Can Americans Afford to Retire?

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Abstract: As members of the baby-boomer generation approach retirement age, much attention has been focused on whether these individuals are adequately prepared for retirement in regard to retirement savings. Research examining retirement adequacy has been mixed with some studies finding that Americans are adequately prepared while others find an insufficient level of preparedness (e.g., VanDerhei, 2003; The Urban Institute, 2009; Skinner, 2007; Munnell, et al, 2007; Hacker, 2008; Love, et al, 2008; Biggs, 2009). Using data from the 2004 Survey of Income and Program Participation, we calculate replacement rates for single individuals between the ages of 55 and 62 by gender, race, educational attainment, and income group. We compare our replacement rates to those found in the literature, and by varying our savings rate assumption, we perform a sensitivity analysis to highlight the impact of differing savings rates on the degrees of retirement preparedness for our sample. Depending on our savings rate assumption, we find median replacement rates that range from 66 percent to 75 percent for our sample as a whole, as well as for men and women. Similar rates are found for our other analysis groups. We find little evidence that levels of preparedness dramatically differ across demographic groups.

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Introduction

As members of the baby-boomer generation approach retirement age, much attention has been focused on whether these individuals are adequately prepared for retirement in regard to retirement savings. Research examining retirement adequacy has been mixed with some studies finding that Americans are adequately prepared while others find an insufficient level of preparedness (e.g., VanDerhei, 2003; The Urban Institute, 2009; Skinner, 2007; Munnell, et al, 2007; Hacker, 2008; Love, et al, 2008; Biggs, 2009).

If those purporting that Americans have insufficient savings for retirement are correct, then this national trend is alarming in that, if not addressed, it will lead to a decline in the standard of living for those no longer able to work as they approach the traditional retirement age. Retirement savings inadequacy will also have adverse macroeconomic consequences for the population as a whole, as the shrinking pool of financial savings will diminish availability of credit and investment funds necessary in the private sector to create employment and foster long run economic growth. Moreover, such a trend will potentially deplete state and local coffers, and increase the federal budget deficit as governments respond to the increased needs of the older population.

Using data from the 2004 Survey of Income and Program Participation, we calculate replacement rates for single individuals between the ages of 55 and 62 by gender, race, educational attainment and income group. We compare our replacement rates to those found in the literature, and by varying our savings rate assumptions, we perform a sensitivity analysis to highlight the impact of differing savings rates on the degrees of retirement preparedness for our sample. Depending on our savings rate assumption, we find median replacement rates that range from 66 percent to 75 percent for our sample as a whole, as well as for men and women. Similar

rates are found for our other analysis groups. We find little evidence that levels of preparedness dramatically differ across demographic groups.

Note, results reported in this paper are meant to illustrate that use of the methodology discussed in the following sections produces findings that are consistent with the rest of the literature. Therefore, statistics reported in this paper should not be interpreted as measures of retirement adequacy for any given demographic group.

Literature Review

The literature on retirement adequacy predominantly uses the replacement rate approach to measure the extent to which future retirees will be able to afford to retire at a level sufficient to support their pre-retirement standard of living (VanDerhei, 2006). This literature can be viewed as falling into two categories: 1) Those which use simple calculations to compute replacement rates (Moore and Mitchell, 1997; Munnell, et al., 2006) and 2) Those applying various advanced econometric modeling and simulation techniques to different components of the computations of pre-retirement and projected retirement income while incorporating life cycle events' impact on income, assets, and expenditures (e.g., the Urban Institute's DYNASIM model, AON Consulting/Georgia State University's retirement modeling, and Social Security Administration's MINT model).

Research in the area of retirement adequacy using the replacement rate approach varies in many respects in regard to the type of data used, as well as in how pre-retirement income and projected retirement income are defined and calculated. These studies are also distinguished by the assumptions they make regarding the inclusion of housing as an asset, the projected cost of health care, and their assumptions regarding taxes, inflation, rates of return on financial investments, and retirement age.

Most notably, these studies differ in their choice of target replacement rates, against which their calculated replacement rates are benchmarked. This choice is significant in that it ultimately determines whether the populations covered in these studies are at risk of failing to meet this target rate, and how far they will fall short of having a financially secure retirement. As stated in the Interim Report of the President's Commission on Pension Policy (1980), the conventional replacement rate in use had been 75 to 80 percent up to the end of the 20th century (Scheiber, 2007). More recent studies have used various thresholds from 75 percent to 90 percent (Alford, Farnen, and Schachet, 2004) to more conservative target rates of 85 percent to 95 percent used by Steinberg and Lucas (2004).

One of the most recent studies to examine retirement adequacy by calculating replacement rates is Brady (2010). Using a life-cycle framework (and simulated data), this study improves the typical measures of retirement adequacy by addressing the shortcomings present in these measures, namely: 1) Calculation of retirement income in nominal terms; 2) Failing to treat savings and, hence, assets as endogenous; and 3) A lack of accounting for owner-occupied housing in the replacement rate calculations. Given Brady's use of a life-cycle approach, consumption is assumed to be "smoothed" during retirement. Brady (2010) presents a series of replacement rates by incorporating different components of wealth step-by-step (e.g., adding in social security benefits, then adding in retirement savings, etc.); these results are presented both by including and excluding housing wealth.

Methodology

Following the approach of Brady (2010), but using survey data on individuals' wealth and income, along with assumptions concerning past and future income, and anticipated

expenditures during retirement, replacement rates are constructed for single individuals aged 55 to 62. These rates will then be compared with target replacement rates developed and in use by financial planners and pension analysts to assess the degree to which our sample meets these thresholds.

The replacement rate (RR*)* is defined as the ratio of projected Average Retirement Income (Y_{ret}) to pre-retirement Income (Y_{pre}):

$$RR = \frac{Y_{ret}}{Y_{pre}}$$

where Y_{pre} is annual pre-retirement income and Y_{ret} is average annual retirement income. This ratio will be compared against established target replacement rates to determine whether an individual or group on average is likely to meet or fall below meeting their pre-retirement standard of living. Y_{pre} is total income from earnings,[1] property and assets,[2] and other sources,[3] received as of the reference period, in 2004 dollars. Y_{ret} is a function of annual Social Security benefits (B_t), an annual annuity (A_t), and the probability that the person will be alive at age *t* ($\Pr(alive)_t$).

$$Y_{ret} = \frac{\sum_{t=62}^{100} (B_t + A_t)\Pr(alive)_t}{\sum_{t=62}^{100} \Pr(alive)_t}$$

[1] Earning is composed of the amount of gross earnings, wages and salary, and or the amount of monthly income from self-employment for each job and/or business recorded for the reference month.

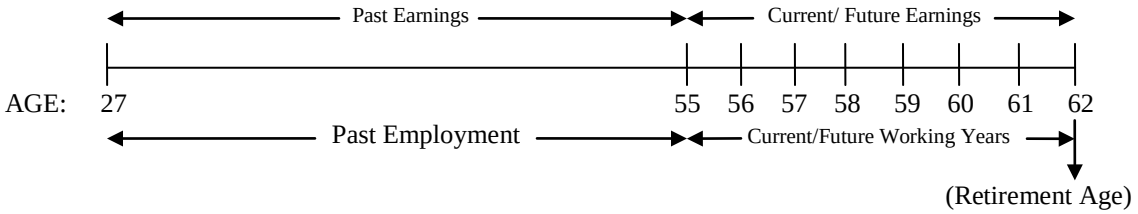
[2] Income from property and assets is composed of the sum of dividend income, interest income, and property and rental income.

[3] Other sources of income consists of various types of transfer payments such as Federal and State Supplemental Security Income, Veterans compensation, AFDC, cash assistance, employer disability payments, as well as money from relatives or friends and any other cash receipts.

As the above equation shows, Y_{ret} is the sum of benefits and an annuity weighted by the probability of being alive at a certain age,[4] from the age of retirement (t=62) to age 100, the age limit in our analysis.

The calculation of social security income (B_t) is based on the person's earnings over his or her working years. This calculation is done in two phases, one covering future earnings, that is, the projected average annual earnings from present up to the year of assumed retirement; and the other, past earnings, that is average annual earnings prior to one's current age, such that the individual is assumed to have worked 35 years and retires at age 62, the minimum retirement age to receive full social security benefits.[5]

The below diagram illustrates these two phases, for a 55 year-old person:



For each individual, past and future earnings are obtained by projecting current earnings forward and backwards, by adjusting current earnings by the percentage change in average earnings between each year that an individual worked in the above example, (starting with the year when they were 27 years old and until they turned 62) and 2004 (the only known data point,

[4] Pr $(alive)_t$ is the probability of survival from time t to time t+1.

[5] According to the Social Security Administration (SSA): "You can retire at any time between age 62 and full retirement age. However, if you start benefits early, your benefits are reduced a fraction of a percent for each month before your full retirement age." Please see the SSA website for "Retirement Benefits by Year of Birth," found at the following URL: http://www.ssa.gov/retire2/agereduction.htm.

that is, the year for which data was not extrapolated). The change in average earnings was calculated using the annual average wage table from the Social Security Administration (2010).[6]

These earnings will be referred to as "actual earnings" so as to distinguish them from "indexed earnings" which the Social Security Administration (SSA) bases their calculations of benefits on. Using our actual earnings calculations, we then calculate indexed earnings using the Social Security Administration's wage index.[7] Indexed earnings are then used to calculate the social security benefit (B_t).

Projected income from wealth is calculated in two steps. First, having calculated the accumulated wealth from present to the year retirement begins (age 62), we compute the amount of a regular annuity the retiree will receive from this accumulated wealth. The stock of wealth at retirement is accumulated from two sources: 1) The total savings out of annual income (earnings) accumulated from present up to retirement; and 2) The future value of the stock of wealth at present reinvested fully up to retirement.

Future Value of Savings from Income (FVSS):

$$FVSS = \sum_{t=t}^{62} \frac{S_t((1+i)^{62-t} - 1)}{i}$$

is a function of annual savings (S_t), rate of return i, and the years remaining until retirement (62-t). Savings is a function of annual earnings times the saving rate.

Future Value of the Stock of Wealth:

[6] We assumed that each individual's wages grew at the national average rate.

[7] See U.S. Social Security Administration (February 2010), Tables 2.A8 and 2.A9.

$$FVSW = \sum_{t=t}^{62} \frac{W_t((1+i)^{62-t}-1)}{i}$$

is a function of annual wealth (W_t), rate of return *i*, and the years remaining until retirement (62-*t*).

Future value of total wealth at retirement ($FVTW_R$) = FVSS + FVSW. Once the future value of total wealth at retirement ($FVTW_R$) is determined (Step 1), then the future stream of annuities the retiree can receive from this wealth during retirement can be calculated (Step 2) using the following equation for the Present Value of an Annuity Due (PV):

$$PV = (1+i)A_t\left[\frac{1-\left((1+i)^{-(100-t)}\right)}{i}\right]$$

Present value of an annuity is a sum of annual annuities (A) and the rate of return (*i*) from retirement age to our assumed age limit. Assuming that the prospective retiree will buy an annuity with their accumulated wealth at retirement, then, PV will be equal to $FVTW_R$, which then allows for solving for A, or the amount of annuity due to the person during their retirement years.

Lastly, given that the probability of surviving to be a certain age declines as one ages, to get an accurate average retirement income, the annual income during retirement can be weighted by the probability of survival. Using the Centers for Disease Control (CDC) life tables (2010), we compute these probabilities for every year starting from age 62 to age 100.

Using this probability, along with the above equations, we compute average retirement income Y_{ret}. Dividing Y_{ret} by pre-retirement income then gives us our estimated replacement rates (RR).

Data

In this paper, we use data on income and wealth from the 2004 Survey of Income and Program Participation (SIPP). SIPP is a longitudinal survey that follows the same households and individuals over time. The survey is conducted in waves, every four months. Sample members are asked about labor force participation, income amounts, demographic, and program participation information pertaining to the 4-month period preceding the interview month. The income and demographic data used in this paper were collected during wave 3 of the 2004 panel of SIPP, as were the asset-related data. For wave 3, interviews were conducted from October 2004 to January 2005.

Individuals' projected social security income is based on the average annual wage tables, wage index tables, and the annual maximum taxable earning tables (Tables 2.A8 – 2.A11) from the Social Security Administration's Annual Statistical Supplement to the Social Security Bulletin, 2009 (Social Security Administration, Office of Retirement and Disability Policy, 2010). The data for survival probabilities are from the United States Life Tables, 2006 (Centers for Disease Control and Prevention, 2010).

Findings

Estimated mean and median replacement rates are reported in Table 1 (standard errors for these replacement rates can be found in Table A1 of the Appendix). As has already been

emphasized above, results reported here are meant to illustrate that use of the methodology discussed in the previous section produces findings that are consistent with the rest of the literature. Therefore, statistics reported in this section should not be interpreted as measures of retirement adequacy for any given demographic group. All comparative statements in this report have undergone statistical testing, and, unless otherwise noted, all comparisons are statistically significant at the 10 percent significant level. The data presented in the tables are subject to error arising from a variety of sources, including sampling error, non-sampling error, and any other sources of error.

Several patterns are evident from the estimated mean and median replacement rates reported in Table 1. As expected, replacement rate increases for each demographic cohort as the savings rate increases. For the sample as a whole, median replacement rates range about from 66 percent to 75 percent. Median replacement rates for both males and females range from about 66 percent to 75 percent. Among whites, median rates range from 67 percent to 76 percent, and among blacks they range from 61 percent to 68 percent[8]. Those with some college education or a bachelor's degree had comparable replacement rates: for those with some college education they ranged from 67 percent to 77 percent, and for those with a bachelor's degree they ranged from 67 percent to 76 percent[9]. Those with high school diploma or less education had replacement rates ranging from 66 percent to 75 percent. Those with a graduate or professional

[8] The median replacement rates between whites and blacks are not statistically different under the 1 percent savings rate assumption.

[9] The median replacement rates between those with some college education and those with a bachelor's degree are not statistically significant under the 1 percent savings rate or under the 15 percent savings rate assumptions.

Table 1. Replacement Rates for Singles 55-62 Years of Age, by Demographic Group, Under Different Savings Rate Assumptions

Demographic Group	Savings Rate Assumption (Percent)									
	15		10		6		3		1	
	Replacement Rate		Replacement Rate		Replacement Rate		Replacement Rate		Replacement Rate	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
All	0.77	0.75	0.74	0.72	0.72	0.69	0.70	0.67	0.69	0.66
Gender										
Male	0.77	0.75	0.74	0.73	0.71	0.70	0.69	0.68	0.68	0.66
Female	0.78	0.75	0.75	0.71	0.72	0.69	0.71	0.67	0.69	0.66
Race										
White	0.78	0.76	0.75	0.73	0.72	0.70	0.71	0.68	0.70	0.67
Black	0.72	0.68	0.69	0.66	0.66	0.64	0.64	0.62	0.63	0.61
Education										
HS diploma or Less	0.79	0.75	0.76	0.71	0.73	0.70	0.71	0.67	0.70	0.66
Some college	0.79	0.77	0.76	0.74	0.73	0.71	0.71	0.69	0.70	0.67
Bachelor's degree	0.78	0.76	0.75	0.73	0.72	0.70	0.70	0.68	0.69	0.67
Graduate or professional degree	0.71	0.69	0.69	0.67	0.66	0.66	0.66	0.62	0.65	0.61
Income Group										
Bottom third	0.83	0.77	0.79	0.74	0.76	0.72	0.75	0.70	0.73	0.68
Middle third	0.83	0.82	0.79	0.77	0.76	0.74	0.75	0.71	0.73	0.69
Top third	0.69	0.66	0.66	0.63	0.64	0.61	0.62	0.59	0.61	0.58

Source: U.S. Census Bureau, Survey of Income and Program Participation Panel 2004, Wave 3. For information on sampling and non-sampling error see www.census.gov/sipp/sourceac/S&A04_W1toW12(S&A-9).pdf.

degree had replacement rate ranging from 61 to 69 percent. Among different income groups, the replacement rate varied from 68 to 77 percent, 69 to 82 percent, and 58 to 66 percent for the bottom third, the middle third, and the top third, respectively[10].

These results are similar to the literature that is methodologically comparable to ours (e.g., Munnell, et al., 2006 and Brady, 2010). Munnell, et al. (2006) found that the median replacement rate for single early boomers (those born between 1946 and 1954, and the cohort closest to our analysis sample) to be 80 percent, while for men and women of this same cohort, they found replacement rates of 79 percent and 83 percent, respectively. The higher rates found by Munnell, et al. (2006) could be attributable to the less conservative assumptions they make regarding the real rate of return on pre-retirement assets and annuity rates after retirement and to the fact that they include proceeds from reverse mortgages in their calculation of total assets. In addition, the Survey of Consumer Finances (the survey that they use in their study) in general captures a larger share of the higher income population than SIPP due to differing sample designs.

Brady (2010) finds replacement rates of 65 percent, 64 percent, 66 percent, and 63 percent for singles earning on average $35,000, $55,000, $75,000, and $100,000 respectively, with an assumption of a 6 percent savings rate for the first group, 9 percent for the second and third groups, and 10 percent for the fourth income group. Our findings, in regard to income group indicate median replacement rates for the bottom third (income less than $36,500), the middle third (income between $36,600 and $55,005), and the top third (income greater than or equal to $55,005) to be 72 percent (under the assumption of a 6 percent savings rate), 77 percent (under the assumption of a 10 percent savings rate), and 63 percent (under the

[10] The difference in median replacement rates between the middle and the upper third of the income groups is not statistically significant under the 15 percent or under the 1 percent savings rate assumptions.

assumption of a 10 percent savings rate), respectively. The differences between our results and those of Brady (2010) could be due to the fact that Brady's findings are based on simulated data, while ours are based on survey data. But more importantly, in our study, individuals are assumed to start working and saving at age 27, while the age at which individuals are assumed to start saving is much later under Brady (2010): age 42 for those with an average income of $35,000 or $55,000, and age 32 for those with average income of $75,000 or $100,000. The later one starts employment, the less time there is for accumulation of savings and assets, thereby resulting in a lower replacement rate.

Table 2 shows our estimates of retirement preparedness for our sample, where retirement preparedness is measured by the percentage of singles 55-62 years old whose replacement rates meet or exceed a given threshold. Standard errors associated with these estimates are reported in Table A2 of the Appendix. Once again, these results are reported for illustrative purposes only and are not necessarily indicative of retirement preparedness of any given demographic group.

As with replacement rates presented in Table 1, as the assumed savings rate increases, the degree of retirement preparedness increases as well. The increase in the degree of retirement preparedness is significant across all demographic groups as we increase the assumed savings rate from 3 percent to 10 percent (for Blacks, results associated with some of the assumptions are not reported due to the sample size not meeting the U.S. Census Bureau Disclosure requirements). However, the increase in preparedness is not statistically significant for all demographic groups if the change in the assumed savings rate is small (that is, if we move from 1 percent savings rate to 3 percent savings rate, etc.). It is also evident from Table 2 that, at any

Table 2. Retirement Preparedness Among Singles 55-62 Years of Age, by Demographic Group and Replacement Rate Threshold, Under Different Savings Rate Assumptions

		Savings Rate Assumption (Percent)				
		15	10	6	3	1
Demographic Group	Replacement Rate Thresholds*	Retirement Preparedness (Percent)*				
All						
	X = 0.81	39.18	29.77	19.59	16.18	15.22
	X = 0.72	55.62	49.76	43.53	37.96	32.91
	X = 0.65	70.89	65.72	59.06	55.78	51.65
Gender Male	X = 0.81	41.60	29.71	18.12	15.50	14.51
	X = 0.72	56.41	50.90	44.86	38.54	32.62
	X = 0.65	70.13	67.32	58.90	55.48	51.64
Female	X = 0.81	37.53	29.81	20.61	16.64	15.70
	X = 0.72	55.09	48.98	42.62	37.56	33.12
	X = 0.65	71.42	64.62	59.16	55.98	51.66
Race White	X = 0.81	40.75	31.37	21.74	18.10	17.03
	X = 0.72	57.15	51.15	45.49	39.94	34.76
	X = 0.65	72.11	66.98	60.49	57.28	53.11
Black	X = 0.81	26.60	--	--	--	--
	X = 0.72	44.61	39.05	29.87	25.85	--
	X = 0.65	59.57	55.49	47.34	44.14	40.07
Education						
HS diploma or less	X = 0.81	41.87	34.43	19.23	15.94	15.65
	X = 0.72	54.87	49.61	44.91	40.46	33.40
	X = 0.65	68.91	64.03	58.88	54.68	52.15
Some college	X = 0.81	41.97	27.79	18.33	14.27	13.30
	X = 0.72	61.52	55.94	47.88	39.33	32.26
	X = 0.65	78.12	73.49	64.59	61.97	56.65
Bachelor's degree	X = 0.81	41.50	33.85	24.12	19.45	18.08
	X = 0.72	57.08	53.39	44.43	38.82	36.82
	X = 0.65	70.91	65.79	60.42	58.02	55.56
Graduate or professional degree	X = 0.81	28.45	24.06	18.06	16.92	15.59
	X = 0.72	43.88	34.68	32.73	31.60	29.84
	X = 0.65	59.47	52.87	47.41	43.23	37.86
Income Group						
Bottom third	X = 0.81	44.28	35.79	22.13	18.88	17.60
	X = 0.72	63.44	57.49	49.33	44.32	36.90
	X = 0.65	80.15	77.57	70.58	67.14	60.83
Middle third	X = 0.81	52.09	36.02	21.65	16.36	15.75
	X = 0.72	68.49	62.98	58.04	48.49	42.85
	X = 0.65	82.55	78.84	73.01	70.31	65.96
Top third	X = 0.81	23.16	18.99	15.58	13.71	12.72
	X = 0.72	37.33	31.22	25.45	22.97	20.49
	X = 0.65	52.46	43.77	36.62	32.89	30.82

* Thresholds = X, and Retirement Preparedness is the percentage of singles 55-62 years of age whose replacement rate is equal to or greater than the Replacement Threshold levels (X).

(--) Data not reported due to the sample size not meeting the U.S. Census Bureau Disclosure requirements.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2004, Wave 3. For information on sampling and non-sampling error see www.census.gov/sipp/sourceac/S&A04_W1toW12(S&A-9).pdf.

given savings rate, the degree of retirement preparedness across all demographic groups increases as the threshold is relaxed.

There is no evidence to believe that there exist differences in retirement preparedness between men and women, and this is true irrespective of threshold level and savings rate used. Moreover, there is little evidence that levels of preparedness differ across different demographic groups. There are three exceptions to this. First, on average, the percentage of those who are prepared among blacks is less than the percentage of those who are prepared among whites, which holds for all threshold level and savings rate assumptions. Secondly, when we assume a savings rate of 15 or 10 percent and when the lowest threshold (65 percent) is used, there exists evidence to believe that the percentage of those who are prepared among those with some college education is greater than the percentage of prepared among those with a high school degree or less[11]. Finally, those with a bachelor's degree have higher levels of preparedness than those with a graduate or a professional degree, although this is not true at very low savings rates[12].

In regard to income, those in the top third of the income distribution have lower levels of preparedness compared to the middle and the bottom third income groups, although this is not always true when a threshold level of 81 percent and a savings rate of 1 percent or a savings rate of 3 percent is assumed. This seemingly paradoxical result can be explained by the fact maintaining pre-retirement standard of living might be more difficult for higher income groups. maintaining pre-retirement standard of living might be more difficult for higher income groups. In addition, the top third includes people with median earnings of $100,000, which means that

[11] This result is not statistically significant if we assume a 1 percent, 3 percent, or 6 percent savings rate.

[12] This result is not significant at the 81 percent threshold level and savings rate of 1 percent, 3 percent and 6 percent.

the households that fall into the top third category are not necessarily well-off (Munnell, et. Al., 2006). More importantly, we believe this result could very well be due to omission of housing from our calculation of wealth. Likewise, we believe that once we take housing into account in our calculations of replacement rates, this result will be drastically different.

Lastly, Munnell, et al. (2006) found 35 percent of single early boomers (born 1946-1954, the cohort most closely matching our sample) are at risk of not being adequately prepared for retirement. They found 30 percent of men among this cohort and 37 percent of women among this cohort to be at risk of falling below the target replacement rates.[13] As shown in Table 2, our results are consistent with these findings: assuming a threshold of 0.65 (we compare at this threshold given Munell's "at risk" definition) and a savings rate of 3 percent, we find about 55 percent of all singles (44 percent at risk), male singles (45 percent at risk), and female singles (44 percent at risk) to be prepared for retirement.

Conclusion

Using SIPP data, we examine retirement adequacy by calculating replacement rates by gender, race, educational attainment, and income group. Using our estimated replacement rates, we determine the degree of retirement adequacy for our sample. In view of the exploratory nature of this paper, we conclude that findings from SIPP are very promising, both in comparison to recent literature findings using similar approaches and methodology used in this paper, but also in regard to robustness and flexibility of the SIPP data.

[13] Munnell, et al. (2006) calculate target replacement rates for all single, men, and women in this cohort to be respectively 72 percent, 70 percent, and 73 percent. At risk is defined as anyone whose replacement rate falls more than 10 percent below these target rates. These figures as well as these findings are based on the following assumptions: applying a real return of 4.6 percent to pre-retirement assets, an annuity rate of 5.9 percent, retirement age of 65, and a savings rate of 3 percent. The authors also assume financial assets include proceeds from a reverse mortgage on the individual's home and these assets are 100 percent annuitized.

Our two indicators of retirement adequacy, replacement rates and the percentage of individuals at risk of falling short of maintaining their pre-retirement standard of living during retirement, are similar to those found in the literature. For our sample as a whole, median replacement rates range from 66 percent to 75 percent, as well as for women and men. Among whites, median rates range from 67 percent to 76 percent, and among blacks it ranges from 61 percent to 68 percent. Those with a high-school diploma or less, some college education, or a bachelor's degree had similar replacement rates ranging from 66 percent to 77 percent while those with a graduate or professional degree had rates that ranged from 61 to 69 percent. Among income groups, the replacement rate varied from 68 percent to 77 percent, 69 percent to 82 percent, and 58 percent to 66 percent for the bottom third, the middle third, and the top third, respectively. As for retirement preparedness (evaluated at the 65 percent threshold), we find 56 percent of all singles to be prepared for retirement. Similar degrees of retirement preparedness are found across demographic groups.

In regard to future research, we plan to expand the scope of our research by extending our analysis to include married-couples. In addition, we will also include housing as part of wealth in future calculations of replacement rates. Lastly, given the ongoing nature of SIPP, our analysis can also be extended to compare our results with other SIPP panels and waves to gain a further understanding of the degree of retirement adequacy in the U.S.

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Appendix A

Table A1. Standard Errors for Replacement Rates for Singles 55-62 Years of Age, by Demographic Group, Under Different Savings Rate Assumptions

Demographic Group	Savings Rate Assumption (Percent)									
	15		10		6		3		1	
	Replacement Rate		Replacement Rate		Replacement Rate		Replacement Rate		Replacement Rate	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
All	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Gender										
Male	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02
Female	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Race										
White	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Black	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Education										
HS diploma or less	0.02	0.03	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02
Some college	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
Bachelor's degree	0.03	0.03	0.03	0.02	0.03	0.02	0.03	0.02	0.03	0.02
Graduate or professional degree	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.02	0.03	0.02
Income Group										
Bottom third	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
Middle third	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02
Top third	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.01

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2004, Wave 3. For information on sampling and non-sampling error see www.census.gov/sipp/sourceac/S&A04_W1toW12(S&A-9).pdf.

Table A2. Standard Errors for Retirement Preparedness Among Singles 55-62 Years of Age, by Demographic Group and Replacement Rate Threshold, Under Different Savings Rate Assumptions

		Savings Rate Assumption (Percent)				
		15	10	6	3	1
Demographic Group	Replacement Rate Thresholds*	Retirement Preparedness (Percent)*				
All						
	X = 0.81	2.38	2.19	1.96	1.69	1.65
	X = 0.72	2.43	2.49	2.49	2.50	2.41
	X = 0.65	2.19	2.37	2.49	2.54	2.58
Gender Male	X = 0.81	3.62	3.47	3.04	2.76	2.71
	X = 0.72	3.59	3.62	3.78	3.86	3.83
	X = 0.65	3.52	3.46	3.58	3.55	3.53
Female	X = 0.81	2.66	2.55	2.27	2.08	2.01
	X = 0.72	2.86	2.89	2.67	2.63	2.69
	X = 0.65	2.64	2.78	2.84	2.89	2.90
Race White	X = 0.81	2.51	2.39	2.20	1.90	1.86
	X = 0.72	2.56	2.57	2.74	2.74	2.62
	X = 0.65	2.42	2.58	2.64	2.67	2.71
Black	X = 0.81	4.89	--	--	--	--
	X = 0.72	5.23	5.33	4.81	4.72	--
	X = 0.65	5.16	5.15	5.36	5.46	5.30
Education						
HS diploma or less	X = 0.81	4.57	4.24	3.37	3.18	3.17
	X = 0.72	4.64	4.78	4.63	4.53	4.13
	X = 0.65	4.24	4.37	4.57	4.79	4.73
Some college	X = 0.81	3.66	3.63	3.02	2.96	2.89
	X = 0.72	3.36	3.53	3.89	3.95	3.76
	X = 0.65	2.92	3.18	3.65	3.63	3.70
Bachelor's degree	X = 0.81	5.36	5.58	5.34	4.47	4.48
	X = 0.72	5.73	5.89	5.45	5.58	5.62
	X = 0.65	4.94	5.08	5.49	5.57	5.61
Graduate or professional degree	X = 0.81	4.62	4.14	4.15	3.81	3.75
	X = 0.72	4.86	4.63	4.71	4.53	4.31
	X = 0.65	4.99	5.16	5.00	4.84	4.63
Income Group Bottom third	X = 0.81	4.12	4.08	3.23	3.05	2.94
	X = 0.72	3.95	4.10	4.32	4.36	3.94
	X = 0.65	3.49	3.77	3.98	3.95	4.07
Middle third	X = 0.81	3.95	3.84	3.43	2.85	2.81
	X = 0.72	3.70	3.99	3.95	4.05	4.02
	X = 0.65	2.80	3.06	3.40	3.73	3.85
Top third	X = 0.81	3.34	2.86	2.71	2.53	2.54
	X = 0.72	3.61	3.54	3.32	3.16	3.18
	X = 0.65	4.13	4.03	3.81	3.76	3.57

* Thresholds = A, and Retirement Preparedness is the percentage of singles 55-62 years of age whose replacement rate is equal to or greater than the Replacement Threshold levels (X).

(--) Data not reported due to the sample size not meeting the U.S. Census Bureau Disclosure requirements.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2004, Wave 3. For information on sampling and non-sampling error see www.census.gov/sipp/sourceac/S&A04_W1toW12(S&A-9).pdf.