Published in final edited form as:

Med Care Res Rev. 2020 October ; 77(5): 474–482. doi:10.1177/1077558718807847.

Do Medicare Advantage Rebates Reduce Enrollees' Out-of-Pocket Spending?

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Abstract

The majority of Medicare Advantage (MA) plans receive payments that exceed their costs of providing basic Medicare benefits. There is controversy about whether these payments are passed on to enrollees as supplemental benefits or retained by plans. We used survey data on MA beneficiaries' actual out-of-pocket (OOP) spending linked to MA payment information to test whether higher plan payments and rebates lowered enrollee OOP spending. We used instrumental variables regression models to address concerns that plan payments and rebates may reflect anticipation of enrollees with particular health spending profiles. We found that beneficiaries recover only \$0.65 of every \$1 in payments exceeding Fee-for-Service spending through lower out-of-pocket spending, but more than fully recovered the value of the rebates supporting supplemental benefits.

INTRODUCTION

Medicare, the federal health insurance program for the elderly, accounts for nearly 15% of all federal spending and 3% of GDP (Congressional Budget Office, 2016). These figures are predicted to rise in coming years due to aging of the Baby Boomer population and healthcare cost growth driven by new technology. Policymakers face a constant tension between trying to reduce Medicare spending and responding to beneficiary concerns about high levels of out-of-pocket spending for healthcare services that are not covered by Medicare. The Centers for Medicare and Medicaid Services (CMS) has long attempted to use private managed care plans to rein in program spending while providing a low-cost way for beneficiaries to access supplemental benefits (McGuire, Newhouse, & Sinaiko, 2011).

Through this program, currently known as Medicare Advantage (MA), participating managed care firms receive risk-adjusted, capitated payments largely determined by bids to CMS reflecting their cost of providing Medicare benefits at the county level. Each year CMS sets a payment benchmark representing their maximum willingness to pay for benefits; a portion of the difference between bids and benchmarks is rebated to MA plans to cover supplemental benefits. In many counties, the benchmarks vastly exceed the cost of providing

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Declaration of Conflicting Interest: The Authors declare that there is no conflict of interest.

the standard Medicare benefit package. Medicare currently pays an average of 102% of average Fee-for-Service (FFS) spending for beneficiaries enrolled in MA (Medicare Payment Advisory Committee [MedPAC], 2016).

This approach to paying MA plans has led to geographic inequities in access to supplemental benefits and MA enrollment. Currently, 33% of Medicare beneficiaries are enrolled in MA, though penetration ranges from under 10% in 3 states to more than 40% in 5 states (Kaiser Family Foundation, 2017). While some argue that higher payments to MA plans provide an important source of supplemental benefits for enrollees, others question whether additional payments to MA plans are actually passed on to beneficiaries. Several recent papers using administrative data have estimated that only between one-half to two-thirds of a \$1 increase in plan payments is passed through to beneficiaries through improvements in the value of MA benefits (Cabral, Geruso, & Mahoney, 2014; Curto, Einav, Levin, & Bhattacharya, 2014; Duggan, Starc, & Vabson, 2016; Song, Landrum, & Chernew, 2012, 2013; Stockley, McGuire, Afendulis, & Chernew, 2014).

In this study, we used the Health and Retirement Study Consumption and Activities Mail Survey data to study the relationship between Medicare Advantage rebates and payments and out-of-pocket healthcare spending among MA enrollees. We used instrumental variables to correct for potential endogeneity between MA rebates, payments and enrollee healthcare utilization.

NEW CONTRIBUTION OF THIS WORK

To date, estimates of the extent that additional payments to MA plans are passed through to beneficiaries have relied on administrative data that estimate the OOP spending that the average FFS beneficiary would face if enrolled in each MA plan (Duggan et al., 2016; Stockley et al., 2014). However, these estimates do not account for non-random selection into MA plans, with beneficiaries choosing between MA and FFS and across plans within MA to elect the coverage option that best matches their anticipated health and healthcare utilization, nor do they incorporate actual beneficiary experiences post-enrollment (Atherly, Dowd, & Feldman, 2004; Dowd, Feldman, & Coulam, 2003; Feldman, Dowd, & Wrobel, 2003; Goldberg, Trivedi, Mor, Jung, & Rahman, 2017; Morrissey, Kilgore, Becker, Smith, & Delzell, 2013; Newhouse et al., 2014; Shimada et al., 2009).

In this study, we exploited exogenous variation in county-level payments to Medicare Advantage plans over time driven by the program's competitive bidding policy to test the extent that Medicare Advantage rebates and payments led to lower realized OOP healthcare spending among Medicare Advantage beneficiaries. In comparison to previous pass-through papers, which have relied on expected OOP spending estimated by CMS as a measure of benefit generosity, we retrospectively studied beneficiaries' actual experiences in MA. Use of reported OOP spending overcomes several key limitations of predicted spending metrics, which are based on in-network service use and expenditures of FFS beneficiaries, who may differ from MA enrollees on a number of dimensions (Dunn, 2010; Stockley et al., 2014).

CONCEPTUAL FRAMEWORK

CMS has paid MA plans through a bid system since 2006. Each year, CMS sets the county-level benchmark determined by federal regulation representing the maximum amount they will reimburse plans to provide standard Medicare Part A and Part B benefits as described above. Plans must submit bids indicating their costs of providing this bundle, with a single bid representing the cost of operating in all markets a plan chooses to enter. CMS calculates plan payments by comparing bids to a predetermined county-level benchmark in counties the plan proposes to serve. If the bid is below the benchmark, the plan receives a rebate amount from CMS equal to 75% of the difference between the bid and the benchmark while 25% is returned to Medicare. Since 2012, rebates are also based on plans' quality rating with higher-quality plans receiving higher rebate percentages with fixed percentages set at 50%, 65% and 70% in 2014 (MedPAC, 2016). Plans are required to return rebates to their enrollees in the form of reduced premiums or more generous benefits. Plans with costs above the benchmark must recoup the difference through enrollee premiums, though the vast majority of bids are below benchmarks. During our study period, MA enrollment was concentrated in counties with monthly MA plan rebates averaging \$72 - \$107 (Figure 1).

If MA plans truly pass through rebates as intended, enrollee OOP spending should drop in response to generous rebates as beneficiaries face lower cost-sharing or enhanced coverage for supplemental services. Since rebates represent funding that is above and beyond a plan's cost of care, each additional \$1 of rebates would decrease OOP spending by \$1 under perfect pass-through. Incomplete pass-through could happen if plans offer supplemental benefits that attract beneficiaries who do not end up using them or if plans retain these additional payments. We separately study total payments to plans and plan rebates, since the former may be influenced by advertising, administrative costs, and profits, which do not necessarily benefit enrollees.

Song et al. (2012, 2013) used MA benchmark rebasing and other exogenous changes in county benchmarks to test whether MA plans strategically increase their cost of providing basic benefits under competitive bidding. Although plan costs should not be affected by the benchmark, the authors found that a \$1 increase in the benchmark was associated with a \$.49 increase in HMO plan bid, with higher benchmarks essentially increasing plan profits by \$.49 of every \$1. Curto et al. (2014) used a similar identification strategy as part of a larger research agenda assessing the economic surplus of MA, also estimating that plans retain roughly half of every \$1 increase in benchmark payments and 55% of the total surplus created by MA. Duggan et al. (2016) exploited differential payment floors between urban versus rural counties and find that less than half of additional reimbursements are passed on to consumers through reductions in premiums and OOP, with no greater ratings in satisfaction, utilization, or health outcomes. However, the more generous payments in urban counties did lead to more advertising spending; urban floor counties spent roughly \$6.35 more for Medicare products than non-urban floor counties (Duggan et al., 2016).

Research has consistently shown that enrollment in Medicare managed care plans is higher in markets with higher plan payment rates (Atherly et al., 2004; Cawley, Chernew, & McLaughlin, 2005; Dowd et al., 2003; Gold, 2009; Nicholas, 2014; Pizer, Frakt, & Feldman,

2003; Town & Liu, 2003). If higher rebates increase MA enrollment, greater plan market share may encourage more efficient treatment practices, reducing OOP spending through changes in healthcare utilization. Higher rebates could attract FFS beneficiaries who are sicker than the average MA enrollee, resulting in higher average OOP spending among MA enrollees if these marginal beneficiaries experience greater OOP spending.

METHOD

Data

We linked county-level MA payment and enrollment data from 2008–2014 to the Consumption and Activities Mail Survey (CAMS), completed by a subset of Health and Retirement Study (HRS) respondents, and to county-level FFS Medicare spending from the Dartmouth Atlas Data.

Out-of-Pocket Spending

Annual out-of-pocket spending measures are reported in the CAMS, a mail survey completed by a random sample of older adults from the nationally representative Health and Retirement Study (HRS). The HRS is a biennial panel survey of older adults age 51 and above who answer a number of questions about demographics, health, healthcare utilization, and work and retirement behavior (Juster & Suzman, 1995). A subset of respondents receives the CAMS in the years between core HRS interviews. We matched CAMS surveys from 2009, 2011, 2013, and 2015 in which respondents reported their spending in the previous year, to HRS information from 2008, 2010, 2012, and 2014 core interview waves, to identify households where at least one member received Medicare benefits from an MA plan or FFS in each spending year in the survey report. We also used core interviews to control for household respondent age, sex, race, education, and whether they were working for pay.

5,607 unique respondents completed the CAMS survey between 2009–2015 providing 15,506 observations. After restricting our sample to those who had at least one member in the household receiving Medicare (dropped 5,465), who were 65 or above (dropped 1,302), and who could be linked to county-level MA information and FFS spending (dropped 657), our sample included 8,082 observations. We excluded 315 observations (< 4% of our sample) that were missing all components used to build our out-of-pocket spending measures, yielding our full Medicare sample size of 7,767 observations from 2008–2014.

Medicare coverage was determined by a survey report in the HRS. 2,518 observations (32%) were classified as MA households if at least one member was covered by MA. For our main analysis, households were included if the same insurance coverage applied for all members in the household. Of 2-member MA households, we dropped 636 mixed coverage households, yielding the main analysis sample of 1,882 households, of which 68% were single households.

The CAMS data support two measures of OOP spending: out-of-pocket healthcare for each household as the sum of spending for drugs, health services, and medical supplies; and total out-of-pocket spending (TOOP), which also includes insurance premiums for health

insurance (excluding long-term care insurance). Following Hurd and Rohwedder (2011), reported spending values were topcoded at the 95th percentile. Spending information, available only at the household level, could not be separately allocated to each member of a respondent household. We adjusted all spending metrics to 2014 dollars using the Consumer Price Index. Out-of-pocket spending accounted for \$1,762 of annual consumption (\$3,681 with insurance premiums), with MA households typically reporting lower spending than FFS households (Table 1). Mean (median) OOP spending for MA was \$1,582 (\$825) compared to \$1,832 (\$1,040) for FFS, increasing to \$2,968 (\$1,983) with insurance premiums for MA and \$3,961 (\$2,946) for FFS.

Medicare Advantage Rebates and Payments

We considered both enrollment-weighted mean county-level MA rebates and payments as measures of benefit generosity. Plans are allowed to choose the supplemental benefits that they offer with rebates, so two plans with the same rebate amount would not necessarily have the same drug coverage, network availability or cost sharing structure for outpatient visits. Since Medicare beneficiaries also have heterogeneous healthcare needs and spending preferences, we assumed that patients select the plan within their county choice set that best matches their anticipated utilization. Ideally, detailed information about prescription drug benefits, outpatient premiums, and network physician availability would be available for each MA enrollee and linked to their utilization. However, CMS collects relatively limited utilization data and distributes even less MA information to protect proprietary managed care firm information.

CMS reports average rebates and payments by MA plan type at the county level. In this paper we used the weighted average of the rebate and payment measures paid to HMO and PPO plans within a county. Although payments to each plan are risk adjusted to reflect expected utilization of enrollees, it is possible that plans are able to anticipate the health status of enrollees and total payments or rebates may be endogenous to utilization outcomes. To address this concern, we used each county's benchmark as an instrumental variable. This is a variant of the approach taken by Chernew, Decicca, and Town (2008), Baicker et al. (2013, 2015), and Song et al. (2013), who all used the benchmark as an instrument for MA penetration and plan bids.

Estimation Strategy

The CAMS data include panel data on only a minority of respondent households, with non-trivial changes in sample composition each wave. Therefore, we treated the data as repeated cross-sections to estimate spending regressions. We first consider the reduced form relationship between MA benchmarks, payments, and rebates and enrollee out-of-pocket spending. The basic specification regressed each of the spending measures S for respondent i in county c and year t , on the county-level MA payment metric R_{ct} (benchmarks, payments, and rebates); a vector of household characteristics X_{ict} ; a vector C_{ct} characterizing the county-level spending environment through county FFS spending adjusted for price, age, sex, and race from the Dartmouth Atlas (Skinner, Gottlieb, & Carmichael, 2011) MA and FFS beneficiary risk scores; and survey year fixed effects. Standard errors were clustered at the county level. We used generalized linear models with a log link and gamma distribution

to account for non-normally distributed spending measures. Standard errors were clustered at the county level.

$$S_{ict} = \alpha + \gamma R_{ct} + \beta X_{ict} + \delta C_{ct} + T_t + \varepsilon_{ict} \quad (1)$$

X_{ct} included demographic characteristics of the household respondent (age, sex, indicators for black race, other race, and Hispanic ethnicity, education level, whether working for pay, the number of members in the household, and indicators for missingness for the small number of observations missing data on control variables, recoded to 0 for dichotomous outcomes and the mean for continuous measures). We also included an indicator variable for the n=338 observations which had missing data on one of the out-of-pocket spending measures but report on other components.

Equation 1 for MA payments and rebates assumes that there is no endogeneity or reverse causality between these metrics and enrollee out-of-pocket spending. However, one may be concerned that plan bids and subsequent payments and rebates reflect advance knowledge of the health or utilization profiles of enrollees in a particular county. We addressed this by using the county benchmark as an instrument for the rebate and payment. Thus, the effect of the payment (rebate) was identified using the exogenous variation from the CMS rules underlying statutory benchmark updates. The instrumental variables estimate was implemented using a two-stage residual inclusion (2SRI) GLM model.

$$R_{ct} = \alpha + \lambda Bench_{ct} + \beta X_{ict} + \delta C_{ct} + T_t + \varepsilon_{ict} \quad (2a)$$

$$S_{ict} = \alpha + \gamma R_{ct} + \tau \hat{\varepsilon}_{ct} + \theta X_{ict} + \rho C_{ct} + T_t + \xi_{ict} \quad (2b)$$

In the IV approach, our identifying assumption was that the benchmark only affects household out-of-pocket spending through the generosity of supplemental MA benefit availability reflected in payments and rebates (R_{ct}). Since we control for county-level, price-adjusted Medicare FFS spending, the payment term captures all payments to plans exceeding average FFS spending regardless of whether they are part of the rebate. This can include expenses such as administrative costs and advertising.

In a robustness check, we constructed simulated benchmarks following Song et al. (2013) that replace all county benchmark rates based on the county's own FFS growth rate with the average FFS growth rate of all other counties in the state (payment rates based on minimum payment floors are unchanged).

We also tested the sensitivity of our results to model specification. We replaced the GLM models with two-stage least squares regression models using the natural logarithm of spending as the second stage dependent variable. Other robustness checks used linear time trend in place of year dummies, excluded county-level controls, and included a measure of insurance market power (HHI based on the number of enrollees in MA plans).

If our IV identifying assumption was violated because the benchmark captures other dimensions of the healthcare environment, we would expect our estimated relationships to

be very sensitive to county controls in the checks described above. We performed a second test to rule out relationships between the benchmarks and other unobserved, market-level factors by replicating our MA models among FFS households, a placebo population. If the predicted rebates (payments) really reflect local factors beyond the random variation in MA payment policy, we would expect to see statistically significant coefficients in the FFS models.

RESULTS

Table 2 presents our main regression results. The GLM regressions (Equation 1) indicate a negative relationship between MA benchmarks and rebates and both measures of OOP spending for Medicare Advantage enrollees. Payments were negatively associated only with OOP without insurance. The reduced form benchmark models indicate that MA beneficiaries recover \$0.22 of every \$1 in higher benchmarks through OOP reductions and \$0.34 in TOOP reductions. The estimates for MA payments are lower, only \$0.09 for both OOP and TOOP and larger for rebates (-\$0.31 and -0.81 respectively). All relationships are statistically significant at $p < 0.10$ or lower except for MA payments and TOOP.

As discussed above, there are several reasons why the OLS regression results indicating incomplete pass-through of payments and rebates may be biased. Table 2 also reports IV specifications accounting for endogenous MA bidding. The county-level benchmark was a strong instrument for payments and rebates with first-stage F-statistics of 36.7 and 36.5 (Table 3). A \$1 increase in the benchmark increased payments by roughly \$0.52 and rebates by roughly \$0.15, comparable to estimates reported elsewhere in the MA literature (Staiger and Stock, 1997; Stock and Yogo, 2005; Song et al., 2013).

The IV estimates suggested that beneficiaries recover more of the MA payments and rebates than our descriptive models revealed. Pass-through of total MA payments remained incomplete, with \$1 of additional payments reducing OOP by \$0.44 ($p < 0.10$) and TOOP by \$0.65 ($p < 0.05$). However, beneficiaries recover more than the full value of MA rebates, with reductions of \$1.50 ($p < 0.05$) in OOP and \$2.23 ($p < 0.01$) in TOOP for each \$1 rebate increase. The smaller point estimates for payments versus rebates are not surprising since the majority of MA payments cover mandatory benefits, which will be similar across enrollees, while rebates cover supplemental benefits. The first stage residuals were statistically significant in all spending regressions.

The simulated benchmark was a weaker instrument than the true benchmark (First-stage F-statistic = 11.5 for payments and 5.8 for rebates) and did not indicate significant relationships between MA payments or rebate and beneficiary OOP spending, though point estimates continued to point to full pass-through of the rebates (Table 4). Our main findings were robust to a number of other specification tests (Table 4). The 2SLS models with logged spending continue to indicate the possibility of full pass-through; a \$1 increase in payments (rebates) reduces TOOP by 0.044% (0.069%), or \$1.31 (\$2.05) when evaluated at mean spending. Findings were also robust to changes in the set of control variables such as excluding county-level FFS and MA risk scores, adjusting for linear time trends, excluding county characteristics, and including county insurance market power. The MA rebate

coefficients were smaller in magnitude when we excluded some or all county-level controls, but TOOP coefficients continued to include full pass-through of the MA rebates. Point estimates generally indicated incomplete pass-through of MA payments.

We found no relationship between MA benchmarks, payments, or rebates and either OOP or TOOP healthcare spending in our placebo regressions in the FFS population (Appendix 1). Coefficients were small in magnitude and statistically insignificant in both the GLM and 2SRI specifications. These models help to allay concerns that benchmarks might influence spending because of a correlation with an unobserved market-level factor.

DISCUSSION

Using survey data on household experiences with their actual Medicare coverage option, we estimated that \$0.34 of every \$1 increase in benchmarks, \$0.65 of payments, and \$2.23 of rebates to Medicare Advantage plans are passed on to enrollees in the form of lower out-of-pocket healthcare spending. Our payment results are slightly larger than those found in papers using expected out-of-pocket spending that could not account for patient-plan matching.

We extended previous pass-through literature in Medicare Advantage to study the experiences of actual beneficiaries in their chosen plans. Additionally, we studied pass-through of both total payments to plans and payments explicitly designated for supplemental benefits, which appeared to have the highest rates of return for MA enrollees. The rebate results are encouraging, as they suggest that supplemental benefits, when provided, significantly reduce beneficiary out-of-pocket spending, in some cases by more than the rebate amount. This could happen if plans are able to provide benefits for services such as eye exams and dental care at negotiated costs that are much lower than what beneficiaries would pay out of pocket, or if supplemental benefits offset other utilization. At the same time, we find incomplete pass-through of the full value of payments exceeding local FFS spending, suggesting that MA plans are not excessively generous in their benefit design. Future reforms to MA policy such as requiring all MA payments exceeding local FFS spending or another appropriate cutpoint below current benchmarks to be rebated to enrollees could improve pass-through rates of MA payments.

Cabral et al. (2014) and Duggan et al. (2016) exploited the exogenous variation in payment rates created by the MA “urban floor” county payment rate, which increased the minimum rate for counties with 250,000 or more residents by 10.5%. Using data from 1997 – 2003, Cabral et al. (2014) found that consumer premiums were reduced by \$0.45 for each dollar in higher payments and consumers benefited from an additional \$0.09 of pass-through in the form of actuarial value of plan benefits. In more recent (2007 – 2011) data, Duggan et al. (2016) estimated less than half of MA extra payments pass-through to beneficiaries in floor counties. Using the same expected OOP cost measure as Duggan, Stockley et al. (2014) analyzed the impact of payment benchmark changes on enrollees’ plan premiums and OOP costs, and qualitatively found that benchmark payment increases led to more generous benefits. Curto et al. (2014) also utilized more recent data (2006–2011) to exploit benchmark update effects and found pass-through rates of 40–60%. Our payment pass-

through estimates using actual beneficiary experiences are higher, but within the confidence intervals of research based on estimated spending.

Our study has several limitations. We used survey data, which may introduce recall bias (Goldman, Zissimopoulos, & Lu, 2011). Though this may reduce the precision of our estimates, we are not aware of any reasons why MA vs. FFS households would have differential recall ability, or why recall bias would vary with county-level rebates. Additionally, out-of-pocket spending data in the HRS is generally high quality and comparable to spending measures derived from other commonly used datasets, such as the Medicare Current Beneficiary Survey and Medical Expenditure Panel Survey (Goldman et al., 2011). Our small sample does not include enough observations from respondents in counties on either side of the urban floor population size cutoff to assess the robustness of our results to other identification strategies sometimes used in the MA literature.

We were unable to account for changes in quality or access to healthcare that MA plans make in response to rebate payments or higher benchmarks. Plans could use some of these funds to expand their provider networks and improve access to care, likely increasing the value of a benefit package to enrollees without necessarily reducing an enrollee's OOP or TOOP spending. Indeed, enrollee spending could actually increase in this case if it becomes easier to consume care. However, Duggan et al. (2016) found that higher plan payments were not associated with better patient satisfaction, differences in utilization, or differences in health outcomes.

Fiscal and demographic pressures provide a strong impetus for policymakers to adopt new strategies to reduce Medicare spending. Most proposals rely on reducing payments to providers, increasing cost-sharing, or a combination of the two. MedPAC has repeatedly called for payment parity between MA and FFS. Despite policymakers' goals of having additional payments to MA plans benefit enrollees, our study and other recent evaluations suggest that enrollees do not recover the full value of these additional payments relative to FFS spending, though enrollees fully benefit from the portion of payments earmarked for supplemental benefits.

Acknowledgments

This work was supported by the National Institute on Aging (K01AG041763). Findings do not represent the views of the sponsor. We thank Joe Newhouse and seminar participants at Indiana University, Johns Hopkins, the American Society of Health Economists Biennial Conference, and the Association for Public Policy & Management for helpful comments. All errors are our own.

Appendix

Appendix A1:

Medicare Advantage Plan Rebates and Annual Spending Among Medicare FFS Beneficiaries, 2008–2014

	OOP Spending		OOP + Insurance	
	GLM	2SRI	GLM	2SRI
MA Benchmark	0.29 (0.05)	-	0.049 (0.09)	-
MA Payment	0.002 (0.03)	0.12 (0.13)	0.02 (0.06)	0.20 (0.46)
First-Stage F		8.7		8.7
MA Rebate	0.002 (0.10)	0.23 (0.23)	-0.19 (0.22)	0.36 (0.81)
First-Stage F		22.9		22.9
Observations	4,792	4,792	4,792	4,792

^aCluster-robust standard errors are in parentheses, statistically significant at *p<.10, **p<.05, ***p<.01.

^bRegressions control for respondent demographics, number of member in the household, if any component of spending measure is missing, county FFS reimbursement adjusted for price, race, gender, age, and county FFS and MA risk scores.

^cMedicare FFS households with same insurance coverage.

^dSpending topcoded at 95th percentile and converted to 2014 dollars.

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Figure 1:

Variation in Medicare Advantage Rebates Across Counties Over Time

Notes. Medicare Advantage average rebates at the county level for study years 2008–2014.

Rebates are weighted average of HMO and PPO plans within a county. Solid vertical lines indicate average county-level rebates averaged across all Medicare beneficiaries in the Health and Retirement Study, dashed lines indicate average rebates among Medicare Advantage enrollees in the Health and Retirement Study.

Table 1:

Characteristics of CAMS Medicare Sample, 2008–2014

Observations	MA 1,882	FFS 4,792
MA payment	8,097 (2,447)	6,636 (3,241)
MA rebate	1,007 (663)	691 (549)
MA benchmark	11,023 (1522)	10,597 (1,179)
Total Medicare Part A + B reimbursement	9,763 (1,648)	9,537 (1,356)
MA penetration	0.34 (.13)	0.25 (.13)
MA county risk scores	1.07 (.36)	0.85 (.46)
FFS county risk scores	1.02 (.10)	1.01 (.08)
OOP health	1,582 (1,914)	1,832 (2,097)
OOP health + insurance	2,968 (3,168)	3,961 (3,729)
Age	76 (7.2)	77 (7.2)
Working	0.06 (.24)	0.09 (.28)
Number of years in school	12 (3.0)	13 (2.9)
Male	0.28 (.45)	0.33 (.47)
Hispanic ethnicity	0.13 (.33)	0.05 (.22)
Black	0.15 (.40)	0.13 (.36)
Avg number of members in household	1.32 (.47)	1.37 (.48)

^a Characteristics of respondents in CAMS sample who were at least 65 years old, received Medicare benefits during the spending year, and had the same Medicare coverage type as their spouse if married.

^b Payments, rebates, and benchmarks are annual rates and converted to 2014 dollars; spending is annual, topcoded at 95th percentile, and converted to 2014 dollars; total Medicare Part A and B reimbursement are price, age, sex, and race adjusted; FFS county risk scores are the average Hierarchical Condition Category (HCC) score, MA county risk scores are the weighted average risk scores from MA plans; standard deviations are in parentheses.

^cDemographics reported for the HRS respondent completing the survey for his/her household.

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Table 2:

Medicare Advantage Plan Rebates and Payments and Annual Spending Among Medicare Advantage Beneficiaries, 2008–2014

	OOP Spending		OOP + Insurance	
	GLM	2SRI	GLM	2SRI
MA Benchmark	−0.22*** (0.047)	-	−0.34*** (0.096)	-
MA Payment	−0.09** (0.04)	−0.44* (0.25)	−0.09 (0.08)	−0.65** (0.31)
First-Stage F		36.7		36.7
MA Rebate	−0.31** (0.13)	−1.50** (0.68)	−0.81*** (0.21)	−2.23*** (0.76)
First-Stage F		36.5		36.5
Observations	1,882	1,882	1,882	1,882

^a Cluster-robust standard errors are in parentheses, statistically significant at * $p < .10$, ** $p < .05$, *** $p < .01$.

^b Regressions control for respondent demographics, number of member in the household, if any component of spending measure is missing, county FFS reimbursement adjusted for price, race, gender, age, and county FFS and MA risk scores.

^c Medicare Advantage households with same insurance coverage.

^d Spending topcoded at 95th percentile and converted to 2014 dollars.

Table 3:

First Stage Regressions of Rebates and Payments

MA sample	
Payments	
Benchmark	0.52*** (0.09)
First-Stage F	36.7
Rebates	
Benchmark	0.15*** (0.03)
First-Stage F	36.5
Observations	1,882

^a First stage regression results of benchmark on rebate and payments.

^b Cluster-robust standard errors are in parentheses, statistically significant at *p<.10, **p<.05, ***p<.01.

^c Regressions control for respondent demographics, number of member in the household, if any component of spending measure is missing, county FFS reimbursement adjusted for price, race, gender, age, and county FFS and MA risk scores.

^d Medicare Advantage households with same insurance coverage.

Table 4:

Sensitivity Analysis of Medicare Advantage Plan Rebates and Payments and Annual Spending Among Medicare Advantage Beneficiaries, 2008–2014

	OOP Spending		OOP + Insurance	
Simulated Benchmarks as Instrument				
	GLM	2SRI	GLM	2SRI
Simulated Benchmark	−0.10 (0.07)	-	−0.13 (0.15)	-
MA Payment	−0.09** (0.04)	−0.23 (0.25)	−0.09 (0.08)	−0.31 (0.33)
First-Stage F		11.5		11.5
MA Rebate	−0.3** (0.13)	−1.13 (0.97)	−0.81*** (0.21)	−1.332 (1.36)
First-Stage F		5.8		5.8
Observations	1,882	1,882	1,882	1,882
ln(Spending) as Dependent Variable				
	OLS	IV	OLS	IV
MA Benchmark	−0.00012*** (0.00004)	-	−0.00010** (0.00004)	-
MA Payment	−0.000046** (0.00005)	−0.00024*** (0.00006)	−0.000012 (0.00002)	−0.00044*** (0.00006)
First-Stage F		288.8		311.8
MA Rebate	−0.00016** (0.00007)	−0.0082*** (0.0002)	−0.00035*** (0.00005)	−0.00069** (0.0002)
First-Stage F		225.6		237.9
Observations	1,738	1,738	1,777	1,777
Control for Annual Time Trend				
	GLM	2SRI	GLM	2SRI
MA Benchmark	−0.22*** (0.05)	-	−0.33*** (0.09)	-
MA Payment	−0.09*** (0.03)	−0.42* (0.23)	−0.10 (0.07)	−0.61** (0.28)
First-Stage F		40.4		40.4
MA Rebate	−0.25** (0.13)	−1.71** (0.82)	−0.69*** (0.21)	−2.52*** (0.86)
First-Stage F		27.5		27.4
Observations	1,882	1,882	1,882	1,882

	OOP Spending		OOP + Insurance	
	Exclude County-Level Risk Scores as Controls			
	GLM	2SRI	GLM	2SRI
MA Benchmark	−0.23*** (0.05)	-	−0.37*** (0.09)	-
MA Payment	−0.04* (0.02)	−0.21** (0.08)	−0.087** (0.04)	−0.34*** (0.11)
First-Stage F		71.9		71.4
MA Rebate	−0.23** (0.10)	−0.94*** (0.31)	−0.68*** (0.16)	−1.52*** (0.38)
First-Stage F		78.7		78.9
Observations	1,882	1,882	1,882	1,882
	Exclude All County-Level Controls			
	GLM	2SRI	GLM	2SRI
MA Benchmark	−0.22*** (0.04)	-	−0.38*** (0.06)	-
MA Payment	−0.04* (0.02)	−0.28*** (0.09)	−0.09** (0.04)	−0.48*** (0.14)
First-Stage F		38.4		38.0
MA Rebate	−0.30*** (0.11)	−0.79*** (0.22)	−0.78*** (0.16)	−1.36*** (0.37)
First-Stage F		150.0		150.5
Observations	1,882	1,882	1,882	1,882
	Include County HHI as Control			
	GLM	2SRI	GLM	2SRI
MA Benchmark	−0.23*** (0.05)	-	−0.34*** (0.10)	-
MA Payment	−0.09** (0.036)	−0.44* (0.26)	−0.09 (0.08)	−0.67** (0.32)
First-Stage F		38.7		38.7
MA Rebate	−0.31** (0.13)	−1.54** (0.70)	−0.83*** (0.21)	−2.30*** (0.79)
First-Stage F		33.2		33.2
Observations	1,882	1,882	1,882	1,882

^aCluster-robust standard errors are in parentheses, statistically significant at *p<.10, **p<.05, ***p<.01.

^bRegressions control for respondent demographics, number of member in the household, if any component of spending measure is missing, county FFS reimbursement adjusted for price, race, gender, age, and county FFS and MA risk scores (unless otherwise indicated).

^cMedicare Advantage households with same insurance coverage.

^dSpending topcoded at 95th percentile and adjusted for inflation (unless otherwise indicated).

^eSimulated benchmarks constructed by purging FFS growth rate and replacing it with FFS growth rate of entire *state* that a given county belongs to, *except* for the given county.

^fTwo-Stage Residual Inclusion model uses the same first stage as other IV specifications and a general linear model with a log link and gamma distribution in the second stage.

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