RETIREE OUT-OF-POCKET HEALTH CARE SPENDING: A STUDY OF EXPERT VIEWS, CONSUMER EXPECTATIONS, AND POLICY IMPLICATIONS

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A mounting body of health care research reports that American retirees are likely to face large and increasing expenditures for out-of-pocket health care costs and that they often struggle to finance these expenditures. It is, however, unclear whether the general population understands what their likely out-of-pocket health care expenditures might be in retirement. It is even less clear whether the population appreciates how much these costs can vary from person to person and over time. It is critically important to know whether Americans understand these costs and to what degree misunderstanding might hamper their financial planning for retirement, especially in light of recent discussion of Medicare reform that could affect these costs.

This article explores this previously unexamined question of how much Americans expect to pay for their out-of-pocket health care spending in retirement. To answer this question, we surveyed 2000 near retirees and retirees to gauge their expectations with regard to their own likely expenditures. We then compared their responses to experts' estimates. Our findings suggest that, surprisingly, many respondents have a reasonable sense of the magnitude of likely out-of-pocket expenditures, at least for the median, or typical, retiree. However, we also found people struggle to understand potential variability in expenditures that might cause them to spend more than the typical retiree. In particular, they underestimate how much personal health experience can affect individual spending. These results suggest that misperception of typical spending may not be a primary factor in retirees' inability to finance out-of-pocket health care costs, but that misperception of the risk of spending above the median is likely an important factor. We discuss educational, regulatory, and health policy implications of our findings.

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* Contact information: hoffman@law.ucla.edu and hjackson@law.harvard.edu. The research reported herein was performed pursuant to a grant from the U.S. Social Security Administration (SSA) funded as part of the Financial Literacy Research Consortium. We are grateful to Professor Annamaria Lusardi for her encouragement in suggesting we take on this project. We have also benefitted from excellent research assistance from Dena Haibi (HLS '14), support on statistical analysis from Travis Coan of the Harvard Law School Library, and consultation from Susan Ettner, UCLA Schools of Medicine and Public Health. We are grateful to the staff of the Rand American Life Panel for their assistance and guidance in administering our survey. For comments and suggestions at various stages of this project, we thank Scott Cummings, Joseph Doherty, Russell Korobkin, David Laibson, Brigitte Madrian, Olivia Mitchell, Kirk Stark, Alexander Stremitzer, Steve Yeazell, Noah Zatz and participants at the Harvard Law School Faculty Summer Workshop. The current draft is preliminary and provisional. Please do not cite or distribute without permission.

TABLE OF CONTENTS

I. Introduction 3
II. Estimating Retiree Health Care Expenditures 8
A. Background on Out-of-Pocket Costs 8
B. Two Ways to Estimate Retiree Out-of-Pocket Health Care Expenditures 11
1. Annual Estimates *13*
2. Lifetime Spending *15*
C. Demographics and Spending Variation 17
D. Coping with Future Uncertainty in Health care Costs 21
1. Uncertain Individual Health Experience *21*
2. Health Care Cost Growth *22*
3. Policy Uncertainty *22*
III. Results of Survey 26
A. Overview of Survey Sample and Treatments 26
B. Estimating Out-of-Pocket Retiree Spending 28
1. Insurance Coverage *28*
2. Premium Costs of Insurance *30*
3. Estimating Total Out-of-Pocket Costs in Two Ways *31*
C. Estimating Demographic Spending Variation 36
D. Estimating Uncertainty: Health, Medical Inflation, Policy Change 39
1. Group One: Assessments of Concern and Severity *39*
2. Group Two: Willingness to Pay *40*
IV. Conclusions and Discussion 41
Box on Self-Assessed Life Expectancies 48

I. Introduction

Health care costs are once again at the center of national debate.[1] After the Supreme Court's recent validation of the 2010 health reform law,[2] national attention has turned to the future of Medicare and, in particular, Medicare costs. Politicians and policy analysts are proposing ways to stem future governmental spending on Medicare, potentially radically reshaping its form. While the issues at hand are complicated, one aspect of the debate is clear: most Americans do not understand it, even though the results of it will likely have an impact on their financial security in retirement. Confusion may extend into other, more individual, decisions regarding retiree health care. Those decisions lie at the center of this study. All of us must make, at least implicitly, assumptions about planning for health care spending in our retirement years. But little is known about what assumptions Americans are currently making with regard to future spending.

This project aimed at what we thought initially was a straightforward question: how do individual's estimates of likely out-of-pocket health care spending in retirement compare to costs experts believe they actually might encounter? We hypothesized that individual estimates would be far off the mark. We were wrong, at least in some respects. Overall, people are better at estimating many aspects of future costs than we anticipated. We uncovered, however, some critical aspects of health care costs that are misunderstood and call for better outreach and education. We also uncovered and tentatively explore some aspects where consumers' misperceptions may have implications for insurance design and regulation and health care policy as a whole.

Although 95 percent of retirees have Medicare coverage, which currently finances a majority share of their health care costs in retirement years, most will spend a considerable amount of additional money out-of-pocket. Recent estimates are that the median Medicare beneficiary spends about 16 percent of income on out-of-pocket health care spending, which includes premiums for both Medicare and supplemental insurance coverage, cost-sharing for services, and the costs of care not covered by insurance.[3] Low-income retirees, retirees in fair or poor health, or those over 85 years old spend as much as one third of their annual income on such costs.[4]

The fact that many retirees are unprepared to finance these out-of-pocket health care expenditures in retirement is a serious and growing concern. In one study's title, scholars question: "*Will Healthcare Costs Bankrupt Aging Boomers?*"[5] Experts project the trend of health care costs consuming a larger and larger portion of retirees' disposable income will continue, possibly reaching as much as 50 percent of post-tax income for some retirees by 2030.[6] One study exposed that a majority of bankruptcies are in part

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[1] See *infra* note 124 and accompanying text.
[2] *NFIB et al., v. Sebelius*, No. 11–393(June 28, 2012).
[3] JULIETTE CUBANSKI ET AL., THE HENRY J. KAISER FAMILY FOUNDATION, MEDICARE CHARTBOOK 72 (2010) [hereinafter KFF CHARTBOOK].
[4] Eliot Fishman et al., The Commonwealth Fund, *Medicare Out-of-Pocket Costs: Can Private Savings Incentives Solve the Problem* viii (2008) (defining "low income" as earning under 135% of the federal poverty level).
[5] Richard W. Johnson & Corina Mommaerts, The Urban Institute, *Will Healthcare Costs Bankrupt Aging Boomers?* (2010).
[6] *Id.* at 1-2 (reporting that by 2040 half of adults 65 and older will spend 19% of income or more on health care up from 10% in 2010 and that those in the bottom income quintile could spend as much as 50% of income on health care by 2030). *See also, e.g.*, Jonathan Gruber & Helen Levy, *The Evolution of Medical Spending Risk*, 23 J. ECON.

caused by medical care costs.[7] Another study estimates that average retirement savings shortfall is over $47,000 per individual for both basic living expenses and out-of-pocket health care costs, not even including nursing home and home health care costs,[8] which, if added, increase the average shortfall by an additional $32,000 for the average man and by $46,000 for the average woman.[9] Shortfalls are most acute for the near poor and middle classes, who are least likely to have a supplemental form of insurance coverage – either private insurance or Medicaid – to fill in the gaps that Medicare does not cover.[10] A series of studies out of the Center for Retirement Research at Boston College showed that including health care expenses in calculations of national retirement risk (i.e., inability to maintain standard of living in retirement) increased estimates of those at risk from 44 to 61 percent for the overall population.[11]

Even as many studies decry retirees' increasing struggle to finance out-of-pocket healthcare expenditures, there has been little investigation into why they face savings shortfalls. Are retirees simply *unable* to save for and finance out-of-pocket health care expenditures or are they perhaps *unaware* of the magnitude of likely future expenditures? Either is possible and both are certainly true for some retirees. Retirees might be aware of the likely magnitude of out-of-pocket health care expenses in retirement but unable or unwilling to save sufficiently to meet them. It is also possible that many may be ignorant of the magnitude of health care costs they will later face, diminishing saving for such expenses, even where feasible. This projects aims to identify the extent to which this second possibility – misperceptions of costs – could be a contributing factor.

To understand and plan for future likely expenditures, an individual must consider two different aspects of spending. First, she must have some sense of what the median, or typical, person spends. Even better, she should have a sense of what the median person similar to her (e.g., a middle-income woman in good health with retiree supplemental insurance coverage through her employer) spends. Understanding this amount will provide a foundation for retirement planning so that she can think about how to finance typical costs through a combination of savings and future income. But just understanding what a typical retiree (like her) spends is not enough. One of the most challenging aspects of planning for future health care costs is that they are not wholly predictable. She must also consider the potential

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PERSPECTIVES 25, 37 (2009) (showing that even though retirees are paying a constant share of their total health care costs, these costs are nonetheless growing as a percent of income); ALICIA H. MUNNELL ET AL., CENTER FOR RETIREMENT RESEARCH AT BOSTON COLLEGE, HEALTHCARE COSTS DRIVE UP THE NATIONAL RETIREMENT RISK INDEX (February 2008) (showing that health care spending is driving growth in risk for retirees) [hereinafter MUNNELL ET AL., 2008]; KFF CHARTBOOK, *supra* note 3, at 72 (showing growth of out-of-pocket costs as a percent of income from 11.9 to 16.2 from 1997 to 2006).

[7] David U. Himmelstein et al., *Medical Bankruptcy in the United States, 2007: Results of a National Study*, 122 AM. J. MED. 741, 743 (2009) (finding that medical bills contribute to a majority of bankruptcies). David Dranove & Michael L. Millenson, *Medical Bankruptcy: Myth Versus Fact*, 25 HEALTH AFFAIRS w74 (2006) (reporting medical bills as a contributing factors in 17 percent of bankruptcies, applying a more cautious approach for classifying what constitutes a contributing factor).

[8] Jack VanDerhei, EMPLOYEE BENEFIT RESEARCH INSTITUTE, RETIREMENT SAVINGS SHORTFALLS FOR TODAY'S WORKERS 2 (2010).

[9] *Id.* at 4 (reporting estimates of shortfalls for unmarried individuals).

[10] *See* Fishman et al., supra note 4, at 11-12 (estimating that savings incentives for retiree health care costs will have some benefit, albeit limited, because those with the greatest exposure and least supplemental coverage are lower-income, whose could only save to finance a small part of later costs, even if savings are tax free).

[11] ALICIA H. MUNNELL, ET AL., CENTER FOR RETIREMENT RESEARCH AT BOSTON COLLEGE, LONG-TERM CARE COSTS AND THE NATIONAL RETIREMENT RISK INDEX 6 (2009) [hereinafter MUNNELL, ET AL., LTC].

variability in spending and the uncertainty that her costs might exceed estimates for the typical retiree based on status quo conditions.

Several sources of uncertainty could lead to variable spending and complicate retirees' ability to plan for retirement health care expenditures. Most importantly, the distribution of medical spending among retirees is highly skewed and largely unpredictable.[12] In other words, some will spend well more than the typical retiree and some will spend less. It's impossible to predict with confidence who will fall into each category, although demographic factors (e.g., gender, health, income) offer some guidance. In addition, future out-of-pocket exposure, even for the typical retiree, depends on the rate of future health care inflation and the stability of health care policy. Health care inflation has outpaced economic growth for a number of years[13] and may continue to do so. And the future of policies regarding Medicare, Medicaid, and private retiree insurance coverage is in flux. Even if policies remain stable, the effects of the 2010 health reform law, the Patient Protection and Affordable Care Act (PPACA) and the Health Care and Education Reconciliation Act of 2010 (HCERA) (collectively referred to herein as "PPACA")[14] on out-of-pocket spending are uncertain. PPACA will alter retirees' exposure in some predictable ways, such as reducing out-of-pocket expenditures on prescription drugs,[15] and in other less predictable ways, because of changes to supplemental insurance, as discussed below. Future reforms might repeal PPACA policies or introduce others that likewise have a significant effect on out-of-pocket spending. Ideally, we would hope people take into account these factors and have a plan to manage them if they should occur.

These conditions, viewed through the lens of financial literacy, pose extraordinary challenges with regard to retiree health care costs. Compared to deciphering credit card terms or mortgage options, estimating individual retiree health care costs is orders of magnitude more challenging. One study found that workers' projections of their total needs for retirement seem not to take even typical health care costs into account and that, despite such omission, nearly half are confident that they will have enough money to pay for medical expenses in retirement.[16] Prior studies suggest that individuals have only low to moderate levels of understanding about Medicare, the foundation of most Americans' retiree health care.[17]

Even if the public had complete knowledge of current Medicare coverage rules, individuals would also need to take into account personal characteristics and participation in other retiree health care

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[12] See *infra* note 109 and accompanying text.
[13] CONGRESSIONAL BUDGET OFFICE, CBO'S 2010 LONG-TERM BUDGET OUTLOOK 27 (reporting that from 1975-2008, excess cost growth in Medicare was 2.5%, in Medicaid was 2.0%, in all other was 1.8%, and overall was 1.9%).
[14] Pub. L. No. 111-148, 124 Stat. 119 (2010) (to be codified as amended in scattered sections of 21, 25, 26, 29, and 42 U.S.C.); Pub. L. No. 111-152, 124 Stat. 1029 (2010) (to be codified in scattered sections of 20, 26, and 42 U.S.C.) ([hereinafter "PPACA"])
[15] PPACA §§ 3301, 3315; HCERA § 1101 (2010) (together, closing the Medicare prescription drug "donut hole").
[16] Ruth Helman, et al., *The 2011 Retirement Confidence Survey: Confidence Drops to Record Lows, Reflecting "the New Normal"* 10, 35, Employee Benefit Research Institute Issue Brief No. 355 (March 2011).
[17] Lauren McCormack, et al., *Health Insurance Literacy of Older Adults*, 43 J. CONSUMER AFF. 223, 240 (2009) ("Our analyses showed that overall levels of health insurance literacy, as measured by this specific instrument, are low to moderate, with beneficiaries averaging a score of just over 70% correct on each of the two indices."); Bankers Life and Casualty Company, Center for a Secure Retirement, Retirement Healthcare for Middle-Income Americans 18-21 (January 2012) (showing that middle-age Americans and near retirees are largely unaware of the benefits and coverage available in the Medicare program and what is not covered, including vision, dental, and most long-term care benefits).

programs – Medicaid, employer sponsored retiree health insurance, and Medigap programs – to understand their own likely out-of-pocket health care costs. The few studies that examine perceptions of potential future insurance coverage and costs suggest confusion exists; for example, more workers expect to receive retiree health benefits through a current employer than is likely.[18] And, of course, they would need to factor in that coverage options, especially for government programs like Medicare and Medicaid, might change before or over the course of their retirement years. Finally, even if people perfectly understood Medicare and were confident regarding future supplemental coverage sources, they would still have to deal with their own unpredictable future health needs. Taken together, these complexities make planning for retiree health care costs perhaps the most challenging component of financial literacy that most Americans confront.

To understand how well people fare in the face of this challenge, we developed and administered a survey to over 2000 individuals approaching and already in retirement [19] in the Rand American Life Panel, asking them to estimate out-of-pocket health care expenditures they are likely to face in retirement. We compare their estimates to experts' estimates. Because of the lack of research in this area, the main purpose of this project is agenda setting – to test who and what are the most important foci for future research and legal and policy consideration, based on the areas where respondents' answers strayed farthest from experts' estimates.

To the extent retirees and near-retirees estimates were inaccurate, we attempted to identify what drives this inaccuracy. With regard to overall out-of-pocket cost estimates, we examine several places where someone might go wrong. For example, do individuals better estimate some components of costs than others (e.g. premium costs vs. deductibles or copayments for medical care)? Or do individuals misunderstand their life expectancies and thus the number of years of costs they will incur? We also explore whether some subgroups of the population are better estimators than others. Finally, we seek to understand how people perceive the factors discussed above that make their future costs uncertain, including individual health experience, unexpected medical inflation,[20] and policy instability that could weaken Medicare are coverage or erode other forms of supplemental coverage.

In Part II below, we offer a comprehensive review of expert studies and reflect on how pinpointing expert views on what a typical retiree should expect to spend out-of-pocket on health care is surprisingly complicated. There is no consistency in methodology for examining retirees' costs and no single set of data that reliably captures all sources of out-of-pocket spending. The result is a confusing and contradictory web of studies on likely expenditures, many of which are written for an audience of economists. The lack of simply-written, easily-accessible materials on this topic would impede efforts – even by a highly educated individual – to learn what she should anticipate spending in retirement, even if her spending is typical.

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[18] Paul Fronstin et al., *Savings Needed to Fund Health Insurance and Healthcare Expenses in Retirement: Findings from a Simulation Model* 23, Employee Benefit Research Institute Issue Brief No. 317 (May 2008) (estimates based on the frequency of availability of such benefits in the U.S., as compared to the proportion of individuals who said they expect them) [hereinafter Fronstin et al. 2008].

[19] Our response rate was over 80 percent. See discussion *infra* Part III.

[20] "Excess cost growth" is defined as the increase in health care spending per person over the growth of GDP per person, adjusted for demographic changes in the population that might affect health care spending.

In Part III of this paper, we describe our findings and compare survey responses with estimates by expert analysts. Some of our findings were modestly surprising. Overall, respondents were more successful in their estimates that we had anticipated. At least if one focuses on median responses, our survey responses –in terms of estimates of insurance premium costs, total monthly expenditures, and lump-sum lifetime expenditures –were closer to expert estimates than we had anticipated, albeit slightly lower than experts' estimates overall. This result suggests that at least some proportion of people understand the magnitude of future savings needed to sustain typical health care expenses. (In this study, we did not explore the important related question of whether individual expectations about retiree health care costs are correlated with their actual savings for those expenses.)

While estimates were remarkably accurate overall, some subgroup populations' responses deviated from experts' estimates that they are likely to spend more. For example, women were significantly worse predictors of typical future spending than men. Their overall estimates of lifetime expected retiree health care costs were lower than those by men by about $30,000 at the median, despite experts' estimates that women will spend considerably more than men over their retirement. Younger cohorts' estimates were nearly identical to older cohorts, despite the fact that their actual costs will be significantly higher by the time they retire, due to medical care cost growth. While interpretation of this result is contestable, as discussed below, this finding may suggest that problems of savings insufficiency might worsen over time, considering that 40-60 years olds misperceive the amount they should be saving for future expenditures.

Importantly, we also learned that respondents' intuitions were less strong with regard to situations that might cause them to have individual costs higher than the median, or typical, retiree. We found that people struggle to evaluate different sources of uncertainty that might lead to higher than typical expenditures in the future. More precisely, they did not differentiate between the risks posed by individual health experience versus policy uncertainty versus unanticipated medical care cost growth. They underestimated the potential effect, in particular, of having particularly high individual health needs, which can result in double to triple median expenditures. This finding suggests that many people who have extensive health needs do not anticipate them and may, in turn, be unprepared to finance them.

In Part V, we discuss the implications of these findings. We highlight where respondents answers suggest opportunities to better align expectations and likely future spending. We also suggest aspects that might require more than aligning expectations and consider ways that insurance regulations and policy solutions could respond to these findings to help improve the financial security of retirees.

II. Estimating Retiree Health Care Expenditures

In this part, we review the literature on retiree out-of-pocket health care expenditures, providing a comprehensive overview of a largely disjointed series of studies. These studies offer benchmarks against which we compare survey respondents' answers in Part III. One of our early insights in reviewing these studies is that they are difficult to comprehend, even for a relatively knowledgeable reader. Many are complex in methodology and format, and there are inconsistencies across them. In itself, the state of the literature creates a significant obstacle for individuals seeking to plan for health care expenditures in retirement. As we review these studies, we examine the basic financial literacy challenges they pose.

A. Background on Out-of-Pocket Costs

Retiree out-of-pocket health care expenditures include any amount the retiree pays and includes two categories of costs: (1) premium costs for insurance coverage (Medicare and supplemental insurance policies) and (2) expenditures for services or items paid for directly by the insured, which includes cost-sharing (deductibles, co-payments, and coinsurance required by Medicare or a supplemental policy) and expenses for care that is not covered by insurance (e.g., dental care under many policies).

Retirees do have some buffer from out-of-pocket spending. Over half of total retiree health care costs are financed by Medicare.[21] Ninety-nine percent of the eligible elderly (about 39 million individuals age 65 and older) are Medicare beneficiaries.[22] Basic Medicare is composed of two parts. Part A Hospital Insurance finances hospital and inpatient care, as well as some home health care. Part B Supplementary Medical Insurance primarily pays for outpatient care. For most, enrollment in Part A is automatic and free, but beneficiaries are subject to coinsurance and copayments for certain services at the point of care.[23] Beneficiaries pay a monthly premium to enroll in Part B, which began at $115.40 in 2011 for the standard premiums and increased on a sliding scale based on income, as described in Appendix A.[24] Low-income enrollees (under 133 percent of the Federal Poverty Level (FPL)) with limited assets ($6,880 for an individual or $10,020 for a couple) are eligible for the Medicare Savings Program (MSP), which defrays all or part of their Medicare premiums and cost-sharing obligations.[25] For reference, in

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[21] Paul Fronstin et al., *Funding Savings Needed for Health Expenses For Persons Eligible for Medicare* 3, EBRI Issue Brief (2010) [hereinafter Fronstin et al. 2010] (showing 64% of total costs for non-institutionalized population financed by Medicare); *See also* KFF CHARTBOOK, *supra* note 3, at 70 (reporting 48% for Medicare fee-for-service beneficiaries, who will have a lower percent financed than the excluded Medicare Advantage beneficiaries).

[22] Dahlia K. Remler & Sherry A. Glied, *What Other Programs Can Teach Us: Increasing Participation in Health Insurance Programs*, 93 Am. J. Pub. Health 67, 68 (2003) (reporting 99 percent take up in Medicare Part A and 95.5 percent in Medicare Part B.

[23] KFF CHARTBOOK, *supra* note 3, at 22. Part A is premium-free if an individual or spouse worked 40 or more quarters of Medicare-covered employment, where they contributed Medicare payroll taxes. Medicare.gov, *Medicare Premiums and Coinsurance Rates for 2011*, (Nov. 5, 2010), at http://questions.medicare.gov/app/answers/detail/a_id/2305/kw/coinsurance.

[24] KFF CHARTBOOK, *supra* note 3, at 22.

[25] Gretchen Jacobson et al., Kaiser Family Foundation, *The Role of Medicare for People Dually Eligible for Medicare and Medicaid* 9-10 (2011) (describing how Medicaid defrays premiums or cost sharing for Qualified Medicare Beneficiaries (QMBs), who must earn under 100% of the FPL to receive assistance with Medicare premiums and cost-sharing; Specified Low-Income Medicare Beneficiaries (SLMBs), who have incomes between 100 and 120% of the FPL and are eligible for assistance with Medicare Part B premiums; and Qualified Individuals (QIs), who earn between 120-135% of the FPL and receive assistance with premiums in limited circumstances. To

2012, the FPL is just over $11,000 for an individual and just over $15,000 for a couple.[26] However, a minority (under 1/3) of those eligible for MSPs enroll; an estimated 3.6 million are eligible.[27]

All other retirees must finance costs not covered by Medicare, including prescription drug costs, by purchasing insurance coverage supplemental to Medicare or by paying directly for such costs. Ninety percent of all retirees obtain supplemental insurance coverage to help finance medical services.[28] Ninety percent also have a source of supplemental prescription drug coverage, mostly under the Medicare Part D prescription drug benefit that took effect in 2006,[29] as established by the Medicare Modernization Act.[30]

Supplemental coverage consists of four main types[31] that fill some – but not all – of the coverage gaps that Medicare leaves.[32] First, about one-third of Medicare beneficiaries now have supplemental employer-sponsored insurance (ESI) for retirees, usually subsidized in part by the employer,[33] but this number is likely to decrease, as discussed further below.[34] Second, about one-quarter of beneficiaries enroll in Medicare Advantage, also known as Medicare Part C.[35] Under Medicare Advantage, beneficiaries pay a monthly premium ($43/month on average in 2011) to buy a policy from an approved private insurer that combines the benefits of Part A and B coverage, Part D prescription coverage in most cases, and sometimes additional benefits, such as dental or vision coverage.[36] Third, about 17 percent of beneficiaries buy a supplemental "Medigap" policy from a private insurer to fill in costs not covered by basic Medicare (Parts A and B).[37] Premiums vary by plan type and state and can range from under $100

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qualify for any of these programs, a beneficiary must have assets at or below $6,880 for an individual or $10,020 for a couple in 2011.)

[26] http://aspe.hhs.gov/poverty/12poverty.shtml

[27] Stan Dorn & Boaping Shang, *Spurring Enrollment In Medicare Savings Programs Through A Substitute For The Asset Test Focused On Investment Income*, 31 Health Affairs 367, 368-370 (estimating current eligibility in three MSPs as 13% for SLMB, 19% for QI, and 33% for QMB and estimating 3.6 Million eligible based on Medicare beneficiary counts). They explain low eligibility as due in part to the application process, including a "burdensome" asset test and recommend replacing the asset test with an investment income test. *Id* at 368-69.

[28] KFF CHARTBOOK, *supra* note 3, at 60.

[29] KFF CHARTBOOK, *supra* note 3, at 60.

[30] Medicare Prescription Drug, Improvement, and Modernization Act of 2003, Pub. L. 108-173 (2003).

[31] KFF CHARTBOOK, *supra* note 3, at 60. There are three shortcomings in this data on supplemental coverage. First, it includes non-elderly disabled on Medicare. In addition, KFF only listed one form of supplemental coverage for each individual according to the following hierarchy: "1) Medicare Advantage, 2) Medicaid, 3) Employer, 4) Medigap, 5) Other public/private coverage, 6) No supplemental coverage. Individuals with more than one source of coverage were assigned to the category that appears highest in the ordering." This methodology will underestimate forms of supplemental coverage lower in the hierarchy, such as "other public/private."

[32] Some retirees also have coverage through the Veterans Affairs health care system which, for many, provides care at low out-of-pocket costs.

[33] KFF CHARTBOOK, *supra* note 3, at 60. ESI tends to provide comprehensive coverage at a relatively low cost to retirees (just over $2000 average per capita annual spending on premiums in 2006). *Id.* at 72.

[34] *See infra* notes 136-139 and corresponding text.

[35] KFF CHARTBOOK, *supra* note 3, at 60.

[36] *Medicare Advantage (Part C),* Medicare.gov, http://www.medicare.gov/navigation/medicare-basics/medicare-benefits/part-c.aspx (last visited June 3, 2011). This $43 average premium is in addition to the Part B premium and is based on the cost of plans with prescription drug coverage. Medicare Advantage providers often receive government rebates, based on plan cost savings over traditional Medicare, which they can use to provide additional services or reduce premiums. *Id.*

[37] KFF CHARTBOOK, *supra* note 3, at 60 (2010).

to over $400 per month.[38] Medigap policies typically do not cover long-term care, vision, dental, hearing aids, or private nursing care.[39] Finally, about 15-16 percent of Medicare beneficiaries are "dually eligible" for Medicaid due to low income and assets or disability.[40] Individuals fully eligible for Medicare and Medicaid, "dual-eligibles," pay little or no premiums and cost-sharing if they are under the income and asset thresholds, which vary state-by-state but are quite low in all. For example, a majority of states are required by federal Medicaid participation rules to provide full Medicaid dual eligibility to those who meet the Supplemental Security Income (SSI) Program income and asset limits, which for an individual is income under 75 percent of the FPL and assets under $2000.[41] Even if not fully eligible for Medicaid, another five percent of Medicare beneficiaries are eligible for Medicaid assistance with all or some of their Medicare premiums and cost sharing through MSPs, discussed above.[42] Medicaid coverage thus protects some of the poorest retirees against significant out-of-pocket exposure.

As noted above, 90 percent of Medicare beneficiaries carry prescription drug coverage, as well.[43] In 2010, about 60 percent had a Medicare Part D prescription drug plan (PDP), nearly 20 percent had coverage through an ESI retiree plan, and 13 percent had some other coverage.[44] The average monthly Part D plan premium is just over $40.[45]

Even with supplemental insurance for medical and prescription drug expenses, retirees face out-of-pocket expenses for cost-sharing obligations and for items or services not covered by Medicare or supplemental coverage. For example, Medicare Part A imposes deductibles and copayments for inpatient care and Medicare Part B requires a 20 percent coinsurance payment for services for most outpatient care.[46] Out-of-pocket exposure to prescription drug costs decreased with the implementation of Medicare Part D in 2006 and has decreased again under PPACA with the closing of the "donut hole," as discussed below, but is still a major component of retiree expenditures.[47] Depending on type of Medicare and supplemental coverage a retiree has, out-of-pocket expenditure can vary significantly. On average, across

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[38] See *Medigap Policy Search*, MEDICARE.GOV, http://www.medicare.gov/find-a-plan/questions/medigap-home.aspx (last visited May 31, 2011). Policy calculations were calculated based on information provided by the search feature on May 31, 2011.
[39] *Id.* at 12
[40] KFF CHARTBOOK, *supra* note 3, at 60 (figure 6.1); Jacobson et al., *supra* note 25, *at* 3 (reporting 21 percent of Medicare eligibles were dual-eligibles for Medicaid, and 77 percent of this 21 percent is "fully" eligible for Medicaid benefits, which equals about 16 percent). Although optional, most states provide full Medicaid benefits at slightly higher income and asset levels overall (e.g., under 100 percent of the FLP and $3000 in assets) or for a subset of the state population, including the "medically needy," nursing home residents, or others in community-based long-term care under a waiver program. *Id* at 8.
[41] Jacobson et al., *supra* note 25, at 8. Some states known as "209(b) states" may set lower eligibility levels. *Id.*
[42] Jacobson et al., *supra* note 25, at 3.
[43] KFF CHARTBOOK, *supra* note 3, at 34 (figure 3.1).
[44] *Id.*
[45] Jack Hoadley et al., *Medicare Part D Spotlight: Part D Plan Availability in 2011 and Key Changes Since 2006*, at 2 (Oct. 2010), http://www.kff.org/medicare/upload/8107.pdf. (estimating 2011 premium weighted by enrollment, based on 2010 enrollment).
[46] THE KAISER FAMILY FOUNDATION, MEDICARE: A PRIMER 2010 5 (2010) [herein after MEDICARE PRIMER].
[47] Gary Engelhardt & Jonathan Gruber, Center for Retirement Research at Boston College, *Does Medicare Part D Protect the Elderly from Financial Risk*, No. 11-8 (June 2011).

all forms, the costs of premiums tend to comprise between 40-60 percent of total out-of-pocket expenses, and cost-sharing and uncovered health care makes up the rest.[48]

B. Two Ways to Estimate Retiree Out-of-Pocket Health Care Expenditures

In developing benchmarks for this study, it quickly became clear that there is no definitive expert estimate of what a person should budget for out-of-pocket health care spending in retirement. In addition, most studies are dense and difficult for a lay reader – or any non-economist, for that matter - to interpret. These facts alone pose a challenge for financial planning. Even those individuals who want to plan for retirement out-of-pocket health expenditures will struggle to find guidance on how much to save.

Even as the body of literature examining retiree out-of-pocket health care costs grows,[49] there is no consensus on the right approach to measure these costs. The design of leading studies varies in several regards, driving inconsistency in estimates. First, because of the many sources of financing for health care costs, there is no one database that accurately captures all health care spending. Studies are left to rely on a mix of Medicare records and survey data that captures self reports of out-of-pocket spending. Furthermore, researchers disagree on which survey data is most accurate,[50] among the three main datasets, which each capture data differently and focus on a different population: the Health and Retirement Survey (HRS),[51] the Medical Expenditure Panel Survey (MEPS),[52] and the Medicare Current Beneficiaries Survey (MCBS).[53].

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[48] KFF CHARTBOOK, *supra* note 3, at 60.

[49] *See, e.g.* Paul Fronstin et al. 2010, *supra* note 21; Anthony Webb & Natalia Zhivan, Center for Retirement Research at Boston College, *How Much is Enough? The Distribution of Lifetime Healthcare Costs* (February 2010); Michael D. Hurd & Susann Rohwedder, University of Michigan Retirement Research Center, *The Level and Risk of Out-of Pocket Healthcare Spending* (2009); Fidelity, *Fidelity Estimates Health Care Costs for Couples Retiring in 2011 Will Drop to $230K in One-Time Reduction* (March 31, 2011); Fidelity, *Retirees Face Estimated $240,000 in Medical Costs* (May 16, 2012) [hereinafter Fidelity 2012]; Dana P. Goldman & Julie M. Zissimopoulos, *High Out-Of-Pocket Health Care Spending By The Elderly*, 22 HEALTH AFFAIRS 194 (2003).

[50] For example, Hurd & Rohwedder caution that the data in the HRS study is higher than the other two surveys by as much as 50% at the mean. Hurd & Rohwedder, *supra* note 49, at 17 (Table 6) (Reporting that in 2003 mean out-of-pocket spending on health care services was $2240 based on HRS data, $1563 based on MCBS data, and $1514 based on MEPS data, all excluding nursing home residents.). In contrast, Samuel Marshall, Kathleen McGarry and Jonathan Skinner disagree that the HRS numbers are inflated, even if higher. Samuel Marshall et al., *The Risk of Out-of-Pocket Healthcare Expenditures at End of Life*, NBER Working Paper (July 2010). They argue the detailed questions in the HRS elicits data respondents may omit in other studies. *Id.* HRS also conducts "exit interviews" with relatives of deceased participants to capture spending in the last year of life and uses "unfolding brackets," to reduce non-response, both of which increase estimates and, perhaps, accuracy. Webb & Zhivan, *supra* note 49, at 8.

[51] HRS is a long-running biennial panel survey that is broader than health care and collects data from about 20,000 individuals 51 or older. This survey asks about all categories of out-of-pocket spending, including prescription drugs but focuses less on such inquiries than other studies do. Hurd & Rohwedder, *supra* note 49, at 4.

[52] MEPS is a two-year household panel survey of community-dwelling individuals (i.e. excludes nursing home residents), which has a smaller sample of the older population than HRS and thus lower expenditures per person on average. MEPS triangulates data from the patient survey with a provider survey. Some believe the data to be better quality. Hurd & Rohwedder, *supra* note 49, at 4.

[53] MCBS is a rotating four-year panel survey of people enrolled in Medicare, who may reside in either community or long-term care facilities, and asks participants to keep health spending diaries to capture data in more detail and more accurately. Hurd & Rohwedder, *supra* note 49, at 4-5.

Second, studies are inconsistent in what they include as out-of-pocket costs. Most studies include premiums for Medicare Part B and supplemental coverage and cost sharing for medical care. But there is less consistency with regard to costs not covered by insurance, such as dental care and vision care, and the costs of long-term care. Some studies, including ours, exclude institutional long-term care costs (e.g., assisted living facility or nursing home) because most people don't save for long-term care costs and it's not clear most should, because of the availability of Medicaid as a safety net.[54] Many elderly tend either to use home equity to pay for nursing home costs or, if they lack home equity, deplete assets sufficiently to qualify for Medicaid.[55] This means that different considerations do and should go into budgeting for and financing long-term care than for other medical costs.[56] Because long-term care takes many forms, some studies do, however, pick up some long-term expenditures for non-institutional patients, including short term nursing home stays, home-based care, or post-acute care, especially when financed by Medicare. This inconsistency in methodology leads not only to variation in estimates but also likely generates confusion on what types of spending people should include in savings targets and which, in contrast, will be financed by insurance.

On average, about 20 percent of total out-of-pocket retiree expenditures can be attributed to long-term care.[57] Thus, very roughly speaking, our benchmarks would be about one quarter higher if long-term care costs were included and perhaps more if long-term care continues to increase as a percentage of U.S. health spending, as it did from 3 percent in 1960 to 7 percent in 2007.[58]

Finally, estimating future medical costs – both for experts and for untrained individuals – is by its very nature an uncertain science because of the unpredictable nature of medical cost inflation and policy uncertainty, as discussed further below.[59] Researchers have to make assumptions about both of these factors that, at times, feel like little more than a shot in the dark. Medical care costs have been growing at a faster rate than the rest of the economy for some time now. From 1975-2008, Medicare spending grew at a rate of 2.5 percent faster than GDP and overall medical spending grew 1.9 percent faster than GDP.[60]

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[54] While the costs of institutional long-term care costs are a significant part of retirement spending, we excluded these costs both for the reason above and also based on a hypothesis that respondents would underestimate costs in general (whether considering long-term care or not), and excluding long-term care costs gave us more conservative expert benchmarks for comparison.

[55] Hurd & Rohwedder, *supra* note 49, at 3.

[56] *Supra* note 55 and corresponding text

[57] KFF CHARTBOOK, *supra* note 3, at 70 (showing long-term care as 19% of total out-of-pocket costs); Fishman, *supra* note 4, at 4 ("average out-of-pocket costs for all health-related needs are about 20 to 30 percent higher … when long-term care costs are taken into account).

[58] Gruber & Levy, *supra* note 6, at 42.

[59] John N. Friedman, National Research Council (US) Committee on National Statistics, Improving Health Care Cost Projections for the Medicare Population: Summary of a Workshop, Appendix A: Predicting Medicare Cost Growth (2010) (describing the different methodologies used to calculate Medicare cost growth and the limitations of each) at http://www.ncbi.nlm.nih.gov/books/NBK52815/; John D. Shato & M. Kent Clemens, CMS Office of the Actuary, *Projected Medicare Expenditures Under Illustrative Scenarios with Alternative Payment Updates to Medicare Providers* (May 18, 2012) (explaining generally the difficulty in deciding on Medicare cost growth projections under PPACA)*;* THE BOARDS OF TRUSTEES, FEDERAL HOSPITAL INSURANCE AND FEDERAL SUPPLEMENTARY MEDICAL INSURANCE TRUST FUNDS, 2012 ANNUAL REPORT OF THE BOARDS OF TRUSTEES OF THE FEDERAL HOSPITAL INSURANCE AND FEDERAL SUPPLEMENTARY MEDICAL INSURANCE TRUST FUNDS 12-20 (describing the complex methodology used to project Medicare cost growth).

[60] CONGRESSIONAL BUDGET OFFICE, *supra* note 13, at 27 (reporting that from 1975-2008, excess cost growth in Medicare was 2.5%, in Medicaid was 2.0%, in all other was 1.8%, and overall was 1.9%).

It's difficult to predict, however, to what extent this level of growth will and can persist going forward. Most studies we cite rely upon projections of future cost growth made by the Medicare Boards of Trustees, calculated annually by the Office of the Actuary (OACT). OACT statistically models costs for the first ten years into the future and economic models the last 51 years of the 75 year projection period, using a linear interpolation to connect year ten to year 25.[61] Until 2012, OACT has assumed that for the final 51 years, long-term cost growth will be GDP + 1, based on the general theory that one of several forces will serve as a brake on long-term cost growth to slow down the rate over time.[62] Despite considerable thought put into how to estimate long-term medical cost growth, these estimates involve significant guess work and can have a large impact on study results.[63]

Acknowledging the lack of a definitive savings target, we designed our survey questions so we could obtain data in a manner congruent with the two main ways experts estimate costs: annual cost and the net present value (NPV) at age 65 of total lifetime spending throughout retirement. We asked our respondents to consider individual (not household) estimates of spending and to exclude residential long-term care costs, such as extended stays in nursing homes, and premiums for long-term health care insurance, to mirror the methodology used in most of the experts' estimates we cite. The following sections describe these experts' estimates and the benchmarks we use to gauge the accuracy of our respondents' estimates.

1. Annual Estimates

One common way to measure retiree out-of-pocket health care expenditures is on a periodic basis, such as average monthly or annual expenditures. In our survey, we asked respondents to estimate what they expect to spend on a monthly basis and compare their answers to the following expert estimates.

A 2010 study by Richard Johnson and Corina Mommaerts of the Urban Institute provides our key benchmarks for respondents' monthly spending estimates (Table One). This study projects that, excluding long-term care, a retiree will spend on average $3278 in 2010.[64] They project median spending of $2583 in 2010, $3284 in 2020, $4569 in 2030, and $6214 in 2040. For someone at the 75th percentile of the spending distribution, their estimates of spending are $3934 in 2010, $4959 in 2020, $6855 in

[61] Friedman, *supra* note 59, at 7-8 (describing OACT's methodologies for projecting Medicare expenditures). OACT projects each category of spending for the first ten years into the future, using "demographically-adjusted extrapolations of past cost growth." *Id.* OACT then uses a Computable General Equilibrium Model (CGE) to forecast years 25-75 and fill in the median timeframe through linear interpolation between year 10 and 25. *Id.* This method benefits from capturing "endogenous growth reduction" as health care consumes more of income, but does not take into account heterogeneity of preferences and assumes that health care operates as a standard good, not dealing with issues of moral hazard, adverse selection, or supply-side incentives for use of care. *Id*. at 7.

[62] The model does not specify how such slowdown would occur, but it might occur in theory though increased supply, decreased demand as more of income is taken up by out-of-pocket costs, or policy changes. *Id.* at 8. Parties disagreed over the appropriate assumption for long-term medical cost growth in 2012, in light of the policy changes enacted by PPACA. Shatto & Clemens, *supra* note 59, at 1.

[63] Other governmental offices use different methods and, for example, the Congressional Budget Office's (CBO) estimates are higher than the OACT estimates because the only brake on cost growth CBO assumes is that non health care consumption will not decline. *Id. at* 8.

[64] Johnson & Mommaerts, *supra* note 5, at 11. Estimates rise to $4116 in 2020, $5708 in 2030 and $7832 in 2040, all in constant 2008 dollars. *Id.*

2030, and $9455 in 2040.[65] Based on these figures, the study estimates that the share of adults who spend more than 1/5 of household income on health care will grow to 45 percent in 2040, from 18 percent in 2010.[66]

Other studies that have estimated annual costs are less useful as benchmarks for our purposes, but validate the use of the Johnson and Mommaerts' figures as conservative benchmark estimates.[67] None of these studies, however, including Johnson and Mommaerts, considers changes to spending that will result from PPACA. For some retirees, spending could be as much as 20-30 percent lower, based in part on reductions to out-of-pocket prescription drug spending under Medicare Part D, as explained below.[68] For others, it will remain similar.[69] On the other hand, all of these studies are at least several years old and would be higher if updated to 2012 dollars.

One of the complexities of using these studies to set benchmarks for evaluating survey responses is the difficulty of setting objective measures for respondent expectations. One plausible approach is simply to use expert estimates of median or mean expenses, as either could be said to reflect the amount that a typical retiree could expect to pay. This approach seems most appropriate for our survey questions soliciting respondent estimates of average expected monthly expenditures for health care. In other contexts, where we solicitation estimates of savings requirements at age 65 to cover expected retiree health care costs, somewhere between the 50th-75th percentile of projected future expenditures might generate a more plausible target for what a risk averse individual might sensibly choose for planning purposes.[70] In light of the inherent subjectivity of these choices, we have chosen to benchmark our survey responses against a range from the median to 75th percentile of the Johnson and Mommaerts study, as reported in Table One. Average estimates will likely fall in this range as well, given that high cost

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[65] Johnson & Mommaerts, *supra* note 5, at 11 (using the Urban Institute DYNASIM3 model to simulate insurance coverage and project spending as a function of insurance coverage and 2006 HRS data on insurance coverage and 2006 MEPS data, which only includes community-dwelling individuals, on out-of-pocket costs. They exclude the costs of long-term care and indicate they use a 2009 intermediate growth rate of 2.8 percent for medical cost growth, which they say they have based on Medicare Trustees' projections).

[66] Johnson & Mommaerts, *supra* note5, at 13.

[67] A Kaiser Family Foundation analysis of 2006 MCBS data, which includes long-term care costs, reports average per capita cost in 2006 of $4241; no medians are available. KFF CHARTBOOK, *supra* note 3, at 70. Long-term care costs were 19 percent on average, which means average annual out-of-pocket spending was just over $3400 when excluding long-term care. *Id.* This estimate is in 2006 dollars and still $100 higher than Johnson & Mommaerts' average ($3278). Centers for Medicare and Medicaid Services (CMS) estimated average annual out-of-pocket spending of $3800 for an individual retired in 2007, again with no medians reported. Munnell et al. 2008, *supra* note 6, at 3.

[68] This estimate is based on comparing EBRI's estimated median spending for a man and a woman with wraparound Medicare coverage from 2009, before PPACA, to their estimate in 2010, after PPACA. Fronstin et al. 2010, *supra* note 21, at 9 (estimating costs after PPACA); Paul Fronstin et al., *Savings Needed for Health Expenses in Retirement: An Examination of Persons Ages 55 and 65 in 2009* 6, EBRI Issue Brief (estimating costs in 2009, before PPACA) [hereinafter Fronstin et al. 2009].

[69] *Id.* (estimates for retirees with employment-based supplemental coverage vary less, showing a decrease of 3-10%).

[70] This assumption is a rough attempt to balance protection against health care costs about welfare loss from forgoing other spending. For any individual, the "right" target range might be higher or lower, depending on income, risk aversion, and opportunity costs. One could, quite reasonably choose a different benchmark – plausibly at or even below the median of projected costs – in which case the responses reported below might be considered even closer to expert estimates.

retirees tend to push the average cost above the median. We thus use a target range of expected retiree health care expense from $2583 a year (or $215 a month) to $3934 a year (or $330 a month) in 2010, rising in future years. While the effect of the PPACA might suppress the rate of increase in costs for some retirees, this study suggests that the typical retiree will spend in excess of $200 a month on health care costs and a good deal more than that a decade or more down the road.

Table One: Annual Spending Benchmarks			
	Median Annual Estimate (Monthly)	75th Percentile Annual Estimate (Monthly)	**Benchmark Monthly Spending Range**
2010	$2583 ($215)	$3934 ($330)	**$215-330**
2020	$3284 ($274)	$4959 ($413)	**$274-413**
2030	$4569 ($381)	$6855 ($571)	**$381-571**
2040	$6214 ($518)	$9455 ($788)	**$518-788**

Source: Johnson and Mommaerts (2010)
Note: Excludes LTC spending. Uses Medicare Boards' of Trustees 2009 intermediate growth rate of 2.8 percent. Estimates generated using Urban Institute DYNASIM micro simulation model and rounded to nearest dollar.

2. Lifetime Spending

A second way to gauge understanding of retiree health care expenditures is based on ability to estimate lifetime spending, or the net present value at age 65 of spending throughout retirement. This estimate is particularly important for retirees who will finance expenditures out of savings, rather than out of cash flow. The accuracy of respondents' lifetime spending estimates relies on three different factors: their projections of life expectancy, their estimates of monthly spending, and their ability to toggle between monthly and lifetime estimates, considering real cost growth. Even if a respondent estimates monthly spending well, she might underestimate her life expectancy, for example, generating too low of a lifetime estimate. Further, recent financial literacy research illustrates the difficulty people have translating between periodic and lump sum payments, suggesting that our respondents might similarly struggle.[71]

As a lump-sum benchmark, we rely on a 2010 Employee Benefit Research Institute (EBRI) report by Paul Fronstin, Dallas Salisbury, and Jack VanDerhei, which is one of few studies that considers the effects of PPACA on retiree out-of-pocket spending. This study reports estimated median lifetime retiree health care costs of $65,000 for a man and $93,000 for a woman ($158,000 for a couple) retiring in 2010, not including long-term care expenses and using Medicare Boards of Trustees excess cost growth estimates.[72] These estimates are based on individuals with median drug expenditures and "wraparound"

[71] *See generally, e.g.*, Jeffrey R. Brown, et al., *Do Consumers Know How to Value Annuities? Complexity as a Barrier to Annuitization* (June 7, 2012) (draft manuscript on file with authors) (showing difficulty among survey respondents in valuing annuities); Jeffrey R. Brown, et al., *Framing and Claiming: How Information-Framing Affects Expected Social Security Claiming Behavior* (February 28, 2012) (showing that individuals' choices on when to claim Social Security benefits, from ages 62-70, vary based on how this claiming decision is framed).
[72] Fronstin et al. 2010, *supra* note 21, at 9. Authors don't indicate the figure they are using for excess cost growth, but the 2011 Medicare Trustees report assumed excess cost growth of 1.4% for Medicare Parts A and B and 2.5% for Part D for the first 10 years and assumes growth of GDP plus one after year 25. Estimates for years 10-25 are based on linear interpolation between year 10 and 25. THE BOARDS OF TRUSTEES, FEDERAL HOSPITAL INSURANCE AND FEDERAL SUPPLEMENTARY MEDICAL INSURANCE TRUST FUNDS, 2011 ANNUAL REPORT OF THE BOARDS OF

Medicare coverage (i.e., Parts A, B, D and Medigap).[73] For someone at the 75th percentile of spending, they estimate $118,000 in expenditures for a man and $137,000 for a woman ($255,000 for a couple).[74] For someone retiring in 2020, the estimates are considerably higher ($109,000 median estimate for a man and $156,000 for a woman and 75th percentile estimate of $198,000 for a man and $230,000 for a woman). Their estimates are similar for an individual with supplemental ESI, whose employer contributes to coverage, but with no employer contribution, estimates are nearly 70 percent higher (median estimate of $109,000 for a man and $146,000 for a woman and 75th percentile estimate of $165,000 for a man and $192,000 for a woman).[75]

These estimates take a conservative approach. Their data set excludes institutionalized patients, who tend to be more expensive, making their estimates lower than if the entire population were considered.[76] Of note, the 2010 EBRI estimates are 20-30 percent lower than their own 2009 estimates, [77] due mostly to PPACA reforms that reduce Medicare Part D out-of-pocket expenses.[78] Other studies, most of which estimate costs for an in-tact couple, not individuals, have reported similar or slightly higher estimates, confirming that the EBRI study offers a realistic and conservative benchmark.[79]

For purposes of setting a baseline for reviewing our sample results, we again assume that a sensible, informed retiree would ideally save enough to finance between the median to 75th percentile of spending estimate over a lifetime if they intended to finance all of their expenses with savings (see Table Two below). While it is difficult to derive a single point estimate of projected costs from the range of estimates above, 50th-75th percentile estimates of $65,000 to $118,000 for men and $93,000 to $137,000 for a woman offer a plausible, conservative range based on the EBRI estimates for a retiree with wraparound Medicare. Those planning on retirement in 2020, even if targeting median costs, would need to save at least $109,000 for a man and $156,000 for woman.

TRUSTEES OF THE FEDERAL HOSPITAL INSURANCE AND FEDERAL SUPPLEMENTARY MEDICAL INSURANCE TRUST FUNDS 12, at https://www.cms.gov/ReportsTrustFunds/downloads/tr2011.pdf. [hereinafter BOARDS OF TRUSTEES 2011].

[73] Fronstin et al. 2010, *supra* note 21, at 7.

[74] Fronstin et al. 2010, *supra* note 21, at 9. These estimates are for someone at the 75th percentile of spending overall and also in the 75th percentile of prescription drug spending throughout retirement. *Id.*

[75] *Id.* at 9. (Comparing columns 1 and 2 of Figure 3).

[76] *Id.* at 5 (using MEPS data on non-institutionalized patients).

[77] *Supra* note 68 and corresponding text.

[78] Fronstin et al. 2010, *supra* note 21, at 7.

[79] In 2011, Fidelity actuaries estimated $230,000 lifetime out-of-pocket spending for the average couple saving to achieve 75 percent certainty of sufficiency (comparable to the above-cited EBRI estimate of $255,000 for a couple). Fidelity, Fidelity Viewpoints, *Get Ready for Higher Health Care Costs*, at 2 (July 1, 2010). A 2010 study by Webb & Zhivan estimates $197,000 in 2009 dollars for an average couple (most comparable to the EBRI $158,000 median) with a high school education and free of chronic disease at age 65, excluding long-term care expenses. Webb & Zhivan, *supra* note 49, at 37. This study uses a 4.2 percent rate of inflation-adjusted cost growth, based on 1960-2007 experience. Using a lower rate of 3.2 percent, based on CMS projections from 2007, they calculate an NPV that is 11 percent lower. This study excludes Medicaid-eligible households, those with long-term care insurance, and those with zero medical expenses and assumes that households are not subject to spending constraints, focusing on those who will finance most out-of-pocket spending on their own. *Id.* at 4.

Table Two: Lifetime Spending Benchmarks			
	Median Estimate	75th Percentile Estimate	**Benchmark Range**
Man retiring in 2010	$65,000	$118,000	**$65,000-118,000**
Woman retiring in 2010	$93,000	$137,000	**$93,000-137,000**
Man retiring in 2020	$109,000	$198,000	**$109,000-198,000**
Woman retiring in 2020	$156,000	$230,000	**$156,000-230,000**

Source: Paul Fronstin, Dallas Salisbury, & Jack VanDerhei, Employee Benefit Research Institute, *Funding Savings Needed for Health Expenses for Persons Eligible for Medicare* (December 2010)
Note: Excludes long-term care spending and uses Medicare Boards' of Trustees 2011 intermediate growth rate. Based upon an individual with wraparound Medicare (Medicare Parts A, B, D, and Medigap).

C. Demographics and Spending Variation

After assessing that our respondents overall estimates were sensible, we broke the population into subgroups, based on key demographic factors that influence out-of-pocket spending, to see if these subgroups were sensitive to the fact that their individual costs are likely to be higher or lower than the median American. Contrary to conventional wisdom, it is largely impossible to predict who in particular will have high or low out-of-pocket expenses in any particular year or over the course of retirement, as discussed further in Part D below. However, there are several factors that hold some predictive value that people should take into account when planning for their likely spending. The most important factors include income, sex/longevity, health status – but only with respect to annual, not total lifetime, costs – and type of supplemental insurance coverage. Ideally, when an individual estimates her own likely spending, she would come up with a starting point of typical spending that takes into account relevant predictive characteristics. We tested whether respondents' estimates moved in the right direction, based on such individual characteristics and found that in many cases they did. But in others, especially with regard to gender, subgroups did not identify that they were at risk of higher expenditures.

Higher income or wealth corresponds to greater out-of-pocket expenditures, reflecting that to some extent retiree health care spending is discretionary, especially if long-term care costs are included.[80] For example, Marshall et al. reports median expenditure of $5061 in the last year of life ($11,618 on average), but those in the highest income quintile have median spending of $6761 ($14,269 on average), as compared to median spending of $2689 for the lowest quintile ($9,046 on average).[81] This differential means that the median retiree in the top quintile of income should expect to spend nearly 2.5 times more in the last year of life than the median retiree in the lowest. Wealth matters even more than income, with median spending in the top quintile in the Marshall study ($8,381) four times that in the bottom ($2,013), including higher spending in all categories, including insurance, drugs, and home care.[82] They conclude that higher-income retirees are buying independence, which they assert could be one way that wealth buys

[80] Marshall et al., *supra* note 50, at 4 (finding that spending in the last year of life is greater at higher income quartiles); Goldman & Zissimopoulos, *supra* note 49, at 197 (reporting spending for low, middle and high income earners with increasing out-of-pocket spending as income increases. Low incomes is defined as less than $12,600; middle as $12,600 to $38,860, and high income above $38,860, all in 1998 dollars); De Nardi et al., *Why Do the Elderly Save? The Role of Medical Expenses*, 118 J. POLITICAL ECON. 39, 53 (2010) (modeling average medical expensive by permanent income quintile from age 74 to 100 and showing increased spending at each income quintile, including nursing home costs).
[81] Marshall et al., *supra* note 50, at 4, 38.
[82] *Id.*

health.[83] Spending estimates are also higher for higher-income retirees in years prior to the last year of life.[84]

Another major determinant of total lifetime spending is sex, in part due to longevity. Women have higher total expenditures over their Medicare years, as illustrated by the EBRI lifetime spending data above, due in large part to longer life expectancy.[85] For those turning 65 in 2007, the average life expectancy for a man was 82 and for a woman was 85.[86] Twenty-five percent of men would live to 87 and women to 90 and 10 percent of men would live until 91 and women to 95.[87] In light of differences in life expectancy, it is unsurprising that the EBRI study estimates of lifetime out-of-pocket costs for someone with wraparound Medicare coverage range from $65,000 to $118,000 for a man at the 50th - 75th percentile and $93,000 to $137,000 for a woman.[88] Based on this data, women should expect lifetime expenditures 43 percent more than men at the median and 16 percent more at the 75th percentile. Some studies also indicate that women have higher average *annual* out-of-pocket spending.[89] These studies, however, include long-term care expenditures, which likely drives higher annual spending and makes the results less useful for this study, in light of our focus on medical care costs.[90]

Some factors, such as health status and age, have less clear effects, contrary to conventional wisdom. It is clear that an individual's health in any one year affects the out-of-pocket costs she will incur in that year and to a limited degree may predict costs in a future year.[91] According, for example, to one study that includes long-term care, someone with self-reported poor health spent on average 40-50 percent more in 2006 ($5,030) than someone reporting very good ($3,744) or excellent ($3,542) health.[92]

It does not follow, however, that good health will lead to lower total lifetime out-of-pocket costs (or bad health to higher). A study by Sun, Webb and Zhivan, in fact, shows that the healthier retirees spend more in total over their retirement years because they live for more years and thus incur costs over more years.[93] The study concurs that healthier retirees do spend less on average annually; for example,

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[83] *Id. at 4.*
[84] *See, e.g.* Neuman et al., *supra* note 89, a t2 (reporting mean spending of $2,761 under 100, $4,001 at 100-199 percent, $4,406 from 200-300 percent, and $4,997 above 400 percent of the federal poverty level, including long-term care spending).
[85] Fronstin et al. 2010, *supra* note 21, at 9.
[86] Social Security, Actuarial Life Table 2007, at http://www.ssa.gov/OACT/STATS/table4c6.html
[87] *Id.*
[88] Fronstin et al. 2010, *supra* note 21, at 9. These are the estimates for beneficiaries with wraparound Medicare coverage.
[89] *See, e.g.* TRICIA NEUMAN ET AL., KAISER FAMILY FOUNDATION, REVISITING 'SKIN IN THE GAME' AMONG MEDICARE BENEFICIARIES: AN UPDATED ANALYSIS OF THE INCREASED FINANCIAL BURDEN OF HEALTH CARE SPENDING FROM 1997 TO 2005 2 (2009) (reporting a mean spending of $4,281 for a woman and $3,765 for a man and median spending of $2,908 and $2,532, all for 2005 and including long-term care).
[90] *Id.*
[91] Hurd & Rohwedder, *supra* note 49, at 9 (describing persistence of bad health/high spending and good health/low spending as present but not perfect); See James D. Reschovsky et al., *Following the Money: Factors Associated with the Cost of Treating High-Cost Medicare Beneficiaries* 1, Health Research and Educational Trust 13 (Feb. 2011). (finding health to be an important factor for high annual costs); Webb & Zhivan, *supra* note 49, at 15 (concluding that "current good health provides only a very limited guarantee of future good health").
[92] No median data is available.
[93] Wei Sun et al., Center for Retirement Research at Boston College, *Does Staying Healthy Reduce Your Lifetime Healthcare Costs?* (May 2010).

they report that in 2009 a household where the husband is age 70-74 and in good health will spend $6,000 on average compared to $7,416 for a household with someone not in good health (defined as having ever been diagnosed with a chronic disease).[94] However, the authors estimate an average lifetime cost for a couple turning 65 in 2009, where one or both suffer from chronic disease, to be $220,000, as compared to $260,000 for a couple free of chronic disease, including home health and nursing home costs, but not costs of assisted living facilities or long-term care insurance premiums.[95] In other words, even though the *annual* expenditures are more for those identifying as in poor health, they live shorter lives and have lower *total lifetime* out-of pocket expenditures. In fact, according to this study, the healthy spend approximately 20 percent more over a lifetime.[96] In addition, one study reported that those in poorer health have less asset accumulation, both because of depletion and because of slower asset accumulation, which might also explain lower spending.[97]

Likewise, it is not clear what effect, if any, advancing age has on annual out-of-pocket costs, but does appear proximity to death may correspond with higher annual health care costs.[98] Average annual health care costs do increase with cohort age[99] – for the average cohort member – but studies suggest this increase largely reflects increased probability of death and high end-of-life costs that are more common for any one member of a cohort at older ages.[100] It is clear that out-of-pocket spending is considerably higher in the last years of life, due to chronic disease and long-term care costs.[101] As noted above, Marshall and colleagues examined HRS exit interviews to better quantify spending in the last year of life, and found average expenses in the last year of $11,618 with out-of-pocket spending as high as $29,335 at the 90th and $94,310 at the 99th percentile, including long-term care.[102]

Consistent with this evidence, studies show increasing average annual costs for older cohorts.[103] For example, Hurd and Rohwedder report an increase in spending with age, looking across data in all

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[94] *Id.* at 2 (estimates exclude nursing home care and are based on the husband's health)
[95] *Id.* at 1.
[96] *Id.*
[97] James M. Poterba et al., *The Asset Cost of Poor Health*, NBER Working Paper No. 16389 18-19 (Jan. 2011).
[98] See generally Marshall et al., *supra* note 50. See also Webb & Zhivan, *supra* note 49, at 7; Meena Seshamani & Alastair M. Gray, *A Longitudinal Study of the Effects of Age and Time to Death on Hospital Costs*, 23 J. OF HEALTH ECON. 217, 230 (2004) ("Average hospital costs increased seven-fold in the last three years of life, compared to a 30% increase from age 65-80.")
[99] Micah Hartman et al., *U.S. Health Spending by Age, Selected Years Through 2004*, HEALTH AFFAIRS w2 (November 2007) (with respect to total expenditures, insured and out-of-pocket, showing a doubling from cohorts ages 65-74 to ages 75-84, and a tripling between ages 65-74 and over 85); See also Webb and Zhivan, *supra* note 49, at 7 (reporting increasing out-of-pocket spending by age). But see Susan T. Stewart, *Do Out-of-Pocket Health Expenditures Rise with Age Among Older Americans?*, 44 The Gerontologist 48, 50-51 (2004) (reporting generally no increase in out-of-pocket costs when long-term care spending is excluded and certain costs, including hospital costs, decrease).
[100] See generally Webb & Zhivan, *supra* note 49.
[101] Webb and Zhivan, *supra* note 49, at 2, 22.
[102] Marshall et al., *supra* note 50 This study uses data from HRS exit interviews and normalizes it to a12-month period. The authors seek to omit outliers that might be erroneous. A large part of this spending, particular at the high ends of the distribution, is for long-term care, which is beyond the scope of this study.
[103] Webb & Zhivan, *supra* note 49, at 40; Hurd & Rohwedder, *supra* note 49, at 16-18.

three leading health surveys.[104] For example, using HRS survey data, they report mean annual spending for care (excluding premiums) for a non-institutionalized 65-69 year old of $2017, 75-79 year old of $2387, and an over 85 year old of $2398 (medians of $720, $880, and $950).[105] Thus, looking at average expected spending for a population, we should expect to see a slow upward incline of average expected spending for cohorts at older ages. But age may be unreliable as an individual predictor, unless used to gauge proximity to death.

Finally, out-of-pocket spending varies considerably based upon the type of supplemental coverage an individual holds[106] – a factor difficult to estimate in a survey because of the unpredictability of future retiree ESI coverage and Medicaid eligibility for many respondents. Variability in total spending, based on type of supplemental coverage, could be driven by higher premiums or cost-sharing for a particular type of coverage or because retirees with certain forms of supplemental insurance use more care than others. One study reports that a median beneficiary with wraparound Medicare coverage (Parts A, B, and D) spends twice as much annually as the median beneficiary with no supplemental coverage and eight times as much as the median beneficiary with Medicaid coverage, whose insurance pays for most care.[107] This variability persists when looking at total lifetime spending.[108] Although we surveyed respondents on their expectations regarding supplemental insurance coverage, we have not explored the relationship between those responses and out of pocket cost expectations in this paper.

In sum, we know a number of factors tend to correspond to higher health care spending, including sex (women spend as much as 40 percent more than men, excluding long-term care), higher income or wealth (can more than double spending), poor health status (higher for annual spending but lower by as much as 20 percent for lifetime spending), proximity to death, and certain types of supplemental coverage. We examine below whether respondents' answers vary according to these factors.

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[104] Hurd & Rohwedder, *supra* note 49, at 17. Webb and Zhivan also report increasing mean annual out-of-pocket costs (just under $2500 for a 66 year old, just over $2500 for a 75 or 85 year old, over $3000 for a 90 year old, and over $3500 for a 95 year old). Webb & Zhivan, *supra* note 49, at 40.

[105] Hurd & Rohwedder, *supra* note 49, at 17. Their mean and median estimates based on MCBS and MEPS data are lower. *Id.*

[106] Those with Medigap supplemental coverage face the greatest total out-of-pocket exposure (more even than those with no supplemental coverage, who are spared premium costs and may consume less care than they would otherwise). In contrast, those with Medicaid are likely to spend much less out of pocket, due to the low premiums and cost-sharing obligations and possibly also due to consumption constraints. Goldman & Zissimopoulos, *supra* note 49, at 198; KFF CHARTBOOK, *supra* note 3, at 72 (reporting out-of-pocket spending in 2006, including long-term care). For premiums and services (including residential long-term care), Kaiser reports average out-of-pocket spending in 2006 of $5,066 for a beneficiary with supplemental Medigap, $4,275 with supplemental ESI, $3,979 with no supplemental coverage, $3,518 with Medicare Advantage, and $2,843 with Medicaid. KFF CHARTBOOK, *supra* note 3, at 72 (no median data is available). Another study, based on 2005 MCBS data (prior to Medicare Part D) and also including long-term care spending reports median spending of $3,819 for a beneficiary with supplemental Medigap, $2,909 with ESI, $2,258 for Medicare Advantage, $1,864 with no supplemental coverage, and $490 with Medicaid. Neuman et al., *supra* note 89, at 2.

[107] Neuman et al., *supra* note 89, at 2.

[108] The EBRI study estimates median spending of $65,000 for a man with wraparound Medicare coverage, $66,000 for ESI coverage that an employer subsidizes, and $109,000 for unsubsidized ESI coverage. Fronstin et al. 2010, *supra* note 21, at 9.

D. Coping with Future Uncertainty in Health care Costs

In addition to looking at the accuracy of respondents' estimates of average out-of-pocket spending, we sought to gauge whether they understand the sources of and magnitude of uncertainly in such estimates. Median expenditures offer only one measure of costs and may be the less important measure in terms of the risk retirees face. The median benchmark estimates, discussed above, belie the variability in costs among retirees and over time. We examine three major sources of uncertainty: the uneven distribution of costs among retirees based on personal health experience, unexpected excess health care cost growth, and policy uncertainly. We discovered that respondents' instincts were less accurate when evaluating uncertainty, than when estimating typical expenditures.

1. Uncertain Individual Health Experience

Even though the factors discussed in Part C above have some power to predict who might spend more or less, the variability of spending among retirees based on individual health experience is largely uncertain. The distribution of health care costs is notoriously uneven with a long, expensive tail for some.[109] The top five percent of Medicare beneficiaries account for 43 percent of total spending, and the top 25 percent account for 85 percent of spending.[110] This lumpiness in total spending also translates into the out-of-pocket share of spending. Johnson and Mommaerts estimate, for example, annual out-of-pocket costs in 2010 from $1909 at the 25th percentile to $ 2583 at the median to $5854 at the 90th percentile.[111] Studies that include estimates at the 99th percentile report annual out-of-pocket spending of over $20,000 for the very highest spenders.[112]

The same variability holds true when looking at total lifetime spending for a retiree, which can more than double from the median to 90th percentile. For example, as noted above, the Fronstin EBRI study estimates *median* lifetime retiree health care costs of $65,000 for a man with wraparound Medicare coverage (i.e., Part B, Part D, and Medigap coverage).[113] For the 75 or 90th percentile of spending, the estimates increase to $118,000 and $187,000 - a near doubling to tripling of costs above the median.[114] For a woman the variability is slightly less, ranging from median spending of $93,000 to $213,000 at 90th percentile, which still represents over a doubling.[115] The Webb and Zhivan study modeled mean and 95th percentile of spending for a couple turning 65 in 2009, and estimated a doubling of expenditures from $260,000 on average to $570,000 at the 95th percentile, including nursing home care but excluding the costs of assisted living facilities.[116]

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[109] Marc L. Berk & Alan C. Monheit, *The Concentration Of Health Care Expenditures, Revisited*, 20 HEALTH AFFAIRS 9 (2001).
[110] See Reschovsky et al., *supra* note 91, at 13 (Feb. 2011).
[111] Johnson & Mommaerts, *supra* note 49, at 11.
[112] Hurd & Rohwedder, *supra* note 49, at 17 (Based on HRS data for a retiree in the 65-69 age bracket, they estimate $720 at the median and $21,950 at the 99th percentile for those 85 and older, spending is $950 at the median to $25,150 at the 99th percentile.).
[113] Fronstin et al. 2010, *supra* note 21, at 9.
[114] *Id*.
[115] *Id.*
[116] Webb & Zhivan, *supra* note 49, at 20. Excluding all nursing home care, their average and 95th percentile estimates for a couple were $197,000 and $311,000 – still an over 50 percent increase from the mean to the 95th percentile.

In sum, individuals face a risk of extremely high spending – double to triple that of a typical retiree – if they have particularly intensive health needs throughout retirement. For the most part, it is impossible to know in advance who will have more or less intensive needs, posing a particular challenge for individual retirement planning.

2. Health Care Cost Growth

Uncertainty with respect to medical care cost growth also complicates predicting out-of-pocket exposure over the coming decades. The rate of health care cost growth and whether it will continue to rise at a faster rate than inflation is uncertain and extremely difficult to predict. While the Medicare Trustee's long-term projection of Medicare cost growth has been GDP plus 1 percent in recent years,[117] historical excess health care cost growth has been over two percent in recent decades - 2.5 percent for Medicare and 1.9 percent overall from 1975-2008.[118] For excess cost growth to be closer to one percent or less in the future, a number of the Trustee's assumptions must prove true, including the questionable assumption that Congress does not override policies that limit increases in the physician fee schedule.[119] In addition, PPACA created a new entity, known as the Independent Payment Advisory Board (IPAB), tasked with managing Medicare expenditure to keep cost growth to under GDP plus 1 percent.[120] However, IPAB is limited in the tools it can use to manage growth, which might make accomplishing its charter difficult,[121] and Congress has contemplated its repeal.[122]

If health care costs were to grow at GDP plus 2 percent instead of GDP plus 1 percent, the out-of-pocket costs of an average retiree would increase on the order of 10 percent over the lifetimes of a typical retiree with an additional increase of approximately 10 percent for every additional percentage point by which out-of-pocket costs exceed GDP growth. This unexpected medical care cost growth is unlikely to have as dramatic effects as being an individual with intensive medical care needs, but it is significant nonetheless.

3. Policy Uncertainty

Finally, policy changes, especially those made to the Medicare program, will shape future retiree costs in significant and unpredictable ways. With Medicare costs escalating as a percent of the total federal budget, from just over 2 percent a decade ago to 3.6 percent in 2010,[123] Medicare reform is a priority for policymakers in both parties.

Some leading reform proposals, including that in Republican Vice Presidential nominee Paul Ryan's "Path to Prosperity" FY2013 budget plan that the House of Representatives passed in March of

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[117] BOARDS OF TRUSTEES 2011, *supra* note 72, at 202-204.
[118] CONGRESSIONAL BUDGET OFFICE, *supra* note 13, at 27 (reporting that from 1975-2008, excess cost growth in Medicare was 2.5%, in Medicaid was 2.0%, in all other was 1.8%, and overall was 1.9%).
[119] *See* Bruce C. Vladeck, *Fixing Medicare's Physician Payment System*, 362 NEW ENG. J. MED. 1955 (2010).
[120] Henry Aaron, *The Independent Payment Advisory Board – Congress's "Good Deed"* 364 NEW ENG. J. MED. 2377 (2011).
[121] *Id.* at 2378-2379.
[122] New York Times Editorial, *We Thought They Were Worried About Costs*, at A30 (March 9, 2012).
[123] KFF Chartbook, *supra* note 3, at 79.

2012,[124] attempt to curb future federal budget spending on health care by converting Medicare from a defined benefit to a defined contribution program.[125] This approach fixes federal government spending to the amount of a "premium support payment" per retiree, which retirees can use to buy a private insurance plan. As government spending goes down, retiree out-of-pocket spending goes up. Perhaps more importantly, if premium support payments grow more slowly than health care costs over time,[126] as anticipated, their relative value will decrease. Many retirees will only be able to afford less comprehensive insurance plans and will face greater risk of high exposure in any one year.

Several plans, including Ryan's and legislation introduced by Senators Lieberman and Coburn in 2011, propose to increase the Medicare eligibility age to 67, [127] which would either delay retirement or increase out-of-pocket costs from retirees age 65-67. As one potential indicator of how significant such changes might be, the Congressional Budget Office in 2011 estimated (admittedly with quite stylized assumptions), that Representative Ryan's Medicare reform proposal could more than double a typical retiree's share of health care costs by 2022 with further increases in the following decade.[128] If the value of premium support payments decreases over time, retirees will have less insurance coverage every year and will face greater risk of extremely high out-of-pocket costs if spending more than the typical retiree.

The fate of current policies that limit retiree out-of-pocket spending, including Part D and PPACA, will also greatly affect future exposure. PPACA is expected to reduce retiree out-of-pocket expenditures on net.[129] Most importantly, it will decrease out-of-pocket spending for prescription drugs under Medicare Part D by $43 billion over ten years, by closing the so-called "donut hole," a gap in Part D coverage of prescription drug spending.[130] An EBRI estimate suggests that while repeal of this donut hole fix would have little impact on someone with *median* prescription drug expenditures, it would increase out-of-pocket spending for someone in the 75th or 90th percentile of prescription drug expenses by as much as 50 percent.[131] Other PPACA policies eliminate cost-sharing for preventive care[132] and

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[124] H. Con. Res. 112 95 (March 2012) at http://www.gpo.gov/fdsys/pkg/CRPT-112hrpt421/pdf/CRPT-112hrpt421.pdf. (proposing to replace Medicare with a "premium support" program); *See* KAISER FAMILY FOUNDATION, PROPOSED CHANGES TO MEDICARE IN THE "PATH TO PROSPERITY" 1 (April 2011) (summarizing terms of Paul Ryan plan).

[125] Paul Ryan, *The Path to Prosperity: A Blueprint for American Renewal*, Fiscal Year 2013 Budget Resolution 52-55 (2012), available at http://budget.house.gov/fy2013prosperity/ (last accessed August 15, 2012).

[126] *Id.* at 53.

[127] Rick Unger, *The Coburn-Lieberman Medicare Proposal - The Good, The Bad And The Ugly*, FORBES (June 29, 2011). Ryan, *supra* note 125.

[128] See CONGRESSIONAL BUDGET OFFICE, LONG-TERM ANALYSIS OF A BUDGET PROPOSAL BY CHAIRMAN RYAN (Apr. 5, 2011) (avail. at http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/121xx/doc12128/04-05-ryan_letter.pdf.)

[129] Robert Berenson & John Holohan, *How Will the Patient Protection and Affordable Care Act Affect Seniors?*, Robert Wood Johnson Foundation and Urban Institute Timely Analysis of Health Policy Issues, at 1-2 (July 2010).

[130] *Id.* at 2. Part D led to a reduction of $180 in annual out-of-pocket costs for the median participant and $800 at the 90th percentile. Engelhardt & Gruber, *supra* note 47, at 3-4. Prior to PPACA, after just over $3000 in spending, retirees would enter the so-called "donut hole" in coverage where they had to pay 100% of the next $3610 in spending before reaching the "catastrophic coverage" level ($6440 in 2010), after which Medicare and the plan together pay 95% of the costs. A beneficiary would spend $4550 total out-of-pocket on cost-sharing before qualifying for catastrophic coverage. MEDICARE PRIMER, *supra* note 46, at 7 (2010).

[131] Paul Fronstin et al., *The Impact of Repealing PPACA on Savings Needed for Health Expenses for Persons Eligible for Medicare*, Employee Benefit Research Institute Notes 3 (2011).

[132] PPACA §§ 4104–4108, 42 U.S.C.A §§ 1395–1396 (West Supp. 1B 2010).

intend to slow Medicare cost growth overall, such as through the creation of the IPAB, discussed above, and through delivery reforms.[133] It is uncertain whether these policies will in actuality save money at all and, if they do, will reduce out-of-pocket costs or simply lower federal outlays, preserving current levels of out-of-pocket spending.

On the other hand, certain PPACA policies could increase out-of-pocket expenditures for retirees. For example, PPACA reduces the rates Medicare will pay to private Medicare Advantage plans, which were historically compensated at rates about 10 percent higher than what the government spent for Medicare fee-for-service beneficiaries.[134] CBO estimates that this reduction will cause enrollment in Medicare Advantage plans to drop to 9.1 million enrollees in 2019 (compared to a pre-reform estimate of 13.9 million).[135] Since these plans can protect retirees relative well against out-of-pocket exposure, their reduction would likely result in higher expenditures for some beneficiaries. Over time, PPACA might hasten the already ongoing erosion of ESI retiree supplemental plans,[136] through policies including the so-called "Cadillac Tax," an excise tax on high-cost employer-sponsored health coverage.[137] Starting in 2018, benefits worth more than $10,200 for an individual retiree or $27,500 for two or more individuals will be subject to a 40 percent excise tax.[138] While this tax may not have a large effect at first because of high thresholds (set even higher for retirees than for employees), these thresholds will grow more slowly than health care costs so that a larger portion of benefits are taxed over time.[139] The result might be increased cost-shifting to retirees or decreased availability of ESI for retirees.

It's difficult to say exactly how people should think about potential policy changes – the effects of which range from small to considerable. But the impact of certain policy changes, including the plan proposed by Congressman Ryan, might rival the risks an individual retiree faces if she incurs individual medical expenses at the 75th percentile of spending, which can result in double median expenses. And both high individual costs or policy change clearly have the potential for greater impact on a retiree's out-of-pocket costs than unanticipated medical cost growth. We are interested in and attempt to assess

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[133] *See* Berenson & Holahan, *supra* note 129, at 2-4 (discussing PPACA efforts to reduce provider payment rates through the Independent Payment Advisory Board, Accountable Care Organizations, and other delivery reform policies).
[134] *Id.* at 2.
[135] Congressional Budget Office, Comparison of Projected Enrollment in Medicare Advantage Plans and Subsidies for Extra Benefits Not Covered by Medicare Under Current Law and Under Reconciliation Legislation Combined with H.R. 3590 as Passed by the Senate (March 19, 2010).
[136] *See e.g.*, Fronstin et al. 2008, *supra* note 18 (projecting an increasing decline of ESI in the future); The Henry J. Kaiser Family Foundation and Hewitt, Findings from Kaiser/Hewitt 2006 Survey on Retiree Health Benefits 1 (2006) [hereinafter Kaiser/Hewitt Survey]. The percentage of private-sector employers offering coverage to Medicare-eligible retirees decreased from 21.6 percent in 1987 to 12.7 percent in 2005. Fronstin et al. 2008, at 12. Some attribute this decline to a 1990 rule by the Financial Accounting Standards Board that required employers to report retiree health liabilities in annual reports. Fronstin et al. 2008, at 11. Even when employers offer ESI, it has become more expensive and less widely available to retirees. *Id.* at 14. Kaiser/Hewitt Survey, at 19-20.
[137] PPACA § 9001 (amending §49801(b) of the IRC) (2010). Other policies could have a similar effect. For example, starting in 2013, the subsidy to employers who offer retiree drug coverage will also be taxed, eliminating an exemption created under the Medicare Modernization Act and costing employers an additional $233 per retiree on average that must be reported as a liability in annual reports. Paul Fronstin, EBRI, Implications of Health Reform for Retiree Health Benefits 12 (2010).
[138] PPACA § 9001 (amending §49801(b) of the IRC) (2010).
[139] *Id.*

whether near retirees and retirees are aware of – and can distinguish between – these types of uncertainly when projecting what their own expenditures might be in retirement.

III. Results of Survey

Our goal of this survey was to determine whether those nearing and in retirement have a reasonable sense of their own likely out-of-pocket health care expenditures in retirement and how those costs might vary, based on predictable and uncertain factors. We began this project with the hypothesis that people would not estimate out-of-pocket health care costs in retirement accurately. To the extent that these estimates were inaccurate, we also hoped to explore where the estimates went awry. For example, an individual might underestimate the likelihood of insurance coverage or the extent of cost sharing or both. By testing a number of different ways in which retirees' understanding might deviate from experts' estimates, we hoped to pinpoint the specific ways in which retirees estimates fell short. We also set out to discover whether some subgroups' estimates were more or less accurate than others. Finally, we wanted to know whether people understand that future spending is uncertain and can be highly variable, based on individual health experience, the growth in health care costs, or health care policy changes. In the following Part, we describe findings with regard to each of these areas of inquiry.

Somewhat surprisingly, we found that respondents' overall expectations with regard to future insurance coverage and costs were sensible, even if not exact, as described in Part B below. While we did not examine the connection between expectations and actual savings behavior, our findings suggest that widespread ignorance of insurance coverage or the magnitude of out-of-pocket health care costs for the typical retiree may not be driving the savings shortfall many retirees face. However, our respondents' intuitions were less accurate with regard to instances in which their own spending might rise above the typical retiree. In Part C, we outline the ways in which respondents were more or less sensitive to variation in costs based on the demographic factors discussed above that have some predictive value, highlighting the finding that women significantly underestimated spending, as compared to men. In Part D, we describe findings that show that respondents struggle to gauge the impact of sources of uncertainty that could affect their future expenditures in unpredictable ways, in particular with regard to the possible impact of intensive medical care needs on their spending.

A. Overview of Survey Sample and Treatments

Our survey was conducted in February and March 2012 through Rand's American Life Panel, an internet based survey service of the Rand Corporation. We solicited 2116 respondents and obtained 1704 completed surveys, a response rate of over eighty percent.[140] The American Life Panel is designed to approximate representative samples of the national population, and actual survey responses, including our own, are weighted to make samples as representative of the population of interest as possible.[141] Our survey sample was structured to consist of eight age-based cohorts ranging from 40-44 years old on the younger end and 75-80 on the older end. These cohorts included five groups under the age of 65, principally those pre-retirement, and three groups 65 and older, principally those in retirement. The older age cohorts were somewhat smaller based on the composition of the American Life Panel. Table Three

[140] Survey details are available on line at https://mmicdata.rand.org/alp/index.php?page=data&p=showsurvey&syid=214. Copies of survey questions are available from the authors.

[141] For purposes of the analysis presented here, our survey responses were unique weighted to ensure that our cohort samples are representative of the national population. For a general overview of the Rand weights, See https://mmicdata.rand.org/alp/index.php?page=weights.

reports basic demographics about the sample, which was 57 percent female, 84 percent white, with an average age of 58 years old, an unemployment rate of 7.3 percent, and a mean educational achievement level of 11.4, equivalent to an associate degree in a college level occupational/vocational program. Table Three also reports basic demographic data on key subsamples discussed below, based on gender, age cohorts, income quintiles, and self-reported health and financial sophistication.

[insert Table Three here]

Most of our survey questions focused on respondents' evaluation of their own out-of-pocket health care costs in retirement.[142] To facilitate our analysis of results, we included a few preliminary questions about respondents' self-assessment of their own current health status, familiarity with financial planning and insurance sources covering health costs in retirement, and life expectancies. Towards the back of the survey, we also included several questions about long-term residential health care services, on which we report in a separate paper.[143] In the last section of the survey, we included a module on risk assessment, where, using two separate formulations, we inquired as to respondents' assessment of several potentially important sources of variation in individual retiree health care costs: personal health and medical needs in retirement, unanticipated health care cost growth during their retirement, and changes in policy affecting Medicare and other government programs.

In an effort to ascertain how sensitive responses on out-of-pocket retiree health care costs might be to how our questions were framed, we divided our respondents into three basic treatments. In Treatment A, respondents were asked a streamlined set of three questions about out-of-pocket health care costs: how much did they expect to spend on average each month for out-of-pocket costs in retirement; how much did they expect to spend per month on out-of-pocket costs during the final year of their life; and how much did they think someone like them would need to save by age 65 in order to have enough money to cover out-of-pocket health care costs throughout retirement. In Treatment B, we added in additional questions about respondents' expectations regarding their own health insurance coverage during retirement and also the monthly insurance premiums they expected to pay for that coverage. We also asked Treatment B respondents to estimate monthly out-of-pocket costs in retirement at three separate ages: 65, 75, and 85 as well as the final year of their lives. The hypothesis we hoped to explore with Treatment B was whether respondents' assessment of out-of-pocket cost might be affected – and presumably increased -- by our inquiring as to insurance coverage, forcing respondents to make separate

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[142] In our survey, we offered respondents the following guidance about the kinds of costs we were interested in:

"In this survey, we want to find out how much you expect to pay for health care in retirement. We are interested in your out-of-pocket costs. Out-of-pocket costs are any expenses that you pay yourself. In addition to any direct payments, these costs include insurance premiums for government programs and other health insurance plans. Out-of-pocket costs also cover deductibles and co-pays. Out-of-pocket costs do not include payments made on your behalf or reimbursed by government programs or other insurance plans. In all cases, we are asking about your own personal health care costs in retirement. Do not include health care costs of other members of your household. Unless otherwise indicated, please do not include in your estimates the cost of long-term residential health-care services (such as extended stays in nursing homes) or premiums for long-term health care insurance. Some questions ask for estimates about costs in the future. Please do not attempt to adjust your estimates to reflect price increases from overall inflation. Just make your estimates using the value of money today."

[143] We offered respondents the following explanation of these services: "Long-term residential health care services include extended stays in nursing homes or assisted living facilities and also extended assistance with activities of daily living (eating, dressing or bathing) at home by home health aides."

estimates for insurance premiums, and suggesting that out-of-pocket costs might be different at different points of retirement. Finally, with Treatment C, we asked respondents the same additional questions as we asked of Treatment B respondents but also provided additional anchoring information about life expectancies, typical insurance premiums, ordinary ratios of premiums to out-of-pocket expenditures on medical care, and projected increases in medical health care costs above inflation.[144] Here, the hypothesis we were interested in exploring was whether the provision of key pieces of expert data about actual life expectations, retiree health care costs, and medical inflation trends and averages would influence participant respondents' assessments of their own out-of-pocket costs.

B. Estimating Out-of-Pocket Retiree Spending

An individual's estimate of total out-of-pocket costs depends on estimating future insurance coverage, future premiums, and total future spending (premiums plus cost-sharing for medical care) as well. We examine our respondents' estimates with regard to each of these factors in turn below and find that, overall, their estimates on all of these fronts are sensible, at least in terms of median responses.

1. Insurance Coverage

We begin our presentation of survey results with a review of respondents' expectations regarding insurance coverage in retirement to test the hypothesis that unrealistic expectations regarding coverage might lead to underestimation of out-of-pocket obligations. Questions on this topic, which were given only to respondents in Treatments B and C, were framed in terms of respondent's expectations regarding the likelihood that particular insurance programs would provide the respondent coverage for "at least a portion of your health care expenses at some point in retirement."[145] Table Four presents a summary of respondent responses overall and also by age cohort.[146] Actual current levels of coverage, as reported above in the literature review, appear at the bottom of the table.

In general, respondent responses to these coverage questions seem directionally sensible. In terms of overall coverage rankings, respondents correctly identified Medicare as the program with the highest expected coverage levels (with a mean response of 73 percent, as compared to 95 percent in fact).[147] Among the other categories, expectations regarding Employer Sponsored Insurance Coverage (mean response of 32 percent) is actually quite close to the 33 percent of Medicare beneficiaries reported in the literature review to have employer sponsored supplemental coverage. In contrast, the mean

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[144] A fuller description of our anchoring information and the sources upon which we relied appears in an Appendix.

[145] The survey introduction to these questions read as follows:

"Many different government programs and insurance plans can cover health care expenses of retirees. With all these choices, many people are confused which plans and programs will provide them coverage. The next questions ask how likely you think it is that particular government programs and insurance plans will cover at least a portion of your health care expenses at some point in retirement. If you are certain that you will be covered, you should click the ruler on 100 percent. If you are certain that you will not be covered, you should click the ruler at 0 percent. If you think you may be covered but are not sure, click on the scale on the point on the ruler that best reflects your assessment of the likelihood that you may be covered or type the number reflecting that likelihood in the box below."

[146] We also surveyed respondents about their expectations regarding coverage from Veterans Administration programs, but do not report those results in this analysis.

[147] As we asked each respondent to report the likelihood of personal coverage, the mean response can be interpreted as the expected coverage level of all respondents.

responses for Medicaid (38 percent) and Medigap (29 percent) both are in a range of close to double actual reported coverage levels from our literature review (15 percent and 17 percent, respectively).[148]

[insert Table Four here.]

Perhaps the most interesting aspect of these responses is the apparent "learning" about Medicare and Medicaid coverage from younger to older age cohorts. The younger age cohorts substantially underestimated the likelihood of Medicare coverage as compared to total respondents or the oldest cohorts. So expected coverage levels of respondents 65 and over, approaches, and for the 75-80 cohort exceeds, 90 percent, quite close to actual coverage levels reported in our literature review (95 percent). In contrast, the younger cohorts over-estimate the likelihood of Medicaid coverage (at over 40 percent expected coverage) as compared to actual coverage levels (15 percent) or the expectations of older respondents.[149] Conceivably, the responses of younger cohorts might reflect some pragmatic assessment about the availability of Medicare in the future.[150] Alternatively, these differences across cohorts could simply represent confusion on the part of younger respondents about the differences between Medicare and Medicaid. So perhaps what one is seeing here is simply greater clarity about which program is which around the time of retirement. The lack of clarity at younger ages is still reason for concern. If a substantial number of younger Americans fail to distinguish between Medicare and Medicaid, they can hardly be expected to engage intelligently in debates regarding reform of these two programs. Moreover, even for respondents over 65, expectations regarding the likelihood of Medicaid coverage (in excess of 25 percent) substantially exceed actual coverage levels for retirees (15 percent).[151]

Another interesting feature of this section of survey results is the relative stability of expectations regarding coverage from employer sponsored insurance programs. Across cohorts, there is relatively little variation in cohort expectations from the respondent average response (32 percent), even though

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[148] While the benchmarks in the literature review might be slightly low, for reasons discussed above, any underreporting of Medicaid or Medigap coverage would be small at most.

[149] Here, and elsewhere throughout the paper, we make comparisons between responses of younger and older cohorts. Where differences are noted, we tested for statistical significance under both Wilcoxon-Mann-Whitney rank-sum and median non-parametric tests. We used non-parametric tests because in many instances the distributions of responses were skewed. Unless otherwise indicated, the differences were significant at the 99 percent confidence level.

[150] On the other hand, as discussed below, the younger cohorts do not estimate consistently higher levels of out-of-pocket expenses than other cohorts of the sort that one would expect if younger cohorts were consciously anticipating less generous Medicare coverage in the future.

[151] For those respondents in Treatment B and C who indicated that they thought there was some probability that they would maintain Medicare coverage at some point in retirement, we asked whether they expect to maintain Part D Prescription Drug Coverage or to participate in Medicare Advantage. Respondents overwhelming reported that they expect to maintain Part D Prescription Drug coverage (quite consistent with the 60 percent coverage levels reported in the expert literature). Of respondents giving definitive answers, over 75 percent indicated that they expected to have Part D coverage (611 of 814). Respondents reported greater uncertainty about Medicare Advantage participation, with nearly half of all respondents reporting that they didn't know or hadn't decided about the issue. Those giving a firm answer to the question reported a good deal higher level of Medicare Advantage take-up (281 of 640 or nearly 44 percent) than the literature review indicates is currently the case (25 percent of current Medicare beneficiaries).

most industry experts assume that levels of employer sponsored coverage will decline over time. As noted below, a persistent feature of our survey responses was the tendency of young cohorts to give quite similar responses as older respondents, suggesting that younger respondents may not have internalized expert expectations about changes in costs or coverage in the coming decades.

2. Premium Costs of Insurance

Where respondents from Treatments B and C indicated that they had an affirmative expectation about maintaining insurance coverage, we next tested expectations regarding the premium cost they anticipated paying to maintain such coverage in retirement. What is most interesting is how accurate the estimates were across all treatment groups. Even without premium anchoring data, respondents did reasonably well in estimating insurance premiums. Table Five reports the respondent expectations for total Medicare premiums, Medigap premiums, and employer sponsored insurance premiums. Here and elsewhere below, we report results in terms of key percentiles of responses (the 10th percentile, the 25th percentile, median, 75th percentile, and 90th percentile) as well as mean and standard deviation. The use of percentiles is helpful in interpreting results because in some questions responses to dollar amounts included high outliers that skew sample means and inflate standard deviations. (For purposes of this and similar tables below, we have not attempted to eliminate outliers in the data.)

[insert Table Five here]

Starting with Treatment B respondents, the median expected total premiums estimates were $120 for total Medicare premiums, $50 for Medigap premiums, and $55 for employer sponsored insurance premiums. How one should interpret these responses is an interesting question. On the one hand, these median responses are close to actual current costs of these programs (shown in the right hand column of Table Five). A typical monthly bill for total Medicare costs (basic coverage plus Part D) is currently in the range of $140 to $150, which is not that much more than the median response of $120 for Treatment B respondents. On the other hand, 25 percent of respondents thought their total Medicare premiums would be $98 or lower and a similar number estimated $250 or higher. As described above, low income Medicare beneficiaries can benefit from premiums subsidies through Medicare Savings Programs and higher income beneficiaries pay more on a sliding scale (as much as $250 or higher). It does appear our respondents answers increased with increasing income.[152] To the extent, however, responses do not align with likely personal expenses, the accuracy at the median communicates the "wisdom of crowds" but obscures possibly substantial ranges in either tail of the distribution for individual respondents.[153]

There is some difference in variations among Treatment B responses and among Treatment C responses, who were prompted in all cases with basic information about actual pricing comparable to the information shown in the right hand column.[154] In all cases, the median Treatment C responses moved

[152] As discussed below, cost estimates among respondents is positively correlated with income levels, and this is also true of total Medicare premium estimates, where the median estimate of respondents in the top income quintile was $200 whereas the median estimate of those in the bottom quintile was $100. These figures are based on a combination of respondents in Treatments B and C.

[153] Note also that mean estimates for these monthly costs skew high, pulled up by a handful of respondents who tend to high-ball their estimates, perhaps reflecting unwillingness or possibly an inability to respond to our estimation requests.

[154] Additional information on our anchoring information is available from the authors.

up and closer to levels suggested in the anchoring information and – perhaps even more pronouncedly – the range of variation in responses, as measured by high and low percentiles tightened around the medians in almost all cases. So, for example, where the distance between the tenth and ninetieth percentiles on the Treatment B responses for total Medicare premiums was $470, the distance between the same percentiles on the Treatment C responses was only $300.[155] Anchoring information provided Treatment C respondents had a more pronounced effect on estimates for Medigap and Employer Sponsored insurance premiums, where the median estimates of Treatment B respondents were a good deal lower than actual costs, suggesting that public understanding of the costs of these supplemental policies may be less accurate the knowledge about Medicare premiums.

Also interesting is the variation of responses on premiums estimates by age cohorts. Figure One shows distributions of expectations for total Medicare premiums by age cohorts for respondents from Treatments B and C. The median response for each age cohort is shown as a number located along a vertical line that represents the distance from the 25th to 75th percentile responses for that cohort. The numbers above represent the 90th percentile responses for each cohort. As shown in Figure One, the median cohort responses trend downward with older cohorts and also the range between the 25th and the 75th percentile as well as the height of the 90th percentile responses compresses with older cohorts. This narrowing of ranges with increasing age is consistent with the greater confidence and knowledge that older participants have about estimating health care costs in retirement. The higher median responses of younger cohorts may suggest expectations that their Medicare premiums are likely to be higher than those of current retirees.

[insert Figure One here]

In sum, respondents seem generally to have sensible expectations with regard to insurance premium costs. Anchoring data narrows the variation in estimates around the median for Treatment C, but it surprisingly has only a small effect. Younger cohorts expect higher premium costs, which also seems sensible, but these higher premium estimates do not translate into higher total out-of-pocket cost estimates, as discussed below.

3. Estimating Total Out-of-Pocket Costs in Two Ways

a) Estimating Monthly Out-of-Pocket Costs

We turn now to our survey results for respondent estimates of total monthly out-of-pocket costs for health care during retirement (premium costs plus any cost-sharing or other spending for medical care). Again, these estimates were closer to expert estimates than we anticipated, with a few notable

[155] Whether the difference in medians between Treatment B and Treatment C is significant for policy purposes is an interesting question. As noted below, Treatment B and Treatment C estimates for total out-of-pocket costs were surprisingly similar both to each other and to the estimates of Treatment A respondents. So however one judges the difference in median estimates about premiums, those differences largely disappear when respondents were asked to estimate overall costs.

exceptions. Our basic findings are presented in Table Six, which reports average monthly cost estimates for all respondents.[156]

[insert Table Six here]

As in the case of premium estimates discussed above, a striking aspect of these results is the relative stability of monthly cost estimates across treatment groups. While Treatment C responses showed a modest narrowing in distribution similar to the narrowing noted above for their estimates of premiums, the more surprising feature of these responses is the similar estimates that all respondents provided, regardless whether they were simply posed questions about out-of-pocket costs in Treatment A or given a good deal of additional framing and then anchoring in Treatments B and C. Median responses did not differ that greatly across treatments.

Assessing how well the respondents did in matching expert estimates of monthly costs requires a more subjective evaluation. As summarized in the right hand column of Table Six, our literature review suggested a plausible benchmark for monthly expense in the vicinity of $215 to $330 a month for 2010, with the lower number representing a expert estimate of median costs and the higher representing costs at the 75th percentile. The median responses for all treatment groups were at or just below this suggested range ($200 for Treatments A and B and $217 for Treatment C). Of course, were one to focus on the 25 percentile of responses, where estimates were all less than half the lower end of our target range, one might find these responses more troubling, unless one were confident that respondents making these lower estimates were also those most likely to have lower health care costs in retirement, a point to which we will return below. But on balance, we were modestly surprised that respondents did so well in estimating average monthly costs that were reasonably close to expert estimates for 2010, especially those in Treatment A who were given very little assistance. Especially if one were of the view that median expert estimates were a more appropriate benchmark for respondent answers, the survey responses are extremely impressive.

This interpretation of results does, however, become slightly more complex when one views the responses sorted by age cohorts as is done in both Table Six and Figure Two. Once again, one sees relative consistency in median estimates across age cohorts with a narrowing of distributions for the older respondents with greater direct experience with retiree health care costs. While there is a modest dip in monthly averages for the 65-69 and 70-74 age cohorts, there is not a consistent increase in expected monthly costs for the younger respondents, even though everyone under the age of 55 would be expected to face retirement after 2020 when expert guidance suggests that an appropriate target range of monthly costs would be in the range of $274 to $413 dollars. In other words, the median respondents in their forties are projecting almost exactly the same average monthly costs as those just on the eve of retirement, suggesting that younger respondents may not generally be incorporating projected cost increases into their

[156] Treatment A respondents were asked a single question about average monthly costs during retirement and for these respondents we used that single estimate in Table Four and accompanying figures. Respondents in Treatments B and C were asked to give different monthly estimates for age 65, 75, and 85. Respondents who were 65 or older were first asked for their current average monthly estimates and then also asked to estimate average monthly expenses at 75 (if they were not yet 75) and 85. For respondents in Treatment B and C, average monthly costs is the average of estimates at all of these ages.

responses (or, alternately, might not understand the implications of real cost growth[157]). As the extent of those increases is expected to be substantial, these responses may suggest an important source of consumer confusion, or at least misapprehension about likely health care costs in retirement.

[insert Figure Two here]

Our questions on monthly cost estimates also included two extensions that explored the extent to which respondents expected their monthly costs to vary across retirement. Both of these extensions resulted in similar findings of reasonable overall responses, as in the above sections. First, we asked all respondents to make separate monthly cost estimates for the last year of their lives. Respondents overwhelming estimated that they would have higher monthly costs in their final year.[158] The median estimate was $350 as compared with a median estimate for average monthly cost of $200 for all respondents. We also calculated the ratio of individual responses on this question to their average monthly cost estimates, and determined that the median ratio was 1.46 or nearly 50 percent higher than the average monthly cost estimate. This is similar to though not as extreme as estimate based on expert data of a ratio of 2, or nearly 100 percent higher.[159]

Another source of insight into respondents' expectations about changes in monthly costs for health care during retirement is available through a comparison of individual respondent estimates of monthly costs at 85 as opposed to monthly costs at 65. These ratios are reported on the third line of Table Seven. While one quarter of respondents projected monthly costs at 85 at or below levels at age 65, the median response indicated projected an increase of 33 percent, which is grossly in line with the ratio of costs reported above in our literature review.[160] So, again on this dimension, the typical response was surprisingly consistent with expert views.

b) Lump Sum Estimates

(1) Responses on Lump Sum Estimates

In addition to asking respondents about expected monthly out of pocket costs for retiree healthcare, we also asked all respondents to estimate the amount of money that a person similar to the respondent would need to accumulate by the age of 65 in order to save enough money to pay for their expected total out-of-pocket costs for health care in retirement.[161] Our goal here was to solicit savings

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[157] An alternative interpretation is that respondents may have interpreted our instructions to express answers in terms of current dollars and not to adjust for general inflation as guidance that they should avoid any source of increase in out-of-pocket costs, whether from excess medical care cost growth or the reduction of government insurance programs. In this case, our responses might reflect confusion regarding inflation versus other economic or cost growth.

[158] There is a risk of demand effect, namely that inquiring about last year costs suggests that such costs will be higher. Even if demand effect is occurring here, it is nonetheless interesting that the magnitude of estimates is close to experts' estimates and that, when prompted, people intuit higher costs in their final year.

[159] This ratio is calculated based on the estimate in the Marshall study of the median last year of life ($5061) divided by the overall median annual estimate in the Johnson and Mommaerts study ($2583). Marshall et al., *supra* note , at 37. Johnson & Mommaerts, *supra* note 5, at 11.

[160] A comparable increase of 33% can be seen in the median estimates from the Hurd & Rohwedder study of $720 for a 65-69 year old and $950 for an over 85 year old.

[161] The actual question read as follows:

targets that the respondents would associate with the amount of savings needed on the eve of retirement to cover expected health care costs in retirement.[162] As reported in Table Seven, the responses on lump sum estimates shared many of the characteristics as the responses we obtained in our questions about expected monthly costs. To begin with, there was again extremely modest variation across treatments, with all three treatments having a median estimate of approximately $50,000 and only a modest narrowing of distributions from Treatment A to the other two treatments. So again, somewhat surprisingly, framing and anchoring had negligible effects on responses.

[insert Table Seven here]

Median lump sum estimates range from marginally to somewhat low, depending on interpretation. The median estimate of $50,000 for all respondents is marginally below the expert estimates of the median of savings needed for men in 2010 that we outlined above in our literature review ($65,000) but even further beneath the equivalent median for women ($93,000).[163] Obviously, if one thought that most individuals should target closer to the 75th percentage of sufficiency, these estimates are less than half what they should be, compared to the expert estimates of $118,000 for a man and $137,000 for a woman for this percentile.

Results broken down by age cohort were also reminiscent of those we obtained for estimates of average monthly costs: The median responses of all age cohorts were at or close to $50,000, and the distance between the 25th and 75th percentile responses was also highly consistent across age cohorts, although the 90th percentile responses did tend to drift upward for younger cohorts, again suggesting greater uncertainty about future costs. See Figure Three. On average, the younger cohorts seemed to be making total costs estimates quite similar to those of older cohorts on the eve of retirement or in retirement. For respondents age 55 and under, who will be turning 65 after 2020, the median estimates fall further off the lower end of targeted ranges ($109,000 for a man and $156,00 for a woman), representing only a half or a third of the lower bounds.[164] Exactly how to interpret the responses of younger cohorts on these lump sum questions is an open question. It is possible that some respondents

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"In planning for retirement, some individuals like to think in terms of how much money they would need to save by the time they turn 65 in order to have enough money to cover out-of-pocket costs in retirement. Imagine that you were asked to give advice to someone with similar preferences and health characteristics as your own. If such a person wanted to have enough money to cover a reasonable estimate of their total out-of-pocket costs for health care in retirement, how much do you think they would need to have set aside? Please give your answer in terms of the total amount of dollars needed at age 65."

[162] It is possible – as one reader noted – that respondents could interpret this question to mean how much they would need to have saved to avoid bankruptcy or significant retirement risk, rather than to cover all out-of-pocket costs. In this case, retirees' estimates would be lower than their expectations of total costs, in which case their expectations of total costs would be even closer to experts' estimates than we report above.

[163] On the other hand, the 75th percentile estimates, $150,000 for all respondents and also most subgroups, is quite close or above, the upper end of our targeted ranges, which were pegged to the 75th percentile estimates from academic studies. Of course, it is not clear whether the respondents giving those higher estimates will in fact be individuals with higher medical costs in retirement.

[164] Conceivably, some of this underestimating of savings needs might reflect modest misperceptions about life expectancies. As noted in an accompanying box (located at the back of the current draft), respondents did slightly underestimated the likelihood that they would survive to ages 65 and 75, when compared with expert assessments. This factor could explain one of the reasons why respondents' lump sum estimates fall a bit further beneath expert estimates than was the case with respondents' average monthly cost estimates.

might have interpreted the question to solicit estimates of savings targets for someone reaching 65 today in which case adjustment for future real increases in health care costs would not have been appropriate.[165] It is also possible that respondents had difficulty in making adjustments to savings targets to reflect real increases in future health care costs. On the other hand, it is potentially troubling that younger cohorts did not project high savings targets, especially to the extent that these projections may influence retirement planning for individuals several decades away from retirement.

[insert Figure Three here]

In sum, respondents' estimates of lump sum savings needs present a reasonably consistent median response of $50,000. While this figure falls somewhat beneath expert estimates, these savings targets represent a sizable amount of money and is consistent with other aspects of our survey results suggesting that respondents are generally aware that health care costs will constitute a substantial expenditure in retirement. While there are undoubtedly complexities in interpreting responses of younger cohorts with respect to these savings targets, the fact that younger respondents did not estimate materially higher savings needs than older cohorts strikes us a potentially important finding and worthy of further study.[166]

(2) Lump Sum Versus Implied Lump Sums

One of the hypotheses that we wanted to explore with our lump sum estimates was whether respondents would somehow engage in a version of hyperbolic discounting where they accurately estimated monthly costs but then made some other error of mental math that led them to make unreasonably low lump sum estimates. Such a cognitive error would be significant because it could lead individuals to set their targeted savings for retirement health care at too low levels. A casual comparison of the lump sum estimate results reported above suggests that respondents – at least on average – made no such mistake, at least to a materially important degree. The relationship between lump sum estimates and expert views as to the savings needs to cover health care costs was roughly comparable to the relationship between average monthly cost estimates and expert views.

Nevertheless, we thought it interesting to explore in greater detail the relationship between respondents' monthly cost estimates and their lump sum estimates. Accordingly, we generated for each respondent an "implied lump sum estimate," based on the monthly cost estimates that person provided, their final year monthly cost estimates, and their reported self-assessed life expectancies.[167] Based on this information, we projected an expected cost cash flow for the person and then discounted that cash flow back to a valuation at age 65, which represents the amount of money the person would need to exactly cover their self-reported expected monthly costs.

The implied lump sum results are interesting in several respects. First – and unexpectedly – the implied lump sum estimates, at least as we calculated them, generally were lower than respondents' actual lump sum estimates. So whereas the median lump sum estimate for all respondents was $50,000 the

[165] The wording of our survey question appears above in note 161.

[166] Conclusions with respect to younger cohort responses are probably best drawn from a complete review of survey response. We attempt such a summary in the conclusion of this paper.

[167] In an accompanying box, we report the result of respondent's self assessed life expectancies, which generally track prior research on the topic in that respondents tend to underestimate their likelihood of reaching ages 75 and 85, which tends to reduce implied lump sum estimates from expert calculations based on actual life expectancies.

median implied lump sum estimate for all estimates was under $39,000. So, rather than hyperbolically discounting their lump sum estimates, respondents appear to have modestly adjusted upward their lump sum estimates as compared to implied lump sum estimates. Alternatively, they may have been adding a modest cushion of additional savings to make sure they would have enough for unanticipated costs. While these results are sensitive to our assumed discount rate (a real 3 percent discount rate), the results are certainly not consistent with hyperbolic discounting.[168]

[insert Figure Four here]

A related point concerns the distribution of implied lump sum estimates. Consider Figure Four which shows the implied lump sum estimates by age cohort. The distribution of percentiles is much narrower in this figure than in the comparable figure (Figure Three above) for actual lump sum estimates. In particular, the 90th percentile estimates are much lower. For example, the 90th percentile estimate of implied lump sums for the 45-49 age cohort is about $150,000 whereas the comparable 90th percentile estimate for actual lump sum is $750,000. In other words, far from hyperbolically discounting, our respondents in many cases were offering lump sum estimates that were substantially higher than the savings levels actually needed to match their own estimated monthly costs and self-assessed life expectancies.[169] So rather than engaging in mental math that set unrealistically low savings needs, a substantial number of respondents appear to have been engaging in mental math that suggested an unobtainable high savings target. One might imagine that such high targets could create a barrier to saving out of a sense of futility.

C. Estimating Demographic Spending Variation

One of the complexities in interpreting respondents' answers is our uncertainty whether those reporting low or high estimated costs are, in fact, individuals who will incur below or above median actual health care costs in retirement. To tease out this question, we segmented our sample in a series of subgroups based on income, gender, self-reported health status and a proxy for financial sophistication based on self reported information on financial planning and familiarity with budgeting and health care insurance. We then analyzed whether this partitioning of the data produced differences in average monthly cost estimates or actual lump sum estimates that were consistent with expert evaluations of the relationships between these categories and retiree health care costs. The results, which are summarized in Table Eight for average monthly costs, are mixed.

[insert Table Eight here]

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[168] As a robustness check, we recalculated respondents' implied lump sums using both a 1.5 and zero percent discount rates. With the 1.5 discount rate, median responses match more closely actual lump estimates of respondents and with a zero percent discount rate, medians of implied lump sums exceed actual lump sum estimates. To the extent one credits this exercise, these results suggest that respondents may be using a mental discount rate closely to 1.5 percent than 3 percent, which is also inconsistent with hyperbolic discounting.

[169] The upper range of actual lump sum estimates exceed implied lump sum estimates even when calculated using a zero percent discount rate. So, for example, the 90th percentile response of the 45-49 age cohort with an implied lump sum calculated with a zero discount rate is roughly $225,000 compared with the $750,000 90th percentile estimate for actual lump sum for that age cohort.

We begin with variations around income levels. As discussed above, higher income individuals tend to pay more for retiree health care and also live longer thereby increasing overall retiree health care costs. Our survey respondents seemed to be quite attuned to this effect. So, as reported in Table Eight, the median expected monthly cost of the lowest quintile respondents was just $100, where the median response for the highest quintile of respondents was $350. As shown in Figure Five, this differential was even more pronounced with respect to lump sum estimates where the lowest income quintile of respondents having a median estimate of $10,0000 as compared to a $100,000 estimate for the highest quintile. So at least in terms of the effect of income on retiree health care costs, respondents seemed to have intuitions that were directionally correct with expert views. [170]

[insert Figure Five here]

The same could not be said about gender. As noted above, women are generally expected to incur greater retiree health care costs than men, largely as a result of having longer life expectancies. As a result, a typical woman might be expected to have out of pocket health care costs in retirement 40 percent higher than a typical man. But, as reported in the second section of Table Eight, woman generally estimated lower average monthly costs than men with a median estimate of $190 for women as compared to $217 for men. This difference was even more pronounced for lump sum estimates where women's median estimate was $30,000 versus $60,000 for men. Thus, women systemically underestimated average monthly health care cost as compared to men and compounded that underestimation in producing lump sum estimates, making their actual reported median estimates substantially below the benchmark median estimates for women, as drawn from our literature review.

Also somewhat surprisingly, estimated monthly health care costs increased with the self reported health status of respondents. As reported in the third section of Table Eight, the estimated average monthly costs of those reporting "Excellent" health were the highest whereas the estimated monthly costs of those reporting "Poor" health was the lowest. Similar effects can be observed in the lump sum estimates. Although these results, where the healthy expect to pay more than the unhealthy, are sensible for lump sum estimates because of the greater longevity (and thus more years of spending) for the healthy, they are inconsistent with the data on annual spending, which reports high annual spending for those in worse health. Conceivably, some of this effect seems to be caused through interactions with income or education level, but the pronounced differences in estimated costs across health statuses are interesting and warrant further investigation.

Finally, in terms of self-reported financial sophistication, there did not seem to be any readily observable difference between estimates across subgroups. See section four of Table Eight for results on average monthly costs and a comparable analysis of lump sum estimates. To a degree, this is a modestly surprising result in that one might have expected the financially sophisticated to produce tighter distributions of estimates, but in fact the distributions were remarkably similar across levels of sophistication and, if anything, the low sophistication group generated slightly tighter distributions.[171]

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[170] As discussed above in note 152, wealthier respondents also gave higher estimates of total Medicare premiums.

[171] Although financial sophistication does not appear to be strongly associated with differences in respondent estimates, we were interested to note a rather dramatic variation in the level of financial sophistication reported by our respondents when segmented by age cohort. Respondents in older cohorts reported a much higher degree of

In an effort to explore the interactions between various correlates with respondents' estimates, we undertook limited regression analysis of the factors discussed above. Table Nine reports summary results. The table includes four rudimentary models. The first two are trimmed linear regressions with lump sum estimates and average monthly costs as dependent variables with gender, age cohort, income quintiles, health status and educational achievement as independent variables. The second two regressions include the same independent variables but employ trimmed logs of lump sum estimates and average monthly costs as dependent variables.[172] The most consistently significant correlation was a positive association between cost estimates and income levels, where all four models included statistically significant impacts. Educational attainment was also positively associated with higher cost estimates at statistically significant levels in three of four models. Consistent with earlier discussion, the dummy for female respondents was inversely associated with cost estimates, but statistically significant in only the linear models and not in those with log transformations of dependent variables. Health status did not have a statistically significant association in any of the models and the sign of its coefficient flipped between linear and log transformation models, suggesting that the crude relationship noted above does not survive controls for income and perhaps educational achievement.

[insert Table Nine here]

The models presented in Table Nine are helpful, but should be viewed with some caution. To begin with, survey responses on cost estimates are difficult to model as they skew towards higher numbers with a fairly large number of outliers. While trimming and log transformations of dependent variables are designed to mitigate these complexities, these adjustments may not offer complete solution. In addition, the explanatory power of the models is limited, with adjusted R Squares beneath 12 percent in all cases. That said, the correlations with income and educational achievement seem reasonably robust, suggesting that our survey respondents, taken as a whole, did recognize that wealthier and better education respondents would face higher health care costs in retirement as a result of a combination of progressive insurance premiums, higher consumption of health care services by the more affluent, and greater longevity. While the negative correlation between the female dummy and costs was less robust, these regressions suggest the possibility that woman may well fail to appreciate that they face higher healthcare costs in retirements and, indeed, may be systemically underestimating costs as compared to men. A final, intriguing aspect of the Table Nine regressions is the often statistically significant negative correlation between age cohorts and cost estimates. As discussed above, in our simple comparisons of age cohorts, younger respondents often seemed to make estimates that were not much different than their older counterparts, raising the possibility that younger workers were insensitive to likely increases in the real cost of healthcare. These regression results suggest that, controlling for other factors and trimming outliers, younger works may actually have been reporting higher cost estimates than their older counterparts.

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familiarity with financial planning and insurance programs. While this self-assessment is at odds with some academic research on the cognitive capabilities of the elderly, it's consistent with elements of our survey results where older cohorts showed a better ability to offer estimates of insurance premiums and other features of insurance programs.

[172] In all cases, we trimmed the top one percent of observations to reduce the confounding impact of outliers at the upper end of the distribution where respondents reported cost estimates that seemed unreasonably high. For lump sum estimates, that trimming limited observations to $3.5 million; for average monthly costs, trimming limited observations to roughly $2500.

D. Estimating Uncertainty: Health, Medical Inflation, Policy Change

In the final module of our survey, we divided respondents into two separate groups and asked each group a series of questions designed to elicit their assessment of three sources of potential risk for out-of-pocket costs for health care expenses in retirement: variation in personal health experience; unanticipated medical cost growth; and changes in government policies with respect to Medicare and other government programs. As discussed earlier in our literature review, all three of the risks could be material. Variations in personal health experience could double to triple individual out-of-pocket costs above median levels, and government policy changes could as much as double them. The results of this aspect of our survey were mixed, but on balance it seems clear that respondents did not unambiguously identify personal health and policy changes as the most salient risks, nor did they generally appreciate the extent to which these risks might be expected to increase their out-of-pocket costs for health care in retirement.

1. Group One: Assessments of Concern and Severity

For half of our respondents, we asked them to make a qualitative assessment of the risk perceptions. First, we ask respondents in this group to evaluate on a four point scale how concerned they were about each of the risks. Second, we asked them if the risk should manifest, how much more they would need to budget for out-of-pocket health care costs if they wanted to be "highly confident" of having sufficient resources to cover the costs.

In this formulation, respondents seemed to identify policy changes and then medical inflation as being the greater sources of risk, but underestimate the potential magnitude of both. In terms of level of concern – summarized in Figure Six – or estimated severity of budgetary impact, these two risks dominated across age cohorts. Again, this response is arguably inconsistent with expert perceptions of the relative risk, which would clearly rank variations in personal health experience, and probably also policy uncertainty, as a more significant risk than unanticipated medical inflation, especially for those at or near retirement for whom any inflation will have limited impact.

[insert Figure Six here]

On the issue of how large of a financial impact respondents estimated that the risks could pose to their budgets, Figure Seven reports responses for Personal Health Experience (on left) and Policy Changes (on right). Nearly all respondents underestimate the magnitude of these risks, especially with regard to personal health experience risk. So, for example, on Figure Seven, only a fifth of all respondents estimated that adverse personal health experience could lead to a more than 50 percent increase in out-of-pocket costs, although expert opinion suggests those who end up in the 75th or 90th percentile of out-of-pocket costs are likely to spend double to triple someone at the median.[173] Similarly, less than a third of respondent reported that they would need at least fifty percent more in financial

[173] *See* infra note 113- 116 and discussion.

resources to compensate for adverse changes in government policy even thought expert views are that some current reform proposals for Medicare could have a much larger effect.[174]

[insert Figure Seven here]

2. Group Two: Willingness to Pay

To gain an alternative perspective on the topic of risk, we posed questions to the other half in terms of their willingness to pay to be free of each of these specific risks.[175] The results for this set of questions appear in Table Ten. As reported in this table, the median respondent was willing to pay a monthly insurance premium of about $150 to be relieved from the risk of higher out-of-pocket costs from person health experience. While it is difficult to know if this specific estimate is actuarially accurate, what is most interesting is that the willingness-to-pay responses for each of these three questions were roughly similar. While the medians for responses on willingness to pay for protection against medical inflation and willingness to pay for protection against policy changes were a bit lower ($125 and $120, respectively) than the health experience analog ($150), the distributions were roughly comparable. Certainly, there is no indication in this data that respondents overall were especially concerned about personal health experience or policy changes, indeed the latter had the lowest median and distribution ranges of the three.[176] Nor was there any evidence in our results that younger workers were particularly wary about policy changes. On the other two willingness-to-pay questions, there was a modest suggestion that younger respondents placed a higher value on protection against bad personal health experience and unanticipated medical inflation than did older respondents, but even there the trends were not especially strong. Thus, our primarily take-away from this inquiry into risk assessment is that respondents did not sharply distinguish across type of risks nor were younger workers noticeably more concerned about unanticipated inflation or policy changes.

[Insert Table Ten here]

To be sure, there are considerable complexities in interpreting individual assessments of financial risks, but the responses to this module of our survey suggest to us that our respondents had difficulty distinguishing among sources of risk and may in some areas substantially underestimate the extent of the potential risk, in particular with regard to their own personal health experiences.

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[174] *See* infra note 204 and discussion.

[175] An illustrative question here read as follows: "Research suggests that health care expenses in retirement can vary considerably from individual to individual based on differences in the health of individuals and their medical needs. As a result, out-of-pocket costs for some individuals can be much higher than those of the average retiree. How much would you be willing to pay each month for an insurance policy that fully protected you from incurring out-of-pocket costs higher than those of the average retiree, regardless of your own health or medical needs?"

[176] The cohort on the eve of retirement, ages 60-64, did however skew somewhat higher at the top end of the distribution in their willingness to pay for insurance against policy changes and also poor personal health outcomes.

IV. Conclusions and Discussion

Our literature review and survey findings offer a starting point from which to understand the timely and important issues of what Americans know about their likely future out-of-pocket heath care expenditures. Understanding the degree to which unrealistic expectations during working years dampen savings and contribute to the shortfalls many retirees face are critical to improving financial security in retirement. Moreover, our analysis offers a framework for evaluating the institutional structure of insurance – public and private – and health care policy with a sensitivity to the costs imposed on insurance consumers.

In these concluding pages, we highlight what we see as the five major takeaways from this research, which together offer insight into opportunities for financial literacy education efforts and potential regulatory design and policy reforms. We could not and do not intend to fully explore implications and possible solutions suggested by each of these takeaway points here, but rather intend these key points to suggest directions for further reflection and research.

As a preliminary point, we want to emphasis one overarching gap in prior academic work on retiree health care expenditure. In reviewing existing literature, we quickly discover a need for better collection of data on out-of-pocket healthcare costs and greater consistency in how these costs are defined and measured. As health care costs continue to increase and politicians debate reform proposals, policymakers need to have better data on the current distribution of out-of-pocket cost for retirees and the implications of competing reform proposals and private market solutions. The lack of consistent, quality data makes it difficult to address a health care spending problem when there is disagreement on the definition of and magnitude of the spending among the experts in this field. And, of course, consumers can hardly be expected to make informed choices if the underlying data is inaccessible or incomprehensible.

Point One: Quality of Overall Estimates

Perhaps the more intriguing and counterintuitive insight from this study is that our respondents, in the aggregate, did not massively underestimate likely retiree health care costs. As we described above, overall estimates of likely out-of-pocket health care expenditures in retirement were more accurate than we anticipated in the aggregate, especially if one focuses on median responses. Overall, respondents also offered sensible answers with regard to life expectancies and projections of increasing costs over retirement and in last year of life. They were somewhat overly optimistic on average about likely insurance coverage in retirement (especially with regard to Medicaid and long-term care coverage), but again not breathtakingly in error, at least as viewed in the aggregate.

There are a number of reasons why people might have a good ballpark sense of retiree out-of pocket health care costs, and it would also be valuable to seek a better understanding of which of these explanatory factors, or others, is most significant. It is possible our respondents merely offered a small, nonzero guess of a couple of hundred dollars a month in response to a question that implied the existence of some costs. If this theory is true, people might not affirmatively consider and plan for costs on their own, suggesting that there may be value in prompting the population at large to consider their future

expenses. Alternatively, health care costs and premiums are pervasive throughout life, and it is possible respondents were inferring from their own prior experience. They might also have familiarity with parents' or acquaintances' experience with Medicare and other forms of supplemental retiree coverage. Assuming pervasive awareness of health care costs or specific awareness with retiree costs influenced our respondents' answers, many people seem to have a genuine sense of their likely future costs and such intuition could, in theory, influence their retirement planning.

If the last theory is true, lack of knowledge may not be the key driver of reported undersavings in other studies. It is possible that those individuals with the most sensible expectations are also those who are already saving the most and others (such as respondents at the 25th percentile or below) are facing shortfalls – a possibility our data doesn't allow us to deny or confirm. But the fact that expectations overall are sensible and retirees are still facing retirement risk in large numbers, due in part to out-of-pocket health care costs, suggests that at least some portion of the population anticipates future costs and does not save to finance them. Likely some face income constraints, where the burdens of reducing consumption during working years outweigh the benefit of savings.[177] Others might anticipate higher rates of return on savings than likely, especially in light of low rates of return in recent years, or might overestimate future income. Additional examination of the apparent mismatch between expectations and actual savings is critical.

Although our main reaction to respondents' estimates is moderate surprise that many approach the level of experts' estimates, there are still aspects of the overall out-of-pocket estimates that raise concerns. Especially with regard to lump-sum spending, median responses were 20 to 50 percent lower than expert median estimates for a man and woman, respectively. For a middle income American, even this amount of unexpected spending might impose significant hardship. Furthermore, our findings suggest reason to be concerned with 25th percentile and 90th percentile responses. Those answering at 25th percentile might severely underestimate future costs, unless they also happen to be those individuals with low realized spending. But, as discussed below, our research does not give us much confidence that this is the case. Those at 90th percentile might – if these estimates are genuine – be engaged in overestimation that discourages actual savings. What is striking is the unexpected overestimation – often by substantial amounts – of reported lump sums, as compared to implied lump sums based on life expectancies and monthly projections. This hypobolic discounting suggests that some individuals may be radically *over*estimating their savings needs for retiree heath in a way that could discourage actual savings out of a sense of futility. This somewhat surprising finding warrants additional work and suggests that there may be a potential for education to show people that achieving sufficient savings might be more feasible than they imagine.

Point Two: Demographic Variation

Respondents' intuition is less strong at the points where their own expenditures might vary from median estimates – in both predictable (Point Two) and unpredictable (Point Three) ways. These two

[177] See Fishman, *supra* note 4, at ix ("Even with a matching subsidy, low-income individuals who saved 1 percent of their income tax free from age 50 on would on average save enough to pay for about a year of Medigap for poor and near-poor seniors (incomes under 150% FPL), and three years of Medigap for lower-middle-income seniors. Because their preretirement incomes are low on average, helping low-income individuals to save will not fully address the problem of out-of pocket medical costs for the low-income elderly.")

findings counsel shifting focus away from the experience and expectations of the median retiree to those cases where costs – either predictably or unpredictably – might exceed median estimates.

We know that some subpopulations are likely to spend more than others on an annual or lifetime basis based on demographic factors, such as income, gender, or health status. Our responses varied appropriately and significantly according to some, but definitely not all, of these factors. The places where respondents seem least sensitive to demographic factors that might cause them to have higher spending suggest opportunities for intervention.

Limited regression analysis suggested our respondents were directionally correct on some dimensions. For example, our higher income respondents estimated relatively higher out-of-pocket spending, which is in line with what expert studies suggest actually occurs. However, the women in our survey showed a dramatically less acute understanding of future out-of-pocket expenditures than the men in our survey. Even similar estimates given by men and women would be reason for concern, in light of the evidence that women on average spend well more than men out-of-pocket on health care over the course of retirement. Our responses bordered on alarming, with women generally making much lower absolute estimates than men, which suggests both that women's estimates with regard to median spending are worse than men's and also that they don't seem sensitive, as a whole, to the fact that they will likely spend more than their male counterparts.

It's difficult to know why this gender gap exists. It's possible many of these women have relied on another individual for household financial management. Or perhaps our respondents struggle for the same reasons that women, even college women, lag behind men in general on measures of financial literacy and numeracy, as evinced repeatedly in studies.[178] Assuming this financial literacy gender gap extends into perceptions of health care spending, women might be left particularly financially vulnerable in retirement if they misjudge this source of significant future costs. This finding only confirms the need to close the gender gap that leaves women behind in matters of mathematics and finances, a problem with roots much deeper than we can examine here. A modest starting place might be working to educate women, in particular, on health care spending, examined below. More ambitiously, we might reconsider the wisdom of an insurance system that leaves many women with little income in retirement but, even at the median, subject to fifty percent more spending than the typical man, before factoring in long-term care costs.

Whether there are serious deficiencies in the expectations of younger cohorts is more ambiguous. While on some survey responses, younger cohorts did seem to expect higher costs, as in the case of future Medicare premiums, which is a view that would be consistent with expert expectations. However, in assessing average monthly costs of retiree health care and lumps sum estimates of required savings, younger cohorts did not report materially greater amounts than the older cohorts. While interpretation of

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[178] Annamaria Lusardi, *Financial Literacy: An Essential Tool for Informed Consumer Choice? Center for Financial Studies* 2 (2008); Dan Kadlec, *Women and Money: Even College Grads Flunk Personal Finance*, Time (June 28, 2012), at http://moneyland.time.com/2012/06/28/women-and-money-even-college-grads-flunk-personal-finance/ (describing a new study that reports low financial literacy scores for women); Annamaria Lusardi & Olivia Mitchell, *Financial Literacy and Retirement Planning: New Evidence from the Rand American Life Panel* 10 (December 2007); Annamaria Lusardi, et al., *Financial Sophistication in Older Population* 11, NBER Working Paper No. 17863 (Feb 2012).

these responses may be ambiguous, especially with respect to lump sums, our results raise the possibility that younger cohorts are materially underestimating their out of pocket costs for health care in retirement. In a companion paper, we find consistent deficiencies in younger cohorts expectations with respect to the costs of long-term health care, and that problem may extend to younger cohort expectations with respect to retiree health care costs more generally.

Point Three: Uncertainty and Risk

Much of the possible variability in spending – either among retirees or over time – is not predictable based on any demographic factors. We examined perceptions with regard to three key drivers of future spending uncertainty: variation in individual health experience among retirees; unanticipated medical cost growth; and changes in government policies with respect to Medicare and other government programs that could increase out-of-pocket costs for some or all retirees. While our findings are tentative here, they suggest that people struggle to gauge the variability in spending they might face due to each of these factors. In other words, they don't understand spending risk.

Most – but not all – of our respondents identified all of these areas as causing concern, but they didn't effectively distinguish between the magnitude of possible risk they could face from each. In particular, it seems our respondents underestimated the risk of variation in personal health expenditures. While arguably the greatest of the three risks for anyone now nearing or in retirement, our respondents did not unambiguously identify it as a greater risk than the others and underestimated the magnitude of variability in spending they might face if they were in the upper end of the distribution. They arguably also underestimated the magnitude of potential risk from policy change, especially at a moment in time when Medicare is vulnerable to fundamental changes.

Failure to appropriately account for spending uncertainty would mean that even those retirees with spot-on median responses might be unprepared to finance future costs if any of the above risks came to fruition. For example, a retiree aware of median annual spending for someone like herself *and* in a position to finance median spending out of savings and social security and pension income could nonetheless face financial crisis if she experiences a serious health problem or develops a chronic condition that propels her into the 90th percentile of spenders, leading to costs double what she planned to finance. Failure to comprehend the potential implications of policy reforms, such as major changes in Medicare and Medicaid programs, could also inhibit the ability of the citizens to engage in political debates on entitlement reform and related matters.

The difficulty that consumers face in comprehending risk and making sensible choices to reduce risk is a recurring theme in academic studies on cognitive processing and retirement planning, with work on the annuity puzzle being perhaps the most familiar example.[179] In light of this work, our findings on the inability of respondents to make risks assessments in line with expert evidence is hardly surprising. Retiree health care costs are, in essence, a negative annuity that depending on a host of imponderables

[179] For an overview of cognitive biases with respect to risk and uncertainty see Christine Jolls & Cass R. Sunstein, *Debiasing through Law*, 35 J. LEGAL STUD. 199, 203-25 (2006). See also Howell E. Jackson, *Accounting for Social Security Benefits, in* BEHAVIORAL PUBLIC FINANCE 261,271-75 (Edward J. McCaffery & Joel Slemrod, eds., 2006). For an overview of the annutization puzzle with a helpful review of the literature, see Jeffrey Brown, *Rational and Behavioral Perspectives on the Role of Annuities in Retirement* (Oct. 2007) (NBER Working Paper 13527)

including life expectancies, personal health care experience, policy changes, and changes in health care costs. It's surprising enough that our respondents were able to make plausible ballpark estimates of typical costs; it would have strained credulity had they also apprehended risks and uncertainty correctly. Still, these cognitive limitations have important implications for financial education, insurance design, and policy, which we discuss below. But a key takeaway from this study is a need to focus more attention on how Americans understand and manage the risk of variability in health care expenditures

Point Four: Possibilities and Challenges for Educational Efforts

While our findings suggest that the overall financial literacy gap with regard to out-of-pocket costs may be smaller than we anticipated, they also reveal some areas in which well-targeted informational efforts could bring expectations more in line with expert estimations. The introduction of readable, plain language materials describing the magnitude of expenditures and factors that could drive higher expenditures would be a significant step, considering the current void of such resources.

While we mention a few areas here that our study suggests would be good targets, in theory, for financial education, we do so with a cautionary note. Our treatments, which were designed to simulate financial education, had surprising little effect on estimates. Anchoring had a modest effect on premium estimates for Treatments B and C but very little residual effects through total monthly costs or lump sum estimates. Education should perhaps focus on overall costs, rather than components of cost, and would need to be carefully tested for effectiveness on the intended audiences.

Our findings suggest that women, in particular, might be a good target for financial literacy efforts. Closing the literacy gender gap with regard to retiree health care expenditures is critical in light of the fact that women live longer than men and will need to manage out-of-pocket spending for more years and, for those who outlive a spouse or partner, on their own. However, if the health care financial literacy gap we're observing is part of a larger innumeracy problem, education on health care expenditures alone will not be enough. Efforts would have to begin earlier so that women become more adept with numbers and finances more generally.

Likewise, education focused on younger cohorts (40-60 year olds) might also be valuable. The fact that younger respondents' expectations may not take account of growth in medical care costs poses concern because these respondents, who are still in their earning years, are in the best position to save for future expenditures. Especially if interest rates remain low and health care costs continue to outpace GDP growth, they may need to save more than anticipated.

As noted above, there may be an opportunity to help people understand spending risk. This task, while worthwhile, could prove challenging. As noted above, studies show that individuals chronically struggle to understand risk, suggesting the problem we see here runs deeper than confusion with the structure of health care. Any educational efforts would have to be structured in a way that combats the mental shortcuts people are inclined to take when thinking about risk.

Furthermore, for many Americans, understanding the potential variability in spending might not help them better manage such spending. For many low to middle-income Americans, knowing that they might face future health care expenditures two or three times higher than median expenditures will do

little to help them save for these expenditures. Thus, financial education could provide a necessary first step but will not be sufficient on its own with respect to spending risk.

Point Five: Implications for Insurance Design and Policy Reforms

Estimating retiree out-of-pocket costs is clearly a complex and uncertain endeavor. But individuals are today expected to defray a significant portion of retiree health care costs without clear guidance as to how large and variable those costs might be. Imagine the simplest example: a system of health care fully financed through taxes. It would be easy to estimate out-of-pocket costs with complete certainty: $0. There are many reasons – some economic, some political – why this is not the system we have. But the further we get from a streamlined system and the more we see proliferation of health plans and options, the more difficult we make it for consumers of health insurance to understand their own out-of-pocket spending.

Individuals must choose among Medicare options and supplement insurance programs without meaningful guidance as to how those choices will mitigate the risk of debilitating health care expenditures in retirement. And they must evaluate entitlement reform proposals without a clear understanding of their implications for individual risks. These difficulties suggest two areas for further work.

Increase Transparency with Respect to Insurance Policies

It is not evident to consumers how – or whether it is even possible – to obtain insurance to protect against excessive variability in spending. As things currently stand, insurance regulation requires disclosure of certain information, such as deductibles and co-pays and annual and lifetime limits, but does not make transparent residual payment risk that falls to policy holders. PPACA attempts to bridge this gap by imposing life time caps and reporting on the actuarial value of policies that will be sold in the new health exchanges for working age populations. But these reforms do not extend to Medicare, or even retiree-only employer health care plans.[180] And it's unclear to what degree these reforms will sufficiency increase transparency for those under age 65, who are likely to struggle to understand what actuarial value means in terms of personal spending risk.[181]

What consumers need to know is the distribution of individual costs under various supplemental insurance options for retirees. For example, supplemental Medigap policies could provide a graph that illustrates the out-of-pocket spending distribution among all enrollees in a particular plan. The buyer could compare his out-of-pocket exposure at the 25th, 50th, 75th, and 90th percentile of one plan against his exposure at the same levels of spending in another. An important role of government would be to require the collection and dissemination of this data (as well as educating consumers about how to interpret the data). If spending risk were to become a key criteria in choosing these policies, we might then see insurers offer more policies that limit risks for someone in the right hand tail of out of pocket expenditures.

Policy Reforms to Limit Risks from Retiree Health Care Costs

[180] *See* NATIONAL RETIREE LEGISLATIVE NETWORK, MEDICARE OUT-OF-POCKET HEALTH COST LIMITS, at http://www.nrln.org/flyin%20whtpprs/WhitePaper%20Medicare%20Catastrophic.pdf (last accessed Sept. 7, 2012).
[181] Ryan Lore et al., *Choosing the "Best" Plan in a Health Insurance Exchange: Actuarial Value Tells Only Part of the Story*, COMMONWEALTH FUND ISSUE BRIEF (August 2012).

Our work also has implications for the on-going debate over entitlement reform. Changes to Medicare and Medicaid policy may be necessary in the coming years to stem the increasing share of governmental spending on health care. Controlling public expenditures on retiree health care costs is a critical component to restoring balance to federal fiscal policies.

Many reform proposals contemplate shifting a portion of these costs back to retirees, either through reducing the generosity of Medicare payments or scaling back the scope of Medicaid support for the elderly. While these proposals are often discussed in terms of aggregate deficit reduction or the cost shifting to typical retirees, attention must also be given implications of these reforms to the risks imposed on individual retirees with high personal medical costs. Medicaid currently provides a safety net for the poorest retirees, but near poor and middle-class retirees face considerable risk that they do not fully understand, and would likely struggle to manage, even if they did understand it.[182]

Beyond scoring the aggregate financial effects of reforms, policy analysts should also take into account the distributional consequences for various populations. Ideally, entitlement reforms should be designed with protections – including life time and annual caps on expenditures beyond those built into the Medicaid program – that will mitigate the risks imposed on individual retirees. At a minimum, public debate over entitlement reform should be informed through clear analysis of the distributional consequences of competing reform proposals.

[182] See Fishman, *supra* note 4, at ix.

Box on Self-Assessed Life Expectancies

Another element of our survey was a series of questions put to all respondents about their own assessments of their life expectancies.[183] We solicited this information to explore the possibility that respondents might be making systematic errors as to their own life expectancies and that such errors might be effecting their expectations about total lifetime health care costs during retirement. In particular, we were curious whether respondents might not anticipate how many years they were likely to spend in retirement and therefore underestimate the financial costs of health care in retirement. As it turned out, respondents as a group offered assessments of life expectancies that fairly closely match responses obtained in other recent academic work. Figure Eight summarizes expectations for survivorship.

[insert Figure Eight here]

In our study, the median respondent reported an 80 percent likelihood of living past 65, a 70 percent likelihood of living past 75, a 50 percent likelihood of living past 85 and a 10 percent likelihood of living past ninety five. These median values underestimate the likelihood of surviving to 65 and 75 (which Social Security actuaries currently put at approximately 92 percent and 75 percent), but somewhat overestimate the likelihood of living beyond 85 (which Social Security actuaries estimate in the range of 43 percent).[184] In contrast to the Payne study, our median responses for surviving past 95 closely match expert views (9 percent). Respondents were directionally accurate in reporting longer life expectancies for women than for men. On balance then, these self-assessed life expectancies do not seem to be a major source of distortion in respondent's ability to estimate health care costs in retirement, though their underestimation of the likelihood of survivorship to and through the first decade of retirement may dampen their lump sum estimates to some degree.

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[183] Estimates on life expectance are admittedly difficult to solicit in survey form, and the framing of the questions can have an effect on responses, as reported in a recent study in John W. Payne et al., *Life Expectancy as a Constructed Belief: Evidence of a Live-to or Die-by Framing Effect*, draft dated 12/24/2011. Questions framed as the probability of "living to" a particular age generate higher average estimates than those framed in terms of "dying by" that same age. *Id.* at 4. Under the "living to" frame in the Payne study, respondents estimated 84 percent probability of living to age 65, 70 percent probability of living to age 75, 51.5 percent probability of living to age 85, and 30 percent probability of living to age 95. *Id.* at 27. When compared with actual estimates of life expectancy, based on Social Security Administration data and adjusted to each respondent's age and gender the "living to" frame produced subjective estimates closer to the actual estimates than the "dying by" frame. In this "living to" frame, the subjective estimates were 8 percentage points low for age 65, 5 percentage points low for age 75, 8 percentage points high for age 85, and 21 percentage points high for age 95. The "living to" frame produces more accurate responses in comparison to actual estimates than the "dying by" frame at ages 65 and 75, equally accurate at 85, and less accurate at 95, when both frames lead to overly optimistic responses. Accordingly, we adopted this "living to" frame to survey respondents' anticipated life expectancy. *Id.* at 28; table with precise data on file with author. In contrast, the "dying by" frame's more pessimistic responses resulted in answers 18 percentage points low at age 65, 21 points low at 75, 12 points low at 85, and 3 points high at 95.

[184] Social Security, Actuarial Life Table 2007, at http://www.ssa.gov/OACT/STATS/table4c6.html.

Table Three: Basic Demographics of Total Sample and Key Subsamples

	N	Age	Female	Married	Income Quntile	Unemployment Rate	White	Highest Educational Acheivement
Total Sample	1704							
Mean		58.14	0.57	0.61	3.00	0.07	0.84	11.40
Standard Deviation		10.52	0.50	0.49	1.42	0.26	0.37	2.23
Gender (ALP Data)								
Male	736							
Mean		58.72	0.00	0.68	3.13	0.08	0.86	11.58
Standard Deviation		10.59	0.00	0.47	1.43	0.27	0.35	2.24
Female	968							
Mean		57.70	1.00	0.55	2.90	0.06	0.82	11.26
Standard Deviation		10.46	0.00	0.50	1.40	0.24	0.38	2.22
Age Cohort (ALP Data)								
40-44	210							
Mean		41.91	0.60	0.64	2.89	0.14	0.74	11.20
Standard Deviation		1.39	0.49	0.48	1.42	0.35	0.44	2.08
45-49	218							
Mean		47.08	0.60	0.63	3.14	0.11	0.74	11.05
Standard Deviation		1.37	0.49	0.48	1.49	0.31	0.44	2.37
50-54	237							
Mean		52.00	0.55	0.60	3.01	0.09	0.76	11.41
Standard Deviation		1.35	0.50	0.49	1.52	0.28	0.43	2.15
55-59	249							
Mean		56.99	0.62	0.61	3.23	0.07	0.85	11.62
Standard Deviation		1.37	0.49	0.49	1.38	0.25	0.36	2.06
60-64	258							
Mean		61.79	0.53	0.64	3.17	0.07	0.88	11.67
Standard Deviation		1.47	0.50	0.48	1.45	0.25	0.33	2.26
65-69	255							
Mean		66.95	0.57	0.58	2.97	0.04	0.93	11.58
Standard Deviation		1.47	0.50	0.49	1.38	0.19	0.26	2.23
70-74	168							
Mean		71.86	0.54	0.54	2.74	0.01	0.93	11.23
Standard Deviation		1.39	0.50	0.50	1.28	0.08	0.26	2.35
75-80	109							
Mean		77.10	0.50	0.58	2.50	0.00	0.93	11.12
Standard Deviation		1.61	0.50	0.50	1.21	0.00	0.26	2.42
Income Quintile (ALP Data)								
First Quintile	354							
		57.93	0.61	0.31	1.00	0.15	0.72	10.14
		11.10	0.49	0.46	0.00	0.35	0.45	2.12
Second Quintile	291							
		59.32	0.61	0.47	2.00	0.10	0.81	10.59
		11.15	0.49	0.50	0.00	0.30	0.39	2.02
Third Qintile	414							
		59.14	0.57	0.65	3.00	0.04	0.84	11.49
		10.84	0.50	0.48	0.00	0.19	0.37	2.09
Fourth Quintile	280							
		57.95	0.56	0.73	4.00	0.04	0.92	11.91
		9.90	0.50	0.44	0.00	0.19	0.27	2.04
First Quintile	362							
		56.36	0.49	0.86	5.00	0.03	0.91	12.76
		9.27	0.50	0.34	0.00	0.18	0.29	1.86

Table Three: Basic Demographics of Total Sample and Key Subsamples (Cont.)

	N	Age	Female	Married	Income Quntile	Unemployment Rate	White	Highest Educational Acheivement
Health Status (self reported)								
Excellent	151							
		56.06	0.52	0.63	3.32	0.07	0.85	12.17
		10.10	0.50	0.48	1.47	0.26	0.35	2.16
Good	661							
		57.55	0.59	0.63	3.39	0.06	0.87	11.80
		10.21	0.49	0.48	1.31	0.24	0.34	2.09
Medium	608							
		59.06	0.56	0.62	2.85	0.09	0.84	11.23
		10.83	0.50	0.49	1.39	0.28	0.37	2.18
Fair	225							
		58.80	0.57	0.52	2.35	0.06	0.78	10.52
		10.57	0.50	0.50	1.39	0.24	0.41	2.36
Poor	56							
		58.30	0.54	0.55	1.91	0.04	0.70	9.89
		10.70	0.50	0.50	1.28	0.19	0.46	2.19
Financial Sophistication (self reported)								
Unsophisticated	560							
		55.55	0.59	0.60	2.95	0.07	0.84	11.02
		10.07	0.49	0.49	1.40	0.26	0.36	2.16
Medium	512							
		55.89	0.57	0.61	2.98	0.08	0.80	11.28
		9.81	0.50	0.49	1.45	0.27	0.40	2.30
Sophisticated	629							
		62.26	0.54	0.61	3.08	0.06	0.87	11.83
		10.19	0.50	0.49	1.41	0.24	0.34	2.18

Table Four: Retiree Health Insurance Coverage Expectations by Cohort and All Respondents

		Medicare		Medicaid		Employer Sponsored		Medigap	
	N	Mean	SD	Mean	SD	Mean	SD	Mean	SD
40-44	128	55.29	28.53	39.98	31.86	32.56	31.51	24.94	26.30
45-49	157	61.14	29.96	43.84	35.34	24.49	32.11	25.63	31.24
50-54	156	67.73	29.13	45.01	34.32	29.03	33.98	25.68	27.40
55-59	173	74.21	22.17	46.80	34.21	35.08	38.00	31.85	30.37
60-64	158	81.93	25.97	30.50	37.32	35.82	42.93	32.45	37.06
65-69	176	88.75	22.03	25.98	36.94	40.62	46.24	29.49	40.91
70-74	106	88.38	24.42	25.30	37.63	32.79	45.84	34.29	43.30
75-80	75	91.89	22.25	27.82	40.97	29.35	43.83	34.92	46.00
All Respondents	1154	72.86	29.10	37.84	36.36	32.05	38.49	28.92	34.12
Coverage from Literature Review		95 percent		15 percent*		33 percent *		17 percent*	

* Reflects Percentage of Coverage of Medicare Beneficiaries.

Table Five: Expectations as to Insurance Premiums for Respondents in Treatments B and Treatment C*

	N	p10	p25	Median	p75	p90	Mean	SD	Ranges Suggested in Anchoring for Treatment C**
Treatment B									
Total Medicare Premiums	573	30	98	120	250	500	210.8	252.6	*n.a.*
Medigap Premiums	568	0	0	50	150	206	105.7	173.3	*n.a.*
Employer Sponsored Premiums	566	0	0	55	200	450	149.1	254.8	*n.a.*
Treatment C									
Total Medicare Premiums	562	50	100	135	200	350	259.2	1018.7	*$96 to $115 for typical basic Medicare Premium plus an average of $40 for typical Part D Prescription Drug Coverage*
Medigap Premiums	229	25	50	100	185	250	134.6	141.3	*Considerable variation in policy types, but majority of monthly medigap premiums range between $50 and $200*
Employer Sponsored Premiums	342	0	80	165	200	330	300.1	1579.0	*Average Participant Costs for Those Over 65 roughly $167*

* Estimated Requested Only for Respondents Who Indicate Some Possibility of Maintaining Insurance Coverage at Some Point in Retirement.

** See Appendix B for Additional Detail on Anchoring.

Table Six: Average Monthly Cost Estimates

	N	p10	p25	Median	p75	p90	Mean	SD	Suggested Ranges from Literature Review
By Treatment									
Treatment A	535	20	75	200	400	700	598.1	6916.6	
Treatment B	577	33	83	200	417	717	345.2	466.8	
Treatment C	565	30	98	217	400	633	389.0	1439.8	*Based on a benchmarking range between median and 75 percentile esimates, our literature review suggests a target range of expected retiree health care expense from $215 to $330 a month in 2010 but rising to a range from $274 to $413 a month in 2020.*
By Age Cohort									
40-44	204	45	83	200	417	900	365.8	466.8	
45-49	213	27	90	225	500	770	560.2	2070.8	
50-54	232	25	85	200	450	700	335.8	473.7	
55-59	247	43	100	225	467	700	926.9	10213.5	
60-64	255	20	92	200	400	700	299.0	357.7	
65-69	253	27	72	155	300	505	279.2	464.1	
70-74	164	15	50	150	305	500	235.1	356.4	
75-80	109	35	98	217	350	600	291.4	393.7	
All Respondents	1677	27	83	200	400	700	440.6	4011.5	

Table Seven: Lump Sum Estimates

	N	p10	p25	Median	p75	p90	Mean	SD	Suggested Ranges from Literature Review
By Treatment									
Treatment A	531	650	10,000	50,000	200,000	500,000	3,489,643.5	87689267.5	*Using a range of conservative median and 75 percentile values, our literature review suggests lump sum estimates for 2010 in the range of $65,000 to $118,000 for men would be a plausible, conservative reading of expert views (based on the lower-end of the EBRI median and 75th percentile estimates) with something more on the order of $93,000 to $137,000 being a plausible reading for woman, ranges roughly consistent though perhaps a bit lower than the targets suggested in other studies cited above." Those planning on retirement in 2020, the lower bounds of these lump sum estimates would increase to $108,000 for men and $156,000 for woman.*
Treatment B	568	500	10,000	45,000	150,000	500,000	294,073.4	3122465.2	
Treatment C	561	500	7,000	50,000	150,000	500,000	493,404.4	6339325.7	
By Age Cohort									
40-44	201	1,200	10,000	50,000	150,000	600,000	262,927.1	1156264.0	
45-49	211	900	5,000	35,000	200,000	750,000	659,895.3	6283425.7	
50-54	229	600	7,000	45,000	150,000	500,000	233,589.7	787711.6	
55-59	246	500	10,000	50,000	150,000	500,000	6,907,215.1	129215114.8	
60-64	253	300	5,000	50,000	150,000	400,000	224,266.3	1264231.0	
65-69	250	350	7,500	30,000	150,000	425,000	169,440.2	579634.2	
70-74	163	200	10,000	50,000	150,000	500,000	1,543,706.4	13883700.3	
75-80	107	50	5,000	50,000	150,000	500,000	135,409.9	267178.7	
Combined	1660	500	10,000	50,000	150,000	500,000	1,384,054.3	49818364.0	

Table Eight: Average Monthly Cost Estimates by Gender, Health Status, Income Quintiles and Financial Sophistication

	N	p10	p25	Median	p75	p90	Mean	SD
By Income Quintile								
Quintile 1	345	0	30	100	200	392	454.6	5266.7
Quintile 2	287	40	90	200	361	650	611.2	7560.2
Quintile 3	408	35	100	220	400	620	317.6	408.0
Quintile 4	278	50	100	250	467	700	361.3	508.4
Quintile 5	356	70	167	350	583	900	487.3	564.9
By Gender								
Male	729	25	90	217	467	758	436.1	1267.7
Female	948	30	80	190	361	600	444.8	5431.2
By Health Status (self reported)								
Excellent	151	40	100	300	500	1000	450.9	664.3
Very Good	646	40	100	220	400	667	619.2	6535.8
Good	601	33	90	200	400	658	324.0	484.9
Fair	222	10	45	150	361	650	291.3	431.4
Poor	56	0	33	150	417	767	352.6	617.7
By Financial Sophistication (self reported)								
Unsophisticated	545	23	83	200	417	667	572.2	6583.6
Medium	507	45	100	200	413	700	427.1	1455.4
Sophisticated	625	20	75	200	392	700	308.0	427.3

Table Nine: Examining the Correlates of Actual Lump Sum and Average Monthly Costs				
	Model 1	Model 2	Model 3	Model 4
	Actual Lump Sum Trimmed	Average Monthly Costs Trimmed	Log Lump Sum Trimmed	Log Average Monthly Costs Trimmed
Female	-53366.448***	-37.714**	-0.069	-0.005
	(15786.47)	(16.62)	(0.18)	(0.08)
Age Cohorts	-6100.450*	-10.795***	-0.046	-0.036*
	(3509.77)	(4.16)	(0.04)	(0.02)
Income Quintiles	35258.401***	51.620***	0.455***	0.301***
	(7357.10)	(6.17)	(0.07)	(0.04)
Health Status	7202.712	10.014	-0.093	-0.068
	(9223.52)	(9.64)	(0.11)	(0.06)
Educational Attainment	11174.503***	10.872***	0.190***	0.032
	(4026.04)	(3.99)	(0.04)	(0.02)
Constant	-34600.688	55.919	7.162***	4.108***
	(57482.99)	-52.324	-0.592	-0.273
Observations	1637	1654	1635	1654
Adjusted R^2	0.066	0.09	0.115	0.115
F	17.176	25.301	27.077	26.251
Standard errors in parentheses				
Each model utlizes OLS to estimate the coefficients.				
$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$				

Table Ten: Willingness to Pay for Protection Against Three Risks								
	N	p10	p25	Median	p75	p90	Mean	SD
Protection Against High Costs from Personal Health Experience	834	30	75	150	300	600	573.5	4510.7
Protection Against High Costs Unanticipate Inflation in Medical Costs	833	20	50	125	250	500	341.0	1364.6
Protection Against High Costs form Adverse Policy Changes	833	10	50	120	250	500	441.9	3434.2

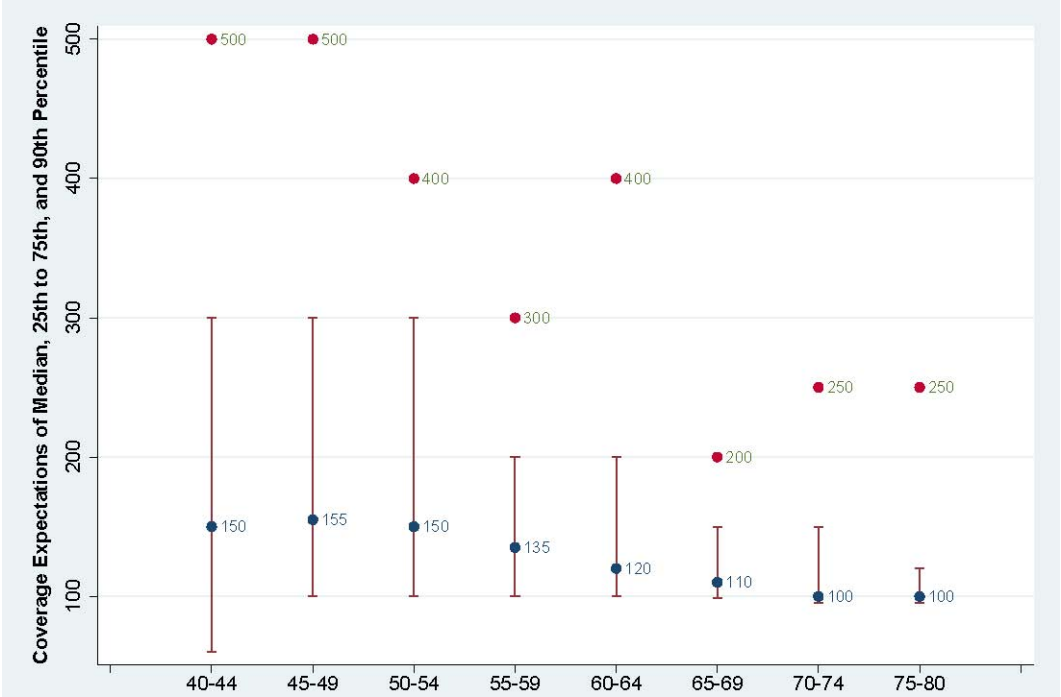

Figure One: Expectations as to Medicare Premiums by Age for Treatments B & C

Figure Two: Average Monthly Cost Estimates by Age Cohort

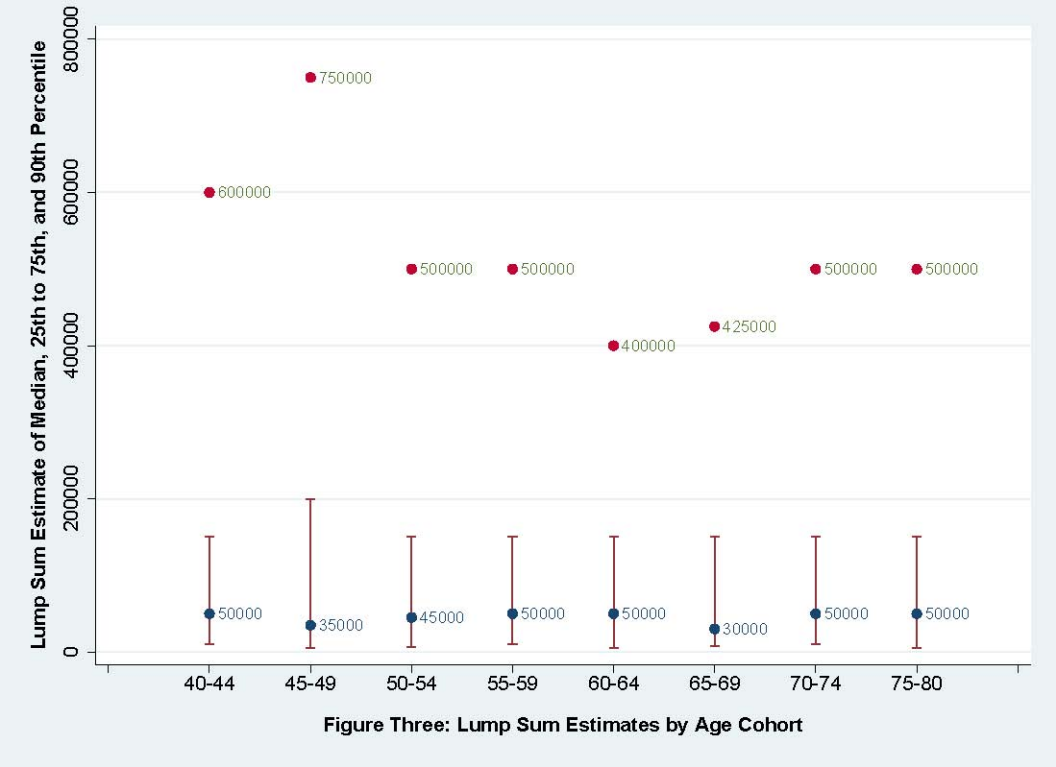

Figure Three: Lump Sum Estimates by Age Cohort

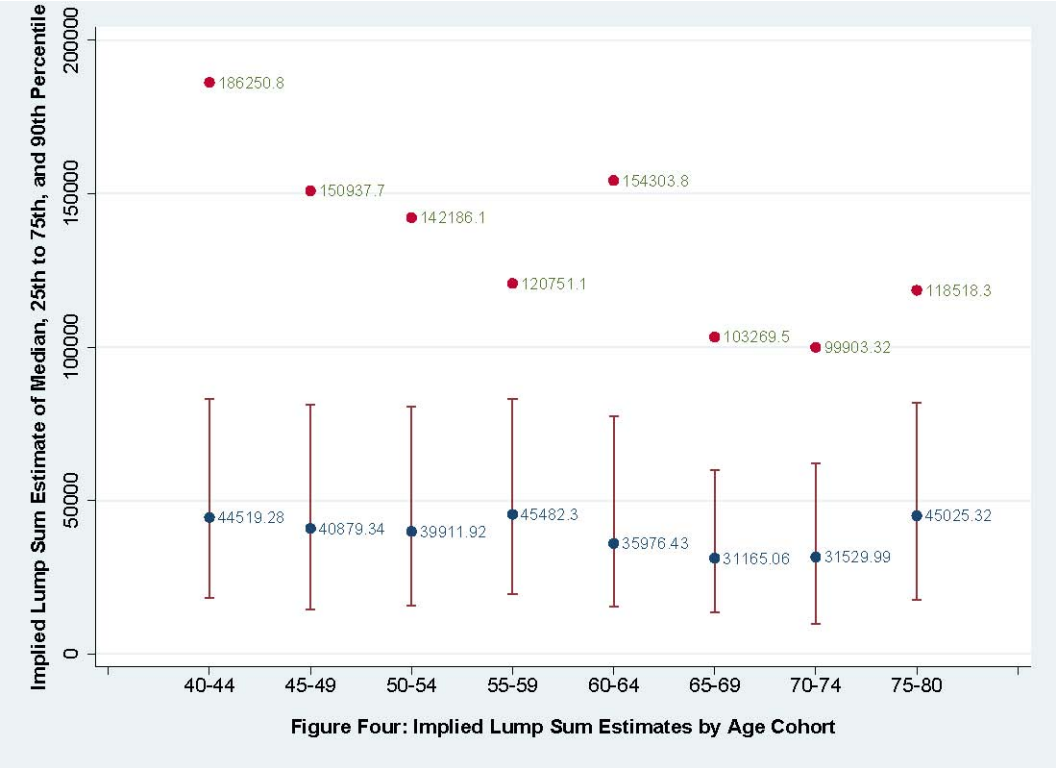

Figure Four: Implied Lump Sum Estimates by Age Cohort

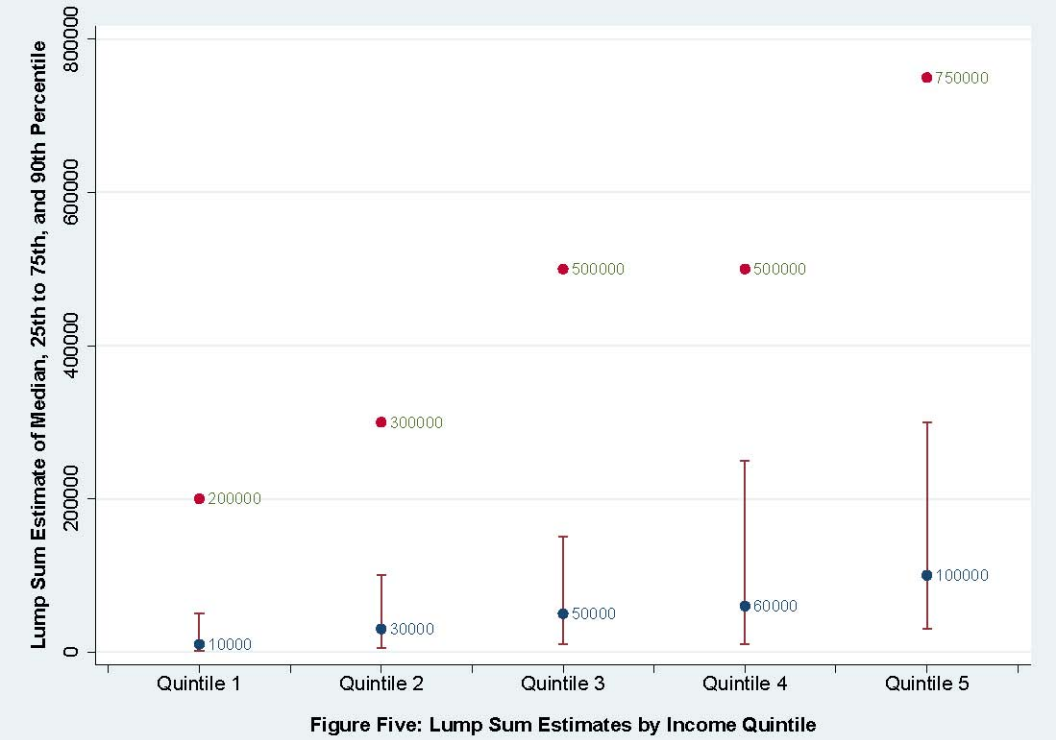

Figure Five: Lump Sum Estimates by Income Quintile

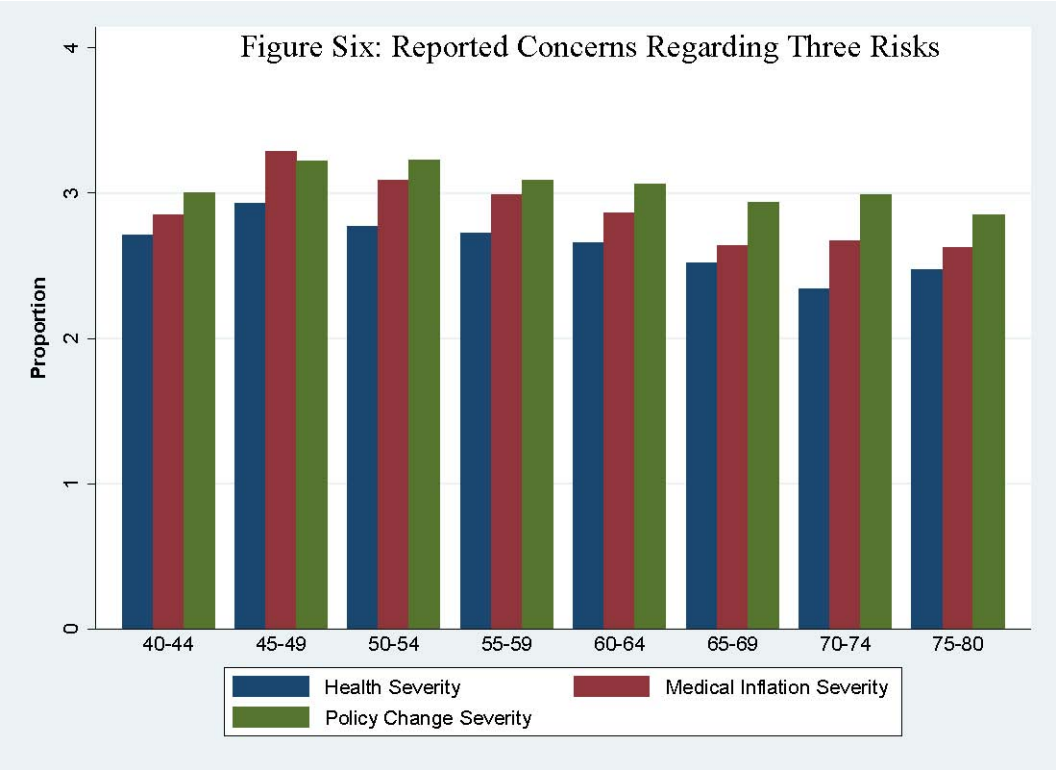

Figure Seven: Expectations on Budget Increases

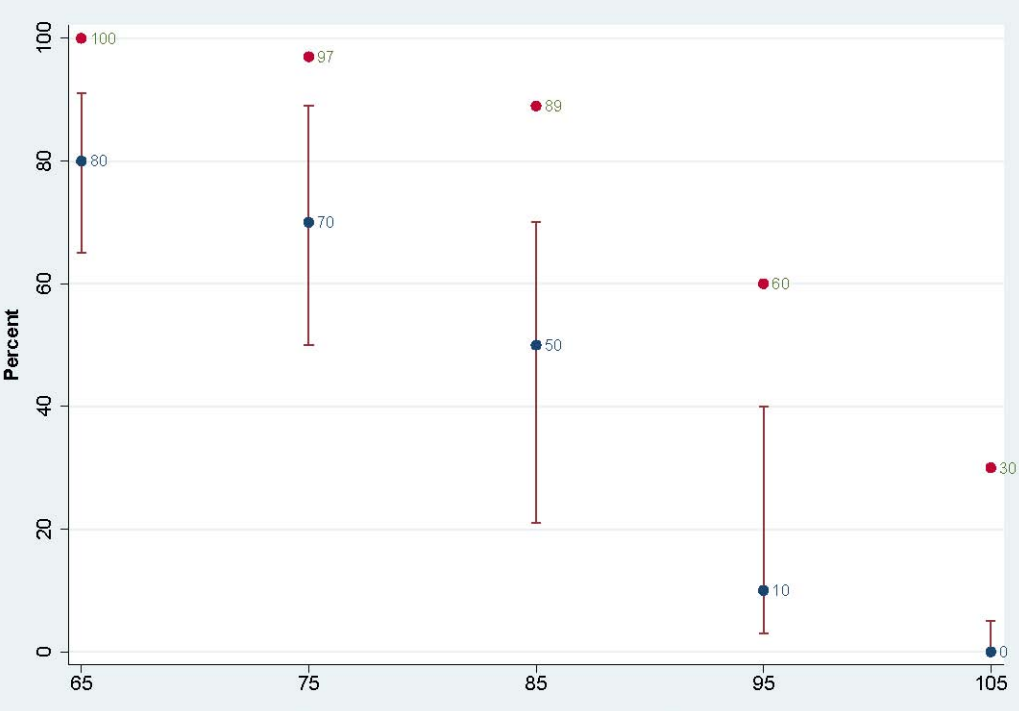

Figure Eight: Expected Likelihood of Survival Past Various Ages