The Fiscal Implications of Inadequate Retirement Savings in Maine

Philip Trostel[1]

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Introduction and Summary

This study estimates the future costs to taxpayers from new retirees in Maine and in the United States as a whole (and there are unreported estimates for each of the other 49 states). As in previous reports of this type,[2] "new retirees" refers to people turning age 65 in coming years. The projections are for the 15 years from 2018 through 2032.

Inadequate savings for retirement creates fiscal costs due to increased elderly reliance on public assistance (mostly in Medicaid, Supplemental Security Income, Supplemental Nutrition Assistance Program, and housing assistance). An aging workforce moving into retirement is increasing public-assistance spending on the elderly. Moreover, savings for retirement has been declining in recent years, which will further exacerbate the problem. But the fiscal burden from the retirement-age population does not have to grow. Simulations show that increasing retirement income through greater preretirement savings can substantially reduce the need for taxpayer contributions for public assistance.

Total means-tested public-assistance spending on the age 65 to 79 population is estimated to be $37 billion nationally in 2016 (this does not include Social Security). Most (76%) of this fiscal cost is federally financed. In Maine, public-assistance spending on the retirement-age population was $164 million, with about $28 million of the fiscal cost financed within the state.

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[2] Jay Goodliffe, Erik Krisle, Sterling Peterson, and Sven Wilson (2015) "The Cost or Retiring Poor: Cost to Taxpayers of Utahns Retiring Poor," Notalys LLC.
Karen Zurlo, Serah Shin, and Hyungsoo Kim (2015). "Retiring Poor in New Jersey: The Projected Expenditures on Government Programs for Older Adults," AARP.

Continuing demographic change (i.e., baby boomers reaching retirement age) will cause these costs to rise substantially. The U.S. retirement-age population is projected to be 39% greater in 2032 than in 2016. Maine's retirement age population is projected to increase 30% between 2016 and 2032.

Compounding this, asset accumulation among the U.S. preretirement-age population has not kept pace with economic growth. In fact, preretirement asset accumulation has more than just stagnated in recent years; it declined between 2006 and 2014. Although the recession, bear market, and slump in housing prices were contributing factors, they do not fully explain the downward trend. Moreover, the downward trend in asset accumulation has been particularly severe in the lower half of the wealth distribution; that is, low- and middle-income households who would most benefit from better opportunities to save for retirement.

After accounting for these trends, the national cost of public assistance on the retirement-age population is projected to be $86 billion in 2032 (i.e., 2.4 times higher than in 2016, even without any inflation). Maine's fiscal cost is projected to increase to $362 million in 2032, with state's share growing to $61 million (2.2 times greater than in 2016).

The fiscal cost from the retirement-age population does not have to grow to such a magnitude, though. Increasing retirement income through greater preretirement savings can substantially reduce taxpayer contributions for public assistance.

Fiscal Costs of Recent Retirees

The fiscal costs of recent retirees in each state can be estimated well using recent individual-level data from the U.S. Census Bureau's Annual Social and Economic Supplement of the Current Population Survey (CPS).[3] These data are collected in March of the survey year, but the dollar amounts are for the previous calendar year.

The CPS is a fairly large national sample, each year averaging about 18,000 observations of individuals age 65 to 79. For state-level analyses, though, the CPS samples can be too small to produce reliable estimates. A small state such as Maine averages fewer than 300 observations in the 65-79 age group each year, and some states have even smaller subsamples. For this reason, five years of data are pooled together to increase the sample size. All dollar values are converted to 2016 dollars using the Consumer Price Index (CPI).

Until the 2015 survey (i.e., 2014 amounts) the CPS contained the estimated insurance value of Medicaid to individuals. The Census Bureau has stopped reporting those estimates, though: "Due to security concerns, the Center for Medicaid and Medicare Services has limited the

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[3] Sarah Flood, Miriam King, Steven Ruggles, and J. Robert Warren (2015). Integrated Public Use Microdata Series, Current Population Survey: Version 4.0, [Machine-readable database]. Minneapolis: University of Minnesota.

availability of data used to update the market value of Medicaid." Given the importance of Medicaid in this project, data for years 2009-13 are used in the subsequent analysis.[4]

The first columns of Tables 1 and 2 report the average[5] means-tested transfer payments (both cash and the dollar value of in-kind benefits) received by retirement-age individuals in the United States and in Maine. The subsequent columns show the average amounts across categories of "retirement" income, which is not a well-defined term. In this report the measure is income from Social Security, pensions, annuities, IRAs, survivor's benefits, and the imputed return on home equity. This somewhat broad measure of retirement income predicts levels of means-tested transfer payments better than narrower measures. Social Security is nearly 48% of the measure, on average. The imputed return to home equity is 25% of the retirement income measure.[6]

Table 1
Estimated Annual Means-Tested Public Assistance per Elderly - United States
(Average for Ages 65-79 during 2009-13 in 2016 $)

	mean	less than $5,000	$5,000 to $9,999	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	more than $24,999
"Retirement" Income	$25,827						
Total Public Assistance	$987	$3,697	$2,210	$1,491	$724	$430	$270
Medicaid	$520	$1,498	$1,147	$832	$422	$276	$195
Supplemental Security Income	$181	$1,221	$342	$137	$98	$39	$20
Food Stamps	$143	$431	$321	$249	$122	$78	$38
Housing Subsidies	$103	$436	$333	$215	$43	$8	$1
Other	$40	$111	$67	$59	$38	$30	$17
N	85,272	7,866	7,758	12,054	13,715	10,547	33,332

Average retirement income in Maine is slightly (3.4%) below the national average, but retirement income in Maine is not distributed as widely as nationally. That is, despite the lower average retirement income in Maine, there are relatively fewer instances of particularly low retirement income in Maine. Nationally, 10% of the retirement-age population have retirement incomes below $5,620 (despite "retirement income" being measured broadly by including the imputed return on home equity). In Maine, the bottom decile of retirement incomes is below $7,668. The bottom four decile cutoffs in Maine are above the national cutoffs, and the median retirement income in Maine is only 0.8% below the U.S. median.

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[4] Average values of Medicaid can be constructed for 2014-15, but in this analysis they would not be sufficiently comparable to earlier years. To be specific, the CPS Medicaid values in 2009-13 distinguish between aged and non-aged, which differ considerably, and cannot be constructed in later years.
[5] Actually, the "averages" in this report are the means after weighting the observations by their inverse sampling probabilities.
[6] Counting the imputed return on home equity as income may seem unusual. But including it in the measure of income substantially improves the prediction of public assistance received (it raises the R^2 by 65%).

Table 2
Estimated Annual Means-Tested Public Assistance per Elderly - Maine
(Average for Ages 65-79 during 2009-13 in 2016 $)

"Retirement" Income	mean $24,956	less than $5,000	$5,000 to $9,999	$10,000 to $14,999	$15,000 to $19,999	$20,000 to $24,999	more than $24,999
Total Public Assistance	$841	$2,811	$2,214	$1,282	$755	$700	$185
Medicaid	$377	$486	$707	$604	$500	$428	$136
Supplemental Security Income	$134	$1,171	$602	$46	$0	$58	$0
Food Stamps	$164	$365	$488	$332	$124	$145	$30
Housing Subsidies	$95	$588	$360	$159	$38	$1	$0
Other	$70	$201	$57	$141	$94	$68	$18
N	1,541	103	141	235	273	198	591

Medicaid is the largest public-assistance program that the elderly receive both nationally (53% of the total) and in Maine (45%). The dollar value of Medicaid is measured as its "insurance value," that is, its actuarial value based on age (child, adult, or aged), state, and disability status. It is not measured as its usage of public funds for Medicaid.

The other important forms of public assistance for the elderly are Supplemental Security Income, Supplemental Nutrition Assistance Program (SNAP, also known as Food Stamps), and the value of federal housing assistance. The small "other" category in Tables 1 and 2 consists of dependents' school lunch subsidies, energy assistance, Aid to Families with Dependent Children (AFDC), Temporary Assistance for Needy Families (TANF), other cash public assistance, and Special Supplemental Nutrition Program for Women, Infants and Children (WIC). The reason Maine's other category is larger than for the U.S. is its larger amount of energy assistance (heating subsidies).[7]

Most public assistance is administered through states but financed by the federal government. Supplemental Security Income, SNAP, AFDC, and TANF are federal programs. The CPS measure of the housing subsidy is the federal program. Medicaid, school lunches, and energy assistance are partly state financed. Data from the Centers for Medicare & Medicaid Services indicates that in 2012-13 (earlier years are atypical in that they contain substantial extra federal contributions from the American Recovery and Reinvestment Act), states contributed 42% of total Medicaid financing; and in Maine, 36% of Medicaid was state funding.

Determining states' shares of school-lunch and energy assistance has always been complicated by different state and federal fiscal years and accounting practices, but it has become more difficult in recent years because the Consolidated Federal Funds Report was discontinued in 2010. Based on the available historical data, it is assumed that all energy assistance is federally

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[7] The CPS also has a measure of "educational assistance" that includes government financial aid such as Pell Grants, but it includes employer contributions for education and scholarships and grants from non-governmental sources. The amount is quite small (less than 1% of total public assistance) among the retirement-age population.

financed.[8] If it is assumed that states only contribute their minimums mandated by federal law, states finance 28% of school lunches nationally, and Maine contributes 27%. It is also assumed that cash assistance from the category AFDC, TANF, and other is all federal, and cash assistance in the very small remaining category is funded by state and local governments.

Given these assumptions, nationally $233 of the $987 (24%) in means-tested transfer payments per retirement-age population is financed by states. In Maine, $143 of the $841 (17%) in public assistance per elderly is not financed federally.

Interpolating Census Bureau population projections indicates that there were 37,214,000 Americans age 65 to 79 in 2016.[9] Combining this with the estimates in Table 1 indicates that their total public assistance cost taxpayers nearly $37 billion. The federal government component was $28 billion. Interpolating the population projections from the Maine Office of Policy and Management indicate that there were 195,343 Maine residents age 65 to 79 in 2016.[10] The estimates in Table 2 suggest their total public assistance cost taxpayers more than $164 million, with $28 million financed within the state.

As one would expect, those with the lowest retirement incomes generally receive the largest means-tested transfer payments. The relationship between total public assistance received and retirement income is nonlinear. Public assistance declines rapidly with income at the bottom of retirement income distribution, but then declines increasingly gradually through the middle of income distribution. This is shown in Table 3, which reports the average level of means-tested transfer payment across U.S. retirement income deciles.

For the subsequent analysis it is necessary to quantify the relationship between transfer payments and retirement income. Moreover, the relationship needs to be quantified linearly. Using a nonlinear relationship would require knowing or at least approximating the entire distribution of retirement incomes, because the effect on public assistance could differ at every level of income. To keep the analysis manageable a linear relationship needs to be estimated, but the actual relationship is decidedly nonlinear. After experimenting with various possibilities, a linear spline is estimated over U.S. retirement-income quintiles. This procedure estimates different linear relationships between five groups of retirement income.

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[8] Nationally in 2009-10, the states' share of energy assistance was about 7%. During those years, federally-financed "leverage awards" encouraged states to supplement LIHEAP funds with non-federal resources, but those incentives stopped after 2010. Given the already low leverage rate and the elimination of federal financial incentives, it is assumed that state-funded energy assistance after 2010 is negligible.
[9] U.S. Census Bureau (2014). "Projections of the Population by Sex and Age for the United States: 2015 to 2060," NP2014-T9.
[10] Maine Office of Policy and Management (2016). Maine State and County Population Projections 2024.

Table 3
Estimated Annual Means-Tested Public Assistance over U.S. Retirement Income Deciles
(Ages 65-79 during 2009-13 in 2016 $)

	United States		Maine	
	Average Public Assistance	N	Average Public Assistance	N
1st Decile (less than $5,620)	$3,600	8,522	$2,587	115
2nd Decile ($5,620 - $10,609)	$2,215	8,532	$2,342	160
3rd Decile ($10,609 - $14,209)	$1,508	8,534	$1,112	163
4th Decile ($14,209 - $17,493)	$802	8,521	$945	166
5th & 6th Deciles ($17,493 - $24,598)	$531	17,054	$641	332
7th & 8th Deciles ($24,598 - $36,062)	$329	17,055	$293	326
9th & 10th Deciles ($36,062 and greater)	$216	17,054	$122	279

A linear spline regression estimated over smaller groups would more precisely estimate the nonlinear relationship, but it would also increase the risk of "overfitting" the data. That is, the sample size is not large enough to prevent outliers from creating implausible blips in the estimated relationship between public assistance and retirement income. The problem is particularly severe at the state level. Estimating a linear spline over five quintiles appears to be the best compromise between estimating the nonlinearity precisely but without overfitting it too much.

The estimated linear splines are illustrated in Figure 1. For the U.S., the estimated intercept (i.e., the amount of public assistance for someone with no retirement income) is $4,047. Public assistance is estimated to fall by: 22¢ per dollar of retirement income over the first quintile (income up to $10,609), 16¢ per dollar over the second quintile ($17,493), 3¢ per dollar over the middle quintile ($24,598), 1¢ per dollar over the fourth quintile, and zero over the top quintile. The estimated intercept in Maine is $3,712. Public assistance in Maine is estimated to fall by: 21¢ per dollar of retirement income in the bottom quintile, 11¢ per dollar in the second quintile, 3¢ per dollar in the third quintile, 4¢ per dollar in the fourth quintile,[11] and zero in the top quintile.

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[11] The slightly higher number in the fourth quintile than the third quintile (although the difference is not statistically significant) is an example of the overfitting described earlier. In this instance it is too small to have an appreciable effect in the subsequent analysis.

Figure 1
Estimated Relationship between Public Assistance and Retirement Income
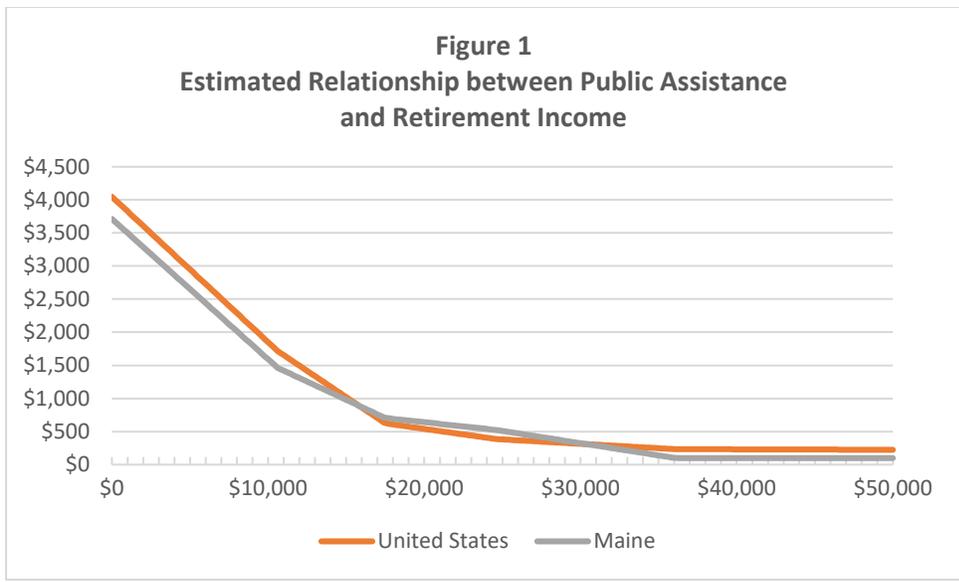
Projections of New Retirees

Until 2005, the U.S. Census Bureau created population projections for every state. Since then each state is responsible for constructing its own projections. However, there is significant inconsistency in the data across the states. Each state has its own policies and methods for creating population projections. Thus, the estimates vary considerably by methodology, cohort definitions, and date. For instance, Delaware released projections in 2016 for single-age cohorts every year through 2050. In contrast, South Carolina's most recent publicly available projections of population by age group were released in 2005 and are for cohorts spanning as many as 20 years of age every ten years through 2030. States' methodologies also vary, especially in regard to projecting/forecasting migration. Delaware bases net migration on forecasts of state job growth, Kansas holds net migration constant, and Mississippi gradually tapers off net migration.

Considering these inconsistencies (as well as avoiding having to interpolate numbers at each age from five-year age groupings), we generate projections for all fifty states with a consistent methodology using data from the American Community Survey (ACS).[12] Each observation in the ACS carries a sampling weight, i.e., the number of people in the population that each person in the sample represents. Thus, it is straightforward to estimate the number of people at each age in the year of the survey. The most recent year of the ACS is 2015.

Although the ACS is a large sample, the age-state cells can be rather small. For example, in recent years Maine has an average of 218 observations in the relevant cells. Thus, the estimates of the population at each age are not precise for small states. To reduce this problem the most recent five years of data (2011-15) are pooled.

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[12] Steven Ruggles, Katie Genadek, Ronald Goeken, Josiah Grover, and Matthew Sobek (2015). Integrated Public Use Microdata Series: Version 6.0, [dataset]. Minneapolis, MN: University of Minnesota.

To project the numbers into the future, survival probabilities need to be applied to the population estimates generated from the ACS data. For example, someone age 58 in the 2013 sample would turn age 65 in 2000. The probability of that occurring is the survival probability of 58-year-old reaching age 59 times the probability of a 59-year-old reaching age 60 times… the probability of a 64-year-old reaching 65. These survival probabilities can be constructed from death probabilities in U.S. life tables. The latest life tables are from 2012.[13] Thus, the population projections are the sample-weighted observed numbers at each age times the relevant multiplicative survival probability to each future year.

The implicit assumption underlying this relatively simple approach is that there is no net migration in the relevant age cohorts (i.e., those approaching retirement age). Net migration for older cohorts is relatively small.[14] [15] Moreover, projecting net migration decades into the future is tenuous at best (extrapolating trends from a few years of data runs into the same "overfitting" problem discussed earlier – a few outliers can create obviously distorted projections).

Tables 4 shows the estimated number of residents turning age 65 in 2018 through 2032 in the U.S. and Maine. The numbers appear to be fairly close to official estimates. Both the U.S. Census Bureau national estimates and Office of Policy and Management Maine estimates are reported in five-year age cohorts and in five-year intervals. Interpolating these estimates yields the numbers shown in Figures 2 and 3 along with estimates constructed here. The average difference between the estimates constructed for this report and the interpolated official estimates is +0.9% nationally and +1.9% in Maine. The cumulative difference in 2032 is -5.2% nationally (interpolated between their 2030 and 2035 totals) and -0.02% in Maine.

These demographic projection reported in Table 4 suggests that the U.S. retirement-age population (i.e., age 65-79) will be 39% greater in 2032 than in 2016. The projection for Maine is for a 30% increase in the retirement-age population from 2016 to 2032.

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[13] Elizabeth Arias, Melonie Heron, and Jiaquan Xu. (2015). "United States Life Tables, 2012" *National Vital Statistics Reports*, V65, N8.
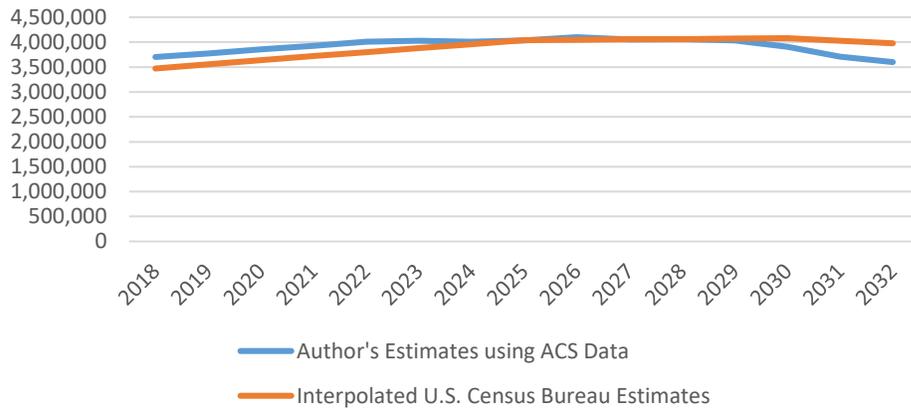
[14] The rate of annual immigration (from other states and abroad) in the ACS data for everyone age 21 and older was 2.55%. But for those age 50-64 the immigration rate was 1.50%, and for those age 65-79 the rate was 1.28%.
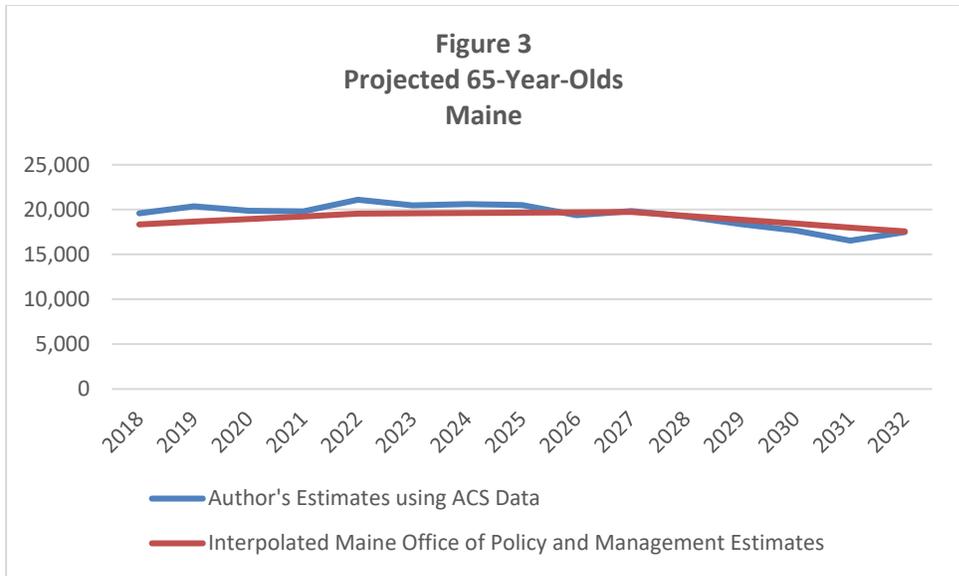
[15] Maine had small net in-migration in recent years [see, e.g., *Governing Data* (2016). "State Migration Rates, Net Totals: 2011-2016."]. Maine's net rate of interstate migration (i.e., not including migration to or from abroad) in the 2011-15 ACS data for the 50-79 age group was 0.17% (1.40% interstate in-migration minus 1.23% out-migration).

Table 4
Estimated Population Turning Age 65

Year	United States		Maine	
	Turning 65	Cumulative	Turning 65	Cumulative
2018	3,702,491	3,702,491	19,571	19,571
2019	3,769,182	7,425,281	20,381	39,707
2020	3,856,342	11,184,913	19,868	59,058
2021	3,926,966	14,960,320	19,798	78,055
2022	4,010,179	18,759,476	21,103	98,055
2023	4,024,954	22,508,880	20,461	117,074
2024	4,006,686	26,170,573	20,624	135,900
2025	4,035,448	29,786,427	20,526	154,242
2026	4,099,266	33,385,529	19,381	171,025
2027	4,053,137	36,851,458	19,831	187,831
2028	4,057,408	40,229,359	19,223	203,566
2029	4,032,577	43,483,948	18,366	217,959
2030	3,906,197	46,507,142	17,681	231,158
2031	3,705,093	49,218,591	16,545	242,687
2032	3,599,459	51,709,043	17,495	254,610

Figure 2
Projected 65-Year-Olds
United States

Author's Estimates using ACS Data
Interpolated U.S. Census Bureau Estimates

Figure 3
Projected 65-Year-Olds
Maine

Scenarios 1 and 2

If retirement preparation is the same for future and current cohorts, and if public assistance remains constant in real terms, the resulting fiscal costs of new retirees are shown in Tables 5. This is referred to as Scenario 1.

The national fiscal cost under Scenario 1 exceeds $51 billion in 2032. This is 0.77% of all government spending in FY 2016 – just for public assistance to those ages 65 to 79. The states' share of this cost is 0.43% of net state and local spending in FY 2016.

Table 5
Estimated Fiscal Costs from New Retirees (in 2016 $) - Scenario 1

	United States		Maine	
Year	Total Cost	Cost to States	Total Cost	Cost to Maine Govt.
2018	$3,653,530,740	$863,416,307	$16,458,172	$2,789,741
2019	$7,327,092,054	$1,731,566,315	$33,391,120	$5,659,959
2020	$11,037,008,184	$2,608,307,832	$49,663,723	$8,418,244
2021	$14,762,490,712	$3,488,728,060	$65,639,416	$11,126,203
2022	$18,511,408,193	$4,374,686,525	$82,457,963	$13,977,029
2023	$22,211,231,574	$5,249,042,885	$98,451,727	$16,688,050
2024	$25,824,503,811	$6,102,945,149	$114,283,032	$19,371,534
2025	$29,392,543,204	$6,946,157,815	$129,707,659	$21,986,084
2026	$32,944,052,119	$7,785,463,935	$143,821,434	$24,378,438
2027	$36,364,149,060	$8,593,714,277	$157,953,542	$26,773,900
2028	$39,697,382,048	$9,381,436,599	$171,186,268	$29,016,912
2029	$42,908,933,665	$10,140,402,715	$183,289,448	$31,068,460
2030	$45,892,150,157	$10,845,407,805	$194,389,307	$32,949,940
2031	$48,567,744,040	$11,477,714,347	$204,083,960	$34,593,232
2032	$51,025,263,299	$12,058,484,663	$214,110,615	$36,292,799

It is probable that levels of public assistance, particularly Medicaid, will grow in real terms as real per capita income grows. Thus, the estimates in Scenario 1 are unrealistically low. Tables 6 reports estimates of a second scenario that assumes that levels of public assistance increase along with increases in the standard of living. To be specific, it assumes that real public assistance increases by 1.524% annually, which was the annual rate of increase in U.S. real GDP per capita from 1991 through 2016.

In the more realistic Scenario 2, the national cost of public assistance to the retirement-age population is $65 billion by 2032 (77% more than in 2016). The fiscal cost in Maine is $273 million in 2032 (66% more than in 2016). Maine's share of the fiscal cost in 2032 is projected to be $46 million.

Table 6
Estimated Fiscal Costs from New Retirees (in 2016 $) - Scenario 2

| Year | United States | | Maine | |
	Total Cost	Cost to States	Total Cost	Cost to Maine Govt.
2018	$3,765,746,336	$889,935,524	$16,963,673	$2,875,426
2019	$7,667,240,613	$1,811,951,519	$34,941,250	$5,922,713
2020	$11,725,407,837	$2,770,993,062	$52,761,345	$8,943,307
2021	$15,922,284,455	$3,762,814,937	$70,796,281	$12,000,317
2022	$20,270,027,913	$4,790,290,239	$90,291,629	$15,304,874
2023	$24,692,023,268	$5,835,313,032	$109,447,886	$18,551,953
2024	$29,146,416,822	$6,887,992,290	$128,983,732	$21,863,375
2025	$33,679,024,132	$7,959,155,322	$148,623,661	$25,192,439
2026	$38,323,794,119	$9,056,825,065	$167,307,380	$28,359,421
2027	$42,947,121,373	$10,149,427,380	$186,547,743	$31,620,757
2028	$47,598,322,306	$11,248,616,909	$205,257,343	$34,792,126
2029	$52,233,201,864	$12,343,949,308	$223,118,915	$37,819,750
2030	$56,716,115,831	$13,403,368,619	$240,237,304	$40,721,401
2031	$60,937,573,120	$14,400,999,492	$256,062,568	$43,403,860
2032	$64,996,747,658	$15,360,279,087	$272,737,322	$46,230,313

Trend in Retirement Assets

The trend in, and distribution of, asset accumulation is examined using data from the Health and Retirement Study (HRS). To be more specific, the version complied by RAND is used.[16] Estimates of pension wealth constructed by Gustman et al. (2014) are also used.[17] The HRS contains very detailed information on asset accumulation, particularly for middle-aged

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[16] RAND HRS Data, Version P. Produced by the RAND Center for the Study of Aging, with funding from the National Institute on Aging and the Social Security Administration. Santa Monica, CA (August 2016).

[17] Alan Gustman, Thomas Steinmeier, and Nahid Tabatabai (2014). Updated Pension Wealth Data Files in the HRS Panel: 1992 to 2010.

households approaching retirement age. Unfortunately, the dataset is not large enough to conduct state-specific analyses. Thus, only national numbers are examined.

The HRS has been conducted in waves every two years from 1992 through 2014.[18] The estimates of pension wealth, however, are only for the waves through 2010. All values are converted into 2016 dollars using the CPI.

Two measures of total net asset accumulation are examined below. One is the HRS measure of "total wealth excluding secondary residence." Their broadest measure of total net assets, "total wealth including secondary residence" would be preferable, but it is not measured in the 1996 wave and 42% of the observations are missing in the 1994 wave.[19] The two measures are closely correlated (their correlation coefficient is 0.987), however, and minimal information is lost using the slightly narrower measure that is collected consistently. The average net value of their difference (i.e., the net value of secondary residence) is 4.9% of total wealth.

The second measure examined below is the sum of pension wealth estimated by Gustman et al. (2014) and the HRS measure of total wealth excluding secondary residence. Unfortunately, pension wealth is not available for 2012 and 2014. Moreover, there are fewer observations of pension wealth (6,739 per year on average) than for other wealth (18,880 on average). But changes in pension wealth appear to be too important to omit from the analysis.

The age group examined for asset accumulation is ages 47 through 61.[20] This is the age range in 2014 of the group reaching age 65 in years 2018 through 2032. Most of the observations in the 65-79 cohort observed in the CPS data in 2011-2015 were in the 47-61 age range in the years 1983 through 2007.

Table 7 reports mean and median levels of assets for preretirement Americans since 1992. Despite generally increasing per capita incomes (U.S. real GDP per capita was 39% higher in 2014 than in 1992), there has been alarmingly little increase in assets among this group. Indeed, average net assets have been on a downward trend since 2006. The recession in 2007-09 and the bear market (after controlling for inflation, both GDP per capita and the Dow Jones Industrial Average did not fully return to their 2006 levels until 2013) were clearly important contributors to this downward trend, but they do not appear to be the whole story.[21] The downward trend persisted even after income and stock values rose.

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[18] Actually, only most of the observations were collected in these even years, but most of the waves took two, sometimes three, years to complete.
[19] It also would be preferable to include the HRS estimates of the implicit value of Social Security pensions, but this is calculated in only three of the waves (1992, 1998, and 2004).
[20] In the case of couples their ages are averaged. Average ages 46.5 and 61.5 are rounded upwards.
[21] Average house prices also fell in 2008-12, but this does not appear to complete the story either.

Table 7
Estimated Total Net Wealth for Americans Age 47 - 61 (in 2016 $)

Year	Not Including Pension Wealth		Including Pension Wealth	
	Mean	Median	Mean	Median
1992	$387,077	$150,539	$575,443	$341,710
1994	$430,303	$167,940	$608,436	$360,760
1996	$442,634	$165,793	$667,758	$373,338
1998	$458,032	$164,618	$745,728	$410,936
2000	$525,506	$178,402	$787,114	$447,680
2002	$498,680	$194,781	$766,361	$465,538
2004	$523,220	$182,959	$766,598	$457,429
2006	$573,533	$203,577	$851,981	$486,594
2008	$512,666	$170,555	$794,303	$438,810
2010	$458,169	$73,965	$716,003	$318,435
2012	$450,790	$65,857		
2014	$444,966	$70,562		
Average N	7,119		3,760	

The median levels reported in Table 7 reveal an even bleaker picture of asset accumulation than the averages. That is, the mean levels somewhat mask the severe downward trend in asset accumulation for low-income preretirement Americans. The distribution of assets has always been skewed, so it is hardly surprising that its median is below its mean. But the skewness increased dramatically since 2002 and the distance between the median and mean has become astounding.

In the HRS measure of net assets not including pension wealth, the median was 39% of the mean in 2002 (and in 1992). In 2014, the median was 16% of the mean.[22] The skewness is not as pronounced in the measure of net wealth including pensions, but the trend is similar. In the measure including pensions, the median was nearly 61% of the mean in 2002 but only 44% in 2010.

The trends in asset accumulation seen in Table 7 were particularly pronounced in the bottom three quintiles of net assets. Table 8 shows the bottom three quintile dividing points in net worth from 1992 through 2014. In the measure of net wealth not including the value of pension wealth, more than 20% of middle-age Americans has a net wealth less than or equal to zero in 2010 and 2012!

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[22] A similar pattern is seen when using the HRS measure total wealth including secondary residence. The mean/median ratio was 39% in 1992 and 2002, and was 15% in 2014.

Table 8
Bottom Three Net Wealth Quintiles for Ages 47 -61 (in 2016 $)

Year	Not Including Pension Wealth			Including Pension Wealth		
	20th Percentile	40th Percentile	60th Percentile	20th Percentile	40th Percentile	60th Percentile
1992	$27,371	$104,494	$210,412	$131,722	$259,680	$436,214
1994	$31,742	$112,635	$235,966	$139,338	$279,182	$466,114
1996	$33,255	$116,256	$233,276	$147,050	$284,316	$487,525
1998	$32,865	$113,378	$237,062	$149,084	$309,062	$523,050
2000	$39,026	$121,258	$259,102	$158,394	$333,362	$592,840
2002	$40,023	$133,545	$295,106	$166,840	$345,902	$610,501
2004	$24,903	$113,079	$279,521	$145,318	$338,331	$585,297
2006	$20,834	$118,199	$310,438	$148,999	$346,536	$625,863
2008	$15,622	$97,807	$260,849	$132,654	$311,240	$584,506
2010	$0	$36,591	$132,300	$81,102	$221,124	$430,017
2012	$0	$30,315	$117,949			
2014	$203	$33,456	$122,165			

The downward trend in the measure of net wealth including pension wealth may be less shocking at first glance, but is actually considerably larger in magnitude. Net wealth not including pensions at the 20th percentile was quite low before 2002, so there is not much space for it to fall. But net wealth including pensions at the 20th percentile fell by more than half between 2002 and 2010.

To quantify the trend in each wealth quintile (to match with retirement income quintiles in the CPS data), the asset data (for ages 47 through 61) are sorted into quintiles in each year. A regression equation is then estimated for each quintile. To be specific, net wealth including pensions is regressed against age, the real value of the Dow Jones Industrial Average (DJIA), and year.[23] The broader measure including pension wealth is used despite losing two years of data because it yields somewhat more conservative estimates of a downward trend in asset accumulation. Net wealth is expected to increase with age and with real stock prices.

The results of these regressions are reported in Table 9. The coefficients of interest are those on year. Net wealth of preretirement-age Americans declined over the 1992-2010 period for all five quintiles, although the decline is not statistically significant for the top quintile. Net wealth declines by roughly $4,000 annually for the bottom three quintiles. In percentage terms, however, the decline is particularly large at the low end of the wealth distribution.

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[23] Real house prices (the Freddie Mac House Price Index adjusted by the CPI) were also initially included in the regression but it was generally not statistically significant (and had an unexpected negative coefficient) when other explanatory variables were included.

Table 9
Estimated Effects on Net Wealth including Pensions (for Ages 47 - 61 in 2016 $)

	Ist Quintile	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile
Age	$952	$1,088	$2,088	$3,542	$919
	3.49	*5.05*	*6.38*	*6.21*	*0.09*
DJIA	$5	$9	$18	$27	$92
	13.68	*29.61*	*36.69*	*33.88*	*5.44*
Year	-$3,826	-$4,209	-$3,792	-$2,687	-$1,526
	-16.52	*-22.81*	*-13.43*	*-5.56*	*-0.18*
N	7,431	7,520	7,536	7,554	7,563
Mean Net Wealth	$62,484	$216,518	$416,582	$716,456	$2,051,633
Growth Rate	-6.12%	-1.94%	-0.91%	-0.38%	-0.07%

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Scenario 3

It appears that retirement preparation is significantly lower for future retirees compared to those retired in 2009-2013. Thus, the future fiscal costs are likely to be substantially greater than calculated in Scenario 2.

It is assumed that the negative annual growth rates of net asset accumulation for each quintile estimated in Table 9 describe both past and future trends. That is, the -6.12%, -1.94%, etc. estimates are assumed to be the same over the entire relevant period of preretirement asset accumulation. It is also assumed that the cumulative percentage changes will ultimately create proportionate impacts on retirement incomes. That is, if the cumulative percentage change in assets is X%, then retirement income also changes by X%. Although this proportionate assumption might be somewhat problematic for upper-income households, it should be reasonable for lower-income households, which is the relevant subpopulation for most of the fiscal costs. The proportionate relationship between retirement assets and retirement income is also assumed to hold across states (i.e., the relationship does not vary across states).

The relevant cumulative percentage changes are determined by the age difference between those observed in the 2009-2013 CPS data on retirement income and public assistance and those turning age 65 between 2018 and 2032. The age 65 -79 cohort observed in the 2009-

2013 CPS data average about 14 years ahead of the cohort turning 65 in 2018.[24] Thus, the cumulative percentage changes are the estimated annual growth rates compounded over 14 years for the 2018 cohort, 15 years for the 2019 cohort, etc.

These cumulative percentage changes are applied to mean retirement income in each quintile. For example, the mean retirement income for the bottom quintile in the CPS data was $4,701, which is projected to shrink to $2,069 for the bottom quintile turning age 65 in 2018. The mean retirement income for the second quintile is $13,730, and it is projected to shrink to $10,642 for the second quintile turning age 65 in 2018. Etc.

The estimated relationship between means-tested transfer payments and retirement income for each quintile shown in Figure 1 and the estimated numbers of new 65-year-olds shown in Table 4 are then combined with the estimated changes in retirement incomes for each quintile. This yields an estimate of the additional public assistance created by falling saving for retirement. Adding these additional costs to the Scenario 2 estimates yields a third scenario.

Table 10 reports the Scenario 3 estimates. These are the most-likely estimates of the fiscal costs associated with future retirees. The national cost of public assistance on the retirement-age population is projected to exceed $86 billion by 2032, which is nearly 2.4 times higher than in 2016. The fiscal cost in Maine is almost $362 million in 2032, and Maine's share is $61 million, which is more than 2.2 times greater than in 2016.

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[24] The middle of the age cohort is age 72 (i.e., 7 years ahead), and middle year of the data is 2011 (also 7 years ahead).

Table 10
Estimated Fiscal Costs from New Retirees (in 2016 $) - Scenario 3

	United States		Maine	
	Total	Cost to	Total	Cost to
Year	Cost	States	Cost	Maine Govt.
2018	$4,727,301,571	$1,117,173,921	$21,236,635	$3,599,714
2019	$9,697,150,906	$2,291,667,655	$44,067,508	$7,469,659
2020	$14,930,627,266	$3,528,462,731	$66,991,083	$11,355,317
2021	$20,399,802,301	$4,820,959,017	$90,440,387	$15,330,089
2022	$26,115,113,133	$6,171,623,051	$115,984,726	$19,659,980
2023	$31,972,518,709	$7,555,867,458	$141,296,504	$23,950,450
2024	$37,911,501,387	$8,959,390,476	$167,269,306	$28,352,967
2025	$43,985,533,648	$10,394,828,926	$193,521,295	$32,802,808
2026	$50,233,894,621	$11,871,465,401	$218,641,158	$37,060,748
2027	$56,476,415,397	$13,346,721,699	$244,575,228	$41,456,700
2028	$62,772,344,066	$14,834,599,554	$269,878,612	$45,745,748
2029	$69,058,496,552	$16,320,167,064	$294,107,532	$49,852,668
2030	$75,150,378,111	$17,759,823,728	$317,375,244	$53,796,660
2031	$80,897,298,810	$19,117,957,927	$338,932,927	$57,450,793
2032	$86,425,799,580	$20,424,474,296	$361,599,782	$61,292,936

Counterfactual Scenarios

Two simple counterfactual scenarios are explored to illustrate the likely fiscal savings in the future if more preretirement Americans were better financially prepared for retirement.

Table 11 shows illustrative fiscal implications from reversing the recent decline in asset accumulation among preretirement Americans. The difference between Scenario 2 and Scenario 3 is created by the significant decline in net worth in the lower half of the wealth distribution. Table 11 reports the estimated difference in projected spending on public assistance caused by this phenomenon. Or, how much taxpayers would save if the trend in asset accumulation were reversed.

If the decline in asset accumulation were reversed, the projected national fiscal savings would exceed $21 billion by 2032. The projected fiscal savings in Maine would be nearly $89 million in 2032. Moreover, these fiscal effects would not be the result of an ambitious program for increasing retirement savings. These effects would be the result of just retirement savings not declining.

A second illustrative counterfactual scenario is shown in Table 12. This table shows the fiscal effects per $1,000 of retirement income for the lowest two quintiles. The fiscal effects are heavily concentrated in the bottom 40% of the retirement income distribution. Nationally, 90% (86% in Maine) of the fiscal costs in Scenario 3 come from the bottom two quintiles. Thus, this scenario essentially highlights the marginal impact of retirement income on costs to taxpayers.

Table 11
Estimated Annual Fiscal Savings if the Decline in Retirement Savings were Reversed (in 2016 $)

| Year | United States | | Maine | |
	Total Cost	Cost to States	Total Cost	Cost to Maine Govt.
2018	-$961,555,235	-$227,238,397	-$4,272,962	-$724,288
2019	-$2,029,910,293	-$479,716,136	-$9,126,258	-$1,546,946
2020	-$3,205,219,429	-$757,469,669	-$14,229,738	-$2,412,010
2021	-$4,477,517,846	-$1,058,144,080	-$19,644,106	-$3,329,772
2022	-$5,845,085,220	-$1,381,332,813	-$25,693,097	-$4,355,106
2023	-$7,280,495,441	-$1,720,554,426	-$31,848,618	-$5,398,497
2024	-$8,765,084,565	-$2,071,398,185	-$38,285,574	-$6,489,592
2025	-$10,306,509,516	-$2,435,673,604	-$44,897,634	-$7,610,369
2026	-$11,910,100,502	-$2,814,640,336	-$51,333,778	-$8,701,327
2027	-$13,529,294,025	-$3,197,294,319	-$58,027,484	-$9,835,943
2028	-$15,174,021,760	-$3,585,982,645	-$64,621,269	-$10,953,622
2029	-$16,825,294,688	-$3,976,217,756	-$70,988,616	-$12,032,918
2030	-$18,434,262,281	-$4,356,455,109	-$77,137,940	-$13,075,259
2031	-$19,959,725,690	-$4,716,958,435	-$82,870,360	-$14,046,932
2032	-$21,429,051,922	-$5,064,195,209	-$88,862,460	-$15,062,623

Table 12
Estimated Annual Fiscal Savings if Retirement Incomes of the Bottom Two Quintiles were $1,000 Greater (in 2016 $)

| Year | United States | | Maine | |
	Total Cost	Cost to States	Total Cost	Cost to Maine Govt.
2018	-$280,124,989	-$66,200,205	-$1,200,346	-$203,465
2019	-$561,785,771	-$132,763,354	-$2,435,319	-$412,798
2020	-$846,233,964	-$199,985,235	-$3,622,130	-$613,969
2021	-$1,131,875,670	-$267,489,172	-$4,787,288	-$811,469
2022	-$1,419,314,190	-$335,417,738	-$6,013,917	-$1,019,388
2023	-$1,702,988,548	-$402,456,743	-$7,180,392	-$1,217,112
2024	-$1,980,026,821	-$467,927,483	-$8,335,019	-$1,412,826
2025	-$2,253,596,983	-$532,578,627	-$9,459,985	-$1,603,514
2026	-$2,525,899,714	-$596,930,246	-$10,489,346	-$1,777,996
2027	-$2,788,126,772	-$658,900,743	-$11,520,045	-$1,952,704
2028	-$3,043,693,762	-$719,297,308	-$12,485,149	-$2,116,294
2029	-$3,289,931,149	-$777,489,066	-$13,367,872	-$2,265,920
2030	-$3,518,661,533	-$831,543,502	-$14,177,419	-$2,403,142
2031	-$3,723,805,752	-$880,023,965	-$14,884,481	-$2,522,992
2032	-$3,912,229,664	-$924,553,022	-$15,615,756	-$2,646,947

Nationally, an additional $1,000 in retirement income would raise average retirement income by 20% for the first quintile, and 7% for the second quintile. It would lead to more than $3.9 billion in fiscal savings by 2032. An additional $1,000 in retirement income in Maine would raise average retirement income by 16% for the first quintile, and 7% for the second quintile. It would create $15.6 million in fiscal savings in 2032.