Elevance Health | Public Policy Institute

Medicare Advantage Growth Is Associated with Lower Total Medicare Spending

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Contents

Key Takeaways

- In the last decade, growth in total Medicare program spending has been slower than predicted while Medicare Advantage (MA) enrollment has grown significantly.
- This study found that higher MA penetration (i.e., percent enrolled in MA) is associated with lower total Medicare spending per capita, both across U.S. counties and year-over-year within a county.
- In comparison to if MA penetration had stayed constant at 2011 levels, cumulative savings in total Medicare spending from 2012-2021 are estimated to be as high as $144 billion (in 2021 dollars).

Overview

Medicare Advantage (MA) plans, private sector plan alternatives to Medicare Fee-for-Service (FFS), are a valuable option for many Medicare beneficiaries, "bundling" Part A, Part B, and often Part D benefits into one plan.

Additionally, they often offer services not covered under Medicare FFS, such as care coordination and disease management programs, as well as extra benefits—called supplemental benefits—that may include dental, vision, and hearing benefits, and benefits that address health-related social needs.

Several studies suggest that MA outperforms Medicare FFS on clinical metrics such as hospital readmission rates and rates of return to the community,[1] and Healthcare Effectiveness Data and Information Set (HEDIS) clinical quality measures, including screening rates for breast and colorectal cancer, all-cause readmissions, cholesterol management, and medication adherence.[2]

This analysis explores the association between the rise in MA enrollment and slower growth in Medicare spending.

MA also employs strategies that can help improve members' health outcomes and care efficiency. For example, some MA plans use models where network providers assume shared clinical and financial risk, earning payment bonuses or penalties based on the quality, patient experience, and cost of care delivered. Research shows these two-sided risk models when used in MA are associated with lower odds of inpatient admissions, emergency department visits, and inpatient readmission.[3]

Further, these approaches—as well as other MA plan incentives for quality and efficiency in clinical practice—may lead to "spillover effects" in FFS. This phrase describes how, in response to MA plan incentives, providers may adapt their behaviors for all Medicare beneficiaries, regardless of whether they are MA members or FFS beneficiaries. Therefore, increased MA enrollment can lead to broader improvements in the Medicare program, including reduced costs and better outcomes across both MA and FFS populations. Numerous studies corroborate these spillover effects, highlighting that increased MA enrollment is associated with lower hospital costs and overall reduced Medicare FFS spending growth.[4-6]

The popularity of MA plans has steadily increased over the past two decades. In 2024, over 32 million people—54 percent of the eligible Medicare population—accessed their Medicare benefits through an MA plan.[7] This represents a doubling in the total number of beneficiaries enrolled in MA over the past decade. However, MA uptake varies widely across counties, which could be attributed to many factors including differences in county urbanicity (i.e., population density), number of plans offered, number of Medicare-eligible individuals, and historical MA market penetration.

Over this same time period, growth in total Medicare program spending has been slower than predicted.[8,9] While there are undoubtedly many factors that contributed to this "bending of the cost curve," the analysis presented in this paper explores whether, and to what extent, slower overall Medicare spending growth was associated with the rise in MA enrollment.

Background

Medicare is the second largest program in the federal budget and a major driver of long-term federal spending, representing approximately 12 percent of the federal budget.[10]

Several government agencies, including the Congressional Budget Office (CBO), Centers for Medicare & Medicaid Services (CMS) Office of the Actuary (OACT), and Office of Management and Budget (OMB), annually predict spending for government-funded healthcare programs, including Medicare. These projections are based on historical trends as well as assumptions about how spending may change as a result of new laws, policy and programmatic changes, healthcare use, and demographic shifts, among other factors.

Since 2011, Medicare spending has been unexpectedly low relative to these projections. In 2023, the CBO compared its own 2010 10-year projections with actual Medicare spending, and found that from 2010 to 2020, actual Medicare spending was approximately $431 billion less than what the CBO had projected in August 2010. Similarly, Medicare spending was $339 billion less than what the CMS OACT predicted in their 2011 Trustees Report. (Table 1) Most of the overestimate stemmed from an overestimate of spending per beneficiary, not an overestimate of the number of beneficiaries.

Table 1

Difference Between Actual and Predicted Total Medicare Spending, 2010-2020

In billions of dollars

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total 2010–2020	Difference Over Actual Spending
2010 CBO Predicted Medicare Spending	447	483	479	522	550	577	626	650	675	738	788	6,535	**431**
2011 CMS Trustees Report Predicted Medicare Spending	457	482	489	516	544	562	605	634	672	714	769	6,443	**339**
Actual Medicare Spending	446	480	466	492	505	540	588	591	582	644	769	6,104	

Note. CBO = Congressional Budget Office; CMS = Centers for Medicare & Medicaid Services.

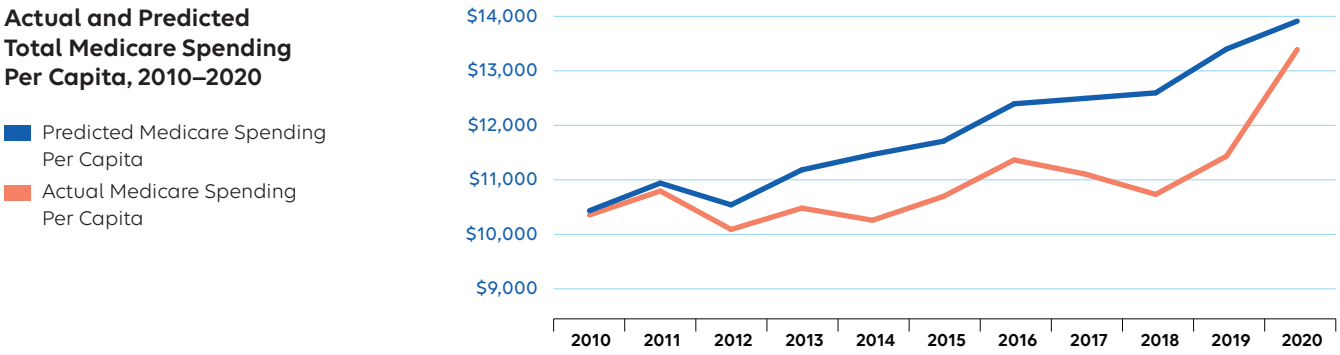
Source for CBO Predicted Medicare Spending and Actual Medicare Spending. Swagel, P.L. (2023, March 17). CBO's Projections of Federal Health Care Spending. Congressional Budget Office. Retrieved August 28, 2024, from https://www.cbo.gov/system/files/2023-03/58997-Whitehouse.pdf.

Source for CMS Trustees Report Predicted Medicare Spending (Adapted). Board of Trustees, Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds. (2011, May 13). 2011 Annual Report. Retrieved August 28, 2024, from https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/downloads/tr2011.pdf.

A comparison of actual and predicted Medicare spending per capita shows a similar story. Each year, from 2010 to 2020, the CBO's predicted Medicare spending per capita was higher than the actual amount. (Figure 1) Further, while the predicted values increase steadily year-over-year, actual spending is flatter, apart from a spike in 2020, which may be attributable to advance payments to providers made during the COVID-19 pandemic.[11]

Figure 1

Actual and Predicted Total Medicare Spending Per Capita, 2010–2020



Source for Predicted Medicare Spending Per Capita (Adapted). Congressional Budget Office. (2010, August 25). CBO's August 2010 Baseline: Medicare. Retrieved August 28, 2024, from https://www.cbo.gov/sites/default/files/recurringdata/51302-2010-08-medicare.pdf. Medicare spending per capita is the sum of separately derived Parts A, B, and D spending per capita calculated as the benefits outlay for each Part, less any respective offsetting receipts, divided by enrollment for that Part (i.e., Part A, B, or D).

Source for Actual Medicare Spending Per Capita (Adapted). Congressional Budget Office. (n.d.). Baseline Projections for Medicare. Retrieved August 28, 2024, from https://www.cbo.gov/data/baseline-projections-selected-programs#10. Medicare spending per capita is calculated as described above using data from the CBO Baseline Report of the year following (e.g., 2010 actual spending is from the 2011 baseline projections). In years with more than one baseline report, the latest one was used.

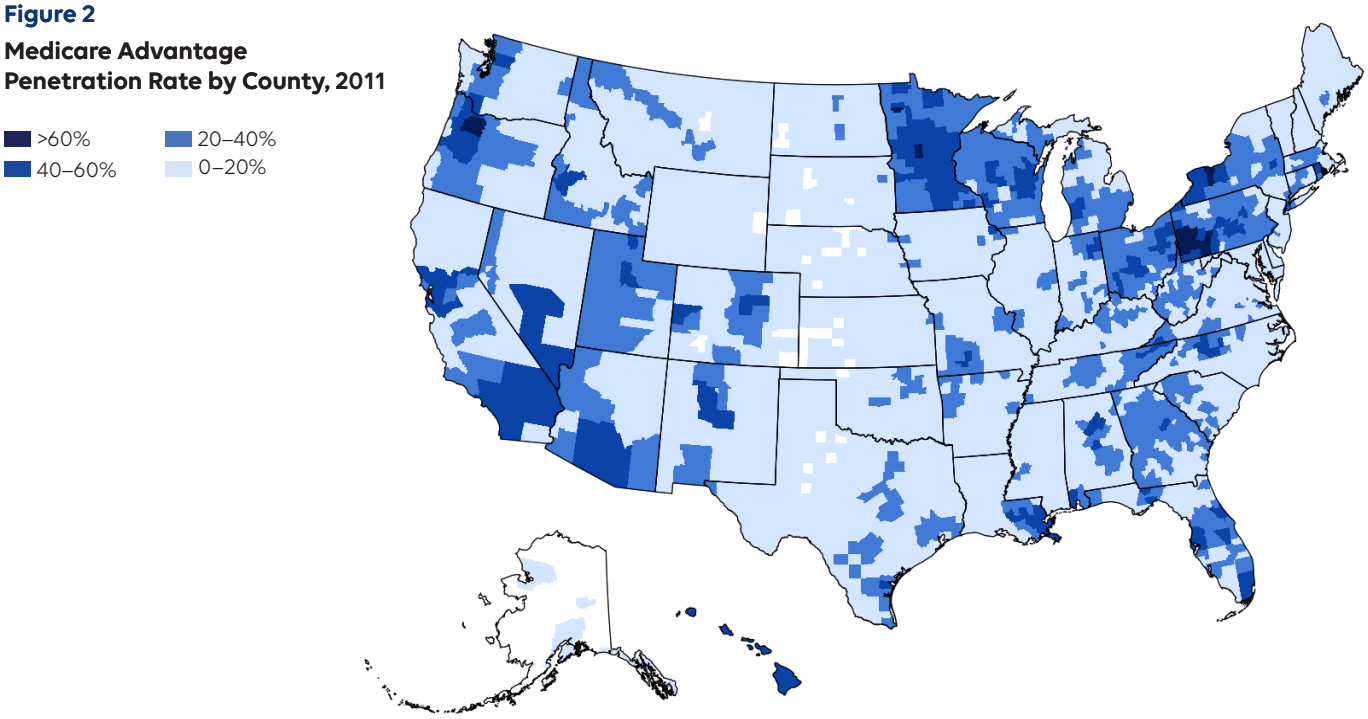
Why was Medicare spending so much lower than predicted? While policy experts have stated that these changes cannot be attributed to any one policy shift, there are many factors hypothesized to have contributed to this trend, including the direction of federal policy and choices by private insurers to ensure delivery of high value care. There have also been fewer heart attacks and strokes, in part due to cholesterol and blood pressure medicines having been increasingly cheaper and more widely used in recent years.[12] Others have suggested the compulsory value-based payment initiatives in Medicare introduced by the Affordable Care Act as a possible contributor.[13]

One factor that has been largely overlooked in recent commentary is increased MA penetration (i.e., percent of eligible Medicare beneficiaries enrolled in an MA plan), which grew substantially during the same timeframe.[14] Notably, this growth has largely been focused in counties in the East and Southwest. (Figures 2 and 3)

Interestingly, as seen in Figure 2, there were parts of the country with already considerable MA penetration in 2011, such as certain counties in California, Florida, Minnesota, New York, Oregon, and Pennsylvania, among others.

Figure 2

Medicare Advantage Penetration Rate by County, 2011

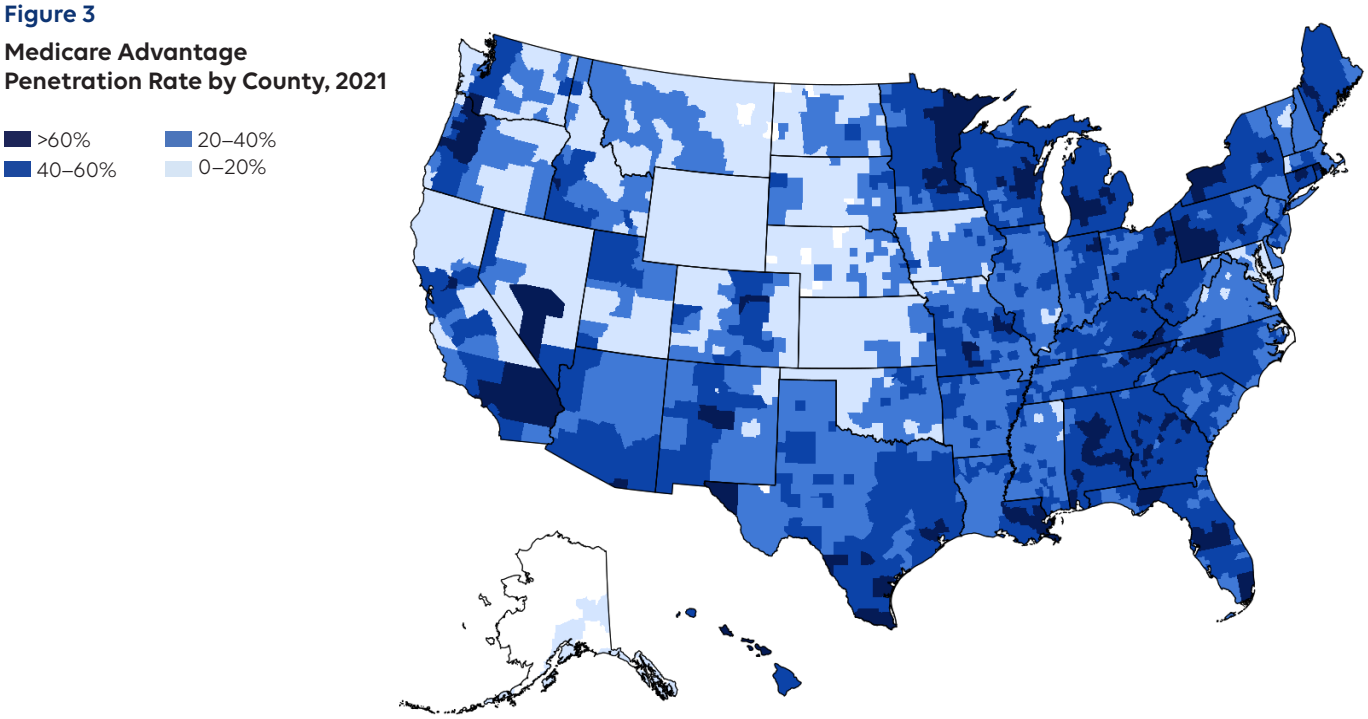


Note. White areas contain counties with no data available. The upper bound on each interval is inclusive (e.g., a county with exactly 20% MA penetration would be shaded in the lightest blue).

Source. Centers for Medicare & Medicaid Services. (2023). Medicare Geographic Variation–by National, State & County. Retrieved February 1, 2024, from https://data.cms.gov/summary-statistics-on-use-and-payments/medicare-geographic-comparisons/medicare-geographic-variation-by-national-state-county.

Figure 3

Medicare Advantage Penetration Rate by County, 2021



Note. White areas contain counties with no data available. The upper bound on each interval is inclusive (e.g., a county with exactly 20% MA penetration would be shaded in the lightest blue).

Source. Centers for Medicare & Medicaid Services. (2023). Medicare Geographic Variation–by National, State & County. Retrieved February 1, 2024, from https://data.cms.gov/summary-statistics-on-use-and-payments/medicare-geographic-comparisons/medicare-geographic-variation-by-national-state-county.

Methods

The objective of this study was to estimate the association between MA penetration and total Medicare spending per capita.

This study utilized two methods. The first method ("Method One") examined the relationship between MA penetration and total Medicare spending across counties. The second method ("Method Two") examined the relationship between the change in MA penetration over time and change in total Medicare spending over time (year-over-year within counties).

Total Medicare spending per capita was calculated as the sum of the enrollment weighted average of FFS spending per beneficiary and MA plan payments per member, plus Medicare Part D plan payments per member. Spending was adjusted for geographic and health status differences as described below.

The data included 3,045 counties from 50 states and DC over the years 2012-2021 (the most recent data available), with 2011 data used for Method Two to calculate the year-over-year change in 2012. The data used for calculating county-level total Medicare spending per capita came from several sources, including:

The CMS Geographic Variation Public Use File,[15,16] which contains county-level data for the following: annual FFS spending per capita, annual MA penetration, and annual FFS enrollment.[17]Additionally, FFS spending per capita is adjusted both for geographic differences in payment rates and for individual beneficiaries' health status using CMS hierarchical condition category (HCC) risk scores.[18] This study used annual FFS spending per capita adjusted for both geographic differences and beneficiaries' health status.

The CMS MA Plan Payment Data,[19] which contains county-level per member per month (PMPM) MA plan payments by plan type. For this study, the payment data was 1) annualized, 2) standardized for geographic differ-ences in payment rates using factors backed out of the FFS data, and 3) standardized for beneficiaries' health status using average CMS-HCC risk scores by county and plan type. Further, plan payments were adjusted for direct graduate medical education (GME) and indirect medical education (IME) payments.[20]

The CMS Part D Plan Payment Data,[21] which contains PMPM Part D plan payments by contract and plan benefit package. For this study, the spending data was 1) annualized and 2) standardized for beneficiaries' health status using average RxHCC risk scores by contract/plan benefit package.

The CMS MA and Part D Enrollment Data,[22] which contains monthly enrollment figures for both MA and Part D. Separately for MA and Part D, the enrollment data was joined with plan payment data to derive an enrollment-weighted average of payments within a county across different plan types.[23]

For demographic and economic controls, this study used the CMS Landscape files,[24] Area Health Resource Files,[25] and county-level urbanicity data.[26] All spending data were inflation-adjusted to 2021, the last year of the study period.

Both Method One and Method Two used linear regression models to estimate the association between MA penetration and total Medicare spending per capita. The regression models controlled for year and state fixed effects and several county-level controls, including the number of MA plans, rurality/urbanicity, total population size, median household income (in 2021 dollars), number of primary care providers per capita, percentage of the population ages 65 years and older, percentage of residents with incomes below the federal poverty level, and unemployment rate.

This study included a sensitivity analysis for both methods, whereby the MA risk scores were adjusted to reflect some policymakers' and researchers' claims of higher MA coding intensity. For the sensitivity analyses, MA risk scores were adjusted using coding intensity estimates from the Medicare Payment Advisory Commission (MedPAC)'s March 2024 report,[27] and the regression models were re-run using these adjusted risk scores. (See Appendix A for how these risk score adjustment factors were determined.)

Rough savings estimates that compared actual total Medicare spending to that if MA penetration had stayed constant at 2011 levels (28%) were calculated to determine the total savings generated from the last decade's growth in MA penetration. These estimates are based on actual MA penetration, actual spending, and actual Part A and B enrollment for years 2012-2021, along with this study's estimates for changes in total Medicare spending per capita associated with 10 percentage point higher MA penetration.

See Appendix B for this study's limitations.

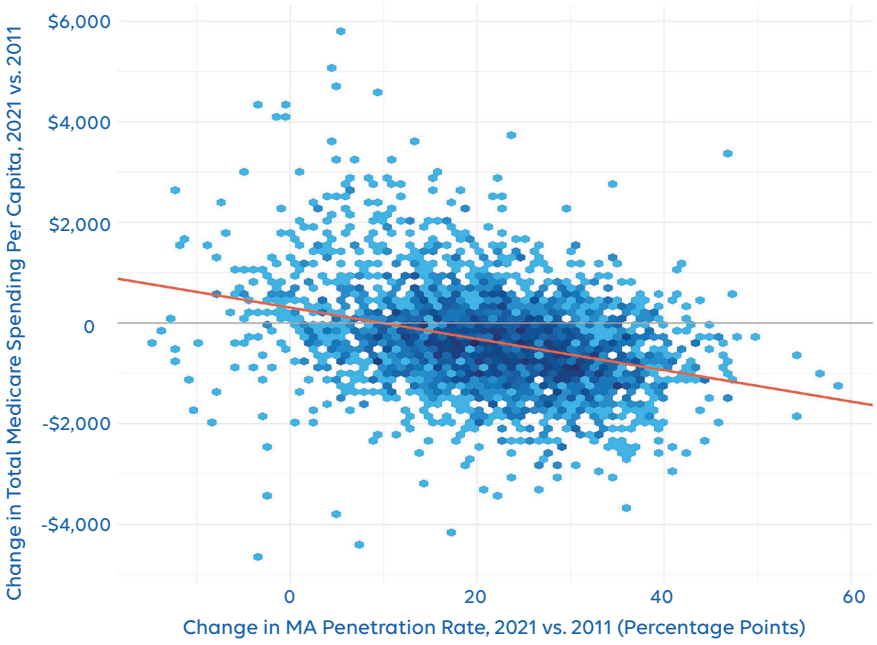
Findings

A preliminary examination of the association between counties' change in MA penetration and change in total adjusted Medicare spending, mapped out via scatterplot, shows a moderately negative correlation between the two variables when comparing the change in 2021 vs. 2011. (Figure 4) A negative correlation—represented by the downward slope of the red line in Figure 4—indicates that as one factor increases, the other decreases (or vice versa). Figure 4 shows that the more that MA penetration increased in a county from 2011 to 2021 (on the x-axis), the more (inflation-adjusted) costs decreased in that same county (on the y-axis).

Interestingly, when stratified by Census region,[28] the results show that this relationship is driven largely by the Midwest and the South, as the correlation in midwestern counties is by far the strongest (i.e., downward slope of the line is steepest), followed by that in southern counties. (Figure 5) In contrast, the plots for the Northeast and West show flatter lines indicating a weaker correlation between change in MA penetration and change in Medicare spending.

Figure 4

County-Level Change in Total Medicare Spending per Capita vs. Change in MA Penetration Rate, 2021 vs. 2011



Note. MA = Medicare Advantage.

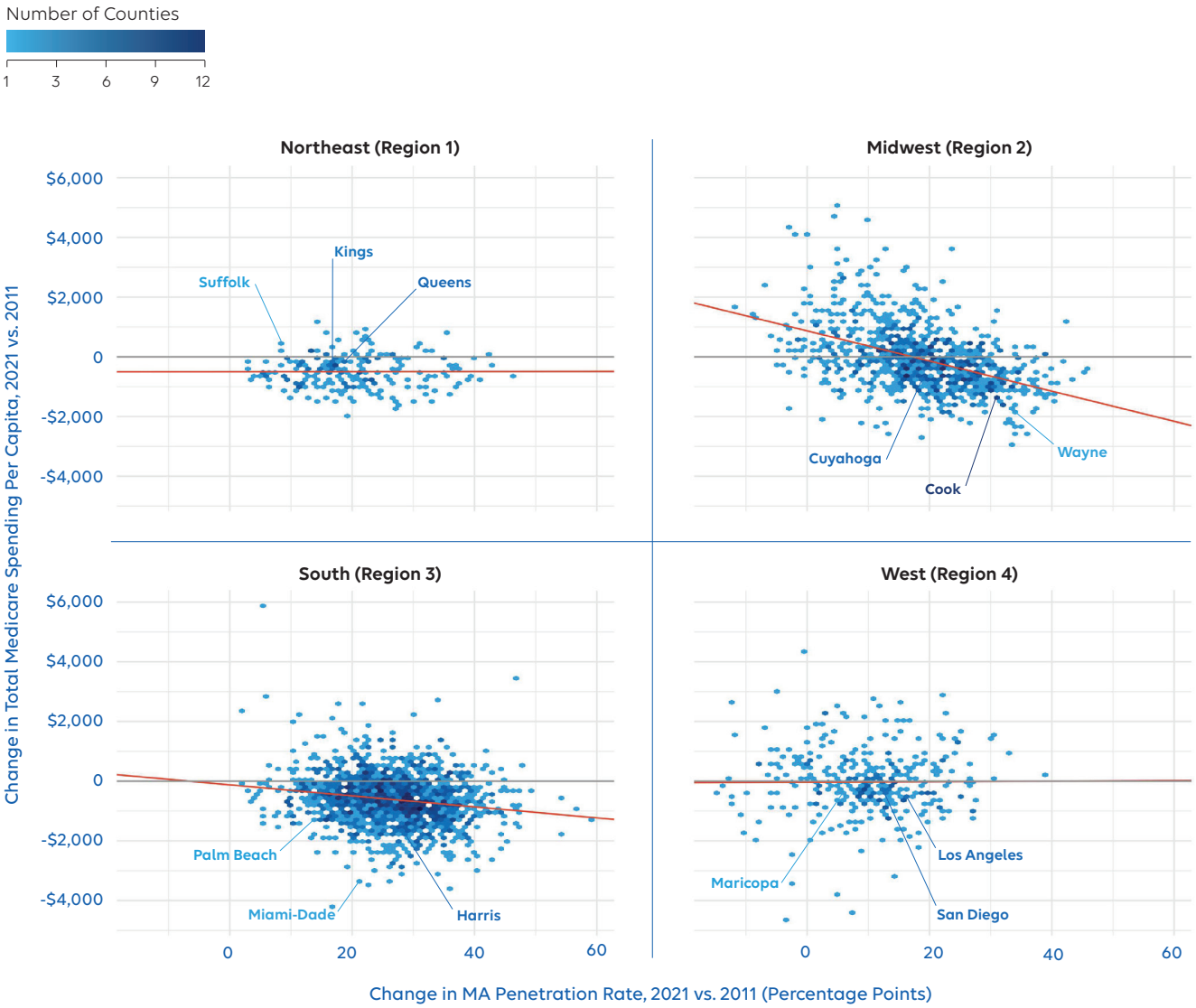
The red line is the line of best fit, which visualizes the strength and direction of the association between change in MA penetration rate and change in total Medicare spending per capita.

Total Medicare spending per capita is the sum of the enrollment weighted average of FFS spending per beneficiary and MA plan payments per member, plus Medicare Part D plan payments per member.

Spending is inflation-adjusted to 2021 dollars, geographic standardized, and adjusted using risk scores.

Figure 5

County-Level Change in Total Medicare Spending per Capita vs. Change in MA Penetration Rate by Census Region, 2021 vs. 2011



Note. MA = Medicare Advantage.

The red line is the line of best fit, which visualizes the strength and direction of the association between change in MA penetration rate and change in total Medicare spending per capita. The labelled counties represent the top three counties in that region with the highest Medicare population.

Total Medicare spending per capita is the sum of the enrollment weighted average of FFS spending per beneficiary and MA plan payments per member, plus Medicare Part D plan payments per member.

Spending is inflation-adjusted to 2021 dollars, geographic standardized, and adjusted using risk scores.

Source for Census Regions. U.S. Census Bureau. (n.d.). Census Regions and Divisions of the United States. Retrieved August 28, 2024, from https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf.

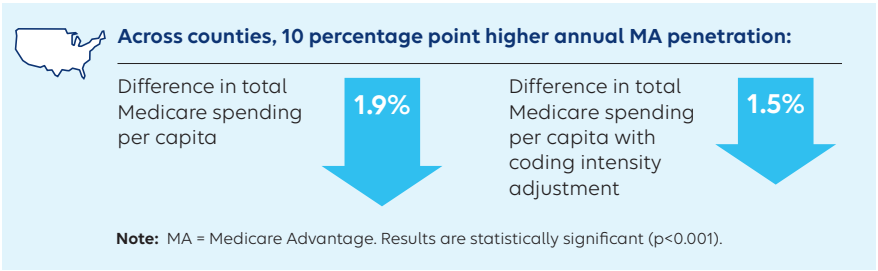
To more accurately estimate this association, linear regression models were used, using year and state fixed effects as well as several county-level controls.

Method One. The regression results for Method One, which examines the association between adjusted annual Medicare spending and MA penetration rate across counties, show that a 10 percentage point higher annual MA penetration is associated with 1.9 percent lower total Medicare spending per capita. In dollars, this is a $252 decrease from average total Medicare spending per capita. (Figure 6)

The sensitivity analysis shows that even after adjusting risk scores for purported higher MA coding intensity, an increase in MA penetration is still associated with lower Medicare spending. With the coding intensity adjustment, a 10 percentage point higher annual MA penetration is associated with 1.5 percent lower total Medicare spending per capita. This correlates to a $204 decrease from average total Medicare spending per capita. (Figure 6)

Figure 6

Association Between MA Penetration and Total Medicare Spending Per Capita, Across Counties



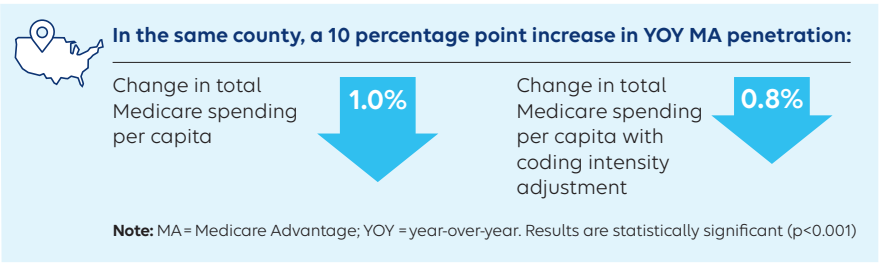
Note: MA = Medicare Advantage. Results are statistically significant (p<0.001).

Method Two. The regression used for Method Two examines the association between the year-over-year change in MA penetration and change in total Medicare spending within a county. It found that for every 10 percentage point year-over-year increase in annual MA penetration within a county, total Medicare spending per capita decreases by, or has a lower increase of, 1.0 percent year-over-year. In dollars, this is a $127 decrease from average total Medicare spending per capita. (Figure 7)

When applying the coding intensity adjustment sensitivity analysis to Method Two, the results show that within a county, for every 10 percentage point year-over-year increase in annual MA penetration, total Medicare spending per capita decreases by, or has a lower increase of, 0.8 percent year-over-year. This is a $105 decrease from average total Medicare spending per capita. Though the results from this sensitivity analysis, along with the Method One sensitivity analysis, were attenuated relative to the main findings, the estimates were still negative and statistically significant. (Figure 7)

Figure 7

Association Between Year-Over-Year Change in MA Penetration and Year-Over-Year Percent Change in Medicare Spending Per Capita, Within a County



Note: MA = Medicare Advantage; YOY = year-over-year. Results are statistically significant (p<0.001)

Using the estimates from these regression results to develop rough savings estimates gives a view of how MA penetration may have affected Medicare spending in total. Under Method One, if 10 percentage point higher MA penetration is associated with 1.9 percent lower total Medicare spending per capita, the cumulative savings from 2012-2021 are estimated at $144 billion (in 2021 dollars) compared to if MA penetration had remained constant at 2011 levels (28%). Even using the reduced estimates from the sensitivity analysis, which estimates 1.5 percent lower total Medicare spending per capita associated with 10 percentage point higher MA penetration, the cumulative savings from 2012-2021 are still estimated at $116 billion (in 2021 dollars). (Table 2)

Similar savings estimates can be developed using the results from Method Two. If 10 percentage point higher MA penetration within a county is associated with 1.0 percent lower total Medicare spending per capita for that same county, cumulative savings from 2012-2021 are estimated at $73 billion (in 2021 dollars). Again, while the sensitivity analysis attenuates the results, estimating 0.8 percent lower total Medicare spending per capita associated with 10 percentage point higher MA penetration, the cumulative savings estimate is still $59 billion (in 2021 dollars). (Table 2)

Table 2

Rough Savings Estimates

Method		Change in Total Medicare Spending Per Capita*	Savings (in 2021 Dollars)
Method One.	**Across Counties**	-1.9%	$144 billion
	Sensitivity Analysis Results	-1.5%	$116 billion
Method Two.	**Within One County**	-1.0%	$ 73 billion
	Sensitivity Analysis Results	-0.8%	$ 59 billion

*Associated with 10 percentage point higher Medicare Advantage penetration.

Discussion

For decades, the rising cost of the Medicare program has been a major concern for the federal budget and the solvency of the Medicare Trust Fund.

However, with Medicare spending trending lower than what was projected during the past decade, policymakers, researchers, and other stakeholders would like to understand the factors contributing to the difference. This analysis is the first study to suggest that one key factor that likely contributed to this slowdown in total Medicare spending is the substantial growth in MA enrollment in the past decade. Prior studies have examined the association between MA penetration and FFS spending only (i.e., not total Medicare spending) using similar methodologies and finding consistent results.[29,30]

This study examined the association between MA penetration and total Medicare spending per capita using two methods, looking at the trend across counties and within individual counties. Both methods showed a negative association between the two variables; as MA enrollment goes up, Medicare spending goes down. Even when taking into account MedPAC's estimates of coding intensity in MA, this study found reductions in Medicare spending associated with MA enrollment growth, though the estimates of the association were smaller.

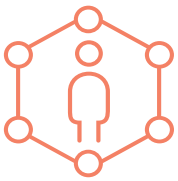
These results could have been driven by a few factors. One of these is spillover effect; that is, as MA enrollment increases, providers adapt their behavior to align with MA plan incentives for quality and efficiency—such as chronic condition management and reduced utilization of costly services like advanced imaging—for all of their Medicare patients, whether in FFS or MA. Thus, FFS benefits in the form of reduced spending as MA enrollment grows. To add credence to this hypothesis, the Method One regression model was rerun to test the association between MA penetration and only FFS spending per capita across counties; the results show that a 10 percentage point increase in annual MA penetration is associated with a 2.1 percent decrease in FFS spending per capita. Similarly, rerunning the Method Two regression model found that a 10 percentage point year-over-year increase in MA penetration within a county is associated with a 1.3 percent year-over-year decrease, or lower increase, in FFS spending per capita.

There is much debate as to whether a Medicare beneficiary costs the government more in FFS or MA, with some like MedPAC[31] citing higher MA costs and others like Milliman[32] citing lower MA costs. From the data available in this analysis, per capita spending among MA enrollees appeared to be around $500 lower than that for FFS enrollees, indicating that the overall study findings may also be partially driven by cost differences between the two options. However, given data limitations (e.g., the lack of hospice users in the MA population), this difference does not represent a true apples-to-apples comparison.

The findings presented are aggregated across counties and years, raising questions about the extent of variation in the direction and magnitude of the findings across the U.S. When stratifying the correlation between change in MA penetration and change in Medicare spending by region, the Midwest and the South showed the strongest relationship. This could, perhaps, indicate that there are pockets of counties where there is large potential for savings, with respect to utilization patterns, provider prices, or both.

Further, seeing as MA penetration was already high in some counties in 2011 as noted in Figure 2, these counties may have reaped the benefits of spillover effect savings before the study period began. Therefore, MA growth in these counties may not have the same effect on spending as the equivalent MA growth in other counties with lower baseline MA penetration. More research is needed to fully understand this mechanism.

The enormity of the savings generated from increased MA penetration should not be overlooked, especially given the growth of the MA program since 2021 (the last year of the study). As of 2024, 54 percent of eligible Medicare beneficiaries are enrolled in an MA plan.[33] Congress and CMS should continue to work with MA plans to ensure the sustainability of the MA program, keeping in mind that large payment cuts to the MA program could reduce needed benefits for members and discourage or even reduce enrollment in MA, which could have unintended consequences for overall Medicare spending growth.



The growth in Medicare Advantage penetration may be a key driver behind the slowdown in total Medicare spending.

Future research should continue to examine this relationship in years after the COVID-19 pandemic. Additionally, more research is needed to understand how other factors may contribute to slowing the growth in Medicare spending, such as the adoption of CMS Innovation Center (CMMI) payment models like accountable care organizations (ACOs).

Conclusion

The last decade has seen an unexpected slowdown in overall Medicare program spending. Still, Medicare spending represents significant portions of both national health spending and the federal budget: over one-fifth and one-tenth, respectively.[34] Therefore, understanding how to manage Medicare spending effectively and further drive down Medicare expenditures is critical. The MA program stands out as a powerful tool in this context, as MA is designed to deliver high-quality healthcare coverage while improving efficiency and value.

This research adds to the merits of MA, pointing to a significant association between higher MA penetration and lower total Medicare spending. This correlation may well be a key driver behind the slowdown in Medicare spending. As policymakers debate the Medicare program's future, the support and continuation of MA should be viewed not merely as an option, but a compelling pathway towards sustainable and quality healthcare for older adults and people with disabilities.

Appendix A

Example Calculations for Sensitivity Analyses' Risk Score Adjustments

Year	"True" Risk Score*	Upcoding per MedPAC Report	Upcoded Risk Score**	CMS Statutory Adjustment	Reported Risk Score†	Needed Adjustment Factor††	After Needed Adjustment‡
2011	2.00	0.06	2.12	0.034	2.048	**0.977**	2.00
2012	2.00	0.07	2.14	0.034	2.067	**0.967**	2.00
2013	2.00	0.08	2.16	0.034	2.087	**0.959**	2.00
2014	2.00	0.08	2.16	0.049	2.054	**0.974**	2.00
2015	2.00	0.11	2.22	0.052	2.105	**0.950**	2.00
2016	2.00	0.09	2.18	0.054	2.062	**0.970**	2.00
2017	2.00	0.09	2.18	0.057	2.056	**0.973**	2.00
2018	2.00	0.10	2.20	0.059	2.070	**0.966**	2.00
2019	2.00	0.12	2.24	0.059	2.108	**0.949**	2.00
2020	2.00	0.13	2.26	0.059	2.127	**0.940**	2.00
2021	2.00	0.15	2.30	0.059	2.164	**0.924**	2.00

Note. 2.00, in this example, is used as an illustrative "true" risk score.
*"True" Risk Scores are what MedPAC assumes risk scores would be, absent coding intensity/upcoding (i.e., what risk score would be if the beneficiary was in Medicare FFS).
**Upcoded Risk Score is the plan's actual calculated risk score before statutory adjustment for coding intensity. Upcoded Risk Score = "True" Risk Score x (1+Upcoding)
†Reported Risk Score = Upcoded Risk Score x (1-Statutory Adjustment)
††Needed Adjustment Factor = "True" Risk Score ÷ Reported Risk Score
‡After Needed Adjustment = Reported Risk Score x Needed Adjustment Factor

Source for Upcoding Estimates. The Medicare Payment Advisory Commission. (2024, March 15). Chapter 12: The Medicare Advantage Program: Status Report. Retrieved August 28, 2024, from https://www.medpac.gov/wp-content/uploads/2024/03/Mar24_Ch12_MedPAC_Report_To_Congress_SEC.pdf.

Appendix B

Limitations

CMS does not publicly provide data for total Medicare program spending by county. Therefore, the study's total Medicare spending numbers by county were aggregated from Medicare FFS spending, MA plan payments, and Part D plan payments, collected from separate datasets. This method does not include certain spending that was unavailable to be added to the study's estimate of total Medicare spending, such as FFS spending for enrollees only in Part A or only in Part B, and hospice spending for MA enrollees.

In addition, some plan types were excluded because of data availability. Specifically, payments to Medicare Medical Savings Account plans, Demo plans, 1876 Cost plans, Health Care Prepayment Plans (HCCP-1833 Cost Plans), and Program of All-Inclusive Care for the Elderly (PACE) plans were not available. The Part D data did not include information that could attribute retiree drug subsidy (RDS) plans to a given county; therefore, RDS subsidy payments were also excluded.

The file with FFS spending and enrollment suppresses data for any counties with fewer than 11 FFS beneficiaries, and the files with MA and Part D plan payments and enrollment suppress data for counties, contracts, or plans with fewer than 11 MA and Part D beneficiaries. Given that the size of such counties and plans is small, their exclusion should not materially affect the results.

For MA plan payments, the unadjusted figures were not geographically standardized for provider reimbursement rate differences like the unadjusted FFS spending data was. Therefore, to geographically standardize MA payments, the study calculated adjustment factors by backing them out of the adjusted FFS figures. Geographic differences in provider reimbursement rates are likely similar between FFS and MA, so these factors seem appropriate.

To adjust MA payments for enrollees' health risk scores, the study would ideally use individual-level risk scores like what CMS uses for the FFS spending data in this study. However, the MA payment data only includes average risk scores by plan type within each county; using these risk scores, nonetheless, should still capture some of the differences in payments by health status. Geographic and risk standardization factors were applied to both the MA plan A/B payment and the rebate payment.

For Part D plan payments, no standardization was made to account for geographic differences because adjustment factors were not available. However, Part D drug costs and pharmacy dispensing fees are unlikely to vary geographically to the same extent as other provider reimbursement rates. Risk standardization factors, for differences in health status, were applied to the direct subsidy, the reinsurance payment, and the low-income cost sharing payment.

Though the FFS and MA data was restricted to beneficiaries with both Parts A and B, the Part D data includes all enrollees (such as individuals with Part A or Part B only); the study could not identify Part D plan payments for only beneficiaries with both Parts A and B.

Lastly, this study's results are not conclusive of a causal effect; however, the methodology was carefully chosen to get as close as possible to estimating a causal effect. When able, the spending data was adjusted for geographic differences in payment rates and beneficiary health status. The regression models controlled for many possible confounders, including state fixed effects, year fixed effects, and county-level population and economic factors including but not limited to population size, median household income, and percentage of residents with income under the federal poverty level.

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[16] FFS spending per capita only includes beneficiaries with both Parts A and B (who didn't have any MA enrollment during the given calendar year). County figures are based on beneficiary county of residence.

[17] FFS spending data includes hospice spending.

[18] For more information on the methodology used by CMS to create the Geographic Variation Public Use File, please see: https://data.cms.gov/sites/default/files/2024-05/a0e72c13-805a-4546-bb18-4e75e84a282f/Geographic%20Variation%20Public%20Use%20File%20Methods%20Paper.pdf.

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