The Drawdown of Personal Retirement Assets: Husbanding or Squandering?

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ABSTRACT

How households draw down their balances in personal retirement accounts (PRAs) such as 401(k) plans and IRAs can have an important effect on retirement income security and on federal income tax revenues. This paper examines the withdrawal behavior of retirement-age households in the SIPP and finds a modest rate of withdrawals prior to the age of 70½, the age at which required minimum distributions (RMDs) must begin. In a typical year, only seven percent of PRA-owning households between the ages of 60 and 69 take an annual distribution of more than ten percent of their PRA balance, and only eighteen percent make any withdrawals at all. For these households, annual withdrawals represent about two percent of account balances. The rate of distributions rises sharply after age 70½, with annual withdrawals of about five percent per year. During the period we study, the average rate of return on account balances exceeded this withdrawal rate, so average PRA balances continued to grow through at least age 85. Our findings suggest that households tend to preserve PRA assets, perhaps to self-insure against large and uncertain late-life expenses, and that RMD rules have important effects on withdrawal patterns.

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Just three decades ago retirement saving in the United States was based heavily on employer-provided defined benefit plans. Benefits after retirement were typically received in the form of lifetime annuities over which recipients had relatively little control. Today, personal retirement accounts (PRAs), which include 401(k)s, IRAs, Keoghs, and similar plans, have become the primary form of retirement saving for private-sector workers. The Investment Company Institute (2012) reports that PRA assets totaled $9.4 trillion in 2011, compared with $2.3 trillion in private sector defined benefit plans. A substantial body of past work, summarized for example in Brady, Holden and Short (2009) and Poterba, Venti and Wise (2007), has described the accumulation of PRA balances. The draw-down of these assets, the subject of this study, has received less attention. Withdrawal patterns are of interest because they may affect the account holder's late-life retirement security, and because they affect federal tax revenues.

Relatively few PRA assets are annuitized. This has generated a long-standing concern that some participants may consume their PRA assets in their early retirement years and outlive their remaining assets, resulting in low levels of late-life consumption. This concern underlies proposals, such as those by Gale, Iwry, John and Walker (2008) and Iwry and Turner (2009), to encourage the annuitization of PRA assets. The Department of Labor and the Treasury Department held joint hearings in 2010 to assess various PRA annuitization proposals, and the Treasury recently released guidance (2012) on the use of partial annuity options. The concern about early withdrawal and consumption is heightened by the growing importance of rollovers from corporate pension plans to PRAs, which gives individuals greater control over the draw-down pattern of their retirement assets than ever before. These concerns motivate our investigation of the time profile of withdrawals from PRAs.

In addition to potentially affecting retirement income security, withdrawals also affect federal tax receipts. Most contributions to PRAs were made with before-tax dollars – "Roth" IRAs and 401(k)s still account for about one quarter of the PRA market – and the accruing income on assets held in PRAs has not been taxed. Withdrawals of both initial contributions and subsequent accruals are taxed as ordinary income provided the account holder is over the age of 59½. Younger individuals face an

additional 10 percent penalty tax on withdrawals unless they use the payout for one of various qualifying purposes such as to pay medical or educational expenses.

PRA participants typically have sole control of their accounts after retirement, and they can decide when, and whether, to make withdrawals. Until age 70½, withdrawals are discretionary. After that age, the tax law specifies required minimum distributions (RMDs). These are determined by reference to an IRS table, based on life expectancies at different ages, which prescribes the share of the previous year-end balance that must be withdrawn each year. If someone fails to withdraw the appropriate amount in a given year, there is a 50 percent penalty tax on the difference between the RMD amount and the actual withdrawal. "Roth" PRAs, which participants fund on an after-tax basis, are not subject to RMD rules. Distinguishing them from traditional PRAs is an important empirical challenge and one that we discuss below.

The RMD age was set in the 1970s, and there have been some proposals, such as one by Representatives Portman and Cardin in 2003 that was analyzed by Orszag and Greenstein (2003), to raise it. The Joint Committee on Taxation (2003) estimated that increasing the RMD age from 70½ to 75 would have reduced federal income tax revenues by $3.9 billion in 2012. Revenue estimates such as this depend critically on whether current RMD requirements represent a binding constraint on withdrawals. Our empirical work provides insight on this issue, and thereby helps to inform the potential revenue consequences, and other effects, of changing RMD rules.

Because PRAs did not attract substantial assets from a broad segment of the U.S. population until the early 1980s, those who reached retirement age in the 1980s and 1990s typically had relatively small balances, or none at all. Only in the last decade have many households reached retirement age with PRA balances large enough to permit meaningful study of the dynamics of post-retirement PRA management. Our analysis takes PRA balances at retirement as given, and focuses on post-retirement drawdown. In many ways our study parallels past work on the late-life draw-down of housing equity. Venti and Wise (1990, 2001, 2004) found that home equity was typically “saved for a rainy day” until the household experienced a shock to family status, like death of a spouse, or entry into a nursing home, at which point it was

often drawn down. Megbolugbe, Sa-Aadu, and Shilling (1997), Banks, Blundell, Oldfield and Smith (2010) and Banerjee (2012) report similar findings.

We examine the draw-down of PRA assets in the early retirement years, with particular interest in the prevalence of withdrawals that rapidly deplete these balances. Our analysis is largely descriptive: we study how withdrawal patterns are related to various household characteristics, and how they change when account holders reach age 70½. We pay particular attention to the relationship between a household's health status, its PRA balance, and its PRA withdrawals, because medical expenses can represent a large late-life outlay. In addition, individuals with chronic health limitations reach retirement with lower PRA balances. Poor health is often associated with an employment history that does not support a robust pattern of PRA contributions, and health needs may also induce pre-retirement withdrawals from PRAs. We know from many other studies, including Wu (2003), Smith (2005), Lee and Kim (2008), Coile and Milligan (2010), and Poterba, Venti and Wise (2012), that poor health predicts the drawdown of non-annuity wealth.

Our central finding is that most households conserve PRA assets in their early retirement years. Withdrawal rates for most account-holders are low until they attain age 70½ and must begin RMDs. At that age, the proportion of households reporting withdrawals jumps from about 20 percent to over 60 percent. The proportion of assets withdrawn averages between one and two percent of PRA balances between ages 60 and 69, and rises to about five percent at age 70½. In our sample period, 1997-2010, investment returns and contributions to PRAs from still-employed households exceed this withdrawal rate, so average PRA assets increased even after age 70½. This pattern could be different for other intervals with different return patterns.

We rely primarily on data from the Survey of Income and Program Participation (SIPP), but we also draw on information in the Health and Retirement Study (HRS). By using these data sources and considering withdrawals through 2010, our analysis complements several other recent studies that have examined the post-retirement management of PRAs using other data sources. For example, Bryant, Holden, and Sabelhaus (2010) use tax return data for the 1990-2007 period to study withdrawals from IRAs and defined contribution pension plans before plan beneficiaries reach age

60 – typically before retirement. They find that such distributions equal roughly 2.5 percent of underlying assets. They do not examine the use of PRAs once households reach retirement age. Bryant (2008) presents aggregate data from 2004 tax returns, and reports a sharp increase in the fraction of IRA holders with withdrawals after age 70. While 29 percent of 65-69 year olds who report IRA holdings make withdrawals, 83 percent of those between the ages of 70 and 75 do so. Bershadker and Smith (2006) examine tax return data from two years, 1990 and 2002. They address questions similar to the ones we study, and find that nearly half of taxpayers do not make any IRA withdrawals within the first two years of retirement, and that a substantial group waits until age 70½ before making any withdrawals. We find similar withdrawal rates. By using household survey data, we can also explore the household characteristics that are associated with different draw-down patterns. Sabelhaus (2000) analyzes tax returns from 1993-1996, along with data from the 1992 and 1995 Survey of Consumer Finances. He also finds an increase in IRA withdrawals at age 70½, and points out that raising the RMD age delays, but does not eliminate, tax liability on the assets in PRAs.

Love and Smith (2007) use data from the HRS (1998-2004) and find that the annuitized value of wealth held in IRAs and defined contribution retirement plans rises from one survey wave to the next for most households. Our finding of rising PRA wealth even in retirement is similar, but it is based on SIPP data for a longer time period, and includes the most recent period. Since the coverage of 401(k) plans in the HRS is incomplete, the SIPP data bring new information, as well as more recent data, to bear on this question. A number of studies -- for example Holden and Shrass (2010a) and Holden and Bass (2012) -- have also used the Investment Company Institute's IRA database, collected from mutual funds and insurance companies that administer IRA plans, to examine distributions from these accounts. These findings describe withdrawals from one type of PRA, but do not include information on employer-sponsored plans such as 401(k)s. Our use of household survey data allows us to capture the full spectrum of PRAs.

This paper is divided into six sections. The first describes the growth of participation in PRAs by tracking various age cohorts. It shows the strong relationship between individual attributes such as earnings, non-PRA wealth, and health status, and

the probability of having a PRA. Section two describes the evolution of within-cohort PRA balances as each cohort ages, and the relationship between PRA assets and household attributes. The first two sections provide a comprehensive summary on PRA ownership patterns, which is helpful in evaluating a range of PRA reform policies. Section three explores the relationship between household attributes and the probability of a PRA withdrawal. The fourth section presents evidence on the percent of PRA balances that is withdrawn, conditional on a withdrawal. Section five reports summary information on the proportion of households that withdraw more than a given percent of their PRA balance in a given year. A brief conclusion suggests several policy applications of our findings.

1. SIPP Data for Tracking PRA Ownership

We describe the spread of PRA accounts using SIPP data organized by cohort. The SIPP data are available for the years 1997, 1998, 1999, 2001, 2002, 2004, 2005, 2009 and 2010.[1] We define PRA assets as the sum of the responses to the three SIPP questions that ask about holdings of "IRAs", "Keoghs" and "401(k), 403(b) or thrift plans." Table 1-1 reports summary data on the number of observations, PRA participation rates, and PRA assets, by age and by year. In this table the "age" of married households is assumed to be the age of the husband. For consistency with later tables, in which we consider withdrawals from PRA plans in the twelve months after the balance is reported, Table 1-1 only includes households who remained in the sample for at least twelve months after the PRA balance was reported.[2] One concern with the SIPP data is the presence of a high number of imputed values for some

[1] The 1997, 1998 and 1999 data are from waves 3, 6, and 9 of the 1996 SIPP panel. The 2001 and 2002 data are from waves 3 and 6 of the 2001 SIPP panel. The 2004 and 2005 data are from waves 3 and 6 of the 2004 SIPP panel. The 2009 and 2010 data are from waves 4 and 7 of the 2008 SIPP panel.

[2] Restricting the sample to include only respondents who remain in the sample for 12 months after the PRA balance is reported excludes between 11 and 22 percent of the respondents in all years except 2005. For 2005, 61 percent of the respondents are excluded because the sample size was reduced beginning with wave 8 of the 2004 panel. We also impose a second restriction. For about 1.6 percent of the sample the sum of monthly withdrawals exceeds the initial asset balance. If the initial PRA balance is positive, we retain the observation and set the withdrawal amount equal to the initial balance (0.4 percent). If the household reports a zero initial PRA balance, but positive subsequent withdrawals, we exclude it from the analysis (1.2 percent). Some of these excluded respondents may have established new "rollover" PRAs (perhaps cash-outs from DB pensions) in the subsequent 12 months.

variables. To address this issue we have re-estimated most of the models below using only the non-imputed data entries. The results are very similar to we report, which use the whole sample. To reduce the sensitivity of our results to outlying observations or under-sampling of high income households, we often focus on medians and quantiles rather than means.

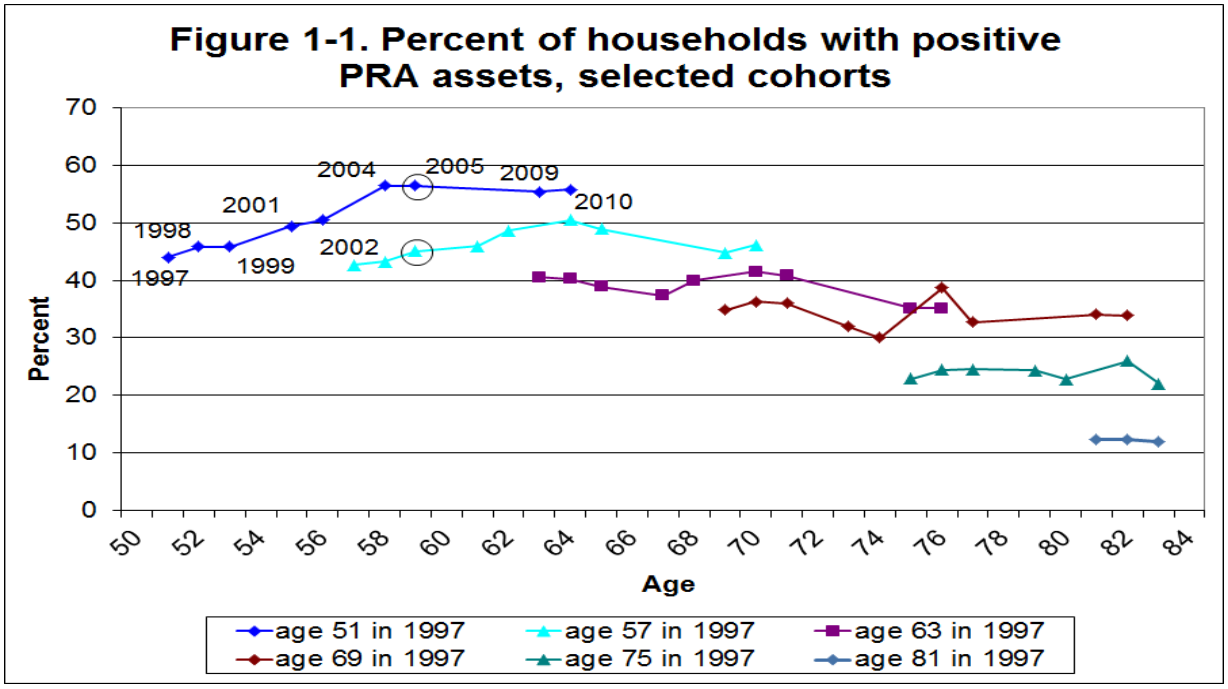
Both the likelihood of respondents having assets in a PRA, and the mean PRA balance in 2010 dollars, increase over time. Because we do not analyze data from 2007, the year when equity markets reached their recent valuation peak, we do not observe account balance declines between 2007 and 2009 or 2010. We observe a slight decline in the probability of having a PRA between 2005 and 2010 PRA for those who were in their 50s in 1997, but increases in the account balance conditional on ownership of a PRA. In each wave of the survey, both the probability of PRA ownership and the average PRA balance conditional on ownership decline with age.

For tracking the evolution of PRA participation and for analyzing how account balances vary for PRA participants as they age, it is helpful to organize the SIPP data by cohort. For example, we can obtain data for 60-year-old households in 1997, 61-year-old households in 1998, and track this cohort through 73-year-old households in 2010. We identify each cohort by its age in 1997: "C60" refers to the cohort that was age 60 in 1997. These cohort data contain data from four distinct panel data sets that span shorter time periods. The same households were included in the SIPP surveys in 1997, 1998, 1999, and 2000. Another sample responded in 2001-2, a third sample responded in 2004-5, and a fourth sample responded in 2009-10. We treat the fourteen-year cohort data set as if it were drawn from a synthetic panel.

Figure 1-1 shows the percent of households with positive PRA balances for six cohorts whose members were between the ages of 51 and 81 in 1997. The first cohort shown in the figure was 51 years old in 1997. When first observed at age 51, 44 percent of the households in this cohort had positive PRA balances. By 2010, when they were age 64, 55.8 percent had positive PRA balances. This figure shows large differences between cohorts, which we interpret as "cohort effects." Younger cohorts are more likely to have a PRA than older cohorts. For example, 56.4 percent of the households that were 59 years old in 2005 had a PRA positive balance, but six years

earlier, only 45 percent of the 59-year-old households had a PRA. This "cohort effect" equals the vertical distance between the two circled observations in the figure.

The presence of substantial cohort effects is not surprising given the growth in PRA availability during the last three decades. IRAs became broadly available in 1981, and 401(k) plans were not widely embraced by corporations until the early 1980s, although many firms did not adopt them until much later. Workers who were 51 years old in 2005 were 28 in 1982, so they were potentially "exposed" to 401(k) plans for 23 years. In contrast, 83 year olds in 1999 were 66 in 1982; they are much less likely to have been able to participate in a retirement saving plan before they retired.



While Figure 1-1 highlights the rapid spread of PRAs in the past three decades, it does not control for any of the correlations of PRA ownership with household attributes such as earnings, non-PRA wealth holdings, and health status. These correlations can be important for explaining the evolution of PRA ownership, since it is possible that some of the age-related or cohort-related variation in PRA ownership rates may reflect age-varying or cohort-varying household attributes that are predictive of PRA ownership. These correlations also provide information on the attributes of the households who are making decisions about whether to draw down PRA assets.

To summarize the relationship between PRA ownership and various household attributes, we estimate probit specifications relating the probability that a household has a positive PRA balance to a set of indicator variables for household age, cohort (again measured as age of household head in 1997), and a set of other household attributes. The latter includes an indicator variable for whether the household is retired, an indicator variable for marital status, a measure of self-reported health status, earned income, annuity income, housing wealth, and non-housing wealth. Since we have chosen to include both age and cohort effects in our specification, we cannot separately identify time effects.

Table 1-2 presents estimates of the probit specifications, showing in each case the "coefficient" normalized to show the marginal relationship between each household attribute and the probability of having a PRA, and the "Z-score" which corresponds to a standard normal variable as a measure of statistical significance. The first column reports estimated age and cohort effects without controlling for other household attributes; it essentially replicates the profiles shown in Figure 1-1. Each cohort includes households in a three year age window. For example, cohort C54 includes cohorts C53, C54, and C55. The difference between the probability derivatives for the C39 cohort (the base cohort) and the C84 cohort is 0.754: a household in the oldest cohort in 1997 has a 75.4 percent lower probability of having a PRA, all else equal, than a household in the youngest cohort in 1997.

In modeling age effects, we allow for differences before and after a household reaches age 63. We do this with a piecewise linear function with a break at age 63. The probability of having a PRA increases with age through age 63, but there is little effect of age after 63. This is consistent with PRA accounts being opened while households are employed, but not after retirement.

The specification in the second column of Table 1-2 augments the first-column specification with variables corresponding to five sets of household attributes. The first "set" is only an indicator for whether the household is retired or still working. In the case of married households, we make this determination based on whether the husband is still working. The second set of variables includes the household's marital status--single female, single male, or married. The third set of variables includes

household income, split between earned income and annuity income. The latter could include Social Security benefits, payments from a defined benefit pension plan, or payments from private annuity contracts. The fourth set of variables describes household wealth, which we divide into housing wealth and non-housing, non-PRA wealth. The fifth set of variables captures self-reported health status. The SIPP does not contain detailed information on specific attributes of health status, so we use self-reported health in our analysis. Each respondent can indicate poor, fair, good, very good, or excellent. We collapse these responses into two categories, "very good or excellent" and "fair or poor." "Good" is the excluded category. Estimates for each of the health status groups are obtained separately for single persons, married males and married females. Finally, all of the attributes are interacted with an indicator for whether the household is above or below the age of 63. We use this same set of household attributes in later explorations of PRA asset balances and withdrawal behavior, although in some case we replace the interaction with pre- and post-age 63 with an interaction with different age breaks. We do not assign any causal interpretation to the estimates from the probit model, but rather view this exercise as a way of describing the patterns of PRA ownership.

Household attributes are strongly related to the probability of PRA ownership. We note two findings in particular. First, holding other attributes constant, those with greater earned income, with greater annuity income, and with greater wealth in either housing equity or other assets are more likely to report a positive PRA balance. Second, persons in better health are also more likely to have a PRA. We recognize that a higher value of non-PRA wealth may, conditional on income, be capturing household attributes such as discount rates that influence the accumulation of both PRA and non-PRA wealth. thereby making causal interpretation difficult.

Several examples can illustrate the quantitative importance of these findings. Among those under 63 years of age, a married person is 11.6 percent more likely than a single man to have a PRA. For someone under the age of 63, a $10,000 increase in earned income is associated with a 3.4 percent increase in the probability of having a PRA. For those over 63, and likely to be retired, a $10,000 increase in annuity income is associated with a 5.5 percent increase in the probability of having a PRA. For those

under 63, each $10,000 increase in housing wealth is associated with roughly a 0.4 percentage point increase in the probability of having a PRA; the effect of the same addition to non-housing wealth is only about 0.1 percentage points.

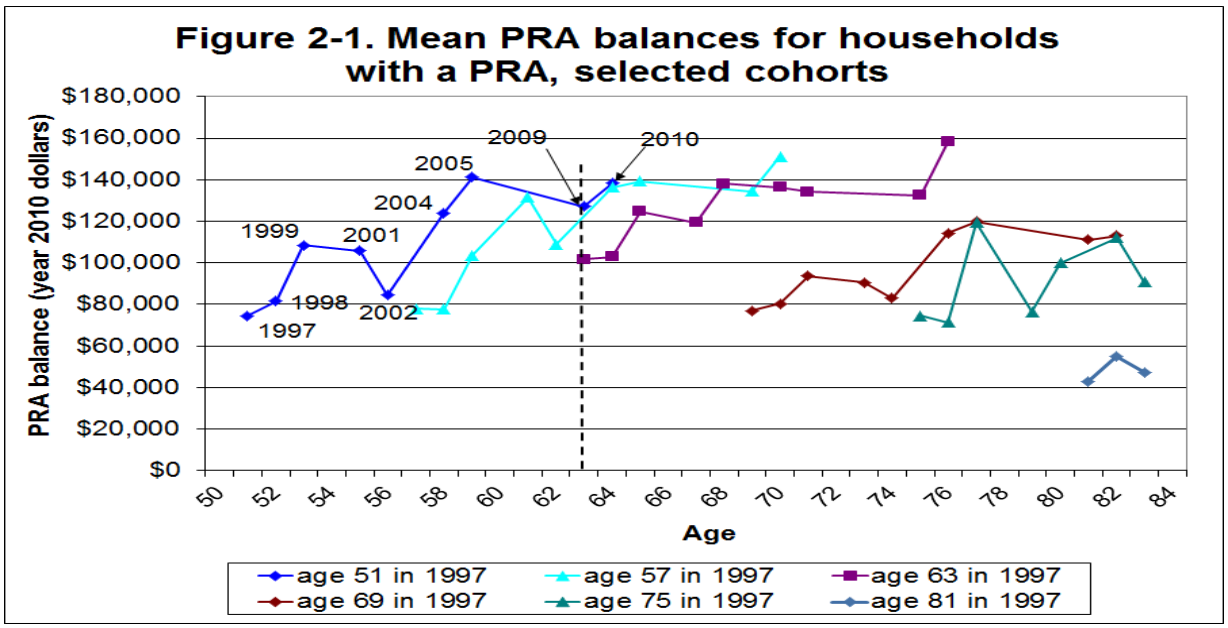
The results in Table 1-2 also display a strong relationship between health status and the probability of PRA ownership. Controlling for other household attributes, persons in poor health are much less likely than those in good health to have a PRA. Among those who are not yet 63 years of age, single persons in very good or excellent health are 34 percent more likely to have a PRA than are those in fair or poor health. For married men (women) the difference is 11.8 (11.5) percent. This complements Poterba, Venti, and Wise's (2011a) finding that households in good health near retirement age have higher lifetime earnings, higher earnings at retirement, higher annuity income after retirement, and higher non- PRA wealth than those in poor health.

To illustrate the findings in Table 1-2 and Table 1-3, we report the probability of PRA ownership for four hypothetical households with different sets of attributes. These probabilities are computed using the coefficient estimates that underlie the marginal probability effects in Table 1-2. We focus on households between the ages of 60 and 63, and consider separately retired and not-yet-retired households. We consider "low-percentile" households with low income (10^{th} percentile), low wealth, and poor health, and "high-percentile" households with high income (90^{th} percentile), high wealth, and good health. The 10^{th} and 90^{th} percentiles approximate persons in the bottom and top quintiles of each attribute. For low-percentile households that are not retired, the predicted probability of PRA ownership is only about 5 percent. By comparison, for the high-percentile non-retired households, the predicted probability is 78 percent. For retired households in this age range, about 7 percent of the low-percentile households are predicted to have a PRA, compared to about 56 percent of high-percentile households. These summary measures underscore the heterogeneity in PRA ownership across different types of households.

2. PRA Balances

We now consider PRA balances. Figure 2-1 shows average PRA balances (in $2010) at each age for selected cohorts labeled by the cohort age in 1997. The data are for 1997, 1998, 1999, 2001, 2002, 2004, 2005, 2009 and 2010. The figure suggests that younger cohorts have higher average PRA asset levels at each age than their predecessors. In addition, in most cases within cohorts for which we have at least two years of data, assets tend to increase as the cohort ages. Several cohorts show a decline in assets between 1999 and 2002 (presumably reflecting the decline in stock prices following the dot-com bubble) and between 2005 and 2009 (reflecting the financial crisis). VanDerhei (2009) provides a detailed analysis of the effect of the 2008 recession and the associated financial crisis on 401(k) account balances. The 37 percent decline in the U.S. equity market in 2008 substantially reduced average 401(k) and other PRA balances. Munnell (2012) shows that the median 401(k) balance for households approaching retirement in 2010 was roughly the same as that in 2007. Her findings suggest that the negative effect of the financial market decline largely offset the positive effects of three years of additional contributions to the system.

For most ages and cohorts in most years, the increase in asset balances arising from new contributions and from returns on existing balances exceeds the reduction in assets due to withdrawals. For cohorts that are young enough for many households to still have labor income, four distinct effects may influence the evolution of average PRA balances as the cohorts age. These are the investment return effect which can raise or lower PRA balances, the contribution effect that increases such balances, the withdrawal effect that reduces them, and the “new account opening” effect that adds low-balance new accounts into the set of PRAs over which the average is computed. While the last effect admits the possibility that PRA balances rise for all existing PRA holders at a given age, while we find a decline in the average PRA balances as the cohort ages, we do not find this. This suggests that the quantitative impact of this effect is modest.



To identify the household attributes that are associated with high and low levels of PRA assets, we estimate a simple model for these balances (B_i):

(1) $B_i = \alpha * e^{Z_i \gamma} + \varepsilon_i$

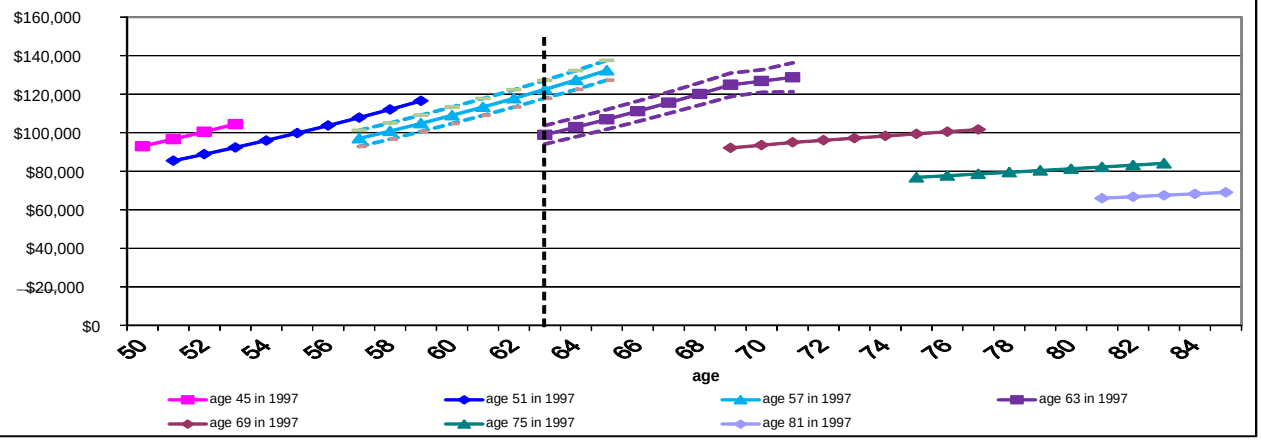
where Z_i is a vector that includes age effects, cohort effects, and the other household attributes that we analyzed in the last section. The coefficients (γ) indicate the percentage change in B that is associated with a unit change in the corresponding Z variable. We estimate (1) by nonlinear least squares (NLLS) for all households with a positive PRA balance. We also estimated the log-linear counterpart to (1), regressing $\ln(B_i)$ on Z_i. The two specifications are similar except for the distribution of the error term. The fitted values from (1) track PRA balances more closely than those from the log-linear specification, so we focus on (1) in our analysis.

Table 2-1 reports the results of estimating (1) by NLLS. The model in column one includes only age and cohort effects; later columns add additional covariates. The age estimates are specified as piecewise linear with breaks at 69 and 71 to allow for a change in asset evolution at the age at which RMDs begin. For households below the age of 69, the estimates indicate that PRA assets increase on average by 3.9 percent per year. Between ages 69 and 71, there is no statistically significant change in assets. At ages above 71, PRA assets increase at an average rate of 1.1 percent per year. These findings suggest that during our sample period, asset returns and the

contributions of those who were still working more than offset PRA withdrawals and the "small account opening effect" for cohorts with substantial numbers of households with employment income. . We observe the pattern of rising average PRA balances both before and after cohorts reach age 70½ and need to begin RMDs. The estimates in column 1 also show substantial cohort effects, as in Figure 2-1.

We can use the estimated age and cohort coefficients from the first column of Table 2-1 to predict PRA balances for any cohort at any age. Figure 2-2 illustrates this. For example, households that attained age 63 in 2003, which were therefore members of the C57 cohort (they were 57 in 1997), are predicted to hold PRA assets of $122,485 (in year 2010 dollars) at age 63, while households that attained age 63 six year earlier in 1997 are predicted to hold PRA assets of only $98,955 – a 24 percent difference. Figure 2-2 also shows 95 percent confidence bands for these two predictions.

Figure 2-2. Predicted PRA balance for households with a PRA, using estimates from exponential model (NLLS), with confidence intervals



The estimates in the second column of Table 2-1 describe the relationship between PRA balances and household attributes. We use the same set of household attributes as above, but now interact each household attribute with three age segments: less than age 69, age 69 to 71, and greater than age 71. The marginal estimates, like those for the probability of having a PRA, show that average balances are higher for those who are married, have greater earned income or annuity income,

have greater housing wealth and greater non-housing wealth, and are in better health. Among households under the age of 69, PRA assets of single men are 34 percent greater than those of single women (the omitted group) and married households have 53 percent more in PRA assets than single women. An additional $10,000 in earned income is associated with 1.9 percent more in PRA assets, and an additional $10,000 in annuity income is associated with a 4.4 percent increase in PRA wealth. An additional $10,000 in housing (non-housing) wealth is associated with a 0.9 percent (0.03 percent, rounded to zero in Table 2-1) increase in PRA assets. Single persons in very good or excellent health have 39 percent more in PRA assets than those in fair or poor health. This difference is 31.4 percent for married men and 17.6 percent for married women.

Table 2-2 illustrates the combined relationship between different sets of household attributes and PRA balances, using the same approach as in the previous section. We again consider households between the ages of 60 and 63, and use the same "low-percentile" and "high-percentile" sets of attributes as above. The first column of Table 2-2 shows the predicted PRA balance for a household with low income, low wealth, and poor health. The next column shows the balance for a household with high income, high wealth, and good health. For households in the 60 to 63 age range who are not retired, the predicted balance for households in the low-percentile group is $66,903, compared to $220,923 for those in the high-percentile group. For households in this age group who are retired, the values are $69,047 and $218,075, respectively.

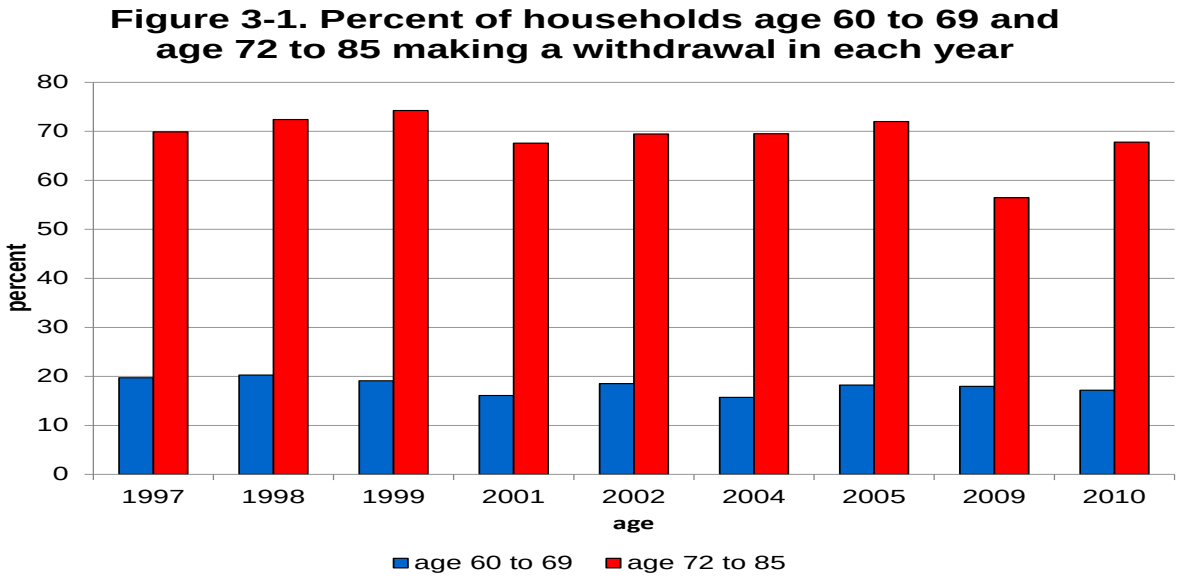
Table 2-2. Estimated PRA balance, for selected attributes, households age 60 to 63.

Attributes and probability		
	Not retired	
Marital status	Single Male.	Married
Earned income	10th pctile	90th pctile
Annuity income	0	0
Housing wealth	10th pctile	90th pctile
Nonhousing wealth	10th pctile	90th pctile
Health	Fair-Poor	Ex-VG
PRA balance	**$66,903**	**$220,923**
	Retired	
Marital status	Single Male.	Married
Earned income	0	0
Annuity income	10th pctile	90th pctile
Housing wealth	10th pctile	90th pctile
Nonhousing wealth	10th pctile	90th pctile
Health	Fair-Poor	Ex-VG
PRA balance	**$69,047**	**$218,075**

3. The Probability of a PRA Withdrawal

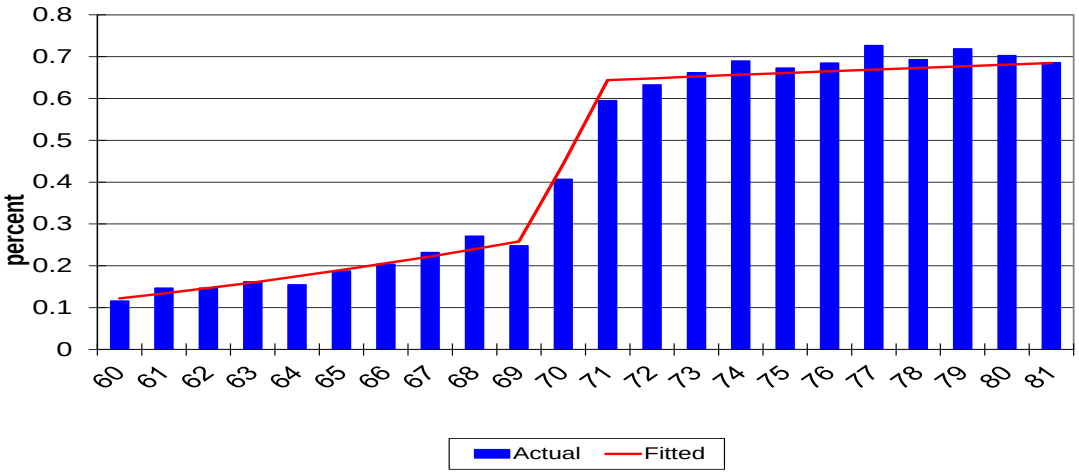
Having summarized patterns of PRA ownership among households of retirement age, we are now ready to examine PRA withdrawals. We begin, in this section, by using SIPP data to calculate the probability of any withdrawal from a PRA during a twelve month period. Respondents are asked to provide the amount received from a draw on an IRA, Keogh, 401(k) or Thrift Plan in each month during the 1997 to 2010 period. In the next section, we report withdrawals as a proportion of balances. Figure 3-1 shows the percentage of PRA owners making a withdrawal in each year. Results are presented for persons age 60-69 (eligible, but not required, to make a withdrawal) and for persons age 72 to 85 who are subject to RMDs. Two features stand out. First, the data show almost a fifteen percentage point decline in the withdrawal rate for those 72-85 in 2009, a year when RMDs were suspended as part of the fiscal stimulus package. There is no decline, however, in the withdrawal rate of those between the ages of 60 and 69 who are not affected by the RMD rules. This suggests that some households stopped making withdrawals when they were no longer required to do so, but more than half of all households over the age of 72 continued to take withdrawals in 2009. This highlights the important heterogeneity in the effect of RMD rules on post-retirement withdrawals. Brown, Poterba, and Richardson (2013), in a study of withdrawal behavior of TIAA-CREF participants, find that roughly one third of those who were taking RMDs in 2007 chose not to take them in 2009.

Our estimate is likely to understate the effect of the RMD suspension because the “year” 2009 in the SIPP data imperfectly aligns with the calendar year 2009, the period covered by the RMD suspension. The SIPP module that yielded the PRA balance was in the field between September and December 2009. We match this balance to withdrawals over the next 12 months and thus our "2009" estimate is likely to include many withdrawals that were made in 2010, when the RMD rules were back in force.



Given the similarity of withdrawal rates across the years other than 2009 in Figure 3-1, we combine all of the years to show the age-specific probability of a withdrawal from a PRA in Figure 3-2. The entry for each age combines data from several cohorts, so it pools information from households who were that age in different years. The cohort effects are negligible in this case. The percentage of households making a withdrawal grows slowly from a little over 10 at age 60 to about 25 at age 69. Between the ages of 69 and 71, however, it jumps to over 60, and fluctuates around 70 for households over the age of 73. Figure 3-1 shows that at ages prior to 70½, most households with PRAs are not making withdrawals. The probability of making a withdrawal only exceeds fifty percent after age 70½.

Figure 3-2. Percent of households with PRA making a withdrawal, actual and fitted using SIPP data for 1997 to 2010



Figures 3-1 and 3-2 show that many households beyond the age of 70½ do not report withdrawals, even though we might expect them to be facing RMDs. One potential explanation of this finding is that some of the households we identify as having a PRA have only a Roth PRA, and are therefore not subject to RMDs. Holden and Schrass (2010a) report that 28.9 percent of all IRAs are Roth IRAs and 40.1 percent of households with an IRA have a Roth IRA. They also note that many households have multiple IRAs. The critical question for our analysis, however, is the fraction of PRA households that have only a Roth PRA. Copeland (2009), based on data from the 2007 Survey of Consumer Finances, reports that that 31.7 percent of households with an IRA have at least one Roth IRA. But this does not quite address the key question - the fraction with only a Roth. Because the availability of Roth IRAs is a relatively recent phenomenon, the fraction of elderly households owning Roth IRAs is likely to be lower than the fraction of all households owning Roth IRAs. We suspect that for our sample this is below 25 percent.

A related explanation for the absence of withdrawals for some households over the age of 70½ is that their PRAs are Keogh plans, and that they are still earning and contributing to these plans. The RMD rules do not apply in this case. Among households headed by someone between the ages of 72 and 85 in the SIPP, the withdrawal rate for those with zero earnings is eight percentage points higher than that

for households with earnings. This suggests that there might be some effect of ongoing earnings, but since we cannot link the PRA to a particular individual, and examine that individual's labor earnings, we cannot explore this further using the SIPP.

Another explanation of the low fraction of households over the age of 70½ making withdrawals is that in married couples, the owner of the PRA may be the wife, and she may be younger than the husband, whose age was used to determine the household's "age." Wives who are not yet 70½ are not required to make RMDs.

Data sources other than the ones we consider also show withdrawal rates well under 100 percent for households older than the RMD age. The Investment Company Institute's IRA Owners Survey, which is summarized in Holden and Schrass (2010b), finds that only 73 percent of households aged 70 or older with a traditional IRA made a withdrawal in for tax year 2007. The analogous statistics were 70 percent for tax year 2008, and 53 percent for tax year 2009, when RMD rules were suspended. The difference in the probability of making a distribution between the 2008 and 2009 tax years suggests that about one in four households above RMD age would not take a distribution were it not for RMD rules.

In a similar vein, tabulations of IRS data by Bryant and Sailer (2006) show that 82.6 percent of households headed by someone between the ages of 70 to 75, 81.7 percent of those headed by someone between the ages of 75 and 80, and only 61.8 percent of households headed by someone over the age of 80 made distributions from a PRA in tax year 2001. Unpublished tabulations from the Survey of Consumer Finances by the Investment Company Institute suggest somewhat higher rates of withdrawal -- approximately 82 percent -- for households over the age of 70.

Yet a third possible explanation for the low withdrawal rate is that survey respondents were confused by or misinterpreted the survey question.[3] They were asked if they "… receive[d] income from a draw on an IRA/Keogh/401k or Thrift Plan in this month?" Some respondents who withdrew funds from an IRA or 401(k) may simply have transferred the funds to a taxable account with the same financial

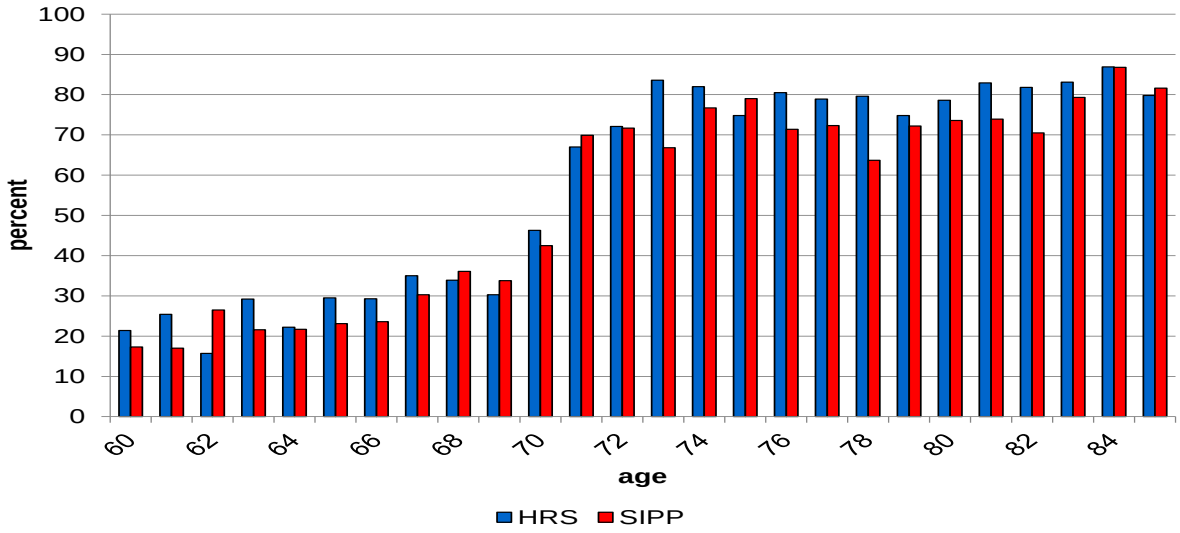
[3] Low withdrawal rates appear to be a problem with all household surveys. Sabelhaus and Schrass (2009) compare aggregate from the Current Population Survey, the Survey of Consumer Finance and the ICI Tracking/IRA Survey with IRA distributions reported to the Internal Revenue Service. They find that each of the household surveys substantially underestimates withdrawals.

institution, and they may not have considered this transaction one that gave them income from their PRA. Holden and Schrass (2010b) report that about 30 percent of households (of all ages) making an IRA withdrawal indicate that they "reinvested or saved it in another account." At some institutions, the transfer of funds in conjunction with RMD requirements may even be automatic; this may increase the likelihood of household misreporting.

A final explanation may be the misalignment of the SIPP “year” and the tax year. The SIPP provides withdrawal amounts in all months, but the PRA balance is only available at a point in time that can occur anytime in the calendar year. The SIPP, for example, might provide a PRA balance for September 2004 and we match this balance with withdrawals over the next 12 months. Thus the SIPP “year” of 2004 spans the tax years of 2004 and 2005. A person may withdraw their RMD for 2004 prior to September 2004 and may make their 2005 withdrawal after September 2005. In such a case the person has fully complied with IRS requirements, but our data will indicate no distribution in the twelve month period after we observe the PRA balance.

The low rate of PRA withdrawal observed in the SIPP, the ICI survey, and IRS data is also observed in the Health and Retirement Study (HRS). The HRS asks whether the respondent withdrew funds since the last interview wave, a period of approximately two years. Figure 3-3 compares the withdrawal rate in the 2010 HRS to the two-year (2009 and 2010) rate in the SIPP. The HRS only contains complete information on balances in IRA and Keogh plans, while the SIPP data include all 401(k) and 401(k)-like plans, thrift saving plans, IRAs and Keogh accounts. At retirement, many 401(k) balances are rolled over into an IRA and thus the IRA balances in the HRS may include assets that were originally accumulated in 401(k) accounts. In spite of the differences in the two data sources, the results in Figure 3-3 are quite similar to those from the SIPP. Both surveys suggest that a substantial group of households only begin to withdraw funds after age 70 ½, and both show that the overall withdrawal rate is well below 100 percent after that age.

Figure 3-3. Percent of households that made a withdrawal in 2009 or 2010 in the HRS and the SIPP



To describe the relationship between household attributes and the likelihood that a household makes a withdrawal, we use the SIPP data to estimate probit models using the same set of explanatory variables that we considered in our earlier data analysis. The results, which are reported in Table 3-1, show the marginal relationship between household attributes and the probability of making a withdrawal for households with a PRA. This table has three columns. The first shows estimates of the relationship between the withdrawal probability and age, with age specified as a piecewise linear function with three segments—60 to 69, 70 to 71, and 72 to 85. The estimation sample includes all households headed by someone between the ages of 60 and 85. The estimates in column 1 are used to estimate the relationship between age and the probability of withdrawal and the predictions based on these estimates are overlaid on the actual data on age-specific withdrawal rates in Figure 3-2; this is the "fitted" line in that figure.

The estimates show that the probability of withdrawal increases by 0.021 per year of age (with z-score of 12.99) for households younger than age 69, by 0.188 (z-score of 30.38) between ages of 69 and 71, and by 0.004 per year of age (z-score of 3.40) for households over the age of 71. The large estimate of the effect of passage through the age at which RMDs are first required suggests that many households postpone distributions until they reach age 70½.

The second column of Table 3-1 shows estimated age and cohort effects. The cohort effects are small and the age effects change very little when the cohort effects are added. This finding supports our use of pooled data from all cohorts in constructing Figure 3-2. The estimates in the third column add the additional household attributes used in earlier specifications as well as the PRA balance. The coefficients on these attributes provide information on the set of households that make withdrawals in the absence of RMDs, and can therefore indicate which households are most affected by RMD rules. Fewer than half of the household attributes are significantly related to the probability of withdrawal. For all age groups, persons with $10,000 or more in PRA balances are about 1.2 percent more likely to make a withdrawal. For those below age 69, retired households are 37.3 percent more likely to withdraw. Households with earned income in all age groups are less likely to withdraw assets from their PRAs. The probability of making a withdrawal declines between 3.8 and 5.8 percentage points for each $10,000 increase in earned income.

Finally, for households under the age of 69, single persons in very good or excellent health are 31 percent less likely to make a withdrawal than single persons in fair or poor health. The health effects for married men and women are not statistically significant. The estimates for the younger group are consistent with the hypothesis that PRA balances are drawn down in times when households encounter high medical expenses, but the estimates for those over age 72 do not offer support for this view. To further understand this pattern, one would need better information on the conditions that led to individuals or households classifying themselves as in poor health, and whether these conditions were associated with substantial out-of-pocket expenses. These findings, however, suggest that RMD rules are likely to disproportionately affect the behavior of households in good health, who appear to be less likely to make withdrawals in the absence of these rules.

Table 3-2 shows the predicted probability of a withdrawal using our “high percentile” and “low percentile” attributes as in the previous sections. The probit specifications in Table 3-1 include the PRA balance as a covariate. In Table 3-2, we hold the PRA balance constant at its sample mean for both the high- and low-percentile households. We include annuity income, as well as housing and non-housing wealth,

among the set of household attributes that we consider, but the estimated effects of these variables are typically insignificantly different from zero in our probit models. To highlight the effect of the PRA balance, Table 3-2 also includes two additional panels showing the relationship between the PRA balance and the withdrawal probability. These panels show averages for the bottom and top quintiles of the distribution of PRA assets. Thus the top panels of this table show the effect of household attributes on the probability of withdrawal, holding the PRA balance constant. The bottom panel adds the effect of the PRA balance on the probability of withdrawal, allowing it to vary in the same "percentile" fashion as the other household attributes.

The results in Table 3-2 suggest that households in both age intervals with PRA assets in the top quintile are more likely than households in the bottom quintle to make withdrawals. For both age groups and for retirees as well as non-retirees the difference in PRA assets between the top and bottom quintiles is striking. The average PRA balance is between $5,000 and $8,000 in the lowest quintile and over $300,000 in the top quintile. In addition, the top two panels show that, holding PRA assets constant, the difference between the withdrawal rates of households with low- and high-percentile attributes are related to age and, to a lesser extent, retirement status. For households in the younger age range who are not retired the estimated withdrawal probability for the 10^{th} percentile group is over four times as high as that for the 90^{th} percentile group (0.183 versus 0.040). For retired households in this age range the difference is also large but the rates are higher for both attribute groups—0.298 versus 0.164. That is, holding PRA assets constant, households who have very limited assets outside their PRA and who are in poor health are more likely than households with substantial non-PRA assets and good health to draw on PRA assets before the RMD age. For older households, however, the differences between the withdrawal rates of the low- and high-percentile group are much smaller. Not surprisingly, RMD rulres attenuate the effect of household attributes on withdrawal probabilities.

4. PRA Withdrawal Percentages

Given the concern that households will draw down their PRA balances before retirement, or early in their retirement years, we now consider the rate at which assets are withdrawn from these accounts by those who make withdrawals. This information complements the evidence in the last section, which suggested that many households with PRAs do not begin to make withdrawals from these accounts until they are required to do so, and that they are maintaining or growing their PRA balances through the early years of retirement.

Figure 4-1 shows the percent of total PRA balances withdrawn by age for all PRA account holders in our SIPP sample. This figure, like Figure 3-2, pools data on PRA balances that respondents were asked to provide in 1997, 1998, 1999, 2001, 2002, 2004, 2005, 2009, and 2010. We calculate the annual withdrawal rate for each household as the sum of all withdrawals during the twelve months following a month in which the balance is reported, divided by the reported balance. The percent of balances withdrawn is the ratio of average withdrawals to the average initial asset balance. It is equivalent to the sum of withdrawals made by all households divided by the sum of initial balances.

Before age 70, the overall rate of withdrawal averages about 1.9 percent per year. In most years, the average real rate of return earned on PRA balances would exceed this value, so the pool of PRA assets would grow even in the absence of new contributions. After age 70, the average withdrawal rate is 5.8 percent. In some historical periods, this rate would also fall below the average real return on assets held in PRAs. Over the period we examine, 1997 until 2010, even with the sharp decline in stock prices in 2001 and in 2008 and 2009, the arithmetic average return on a 50/50 portfolio of large company stocks and intermediate bonds was 7.04%. Thus our estimated withdrawal rates are consistent with the findings in Figure 1-1 of rising real PRA balances even after the age at which RMDs begin. These results suggest that withdrawal rates rise by about four percent when RMD rules take effect. Since our earlier results suggested that about 17 percent of PRA account holders were constrained by the RMD rules, reconciling these two results requires that the

households that are affected by the RMD rules have larger account balances than those who are not.

Figure 4-2 compares the annualized percent withdrawn based on SIPP data for 2009 and 2010 with that based on HRS data for the same period. Recall that the SIPP data include withdrawals from 401(k), 403(b), thrift plans, IRAs and Keoghs, but the HRS data only include withdrawals from IRAs and Keoghs. The HRS also asks about withdrawals over a two-year period, so to make the HRS and SIPP withdrawals consistent, we have divided the HRS percent withdrawn by two and compared it with the average of SIPP withdrawal rates in 2009 and 2010. The two series show a similar pattern, although the percent withdrawn in the HRS (1.9 percent) is slightly higher before age 70 than that in the SIPP (1.6 percent). After age 70, the average percent withdrawn in the HRS is slightly lower than in the SIPP, 4.0 versus 5.0. This figure suggests that the key conclusion from the two data sets for the 2009 to 2010 period is similar to that from the SIPP data for all years in Figure 4-1.

The data in Figures 4-1 and 4-2 describe aggregate withdrawal rates from the PRA system, but they do not indicate the withdrawal rate among households making a withdrawal. Particularly before age 70½, when a small fraction of households with

Figure 4-1. The percent of PRA balances withdrawn by age, SIPP data for 1997 to 2010

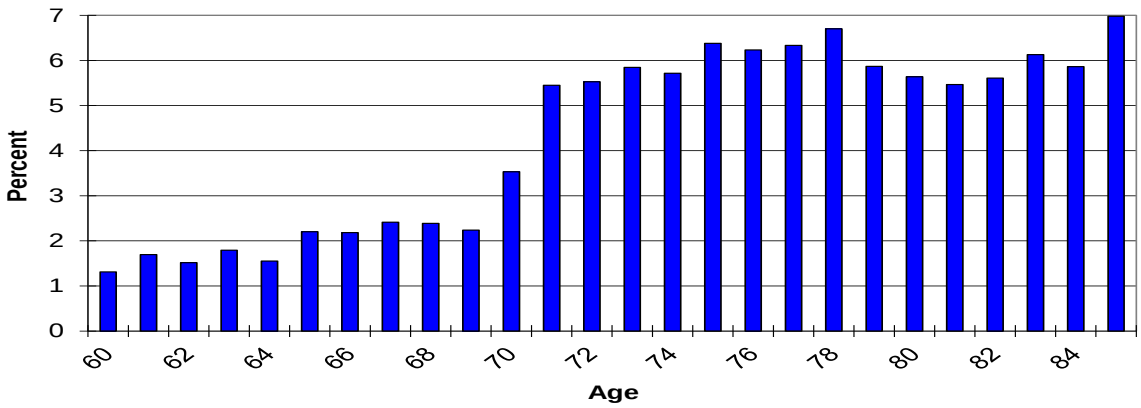
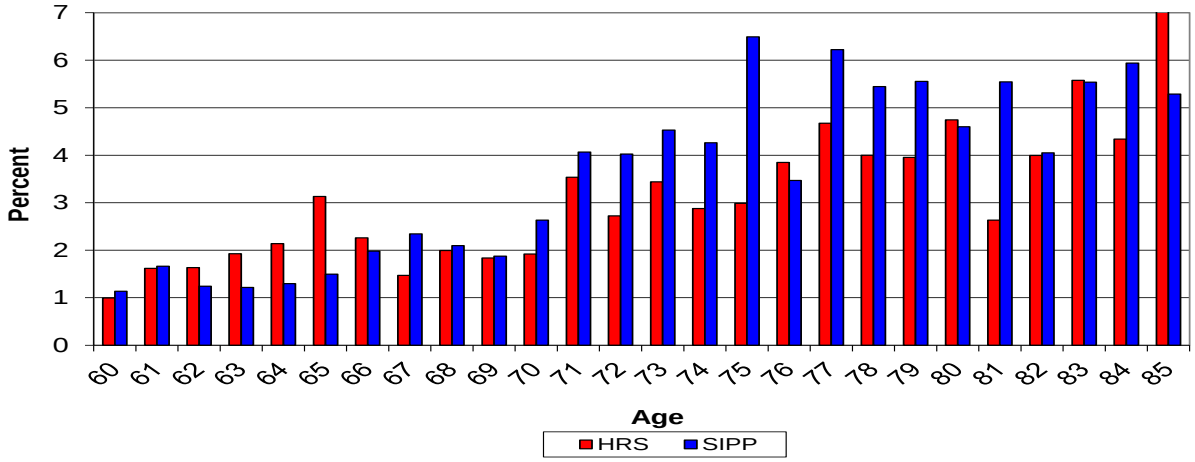


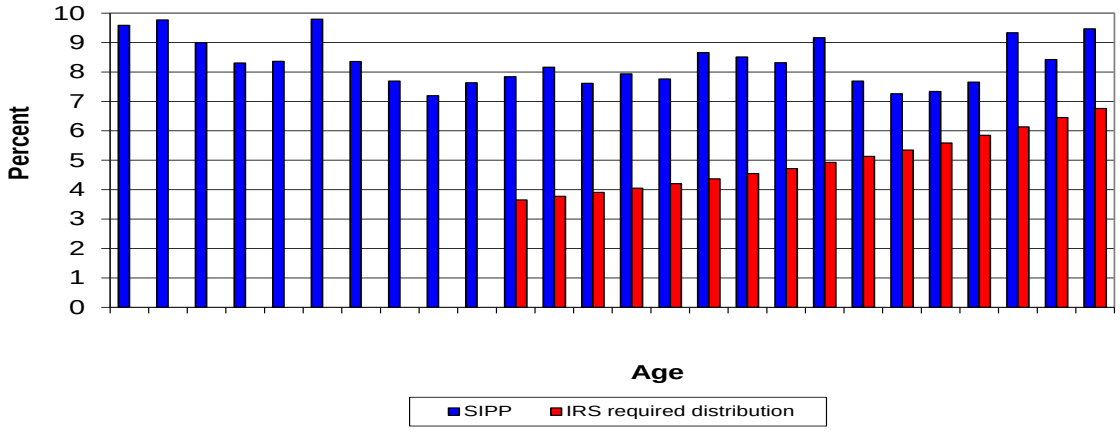
Figure 4-2. The percent of PRA balances withdrawn annually, HRS and SIPP, 2009 & 2010



PRAs are making withdrawals, these two rates can differ substantially. Figure 4-3 shows the average percentage of the PRA balance withdrawn for households making a withdrawal, calculated as the ratio of the average amount withdrawn to the average initial balance for the set of households making withdrawals. The average withdrawal conditional on a withdrawal averages 8.6 percent of the account balance for ages 60 to 69, 8.2 percent for ages 70 to 79 and 8.2 percent for ages 80 to 85.

RMD amounts are calculated by dividing the account balance by an applicable distribution period taken from the Uniform Lifetime Table published by the IRS. For example, for an unmarried person age 72 or for a married person age 72 whose spouse is not more than 10 years younger, the distribution period was 25.6 years in 2006. Thus the required minimum distribution is 1/25.6 = 3.9 percent of the PRA balance at the end of the previous year. By age 80 the required minimum distribution is 5.3 percent and at age 90 it is 8.8 percent. These RMD rates are shown in Figure 4-3. The data suggest that for households that make withdrawals, the average withdrawal after age 70 ½ exceeds the required RMD percentage

Figure 4-3. Percent of PRA assets withdrawn for households who make a withdrawal (1997-2010) and the IRS required distribution (in 2006), by age



Our analysis suggests a more positive trajectory for PRA balances than the HRS analysis by Love and Smith (2007), who found that 57 percent of households between the ages of 60 and 69 who had defined contribution pension account in 1998 reported a decline in the value of that account between 1998 and 2004. The disparity between our findings and theirs may be due to HRS data issues rather than substantive differences in behavior, or it could be a feature of the specific time period they study. Many households in the age range being studied transitioned from employment to retirement between 1998 and 2004. Venti (2011) reports that the HRS data on 401(k) balances held with former employers are incomplete in this period. If some of these balances are not included in the calculation, the PRA balance trajectory estimated from HRS data would be biased downward relative to one estimated from SIPP data.

We now consider the relationship between household attributes and the percent of the PRA balance withdrawn, conditional on a withdrawal. We investigate these relationships to shed light on the possibility that modest rates of PRA withdrawal for the population at large conceal much higher rates for some households. We model this relationship as:

(2) $$W_i = \left(Z_i \delta\right) B_i^{1+\sum \beta AGEcategory} + \eta_i$$

where W_i represents assets withdrawn and B_i the household's pre-withdrawal PRA balance. This specification allows the fraction of assets withdrawn, W_i/B_i, to vary with

B_i and to be proportional to a linear function of household attributes, $Z_i\delta$. It also allows the elasticity of the withdrawal rate with respect to B_i to vary by age. We consider four age categories: 60 to 69, 70 to 71, 72 to 75, and 76 to 85. We estimate (2) by NLLS. We estimate (2) rather than the corresponding linear specification in the logarithm of the withdrawal rate, $\ln(W_i / B_i)$, because the fit of (2) was better than that of the log-linear model.

Table 4-1 reports estimates of equation (2). The first column shows results with only age and cohort indicator variables as explanatory variables in the set of Z_i variables, and with age categories in the exponential term for B_i. The estimates in the second column expand the specification to include all of the other explanatory variables analyzed in previous sections as part of Z_i. The results in the first column indicate that at a given age, households in older cohorts withdraw a larger proportion of their PRA balances conditional on making a withdrawal. The results in the second column indicate that some of the other household attributes have statistically significant effects on the proportion of PRA balances withdrawn. Earned income and annuity income are negatively related to the proportion withdrawn, but only three of the six estimated effects are statistically significant. Housing and non-housing wealth are positively related to the withdrawal proportion in all age intervals but only the housing wealth effects are statistically significant. Being retired is associated with higher withdrawal rates for the two younger age groups, but marital status and most of the health status indicators do not have statistically significant effects on the proportion of the PRA withdrawn. The elasticity of the withdrawal (W) with respect to the PRA balance (B_i) is 0.40 in the 60 to 69 age range, 1.096 in the 70 to 71 range, 1.092 in the 72 to 75 range, and 1.103 in the 76 to 85 age range.

Table 4-2 reports the fitted value of the proportion of assets withdrawn (W/B) for households with selected attributes. The format is the same as that in Table 3-2, with the top panel showing the percent withdrawn for sets of household attributes conditional on an average account balance and the bottom panel showing the percent withdrawn for the top and bottom quintiles of the distribution of PRA assets. The table shows two estimates of the predicted proportion of assets withdrawn: the mean of the ratio of withdrawals (W) to balances (B), and the ratio of the mean predicted withdrawal

to the mean (actual) balance. For households in the younger age group, whether retired or not, the proportion withdrawn is slightly greater for those with high-percentile attributes. For the older age group the proportion withdrawn is considerably higher than for those with low-quintile attributes. This disparity may be due to reporting rather than behavioral differences. It is possible that households with higher income and larger holdings of assets outside their PRAs are more aware of their PRA withdrawal activity, and consequently report this activity with higher probability.

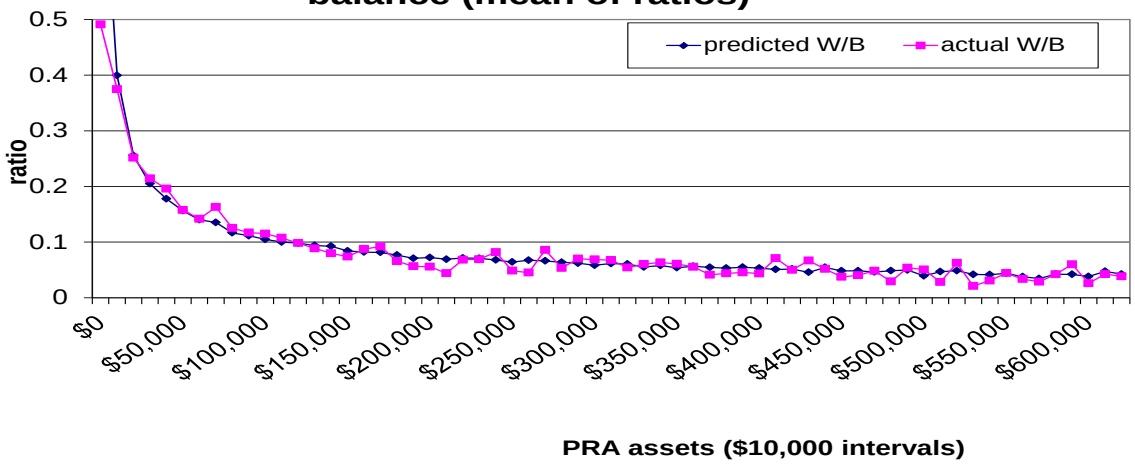
The results in the bottom panel suggest that the PRA balance is a key determinant of the proportion of assets withdrawn. For households in the 60 to 69 age range the predicted proportion of assets withdrawn for those in the bottom quintile is about 32 percent, compared to about 5 to 6 percent for those in the top quintile. For households in the older age range, the predicted proportion of assets withdrawn ranges from 19 to 23 percent in the bottom quintile, to less than 6 percent in the top quintile.

The results in Table 4-1 suggest that age is an important determinant of the percentage of the PRA balance withdrawn, and that the PRA balance itself is also an important influence on withdrawals. We explore the interaction of these two effects in two figures. Figure 4-4 shows the average predicted and actual values of W/B for each $10,000 interval of the distribution of PRA assets. The figure suggests two conclusions. First, the model fits the data on withdrawals reasonably well. Second, the withdrawal proportion increases very rapidly as PRA assets decline below $50,000—going from an average of about six percent when the PRA balance is $250,000 or greater, to about ten percent at a PRA balance of $100,000, to over twenty-five percent at a PRA balance below $20,000. This pattern is consistent with households tending to avoid very small withdrawals, and with withdrawals of any given size being a larger fraction of the account balance for smaller- than for larger-balance accounts.

Figure 4-5 shows the relationship between the PRA balance and the predicted withdrawal proportion for the 60 to 69 and the “72 and older” age groups. For households with PRA assets over $200,000, the percentage of assets withdrawn does not vary much with age for either age group. At lower PRA levels, however, there is a large difference as can be seen by the vertical distance between the two profiles at low balances. For example, on average, households aged 60 to 69 with PRA balances

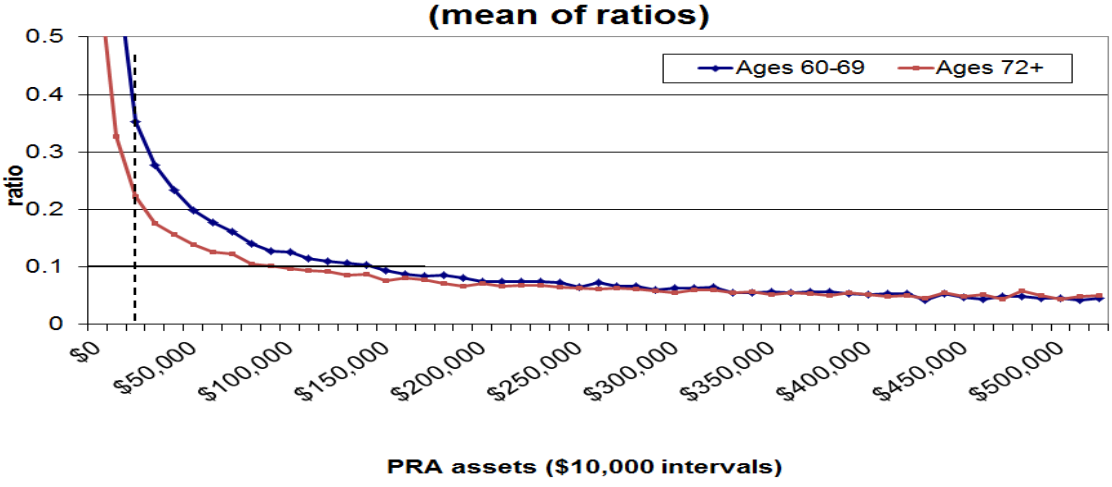
between $20,000 and $30,000 withdraw about 35 percent of their balance each year. Households with the same level of PRA assets in the 72 and older age group average withdrawals equal to only 22 percent of their balances. Households in the 60 to 69 age group are not predicted to withdraw less than 10 percent of their assets until they have assets of $140,000 or more.

Figure 4-4. Predicted and actual ratio of withdrawals (W) to PRA balance (B) by PRA balance (mean of ratios)



Universe: households making a withdrawal, ages 60 to 85

Figure 4-5. Predicted ratio of withdrawals to PRA balance by level of PRA assets, ages 60-69 and 72+ (mean of ratios)



Universe: households making a withdrawal, ages 60 to 85

5. Household Heterogeneity: The Distribution of Withdrawal Rates

Our analysis so far has described how various factors affect the probability that a household withdraws assets from a PRA, but has not characterized the heterogeneity in household withdrawal rates, each of which is the product of the probability of a withdrawal conditional on PRA ownership and proportion of the PRA that is withdrawn, conditional on a withdrawal. These two proportions together determine the distribution of the proportion of PRA balances withdrawn – a distribution with many entries at zero for younger households.

Figure 5-1. Percent making a withdrawal, percent of balance withdraw given withdraw, and percent withdrawn for all PRA owners

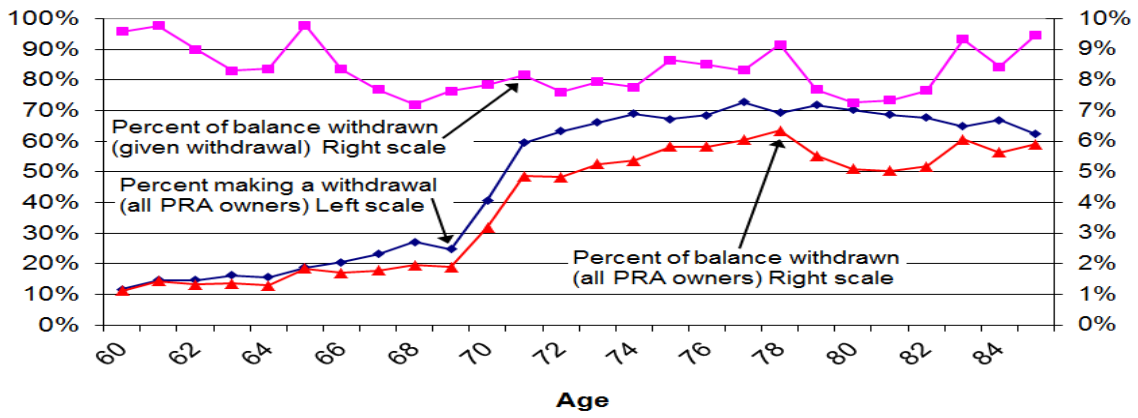


Figure 5-1 pools data on households of various ages in all cohorts to summarize the average patterns of withdrawals at different ages. It shows that the average percentage of households who own a PRA who make a withdrawal increases from 11.4 percent at age 60 to 24.8 percent by age 69. This percentage jumps to over 60 percent by age 71, when the age of the household head exceeds the age at which RMDs must begin. The percentage of assets withdrawn by households that make a withdrawal is about 9.6 percent at age 60. It declines to between seven and eight percent between ages 68 and 75, and it becomes somewhat more variable after that age, falling below eight percent at many ages in the late 70s and early 80s. It varies less by age than the other summary measures shown in Figure 5-1. The average percentage of all PRA

assets withdrawn, which is the product of the two foregoing series, is about 1.1 percent at age 60. It rises to about 1.9 percent by age 69, then jumps to about five percent by age 71 and fluctuates between 5 and 6 percent through age 85.

Figures 5-2 and 5-3 describe the heterogeneity in withdrawal percentages for households with heads between the ages of 60 to 69, and over the age of 72, respectively. Both figures show the distribution of households by the percentage of their PRA balance withdrawn. For households aged 60 to 69,withdrawals of a large proportion of the PRA balance are rare. It is important to note that the vertical scale in the two figures is different, reflecting the large disparity in the fraction of PRA-holding households that make no withdrawals in the two age groups. The vertical lines in Figure 5-2 indicate that about 82 percent of households make no withdrawals, and that 89 percent of households make an annual withdrawal of less than five percent from their PRA. Only eight percent of households withdraw more than ten percent of their PRA assets. Figure 5-2 shows that there is a small but identifiable group of households that make withdrawals equal to their account balance -- essentially closing their PRA.

Figure 5-3 shows that for households older than 71, after RMDs begin for the household head, most withdrawals are still modest. The percentage of households making large withdrawals from their PRAs is substantially greater for this group than for the younger group. The vertical lines in Figure 5-3 indicate that 59 percent of households withdraw less than five percent of their PRA balances and 76 percent withdraw less than 10 percent. Note that 32 percent of households in this age group report no withdrawals. Nearly a quarter of the households in this older group, however, withdraw more than ten percent of their PRA, and 14 percent withdraw more than 20 percent. Our results from the previous section suggest that the households withdrawing large fractions of their PRA balances tend to have low balances. Some households may withdraw a large proportion of PRA assets because of special circumstances, such as an illness or entry into a nursing home. Understanding the correlates of large withdrawals is an important topic for future study, in part because it is the complement of this group that is most affected by RMD rules at older ages.

Figure 5-2. Distribution of percent of PRA balances withdrawn in a year, all households age 60 to 69 with a PRA account

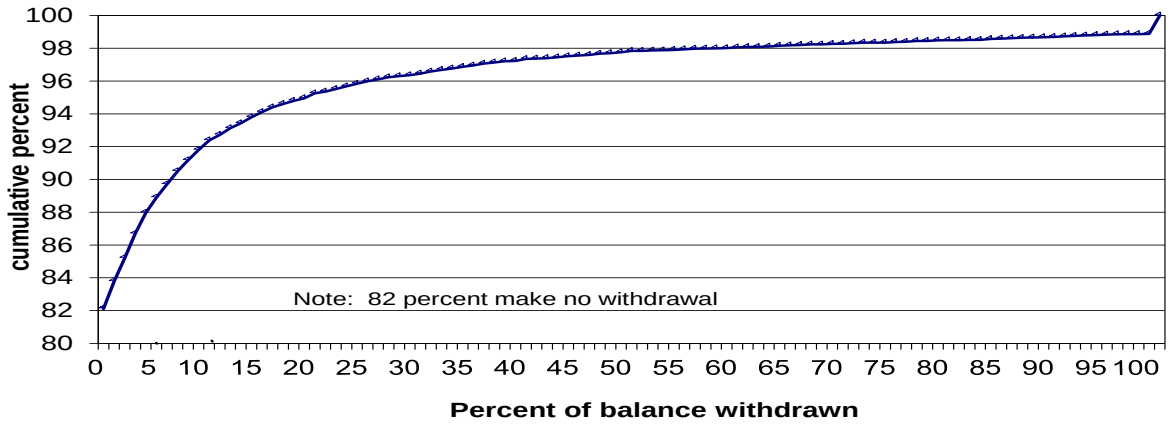
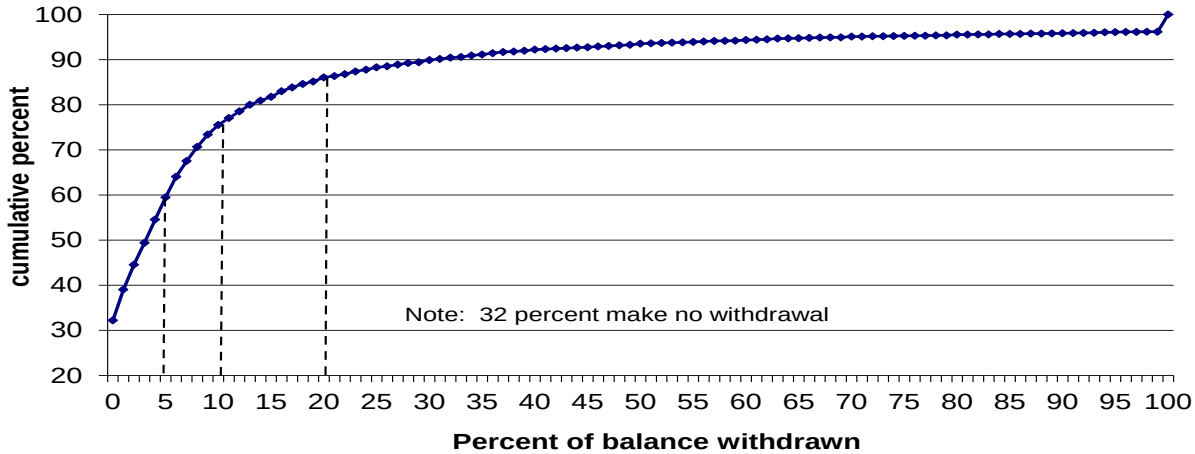


Figure 5-3. Distribution of percent of PRA balances withdrawn, all households age 72 to 85 with a PRA account



6. Conclusions and Future Directions

Assets in personal retirement accounts (PRAs) are a large and growing component of household financial wealth, accounting for nearly one-quarter of non-annuity wealth and almost forty percent of wealth excluding annuities and housing in 2010. While much of the past research on these accounts has focused on the accumulation of PRA balances, understanding withdrawal patterns is important for

analyzing proposals to encourage full or partial annuitization of PRA balances, as well as for estimating the effects of changes in required minimum distribution (RMD) rules.

We use data from the SIPP and HRS to investigate the actual pattern of withdrawals from PRAs. There are important differences across households, and we are able to identify a number of socio-demographic variables that help predict such differences. Our central finding is that relatively few households draw down their PRA balance completely at the start of retirement, especially when the account is substantial. Most households appear to conserve their PRA assets. Our findings do not support the concern that households with PRAs will deplete these assets in their first few years of retirement. The low rate of withdrawals from PRAs during our sample period, 1997-2010, combined with investment returns to PRA assets and contributions by some still-employed PRA-owning households, generate an upward-sloping pattern of average PRA balances by age. In our sample, average PRA balances continue to grow through at least age 85, although the rate of growth is slower at older than at younger ages.

The rate of PRA withdrawal rises sharply at age 70½, when RMDs begin, suggesting that many households in their early 70s would not make withdrawals if it were not for the RMD rules. We conclude that changes in the age at which RMDs are required could have substantial effects on withdrawal patterns and on the tax revenue collected from such withdrawals. A one year postponement of the RMD age could reduce the share of PRA balances withdrawn by those in their early 70s by roughly four percentage points.

While average withdrawal rates are low, there is substantial heterogeneity across households, and some withdraw a significant proportion of, or all, PRA assets before the RMD age. Among households headed by someone between the ages of 60 and 69, about 89 (93) percent of PRA owners make an annual withdrawal of less than five (ten) percent of their PRA assets. At ages 72 and older, after RMDs take effect, 59 (76) percent of households withdraw five (ten) percent or less of their PRA balance. Reflecting the heterogeneity in behavior, however, fifteen percent of those over 72 withdraw more than twenty percent of their balance. Among households approaching retirement, whether a withdrawal is made varies greatly with the PRA balance;

households with higher balances are more likely to make a withdrawal. Among those who make a withdrawal, the PRA balance is the most important determinant of the proportion of assets withdrawn. These findings suggest that RMD rules are likely to affect different households differently. Those with large PRA balances are less likely to be constrained to make some distribution, but they may be required to withdraw more than they would otherwise would have.

We note three important limitations of our current analysis. First, we cannot say anything about whether withdrawals from PRAs are transferred, after payment of taxes, to taxable investment accounts, or whether these withdrawals are consumed. While we know that assets in PRAs have not been consumed, it is difficult to infer from PRA balances alone whether a household is building or drawing down wealth. For this reason, we do not try to assess how the draw-down patterns we observe affect late-life financial security. We note that some recent work, notably Shoven and Slavov (2012), has suggested that households might benefit from drawing down their PRA and non-PRA wealth in their sixties so that they can defer claiming Social Security. Integrating the analysis of PRA withdrawals with a broader investigation of household wealth at older ages, along the lines of French, Doctor, and Baker (2007), Hurd (2002), Hurd and Rohwedder (2010), Love, Palumbo and Smith (2008), Poterba, Venti, and Wise (2011b), and many others, is a key research priority.

We view investigation of whether PRA balances are viewed as a source of precautionary savings as particularly important, because this could affect the analysis of proposals for partial annuitization of PRAs. If households are concerned about late-life expenditure risks, they may choose not to annuitize all or even most of their financial wealth at retirement. Yaari (1965) famously shows that households that face only longevity risk should fully annuitize, and Davidoff, Brown, and Diamond (2005) show that partial annuitization is attractive in a wider class of environments. In the presence of large uninsured late-life expenses, such as those documented in Marshall, McGarry, and Skinner (2011), however, Inkmann, Lopes, and Michaelides (2011) find that in a calibrated stochastic lifecycle model, annuity demand depends on risks that households are attempting to insure against and the availability of public and private insurance arrangements. Davidoff (2010) suggests that one reason households may

conserve housing equity is to preserve flexibility to fund potentially large health expenses. A similar argument may apply to PRAs.

Second, our analysis excludes individuals who die between waves of the SIPP. Whether death-induced withdrawals should be aggregated with other withdrawals from PRAs depends on the purpose for which one is calculating the withdrawal rate. If the goal is to understand how PRAs are serving the retirement income needs of long-lived households, it seems appropriate to exclude those who die at an early age from the analysis. On the other hand, if the goal is to understand how long assets are held in the PRA system, which might be relevant for some types of tax analysis, then it is more important to recognize that death can be an important factor in generating withdrawals from the retirement saving system. Some withdrawals just before death may be motivated by poor health and associated medical costs - one of the expenditure risks that PRAs may be conserved to insure against.

Finally, the expansion of the PRA system over the last three decades may have shifted the composition of households who save through these accounts. If the first firms to adopt 401(k)s in the 1980s used these plans as supplementary to their defined benefit plans, but if later adopters have used 401(k)s as their primary retirement plans, then the characteristics of households reaching retirement in the last decade with substantial PRA balances may differ from the characteristics of those who will retire with substantial PRA balances in future decades. The type of descriptive analysis that we present in this study is essential for characterizing the changing composition of the PRA-participant population. Analyzing how changing characteristics may affect future PRA withdrawal behavior, and retirement security more generally, is a greater challenge.

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Table 1-1. Summary data by age interval and year, from SIPP (in 2010 dollars)

Year	Age interval				
	50-59	60-69	70-79	80+	all
		Number of Observations			
1997	4,814	3,505	3,326	1,802	13,447
1998	4,615	3,344	3,202	1,195	12,356
1999	4,784	3,308	3,208	1,187	12,487
2001	4,560	3,053	2,579	1,140	11,332
2002	4,575	3,115	2,538	1,063	11,291
2004	6,805	4,615	3,493	2,467	17,380
2005	3,161	2,115	1,623	800	7,699
2009	6,540	5,207	3,203	2,175	17,125
2010	6,144	5,110	3,184	1,433	15,871
all	45,998	33,372	26,356	13,262	118,988
		Percent with positive PRA balance			
1997	43.8	38.9	24.4	6.8	32.9
1998	45.5	40.6	26.9	10.8	36.3
1999	46.8	40.4	28.8	13.5	37.6
2001	49.3	41.3	30.6	17.3	39.9
2002	50.6	44.7	31.3	19.5	42.0
2004	57.2	50.3	38.8	19.4	46.6
2005	56.6	52.1	36.8	24.0	48.1
2009	55.9	52.1	39.4	29.2	48.5
2010	55.0	53.1	40.7	34.3	50.0
all	51.5	46.3	32.8	19.6	42.7
		Mean PRA balance			
1997	$34,644	$35,326	$17,885	$3,834	$26,642
1998	$40,942	$39,190	$21,214	$6,866	$32,344
1999	$49,500	$46,854	$27,539	$11,371	$39,944
2001	$52,339	$47,609	$27,080	$13,924	$41,747
2002	$45,304	$51,443	$30,012	$15,170	$40,965
2004	$61,119	$62,790	$43,746	$18,075	$52,125
2005	$64,084	$71,503	$43,936	$22,389	$57,869
2009	$62,573	$68,494	$53,007	$27,280	$58,253
2010	$64,397	$77,090	$60,337	$38,380	$65,502
all	$53,382	$56,565	$35,483	$17,656	$46,651
		Number of observations (households with a PRA)			
1997	2,034	1,282	752	116	4,184
1998	2,049	1,282	799	120	4,250
1999	2,205	1,259	864	147	4,475
2001	2,203	1,197	743	188	4,331
2002	2,238	1,317	741	201	4,497
2004	3,849	2,242	1,281	473	7,845
2005	1,754	1,035	565	191	3,545
2009	3,617	2,647	1,219	624	8,107
2010	3,296	2,621	1,241	463	7,621
all	23,245	14,882	8,205	2,523	48,855
		Mean PRA balance (households with a PRA)			
1997	$79,045	$90,904	$73,323	$55,984	$81,078
1998	$89,917	$96,480	$78,753	$63,613	$89,151
1999	$105,750	$116,097	$95,608	$84,472	$106,165
2001	$106,066	$115,354	$88,640	$80,663	$104,645
2002	$89,550	$115,085	$95,825	$77,707	$97,553
2004	$106,765	$124,717	$112,675	$93,020	$111,972
2005	$113,250	$137,308	$119,432	$93,388	$120,253
2009	$112,001	$131,369	$134,568	$93,271	$120,067
2010	$117,107	$145,254	$148,317	$111,997	$131,111
all	$103,683	$122,151	$108,224	$90,133	$109,370

Table 1-2 Estimated probability of having a PRA account, probit marginal effects, households age 50 to 85

Variable	(1) Coef	(1) Z-score	(2) Coef	(2) Z-score
spline in age				
Age ?63	**0.008**	**12.32**	**0.014**	**18.07**
Age>63	**-0.002**	**-4.26**	**-0.003**	**-4.51**
cohort effects				
Age 42 in 1997	-0.009	-0.79	**-0.030**	**-2.56**
Age 45 in 1997	-0.017	-1.74	**-0.063**	**-5.86**
Age 48 in 1997	**-0.044**	**-4.51**	**-0.100**	**-9.44**
Age 51 in 1997	**-0.075**	**-7.78**	**-0.150**	**-14.25**
Age 54 in 1997	**-0.104**	**-9.91**	**-0.181**	**-15.75**
Age 57 in 1997	**-0.152**	**-13.55**	**-0.233**	**-19.08**
Age 60 in 1997	**-0.184**	**-15.47**	**-0.252**	**-19.63**
Age 63 in 1997	**-0.232**	**-18.72**	**-0.289**	**-21.56**
Age 66 in 1997	**-0.245**	**-18.92**	**-0.273**	**-19.21**
Age 69 in 1997	**-0.266**	**-19.83**	**-0.270**	**-18.63**
Age 72 in 1997	**-0.306**	**-21.44**	**-0.286**	**-18.60**
Age 75 in 1997	**-0.375**	**-24.43**	**-0.347**	**-20.80**
Age 78 in 1997	**-0.472**	**-28.37**	**-0.415**	**-22.90**
Age 81 in 1997	**-0.558**	**-27.76**	**-0.506**	**-23.05**
Age 84 in 1997	**-0.754**	**-26.80**	**-0.668**	**-21.27**
self-reported retirement status				
retired if age?63			**0.042**	**5.80**
retired if age>63			**-0.081**	**-10.01**
marital status				
Single male if age ?63			**-0.060**	**-8.47**
Single male if age>63			-0.013	-1.61
Married if age ?63			**0.056**	**5.64**
Married if age>63			**0.095**	**10.16**
income				
Earned income if age ?63			**0.034**	**22.60**
Earned income if age>63			**0.023**	**12.23**
Annuity income if age ?63			**0.013**	**5.92**
Annuity income if age>63			**0.055**	**30.53**
wealth (in 10,000's)				
Housing wealth if age ?63			**0.004**	**17.79**
Housing wealth if age>63			**0.005**	**27.83**
Nonhousing wealth if age ?63			**0.001**	**5.20**
Nonhousing wealth if age>63			**0.000**	**2.44**

Variable	(1) Coef	(1) Z-score	(2) Coef	(2) Z-score
health status - single persons				
VG or excellent if age ?63			**0.129**	**16.89**
VG or excellent if age>63			**0.078**	**10.13**
Fair or poor if age ?63			**-0.213**	**-22.43**
Fair of poor if age>63			**-0.179**	**-20.60**
health status - married male				
VG or excellent if age ?63			**0.019**	**2.38**
VG or excellent if age>63			**0.034**	**3.84**
Fair or poor if age ?63			**-0.099**	**-9.84**
Fair of poor if age>63			**-0.077**	**-8.35**
health status - married female				
VG or excellent if age ?63			**0.064**	**8.29**
VG or excellent if age>63			**0.072**	**8.37**
Fair or poor if age ?63			**-0.051**	**-5.01**
Fair of poor if age>63			**-0.084**	**-8.79**
Intercept	**-0.348**	**-10.58**	**-0.931**	**-21.45**
number of observations	118,988		118,988	
Wald chi2(2)	6,273		16,419	
Prob > chi2	0.0000		0.0000	
Pseudo R2	0.0492		0.2060	

Table 2-1 Non-linear least squares estimates of PRA balance for households with a PRA account, households age 50 to 85

Variable	(1) Coef	(1) z-score	(2) Coef	(2) z-score
spline in age				
Age?69	**0.039**	**21.35**	**0.037**	**17.12**
69<age?71	0.015	1.07	0.045	1.27
Age>71	**0.011**	**2.89**	**0.012**	**2.56**
cohort effects				
Age 42 in 1997	-0.057	-1.47	**-0.090**	**-2.22**
Age 45 in 1997	-0.063	-1.78	**-0.117**	**-3.33**
Age 48 in 1997	**-0.111**	**-3.21**	**-0.205**	**-5.91**
Age 51 in 1997	**-0.187**	**-5.38**	**-0.325**	**-9.16**
Age 54 in 1997	**-0.241**	**-6.42**	**-0.390**	**-9.85**
Age 57 in 1997	**-0.292**	**-7.25**	**-0.444**	**-10.39**
Age 60 in 1997	**-0.384**	**-8.98**	**-0.517**	**-11.37**
Age 63 in 1997	**-0.505**	**-11.04**	**-0.633**	**-13.09**
Age 66 in 1997	**-0.656**	**-13.51**	**-0.736**	**-14.56**
Age 69 in 1997	**-0.809**	**-15.89**	**-0.832**	**-15.59**
Age 72 in 1997	**-0.925**	**-16.67**	**-0.944**	**-15.72**
Age 75 in 1997	**-1.066**	**-16.58**	**-1.054**	**-15.05**
Age 78 in 1997	**-1.200**	**-15.86**	**-1.200**	**-14.54**
Age 81 in 1997	**-1.286**	**-12.23**	**-1.323**	**-11.60**
Age 84 in 1997	**-1.151**	**-5.56**	**-1.098**	**-4.92**
self-reported retirement status				
retired if age?69			0.032	1.32
retired if 69<age<72			0.030	0.37
retired if age?72			-0.040	-0.61
marital status				
Single male if age?69			**0.339**	**12.74**
Single male if 69<age<72			**0.223**	**2.39**
Single male if age?72			**0.322**	**5.98**
Married if age?69			**0.532**	**15.67**
Married if 69<age<72			**0.484**	**4.74**
Married if age?72			**0.483**	**7.80**
income sources (in 10,000s)				
Earned income if age?69			**0.019**	**18.72**
Earned income if 69<age<72			0.008	1.40
Earned income if age?72			0.007	1.60
Annuity income if age?69			**0.044**	**9.58**
Annuity income if 69<age<72			**0.062**	**5.86**
Annuity income if age?72			**0.045**	**6.56**
wealth (in 10,000's)				
Housing wealth if age?69			**0.009**	**21.93**
Housing wealth if 69<age<72			**0.010**	**8.14**
Housing wealth if age?72			**0.009**	**10.58**
Nonhousing wealth if age?69			**0.000**	**2.87**
Nonhousing wealth if 69<age<72			**0.001**	**5.24**
Nonhousing wealth if age?72			**0.000**	**4.25**
health status - single persons				
VG or excellent if age?69			**0.233**	**7.80**
VG or excellent if 69<age<72			0.167	1.87
VG or excellent if age?72			**0.272**	**4.72**
Fair or poor if age?69			**-0.157**	**-3.15**
Fair or poor if 69<age<72			-0.237	-1.59
Fair or poor if age?72			0.137	1.86
health status - married male				
VG or excellent if age?69			**0.121**	**6.18**
VG or excellent if 69<age<72			-0.133	-1.65
VG or excellent if age?72			0.034	0.80
Fair or poor if age?69			**-0.193**	**-5.48**
Fair or poor if 69<age<72			-0.155	-1.46
Fair or poor if age?72			0.010	0.19
health status - married female				
VG or excellent if age?69			**0.134**	**6.81**
VG or excellent if 69<age<72			0.154	1.86
VG or excellent if age?72			**0.195**	**4.62**
Fair or poor if age?69			-0.042	-1.21
Fair or poor if 69<age<72			-0.182	-1.45
Fair or poor if age?72			0.080	1.41
Alpha	**1.424**	**10.29**	**0.690**	**8.30**
number of observations	48,855		48,855	
RMSE	13.513		12.480	

Table 3-1 Estimated probability of making a withdrawal, probit marginal effects, households age 60 to 85

Variable	(1) Coef	(1) Z-score	(2) Coef	(2) Z-score	(3) Coef	(3) Z-score
spline in age						
Age?69	**0.021**	**12.99**	**0.019**	**9.79**	**0.018**	**3.07**
69<age?71	**0.188**	**30.38**	**0.179**	**27.39**	**0.530**	**14.05**
Age>71	**0.004**	**3.40**	-0.001	-0.94	**-0.019**	**-4.14**
cohort effects						
Age 51 in 1997			-0.039	-1.84	-0.102	-1.70
Age 54 in 1997			0.000	0.02	-0.010	-0.18
Age 57 in 1997			-0.009	-0.47	-0.026	-0.45
Age 60 in 1997			-0.004	-0.21	-0.065	-1.16
Age 63 in 1997			0.005	0.25	-0.015	-0.26
Age 66 in 1997			0.029	1.29	0.054	0.87
Age 69 in 1997			0.037	1.59	0.117	1.80
Age 72 in 1997			**0.083**	**3.44**	**0.248**	**3.63**
Age 75 in 1997			**0.119**	**4.44**	**0.378**	**4.99**
Age 78 in 1997			**0.096**	**3.19**	**0.355**	**4.23**
Age 81 in 1997			**0.131**	**3.30**	**0.479**	**4.36**
Age 84 in 1997			0.114	1.63	**0.456**	**2.36**
self-reported retirement status						
retired if age?69					**0.373**	**10.22**
retired if 69<age<72					0.128	1.48
retired if age?72					**0.161**	**2.53**
PRA balance (in 10,000's)						
PRA balance if age?69					**0.012**	**13.14**
PRA balance if 69<age<72					**0.012**	**4.87**
PRA balance if age?72					**0.013**	**9.43**
marital status						
Single male if age?69					0.023	0.46
Single male if 69<age<72					0.167	1.58
Single male if age?72					-0.059	-1.11
Married if age?69					-0.034	-0.62
Married if 69<age<72					**-0.266**	**-2.39**
Married if age?72					-0.100	-1.77
income sources (in 10,000s)						
Earned income if age?69					**-0.038**	**-7.48**
Earned income if 69<age<72					**-0.058**	**-4.31**
Earned income if age?72					**-0.041**	**-5.41**
Annuity income if age?69					0.000	0.05
Annuity income if 69<age<72					-0.002	-0.15
Annuity income if age?72					**0.030**	**3.56**
wealth (in 10,000's)						
Housing wealth if age?69					**-0.003**	**-3.20**
Housing wealth if 69<age<72					0.002	1.27
Housing wealth if age?72					0.001	0.98
Nonhousing wealth if age?69					**-0.001**	**-2.14**
Nonhousing wealth if 69<age<72					0.000	-0.26
Nonhousing wealth if age?72					0.000	0.41

Variable	(1) Coef	(1) Z-score	(2) Coef	(2) Z-score	(3) Coef	(3) Z-score
health status - single persons						
VG or excellent if age?69					**-0.125**	**-2.50**
VG or excellent if 69<age<72					-0.067	-0.68
VG or excellent if age?72					0.015	0.29
Fair or poor if age?69					**0.185**	**2.62**
Fair or poor if 69<age<72					-0.018	-0.13
Fair or poor if age?72					-0.043	-0.64
health status - married male						
VG or excellent if age?69					0.012	0.33
VG or excellent if 69<age<72					**0.228**	**2.67**
VG or excellent if age?72					-0.019	-0.41
Fair or poor if age?69					-0.023	-0.43
Fair or poor if 69<age<72					0.089	0.80
Fair or poor if age?72					**-0.110**	**-2.17**
health status - married female						
VG or excellent if age?69					-0.070	-1.86
VG or excellent if 69<age<72					0.007	0.08
VG or excellent if age?72					0.016	0.35
Fair or poor if age?69					-0.017	-0.31
Fair or poor if 69<age<72					-0.045	-0.37
Fair or poor if age?72					-0.027	-0.49
Intercept	**-1.693**	**-16.18**	**-1.546**	**-13.12**	**-2.177**	**-6.07**
number of observations	25610		25610		25610	
Wald chi2(2)	5260.4		5305.9		5604.8	
Prob > chi2	0		0		0	
Pseudo R2	0.1871		0.189		0.221	

Table 3-2. Estimated probability of making a withdrawal, for selected attributes.

Attributes and predicted probability	Age 60-69	60-69	72-85	72-85
		Not retired		
Marital status	Single Male.	Married	Single Male	Married
PRA balance	mean	mean	mean	mean
Earned income	10th pctile	90th pctile	10th pctile	90th pctile
Annuity income	0	0	0	0
Housing wealth	10th pctile	90th pctile	10th pctile	90th pctile
Nonhousing wealth	10th pctile	90th pctile	10th pctile	90th pctile
Health	Fair-Poor	Ex-VG	Fair-Poor	Ex-VG
Probability	**0.183**	**0.040**	**0.535**	**0.523**
		Retired		
Marital status	Single Male	Married	Single Male	Married
PRA balance	mean	mean	mean	mean
Earned income	0	0	0	0
Annuity income	10th pctile	90th pctile	10th pctile	90th pctile
Housing wealth	10th pctile	90th pctile	10th pctile	90th pctile
Nonhousing wealth	10th pctile	90th pctile	10th pctile	90th pctile
Health	Fair-Poor	Ex-VG	Fair-Poor	Ex-VG
Probability	**0.298**	**0.164**	**0.614**	**0.682**
Actual means by PRA quintile				
		Not retired		
PRA balance quintile	Bottom quintile	Top quintile	Bottom quintile	Top quintile
PRA balance	**$5,579**	**$356,448**	**$6,519**	**$313,958**
Probability	**0.066**	**0.095**	**0.548**	**0.746**
		Retired		
PRA balance quintile	Bottom quintile	Top quintile	Bottom quintile	Top quintile
PRA balance	**$7,674**	**$375,764**	**$5,492**	**$386,083**
Probability	**0.144**	**0.339**	**0.408**	**0.663**

Table 4-1 Non-linear least squares estimates of the proportion of balances withdrawn for households making withdrawals, households age 60 to 85

Variable	(1) Coef	(1) Z-score	(2) Coef	(2) Z-score
Determinants of α				
spline in age				
Age≤69	**-0.022**	**-3.88**	**-0.029**	**-4.19**
69<age≤71	**-0.050**	**-2.00**	-0.008	-0.22
Age>71	**-0.008**	**-1.98**	-0.008	-1.65
cohort effects				
Age 51 in 1997	0.014	0.21	-0.013	-0.17
Age 54 in 1997	0.079	1.26	0.052	0.67
Age 57 in 1997	0.070	1.11	0.057	0.75
Age 60 in 1997	**0.128**	**2.01**	0.087	1.12
Age 63 in 1997	0.100	1.58	0.075	0.97
Age 66 in 1997	**0.166**	**2.54**	0.147	1.87
Age 69 in 1997	**0.176**	**2.63**	**0.168**	**2.08**
Age 72 in 1997	**0.164**	**2.47**	**0.159**	**1.99**
Age 75 in 1997	**0.172**	**2.49**	**0.190**	**2.31**
Age 78 in 1997	**0.279**	**3.40**	**0.301**	**3.10**
Age 81 in 1997	**0.198**	**2.35**	**0.214**	**2.19**
Age 84 in 1997	0.161	1.84	0.167	1.47
self-reported retirement status				
retired if age≤69			**0.130**	**2.74**
retired if 69<age<72			**0.118**	**2.02**
retired if age≥72			0.010	0.23
marital status				
Single male if age≤69			0.065	1.18
Single male if 69<age<72			0.000	0.00
Single male if age≥72			-0.015	-0.54
Married if age≤69			**0.127**	**2.00**
Married if 69<age<72			0.145	1.45
Married if age≥72			0.045	1.29
income sources (in 10,000s)				
Earned income if age≤69			**-0.009**	**-2.31**
Earned income if 69<age<72			**-0.021**	**-2.37**
Earned income if age≥72			-0.006	-1.62
Annuity income if age≤69			-0.009	-0.89
Annuity income if 69<age<72			**-0.043**	**-2.89**
Annuity income if age≥72			0.002	0.22
wealth (in 10,000's)				
Housing wealth if age≤69			**0.004**	**2.21**
Housing wealth if 69<age<72			**0.008**	**2.86**
Housing wealth if age≥72			**0.003**	**3.05**
Nonhousing wealth if age≤69			0.001	1.32
Nonhousing wealth if 69<age<72			0.002	1.21
Nonhousing wealth if age≥72			0.000	0.95
health status - single persons				
VG or excellent if age≤69			**0.135**	**2.20**
VG or excellent if 69<age<72			-0.057	-0.93
VG or excellent if age≥72			**0.065**	**2.23**
Fair or poor if age≤69			**0.216**	**2.56**
Fair or poor if 69<age<72			0.124	1.06
Fair or poor if age≥72			-0.024	-0.66
health status - married male				
VG or excellent if age≤69			**0.136**	**2.73**
VG or excellent if 69<age<72			-0.034	-0.49
VG or excellent if age≥72			0.006	0.19
Fair or poor if age≤69			0.034	0.53
Fair or poor if 69<age<72			-0.101	-1.14
Fair or poor if age≥72			-0.037	-1.00
health status - married female				
VG or excellent if age≤69			-0.037	-0.74
VG or excellent if 69<age<72			0.017	0.25
VG or excellent if age≥72			0.036	1.22
Fair or poor if age≤69			-0.028	-0.33
Fair or poor if 69<age<72			0.059	0.45
Fair or poor if age≥72			0.022	0.63
Intercept	**1.785**	**5.10**	**2.087**	**4.90**
Determinants of β				
β (age 60-69)	**-0.600**	**-22.25**	-0.676	-26.02
β (age 70-71)	**0.096**	**2.31**	0.077	1.26
β (age 72-75)	**0.092**	**2.24**	0.156	3.20
β (age 76-85)	**0.103**	**2.36**	0.144	2.94
number of observations	9,533		9,533	
RMSE	1.5713		1.5475	

Table 4-2. Proportion of assets withdrawn given a withdrawal, for selected attritubes.

Attributes and predicted proportion withdrawn (W/B)	**60-69**	**60-69**	**72-85**	**72-85**
		Age		
		Not retired		
Marital status	Single Male.	Married	Single Male	Married
Earned income	10th pctile	90th pctile	10th pctile	90th pctile
Annuity income	0	0	0	0
Housing wealth	10th pctile	90th pctile	10th pctile	90th pctile
Nonhousing wealth	10th pctile	90th pctile	10th pctile	90th pctile
Health	Fair-Poor	Ex-VG	Fair-Poor	Ex-VG
Mean W/B	0.237	0.253	0.145	0.276
Ratio of mean W to mean B	0.082	0.087	0.061	0.118
		Retired		
Marital status	Single Male	Married	Single Male	Married
Earned income	0	0	0	0
Annuity income	10th pctile	90th pctile	10th pctile	90th pctile
Housing wealth	10th pctile	90th pctile	10th pctile	90th pctile
Nonhousing wealth	10th pctile	90th pctile	10th pctile	90th pctile
Health	Fair-Poor	Ex-VG	Fair-Poor	Ex-VG
Mean W/B	0.290	0.309	0.151	0.289
Ratio of mean W to mean B	0.100	0.107	0.064	0.124
Actual means by PRA quintile				
		Not retired		
PRA balance (B) quintile	Bottom quintile	Top quintile	Bottom quintile	Top quintile
Mean W	$4,046	$13,224	$2,646	$17,510
Mean B	$8,684	$346,998	$8,431	$332,693
Mean(W/B)	0.486	0.043	0.350	0.054
Ratio of means	0.466	0.038	0.314	0.053
		Retired		
PRA balance (B) quintile	Bottom quintile	Top quintile	Bottom quintile	Top quintile
Mean W	$5,190	$21,213	$6,059	$22,519
Mean B	$12,878	$403,145	$14,798	$411,831
Mean(W/B)	0.460	0.057	0.466	0.059
Ratio of means	0.403	0.053	0.409	0.055