



December 2013

MEDICARE

Continuous Insurance before Enrollment Associated with Better Health and Lower Program Spending

GAO Highlights

Highlights of [GAO-14-53](#), a report to congressional requesters

Why GAO Did This Study

Nearly 7 million individuals aged 55 to 64—more than 18 percent of the pre-Medicare population—lacked health insurance coverage in the first half of 2012. Health insurance protects individuals from the risk of financial hardship when they need medical care, and uninsured individuals may refrain from seeking necessary care because of the cost. If they forgo medical care beforehand, these individuals may be in worse health and need costlier medical services after enrolling in Medicare compared to those with prior insurance.

GAO was asked to review the effects of having prior health insurance coverage on Medicare beneficiaries. This report examines the health status, program spending, and use of services of Medicare beneficiaries with and without continuous health insurance coverage before Medicare enrollment. To examine the effects of beneficiaries' prior insurance coverage, GAO used data from the Health and Retirement Study and Medicare claims to conduct two types of multivariate analysis. GAO predicted probabilities of beneficiaries' reporting being in good health or better and values for program spending and beneficiaries' use of services.

In comments on a draft of this report, the Department of Health and Human Services highlighted a key finding in GAO's report that beneficiaries with prior insurance used fewer or less costly medical services in Medicare compared with those without prior insurance.

View [GAO-14-53](#). For more information, contact James Cosgrove at (202) 512-7114 or cosgrovej@gao.gov.

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What GAO Found

Beneficiaries with continuous health insurance coverage for approximately 6 years before enrolling in Medicare were more likely than those without prior continuous insurance to report being in good health or better during the first 6 years in Medicare. In particular, having prior continuous insurance raised the predicted probability that a beneficiary reported being in good health or better by nearly 6 percentage points during the first 6 years in Medicare.

Beneficiaries with prior continuous insurance had lower total program spending during the first year in Medicare compared with those without prior continuous insurance. Specifically, during the first year in Medicare, beneficiaries with prior continuous insurance had approximately \$2,300, or 35 percent, less in average predicted total spending than those without prior continuous insurance. Similarly, beneficiaries with prior continuous insurance had lower institutional outpatient spending—for example, spending for services provided in a hospital outpatient setting—during the first and second years in Medicare compared with those without prior continuous insurance. In contrast, physician and other noninstitutional spending—spending for services provided by physicians, clinical laboratories, free-standing ambulatory surgical centers, and other noninstitutional providers—were similar during the early years in Medicare for beneficiaries with and without prior continuous insurance. However, during the fourth and fifth years in Medicare, beneficiaries with prior continuous insurance had physician and other noninstitutional spending that was about 30 percent higher than beneficiaries without prior continuous insurance.

Beneficiaries with prior continuous insurance had more physician office visits during the first 5 years in Medicare compared with those without prior continuous insurance. Specifically, during the first 5 years in Medicare, the difference in the average predicted number of physician office visits between beneficiaries with and without prior continuous insurance ranged from 1.3 to 2.5, or 23 to 46 percent. This utilization pattern may indicate that, even after Medicare enrollment, beneficiaries with prior continuous insurance continued to access medical services differently from those without prior continuous insurance. The number of institutional outpatient visits was similar for beneficiaries with and without prior continuous insurance for the first 5 years after Medicare enrollment.

Taken together, GAO's results show that, consistent with those of some other researchers, beneficiaries with prior continuous insurance used fewer or less costly medical services compared with beneficiaries without such insurance during the early years in Medicare, because they either were in better health or were accustomed to accessing medical services differently. This suggests that the extent to which individuals enroll in private insurance before age 65 has implications for beneficiaries' health status and Medicare spending.

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Abbreviations

CMS	Centers for Medicare & Medicaid Services
HRS	Health and Retirement Study

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December 17, 2013

The Honorable Max Baucus
Chairman
Committee on Finance
United States Senate

The Honorable Tom Harkin
Chairman
Committee on Health, Education, Labor, and Pensions
United States Senate

The Honorable Sheldon Whitehouse
United States Senate

Nearly 7 million individuals aged 55 to 64, the pre-Medicare population, lacked health insurance coverage in the first half of 2012, accounting for more than 18 percent of this population.¹ The health insurance coverage of pre-Medicare individuals may have implications for the Medicare program. Health insurance protects individuals against the risk of financial hardship when they need medical care, and uninsured pre-Medicare individuals may refrain from seeking necessary care because of the cost. As a result, these individuals may be in worse health and may require more costly medical services after Medicare enrollment compared with those who were insured. They also may, out of habit, continue to seek care differently. Previous research has produced inconclusive results concerning the extent to which, if at all, health insurance coverage before Medicare enrollment affects beneficiaries' spending and use of services after enrollment.²

¹Agency for Healthcare Research and Quality, *Table 1: Health Insurance Coverage of the Civilian Noninstitutionalized Population: Percent by Type of Coverage and Selected Population Characteristics, United States, First Half of 2012*, accessed July 12, 2013, http://meps.ahrq.gov/mepsweb/data_stats/summ_tables/hc/hlth_insr/2012/t1_a12.pdf.

²See, for example, Sandra L. Decker et al., "Health Service Use among the Previously Uninsured: Is Subsidized Health Insurance Enough?" *Health Economics* (October 2012); J. Michael McWilliams et al., "Medicare Spending for Previously Uninsured Adults," *Annals of Internal Medicine*, vol. 151, no. 11 (December 2009).

You asked us to provide information on the effects of Medicare beneficiaries' health insurance coverage before enrollment on their health status, spending, and use of services after enrollment.³ This report compares (1) the health status of Medicare beneficiaries with and without continuous health insurance coverage before enrollment and (2) the spending and use of services by Medicare beneficiaries with and without continuous health insurance coverage before enrollment.

To examine the effects of continuous health insurance coverage before Medicare (our independent variable of interest) on beneficiaries' health status, spending, and use of services (our dependent variables of interest), we used data from the Health and Retirement Study (HRS) and Medicare claims. HRS is a longitudinal panel study that surveys a representative sample of more than 26,000 Americans aged 50 and older every 2 years. From HRS, we obtained information from 1996 through 2010 on beneficiaries' self-reported health insurance coverage before Medicare, self-reported health status in Medicare, and demographic and health-related characteristics. From the Medicare data, we obtained information from 2001 through 2010 on multiple categories of beneficiaries' Medicare spending (total, institutional outpatient, and physician and other noninstitutional spending) and services (institutional outpatient and physician office visits).⁴

³For this report, we use "spending" to refer to Medicare program spending, not beneficiary spending.

⁴We worked with Acumen, LLC, to link beneficiaries' HRS data with their Medicare data and to conduct statistical analyses of their spending and use of services based on programming specifications provided by GAO. HRS, which is administered by the University of Michigan with support from the National Institute on Aging and the Social Security Administration, partners with Acumen to link Medicare beneficiaries' HRS data to their Medicare data and to provide analytical support for these linked data. Total spending refers to Medicare's spending per beneficiary for all covered services: durable medical equipment, home health, hospice, inpatient, institutional outpatient, physician and other noninstitutional, and skilled nursing facility. Institutional outpatient spending refers to Medicare's spending per beneficiary for outpatient services provided by institutional providers, such as hospital outpatient departments, rural health centers, renal dialysis facilities, and outpatient rehabilitation facilities. Physician and other noninstitutional spending refers to Medicare's spending per beneficiary for services provided by certain noninstitutional providers, such as physicians, clinical laboratories, and free-standing ambulatory surgical centers. Institutional outpatient visits refer to services provided by institutional providers on an outpatient basis. Physician office visits refer to services provided by noninstitutional providers, such as physicians. We also examined home health and institutional inpatient spending and hospital stays, but the number of beneficiaries with data for these categories was too low to provide meaningful results.

Unlike other studies, we performed our analysis for multiple groups of Medicare beneficiaries categorized by their length of Medicare enrollment. This approach enabled us to maximize the number of beneficiaries in our study groups and to measure the effects of prior continuous insurance on health status, spending, and use of services at several points in time after Medicare enrollment. About 4,500 HRS respondents met our initial criteria that they were in their first, second, third, fourth, fifth, or sixth year of Medicare enrollment between 2001 and 2010 and provided information about their insurance coverage in each of the three consecutive HRS surveys preceding Medicare enrollment. Unlike some other studies on this topic that have categorized prior insurance based on a single point in time, we categorized beneficiaries as having prior continuous insurance only if they reported receiving private insurance in the three consecutive HRS surveys before Medicare enrollment at age 65—a period spanning approximately 6 years.⁵ We excluded additional respondents who were enrolled in Medicare or Medicaid prior to Medicare enrollment at age 65 because their enrollment in these programs may have been due, at least in part, to poor health, which could bias our results.⁶ We also excluded respondents who had missing or incomplete data for important variables. Our final study sample size ranged from 3,201 to 1,152, depending on the analysis.

Our analyses of health status relied on HRS data that were provided every other year. Therefore, for these analyses, we defined three distinct groups of beneficiaries who were in (1) their first and second years of Medicare, (2) their third and fourth years of Medicare, and (3) their fifth and sixth years of Medicare from 2001 through 2010 (see fig. 1 in app. I). We classified beneficiaries as being in good health or better if they

⁵Approximately 80 percent of the beneficiaries in our study populations were categorized as having prior continuous insurance.

⁶Researchers have noted that because declines in health may lead to changes in employment and health insurance status, there is a strong possibility of a reverse relationship between health and health insurance status. See Decker et al., “Health Service Use among the Previously Uninsured,” 1155-1168.

reported in HRS that they were in excellent, very good, or good health.⁷ We used logistic regression analysis to estimate these beneficiaries' self-reported health status and predict probabilities of their reporting being in good health or better assuming both that they did and that they did not have prior continuous insurance.

Our analyses of spending and use of services used Medicare data that were available each year. Therefore, for these analyses, we defined five distinct groups of beneficiaries who were in their first, second, third, fourth, and fifth years of enrollment between 2001 through 2010 (see fig. 2 in app. I). We used generalized linear models to estimate beneficiaries' spending and use of services and predict values for these variables assuming both that they did and that they did not have prior continuous insurance.

We included the following independent variables in all of our analyses: prior continuous insurance, demographic characteristics (census division, education level, income, marital status, race, and sex), potential health risk factors (body mass index and smoking status), and ever having had a diagnosis of any of eight health conditions (arthritis, cancer, diabetes, heart problems, high blood pressure, lung problems, psychological problems, and stroke). For our analyses of spending and use of services, we also included a variable for the number of months a beneficiary was alive during the year to control for partial-year spending and use of services. In addition, for our spending analyses, we adjusted spending to calendar year 2011 constant dollars. Differences in health status, spending, and use of services that are discussed in the text of this report are based on results that were statistically significant at a 95 percent

⁷We chose to use the self-reported health status measure alone for its clarity of meaning and ease of interpretation. Some researchers have noted that beneficiaries without prior insurance have a higher rate of mortality than those with prior insurance—and that therefore mortality should be included in measures of health status. See Daniel Polsky et al., “Response to McWilliams Commentary: ‘Assessing the Health Effects of Medicare Coverage for Previously Uninsured Adults: A Matter of Life and Death?’” *Health Services Research*, vol. 45, no. 5 (October 2010). Other researchers have noted that combining the HRS self-reported health status measure with mortality may produce misleading results. See J. Michal McWilliams et al., “Commentary: Assessing the Health Effects of Medicare Coverage for Previously Uninsured Adults: A Matter of Life and Death?” *Health Services Research*, vol. 45, no. 5 (October 2010). We checked our sample to see if mortality was associated with not having prior continuous insurance and determined that there was not a consistent pattern and that inclusion of mortality in our health status analyses was not warranted.

confidence level. The tables display all of our analytical results—whether or not the results were statistically significant at conventional confidence levels—and indicate the level of statistical significance.

Our methodology had some important limitations. Because we used multiple exclusion criteria to define our study populations, our results might not be representative of the entire Medicare population. However, we compared certain characteristics of our study populations with those of the entire Medicare population and noted only small differences. In addition, like other researchers, we were limited in our ability to control for instances where individuals' poor health led to the loss of insurance rather than the loss of insurance leading to poor health. To address this issue, we controlled for potential health risk factors and diagnoses of eight health conditions in all of our analyses, and we excluded beneficiaries who were enrolled in Medicare or Medicaid before age 65 because their enrollment in these programs may be due, at least in part, to poor health. Furthermore, because HRS does not collect health insurance plan information, we were unable to control for variations in health plan benefits and coverage options in our analyses. Moreover, although we structured our analyses to capture as many beneficiaries as possible, the number of beneficiaries in our study populations may not be large enough to find significant differences for some variables. We ensured the reliability of the HRS and Medicare data used in this report by reviewing related documentation, performing appropriate electronic data checks, and discussing the data with officials from Acumen, LLC. We found the data were sufficiently reliable for the purpose of our analyses. (See app. I for additional details about our scope and methodology.)

We conducted this performance audit from July 2011 to December 2013 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Among the pre-Medicare population, the primary source of health insurance is private coverage. In the first half of 2012, nearly 69 percent of individuals in this population were privately insured. An additional 13 percent of individuals obtained coverage through government programs such as Medicaid. However, a significant portion—more than 18 percent—was uninsured.⁸

Previous research has demonstrated that individuals with health insurance coverage tend to be in better health than individuals without coverage.⁹ However, research regarding the extent to which having prior health insurance coverage affects spending and use of medical services after enrolling in Medicare has produced inconsistent results. For example, one group of researchers found that having prior insurance was linked to lower spending and lower rates of hospitalization after enrolling in Medicare,¹⁰ while another group of researchers found that having prior insurance had no effect on beneficiaries' spending or rates of hospitalization after Medicare enrollment.¹¹ This latter group of researchers found, however, that beneficiaries without prior insurance were less likely to visit physician offices and more likely to visit hospital emergency and outpatient departments after enrolling in Medicare, which could indicate that beneficiaries without prior insurance continued to access the health care system differently after Medicare enrollment.

⁸Agency for Healthcare Research and Quality, *Table 1: Health Insurance Coverage of the Civilian Noninstitutionalized Population: Percent by Type of Coverage and Selected Population Characteristics, United States, First Half of 2012*.

⁹See Institute of Medicine, *America's Uninsured Crisis: Consequences for Health and Health Care* (Washington, D.C.: 2009).

¹⁰See McWilliams et al., "Medicare Spending for Previously Uninsured Adults," 757-766. The researchers found that adjusted annual total Medicare spending was \$1,023 higher for beneficiaries without prior insurance (\$5,796 vs. \$4,773). Additionally, among relevant clinical subgroups, beneficiaries without prior insurance had higher adjusted annual hospitalization rates for complications related to cardiovascular disease or diabetes (9.1 percent vs. 6.4 percent) and for joint replacements (2.5 percent vs. 1.3 percent).

¹¹See Decker et al., "Health Service Use among the Previously Uninsured," 1155-1168. Although the researchers did not find statistically significant differences in Medicare expenditures or in the number of hospitalizations for beneficiaries with and without prior insurance, they found that beneficiaries without prior insurance had 16 percent fewer physician offices visits but 18 percent and 43 percent more hospital emergency room visits and outpatient department visits, respectively.

Subsequent commentary and analysis by both research groups suggests that the conflicting results may be primarily attributable to different definitions of prior insurance and different analytical approaches to control for differences in beneficiaries with and without prior insurance.¹² The group that found that having prior insurance was linked to lower spending used a more rigorous definition of prior insurance based on a longitudinal assessment of insurance coverage before age 65 rather than a point-in-time assessment. This group included beneficiaries who were enrolled in Medicare, Medicaid, and other government health programs before age 65 in its analysis and used a statistical weighting methodology to control for the possibility of reverse causality between health status and insurance coverage. More specifically, some individuals may have experienced declining health before age 65 that led to loss of employment, loss of private insurance coverage, and subsequent enrollment in government health programs. The group that did not find that having prior insurance was linked to lower spending criticized the inclusion of these beneficiaries, noting that many individuals transition to government health programs before age 65 because of poor health, thereby resulting in an overestimate of the effect of having prior insurance on their Medicare spending after age 65. These researchers also criticized the statistical weighting methodology used to control for the possibility that beneficiaries entered these programs because of poor health, contending that the data used in the weighting methodology were not sufficiently detailed to adequately adjust for this possibility.

¹²See Daniel Polsky and Sandra L. Decker, "Would Insuring Near-Elderly Persons Reduce Medicare Spending in Patients Aged 65 Years or Older?" *Annals of Internal Medicine*, vol. 152, no. 7 (April 2010) and J. Michael McWilliams et al., "In Response: Would Insuring Near-Elderly Persons Reduce Medicare Spending in Patients Aged 65 Years or Older?" *Annals of Internal Medicine*, vol. 152, no. 7 (April 2010).

Beneficiaries with Continuous Insurance before Medicare Were More Likely to Report Better Health after Medicare Enrollment than Those without Continuous Insurance

Beneficiaries with prior continuous insurance were more likely than those without prior continuous insurance to report being in good health or better in the 6 years after Medicare enrollment. On average, the predicted probability of reporting being in good health or better in the first 2 years in Medicare was approximately 84 percent for beneficiaries with prior continuous insurance and approximately 79 percent for beneficiaries without prior continuous insurance. Although the predicted probabilities of beneficiaries who reported being in good health or better decreased over time for both those with and without prior continuous insurance, the percentage point difference increased slightly. In total, having prior continuous insurance raised the predicted probability that a beneficiary reported being in good health or better by nearly 6 percentage points in the first 6 years after Medicare enrollment. (See table 1.)

Table 1: Predicted Probability of Beneficiaries with and without Prior Continuous Insurance for 6 Years before Medicare Reporting Good Health or Better in Medicare

Reporting period	Beneficiaries with prior continuous insurance (percent)	Beneficiaries without prior continuous insurance (percent)	Percentage point difference
First and second years in Medicare	84.2% ^a	78.7% ^a	5.6 ^a
Third and fourth years in Medicare	82.9 ^a	77.2 ^a	5.7 ^a
Fifth and sixth years in Medicare	81.0 ^a	75.1 ^a	5.9 ^a

Source: GAO analysis of Health and Retirement Study (HRS) data.

Notes: The table is a summary of results from three models. The models included the following independent variables: prior continuous insurance, demographic variables (census division, education level, income, marital status, race, and sex), potential health risk factors (body mass index and smoking status), and ever having had a diagnosis of any of eight health conditions (arthritis, cancer, diabetes, heart problems, high blood pressure, lung problems, psychological problems, and stroke). The number of beneficiaries in each group ranged from 3,201 for the first and second years in Medicare to 2,001 for the fifth and sixth years in Medicare.

^aEffect of prior continuous insurance significant at the .01 level.

According to previous research, there are reasons why Medicare beneficiaries with prior continuous insurance may be healthier than those without prior continuous insurance. Because of financial constraints, beneficiaries without prior continuous insurance may have difficulty accessing medical services that could help them improve their health before they enroll in Medicare. In addition, being uninsured before Medicare may have effects on beneficiaries' health that remain for some time. For example, if a beneficiary without prior continuous insurance is diagnosed with diabetes and has inadequate access to care before Medicare, the beneficiary may develop complications that increase the risk for adverse health events for years to come, even after the diabetes is controlled.

Beneficiaries with Continuous Insurance before Medicare Had Lower Program Spending and More Physician Office Visits after Medicare Enrollment than Those without Continuous Insurance

There were differences in Medicare spending and use of services between beneficiaries with and without prior continuous insurance. In particular, compared with beneficiaries without prior continuous insurance, beneficiaries with prior continuous insurance had significantly lower total spending during the first year in Medicare.¹³

Beneficiaries with Prior Continuous Insurance Had Approximately \$2,300 Less in Estimated Total Spending during the First Year in Medicare than Those without Prior Continuous Insurance

Beneficiaries with prior continuous insurance had lower total program spending during the first year in Medicare compared with those without prior continuous insurance.¹⁴ Specifically, during the first year in Medicare, average predicted total spending for beneficiaries with and without prior continuous insurance was \$4,390 and \$6,733, respectively—a difference of \$2,343, or 35 percent. Because the difference in total spending was the greatest during the first year in Medicare, it is possible that beneficiaries without prior continuous insurance had a pent-up demand for medical services in anticipation of coverage at age 65. Table 2 shows predicted spending, as well as the difference in predicted spending, during the first 5 years in Medicare for beneficiaries with and without prior continuous insurance.

¹³Differences in health status, spending, and use of services that are discussed in the text of this report are based on results that were statistically significant at a 95 percent confidence level. The tables display all of our analytical results—whether or not the results were statistically significant at conventional confidence levels—and indicate the level of statistical significance.

¹⁴Total spending included inpatient, institutional outpatient, durable medical equipment, skilled nursing facility, home health, hospice, and physician and other noninstitutional spending.

Table 2: Predicted Total Medicare Spending for Beneficiaries with and without Continuous Private Insurance for 6 Years before Medicare

Type of spending	Average predicted spending by year of Medicare enrollment (dollars)				
	First year	Second year	Third year	Fourth year	Fifth year
Beneficiaries with prior continuous insurance	\$4,390	\$5,223	\$6,129	\$6,093	\$6,068
Beneficiaries without prior continuous insurance	6,733	6,316	7,311	5,227	6,630
Difference	(2,343) ^a	(1,093) ^b	(1,183)	865	(562)

Source: GAO analysis of Health and Retirement Study (HRS) and Centers for Medicare & Medicaid Services (CMS) data.

Notes: The table is a summary of results from five models and compares average predicted spending, by year of Medicare enrollment, for beneficiaries who reported having continuous private insurance in the 6 years before Medicare with that for beneficiaries who reported not having continuous private insurance. For example, during the first year in Medicare, predicted total spending for beneficiaries with prior continuous insurance would be, on average, \$2,343 less than for beneficiaries without prior continuous insurance.

The models included the following independent variables: prior continuous insurance, demographic variables (census division, education level, income, marital status, race, and sex), potential health risk factors (body mass index and smoking status), the number of months a beneficiary was alive during the year, and ever having had a diagnosis of any of eight health conditions (arthritis, cancer, diabetes, heart problems, high blood pressure, lung problems, psychological problems, and stroke). The number of beneficiaries in each group ranged from 1,592 for the first year of enrollment to 1,152 for the fifth year of enrollment.

Total spending includes inpatient, institutional outpatient, durable medical equipment, skilled nursing facility, home health, hospice, and physician and other noninstitutional spending.

^aEffect of prior continuous insurance significant at the .01 level.

^bEffect of prior continuous insurance significant at the .10 level.

Similar to our results for total spending, beneficiaries with prior continuous insurance had lower institutional outpatient spending during the first and second years in Medicare compared with those without prior continuous insurance. Specifically, during the first year in Medicare, average predicted institutional outpatient spending was \$513 (or 32 percent) less for beneficiaries with prior continuous insurance (see table 3). During the second year in Medicare, average predicted institutional outpatient spending was \$609 (or 33 percent) less for beneficiaries with prior continuous insurance.

Table 3: Predicted Institutional Outpatient and Physician and Other Noninstitutional Medicare Spending for Beneficiaries with and without Continuous Private Insurance for 6 Years before Medicare

Type of spending	Average predicted spending by year of Medicare enrollment (dollars)				
	First year	Second year	Third year	Fourth year	Fifth year
Institutional outpatient					
Beneficiaries with prior continuous insurance	\$1,068	\$1,229	\$1,354	\$1,063	\$1,400
Beneficiaries without prior continuous insurance	1,580	1,838	1,544	1,038	1,628
Difference	(513) ^a	(609) ^a	(190)	26	(229)
Physician and other noninstitutional^b					
Beneficiaries with prior continuous insurance	1,870	2,161	2,235	2,522	2,320
Beneficiaries without prior continuous insurance	2,251	1,944	2,071	1,934	1,808
Difference	(381) ^c	217	163	589 ^d	511 ^d

Source: GAO analysis of Health and Retirement Study (HRS) and Centers for Medicare & Medicaid Services (CMS) data.

Notes: The table is a summary of results from 10 models and compares average predicted spending, by year of Medicare enrollment, for beneficiaries who reported having continuous private insurance in the 6 years before Medicare with that for beneficiaries who reported not having continuous private insurance. For example, during the first year in Medicare, predicted institutional outpatient spending for beneficiaries with prior continuous insurance would be, on average, \$513 less than for beneficiaries without prior continuous insurance.

The models included the following independent variables: prior continuous insurance, demographic variables (census division, education level, income, marital status, race, and sex), potential health risk factors (body mass index and smoking status), the number of months a beneficiary was alive during the year, and ever having had a diagnosis of any of eight health conditions (arthritis, cancer, diabetes, heart problems, high blood pressure, lung problems, psychological problems, and stroke). The number of beneficiaries in each group ranged from 1,592 for the first year of enrollment to 1,152 for the fifth year of enrollment.

^aEffect of prior continuous insurance significant at the .01 level.

^bPhysician and other noninstitutional spending refers to Medicare's per beneficiary spending for services provided by noninstitutional providers, such as physicians, clinical laboratories, and free-standing ambulatory surgical centers.

^cEffect of prior continuous insurance significant at the .10 level.

^dEffect of prior continuous insurance significant at the .05 level.

In contrast to our results for total spending and institutional outpatient spending, physician and other noninstitutional spending were similar during the early years in Medicare for beneficiaries with and without prior continuous insurance. However, during the fourth and fifth years in Medicare, beneficiaries with prior continuous insurance had higher physician and other noninstitutional spending. Specifically, during the fourth and fifth years in Medicare, average predicted physician and other noninstitutional spending was \$589 (or 30 percent) and \$511 (or 28 percent) more, respectively, for beneficiaries with prior continuous insurance.

Beneficiaries with Prior Continuous Insurance Had More Physician Office Visits during the First 5 Years in Medicare than Those without Prior Continuous Insurance

Beneficiaries with prior continuous insurance had more physician office visits during the first 5 years in Medicare than those without prior continuous insurance. Specifically, during the first 5 years in Medicare, the difference in the average predicted number of physician office visits between beneficiaries with and without prior continuous insurance ranged from 1.3 to 2.5, or 23 to 46 percent (see table 4). This utilization pattern may indicate that, even after Medicare enrollment, beneficiaries with prior continuous insurance continued to access medical services differently compared with those without prior continuous insurance. For example, beneficiaries with prior continuous insurance may have been more likely to have physician office visits before Medicare if their insurance covered these visits.

Table 4: Predicted Service Use for Beneficiaries with and without Continuous Private Insurance for 6 Years before Medicare

Type of service	Average predicted number of services used by year of Medicare enrollment				
	First year	Second year	Third year	Fourth year	Fifth year
Physician office visit					
Beneficiaries with prior continuous insurance	6.3	6.8	7.1	7.2	7.8
Beneficiaries without prior continuous insurance	4.9	5.4	5.8	5.3	5.4
Difference	1.4 ^a	1.5 ^a	1.3 ^a	2.0 ^a	2.5 ^a
Institutional outpatient visit					
Beneficiaries with prior continuous insurance	2.8	3.1	3.2	3.1	3.5
Beneficiaries without prior continuous insurance	2.9	3.1	3.1	3.0	3.4
Difference	(0.1)	(0.1)	0.1	0.2	0.0

Source: GAO analysis of Health and Retirement Study (HRS) and Centers for Medicare & Medicaid Services (CMS) data.

Notes: The table is a summary of results from 10 models and compares average predicted service use, by year of Medicare enrollment, for beneficiaries who reported having continuous private insurance in the 6 years before Medicare with that for beneficiaries who reported not having continuous private insurance. For example, during the first year in Medicare, the predicted number of physician office visits for beneficiaries with continuous insurance before Medicare would be, on average, 1.4 more than that of beneficiaries without continuous insurance. All values in the table are rounded to the nearest one-tenth.

The models included the following independent variables: prior continuous insurance, demographic variables (census division, education level, income, marital status, race, and sex), potential health risk factors (body mass index and smoking status), the number of months a beneficiary was alive during the year, and ever having had a diagnosis of any of eight health conditions (arthritis, cancer, diabetes, heart problems, high blood pressure, lung problems, psychological problems, and stroke). The number of beneficiaries in each group ranged from 1,592 for the first year of enrollment to 1,152 for the fifth year of enrollment.

^aEffect of prior continuous insurance significant at the .01 level.

According to our analyses, the number of institutional outpatient visits was similar for beneficiaries with and without prior continuous insurance. However, because we found that beneficiaries without prior continuous insurance had higher institutional outpatient spending, it is possible that they required more costly outpatient care than beneficiaries with prior continuous insurance.

Concluding Observations

Previous research regarding the extent to which health insurance coverage prior to Medicare enrollment affects beneficiaries' spending and use of services after enrollment has been inconclusive, possibly because of different definitions of prior insurance and different approaches for dealing with the potential for reverse causality between health status and health insurance coverage. Like researchers who did not find significant differences in Medicare spending between beneficiaries with and without prior insurance coverage, we excluded individuals who were enrolled in government health programs prior to age 65 from our analysis because of the possibility that they lost insurance coverage because of poor health, which could have resulted in an overestimate of the effect of having prior insurance on Medicare spending after age 65. However, like researchers who did find significant differences in Medicare spending between these groups, we used a more rigorous definition of prior insurance based on a longitudinal assessment of insurance coverage before age 65 rather than a single point in time. Using our methodology, we found significant differences in Medicare spending between beneficiaries with and without prior continuous insurance.

This study adds to the body of evidence suggesting that beneficiaries with prior insurance used fewer or less costly medical services in Medicare compared with those without prior insurance, because they either were in better health or were accustomed to accessing medical services differently. In particular, we found that beneficiaries with prior continuous insurance were more likely than those without prior continuous insurance to report being in good health or better in the 6 years after Medicare enrollment. Additionally, we found that beneficiaries without prior continuous insurance had higher total and institutional outpatient spending but did not have higher spending for physician and other noninstitutional services, suggesting that they required more intensive medical services or that they were accustomed to visiting hospitals more than physician offices. This suggests that the extent to which individuals enroll in private insurance before age 65 has implications for beneficiaries' health status and Medicare spending.

Agency Comments

We provided a draft of this report to the Department of Health and Human Services for review. In written comments, reproduced in appendix II, the department highlighted a key finding in our report that beneficiaries with prior insurance used fewer or less costly medical services in Medicare compared with those without prior insurance.

As arranged with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies of this report to appropriate congressional committees and the Administrator of the Centers for Medicare & Medicaid Services (CMS). The report also will be available at no charge on GAO's website at <http://www.gao.gov>.

If you or your staffs have any questions regarding this report, please contact me at (202) 512-7114 or cosgrovej@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix III.



James Cosgrove
Director, Health Care

Appendix I: Data and Methods

This appendix describes the data and methods we used to address our research objectives. We used data from the Health and Retirement Study (HRS) and Medicare claims. HRS is a longitudinal panel study that surveys a representative sample of more than 26,000 Americans over the age of 50 every 2 years.¹ We used a subset of HRS data from 1996 through 2010 to obtain information on beneficiaries' health insurance coverage before Medicare, health status in Medicare, demographic characteristics, potential health risk factors, and diagnoses of health conditions. Because HRS data are survey data, these data were self-reported. We also used data from the Medicare Beneficiary Annual Summary Files and the Medicare Denominator Files from 2001 through 2010 to obtain information on Medicare spending and use of services. We worked with Acumen, LLC, to link beneficiaries' HRS data with their Medicare data and to conduct statistical analyses of their spending and use of services.² We assessed the reliability of the HRS and Medicare data and determined that the data were adequate for our purposes. We conducted our work from July 2011 to December 2013 in accordance with generally accepted government auditing standards.

Data Sources

Health and Retirement Study

To determine whether Medicare beneficiaries had continuous health insurance coverage before Medicare, we used HRS data to develop a composite measure. We categorized beneficiaries as having prior continuous insurance if they reported receiving private insurance through their employer or their spouse's employer in the three consecutive HRS surveys before Medicare enrollment at age 65—a period spanning approximately 6 years. To analyze beneficiaries' health status in Medicare, we collapsed the HRS self-reported health status measure, which uses a scale from 1 (excellent) to 5 (poor), to two categories. We classified beneficiaries as being in good health or better if they reported being in excellent, very good, or good health. We also used HRS data to

¹HRS is administered by the University of Michigan with support from the National Institute on Aging and the Social Security Administration. The RAND Center for the Study of Aging prepares a publicly available subset of HRS data for use by researchers.

²HRS partners with Acumen, LLC, to link Medicare beneficiaries' HRS data to their Medicare data and to provide analytical support for these linked data. Precautions were taken to ensure compliance with applicable confidentiality agreements with HRS.

develop a set of independent variables for our analyses. Specifically, we used data on demographic characteristics (census division, education level, income, marital status, race, and sex), potential health risk factors (body mass index and smoking status), and ever having had a diagnosis of any of eight health conditions (arthritis, cancer, diabetes, heart problem, high blood pressure, lung problem, psychological problem, and stroke).

Medicare Data

To analyze beneficiaries' spending and use of services, we used data from the Medicare Beneficiary Annual Summary Files. In particular, we obtained data on total, institutional outpatient, institutional inpatient, home health, and physician and other noninstitutional spending; institutional outpatient and physician office visits; and hospital stays.³ We also used enrollment data from the Beneficiary Annual Summary Files and Medicare Denominator Files to determine which beneficiaries to include in our analyses of spending and use of services.

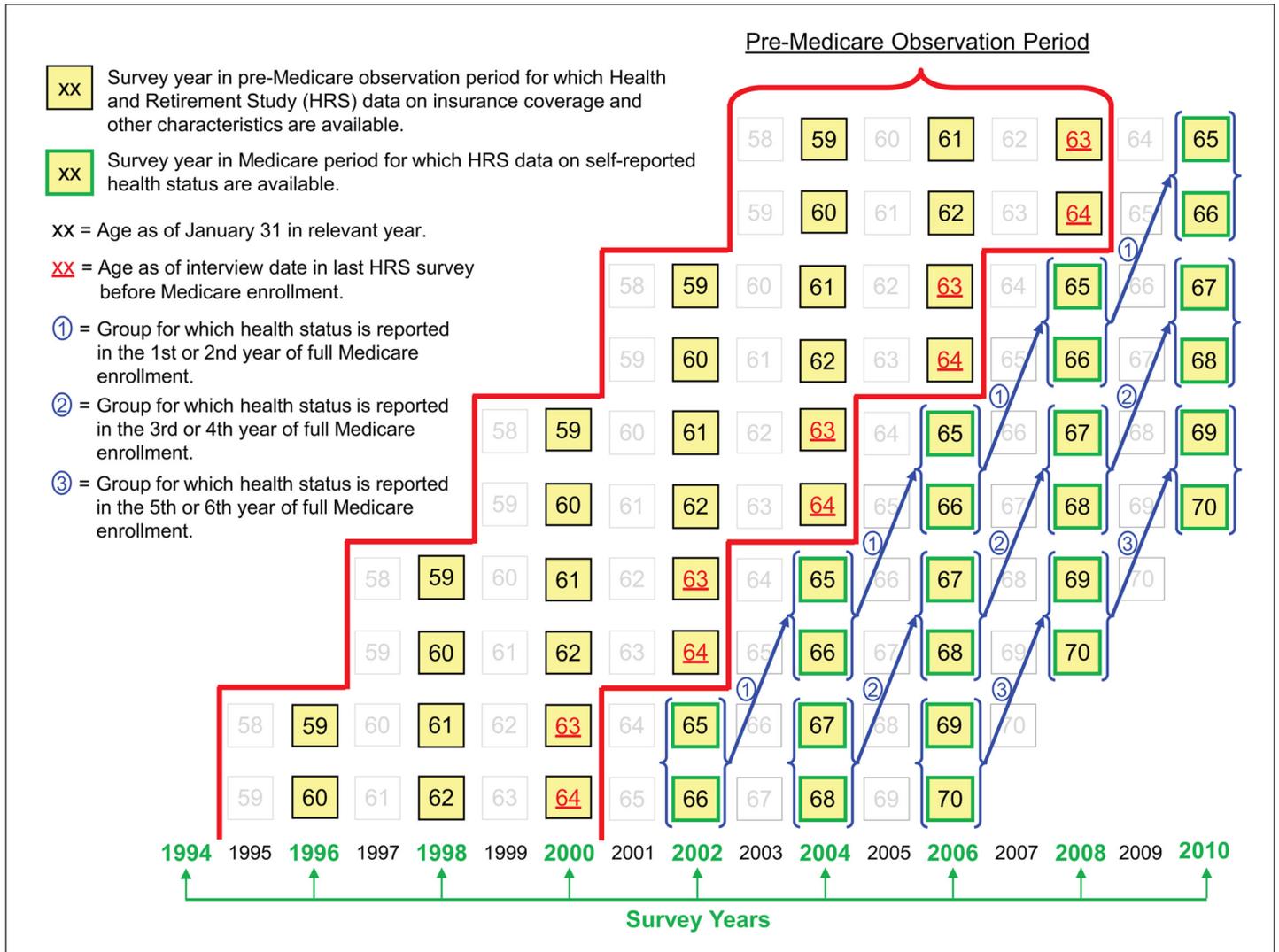
Study Populations

Health Status Analyses

Because we used HRS data on beneficiaries' self-reported health status that were collected about every 2 years, we defined three groups of beneficiaries, drawn from multiple survey years spanning 2001 through 2010, who were in (1) their first and second years of Medicare, (2) their third and fourth years of Medicare, and (3) their fifth and sixth years of Medicare (see fig. 1). This approach allowed us to measure the effect of prior continuous insurance on self-reported health status at three points in time after Medicare enrollment.

³Total spending refers to Medicare's spending per beneficiary for all covered services: durable medical equipment, home health, hospice, inpatient, institutional outpatient, physician and other noninstitutional, and skilled nursing facility. Institutional outpatient spending refers to Medicare's spending per beneficiary for outpatient services provided by institutional providers, such as hospital outpatient departments, rural health centers, renal dialysis facilities, and outpatient rehabilitation facilities. Physician and other noninstitutional spending refers to Medicare's spending per beneficiary for services provided by certain noninstitutional providers, such as physicians, independent clinical laboratories, and free-standing ambulatory surgical centers. Institutional outpatient visits refer to services provided by institutional providers on an outpatient basis. Physician office visits refer to services provided by noninstitutional providers, such as physicians.

Figure 1: Study Populations for Health Status Analyses

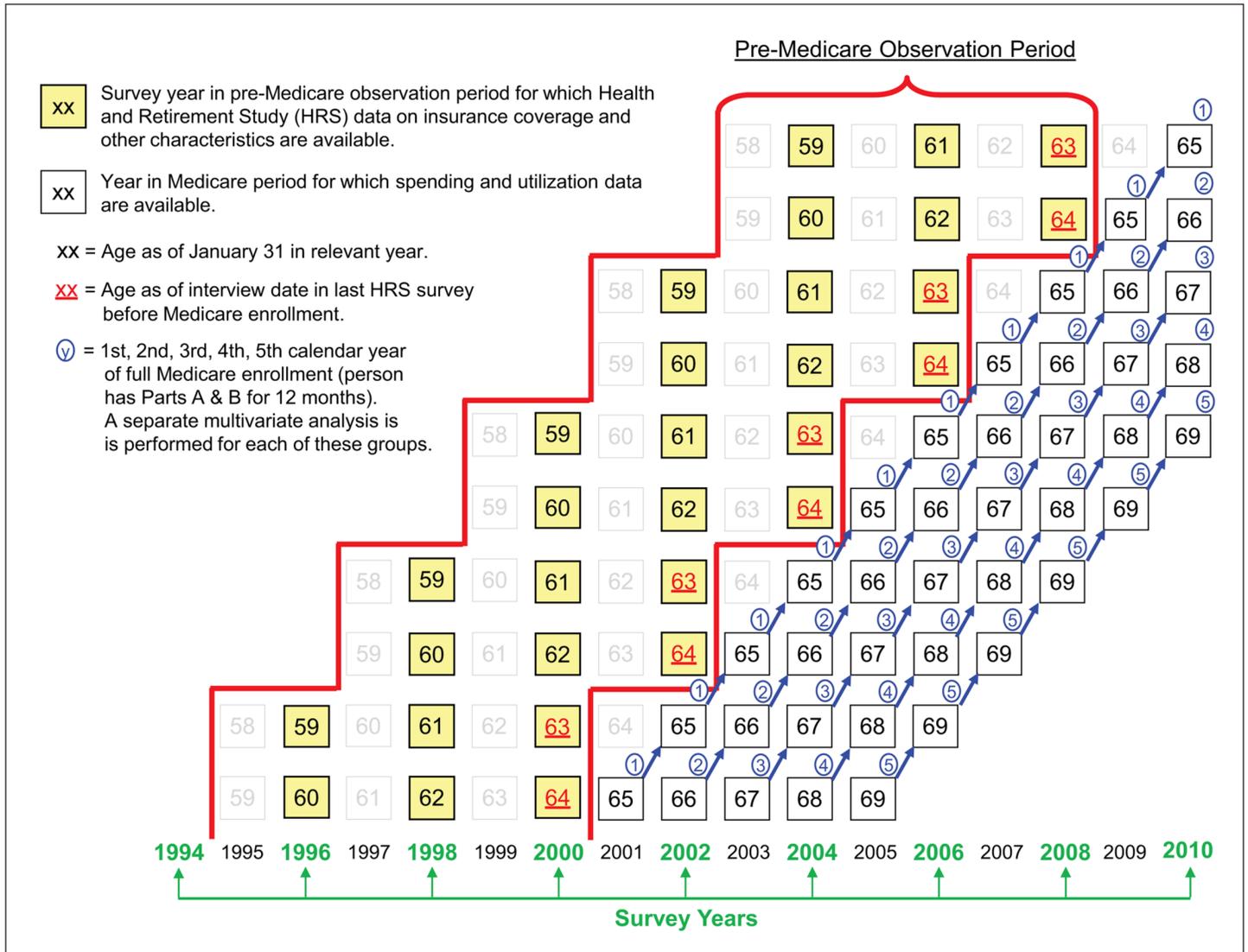


Source: GAO.

Analyses of Spending and Use of Services

Because we used Medicare data on beneficiaries' program spending and use of services that were collected every year, we defined five groups of beneficiaries who were in their first, second, third, fourth, and fifth years of enrollment from 2001 through 2010 (see fig. 2). This approach allowed us to measure the effect of prior continuous insurance on spending and use of services for beneficiaries in each of the first 5 years of Medicare enrollment.

Figure 2: Study Populations for Analyses of Spending and Use of Services



Source: GAO.

Exclusion Criteria

For all of our analyses, we excluded beneficiaries from our study populations because of missing data and design and methodological issues. Specifically, we excluded beneficiaries who died before age 65; beneficiaries who were over age 65 as of January 31, 2001; beneficiaries who did not participate in all three HRS surveys in their pre-Medicare period; and beneficiaries who did not respond to relevant HRS questions

about insurance during their pre-Medicare period. We excluded beneficiaries who were enrolled in Medicare or Medicaid before age 65 because their enrollment in these programs may have been due, at least in part, to poor health, which would indicate that their health status affected their insurance coverage rather than the other way around. We chose to exclude these beneficiaries to avoid overestimating the effects of having prior continuous insurance on health status, spending, and use of services. In addition, we excluded beneficiaries who reported receiving coverage from the Veterans Health Administration before age 65 because their Medicare spending and use of services might not fully represent their overall use of medical services.

For our analyses of spending and use of services, we applied additional exclusion criteria to define our study populations. We excluded Medicare Advantage beneficiaries because they did not have fee-for-service data that could be linked to HRS data.⁴ In addition, we excluded beneficiaries who were not enrolled in both Medicare Parts A and B for all months they were alive during a given year because we did not have complete information on their spending and use of services.

After the exclusions, the number of beneficiaries in our three study populations for our health status analyses ranged from 3,201 for the first group to 2,001 for the third group. The number of beneficiaries in our five study populations for our analyses of spending and use of services ranged from 1,592 for the first group to 1,152 for the fifth group.

Modeling Health Status

To examine the relationship between Medicare beneficiaries' prior continuous insurance and their self-reported health status, we used logistic regression analysis. In particular, we modeled beneficiaries' self-reported health status during three periods after Medicare enrollment. We also predicted probabilities of their reporting being in good health or better assuming both that they did and that they did not have prior continuous insurance. In all of our analyses, we included the following independent variables: prior continuous insurance, demographic characteristics,

⁴About three out of four beneficiaries are enrolled in Medicare's traditional fee-for-service program, and the rest are enrolled in private health plans under the Medicare Advantage program. Medicare fee-for-service consists of Medicare Part A, which covers hospital and other inpatient services, and Medicare Part B, which is optional insurance and covers physician, outpatient hospital, home health care, and certain other services.

potential health risk factors, and ever having had a diagnosis of any of eight health conditions. See table 5 for an example of results from one of the three models that we conducted for our analyses of health status.

Table 5: Multivariate Analysis of the Effect of Prior Continuous Insurance on Self-Reported Health Status for Beneficiaries in Their First or Second Year of Medicare Enrollment

Variable	Measure of variable	Coefficient	Significance level
Prior insurance coverage	Continuous ^a	0.4590	0.0009
	Not continuous (reference group)	n/a ^b	n/a ^b
Sex	Male	-0.3194	0.0049
	Female (reference group)	n/a ^b	n/a ^b
Race	White	0.2790	0.0532
	Nonwhite (reference group)	n/a ^b	n/a ^b
Education level	High school graduate	0.7699	<.0001
	Not a high school graduate (reference group)	n/a ^b	n/a ^b
Marital status	Married	-0.2572	0.0566
	Single (reference group)	n/a ^b	n/a ^b
Smoking status	Smoker	-0.8466	<.0001
	Nonsmoker (reference group)	n/a ^b	n/a ^b
Body mass index ^c	Continuous	-0.0219	0.0403
Diagnosed with diabetes ^d	Yes	-1.1175	<.0001
	No (reference group)	n/a ^b	n/a ^b
Diagnosed with heart problem ^d	Yes	-0.8250	<.0001
	No (reference group)	n/a ^b	n/a ^b
Diagnosed with high blood pressure ^d	Yes	-0.3419	0.0028
	No (reference group)	n/a ^b	n/a ^b
Diagnosed with stroke ^d	Yes	-1.1711	<.0001
	No (reference group)	n/a ^b	n/a ^b
Diagnosed with arthritis ^d	Yes	-0.6312	<.0001
	No (reference group)	n/a ^b	n/a ^b
Diagnosed with cancer ^d	Yes	-0.4766	0.0036
	No (reference group)	n/a ^b	n/a ^b
Diagnosed with lung problem ^d	Yes	-0.8484	<.0001
	No (reference group)	n/a ^b	n/a ^b
Diagnosed with psychological problem ^d	Yes	-0.6955	<.0001
	No (reference group)	n/a ^b	n/a ^b

Appendix I: Data and Methods

Variable	Measure of variable	Coefficient	Significance level
Income quintile	1st (lowest)	-1.1602	<.0001
	2nd	-0.7519	<.0001
	3rd	-0.3581	0.0548
	4th	-0.6174	0.0006
	5th (reference group)	n/a ^b	n/a ^b
Census division ^e	New England	0.5489	0.0857
	Middle Atlantic	0.5301	0.0164
	East North Central	0.5788	0.0035
	West North Central	0.5005	0.0395
	South Atlantic	0.4725	0.0095
	East South Central	0.3128	0.2091
	West South Central	-0.0258	0.9021
	Mountain	0.2602	0.3410
	Pacific (reference group)	n/a ^b	n/a ^b
	Intercept	2.9111	<.0001
	Number of observations	3,201	

Source: GAO analysis of Health and Retirement Study (HRS) data.

Notes: We used logistic regression to examine the effect of having prior continuous insurance on beneficiaries' self-reported health status during their first or second year of Medicare enrollment. The model also controlled for other variables that could affect beneficiaries' health status. Data for all of the variables were from HRS. The following variables were measured as of the last HRS survey prior to Medicare enrollment: marital status, smoking status, body mass index, health conditions, income quintile, and census division.

^aWe defined prior continuous insurance coverage as self-reported continuous private health insurance coverage during approximately 6 years before Medicare enrollment.

^bNot available because the method calculates coefficients for the included groups relative to the reference group.

^cBody mass index is a measure of body fat based on height and weight.

^dRespondents reported whether or not a physician ever told the respondent that he or she had a particular health condition.

^eCensus divisions are groupings of states that subdivide the United States.

Modeling Medicare Spending and Use of Services

To examine the relationship between Medicare beneficiaries' prior continuous insurance and their spending and use of services, we used generalized linear models because our spending and service variables had skewed distributions and a high proportion of zero values.⁵ For example, for beneficiaries in their first year of Medicare enrollment, 30 percent of beneficiaries in our study population had no institutional outpatient visits and therefore no institutional outpatient spending. We modeled total, institutional outpatient, and physician and other noninstitutional spending and institutional outpatient and physician office visits for beneficiaries in each of the first 5 years of Medicare enrollment.⁶ We predicted values for these variables assuming both that beneficiaries did and that beneficiaries did not have prior continuous insurance. In all of our analyses, we included the following independent variables: prior continuous insurance, demographic characteristics, potential health risk factors, ever having had a diagnosis of any of eight health conditions, and the number of months a beneficiary was alive during the year. For our spending analyses, we used the price index from the Personal Health Care Expenditure component of the CMS National Health Expenditure Accounts to express all spending in 2011 dollars. This approach adjusted for inflation by removing the effects of health care price-level changes between 2001 and 2010. See table 6 for an example of results from 1 of the 25 models that we ran for our analyses of spending and use of services.

⁵We used a generalized linear model with a log link function with a gamma distribution to model spending and a log link function with a negative binomial distribution to model service use.

⁶We also modeled beneficiaries' home health and institutional inpatient spending and hospital stays, but the number of beneficiaries with data for these categories was too low to provide meaningful results.

Table 6: Multivariate Analysis of the Effect of Prior Continuous Insurance on Total Medicare Spending for Beneficiaries in Their First Year of Medicare Enrollment

Variable	Measure of variable	Coefficient	Significance level
Prior insurance coverage	Continuous ^a	-0.4277	0.0002
	Not continuous (reference group)	n/a ^b	n/a ^b
Sex	Male	0.0147	0.8542
	Female (reference group)	n/a ^b	n/a ^b
Race	White	0.0317	0.7934
	Nonwhite (reference group)	n/a ^b	n/a ^b
Education level	High school graduate	0.2478	0.0401
	Not a high school graduate (reference group)	n/a ^b	n/a ^b
Marital status	Married	-0.1107	0.2413
	Single (reference group)	n/a ^b	n/a ^b
Smoking status	Smoker	0.1030	0.3461
	Nonsmoker (reference group)	n/a ^b	n/a ^b
Body mass index ^c	Continuous	0.0118	0.1414
Diagnosed with diabetes ^d	Yes	0.6338	<.0001
	No (reference group)	n/a ^b	n/a ^b
Diagnosed with heart problem ^d	Yes	0.3159	0.0044
	No (reference group)	n/a ^b	n/a ^b
Diagnosed with high blood pressure ^d	Yes	0.0175	0.8278
	No (reference group)	n/a ^b	n/a ^b
Diagnosed with stroke ^d	Yes	-0.3952	0.1157
	No (reference group)	n/a ^b	n/a ^b
Diagnosed with arthritis ^d	Yes	0.4153	<.0001
	No (reference group)	n/a ^b	n/a ^b
Diagnosed with cancer ^d	Yes	0.3979	0.0011
	No (reference group)	n/a ^b	n/a ^b
Diagnosed with lung problem ^d	Yes	0.6581	<.0001
	No (reference group)	n/a ^b	n/a ^b
Diagnosed with psychological problem ^d	Yes	0.2633	0.0351
	No (reference group)	n/a ^b	n/a ^b
Income quintile	1st (lowest)	-0.1330	0.3566
	2nd	-0.1737	0.1727
	3rd	-0.0723	0.5436
	4th	-0.1775	0.1296
	5th (reference group)	n/a ^b	n/a ^b

Appendix I: Data and Methods

Variable	Measure of variable	Coefficient	Significance level
Census division ^e	New England	0.0744	0.7462
	Middle Atlantic	0.0215	0.9013
	East North Central	-0.2209	0.1467
	West North Central	-0.1201	0.4881
	South Atlantic	0.1686	0.2438
	East South Central	-0.1622	0.3953
	West South Central	-0.4300	0.0147
	Mountain	-0.3703	0.1232
	Pacific (reference group)	n/a ^b	n/a ^b
Number of months the beneficiary was alive during the year	1	0.6810	0.6240
	2	0.3342	0.8101
	3	2.6074	0.0621
	4	0.3284	0.8152
	5	2.1419	0.0301
	6	n/a ^f	n/a ^f
	7	n/a ^f	n/a ^f
	8	0.9526	0.4951
	9	n/a ^f	n/a ^f
	10	-1.0094	0.4669
	11	2.0772	0.0367
	12 (reference group)	n/a ^b	n/a ^b
	Intercept	7.8474	<.0001
Number of observations		1,592	

Source: GAO analysis of Health and Retirement Study (HRS) and Centers for Medicare & Medicaid Services (CMS) data.

Notes: We used a generalized linear model to examine the effect of having prior continuous insurance on total Medicare spending for beneficiaries in their first year of Medicare enrollment. The model also controlled for other variables that could affect beneficiaries' Medicare spending. Data for all of the independent variables other than the number of months the beneficiary was alive during the year were from HRS. Data for the number of months the beneficiary was alive during the year were from Medicare claims. The following variables were measured as of the last HRS survey prior to Medicare enrollment: marital status, smoking status, body mass index, health conditions, income quintile, and census division.

^aWe defined prior continuous insurance coverage as self-reported continuous private health insurance coverage during approximately 6 years before Medicare enrollment.

^bNot available because the method calculates coefficients for the included groups relative to the reference group.

^cBody mass index is a measure of body fat based on height and weight.

^dRespondents reported whether or not a physician ever told the respondent that he or she had a particular health condition.

^eCensus divisions are groupings of states that subdivide the United States.

^fNot available because there were no beneficiaries alive for the corresponding number of months.

Data Reliability

Comparison with the Entire Medicare Population

Because we used multiple exclusion criteria to define our study populations, our results might not be representative of the entire Medicare population. To compare our study populations with the entire Medicare population, we examined certain characteristics of these populations—gender, race, and census division (see tables 7 and 8).⁷ We selected these characteristics because data on these characteristics were available in each of the data sources that we used. Because we only had access to Medicare Denominator File data for 2003 through 2010, we compared characteristics for beneficiaries in their first or second year of Medicare enrollment from 2003 through 2010. On the basis of this analysis, we determined that our study populations and the entire Medicare population were comparable. However, we noted small differences between the populations. For example, compared with the entire Medicare population, our study populations included slightly higher percentages of females.

⁷Because we could not determine which beneficiaries in the entire Medicare population were enrolled in Medicaid or the Veterans Health Administration before age 65, we compared the entire Medicare population to our study populations before we excluded these individuals.

Table 7: Beneficiaries in Study Population for Health Status Analyses in Their First or Second Year of Enrollment Compared with All Medicare Beneficiaries in Their First or Second Year of Enrollment, 2003-2010

Characteristic	Study population (percent)	All Medicare beneficiaries (percent)
Gender		
Male	41.4%	46.8%
Female	58.6	53.2
Race		
White	84.3	85.3
Nonwhite	15.7	14.7
Census division		
New England	4.4	4.9
Middle Atlantic	10.9	13.6
East North Central	16.7	15.8
West North Central	9.1	7.0
South Atlantic	24.9	20.3
East South Central	6.7	6.2
West South Central	9.5	10.6
Mountain	5.7	6.9
Pacific	12.2	14.8

Source: GAO analysis of Health and Retirement Study (HRS) and Centers for Medicare & Medicaid Services (CMS) data.

Table 8: Beneficiaries in Study Population for Analyses of Spending and Use of Services in Their First Year of Enrollment Compared with All Medicare Beneficiaries in Their First Year of Enrollment, 2003-2010

Characteristic	Study population (percent)	All Medicare beneficiaries (percent)
Gender		
Male	40.6%	45.4%
Female	59.4	54.6
Race		
White	85.5	87.5
Nonwhite	14.5	12.5
Census division		
New England	3.7	4.8
Middle Atlantic	9.3	11.5
East North Central	17.4	17.3
West North Central	9.6	7.3
South Atlantic	27.0	22.1
East South Central	7.3	7.0
West South Central	11.1	11.9
Mountain	4.4	6.5
Pacific	10.3	11.6

Source: GAO analysis of Centers for Medicare & Medicaid Services (CMS) data.

Supplementary Analyses

We excluded Medicare beneficiaries who were enrolled in Medicaid before age 65 from our primary analyses because their enrollment in this program may have been due, at least in part, to poor health. To determine the effect, if any, of removing these beneficiaries from our analyses, we conducted supplementary analyses of Medicare spending and use of services that included these beneficiaries. Results for most of the dependent variables (e.g., total spending, physician and other noninstitutional spending, physician office visits, and institutional outpatient visits) were similar to our original results. However, beneficiaries with prior continuous insurance only had lower institutional outpatient spending during the first year in Medicare, rather than during the first and second years in Medicare, when we included these beneficiaries.

Appendix II: Comments from the Department of Health and Human Services



DEPARTMENT OF HEALTH & HUMAN SERVICES

OFFICE OF THE SECRETARY

Assistant Secretary for Legislation
Washington, DC 20201

NOV 27 2013

James Cosgrove
Director, Health Care
U.S. Government Accountability Office
441 G Street NW
Washington, DC 20548

Dear Mr. Cosgrove:

Attached are comments on the U.S. Government Accountability Office's (GAO) report entitled, "Medicare: Continuous Insurance before Enrollment Associated with Better Health and Lower Program Spending" (GAO-14-53).

The Department appreciates the opportunity to review this report prior to publication.

Sincerely,

Jim R. Esquea
Assistant Secretary for Legislation

Attachment

GENERAL COMMENTS OF THE DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS) ON THE GOVERNMENT ACCOUNTABILITY OFFICE'S (GAO) DRAFT REPORT ENTITLED, "MEDICARE: CONTINUOUS INSURANCE BEFORE ENROLLMENT ASSOCIATED WITH BETTER HEALTH AND LOWER PROGRAM SPENDING" (GAO-14-53)

The Department appreciates the opportunity to review and comment on this draft report.

GAO reviewed the effects of having prior health insurance coverage on Medicare beneficiaries, the health status spending, and use of services of Medicare beneficiaries with and without continuous health insurance coverage before Medicare enrollment. GAO's findings suggest that beneficiaries with prior insurance used fewer or less costly medical services in Medicare compared with those without prior insurance.

HHS believes a focus on prevention will not only improve the health of Americans, but also help to reduce health care costs and improve quality of care. The Affordable Care Act works to address these factors. Prevention and access to care will strengthen Americans' health during their lives, including when they are eligible for Medicare.

For additional information on building healthier communities and investing in prevention, go to the following link:

<http://www.hhs.gov/healthcare/facts/factsheets/2011/09/prevention02092011.html>

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

James Cosgrove, (202) 512-7114 or cosgrovej@gao.gov

Staff Acknowledgments

In addition to the contact listed above, Christine Brudevold, Assistant Director; George Bogart; David Grossman; Elizabeth T. Morrison; Aubrey Naffis; and Eric Wedum made key contributions to this report.

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