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Suspicious Minds (can be a good thing when saving for retirement)

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Abstract

Retirement saving is an area now jam-packed with defaults meant to address delayed or absent decision making. Yet, getting individuals engaged with retirement saving decisions is critical to avoid unsuitable one-size-fits-all defaults and optimise accumulated wealth. We apply a market-segmentation approach to the problem based on two attitudinal motivators of behavioral engagement: trust and interest.

Our research sheds new light on why and how engagement occurs. Engagement grows with interest, yet engagement can also be motivated by low levels of trust. However, when interest is lacking, trust is related to reducing monitoring behaviour. This increases the vulnerability of individuals to exploitation exposing the "dark side of trust" (Gargiulo and Ertug 2006). Based on this interaction of trust and interest and how it feeds into engagement, a personalised approach by pension plan providers that addresses members' diverse needs and means in terms of time, knowledge, and financial resources seems desirable.

Keywords: pension defaults, trust, engagement, retirement savings

1. Introduction

The question of how to engage people with their pension plans has gained increasing traction as retirement savings systems around the world have moved away from defined-benefit (DB) to defined-contribution (DC) (OECD 2014). Individuals, however, have not matched this

shift of responsibility with a commensurate increase in engagement. This development, in turn, has triggered numerous defaults to address slow or absent decision making (Benartzi et al. 2007; Johnson et al. 2012). In Australia, as elsewhere, the well-documented low levels of non-default choices (ANZ 2011; Australian Government 2004, 2010; Newfocus 2011) related to various pension plan options are widely interpreted as evidence of a lack of interest and/or decision capability. Whatever the reason, retirement savings can be severely affected: a failure to engage with pension decisions can lead to inadequate retirement wealth and undiversified or poorly performing investments (Agnew et al. 2003; Benartzi 2001; Choi et al. 2003; Dobrescu et al. 2014; French and Poterba 1991; Mitchell et al. 2006; Pool et al. 2013).

To date, the relationship between attitudes towards retirement savings and observable levels of non-default decisions, such as making additional contributions, opting out of the default investment option, and changing insurance cover, seems to be addressed by only one study (Bateman et al. 2014). This study used member records and survey responses from a large Australian retirement savings plan provider to explore the influence on engagement of two variables in particular: member interest in retirement saving and their likelihood to recommend their provider. Opting out of defaults was shown not to be the most reliable proxy for member engagement. While highly interested members (those who self-report their level of personal interest in superannuation as at least 9 out of 10), were more likely to make additional contributions and/or use the plan's online services, they were no more likely than other less interested people to opt out of default investment or insurance settings. Furthermore, recommendation – arguably an output of trust - was identified as a critical determinant of additional contributions. These findings, together with effects resulting from demographics and employment conditions, suggest that member engagement is moderated in

far more complicated ways than was previously thought. Hence in this study we revisit and replicate our findings on the role of interest and add the moderating role of trust to our understanding of what motivates engagement with retirement saving.

We use new survey information and a market-segmentation approach to evaluate the relative impact of our two key motivational factors -- self-reported trust in the provider's investment decisions, and self-reported interest -- and how they interact to determine engagement.

We contend that trust and interest serve different masters in retirement saving. Whereas interest generates engagement to benefit both the provider and the member, an increase in trust is mainly beneficial for engagement serving the provider. Engagement adds value for the provider in the form of referrals, increased investments and cross-selling opportunities like additional insurance (Kumar et al. 2010). These value–adding opportunities require trust, rather than interest. In contrast, engagement that adds value to the member through increased contributions, preference-matched investments and increased knowledge, requires interest, rather than trust.

Specifically, we find, first, that engagement is related to the size of the stakes. For instance, casual or contract employees are more likely than permanents to be disengaged. Second, in terms of our two key motivational factors, an important new finding is that engagement is connected with both mistrust and trust in the investment decisions of the provider. A relatively high proportion of permanent staff members are mistrustingly engaged; i.e., they are engaged because they do *not* trust their provider to look after their retirement savings properly and so monitor the provider. The mistrustingly engaged are the members most likely to be active online. By contrast, when members have extremely high trust in the provider they

are characterised by very low levels of active decision making. Third, in general, non-default investment choices do not confirm high levels of interest: among permanent staff members, non-default investment choices are as likely to be made by the mistrustingly engaged, as by those we term the super engaged (that is, members with high levels of interest in both retirement saving and their provider) and by those with little interest and trust. We conclude that a one-size-fits-all approach to defaults may not advance the objective of ensuring more active retirement provision. A more personalised approach to each segment (Sunstein 2013) is likely to achieve better results.

Our results contribute to studies of the role of trust in financial decisions, and specifically retirement savings (McKenzie and Liersch 2011; Vickerstaff et al. 2012). Trust is a precondition for participation in the financial sector (Guiso et al. 2008) and is the foundation of risk taking and investment delegation (Gennaioli et al. 2015). We confirm this result by showing that the most trusting members are more likely to contribute additional savings to their retirement funds and purchase additional insurance. Studies of trust have exposed a virtuous cycle between incremental knowledge acquisition and greater trust (Andersson and Wengström 2012). And while the cross-sectional data we collect here does not let us study the dynamics of trust and information acquisition, we add an extra dimension to this stream of research by identifying members whose monitoring and knowledge acquisition is a symptom of low trust. We also contribute to the understanding of the so-called ‘dark side of trust’ (Gargiulo and Ertug 2006) by demonstrating that trusting customers that lack interest in retirement saving are the least likely to engage.

The remainder of this article is organized as follows: In Section 2 we explore the role of trust as a motivator of engagement with the resulting outcomes. In Section 3 we discuss our

exemplar retirement savings fund, UniSuper, and the default and non-default choices typically available to members. In Section 4 we discuss the data in detail and in Section 5 we describe the estimation method for our cluster analyses, as well as our subsequent regression analyses. Results are presented in Section 6. In Section 7 we discuss the findings and our suggested segmented marketing strategies. Section 8 concludes.

2. Trust and Engagement

Trust and interest serve as motivators for customer engagement[1] (Brodie et al. 2011; Vivek et al. 2012) and non-default choice behavior (Brown and Krishna 2004; Hedesström et al. 2007). Trust is born of uncertainty and information asymmetry: one party makes itself vulnerable to the other to benefit from the latter's competence, assuming the latter's reliability and an alignment of interests (Morgan and Hunt 1994; Rousseau et al. 1998). Trust benefits the individual by reducing his competence gap and lowering his information gathering costs (Singh and Sirdeshmukh 2000). Trust can enhance the satisfaction of the individual too. In the context of retirement saving, trust can also be perceived as beneficial. Trust reduces the transaction costs of the member allowing him to spend less time gaining knowledge. The provider also benefits: by building trust the member offers the provider the benefit of the doubt if there is a reliability issue (Gargiulo and Ertug 2006). Trusting customers value the relationship (Morgan and Hunt 1994) and may unwittingly, or even willingly, pay more as a form of relational inertia takes hold (Gargiulo and Ertug 2006). Trust is also important as a prerequisite for recommendation of the provider (Bowden 2009; Patterson et al. 2006).

[1] In this article we regard engagement as a behavioral manifestation of interest or involvement. It is this behavioral engagement that we focus on, rather than the emerging construct of customer engagement. Customer engagement includes but is not limited to behavioral engagement.

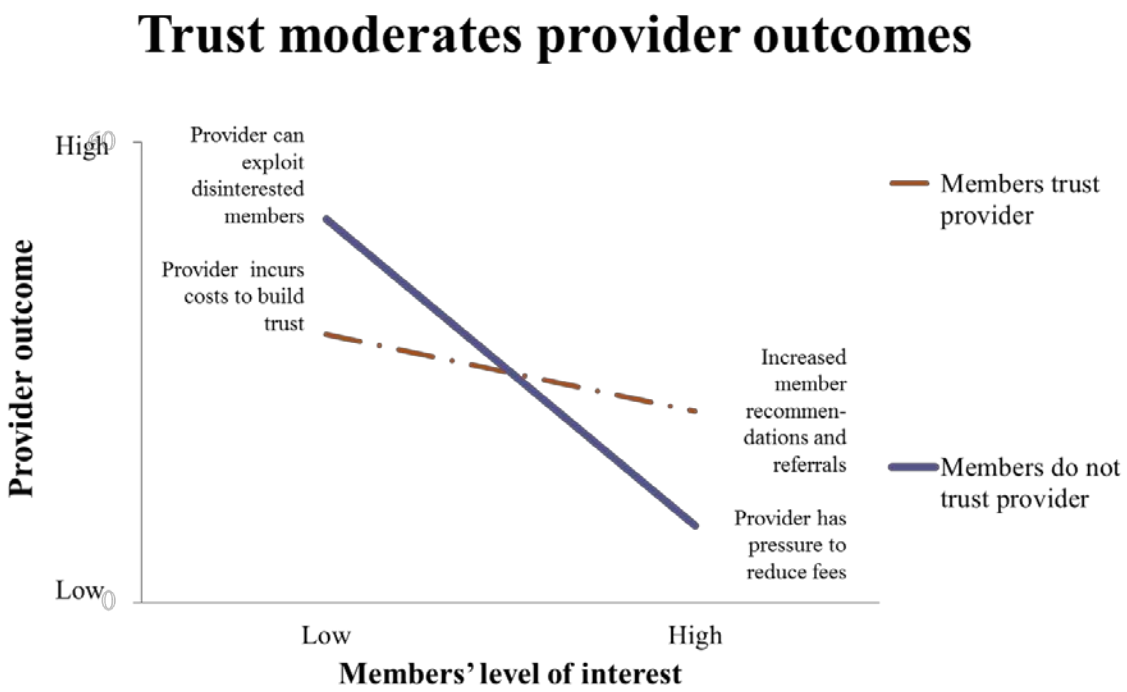
Less explored is the so-called 'dark side of trust' where too much trust can lead to blind faith or complacency to "expose the trustor to malfeasance opportunities" (Gargiulo & Ertug, 2006, p175). The inter-temporal and complex nature of retirement saving, compounded by uncertainty, not only meets the prerequisites for trust (Rousseau et al. 1998) but is likely to nudge people towards blind faith or complacency. Furthermore, since the investment provider has usually been selected by the member's employer rather than the member, compulsory retirement saving, as found in Australia's superannuation system, offers the unique opportunity to study levels of trust varying from virtually absent to so-called blind trust.[2]

Thus, here, we contrast trust with levels of interest and their accompanying levels of engagement. We contend that the dominant of these two drivers of engagement will determine whether the ensuing engagement behaviors add value to the provider or the member.

Interest in retirement saving has been documented to serve as a motivator for engagement in retirement saving decisions (Hedesström et al. 2007). The interested member engages behaviorally and grows in knowledge reducing his need for trust. He monitors his investments and the provider. This monitoring can create the required pressure to drive down fees, thus increasing the member's accumulated retirement income, and improve service. In contrast, the uninterested member risks exploitation in the form of higher fees with poorer fund management. Engagement that results from high levels of interest constrains opportunism.

[2] In Australia, most members can choose a superannuation provider different from the default provider chosen by their employer but the majority do not choose for themselves. Membership of the provider in our study is stipulated in relevant enterprise agreements and, with a few exceptions, employees are not allowed to choose another provider.

Figure 1: Provider outcomes given members' level of interest and level of trust



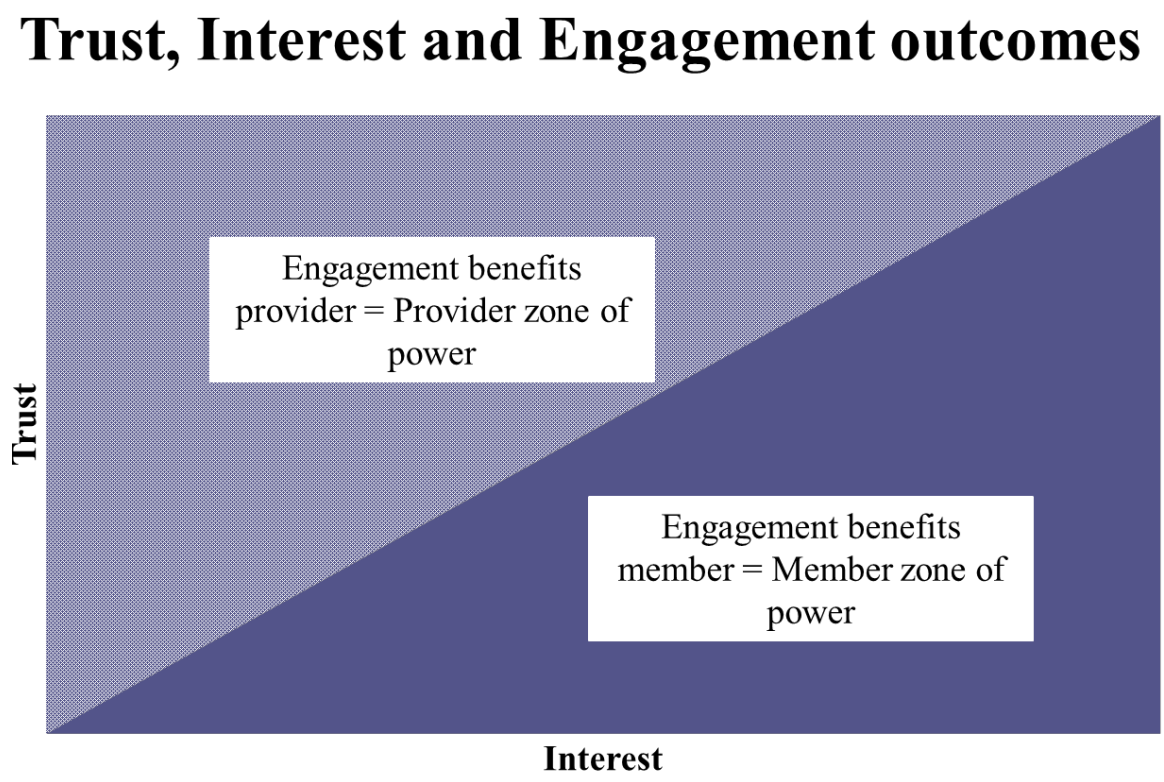
Countering, extreme outcomes due to interest-driven member engagement, trust moderates provider outcomes (see Figure 1). The provider faced with uninterested members can take advantage of them but, dependent on the share of interested members and the strength of their interest, might want to adopt a less risky approach by developing trust. While the provider incurs costs to develop trust, the returns of trust are manifested in long-term customer relationship outcomes (Morgan and Hunt 1994) like increased member recommendation, retention, cross selling opportunities (Kumar et al. 2010), and possibly higher fees (Gennaioli et al., 2015).

This increased level of trust in the provider does not necessarily serve the long-term retirement saving interest of members. Interested members can be drawn into reducing their level of engagement if they trust the firm and they may be less inclined for example to assess fees critically. Their increased apathy can spill over into other areas related to retirement

saving and members may miss valuable opportunities such as tax concessions or matched contributions. Uninterested members may suffer ‘blind faith’, reducing their information search and knowledge acquisition costs (Singh and Sirdeshmukh 2000), but risking opportunistic behaviour by their provider.

In the world of retirement saving, where interest is generally low, trust matters more to the engagement-driven outcomes of the provider than to those of members. The member who trusts too much opens the door for opportunistic behaviour on the part of the provider. We illustrate this conceptually in Figure 2.

Figure 2: Trust, Interest and Engagement outcomes



In the next section we delve into the compulsory retirement savings environment as well as the retirement saving choices typically faced by members of the provider we study, UniSuper.

3. About UniSuper and member choices

Providing adequately for retirement demands many decisions from consumers: how much is required for a comfortable retirement; how much can be spared from the current monthly household budget, how should the money be invested and with whom? These decisions are frequently neglected, with 'bounded rationality' and 'bounded willpower' commonly cited as the cause (Thaler and Benartzi 2004). The financial decisions are complex, requiring calculations about the current and future household budget, investment returns and the future value of money, and longevity estimates. Self-control and willpower are tested by the sacrifice of time and money required in the present for a much delayed benefit. The situation is aggravated by tight financial budgets and the many monetary and time-use temptations in the present. Motivation is further hampered by consumers struggling to visualise the future (Hershfield et al. 2011) and discounting the immediate future more heavily than the distant future (Frederick et al. 2002; McClure et al. 2004). The decisions are further complicated by uncertainty over financial market performance and changes to policy (Weber 2004). In the USA, Europe and Australia, policymakers and providers have responded to ageing populations and consumers' inability to adequately provide for retirement by using defaults. This response has gone some way towards improving the welfare of reluctant decision-makers (Amir et al. 2005; Beshears et al. 2009; Choi et al. 2005; Gallery et al. 2004; Liersch and Stern 2009).

Australia's employer-contributed compulsory retirement saving, known as the Superannuation Guarantee, is recognised as one of the top three systems globally in terms of gross replacement rates for the average income earner (Eisenberger 2013; Mercer 2013). Defaults are the norm unless the individual (the employee) requests otherwise ensuring that savings are made and invested with minimal consumer input required. The provider we study, UniSuper, is Australia's superannuation fund for higher education and research sector employees. It is one of the largest superannuation funds: at end-January 2015 UniSuper had around 400,000 member accounts in defined benefit (DB) and defined contribution (DC) plans, and roughly $46.3 billion in assets.[3]

Arrangements for members of UniSuper depend on employment status, earnings and the workplace agreement between the employees and employer.[4] In particular, these arrangements differ between casual and short-term contract staff (subsequently called 'casual employees') and staff on long-term contracts of at least two years (subsequently called 'permanent employees'). Casuals are enrolled in a DC plan under which the employers (i.e., the universities and research institutions) make the minimum compulsory contribution required, currently 9.5% of earnings. They are also automatically covered for life and total and permanent disability (TPD) insurance. Permanent employees receive employer contributions to their superannuation account above the mandatory 9.5%, typically amounting to 17% of earnings.[5] In addition, permanent employees are defaulted to contribute 7% of their post-tax wage, labelled 'standard member contribution' (which is a form of voluntary member contribution). Permanent employees are automatically enrolled in a DB plan and

[3] Member and assets data from http://www.unisuper.com.au/about-us/about-unisuper. UniSuper is unusual in operating an open DB-type plan for permanent employees Most Australian public and corporate DB plans closed to new members around 15 to 20 years ago.
[4] Industrial agreements mean that, unlike many workers in Australia, employees of Universities may not elect to have their employer contribute to a pension plan other than UniSuper.
[5] A very small minority of employees receive a 14% contribution.

have 24 months from joining to elect to move to a DC plan by opting out. Permanent employees are automatically covered for a minimum level of death and disability benefits. Apart from the higher contribution rates and some additional insurance coverage, permanent employees who elect to move from the DB plan hold a DC account similar to that described above for casuals

Permanent employees can choose to reduce the level of 'standard member' contribution from 7% to 0%. They can also elect whether to make these contributions pre- or post-tax. Casuals and permanent employees can make additional ('voluntary') contributions from either pre- or post-tax earnings, can change their insurance cover, and can change their investment option(s). For low-income earners, voluntary contributions currently attract a government co-contribution up to $500 p.a. For high-income earners, additional contributions can be subject to an excess contribution tax. The insurance options include changing the level of cover for life and/or TPD insurance, adding cover for income insurance or opting out completely. In terms of investment choice, DC members may select from a menu of 15 investment options varying by targeted returns, risk, asset allocation and management fees. Limited movement between investment options is allowed at zero fees. If new members do not select an investment option, their contributions go to the default investment option, i.e., a diversified 'Balanced' fund that has a 70% allocation to growth assets. The well-documented magnetic appeal of opt-out defaults versus opt-in defaults (Johnson et al. 2002) is reflected in the high retention of the DB plan by around 79% of permanent employees and the high retention of the opt-out investment choice (59.5%) as opposed to the low opt-in for additional insurance (8.8%).

All members are invited to register for on-line access to check their balance, monitor their transactions, monitor their investments, update their details, and access educational tools offered by UniSuper. Online inactivity/activity of members in the last 12 months is recorded by UniSuper.

In a nutshell, for positive engagement with retirement saving to show up in administrative data, members would have to make additional contributions, actively opt-out of the default investment option, actively opt-in to the additional insurance offered and/or participate in the on-line monitoring of accounts.

4. Data

Every alternate month, UniSuper conducts telephone interviews with a random sample of its members about their level of personal interest in superannuation affairs and their willingness to recommend UniSuper to a friend, family member or colleague.[6] Specifically, respondents are asked the following questions:

- Assuming there was nothing to stop you recommending UniSuper to a friend, family member or colleague, using a scale from 0 to 10 where 0 equals "not at all likely", 5 is neutral and 10 equals "extremely likely", how likely are you to *recommend* UniSuper?
- Thinking about your superannuation in general, on a scale of 0 to 10, where 0 is 'very disinterested' and 10 is 'very interested', how much *interest* do you personally take in your superannuation affairs?

The first of these questions is a typical measure of customer 'advocacy' while the second measures the level of member interest in superannuation. As in Bateman et al. (2014) we

[6] The telephone interviews are conducted by an independent marketing research company. As discussed more fully in Bateman et al. (2014), respondents are drawn from members that have supplied telephone numbers.

combine these measures with the demographic information available from the UniSuper full member database.

From the June 2013 wave onwards, UniSuper at our request added three new attitudinal questions to allow further exploration of the reasons for (dis)engagement.[7] These questions were aimed at addressing the motivation of members and understanding their needs and wants, both highlighted as important internal factors inhibiting engagement with retirement saving (Rickwood and White 2009).[8] Indeed, lack of personal relevance could see members not buying into the goal of retirement saving (Bagozzi and Dholakia 1999). And, as already discussed, scepticism regarding the motives of the default setter has been identified as a reason for default rejection (Brown and Krishna 2004), as has a lack of trust in the financial institution (Agnew et al. 2012). The three new attitudinal questions asked respondents to what extent they agreed (on the same 11-point scale) with each of the following statements:

- My superannuation will take care of itself.
- I am confident that other assets outside of superannuation will give me an income in retirement.
- I trust the investment decisions of UniSuper.

[7] The questions had to be kept brief since they were 'piggy-backed' onto UniSuper's bi-monthly two-question marketing tracking survey. An area for future exploration would be to split trust in the provider into its components and measure the reliability of the financial institution and the perception that the interests of the financial institution and those of the member are aligned.
[8] This study also identified involvement, already measured by UniSuper, as the third critical internal factor.

Table 1- Employment and superannuation account features

	Member Sample								
	All Employees			*Permanent Employees*			*Casual Employees*		
	Obs.	*Mean*	*Median*	*Obs.*	*Mean*	*Median*	*Obs.*	*Mean*	*Median*
Superannuation related features									
Made standard contributions in the last 12 months ('000s)	635	$5.98	$5.88	607	$6.12	$5.96	28	$2.85	$2.62
At highest level (7% of wage)	315			315			0		
Made voluntary contributions in the last 12 months ('000s)	188	$8.96	$3.66	86	$8.15	$5.20	102	$9.68	$2.89
Supplementary insurance purchased	156			72			84		
Has a 'balanced' investment allocation	1,051			411			640		
Employment related features									
Years of contribution	1,766	8.16	7.00	792	10.27	9.00	974	6.44	5.00
Annual wage (estimated '000s)	1,766	$66.65	$66.52	792	$91.11	$84.72	974	$46.75	$32.37
Demographics									
Age	1,766	41.15	40	792	43.52	42	974	39.21	37
Male (%)		43.04			39.99			45.58	
Attitudinal indicators									
Level of advocacy (likely to recommend)	1,766	6.85	7	792	7.09	7	974	6.65	7
Level of involvement (interested in superannuation)	1,758	5.91	6	790	6.13	6	968	5.73	6
My superannuation will take care of itself (extent of agreement)	1,764	5.12	5	792	5.23	5	972	5.03	5
I trust the investment decisions of UniSuper (extent of agreement)	1,764	6.77	7	792	6.80	7	972	6.75	7
I am confident that other assets, outside of superannuation, will give me an income in retirement (extent of agreement)	1,764	5.47	5	792	5.33	5	972	5.59	6

Note: The table presents statistics for the total number of sample members ("All Employees"), as well as the number of members in subsamples defined by the type of employment contract ("Permanent/Casual Employees"). We show the conditional mean and median for the standard and voluntary member contributions (i.e., conditional of positive contributions), as well as the unconditional mean and median for the total amount accumulated in the pension account in the last 12 months. We also include the number of employers currently contributing, years of contribution and estimated salary. The final sample consists of 1766 members interviewed between June 2013 and July 2014, of which 792 were permanent and 974 were casual employees, classified based on their superannuation plan.

We use data from eight waves collected during the period June 2013 to July 2014,[9] for a total of 2,722 records. We include only current and active contributors, which reduces our sample size to 1,784. We also remove 18 identified outliers,[10] leaving at most 1,766 observations per item. The final sample is presented in **Table 1**. The top half of the table reports default and non-default behavior of the respondents and employment-related and demographic characteristics. Default behavior is exhibited through an acceptance of standard contributions at 7%, no voluntary contributions, no supplementary insurance and having the 'balanced' investment option. The bottom half reports the mean and median scores for the five attitudinal questions.

Table 1 shows that among permanents and casuals, additional voluntary contributions are made by approximately 10% of employees and supplementary insurance is purchased by around 8.8% of employees. The low proportion of permanents making voluntary contributions is somewhat compensated by the 76.6% who contribute through the standard contributions, although only about 40% of all permanent staff do so at the maximum level of

[9] UniSuper conducts approximately 400 interviews each alternate month, having cut back the research from twelve to six surveys per annum in 2013. 320 participants are randomly selected from the UniSuper member database and 80 are randomly selected from members who have initiated contact with the UniSuper call centre in the last month. In Bateman et al. (2014), these 80 were excluded from our analyses. Due to administrative process changes made by UniSuper it was not possible to identify and remove these 80 call centre related interviews from the August 2013 data. Hence the data includes a variable for interview month to highlight whether August 2013 data was significantly different from that of other months. We started with 2722 interviews matched with the member database. After retaining only current and active contributors, thus excluding pensioners, 1784 respondents remained. 18 outliers were identified and removed as described in footnote 10 since the process of cluster analysis is very sensitive to outliers (Tuma et al. 2011).

[10] Two outliers were identified based on their answering all questions with a 10, or with a 1. A further 16 were identified by calculating the average dissimilarity for each observation following the process recommended by Hair, Black, Babin, & Anderson (2010). Values were centred for the variables of interest (we included the three retained attitudinal and the five behavioural variables to increase our likelihood of finding real outliers). We calculated the squared difference for each mean-centred variable, summed these and then computed the square root for each subject. 16 outliers were identified with a square root difference in excess of 8.69 (given that the next set of differences was 8.44 or less). Our remaining sample size of 1766, despite missing a further 10 observations on the attitudinal variables, is more than large enough for the cluster analysis based on only three variables, following the guidelines of Tuma et al. (2011).

7% of wage. The attraction of the default investment option is revealed by the fact that almost 66% of casuals and 52% of permanents retain it[11].

We tested for correlations between the responses to the five attitudinal questions - relating to recommendation, interest, complacency, trust and sufficient non-superannuation assets - and the behavioral indicators of engagement. The attitudinal questions were significantly correlated as can be seen in **Table A1-1** in Appendix 1. Significant positive correlations were also noted between the interest in superannuation and engagement variables. Next we tested whether the three new questions could be combined into a single scale measuring 'confidence in superannuation'. Doing so, however, returned a Cronbach's alpha of 0.482 that is well below the recommended level of 0.70 required if questions are reliable in measuring a single construct (Hair et al. 2010).[12] To avoid multicollinearity, we therefore reduced the number of attitudinal variables using principal-axis factoring, as described in Section 5.

Moderators of active superannuation choices

Table 1 reported the mean and median of the answers for the five attitudinal questions. Next we consider their distribution. The distribution of answers on the 'Recommend', 'Interest' and 'Trust' questions is negatively (left) skewed[13] with very few responses in the 0-6 range,

[11] While the UniSuper database is very representative of the Australian higher education sector as discussed in Bateman et al. (2014), this higher level of non-default investment choice seen in their marketing database could reflect that those members prepared to participate in the telephone research are among the more engaged. A comparison of the Net Promoter Score (Reichheld 2003), which subtracts the proportion of 0 to 6 ratings from proportion of 9 and 10 ratings on the recommendation question, shows an NPS score of -17.8. If compared with the "average' NPS score in Australia of -29 (Roberts 2014), this also implies a more positive member predisposition within UniSuper. This suggests that the cluster sizes as reported in Data Analysis are not generalizable. However our thesis relates to the relationship between attitudinal predispositions and engagement, rather than the quantification of these attitudinal predispositions. Given the size of the UniSuper member base and its high proportion of non-tenured academic staff, it seems likely that the identified latent classes would exist in other retirement saving funds.

[12] All five attitudinal questions combined return a Cronbach's alpha of 0.417.

[13] The attitudinal variable responses on the 11 point numeric scale variable display negative skews and kurtosis. For purposes of the factor analysis and cluster analysis the variables were transformed. 'Recommending' and 'Trust' were transformed as follows: sqrt(11-x). 'Confident that super takes care of itself', 'interested' and

suggesting that responses can be grouped into 0-6, 7-8 and 9-10. However, the responses to 'Super takes care of itself' (i.e., complacent) and 'Enough assets outside of super' are symmetrically distributed. In order to avoid losing information and to facilitate the interpretation of results, we categorised the responses to the five attitudinal questions into four groups (i.e., 0-3, 4-6, 7-8 and 9-10).

Bateman et al. (2014) showed that age, tenure years, willingness to recommend the pension provider and interest in superannuation are significant predictors of opting out of the default investment choice. Furthermore, the purchase of additional insurance, making additional contributions, as well as registering for and using the plan's online services, were all positively correlated with the selection of a non-default investment choice. We extend the logistic regression analyses from Bateman et al. (2014) with the three new confidence questions – relating to trust, complacency and sufficient non superannuation assets - using the new split of the 11 point rating scales. Details are reported in Appendix 1. In brief, the three new attitudinal variables significantly predict engagement in the form of online behavior, making additional contributions, and to a lesser extent, opting out of the default investment option. Furthermore, active superannuation choices are shown to depend to a considerable extent on participants' trust in the investment decisions of the pension provider.

Next we further investigate the influence of the attitudinal variables by conducting cluster analysis to identify distinct groups of members with similar attitudes, and then measure the relative influence of these on the behavioral indicators of engagement.[14]

'enough assets outside superannuation' have a log (-x-k) transformation where k ensures zero skew (Box and Cox 1964).

[14] We do not investigate the DB versus DC choice as a behavioral indicator of engagement since it does not apply to the casuals, and 79% of the permanent employees were in the DB option.

5. Data Analysis

Our first objective is to identify groups of members with similar attitudes towards UniSuper and superannuation. If clusters of members differ significantly, behavioral indicators can be used to identify group members. This would enable pension plan providers to formulate and target strategies specific to each group.

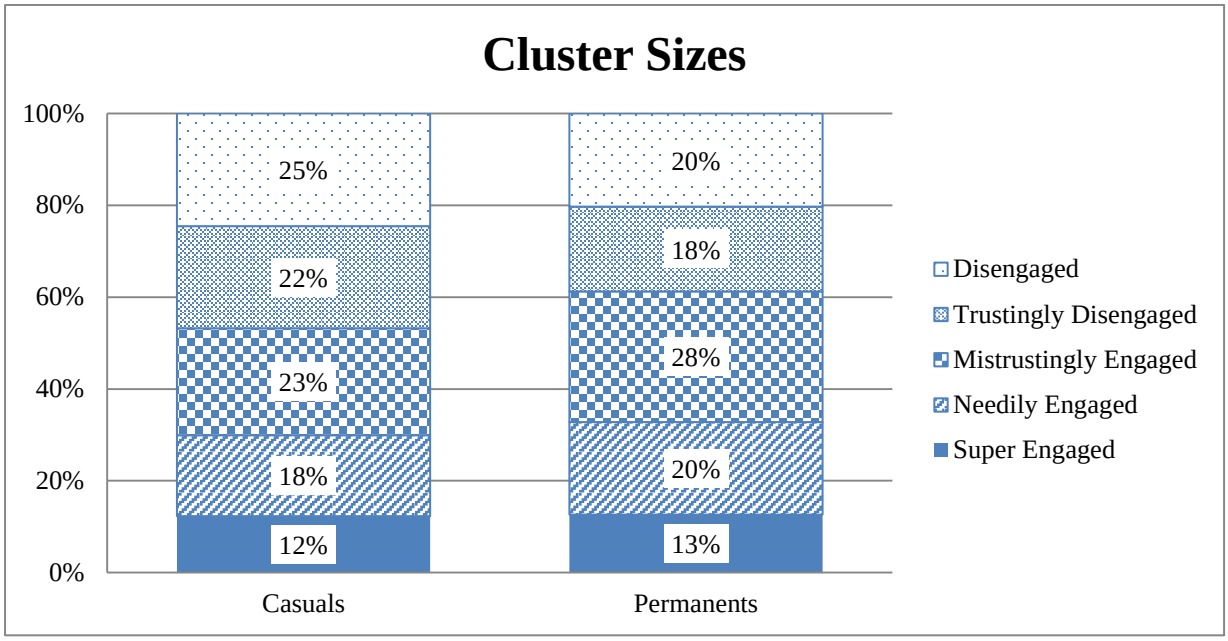
Cluster analysis is a widely used method to segment a market by identifying groups of homogenous subjects (Tuma et al. 2011). With this approach, Tuma et al. (2011) consider motivation-type variables such as the attitudinal variables discussed above more appropriate to explain member behavior than even demographic variables. Hence we limit our cluster analysis to the five attitudinal questions discussed in Section 4, but validate it with behavioral information. Since multicollinearity compromises cluster analysis (Hair et al. 2010), we conduct a factor analysis for item reduction, as described in Appendix 2, and retain three of the attitudinal variables to base our cluster analysis on.

Cluster analysis maximizes both the similarities within a group and the differences between groups. We follow the procedure recommended by Hair et al. (2010) and Tuma et al. (2011).[15] Our initial analysis is hierarchical clustering, aimed at identifying the underlying structure of the clusters and suggesting the optimal number of clusters. Next we use the identified cluster seeds to run a non-hierarchical cluster analysis and assign each subject to a cluster. Our procedure results in the five clusters shown in Figure 3.[16]

[15] A detailed description of the cluster analysis can be found in Appendix 2.
[16] The similarity in size and shape of clusters resulting from k-means cluster analysis is a common concern (Tuma et al. 2011); hence the initial hierarchical clustering aimed at establishing the optimum number of clusters and identifying the initial cluster centres.

Figure 3: Cluster sizes by type of staff member*

(*see text for explanations of the cluster labels)



As discussed in detail in the next section, the five clusters are labelled (from top to bottom) as – Disengaged, Trustingly Disengaged, Mistrustingly Engaged, Needily Engaged, and Super Engaged. These labels are based on members' trust in the investment decisions of UniSuper, their interest in superannuation and their confidence in the assets outside superannuation providing income (which captures the relative importance of retirement plan savings to their retirement wealth). These three attitudinal variables display significant differences between the clusters at the 0.05 level. To further validate our results we compare the clusters on behavioral and demographic results.

Finally, we run logistic regression models as at the start of our analysis, with the clusters as independent variables. The estimation results are shown in **Table 4**, discussed under Findings and their predictions are illustrated in Figures A3-1 to A3-5 in Appendix 3.

6. Findings

We look first at the behavioral and demographic characteristics of the five clusters (**Table 2).** The Needily Engaged can be distinguished by their lack of assets outside of the UniSuper retirement plan account. They have a higher superannuation account balance, possibly as a result of more years of contribution, and an increased likelihood of making additional contributions compared with the Disengaged. These members are significantly more interested in superannuation than those belonging to the disengaged clusters, and are also more likely to register online. They are among the most trusting of UniSuper members, which could be why they are significantly more likely to be in the default investment option than those in some of the other clusters. At 42 years of age on average, they represent one of the older clusters.

Table 2: Cluster differences on demographic, attitudinal and behavioral variables

	Dis-engaged (D)	Trustingly Disengaged (TD)	Mistrustingly Engaged (ME)	Needily Engaged (NE)	Super Engaged (SE)	Total♦
Observations	*397*	*361*	*450*	*329*	*219*	*1756*
	22.6%	*20.6%*	*25.6%*	*18.7%*	*12.5%*	*100.0%*
	Mean *(std dev)*	Mean *(std dev)*	Mean *(std dev)*	Mean *(std dev)*	Mean *(std dev)*	Mean *(std dev)*
Attitudinal indicators						
Trust investment decisions of UniSuper#	4.95	7.40	5.96	8.18	8.53	6.76
	(1.50)	(1.19)	(1.44)	(1.03)	(1.10)	(1.85)
Enough assets outside of super#	4.42	8.00	4.86	2.92	8.31	5.47
	(2.15)	(1.20)	(2.19)	(1.80)	(1.40)	(2.70)
Interested in superannuation#	4.23	4.11	8.10	5.35	8.25	5.91
	(1.73)	(1.91)	(1.17)	(2.02)	(1.38)	(2.46)
Confident that super takes care of itself#	4.54	6.11	4.03	5.56	6.04	5.11
	(2.22)	(2.33)	(2.32)	(2.63)	(2.72)	(2.56)
Engagement behaviors						
Recommend UniSuper#	5.74	6.79	6.88	7.57	7.78	6.85
	(2.31)	(2.15)	(2.03)	(1.83)	(1.87)	(2.18)
Non-default investment choice	.40	.36	.46	.35	.47	.41
	(0.49)	(0.48)	(0.50)	(0.48)	(0.50)	(0.49)
Supplementary insurance purchased	.06	.07	.12	.09	.11	.09
	(0.24)	(0.25)	(0.32)	(0.28)	(0.31)	(0.28)
Registered online	.61	.58	.78	.74	.76	.69
	(0.49)	(0.49)	(0.42)	(0.44)	(0.43)	(0.46)
Active online past 12 months	.26	.29	.44	.34	.41	.35
	(0.44)	(0.45)	(0.50)	(0.47)	(0.49)	(0.48)
Additional contributions in past 12 months	.33	.35	.51	.46	.48	.42
	(0.47)	(0.48)	(0.50)	(0.50)	(0.50)	(0.49)
Demographics, employment and superannuation related features						
Age	37.68	37.15	45.34	42.14	43.93	41.15
	(10.97)	(11.91)	(12.70)	(13.12)	(13.80)	(12.85)
Male	.37	.45	.48	.39	.49	.43
	(0.48)	(0.50)	(0.50)	(0.49)	(0.50)	(0.50)
Years of contribution	6.53	6.76	9.59	9.35	8.79	8.17
	(5.61)	(5.71)	(7.08)	(7.32)	(7.29)	(6.71)
Annual wage (estimated '000s)	$60.92	$59.59	$76.12	$66.52	$70.55	$66.79
	($46.77)	($42.55)	($52.44)	($41.73)	($55.64)	($48.17)
Super balance ('000s)	$63.62	$68.84	$149.99	$120.77	$152.50	$108.62
	($114.09)	($102.70)	($221.01)	($178.21)	($272.11)	($184.99)

♦ *- 10 subjects were not classified into a cluster due to missing values*

 # - mean scores on 0-10 rating scales of attitudinal items

Significant differences at the p=0.05 level are discussed in the text

The Super Engaged are so named due to their extremely high level of interest in superannuation, their relatively high prevalence of being registered online, and their high level of online activity and additional contributions in the past 12 months. They are also the most likely to recommend UniSuper and have the highest trust rating in the investment decisions of UniSuper. Their average age is 44 and they are more likely to be male than female when compared with the Disengaged.

The Mistrustingly Engaged are of a similar age and gender to the Super Engaged, but their similarly high level of interest in superannuation may be the result of their significantly lower level of trust in the investment decisions of UniSuper. They are also significantly less likely to recommend UniSuper than the Needily Engaged or the Super Engaged. This mistrust could motivate monitoring via significantly higher activity on online services. However, like the Needily and Super Engaged clusters, they have significantly more additional contributions in the last 12 months, than the Disengaged clusters. They also share a similar number of contribution years and a similar superannuation balance with the other two Engaged clusters.

The Trustingly Disengaged and the Disengaged can be significantly differentiated from the Engaged clusters by their younger age (hence their lower average years of contribution), their lower estimated salary, and their lower level of superannuation balance. They show little interest in superannuation attitudinally, and behaviourally they are significantly less likely to be registered or active online. However, in contrast with the Disengaged, the Trustingly Disengaged trust the investment decisions of UniSuper, are more likely to be in the default investment option, and are significantly more likely to report that they have enough retirement provision outside of superannuation.

Broadly speaking, Figure 3 illustrates that casuals are more likely to make up the disengaged clusters (almost 50 percent of the sample are in Trustingly Disengaged and Disengaged) than are permanent employees (less than 40 percent of the sample). Interestingly, permanent employees make up a relatively high proportion of the Mistrustingly Engaged cluster.

Cluster membership helps explain the active (non-default) choices of members of the retirement plan, even after allowing for age, gender and the size of the stakes. **Table 3** reports marginal effects from logit models of active choices. The dependent variable in each model is a binary indicator taking the value of one if the member: actively chooses a non-default investment option; purchases supplementary insurance; registers for the online services of the plan; has actively used the member website in the past 12 months; or has made additional contributions to their retirement savings account in the past 12 months.

We estimated separate models for casual and permanent staff members. The reference level for cluster membership is the needily engaged cluster. These results can help us see which active choices are dependable indicators of member engagement and which are not. Whether a member has opted out of the default investment option is not a good guide to their level of engagement. Compared with the reference level, the Super Engaged, the Mistrustingly Engaged and the Disengaged among permanents are all 13-15% more likely to opt out of the investment default. However registration for, and use of, online services is a significant discriminator between engaged and disengaged members. Registration for and use of online services is 10-15% less likely among disengaged members, whereas online activity is the hallmark of the Mistrustingly and Super Engaged, who are between 10% and 17% more likely to use it than the reference level.

Table 3: Estimation results for active (non-default) choices of UniSuper members

	Non-default Investment Choice		*Supplementary Insurance Purchased*		*Registered Online*		*Active Online in past 12 months*		*Additional Contributions in past 12 months*	
	Casual	*Perm.*	*Casual*	*Perm.*	*Casual*	*Perm.*	*Casual*	*Perm.*	*Casual*	*Perm.*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Age/10	0.008	-0.145	0.085	0.243	-0.083	0.164	-0.228	-0.196	0.043	-0.019
	(0.078)	(0.132)	(0.038)	(0.091)	(0.069)	(0.106)	(0.084)	(0.137)	(0.061)	(0.119)
Age^2/100	-0.001	0.015	-0.007	-0.022	0.006	-0.018	0.024	0.026	0.001	0.010
	(0.009)	(0.014)	(0.004)	(0.009)	(0.008)	(0.012)	(0.009)	(0.015)	(0.006)	(0.014)
Male	-0.010	0.140	0.044	0.059	0.091	0.036	0.103	0.102	-0.068	-0.039
	(0.031)	(0.037)	(0.019)	(0.023)	(0.029)	(0.032)	(0.035)	(0.040)	(0.020)	(0.031)
Log annual wage	0.075	0.039	0.015	-0.016	0.062	0.076	0.063	0.012	0.062	0.044
	(0.014)	(0.064)	(0.008)	(0.037)	(0.011)	(0.056)	(0.014)	(0.071)	(0.011)	(0.066)
Years of contribution	0.008	0.000	0.000	0.000	0.020	0.011	0.006	0.002	0.003	0.008
	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Cluster:										
Disengaged	0.027	0.131	-0.010	-0.013	-0.103	-0.056	-0.038	-0.101	-0.046	-0.009
	(0.045)	(0.056)	(0.028)	(0.031)	(0.044)	(0.050)	(0.051)	(0.061)	(0.029)	(0.043)
Trustingly disengaged	0.065	-0.017	-0.007	-0.008	-0.125	-0.138	-0.005	-0.151	-0.015	-0.004
	(0.048)	(0.056)	(0.029)	(0.031)	(0.045)	(0.051)	(0.052)	(0.059)	(0.032)	(0.045)
Mistrustingly engaged	0.075	0.128	0.015	0.016	-0.004	0.076	0.113	0.103	0.062	-0.010
	(0.046)	(0.051)	(0.029)	(0.028)	(0.044)	(0.043)	(0.053)	(0.056)	(0.031)	(0.043)
Super engaged	0.107	0.154	-0.010	0.045	-0.014	0.075	0.169	0.055	0.058	0.010
	(0.055)	(0.062)	(0.031)	(0.040)	(0.053)	(0.051)	(0.065)	(0.072)	(0.036)	(0.050)
Interview month:										
1308	-0.018	0.041	-0.018	-0.008	0.042	0.055	# not estimated		0.036	-0.061
	(0.053)	(0.063)	(0.033)	(0.036)	(0.050)	(0.055)			(0.034)	(0.052)
1310	-0.005	0.080	-0.042	0.031	-0.062	0.037	-0.144	-0.066	0.024	-0.027
	(0.056)	(0.068)	(0.032)	(0.042)	(0.055)	(0.059)	(0.058)	(0.065)	(0.036)	(0.053)
1312	-0.058	0.062	0.017	-0.038	-0.021	0.014	-0.038	-0.044	0.067	0.033
	(0.055)	(0.066)	(0.037)	(0.037)	(0.052)	(0.058)	(0.057)	(0.067)	(0.038)	(0.051)
1402	0.060	0.120	-0.007	0.018	0.070	0.006	-0.042	-0.049	0.061	-0.010
	(0.057)	(0.067)	(0.034)	(0.040)	(0.051)	(0.061)	(0.058)	(0.065)	(0.037)	(0.054)
1404	0.038	0.023	-0.047	-0.004	-0.022	0.074	-0.082	0.033	0.015	0.022
	(0.058)	(0.067)	(0.031)	(0.038)	(0.053)	(0.057)	(0.059)	(0.065)	(0.034)	(0.051)
1406	-0.076	0.051	-0.035	0.016	-0.009	-0.065	-0.141	-0.055	-0.019	0.053
	(0.057)	(0.066)	(0.034)	(0.041)	(0.055)	(0.062)	(0.000)	(0.000)	(0.034)	(0.052)
Observations	966	790	966	790	966	790	802	651	966	790
Model Fit (Ps R^2)	0.065	0.033	0.084	0.078	0.118	0.091	0.073	0.060	0.214	0.087

Notes: ***p-value<0.01 ** *p*-value<0.05 * *p*-value<0.1

All specifications are logit models (marginal effects reported). The dependent variables denote whether a member is opting for an investment choice other than the default 'balanced' option, purchasing supplementary insurance, registering to use online member services, is active on the online service in the past 12 months, or making additional contributions in the past 12 months. The variables denoting cluster are compared with the 'Needily Engaged' cluster. Robust standard errors are in parentheses below estimated parameters. # - data not supplied for August 2013

Casuals who are mistrustingly engaged are about 6% more likely to make additional contributions than the reference level but other effects are not significant. The high rate of regular contributions by permanent members of UniSuper makes additional contributions less attractive and results in less variation in the data. Consequently we do not estimate significant differences between the cluster memberships in the permanent employees' model of additional contributions. Casual contract women and those on higher wages are also 6% more likely to contribute extra. In general, and consistent with other studies, other non-default activity is more prevalent among higher income, longer-tenured males.

7. Discussion

Bateman et al. (2014) used administrative records and survey data from UniSuper, to show that opting out of defaults might not be a reliable proxy for member engagement and that member engagement is likely to be moderated in complicated ways.

Here we extend that study using new data on plan member attitudes to assess the importance of key moderating variables on engagement. We consider the trust that members have in their superannuation plan (fund), their interest in superannuation, and the availability of adequate outside options. Using cluster analysis, we distinguish between plan members by their level of interest in superannuation generally, as well as by their level of trust in the investment decisions of their provider, and highlight the subtleties that separate the engaged and the disengaged.

We find engagement, driven by interest, to be related to the size of the stakes. For instance, casuals are more likely than permanents to populate disengaged clusters (almost 50 percent of the sample are in Trustingly Disengaged and Disengaged). However, trust, or the lack of it, is

also related to engagement: a relatively high proportion of permanent employees make up the Mistrustingly Engaged cluster. Furthermore, it seems that monitoring behavior is connected with both trust and interest. Among all staff members, those most likely to be active online are the Mistrustingly Engaged, with the Super Engaged casuals following closely. The Trustingly Disengaged, among both permanents and casuals, and the Disengaged casuals are the least likely to register for online services,[17] while the disengaged clusters of permanent employees are unlikely to be active online.

Our finding that among permanent employees, non-default investment choices are as likely to be made by the Super Engaged, as by the Mistrustingly Engaged and the Disengaged is surprising only as regards the latter. The self-reported low perception among the Disengaged that "superannuation takes care of itself" could shed some light on this finding. Furthermore, this cluster is most likely to be female, is one of the younger clusters, and is likely to earn less than the other clusters. Perhaps the Disengaged, realising that superannuation requires some attention, while prepared to spend some time on the initial investment, are constrained in terms of ongoing time or even financial means.

Segmenting the engaged and the disengaged further has shown that a 'one size fits all' solution, for example, encouraging all members to contribute voluntarily, may not advance the objective of ensuring more active retirement provision. A more personalised approach to each group is likely to achieve better results (Arora et al. 2008; Sunstein 2013). For example, asking additional attitudinal questions when members sign up or when they go on-line, could guide the interaction. The Needily Engaged seem to follow their investments and make additional contributions, yet many are likely to be in the default investment option. When

[17] We are aware that from a normative point of view this is a tricky statement as their relatively more precarious situation ought to entice casual and contract staff to pay more attention. However they might also be more constrained in their time budgets.

they go on-line to check their account, they could be guided through a set of questions on whether the default is the optimal investment for them. The Mistrustingly Engaged do not perceive that they have enough assets outside of superannuation for their retirement and building their knowledge to ensure that they are invested optimally (and are taking advantage of all government offered superannuation tax relief) could help build their trust in their superannuation provider. The Super Engaged could be offered additional products, more sophisticated financial solutions and updates on changes to superannuation policy thus feeding and maintaining their interest in superannuation. The Disengaged, who currently show the least interest, often show enough interest at some point to move away from the default investment option. At the time of changing their investment option they could be shown the merits of compound interest and how far a small voluntary contribution could go. In addition, they could then be offered a pre-commitment to additional annual contributions addressing those for whom time may be the issue. The Trustingly Disengaged are arguably the hardest to address since they may have relinquished all control and responsibility to their superannuation provider. This group would need to be identified when they first sign up for superannuation and their confidence and trust could be channelled for pre-commitment to additional voluntary contributions if needed.

Whereas interest in retirement saving has been recognised as a requirement for goal setting (Stawski 2007) and intention (Ellen et al. 2011; Wiener and Doescher 2008), our segmentation has also highlighted the vulnerability that exists if member interest is low. Disinterested members who trust too much, not only limit their monitoring, but are more likely to succumb to defaults. Through excessive trust, these members effectively drop their guard to opportunistic behaviour (Gargiulo and Ertug 2006).

8. Conclusion

In Australia, the government introduced the Superannuation Guarantee in 1992 aimed at ensuring that retirement provision is made for each individual. With this, the primary decision on whether to save for retirement or not was effectively taken away from the employee and the result has seen superannuation savings grow to $1.9 trillion (Durkin and Patten 2012). Defaults are the norm unless the fund member requests otherwise, ensuring that savings can be made and invested with minimal consumer input.[18] The default settings however do not necessarily optimise retirement wealth (Dobrescu et al. 2014).[19] Fortunately, once enrolled, a member has discretion over voluntary contributions, insurance cover and choice of investment option. In order to take the next step and ensure that their forced savings achieve their full potential, greater member engagement is required.

The analysis presented here confirms that degrees of engagement are due not only to life stage, but also to varying levels of interest and trust in particular. This suggests that pension plan providers could guide members' decision making depending on their attitudinal stage. Indeed, the varying attitudes reported here suggest that a personalised approach is called for.

Furthermore, the importance of trust in the pension plan provider appears pivotal in providing impetus for engagement; those who trust too much risk complacency. On the other hand, a healthy level of mistrust seems to accompany a stronger level of engagement. While the research suggests that in the presence of contracts, providers will struggle to develop trust

[18] Based on 'homo-economicus' there was an expectation that Australian employees would become engaged with their superannuation to 'police' the administration and management of superannuation assets through natural market forces (Australian Government 2010). However, the industry has had to adopt numerous defaults to avoid delays due to slow or absent decision-making.

[19] For example, the default contribution rate is set at 9.5% of annual salary or wage, while expert opinion suggests that a minimum of 15% is required to maintain a pre-retirement lifestyle in retirement (Bateman et al. 2012).

(Malhotra and Murnighan 2002), our results show that there are many members who trust the provider to the point of blind trust, undermining engagement.

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Appendix 1: Identifying the drivers of active superannuation choices

We began our analysis of these variables by examining their correlations as shown in **Table A1-1**.

Table A1-1: Correlations between attitudinal and behavioral measures

Correlations										
	Recommend UniSuper	Interested in superannuation	Confident that Super takes care of itself	Trust Investment decisions of UniSuper	Enough assets outside of UniSuper	Non-default investment	Supplementary Insurance purchased	Registered online	Active online in past 12 months	Additional Contributions in past 12 months
Recommend UniSuper	1.000	**.216**	**.141**	**.402**	.020	**.061**	**-.002**	**.132**	.125	.142
Interested in superannuation		1.000	**-.169**	.042	.017	**.126**	**.063**	**.198**	**.198**	**.177**
Confident that Super takes care of itself			1.000	**.374**	**.212**	**-.083**	-.045	-.046	-.044	-.021
Trust Investment decisions of UniSuper				1.000	**.171**	-.034	.016	.036	.048	.042
Enough assets outside of UniSuper					1.000	-.004	-.040	-.027	-.010	-.055
Non-default investment choice						1.000	**.073**	**.111**	**.079**	**.140**
Supplementary insurance purchased							1.000	.096	.074	.069
Registered online								1.000	**.489**	**.139**
Active online in past 12 months									1.000	**.086**
Additional contributions in past 12 months										1.000

Items in bold are significant at 0.01 level. Items in grey are behavioral variables from the UniSuper member database

Next we repeated the analysis undertaken in Bateman et al. (2014) with the addition of the three new attitudinal variables.

The results of the logistic regression estimations are reported in **Table A1-2**. Figures A1-1 to A1-10 then present predictions of the active superannuation choices based on the logistic regression models described in **Table A1**, estimated at the means of each of the variables.

Figure A1-1: Non-default Investment Choice Predictions – Permanent employees

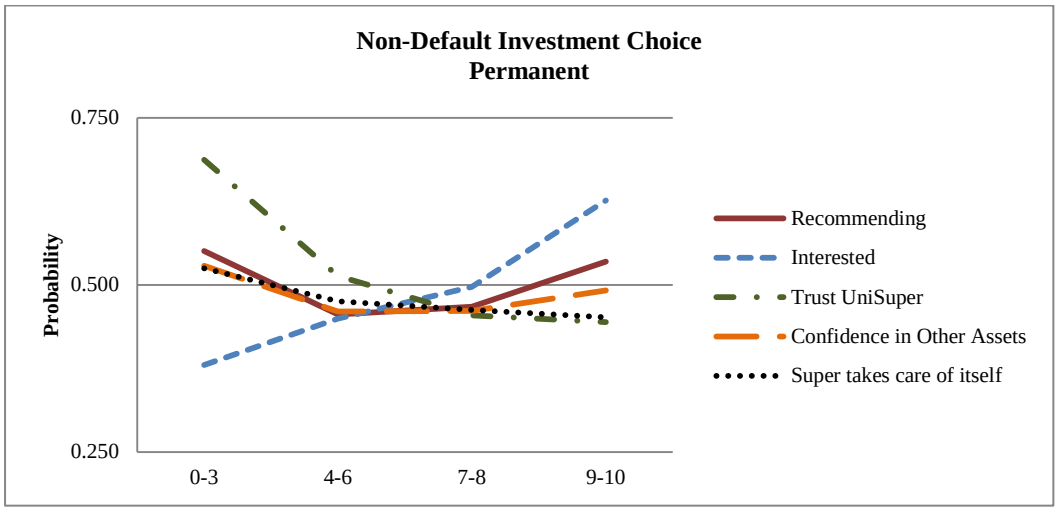


Figure A1-2: Non-default Investment Choice Predictions – Casual employees

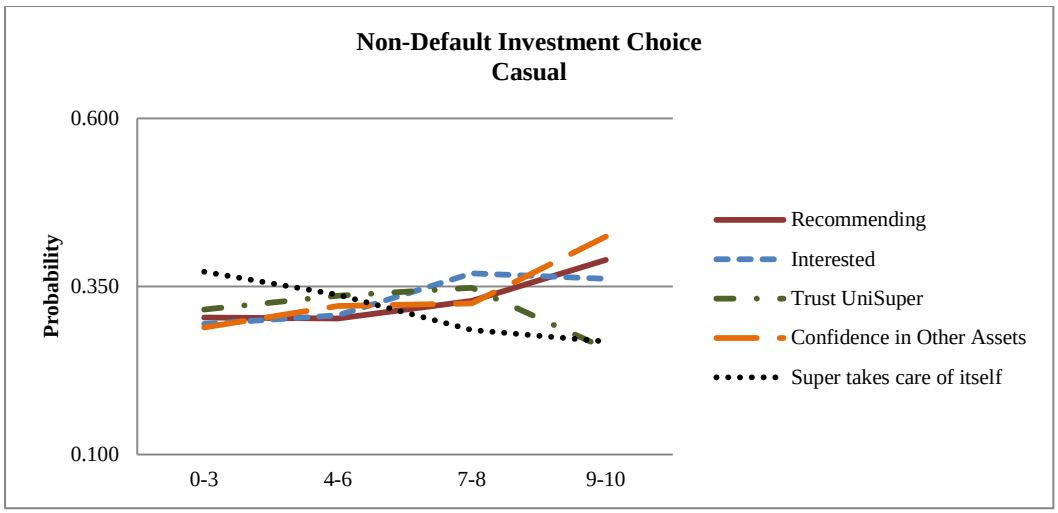


Table A1-2: Estimation results for active (non-default) choices of UniSuper members

	Non-default Investment Choice		*Supplementary Insurance Purchased*		*Registered Online*		*Active Online in past 12 months*		*Additional Contributions in past 12 months*	
	Casual	*Perm.*	*Casual*	*Perm.*	*Casual*	*Perm.*	*Casual*	*Perm.*	*Casual*	*Perm.*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Age/10	0.014	-0.129	0.091	0.240	-0.070	0.166	-0.187	-0.144	0.043	-0.035
	(0.078)	(0.134)	(0.038)	(0.093)	(0.068)	(0.108)	(0.082)	(0.136)	(0.060)	(0.115)
Age^2/100	-0.002	0.011	-0.007	-0.022	0.003	-0.019	0.019	0.018	0.001	0.013
	(0.009)	(0.015)	(0.004)	(0.009)	(0.008)	(0.012)	(0.009)	(0.015)	(0.006)	(0.013)
Male	-0.012	0.144	0.048	0.054	0.083	0.036	0.105	0.112	-0.072	-0.034
	(0.030)	(0.037)	(0.019)	(0.022)	(0.029)	(0.032)	(0.035)	(0.040)	(0.020)	(0.031)
Log annual	0.071	0.026	0.015	-0.010	0.058	0.089	0.051	0.016	0.062	0.042
wage	(0.014)	(0.063)	(0.009)	(0.037)	(0.011)	(0.057)	(0.014)	(0.075)	(0.012)	(0.064)
Years of	0.007	-0.001	0.000	0.000	0.020	0.010	0.005	0.001	0.002	0.007
contribution	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Recommending UniSuper: 10 = Extremely likely										
Rating:	-0.002	-0.089	-0.032	0.008	0.017	0.073	0.116	-0.015	0.018	0.059
4-6	(0.064)	(0.092)	(0.042)	(0.057)	(0.063)	(0.081)	(0.074)	(0.100)	(0.039)	(0.081)
Rating:	0.023	-0.078	-0.021	-0.022	0.024	0.108	0.135	0.045	0.031	0.121
7-8	(0.066)	(0.091)	(0.045)	(0.057)	(0.064)	(0.080)	(0.076)	(0.098)	(0.039)	(0.081)
Rating:	0.079	-0.015	-0.048	-0.024	0.101	0.137	0.154	0.171	0.016	0.102
9-10	(0.072)	(0.098)	(0.045)	(0.060)	(0.069)	(0.085)	(0.082)	(0.106)	(0.041)	(0.086)
Personal interest in superannuation: 10 = Very interested										
Rating:	0.012	0.066	-0.037	-0.019	0.091	0.076	0.137	-0.023	0.049	0.035
4-6	(0.043)	(0.054)	(0.029)	(0.031)	(0.042)	(0.052)	(0.047)	(0.057)	(0.027)	(0.041)
Rating:	0.070	0.111	-0.013	0.036	0.135	0.163	0.232	0.205	0.123	0.062
7-8	(0.047)	(0.057)	(0.032)	(0.033)	(0.047)	(0.053)	(0.054)	(0.061)	(0.031)	(0.044)
Rating:	0.063	0.235	-0.046	0.009	0.196	0.209	0.259	0.240	0.122	-0.059
9-10	(0.056)	(0.066)	(0.033)	(0.037)	(0.053)	(0.059)	(0.063)	(0.074)	(0.036)	(0.060)
My super will take care of itself: 10 = Strongly agree										
Rating:	-0.031	-0.046	-0.010	0.002	0.006	-0.056	-0.023	-0.011	-0.041	0.075
4-6	(0.037)	(0.045)	(0.024)	(0.025)	(0.036)	(0.040)	(0.042)	(0.047)	(0.027)	(0.037)
Rating:	-0.080	-0.059	-0.051	0.013	-0.022	-0.034	-0.093	-0.025	-0.040	0.023
7-8	(0.044)	(0.055)	(0.024)	(0.028)	(0.042)	(0.047)	(0.050)	(0.057)	(0.033)	(0.046)
Rating:	-0.097	-0.069	-0.033	-0.016	-0.113	-0.033	-0.026	0.003	-0.120	-0.065
9-10	(0.062)	(0.078)	(0.037)	(0.041)	(0.067)	(0.068)	(0.077)	(0.083)	(0.029)	(0.070)
I trust the investment decisions of UniSuper: 10 = Strongly agree										
Rating:	0.019	-0.165	-0.033	0.016	-0.103	-0.058	-0.029	-0.040	0.040	-0.078
4-6	(0.069)	(0.090)	(0.045)	(0.044)	(0.064)	(0.083)	(0.089)	(0.120)	(0.041)	(0.063)
Rating:	0.030	-0.221	0.013	0.042	-0.066	-0.026	0.044	-0.017	0.040	-0.078
7-8	(0.071)	(0.091)	(0.048)	(0.046)	(0.065)	(0.086)	(0.090)	(0.121)	(0.041)	(0.064)
Rating:	-0.055	-0.231	-0.014	0.060	-0.041	-0.026	-0.007	0.068	0.104	0.011
9-10	(0.079)	(0.105)	(0.052)	(0.058)	(0.073)	(0.096)	(0.098)	(0.137)	(0.053)	(0.070)

Table A1-2 ctd: Estimation results for active (non-default) choices of UniSuper members

	Non-default Investment Choice		*Supplementary Insurance Purchased*		*Registered Online*		*Active Online in past 12 months*		*Additional Contributions in past 12 months*	
	Casual	*Perm.*	*Casual*	*Perm.*	*Casual*	*Perm.*	*Casual*	*Perm.*	*Casual*	*Perm.*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
I am confident that other assets outside of superannuation will give me an income in retirement: 10 = Strongly agree										
Rating:	0.030	-0.064	0.019	-0.033	-0.062	-0.012	-0.062	-0.013	0.014	-0.015
4-6	(0.039)	(0.046)	(0.026)	(0.027)	(0.038)	(0.039)	(0.045)	(0.049)	(0.026)	(0.036)
Rating:	0.034	-0.063	-0.006	-0.005	-0.053	-0.024	-0.040	-0.033	0.008	-0.026
7-8	(0.043)	(0.048)	(0.025)	(0.030)	(0.040)	(0.043)	(0.050)	(0.051)	(0.029)	(0.040)
Rating:	0.124	-0.035	-0.039	-0.063	-0.009	-0.064	0.054	-0.135	0.023	-0.091
9-10	(0.052)	(0.065)	(0.025)	(0.031)	(0.050)	(0.058)	(0.059)	(0.065)	(0.032)	(0.060)
Interview month:										
1308	-0.012	0.052	0.001	-0.003	0.038	0.064	# not estimated		0.041	-0.064
	(0.053)	(0.063)	(0.032)	(0.036)	(0.050)	(0.055)			(0.035)	(0.051)
1310	-0.004	0.089	-0.028	0.025	-0.059	0.032	-0.150	-0.070	0.015	-0.026
	(0.057)	(0.067)	(0.031)	(0.041)	(0.055)	(0.060)	(0.056)	(0.064)	(0.037)	(0.054)
1312	-0.051	0.062	0.035	-0.036	-0.022	-0.010	-0.028	-0.065	0.056	0.040
	(0.055)	(0.066)	(0.037)	(0.036)	(0.053)	(0.060)	(0.058)	(0.064)	(0.038)	(0.049)
1402	0.058	0.123	-0.007	0.023	0.066	-0.003	-0.051	-0.053	0.055	-0.004
	(0.057)	(0.067)	(0.031)	(0.041)	(0.050)	(0.061)	(0.056)	(0.064)	(0.036)	(0.054)
1404	0.053	0.031	-0.036	-0.002	-0.018	0.065	-0.073	0.035	0.011	0.028
	(0.058)	(0.067)	(0.030)	(0.037)	(0.053)	(0.057)	(0.056)	(0.064)	(0.035)	(0.050)
1406	-0.063	0.065	-0.025	0.017	-0.004	-0.058	-0.134	-0.043	-0.020	0.058
	(0.057)	(0.066)	(0.032)	(0.041)	(0.054)	(0.064)	(0.057)	(0.065)	(0.034)	(0.052)
Observations	966	790	966	790	966	790	802	651	966	790
Model Fit (Ps R^2)	0.078	0.048	0.117	0.050	0.133	0.098	0.099	0.099	0.239	0.119

Notes: ***p-value<0.01 ** p-value<0.05 * p-value<0.1

All specifications are logit models (marginal effects reported). The dependent variables denote whether a member is opting for an investment choice other than the default 'balanced' option, purchasing supplementary insurance, registering to use online member services, is active on the online service in the past 12 months, or making additional contributions in the past 12 months. The variables denoting likelihood to recommend UniSuper, personal interest in superannuation in general, agreement that superannuation will take care of itself, trust in the investment decisions of UniSuper and confidence in assets outside of superannuation for a retirement income, are measured on a scale of 0 to 10. Robust standard errors are in parentheses below estimated parameters. # - data not supplied for August 2013

The results reported in **Table A1** and Figures A1-1 and A1-2 confirm the findings in Bateman et al. (2014) that among casuals there is no significant relationship between the level of interest in superannuation and the likelihood of choosing a non-default investment option. However, the relationship among permanent employees is more pronounced with those self–rating a 7 to 10 on interest significantly more likely to make a non-default

investment than those self-rating a 0 to 3. In Bateman et al. (2014) the likelihood of a 7 or 8 rating being different than a 0 to 6 rating was only just significant at 0.053. These analyses also reflect that those permanent employees who trust the investment decisions of UniSuper are significantly more likely to remain in the default.

Trust is seen to vary more among permanents than among casuals suggesting that perhaps the permanents act based on trust more than do the casuals.

Figure A1-3: Supplementary Insurance Purchased Predictions – Permanent employees

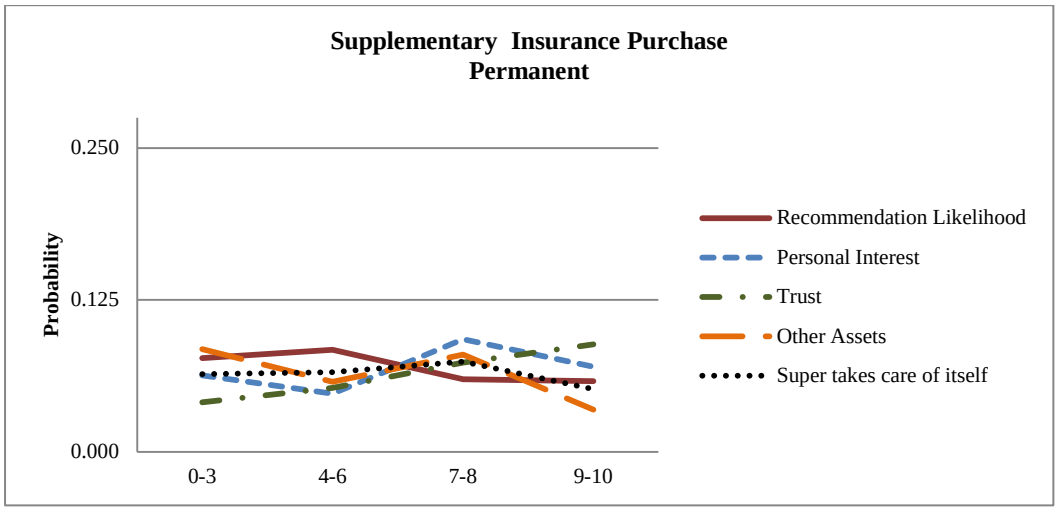
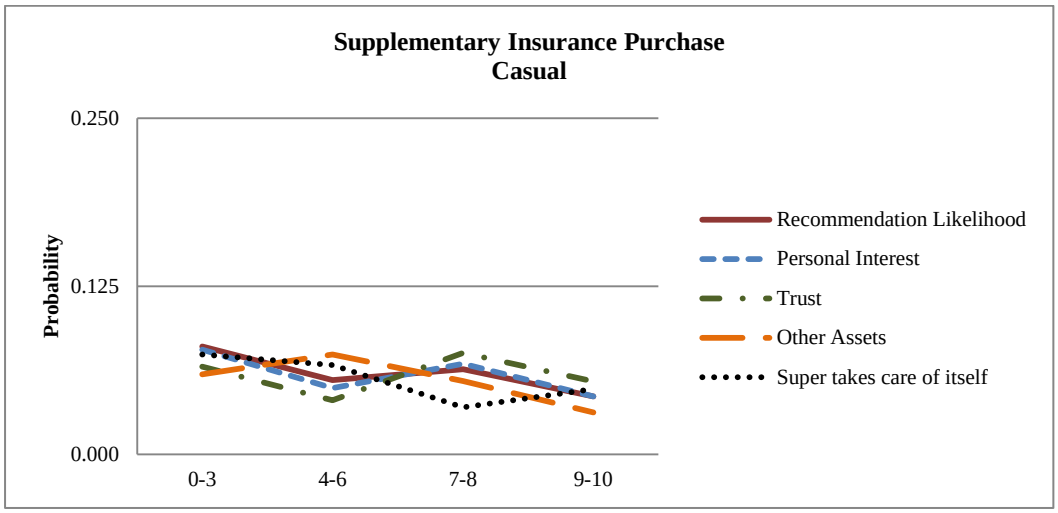


Figure A1-4: Supplementary Insurance Purchased Predictions – Casual employees



Figures A1-3 and A1-4 report the likelihood of respondents purchasing supplementary insurance. As in Bateman et al. (2014), the attitudinal measures, and interest in superannuation in particular, had little bearing in terms of influencing the likelihood of subjects to purchase supplementary insurance.

Figure A1-5: Registration Online Predictions – Permanent employees

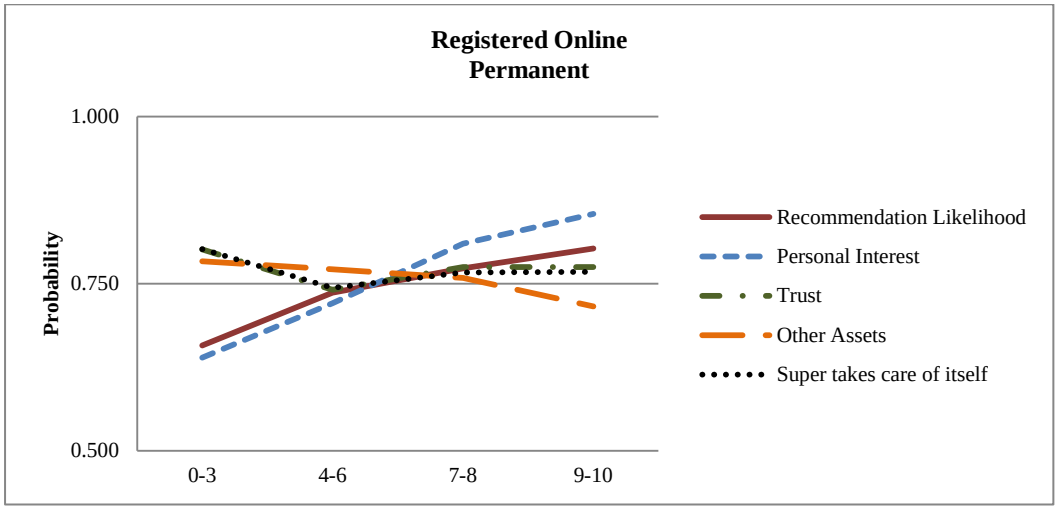
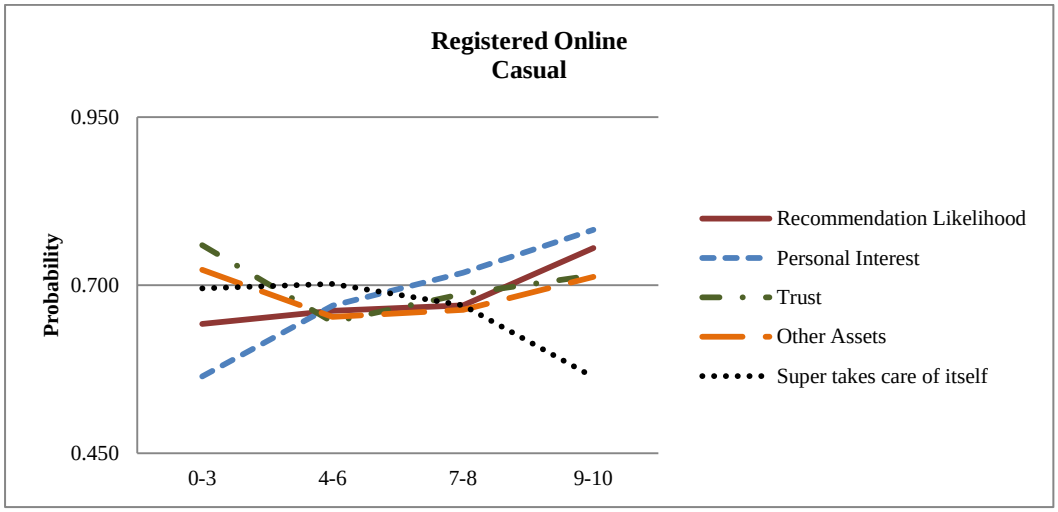


Figure A1-6: Registration Online Predictions – Casual employees



Figures A1-5 and A1-6 report the likelihood of the respondent being registered online. Both permanent and casual employees who self-report an interest in superannuation greater than 6,

are significantly more likely to be registered for online activities (as in Bateman et al. 2014) and significantly more likely to be active online, (significant for casuals but not for permanent employees in Bateman et al. (2014)).

Figure A1-7: Active Online (in past 12 months) Predictions – Permanent employees

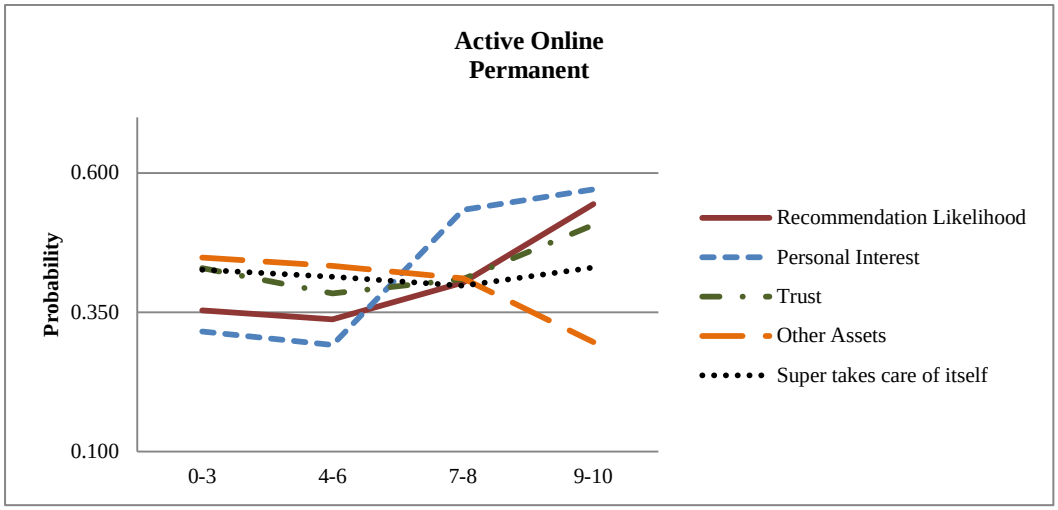
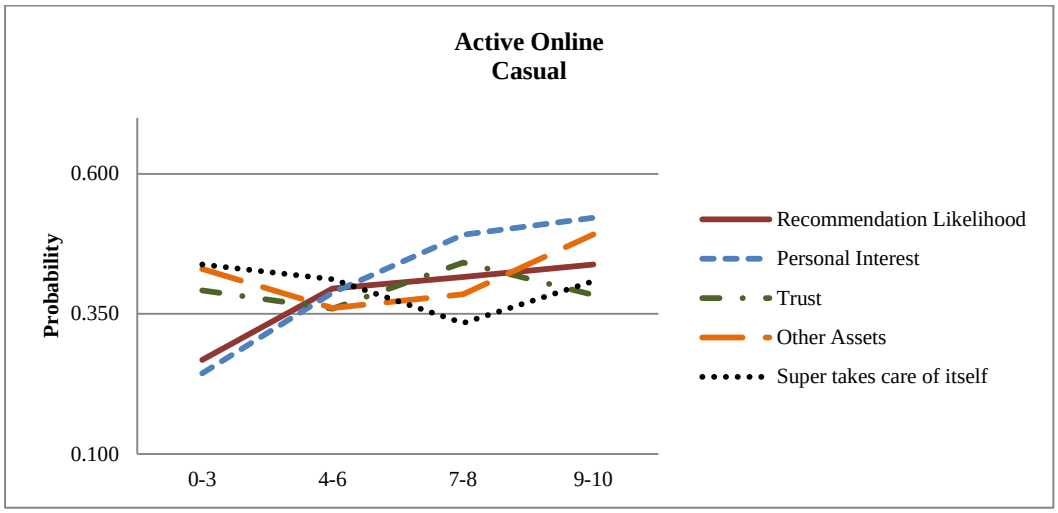


Figure A1-8: Active Online (in past 12 months) Predictions – Casual employees



The increase in active online behavior among those interested compared with the Bateman et al. (2014) data could be a reflection of the median age of the permanent employees which is 42 in the current dataset as opposed to 44 in the dataset used in Bateman et al. (2014).

The predicted behavior of employees reflected in Figures A1-7 and A1-8 suggests that those who are the least likely to trust UniSuper are as likely as the members most trusting of UniSuper, to be registered and active online.

Figure A1-9: Additional Contributions (in past 12 months) Predictions – Permanent employees

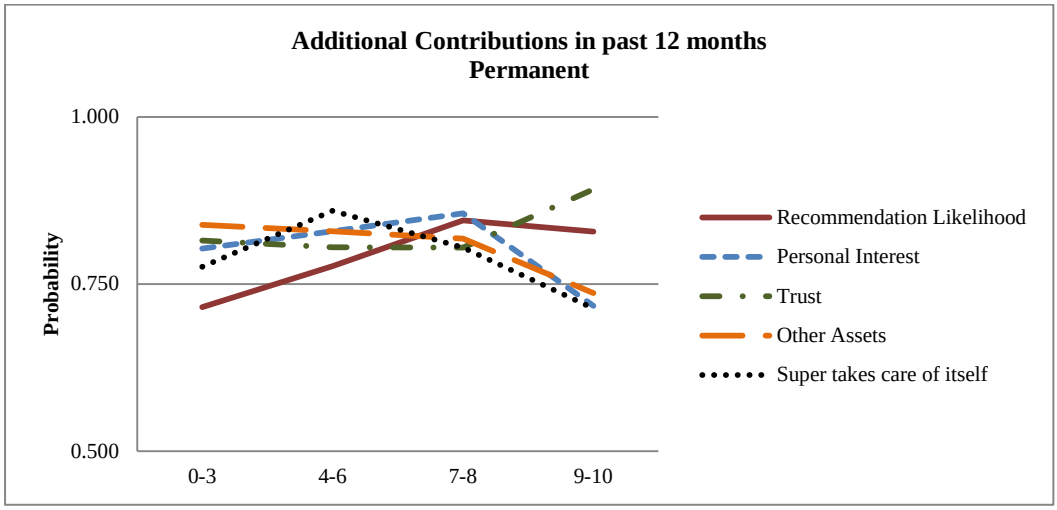
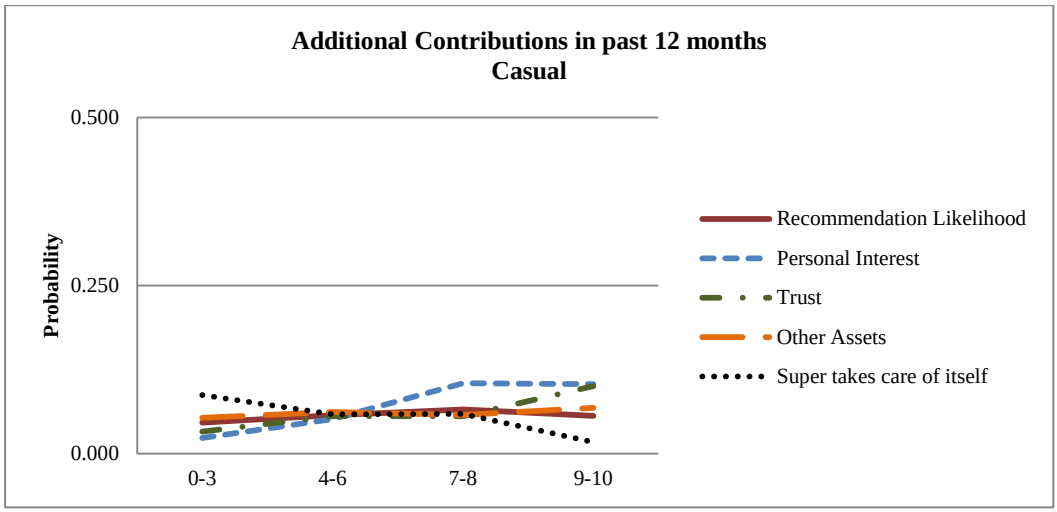


Figure A1-10: Additional Contributions (in past 12 months) Predictions – Casual employees



As in Bateman et al. (2014) interest in superannuation was a predictor of likelihood to make an additional contribution among casuals. Casuals who thought that their superannuation would take care of itself also seemed less likely to make voluntary contributions.

These results illustrated in Figures A1-9 and A1-10 show that the additional three questions, trust in particular, influence active superannuation behavior.

Appendix 2: Cluster Analysis Procedure

We begin our cluster analysis procedure with a factor analysis on the attitudinal items since cluster analysis is compromised in the presence of multicollinearity (Hair et al. 2010). We extracted the factors using principal-axis factoring with promax rotation. Promax rotation is an oblique rotation which assumes that factors are correlated and rotates factor axes to find a simple structure in the data. Our factors display a correlation in excess of 0.5 suggesting that oblique rather than orthogonal rotation is required (Tabachnick and Fidell 2007). Two factors emerge with eigenvalues greater than 1. Given the third factor's eigenvalue of 0.935 and the combined cumulative variance of 77.4% explained by these three factors, we repeat the factor analysis for three factors. The first factor includes the 'Recommend' and 'Trust investment decisions of UniSuper' questions with strong factor loadings for each.[20] With the strong correlation between 'Recommend' and 'Trust investment decisions of UniSuper' (r=0.402***), we retain only the latter question for the cluster analysis. In the same way, we retain the 'Interested in superannuation' question to represent the second factor. Given its relatively low correlation with the attitudinal variables, we also retain the question on whether the member thinks he/she has enough assets outside of superannuation.

We base our cluster analysis on the three attitudinal variables – 'Interest', 'Trust' and 'Enough assets outside super'. To begin, we minimise the influence of the variance in the standard deviation of the three retained attitudinal variables (from sd_{trust}=1.857 versus sd_{assets} = 2.702) by standardising them.

[20] The factor loadings represent the correlation between the variable and the rotated factor.

Since cluster analysis is sensitive to the order of subjects in the dataset we randomly sort all subjects. Next we run hierarchical cluster analysis using squared Euclidian distance and between-groups linkage to identify an underlying hierarchy among the subjects being clustered and determine the optimal number of clusters. This hierarchical method agglomerates all observations with a resulting agglomeration schedule as shown in **Table A2-1.** **Table A2-1** reveals that there is homogeneity within the groups and that the preferred solution is either five or three clusters. To be actionable, a cluster has to represent at least 10% of the member base. The five cluster solution has two clusters which are very small. However, rather than treat them as outliers, we retain these observations since they represent extreme attitudes regarding trust that we theorised as motivators of engagement.

Table A2-1: Agglomeration Schedule (standardised variables)

# of clusters	Agglomeration Coefficient	Difference	Proportion increase
15	3.66	0.05	1.4%
14	3.71	0.06	1.7%
13	3.77	0.22	5.9%
12	3.99	0.30	7.4%
11	4.29	0.71	16.5%
10	4.99	0.09	1.7%
9	5.08	0.39	7.7%
8	5.47	0.86	15.8%
7	6.33	0.07	1.1%
6	6.40	0.67	10.4%
5	7.07	1.30	18.4%
4	8.37	0.46	5.5%
3	8.82	4.38	49.6%
2	13.20	0.39	2.9%
1	13.59		

Interpretation of the five cluster solution reveals five plausible groups differing in terms of the extent to which they are interested, or trust the investment decisions of UniSuper or have assets outside of superannuation. From our initial hierarchical cluster analysis, we create a sample file of 282 observations which are randomly selected in the case of the larger clusters and contain all the observations for the two small clusters. This sample file is used as the initial seed file for our k-means cluster analysis. Using this seed file, the k-means cluster analysis identifies the initial centres efficiently. Next, with the re-iterated centre points, the entire data file is classified according to the five identified clusters.

As a final form of validation the behavioral and demographic characteristics of the clusters are examined as shown in **Table A2-2**. All variables display significant differences between clusters at the 0.05 level.

Table A2-2: Differences between clusters on demographic, attitudinal and behavioral variables

	Dis-engaged (D)	Trustingly Disengaged (TD)	Mistrustingly Engaged (ME)	Needily Engaged (NE)	Super Engaged (SE)	Total♦	
Observations	*397*	*361*	*450*	*329*	*219*	*1756*	
	22.6%	*20.6%*	*25.6%*	*18.7%*	*12.5%*	*100.0%*	
	Mean *(std dev)*	Mean *(std dev)*	Mean *(std dev)*	Mean *(std dev)*	Mean *(std dev)*	Mean *(std dev)*	**Comments**
Attitudinal indicators							
Trust investment decisions of UniSuper#	4.95 (1.50)	7.40 (1.19)	5.96 (1.44)	8.18 (1.03)	8.53 (1.10)	6.76 (1.85)	All clusters are significantly different from each other regarding their level of trust in UniSuper
Enough assets outside of super#	4.42 (2.15)	8.00 (1.20)	4.86 (2.19)	2.92 (1.80)	8.31 (1.40)	5.47 (2.70)	TD and SE have significantly more assets outside of superannuation, with NE having significantly the least
Interested in superannuation#	4.23 (1.73)	4.11 (1.91)	8.10 (1.17)	5.35 (2.02)	8.25 (1.38)	5.91 (2.46)	TD & D are less interested in super than ME & SE and NE
Confident that super takes care of itself#	4.54 (2.22)	6.11 (2.33)	4.03 (2.32)	5.56 (2.63)	6.04 (2.72)	5.11 (2.56)	ME are significantly less likely to think that superannuation takes care of itself
Engagement behaviors							
Recommend UniSuper#	5.74 (2.31)	6.79 (2.15)	6.88 (2.03)	7.57 (1.83)	7.78 (1.87)	6.85 (2.18)	D are significantly least likely to recommend, while ME & TD are significantly less likely to recommend than NE and SE
Non-default investment choice	.40 (0.49)	.36 (0.48)	.46 (0.50)	.35 (0.48)	.47 (0.50)	.41 (0.49)	TD and the NE are significantly more likely to be in the default
Supplementary insurance purchased	.06 (0.24)	.07 (0.25)	.12 (0.32)	.09 (0.28)	.11 (0.31)	.09 (0.28)	No significant differences apart from between D and ME
Registered online	.61 (0.49)	.58 (0.49)	.78 (0.42)	.74 (0.44)	.76 (0.43)	.69 (0.46)	NE & ME & SE are significantly more likely to be registered for on-line than are D & TD
Active online past 12 months	.26 (0.44)	.29 (0.45)	.44 (0.50)	.34 (0.47)	.41 (0.49)	.35 (0.48)	NE & D & TD are significantly different from ME & SE
Additional contributions in past 12 months	.33 (0.47)	.35 (0.48)	.51 (0.50)	.46 (0.50)	.48 (0.50)	.42 (0.49)	NE & ME & SE behave significantly differently from D & TD

	Dis-engaged (D)	Trustingly Disengaged (TD)	Mistrustingly Engaged (ME)	Needily Engaged (NE)	Super Engaged (SE)	Total♦	
Observations	*397*	*361*	*450*	*329*	*219*	*1756*	
	22.6%	*20.6%*	*25.6%*	*18.7%*	*12.5%*	*100.0%*	
	Mean *(std dev)*	Mean *(std dev)*	Mean *(std dev)*	Mean *(std dev)*	Mean *(std dev)*	Mean *(std dev)*	**Comments**
Demographics, employment and superannuation related features							
Age	37.68	37.15	45.34	42.14	43.93	41.15	NE & ME & SE are significantly older than D & TD
	(10.97)	(11.91)	(12.70)	(13.12)	(13.80)	(12.85)	
Male	.37	.45	.48	.39	.49	.43	D are significantly more female than SE & ME
	(0.48)	(0.50)	(0.50)	(0.49)	(0.50)	(0.50)	
Years of contribution	6.53	6.76	9.59	9.35	8.79	8.17	D & TD have had significantly fewer years of contribution than NE & ME & SE
	(5.61)	(5.71)	(7.08)	(7.32)	(7.29)	(6.71)	
Annual wage (estimated '000s)	$60.92	$59.59	$76.12	$66.52	$70.55	$66.79	ME earn significantly more
	($46.77)	($42.55)	($52.44)	($41.73)	($55.64)	($48.17)	
Super balance ('000s)	$63.62	$68.84	$149.99	$120.77	$152.50	$108.62	D & TD have significantly lower balances than NE & ME & SE
	($114.09)	($102.70)	($221.01)	($178.21)	($272.11)	($184.99)	

♦ *- 10 subjects were not classified into a cluster due to missing values*

 # - mean scores on 0-10 rating scales of attitudinal items

Significant differences at the p=0.05 level are discussed in the comments

Appendix 3: Cluster Predictions of Superannuation Behavior

In this appendix we examine the probability of active superannuation choices, given the cluster that a member can be assigned to. The figures reported in this appendix offer predictions of the active superannuation behaviors based on the logistic regression models estimated at the means of each of the variables (**Table 3** shows the estimation results).

Figure A3-1: Non-Default Investment Choice Predictions

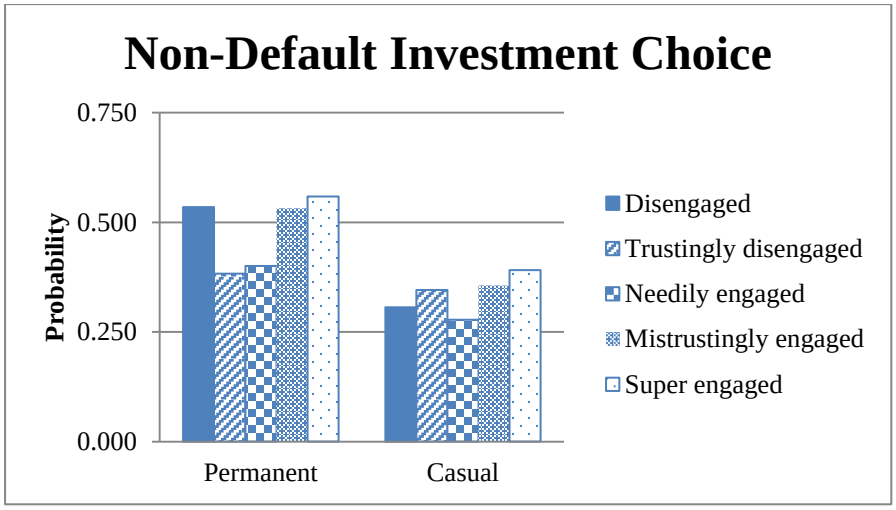


Figure A3-2: Supplementary Insurance Purchase Predictions

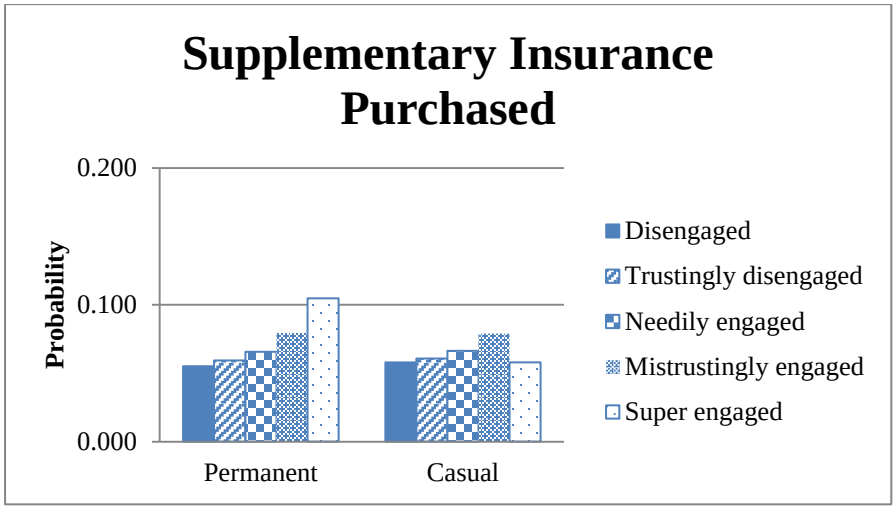


Figure A3-3: Online Registration Predictions

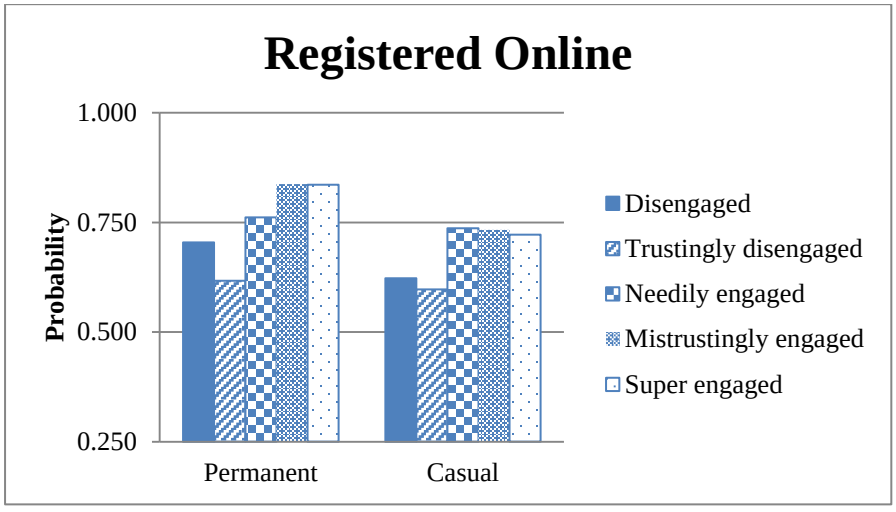


Figure A3-4: Active Online Predictions

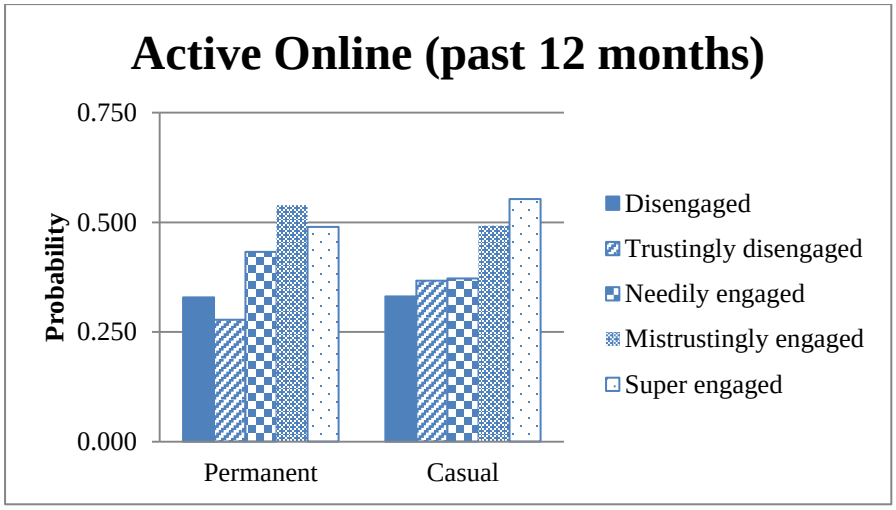


Figure A3-5: Additional Contributions Predictions