ACOs and the 1%: Changes in Spending Among High-Cost Patients Following the Medicare Shared Savings Program

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INTRODUCTION

Accountable Care Organizations (ACOs) were created by the Centers for Medicare and Medicaid Services (CMS) to improve efficiency and reduce unwarranted regional variations in spending. Because a small subset of high-cost patients drive total Medicare spending and may drive spending variation within and across regions,[1] reducing spending among these patients is critical. Studies suggest the Medicare Shared Savings Program—CMS' flagship ACO program—is associated with modest spending decreases.[2, 3] However, it is unknown whether the MSSP has reduced spending for high-cost patients, and, if so, whether this has reduced regional spending variation. We asked two research questions: First, has the MSSP reduced spending for high-cost beneficiaries who potentially drive regional spending variation? Second, has the MSSP reduced spending variation within regions overall?

METHODS

Using national 100% data for Medicare fee-for-service beneficiaries in 2010 ($n = 29{,}987{,}387$) and 2014 ($n = 30{,}848{,}623$), we measured total spending per beneficiary at the 50th, 90th, and 99th spending percentiles for each region (hospital referral region). We adapted the Gini coefficient—typically used to summarize income inequality—to summarize spending variation within region.[4] Gini coefficients range from 0 (if spending is equal across beneficiaries) to 1 (if spending is concentrated among one beneficiary). MSSP penetration was the proportion of beneficiaries in each region in the MSSP.

We performed first-differences analyses to test whether within-region changes in MSSP penetration were associated with changes in spending at the 50th, 90th, and 99th percentiles and changes in each region's Gini coefficient. We con-

Table 1 Association Between Region-Level Medicare Shared Savings Program (MSSP) Penetration and Changes in Spending and Region-Level Variation (2010 and 2014)

	Mean value in 2010[d]	Estimated impact of MSSP on absolute changes in spending, $ (95% CI)[b]	P[e]	Estimated impact of MSSP on relative changes in spending, % (95% CI)[b,c]	P[e]
Annual spending at 50th percentile[a]	$2183	−$133 (−$224, −$ 43)	0.004	−5.4 (−9.1, −1.8)	0.004
Annual spending at 90th percentile[a]	$25,390	−$1192 (−$2103, −$282)	0.010	−4.6 (−8.1, −1.1)	0.010
Annual spending at 99th percentile[a]	$95,535	−$4602 (−$7416, −$1789)	0.001	−4.9 (−7.9, −1.9)	0.001
Gini coefficient	0.752	0.002 (−0.002, 0.006)	0.305	0.3 (−0.3, 0.8)	0.304

CI confidence interval, HRR hospital referral region, CMS Centers for Medicare & Medicaid Services
[a]For each region (as defined by the 306 HRRs), we used: national 100% data on cost and resource use for 2010 (n = 29,987,387) and 2014 (n = 30,848,623) from the Medicare Beneficiary Annual Summary Files to define total Medicare spending; 100% data from CMS' Geographic Variation Public Use Files to define average beneficiary age, sex, race/ethnicity (white, black, Hispanic, other), Medicaid dual-eligibility, and comorbidity (CMS-Hierarchical Condition Category risk score); and a 20% random sample from the Shared Savings Program Beneficiary-Level File to define MSSP penetration. We excluded beneficiaries without 12 months of enrollment in Parts A and B of Traditional Medicare
[b]Homoskedastic standard errors were calculated after the Breusch-Pagan test failed to reject homoscedasticity
[c]Relative changes were calculated as the ratio of the absolute change in spending (or Gini coefficient) to the level of spending (or Gini coefficient) estimated for a "control" region, i.e., a region with 0% MSSP penetration in the year 2014. For example, to estimate relative changes in spending for beneficiaries at the 50th percentile, we calculated the ratio of the estimated absolute change in spending (− $133) to the estimated level of spending among beneficiaries in the 50th percentile in a region with 0% MSSP penetration in 2014 ($2447)
[d]Spending in 2010 was inflated to 2014 dollars using the Bureau of Labor Statistics Consumer Price Index (CPI) value of 1.0795 (https://www.bls.gov/cpi/)
[e]P < 0.05 (two-sided) was considered statistically significant

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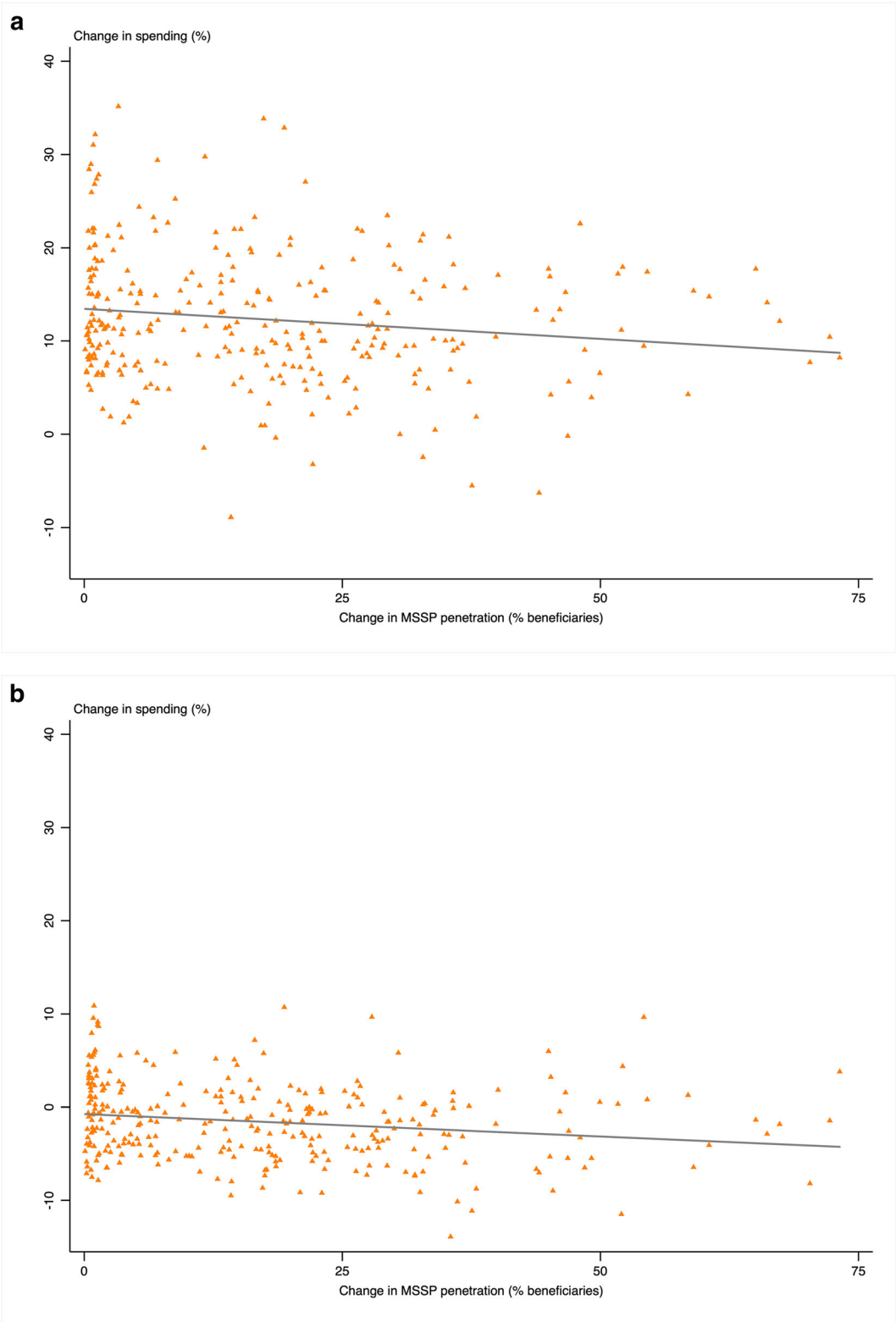

Figure 1 Region-level changes in spending and Medicare Shared Savings Program (MSSP) penetration between 2010 and 2014. In a and b, each orange triangle represents the percent change in average spending between 2010 and 2014 at a given percentile of spending for a given region. Percent changes were unadjusted and were calculated by dividing the region's absolute change in spending for a given percentile by the region's level of spending for a given percentile at baseline (2010). The gray line represents the fitted relationship between within-region change in MSSP penetration and within-region change in spending or the Gini coefficient, adjusting for year fixed effects and regional characteristics (listed in main text).

trolled for fixed differences across regions, common shocks across years (year fixed effects), and regional changes in beneficiary age, sex, race, comorbidity, and Medicaid dual-eligibility. This study was exempt from University of Michigan Institutional Review Board oversight.

RESULTS

High-cost beneficiaries drove spending variation within and across regions. For example, while spending for beneficiaries at the 50th percentile of spending differed by only $422 between high- vs. low-spending regions (i.e., 75th vs. 25th percentile), this difference increased to $16,652 for beneficiaries at the 99th percentile.

MSSP penetration was associated with consistent spending reductions overall (Table 1, Fig. 1). Changes in spending were uniform across moderate- vs. high-cost beneficiaries: a 1 percentage-point increase in MSSP penetration was associated with a spending change of −5.4% among beneficiaries at the 50th percentile (95% confidence interval [CI] −9.1%, −1.8%); −4.6% at the 90th percentile (95% CI −8.1%, −1.1%); and −4.9% at the 99th percentile (95% CI −7.9%, −1.9%). MSSP penetration was not associated with change in within-region spending variation (change in the Gini coefficient, 0.002; 95% CI −0.002, 0.006). However, MSSP penetration was associated with progressively greater absolute spending changes across the 50th (−$133), 90th (−$1192), and 99th (−$4602) percentiles.

DISCUSSION

Our study provides new evidence that the MSSP has not affected spending variation within or across regions. While the MSSP was associated with reduced spending overall, it was not associated with greater relative reductions among the high-cost beneficiaries who drive spending variation within and across regions. Our findings are consistent with prior evidence that MSSP ACOs achieved similar relative spending reductions among beneficiaries with high versus low medical complexity.[3, 5] The modest effect on high-cost beneficiaries may explain our finding that the MSSP has not reduced within-region spending variation.

As with prior MSSP evaluations, our study is limited by the program's voluntary nature. Regions with greater MSSP penetration may preferentially adopt other value-based initiatives. Our measure of MSSP penetration did not capture Pioneer or commercial ACOs. This ecological analysis could also miss underlying relationships between individual MSSP participation and spending. However, our savings estimate for median-spending beneficiaries (−$133 per year) is comparable to prior beneficiary-level estimates for beneficiaries with mean levels of spending.[2, 3, 5] Further, region-level analyses are necessary to evaluate changes in total variation and may capture spillover effects onto non-ACO beneficiaries. Finally, although high-cost beneficiaries typically have persistently high year-to-year spending,[6] we did not follow a cohort of high-cost beneficiaries. Nonetheless, our study provides additional evidence that the MSSP has neither reduced spending variations within or across regions nor disproportionately reduced spending among high-cost beneficiaries. We hypothesize a number of design features in the MSSP, such as limited accountability for highest-cost patients (e.g., truncated spending at 99th percentile) and the absence of downside risk, may decrease incentives to focus on the highest-need patients.

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