Published in final edited form as:

Health Aff (Millwood). 2013 May ; 32(5): 873–881. doi:10.1377/hlthaff.2012.1230.

Supplemental Coverage Associated With More Rapid Spending Growth For Medicare Beneficiaries

Ezra Golberstein,

Division of Health Policy & Management, School of Public Health, University of Minnesota

Kayo Walsh,

Department of Health Care Policy, Harvard Medical School

Yulei He, and

Associate Professor of Health Care Policy, Harvard Medical School

Michael E. Chernew, PhD

Professor of Health Care Policy, Harvard Medical School

Abstract

Lowering both Medicare spending and the rate of Medicare spending growth is important for the nation's fiscal health. Policy makers in search of ways to achieve these reductions have looked at the role that supplemental coverage for Medicare beneficiaries plays in Medicare spending. Supplemental coverage makes health care more affordable for beneficiaries but also makes beneficiaries insensitive to the cost of their care, thereby increasing the demand for care. Ours is the first empirical study to investigate whether supplemental Medicare coverage is associated with higher rates of spending growth over time. We found that supplemental insurance coverage was associated with significantly higher rates of overall spending growth. Specifically, employer-sponsored and self-purchased supplemental coverage were associated with annual total spending growth rates of 7.17 percent and 7.18 percent, respectively, compared to 6.08 percent annual growth for beneficiaries without supplemental coverage. Results for Medicare program spending were more equivocal, however. Our results are consistent with the belief that current trends away from generous employer-sponsored supplemental coverage and efforts to restrict the generosity of supplemental coverage may slow spending growth.

More than 90 percent of beneficiaries in traditional fee-for-service Medicare have some form of supplemental coverage.^{1,2} This coverage comes from a variety of sources, including employer-sponsored plans; individually purchased plans known as “Medigap” plans; Medicaid coverage for qualifying Medicare beneficiaries, who are often referred to as “dual eligibles”; and supplemental coverage from other public sources, such as the department of Veterans Affairs.¹ In addition, instead of participating in traditional fee-for-service Medicare, many beneficiaries choose to enroll in Medicare Advantage plans, which are private plans—including managed care plans—that some people prefer to traditional Medicare.

Supplemental coverage helps insulate Medicare beneficiaries from the cost of their care, thus making it more affordable at the point of service. For example, some supplemental plans cover high-deductible payments for inpatient care and the 20 percent cost sharing for physician and other outpatient services that is characteristic of the standard fee-for-service Medicare benefit package.

However, this additional financial protection for beneficiaries comes at a cost to the Medicare program, which is responsible for paying the majority of provider fees that are not paid for by beneficiaries or supplemental insurers. Beneficiaries with supplemental coverage

have higher levels of overall medical spending compared to those without such coverage, because of a combination of moral hazard and adverse selection. In the health care context, moral hazard is the use of additional services in response to reduced levels of cost sharing, and adverse selection is the enrollment of people with relatively high expected health care costs into generous insurance coverage such as that provided by Medicare supplemental insurance plans.

Although both factors help explain the higher spending by beneficiaries who have supplemental coverage, the moral hazard aspect of the problem is of greater concern from the perspective of containing Medicare spending. The presence of moral hazard implies that overall Medicare program spending is higher specifically because of the additional financial protections afforded by supplemental coverage. That is, such coverage makes beneficiaries insensitive to the cost of care and thereby “induces” demand for services. And research does show that this kind of hazard is at work in Medicare supplemental coverage.³

The percentage of firms that offer health benefits to their retirees who are eligible for Medicare and the value of the offered benefits have both been declining.^{4,5} However, these reductions may be offset by an increase in the number of people enrolling in Medigap or Medicare Advantage plans.⁶ Thus, the cost effects of supplemental coverage remain a concern for policy makers in light of what many people view as unsustainable levels and growth of Medicare spending.

This concern has been reflected in policy proposals that have drawn bipartisan support in recent years.⁷ For example, policy proposals aimed at restricting Medigap plans from offering first-dollar coverage—that is, coverage for which beneficiaries pay no out-of-pocket costs—have been offered in recent years by Sens. Tom Coburn (R-OK) and Joe Lieberman (I-CT)⁸ and by President Barack Obama’s National Commission on Fiscal Responsibility and Reform, also known as the Simpson-Bowles Commission.⁹

The Affordable Care Act also directed insurers to implement at least nominal cost sharing for physician services under the two most popular Medigap plans. These plans currently offer first dollar coverage. Another option involves levying a tax on insurers that offer relatively generous supplemental coverage, which would presumably be passed along to consumers in the form of higher premiums for those plans. The higher premiums would make supplemental coverage less attractive financially by making beneficiaries bear some of the added costs that result from moral hazard and that are currently borne by the Medicare program.¹⁰

Some policy proposals would combine the separate deductibles for Medicare Parts A and B into a single deductible that is lower than the current Part A deductible but higher than the current Part B deductible.⁹ That change might also have the effect of making supplemental coverage less valuable to beneficiaries.

Previous research suggests that these types of policy changes might reduce both levels of Medicare spending for people with supplemental coverage and the number of Medicare beneficiaries with such coverage.¹⁰ However, a more fundamental goal is slowing the trajectory of spending growth for Medicare beneficiaries, and research shows that initiatives aimed at lowering the level of spending may not slow the rate of spending growth.^{11–14}

There is a great deal of literature on factors that contribute to higher levels of Medicare spending; in comparison, much less is known about the factors associated with the rates of growth of that spending. The relationship between spending growth and supplemental coverage in particular is difficult to predict, and research into this question is difficult as well.

Over time, spending growth is associated with the adoption of medical technology, and people with more generous supplemental insurance are more likely than people with less generous coverage to use new services as they are introduced. Yet because people with more generous supplemental insurance have higher initial levels of spending, their insurance will lead to faster spending growth only if the increase in use is even greater than the difference in the base spending between the two groups.

For instance, a 5 percent spending growth rate for a beneficiary with \$5,000 in annual spending would imply the spending of an additional \$250 per year. For a beneficiary with \$10,000 in annual spending to have a growth rate of more than 5 percent, his or her annual spending would need to increase by more than \$500 per year.

In addition, people without supplemental insurance should have relatively slower spending growth because if their spending rose at the same rate as that of people with supplemental coverage, their out-of-pocket spending would consume an ever-greater share of their total income. That situation could not be sustained.

Finally, changes in the generosity of supplemental coverage or in the composition of the populations with and without supplemental coverage over time could affect the relationship between supplemental coverage and spending growth. However, no previous empirical research has investigated whether or not supplemental Medicare coverage is associated with higher rates of spending growth over time. That is the question we addressed in our study.

Study Data and Methods

Data

Our data came from the Medicare Current Beneficiary Survey for the period 1992–2005. We chose 2005 as the last year of our study period to avoid any confounding that might occur because of the introduction of Medicare Part D prescription drug benefits in 2006.

The Medicare Current Beneficiary Survey is an annual survey of a nationally representative sample of Medicare beneficiaries. The survey collects detailed data on sociodemographic characteristics, specific health conditions, and disability, and it is linked to spending data from Medicare claims files. The major strength of the survey for our purpose is that it represents the longest running sample of relevant data available and thus can be used to study long-term trends in rates of Medicare spending growth.

The 1992–2005 data included 175,937 total observations across all of the years in the period, with some beneficiaries being observed up to a maximum of four times because of the overlapping panel design of the survey. We excluded 29,663 people who qualified for Medicare because of disability so that we could focus the analysis on elderly beneficiaries. We excluded 25,737 other people who were enrolled in a Medicare health maintenance organization because we lacked good measures of annual expenditures for these beneficiaries. We excluded another 4,799 people who were not covered by Medicare Part A or Part B. And we excluded 131 people who lived in a mental health facility or an institution for the mentally retarded, as well as 508 people who had more than 100 percent of out-of-pocket spending because of data errors.

We also excluded 10,734 observations with missing information on covariates needed for our analysis. These exclusions yielded an analysis sample of 104,365 observations. Our measures of health care spending encompassed all-payer spending for all health services used in a given survey year, including payments from Medicare; beneficiaries' out-of-pocket payments; and other third-party payments, such as those from a supplemental insurer. For Medicare-covered services, these measures of spending came from Medicare claims data

that were linked to the survey respondents' self-reports of spending. For services not covered by Medicare, including prescription drugs in this period before the introduction of Medicare Part D, spending was based on respondents' self-reports. More details on the spending measures are available in Michael Chernew and colleagues' 2005 Health Affairs article.¹⁴

Analysis

Our analytic approach to estimating whether supplemental insurance was associated with steeper rates of spending growth was to estimate multivariate models that predicted annual spending in terms of other variables. The key predictor variables in the model were measures of supplemental insurance coverage, a linear time trend, and the interaction between supplemental insurance and the time trend. Our measure of supplemental coverage was a set of five indicator variables that reflected the source of coverage: individually purchased private coverage; employer-sponsored private coverage; Medicaid for people who were dually eligible for it and Medicare; other public coverage, such as coverage through the Department of Veterans Affairs, the Program of All-Inclusive Care for the Elderly, or a state-sponsored drug plan; and no supplemental coverage.

Consumers make decisions about whether to buy supplemental coverage in part based on how likely they think it is that they will use health services and what they expect their health care spending will be. Therefore, our models of annual spending included an extensive set of sociodemographic and health covariates to control for differences across people with different types of supplemental insurance. We interacted these covariates with the linear time trend to control for how the composition of the supplemental insurance groups changed over time.

The sociodemographic covariates included age, defined as indicators for ages 65–69, 70–74, 75–79, 80–84, or 85 and older; sex; and marital status. Race was defined as white, black, or other; we also included an indicator for Hispanic ethnicity. Education was defined as less than high school, high school diploma or GED only, some college, or college degree and above. Census region, family income, household size, and whether the respondent lived in an urban area were also included as sociodemographic covariates.

The health covariates included indicators for whether respondents reported ever being diagnosed with the following diseases or disorders: diabetes, cancer, coronary heart disease, stroke, Alzheimer's or other dementia, hypertension, osteoarthritis, lung disease, and mental or psychiatric conditions. Disability status was defined as having no disability; having a limitation only in the instrumental activities of daily living, such as housekeeping and shopping; or as having 1–2, 3–4, or five or more limitations in activities of daily living, such as bathing and eating.

Health covariates also included whether the respondent had ever been a smoker and body mass index, coded as underweight, normal weight, overweight, or obese. Respondents' self-rated health was another health covariate, coded as excellent or very good, good, or fair or poor. The final health covariate was an indicator of whether the respondent died in the same year as the survey.

Detailed information about our modeling approach is available in the online methodological Appendix.¹⁵ In brief, we used models designed to capture the skewed distribution of medical spending,¹⁶ and we used propensity score adjustments to further reduce confounding bias among categories of supplemental coverage in our models. Data management was conducted with the statistical software SAS, version 9.3. Data analysis was conducted with the statistical software Stata, version 11.2.

Limitations

This research design measured association but not necessarily causality. We were able to control for a broad set of observable characteristics that may have been associated with supplemental insurance choices and spending, but we were not able to control for unobserved characteristics that may have predicted both insurance choice and spending. Nonetheless, in the absence of randomized or quasi-experimental research designs, understanding the association between coverage and spending growth, with health status and demographic characteristics controlled for, is an important contribution to understanding the likely consequences of efforts to limit supplemental coverage.

Study Results

Sample Characteristics

The characteristics of the Medicare Current Beneficiary Survey analytic sample are described in Exhibit 1 (a complete listing of the sample's characteristics is available in the Appendix).¹⁵

The most common form of supplemental coverage was employer-sponsored coverage, followed by self-purchased coverage, Medicaid dual eligibility, and other public coverage.

We also included characteristics for the sample in the 1992 and 2005 survey waves in Exhibit 1 to illustrate the changes in the fee-for-service Medicare population over the study period. The proportion of beneficiaries with "other public" supplemental coverage was fairly constant over the study period, while the proportion with no supplemental coverage dropped slightly. However, the proportion with Medicaid dual eligibility and the share of beneficiaries with employer-sponsored coverage increased, while the share with self-purchased supplemental coverage decreased.

The increase in the percentage of respondents with employer-sponsored insurance from 1992 to 2005 seems contrary to the trend of fewer employers' offering supplemental coverage benefits.⁴ The apparent discrepancy was because the analytic sample excluded the Medicare Advantage population as a result of concerns about the reliability of the spending data, and this group grew steadily over the study period. If we included the Medicare Advantage population in the sample, the proportion with employer-sponsored coverage remained constant between 1992 and 2005, but the results regarding the relationship between supplemental coverage and spending growth were unchanged.

We also found trends in the study population toward having more chronic conditions but fewer disabilities. This pattern is consistent with evidence that chronic diseases have become less disabling, in large part because of improvements in medical care.^{15, 17}

Overall Spending

The main results for overall spending are displayed in Exhibit 2. The supplemental insurance variables and their interactions with the time trend were the key variables in our analysis. The coefficients for the supplemental coverage variables show the difference in annual spending between beneficiaries in each supplemental coverage category and those with no coverage in 1992. The interaction variables allowed us to model the rates of spending growth for each of the supplemental insurance groups, and the coefficients on these variables indicate the extent to which the supplemental coverage groups had different rates of spending growth in the study period, compared to beneficiaries with no supplemental coverage.

All of the supplemental insurance categories had significantly higher levels of spending than the category with no supplemental insurance after we controlled for all of the sociodemographic, disease, disability, and health behavior characteristics mentioned above. For example, in 1992 the group with employer-sponsored coverage spent \$460 more per beneficiary than the group with no supplemental coverage. This result was consistent with the prior literature, and the size of the spending difference between people with supplemental insurance and those with no supplemental insurance was within the range found in most existing studies.³

More important for this study, we also found that having supplemental insurance was associated with significantly higher rates of overall spending growth than having no supplemental insurance (Exhibit 2). The coefficients on the interaction terms of supplemental coverage group and time indicated that all of the supplemental coverage groups had higher rates of spending growth than the group with no supplemental coverage. All of those differences were statistically significant ($p < 0.01$). Exhibit 2 also presents the coefficients on the interactions between supplemental coverage group and time in terms of their predicted marginal effects, compared to the time trend for the group with no supplemental coverage.

Our model predicted that, when sociodemographic and health characteristics were held constant, between 1992 and 2005 beneficiaries with no supplemental coverage had an annual average spending growth rate of 6.08 percent (data not shown). The predicted average spending growth rate for the group with employer-sponsored coverage was 7.17 percent, with \$96 more spending per year than the group with no coverage. For the group with self-purchased coverage, the predicted growth rate was 7.18 percent, and spending was \$86 higher per year than in the group without coverage. Other public insurance was associated with an average annual spending growth rate of 6.80 percent and \$84 higher spending per year, while Medicaid dual eligibility was associated with a growth rate of 6.12 percent and \$70 higher spending per year.

We also estimated models in which the outcome was spending paid for exclusively by the Medicare program. The results of these models suggested a weaker association of employer-sponsored and “other public” supplemental coverage with Medicare spending growth.

Specifically, annual Medicare spending for those with no supplemental coverage grew by 6.27 percent a year on average, which was comparable to the trend for overall spending. Rates of Medicare spending growth were only slightly higher for those with employer-sponsored coverage, at 6.37 percent a year, and for those with “other public” coverage the figure was 6.40 percent a year. Rates of Medicare spending growth were highest for those with self-purchased coverage, at 7.09 percent a year—which was also comparable to the trend for overall spending. Rates of Medicare spending growth were lowest for Medicaid dual eligibles, at 4.59 percent a year.^{15, 18}

Together with our main results of higher growth rates in overall spending, particularly for beneficiaries with employer-sponsored and “other public” supplemental coverage, these results suggest that out-of-pocket and other third-party spending was growing faster than Medicare spending. The difference may reflect lower spending growth for services such as prescription drugs for beneficiaries without supplemental drug coverage, which included those without any supplemental coverage and most beneficiaries with self-purchased coverage.¹⁹

Relationship of Coverage to Spending Growth

To illustrate the magnitude of the relationship between supplemental coverage and overall spending growth more clearly, we plotted the predicted average annual spending over time by supplemental coverage category, holding all sociodemographic and health characteristics constant (Exhibit 3). These results illustrate that even seemingly small differences in rates of spending growth can have substantial effects over time. The \$360 difference in predicted spending in 1992 between the group with self-purchased supplemental coverage group and the group with no coverage more than quadrupled in 2005, to \$1,562. The difference in predicted annual spending between the group with employer-sponsored coverage and the group with no coverage nearly quadrupled, from \$460 in 1992 to \$1,806 in 2005.

The results in Exhibits 2 and 3 could be explained by a given type and generosity of supplemental insurance being associated with faster spending growth, by increased generosity of supplemental plans over time, or by a combination of the two. Which explanation is the right one is important: If the results were solely the result of increased generosity of supplemental plans over time, then policies that restricted the generosity of supplemental coverage might only reduce levels of spending and not alter the trajectory of spending growth.

Previous research shows that employer-sponsored health benefits became less generous during the study period.^{20, 21} Therefore, our results for employer-sponsored supplemental coverage were not likely to be explained by increases in the generosity of supplemental coverage over time.

Less is known about trends in the generosity of self-purchased supplemental coverage during our study period. Even though Medigap plans have standard benefit packages, that standardization was introduced in 1992. Prior to that year, Medigap benefit generosity was quite variable. Because people generally retained their pre-1992 Medigap plans even after standardization was introduced, it is difficult to characterize overall trends in benefit generosity.³

However, evidence suggests that the most generous Medigap plans were the most popular standardized Medigap plans between 1992 and 2005,^{22, 23} and some research has found that the most common Medigap plans before 1992 had benefit structures that were similar to the more generous standardized Medigap plans.²⁴ Thus, our results for self-purchased supplemental coverage were also not likely to be fully explained by increases in the generosity of coverage over time.

Addressing Causality

Our primary analytic concern was that unmeasured characteristics of the supplemental coverage groups, rather than a causal effect of supplemental coverage, might explain the differences in spending growth. Our models addressed this concern by controlling for a rich array of covariates and by using propensity score adjustments.

In a sensitivity analysis we found that controlling for health conditions and disability significantly narrowed the gap in spending growth between people who had supplemental coverage and those who did not, compared to a model in which we did not control for health conditions and disability. The narrowing of that gap suggests that these individual characteristics were correlated with spending growth.¹⁵ However, we could not be sure that these covariates captured all of the potential confounding, and we therefore do not claim that our results measure causality.

These concerns are somewhat allayed by our results for overall spending growth in the groups with employer-sponsored and self-purchased supplemental coverage. Specifically, adverse selection was less likely to be an issue for those with employer-sponsored coverage because most workers will accept employer-sponsored coverage, and employers will offer it to all employees regardless of health status or preferences for coverage or care.²⁵ If unmeasured traits across supplemental coverage groups were driving our results, we would expect to see faster spending growth in the group with more adverse selection, those with self-purchased coverage.

We did not see that in the overall spending results. Beneficiaries with self-purchased supplemental coverage had almost the same rates of spending growth as those with employer-sponsored coverage. However, we did observe faster Medicare program spending growth among those with self-purchased coverage than among those with employer-sponsored coverage.

Discussion

The intense fiscal pressures imposed by Medicare spending growth make it necessary for policy makers to consider all interventions that might slow the rate of this growth. Even small decreases in this rate would have major consequences for the program's long-term solvency.²⁶

The study reported here is the first to assess the relationship between supplemental Medicare coverage and the rate of spending growth. We found that beneficiaries with supplemental coverage had significantly higher rates of overall spending growth between 1992 and 2005, after we controlled for an extensive set of sociodemographic and health characteristics. If our results represent causal estimates, they suggest that policies limiting the generosity of supplemental coverage might have the potential to slow spending growth for Medicare beneficiaries.

An important limitation of this analysis, however, is that although we could control for a wide range of important individual characteristics and make further statistical adjustments, our research design did not allow us to make strong causal inferences about the effect of supplemental coverage on rates of spending growth. Controlling for important individual characteristics reduced the differences in spending growth across supplemental coverage groups, but it is possible that other, unmeasured characteristics of the individuals in each supplemental coverage group accounted for some of the remaining differences in spending growth.

However, we did find that rates of overall spending growth were similar between beneficiaries with employer-sponsored supplemental coverage and those with self-purchased coverage. To the extent that employer-sponsored coverage was subject to less selection bias than self-purchased supplemental coverage, as suggested by prior research,²⁵ we have more confidence that our results were not driven purely by unobserved factors related to insurance choice than we would have if employer-sponsored coverage and self-purchased supplemental coverage had similar selection biases.

The results for Medicare-specific spending growth were more ambiguous than the results for overall spending. Future research that is able to deliver stronger causal evidence on the effects of supplemental insurance on overall and Medicare-specific spending growth will be valuable.

Our study distinguished between the presence of and the source of supplemental coverage, but it was not able to determine the generosity of supplemental coverage. Future research

that can identify the relationship between the design of supplemental benefits and spending growth will be useful for informing specific policies to reform Medicare supplemental coverage.

In addition, even if our results do represent causal effects, on their own they do not necessarily imply that policy makers should limit the generosity of supplemental coverage. Such policy decisions should reflect the value of supplemental coverage to beneficiaries, in terms of both the health benefits and the financial protection that supplemental insurance may provide to beneficiaries.

Conclusion

Medicare's rate of spending growth presents the greatest long-term threat to the nation's fiscal health, and thus all policy options to slow that growth rate should be taken seriously. Current evidence suggests that the lower cost sharing afforded by supplemental coverage leads to higher overall spending for the Medicare program.

Requiring premiums for supplemental coverage to reflect, as closely as possible, the full cost of the policies, including the added cost to the Medicare program, seems sensible. The results of this study suggest that the results of such a requirement would not only be lower spending for Medicare beneficiaries, but possibly also slower overall spending growth.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

This research was supported by the National Institute on Aging (Grant No. R01AG034417 and R01AG027312), and by the Robert Wood Johnson Foundation (Grant No. 70266).

Notes

1. Medicare Payment Advisory Commission. Health care spending and the Medicare program [Internet]. Washington (DC): MedPAC; 2012 Jun. [cited 2013 Apr 3]. (A Data Book). Available from: <http://www.medpac.gov/documents/Jun12DataBookEntireReport.pdf>
2. Laschober, M. Trends in Medicare supplemental insurance and prescription drug benefits, 1996–2001: data update [Internet]. Menlo Park (CA): Kaiser Family Foundation; 2004 Jun. [cited 2013 Apr 3]. Available from: <http://www.kff.org/medicare/upload/Trends-in-Medicare-Supplemental-insuranceand-Prescription-Drug-Benefits-1996-2001Data-Update.pdf>
3. Atherly A. Supplemental insurance: Medicare's accidental stepchild. *Med Care Res Rev.* 2001; 58(2):131–61. [PubMed: 11398644]
4. Kaiser Family Foundation, Health Research and Educational Trust. Employer health benefits: 2012 annual survey [Internet]. Menlo Park (CA): KFF; 2012. [cited 2013 Apr 3]. Available from: <http://ehbs.kff.org/pdf/2012/8345.pdf>
5. Whitmore, H.; Pickreign, J.; Gabel, J. Survey of retiree health benefits, 2005: a chartbook. New York (NY): Commonwealth Fund; 2007.
6. Kaiser Family Foundation. Medigap reforms: potential effects of benefit restrictions on Medicare spending and beneficiary costs [Internet]. Menlo Park (CA): KFF; 2011 Jul. [cited 2013 Apr 3]. Available from: <http://www.kff.org/medicare/upload/8208.pdf>
7. Congressional Budget Office. Reducing the deficit: spending and revenue options [Internet]. Washington (DC): CBO; 2011 Mar. [cited 2013 Apr 3]. Available from: <http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/120xx/doc12085/03-10-educingthedeficit.pdf>

8. Lieberman, Coburn T. Coburn reveal bipartisan proposal to save Medicare, reduce debt [Internet]. Washington (DC): Senate; 2011 Jun 28. [cited 2013 Apr 3]. Available from: <http://www.coburn.senate.gov/public/index.cfm/2011/6/lieberman-coburn-reveal-bipartisanproposal-to-save-medicare-reducedebt>
9. National Commission on Fiscal Responsibility and Reform. The moment of truth: report of the National Commission on Fiscal Responsibility and Reform [Internet]. Washington (DC): White House; 2010 Dec. [cited 2013 Apr 3]. Available from: http://www.fiscalcommission.gov/sites/fiscalcommission.gov/files/documents/TheMomentofTruth12_1_2010.pdf
10. Jacobson, G.; Neuman, T.; Rice, T.; Desmond, K.; Huang, J. Medigap reform: setting the context [Internet]. Menlo Park (CA): Kaiser Family Foundation; 2011 Sep. [cited 2013 Apr 3]. (Issue Brief). Available from: <http://www.kff.org/medicare/upload/8235-2.pdf>
11. Chernew ME, Sabik L, Chandra A, Newhouse JP. Ensuring the fiscal sustainability of health care reform. *N Engl J Med*. 2010; 362(1):1–3. [PubMed: 20007553]
12. Chernew ME, Sabik L, Chandra A, Newhouse JP. Would having more primary care doctors cut health spending growth? *Health Aff (Millwood)*. 2009; 28(5):1327–35. [PubMed: 19738248]
13. Riley GF. Long-term trends in the concentration of Medicare spending. *Health Aff (Millwood)*. 2007; 26(3):808–16. [PubMed: 17485760]
14. Chernew ME, Goldman DP, Pan F, Shang B. Disability and health care spending among Medicare beneficiaries. *Health Aff (Millwood)*. 2005; 24(Suppl 2):w5-r42–52.10.1377/hlthaff.w5.r42
15. To access the Appendix, click on the Appendix link in the box to the right of the article online.
16. Accounting for the non-negativity and skewness of annual medical spending distributions generally requires the use of a nonlinear model to accurately model the non-normal spending distribution. In all of our models we used the Medicare Current Beneficiary Survey weights, and we adjusted the standard errors to account for the complex survey design. When calculating predictions from the models, we used smearing factors to adjust for the nonlinear retransformation.
17. Cutler, DM.; Landrum, MB.; Stewart, K. Intensive medical care and cardiovascular disease disability reductions. Chapter 6. In: Cutler, DM.; Wise, DA., editors. *Health at older ages: the causes and consequences of declining disability among the elderly*. Chicago (IL): University of Chicago Press; 2008. p. 191-222.
18. The fact that we did not see a significant coefficient on Medicare-only spending growth for dual eligible may reflect the trends toward lower provider payments for dual eligible over the course of the study period, as described in chapter 3 of Medicare Payment Advisory Commission. Report to the Congress: new approaches in Medicare [Internet]. Washington (DC): MedPAC; 2004 Jun [cited 2013 Apr 4]. Available from: http://www.medpac.gov/documents/June04_Entire_Report.pdf
19. Laschober MA, Kitchman M, Neuman P, Strabic AA. Trends in Medicare supplemental insurance and prescription drug coverage, 1996–1999. *Health Aff (Millwood)*. 2002; (21):w127–38.10.1377/hlthaff.w2.127 [PubMed: 12703569]
20. Kaiser Commission on Medicaid and the Uninsured. Retiree health trends and implications of possible Medicare reforms [Internet]. Washington (DC): The Commission; 1997 Sep. [cited 2013 Apr 4]. Available from: http://www.kff.org/medicare/1318-retiree_r.cfm
21. Buchmueller T, Johnson RW, Lo Sasso AT. Trends in retiree health insurance, 1997–2003. *Health Aff (Millwood)*. 2006; 25(6):1507–16. [PubMed: 17102173]
22. McCormack LA. Medigap reform legislation of 1990: have the objectives been met? *Health Care Financ Rev*. 1996; 18(1):157–74. [PubMed: 10165030]
23. America's Health Insurance Plans. Trends in Medigap policies December 2004 to December 2006 [Internet]. Washington (DC): AHIP; 2008 Mar. [cited 2013 Apr 4]. Available from: <http://www.ahip.org/pdfs/MedigapTrendReport.pdf>
24. Rice T, Thomas K. Evaluating the new Medigap standardization regulations. *Health Aff (Millwood)*. 1992; 11(1):194–207. [PubMed: 1577375]
25. Ettner SL. Adverse selection and the purchase of Medigap insurance by the elderly. *J Health Econ*. 1997; 16(5):543–62. [PubMed: 10175630]
26. Boards of Trustees. 2012 annual report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds [Internet]. Washington (DC): The

Boards; 2012. [cited 2013 Apr 4]. Available from: http://www.treasury.gov/resourcecenter/economic-policy/ssmedicare/Documents/TR_2012_Medicare.pdf

EXHIBIT 3.

Average Health Care Spending By Supplemental Coverage Group And Year

SOURCE Authors' analysis of data from the 1992–2005 Medicare Current Beneficiary Surveys. **NOTE** Spending estimates were adjusted for all of the characteristics described in the text.

EXHIBIT 1

Characteristics Of The Medicare Current Beneficiary Survey Sample, 1992–2005

Characteristic	1992–2005		1992 only		2005 only	
	Number	Percent	Number	Percent	Number	Percent
AGE						
65–69	22,161	21.23	2,476	29.40	1,437	20.32
70–74	22,403	21.47	1,542	18.31	1,431	20.73
75–79	20,726	19.86	1,532	18.19	1,366	19.79
80–84	20,575	19.81	1,520	18.05	1,377	19.95
85 and older	18,400	17.63	1,352	16.05	1,291	18.70
SEX						
Male	42,950	41.15	3,400	40.37	2,944	42.65
Female	61,415	58.85	5,022	59.63	3,958	57.35
RACE OR ETHNICITY						
White	92,871	88.99	7,523	89.33	6,089	83.22
Black	9,444	9.05	774	9.19	589	8.33
Other	2,050	1.96	125	1.48	224	3.25
Hispanic ethnicity	5,902	5.66	400	4.75	435	6.30
EDUCATION						
Less than high school	40,908	39.20	3,860	45.83	2,107	30.33
High school diploma or GED	34,216	32.78	2,499	29.67	2,548	36.92
Some college	14,826	14.21	1,029	12.22	1,101	15.95
College degree and above	14,415	12.28	1,034	12.28	1,146	16.60
SUPPLEMENTAL COVERAGE TYPE						
Employer-sponsored	40,317	38.63	3,130	37.16	2,890	41.87
Self-purchased	33,823	32.41	2,950	35.03	1,949	28.24
Medicaid	15,056	14.43	987	11.72	1,141	16.53
Other public	6,112	5.86	511	6.07	369	5.35
None	9,057	8.68	844	10.02	553	8.01

SOURCE Authors' analysis of data from the 1992–2005 Medicare Current Beneficiary Surveys. **NOTES** Summary statistics for all of the variables in our models are available in the online Appendix (see Note 15 In text). For the whole study period there were 104,365 beneficiaries. For 1992 there were 9,159, and for 2005 there were 7,599. Percentages may not sum to 100 because of rounding.

EXHIBIT 2**Health Care Spending In 1992 And Spending Growth In 1992–2005, By Type Of Supplemental Coverage Variable**

	Coefficient	<i>p</i> value	Marginal effect
TYPE OF SUPPLEMENTAL COVERAGE			
Employer-sponsored	12.41	<0.001	\$460
Self-purchased	9.77	<0.001	\$360
Medicaid	18.41	<0.001	\$822
Other public	14.15	<0.001	\$552
Time trend	2.14	<0.001	— ^a
SUPPLEMENTAL COVERAGE GROUPS INTERACTED WITH TIME			
Employer-sponsored	0.88	<0.001	\$278/year
Self-purchased	0.78	<0.001	\$268/year
Medicaid	0.58	0.008	\$252/year
Other public	0.75	0.003	\$266/year

SOURCE Authors' analysis of data from the 1992–2005 Medicare Current Beneficiary Surveys. **NOTES** Coefficients and their statistical significance are from an ordinary least squares model with square-root transformation of annual all-payer spending from the Medicare Current Beneficiary Surveys. The model included the set of sociodemographic and health covariates and their interactions with the linear time trend, as described in the text. Marginal effects were calculated from the model's predictions. The marginal effects for the supplemental coverage groups are interpreted as the difference between average spending in 1992 for beneficiaries in each supplemental coverage group and average spending in 1992 for beneficiaries with no supplemental coverage. The marginal effects for the interactions between supplemental coverage groups and time are interpreted as the difference between the average annual spending increases for beneficiaries in each supplemental coverage group and average annual increases for beneficiaries with no supplemental coverage.

^aReference. The marginal effects for the interactions between supplemental coverage groups and time are relative to this reference category, which is the time trend for the no supplemental coverage group.