has indicated that it will undertake further validation and assurance work in relation to the ongoing validation of data.

3.2 Other data sources

ABS Data

We have used data from the 1% Confidentialised Unit Record File (CURF) from the 2011 Census² in developing the population dataset. The CURF contains information about individuals, dwellings and families and these can be linked. We have used all these information sources.

We have also drawn on a number of other Census summaries extracted using TableBuilder³, a tool developed by the ABS for providing Census information.

HILDA Survey Data

The Household, Income and Labour Dynamics in Australia (HILDA) Survey is a household-based panel study which began in 2001 and is managed by the University of Melbourne. It collects information about economic and subjective well-being, labour market dynamics and family dynamics. Information is collected annually through interviews with all adult members of each household. The survey covered around 7,500 households and 14,000 individuals in wave 1 with around 5,000 additional people being included in wave 11.

We have used the HILDA survey in developing the demographic assumptions described later in the report.

Life tables

We have referenced the Australian Life Tables 2010-12⁴ in developing the mortality assumptions used in the valuation model. These life tables are based on the mortality of male and female Australians over the three calendar years centred on the 2011 Census of Population and Housing (the Census). These life tables are developed by the Australian Government Actuary.

Other information sources

We have also used a number of other sources of information in developing our model and the assumptions. These are discussed in the relevant sections of this report and include economic data and forecasts, population projections and details of the welfare system and payment design, the eligibility criteria and indexation rates applying.

² ABS 2011 Census of Population and Housing, undertaken 9 August 2011.

³ <http://www.abs.gov.au/websitedbs/censushome.nsf/home/tablebuilder?opendocument&navpos=240>

⁴ http://www.aga.gov.au/publications/life_table_2010-12/

3.3 Data limitations

The data, though extensive, has a number of limitations, and we highlight below a number of important observations in this regard:

- Reliability:
 - The Department’s data is only updated when welfare recipients provide new information as part of the process of applying for payments, and various fields may therefore not be up to date.
 - Many of the variables are self-reported and as such may be subject to errors or issues arising from misunderstanding the information being sought.
 - As noted above, a subset of the Department’s data is known to be immaturely developed due to the ‘as known as’ date being 30 June 2015. Whilst the selected valuation methodology compensates for the major maturity issues, it is not possible to make adjustments to reflect all of the potential areas where the data matures. In particular there may be a small number of people who are not recorded within the current welfare recipient population who are later identified as having received an entitlement during the most recent year and hence falling within one of the current welfare recipient classes.
- Completeness:
 - Some variables are only available for subsets of the welfare recipient population as they are only relevant to certain payment types. As an example, level of educational attainment is only available for some welfare recipients.
 - Other variables are missing, even where relevant, for example, indigenous status.
- Limitations of Census CURF data:
 - This data contains a limited number of variables and some of these are defined in a broad way (e.g. age band rather than age). Whilst we have attempted to overcome these limitations through the modelling (see section 6) it would be preferable to have a greater level of detail in the source data.
- Data information and controls:
 - The longitudinal data suite that has been developed recently to support this project and is still in its infancy. This means that there is a greater chance that features of the data are less well understood than would be the case if it had been established and in use for an extended period of time.
 - We understand that the Department has mitigated this risk through independent validation of the coding of data extraction and upload processes. As noted above the PwC team has worked with staff from the Department to reconcile the data and undertake quality assurance checks on samples against source information. Notwithstanding, there remains an opportunity to develop more formal and comprehensive control processes for the longitudinal data suite.
 - Over time, as the project progresses and as we continue to work closely with the Department, we will gradually develop a fuller understanding of the control processes supporting the extraction of data. This may lead to improvements being made to the information within the longitudinal data suite and our interpretation and use of it.

3.4 Summary of the data used for assumption development

The main data sources used to develop the model assumptions are shown in Table 2 below.

Table 2: Social security data used for assumption development

| Assumption Set | Specific individual assumptions | Information sources |
|---|--|--|
| Policy settings | Eligibility criteria for each payment type Payment structures for each payment type Policy change impacts | DSS summary information Centrelink payment guides Legislation |
| Demographic assumptions | Mortality Partner status Having children (fertility, taking on care of children) Education status | DSS data Population statistics Life tables Research on population experience HILDA Survey |
| Welfare class movement assumptions | New entrants to the payment system Movements between welfare classes Exits from the payment system | DSS data Supplemented by information on benefit design Modelled mortality |
| Payment utilisation assumptions | For each payment category and people in each class | DSS data Supplemented by information on benefit design |
| Payment assumptions | For people receiving payments in each payment category | DSS data Supplemented by information on benefit design |
| Economic adjustment assumptions | Assumptions are planned to be used to adjust the underlying assumptions (items 1-4 above) to reflect current and expected future economic conditions | Economic forecasts Past economic data and DSS data Research on past experience and any other relevant experience |
| Economic assumptions | Indexation Discounting | External economic data Referencing information on benefit design |

4 Model population

4.1 Scope of population

The scope of the population for the baseline valuation includes all Australian residents at 30 June 2015 and overseas welfare recipients who received a payment in the 2014/15 year.

Future migrants and unborn children are not included in the model, but will appear in future valuations once they migrate or are born, and at that time will contribute to an increase in the total lifetime cost.

The valuation model allows for the impact of future children on the likelihood and size of welfare payments for members of the model population, but does not estimate the future liabilities for the unborn children once they are eligible to receive welfare payments in their own right.

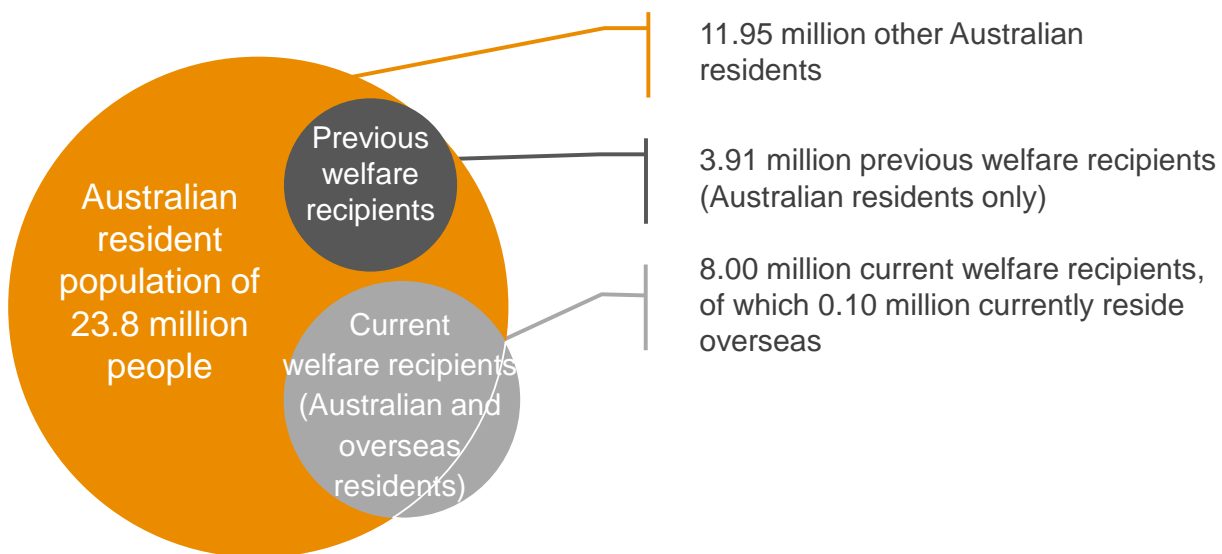
The valuation model allows for new entrants to the welfare payment system in each future year to be drawn from the model population, including existing children. The reporting of the costs for these future new entrants is discussed in Section 8.1.

4.2 Summary of current population

The Australian estimated resident population at 30 June 2015 is 23.8 million people.⁵

The model population is 23.9 million people; this is slightly larger than the resident population owing to the inclusion of overseas residents who currently receive welfare payments as represented below.

Figure 12: Population at 30 June 2015



⁵ Source: ABS – 2014 estimated resident population projected to 2015 by PwC

4.3 Development of model population dataset

Australian resident population

A full synthetic dataset was developed to represent the 2015 Australian resident population. This was done by:

- 1 Expanding the 2011 Census sample population from 1% to 100%.
- 2 Adjusting the population from the enumerated population (those covered by the 2011 census) to the 2011 estimated resident population. This adjustment allows for people overseas on census night and for the net undercount in the census.

- 3 Adjusting the population further to represent the 2015 estimated resident population.

This step included adjustments for ageing the population and for changes arising from migration.

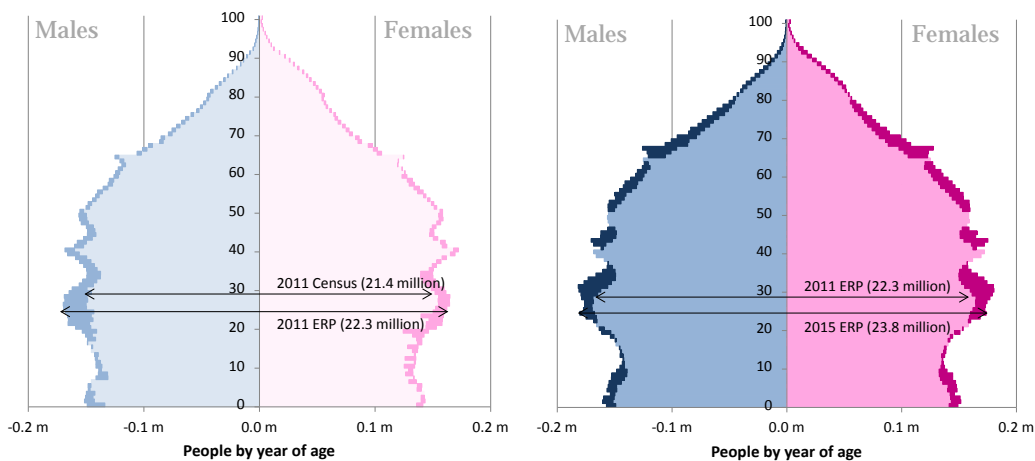
- 4 Enhancing the population using statistical imputation referencing external data to produce a synthetic dataset which is representative of the population.

This step was required as some important characteristics were either not available or have limited detail in the original data. Specifically, indigenous status was not available on the original data and so was imputed; age was expanded from 5 year age bands to individual ages and a more detailed location was also imputed.

Imputation was also used to establish variable information for individuals for whom the census response was 'not stated'.

The populations generated through the first three steps of this process are illustrated below.

Figure 13: Illustration of creation of 2015 ERP (steps 1 to 3)



2011 census (light colours) => 2011 ERP (mid colours) => 2015 ERP (dark colours)

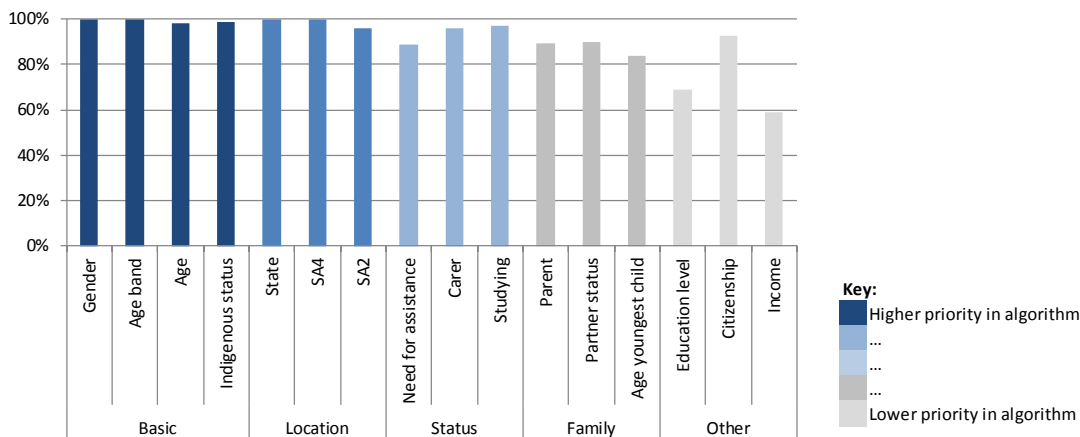
Model population

The model population data has been developed from the dataset with synthetic records for the 2015 estimated resident population and the latest data for people in receipt of Commonwealth welfare payments.

The development process was performed using an algorithm which replaced records for synthetic people in the population data with records for actual people in receipt of Commonwealth welfare payments. In deploying this algorithm a range of characteristics were considered in order to identify the best available records for replacement.

The figure below illustrates the extent to which records with common characteristics were identified for replacement.

Figure 14: Proportion of replaced records with common variable values



Owing to the synthetic nature of the population data and the likelihood of missing or inconsistent information in the data for people in receipt of Commonwealth welfare payments, we did not expect to achieve common values across all variables.

The objective of this replacement process was to ensure that both the component for people in receipt of Commonwealth welfare payments and the residual non welfare recipient component of the final population retained a realistic profile in terms of the important demographic characteristics.

As part of this stage of work we imputed a number of variables within the DSS records where the welfare recipient data had missing values by reference to the synthetic population data. The variable for which this step had the biggest number of imputed values was the level of educational attainment. This variable was complete for the majority of younger people in the DSS data but was missing for many older people.

Recent exits

Given the importance of previous welfare utilisation as an indicator of likely future welfare utilisation it is important to ensure the model population dataset identifies people who have recently exited the payment system.

In developing the population data records for this group there is a trade-off between retaining actual DSS records which have the advantage of being longitudinal but may now be out of date, and using synthetic population records which reflect the current population profile but lose the longitudinal information for the person who has exited.

We have balanced these considerations and used the following approach to develop population records for this group:

- For people who exited within the last 3 years: we have referenced DSS administrative data directly in developing the population records. A similar approach as described above for current welfare recipients was used to replace synthetic population records with these records for recent welfare recipients.
- For people who exited the payment system more than 3 years ago: we have represented them by identifying synthetic populations records with the same age, gender and indigenous status and assigned past welfare history information to these representative records.

4.4 Model segmentation

From our previous experience and research we know that past and current receipt of welfare is a very strong predictor of future receipt of welfare. For example, some groups of payment recipients have few exits and it is highly likely a current payment recipient would also receive the payment next year.

Therefore, we have created broad welfare class groupings which reflect each person’s life situation and use of welfare for consideration in the modelling. There are twelve **welfare classes** to which a person can belong and people are assigned to a unique class each year. These are summarised in Table 3 below.

Table 3: Welfare classes

| Active – income support (IS) | Active – non income support (Non-IS) | Inactive classes |
|------------------------------|--------------------------------------|-------------------------------|
| 1 Studying | 7 Non IS Family | 10 Previous welfare recipient |
| 2 Working Age | 8 Non IS Carer | 11 Dead |
| 3 Parenting | 9 Non IS Other | 12 Rest of Aust. population |
| 4 Carers | | |
| 5 Disability support | | |
| 6 Pension Age | | |

These classes have been defined by reference to the welfare types currently being received; however the types have been grouped so that the classes are more a reflection of an individual's life situation than that of the detailed payment type structure per se. Most of the welfare classes contain people who receive one or more of a number of payment types. For example the Studying class contains people who received either Austudy, Abstudy or Youth allowance (students). Further details on how the class variable is set for people receiving different payment types are provided in the table below:

Table 4: Mapping of payment types to welfare classes

| Active – income support | Active – non income support | Inactive classes |
|--|--|--|
| 1 Studying People receiving: <ul style="list-style-type: none"> • ABSTUDY Secondary • ABSTUDY Tertiary • (all ABSTUDY except working) • Austudy Payment (except Austudy working) • Youth Allowance (Students) | 7 Non IS Family People receiving one or more of the following in the previous year but not currently receiving a carer payment: <ul style="list-style-type: none"> • Family Tax Benefit • Child Care Payments • Dad and Partner Pay • Double Orphan Pension • Family Supplements • Family payments • Parenting Payment supplements • Maternity Payments • Schoolkids Bonus • Single Income Family Supplement • Stillborn Baby Payment • Parental Leave pay | 10 Previous welfare recipient People who were previously in one of classes 1 to 9 but are not for the latest year. |
| 2 Working Age People receiving: <ul style="list-style-type: none"> • Special Benefit • Newstart Allowance • Partner Allowance • Sickness Allowance • Widow Allowance • Youth Allowance (Other) • Austudy (working) • ABSTUDY (working) | 8 Non IS Carer People receiving any other carers payment, specifically <ul style="list-style-type: none"> • Carer Allowance, • Carer Supplement or • Child Disability Assistance Payment | 11 Dead People who have died during the previous year or in prior years. |
| 3 Parenting People receiving: <ul style="list-style-type: none"> • Parenting Payment (Partnered) • Parenting Payment (Single) | 9 Non IS Other People receiving payments but not in any other class. | 12 Rest of Aust. population Rest of modelled population. |
| 4 Carers People receiving: <ul style="list-style-type: none"> • Carer Payment | | |
| 5 Disability support People receiving: <ul style="list-style-type: none"> • Disability Support Pension | | |
| 6 Pension Age People receiving: <ul style="list-style-type: none"> • Age Pension • Widow B Pension • Wife Pension | | |

The classes are defined in a hierarchical way so that any person in receipt of any income support payment during the financial year will be assigned to one of the active income support classes. People receiving more than one type of income support payment during a year will be assigned to the most recent and relevant class. For example, a 65 year old person who received the Disability Support Pension for the first 7 months of the year and the Age Pension for the last 5 months will be assigned to class '6 Pension Age'. Alternative assignments are possible, for example based on most days in class or on an agreed prioritisation. The payment data was reviewed and it was noted that studying, working age and parenting payments had the greatest overlaps and in practice these payments could be received in any order. This review of the data, together with consideration of the planned model design, suggested that using the latest payment was the most appropriate approach.

Note that individuals are assigned to a single class as discussed above, however the model can allow for individuals to utilise multiple payment types over a year, as appropriate.

People not receiving income support payments will be assigned to non-income support classes '7 Non IS Family', '8 Non IS Carer' and '9 Non IS Other'. These are also defined hierarchically in the following order of precedence: carer, family, other. The remainder of the population will be assigned to one of the inactive classes. This hierarchy will ensure that each person is assigned to a unique class for each year.

For FTB and family payments, because payments can be received as part of an income tax assessment post 30 June relating to a previous year, some people who are eligible for 2014-15 payments would not yet have relevant data recorded as at 30 June 2015. For modelling purposes, it is important that classes for a given year are not expected to change significantly as future data becomes available. In order to provide this stability, people are assigned to class '7 Non IS Family' based on whether they are eligible for family payments in the previous year instead of the current year.

Consequently, new welfare entrants eligible for family payments for the first year will be assigned to class '9 Non IS Other', moving to class '7 Non IS Family' in the second year. People who are no longer eligible for family payments will remain in class '7 Non IS Family' for a year before they move to class '10 Previous Welfare Recipient'.

Welfare class examples and considerations

The steps in assigning each person to a class are as follows:

- If an individual received an income support payment at any point during the year, then their class at the end of the year is determined by their most recent income support payment, with reference to the payment mapping in Table 4.
- If an individual did not receive an income support payment but received a non-income support payment, their class is as follows (again with reference to the payment mapping in Table 4)
 - 08 Non-IS Carer if any carer payment was received during the year; if not then
 - 07 Non-IS Family if any family payment was received during the previous* year; if not then
 - 09 Non-IS Other
- If an individual did not receive any payment at all during the year, then their class is either 10 Previous Welfare Recipient, or 12 Rest of Aust. Population
- An individual is only in 11 Dead if he or she was not alive at any point during the year.

* For FTB and family payments, because payments can be received as part of an income tax assessment post 30 June relating to a previous year, some people who are eligible for 2014-15 payments would not yet have relevant data recorded as at 30 June 2015. For modelling purposes, it is important that classes for a given year are not expected to change significantly as future data becomes available. In order to provide this stability, people are assigned to class '7 Non IS Family' based on whether they are eligible for family payments in the previous year instead of the current year.

The following examples illustrate the treatment of individuals in the class structure under hypothetical scenarios.

Example 1: No payments received for 2013/14, Newstart Allowance received for 2014/15 – Individual entered the system during the year as no payments were made in 2013/14 but a payment was made in 2014/15. Individual enters into class 02 Working Age at June 2015 as Newstart Allowance is in this class.

Example 2: Carer Allowance received for 2013/14, no payment received for 2014/15 – Individual was in class 08 Non-IS Carer at June 2014 and exits the system, moving to Class 10 Previous Welfare Recipient at June 2015.

Example 3: FTB amounts received for 2014/15, FTB amounts were also received for the previous two years – Individual allocated to class 07 Non-IS Family at June 2014 and June 2015.

Example 4: FTB amount received for 2014/15, no payments received for 2013/14 – Individual allocated to class 09 Non-IS Other at June 2015 as no family payment was made in the previous year. Individual was inactive in 2013/14 so this is an entry into the system.

As can be seen the class of an individual depends on the payments over a full year. We have discussed below how changes in different circumstances will be reflected in the class of an individual, and the timing of this:

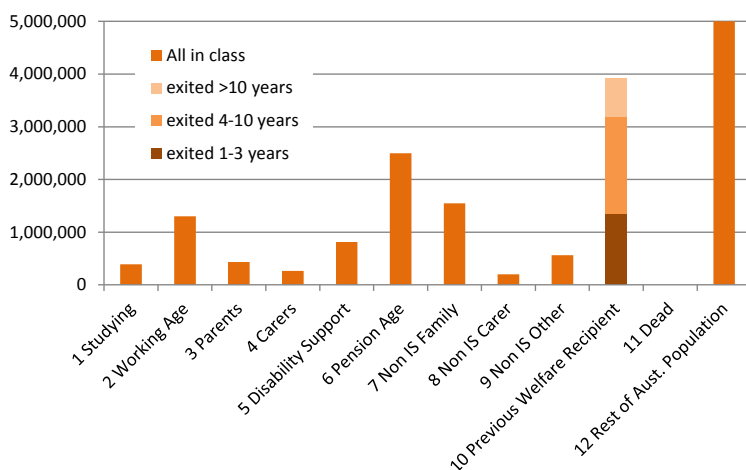
- A move from one income support class to another income support class during the year will be immediately reflected in an individual's class status at the current year end
- A move from a non-income support class to an income support class during the year will also be immediately reflected in an individual's class status at the current year end
- Exits from an income support class during the year to a non-income support class will not be reflected in an individual's class status until the following year end
- Exits from the welfare system, from either income or non-income support payments, during the year will not be reflected in an individual's class status until the following year end

There is a practical consideration that these features should be considered when conducting any programme evaluation, and in particular how quickly changes in payments will be reflected by class movements. In these circumstances, supplementary analysis or consideration of other model outputs may be of use.

Summary of model population by class

The model population split by class is as follows.

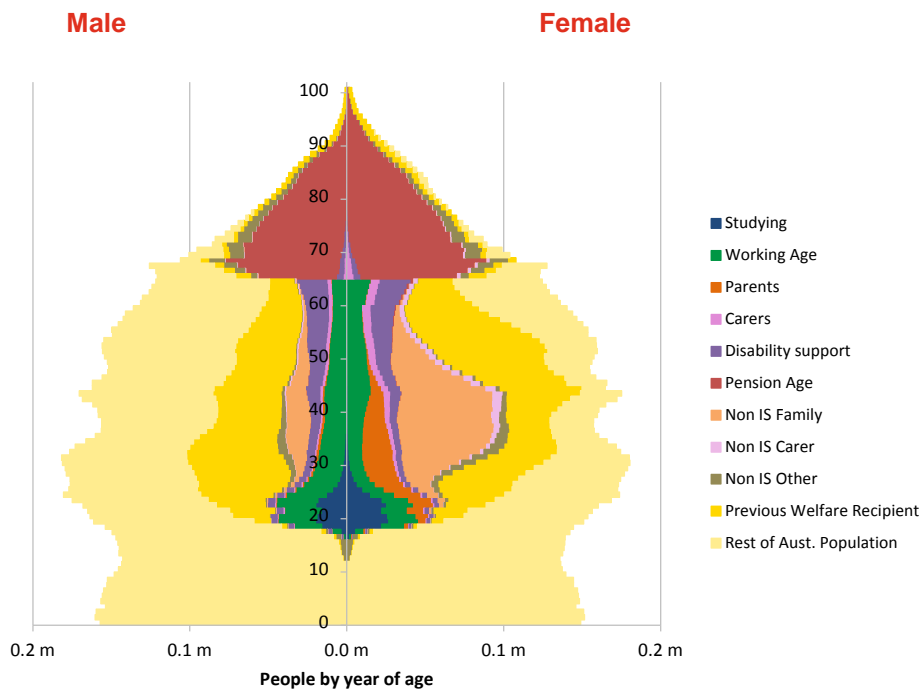
Figure 15: Model population by welfare class



Note: Class 12, the rest of the Australian population is much larger than other classes and has not been shown in full in the chart. It contains 11.95 million people

It is interesting to consider how the current welfare recipients relate to the whole population i.e. which groups of the population are people in receipt of Commonwealth welfare payments. We have used a population pyramid which shows the composition of the population by age and gender to illustrate which people fall into each class and to show the proportion of each group who are current welfare recipients.

Figure 16: Model population with class utilisation (June 2015)



We can see that:

- a large proportion of over 65's are people in receipt of Commonwealth welfare payments (as would be expected)
- people only generally access the payment system directly from their late teens onwards
- there is a significant group of females and a smaller group of males receiving Parenting payments or 'Non IS Family' payments (which is primarily FTB and/or child care payments)
- there is a slight increase in payment utilisation in the years leading up to retirement age
- there are other differences in payment system utilisation between genders – which may relate to the variation in roles performed by each gender, differences in longevity and differences in lifetime incomes.

4.5 Approved care organisations

The welfare recipient data provided by the Department included records for 18,700 Approved Care Organisations (ACOs) which receive some FTB payments.

An ACO is eligible for FTB for a child if:

- the child is an Australian resident who is a client of the organisation, and
- the child is not claiming a pension, benefit, labour market program payment or prescribed educational scheme payment themselves, and
- no one else is claiming FTB for that child, and
- the child is either aged under 16 years or aged 16 to 19 years (up to the end of the calendar year in which they turn 19) and a senior secondary school child.

The vast majority of these organisations (99%) are not current welfare recipients, having exited in 2009 or 2010. The total payments to them reduced from approximately \$1.5 billion per annum in 2008 and prior to the much lower figure of approximately \$2 million per annum in recent years.

Following discussions with the Department and recognising the very low ongoing expenditure on payments to these organisations we have excluded them from the results developed and presented in this report.

5 Scope and categorisation of payments

5.1 Scope of payments

During the 2014/15 year the Department was responsible for \$109.1 billion of entitlements.

PwC have worked together with the Department's staff to define which payments should be in scope. There are around 100 payment types in the data of which around 80 were determined to be in-scope. These represent the vast majority of the recent payments, with \$108.8 billion included in the scope of this valuation.

Payment types were excluded if they were for payments that have been discontinued or replaced, for example the Baby Bonus and Back to School bonus were excluded as were some supplements that have been out of use for many years.

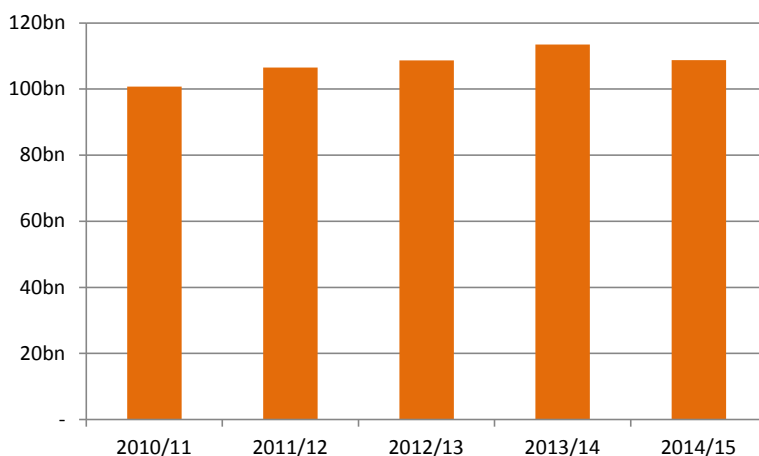
The list of in-scope payments being valued is provided in Table 6 and Table 7 in Section 5.2 and generally includes payments for which the Department has policy responsibility as at 30 June 2015; including income support payments to both working age people and age pensioners, family payments, and various supplementary payments and allowances.

The scope does not include veterans' payments, concession card benefits, aged care payments or payments under the National Disability Insurance Scheme (NDIS) (note this list is not exhaustive).

The main recent payment types excluded are the Baby Bonus⁶ and Seniors supplement⁷ both of which are discontinued and flexible support payments which are outside of the policy responsibility of the Department.

The total amount of in scope payments paid in each of the last five financial years is shown below.

Figure 17: In scope payments by financial year 2010/11 – 2014/15



Note: the payments are slightly understated for the most recent year as some of the family tax benefit payments and much of the child care benefit payments are made after the end of the financial year.

5.2 Payment type categorisation

The payment types have been grouped into 17 broader payment categories for modelling in the valuation. The amounts of payments received by each person within each category are considered in building the valuation models and setting the assumptions. This categorisation is intended to achieve a balance between the benefit of the valuation model capturing the different features of each payment and the costs of having the additional

⁶ Only available for children born or placed for adoption before 1 March 2014

⁷ Ceased 20 September 2014

complexity of more payment categories in the model. We considered the following criteria for grouping payment types into categories:

- The purpose of the payment
- The eligibility criteria and target group
- The indexation regime applying
- The importance of the payment within the whole system: its relative size in terms of expenditure and the number of people receiving payments

In general we have separated supplements from the main pension payments as these are often subject to different indexation and, as not all pension recipients will receive all the supplements, it allows for cleaner modelling (especially of the main payment). The resultant payment categories are as follows:

Table 5: Payment categories

| Income support (IS) |
|---|
| A - IS Studying |
| B - IS Working Age |
| C - IS Parents |
| D - IS Carer |
| E - IS Disability |
| F - IS Age |
| G - IS Dependent |
| Non income support (Non-IS) |
| H - Other FTB |
| I - Other Family |
| J - Other New Parent |
| K - Other Living (for specific supplements such as Energy Supplement and Rent Assistance) |
| L - Other Health & Disability |
| M - Other Carer |
| N - Other Study & Skills |
| O - Other Remote & Regional |
| P - Other General Allowances (for general pension supplements) |
| Q - All Other |

Note that whilst people are in a single class for each year they may receive payments from a number of different payment categories during that year.

The details of how the individual payment types have been grouped into each payment category are shown in Table 6 and Table 7 overleaf:



Income support payment categories

There are seven income support payment categories which capture the main financial supports provided when people are of pension age or of working age and either not able to work or not able to find work. People can only access one of these payment types during each fortnightly assessment period.

Table 6: Components of income support payment categories

| |
|-------------------------------|
| A - IS Studying |
| Abstudy - studying |
| Austudy |
| YA (Student) |
| B - IS Working Age |
| Abstudy - working |
| Austudy - working |
| Newstart |
| Sickness Allowance |
| Special Benefit |
| YA (other) |
| C - IS Parents |
| Parenting Payment - Partnered |
| Parenting Payment - Single |
| D - IS Carer |
| Carer Payment |
| E - IS Disability |
| Disability Support Pension |
| F - IS Age |
| Age Pension |
| Widow B Pension |
| Wife Pension |
| G - IS Dependant |
| Partner Allowance |
| Widow Allowance |

These payment categories align closely with the income support class definitions:

- For the Working Age class people receive some payments in either category B or G.
- For the other five income support classes everyone in the class receives some payments in the related payment category. For example everyone in class 3 Parenting receives some payments in category C.

Non income support payment categories

There are ten non income support payment categories which capture the other supplements, allowances and payments provided. These include pension supplements, major payments such as Energy Supplement, Family Tax Benefit, child care payments and a large number of smaller payments.

Some of these payments are paid regularly throughout the year and may be received alongside an income support payment; others are one off payments or link to the tax system.

People can access many of these payment types (and hence categories) during a year and some payment categories such as K – other living and P – other general allowances are utilised by a high proportion of the people in receipt of Commonwealth welfare payments.

Table 7: Components of non-income support payment categories

| |
|--|
| H - Other FTB |
| Family Tax Benefit A |
| Family Tax Benefit A Supplement |
| Family Tax Benefit B |
| Family Tax Benefit B Supplement |
| Large Family Supplement |
| Family Tax Benefit - old |
| I - Other Family |
| Child Care Payments |
| Double Orphan Pension |
| Schoolkids Bonus |
| Single Income Family Supplement |
| Child Care Benefit and Child Care Rebate |
| Multiple Birth Allowance |
| J - Other New Parents |
| Dad and Partner Pay |
| Maternity Payments |
| Newborn Payment |
| Parental Leave Pay |
| Stillborn Baby Payment |
| K - Other Living |
| Energy Supplement |
| Living Allowances |
| Pharmaceutical Allowance |
| Rent Assistance |
| Residential Costs |
| Telephone Allowance |
| Utilities Allowance |
| Incidentals Allowances |
| L - Other Health & Disability |
| Mobility Allowance |
| Essential Medical Equipment Payment |
| Incentive Allowance |
| Youth Disability Supplement |
| M - Other Carer |
| Carer Allowance |
| Carer Supplement |
| Child Disability Assistance Payment |
| Carer Supplement - old |

Non-income support payment categories, continued

N - Other Study & Skills

- CDEP Supplement
- Education Supplements
- Fares Allowance
- Relocation Allowances
- Training supplements
- Education Entry Payment
- Language Literacy & Numeracy Supplement
- Pensioner Education Supplement
- Relocation Scholarship
- School Fees Allowance
- School Term Allowance
- Student Start-up Scholarship
- Work for the dole
- Work Program Supplement

O - Other Remote & Regional

- Assistance for Isolated Children
- Remote Area Allowance

P - Other General Allowances

- General Supplement
- Income Support Bonus
- Low Income Supplement
- Income Management
- Pension Supplement
- Pension Bonus Scheme Payment
- Pension Bonus Top-Up Payment
- Pensioner Loan

Q - All Other

- Bereavement Allowance
- Bereavement Lump Sum
- Crisis Payment



6 Assumptions

6.1 Overview of assumptions

This section details the nature of the main assumption sets and explains how each is used in the model. These comprise: the policy basis, flow assumptions, welfare utilisation assumptions, payment assumptions and economic assumptions.

The purpose of each of these sets of assumptions is as follows:

- **Policy setting basis** is used to determine the payments included in the valuation and their related eligibility criteria and payment structures.
- **Flow assumptions** are used to ascertain how each person's individual demographic and risk characteristics change as time progresses.
- **Welfare utilisation assumptions** are used to develop the assumed probability of each individual in the population receiving each category of payment in each future year. They are developed by considering:
 - **welfare class movements** (how people move in, between and out of welfare classes).
 - **payment utilisation** of people within each welfare class for each payment category.
- **Payment assumptions** are used to assess the actual amount of payments made within each payment category once we have determined that an individual is accessing that payment.
- **Economic and forward looking adjustments** are used to support the welfare utilisation assumptions; to ensure the model reflects the current economic climate and can be used to understand the potential impact of changes to the external economic environment. Other forward looking adjustments allow for changes which have not been reflected in historic data, for instance if there has been a policy reform.
- **Economic assumptions** are used here for:
 - Indexation – consideration of how the average payments within each payment category will change in future years.
 - Discounting – developing lifetime costs as the net present value of the future payments. Discounting is used to adjust projected future payments to be in present values. This recognises the time value of money (i.e. 'a dollar today' is worth more than 'a dollar next year' as the money could be invested to earn income).

The considerations and approach used for developing each of these sets of assumptions is discussed in the remainder of this section and the main factors considered in each set of assumptions are listed in Appendix C.

6.2 Policy basis

The actuarial valuation reflects the policy as legislated at the valuation date. It assumes that these policy settings will persist in perpetuity.

This means that future changes in payment design or eligibility have been included in the valuation if the related legislation is in place; however changes that are still being debated are not included.

By way of example, we have allowed for the increase in retirement age from 65 to 67 which will occur over the period from 1 July 2017 to 30 June 2023 and the change in pension asset test which will come into effect from 1 January 2017. However we have not included the child care reforms currently being debated.

We have summarised the main future policy changes in Appendix A. The approaches used for implementing these within the model are as follows:

- Pension age changes have been modelled through explicit modelling of each individual's pension age and the setting of assumptions for the timing of entry onto the age pension relative to pension age.
- Changes to the pensions asset test impact on all pensions and allowances.
 - These have been modelled for age pensioners through explicit identification and allowance for people likely to exit aged pension at the point in time that this legislation takes effect; through adjustments to age

pension entry rates applying after the change; and through adjustments to the average size of payments to pensioners remaining after the change.

- For other pensioners and those people in receipt of allowances the impact is much smaller and the expected impacts have been allowed for in the valuation model through small adjustment to the overall cost of the other pensions and allowances.
- Changes to the treatment of defined benefit superannuation streams have been modelled through an explicit adjustment to the average size of payments to pensioners.
- The changes to Schoolkids Bonus and Income Support Bonus which have their last instalments in July and September 2016 respectively have been allowed for through explicit adjustments to the level of payments in the relevant payment categories.

Where changes have been made to other areas of Government policy which may ultimately have an impact on welfare utilisation we have not made any allowance for the impact at this stage. An example of this would be the introduction of the National Disability Insurance Scheme (NDIS) which provides assistance to people with disabilities and their carers. Over time this may reduce the extent to which these groups of people draw on supports from the social security system. These types of policy impacts are challenging to quantify reliably and the timing of the emergence of the impacts is uncertain. Hence for these types of changes our approach will be to reflect the policy impacts as they emerge in and are evidenced by the experience.

6.3 Flow assumptions

Overview of demographic flow assumptions

Demographic models often focus on age and gender, with the driving events of births and deaths. While this model needed to consider these, it needed to do much more.

Welfare entitlements are strongly related to household structures and hence it was critical that the model properly emulate how such structures can change over time. Since the model simulates individuals rather than households, this means that the model had to consider the key household circumstances of each individual.

At this stage in the model evolution, the household structure is defined by the partnership status of the individual and the number and ages of children in their care, as well as the frequently different roles undertaken by males and females. The number of possible structures is substantial and hence the number of possible transitions is enormous. To make this manageable the model used a structural approach by considering:

- Changes in partnership status, that is, changes from partnered to single and vice versa. This is dependent upon age and numbers of children. Given that payment eligibility does not distinguish between married and de facto partners, these have been considered together.
- Changes in care of children:
 - The possible reduction in the number of children in the care of an individual, such as through children becoming independent.
 - The possible increase in the number of children in the care of an individual. Where more than one child is gained, a distribution of ages is simulated. This process can model blended families as well as dependent children returning to the home. The specific case of gaining at least one child of age zero (a new birth) is considered separately to that of gaining children of other ages.

The simulation models the transitions in these characteristics for each individual in each future year, and uses the new household circumstances of the individual to influence future transitions. Note that the nature of the model means that one child may be recorded as being in the care of more than one individual, reflecting joint care.

A key contributor to these demographic flow models was the HILDA (Household Income and Labour Dynamics Australia) data that has tracked over 20,000 Australians over fifteen years, providing unique quantification of the changes that occur in people's lives. Departmental administrative data was used where possible to better characterise individuals receiving payments, where the HILDA data was insufficient and as a constant cross-check for the HILDA data.

We have also modelled mortality and while it is not strictly a demographic property, it was appropriate to consider educational status in this part of the model. The approach for developing each of these characteristics is discussed in turn below.

Further, there are some characteristics which do not change over time (such as a person's country of birth) or change in a predictable way (such as a person's age) and these have also been considered in the simulation model as their effects can be modelled without requiring additional assumptions.

Partnering

A person's partner status is important in determining both their likelihood of accessing payments and the rate of payment applying. For example, the single person Age Pension is more than the partnered Age Pension.

As we know each person's current partner status (partnered or not) we have developed models for the probability of a change in status in the next year. The models reflect the person's characteristics, including age, current partner status, indigenous status and whether they have children. A critical component of this analysis (and the other demographic sub-models) was the recognition that the probabilities of changes in partnership status differ by the welfare class of the individual. Given the reasons for these differences are complex to understand and model, separate models were effectively created for each welfare class.

We have drawn on both the Department's administrative data and the HILDA survey data in developing these assumptions.

Children

Having children is also an important determinant of welfare use. For some payments such as Parenting Payment and Family Tax Benefit there is a direct link to both eligibility and payment levels. For other payments such as the Carers payment, having children increases the likelihood of accessing the payment. In other contexts the age of the youngest child often has a direct effect on the ability to work, particularly for females.

For each person in the model population we have included the children in their care in our model, with their ages. Current children have been identified and included in the person level information. For the forward projection we have developed assumptions for changes to child numbers through use of a series of statistical sub-models reflecting:

- births (single and multiple); and
- gaining one or more other dependent children.

These assumptions allow us to model the number and ages of all the dependent children for each person in each future year. From that it is then possible to derive critical variables, such as the age of the youngest child or the number of children below a certain age that become inputs to subsequent stages in the valuation model. Children have been retained within the model up to the age of 24.

Importantly we have considered 'having recorded dependent children' rather than the natural process of having a child. By this we mean that individuals can take on new responsibility for the care of children as a result of adopting, fostering or helping care for children as well as through childbirth. Similarly people can stop providing care to children as a result of changes in family structures and responsibilities as well as through children leaving home. There may also be subtle differences between the information recorded for people and their actual situation, for example as a result of timing lags in the Department seeking and receiving updated information.

In general the data does not identify the precise nature of changes in child records but the statistical modelling is still able to replicate the relevant features of the changes. For example, the data clearly recorded situations where multiple children were added to an individual, with some but not all aged zero indicating new births. These presumably involve a blending of families occurring at the time of or close to a birth.

The statistical models have been developed by reference to the HILDA survey data that directly recorded these events and have then been validated and refined using the Department's administrative data.

Educational attainment

Whilst there are no direct links to the payment system eligibility, it is hypothesised that a person's level of education is a predictor of their likelihood of drawing on the welfare system. Conversely receiving payments while studying is likely to result in an increased educational level. Hence we have identified this as an important characteristic to include in the valuation model and have captured this through modelling each person's highest level of educational attainment.

This is a dynamic variable changing rapidly as people progress through their school years and potentially continuing to change, albeit at a slower rate, throughout their lifetime. As noted earlier this information has been collected for the majority of younger people in receipt of Commonwealth welfare payments but is missing for many older ones. We have imputed the values for those individuals with missing data. We have developed assumptions for how each person's level of education may change each year, reflecting their characteristics, including current education status, age and gender. Transitions in 'highest level of education' can only be upwards so special care was needed to ensure that the model was realistic with most individuals plateauing at a reasonable level of education, while at the same time reflecting the long term trend of increasing educational attainment in Australia.

The statistical models have been developed by reference to the HILDA survey data and validated and refined using the Department's administrative data for the classes where such data was sufficiently complete, such as for those receiving studying payments.

Mortality

Mortality, or the rate at which people die, is an important element of welfare and population projections. The longer people live, the higher the welfare lifetime cost.

Our approach to mortality assumptions is to cross reference existing published mortality tables where possible, subject to validation with experience from the Department's administrative data. Existing mortality tables contain rates of deaths by age and gender, with improvement factors to estimate the increasing life expectancy over time. The Australian Government Actuary population mortality rates were adopted as a base assumption after considering this comparison, together with 25-year mortality improvement factors.

We then considered mortality differences for sub-groups within the population by undertaking a literature review of existing research. Guided by this, we then analysed subgroups within the welfare recipient population that exhibit higher or lower than average mortality. Below is a list of subgroups where we have adopted separate mortality tables or applied factors to existing tables:

- Disability Support Pension (DSP) recipients – a set of factors by age is applied to the base AGA tables, these factors are informed by experience observed in the administrative data, which shows considerably higher mortality experience for this group
- Indigenous Australians – instead of using the AGA tables, we have used ABS tables specific to Indigenous Australians
- Indigenous DSP recipients – a set of factors by age is applied to the ABS Indigenous tables, informed by experience observed in the administrative data

For a number of the classes the past mortality was observed to be significantly lower than that implied by the AGA or ABS tables. This was investigated and considered to be a result of underreporting of deaths in the administrative dataset. For example, FTB recipients with no obligation to report to Centrelink on a regular basis are more likely to not report a death when exiting the welfare system. We have accounted for this effect in developing our mortality and exit projections.

Given the importance and materiality of mortality to the overall level of welfare costs, we have conducted sensitivity analysis around the impact of adopting different assumptions, namely:

- Adopting ABS tables instead of AGA tables for the base population
- Assuming no mortality improvement in the future, i.e. life expectancy stays the same
- No adjustments for subgroups, i.e. Indigenous and DSP recipients have the same life expectancy as the base population
- For age pension recipients instead of using AGA tables directly, adjusting them by a factor to align more closely with the recent observed experience. The factors ranged from 1.35 at age 65 down to 1.00 by age 85.

These sensitivity analyses are discussed in the overall results section of this report, and illustrate the materiality of the mortality assumptions to the overall results. This is an area that may warrant additional investigation in subsequent valuations.

Validation of demographic assumptions

Consideration of demographic benchmarks

The Department and IDC have emphasised the importance of the principle of consistency between population projections underpinning the actuarial valuation and government population projections developed for other purposes. Whilst this remains a model objective we have not received any details of population projections used for other government models, other than those publically available from the ABS. Hence this has been the main source of demographic information used.

The model population is a closed one (i.e. one with no people joining it) for which we have developed specific mortality assumptions for different population subgroups. This means that exact alignment with any population projections is not possible, however we have sought general consistency between the mortality and fertility assumptions used in the ABS population projections with the mortality and child birth assumptions used within the actuarial valuation model.

Specifically we considered different life tables when selecting the mortality assumptions and assessed the cost impact of adopting alternative sets of assumptions. The impact of using ABS tables rather than the selected assumptions is small, as shown in the sensitivity testing in section 8.4.

The closed model population means that the main impact of fertility assumptions within the model is to determine if and when the existing people have new children and this may then impact their utilisation of the various types of family and parenting payments. As we are modelling 'children in people's care as recorded in the Department's administrative data' the relationship to actual child numbers recorded in population data will be indirect. Notwithstanding this, in validating the model we have considered general trends in numbers of births and total children together with examining the proportions of the population with and without children over time and the differences in this for different groups of people, such as by class and age.

Calibration of demographic models

The demographic models for partnering, children and educational attainment were initially developed as independent modules and then brought into the full model structure where they are used in combination with other model components, including the class movement assumptions and the population module.

One would expect that there would be relative stability or gradual trends in the mix of demographic characteristics observed for groups of people of similar ages and genders in each class. Trends in profiles may occur, for example, as a result of more people finishing school and progressing into further education for younger generations than their predecessors or as a result of demographic trends in average family sizes and the age at which people have children. Other factors, such as the proportion of 40 year olds who are partnered, may be more stable over time.

As part of the overall development of the valuation model a number of small calibration adjustments were made to the statistically fitted assumptions to align the overall model. These were developed in an iterative way by reviewing the proportions of people in different classes and age bands exhibiting different characteristics simulated in future years (a cross sectional analysis) and by reviewing how the experience at different ages compares for successive cohorts of people over time (a longitudinal analysis). Census data was considered in checking the reasonableness of the adjustments made.

6.4 Welfare class movement assumptions

These assumptions are used to determine the likelihoods of individuals moving in and out of each welfare class. They are a key assumption in the model as they are used to determine each person's future trajectory and this reflects their expected interactions with the payment system.

Approach

The movement to class 11 (dead) was modelled by simulating whether a person died using mortality rates and then referencing this event. As people would generally receive some payment in the year of death the class definitions mean that people would move to class 11 in the financial year following that of their death.

The movements to other classes were modelled for those people not moving to class 11 through developing assumptions as to their likely destination classes given the person's current characteristics.

We developed these assumptions by reference to recent past experience and used a two stage approach in setting the assumptions:

- Firstly to set **foundation assumptions** which reflect each person's welfare class, age and gender only.
These assumptions allow us to see the overall level of movements from each class, the main destinations and the extent of any variation from year to year. These assumptions have been discussed with the Department and the reasons behind any variations over time explored. We used this information to select an appropriate number of reference years for setting the assumptions, so that they reflect the expected future experience (given current policy). Unless policy changes or persistent behavioural changes have taken place we followed a general principle of setting assumptions following long-term trends in three-year average movements. Where there have been trends the assumptions were generally selected based on two-year average movements.
- The second stage is to set **risk based assumptions**. These reference more of the factors that influence which people move from within each class and hence provide assumptions which are more tailored to each individual's characteristics. Hence they provide greater differentiation between the outcomes and costs for different individuals in the system.

The risk factors considered in setting the assumptions include:

- Static characteristics (e.g. country of birth, indigenous status)
- Demographic variables (e.g. age, gender, partner status, number of children, ages of children, interactions of age with the changing age pension qualifying age)
- Highest level of educational attainment
- Past welfare system information (e.g. duration in system, age at entry to system, duration in current class, previous class, details of past payment utilisation)

These risk based assumptions are established using statistical techniques. These are used to explore the relative importance of different characteristics on class movements and to develop multi-factor models which reflect each person's mix of characteristics.

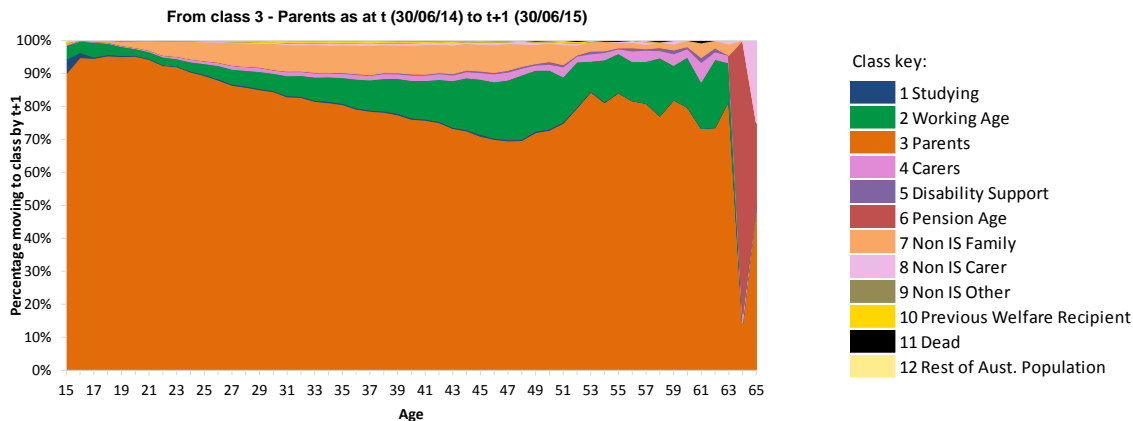
- Risk based assumptions were developed for each of classes 1-4, 8-9, 10 and 12. These risk based assumptions are being set with reference to the experience over the last two years.
- Having reviewed the foundation assumptions we have retained these for the final models for class 5 (DSP) and class 6 (age pension). These assumptions were retained owing to the limited additional benefit of adding risk based models, having noted that only 1-2% of people in the disability class move out of it other than through retirement or death (both of which are modelled explicitly). Similarly less than 1% of age pensioners move out of this class other than through death.
- We also retained the foundation assumptions for class 7 as a majority of people remain in this class from year to year prior to exiting, with only a very small proportion of people moving into the income support classes.

The two stage approach is useful as the foundation assumptions capture many of the key features of the class experience and provide a point of reference from which to validate the risk based assumptions.

Example

The Parenting class provides a useful example to illustrate the approach. The chart below shows the single year movements for females in this class by age. This is the experience referenced in setting the foundation assumption.

Figure 18: Illustration of female single year movements from class 3 Parents



We can see the key features of the experience:

- A significant majority of these people stay in the class from one year to the next
- The main destinations are class 6 - Pension Age (for people at or approaching pension age); class 2 - working age and class 7 - Non IS family
- The proportion of people leaving the class increases at older ages. This is not surprising noting that the eligibility criteria include having a qualifying child under age 8 for single parents or under age 6 for partnered parents.

In developing the risk based assumptions we considered additional factors including people’s partner status, number and ages of children, educational attainment and which other payment categories they utilised. These provide information as to whether the person is likely to stay in the class and, when they leave, the relative likelihood of exiting the system versus moving to other classes. This means the risk based assumptions used are more tailored to people’s individual circumstances rather than being averages for their age and gender.

6.5 Payment category utilisation assumptions

We modelled the payments to each person by considering which of the 17 payment categories they receive any payment entitlements for (the payment utilisation assumptions) and then the amount received in that category (the payment assumptions).

Approach

There are a large number of payment utilisation assumptions, reflecting each possible combination of active classes and payment categories. In practice this is simplified a little as some combinations are invalid (such as income support payments to non-income support classes) or everyone in the class receives a payment in certain categories.

We have again used a staged approach in setting these assumptions:

- Firstly to set **initial foundation assumptions** for each payment category which reflect each person’s class, age and gender. For income support classes these also reference the person’s previous class.

These assumptions allow us to see the overall level of utilisation from each class, and the extent of any variation from year to year. These assumptions have been discussed with the Department and the reasons behind any variations over time explored. We used this information to select an appropriate number of reference years for setting the assumptions, so that they reflect the expected future experience (given current policy).

- For the income support payment categories we noted that where people utilised secondary income support payments (for example a person in the working age class receiving some studying payments in addition to their working age payments) this was usually because they changed payment types and class during the year.

This observation allowed us to refine the **foundation assumptions** for these payment categories by referencing both the current and previous class in determining the utilisation.

- The second stage is to set **risk based assumptions** for some of the assumptions. These reference more of the factors that influence which people from within the class utilise each payment category and hence provide assumptions which are more tailored to each individual's characteristics.

These risk based assumptions are established using statistical techniques. These are used to explore the relative importance of different characteristics on payment utilisation and to develop multi-factor models which reflect each person's mix of characteristics. The risk based assumptions are being set with reference to the experience over the same time periods as used for the foundation assumptions.

In developing the risk based utilisation assumptions we considered a number of characteristics which drive people's likelihood of accessing each payment category. For some payment categories we referenced the specific factors which influence eligibility for payments (such as numbers of children within specified age ranges for FTB); for others we have reflected the extent to which people with different characteristics have shown a differing propensity to access each payment category. In this way the risk assumptions are more tailored to the individual than was the case for the foundation assumptions.

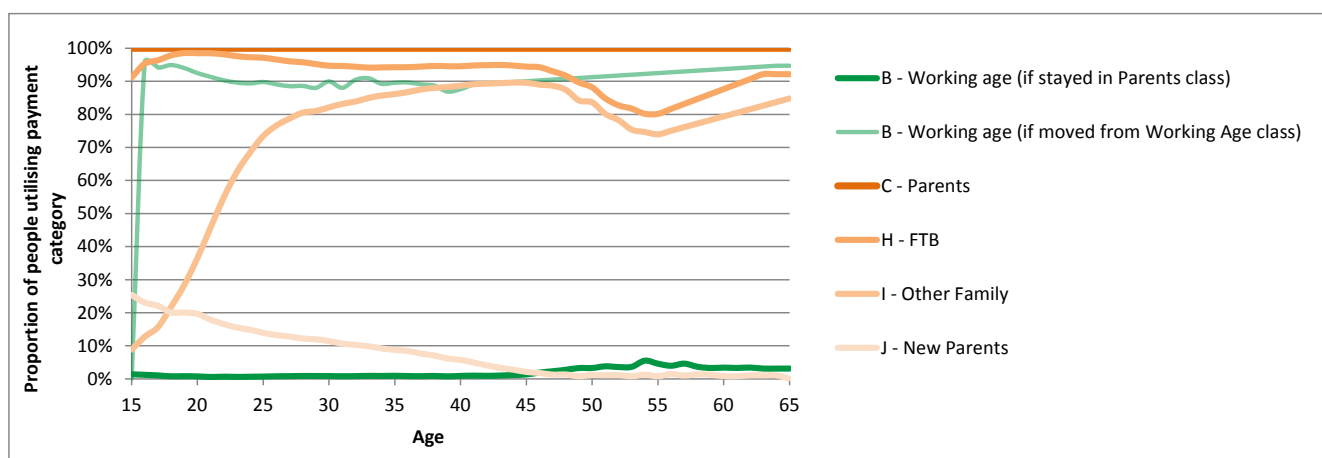
Risk based assumptions are not required where the foundation utilisation assumption is nil or 100%. Further, where the utilisation is close to either of these values the value of developing a risk based model is questionable and as such we have generally chosen to retain the foundation assumptions in these cases. This is the case for many of the supplements.

Overall the utilisation of 98% of income support payments and around half the non-income support payments has been modelled considering risk based assumptions, and the remainder using foundation assumptions. Appendix C includes a detailed table showing where risk and foundation assumptions have been used.

Example

We continue with our example of the Parenting class. The charts below show the foundation payment utilisation assumptions for selected payment categories for females in this class by age.

Figure 19: Illustration of utilisation of selected payment categories for class 3 Parents (females)



We can see the key features of the experience:

- Everyone utilises payment category C (Parent payment)
- The utilisation of other income support payments such as B – working age payments is nil or low if people have stayed in the Parents class from year to year, but high if people have moved from this class
- A majority of people also access FTB and other family payments (primarily child care), with some shifts in utilisation by age
- A small proportion of people use payment category J – New parents, with a declining proportion by age.

A risk based model is not required for payment category C as everyone uses this payment category, however one has been developed for payment category H. Together these two payment categories cover 74% of the payments made to people in the class. For utilisation of secondary income support payment types, the refined foundation models reflect class movements and perform well in identifying which people are likely to receive the secondary income support payment type.

Foundation models have been used for the other non-income support payment types. For some of these such as payment category K (which includes energy supplement) over 99% of people utilise the payment category and hence the additional gain from a risk based model is minimal. For others, especially payment categories I and J, there is some variation in utilisation between people with different characteristics and the development of risk models to replace the foundation ones is one way in which the model could be refined in future model evolutions. This would mean the assumed utilisation more accurately reflects each person's individual situation rather than being an average for someone of their age and gender within the class.

6.6 Payment assumptions

These form the second set of assumptions needed to determine the payments made to each person in each future year. They capture the amount of payments received given that the person has an entitlement.

The assumptions are set to reflect 2014/15 payment levels; they are applied in combination with the assumptions for the changes to the level of payments expected in future years which are discussed in section 6.8.

General approach

There are a large number of payment assumptions, reflecting each valid combination of active classes and payment categories. We have again used a two stage approach in setting these assumptions: first foundation assumptions and then targeted refinement using risk based assumptions:

- The **foundation assumptions** are set for each payment category and reflect each person's class, age and gender.

These assumptions allow us to see the average level of payments made to people in each class, and the extent of any variation from year to year. These assumptions have been discussed with the Department and the reasons behind any variations over time explored. We used this information to select an appropriate number of reference years for setting the assumptions, so that they reflect the expected future experience (given current policy).

- The second stage is to set **risk based assumptions** for some of the assumptions. These have been used in a targeted way to refine selected foundation assumptions.

These risk based assumptions reference more of the factors that influence the level of payments for different people in each payment category. They are established using statistical techniques and reference the experience over the same time periods as used for the foundation assumptions.

A large proportion of the total cost for people in any class is captured within a small number of payment categories. These typically include the primary income support payments and payment categories H – FTB, K – Other Living (which contains the Energy Supplement and Rent Assistance payments) and P – Other General Allowances (contains the pension supplement). The other payment categories make a much lesser contribution to the overall costs.

Risk based assumptions also add little when the annual payments to everyone within a class who utilises the payment are of similar size. Further where the drivers of the payment amounts are not well represented in the data a risk based model may perform little better than the foundation model.

In refining the payment assumptions by developing risk based assumptions we have focussed primarily on the main income support payment types for each class. Where we have seen little improvement in performance we have generally chosen to retain the foundation assumptions for this baseline valuation. An example of this is payment category N – other study and skills where people typically either receive a payment of around \$2,050 or \$1,025, and the risk factors in the data collated do not enable us to distinguish well between which people typically fall into each of these two groups. Hence we have retained the foundation assumptions in this case.

The risk based assumptions within the payment size models cover 98% of the income support payments and 66% of overall payments. Appendix C includes a detailed table showing where risk and foundation assumptions have been used.

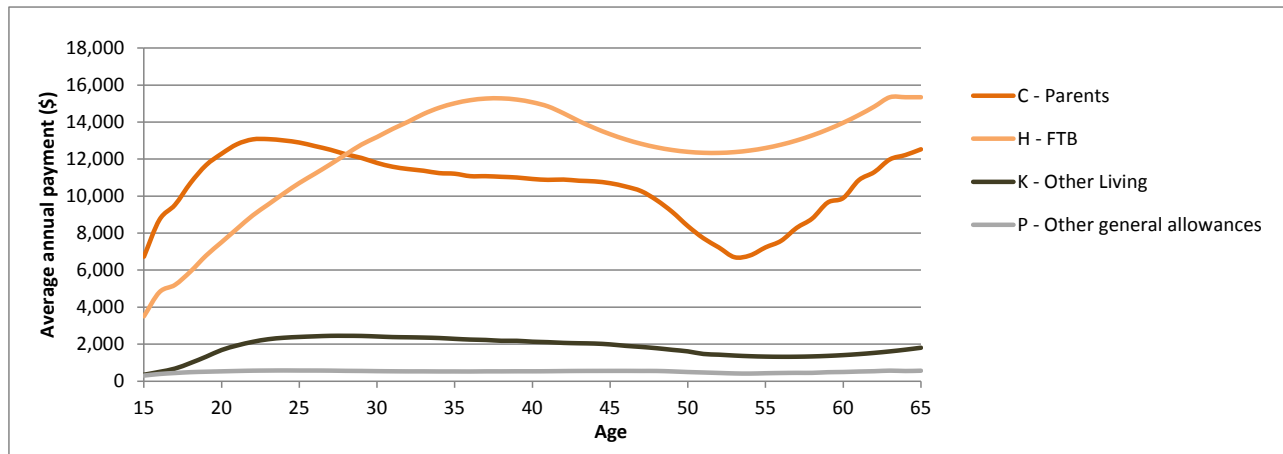
Overall across both the payment utilisation and payment size models the risk based models have been used for payment categories which cover 98% of income support payments and 61% of supplements and allowances.

Examples

Example 1 – Payments to parents

The charts below show the foundation payment amount assumptions for selected payment categories for females in the Parenting class by age. These amounts are conditional on a payment utilisation.

Figure 20: Illustration of payment category amounts for class 3 parents (females)



Looking first at the main parenting payment which is received by everyone in the class, we can see the average amount is lower at younger ages before peaking around age 20 and then decreasing until around age 50 and then rising again. This pattern is likely to be influenced by the mix of people receiving payments. Specifically the mix of:

- People receiving payments for the whole of the year vs. part of the year
- People receiving the single vs. couple rate
- People receiving full or part payments. This may perhaps also reflect the mix of parents vs. grandparents.

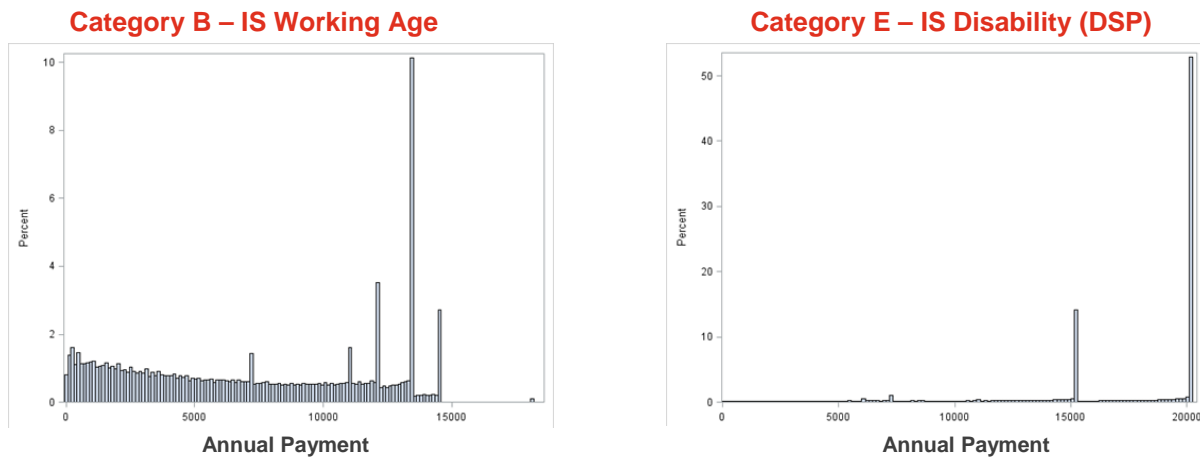
For the FTB payment shown above the general trend is an increasing one up to just below age 40 followed by reductions at older ages. This is most likely reflecting changes in family and household composition as children are born, grow up and then leave the household. The other two payment supplement categories are of much smaller relative size and have somewhat lesser variability across the age range, most likely because the payment levels vary less with family size.

The risk based assumptions recognise the drivers of the differences in average cost for the main parenting payments in payment category C.

Example 2 – Working age and disability income support payments

The charts below show the distribution of actual levels of annual payments seen for people in the IS Working Age class and IS Disability classes. The charts only include working age payments and DSP payments respectively, and exclude other supplementary payments.

Figure 21: Examples of annual payment distributions



For the disability support pension chart shown in the right hand chart, just under 70 per cent of people are receiving annual payments that equate to either the single or partnered full year rate⁸. Conversely the distribution for the working age payments is much less concentrated; although there are small spikes at the single or partnered full year rates many more people are receiving other payment amounts.

The risk based models consider a range of factors which influence these payment levels. For example:

- The Category B payments model considers a number of factors including: age, gender, duration in class, duration in system, partner status, class in the previous year and information on child ages and payment types previously utilised. Whilst the partner status has a direct link to payment rates, most of the other factors are proxies which capture information on the proportion of the year the person is likely to have been on payment and/or whether they are likely to be receiving a full or part rate of payment.
- The Category E payments model considers: partner status, duration in class and the person’s age to identify whether the person is likely to have received a full or partial and a single or couple rate over the course of the year. The payment amounts are then determined from this. As most people in the class have been there for many years, the distribution of payments is simpler and the payment models reflect fewer risk characteristics.

Age pension approach

The age pension payments represent a large part of the overall annual expenditure and form a significant part of everyone’s lifetime cost, both for those currently in class 6 and everyone else who has some chance of entering class 6 in future.

As part of our discussions with the Department in relation to the required scope of work we identified the financial importance of this payment type, both because the future cost of age pension for current welfare recipients at younger ages is a material consideration in applying the investment approach, and because the lifetime cost for age pension payments to people who have already reached retirement age, is substantial. However, we understand that the first round of interventions will consider younger groups and other interventions may be looked at for older Australians in the future.

⁸ This figure is somewhat less than the reported figure of approximately 80% of DSP recipients who receive full rate for any fortnightly payment period because people may not receive payments for all fortnights in a year.

We agreed that the scope of work for the baseline valuation was to include an indicative cost for this payment type and that this would be refined for the 2016 valuation. The age pension payment model was developed in reference to this scope. It has two sub models which consider people’s payment rates at the point of entry to age pension and then the rates in subsequent years. A range of factors are included in each model:

- The payment model at entry considers factors such as the person’s age at entry, gender, partner status and their payment class prior to entry
- The subsequent year’s payment model includes consideration of people’s previous annual payment rate, duration in class, changes in partner status and whether they died during the year.

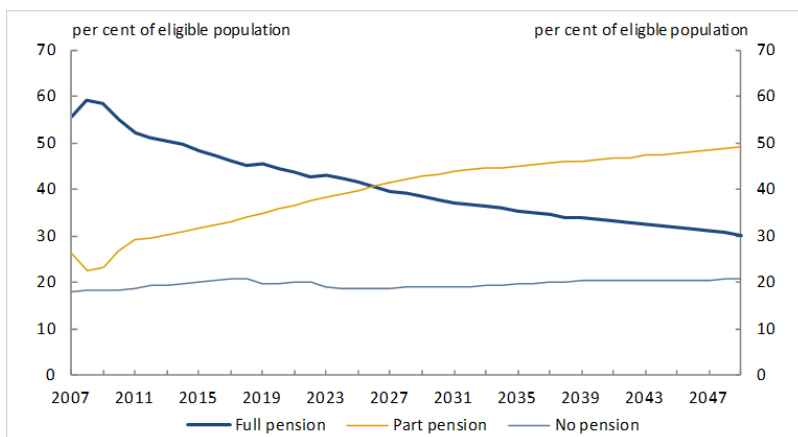
This model structure retains significant information about the actual payment rates applying to people currently in the class in developing the payment amount assumptions for future years. The age pension payment model includes two adjustments and these are discussed below.

Age pension adjustments

Notwithstanding the more limited scope for this payment type we have identified two trends in age pension experience that require adjustment in the forward projection:

- First, the possibility of individual’s assets eroding, or otherwise, as they age after retirement. This may generate a pattern of increased reliance on the aged pension as people get older. This may be compounded by life transitions such as changes in a person’s health necessitating changes in living arrangements or losing a partner
- Second, the expected future trend of an increased number of part pensioners as people reach retirement with more superannuation assets. This is illustrated in the chart below.

Figure 22: Illustration of expected trend in part and full pensions



Source: Rothman, G. *Modelling the sustainability of Australia’s retirement income system*, July 2012 Paper presented to the 20th colloquium of superannuation researchers

The baseline valuation model assumptions include adjustments for both of these trends.

For the first trend we have fitted the average payment size through explicitly identifying full and part pensioners in the current pensioner population and developing model assumptions which assign people to these groups when they first enter the age pension class. We have then allowed for the trend in increased age pension sizes by modelling how a proportion of people migrate from part to full pension as their retirement progresses.

For the second trend we have made a further adjustment to allow for an increased proportion of people newly entering age pension to be part pensioners. We sought a range of external information to support this assumption but, at this stage of the model evolution, have little evidence to quantify the magnitude of the likely shift in mix of the whole age pensioner population. We also note that the range of sizes of the possible impact will be confounded by the change in age pension asset test which might be expected to generate an increase in the proportion of full pensioners (as the asset free thresholds increase) and a reduction in part pensioner numbers (as the taper rate is doubled). It will be further impacted by whether people’s investments have and will produce returns at the rates previously assumed and by behavioural responses from people post and approaching pension age.

The combined effect of all of these considerations is challenging to model and subject to a material degree of uncertainty. As such we have developed a central scenario which we consider makes a reasonable allowance for this trend and have considered the extent to which this scenario impacts the overall cost as part of the sensitivity testing performed on the model. The central scenario allows for an 8% increase in the proportion of new pensioners who are part rather than full pensioners to occur gradually over the period from 2016 to 2030. This timeframe has been selected as, by 2030, most new retirees will have had an opportunity to build superannuation savings over their full working lifetimes. We consider that this will operate together with the increases in part pensioner numbers that have already been seen for recent retirees to deliver an overall shift in part pensioner proportions of a similar magnitude to that suggested after allowing for the impact of policy changes.

Age pension refinements

The refinements to the model will seek to explore and consider the impacts of a broader range of information, including more information on aggregate trends in asset accumulation and income for people over retirement age and through further discussions in relation to population trends with the Department and other stakeholders.

6.7 Economic and other adjustments

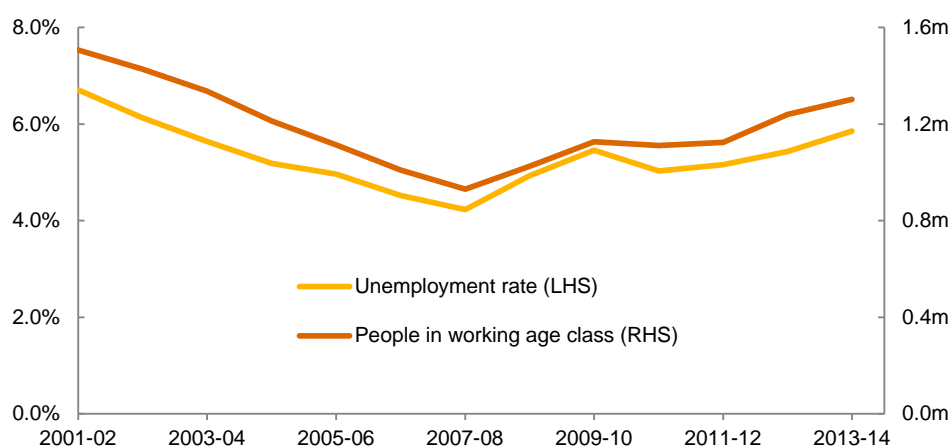
Economic adjustments

The number of welfare recipients will be linked to broader factors such as the macro-economic environment, employment opportunities in the welfare recipients' region and the incentives implicit in the design of different benefits. All of these factors are dynamic and evolve over time.

The overall design of the valuation model includes development of an economic adjustments module. This will be used to understand the extent to which the macro-economic environment influences welfare utilisation and the extent to which the size and mix of current welfare recipients has been influenced by the economy.

The need for this is illustrated in the chart below which shows the relationship between the number of people in the working age payments class and the unemployment rate. The relationship between numbers of people in other classes and macro-economic factors is less apparent.

Figure 23: Correlation between unemployment rate and number of people in the working age payment class



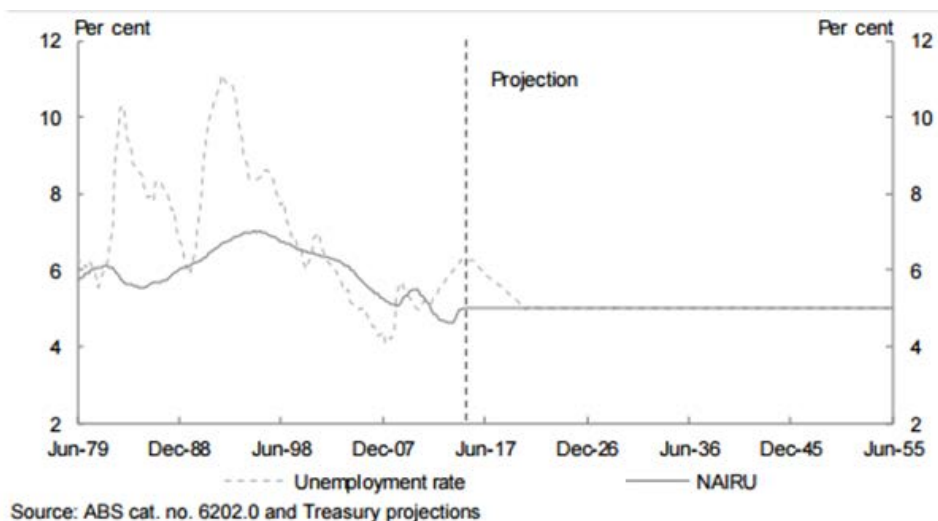
Source: PwC analysis of Departmental data and ABS catalogue 6202.0

From the perspective of the model these influences would be seen through changes to the rates of movements into, out of and between classes and through variations in welfare recipient numbers over and above those explained by policy changes.

The economic adjustments module will be calibrated to Treasury projections, considering the extent to which the economic environment at the valuation date has deviated from the expected long run position. Adjustments will be made to reflect this and to allow for the reversion back to the long run position over the modelling timeframe. It will dampen the impact of short to medium term economic fluctuations and ensure the results focus on the drivers of longer term costs.

At the time of preparing this baseline report we considered the macro-economic climate, as represented by the unemployment rate and non-accelerating inflation rate of unemployment (NAIRU), shown below.

Figure 24: Projected unemployment rate and long run unemployment rate



Source: 2015 Intergenerational Report

In light of the unemployment rate being close to the expected long run position and with a limited timeframe available for preparing the baseline report we have not developed this module for inclusion in the baseline valuation. In effect the core modelling assumption is that the unemployment rate remains similar to that seen over the last three years.

We consider this to be reasonable given the economic climate represented above and as the main drivers of the lifetime cost results are those factors which influence people’s long term interactions with the welfare system. The economic adjustments are a worthwhile refinement but the absence of them is unlikely to change many of the learnings from the valuation work.

The development of the economic adjustment module is scheduled for inclusion in the next (June 2016) or subsequent iteration of the model depending on the Departments priorities. At the time of its inclusion we will identify the extent to which its introduction changes the results.

Forward looking (policy) adjustments

Forward looking adjustments may be needed to ensure the model reflects the current policy settings (those legislated at the valuation date) rather than those reflected in the recent experience. For this reason changes may need to be made to the welfare class movement, payment utilisation and payment assumptions.

Our approach for these adjustments was developed after consideration of the main recent and upcoming changes to the payment system (see Appendix A). It includes the elements described below.

For policy changes which took effect prior to the valuation date:

- 1 Exclude any discontinued payment types which will not be available in 2015/16 or any subsequent years from the payment categories for which assumptions are fitted.
- 2 Where possible develop assumptions with reference to periods of past experience which exclude periods impacted by policy change.
- 3 Discuss and review the assumptions jointly with Department staff to ensure drivers of variations in experience are identified and adjusted for as far as is practical.
- 4 Where no appropriate reference period is available, adjust the analysis developed from the historical experience using expert judgement.

For policy changes which will take effect after the valuation date:

- 5 Model retirement timing based on each individual’s actual pension age in order to allow for future changes to retirement age.
- 6 Make explicit adjustments for major policy changes which form part of current legislation but are not yet well reflected in the past experience.

- 7 For any future changes to each payment type (such as payments being discontinued or the rate of payment changing), develop an index which reflects the change and apply this in addition to the economic inflation.
- 8 Other changes to be considered on a case by case basis.

At this 30 June 2015 valuation we have allowed for a number of past policy changes in selecting assumptions based on the analysis of past experience. Most notably we have observed changes in rates of movements into disability pension over recent years.

We have also allowed for future policy changes including the change in retirement age from age 65 to age 67; the impacts of the changes legislated on 30 June 2015 to the pensions assets test and treatment of defined benefit superannuation; and for the discontinuation of Schoolkids Bonus and the Income Support Bonus (both have the last instalments payable in 2016). The specific adjustments required and the approach for each was discussed in section 6.2.

Other adjustments

Benchmarking and calibration adjustments may also need to be made to reconcile aggregate projections of population characteristics with external benchmark sources, such as reports released by Treasury and the ABS and to ensure the model does not drift out of alignment over the long projection timeframe.

They may also be used to adjust for other longer term trends that are not reflected sufficiently within the other assumptions.

For this baseline valuation we included the following adjustments:

- Age pension adjustments (discussed in section 6.6)
- Demographic calibration adjustments (discussed in section 6.3)

6.8 Economic assumptions

The lifetime cost will be estimated as the net present value of projected payments. Payments are expected to increase in each future year and the indexed payments will then need to be discounted or deflated to allow for the time-value of money. The economic assumptions relate to both the rate of indexation of payments over time and the rate at which they are discounted to their present value.

Indexation assumptions

Indexation assumptions reflect how payments are expected to increase in each future year and are based on the relevant inflation index together with information on any planned changes to the payment structure or criteria. The assumptions will vary by payment category. Projected payments will be indexed within this module to allow for future increases in payment amounts; and discounted or deflated to allow for the time-value of money.

The relevant rate of inflation applied to the index is a function of the macroeconomic outlook. Accordingly, the assumptions are aligned with Treasury's forecasts and medium- to long-term approach for projecting price indices, as outlined in the 2015-16 Budget and 2015 Intergenerational report. Under this framework, the indexation rates are largely determined by the economic cycle over the short to medium term, but are fixed over the long term in line with economic fundamentals.

The valuation assumes:

- Short-term growth (up to 2016-17) consistent with 2015-16 Budget forecasts
- Medium-term growth (from 2016-17 to 2021-22) consistent with published 2015-16 Budget projections to 2018-19 and interpolated for years between 2019-20 and 2021-22
- Long-term growth in the Consumer Price Index (CPI) and the Pensioner and Beneficiary Living Cost Index (PBLCI) of 2.5 per cent per annum and Male Total Average Weekly Earnings (MTAWE) of 4.0 per cent per annum.
- Long term growth in the PBLCI and for National Minimum Wage will require input from Treasury going forward.

The key economic assumptions are shown below:

Table 8: Indexation growth assumptions

| Indexation parameter | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 to 2054-55 |
|----------------------|---------|---------|---------|---------|--------------------|
| CPI and PBLCI | 2.5% | 2.5% | 2.5% | 2.5% | 2.5% |
| MTAWE | 2.5% | 2.8% | 2.8% | 3.3% | 4.0% |

Source: 2015-16 Commonwealth Budget, Budget Paper 1, Budget Statement 1 and 2015 Intergenerational Report

These forecasts do not incorporate updates in the 2015 Mid-Year Economic and Fiscal Outlook (MYEFO), as this ensures methodological consistency with future valuations, which will incorporate economic assumptions from the last available Budget, released in May.

Discounting assumptions

Discounting is applied to future payments to calculate a net present value. This provides an important reference point, both at an overall and group level, for applying and understanding the results of the investment approach. Discounting takes into account the time value of money, ensures policy interventions can be identified and prioritised. It also allows discounted costs to be compared at different points in time to assess progress.

The overarching methodology, consistent with many other long-duration actuarial valuations in other Government contexts, is to ensure a long term stable gap between discount rates and inflation rates. Using a fixed long term gap minimises the chance of volatile changes in the valuation that are purely due to changing economic assumptions. Such movements would likely confound the purpose of the valuation and the communication of its headline results.

The valuation assumes a nominal discount rate of 6 per cent per annum, consistent with the rate used in valuing the Commonwealth's defined benefit superannuation liabilities, and representing a longer term average of the 10 year government bond yield. This rate will be revisited as necessary going forward taking into account prospects for a continuation of the prevailing low interest environment.

These discounting assumptions have been discussed and agreed with the Department and IDC.

The table below shows the proposed long term indexation assumptions for each of the indexation regimes as well as the discounting gap with the assumed discount rate of 6 per cent.

Table 9: Gap between discount rate and indexation assumptions

| Indexation regime | Proportion of 2014-15 payments | Long term indexation assumption | Discounting gap (discount rate less indexation assumption) |
|-----------------------|--------------------------------|---------------------------------|--|
| CPI/MTAWE/PBLCI | 51% | 2.5/4 per cent | 2/3.5 per cent |
| CPI | 45% | 2.5 per cent | 3.5 per cent |
| National minimum wage | 2% | To be determined | To be determined |
| No indexation | 2% | 0 per cent | 6 per cent |

Notes: Indexation assumptions for the PBLCI and national minimum wage will require Treasury input

Sources: 2015-16 Commonwealth Budget, Budget Paper 1, Budget Statement 1, 2015 Intergenerational Report and PwC analysis of Departmental data



7 Model outputs, validation and limitations

7.1 Outputs and model use

The valuation model applies the assumptions to the population to simulate people's future trajectories through life and the resultant interactions with the payment system.

The model outputs include some standard information ('outputs') and can also be used to investigate the expected experience of specific groups. The outputs include the following categories of information:

- Lifetime cost results – e.g. overall lifetime cost results; lifetime cost results for different payment categories.
- Major group information and results – e.g. average lifetime cost information; demographic information; information on expected future trajectories.
- Lifetime cost forecasts, which will be used to understand the drivers of changes in the lifetime cost in future years.
- Projections of future welfare recipient numbers and expenditures (both limited to the current in scope population).

The model output spreadsheet includes the facility to examine many of the charts and results shown in this report by age, gender and a range of other characteristics.

The valuation also examines the sensitivity of the model results to changes in the model assumptions, and the model has the facility to quantify the impact of other assumption changes reasonably readily.

The model can also be used at a "system level" to consider the likely future welfare utilisation of the Australian population as it grows and the demographic profile shifts over the coming years. We know that the population is expected to both grow and age; by considering which people within the population are more likely to draw on supports from the welfare system we can see how the numbers of people seeking to access different payments may vary in future.

7.2 Limitations of the actuarial model

As well as understanding what the model can do, it is important to bear in mind what the model is not intended to do. Essentially, it is a tool for understanding the long term impact of decisions made today and in the future, at a fairly high "system" level, and for groups of interest. It is a dynamic model that projects a limited number of factors over a long time period, taking into account how the population will change over that time and considering uncertainty. This contrasts with static models that quantify, at a much more detailed or precise level, the "overnight" impact of decisions or changes on today's population. The models can and should work in tandem.

Further, the actuarial model, particularly at this stage of its development, is quite financially-focussed. An important aim of the investment approach, supporting the mission of the Department, is to positively impact the lifetime wellbeing of people and families in Australia, as well as reduce welfare costs. It will therefore be important, in using the actuarial model to develop interventions, to adopt a framework that considers not just "savings" generated by the model, but also costs and benefits that are beyond the scope of the model. In particular, as well as outputs from the model, in developing potential policy interventions it will be important to consider:

- Short term impacts over the budget forecast period, as determined by detailed "overnight" costing models.
- Broader costs and benefits to other parts of the system, using more traditional economic approaches such as cost:benefit analysis.
- Qualitative impacts on people's lives and their lifetime wellbeing.

Particularly for the baseline, it will be important that the actuarial valuation model is used to identify policy priorities in a systematic way, in conjunction with appropriate expertise and dovetailing with existing policy and investment frameworks. The actuarial valuation model results should be validated in the context of broader qualitative evidence, wellbeing measures, existing policy evaluation frameworks and expertise.

7.3 Model validation and risk mitigation

The valuation model has been newly developed for this baseline actuarial valuation and model validation is an essential part of this development process. Our approach to validating the model and mitigating the risks implicit in its development combines the use of an appropriate set of checks and the development by a team with the appropriate skills and experience.

In developing the models we have mitigated the risks through first developing the methodology, then a simple version of the model with a simpler ‘foundation’ set of assumptions and finally the full risk based model. At each stage of work the analyses undertaken have been subject to PwC’s standard quality control processes which include review of all work products by a qualified actuary. All the elements of the method have also been discussed by the senior members of the project team and have been subject to review from PwC’s second partner and from senior members of staff from Data Analysis Australia.

Throughout these stages we have discussed the emerging analyses and selected assumptions with the Department and where appropriate additional investigations have been undertaken by staff from either PwC or the Department to assist in understanding and interpreting the observed experience.

The suite of computer programs used to implement all the statistical elements of the assumption development have been subject to technical review by both PwC staff and senior members of staff from Data Analysis Australia. A comprehensive set of checks has been used in developing the model assumptions and to validate the overall results. Firstly checks were used to validate each module and then to validate the overall model and results. Sensitivity checks have also been used in order to help understand and validate the model behaviour.

A summary of the checks used is provided below.

Table 10: Summary of model validation checks

| Module | Description | Foundation model | Risk based model |
|--|--|------------------|------------------|
| Population | Check of composition vs. demographic projections | Y | Y |
| Flow assumptions | Check on projected deaths vs. demographic projections | Y | Y |
| | Check on projected partner status profile by age | N/A | Y |
| | Check on projected education status profile by age | N/A | Y |
| | Check on projected child numbers by parent | N/A | Y |
| | Check on projected child numbers by age of child | N/A | Y |
| Welfare class movement assumptions | Check on projected profiles of numbers and proportions of people by class and age | Y | Y |
| | Comparison of quality of fit vs. foundation assumptions | N/A | Y |
| | Checks on projected numbers of new entrants by class | Y | Y |
| | Checks on projected numbers of exits by class | Y | Y |
| Payment category utilisation and size assumptions | Checks on selected payment utilisation assumptions for each payment category vs. past experience | Y | Y |
| | Checks on selected payment size assumptions for each payment category vs. past experience | Y | Y |
| | Statistical goodness of fit tests | N/A | Y |
| | Comparison of quality of fit vs. foundation assumptions | N/A | Y |
| | Checks on combined effect of utilisation and size assumptions both vs. past experience and projected | Y | Y |
| Indexation assumptions | Checks on application of indexation assumptions | Y | Y |
| Projection module | Spot checks on projections for sample people | Y | N/A |
| | Use of representative model points and spot checks to validate calculation of full current lifetime cost | Y | N/A |

| Module | Description | Foundation model | Risk based model |
|---------------------------------------|--|------------------|------------------|
| Results module / overall model | Comparison of results to aggregate projections for key individual payment types | Y | Y |
| | Comparison between foundation and risk based models and examination of reasons for differences | N/A | Y |
| | Back-testing: running the full model on population data for previous year ends and comparing the projected experience to that which actually emerged | Y | no (see note) |
| | Sensitivity testing of key assumptions | Y | Y |

Note:

For the foundation model we also performed 'Back-testing' - applying the model assumptions to older population datasets and considering how well the projected experience compares to that actually observed over the intervening years. This was some use in validating the foundation model run but the extent of differences arising from past policy changes was such that the exercise was not repeated for the final risk based assumptions as we considered the reconciliation between foundation and risk to be a more informative check.

All issues identified through these validation processes were investigated and responded to in selecting the final assumptions to use in the baseline model. Where these assumptions differ at an overall level from past observed experience this was as intended and the differences can generally be explained by assumptions selected to reflect past or expected future changes in policy, eligibility criteria or payment levels.

For a number of sets of assumptions we chose to retain foundation assumptions for the baseline model. This included assumptions for the movements out of class 7 and for the FTB payment amounts. In order to differentiate well between the experience of different individuals of any particular age and gender both these assumption sets would need to place strong reliance on being able to identify and simulate detailed family structures for many years into the future. The model validates satisfactorily at a whole of population and class level in this regard but some more work is required to understand how well it performs for the variety of different family sizes and structures within each class. Hence, at this stage of the model evolution, we recognised that further work is required before robust risk based models can be included in place of the foundation ones for these two assumptions.

As a final quality control an independent PwC partner performed an internal peer review of key elements of the model.

The department has indicated that it will undertake further validation and assurance work around the model.



8 Overall results

8.1 Scope of valuation

The scope of the valuation can be considered in terms of:

- the payments to be included (covered in section 5)
- the people for which those payments are included (covered in section 4), and
- the time periods to be included (see below).

Time periods

The valuation includes all payments made to people in the in scope population for the period starting from the valuation date and for their remaining lifetimes.

The payments have been assessed on an accruals basis, reflecting the timing of when each person's payment entitlements accrue rather than when the payment is actually made.

8.2 Terminology

The terminology and definition used for the key result of the actuarial valuation is critical to its communication. Given the importance of this result, considerable consultation with the Department and the IDC has occurred to arrive at definitions and terminology that are clear and fit for purpose.

Reflecting the person-centred nature of the model, the agreed terminology has been built from the central concept of a lifetime cost, which is defined as:

Lifetime cost: *the net present value of future in-scope payments made to a person over the remainder of their natural lifetime at the valuation date.*

This concept includes all **future** payments after the valuation date, noting that current and previous welfare recipients will also have a history of past payments which is not included, given the future focus of the model.

Total Lifetime Cost

The total lifetime cost can be assessed for any group of people within the model population. In the discussion on the results we examine the total lifetime cost for the whole model population and for four groups of people in the starting population:

- Current welfare recipients - this includes any person who received a payment in the 2014/15 year.
- Recent exits – people who exited in the last three years. This is people who received a payment in 2011/12, 2012/13 or 2013/14 but no payment in the current year.
- Older exits – other people who are known to have previously received a payment.
- Rest of the Australian population – the remainder of the model population.

Future migrants and unborn children are not included in the estimate of total lifetime cost, but will appear in future valuations once they migrate or are born, and at that time will contribute to an increase in the total lifetime cost.

Average Lifetime Cost

For any group of people the lifetime cost can be considered in terms of the number of people in the group and the lifetime cost per person. Through this report we use the term **average lifetime cost** to refer to the per person lifetime cost for a group of people.

As discussed elsewhere, while the model does simulate the lifetime trajectory of each individual, it is only intended that results ever be considered for a similar group of individuals – either in total or on average for that group. Over time, as the model is developed further, the size of the group for which results are meaningful and statistically robust may reduce, enabling increasingly granular outputs.

In considering total and average lifetime cost results, the following points should therefore be noted:

- The actuarial valuation model is designed as a whole of population model with the purpose being to produce population and population group information rather than information for defined individuals. As such it captures the different risk characteristics that are important at a population level, but does not reflect all the factors that may result in different outcomes or different levels of payment for individual people.
- The total lifetime costs and averages can be assessed across the whole population or groups of people, within the following guidelines.
 - Such groups should include at least 1000 people.
 - Group level results will be more reliable when the groups are homogeneous. For example, results could be calculated for all the following groups:
 - Female age pensioners
 - Female age pensioners who are 70-75
 - Female age pensioners who are 70-75 and are partnered
 - Etc.As groups are more highly specified, the more similar the people are within them. This means there is less variability in expected average lifetime cost within these more highly specified groups.
- The ability of the model to differentiate average lifetime costs between different people is limited by the extent of the factors included in the model.
 - In the foundation model the main factors we have used to differentiate outcomes are the person's starting class and their age and gender. Further differences will reflect the differential mortality assumptions used for indigenous people and disability pensioners.
 - For the final risk based model used in this report, further factors have been included such as people's partner status, family composition and welfare history.
 - Even where characteristics are not explicitly analysed within the assumption setting process we may be able to see some differences in average lifetime cost if other factors operate as proxies. For instance, the average lifetime cost for 30 year old people in the working age class currently living in one part of the country may differ to an equivalent group living somewhere else, although we have not explicitly included geographic location as a predictor in the model. The difference could arise if these groups have different demographic profiles or if features of their welfare history such as the average past duration in the payment system were different.
- Even for the most homogenous possible group, the average lifetime cost is the average of a range of costs each arising from a different possible future life trajectory. Many important determinants of costs such as future family composition and the length of a person's remaining life cannot be known with certainty, and can only be represented by probability distributions.

8.3 Total lifetime cost

The estimated total lifetime cost for the whole population as at 30 June 2015 is **\$4,764 billion** dollars. This figure is the net present value of the in scope payments expected to be made over the remaining natural lifetimes of the full model population. In calculating the net present value, the projected payments are discounted to current dollar values. So, for example, payments projected to be paid during the 2017/18 year would be discounted by 3 years to represent the value of these payments in current dollars.

This is a substantial figure; by way of comparison the in scope payments made in the 2014/15 year totalled \$108.8 billion. Hence the total lifetime cost is over 40 times the size of recent annual payments. Such a multiplier is perhaps not unreasonable given that we have included the age pension in the valuation, which a

Overall results

significant proportion of the model population are expected to receive in the future for many years post retirement.

As an alternative frame of reference we could compare the lifetime cost to the latest GDP figure, which is \$1,620 billion⁹ as at June 2015.

Table 11: Summary of key valuation results (30 June 2015 baseline valuation)

| Population segment | Number in starting population | Avg. age | Proportion in class > 4 years | Lifetime cost (\$Bn) | Average payment in 2014/15 (a) | Average lifetime cost (\$'000) non-age pension part | Average lifetime cost (\$'000) age pension part | Total Average lifetime cost (\$'000) (b) | Ratio = (b) / (a) |
|---|-------------------------------|-----------|-------------------------------|----------------------|--------------------------------|---|---|--|-------------------|
| Current welfare recipients | | | | | | | | | |
| - Studying payment recipients | 392,000 | 24 | 25% | 97 | 8,500 | 157 | 90 | 247 | 29 |
| - Working age payment recipients | 1,302,000 | 39 | 35% | 410 | 10,900 | 174 | 141 | 315 | 29 |
| - Parenting payment recipients | 432,000 | 33 | 49% | 191 | 29,100 | 324 | 118 | 441 | 15 |
| - Carer payment recipients | 265,000 | 51 | 50% | 109 | 25,600 | 244 | 168 | 411 | 16 |
| - Disability support pensioners | 813,000 | 50 | 79% | 338 | 21,300 | 258 | 157 | 416 | 20 |
| - Age pensioners | 2,495,000 | 76 | 76% | 507 | 16,600 | 1 | 202 | 203 | 12 |
| - Family non IS clients | 1,547,000 | 40 | 53% | 342 | 5,500 | 103 | 118 | 221 | 40 |
| - Carer non IS clients | 199,000 | 51 | 53% | 42 | 6,800 | 99 | 114 | 213 | 31 |
| - Other non IS clients | 561,000 | 54 | 3% | 87 | 2,500 | 72 | 84 | 155 | 62 |
| <i>Total current welfare recipients</i> | <i>8,006,000</i> | <i>52</i> | <i>55%</i> | <i>2,123</i> | <i>13,400</i> | <i>115</i> | <i>150</i> | <i>265</i> | <i>20</i> |
| Previous welfare recipients | | | | | | | | | |
| - Exited 1-3 years | 1,351,000 | 39 | n/a | 270 | n/a | 84 | 115 | 200 | n/a |
| - Exited 4+ years | 2,560,000 | 46 | n/a | 410 | n/a | 47 | 113 | 160 | n/a |
| <i>Total previous welfare recipients</i> | <i>3,911,000</i> | <i>43</i> | <i>n/a</i> | <i>680</i> | <i>n/a</i> | <i>60</i> | <i>114</i> | <i>174</i> | <i>n/a</i> |
| Rest of Australian resident population | | | | | | | | | |
| - Rest of Australian resident population | 11,949,000 | 28 | n/a | 1,961 | n/a | 77 | 88 | 164 | n/a |
| Australian resident population | 23,866,000 | 39 | n/a | 4,764 | | | | | |

Notes:

The valuation model considers people's basic age pension, energy supplement and pension supplements and models each of these elements separately. The information shown above for the age pension part of the average lifetime cost reflects all the payments made to people whilst in receipt of the age pension.

The average payment in 2014/15 is understated owing to the data maturity issues with FTB and family payment data. This has a particular impact on the average payments for people in the family non IS and other non IS classes; we would expect these amount to ultimately be larger than the figures shown.

The above table shows the contribution of each class and population group to the total lifetime cost, which reflects the number of people in that class and their average lifetime cost. The average lifetime cost for people in each class is driven by the probability of an average person in that starting population entering, remaining in or leaving the system in each future year; combined with the type and amount of payments they are likely to receive. A few comparative indicators have been included in the table to help explain the results:

- The average age of the starting population is shown – obviously, younger people have a longer period over which they may receive benefits, but also a greater potential to move out of the system and become self-reliant at some stage, compared to older people. Also, the age pension costs for younger people are further into the future and so are lower as they are discounted more;
- The proportion of people in the starting population who have been in that class for more than 4 years is an indicator of how likely people are to remain in that class – for example, as expected, age pensioners are very likely to remain as age pensioners for the remainder of their lives. This is also true of disability support

⁹ <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5204.02014-15?OpenDocument>

Overall results

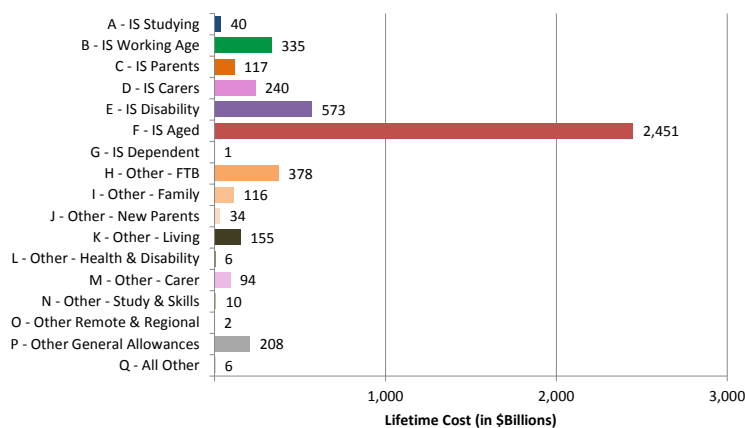
pensioners, but as would be expected those who are studying are quite likely to move out of that class in a few years (and either out of the system or into another class);

- The average total payment received by people in each class in 2014/15 is shown, which as can be seen is quite different by class, reflecting the nature and mix of the payments received and the “average” eligibility criteria of people in that class;
- The ratio of the average lifetime cost to the annual payment is shown for current welfare recipients – this ratio will reflect the average number of years on benefit projected for people in that class, along with the extent to which future payment levels will change based on people transitioning into different classes or changing their circumstances. For example, the age pension ratio of 12 would mainly reflect the number of years that the current population of age pensioners are likely to remain in receipt of payments, along with some variation in payment as people age and their circumstances change. The ratio of 29 for studying payment recipients would reflect the fact that while many in this class will exit the system within a couple of years, this is swamped by the long term cost of the people who transition to other classes after studying, or return to the system at a later stage of their lives, particularly as they retire and go onto the age pension. (Note that the ratio in this calculation compares the average lifetime cost, which has been discounted so that payments are equivalent to current dollar values against the actual 2014/15 payments. As these values are both in current dollar values, they are comparable and the ratio is therefore mostly reflective of the features discussed above, rather than any economic differences.)

Contribution of payment categories to total lifetime cost

The total lifetime cost is dominated by the age pension, as illustrated by the charts below which shows how each payment category contributes.

Figure 25: Composition of lifetime cost (\$billion) by payment category



Payment category key:

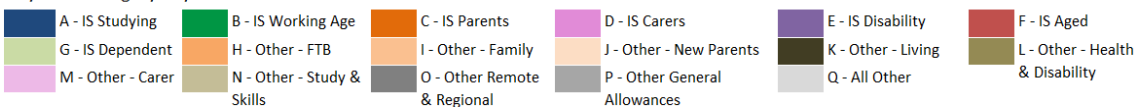
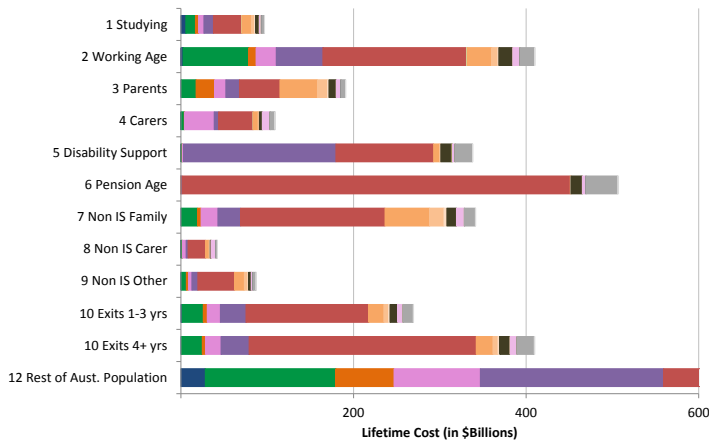


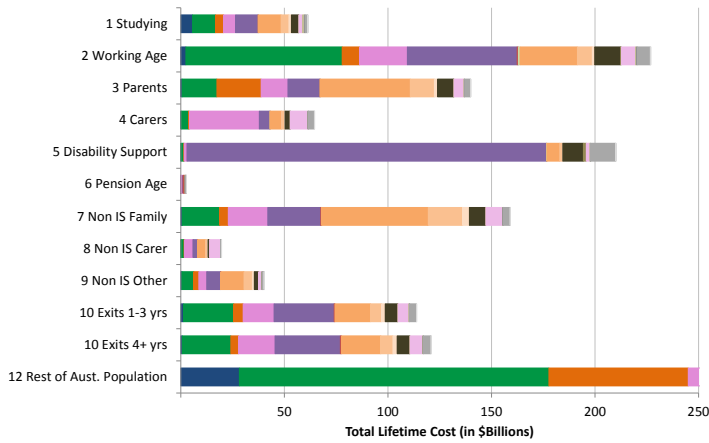
Figure 26: Composition of lifetime cost (\$billion) by welfare class and payment category

a) Including age pension costs

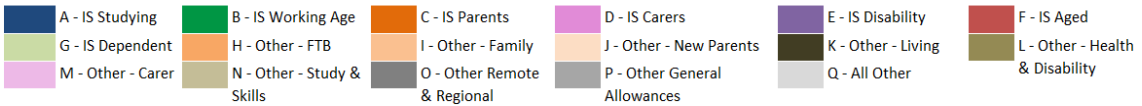


Note: Class 12, the rest of the Australian population, is much larger than other classes and has not been shown in full in the chart. The total lifetime cost for this class is \$1,961 billion.

b) Excluding payments received whilst in the pension age class



Payment category key:

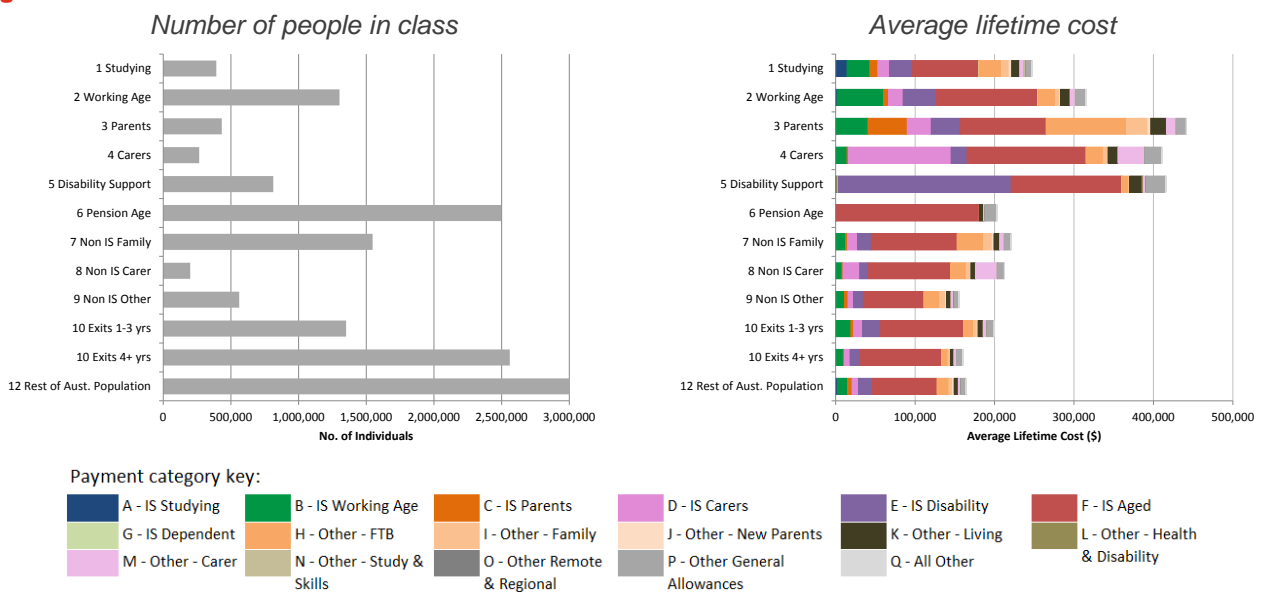


Note: Class 12, the rest of the Australian population, is much larger than other classes and has not been shown in full in the chart. The total lifetime cost (excluding age pension costs) for this class is \$915 billion.

Overall results

The relative contributions of each class are impacted by the numbers of people in each class as well as the average cost for each.

Figure 27: Drivers of welfare class lifetime costs



Note: The rest of the Australian population class contains 11.95m people and is not shown in full in this chart.

For the total lifetime cost for current welfare recipients:

- The largest contribution is from people in the Age Pension class. This is primarily a result of the large number of people in this class; the average lifetime cost per person is less than for many other groups.
- The next largest contributions are from the Working Age and Non IS family segment. This is mostly a result of the large number of people in these segments as well as a relatively high average lifetime cost per person for the Working Age group.
- On a per person basis the disability support, carers and parents classes are the most costly. This reflects a mix of drivers including long durations in class and people in these classes accessing a broad range of payments.

Despite having one of the lowest future lifetime costs per person, Class 12 Rest of Aust. Population accounts for approximately 40% of the total lifetime cost for the model population. This is driven by the fact that this class makes up half of the model population.

8.4 Areas of sensitivity and uncertainty

Limitations of the valuation

The valuation explores the cost of future welfare payments over the remaining natural lifetimes of the model population on the basis that the currently legislated policy persists over that timeframe. Whilst this exercise is intended to provide useful information it is important to understand its limitations.

The payment system changes frequently. Hence the scenario contemplated in the valuation of current policy continuing will be unlikely to eventuate in practice. As time progresses further into the future, the potential for different policies to be put in place is greater and so differences between actual and projected payments are likely to be larger.

The valuation explores the use of the welfare system allowing for expected demographic changes and considering the broader economic environment. Other external factors may influence the demands on the system. These factors extend as far as changing patterns of life and work; changes in the composition of households; changes in mix of industries and work opportunities; impacts of trends in population health and healthcare driving changes in demand for supports and behavioural changes from individuals and in terms of the informal supports provided between members of different generations. The extremely long term nature of the projected payments within the model means that all these factors and others that we have not yet

contemplated are likely to influence the use of the welfare system in future years and hence impact the liabilities. We have not considered such trends explicitly.

Uncertainty

For each person, their actual life outcomes and the welfare payments received are uncertain. This is reflected in the assumption sets adopted in the valuation model which are probabilities of different events occurring throughout people's lives and the likely costs of the resultant life trajectories. For each group of people and the population as a whole the valuation results presented above represent the mean of the lifetime costs derived from the range of modelled future outcomes.

Many of the assumptions underlying the actuarial valuation are developed by considering patterns of past use of the welfare system. In some cases the past experience has been volatile and in others the experience has varied from year to year, most likely as a result of policy changes. Some policy changes are recent and not fully reflected in the observed experience; people may also behave differently in the future than they have in the past. These considerations mean that the assumptions are inherently uncertain and the actual future experience may differ from that modelled.

The long term nature of the lifetime cost results means they are highly sensitive to some of the assumptions. In particular:

- The assumed mortality rates and mortality improvements have a systemic impact on the whole population. Small changes to future mortality rates mean that, on average, people receive the age pension for a different length of time and this can impact the lifetime costs materially.
- The economic assumptions also have an extremely large impact on the lifetime cost results. Many of the payments are not received until many years into the future and for some of the population are concentrated in the latter part of people's lives. This means small changes in the indexation and discount rates can have a large impact on the lifetime cost.

The impact is greatest for changes to the discount rate as this impacts all future payments over all timeframes. It is greater for changes to MTAWA than changes in the CPI as the payments that occur later in people's lives are indexed by MTAWA and hence have a longer average duration.

An important part of the analysis has been to build on the foundation model via the introduction of risk based assumptions to achieve a differentiation in the lifetime cost results for different groups of the population, which are more reflective of their underlying risk profile. Whilst improving the explanatory power of the modelling, this work illustrates that not all of the variation in welfare utilisation for different people can be explained by the risk characteristics included. Whilst there are opportunities to build on the baseline valuation by considering additional risk characteristics in future valuations, there will be a limit to the extent to which variation between groups and individuals can be explained.

A number of the risk based characteristics are dynamic in nature. Examples included in the baseline valuation include educational attainment, partnering status and number and age profile of children. Quite small variation in adopted parameters can have a significant compounding effect over the long periods of time projected. An important validation step has been to check the reasonableness of the distributions of these parameters across the projected population into future years. What represents reasonable is ultimately a subjective judgement. Where possible we have attempted to validate with other external reference points. Changes in profile may also impact on the predictive strength of the characteristic over time. For example, obtaining a university degree may not be as powerful an influence on lifetime earnings and employment as it was for earlier generations, due to a greater proportion of the population obtaining a degree and the changing composition of the economy.

By its nature the lifetime cost for the rest of the Australian population group may be even more uncertain than the lifetime cost for people currently and recently in receipt of Commonwealth payments. This comprises those segments of the population who have either never been in receipt of Commonwealth payments or who have not been in the last three years. As a result, less is known about the current situation and characteristics of people in these segments. Furthermore their projected future consumption of welfare is generally further into the future than for current and recent welfare recipients. The further out into the future the costs are projected, the more uncertain they become for the range of reasons discussed above. We have illustrated the sensitivity to these and other assumptions in the section below.

Sensitivity

The lifetime cost results are sensitive to the underlying assumptions. To illustrate these sensitivities we have tested a range of alternate assumptions and the results are presented below.

Table 12: Sensitivity of current liabilities to changes in assumptions

| Assumption set | Sensitivity test | Change in lifetime cost | % change |
|----------------------|---|-------------------------|----------|
| Mortality | AGA tables with adjustments for age pensioners | -\$71 bn | -1.5% |
| Mortality | ABS life table (in place of AGA life table) | -\$16 bn | -0.3% |
| Mortality | No mortality improvements | -\$612 bn | -12.8% |
| Mortality | Removal of mortality adjustments for specific population groups | \$145 bn | 3.1% |
| Economic | Discount rate increases 1% to +7% | -\$1,057 bn | -22.2% |
| Economic | Discount rate reduces 1% to +5% | \$1,608 bn | 33.8% |
| Economic | Long term CPI assumption increases by 1% (from 2.5% to 3.5%) | \$111 bn | 2.3% |
| Economic | Long term CPI assumption reduces by 1% (from 2.5% to 1.5%) | -\$87 bn | -1.8% |
| Economic | Long term MTAWA assumption increases by 1% (from 4% to 5%) | \$796 bn | 16.7% |
| Economic | Long term MTAWA assumption reduces by 1% (from 4% to 3%) | -\$548 bn | -11.5% |
| Aged pension | Adjustment to reflect an expected increase in future numbers of part pensioners is removed | \$49 bn | 1.0% |
| Aged pension | Long term MTAWA assumption reduces by 0.5% for age pension only (from 4% to 3.5%) | -\$202 bn | -4.2% |
| Payment | All working age income support payments increase by 10% (e.g. \$52 per fortnight for single Newstart recipients with no children) | \$34 bn | 0.7% |
| Payment | Age pension payments increase by 10% (\$78 per fortnight for singles and \$59 for couples) | \$245 bn | 5.1% |
| Entry and exit rates | Rates of movement from the rest of the population to the active classes increase by 5% for ages up to retirement age | \$230 bn | 4.8% |
| Entry and exit rates | Rates of movement from the rest of the population to the active classes increase by 5% for retirement age and above | \$30 bn | 0.6% |
| Entry and exit rates | Rates of movement from the active classes to the rest of the population increase by 5% | -\$244 bn | -5.1% |

Age pension sensitivities

In section 6.7 we noted that the age pension costs may vary in future as a result of the expected future trend of an increased number of part pensioners over time as people reach retirement with more superannuation assets.

We have allowed for this trend in the valuation results through making an explicit adjustment to increase the proportion of part pensioners entering the age pension class in future years. To illustrate the sensitivity to this assumption we have assessed the change in lifetime costs that would occur if we had not made the adjustment. Removing the adjustment would increase the liabilities by 1.0% (applying this adjustment has reduced the lifetime cost by 1%).

For our draft report we constructed an alternative scenario based on an assumption that the expected shift in average payment levels if the mix of full and part pensioners changes (from the current mix of 60% full pension / 40% part pension to 40% full pension / 60% part pension over the next 30 years) would be broadly equivalent to the annual increase in age pension being reduced by 0.5% per annum.

We have retained this as an alternative scenario and it results in a greater proportion of part pensioners than the main scenario which we have adopted, especially looking many years into the future. Under this scenario the lifetime cost would be 4.2% lower.



9 Results for current welfare recipient classes

In this section, for each welfare class, we present information regarding the profile of the people in that class and a breakdown of payments received during 2014/15. We then discuss the setting of foundation assumptions and key considerations when introducing risk based assumptions in the final valuation model. We then present results based on the application of the assumptions underlying the final valuation model.

Foundation assumptions

In setting foundation assumptions for class movements, we have followed a principle of following long-term trends in three-year average movements, unless policy changes or persistent behavioural changes have taken place. This principle applies to all classes of payments.

The foundation assumptions for both payment utilisation and payment amounts have been set separately for each payment category for people in each class. The assumptions are set by age and gender. For the utilisation assumptions for the income support payment categories (A to G), the assumptions are also set by considering the person's previous class (1 to 6 or non-income support). This approach is consistent across classes.

Similar to the class movement assumptions, our payment assumptions have been largely based on the average of experience over the last 2 to 3 years, unless policy changes have taken place or persistent behavioural changes are observed. The main exceptions were the FTB and other Family payment categories. As discussed earlier in Section 4.4, the 2014/15 payments in these payment categories are not yet complete, and therefore have been excluded when setting utilisation and payment assumptions. In addition, for some of the smaller class/payment category combinations, assumptions were often set using a longer term average (typically 5 years).

This general approach was applied for all classes and payment categories.

Risk based assumptions

We refined many of the class movement and payment assumptions through consideration of the risk factors that influence the experience. The details of the assumption forms adopted and factors included in each have been shown in Appendix C.

For the payment models we focussed on modelling the payment levels for the primary income support payment category. This reflects the family composition of individuals more directly than the foundation models. For people in all classes we also examined the risk factors that influence the payment utilisation and/or annual payment size for some of the largest non-income support payment categories for selected classes.

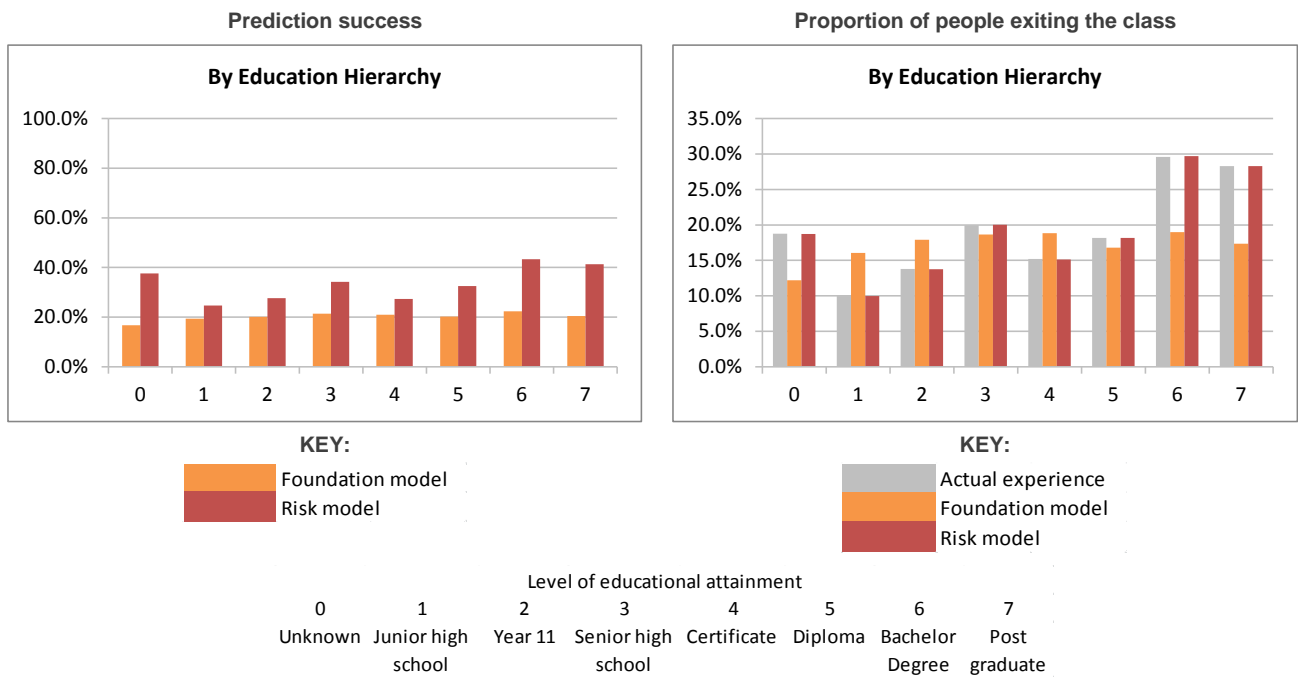
We tested the prediction success of each component of the final baseline model compared to the foundation version, and confirmed that this has improved materially overall as well as for each component. In many cases this improvement related to more accurately reflecting eligibility criteria, whereas in other cases it introduced differentiation based on other factors.

Example

An example is shown below for educational attainment as a predictor of exiting the system from the Working Age class. The graph on the left shows that the risk based model improves the extent to which individual people in the working age class are successfully predicted to exit, by adopting the risk based model. As factors like educational attainment have been included as a risk factor it improves the performance considerably when assessed across this dimension.

The graph on the right illustrates, for each class, how much more closely the fitted rates of exit match the actual experience for each of the educational attainment categories. The foundation model did not distinguish much between these categories, whereas by introducing educational attainment as a risk factor, the relativity between categories more closely resembles what is observed in the actual data.

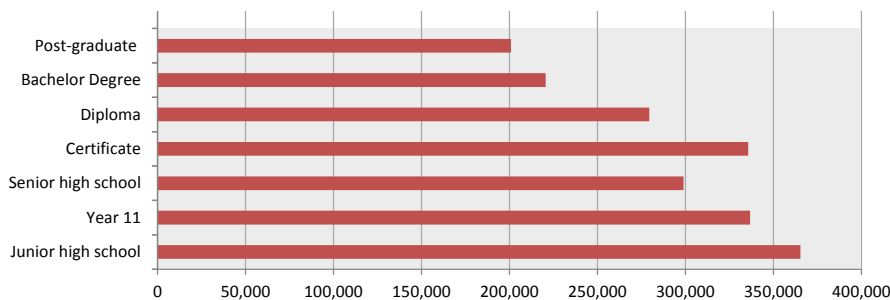
Figure 28: Comparison of performance of foundation and risk models (class 2 to class 10)



Note that this example shows a material improvement – these graphs across different class movement combinations vary significantly from low to moderate improvements, through to significant ones. Note that this example is provided to give a simple illustration of the benefits of introducing risk factors into the model. Technical documentation of the statistical fits and diagnostics used in the risk based models is being separately prepared for the Department.

Another way of understanding the extent of “differentiation” that has been introduced during the risk based modelling phase is to look at the predicted differences in average lifetime cost for different groups within the model – the figure below shows the differential average lifetime costs predicted for people in the Working Age class, for people with different levels of educational attainment. The model predicts that people with a post-graduate qualification have a much lower average lifetime cost than people who left school before year 12. Note that within each of the educational attainment levels, there will remain significant variability in lifetime costs for different people.

Figure 29: Lifetime costs for Working Age people ages 20-40 by education attainment



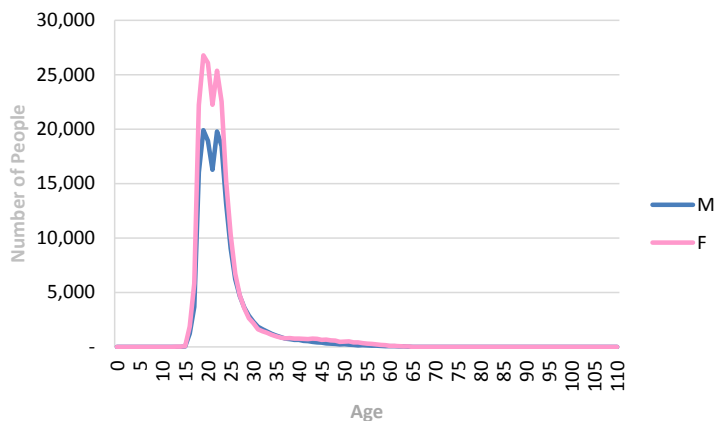
9.1 Studying Payment recipients

What does the data tell us about people receiving Studying payments?

There were 392,000 people in the Studying class for the 2014/15 year. This included a mix of both males and females albeit with more females at younger ages. The people in the class are mostly in the age range 15 to 30, although there are some people receiving these payments at most ages through to retirement age.

The people in this class represent 4.8% of the people who received a payment in the 2014/15 year.

Figure 30: 2014/15 profile of people in Class 1 – Studying (age/gender)

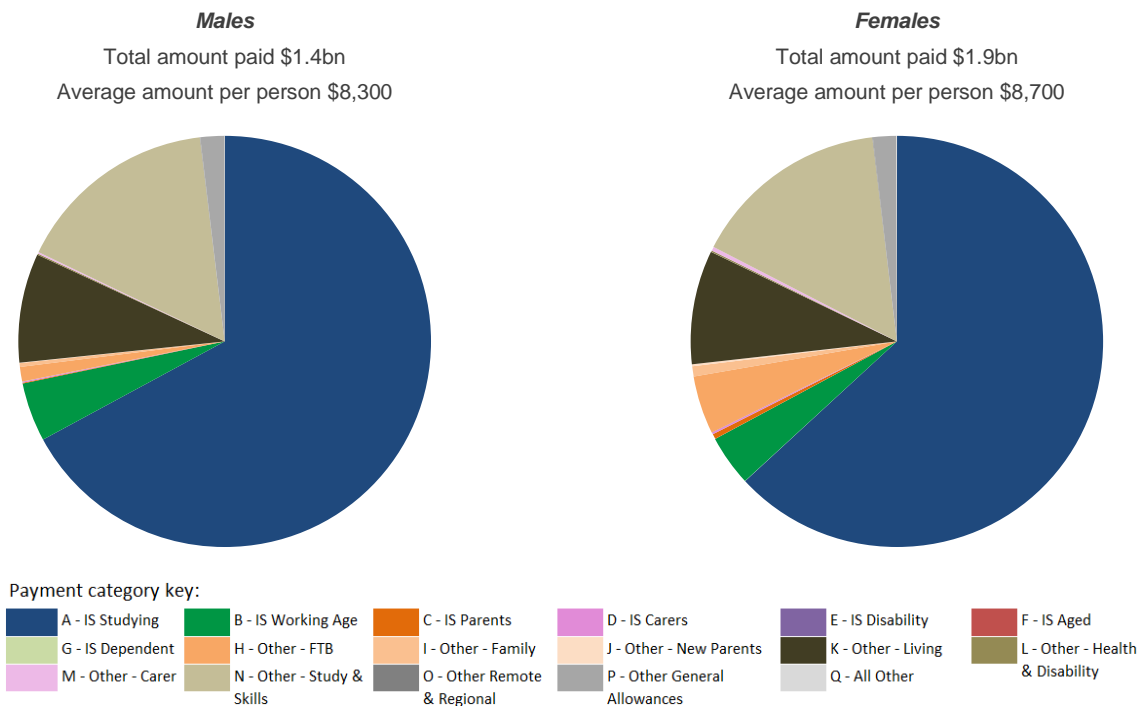


Of these:

- 25% have remained in this class for more than 4 years
- 64%, the majority, entered this class directly in the last 4 years, without being in receipt of any income support payments in the year prior to their entry
 - However, around 10% of the people who entered directly had previously been in receipt of Commonwealth payments
- Over the same time period 10% entered this class from other active classes, and for these people
 - the most common pathway into this class is via the ‘working age’ class, from which 7% entered the class in the last 4 years
 - 3% entered this class from other welfare classes in the last 4 years. The main other classes were class 3 ‘Parents’ and class 7 ‘Non IS Family’.

Looking at the movements into and out of this class we can see that people in this class show a high level of mobility; not only are 64% of the people in the class today new to the class in the last 4 years but a significant proportion of the people in this class 4 years ago are no longer in the payments system. Notwithstanding these dynamics, there are material proportions of people who transition to or from the studying classes from other income support classes, most notably the working age payment class and this group may warrant further consideration.

Figure 31: 2014/15 payments to people in Class 1 - Studying



During 2014/15, people in this class received a total of \$3.3 billion. This is 3.1% of the total payments made in 2014/15.

The average payment is \$8,500 with slightly higher average payments being made to females, as a result of them being more likely to also be claiming FTB and other family payments.

What have we taken into account in fitting assumptions?

Foundation assumptions

Movements in and out of Studying have been fairly stable in recent years. On 1 July 2012, the maximum age for Youth Allowance for non-students and the minimum qualification age for Newstart allowance, both increased from 21 to 22 years [Social Security and Other Legislation Amendment (Income Support and Other Measures) Act 2012]. This appears to have had a small but visible behavioural effect. Following this Studying payment recipients appear somewhat more likely to move to Working Age benefits at ages up to 21 (note the Working Age class includes Youth Allowance (other) payments). Nevertheless, there had always been significant movement to Working Age and exits from Studying.

For the studying class, many people utilise the 'Other study and skills' payment category alongside their primary income support payment and also the living allowance and general supplements that are accessed by most current welfare recipients. These payments are the main drivers of the cost; FTB also contributes for the small proportion that utilise it.

For the main studying payment the average size increases slightly with age, possibly as a direct result of the higher payment levels for older people (e.g. Austudy rates are higher than Youth Allowance) and for people with children.

Risk based assumptions

We refined both the class movement and payment assumptions through consideration of the risk factors that influence the experience.

Upon leaving the studying class most people tend to move to either working age payments (46%) or exit the system (48%). Those who leave quicker than average are more likely to transition onto working age payments, while those who stay in the studying class longer are more likely to exit the system.

The welfare class movement assumptions have been refined to include a number of characteristics, including information about people's family composition, educational attainment and duration in the class. The education

level, age of recipient and additional supplements received over the year contain the most significant information in explaining class movements.

Those receiving other general allowances in addition to the main studying payments tend to be more likely to continue studying. When they do leave the class they are relatively less likely to exit and more likely to move to working age payments.

Both males and females appear to have a lower probability of remaining in class at ages 25 and up. Upon leaving the class the relative risk of moving to working age payments increases with age while the likelihood of exiting the system is greatest around age 25. Unsurprisingly we can also see that parents are more likely to move into the parenting or family non IS classes rather than exit and people who partner during the year are more likely to exit or move into one of the non-income support classes.

The studying payments model differentiates the size of payments made to different people in the class by considering factors including their age and gender, whether they died or changed class during the year and the person's duration in the class and in the whole welfare system. Most of these factors are simply reflecting the person's likelihood of receiving payments for the full year rather than part of it, and the most likely underlying payment rate applicable.

What does the model show for people in the Studying class?

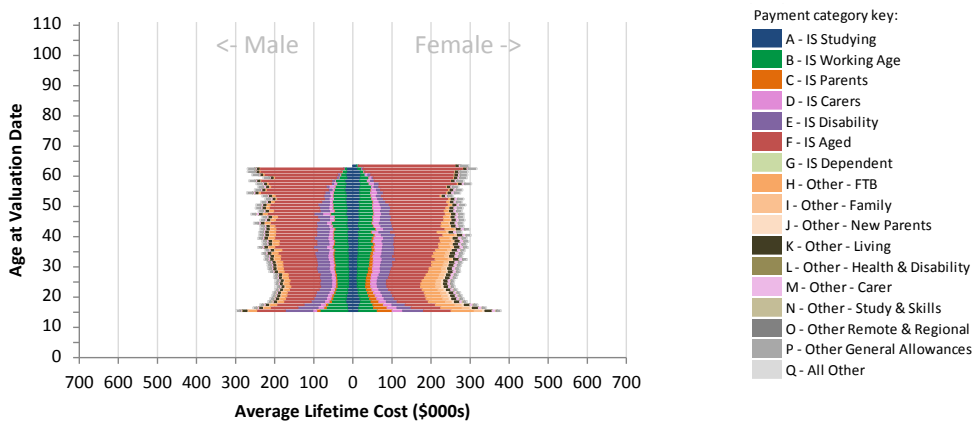
Lifetime costs

392,000 of the people who were in the class during the 2014/15 year were included in the model population (having survived from the time of receipt of payment to 30 June 2015).

We estimated the lifetime cost for this class to be **\$97bn** (or **2.0%** of the total lifetime cost).

The average lifetime cost for people in this class is **\$247,000**, with the variation by age and gender illustrated in the figure below. This is the lowest average lifetime cost of the pre-retirement income support classes, despite the people in this class generally being younger and thus having a longer future lifetime.

Figure 32: Average lifetime cost by age and gender (Class 1)



We can see that the most substantial part of this cost is for the age pension. This component of the average lifetime cost is lower for younger people as their time of retirement is further away and because younger people are more likely to exit and may later draw a lower level of age pension.

The next most apparent feature is the difference between the average lifetime costs for men and women. Women have higher costs through most of the age range as they are more likely to receive FTB or other family payments.

For both men and women there are additional cost components for all the main income support payment types reflecting the probability of people moving from the current studying class onto these payments. There are some differences between the genders, in particular reflecting the differential chances of moving onto parenting payments versus working age payments.

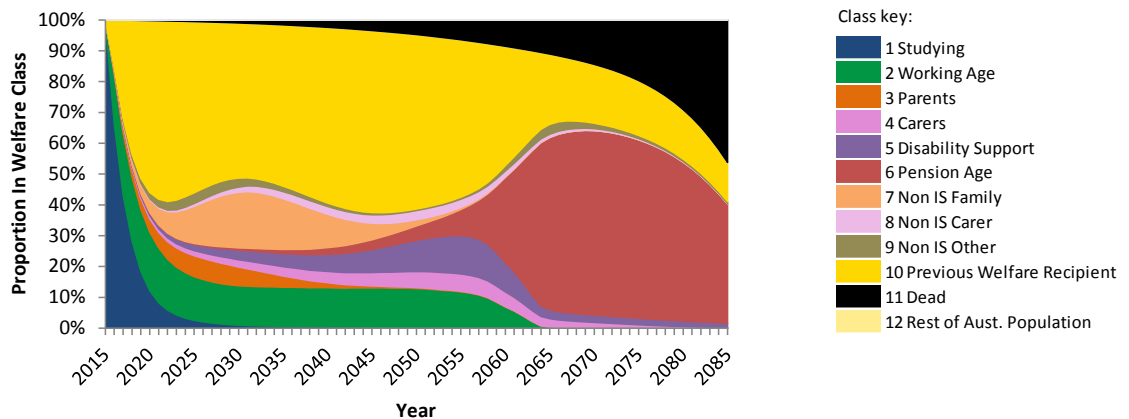
The average lifetime costs are expected to be higher for the very youngest people in this class, typically those receiving Abstudy payments. This reflects the different mix of people at these ages, compared to the slightly older groups who include people receiving Abstudy, Austudy and Youth Allowance (student). Note that

indigenous status was included in the risk factor model for the Studying class, reflecting the different usage of Abstudy payments.

Future outcomes

In developing the valuation results the projection model also produces information on the expected transitions for people out of each class, as shown below.

Figure 33: Expected future trajectory for people in Class 1



We can see the expectations are that:

- Most people (around 85%) exit the class over the next 5 years however only around half of those present today are expected to leave the payment system completely over this timeframe. Of the rest:
 - many move onto working age payments and some onto parenting payments
 - small proportions move onto Carer payment and Disability Support Pension
- Of the group who exit over the next 5 years, a proportion later return to the non-income support classes 7 or 9 over the following 10 years, presumably as they have their families and receive FTB and family payments.
- There are a small number of people who we expect to remain in, or exit and return to, this class over the next 10 years. It may be worth exploring which types of people remain on these payments for extended periods.
- Around 25% or more of the original group receive some form of income support payment in each projected year over the average lifetime of the group
- In 2050, after 35 years, just over 30% of the original group are projected to be on some form of income support payment

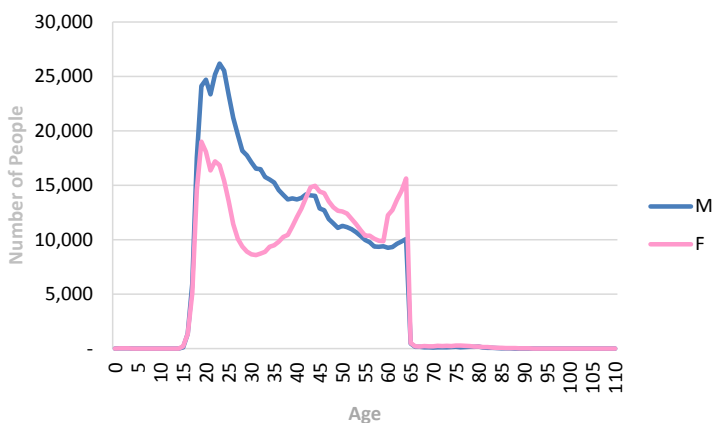
9.2 Working Age Payment recipients

What does the data tell us about Working Age people?

There were 1,304,000 people in the Working Age class for the 2014/15 year. This included a mix of both males and females albeit with more males at younger ages. The numbers in the class peak for people in their twenties and then gradually reduce up to pension age.

The class has a greater proportion of males than females; we consider this is most likely to be because more females are receiving Parenting or Studying payments.

Figure 34: 2014/15 profile of people in Class 2 – working age (age/gender)

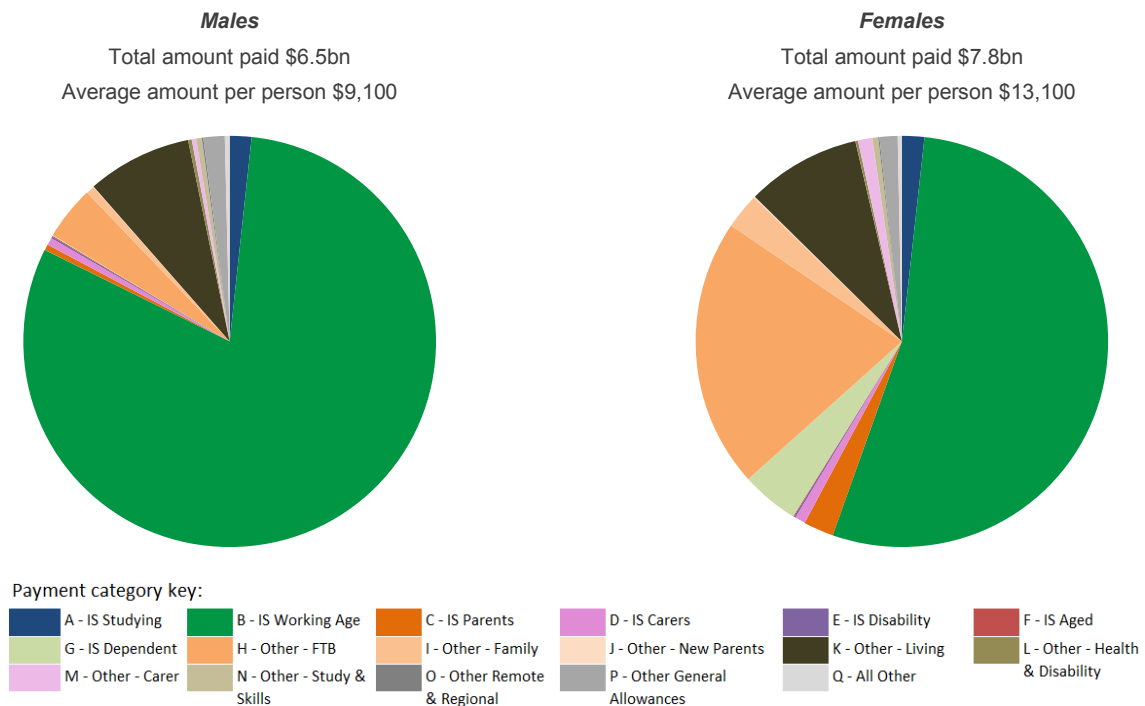


The people in this class represent 16.1% of the people who received a payment in the 2014/15 year. Of these:

- 35% have remained in this class for more than 4 years
- 40% entered this class directly in the last 4 years, without being in receipt of any income support payments in the year prior to their entry
 - A significant proportion of these (40%) had previously been in receipt of Commonwealth payments.
- 25% of people entered this class over the last 4 years from other active classes, of whom
 - For women, the most common pathway into this class is via the Parenting class, from which 10% entered the class in the last 4 years. Smaller proportions entered from the Studying class or from the Non IS Family class.
 - For men, 13% entered this class from other welfare classes in the last 4 years. The main previous class was class 1 – Studying.

Looking at the movements out of this class we can see that people in this class show some mobility, with a mixture of exits from the system and movements to a range of other classes.

Figure 35: 2014/15 payments to people in Class 2 – working age



During 2014/15, people in this class received a total of \$14.3 billion. This is 13.1% of the total payments made in 2014/15.

The average payment is \$10,900 with considerably higher average payments being made to women than men. As can be seen from the charts this is because of their greater propensity to receive FTB and family payments alongside the main working age payment.

The working age class also contains a small group of dependants, being people receiving either Partner Allowance or Widow Allowance. The eligibility criteria for these payments are such that this group are all age 60 or above at the valuation date and almost all women. The contribution of the payments made to this group can be seen in the chart for females above.

What have we taken into account in fitting assumptions?

Foundation assumptions

In setting the class movement assumptions we have observed a small but steady increase in the proportion of individuals remaining in this class year on year from 2012 onwards, especially for females. This may be a flow-on effect of policy changes that reduce the ease of transitioning to other classes, such as to the Parenting class, or to the DSP class.

In terms of the payment utilisation assumptions, many people receive FTB and family payments and some receive other study and skills payments, all alongside their main income support and other living and pension supplements.

The working age payment, FTB and other living payments make up most of the overall cost. For the main working age payment, the average annual payment increases slightly with age especially for women, which may simply be a reflection of older people being more likely to be in the class for the full year. There is also an increase in sizes from ages 60 to 65, likely due to the higher rates available for people aged 60 or over.

We have also observed an overall increase in the main working age payment average size over the last 5 years. This is likely caused by longer durations on benefit, and may also be related to having more older people in the class owing to the increase in female retirement age and tightening of the DSP eligibility criteria. Our average payment assumptions have been based on the average of the experience over the last 3 years.

Risk based assumptions

We have refined both the class movement and payment assumptions through consideration of the risk factors that influence the experience.

A person's duration in the class is a significant predictor of remaining in the class and therefore of a higher average lifetime cost. Each year spent in the class reduces the probability of leaving this class in the following year. If a recipient does not leave within the first two years their average duration in class is predicted to be 7-8 years. It may be worth conducting additional investigations to better understand the factors that could predict the likelihood of leaving within the first two years, and to inform tailored interventions for high risk people during this period.

For the assumptions for movements out of this class, we have considered combination of factors, both those relating to the recipient; age, gender, education level, partnering status, number of dependent children, and age of youngest child; and those relating to how the recipient interacts with the system; how long they've been in the class, detail of other payment types and supplements previously received.

Factors which have the largest impact on a persons' trajectory are: the number of dependent children a recipient has, the highest level of education attained, their previous payment class, their current utilisation of payments and the length of time spent receiving working age payments. Those who have attained a higher level of education in either a bachelor's degree or higher are relatively more likely to exit the system than those with a lower level of education attained.

For the payment models we have focussed on modelling the payment levels for the main working age income support payment category. This model recognises information which impacts people's payment levels and the number of weeks on payment during the year, including partner status and the duration in class.

What does the model show for the current Working Age group?

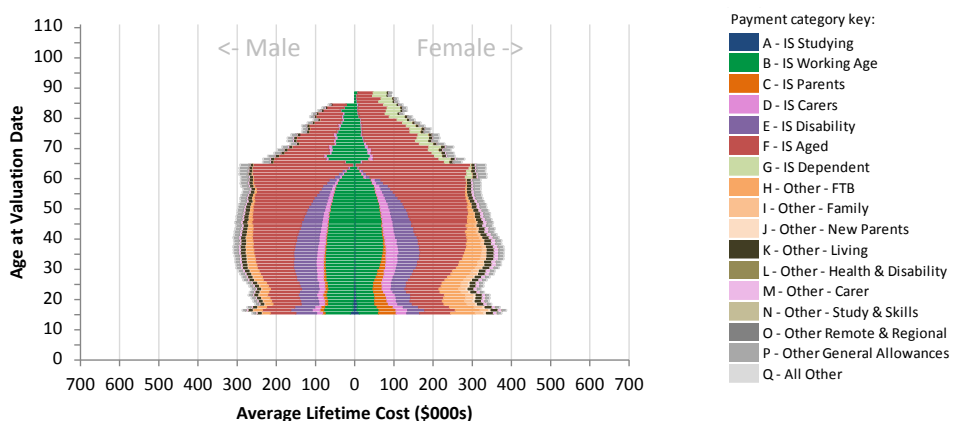
Lifetime costs

1,302,000 of the people who were in the class during the 2014/15 year were included in the model population (having survived from the time of receipt of payment to 30 June 2015).

We estimated the lifetime cost for this class to be **\$410bn** (or **8.6%** of the total lifetime cost).

The average lifetime cost for people in this class is **\$315,000**, with the variation by age and gender illustrated in the figure below.

Figure 36: Average lifetime cost by age and gender (Class 2)



The vast majority of people in this class are in the age range 15 to 65 and we discuss this group in the paragraphs that follow. There are a very small number of people under age 15 and a small number of people over age 65. These two groups consist of people receiving some of the smaller payment types such as special benefit and sickness allowance, who are assigned to this class. For these:

- The average lifetime cost for the older group is a reflection of the people's payment levels and future lifetimes; most would be expected to move into the age pension class

Results for current welfare recipient classes

- For the younger group the average lifetime costs shown reflect typical expectations of life experience based on similar past groups

For the main 15-65 age group we can see that the largest part of the lifetime cost is from the age pension (note that we expect to see this across most of the classes).

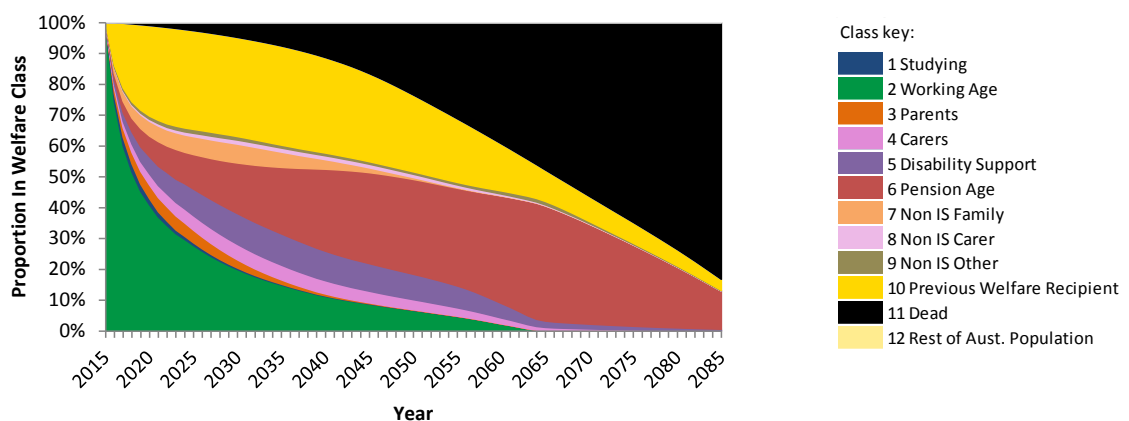
The other main components of the lifetime cost are for:

- Working age payments (for both men and women)
- Disability support pensions (for both men and women)
- Parenting payments (primarily for women)
- FTB and family payments (primarily for women).

Future outcomes

In developing the valuation results the projection model also produces information on the expected transitions for people out of each class, as shown below.

Figure 37: Expected future trajectory for people in Class 2



Some observations we can make based on our analysis are that:

- About 35% of the people currently in the working age class will stop receiving any income support over the next 5 years. Most of these people will stop receiving any payments; the rest will keep receiving one or more of the family payment categories
- Over the same timeframe, of the people who stay on income support payments around 65% remain on the working age payment, a proportion retire and the remainder mostly move onto parenting, carer or disability payments
- Around 40% of the people in this class will either remain or exit and return over the next 5 years and perhaps 20% will remain, or exit and return, to this class over the next 10 years or more.
- For those changing class but staying in the system the most common next class is age pension, though it would be interesting to explore in more detail the characteristics of people moving onto the disability support pension. Note that separate analysis shows a reduction in the number of people moving onto the disability support pension following the tightening of eligibility criteria, and that perhaps around 16,000 people who may have previously moved there from Working Age payment during 2014/15 will now potentially stay in this class.
- In 2050, after 35 years, around 50% of the original group are projected to be on some form of income support payment

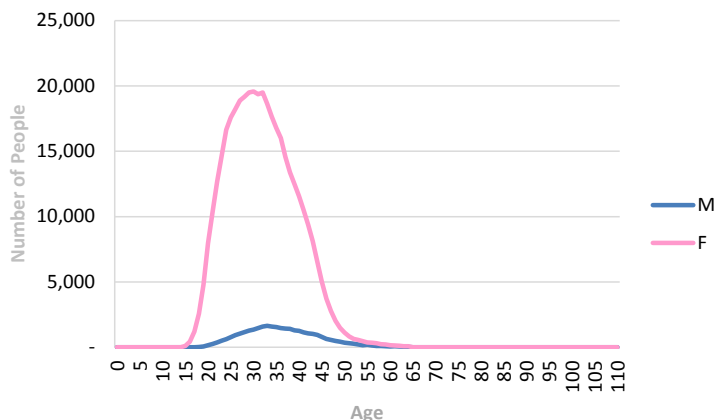
9.3 Parenting Payment recipients

What does the data tell us about Parenting payment recipients?

There were 433,000 people in the parenting class for the 2014/15 year. The people in this class are predominantly women and in the age range 15 to 50.

The people in this class represent 5.3% of the people who received a payment in the 2014/15 year.

Figure 38: 2014/15 profile of people in Class 3 – Parents (age/gender)

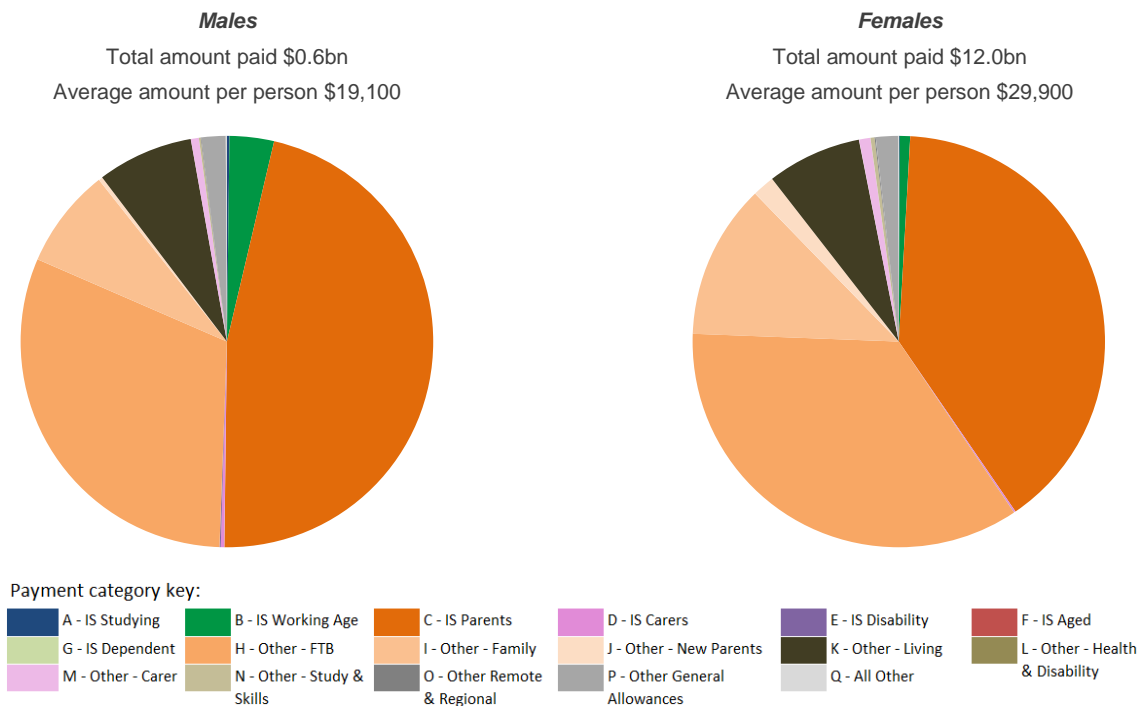


Of these:

- 51% of females and 24% of males have remained in this class for more than 4 years
- 21% of females and 38% of males entered this class directly in the last 4 years, without being in receipt of any income support payments in the year prior to their entry
 - A significant proportion of these (19% of males and 6% of females) had previously been in receipt of Commonwealth payments.
- Over the same time period 29% of females and 39% of males entered this class from other active classes
 - For women, the most common pathways into this class differ by age. Women up to age 25 commonly enter this class via the ‘working age’ class (11% in the last 4 years). Women aged 25 to 40 commonly enter via class 7 ‘Non IS Family’ (10% in the last 4 years).
 - For men, the most common pathway into this class is via the ‘working age’ class, from which 28% entered the class in the last 4 years. In contrast to females, only 5% of males entered this class via class 7 ‘Non IS Family’ in the last 4 years.
 - 7% of both males and females entered this class from other welfare classes in the last 4 years. The main other classes were class 1 ‘Studying’ and Class 9 ‘Non IS Other’.

Looking at the movements into and out of this class we can see that people in this class show considerable mobility. However note that many people exit to other active classes upon ceasing to meet the eligibility criteria for parenting payment, which is linked to the age of the person’s youngest qualifying child. The most common destinations are the Working Age and Non-IS family classes.

Figure 39: 2014/15 payments to people in Class 3 - Parents



During 2014/15, people in this class received a total of \$12.6 billion. This is 11.6% of the total payments made in 2014/15.

Based on the 2014/15 experience, people in this class receive some of the highest average annual payments. It is worth noting that the average amount per person for 2014/15 is likely to be understated. It will not fully reflect all FTB and family payments as these can be received as part of an income tax assessment post 30 June. The 2013/14 overall average (which as at 30 June 2015 would reflect all FTB and family payments) is about \$2,500 or 9% higher than the average for 2014/15. This is a smaller difference than seen for people in the Non IS family class as these payment types form a smaller proportion of the annual payments received and because more people in the class will receive some FTB payments throughout the year alongside their income support payment.

The average payment is significantly higher for women than men as a result of them being more likely to receive FTB and family (child care) payments in addition to the main payment. The rate of the parenting payment itself is higher on average for women, probably because a higher proportion of women are receiving the single rather than the partnered rate.

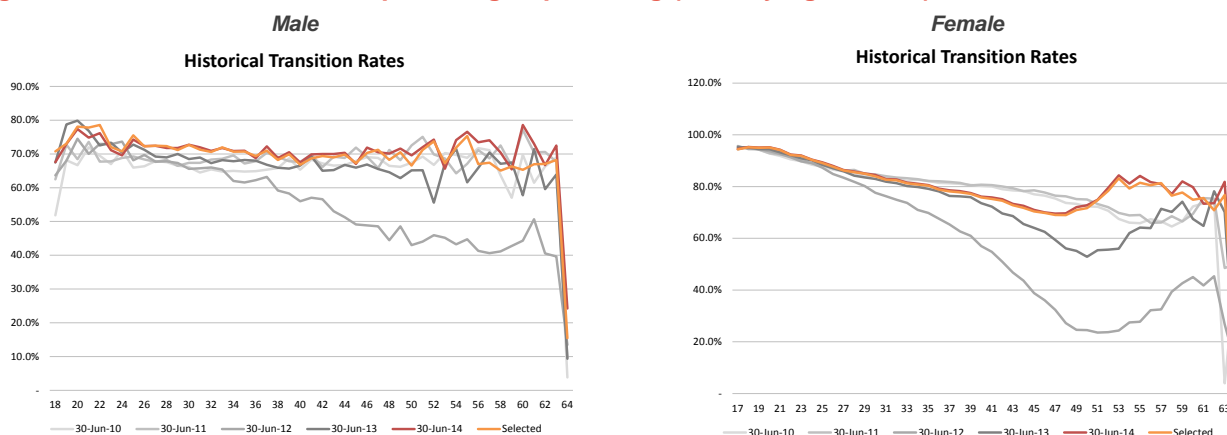
What have we taken into account in fitting assumptions?

Foundation assumptions

Parenting payments eligibility has been significantly influenced in recent years by the removal of grandfathering provisions regarding the age of youngest child.

This is illustrated in the charts below which show the rates of men and women staying in the parenting class. The male rates are more volatile than the female ones owing to the much smaller numbers of men in this class. In both cases there is considerable variability between the past years of experience and in particular the persistency rates are low for the 2012 year which is likely to relate to the removal of the grandfathering provisions.

Figure 40: Transition rates from parenting to parenting (i.e. staying in class)



In selecting class movement assumptions for Parenting, we have taken into account the flow-on effect of this in moving to Non-IS Family and Working Age payments. We consider that the latest 2014 movements for moving to Parenting, Non-IS Family and Working Age are most reflective of the future, after policy changes settled down in 2013. Movements to other smaller classes such as Studying and Carers do not seem to have been affected by policy changes, and we have relied on 3-year average historical rates.

For the payment utilisation assumptions, the majority of people receive both FTB and family payments and some others receive the new parents' payments, all alongside their main income support and other living and pension supplements.

The FTB and family payments make up around half of the overall cost, with the main parenting payment representing around 35% to 40% of the overall cost. For the main parenting payment the average size reduces slightly with age. This may simply be a reflection of older people being more likely to be partnered.

Risk based assumptions

We refined both the class movement and payment assumptions through consideration of the risk factors that influence the experience.

For the assumptions for movements out of this class, we observed that most people stay in the class from year to year and then leave when their youngest child is between five and eight. This reflects the parenting payment eligibility conditions and also changes in behaviour once the children reach school age. Those leaving are most likely to move to the Working Age class or the Non IS Family class, although the detail of this is strongly age dependent. Forming an exception to this pattern were those who also received a carer's supplement. These people were significantly more likely to move to one of the carer's classes and less likely to leave the welfare system altogether.

The model uses a combination of terms relating to the age, gender and indigeneity of the recipient, how long they've been in the class, their partnership status, education level, the age of their youngest child, and detail of other payment types and supplements previously received. The most significant terms are those covering the age of youngest child (specifically for ages between five and eight inclusive), whether the recipient received a non-income support carer or a family tax benefit payment previously, and their partnership status in the following year.

For the payment models we focussed on modelling the payment levels for the primary income support payment category and included information on partner status.

What does the model show for current Parenting payment recipients?

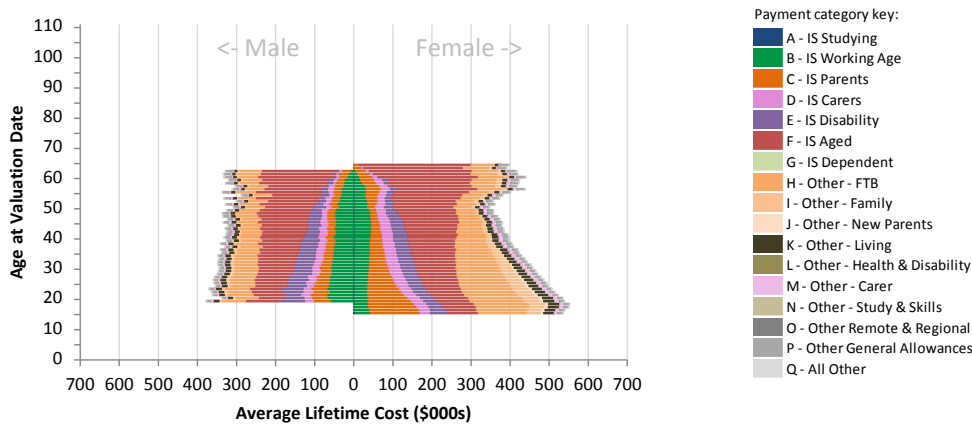
Lifetime costs

432,000 of the people who were in the class during the 2014/15 year were included in the model population (having survived from the time of receipt of payment to 30 June 2015).

We estimated the lifetime cost for this class to be **\$191bn** (or **4.0%** of the total lifetime cost).

The average lifetime cost for people in this class is **\$441,000**, a significantly higher amount than for the studying or working age class.

Figure 41: Average lifetime cost by age and gender (Class 3)



There is significant variation by age and gender illustrated in the figure above.

For men the average lifetime cost is much lower than for women (**\$340,000 vs. \$450,000**). This reflects the previous observation, that women typically receive higher annual payments as a result of receiving more FTB and family payments.

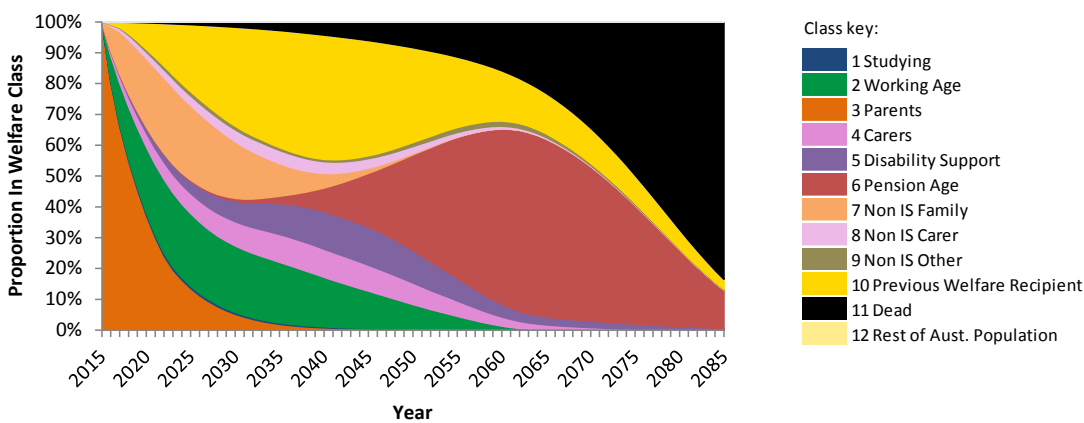
The average lifetime costs are higher for the younger people in the class, especially the younger women. This is because they are more likely to stay on the parenting payments for longer and also may be more likely to transition to other types of income support.

The average lifetime costs also have small but clear contributions from both disability support and carer payments. These reflect the likelihood of people in the parenting class to move into these classes in future years.

Future outcomes

In developing the valuation results the projection model also produces information on the expected transitions for people out of each class, as shown below.

Figure 42: Expected future trajectory for people in Class 3



We can see the expectations are that:

- There is a steady reduction in numbers of current parenting payment recipients remaining on those payments.
 - Most of the reduction takes place over the next 10 years
 - This is related to the current and future family composition of the people in this class and specifically the link between parenting payment eligibility and the age of a person’s youngest child.

Results for current welfare recipient classes

- As people exit this class a significant proportion move first to the Non IS family class (i.e. they receive only FTB or child care payments)
- Perhaps 30% of people currently in the class will move into another income support class when they exit parenting payment. The most common next income support destination is working age, followed by carer or DSP.
- In 2050, after 35 years, around 55% of the original group are projected to be on some form of income support payment

9.4 Carers (Income Support)

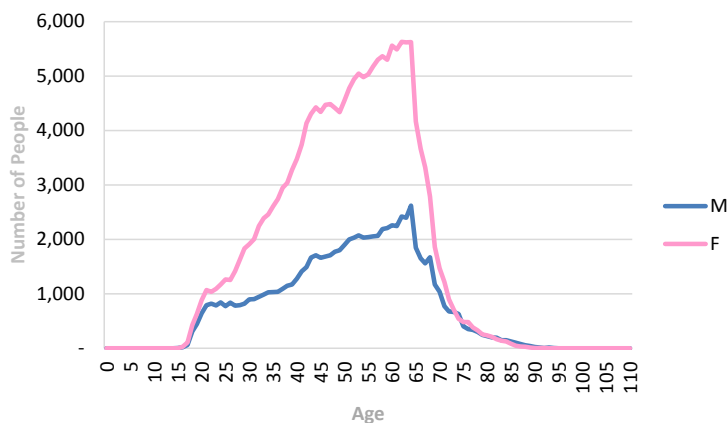
This class includes people receiving the Carer Payment in 2014/15. People receiving Carer Allowance, an income supplement, are in the Non income support carers class, Class 9.

What does the data tell us about Carers?

There were 266,000 people in the Carers class for the 2014/15 year. This included significantly more women than men. The numbers in the class increase by age up to pension age and then reduce as most retire; however there are material numbers of people in the Carers class who are over pension age.

The people in this class represent 3.3% of the people who received a payment in the 2014/15 year.

Figure 43: 2014/15 profile of people in Class 4 – carers (age/gender)

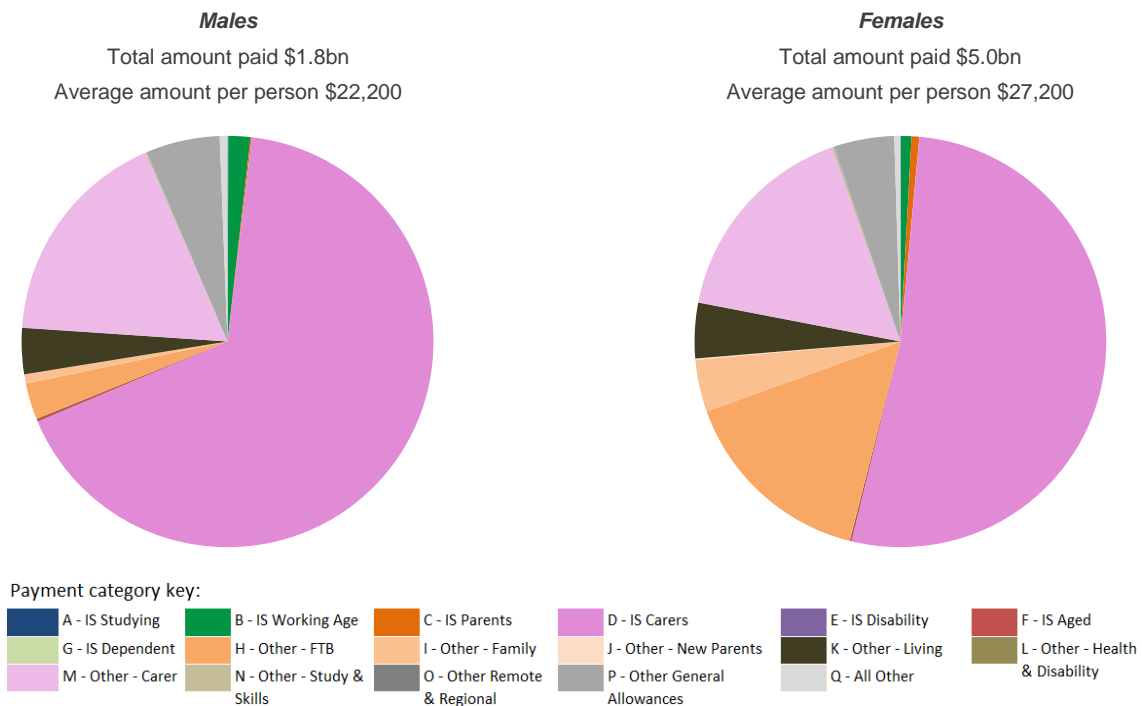


Of these:

- 50% have remained in this class for more than 4 years
- 15% of females and 25% of males entered this class directly in the last 4 years, without being in receipt of any income support payments in the year prior to their entry
- Over the same time period 32% entered this class from other active classes, of whom
 - For men, the most common pathway into this class is via the Working age class, from which 18% entered the class in the last 4 years. Small proportions also entered from all the other active classes
 - For women, the most common pathway into this class is via the Parenting class, from which 13% entered the class in the last 4 years. Others entered from the Working age class and small proportions also entered from all the other active classes

Looking at the movements into and out of this class we can see that people in this class show limited mobility. Whilst the numbers entering the class each year are relatively small, the main exits from the class are through retirement or movement to the working age class; only a small proportion of people from the class directly exit the welfare system.

Figure 44: 2014/15 payments to people in Class 4 - carers



During 2014/15, people in this class received a total of \$6.8 billion. This is 6.3% of the total payments made in 2014/15.

Based on the 2014/15 experience, people in this class receive some of the highest annual payments, being \$25,600 on average. Higher average payments are being made to women, as a result of them being more likely to also be claiming FTB and other family payments.

What have we taken into account in fitting assumptions?

Foundation assumptions

In developing the class movement assumptions for people in this class we observed that Carer is a very 'sticky' class, with more than 80% of recipients remaining in the class in any year. This is more so in recent years, after the introduction of allowances to supplement Carer income. There also appears to be an increase in transitions into this class, with a stable flow of people from all ages moving to Carer, including from the Age Pension, which may be due to the fact that the total available payments are higher for people in this class.

For the payment utilisation assumptions almost everyone in this class receives carers allowance or supplement as well as their carer payment and many of the people of parenting age also receive FTB and family payments, especially the women. Most also receive other living and general supplements.

Around 55% of the overall cost is from the main carer payment and the amount of this is fairly consistent across people of all different ages. Conversely the utilisation of the FTB and family payments varies considerably by age with a clear concentration in the typical parenting age range.

The main carer payment sizes are relatively stable by age. We have also observed an overall increase in the main carer payment average size over the last 5 years. This is likely caused by longer durations on benefit, leading to a greater proportion of full year payments. Our average payment assumptions have been based on the average of the experience over the last 2 years.

Risk based assumptions

We refined both the class movement and payment assumptions through consideration of the risk factors that influence the experience.

In developing the class movement assumptions, while the data analysed did not make it clear who was being cared for, it is evident from the data itself that there are several distinct subgroups, corresponding to those caring for a child, those caring for a parent and those caring for a partner. This leads to quite different factors

emerging as important for different age groups, with the major difference being between those of or close to pension age and those who are younger.

Younger recipients are more likely to leave this class if they are single or if they had received a bereavement or crisis payment. If they had previously received Working Age payments then they were more likely to return to the Working Age class. The most significant variables for this model were whether the recipient had received a bereavement or crisis payment recently, their partnership status, and whether the recipient received an income support Working Age payment previously.

People persist in this class up to and frequently beyond retirement age. For people close to or above retirement age, the model incorporates factors to reflect the probability of moving to age pension, or of ceasing to care for a partner (again, the recent receipt of a bereavement payment was used as a proxy in this regard).

The model of payment levels for the main carer payment is a relatively simple model which includes details of the person's partner status and duration in class. These factors are correlated to their payment level and likelihood of receiving a full year rather than part year of payments.

What does the model show for Carers?

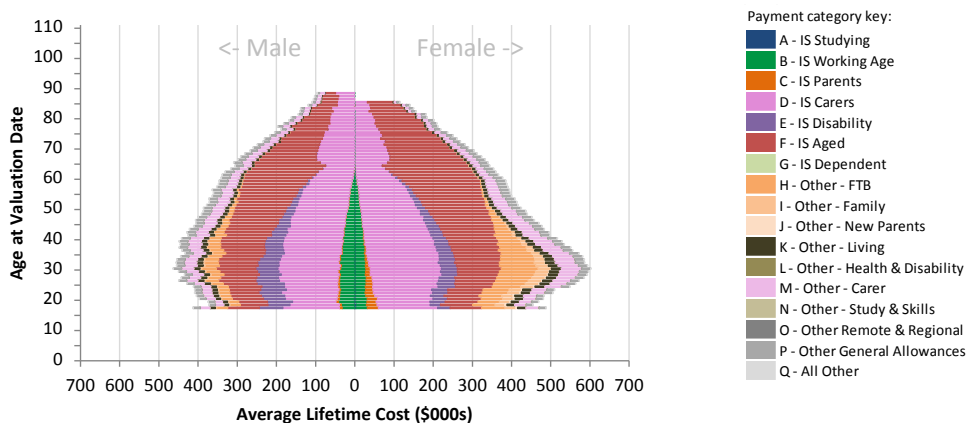
Lifetime costs

265,000 of the people who were in the class during the 2014/15 year were included in the model population (having survived from the time of receipt of payment to 30 June 2015).

We estimated the lifetime cost for this class to be **\$109bn** (or **2.3%** of the total lifetime cost).

The average lifetime cost for people in this class is **\$411,000**, with the variation by age and gender illustrated in the figure below.

Figure 45: Average lifetime cost by age and gender (Class 4)



For both genders these average lifetime costs include significant amounts of the carer payment and age pension and contributions from a range of supplementary payment categories.

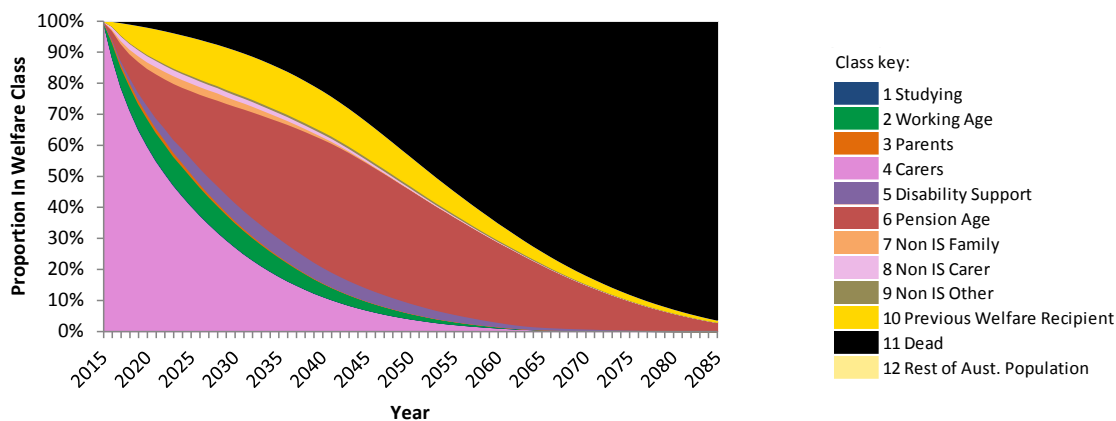
The costs are noticeably higher for women than men and especially so for those at young to mid ages. This arises from higher additional costs of FTB and family payments and from more women transitioning to parenting payments.

The average lifetime cost pyramid shows a small discontinuity at age 65 but then continues through the full age range reflecting the composition of people in the class. The discontinuity arises as many people move to the pension class once they are over this age. For the small proportion of people who continue in this class once they are above their pension age, the average lifetime cost is mainly comprised of a mix of Carer payment and age pension.

Future outcomes

In developing the valuation results the projection model also produces information on the expected transitions for people out of each class, as shown below.

Figure 46: Expected future trajectory for people in Class 4



The model projections indicate that:

- More than 60% of the people in this class are expected to remain there for the next 5 years (or exit and subsequently return) and perhaps 40% are expected to be receiving carers payment pension in 10 years' time.
- For those who exit over the next 10 years:
 - Around half of these move onto another income support payment. The biggest destination is age pension, although a material proportion of people move onto working age payments.
 - Most of the remainder either exit the system or die.
- In 2050, after 35 years, around 45% of the original group are projected to be on some form of income support payment

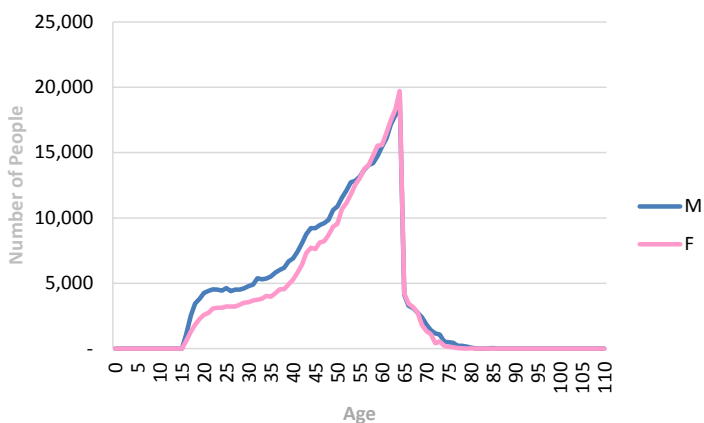
9.5 Disability Support Pensioners

What does the data tell us about Disability Support Pensioners?

There were 827,000 people in the disability support class for the 2014/15 year. After the age pension and working age classes it is the largest income support class. This included a mix of both males and females albeit with more males at younger ages. The numbers in the class increase by age up to pension age and then reduce as most retire; some people persist beyond retirement age.

The people in this class represent 10.2% of the people who received a payment in the 2014/15 year.

Figure 47: 2014/15 profile of people in Class 5 - disability support (age/gender)



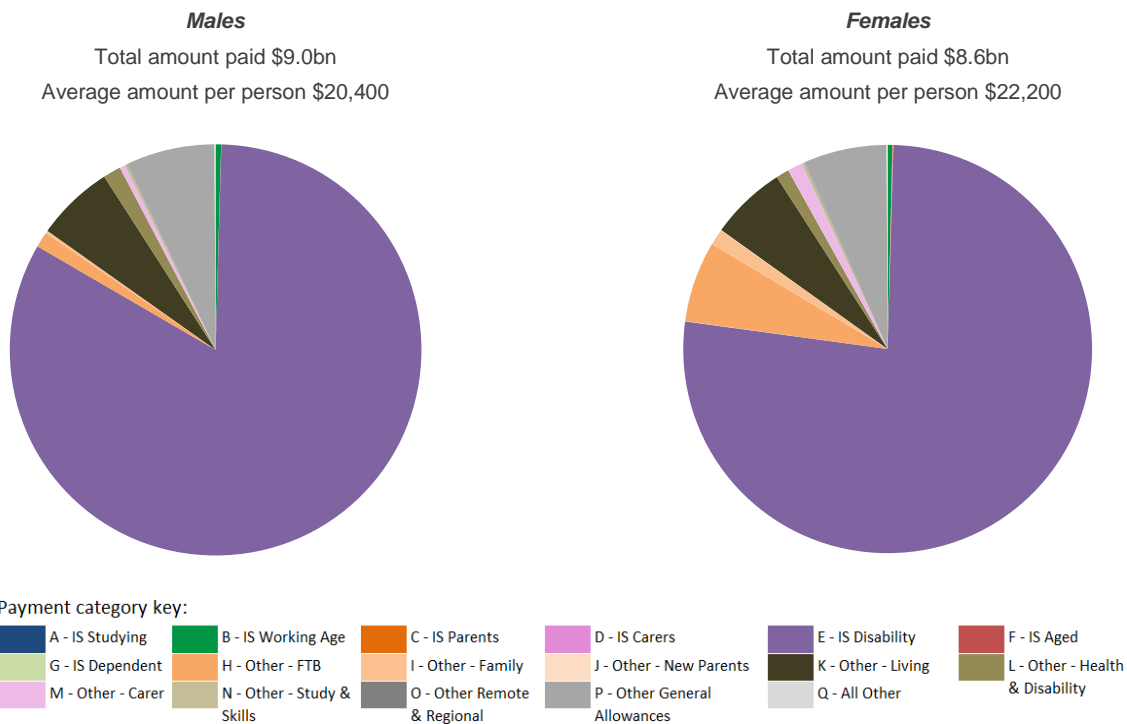
Of these:

- 79% have remained in this class for more than 4 years
- 10% entered this class directly in the last 4 years, without being in receipt of any income support payments in the year prior to their entry
- Over the same time period 11% entered this class from other active classes, of whom
 - For men, the most common pathway into this class is via the 'working age' class, from which 8% entered the DSP class in the last 4 years. Only 2% entered this class from the remaining active classes.
 - For women, 13% entered this class from other welfare classes in the last 4 years. The main class was 'working age' (6%), with another 6% entering the class from class 1 'Studying', class 3 'Parents', class 4 'Carer' and class 7 'Non IS Family'.

We conducted some additional analysis to compare the group entering this class from outside the system, with those entering from other income support classes, and how this was changing over time. This analysis showed that in the last 2 years, the number of new entrants to the class has fallen from the previous level of approximately 50,000 per year (in 2012) to 34,000 in 2015, in response to the tightening of eligibility criteria. There has been a larger drop in those emerging from working age and parenting payments than from outside the system, and the drop includes a downwards trend in the number of primary medical conditions which are listed as having psychological or muscular medical conditions. Although numbers are small, there has also been an increase in the number of new recipients with cancer-related conditions.

Looking at the movements into and out of this class we can see that people in this class show very limited mobility into and out of the class. The numbers entering the class each year are much smaller than for many of the other classes, and the main exits from the class are only through retirement or death.

Figure 48: 2014/15 payments to people in Class 5 - disability support



During 2014/15, people in this class received a total of \$17.6 billion. This is 16.2% of the total payments made in 2014/15.

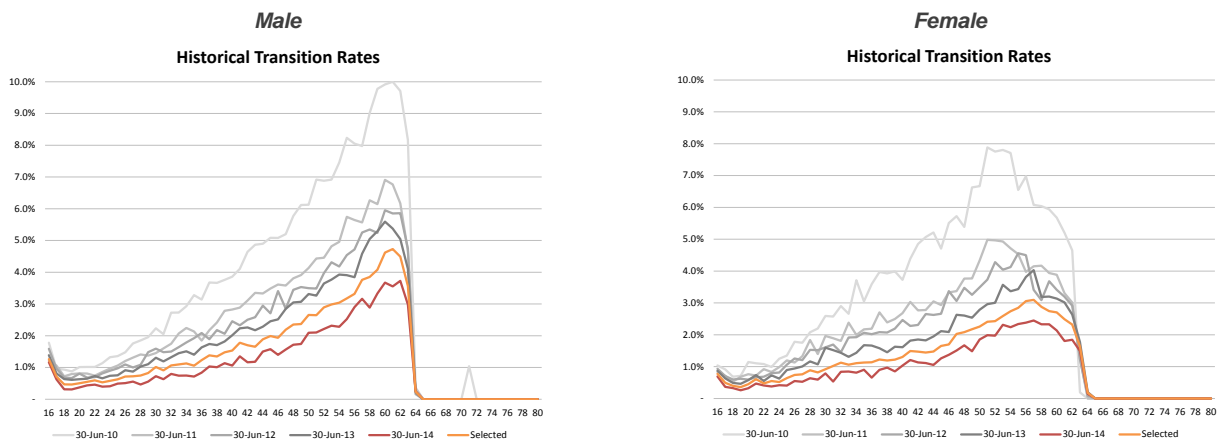
The average payment is \$21,300 with slightly higher average payments being made to females, as a result of them being more likely to also be claiming FTB.

What have we taken into account in fitting assumptions?

Foundation assumptions

In fitting the foundation assumptions we noted that the movements into this class have been reducing year by year. This is the case for movements from all other classes, including entries from previous welfare recipients and the rest of the Australian population. An example of this is the movement from working age payments into the disability support pension, as illustrated in the chart below.

Figure 49: Transition rates from working age to disability support pension (age/gender)



We have discussed this with the Department and understand this experience is likely to be a reflection of a series of policy changes that have been made over recent years, all tightening the eligibility criteria for the Disability Support Pension – as discussed earlier.

For existing DSP recipients, experience has been stable with a very high proportion of people remaining on benefits for long periods of time. The persistency in class has grown slightly in recent years.

For the payment utilisation assumptions around 5% to 10% of people receive FTB and Family payments, and around 10% receive Other Health & Disability payments. Almost everyone receives other living and general supplements.

The majority of the cost (around 80%) is from the main disability support payment. The remainder of the cost is mainly in the FTB, other living and general supplement payment categories.

The main Disability Support Pension payment sizes have a slight downward shape by age; this may be a reflection of older people being more likely to be partnered which has a lower rate. Also lower rates are paid to people under 21. We have also observed an overall increase in the main disability support payment average size over the last 5 years. This is likely caused by longer durations on benefit.

In recognition of the variations in past experience, the selected class movement and average payment assumptions have been based on the average of the experience over the last 2 years.

Risk based assumptions

As the main movement out of this class is at retirement and this is already fully allowed for in the foundation assumptions our primary focus for refining the model was developing risk based assumptions for the main disability support pension payment. We have not developed risk based class movement assumptions out of this class at this stage, though note that the probability of entering the class is based on risk based assumptions contained in other class models.

The model of payment levels for the main disability support pension is a relatively simple model which includes details of the person's age, partner status and durations in the class and income support system. These factors are correlated to the persons' payment level and likelihood of receiving a full year rather than part year of payments respectively.

What does the model show for current Disability Support Pensioners?

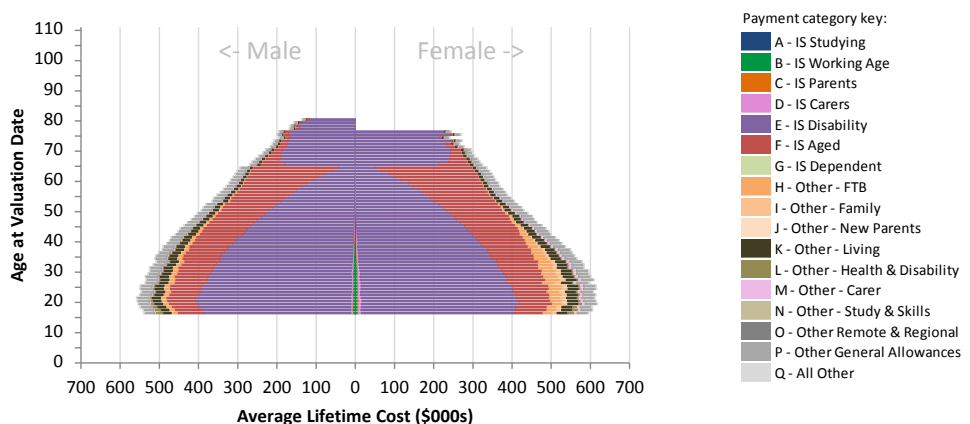
Lifetime costs

813,000 of the people who were in the class during the 2014/15 year were included in the model population (having survived from the time of receipt of payment to 30 June 2015).

We estimated the lifetime cost for this class to be **\$338bn** (or 7.1% of the total lifetime cost).

The average lifetime cost for people in this class is **\$416,000**, with the variation by age and gender illustrated in the figure below. It is interesting to note that this class represents around 10% of current welfare recipients but represents a greater proportion, 15.9%, of total lifetime costs for current welfare recipients. This is because these welfare recipients are less likely than average to exit the system.

Figure 50: Average lifetime cost by age and gender (Class 5)



We can see that the most substantial part of this average lifetime cost is for the disability support pension itself, with the age pension also being a key component of the average lifetime cost for people below pension age. At all ages a number of supplements that are paid alongside the pension also contribute to the cost.

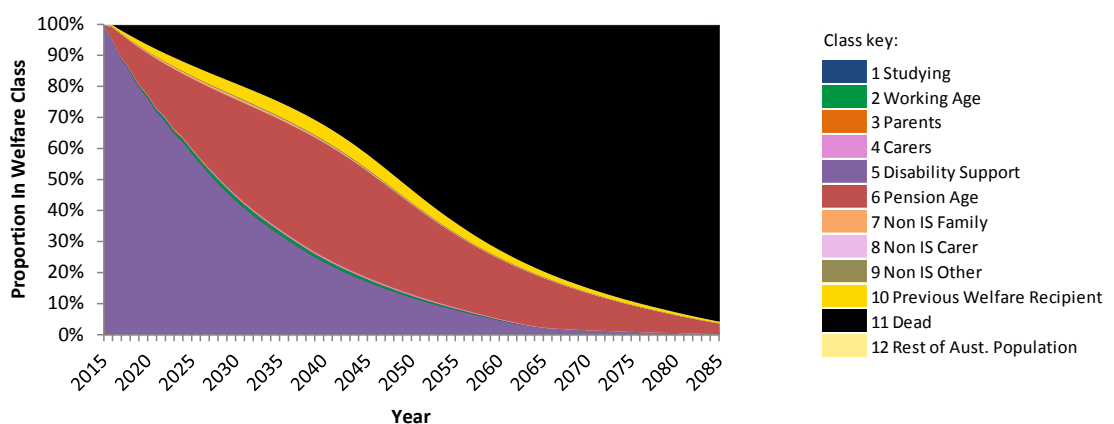
The average lifetime cost is higher for younger people with a steady reduction as people age. This is a reflection of the extremely high persistency in the payment system for people in this class – as people are not expected to exit the system the main determinant of the lifetime cost is then the expected duration of the person’s future lifetime.

The average lifetime cost pyramid shows a change at age 65 as most people would leave this class and instead be in the pension class once they are over this age. For the small proportion of people who continue in this class once they are above their pension age, the lifetime cost is comprised primarily of the disability support pension. This simply reflects the reduced likelihood of them transitioning to the age pension at some later stage.

Future outcomes

In developing the valuation results, the projection model also produces information on the expected transitions for people out of each class, as shown below.

Figure 51: Expected future trajectory for people in Class 5



This reinforces the observation that most people only exit this class through death or retirement.

- More than 60% of the people in this class are expected to remain there for the next 10 years (or exit and subsequently return) and around one third are expected still to be receiving disability support pension in 20 years’ time.
- About half the people currently in the class are expected to be receiving either DSP or age pension in 30 years’ time (and are most likely to also do so for all the intervening years).
- In 2050, after 35 years, just over 40% of the original group are projected to be on some form of income support payment

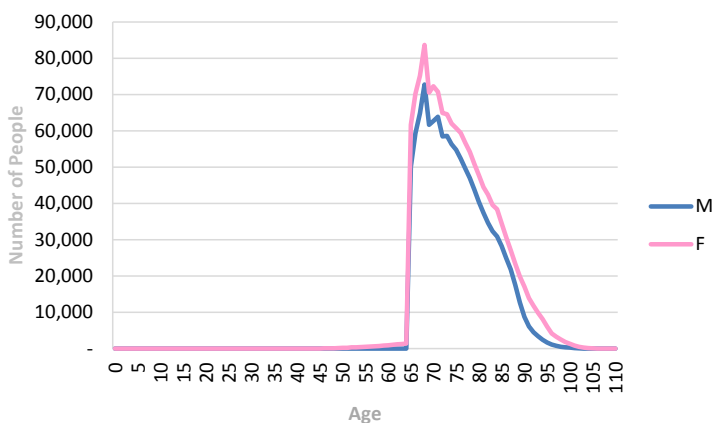
9.6 Age Pensioners

What does the data tell us about Age Pensioners?

There were 2,588,000 people in the age pension class for the 2014/15 year; it is the biggest income support class by a considerable margin. The people in this class represent 31.9% of current welfare recipients.

The class includes a mix of both men and women albeit with slightly more women. This is most likely a result of greater female longevity. The vast majority of people in the class are past pension age, however a small number of younger people have been included through their receipt of either wife pension or widow B pension.

Figure 52: 2014/15 profile of people in Class 6 – age pension (age/gender)

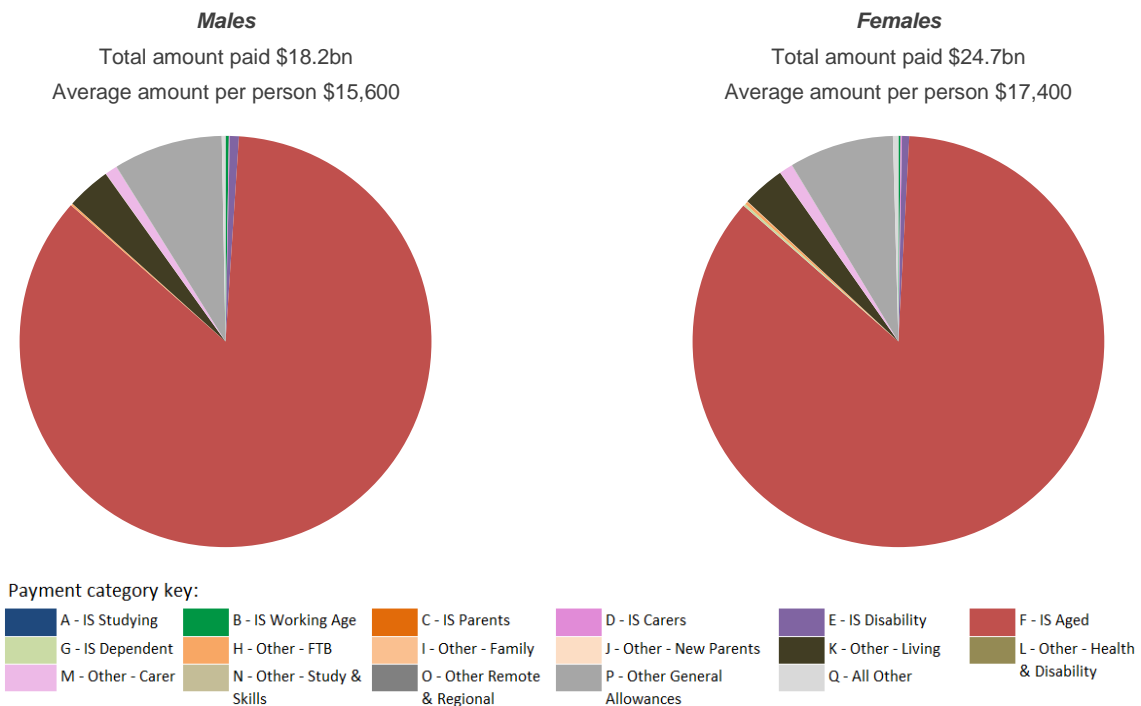


Of these:

- The majority of people enter the class on reaching their age pension qualifying age (pension age). Prior to entering the age pension class these people were in a mix of classes:
 - 13% of women and 20% of men were in the non-active classes
 - Those arriving from elsewhere in the welfare system were mostly from the DSP (4%) or working age (3%) classes (these being the main pre-retirement classes available to older working age people)

Looking at the movements out of this class we can see that most people (93%) in this class remain in it from one year to the next. A small number of people leave the class (presumably as a result of changes in their personal circumstances), otherwise people exit at the end of their lives.

Figure 53: 2014/15 payments to people in Class 6 – age pension



During 2014/15, people in this class received a total of \$42.9 billion. This is 39.4% of the total payments made in 2014/15.

The average payment is \$16,600. The average payments are slightly higher for women than men, possibly as a result of more of them receiving the single rate.

What have we taken into account in fitting assumptions?

Foundation assumptions

People from all welfare classes generally move into the age pension class on reaching age pension qualifying age ('pension age'). Once in the Age Pension, people generally stay there until death. There are small numbers of movements to the Carer class and also a small number of exits.

For the payment utilisation assumptions, around 5% of people receive the carer allowance and/or supplement. Almost everyone receives other living and general supplements.

The majority of the cost (over 85%) is from the main age pension payment. The general supplement and other living payment categories are the largest components of the remaining cost.

The main Age Pension payment sizes show an upward sloping shape by age. This may be related to there being more single people at older ages (and thus receiving higher rates of payment) and also people's income and assets may reduce as they get older, which increases the pension payment.

Risk based assumptions

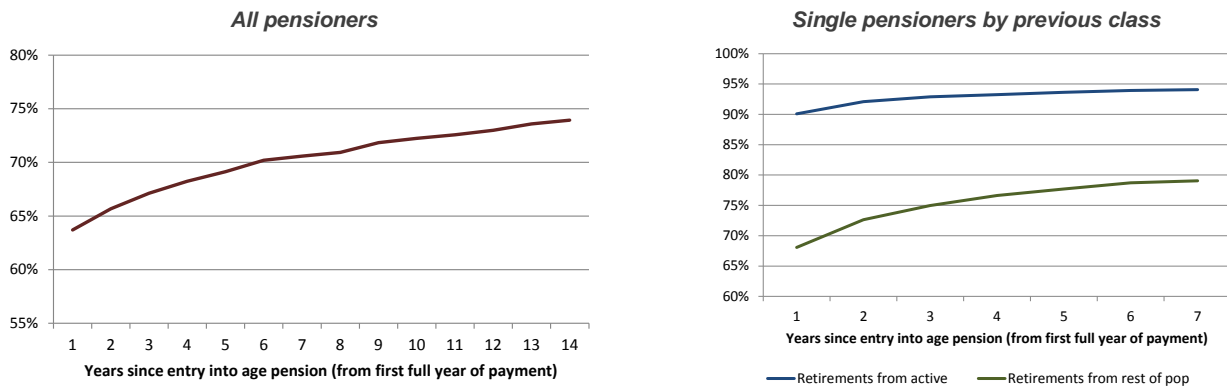
The main movement out of this class is through mortality and this is already fully allowed for in the foundation assumptions. Thus our focus for refining the models for this class was in developing risk based assumptions for the main age pension payment and in understanding the trends in the mix of pensions that will occur in future years.

We refined the foundation age and gender based payments assumptions by also considering factors such as the persons' partner status, the age at which they entered the pension class and whether they entered from another income support class. We have observed that around two thirds of people entering the age pension class from another income support class are full pensioners at the start of their retirement as compared to less than a quarter of people entering the class from a non-income support class or from the previous welfare recipient or the rest of the Australian population groups.

We also explored how peoples' payment levels change as they progress through their retirement years. We investigated this by examining the changes in the level of age pension payments to people as a proportion of the full single pension, as shown in the left hand chart in the figure below. This clearly shows an increasing trend, however as shown in the right hand chart, some of this may be explained by other factors such as the persons previous class (which is a proxy for being a full or part pensioner) and the change in mix of single vs. partnered pensioners.

Nonetheless, when examined individually, the trend for all subgroups was for the proportion of full pensioners and average rate of payment to increase the further they progress into their retirement.

Figure 54: Illustration of trends in pension levels over a person's retirement



The risk based assumptions allow for this by explicitly modelling how people move between full-single, full-couple and part rates of annual payment. A key driver of the change from full-couple to full-single rate is partner longevity. Although we have not been able to model these cost drivers at this stage, the gradual shift to higher rates of payment may also be influenced by movements in asset values and changes in pensioner behaviour.

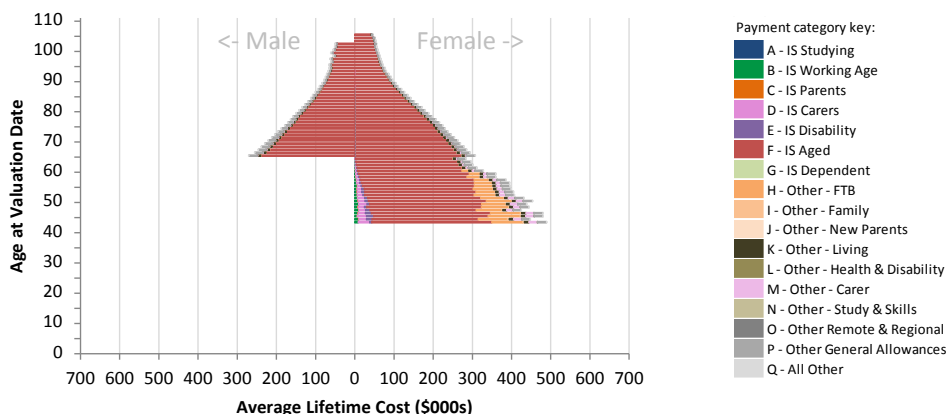
What does the model show for current Age Pensioners?

Lifetime costs

2,495,000 of the people who were in the class during the 2014/15 year were included in the model population (having survived from the time of receipt of payment to 30 June 2015). Note also that the 93,000 deaths during the 2014/15 year is broadly in line with expected population mortality.

We estimate the lifetime cost for this class to be **\$507bn** (or **10.6%** of the total lifetime cost).

Figure 55: Average lifetime cost by age and gender (Class 6)



The average lifetime cost for people in this class is **\$203,000**, with variation by age as shown above.

For those above retirement age the pyramid or 'inverse funnel' shape illustrates the reductions in average lifetime cost for older people. The average lifetime costs range from around **\$290,000** for people at age 65 to around **\$88,000** when people reach age 90.

This is simply a function of the expected future lifetimes for people who have currently reached the ages shown. As can be seen, almost all of the cost is from the age pension; the remainder is the cost of the pension supplements and living allowance payment types (e.g. energy supplement) that are paid alongside the pension.

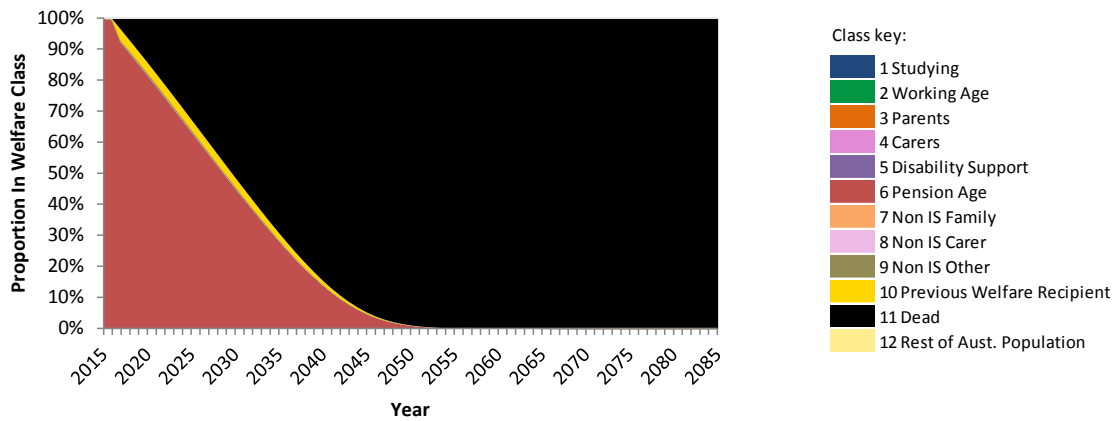
There are very small numbers of people in this class below retirement age (approx. 15,000 people or around 0.5% of the class). Typically these are people receiving either wife pension or widow B pension. The existence of this group extends the pyramid to younger ages and the average lifetime costs are larger again as a result of the combined effect of the longer future lifetime and the expectation of this group being highly likely to remain in the class for the remainder of their lifetimes.

Future outcomes

In developing the valuation results the projection model also produces information on the expected transitions for people out of each class, as shown below.

We can see that a very small proportion of this class exit and, as is intended for age pensioners, the rest stay on the payment for their remainder of their natural lives.

Figure 56: Expected future trajectory for people in Class 6



9.7 Non income support – Family

People are in this class if they have not received any income support payment in the financial year but have received a FTB, family or new parent payment.

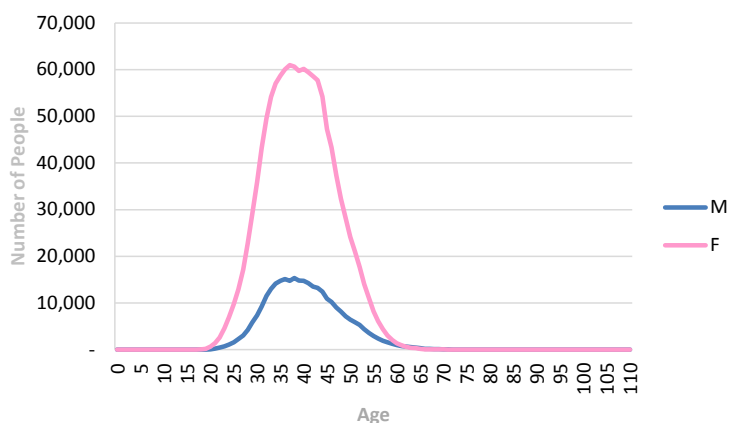
The precise definition of this class includes a one year timing lag as explained in section 4.4. This means that people typically enter the class via class 9 and spend a year in that class before moving to class 7 for the remainder of the period during which they are receiving any of the family payment categories.

What does the data tell us about the Non IS Family class?

There were 1,548,000 people in this class for the 2014/15 year. This included some males and a much greater number of females. The numbers are concentrated in the age range 20 to 60.

The people in this class represent 19.1% of people in receipt of Commonwealth welfare payments.

Figure 57: 2014/15 profile of people in Class 7 – Non IS Family (age/gender)

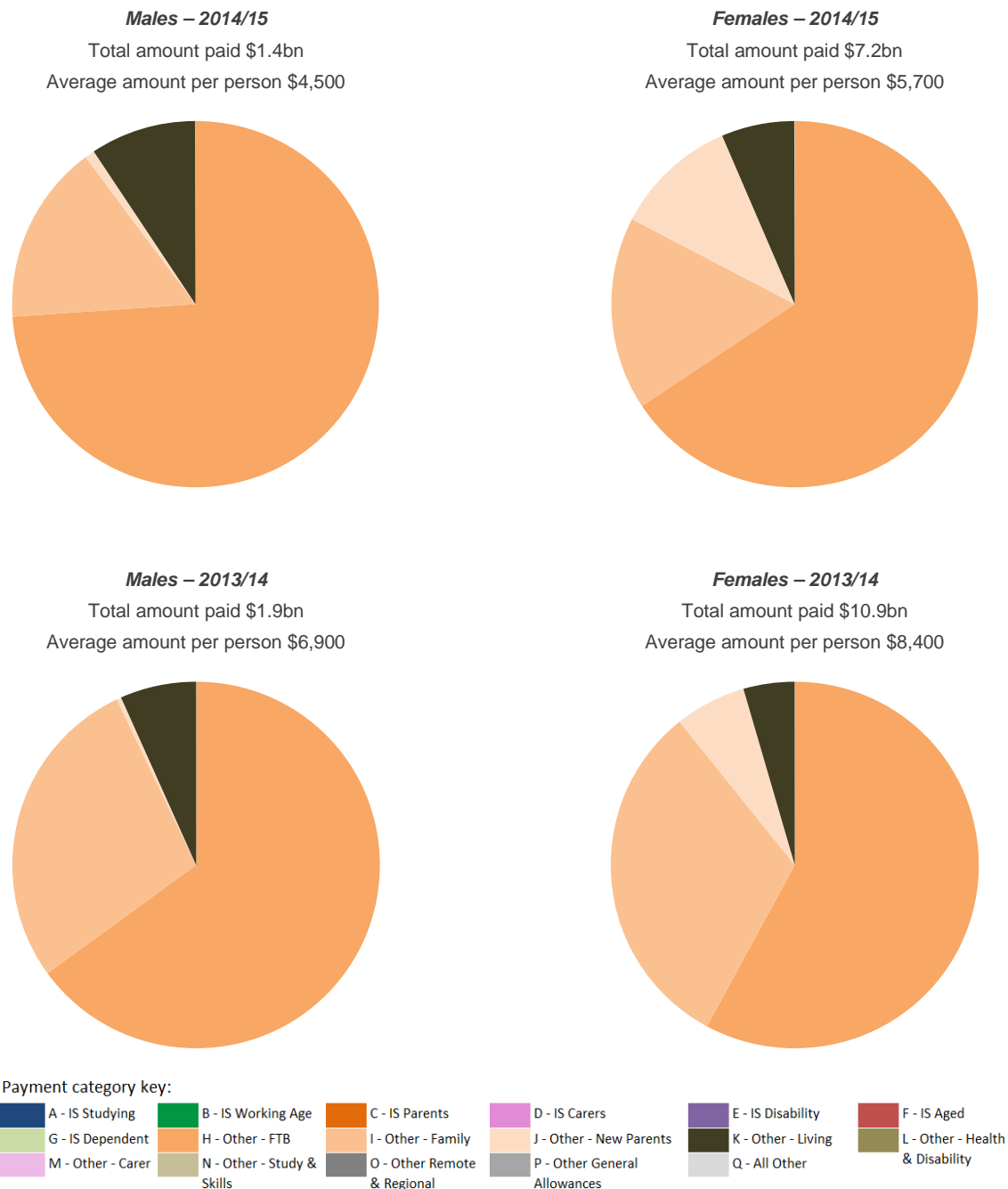


Of these:

- Around half (53%) have remained in this class for more than 4 years
- 24% of females and 44% of males entered this class directly in the last 4 years, without being in receipt of any income support payments in the year prior to their entry (this includes those who entered from class 9).
- Over the same time period, 18% entered this class from other active classes, and for these people the most common pathway into this class is via the 'working age' class for men and via the parents class for women.

Looking at the movements into and out of this class we can see that people in this class are relatively mobile, with people typically entering for a number of years and then exiting. Most entries and exits are to or from outside the payment system. These movements in and out of the class are driven by changes in family composition, with people entering the class as they have children or take on care of children and then exiting as those children grow up and leave the household.

Figure 58: 2014/15 and 2013/14 payments to people in Class 7 – Non IS Family



During 2014/15, people in this class received a total of \$8.5 billion. This is 7.8% of the total payments made in 2014/15.

The average payment is \$5,500 with slightly higher average payments being made to females, as a result of them being more likely to also be claiming New Parents allowance.

It is worth noting that the average payment for 2014/15 is understated; it will not fully reflect all FTB and family payments as these can be received as part of an income tax assessment post 30 June. The 2013/14 overall average (which as at 30 June 2015 would reflect all FTB and family payments) is \$8,100, about 50% higher than the overall average for 2014/15. The greater increase reflects that the two payment categories that are most impacted by data maturity issues form the majority of payments made to people in this class.

Even allowing for the delay in recognising FTB and family payments, the average amount per person is much lower than that for people in the income support classes.

What have we taken into account in fitting assumptions?

Foundation assumptions

In undertaking the analysis to develop the class movement assumptions we noted that there have been many policy changes over recent years, with eligibility criteria tightened for both FTB A and FTB B. Offsetting these, FTB A payments increased for young dependants undertaking full time study, making it more financially beneficial than Youth Allowance. Altogether, these made entries into and exits out of Non-IS Family quite volatile in the past. For class movement assumptions, we have therefore given more credibility to experience in the most recent year.

For the payment utilisation assumptions, most people receive FTB, family and other living payments. Around 7% of people also receive new parent payments. Very few people receive the remaining payment categories.

FTB (60%) and family payments (30%) comprise the majority of the cost. The average sizes generally decrease from age 40 onwards, likely related to children reaching the maximum eligible age for FTB. The overall average sizes of FTB have increased slightly over time, likely related to more families accessing FTB A rather than Youth Allowance, as mentioned above.

Risk based assumptions

For the assumptions for movements out of this class, we have retained the foundation model as most people stay in the class for a number of years before exiting out of the system. A small proportion move to other classes, with the parenting and working age classes being the most common destinations.

For this class the most relevant payment model is the utilisation assumption model developed for FTB payments. This applies across a number of welfare classes and draws on information about whether people have children of different ages and their partner status, class and past utilisation of FTB. Together these factors reflect information on the household's eligibility for FTB and whether the individual is likely to be the person claiming on behalf of the household.

What does the model show for people currently in the Non IS family class?

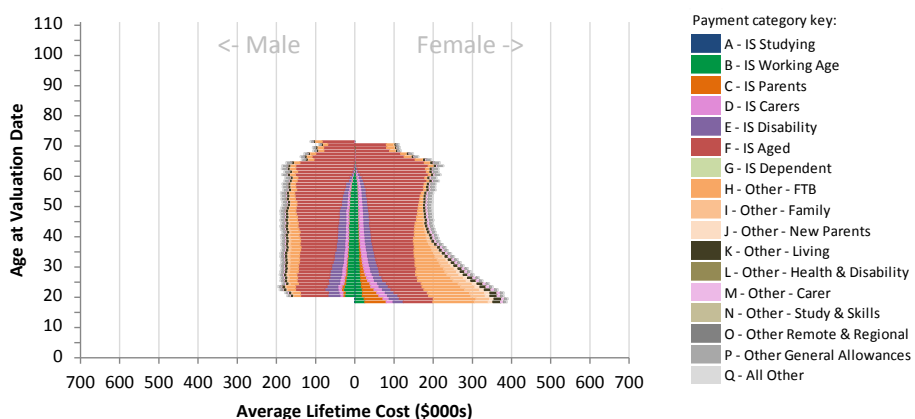
Lifetime costs

1,547,000 of the people who were in the class during the 2014/15 year were included in the model population (having survived from the time of receipt of payment to 30 June 2015).

We estimated the lifetime cost for this class to be **\$342bn** (or **7.2%** of the total lifetime cost).

The average lifetime cost for people in this class is **\$221,000**, with the cost for women being **\$229,000** vs **\$188,000** for men.

Figure 59: Average lifetime cost by age and gender (Class 7)



The most substantial part of this average lifetime cost for both genders is for the age pension.

For women there are significant contributions from FTB, family payments and parenting payments. These are especially material for women in their late teens and twenties but then decline as ages increase. For people in their early forties and above, the differences between the costs for men and women are small.

The average lifetime cost pyramid shows a significant change at age 65 with much lower costs for older people:

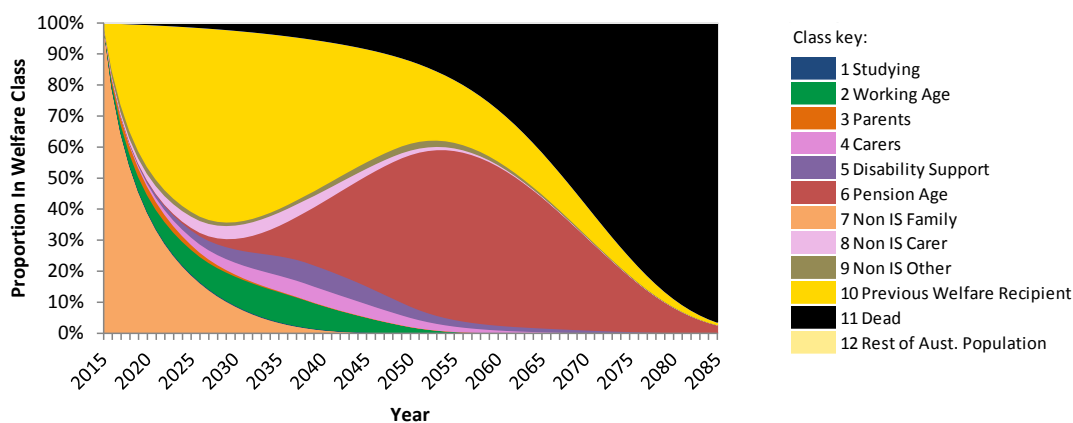
- For people below age 65 - the age pension component of the average lifetime cost is significant as there is a high chance of the people moving onto the age pension as they reach pension age.
- For people above age 65 - to be above age 65 and be in this class they cannot be receiving age pension at present. This means they are far less likely to receive the age pension in future than a typical person in the population and hence have a lower average lifetime cost.

For people significantly above age 65 the average lifetime costs reduce year on year as the future lifetime is shorter and the chances of moving into the age pension class at a future point in time are even lower.

Future outcomes

In developing the valuation results, the projection model produces information on the expected transitions for people out of each class, as shown below.

Figure 60: Expected future trajectory for people in Class 7



We can see that:

- 40-50% of people are expected to stay in this class for the next 5 years (or exit and return) and around 20% for the next 10 years. This pattern of behaviour is likely to be determined by the eligibility criteria for family tax benefit (linked to child ages) and child care benefits as these are the main payment types which cause people to be in this class.
- The majority of the people who exit this class exit the payment system
- Perhaps 10-15% of people move onto a different payment at the point they exit this class, with the most common destinations first being working age payments, then the two carer classes, and then later being the age pension .

9.8 Non income support – Carers

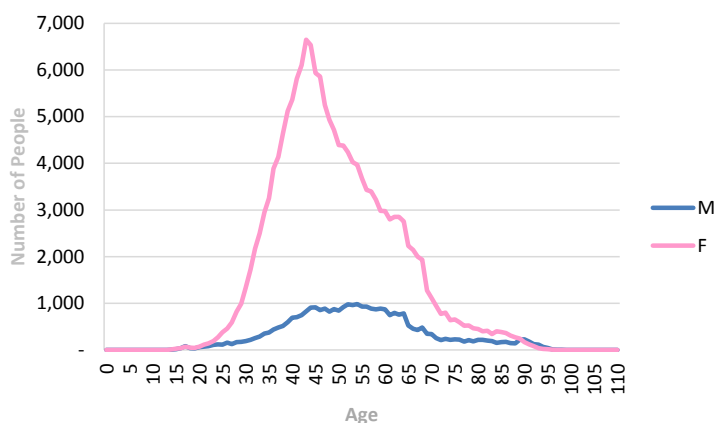
As noted above, this class includes those people receiving Carer Allowance or Carer Supplement, who do not also receive any Carers Payment. People receiving the Carers Payment are in class 4 and have been discussed in section 9.4.

What does the data tell us about Non IS Carers?

There were 200,000 people in the class for the 2014/15 year; it is the smallest of all the classes. This included many more women than men. The numbers in the class increase up to around age 45 and then reduce; however material numbers of people stay in the class until post retirement age.

The people in this class represent 2.5% of current welfare recipients.

Figure 61: 2014/15 profile of people in Class 8 – Non IS Carer (age/gender)



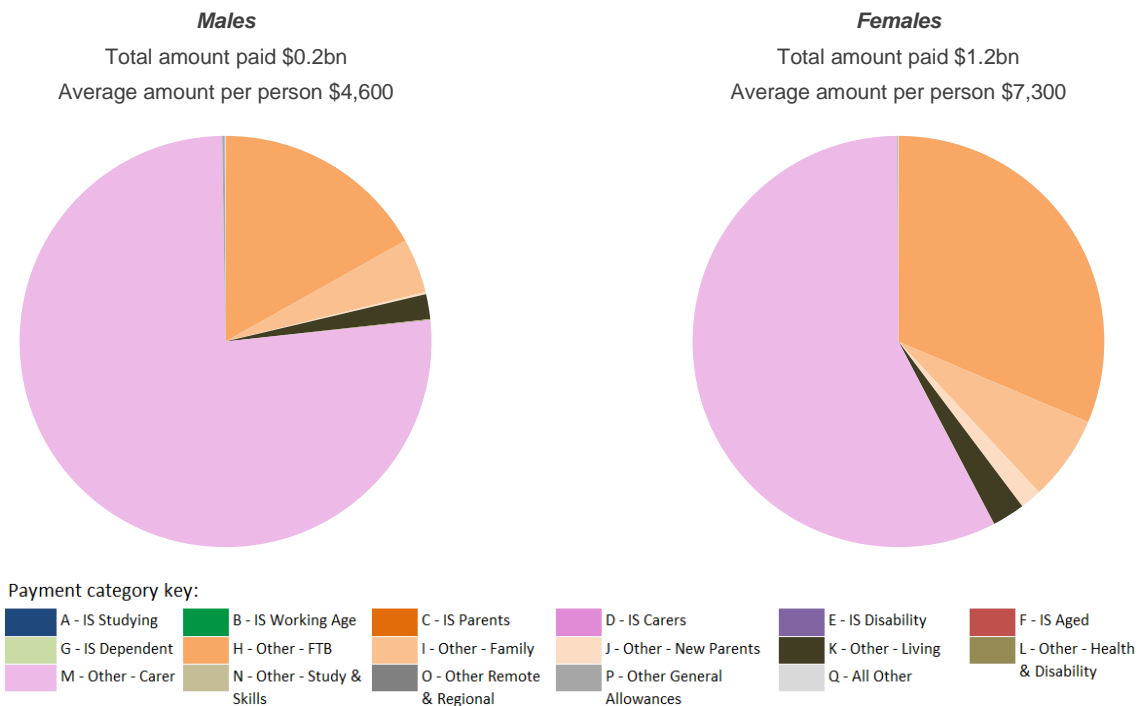
Of these:

- Around half the people in the class (53%) have remained in it for more than 4 years
- 19% of females and 44% of males entered this class directly in the last 4 years, without being in receipt of any income support payments in the year prior to their entry
- Over the same time period 24% entered this class from other active classes
 - For women the most common pathway into this class is via the ‘Non IS Family’ class, from which 15% entered the class in the last 4 years
 - For men only a small proportion (15%) entered from other classes over the same timeframe. The main previous classes were class 2 ‘Working Age’, class 7 ‘Non IS Family’ and class 4 ‘Carer’.

Looking at the movements out of this class over recent years we can see that women in this class have shown quite limited mobility, although many more of the men have exited over the same time period. As people are typically caring for a partner, child or other adult (e.g. disabled person or parent) this may reflect a different mix of people being cared for.

The typical next destination for people is the Carer or Non IS Family classes or to exit the payment system.

Figure 62: 2014/15 payments to people in Class 8 – Non IS Carer



During 2014/15, people in this class received a total of \$1.4 billion. This is 1.3% of the total payments made in 2014/15.

The average payment is \$6,800. The average amount for this class is much lower than for the income support classes. The average payments being made to women are higher than for men; this is a result of them being more likely to also be claiming FTB and family payments.

It is worth noting that the average payment for 2014/15 is understated. It does not fully reflect all the FTB and family payments as these can be received as part of an income tax assessment post 30 June. The 2013/14 overall average (which as at 30 June 2015 would reflect all FTB and family payments) is \$8,000, about 17% higher than the average as known at 30 June 2015 for 2014/15.

What have we taken into account in fitting assumptions?

Foundation assumptions

Similar to Income Support Carer, Non-IS Carer is a very stable and persistent class. Class movement assumptions therefore reflect long term trends.

For the payment utilisation assumptions, everyone receives the carer allowance and/or supplement. Around 30% of people receive the FTB, Family and other living payments.

The carer allowance and supplement comprise around half the cost, with FTB (35% of cost) and family payments (13% of cost) comprising the majority of the remainder. The utilisation rates for FTB and family payments by age reflect the typical ages during which people have children.

The average sizes by age generally increase through to age 40, then decrease for older ages. The shape of the average sizes by age may be related to the number of people typically being cared for at different ages, which impacts payment rates.

Risk based assumptions

We refined the class movement assumptions through consideration of the risk factors that influence the experience.

This is a stable class where most recipients stay in the class, but the experience is differentiated between that for those people who are at least a year below retirement age and those at or above retirement age. For the younger group transitions are likely to be out of the system, but for those who remain the most common movements are into the Carer class or the Non-IS Family class. Transitions to the Carer class are likely a

reflection of the person being cared for becoming reliant on constant care and hence the recipient meeting eligibility criteria for the income support. For older recipients they are less likely to transition into the Carer class and more likely to leave the system than the younger group. The most significant variables in the model are those relating to the partnership status of the recipient; whether people have been in the class over the longer term and have received family or living supplements previously is also a significant determinant of their likelihood of staying in the class and, if leaving, their next class.

What does the model show for current Non IS Carers?

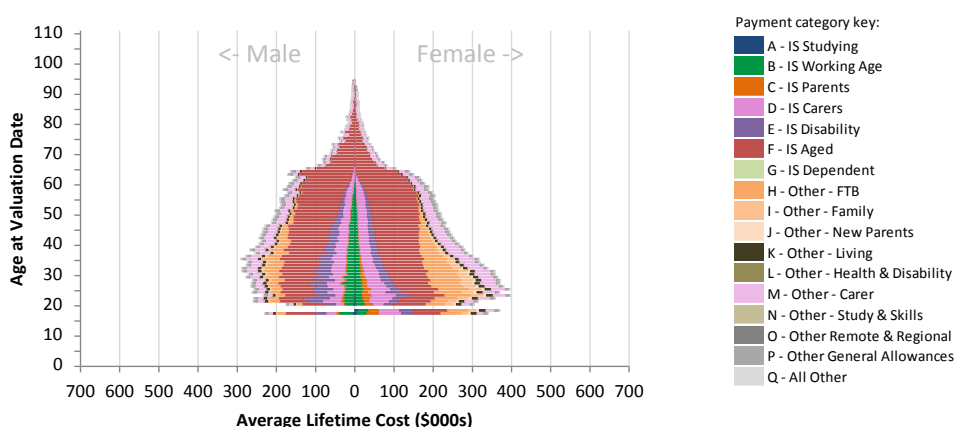
Lifetime costs

199,000 of the people who were in the class during the 2014/15 year were included in the model population (having survived from the time of receipt of payment to 30 June 2015).

We estimated the lifetime cost for this class to be **\$42bn** (or **0.9%** of the total lifetime cost).

The average lifetime cost for people in this class is **\$213,000**.

Figure 63: Average lifetime cost by age and gender (Class 8)



The costs differ between genders with around \$178,000 for men and \$220,000 for women. We can see that a major part of the difference is for younger women and arises from their increased propensity to receive FTB and family payments.

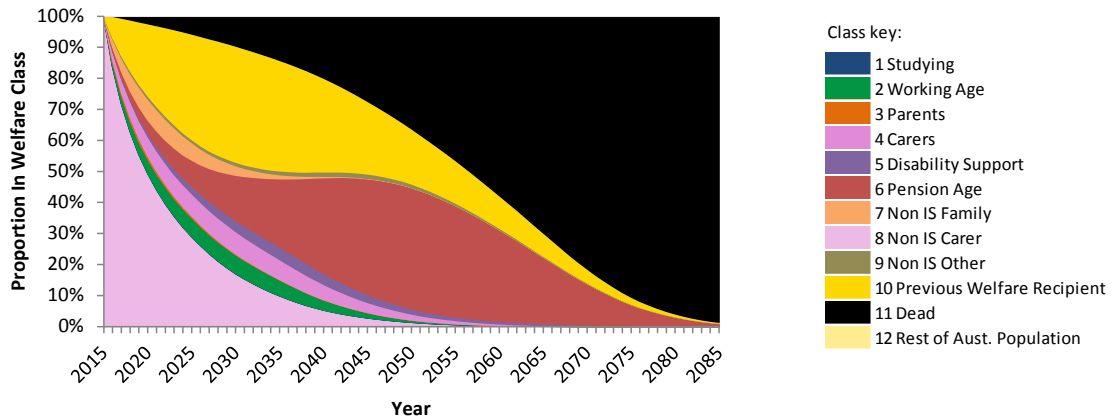
The general shape of this pyramid is similar to that for the previous class (non IS family) with significant reductions in average lifetime costs once people pass pension age, reflecting that these people are not currently in receipt of age pension.

At the younger ages there are a myriad of contributions to the assessed average lifetime cost from working age, disability support, carer and parenting income support payments. This may indicate that some people in this class are quite close to becoming income support recipients and have material likelihoods of transitioning to these classes in future.

Future outcomes

In developing the valuation results the projection model produces information on the expected transitions for people out of each class, as shown below.

Figure 64: Expected future trajectory for people in Class 8



We can see that:

- Around two-thirds of people exit the class over the next 10 years:
 - Around one-third of those currently present either die or exit the payment system
 - Approximately 15% of people move into a pre-retirement income support class with working age and carer being the most common.
 - A similar proportion either retire or move into the pension and non IS family classes

It is interesting to note the distinct group who move from this class (which comprises people receiving carer allowance or carer supplement payments) into class 4 (which has those receiving carer payment).

9.9 Non income support - Other

What does the data tell us about this class?

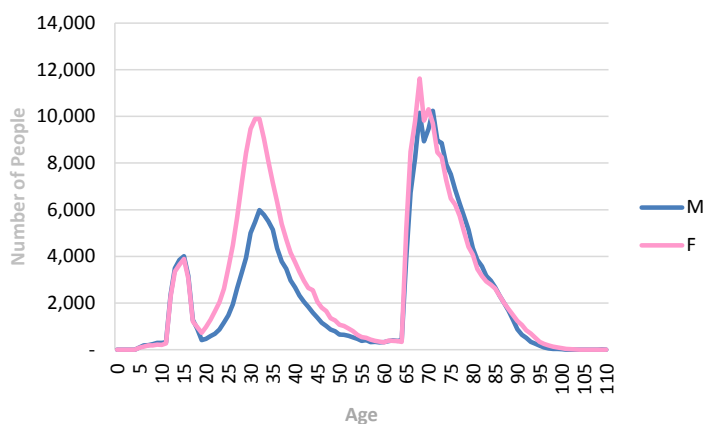
There were 567,000 people in the Non IS other class for the 2014/15 year. This included a mix of genders and ages as illustrated below.

There are three distinct groups within the class:

- a group receiving payments such as school fees allowance or assistance to isolated children payments during their youth
- a group of parenting age who are predominantly female and are first year FTB, family or new parent payment recipients (and who subsequently move on to class 7), and
- a group of older people who are typically receiving energy supplements.

The people in this class represent 7.0% of people in receipt of Commonwealth welfare payments.

Figure 65: 2014/15 profile of people in Class 9 – Non IS Other (age/gender)

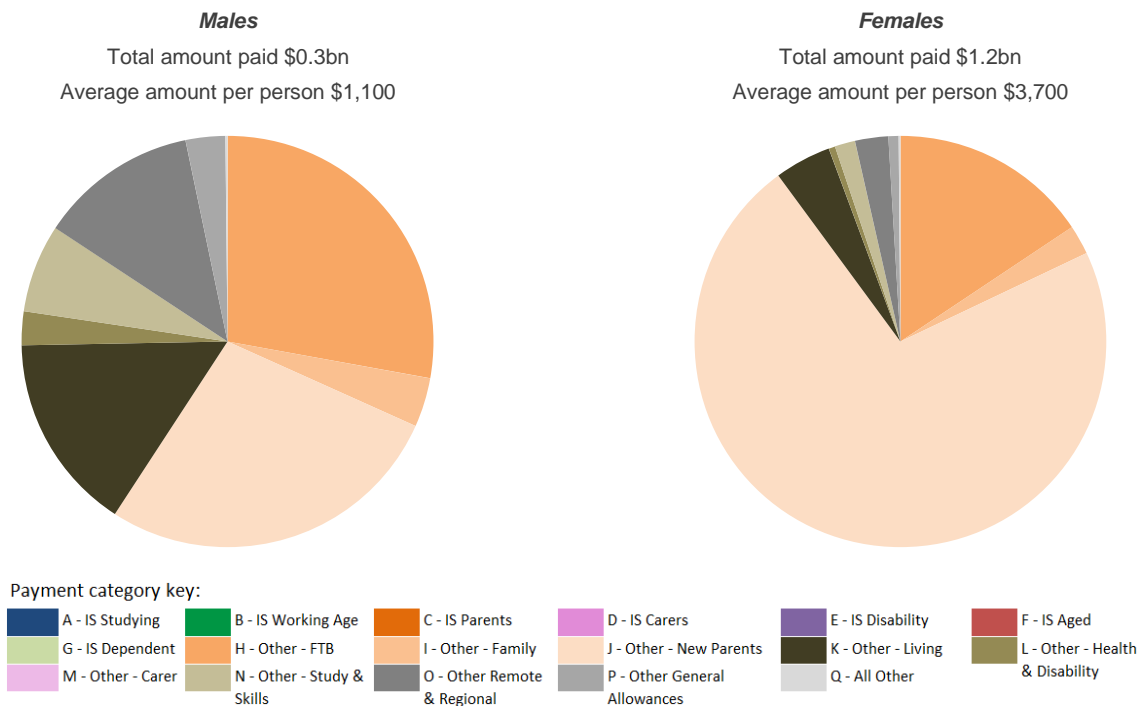


Of these:

- Only a very small proportion (3%) have remained in this class for more than 4 years
- 87% entered this class directly in the last 4 years, without being in receipt of any income support payments in the year prior to their entry
- Over the same time period 10% entered this class from other active classes with the most common pathway into this class being via the 'Non IS family' class

Looking at the movements out of this class we can see that many people in this class tend to move onto other classes quickly. The younger group tend to exit the system or move onto Studying or Working age payments; the parenting group tend to move into the Non IS family class; and the older group typically stay, move into the age pension group or exit.

Figure 66: 2014/15 payments to people in Class 9 – Non IS Other



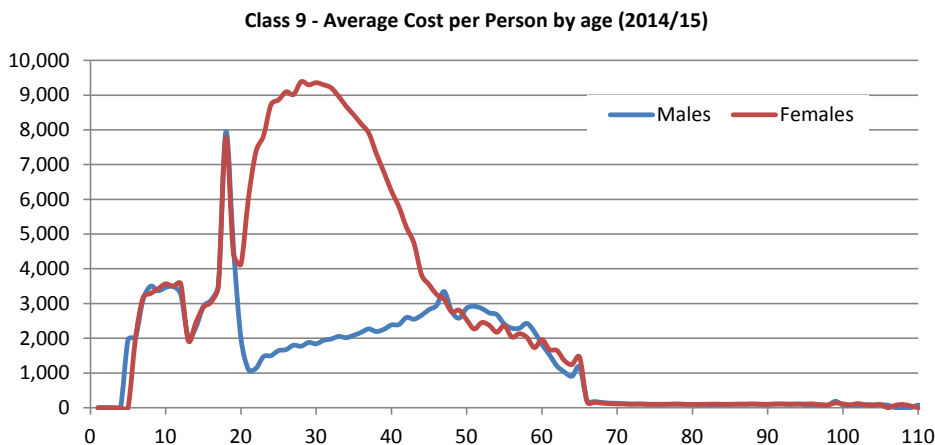
During 2014/15, people in this class received a total of \$1.4 billion. This is 1.3% of the total payments made in 2014/15.

The average payment is \$2,500 with slightly higher average payments being made to females, as a result of there being greater numbers at parenting ages receiving FTB payments. Note this is a much lower average payment than for the income support classes and is the lowest of all classes.

As for classes 3 'Parents', 7 'Non IS Family' and 8 'Non IS Carer', it is worth noting that the average payment for 2014/15 is somewhat understated. It will not fully reflect all FTB and family payments as these can be received as part of an income tax assessment post 30 June. A review of previous years' average annual payments suggests the real average may be in the range \$4,000-\$5,000, however this depends on the relative proportions of each of the three identified sub-groups within the class and this has varied from year to year.

The variation in average payment size by age and gender within this class is illustrated in the chart below. We can see that the highest annual payments are going to the female parenting age group who are receiving FTB and other payments, whereas the people over 65 are receiving very small payments (of only around \$100 for the Energy Supplement in most cases).

Figure 67: 2014/15 payments to people in Class 9 – Non IS Other – by age and gender



What have we taken into account in fitting assumptions?

Foundation assumptions

Given the diverse demographic mix of people in this class, the factors influencing their movements are wide-ranging. Firstly, with changes to FTB A and FTB B, movements into Non-IS Other varies slightly from year to year as an interim class for FTB recipients. Secondly, the introduction of various allowances, including the Energy Supplement, has made the demographic mix in this class different from year to year. We have taken all of these into account when projecting future class movements. As a principle, we have assumed that the majority of young to middle-aged recipients will continue to move into FTB Non-IS Family after one year. We have also assumed that existing old-age recipients of Energy Supplement will most likely stay, with regular but slow movement into the Age Pension.

For the payment utilisation assumptions, around 70% of people currently receive the living allowances, and in particular the energy supplement. A number of people also receive FTB, Other Family and New parent payments; these people will mostly move to class 7 in the next year. There is greater variability in the utilisation assumptions in this class compared to other classes, due to the diverse demographics of people and the various policy changes such as the Energy Supplement. Assumptions have been selected after considering these various changes.

New parent payments comprise over half the cost, with FTB the second largest payment category (around 25% of cost). Other family, living allowances and remote and regional payments are the largest of the remaining payment categories.

The new parent utilisation by age reflects the typical ages when families have children. The high new parent utilisation for this class arises from the class definitions whereby people who first receive welfare payments on having a newborn child enter the system via this class.

Risk based assumptions

We refined the class movement assumptions through consideration of the risk factors that influence the experience.

For the assumptions for movements out of this class, we considered the drivers of experience for each of the three groups identified above. These groups may be identified through their ages and also by reference to the payment categories for which they have recently received payments.

In practice many of these movements are governed by the model structure with people who receive an FTB, family or parental payment in one year moving into class 7 in the next year, unless they also receive an income support payment in that year. The lagged definition of class 7 means that people only enter this class in their second year of receiving any of these family payment types, so new parents enter via class 9. This was seen in the analysis through the significance of age and the indicators of utilisation of these payment types. For the group in age band 20-65 almost everyone enters the class for a single year before moving onto class 7 (Non IS Family).

For the very youngest and oldest people in the class the person's age, education status and utilisation of studying supplements were significant in determining whether they would stay in the class, exit or move to the studying class.

For the payment models we retained the foundation assumptions.

What does the model show for current people in the Non IS other class?

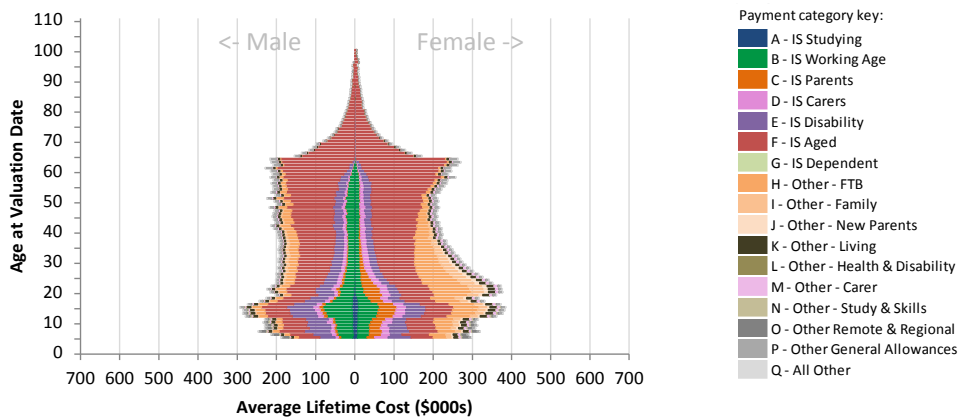
Lifetime costs

561,000 of the people who were in the class during the 2014/15 year were included in the model population (having survived from the time of receipt of payment to 30 June 2015).

We estimated the lifetime cost for this class to be **\$87bn** (or **1.8%** of the total lifetime cost).

The average lifetime cost for people in this class is **\$155,000**, with the variation by age and gender illustrated in the figure below. The chart has the 'spikey' shape seen in the other carer non income support classes.

Figure 68: Average lifetime cost by age and gender (Class 9)



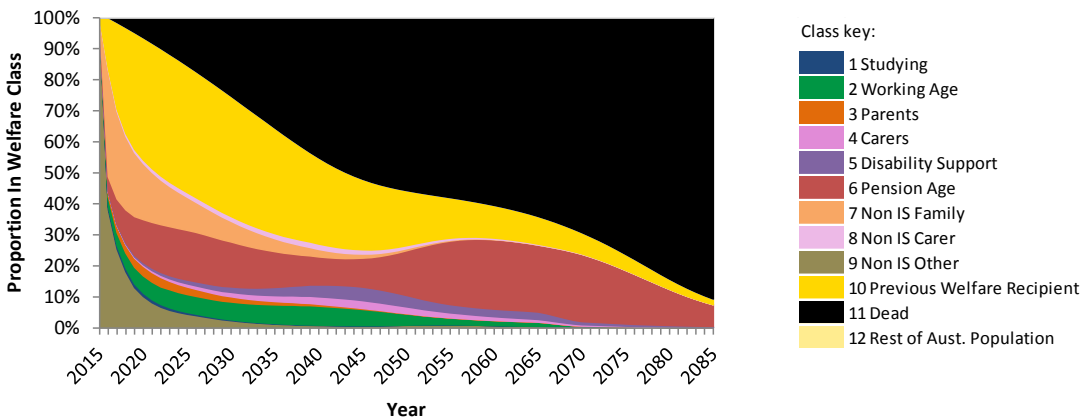
This pyramid extends through the full range of ages reflecting the broad mix of people in the class. Returning to the three groups we identified above:

- The older group have relatively low average lifetime costs and these typically reflect their chance of moving onto the age pension payment at some point in the future.
- For the people in the 20 to 65 age bracket the average lifetime cost is dominated by the FTB, family and age pension payments and is similar to that seen for the non IS family class. In this age range these two non IS classes contain people with a very similar mix of characteristics and so the cost similarity is unsurprising.
- For the group below age 20 the family payment categories make a lower contribution to the cost but there are larger elements from the income support payment types. This group have a greater chance of moving into these payments as they grow older than the other people in the class (who are not currently getting any income support payments).

Future outcomes

In developing the valuation results the projection model also produces information on the expected transitions for people out of each class, as shown below.

Figure 69: Expected future trajectory for people in Class 9



The trajectory results support the observations above, showing that:

- Over the next 5 years there is a distinct group who move quickly into the age pension, as expected for some of the older people in the class
- Over the same time period around half the class exit the payment system
- There is also a distinct group moving into class 7 (presumably the new parents) and staying there for at least 10 years before exiting the payment system.

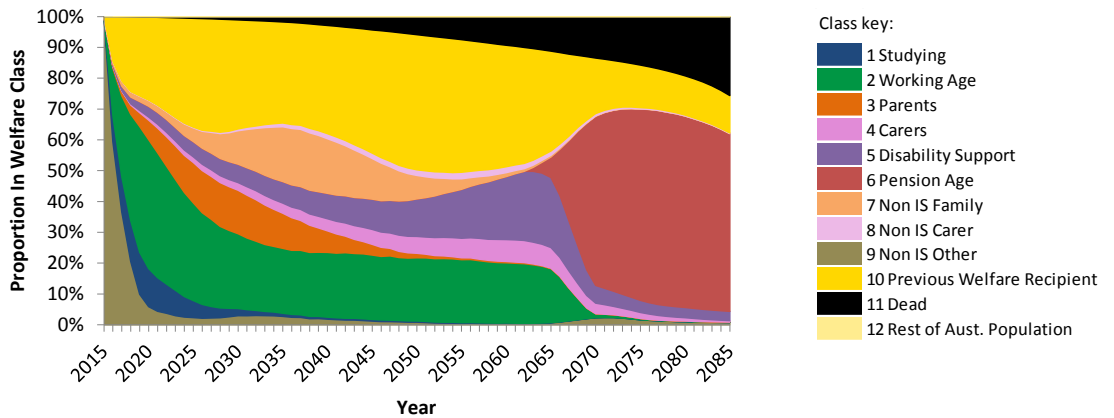
Results for current welfare recipient classes

- Around 10% of the people in the class are expected to move onto some form of pre-retirement income support over the next 5-10 years.

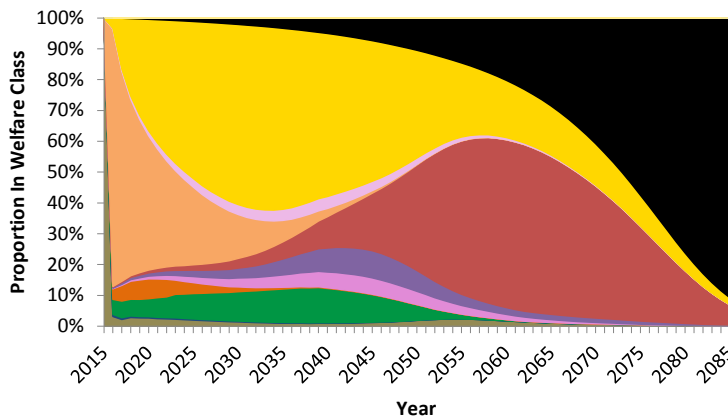
These results are reflective of the distinctive sub groups within this class each of whom would be expected to have very different future life trajectories. We have illustrated this below by showing the trajectories for people within the different age bands.

Figure 70: Expected future trajectory for people in Class 9 – by age band

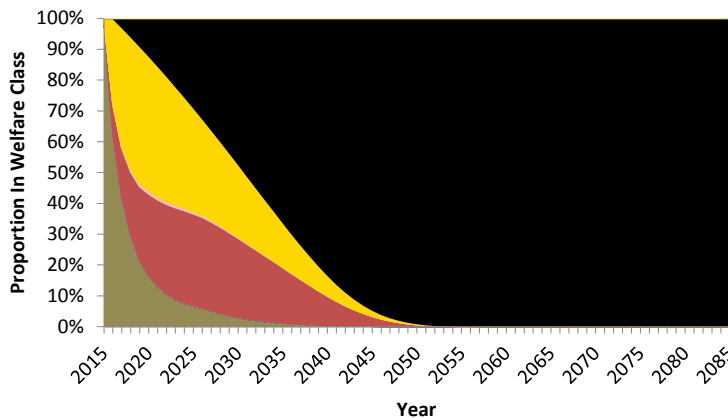
Age 1-19



Ages 20-64



Ages 65+

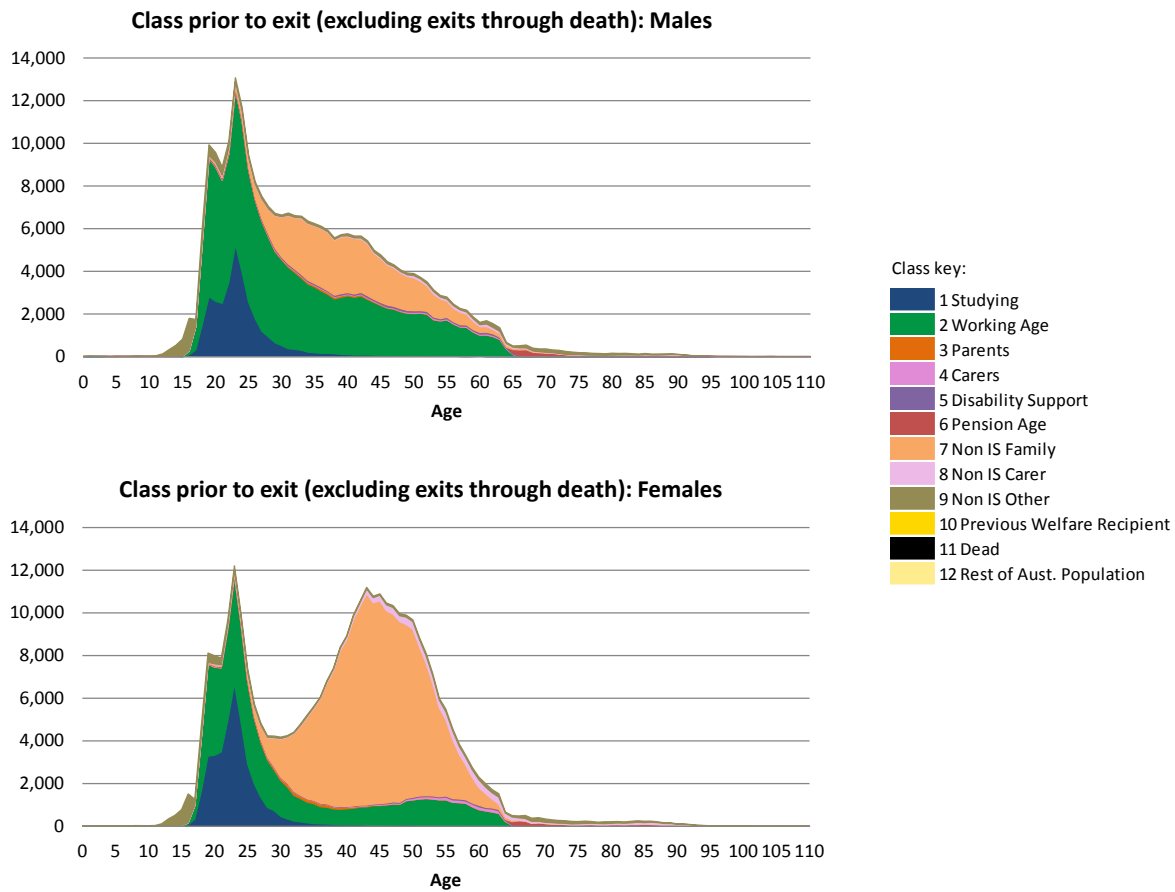


10 Analysis of exits and entrants

10.1 Exits from the system

This section examines the exits from the system as a whole. The figure below presents the information on the exits observed over the last year; to help focus on the areas of greater interest we have removed the deaths from the charts as these would otherwise dominate the numbers.

Figure 71: Summary of exits between June 2014 and June 2015



We can see that the main classes from which people exit the system are Studying, Working Age and Non-IS Family (noting that most people who are on parenting payment will often transition to family tax benefit only (i.e. the family non IS class), before exiting the system).

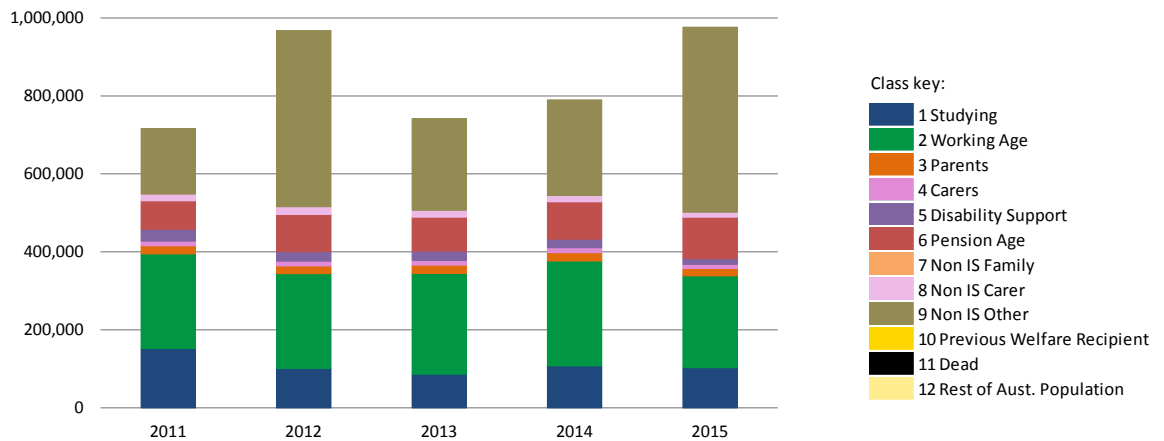
These two graphs further illustrate the earlier observations that few people exit disability support pension, age pension or carer categories directly, other than by death. These groups of exited people have been considered separately from those in the remainder of the population when considering which people are likely to enter in future years.

10.2 Past new entrant experience

Historical entrants and re-entrants

The total number of recent new entrants and re-entrants has been volatile, with between 720,000 and 980,000 each year. A breakdown of these new entrants by class is shown below.

Figure 72: History of entrants and re-entrants, by class entered, for year ending 30 June



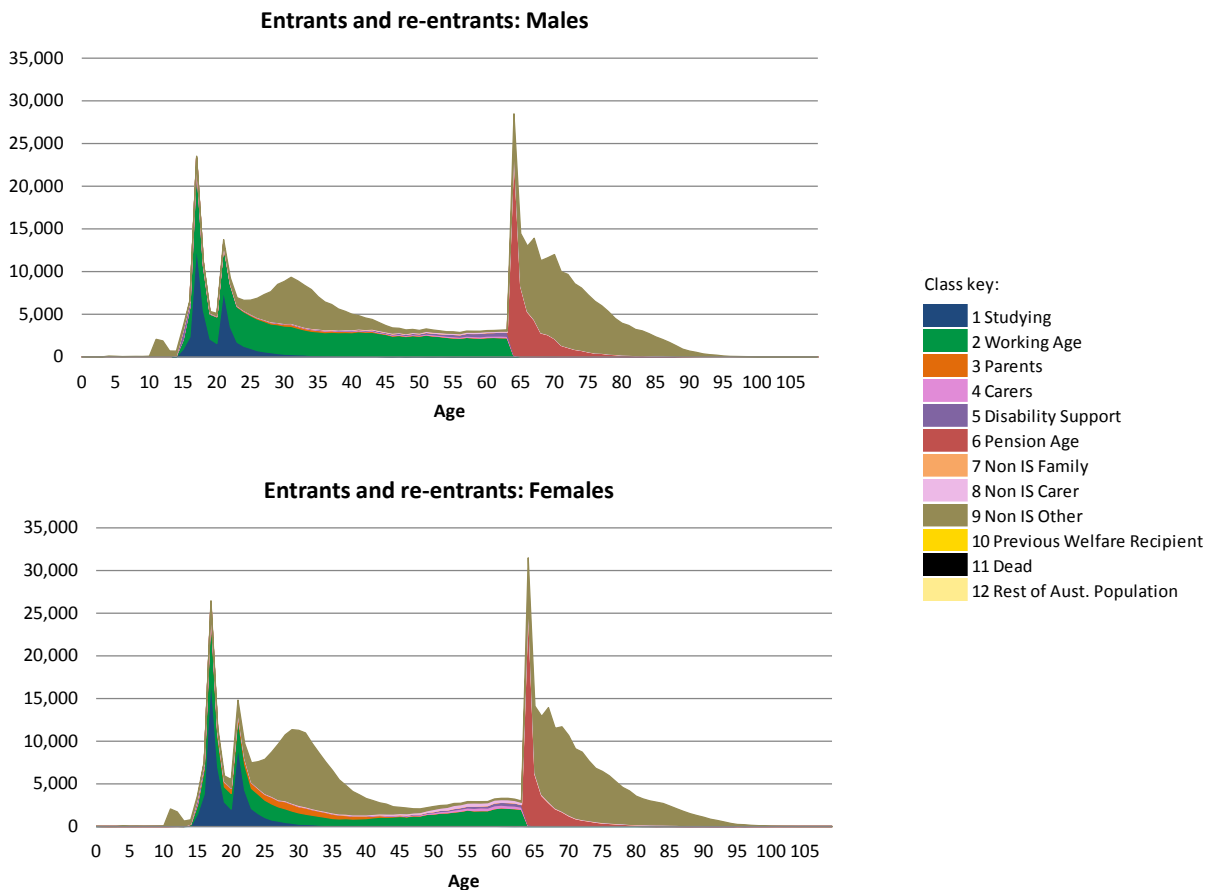
We can see that:

- The classes with the most new entrants are classes 9 'Non IS Other', 2 'Working Age', 1 'Studying' and 6 'Pension Age'.
- Entrants and re-entrants into class 9 'Non IS Other' are particularly volatile. This is discussed below.

Profile of entrants and re-entrants

The charts below show the profile of entrants and re-entrants in 2014/15.

Figure 73: 2014/15 combined profile of entrants and re-entrants, by age, gender and class entered



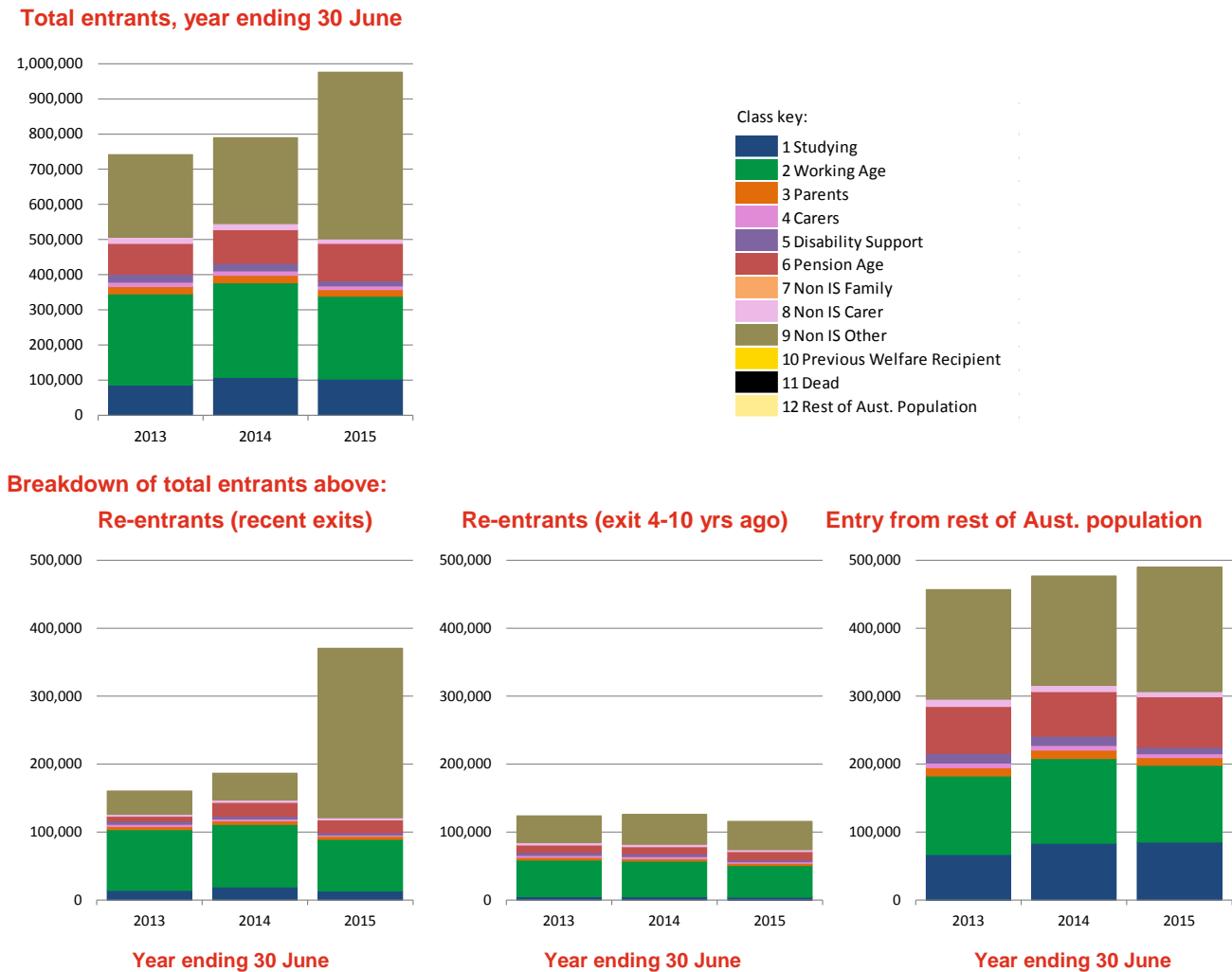
We can see that:

- The total numbers of male and female entrants were similar in 2014/15, with around 490,000 of each.
- For people below pension age the entries are dominated by 1 'Studying', 2 'Working Age' and 9 'Non IS Other'.
 - Entries into Non IS Other largely relate to people using FTB for the first time. These people will transition into class 7 'Non IS Family' if they continue to utilise FTB in the following year. The reason these people enter into class 9 'Non IS Other' rather than class 7 'Non IS Family' is because of the timing lag on the definition of people in class 7, as explained in section 4.4.
- At later ages, entries are dominated by 6 'Pension Age' and 9 'Non IS Other'.
 - Most of the entries into 9 'Non IS Other' here relate to the Energy Supplement. The experience in the 2014/15 year was unusual in this regard with a much higher number of new entrants than observed in other recent years. Many of these new entrants receive very low levels of payment (of the order of \$100 compared to a more typical average class 9 payment of \$2,500). This experience has been driven by a group of people who were previously in class 9, exited in 2012 and then re-entered in 2015. The observed pattern of exit and subsequent re-entry has been investigated and identified as an artefact of the treatment of some small supplements within the data. As such, we would expect this group of people to remain in class 9 and not expect this feature of the entrant experience to be repeated in future years.
- At earlier ages, more males have entered into 2 'Working Age', whereas more females have entered into 3 'Parents', 1 'Studying' and 9 'Non IS Other'.

Experience of new entrants compared to re-entrants

We have also presented the numbers split between re-entrants, for people who exited the welfare system before and after 3 years ago, and new entrants from the rest of the population.

Figure 74: Breakdown of recent entrants and re-entrants, by class entered and period since exit

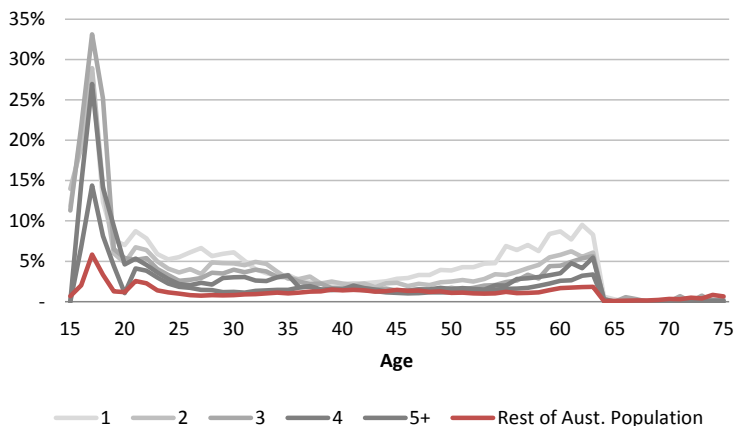


We can see that:

- A large number of re-entrants come from the groups of people who exited the system between 1 and 3 years ago. Our analysis, as further discussed below, shows that recent welfare history is likely to be predictive of re-entering.
 - Much of the increased number of entrants into class 9 in 2014/15 is coming from people who exited in the last 3 years re-entering into this class. This is the same group of additional older entrants that we discussed in relation to the previous chart.
- The rest of the Australian population group are relatively more likely to enter into class 1 ‘Studying’, class 2 ‘Working Age’, class 6 ‘Pension Age’ or class 9 ‘Non IS Other’.

The chart below shows an illustration of some of these numbers as rates. This chart shows the rate of females entering or re-entering from both the recent welfare recipient and the rest of the Australian population classes into the working age class between June 2014 and June 2015.

Figure 75: Illustration of rates of females entering from the rest of the Australian population and previous welfare recipients classes to the working age class between June 2014 and June 2015



Notes:

- Re-entry rates from previous welfare recipients (class 10) are shown in grey and split by number of years since last utilised welfare.
- Entry rates from the rest of the Australian population (class 12) are shown in red

We can see that:

- The probability of people re-entering is generally higher for someone who has recently utilised welfare, and as such the re-entry rates for people who have only been inactive for one year are the highest.
- The probability of re-entering decreases the longer people are inactive.
- The probability of entering into the working age class is generally lower for first time entries from the rest of the Australian population class, than it is for re-entries from the exits class.

10.3 Expected new entrants

What have we taken into account in fitting entrants assumptions?

Foundation assumptions

As would be expected there are clear age related trends for entries that depend on the typical pathways and life circumstances at the different age ranges. These features together with commentary can be seen in Figure 71 and have been allowed for in the entry rate assumptions.

The probability of the re-entry of a past welfare recipient is generally higher than the probability of entry from someone in the rest of the population. As a result of this, different entry assumptions were selected for previous welfare recipients (Class 10) and the rest of the Australian population (Class 12). Once a person has been inactive for more than 10 years, we elected to use the same entry assumptions as for the rest of the Australian population (i.e. Class 12 entry assumptions). This was done in order to be more consistent with the historical data analysed; in particular noting that as there is only a limited period of data, the rest of the Australian population group in Class 12 includes some people who would have received welfare prior to the period of experience recorded in the data.

Historical entry rates have been relatively stable over the last few years and as a result entry rate assumptions were largely selected based on an average of the experience over the last 3 years, with the following main exceptions:

- Entry rates into Class 5 ‘Disability Support’ have been decreasing over recent years, in line with the more detailed observations made in Section 9.5 regarding tightened eligibility criteria. Following discussion with the Department, Class 5 entry rate assumptions were selected based on the average of the experience over the last 2 years (consistent with the approach for other selections relating to movements into Class 5).
- The observed historical entry rates into Class 9 ‘Non IS Other’ have varied due to the introduction of the energy supplement. This has resulted in some volatility in recent entries into Class 9 as can be seen in Figure 74. The entry rates for this class were selected to allow for a steady flow of new entrants receiving

the energy supplement. The assumption is intended to produce a relatively stable total number of people utilising this payment.

Once a person enters into an active class, payment assumptions are applied in line with those for the current welfare recipients, as described in Section 9.

Risk based assumptions

We refined the entry rates through consideration of the risk factors that influence the experience.

As with the foundation assumptions, different sets of entry assumptions were selected for past welfare recipients (Class 10) and the rest of the Australian population (Class 12), and Class 12 entry assumptions are used for anyone who has been inactive for more than 10 years. For past welfare recipients we noted that the time since exit from the welfare system was predictive of the probability of re-entering. As illustrated in Figure 75 recent welfare recipients are generally more likely to re-enter the system compared to other people. The probability of re-entering then decreases the longer people are inactive.

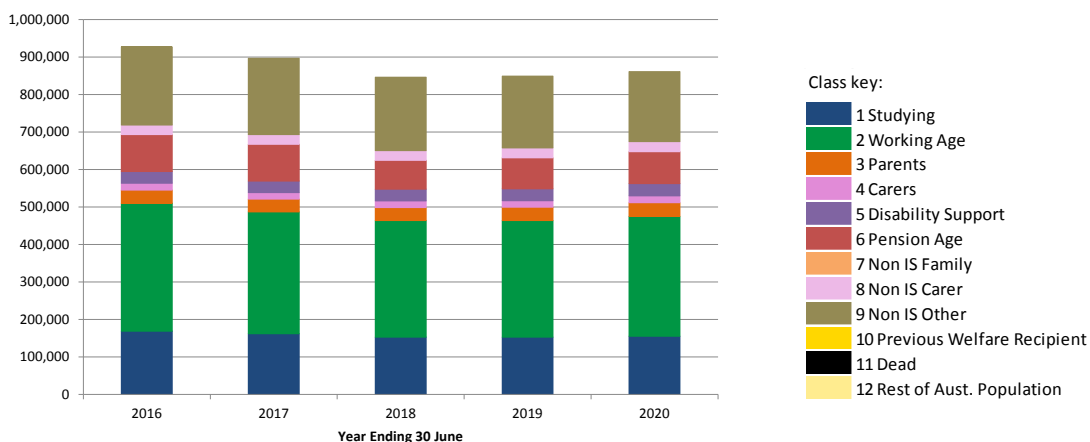
We also noted that the last active welfare class was predictive of re-entries for past welfare recipients. For example past welfare recipients who last utilised either Class 2 'Working Age' or Class 5 'Disability Support', were seen to be more likely than average to re-enter the welfare system and people are often more likely to re-enter a class they have previously been in.

Additionally, partner status, child information and highest level of education appear predictive of entry probabilities and so these were included as factors in the entry rate assumptions.

What is the expected new entrant experience?

The expected numbers of new entrants and re-entrants over the next 5 years are shown below.

Figure 76: Expected number of entrants and re-entrants, by year of future entry and destination class



As can be seen:

- The total number of entrants and re-entrants is expected to be around 900,000 in 2016. This is mid-way between the level seen in 2014 and the higher level seen in 2015. The number of entrants and re-entrants in 2015 was higher than normal due to a large number of people receiving the energy supplement for the first time (which is in class '9 Non IS Other'). The projections do not allow for this to continue to the same extent.
- The total entrant and re-entrant numbers are expected to decrease and then increase again slightly over the 5 year period shown.
 - There are some slight variations from year to year in the expected number of entrants and this links to the shape of the population.
 - There are also changes to the numbers of age pension entrants owing to the staged changes in pension age from 65 to 67 which impact people retiring over the period 2017 to 2023.

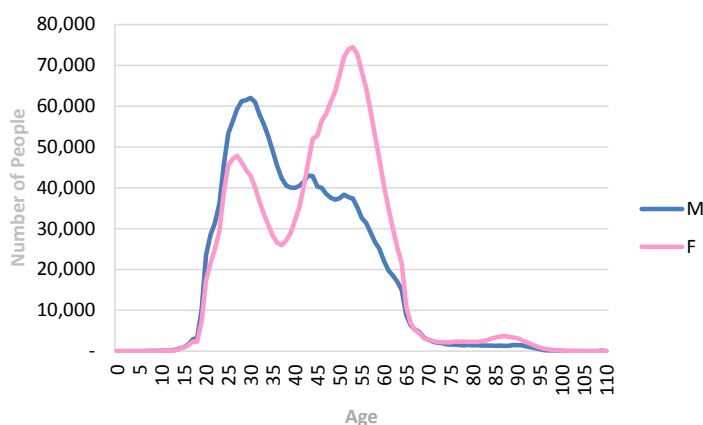
11 Results for non-welfare recipient classes

Importantly, every person within the population has some chance of accessing the welfare system during their lifetime. Hence everyone has a non-zero average lifetime cost. In this section we discuss the lifetime costs for people who are not current welfare recipients (i.e. those in classes 10 and 12).

11.1 Previous welfare recipients

There are 3.9 million people who were in the past welfare recipients class at 30 June 2015. The profile of these by age and gender is illustrated below.

Figure 77: Profile of people in Class 10 – all people in class (age/gender)



We can see that there are more women in this class at older ages, most likely because women are more likely to have received FTB or family payments and have been in the large Non IS Family class. At younger ages there are more men than women.

Some of the people have been in the previous welfare recipients class for only a short period; others have been there for longer, up to the maximum of the 13 years available from the data provided.

Going forward we will have people in the exits class who have been past welfare recipients but not been in the payment system for even longer periods. An example would be someone age 40 who received a Studying payment when they were 20 and then exited the welfare system and has not received any subsequent payments.

As a result of this consideration we have segmented the exits into three groups as follows:

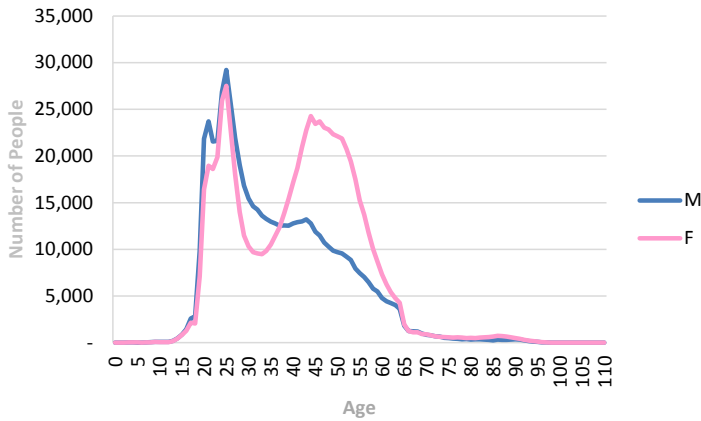
- **Exits in the last 3 years.** This group comprises 1,351,000 people and will be referred to as recent exits.
- **Exits 4-10 years old.** This group comprises 2,065,000 people and will be referred to as older exits.
- **Exits 11+ years old.** This group comprises 496,000 people and is also part of the older exits group. Owing to the limited number of years of data available to analyse, this group is likely to have many similar characteristics with the people who are labelled as 'rest of Aust. population' which includes some people who would have been welfare recipients prior to the period for which we have data and hence have not been identified as such.



Recent welfare recipients (exits in past 3 years)

There were 1,351,000 people in the recent exits group in the model population. This included a mix of genders and ages as illustrated below.

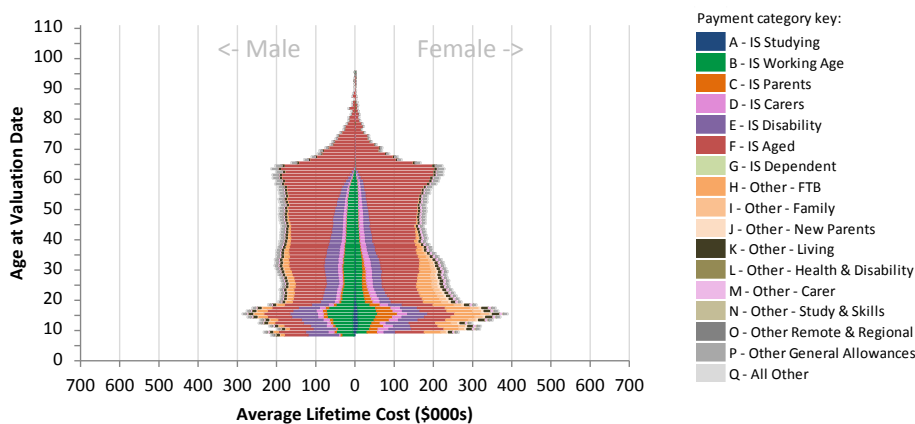
Figure 78: Profile of people in Class 10 – Exits in the last 3 years (age/gender)



Lifetime costs

We estimated the lifetime cost for this recent exits group to be **\$270bn** (or **5.7%** of the total lifetime cost).

Figure 79: Average lifetime cost by age and gender (Class 10, exits in last 3 years)



The average lifetime cost for people in this group is **\$200,000**, however the group includes people at almost all ages and there is considerable variation in costs between them.

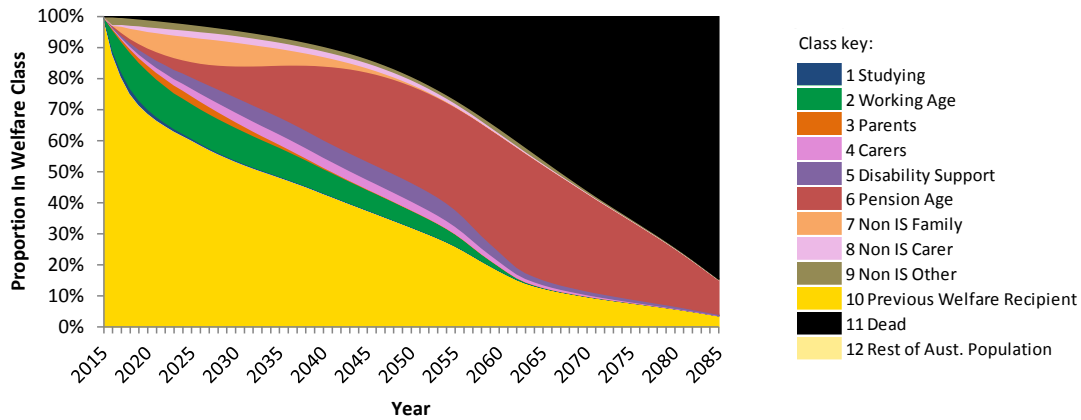
For those past pension age we again see the ‘spike’ of very low average lifetime costs for older people that characterises the classes where people are not currently in receipt of income support payments. It is even more marked for this group as those people at post-retirement ages who are currently not receiving any payments, are less likely to do so in future.

For people currently at the younger ages the shape is much more like that of the Studying and Working age classes with a gradual increase in average lifetime costs for people closer to pension age and the age pension making up the largest part of the cost. The differences between the average lifetime costs for men and women is apparent below age 40 and reflects the greater likelihood of women claiming FTB, family and parenting payments.

The group also includes a number of people under age 20 who are likely to have been past recipients of Abstudy and related student payments or Assistance for isolated children payments. The average lifetime costs for people in this group are higher than for other exits and can be seen to include significantly larger working age, parenting and disability costs than for people in their twenties and older.

In developing the valuation results the projection model also produces information on the expected transitions for people out of each class, as shown below.

Figure 80: Expected future trajectory for people in Class 10 (exits in the last 3 years)



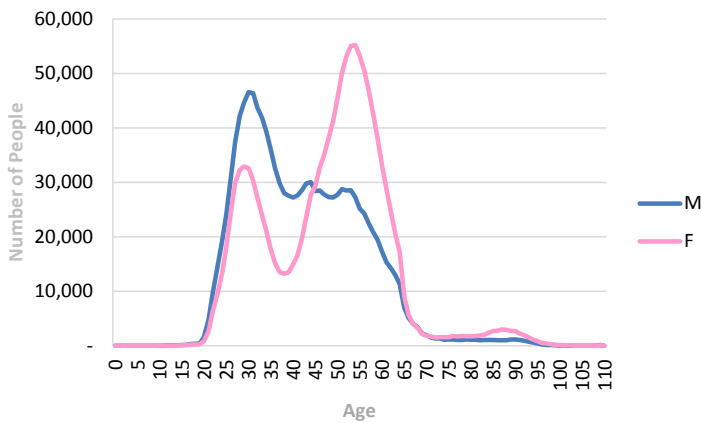
There is a very different pattern of the future trajectories for people in this class than for those in the active classes 1-9. These people are not currently receiving any payments and the trajectories illustrate the patterns of people returning to the welfare system.

We can see that a material proportion, perhaps 40%, return to the welfare system over the next 10 years. The most common next destination over this period is working age payments and most of the people who move into this class appear to do so over the next 5 years. Beyond 10 years, many move onto age pension as expected.

Previous welfare recipients (older exits)

There were 2,560,000 people in the older exits group in the model population. This included a mix of genders and ages as illustrated below.

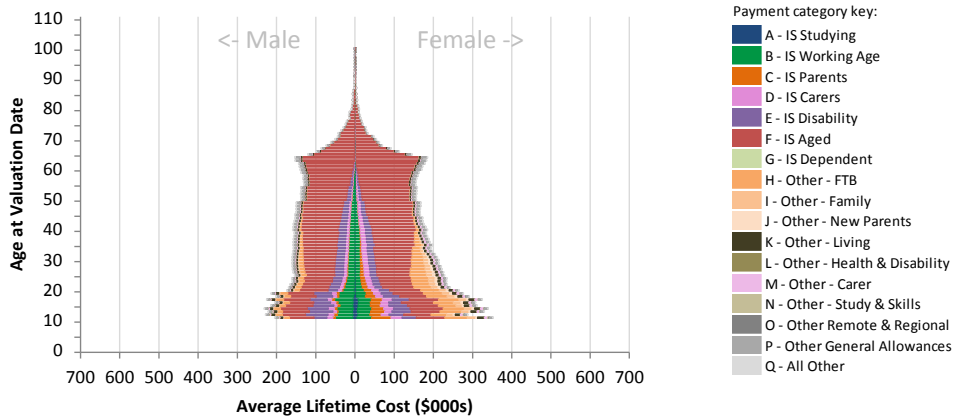
Figure 81: Profile of people in Class 10 – Exits 4+ years old (age/gender)



Lifetime costs

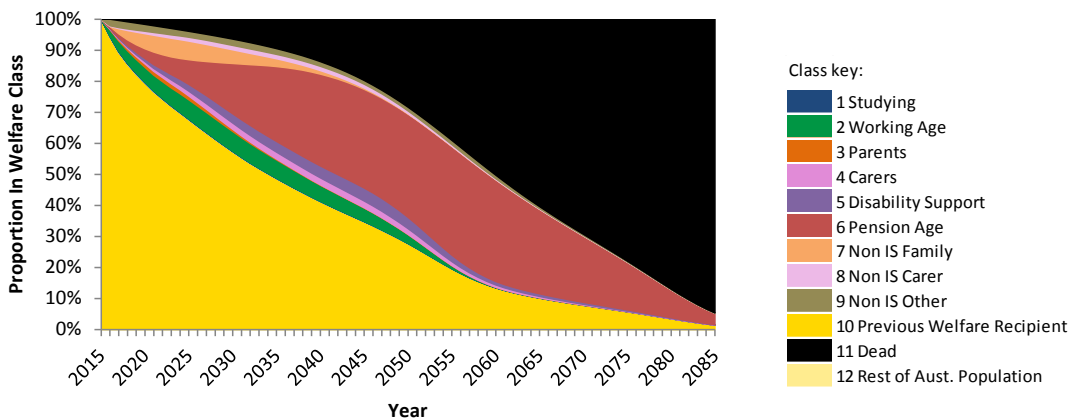
We estimated the lifetime cost for this older exits group to be **\$410bn** (or **8.6%** of the total lifetime cost).

Figure 82: Average lifetime cost by age and gender (Class 10, older exits)



The average lifetime cost for people in this group is **\$160,000**, however the group includes people at almost all ages and there is, again, considerable variation in costs between them. It is noticeable that these costs are lower than for the recent exits.

Figure 83: Expected future trajectories for people in Class 10 (exited 4+ years)



The expected trajectory for these older exits is shown above. We can see that much smaller proportions of people are expected to return to the active classes, in particular to the working age class.

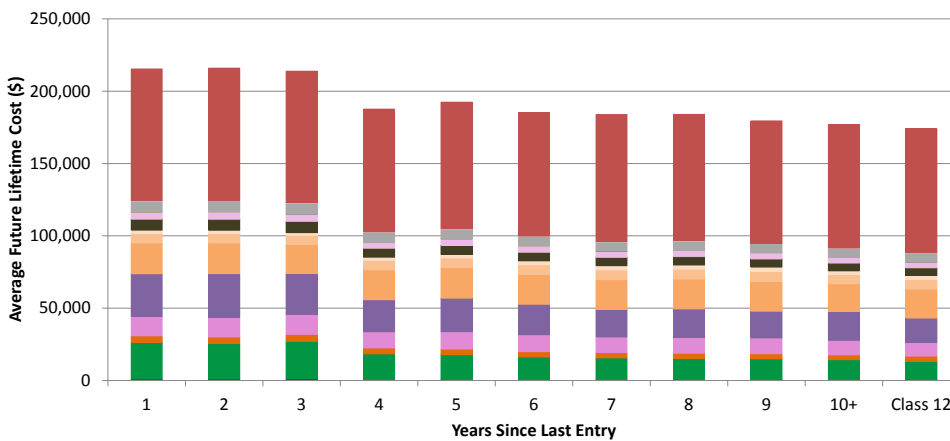
Comparisons of average lifetime costs

Analysis by duration since exit

The lifetime costs for past welfare recipients below retirement age are typically in the range \$150,000 to \$300,000 (with variations by age and duration since exit), lower than for those for people in the active classes. This is unsurprising as the cost reflects the combined effect of the likelihood of returning to the system and the expected cost at arrival. Equally unsurprising is that the lifetime costs for people age 20 and over are heavily dominated by age pension costs.

For people in class 10 (previous welfare recipients) our analysis has shown that the longer people remain out of the system the lower their chances of return. Thus it is interesting to examine how the costs for people in class 10 vary by their delay since exit and this is illustrated below for people aged 30 at the valuation date.

Figure 84: Variation in average lifetime cost by duration since exit (person age 30)



This chart shows gradual reductions as the duration since exit increases, most notably for the pre-retirement part of the costs. The shape of the chart above also reflects the mix of other characteristics (such as by gender and partner status or numbers of children) and this may generate some of the differences between the expected costs for people of different durations post exit.

Comparisons for current welfare recipients and exits

Comparing the average lifetime costs for people in current welfare recipient classes and those recently exited can be informative as it provides some indication of the differences in lifetime cost that may be achieved through interventions that assist people in exiting the welfare system in a sustained way.

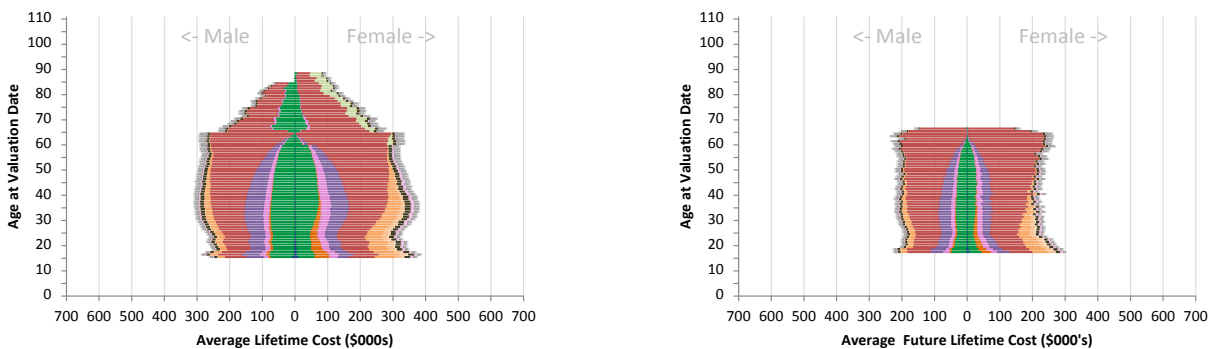
As an example, the average future lifetime cost for a 30 year old man receiving working age payments is perhaps \$230,000 compared to only \$100,000 to \$200,000 for people who are not current welfare recipients.

As an illustration the figure below shows how the average lifetime cost of current people in the working age class compare to people who exited this class one year ago.

Figure 85: Comparison of costs of working age people and working age 1 year exits

Working age

Exits – previously in working age class



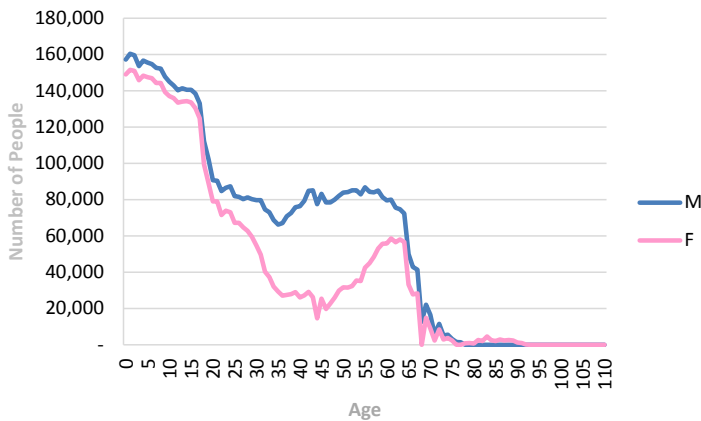
Note the much lower contribution of income support costs reduces significantly (as this is linked to the requirement for the person to re-enter); however the age pension costs for people of different ages are similar.

11.2 Rest of the Australian population

This group (class 12) is the remainder of the population, being the group of people who have not received any payments during the period covered by the data analysed – broadly the last 14 years. This group will include some people who were welfare recipients prior to that time alongside others who have never received a payment.

There were 11,949,000 people in this class at 30 June 2015 with the demographic profile shown below.

Figure 86: Profile of people in Class 12 – rest of the Australian population (age/gender)



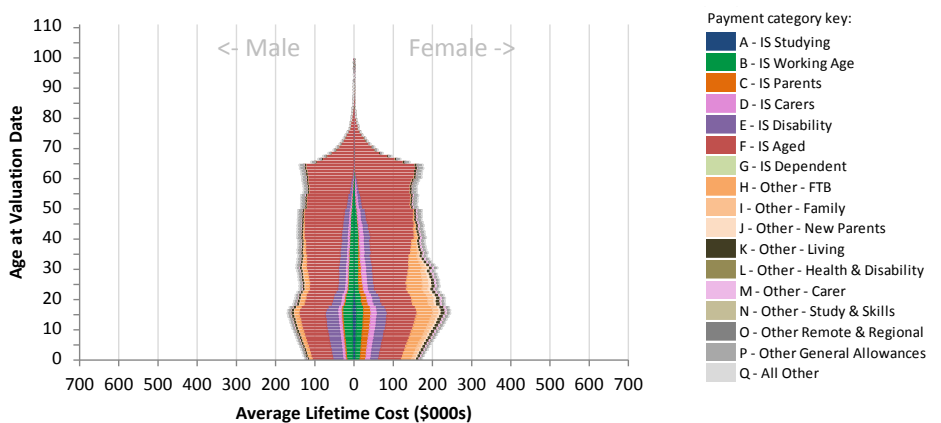
Almost the whole of the Australian resident population who are currently younger than age 15 will be included in this class given that very few of these people will have ever received a payment under their own name, as children’s payments would typically be made to a parent or guardian. Note that there are fewer females than males in the middle age range, given that females are more likely to have entered the system to access family benefits over this age range, and therefore will appear in the current or previous welfare recipient groups.

Lifetime costs

We estimated the lifetime cost for this class to be **\$1,961bn** (or **41.2%** of the total lifetime cost). This is a very substantial figure owing to the large number of people in this class, accounting for half the model population.

It is perhaps more informative to consider the average lifetime costs for people in this group and these are shown in the figure below. The average lifetime cost for people in this group is **\$164,000**.

Figure 87: Illustration of average lifetime costs for the rest of the Australian population



Note that the majority of the lifetime cost (53%) comes from age pension and related supplements. A substantial proportion of the rest is from family payment types, principally FTB and child care.

There is considerable differentiation in the patterns of costs by age, with the cost for older people in this class consisting predominantly of age pension and family payment types, whereas younger people have more chance of someday accessing other payments and hence have greater costs for a range of payment categories.

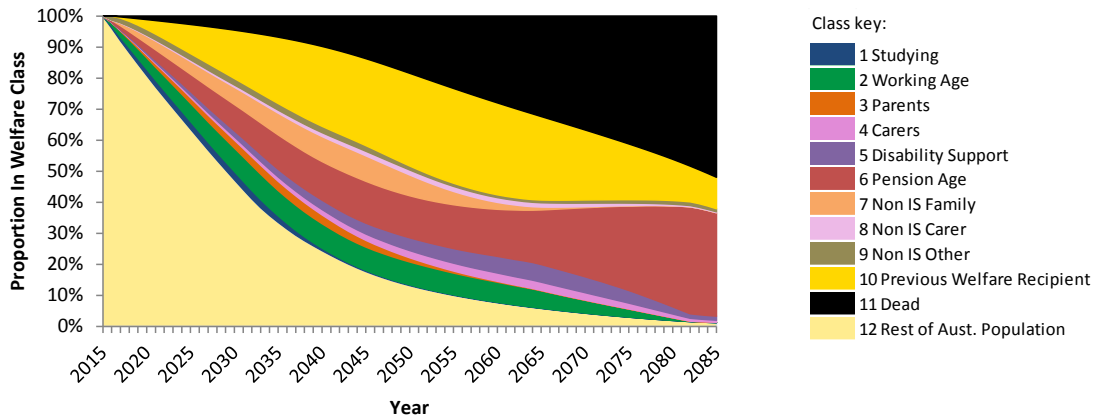
One of the benefits of including the whole population in the model is that it places attention on where the future costs of the system are going to come from, facilitating longer term thinking and enabling the investment approach to be applied in a broader context. We estimate that each year of new births adds around \$50 billion to the total lifetime cost – these costs are of course highly uncertain as welfare payments to this group in their own right will not commence for many years, but this statistic does highlight the value of investing now in children who are at high risk of becoming dependent on welfare when they reach adulthood.

Expected trajectories for the rest of the Australian population

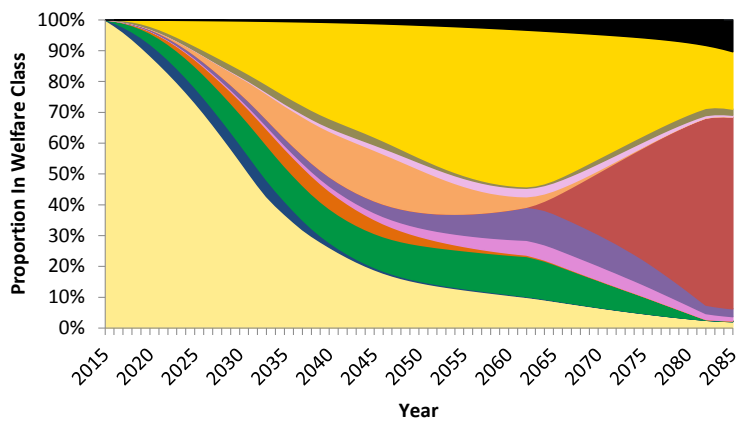
The projection model also produces information on the expected transitions for people out of each class, as shown below.

Figure 88: Expected future trajectories for people in rest of Aust. population (Class 12) by age

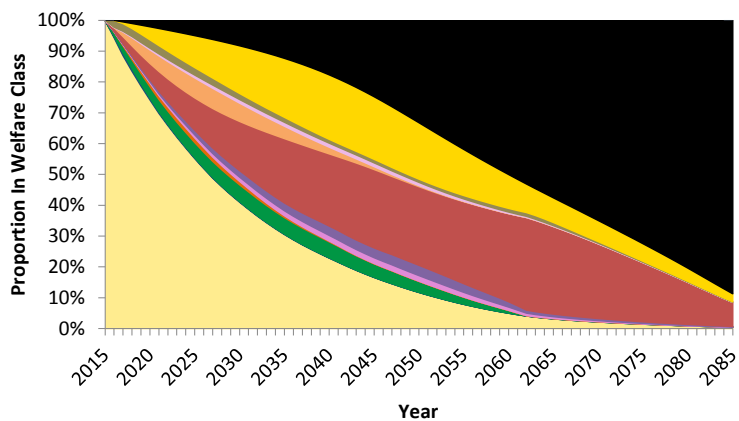
All



Ages 0-19



Ages 20+



Comments:

- We can see people in the rest of the Australian population class have a material chance of entering the welfare system at some future stage of their lives, although for many this will just be to receive the age pension.

- The main difference in the shapes of this trajectory compared to those shown for the two groups of previous welfare recipients is likely to be driven by their different age profiles: on average the recent exit class progress to age pension sooner, whereas the rest of the Australian population group are relatively more likely to enter the studying and parenting classes at some stage. This is also because almost all people under 15 fall into this group.
 - We have shown the different trajectories for the younger and older groups and this illustrates the relatively small proportions of the older group who are likely to enter the system other than for retirement. Conversely, significant proportions of the younger people are expected to use other types of support; this is not unexpected given they have much of their lives ahead of them.

12 Forecasts

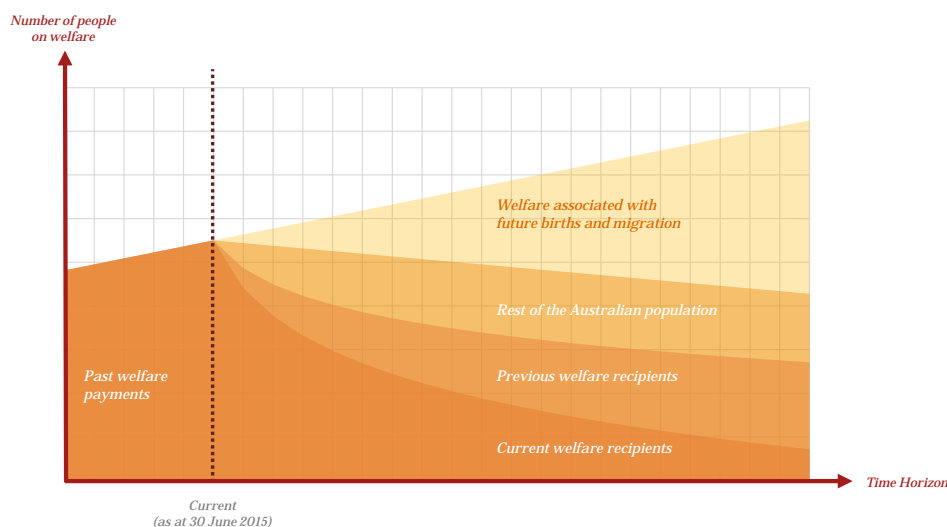
12.1 Background

In addition to current welfare recipients, there are three groups of people who may receive welfare in future years:

- Class 10 – ‘previous welfare recipients’ is people in the current resident population who were recipients of welfare benefits in the past, who may again be recipients of welfare benefits in the future.
- Class 12 – ‘rest of Aust. population’, the rest of the current resident Australian population who have never been recipients of welfare in the past (or at least in the timeframe covered by the administrative dataset on which the valuation is based)
- People not yet born or who will migrate to Australia in future years.

These groups are illustrated below, with the darkest colour representing the current welfare recipients and recent exits and the paler colours representing the three groups of people identified above.

Figure 89: Representation of future welfare payments by recipient group



The first two of these groups are included in the model population and we can examine their potential future use of the welfare system and the related costs.

The third group is not represented in the model population and this will mean that any forecasts of information developed from the model will not reflect the entirety of the future welfare recipient numbers or costs. Initially the size of this missing group of people will be fairly small and with a fairly small impact on assessments of welfare recipient numbers or population costs; however as we project into the future the size of this group will grow and be a limit on the use of the forecast information.

In order to produce a complete forecast for the lifetime cost at 30 June 2016 which includes the third group of people we would need to develop a dataset to represent the population at that point in time. This would require rolling forward the June 2015 population, adding records for newborn children and those migrating into the country and removing records for emigrating. This would be a substantial exercise and would only be reliable if we had detailed information on the planned profile of future migrants. We consider that the benefits of such an exercise are insufficient to justify the work involved.

Instead we have adopted the simpler approach of forecasting information such as the lifetime costs or welfare recipient numbers only for those people who are within the model population for the current valuation.

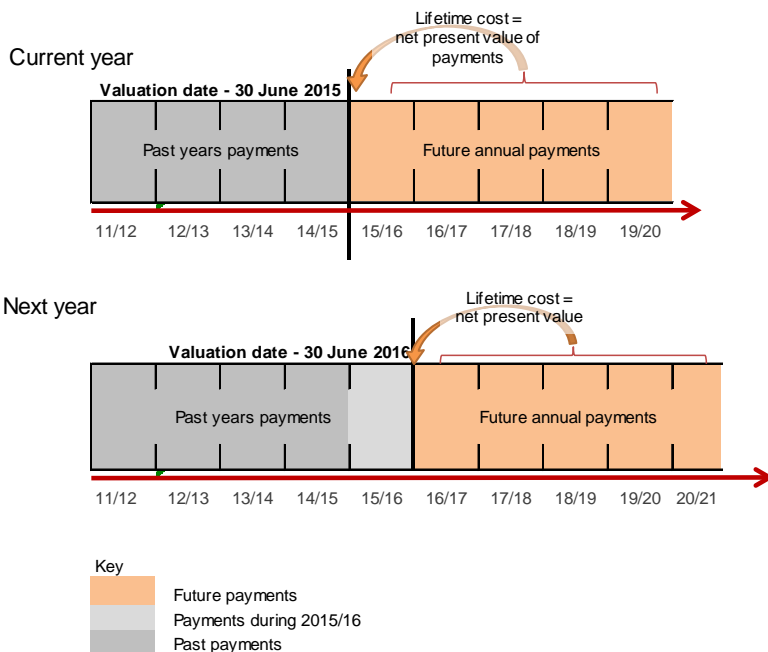
12.2 Lifetime cost forecasts

Lifetime cost forecasts are expectations of lifetime cost at future valuation dates. They provide useful benchmarks for future years' valuations. As each subsequent valuation is performed, the differences to the benchmark can be examined to understand how the lifetime cost results differ from expectations.

Some changes in the valuation results will arise from changes in the experience (either numbers of people in the welfare system or the levels of payment being different to expected); others may be the result of refinements to the methodology or model structure or changes in the assumptions. The changes can be examined further to see whether the underlying causes are factors outside of the control of the Department (such as demographic or economic factors) or those within its control.

The approach for developing the lifetime cost forecasts is illustrated below.

Figure 90: Development of lifetime cost forecasts



The forecast lifetime cost at 30 June 2016 for the 30 June 2015 population is as follows:

Table 13: Lifetime cost forecast

| Item | Amount (\$bn) |
|--|---------------|
| Lifetime cost at 30 June 2015 | 4,764 |
| Adjustments: | |
| <i>less</i> expected expenditure in 2015/16 | -124 |
| <i>plus</i> adjustment for discounting to 30 June 2016 | 286 |
| Expected lifetime cost at 30 June 2016 | 4,926 |

When we reach 30 June 2016 we will be able to reassess the lifetime cost for this subset of the population and explain the movements in the lifetime cost assessment. We will also be able to show the additional components of lifetime cost being added for new members of the population.

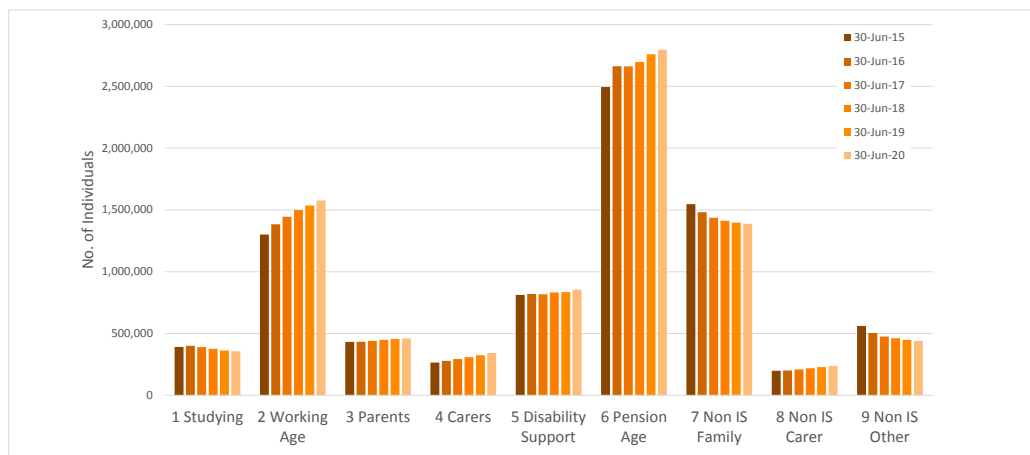
12.3 Forecasts of other information

The model output includes forecasts of information for the numbers of people in each class in future years, the future payment amounts and the numbers of people receiving payments in each payment category.

People in each class

The chart below shows the expected numbers of people in each active class over the period June 2016 to June 2020. The actual numbers of people in each class for the year ending 30 June 2015 have also been included.

Figure 91: Projected numbers of people in each active welfare class



Notes:

- As noted above the actual numbers will be slightly higher than this as the population is expected to grow through migration and births. Over this 5 year timeframe migration will have the bigger impact as most people only enter the payment system in their own right in their teenage years.
- Consequently the Department should use this information with care and consider making adjustments for the undercount before using them for purposes such as planning or budgeting.

Many of the features of this chart reflect the demographic profile of the current Australian resident population:

- The most notable feature of this forecast is the expected growth in numbers of age pensioners and working age payment recipients:
 - The numbers of age pensioners will increase as the large numbers of people who are in their early 60s today move into retirement. The shape of the chart is stepped as a result of the increases in pension age and the changes to the pension asset test and taper rate both of which start to take effect from 2017.
 - The numbers of people in the working age class are expected to grow as a result of a number of factors. Recent and future increases to pension age mean that more people in their 60s are expected to access these payments before they become eligible to draw their pensions. Similarly the tightening of the eligibility criteria for disability support pension will mean more people remain in the working age class. Finally, the population profile shows a significant number of people who are currently around age 30 and may access working age payments at their current stage of life.
- Conversely, the numbers of people studying are expected to reduce as there are fewer people in their late teens and early 20s today than was the case in the recent past.
- The number of people in the carer's class has been growing from year to year and we expect this to continue in the future. As the population ages and there are more older people needing care, there may be more demand for this payment. Note also that this class includes a group of people over pension age who may be caring for ageing partners.

The number of people in class 9 is expected to reduce a little as there were a historically unusual number of people in this class at June 2015. In developing the model assumptions we have assumed that most but not all these people would be likely to remain in the system over the longer term.

13 Dynamics of the system

13.1 Introduction

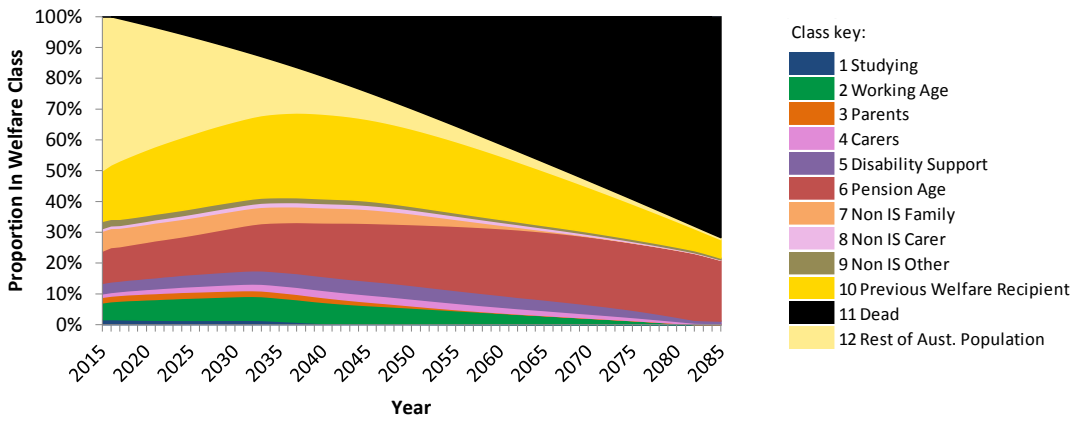
As well as considering individual class movements, it is also informative to examine the dynamics of how people move into, through and out of the system overall. Building on the previous sections which cover these movements in some detail, this section discusses overall movements at a system level.

13.2 Trajectories through the system

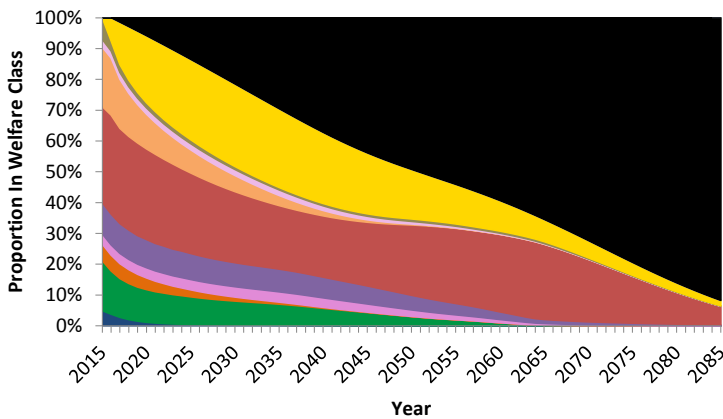
In section 9 we discussed the past experience and expected future trajectory of people in each class. This can be summarised to a system-wide view for the 8.0 million current welfare recipients and 15.9 million people in the previous welfare recipient and the rest of the Australian population classes, as shown below.

Figure 92: Expected trajectories of a) whole population b) current welfare recipients, and c) previous welfare recipients and the rest of the Australian population

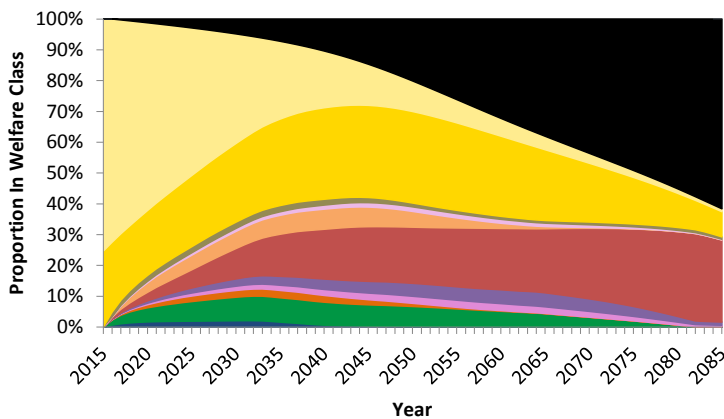
a) Whole population



b) Current welfare recipients



c) Previous welfare recipients and rest of Aust. population



Much of the shape of these charts is determined by the design of the payment system and the demographics of the welfare recipient population.

Figure 16 provided an overview of which parts of the overall Australian population are reflected in the current welfare recipient group. Not surprisingly in this group there is high utilisation of people above pension age and also of people of parenting age with lower utilisation at other ages. The charts show this as they provide an indication that:

- Many current welfare recipients exit for a period and then return later as they retire (as evidenced by the previous welfare recipient group in the second chart increasing and then declining in size).
- Numbers of people in the parenting and family non IS classes reduce relatively quickly.
- The size of the age pension band first shrinks a little and then increases again as the current parents retire.

Turning now to consider the previous welfare recipients and the rest of the Australian population group: around 30% of these 15.9 million people are expected to become current welfare recipients over the next 15-20 years. Many of the older people in this group will retire and draw pensions and for the younger people there will be a material propensity to utilise working age and family payments as well as smaller likelihoods of receiving other types of support.

Overall, the extended duration of the supports being provided and the smoothness of the patterns stand out, highlighting the challenge of changing these patterns over time. Despite this, there are likely to be targeted interventions that can make small changes to the likelihoods of people following certain trajectories that cumulate to make a significant difference to their life outcomes.

To address this we have further considered the factors which differentiate between people in each class and (where relevant) help improve their likelihood of reduced reliance on the system. We considered both the past experience and the information on risk factors emerging from the valuation modelling.

Welfare class dynamics – past experience

As part of our exploratory analysis of the system, we prepared a considerable number of charts to understand the dynamics of welfare recipients moving into, through and out of the system. Talking through these charts with the Department has provided us with insights into the system, and helped inform the analysis and assumption setting.

The first set of charts starts with the people who were payment recipients in each class in 2010/11, and follows their subsequent movements “forward” through different classes or out of the system until 2014/15.

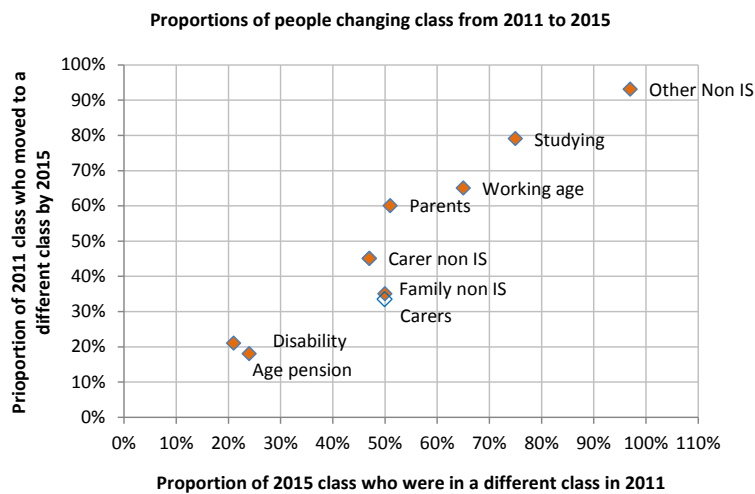
The second set of charts starts with the people who were payment recipients in each class in 2014/15, and tracks their previous movements “backwards” from different classes or from outside the system, since 2010/11.

A sample of these charts is included in Appendix B. Many of the insights discussed throughout the report, and in the “groups of interest” section, are gleaned from this exploratory analysis and the accompanying discussions with the Department.

A key feature that we identified is that many of the classes exhibit high levels of persistency: once people enter they often only exit after an extended period on benefit (many years) or to the age pension or at the end of their

lives. These findings can be summed up in the figure below which shows the proportions moving in and out of each class to any other destination over the last four years.

Figure 93: Illustration of class persistency over period June 2011 to June 2015



We have grouped the classes into three categories:

- **Studying, Working Age, Other Non IS.** These are the three least persistent classes, although the low persistency of the Other non IS class is overstated through it partly operating as a holding class for the Family non IS class.

For these classes there is a much higher degree of change of the people in the class: new people arrive each year and others exit the system or move on to different classes.

- **Parents, Family Non IS, Carers, Carer’s Non IS.** These four classes are in the middle of the spectrum. Whilst many people stay within the class for a number of years most eventually move on.

A key feature is that all the people in these classes are accessing support from the welfare system whilst they themselves are providing support to others – either as a parent or through taking on caring responsibilities. Whilst these four classes all include around 50% of people who were not in the class 4 years ago, looking forward, the outcomes are different. More of the Parents class have moved to a different class over the last 4 years, most likely because of the ongoing eligibility criteria link to the age of the person’s youngest child.

For people in these classes it may be helpful to develop policies which focus on maintaining people’s skills and confidence whilst they are supporting others and helping them move to lower levels of support when their parenting or caring roles become less intensive or come to an end.

- **Disability support pension, Age pension.** These are the most persistent classes; typically exits are only through retirement (for DSP recipients) or death.

For these classes the past experience suggests there are limited opportunities to help people return to self-reliance once they have entered these classes. Thus the focus for policy development may be on improving understanding of the pathways into this class and helping people earlier, and on ensuring the supports provided to people in the class are appropriately targeted and calibrated.

14 Groups of interest

14.1 Introduction

An important purpose of the actuarial valuation is to identify “groups of interest”, which have relatively high lifetime costs, but where, with more effective policy settings or interventions, those costs could be reduced and the lifetime wellbeing of the people in the group improved. These groups will effectively be candidates for the application of the investment approach. The intention of the investment approach is to direct funding towards evidence based policy interventions which increase the chances of sustained employment and self-reliance. Over time, this may include ceasing policy settings or interventions that are shown not to reduce the lifetime costs of welfare for particular groups; introducing or strengthening policy settings or interventions that encourage self-reliance for particular groups; or investing in more tailored and effective policy settings or interventions for individuals and families who are identified as being most at risk of long-term welfare dependency.

The way in which the groups are identified and described in this valuation report (for example, their age bracket, gender, class, life circumstances or characteristics) is informed by the model structure and data, which effectively provide a sorting mechanism to facilitate system-wide thinking. In the foundation model, which developed assumptions by age, gender and class, these factors were the main starting point for examining lifetime costs. Of particular interest were specific age or gender groups transitioning between different classes but remaining in the system. The final baseline model, which includes additional dimensions such as family situation, highest educational attainment, and some other factors, brings another lens to inform the identification of groups. Ultimately, it will also be possible to drill down to examine lifetime costs using reporting variables to define groups. These are variables which are not used as predictors in the model but their influence may be captured in people’s welfare history, so examining costs for groups defined in this way may help inform policy. Examples would include people living in a particular area or those with particular characteristics such as a reported period of homelessness or a past domestic violence event.

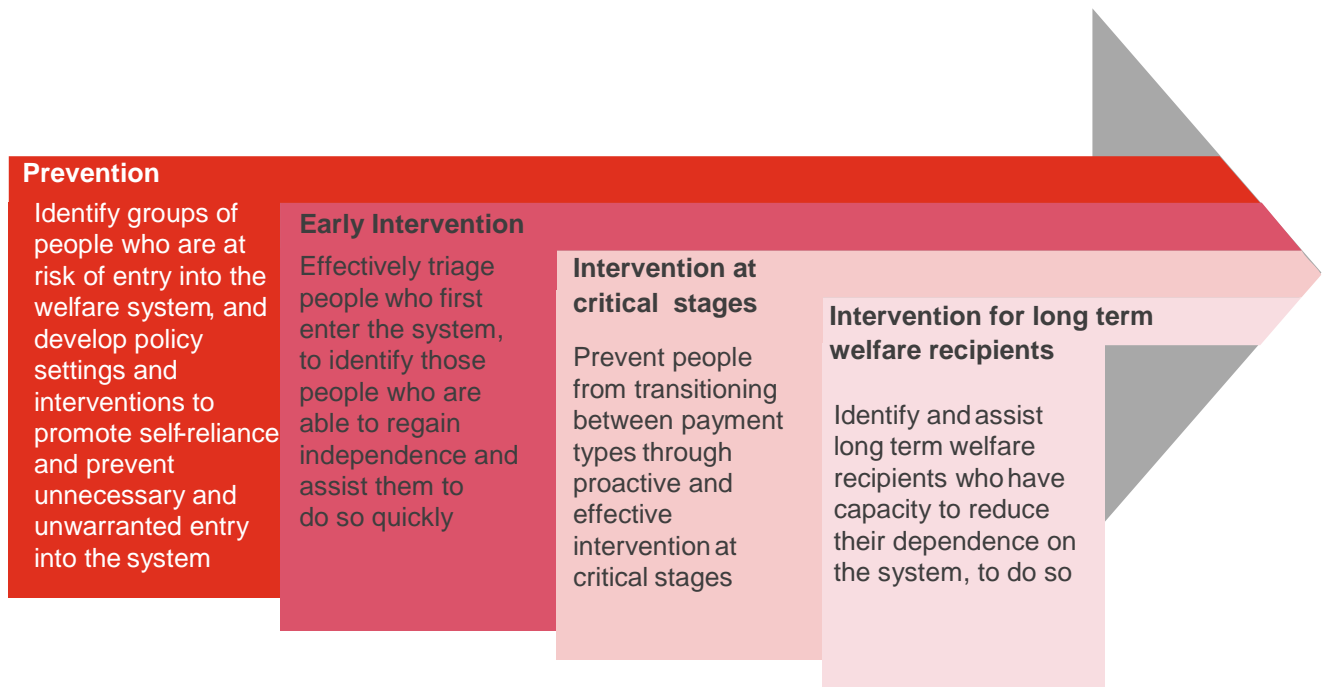
We note that this section should be considered as a straw man to facilitate further discussion. It is designed to summarise insights from the report into a framework that may assist the Department with their thinking on group prioritisation. In doing this, we have drawn on group identification and claim management concepts that, as actuaries, we are familiar with applying in workers’ compensation or other long tail injury schemes. We acknowledge that there are a number of alternative frames of reference that could be used. As the model evolves beyond the baseline, groups of interest will be able to be further differentiated, providing more granular insights to refine the group prioritisation task.

We highlight that the groups of interest identified in this section are not exhaustive, and that further groups are likely to be identified or existing groups modified as the model results are explored more fully in conjunction with the Department’s social policy experts and external stakeholders.

A framework for consideration

The following framework for considering interventions, and thinking about groups, is adapted from the workers’ compensation field, which shares the overarching objective of assisting people with the capacity to work, to do so.

Figure 94: Intervention framework



These interventions should work in concert with each other, but each has a slightly different emphasis. This framework could be used to inform a facilitated workshop or forum to discuss and consider groups for prioritisation in conjunction with examining the results of the model for different groups.

14.2 Application to classes

Based on the observations on the dynamics of the system the classes may fit within this framework as shown.

Table 14: Application of interventions framework to classes

| Class | Prevention | Early intervention | Intervention at critical stages | Intervention for long term welfare recipients |
|--------------------------|------------|--------------------|---------------------------------|---|
| Studying | Y | Y | Y | Y |
| Working age | Y | Y | Y | Y |
| Parents | | Y | Y | |
| Carers | | Y | Y | Y |
| Disability support | | Y | Y | (Y) |
| Age pension | | | | |
| Family non IS | | | Y | |
| Carer non IS | | | Y | Y |
| Other non IS | | | Y | |
| Recent exits | Y | | Y | |
| Older exits | Y | | | |
| Rest of Aust. population | Y | | | |

Within each class there will be different groups of people with different circumstances and so the interventions at each stage of the framework will need to be targeted appropriately.

Some illustrative examples

Prevention activities would typically be initiatives designed to encourage continued self-reliance for target groups or change the “identified risk factors” for entry into the system. They would typically be either low cost initiatives which may target broad groups or be highly targeted towards those most at risk.

Intuitive examples would include:

- Overall policy settings that effectively incentivise workforce participation and self-reliance
- Ongoing focus on recent exits from the payment system, to help reduce their chance of re-entering
- Policies or incentives to encourage more years of self-reliance for people approaching retirement
- Behavioural prompts to encourage older workers who are at risk of redundancy due to industry changes or macro trends, to update or refresh their skills
- Early childhood or school age programmes that are designed to address identified risk factors that predict teenage entry to the payment system

Based on early insights from the analysis, we have highlighted the following examples of areas for further investigation:

Table 15: Areas for further investigation of prevention

| Group | Reason |
|---|---|
| Post-55 entry into working age income support | <ul style="list-style-type: none"> • The proportion of the non-welfare recipient population who enter or re-enter the system into working age income support hovers a bit above 1% up to age 55, but then rises to around 2% between age 55 and retirement age. • The group of entrants/re-entrants between 55 and retirement age represents about 20,000 males and 17,000 females each year, with an average lifetime cost of about \$300,000. |
| Exits within previous 3 years | <ul style="list-style-type: none"> • The average lifetime cost of people who exited in the last 3 years is around \$200,000 due to their chance of re-entering. • This group makes up around 1.35 million people so a preventative strategy that reduced the re-entry rate by around 10% would correspondingly reduce the pre-retirement lifetime cost for this group by about the same proportion, translating to around \$10 billion in reduced lifetime cost. |
| Teenage entry into studying income support | <ul style="list-style-type: none"> • At about age 17 15-20% of the population enter the system for the first time to receive studying income support. • This group represents about 13,000 males and 17,000 females entering each year, and understanding the profile of this group better could inform strategies for either preventing some from entering the system (if they are able to support themselves while pursuing their studies) or providing more targeted early intervention for those who are at higher risk of later transitioning to working age income support. |

Early intervention activities would typically be short term, targeted interventions for people first entering the payment system – tailored to their age, risk factors and reason for entry. The concept of triaging claims and applying different claims management strategies is well established practice in workers’ compensation schemes, though its success is dependent on building a strong evidence base and tools to support effective treatments. Given that both welfare and workers’ compensation systems share the same goal of assisting people back to independence and work where possible, we feel that sharing ideas and research between the industries could be helpful.

Table 16: Areas for further investigation of early intervention

| Group | Reason |
|--|---|
| <p>Young carers entering between ages 15-24</p> | <ul style="list-style-type: none"> • Around 1,000 people joined the system as carers between the ages of 15 and 24 during 2015, with the most common age at entry being 17. From our exploratory analysis we can see that of about 9,000 carers who had recently entered and were 15 to 24 in 2010/11, around 80% were either still carers or had transitioned to other forms of income support by 2015. • This group is worthy of further investigation in that our model estimates the people in it will have a high lifetime cost due to their likelihood of remaining as long term welfare recipients. Intuitively, early intervention in these cases to understand the family situation, explore alternative care arrangements that would allow the young person to continue engaging in study or work, and provide appropriate advice and support, may change the trajectory in a proportion of these situations. |
| <p>Young parents</p> | <ul style="list-style-type: none"> • About 1,500 females entered the system as young parents between the ages of 14 and 18 during 2015. Our analysis indicates that this group will have an average lifetime cost of around \$540,000, due to the level of payments made and their likelihood of becoming long-term welfare recipients. • This group are worthy of further investigation to understand what early interventions could be applied to improve their probability of becoming self-reliant in the future. |

Intervention at critical stages would involve identifying trigger points at which certain groups of people typically transition to another payment type, and using data analysis to predict which people are likely, without intervention, to become long term welfare recipients.

In considering transitions between classes, we have conducted exploratory analysis that tracks the people in each welfare class “forwards” from 2011 to 2015, to show where the people who were in each class in 2010/11 subsequently moved to. We have also tracked people “backwards”, to show where people in each class in 2014/15 came from.

This analysis in itself shows some interesting insights into pathways through the system, and informs some useful “intervention points” for consideration, including:

Table 17: Areas for further investigation of intervention at critical stages

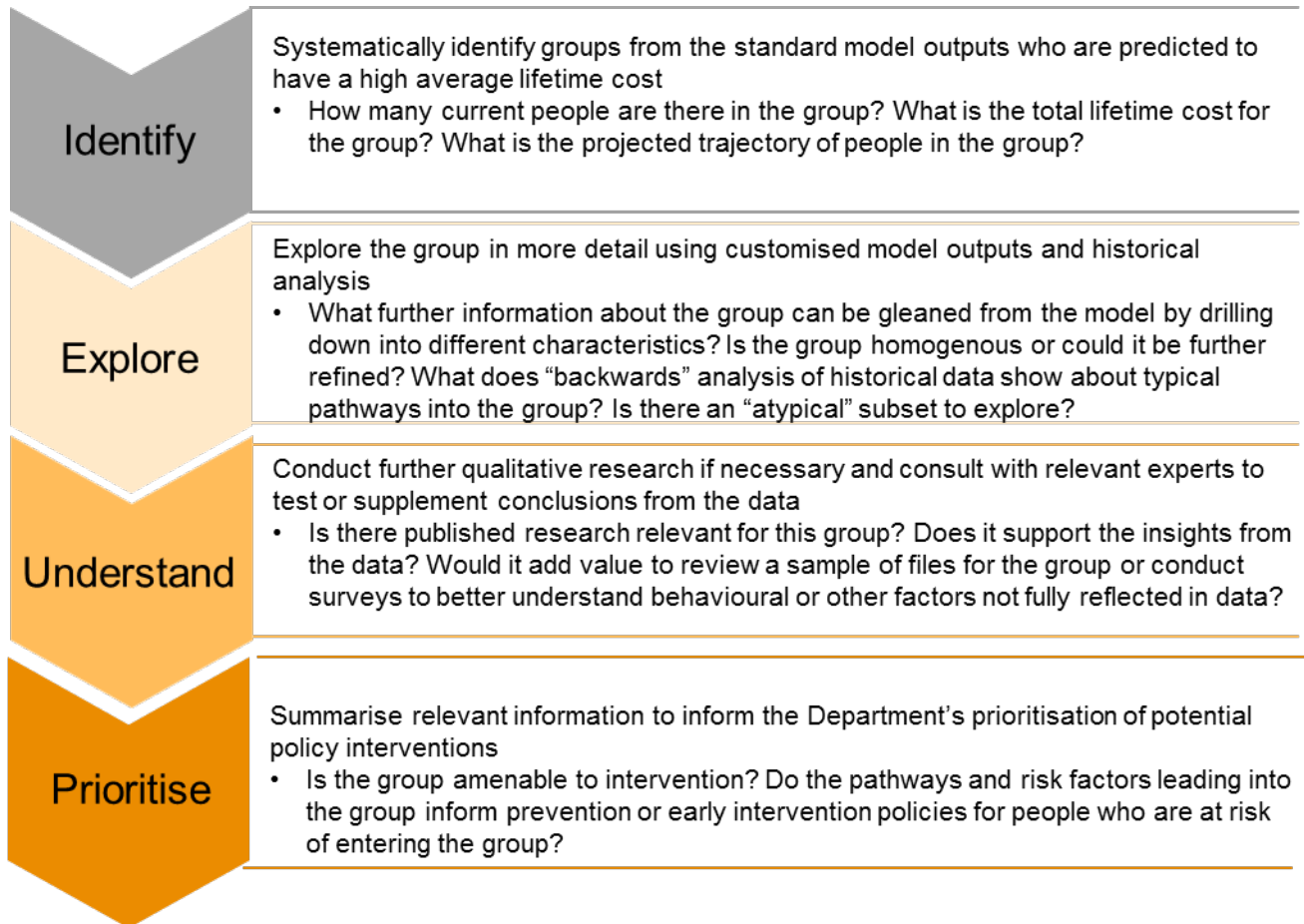
| Group | Reason |
|---|--|
| <p>Parents transitioning to working age payments</p> | <ul style="list-style-type: none"> • There were 30,000 females within the 2014/15 working age class that were in the parenting class in 2010/11, with their youngest child aged 1-3. • This suggests there may be an opportunity for more effective intervention in the year leading up to a parent losing eligibility for parenting payments. |
| <p>Students who transition to working age</p> | <ul style="list-style-type: none"> • The majority of people receive studying income support payments for some years and then exit. However a proportion transition to working age payments. • There may be benefits in exploring the experiences of people who undertake this transition to better understand the challenges being faced by this group and to design effective policy and behavioural incentives for them. |
| <p>Working age to disability transitions</p> | <ul style="list-style-type: none"> • Another high cost group are people who enter via the working age class in their 30s and 40s, but progress to DSP, stay on and transition to age pension. We can see from the data that around 14,000 DSP recipients aged 40-49 in 2015 had transitioned from working age income support since 2010/11, representing about 7% of the 2010/11 working age class population who were then aged 36-45. • It would be worth investigating this group further to see what factors could have predicted this progression, and what different interventions could have changed that trajectory when they first entered the system. Note that with the tightening of DSP eligibility criteria, some of these people may no longer progress to DSP, but may remain in the working age class for longer. |
| <p>Older people entering carer payment</p> | <ul style="list-style-type: none"> • There are a number of people well over pension age who enter the Carer class each year. These people are relatively more costly than age pensioners. • As the aged part of the population grows, these numbers could increase in future years. • It would be worth exploring the drivers of this transition and validating that they are consistent with the policy intent. |

Some of the graphs from the forwards and backwards analysis illustrate these points and are included in Appendix B.

Intervention for long term welfare recipients is likely to require more investment than some of the other intervention types, for example by providing intensive case management. This type of intervention may also have a lower number of successes per head of intervention population, but with a significant saving for each success. This is also true in the workers' compensation setting, where these are termed "tail" claims, but successful strategies have nevertheless been deployed with the assistance of incentives for service providers. This is an area where "try, test, learn" is particularly applicable, and where the investment approach can be used to demonstrate the business case, given the high lifetime cost of people who are long term welfare recipients.

14.3 A framework for further analysis

We highlight that any model, however sophisticated, is only ever able to be a simplified representation of complex real life situations, and it will therefore always be helpful to conduct more detailed or ad-hoc analysis of groups of interest. In turn, the examination of historical data in different ways can help inform the future refinement of the model, in an iterative process. We have developed the following framework for guiding further analysis to inform policy interventions.





Appendices

| | | |
|------------|----------------------|-----|
| Appendix A | Policy changes | 118 |
| Appendix B | Exploratory analysis | 121 |
| Appendix C | Model factors | 122 |
| Appendix D | Glossary | 130 |

Appendix A Policy changes

In the course of analysing the data, we have considered policy changes that may have impacted the past experience, and where possible taken these into account in setting assumptions for the model. The following table summarises the most material policy changes we have considered, noting that this is not an exhaustive list as we are also aware of a large number of other policy changes.

Our general approach to these has been to ask questions when we have observed discontinuities, features or trends in the experience, to see if there are any policy changes that could explain these.

Table 18: Policy changes which may have impacted past experience

| Amendment | Year | Description |
|--|------|---|
| Changes to FTB income test Family Assistance, Social Security and Veterans' Affairs Legislation Amendment (2005 Budget and Other Measures) Act 2006 | 2006 | From 1 July 2006, the lower income threshold for Family Tax Benefit Part A was increased from \$33,361 to \$37,500. |
| Welfare to Work and Other Measures Employment and Workplace Relations Legislation Amendment (Welfare to Work and Other Measures) Act 2005 | 2006 | From 1 July 2006 there were multiple changes to the work test and eligibility for allowances for new and recent Disability Support Pension (DSP) applicants. The eligibility and activity requirements for Parenting Payment recipients changed. From 1 July 2006 Taper rates and income thresholds for many payments were altered. Changes were made to the qualification for Pensioner Education Supplement (PES). A higher rate of Mobility Allowance was made available for some people. |
| Age Pension assets test taper rate Tax Law Amendment (Simplified Superannuation) Act 2007 | 2007 | Age Pension 'assets test' taper rate halved. |
| Secure and Sustainable Pension Reform package Social Security and Other Legislation Amendment (Pension Reform and Other 2009 Budget Measures) Act 2009 | 2009 | There was a one-off increase to the rate of many pensions, and changed indexation arrangements. The Pension Supplement was introduced as part of reform package and took effect from 20 September 2009. The 'income test' taper rate increased. The Pension Bonus Scheme was closed to new registrations from 1 July 2014. The Commonwealth Seniors Health Card income test was modified. A Carer Supplement was introduced for Carer Payment recipients. Indexation was changed for certain FTB payments. This Act introduces a new Work Bonus into the social security law, which allows for a certain amount of employment income that is earned, derived or received in an instalment period by a pensioner who is of age pension age to be disregarded for the purposes of the income test. |
| Training Incentives Social Security Amendment (Training Incentives) Act 2009 | 2009 | The introduction of a training supplement was made available to recipients of Newstart Allowance and Parenting Payment. |
| Carer Payment Social Security Legislation Amendment (Improved Support for Carers) Act 2009 | 2009 | Eligibility changed for individuals providing care for children with a disability. |
| Parenting Payment transitional arrangement Social Security Amendment (Parenting Payment Transitional Arrangement) Act 2011 | 2011 | Changed ability to access transitional arrangements. |
| Work rule for Disability Support Pension Social Security and Other Legislation Amendment (Disability Support Pension Participation Reforms) Act 2012 | 2012 | From 1 July 2012, all Disability Support Pension recipients can work up to 30 hours a week without having their payment suspended or cancelled. |

Policy changes

| Amendment | Year | Description |
|---|-----------|---|
| Changes to the eligibility criteria for Youth Allowance (other) and Newstart Allowance Social Security and Other Legislation Amendment (Income Support and Other Measures) Act 2012 | 2012 | The age of qualification and income free test for these payments changed. |
| Clean Energy Advance (CEA) | 2012 | The Clean Energy Advance (CEA) was introduced in May 2012. |
| Clean Energy Supplement and other measures Clean Energy (Household Assistance Amendments) Act 2011 | 2012-2013 | From 1 July 2013, the normal payment indexing arrangements and the Clean Energy Supplement (CES) began to deliver assistance related to carbon pricing. In addition, amendments were introduced for the Low Income Supplement, Essential Medical Equipment Payment, Single Income Family Supplement and aged care. |
| Family Tax Benefit and Youth Allowance Family Assistance and Other Legislation Amendment Act 2011 | 2012 | The maximum age limit for a young person to qualify as a dependent child for Family Tax Benefit Part A (FTB-A) changed from aged under 25 to aged 21. This change aligns with the age of independence recognised in Youth Allowance. As at 1 January 2012, a young person is considered independent for Youth Allowance purposes once they turn 22. |
| Removal of the grandfathering provisions and other measures Social Security Legislation Amendment (Fair Incentives to Work) Act 2012 | 2013 | Grandfathering provisions for some Parenting Payment recipients were removed. For certain Newstart recipients there were changes to the eligibility for certain supplements and allowances, and to income taper rates. |
| New Income Support Bonus Social Security and Other Legislation Amendment (Income Support Bonus) Act 2013 | 2013 | The Act creates a new Income Support Bonus to be paid to recipients of Newstart Allowance, Youth Allowance, Parenting Payment, Sickness Allowance, Austudy Payment, Special Benefit, ABSTUDY Living Allowance, Exceptional Circumstances Relief Payment, Transitional Farm Family Payment. |
| Austudy | 2013 | The maximum length of temporary absence was reduced. |
| Age/study rules for children for family assistance payments Social Security and Other Legislation Amendment (2012 Budget and Other Measures) Act 2012 | 2013 | The maximum age of eligibility for FTB Part A is further reduced to 17 for children who have completed secondary education or a vocational equivalent. Children still in secondary study can continue to access FTB Part A until the end of the calendar year they turn 19. |
| Austudy | 2014 | The residence requirements changed for Austudy in Jan 2015 and temporary absence is no longer included. |
| Family Tax Benefit Part B | 2014 | The FTB B higher income earner test changed to \$100,000 from 1 July 2015. Families with one parent earning over \$100,000 are not eligible for FTB B. |
| Disability Support Pension | Various | The tightening of eligibility criteria including, but not limited to, the 'Program of Support' rule in September 2011 and the revised Impairment Tables in January 2012. |
| | 2014 | From 1 July 2014, DSP recipients under age 35 years, granted between 1 January 2008 and 31 December 2011, are subject to review of their impairment (using the revised Impairment Tables) and capacity to work. People with a severe or manifest disability will not be reassessed. People who have some capacity to work now or in the future will be helped to do this through programmes, services and activities. Under this reform, recipients under 35 will have a participation plan which includes activities that will genuinely assist in labour market participation. These activities could include Work for the Dole, job search, work experience, education and training, and connection with Disability Employment Services. |
| Seniors Supplement Cessation Social Services and Other Legislation Amendment (Seniors Supplement Cessation) Act 2014 | 2014 | The Budget 2014 – 15 measure on the cessation of the Seniors Supplement – Commonwealth Seniors Health Card holders commenced on 20 June 2015. The Seniors Supplement for Commonwealth Seniors Health Card (CSHC) holders will no longer be paid beyond the June 2014 quarterly payment. From this date CSHC holders will continue to receive only the Energy Supplement each quarter. |
| Energy Supplement (ES) | 2014 | In September 2014, The Energy Supplement (ES) replaced the CES and indexing was removed. |
| Other Measures Social Security Amendment (Supporting More Australians into Work) Act 2013 | 2014 | From 20 March 2014, the income free area that applied for certain payments was increased. From 1 January 2014, eligibility for the Pensioner Education Supplement (PES) was extended. |

Policy changes

The following table contains the legislated future policy changes of which we are aware.

Table 19: Legislated future policy changes

| Amendment | Year | Description |
|--|--------------|--|
| Repeal of the income support bonus and the schoolkids bonus Minerals Resource Rent Tax Repeal and Other Measures Act 2014 | 2016 | The final instalment of the Schoolkids Bonus will be paid in July 2016. The Income Support Bonus will continue until December 2016 with the last instalment paid in September 2016. |
| Changes to assets test Social Services Legislation Amendment (Fair and Sustainable Pensions) Act 2015 | 2017 | Increases made to the assets test free areas for pensions and allowances. Age Pension 'assets test' taper rate doubled (reversing the 2007 change). |
| Changes to the treatment of defined benefit income streams Social Services Legislation Amendment (Defined Benefit Income Streams) Act 2015 | 2017 | This introduces a 10% cap on the amount of a superannuant's defined benefit income that is excluded when applying the social security income test. |
| Qualifying age for the age pension Social Security and Other Legislation Amendment (Pension Reform and Other 2009 Budget Measures) | 2017 to 2023 | The Age Pension age will be increased from age 65 to age 67, at a rate of six months every two years, beginning in 2017. Note prior to this the Age Pension age for females was increased from 60 to 65 over the period from 1995 to 2013. |



Appendix B Exploratory analysis

The exploratory analysis charts are a set of separate documents. A zipped file with these documents will be provided along with this report.



Appendix C Model factors

The tables below summarise the characteristics that are considered within each of the key sets of model assumptions.

Flow assumptions

Table 20: Factors considered in flow assumptions

| Individual Characteristics Used | Mortality | Partnering status | Gaining children | Losing children | Education attainment |
|-------------------------------------|-----------|-------------------|------------------|-----------------|----------------------|
| Age | Y | Y | Y | N | Y |
| Gender | Y | Y | Y | N | Y |
| Class | Y | Y | Y | N | Y |
| Partner status | N | Y | Y | N | N |
| Number of dependent children | N | Y | Y | N | N |
| Age of dependent children | N | N | Y | Y | N |
| Highest level of education attained | N | N | N | N | Y |
| Indigenous status | Y | Y | Y | N | Y |

Class movement assumptions

Table 21: Factors considered in class movement assumptions

| Individual Characteristics Used | 1 Studying | 2 Working Age | 3 Parents | 4 Carers | 5 Disability Support | 6 Pension Age | 7 Non-IS Family | 8 Non-IS Carer | 9 Non-IS Other | 10 Prev. Welfare Recipient | 11 Dead | 12 Rest of Aust. Pop |
|-------------------------------------|---------------|---------------------|--------------|-------------|----------------------------|---------------------|-----------------------|----------------------|----------------------|-------------------------------------|------------|----------------------------|
| Age | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N/A | Y |
| Gender | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N/A | Y |
| Class | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N/A | Y |
| Previous class | Y | Y | N | N | N | N | N | | Y | Y | N/A | N |
| Partner status | Y | Y | Y | Y | N | N | N | Y | Y | Y | N/A | Y |
| Number of dependent children | Y | Y | Y | Y | N | N | N | Y | Y | Y | N/A | Y |
| Age of dependent children | Y | Y | Y | Y | N | N | N | Y | Y | Y | N/A | Y |
| Highest level of education attained | Y | Y | Y | N | N | N | N | N | Y | Y | N/A | Y |
| Duration in welfare class / system | Y | Y | Y | Y | N | N | N | Y | Y | Y | N/A | N |
| Age entered welfare system | N | Y | N | N | N | N | N | N | Y | N | N/A | N |
| Place of birth / language spoken | N | N | N | Y | N | N | N | Y | N | N | N/A | N |
| Indigenous status | Y | N | Y | Y | N | N | N | Y | N | Y | N/A | Y |
| Dependent identifier | N | Y | N | N | N | N | N | N | N | N | N/A | N |
| Previous welfare utilisation | Y | Y | Y | Y | N | N | N | Y | Y | N | N/A | N |

Payment category utilisation assumptions

The assumption approaches adopted for utilisation of each payment category for people in each class are summarised below. As noted in section 6, foundation assumptions were adopted in a number of cases due to the limited value of developing a risk-based model for that category and class.

Table 22: Approach adopted for developing payment utilisation assumptions for each class.

Income Support payment categories for year t – t+1

| Model class (at t+1) | A IS Studying | B IS Working Age | C IS Parents | D IS Carers | E IS Disability | F IS Aged | G IS Dependent |
|--------------------------------|------------------|---------------------|-----------------|----------------|--------------------|--------------|-------------------|
| 1 Studying | R* | F* | F* | F* | F* | F* | F* |
| 2 Working Age | F* | R* | F* | F* | F* | F* | R* |
| 3 Parents | F* | F* | R* | F* | F* | F* | F* |
| 4 Carers | F* | F* | F* | R* | F* | F* | F* |
| 5 Disability Support | F* | F* | F* | F* | R* | F* | F* |
| 6 Pension Age | F* | F* | F* | F* | F* | R* | F* |
| 7 Non IS Family | Grey area | | | | | | |
| 8 Non IS Carer | Grey area | | | | | | |
| 9 Non IS Other | Grey area | | | | | | |
| 10 Previous welfare recipients | Grey area | | | | | | |
| 11 Dead | Grey area | | | | | | |
| 12 Rest of Aust. population | Grey area | | | | | | |

Notes:

- IS indicates Income Support
- R indicates risk based assumptions are used.
- R* indicates where the assumption is 100% and hence that no risk based model was required to model utilisation accurately. For Payment category G the individuals receiving dependents payments have been identified and treated as a closed group in the model.
- F* indicates where refined foundation assumptions have been used, referencing both current and previous class. In these cases we consider the additional value of risk based utilisation assumptions to be minimal
- F indicates Foundation assumptions have been used
- Grey areas are where the class definitions mean that it is not possible to have payments in that category.

Model factors

Non-Income Support (Allowances and Supplements) payment categories for year t – t+1

| Model class (at t+1) | H FTB | I Family | J New Parents | K Living | L Health & Disability | M Carer | N Study & Skills | O Remote & Regional | P General Allowances | Q All Other |
|--------------------------------|----------|-------------|---------------------|-------------|-----------------------------|------------|------------------------|---------------------------|----------------------------|-------------------|
| 1 Studying | R | F | F | F | F | F | R | F | F | F |
| 2 Working Age | R | F | F | F | F | F | F | F | F | F |
| 3 Parents | R | F | F | F | F | F | F | F | F | F |
| 4 Carers | R | F | F | F | F | F | F | F | F | F |
| 5 Disability Support | R | F | F | F | F | F | F | F | F | F |
| 6 Pension Age | R | F | F | F | F | F | F | F | F | F |
| 7 Non IS Family | R | F | F | R | F | | F | F | F | F |
| 8 Non IS Carer | R | F | F | F | F | R* | F | F | F | F |
| 9 Non IS Other | F | F | F | F | F | | F | F | F | F |
| 10 Previous welfare recipients | | | | | | | | | | |
| 11 Dead | | | | | | | | | | |
| 12 Rest of Aust. population | | | | | | | | | | |

Notes:

- IS indicates Income Support
- R indicates risk based assumptions are used.
- R* indicates where the assumption is 100% and hence that no risk based model was required to model utilisation accurately. For Payment category G the individuals receiving dependents payments have been identified and treated as a closed group in the model.
- F* indicates where refined foundation assumptions have been used, referencing both current and previous class. In these cases we consider the additional value of risk based utilisation assumptions to be minimal
- F indicates Foundation assumptions have been used
- Grey areas are where the class definitions mean that it is not possible to have payments in that category.

Model factors

Through applying these approaches the factors considered for utilisation of the income support and other payment categories are as follows. Where foundation assumptions have been used for some classes and risk based assumptions for others, the table shows the factors in the risk based assumption set.

Table 23: Factors considered in payment utilisation assumptions – income support payments

| Individual Characteristics Used | A IS Studying | B IS Working Age | C IS Parents | D IS Carers | E IS Disability | F IS Aged | G IS Dependent |
|---------------------------------|------------------|---------------------|-----------------|----------------|--------------------|--------------|-------------------|
| Age | Y | Y | Y | Y | Y | Y | Y |
| Gender | Y | Y | Y | Y | Y | Y | Y |
| Class | Y | Y | Y | Y | Y | Y | Y |
| Previous class | Y | Y | Y | Y | Y | Y | Y |
| Dependent identifier | N | Y | N | N | N | N | Y |

Table 24: Factors considered in payment utilisation assumptions – other payments

| Individual Characteristics Used | H FTB | I Family | J New Parents | K Living | L Health & Disability | M Carer | N Study & Skills | O Remote & Regional | P General Allowances | Q All Other |
|-------------------------------------|----------|-------------|------------------|-------------|--------------------------|------------|---------------------|------------------------|-------------------------|----------------|
| Age | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Gender | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Class | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Previous class | Y | N | N | Y | N | N | N | N | N | N |
| Partner status | Y | N | N | Y | N | N | N | N | N | N |
| Number of dependent children | Y | N | N | Y | N | N | N | N | N | N |
| Age of dependent children | Y | N | N | Y | N | N | N | N | N | N |
| Highest level of education attained | N | N | N | N | N | N | Y | N | N | N |
| Duration in welfare class / system | N | N | N | N | N | N | Y | N | N | N |
| Previous welfare utilisation | Y | N | N | Y | N | N | Y | N | N | N |

Model factors

Payment category amount assumptions

The assumption approaches adopted for each payment category for people in each class are summarised below; these are applied for people who utilise a payment. The risk based assumptions cover 98% of the income support payments and 66% of overall payments.

Table 25: Approach adopted for developing payment assumptions for each class.

Income support payment categories for year t – t+1

| Model class (at t+1) | A IS Studying | B IS Working Age | C IS Parents | D IS Carers | E IS Disability | F IS Aged | G IS Dependent |
|--------------------------------|------------------|---------------------|-----------------|----------------|--------------------|--------------|-------------------|
| 1 Studying | R | F | F | F | F | F | F |
| 2 Working Age | F | R | F | F | F | F | R |
| 3 Parents | F | F | R | F | F | F | F |
| 4 Carers | F | F | F | R | F | F | F |
| 5 Disability Support | F | F | F | F | R | F | F |
| 6 Pension Age | F | F | F | F | F | R | F |
| 7 Non IS Family | | | | | | | |
| 8 Non IS Carer | | | | | | | |
| 9 Non IS Other | | | | | | | |
| 10 Previous welfare recipients | | | | | | | |
| 11 Dead | | | | | | | |
| 12 Rest of Aust. population | | | | | | | |

Notes:

- F indicates Foundation assumptions have been used
- R indicates risk based assumptions are used.
- Grey areas are where the class definitions mean that it is not possible to have payments in that category.

Model factors

Non-income support payment categories (Allowances and supplements) for year t – t+1

| Model class (at t+1) | H FTB | I Family | J New Parents | K Living | L Health & Disability | M Carer | N Study & Skills | O Remote & Regional | P General Allowances | Q All Other |
|--------------------------------|----------|-------------|---------------------|-------------|-----------------------------|------------|------------------------|---------------------------|----------------------------|----------------|
| 1 Studying | F | F | F | F | F | F | F | F | F | F |
| 2 Working Age | F | F | F | F | F | F | F | F | F | F |
| 3 Parents | F | F | F | F | F | F | F | F | F | F |
| 4 Carers | F | F | F | F | F | F | F | F | R | F |
| 5 Disability Support | F | F | F | F | F | F | F | F | R | F |
| 6 Pension Age | F | F | F | F | F | F | F | F | R | F |
| 7 Non IS Family | F | F | F | F | F | | F | F | F | F |
| 8 Non IS Carer | F | F | F | F | F | F | F | F | F | F |
| 9 Non IS Other | F | F | F | F | F | | F | F | F | F |
| 10 Previous welfare recipients | | | | | | | | | | |
| 11 Dead | | | | | | | | | | |
| 12 Rest of Aust. population | | | | | | | | | | |

Notes:

- F indicates Foundation assumptions have been used
- R indicates risk based assumptions are used.
- Grey areas are where the class definitions mean that it is not possible to have payments in that category.

Model factors

Through applying these approaches the factors considered for utilisation of the income support and other payment categories are as follows. Where foundation assumptions have been used for some classes and risk based assumptions for others, the table shows the factors in the risk based assumption set.

Table 26: Factors considered in payment assumptions – income support payments

| Individual Characteristics Used | A IS Studying | B IS Working Age | C IS Parents | D IS Carers | E IS Disability | F IS Aged | G IS Dependent |
|-------------------------------------|------------------|---------------------|-----------------|----------------|--------------------|--------------|-------------------|
| Age | Y | Y | Y | N | Y | Y | Y |
| Gender | Y | Y | Y | N | | Y | N |
| Class | Y | Y | Y | Y | Y | Y | Y |
| Previous class | Y | Y | N | N | N | Y | N |
| Partner status | N | Y | Y | Y | Y | Y | Y |
| Number of dependent children | N | Y | N | N | N | N | N |
| Age of dependent children | N | Y | N | N | N | N | N |
| Highest level of education attained | Y | N | N | N | N | N | N |
| Duration in welfare class / system | Y | Y | N | Y | Y | Y | Y |
| Age entered welfare system | N | N | N | N | N | Y | N |
| Indigenous status | N | Y | N | N | N | N | N |
| Previous welfare utilisation | N | Y | N | N | N | N | Y |

Table 27: Factors considered in payment assumptions – other payments

| Individual Characteristics Used | H FTB | I Family | J New Parents | K Living | L Health & Disability | M Carer | N Study & Skills | O Remote & Regional | P General Allowances | Q All Other |
|------------------------------------|----------|-------------|---------------------|-------------|-----------------------------|------------|------------------------|---------------------------|----------------------------|----------------|
| Age | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Gender | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Class | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Previous class | Y | N | N | N | N | N | N | N | N | N |
| Partner status | Y | N | N | N | N | N | N | N | N | N |
| Number of dependent children | Y | N | N | N | N | N | N | N | N | N |
| Age of dependent children | Y | N | N | N | N | N | N | N | N | N |
| Duration in welfare class / system | Y | N | N | N | N | N | N | N | N | N |
| Previous welfare utilisation | Y | N | N | N | N | N | N | N | N | N |

Appendix D Glossary

Glossary A to M

Actuarial Valuation

Estimation of the lifetime cost to the Australian government of future social security payments using generally accepted actuarial principles.

Allowances

Allowances provide income support and access to a range of concessions for eligible Australians. The term Allowance is used by the Department to refer to income support payments that are generally at lower payment levels than Pensions.

Assumptions

Assumptions are the parameters that guide the model— these include 'macro' assumptions such as economic forecasts and demographic assumptions; and 'micro' assumptions such as probabilities of individuals moving into and through the welfare system based on various risk factors.

Group

In this report we have used the term group to refer to a group of people defined by a set of common characteristics in the model - for example , a group could be "females aged 20 to 24 who were in welfare class 'studying' in 2014/15" or could be "male carers". Generally, groups will be defined by the model structure and individual's characteristics.

Data

Data refers to sets of information that are being used to inform the project.

Datasets

A set of values of qualitative (characters) or quantitative (numbers) variables that is data coded in a form suitable for using in analysis.

Discounting

The process of determining the present value of a payment or a stream of payments that is to be received in the future. Given the time value of money, a dollar is worth more today than it would be worth tomorrow given its capacity to earn interest.

Dynamic

A term we are using to describe information or data variables that change with the progression of time (e.g. a person's partner status).

Flow assumptions

This comprises the set of assumptions used to ascertain how each person's individual demographic and risk characteristics change as time progresses.

Indexation

Indexation is a technique to adjust payments by means of an index, in order to maintain the purchasing power of the payment after inflation.

Liability

In Finance, the term liability is used to refer to general obligations to make future payments. The specific meaning varies depending on the person using the term and context of its use. Actuaries may also use this term to describe the net present value of the cash flows arising from future obligations.

Lifetime cost

For the investment model, the lifetime cost will be the net present value of all future welfare payments (to the in-scope population).

Average lifetime Cost (future)

The net present value of the payments that we expect to be made to an individual over their future lifetime. Note that these will be assessed for groups of similar individuals, not for specific people.

Method

The method refers to the description or specification of the process for selecting modelling techniques, taking the data, analysing it, developing or incorporating assumptions about the future, and projecting forward and summarising the expected welfare payments for each individual within the model population.

Model

The model refers to the set of computer programs, spreadsheets, formulae, techniques and tools that are being built to apply the method. In a sense, the model is intended to represent, in a mathematical way, what happens to people as they move in, through and out of the social support system based on various assumptions. The model is a collection of modules and sub-components that fit together in applying the method.

Model population

The model population is the set of individual person records used in the model. The model design allows the model to be run for either a sample of the population or the whole population. Where the model is run for the entire model population, and not a sample, we refer to this as the full population.

Glossary N to Z

Net Present Value

The sum of the present values of incoming and outgoing cash flows over a period of time.

Payment

A generic term used to describe all the different types of benefits which an individual can be paid. Includes Pensions, Allowances, Entitlements etc.

Payment assumptions

The assumptions which describe the payments which individuals receive given that they use a specific Payment category.

Payment categories

The groupings of individual payment types used for modelling purposes.

Payment types

A term used to describe the labels which have been assigned to all the underlying payments so they can be considered for modelling purposes. The assignment has been through a mapping process with around 2,000 underlying payments being identified by codes and these mapped to around 100 payment types.

Payment utilisation assumptions

The assumptions which describe the probabilities with which individuals use different Payment categories.

Pensions

Pensions provide income support and access to a range of concessions for eligible Australians. The term Pension is used by the Department to refer to income support payments that are generally at higher payment levels than Allowances.

Present Value

The present value is the value of an expected income stream determined as of the date of valuation. The present value is always less than or equal to the future value because money has interest-earning potential, a characteristic referred to as the time value of money.

Probability

Probability is the measure of the likelihood that an event will occur. Probability is quantified as a number between 0 and 1 (where 0 indicates impossibility and 1 indicates certainty). The higher the probability of an event, the more certain we are that the event will occur.

Projection

The use of the model to forecast the future payment experience of the population based on current statistics and trends.

Risk characteristics

Measurable or observable factors or characteristics that are used to assign each individual to one of the risk classes of a risk classification system. Examples of risk characteristics in the context of the actuarial valuation model include age, gender, family situation and education status.

Risk classes

A set of risks grouped together under a risk classification system.

Risk classification system

The process of systematically arranging risks into groups or categories according to similar risk characteristics.

Risk factors

See risk characteristics.

Simulation

Simulation is the imitation of the operation of a real-world process or system over time. In the context of the actuarial valuation model, we will simulate how the payment system operates. Where the system is stochastic, multiple simulations may be used to show the range of possible outcomes.

Static

A term we are using to describe information or data variables that do not change over time. (e.g. a person's date of birth or country of birth).

Statistics

The study of the collection, analysis, interpretation, presentation, and organisation of data.

Stochastic

The term stochastic describes events or systems that are unpredictable due to the influence of random variables. A stochastic model will not produce the same output from a given starting condition or initial state even if run in the same way.

Valuation

see Actuarial Valuation

Valuation Date

The reference date for the actuarial valuation. The valuation will consider the lifetime cost as at the valuation date for all payments after the valuation date.

Valuation Results

The summarised outputs from the model, which will be tailored to meet the needs of different users – for example, as well as the total reported lifetime cost, results may include average lifetime cost estimates for particular groups, projected payments for each of the next five years, projected numbers of “new entrants” to the social support system from different population segments.

Welfare class

The assignation of people into unique segments used within the model. There are 12 classes: 6 for income support recipients (studying, carers, etc.), 3 for people receiving payments but no income support and 3 for the rest of the population. Each person is assigned to the single most appropriate category for each financial year.

Welfare class assumptions

The assumptions which describe the probabilities with which individuals move between welfare classes.

Welfare utilisation assumptions

A term covering both the Welfare class and Payment utilisation assumptions.

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