Disparities in Minority Retirement Savings Behavior: Survey and Experimental Evidence from A Nationally-Representative Sample of US Households

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1. Introduction

Understanding the economic lives of minority populations in the United States, the evolution of their welfare and the impact of policies on their well-being is a long-standing priority for policymakers and researchers. In particular, it is important to understand how and why these populations may differ in financial participation and retirement savings, which will have direct implications for their long-term wealth accumulation and their ability to maintain consumption levels in the event of economic hardship and during old age. Previous studies have shown that on average, non-Hispanic white households have significant retirement wealth advantages relative to black and Hispanic households[1]. As the demographic landscape of the United States changes, these wealth gaps will become increasingly relevant to the overall elderly population and policymakers concerned with their economic status: non-Hispanic whites currently make up 80% of the over-65 population, but this proportion will drop below 60% by 2050.[2] In 2009, 6.6% of non-Hispanic whites over the age of 65 were below the poverty line, compared with 19.5% for blacks and 18.3% for Hispanics.[3] If current wealth disparities persist, an increasing share of the elderly will be at risk of poverty in retirement in the future.

In our overall task order, we are investigating the main barriers to the accumulation of retirement savings faced by minority groups in the United States. We focus in particular on the roles of financial literacy and social networks, in order to develop implications for policies that better address the needs of these populations. To date, we have conducted and report below a detailed literature review, and an initial analysis of new data collected in the RAND American Life Panel to document and compare retirement savings of Hispanics, Asians and African Americans to the majority nonwhite Hispanic population, comparing retirement savings and the asset allocation of these groups to estimates that are representative of the population at large as well as across the different minority groups. We also measure and compare systematic differences in planning behavior, risk preferences and financial capability/literacy across these groups. We then analyze to what extent minority status independently predicts retirement savings outcomes relative to socioeconomic determinants of retirement savings such as age, gender, education, and wealth, as well as how these determinants interact with minority status to affect retirement savings. We estimate to what degree differences that attach to minority status can be attributed to differences in these factors, as well as to financial literacy and social/cultural factors such as beliefs about the financial system and expectations about family support. An empirical understanding of which constraints are most relevant to retirement savings participation will allow policymakers to better design and prioritize interventions for these populations.

2. Background Literature Review

2.1 What is Known About Disparities in Long-Term Wealth and Savings Behavior ?

Studies based on the Health and Retirement Study (HRS) by Smith (1995) and Choudhury (2001) both report that mean and median total wealth for white households in this sample of older adults are more

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[1] In this study, we restrict attention to cover only two of the largest minority groups: black and Hispanic households. Research reviewed in this report suggests that the wealth gap between Asian and white households is significantly less wide; in addition the small relative population share of Asians and other sub-populations including Native Americans call for a more specialized study in order to maintain adequate statistical power

[2] Based on US Census Bureau population projections released August 14th, 2008

[3] From U.S. Census Bureau, Current Population Survey, 2009 Annual Social and Economic Supplement, Table "POV01. Age and Sex of All People, Family Members and Unrelated Individuals Iterated by Income-to-Poverty Ratio and Race", retrieved 4/27/2011 from http://www.census.gov/hhes/www/cpstables/032010/pov/new01_100.htm

than double those of black and Hispanic households. Notably, of the components of total wealth, Social Security wealth is the most evenly distributed across groups: at the median, Smith found white households to have roughly 40% higher Social Security wealth than black and Hispanic households, but had asset-based net worth that was nearly four times the level of Hispanics and more than four times the level of blacks. Disparities in private pension wealth are less stark than those in net worth when mean values are considered, but are even more pronounced when median values are examined.[4]

The pattern above suggests that differences in individual savings behavior ultimately drive a large part of long-term wealth disparities. As the retirement system changes and defined benefit pension plans are phased out, participation in defined contribution (DC) plans is becoming increasingly important in this context. Two recent large-scale studies document racial/ethnic disparities in savings behavior, notably in participation rates and contribution rates in major DC plans. Ariel/Hewitt (2009) conducted a major study focusing on disparities across racial and ethnic groups in 401(k) savings plans, using data from 2007 that encompassed nearly 3 million employees at 57 large U.S. companies. Even within groups of similar age and income, black and Hispanic workers had lower participation rates and, conditional on participation, lower contribution rates. Among those participating, black workers chose to invest a smaller proportion of their plan in equities, which have traditionally outperformed less risky assets over the longer term. Black workers make hardship withdrawals and take loans from their 401(k) plans more often than Hispanic workers and much more often than white and Asian workers. As a result, within groups of similar age and income, black and Hispanic workers have significantly lower 401(k) savings than white and Asian workers

In a similar context, the U.S. Office of Personnel Management (2010) produced an analogous report based on data describing the participation patterns of 1.5 million federal employees in the Thrift Savings Plan (the Federal equivalent of the 401(k) plans analyzed by Ariel/Hewitt). The substantive findings were similar to the Ariel/Hewitt report: "minority groups[5] lagged behind non-minorities in terms of the percentage of employees participating, salary deferral rates, and [Thrift Savings Plan] balances". Disparities by minority status persisted across nearly all income levels, with the gaps in participation rates and deferral rates narrowing at the top of the income distribution. Workers from minority groups were also more likely to invest in the lowest risk fund available, a finding consistent with the low equity exposure of Hispanics and (particularly) blacks in the Ariel/Hewitt report.

2.2 What Factors Potentially Affect These Disparities?

In the section below we review the evidence for and against a number of factors that have been proposed in the debate about minority savings behavior. Scholz & Levine (2003) provide an excellent early survey of the literature published prior to 2002 related to black/white wealth disparities in the United States. We draw on their analysis in the following sections, updated with more recent studies and extending their scope to include topical sections on immigrants, and on mortgages and predatory lending.

Income and Employment

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[4] Smith found median Hispanic pension wealth to be zero, compared with $6,950 for black households and $47,000 for whites. Mean values were $39,221 ; $65,332 ; and $109,371 respectively.
[5] The U.S. Office of Personnel Management report defined all groups other than non-Hispanic white as "minority". Given that Ariel/Hewitt found Asians to be fairly similar to non-Hispanic whites, this definition would likely narrow the disparities between non-Hispanic whites and "minorities".

Although there are some methodological issues involved in assessing the role of different factors in explaining wealth disparities[6], it appears that differences in income disparities play a larger role in wealth inequality than other demographic factors (e.g. Menchik & Jianakoplos, 1997). Moreover, empirical studies tend to find that savings rates increase with income; this means that racial/ethnic differences in savings rates conditional on income are exacerbated by income disparities, and may help to explain why wealth disparities are wider than the corresponding income disparities (Gittleman & Wolff, 2000).

Furthermore, the benefits offered by employers may be less conducive to savings for minorities in other ways. The two studies described above clearly demonstrate correlation between minority status and low participation/contribution rates among employees of very large private sector companies and the Federal Government, employees who tend to be offered relatively generous retirement plans and employer matching of pension contributions. However, as Butrica & Johnson (2010) report, black and (particularly) Hispanic workers are less likely than white workers to work for employers who offer retirement plans. This partly reflects racial/ethnic employment differences by firm size, industry, occupation, part-time status and income level; however, even after controlling for these factors, black and Hispanic workers are significantly less likely to be offered an employer pension. Black and Hispanic workers are also more likely to find themselves unemployed, further contributing to the gap in employer pensions[7].

Family and Social Network Effects

Family size varies significantly by race/ethnicity: on average, fertility rates and family size are lowest for non-Hispanic whites, higher for blacks and Asians, and significantly higher among Hispanics.[8] There is conflicting evidence on the relationship between family size and wealth: from a theoretical standpoint, families with children may have an incentive to accumulate wealth (e.g. in order to help with higher education expenses), may have a disincentive to accumulate wealth (e.g. if parents expect to receive support in retirement from their children), or may simply be unable to save as much due to the increased consumption costs of a larger family. Menchik & Jianakoplos (1997) find a negative (but not statistically significant) effect of family size on wealth; Blau & Graham (1990), in contrast, find a positive and significant relationship between family size and wealth.

Apart from the impact of family size, intergenerational effects may perpetuate existing ethnic/racial disparities in wealth through a number of pathways: wealthy parents may provide significant inheritances to their children, passing their wealth down; children who receive inheritances may in turn be motivated to provide bequests for their own children, prompting them to save more; and more subtly, parents who acquire wealth through a high savings rate may pass on their thrifty attitude to their children.

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[6] In particular, the standard Blinder-Oaxaca regression decomposition approach relating wealth disparities to income disparities and other factors has produced inconsistent results depending on whether the model attempts to explain black wealth with the parameters from a white wealth model, or vice versa. See e.g. Barksy et al (2002); Altonji & Doraszelski (2005)

[7] However, Butrica & Johnson do not control for unionization of the workplace, which is an explanatory factor mentioned by other authors as a reason for low Hispanic pension coverage (e.g. Ghilarducci et al, 2007).

[8] Fertility rates per 1000 women in 2009 were 58.5 for non-Hispanic whites, 68.7 for Asians/Pacific Islanders, 68.9 for non-Hispanic blacks, and 93.3 for Hispanics (Sutton, Paul; Brady Hamilton; and T.J. Mathews "Recent Decline in Births in the United States, 2007-2009", NCHS Data Brief, No. 60, March 2011, retrieved 4/27/2011 from http://www.cdc.gov/nchs/data/databriefs/db60.pdf)
Average family sizes in 2010 were 3.11 for white heads of household, 3.35 for blacks, 3.40 for Asians, and 3.93 for Hispanics (from U.S. Census Bureau, Current Population Survey, 2010 Annual Social and Economic Supplement, Table "AVG2. Average Number of People per Family Household, by Race and Hispanic Origin/1, Marital Status, Age, and Education of Householder: 2010", retrieved 4/27/2011 from http://www.census.gov/population/www/socdemo/hh-fam/cps2010.html)

Evidence on the effect of receiving inheritances is mixed: Menchik & Jianakoplos (1997) estimate that 10%-20% of the black-white wealth gap can be explained by the differential inheritances received by households, whereas Altonji & Doraszelski (2005) find that inheritances play very little role in the gap (see also Smith, 1995; Gittleman & Wolff, 2000). However, intergenerational transfers are not limited to inheritances: Charles & Hurst (2002) report that 42% of white households in the Panel Study of Income Dynamics receive family help for the down payment on a home, but fewer than 10% of black households receive equivalent assistance.

Evidence on the effect of bequest motives is inconclusive. Hurd (1987,1989) examines asset decumulation of older couples, and sees no difference in patterns between those with children (who might have bequest motives) and those without, providing suggestive evidence that bequest motives do not have a major effect on wealth. Menchik & Jianakoplos (1997) also find no effect of bequest motives. Smith (1995), on the other hand, does find a positive effect of bequest motives on wealth, and that this effect appears larger for white households – however, his findings may be partly explained by the fact that white households on average can afford to make larger bequests.

An area for further research is the extent to which the transmission of preferences between generations may contribute to wealth disparities. Although they do not examine the ethnic/racial aspect in detail, Waldkirch et al. (2004) find that parents may shape the consumption preferences of their children; Gouskova et al. (2010) find that parents may transmit their time preferences to their children (which in turn influences pension participation preferences); and Charles & Hurst (2003) find that there are intergenerational correlations between asset portfolio choices even after controlling for measures of risk aversion. If disparities in these factors exist along racial/ethnic lines in one generation, they may be perpetuated in the following generation and influence wealth disparities.

Finally, Scholz & Levine (2003) suggest one further potential pathway for family characteristics to influence wealth: having strong family networks may reduce the need to accumulate wealth if one expects family support in old age, or in moments of crisis (which normally provide an incentive for precautionary saving). However, they do not provide any empirical evidence on this subject.

Time Preferences and Risk Aversion

Standard lifecycle models suggest that savings rates (and consequently, wealth) may vary across individuals if time preferences are heterogeneous. If one group has systematically lower time preference rates, they will not place a premium on present consumption and will defer more consumption to the future. Attitudes to risk may also affect the pace of wealth accumulation: people with higher risk tolerance invest more of their wealth in higher risk, higher growth assets than those who are risk averse, and, over the long term, are likely to see higher return on their investments. Indeed, Hanna, Wang & Yuh (2010) claim that household characteristics including observed risk tolerance explain all racial/ethnic differences in the ownership of risky assets.

Scholz & Levine (2003) find that, after conditioning on education, age and income, black and Hispanic households seem to have shorter planning horizons, and a greater degree of risk aversion. Several authors find that white households seem to have higher tolerance for risk than non-white households (see, e.g., Yao, Gutter & Hanna, 2005; Wang & Hanna, 2007). However, survey questions in the HRS designed to elicit risk preferences found no observable differences along racial/ethnic lines (Barsky et al, 1997). It is difficult to reconcile these conflicting findings; it is unclear whether the questions in

the HRS, which involve hypothetical gambles over income levels, capture the concepts of risk that people apply to their investment behavior.

Investment Allocation and Performance

As mentioned in the previous section, there may be differences in the return that different households receive on their investments. In some cases, this may be because of asset choices, in other cases due to differential access to credit, or due to discrimination.

Interestingly, Gittleman & Wolff (2000) find that, within asset classes, black households in the PSID had higher returns than white households (i.e. black home values increased more than equivalent white home values, black-owned stocks outperformed white-owned stocks). However, a preponderance of studies find that non-white households are less likely to invest in high-risk, high-yield assets, even controlling for income (e.g. Choudhury, 2001) and for other factors such as observed risk preferences (e.g. Ozawa & Lum, 2001).[9] U.S.-born Hispanics appear to have a strong preference for housing equity and real estate investment (Cobb-Clark & Hildebrand, 2006), while black investors choose real estate or insurance vehicles more often than white investors (Brown, 2007[10]). It has also been suggested that black workers may prefer to keep assets easily accessible, because more transitory income and higher unemployment risk increases the likelihood that they may need access to money quickly (Blau & Graham, 1990). Even if returns within asset classes are high for black households as Gittleman & Wolff suggest, this may be outweighed by how non-white households allocate their wealth across asset classes. Black and Hispanic households maintain a preference for real estate despite relatively low access to credit and prime mortgage lenders, described below.

Credit Constraints/Cost of Lending

Charles & Hurst (2002) find that blacks are less likely to apply for mortgages, and more likely to be rejected if they do apply; Scholz & Levine (2003) find that blacks and Hispanics are more likely to be turned down for credit and more likely to be discouraged from borrowing.[11]

Black and Hispanic households appear particularly at risk for high-cost loans from predatory lenders, which drives up the cost of acquiring major assets[12] and slows any growth in wealth (Ibarra & Rodriguez, 2005; National Council of Negro Women, 2009; Squires et al, 2009; Bocian et al, 2010). Menchik & Jiankoplos (1997) also point out that credit constraints may make it more difficult for black households to start their own businesses, thus denying them access to another asset class with traditionally high risk and returns.

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[9] But see also Coleman (2003) who claims that black heads of household no longer appear to hold fewer high-risk assets once wealth is properly taken into account

[10] Brown (2007) cites newspaper articles between 1999 and 2004, most of which describe findings from collaborative research by Ariel Mutual Funds and Charles Schwab & Co.

[11] Not all interpretations of this result involve non-white families being unfairly disadvantaged: it is possible that blacks and Hispanics are more likely to overreach their realistic ability to repay, and so are (correctly) denied credit on a more regular basis than white families.

[12] This is most notable – and impactful – in the mortgage market, but black and Hispanic households also pay more for auto finance

Whether poor access to low-cost lending is the result of discrimination (malicious or structural), or the result of low credit-worthiness[13], it likely contributes to the wealth gap between white and non-white households.

Personal Health Status and Related Expenditures

Smith (1995) documents significant differences in health status along racial/ethnic lines in the HRS, notes the strong correlation between health and wealth in the HRS, and speculates that disparities in health could influence disparities in wealth. However, interpretation of the relationship between health and wealth is not straightforward: health may plausibly affect wealth, if poor health reduces earnings, increases medical expenditures, or reduces life expectancy; but wealth may affect health, through access to better education, better nutrition, better medical care, and other pathways; or the correlation may arise from some third factor, such as genetics. Smith (1999) goes on to show that health shocks do appear to affect wealth, with major health shocks between waves of HRS causing a mean wealth reduction of around $17,000, equivalent to 7% of household wealth. However, the observed drop in wealth is much larger than can be accounted for by increased medical expenses and reduced income, so some combination of other factors may be at work.

While these studies suggest that negative health events may contribute to negative wealth outcomes later in life, the potential impact of poorer health on income and wealth accumulation earlier in life is as yet unknown. Insofar as health disparities exist over the lifecycle, the effect of health on wealth may play a significant part in explaining wealth disparities on racial/ethnic lines.

Disincentives to Save

In order to target assistance at those who need it, many safety net benefits have asset tests: people with assets above a certain level are ineligible to receive benefits. A criticism of these programs is that this reduces the incentive to save for population groups that are relatively low-income, as people climbing out of poverty lose benefits that are of significant value. A number of studies have looked at various aspects of social insurance to shed light on the validity of this criticism.

Hubbard et al (1995) calibrate a dynamic lifecycle model including asset-tested benefits, and find that including the asset tests helps explain the low accumulation of wealth among those with low expected lifetime income. Powers (1998) examines a major change to the Assistance for Families with Dependent Children (AFDC) asset tests in 1981, and finds that assets held by female-headed households in the National Longitudinal Survey-Young Women dataset were sensitive to the changes in asset limits. Gruber & Yelowitz (1999) examine the expansion of Medicaid over 1984-1993, and find that Medicaid asset tests had a large negative effect on wealth holdings among the eligible population. Neumark & Powers (2000) focus on means tests for Supplemental Security Income (SSI) over 1984-1991, and find that generous SSI benefits (i.e. in states that provide a generous SSI supplements) may induce reductions in labor as workers approach eligibility age. Ziliak (2003) uses data from the Panel Survey of Income Dynamics (PSID), 1980-1991, to examine the effect of income

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[13] Various studies control for income and other observable characteristics, but these may not be an adequate measure of credit-worthiness; some studies use aggregated credit scores over groups or neighborhoods, but further study linking individual characteristics, credit scores, and loan decisions would be helpful

transfers on the assets of the poor, finding that means-tested income transfers likely depress liquid assets among the poor.[14]

On the other side, Hurst & Ziliak (2006) found that the major welfare reform of 1996, which loosened asset limits on programs while introducing time limits on how long certain benefits could be taken, had a minimal effect on savings behavior even for those people who were most likely to face a binding asset constraint.

In addition, the effect of these asset-tests are unlikely to play a major role in explaining racial/ethnic wealth disparities across the income distribution: the effect of the asset tests should only be felt by those close to the constraint and, less strongly, by those who have a reasonable fear that they may in the future fall into poverty, and so persistent wealth disparities at higher income levels cannot be explained by reference to asset-tested benefits.

3. Data

While most of factors above are studied in isolation, many of them are likely to overlap or confound one another. In this next section, we examine some of these factors in the context of new survey data, which enables analysis to be carried out jointly.

3.1. The American Life Panel

The sample for the main study is drawn from the American Life Panel (ALP). The ALP is an Internet panel of respondents 18 and over. Respondents in the panel either use their own computer to log on to the Internet or they were provided a small laptop or a Web TV, which allows them to access the Internet, using their television and a telephone line. The technology allows respondents who did not have previous Internet access or a computer to participate in the panel and furthermore use the Web TVs for browsing the Internet or use email. Official participants in the ALP are recruited from survey programs that collect representative samples of U.S. consumers. As of 2010, the ALP contained approximately 3,000 individuals from U.S. households[15]. Recently the ALP has begun recruiting from

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[14] Differences between the labor income of rich and poor was seen as the major factor in the gap between the net worth-to-permanent income ratios of rich and poor, while differences in means-tested income was seen as the major factor in the gap between *liquid wealth*-to-permanent income ratios of rich and poor

[15] The first cohort of participants in the ALP was recruited from among individuals ages 18 years and older who had responded to the Monthly Survey (MS) of the University of Michigan's Survey Research Center (SRC).[2] Each month, the MS interviews approximately 500 households, of which 300 households are a list- assisted random-digit-dial (RDD) sample and 200 are re-interviewed from the RDD sample surveyed six months previously. The 200 re-interview Michigan participants were referred to RAND each month. Through August 2008, about 51 percent of these referrals agreed to be considered for the ALP, and about 58 percent of them actually participated in at least the household characteristics module of the ALP. Thus, about 30 percent (51 percent × 58 percent) of the Michigan recruits became ALP participants. Originally, the ALP included only respondents 40 years of age and older. However, since November 2006, the ALP has included respondents 18 years of age and older.

In 2003, RAND received a five-year grant from the National Institute on Aging to study methodological issues of internet interviewing among an older population. Part of the study concentrated on a comparison of internet interviewing with CATI (Computer Assisted Telephone Interviewing). To that end, RAND recruited both a small internet panel and a parallel telephone panel. Both subpanels were obtained from the University of Michigan as described above. Once the experiments comparing internet with CATI were finished the members of the CATI sample were invited to join the internet panel and about 80 of the original 500 CATI panel members agreed to do so. In the ALP, this group is called the SRG sample, after RAND's Survey Research Group, which administered the CATI study. After August 2008, the ALP did not receive new respondents from the University of Michigan. Instead, in the fall of 2009 participants in the Face-to-Face Recruited Internet Survey Platform (FFRISP) were offered to join the ALP. The FFRISP was an NSF-funded panel of Stanford University and Abt SRBI. Respondents were sampled from June to October 2008 in a multi-stage procedure based on address lists. The target population consisted of individuals 18 years or older who resided in a household in the 48 contiguous states or the District of Columbia and who were reportedly comfortable speaking and reading English, and the sample was representative of this population. They were recruited in a face-to-face interview. They were offered a laptop (worth $500) and a broadband internet subscription, or $200 upfront and $25 per month (for 12 months) if they already had a computer and internet access. Additionally, they were paid $5 per monthly survey. The FFRISP recruited 1,000 respondents

a random mail and telephone sample using the Dillman method, with the goal to achieve 5000 active panel members.

This study is designed to take advantage of the expansion of the ALP to vulnerable populations. The ALP has a planned expansion of about 2000 new panel members which targets individuals who are more likely to have a lower education or lower income and are more likely to belong to minorities. In particular the expansion aims at a subpanel of about 1000 respondents who will be interviewed in Spanish if needed. The sample frame comes from Post Office Delivery Sequence Files. By concentration on zip-codes with particular characteristics one can oversample vulnerable populations. The samples are address-based, while for about half of the households in the database also a phone number is available.

As of August 29, 2011, the sample used for this work represents the presently available fraction of the total intended new recruitment. Data for this work come from MS189 and MS210, two modules of the ALP conducted separately for logistical reasons. Data for the survey portion of the study was collected first in MS189, followed by the experimental module, MS210. The total available data from MS189 contains 3061 individuals who have completed the survey. Of these, one respondent was dropped due to respondent age below 18 and one was dropped because of missing ethnic self-identification.

MS210 consists of fewer observations than MS189 as it was fielded several weeks after MS189 : 2856 individuals have completed the survey. Of these, 1 was dropped due to respondent age below 18 and 2 were dropped because of missing ethnic self-identification.

The overlap between MS189 and MS210 is substantial. However, because of the time delay, as well as the (expected) rate of non-response in any given wave of the panel, at the time of writing, there are still a number of individuals in MS189 had not participated in MS210 and vice versa, see Table 1 below.

Table 1: MS189 and MS210 Sample

	Number of observations
Survey and Experiment (MS189 and 210)	2681
Survey only (MS189)	378
Experiment only (MS210)	175

In MS189, 2403 individuals identified themselves as non-Hispanic whites. 246 individuals identified themselves as non-Hispanic black and 313 individuals identified themselves as Hispanic/Latino (of which 179 also identified as white and 5 as black). Other individuals identified themselves as Asian-Americans (54), Native American (21) or other ethnicities (34). In MS210, 2,216 individuals identified themselves as non-Hispanic whites. 228 individuals identified themselves as non-Hispanic black and 315 individuals identified themselves as Hispanic/Latino (of which 181 also identified as white and 5

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from a gross sample of 2,554 addresses that were not known to be ineligible. The panel was terminated after September 2009, but participants were offered to join the ALP under the same conditions (laptop, high speed internet, monetary compensation). From the 1,000 participants in the Stanford sample, 457 agreed to join the American Life Panel.

as black). Other individuals identified themselves as Asian-American (51), Native American (23) or other ethnicities (33).

Given the breakdowns above, for ease of exposition, we consider the following six mutually-exclusive categories: non-Hispanic whites, Hispanics (excluding the very small number of individuals also identifying as blacks), blacks, Asian-Americans, Native Americans and others.

4. Mind the (Savings) Gap

The ALP provides a rich array of demographic variables such as income, education and ethnicity for all participants. Survey questions in MS189 that directly address or proxy for multiple aspects of savings behavior include

- *Short-term savings behavior and outcomes:*

  - whether or not in the past year, the respondent's monthly household income has been more than (rather than less than or equal to) expenses

  - the degree to which the respondent agrees with the statement that he/she are confident in his/her own ability to raise $2,000 to meet an unexpected need in the next month

- *Long-term savings behavior and outcomes*

  - respondent reports thinking about planning for retirement [or having done so, prior to retirement]

  - the degree to which the respondent agrees with the statement that he/she ais currently planning and saving adequately to cover financial needs in retirement [or have done so, prior to retirement]

  - the respondent's (calculated) self-reported approximate net worth[16]

  - the amount reported by the respondent as the total of all savings and investments set aside for retirement at the present moment. Note that this specifically asks respondents about dedicated assets (hence is not equal to, and may be either greater or less than net worth)

- *Savings behavior and outcomes in the context of employee-benefits plans*

  - If offered, the respondent's reported enrolment in an employer-sponsored retirement savings plan

  - If enrolled, the respondent's reported 2010 contributions (percentage and dollar amount) and 2010 withdrawals or loans.

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[16] As reported, by the respondent, the value of primary home + other homes + real estate investment + farm or business + vehicles + stocks / stock mutual funds (including held in retirement savings accounts) + bonds / bond mutual funds (including held in retirement savings accounts) + CDs, checking and savings accounts + other savings – mortgages – all other debts

o If enrolled, the respondent's current balance and portfolio allocation.

As a first step, we tabulate the results by ethnicity, as shown in Table 2 below.

Table 2: General savings behaviors and outcomes

	Short-term indicators		Long-term indicators	
	% report that current income exceeds expenses	% confident in ability to meet unexpected short-term expenses	% report thinking / planning for retirement	% confident in ability to meet long-term financial needs
White	49%	70%	38%	45%
Black	33%	45%	31%	39%
Hispanic	34%	49%	25%	37%
Asian-American	32%	76%	33%	56%
Native American	19%	38%	11%	14%
Other	29%	36%	24%	30%
N reporting	3059	3059	3059	3059

	Calculated net worth estimate				Dedicated retirement savings			
	Mean	White/x	Median	White/x	Mean	White/x	Median	White/x
White	$325,821	1.0	$70,500	1.0	$168,078	1.0	$20,000	1.0
Black	$39,520	8.2	$0	-	$34,774	4.8	$0	-
Hispanic	$83,405	3.9	$4,010	17.6	$28,677	5.9	$1,000	20.0
Asian-American	$321,222	1.0	$80,500	0.9	$102,658	1.6	$30,000	0.7
Native American	$27,718	11.8	$800	88.1	$20,077	8.4	$0	-
Other	$187,243	1.7	$2,500	28.2	$218,056	0.8	$1,000	20.0
N reporting	2904				2487			

Source: Wave 189 of the American Life Panel as of end August 2011
Note: Summary statistics are population-weighted. Observations with missing dollar values where ownership of an assets/liability is reported are dropped. Table 2a in the appendix provides the same table of values with missing values assumed to be zero, with qualitatively similar results.

First, it should be noted that across all ethnic groups, reported levels of short and long term financial preparation are low. Overall, on average, most households report not living within their means. Although some may be able to meet short-term shocks, fewer than one in two households are able to report that a strong feeling of confidence in their long-term financial preparedness.

However, a closer look reveals that disparities are striking. The top panel of Table 2 shows that only half of white households report any ability to save out of current income i.e. their current household income exceeds their expenses (49%), while black, Hispanic and Asian-American households lag this figure by more than fifteen percentage points (32-34%). Finally, only 19%, or one in five, Native American households report the same. A majority of white and Asian-American households (70% and 76%) report being confident in their ability to meet unexpected short-term expenses, while in all other ethnic groups the percentage is below half.

With respect to long-term savings, white households are most likely to report thinking or planning for retirement (38%), followed by Asian-American (33%), black (31%) and Hispanic households(25%), but only one in ten Native American households (11%). Asian-American and white households are most confident that they are currently planning and saving adequately for retirement (or previously did so) (56% and 45%) followed by black (39%) and Hispanic households (37%) and finally Native American households (14%).

When considering total estimates of total net worth and dedicated retirements savings, the patterns suggested above persist. Above, noting that the absolute values are subject to caveats because of the nature of self-reporting, we computed means by ethnic group as well as median values for the group (avoiding outliers). We also compute the ratios for each statistic for each individual ethnic group relative to whites.

The ratios in Table 2 are broadly consistent with, firstly, the top panel of Table 1, and also with other recently released analysis from the Pew Research Center (Taylor et al, 2011). The Pew study found using the Survey of Income and Program Participation (SIPP) data that in 2009, the median wealth of white households was $113,149, 20 times that of black households at $5,677 and 18 times that of Hispanic households at $6,325, noting that these "lopsided" ratios were the largest since the publication of the SIPP and twice the size of ratios prevailing prior to 2009.

Our corresponding results suggest that as of August 2011, in our sample the median wealth of white households was $70,500, 18 times that of Hispanic households at $4010, and most disturbingly, that the median wealth of black households is *zero*.

It is worth bearing in mind while these results cannot conclusively indicate changes over time because of incomparable surveys, the differences are consistent with pre-existing trends. The Pew report shows that between 2005 and 2009, median wealth for black households fell by 53% and for Hispanic households by 66%, a difference of approximately $6000 and $12,000 respectively. In 2009, Pew finds that 35% of black and 31% of Hispanic households had zero or negative net worth, compared with 56% and 41% in the 2011 ALP sample.

These summary statistics show important disparities among all six of the groups above. For the next descriptive analysis of employer-sponsored retirement savings plans, we consider only the currently employed out of the combined sample of 2947 individuals, or 1803 individuals. Going forward as the sample becomes more focused, we restrict attention to the difference between white, black and Hispanic households, because of the small number of observations for Asian-American and Native American households.

We observe in Table 3 below that about 60% white and Hispanic employees report working for an employer offering any retirement savings plan, and about 52-55% report being offered any DC plan. A minority, 40%, of black employees work for an employer who offers any plan at all, and only 35% are offered a DC plan. Conditional on being offered a plan, black employees are slightly less likely to enroll (75% vs about 80% for whites and Hispanics). For those who are enrolled in a DC plan, white employees were somewhat more likely than black or Hispanic employees to make a contribution in 2010. Hispanic employees on the other hand, were much more likely than either whites or blacks to draw down on retirement savings wealth, both through withdrawals and through loans.

Table 3: Employer-Sponsored Retirement Savings Plan Behavior

	Employer offers any plan	Employer offers DC plan	If offered DC plan (N=940): Enrolled	If enrolled in DC plan (N=780), in 2010: Contributed	Made Withdrawal	Borrowed against
White	59%	52%	81%	84%	3%	4%
Black	39%	35%	75%	78%	4%	3%
Hispanic	61%	55%	82%	78%	24%	8%
N reporting	*1803*	*1803*	*940*	*779*	*778*	*778*

	$ Amount Plan Balance (if enrolled)		% of Salary Contributed (if any)		$ Amount Contributed (if any)		Withdrawn (if any)		Borrowed (if any)	
	Mean	Med.	Mean	Med.	Mean	Med.	Mean	Med.	Mean	Med.
White	$71,885	$25,000	8	6	$5,382	$3,500	$8,726	$5,000	$7,897	$5,000
Black	$25,300	$16,000	9	5	$4,527	$4,000	$2,037	$2,000	$3,712	$600
Hispanic	$21,642	$10,000	6	4	$2,528	$1,750	$4,769	$3,000	$7,971	$4,000
N	*760*		*623*		*618*		*40*		*35*	

	Percentage allocation in DC plan (N reporting=589)			
	Stocks	Bonds	Cash	Other
White	65.1%	17.9%	11.8%	5.2%
Black	60.6%	15.6%	13.2%	10.6%
Hispanic	53.4%	21.8%	11.4%	13.5%

Conditional on having an employer sponsored retirement savings plan, white employees have about 3 times as much wealth as Hispanic and black employees in their retirement savings plan on average. When we consider median values, the ratio is approximately 1.5 for black employees and 2.5 for Hispanic employees. For those who are enrolled in a DC plan, white employees were somewhat more likely to make a contribution in 2010. In general, Hispanic employees report contributing the lowest amounts (both in percentage terms and in dollar amounts). Hispanic employees on the other hand, were much more likely than either white or black employees to draw down on retirement savings wealth, both through withdrawals and through loans. Only a handful of employees reported the amounts withdrawn or borrowed, but among these, black employees tended to draw down less than white or Hispanic employees.

We also examined the reported percentage allocations to different asset classes. White employees were most likely to hold stock, while Hispanic employees were most likely to hold bonds. A large number of black and Hispanic respondents indicated that they dedicated resources to "other" assets, but unfortunately the survey did not specify the type of asset, making this variable less useful than anticipated at the time of data collection.

Table 4: Employer-sponsored DC Plan Balance as % of Dedicated Retirement Savings

	All	Respondents offered a DC plan
White	14%	34%
Black	11%	35%
Hispanic	20%	41%

Finally, the importance of the employer-sponsored plan also seems to vary across ethnic groups, with a slightly larger presence for Hispanics. Overall, for white and black households, less than 15% of total dedicated retirement savings resides in employer-sponsored DC plans. However, for Hispanic households, this figure is 20%. For only those offered a DC plan, a significant fraction of dedicated wealth is held in such plans across the board: plan balances represent about 35% of the dedicated retirement savings of white and black employees, and 41% of Hispanic employees.

5. Differences in Potential Determinants of Retirement Savings by Minority Groups

5.1. Demographics/Individual Endowments

Table 5: Summary Statistics by Ethnic Group, Demographics

	Reported income, last 12 months	Age in years	High school graduate	Female	Have chronic illness	Probability of living to 75 (unconditional)
White	$73,311	50	59%	52%	37%	68%
Black	$40,508	41	45%	55%	42%	67%
Hispanic	$38,175	38	41%	49%	32%	67%

Table 5 shows that whites as a group on average earn almost twice as much as blacks and Hispanics. Figure 1 shows that the (log) income distribution for whites is the most compressed and most right-skewed, while the distribution for blacks tends to skew left with more mass in the lower end, even relative to Hispanics.

Figure 1: Distribution of Reported Log Income (Last 12 months), Kernel Density Estimation
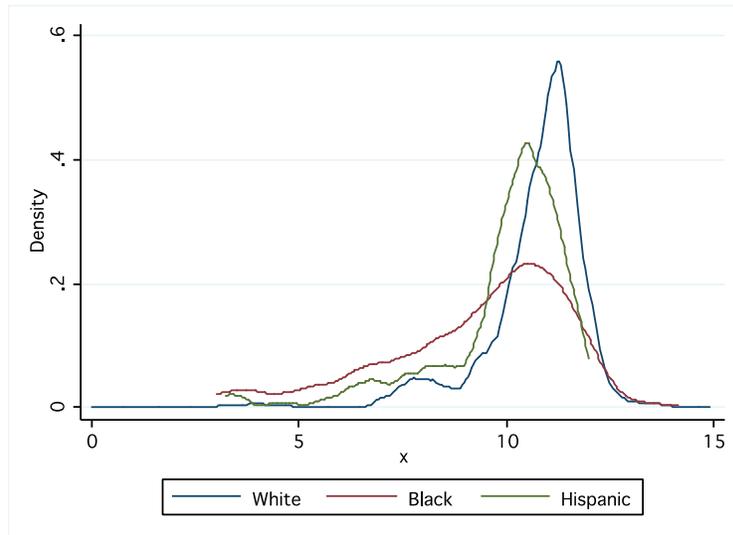
This pattern is consistent with differences in earnings capacity as represented by education. Whites are also the most educated, with 60% of the group reporting being high school graduates (relative to 45% of blacks and 41% of Hispanics). Furthermore, the age distribution of these groups is also quite different in our sample. Average age is highest for whites in the sample, followed by blacks and finally Hispanics (a 12-year gap). Figure 2 below moreover suggests that the shape of the age profile is markedly different by ethnic group.

Figure 2: Distribution of Age, Kernel Density Estimation
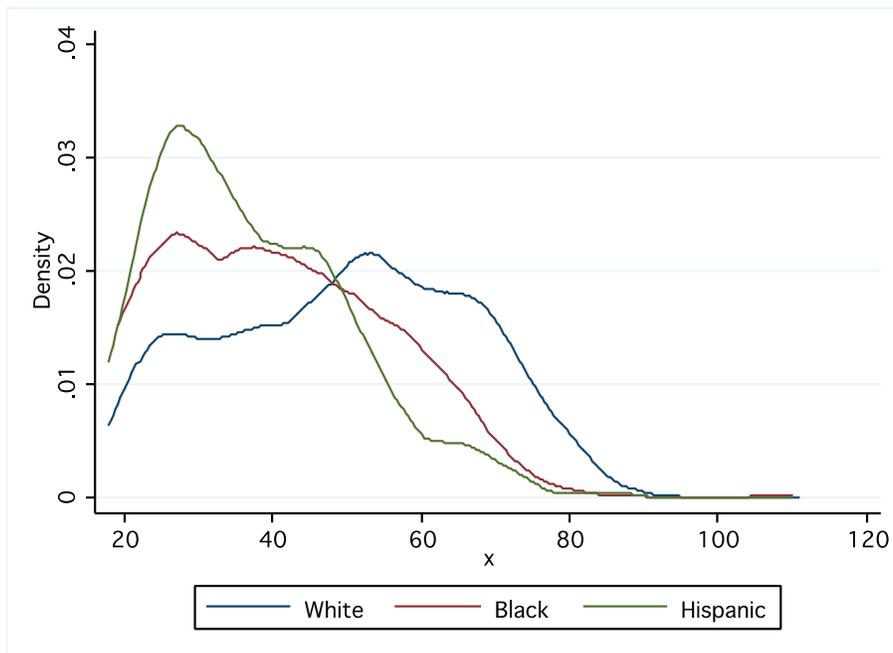
Finally, it should be noted that health status varies by ethnicity. Poor health status affects the ability to work as well as the ability to save. Furthermore, the incentive to save depends on one's expectations of longevity. We find that blacks are significantly more likely than whites or Hispanics to report having

a chronic illness. At the same time, there is hardly any difference in reported average expectations of survival to the age of 75.

5.2. Financial Capability

Although the precise definitions of financial capability are difficult to pin down (see Hung, Parker, and Yoong, 2010), two key components are financial literacy/knowledge and financial access. In this study, we are able to consider measures that proxy for both.

In the first case, many authors have established that, independent of formal education, financial literacy has an important role in determining whether or not people save. In this study, we adopt a measure of financial literacy that relies on an increasingly widely-used methodology based on a module of questions first fielded in the Health and Retirement Study by Lusardi and Mitchell (2007) and replicated in the ALP in 2009. To construct this index, we administered a battery of questions about basic financial literacy including interest compounding, time value of money, and inflation as well as a second battery of questions about investments, including properties of different asset types and diversification. We then used factor analysis, retaining one principal factor, to obtain weights which we then applied to the responses in order to compute an index of financial literacy[17]. For robustness checking, we have other measures of financial literacy as well, including self-reported mathematics skill and the reported level of confidence in own ability to handle financial matters

In the second case, we consider a measure of self-reported access i.e. the extent to which the respondent agrees that he/she is confident in his/her ability to access necessary financial products and services. We also use a simple measure of unbankedness; i.e., whether or not the respondent has a bank checking or savings account[18]

Table 6: Summary Statistics by Ethnic Group, Financial Capability

	Confident in math-skills	Financial Literacy Index	Confident in financial matters	Confident of financial access	Unbanked
White	59%	0.03	86%	63%	8%
Black	62%	-0.76	78%	50%	38%
Hispanic	63%	-0.72	77%	58%	31%

First, we note a striking fact: white, black and Hispanic respondents are very similar in their self-assessment of mathematical skills, with black and Hispanics actually slightly more likely to report confidence in their ability. However, this trend is reversed when the households are asked about skills related to financial matters specifically, in spite of the strong role that numeracy plays in financial decision making. A second striking fact is that on an absolute basis, more individuals in all categories are likely to express confidence in financial skills than math skills. Indeed, almost 90% of whites, and 80% of black and Hispanics are confident in their ability to handle financial matters.

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[17] The details of the index construction are available from the authors upon request

[18] Alhough in a regression context, this is problematic when the zero value for balances enters as the dependent variable

Figure 3: Distribution of Financial Literacy Index, Kernel Density Estimation
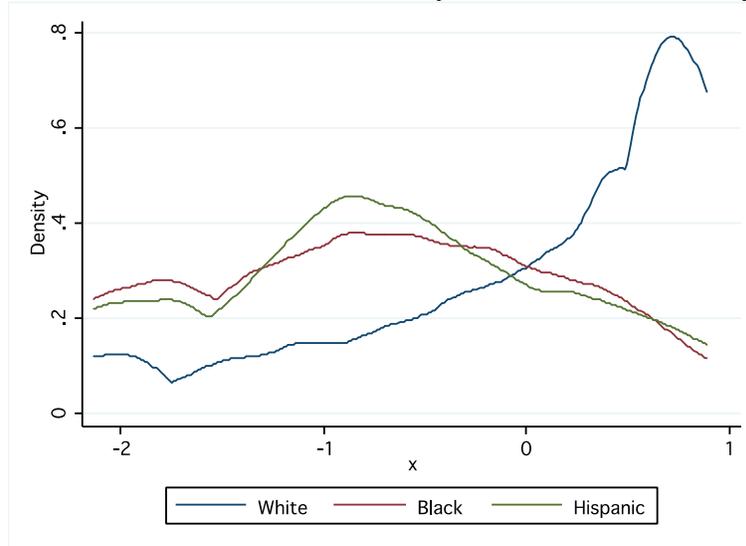
On average, the objectively assessed financial literacy index suggests that there is a clear gap between whites and blacks or Hispanics, who are both much behind. Figure 3 shows the distribution of the index, which gives a more complete picture. For whites, the financial literacy index is skewed positive and well to the right of the normalized mean of zero. The distribution of scores is quite different from that of blacks and Hispanics, which are very similar to one another (more symmetric, centered negatively and with a more evenly-spread mass)

Only about 60% of whites and Hispanics, and 50% of blacks report being confident of financial access. However, although these self-assessments are quite close for whites and Hispanics, the gap in actual reported unbankedness is large. Only 8% of white households are unbanked, compared to 31% of Hispanics, suggesting a remarkable difference in expectations. These proportions compare highly against other January 2009 data, wherein an estimated 21.7 percent of black, 19.3 percent of Hispanic households and 3.3 percent of white households were found to be unbanked (FDIC, 2010).

5.3. Preferences and Norms

Finally, we take measures of a number of individual preferences and social norms that may be related to savings and investments.

As with many other studies we measure risk aversion and time preferences. For risk aversion, we use a self-assessment (whether individuals strongly disagree/disagree that they like to take risks. While rough, this measure has been shown to be well-correlated with more quantitative methods. To measure time-preference, we asked respondents to make a hypothetical choice: to receive $1250 in a year versus $1000 today. We also asked them to make the same hypothetical choice a year from today i.e. receive $1250 in two years versus $1000 a year from today. We categorize individuals as patient if they chose to delay and receive $1250 in a year versus $1000 today. We also categorized individuals as time-inconsistent (present-biased) if they chose to receive $1000 today vs $1250 in a year (short-term impatient) but to receive $1000 in a year vs $1250 two years from today (long-term patient).

In terms of social, possibly ethnically-mediated norms and relationships, we proxy for the degree to which social networks substitute for individual retirement savings, by asking respondents to indicate

if they expected to rely (or were relying) on family support rather than their own resources during retirement[19]. We also note whether respondent discusses retirement with their friends and family. Finally, we compute a index of trust in formal financial institutions, using the same methodology as the financial literacy index. In MS189, respondents were asked to assign a trust rating from 1 to 5 (1 being not trusting at all, to 5 being complete trust) for 5 types of financial institutions (banks, the stock market, advisors, insurance companies, stock brokers). We then applied factor analysis to the scores. As with the financial literacy index, the resulting eigenvalues suggested one principal factor, which was retained for scoring coefficients.

Table 6: Summary Statistics by Ethnic Group, Individual Preferences/Norms

	Risk-averse	Patient	Time-inconsistent (present-biased)	Expect to rely on family support in retirement	Ask friends/family about retirement decisions	Financial Trust Index
White	38%	34%	3%	5%	48%	0.01
Black	31%	25%	4%	18%	53%	-0.14
Hispanic	23%	21%	6%	12%	56%	-0.17

Table 6 shows that firstly, white respondents are more risk-averse, more patient and less present-biased than black and Hispanic respondents. Secondly, white respondents are less likely to report expecting to rely on family support in retirement, and less likely to discuss their retirement decisions with their friends or family. Conversely, they have higher levels of trust in financial institutions.

Figure 4: Distribution of Financial Trust Index, Kernel Density Estimation

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[19] Note that in a regression this may be interpreted as potentially endogenous if the dependent variable is the total amount saved
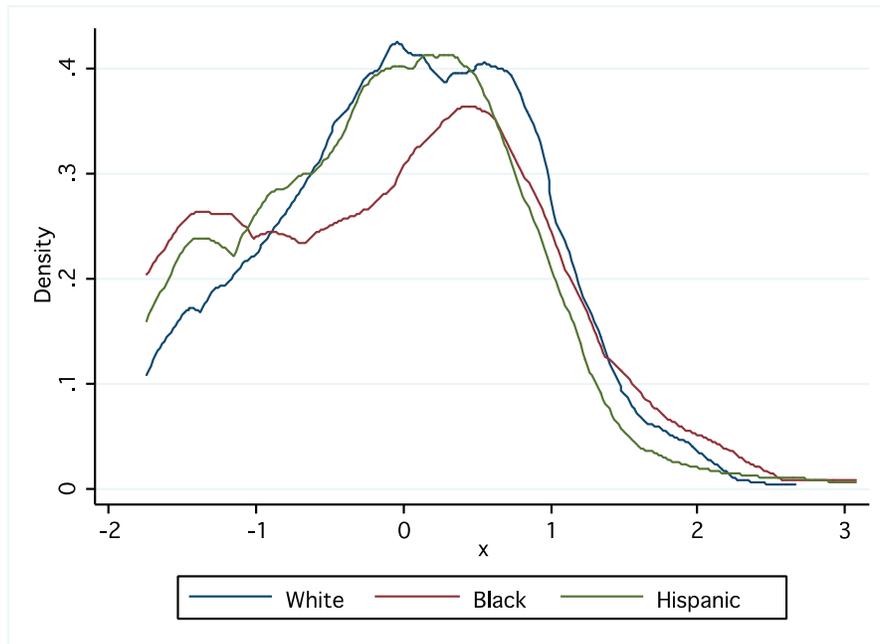
Interestingly, Figure 4 shows that the shape of the distribution for financial trust index is more similar across ethnic groups than for financial literacy. It also suggests, that unlike whites, the distribution for blacks and Hispanics is somewhat bimodal with a small but important left tail i.e. a small group of individuals who do not trust any institutions at all and a larger group who have a reasonable amount of trust in some institutions.

6. Regression Analysis

In this section, we explore how these potential determinants of retirement savings relate to observed disparities in retirement savings between non-Hispanic whites and the minority groups of blacks and Hispanics. Many studies of disparities employ Blinder-Oaxaca decomposition methods. The Blinder-Oaxaca decomposition method explains the gap between two groups by decomposing it into one part that is due to inter-group differences in the *magnitudes* of the determinants, and a second part that is due to inter-group differences in the *effects* of the determinants. For example, we may consider that white respondents save more in the first instance because they have higher income, but also in the second instance, because they have a higher marginal propensity to save out of income.

We first consider the basic socioeconomic endowments alone: income, education and age. For this analysis, we perform the pooled version of the Blinder-Oaxaca decomposition. In such an analysis, we first compute a baseline linear regression model over the entire sample with the endowments and a minority indicator as independent variables to obtain reference coefficients. We then decompose the gap into an "explained" part of the gap, i.e. the amount that can be accounted for by differences in these endowments, given the reference coefficients, and an "unexplained" part, i.e. the amount that can be accounted for group-specific effects relative to the reference coefficients.

Table 7: Oaxaca Decomposition, Contribution of Socioeconomic Determinants

		Estimated net worth ($)		Dedicated retirement savings ($)	
		Coeff.	P>[z]	Coeff.	P>[z]
Overall	Minorities	$72,729	0.00	$25,351	0.00
	White	$241,493	0.00	$120,060	0.00
	Difference	-$168,764	0.00	-$94,708	0.00
	Explained	-$146,933	0.00	-$68,505	0.00
	Unexplained	-$21,831	0.31	-$26,204	0.00
Explained	Age	-$83,426	0.00	-$32,435	0.00
	Log household income	-$53,407	0.00	-$27,209	0.00
	High school graduate	-$10,099	0.00	-$8,861	0.00
Unexplained	Age	-$261,095	0.00	-$116,624	0.00
	Log household income	-$593,407	0.00	-$453,373	0.00
	High school graduate	-$44,958	0.02	-$32,039	0.00
	Constant	$877,629	0.00	$575,833	0.00

*Note that for retirement savings and net worth, we drop observations below the 1st and above the 99th percentile to eliminate outliers

Table 7 shows that, for both outcomes, differences in basic socioeconomic endowments, can explain most but not all (especially for dedicated retirement savings) of this variation. Furthermore, an overwhelmingly large portion of unexplained variation comes from differences in the coefficient on income. In other words, differences in individuals' background characteristics earn explain a large fraction of the differences in savings outcomes, but a significant remaining unexplained part is due to differences in the marginal propensity to save out of income.

Table 8 explores a fuller decomposition that shows that differences in the additional determinants explains almost all the disparities in net wealth, but that significant unexplained variation in dedicated retirement savings exists. The first two columns address the whole sample, and the last two columns only those who are offered DC plans.
In the larger sample, focusing on explained variation, while age is the largest contributory factor, a similar amount of the gap can be attributed to differences between groups in income and financial literacy. In other words, financial literacy explains as much of the gap as does income. When we consider only the population of individuals offered a DC plan, however, we note that the effects of financial literacy and access becomes insignificant.

One statistically significant contributor is differences in patience across groups. Equally important to note are contributions to disparities in retirement savings from differences in coefficients, or the unexplained variation. There are significant differences in the effect of income and the effect of financial access, suggesting disparities in behavior across groups even when presented with the same opportunities.

Table 9 examines disparities in behavior in DC plans. From the previous results, we note that, conditional on being offered a plan, there seems to be little difference between groups in the decision to enroll. However, there are differences in the decision to contribute and draw down early on the 401(k) plan. Table 9 shows that, when considering enrolment and contribution behavior, while the

sign of the gap is negative with respect to minorities, the actual difference in this sample is not statistically significant (and that differences in endowments would actually predict an even wider gap).

For withdrawals and/or borrowing, however, most of the difference across the two groups is unexplained variation. Most significantly, there are differences in the effect of financial access. The latter is particularly interesting, and suggests that access to formal financial services may be particularly important for minorities in that it protects them from having to draw down on their accumulated retirement savings plan assets in times of financial stress (hence not only reducing their savings but also potentially incurring penalties), but that somehow minorities are not making use of access in the same way.

These decompositions are useful in providing an idea of how much variation can be usefully attributed to the various determinants. However, this type of analysis is subject to two important limitations. Firstly, standard Blinder-Oaxaca decomposition methods are restricted to comparisons between two groups, in this case non-Hispanic whites and minorities collectively. However, as the initial descriptive analysis suggests, there could be potentially important differences in black and Hispanic group-level measures that make aggregation inappropriate. This is especially true with respect to behavior in the context of DC plans. Secondly, the models in the decompositions are based on ordinary least squares and yield predictions regarding means, while as previously noted, it is appropriate to consider the median individuals.

Table 8: Oaxaca Decomposition, Contribution of Multiple Determinants

			Est. Net Worth		Dedicated Retirement Savings		If Offered DC Plan Est. Net Worth		If Offered DC Plan Dedicated Retirement Savings	
			Coef.	Z-stat	Coef.	Z-stat	Coef.	Z-stat	Coef.	Z-stat
Overall		Minorities	70773	0.00	26874	0.00	90234	0.03	45349	0.00
		White	189388	0.00	119466	0.00	179401	0.00	154035	0.00
		Difference	-118616	0.00	-92592	0.00	-89168	0.05	-108686	0.00
		Explained	-119243	0.00	-73516	0.00	-71904	0.00	-65705	0.00
		Unexplained	627	0.98	-19076	0.05	-17264	0.70	-42981	0.01
Explained	Demographics	Age	-40159	0.00	-26507	0.00	-21735	0.06	-17270	0.05
		Log household income	-31405	0.00	-16002	0.00	-22143	0.05	-15088	0.04
		High school graduate	1972	0.60	-3873	0.04	1619	0.73	-4058	0.18
	Health status	Chronic illness	-1385	0.44	-783	0.51	-2131	0.51	-878	0.51
		Pr(live >75)	-185	0.66	-112	0.69	407	0.69	-176	0.88
	Financial capability	Financial literacy index	-32721	0.00	-14450	0.00	-1533	0.86	-10863	0.15
		Financial access	-3506	0.17	-3160	0.02	-5995	0.18	-3736	0.19
	Preferences	Risk aversion	1582	0.33	855	0.35	370	0.74	-312	0.72
		Patience	-8704	0.01	-6972	0.00	-13568	0.01	-9060	0.02
		Present-bias	-8	0.99	357	0.51	-264	0.77	-225	0.81
	Norms	Information from social network	-2246	0.11	-1476	0.11	-6742	0.13	-3346	0.09
		Expected future transfers	162	0.84	423	0.65	39	0.96	-209	0.92
		Financial Trust Index	-2639	0.16	-1815	0.14	-227	0.82	-485	0.74
Explained	Demographics	Age	-245807	0.00	-148306	0.00	-199596	0.07	-124795	0.04
		Log household income	-366448	0.00	-322993	0.00	-168655	0.59	-237486	0.17
		High school graduate	-19792	0.40	-20837	0.01	-86728	0.20	-11980	0.47
	Health status	Chronic illness	17398	0.22	5976	0.28	-4488	0.85	-2404	0.77
		Pr(live >75)	-11992	0.73	9596	0.65	-49607	0.51	-12894	0.80
	Financial capability	Financial literacy index	-2288	0.76	2291	0.53	6094	0.51	1146	0.78
		Financial access	-7062	0.75	-15257	0.07	21329	0.62	-22687	0.26
	Preferences	Risk aversion	-7814	0.45	-2014	0.63	-25640	0.14	-11756	0.15
		Patience	-13938	0.24	-12934	0.01	-23349	0.07	-12704	0.15
		Present-bias	-1834	0.54	936	0.53	775	0.60	853	0.37
	Norms	Expected future transfers	242	0.91	1920	0.16	-4373	0.52	620	0.75
		Information from social network	18735	0.47	18728	0.05	-61715	0.39	21253	0.25
		Financial Trust Index	1634	0.35	1126	0.28	-116	0.97	-1315	0.62
	Constant		639593	0.00	462694	0.00	578807	0.04	371168	0.07
	N			1997		1939		782		808

*Note that for retirement savings and net worth, we drop observations below the 1st and above the 99th percentile to eliminate outliers

Table 9: Oaxaca Decomposition, Contribution of Multiple Determinants

			Enrolled (if offered)		Contributing (if enrolled)		Withdrawing (if enrolled)	
			Coef.	Z-stat	Coef.	Z-stat	Coef.	Z-stat
Overall		Minorities	0.80	0.00	0.80	0.00	0.22	0.00
		White	0.81	0.00	0.83	0.00	0.07	0.00
		Difference	-0.02	0.71	-0.03	0.51	0.15	0.01
		Explained	-0.05	0.05	-0.08	0.03	0.04	0.07
		Unexplained	0.04	0.48	0.05	0.39	0.10	0.04
Explained	Demographics	Age	-0.02	0.09	-0.02	0.07	0.01	0.25
		Log household income	-0.03	0.07	-0.05	0.03	0.00	0.75
		High school graduate	0.00	0.54	0.01	0.17	0.00	0.94
	Health status	Chronic illness	0.00	0.47	0.00	0.86	0.00	0.67
		Pr(live >75)	0.00	0.71	0.00	0.45	0.00	0.75
	Financial capability	Financial literacy index	0.02	0.37	-0.02	0.46	0.02	0.39
		Financial access	0.00	0.33	-0.01	0.34	0.00	0.71
	Preferences	Risk aversion	0.00	0.91	0.00	0.44	0.00	0.59
		Patience	0.00	0.78	0.00	0.82	0.01	0.05
		Present-bias	0.00	0.79	0.00	0.71	0.00	0.54
	Norms	Expected future transfers	-0.01	0.20	0.00	0.49	0.00	0.78
		Information from social network	0.00	0.96	0.00	0.39	0.00	0.34
		Financial Trust Index	0.00	0.80	0.00	0.79	0.00	0.79
Explained	Demographics	Age	-0.10	0.58	-0.32	0.12	-0.47	0.01
		Log household income	-0.79	0.02	0.59	0.13	0.51	0.17
		High school graduate	-0.10	0.09	-0.06	0.29	0.04	0.53
	Health status	Chronic illness	0.03	0.18	-0.01	0.71	0.05	0.15
		Pr(live >75)	0.21	0.12	-0.03	0.82	0.12	0.41
	Financial capability	Financial literacy index	0.02	0.28	0.01	0.77	0.04	0.16
		Financial access	0.06	0.24	-0.12	0.06	-0.20	0.03
	Preferences	Risk aversion	0.00	0.97	-0.02	0.39	-0.06	0.06
		Patience	-0.05	0.11	0.00	0.99	0.00	0.95
		Present-bias	0.00	0.73	0.00	0.99	0.00	0.41
	Norms	Expected future transfers	0.01	0.61	0.00	0.97	0.00	0.73
		Information from social network	0.11	0.04	0.05	0.42	-0.06	0.38
		Financial Trust Index	0.00	0.87	0.01	0.48	0.00	0.62
	Constant		0.63	0.11	-0.05	0.92	0.15	0.76
	N		821		684		684	

To try to understand the impact on the median individual in the distributions of net worth, dedicated retirement savings and retirement plan balances, we employ quantile rather than linear regression methods.

 We regress the outcome variables of interest on the groups of predictors above (excluding health for parsimony). In this case, the effects reflect the impact on the median rather than the mean.
Tables 10a and 10b show the results of quantile regression analysis for the two dependent variables, estimated net worth and dedicated retirement savings. In both cases, the results are striking. There are significant differences by ethnicity, as shown in Column 1 of both tables. In both instances, these effects are attenuated by the inclusion of the cluster of demographic characteristics but remain significant (Column 2).

The inclusion of financial capability variables (Column 3), however, in both tables, results in the attenuation of the ethnicity effects. Column 4 demonstrates that effect of the inclusion of the preference and norms measures also attenuates the effects somewhat, but that the effect is not as large (both in terms of magnitude and statistically speaking) as the inclusion of the financial capability variables. Column 5 shows the full specification.

Table 10a: Stepwise Quantile Regression – Estimated Net Worth

	1	2	3	4	5
Outcome:Net Worth					
Black	-1.90e+05***	-4.43e+04+	-2.14E+04	-3.68E+04	-1.92E+04
Hispanic	-1.46e+05***	-7194.184	16232.525	-670.957	16983.456
Age		8014.580***	7433.974***	7433.230***	7094.913*
Log household income		47918.682***	38896.407***	44327.327***	39126.524*
High school graduate		64527.677***	38867.115*	44975.366**	30493.803*
Financial literacy index			48101.065***		36799.270*
Financial access			58026.585***		37095.440*
Risk aversion				-3.03e+04*	-2.50E+04
Patience				1.11e+05***	99683.932*
Present-bias				12292.123	14367.234
Expected future transfers				-4.34E+04	-2.65E+04
Information from social network				-4.33e+04**	-4.10e+04*
Financial Trust Index				29422.997***	19083.472*
Constant	2.36e+05***	-7.07e+05***	-6.07e+05***	-6.32e+05***	-5.79e+05*
N	2744	2654	2654	2615	2615

Table 10b: Stepwise Quantile Regression – Retirement Savings

	1	2	3	4	5
Outcome:Dedicated Retirement Savings					
Black	-4.56e+04**	-3.60e+04*	-2.64e+04+	-3.16e+04*	-2.46e+04+
Hispanic	-4.96e+04***	-1.54E+04	-4930.534	-1.08E+04	-2464.994
Age		2829.102***	2766.870***	2726.442***	2670.284***
Log household income		14505.297***	11440.978***	13180.426***	10991.633**
High school graduate		21336.595*	13927.039	16060.984+	11428.71
Financial literacy index			16134.182**		13061.399*
Financial access			18793.797*		18417.181*
Risk aversion			3983.771		9449.797
Patience				24281.522**	18711.990*
Present-bias				-4.00E+04	-4.04E+04
Expected future transfers				-1.00E+04	-8367.059
Information from social network				-8120.939	-8017.946
Financial Trust Index				7304.391	5091.778
Constant	71759.398***	-2.36e+05***	-2.12e+05***	-2.19e+05***	-2.05e+05***
N	760	750	750	747	747

7. Experimental Analysis

Overall the results of the survey analysis suggests that ethnic disparities in wealth accumulation outcomes can largely be accounted for by two key contributing factors: firstly demographics related to earnings potential, and secondly, differences in financial capability.

However, the analysis remains silent on the role of choice architecture in retirement savings plans and some aspects of group-specific behavior, especially in the context of retirement savings plans remain unexplained. To explore these, we designed and conducted a hypothetical choice experiment to further examine the role of ethnic priming and choice-architecture in a series of hypothetical choice tasks related to savings and investment.

7.1. Tasks and Randomization

All respondents to MS210 were asked to perform three tasks.

- *In the hypothetical savings task,* respondents were asked "Suppose that you were to receive $1000 as an unexpected inheritance from a relative. What would you do with this money?" and given four options: save or invest, spend, give the money to a friend or relative or other.

- *In the hypothetical risk aversion task*, respondents were asked to select one of two options in a series of gambles that took the form below

  "Which would you prefer, the sure payment or the die-roll? (Choose A or B.)

  (A)   I get $1000 for sure.
  (B)   If the die comes up 1, 2, or 3, I get $1600.
         If the die comes up 4, 5, or 6, I get nothing."

  The amount offered in the die-roll would increase from $1600 to $3200. Respondents' risk aversion was measured as increasing with the amount of money needed to take the gamble.

- Finally, in the hypothetical portfolio allocation task, respondents were told "Suppose that you were to receive $1000 as an unexpected inheritance from a relative **on condition that you use it for your retirement savings' and asked** how they would divide this money across the following assets: individual stocks, stock mutual funds, bond mutual funds, money market funds/cash and others

At the same time respondents were exposed to two orthogonal randomized experiments

- ***Ethnic priming experiment*** The experimental setup follows closely that of Choi, Benjamin and Strickland(2010). In this framework, the researcher creates exogenous variation by randomly varying ethnic identity salience and the marginal effect of religious identity is the change in respondents' choices when ethnicity is made salient. To raise the saliency of ethnicity without imposing further value judgements, Choi, Benjamin and Strickland(2010) ask college students about living arrangements. In the ethnic priming treatment, students are asked to give pros and

cons about living with someone of the same or different ethnicity, while the controls were asked about living on/off campus. In our treatment, prior to any choice tasks, we ask respondents about working: in the ethnic priming treatment, respondents are asked to give the pros and cons of working for a supervisor of the same or different ethnicity, while the control group is asked about working at home versus commuting.

- ***Default option experiment*** Many proposals for improving equity in retirement savings plans focus on automatic enrolment and defaults. In a cross-cutting randomization for the portfolio choice task, we presented three alternative default options for the allocations similar to that given by employers.

    o In the baseline case, no default was provided.

    o In the default treatment case, the entry fields were pre-filled with 100% in the case of cash.

    o In the suggested treatment case, the entry fields were not prefilled, but an example showing 100% cash was provided.

  This randomization allows us to see firstly if defaults have an impact on hypothetical behavior, and furthermore, isolate and compare these to effects that result purely from suggestion.

7.2. Results

In Table 11, we regress the outcomes of the savings choice task on individual ethnicity dummies, an indicator for the randomized treatment and a vector of the other control variables (including whether or not the household previously reported spending beyond their means)

The results show that firstly, black and Hispanic respondents are less likely to save and more likely to spend, even with a hypothetical amount. Also, black respondents are more likely to report giving money to a social connection. Ethnic identity, when made salient, further decreases the amount saved and increases slightly the amount given to a social connection or used for other purposes. However, these effects hold for all types of respondents. While it appears that minority-specific effects may go the other way, the estimates are not statistically significant. The results are qualitatively similar to an alternative specification (not shown) where blacks and Hispanics are split into single "minority" group.

In Table 12 and 13, we examine the results for the other two tasks, again grouping blacks and Hispanics into a single "minority" group for clarity of presentation. Recall that in the portfolio choice task, the default and the suggestion treatment are both anchored to a 100% cash allocation. The bottom row of Table 12 shows mean allocations that for all groups, the power of defaults is strong: there is a significant movement towards cash for all. However, when we consider the effect of priming and the simple "suggestion" treatment, there is a significant difference by ethnicity: firstly, the prime seems to move minorities in the direction of cash, and the suggestion treatment appears to be reinforced by the prime.

Table 11: OLS estimates - Savings Task and Ethnic Priming

	Save	Spend	Give to friend	Other
Minority	-104.411***	80.347***	15.858*	8.205
Ethnic priming	-64.112***	21.46	9.152+	33.499**
Minority*priming	26.764	-37.856	2.677	8.414
Age	1.680**	-1.194**	0.392*	-0.878*
Log household income	-6.198	4.666	-2.946+	4.478
High school graduate	-14.235	10.14	2.134	1.961
Financial literacy index	-6.919	-9.283	-1.375	17.576**
Financial access	60.146***	-37.214**	0.969	-23.900*
Risk aversion	18.929	-34.191*	2.308	12.954
Patience	78.226***	-42.008**	0.179	-36.396***
Present-bias	-39.38	-16.719	16.88	39.219
Expected future transfers	-121.045***	74.618**	-10.533	56.960**
Information from social network	2.395	-15.972	3.72	9.856
Trust index	-0.511	5.517	1.289	-6.295
Constant	622.026***	271.919***	33.046	73.009+
N	2429	2429	2429	2429

Table 12: Summary Mean of Cash holding by Treatment Group

| | White | | Minorities | |
% Cash allocation	No prime	Prime	No prime	Prime
No design treatment	26.77	28.30	20.98	30.50
Suggestion	33.61	32.83	32.38	49.32
Default	45.20	43.95	47.88	52.94

Table 13: OLS estimates - Risk Aversion, Portfolio Choice and Ethnic Priming

	Risk Aversion	Stocks	Bonds	Cash	Other
Priming	-0.002	-0.236	0.419	1.052	-1.235
Suggestion treatment		3.268**	-0.26	-0.372	-2.636*
Default treatment		-8.627***	-3.736*	20.227***	-7.865**
Priming*Suggestion		-1.488	1.874+	-2.23	1.844
Priming*Default		4.231	-4.607+	-7.529+	7.905*
Minority	-0.273+	10.196**	-0.593	-1.709	-7.895*
Minority*Priming	0.065	-10.342*	7.003*	0.393	2.946
Minority*Suggestion		-1.251	2.807*	-5.005*	3.449*
Minority*Default		1.426	-1.265	1.699	-1.86
Minority*Priming*Suggestion		-4.222	-13.169***	21.523***	-4.132
Minority*Priming*Default		-4.455	1.916	5.802	-3.262
Age	0.013***	-0.231***	0.002	0.156**	0.072
Log household income	-0.124***	-0.084	-0.3	0.966	-0.582
High school graduate	0.119	5.537***	2.051+	-3.263+	-4.326**
Financial literacy index	-0.199***	8.913***	0.599	-7.203***	-2.308*
Financial access	-0.038	4.178**	1.015	-4.495*	-0.697
Expect future transfers	0.270+	6.960*	-0.315	-2.546	-4.098
Information from social networks	0.077	1.076	0.916	0.394	-2.385
Trust index	-0.139**	3.338***	1.566*	0.607	-5.510***
Constant	4.770***	38.279***	16.688***	17.045*	27.988***

N=2379

Table 13 above considers this pattern more formally, with controls for the other determinants of decision making. The regression analysis confirms that the effect of defaults is strong and statistically significant across all ethnic groups. Interestingly there is a small negative interactive effect of suggestion for minority groups without priming, and a strong positive interactive effect of suggestion for minority groups when priming is present. One hypothesis may be that these effects are not due to suggestion itself, but because priming changes the risk preferences of minorities differentially. However, in Column 1, we show that firstly, risk-aversion for minorities overall in this sample is lower, and secondly, the priming treatment has no significant effect on the risk-preferences of minorities.

9. Summary Discussion

Differences in savings and wealth accumulation may be attributed to a number of factors, including differences in underlying socio-economic characteristics, preferences and attitudes, and environmental differences that limit access and opportunity including potentially discriminatory practices. Evidence also suggests that minority groups in the United States tend to be excluded or participate only on the margins of the financial mainstream, and to have lower levels of retirement savings. While this is partly attributable to lower levels of financial resources, differences in financial literacy, access and cultural

norms may also leave them less equipped to make decisions that protect or improve their financial welfare now and in the future (see e.g. Lusardi and Mitchell (2009, 2010). Further understanding the degree to which wealth disparities can be attributed to different factors is important in order to consider the necessity and efficacy of policy interventions to affect changes in these mediators. If (hypothetically only) most of the gap may be explained by differences in demographics that are likely to converge, the gaps may shrink over time. Such a case has very different implications for policymakers than a case in which, for instance, a large part of the gap is due to factors that are unlikely or difficult to change or, alternatively, if it remains unexplained.

This study, consistent with others preceding it, finds very large disparities in retirement savings between white, black and Hispanic households in the United States. The degree to which employee benefit plans are offered to working individuals and contribute to overall retirement savings also varies by ethnic group. Like the Ariel/Hewitt (2009) study, the results show that black and Hispanic workers have lower participation rates and, conditional on participation, lower contribution rates; in addition, black and Hispanic workers invest a smaller proportion of their plan in stock; however, in contrast, our results suggest that Hispanic workers are drawing down on their plans much more frequently than other ethnic groups. Overall, with the exception of the last finding, our results are largely quantitatively and qualitatively in line with the study based on actual plan data, which is reassuring as a validity check.

The advantage of our sample however is the ability to analyze the drivers of disparities in a joint setting. The main driver of disparities in savings balances, generally and in the context of DC plans, is clearly income, a factor that generally lies outside the scope of policymakers concerned with reducing inequity via the design of retirement savings plans.

In the general population, the results show a significant role for financial literacy and financial access, both of which can be at least partially addressed through policy levers such as financial education. Generally, policies that are targeted to low-income populations or low financial-literacy populations more broadly are likely to help eradicate ethnic disparities significantly.

Within the context of DC plans, however, the results suggest there are indeed gaps in enrolment and the incidence of contributing, but that the key area of policy concern for improving equity in outcomes may lie in focusing on the rates of savings as well as withdrawal behavior (and its consequences). Although the contribution of financial capability appears to be limited in this sample, further result suggest that there is room to explore a greater role for choice architecture in retirement savings plans. Experimental analysis shows that defaults can have a strong effect across all ethnic groups, reducing disparities by bringing everyone to the same outcome. However, information treatments are more subtle: these can have significant impacts for minorities, even controlling for differences in financial literacy. However, these effects should be carefully managed. Other areas of interest for further research is manipulation of patience norms. Given that patience is a consistently significant predictor of savings behavior, and varies by ethnicity, an interesting avenue for reducing disparities could be more intensive interventions targeted at increasing patience, even without an explicit ethnic prime.

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Appendix 1: Description of Sampling Weights

As with all surveys based on random samples, the composition of the un-weighted sample differs from the population composition. RAND constructs sampling weights to correct for this sampling error and to make the sample as representative of the population of interest as possible. The benchmark distributions against which the ALP is weighted are derived from the Current Population Survey (CPS). The sampling weights were constructed using the March 2008-2010 waves of the CPS, which includes the annual income supplement. Three weighting methods have been implemented for the ALP: cell-based post stratification, logistic regression, and ranking. After some experimentation, ranking was found to give the best results among these different methods. It allows finer categorizations of variables of interest (in particular, age) than cell-based post-stratification does, while still matching these distributions exactly. Variables were created that account for interactions with gender, so that all distributions are matched separately for males and females. The resulting set of variables whose distributions are matched exactly is:

- Gender × age, with 14 categories: (1) male, 18-24; (2) male, 25-34; (3) male, 35-44; (4) male, 45-54; (5) male, 55-64; (6) male, 65-74; (7) male, 75+. Categories (8)-(14) are the same as (1)-(7), except that they are for females instead of males.

- Gender × race/ethnicity, with 6 categories: (1) male, non-Hispanic white; (2) male, non-Hispanic African American; (3) male, Hispanic and other; (4) female, non-Hispanic white; (5) female, non-Hispanic African American; (6) female, Hispanic and other.

- Gender × (household) income, with eight categories: (1) male, <$25,000; (2) male, $25,000-$49,999; (3) male, $50,000-$74,999; (4) male, $75,000+; (5) female, <$25,000; (6) female, $25,000-$49,999; (7) female, $50,000-$74,999; (8) female, $75,000+.

- Gender × education, with six categories: (1) male, high school or less; (2) male, some college or a bachelor's degree; (3) male, more than a bachelor's degree; (4) female, high school or less; (5) female, some college or a bachelor's degree; (6) female, more than a bachelor's degree. All aggregate U.S. statistics for the SCPC were weighted using the sampling weights constructed in this manner.

Appendix 2: Additional Tables and Figures

Alternative Table 2a: Missing values treated as zeros

	Net worth estimate				Dedicated retirement savings			
	Mean	*Ratio of white:x*	Median		Mean		Median	
white	$322,740	*1.0*	$71,000	*1.0*	$129,444	*1.0*	$3,000	*6.7*
black	$41,170	*7.8*	$0	-	$31,475	*4.1*	$0	-
Hispanic/Latino	$85,236	*3.8*	$5,000	*14.1*	$27,134	*4.8*	$70	*285.7*
Asian-American	$311,213	*1.0*	$80,500	*0.9*	$89,618	*1.4*	$20,000	*1.0*
Native American	$26,776	*12.1*	$800	*88.1*	$16,872	*7.7*	$0	-
Other	$181,567	*1.8*	$2,500	*28.2*	$203,975	*0.6*	$1,000	*20.0*
N	*3059*				*3059*			