Who Benefits when the Government Pays More? Pass-Through in the Medicare Advantage Program*

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Abstract

Governments contract with private firms to provide a wide range of services. While a large body of previous work has estimated the effects of that contracting, surprisingly little has investigated how those effects vary with the generosity of the contract. In this paper we examine this issue in the Medicare Advantage (MA) program, through which the federal government contracts with private insurers to coordinate and finance health care for 17 million Medicare recipients. To do this, we exploit a substantial policy-induced increase in MA reimbursement in metropolitan areas with a population of 250,000 or more relative to MSAs below this threshold. Our results demonstrate that the additional reimbursement leads more private firms to enter this market and to an increase in the share of Medicare recipients enrolled in MA plans. Our findings also reveal that about one-eighth of the additional reimbursement is passed through to consumers in the form of better coverage. A somewhat larger share accrues to private insurers in the form of higher profits and we find suggestive evidence of a large impact on advertising expenditures. Our results have implications for a key feature of the Affordable Care Act that will reduce reimbursement to MA plans by $156 billion from 2013 to 2022.

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1 Introduction

Governments often contract with private firms to provide publicly financed goods and services. The size of these contracting arrangements is vast and the breadth is wide, representing 10% of GDP in the U.S. in 2008 and ranging from defense contractors to landscaping companies (OECD, 2011). Private firms are also increasingly involved in social services such as education and health care. "Contracting out" could lead to improved efficiency, as private firms have powerful incentives to control costs. Additionally, if the government contracts with multiple firms, consumers may have access to more choice. This can improve consumer surplus in two ways: additional competition can lead to quality improvements and private firms may more effectively cater to heterogeneous consumer preferences.

The Medicare program, which currently provides health insurance to 55 million U.S. residents at a cost of over $600 billion in 2013, offers an important example of "contracting out" (CMS, 2013; CBO, 2013). For most Medicare recipients, the federal government directly reimburses hospitals, physicians, and other health care providers on a fee-for-service basis. However, for 17 million (or 31 percent of all) Medicare recipients, the federal government contracts with private insurers to coordinate and finance medical care as part of the Medicare Advantage (MA) program. This paper examines the MA market and explores how the quality of private provision changes as the generosity of the contract increases.

Previous research has investigated the effect of Medicare Advantage on Medicare expenditures, health care utilization, and health outcomes (Afendulis et al. 2013, Landon et al. 2012, Lemieux et al. 2012). A related strand of research has explored how MA enrollment is affected by the generosity of plan reimbursement (Cawley et al. 2005, Pope et al. 2006); surprisingly little research has investigated how the characteristics of Medicare Advantage coverage vary with the generosity of plan reimbursement. Plan payment rates could influence the quality of coverage offered by private insurers as well as the entry decisions of some insurers. Given that a key feature of the recently enacted Affordable Care Act gradually lowers reimbursement to MA plans by an estimated $156 billion from 2013-22 (CBO, 2012), this gap is unfortunate. While the Congressional Budget Office and others have estimated that these lower payment rates will reduce MA enrollment, there is little evidence on how the quantity and quality of plans will change for those who remain in the program.

We aim to partially fill this gap in the literature by exploiting policy-induced variation in the generosity of MA plan reimbursement. In counties with relatively low Medicare Fee-for-Service (FFS) spending, plan payments are set at a payment floor. This floor is 10.5 percent higher in counties that belong to metropolitan areas with more than 250,000 residents than it is in counties below this threshold. We leverage cross-sectional variation in payment, focusing in on the 2007-2011 period, which is marked by a substantial expansion in the MA program, as shown in Figure 1. In doing so, we explore the impact of additional reimbursement on MA enrollment and on the generosity of MA coverage. We compare outcomes in urban counties with a population of 250,000 or more to similar counties below this threshold.[1] The differential payments applying to urban counties are in effect throughout our sample period and affect a substantial percentage of counties, as shown in Figure 2.

Our first set of empirical results indicate that counties receiving additional reimbursement (by virtue of the urban payment floor) see an average of 1.8 more insurers, as well as an HHI that is 873 lower. These effect sizes are substantial, given that our non-urban control counties have an average of 5.4 insurers and an average HHI of 4,308. Our findings imply that increased reimbursement induces more insurers to enter the MA market, which in turn gives Medicare recipients more MA plans from which to choose. We next estimate the effect of the additional reimbursement on the fraction of Medicare recipients enrolling in MA.[2] We estimate that the 10.5 percent increase in plan reimbursement in urban counties leads to a 13.1 percentage point increase in enrollment in MA plans.[3] This enrollment increase could arise through a variety of different mechanisms, such as improved quality of coverage, increased advertising, or enhanced plan variety through new plan entry.

One concern is that insurer entry and overall MA enrollment may differ across urban and non-urban counties for reasons apart from MA reimbursement generosity. We conduct a series of falsification tests, using two sets of difference-in-differences specifications. In the first, we restrict

[1] Our specifications control flexibly for both the county and the MSA population and for county per-capita Medicare FFS expenditures. To obtain a more comparable set of urban and non-urban counties, we focus on counties in metropolitan areas with populations between 100,000 and 600,000 while probing the sensitivity of our results to alternative sample definitions.

[2] All else equal, a higher level of reimbursement would make the marginal MA enrollee more profitable for health insurers, which would lead insurers to aim for higher enrollment.

[3] Our implied elasticity estimates are approximately twice as large as those from studies using data from the late 1990s and early 2000s (Cawley et al, 2005; Cabral et al, 2015) and we outline several plausible explanations for this difference below.

to non-floor counties, where FFS expenditures are relatively high and MA reimbursement is set independent of urban status. We find no evidence of higher MA enrollment or greater competition in this set of urban counties relative to their non-urban counterparts. We also estimate a similar set of specifications for the period preceding the introduction of differential urban payments. We find no evidence of a significant relationship between urban status and our outcome variables of interest throughout this earlier period. These results remain unchanged when including a broader set of counties and longer time period, under a triple-difference specification.

Given this evidence of greater competition in counties with higher MA payments, we next explore reimbursement's impact on consumer out-of-pocket costs and premiums. Here, we find much more modest effects. Our estimates suggest that only one-eighth of the additional reimbursement is passed through to consumers and we can rule out pass through of 49 percent or more at the 95 percent level of confidence. These findings suggest that less than half of the additional reimbursement is passed on to consumers, through reductions in premiums, deductibles, or co-payments. Despite evidence of limited pass-through on average, we also find substantial heterogeneity across counties, with greater pass-through in more competitive counties. These results are broadly consistent with recent research by Cabral et al. (2015), which estimates that less than half of incremental reimbursement to Medicare managed care plans in the early 2000s is passed through to consumers and that consumers benefit more in more competitive markets.

Low rates of pass-through could potentially be attributable to compositional differences in insurers across urban and non-urban floor counties. To investigate this possibility, we split the sample into Humana and non-Humana plans, as Humana is the largest provider of MA coverage and operates in virtually all of our markets. If the additional insurers that enter in response to the enhanced reimbursement offer less generous coverage than those already operating, we would expect to find greater pass-through among Humana plans. Consistent with this, our estimates imply significant pass-through of 19 percent for Humana plans versus (an insignificant) 0.5 percent for all other plans.

Plans may respond to reimbursement increases through an alternate channel: by improving care quality rather than decreasing their enrollees' financial costs. For example, plans could contract with better providers, cover additional services, or expand the breadth of their provider networks in response to the additional revenues. We use detailed individual-level data from the Consumer

Assessment of Healthcare Providers and Systems (CAHPS), which contains information on MA plan satisfaction ratings, utilization, and health outcomes, and find no evidence of increases to patient satisfaction or utilization in urban floor counties. Similarly, we find no impact on self-reported (overall or mental) health or satisfaction with care. Finally, while selection and composition effects could partially explain our low estimated pass-through, we find no evidence of significant compositional differences between MA recipients in urban and non-urban floor counties.

Our results indicate that the increased reimbursements paid to urban floor counties substantially increase the number of enrollees in Medicare Advantage, even without substantial changes to quality or financial generosity. How could insurers increase enrollment in counties above the MSA population threshold, while keeping plan quality largely fixed? One mechanism could be through plan entry and accompanying enhancements to plan variety, which could spur increased plan enrollment even in the absence of changes to overall quality. We also provide evidence for an additional channel-increased advertising-as we find significantly greater advertising in counties with higher benchmarks.[4]

The recently enacted Affordable Care Act instituted many changes to the Medicare Advantage program, including a reduction in the generosity of MA reimbursement, with the magnitude of these reductions growing steadily over time. Our estimates indicate that the financial incidence of these cuts will fall to a significant extent on the supply side of the market. While we cannot measure the direct impact on firm profitability, we can look to stock returns as a proxy. In April 2013, following reversals of planned cuts to the MA program, the stock market valuation of major health insurers rose substantially (see Figure 3).[5] At the same time, the stock price of the largest publicly traded hospital operator (Hospital Corporation of America) was unchanged. Insurers, rather than providers or consumers, appear to be the primary beneficiaries of MA reimbursement increases.

The paper is organized as follows. Section 2 describes the Medicare Advantage program. Section 3 describes the data on Medicare Advantage enrollment, cost, and quality along with insurer participation and also outlines our identification strategy. Section 4 presents our main results for market structure, plan financial characteristics, and MA enrollment while Section 5 describes the

[4] The increase in advertising spending, meanwhile, suggests that not all of the rents associated with market power are captured by insurers. To the extent that the market for hospital or physician services is imperfectly competitive, some of the benefits of additional reimbursement may be passed through to them as well.

[5] See Al-Ississ and Miller (2013) for an examination of the effect of the Affordable Care Act on the stock prices of a broader set of firms in the health care sector.

estimated effects of additional reimbursement on plan quality. Section 6 presents results on firm advertising and stock market returns and Section 7 concludes.

2 The Medicare Advantage Program

First introduced in 1982 as Medicare Part C, the forerunners to contemporary Medicare Advantage plans allowed consumers to opt out of traditional fee-for-service (FFS) Medicare and into private managed care plans. The federal government hoped to achieve quality as well as cost improvements by harnessing competition between private insurers (see McGuire, Newhouse, and Sinaiko 2011, for a comprehensive history). Under traditional FFS, patients have substantial freedom in selecting physicians as well as treatment options. By contrast, under managed care, greater restrictions are placed on access, with limited provider networks and requirements for approval for specialist visits and certain procedures. In addition, managed care organizations also place greater emphasis on care coordination in an attempt at efficiency improvements.

While all Medicare Advantage plans must cover the services that are included under traditional Medicare Parts A and B, individual plans differ in the supplemental benefits that they provide, such as vision or prescription drug coverage. Plans can also differ in their financial characteristics, including the premium charged and consumer co-payments (which affect the level and variance of predicted out-of-pocket costs). Private insurers enter county-level markets by offering one or more plans and an insurer can selectively introduce a Medicare Advantage plan to certain counties and not to others. An insurer can also offer multiple plans within the same county, while varying each individual plan's characteristics. However, Medicare Advantage plans are guaranteed-issue, and the insurer is required to offer coverage to all interested Medicare recipients in the counties in which a given plan is active.

Plans can also differ in the specific type of managed care framework that they utilize. All Medicare Advantage plans were operated as health maintenance organizations (HMOs) through 2003. However, following the passage of the Medicare Modernization Act, these plans could also operate as POS (point of service), PPO (preferred provider organization), or PFFS (private fee-for-service). HMO, POS, and PPO plans all rely on provider networks, while PFFS plans were

not required to construct networks prior to 2011.[6] Differences between these plan types could ultimately shape insurers' market entry decisions, in terms of what plan types get offered where. For instance, given that PFFS plans were not required to form provider networks during our study period, the fixed costs of market entry for PFFS plans could be substantially lower than for other types of plans.

Payments to Medicare Advantage plans are based on payment benchmarks, which vary with an enrollee's county of residence. The benchmark payment is risk-adjusted for that enrollee's demographic and health characteristics. Originally, benchmarks were set at 95% of a county's per enrollee, risk-adjusted Medicare fee-for-service spending. The Centers for Medicare and Medicaid Services (CMS) introduced a payment floor in 1998, primarily to encourage plan entry to rural counties. As a result, government spending on MA enrollees in many counties (particularly rural ones) substantially exceeded spending on similar enrollees in Medicare FFS. In 2001, CMS introduced a second payment floor, which was set at an approximately 10.5 percent premium to the existing floor, and which applied only to urban counties. CMS defined a county as "urban" if the metropolitan area to which it is assigned had a population of 250,000 or more.

The relationship between a county's average per-capita fee-for-service spending and its benchmark, as of 2004, can be seen in Figure 4. As this figure shows, counties with relatively low FFS spending had benchmarks set at the payment floor. More specifically, a non-urban county with average per-capita FFS spending below $555 per month had a floor of $555 while an urban county with average per-capita FFS spending below $613 had a corresponding floor of $613. Counties with per-capita FFS spending above $613 were in this year essentially unaffected by the payment floor. As the figure shows, the impact of the payment floor is quite substantial for some counties. Consider an urban county with per-capita FFS spending of $500. Its benchmark is 23 percent greater than it would be in the absence of the payment floor. The corresponding gap is considerably smaller for an urban county with per-capita FFS spending of $600, where the floor increases the benchmark by just 2 percent.

[6] Medicare Advantage HMO plans do not allow enrollees to see physicians or hospitals outside of their provider network, barring a medical emergency. POS enrollees, meanwhile, have the option of visiting physicians and hospitals outside of the network, but require explicit approval to do so. Under PPO plans, out-of-network physician visits would not require plan approval, but would entail greater cost sharing. Finally, as part of PFFS plans, enrollees would have the option to visit any physician, so long as that physician accepts the payment terms of the PFFS plan (cost sharing terms for the patient would remain the same across all physicians).

Our analysis focuses on the 2007-2011 period, throughout which payment floors continue to be functionally (albeit not formally) present; benchmarks after 2004 were set at the highest of the previous year's benchmark (adjusted for inflation) or a county's average FFS level. As such, 2004 floor counties would have 2007-2011 benchmarks set at the inflation adjusted 2004 floor rates, so long as the inflation adjusted floor, from 2004, exceeded that county's contemporaneous FFS costs. Ultimately, over 90% of the original, 2004 floor counties remained floors in the subsequent period. The relationship between benchmarks and a county's average 2007 per-capita fee-for-service spending can be seen in Figure 5; as expected, this relationship is largely consistent with what was observed in 2004, though it becomes somewhat less tight.[7]

In 2003, the Medicare Modernization Act introduced an additional component to the reimbursement mechanism, in the form of a bidding system. Beginning in 2006, if a firm placed a bid that was lower than the existing reimbursement benchmark, 25% of the difference got returned to the federal government. The remaining 75% got passed back to plans, and had to fund services not covered by traditional Medicare or be passed on to consumers. In the first year of these bids, CMS estimated that 65% of these rebates went towards part A and B cost-sharing reductions, 14% towards providing non-traditional benefits (vision, etc.), 4% towards reducing part B premiums, and 16% towards part D benefits and premium reductions (CHS 2006).[8]

We focus on the 2007-2011 period, given that the preceding years were subject to very different policy and hence might not be as germane to the present-day. First, the introduction of Medicare Part D in 2006 altered the market, and we start in the following year given that 2006 could have been a period of transition as consumers became accustomed to the prescription drug benefit. However, our results are also robust to the inclusion of 2006. Second, the 2003 Medicare Modernization Act led to a shift in risk adjustment, a bidding system for Medicare Advantage, and higher reimbursements for MA plans, with some of these changes only fully phased in as of 2007.

[7] To the extent that a county's FFS level rose above the floor level in one or more years, its benchmark would subsequently exceed the inflation-adjusted floor. This explains why some counties in 2007 have a benchmark above the linear relationships displayed in Figure 4. Similarly, counties with non-binding 2004 floors would have subsequent rates that always exceeded the corresponding, inflation adjusted floor level, irrespective of their subsequent FFS costs. After 2004, a county can go from being floor to non-floor, but cannot go from being non-floor to floor.

[8] Song et al. (2013) explore the effect of benchmark changes on plan bids. They instrument for the county benchmark with the growth of FFS spending in other counties in the state and with the national changes in benchmarks (which in dollar terms are larger for those counties with higher baseline FFS spending). However, this identifying variation is unlikely to be exogenous, given the many factors with which initial benchmark levels & state-level FFS growth rates may be associated. One of the many outcome variables that we consider below is the plan rebate, which is three-fourths of the difference between the bid and the benchmark.

Altogether, by focusing on the 2007 to 2011 period, we can analyze a period in which MA exists in nearly every county (eliminating concerns about selection) under a stable set of policies (after the introduction of stand-alone prescription drug products but before the implementation of the relevant features of the Affordable Care Act).

Previous research has investigated the effects of plan reimbursement on enrollment in Medicare Advantage during the late 1990s and early 2000s. For example, Cawley et al. (2005) estimate a substantial elasticity of 4.94 during the 1997 through 2001 period. A related strand of the literature highlights the beneficial effects of competition in Medicare Advantage on characteristics such as premium costs (Town and Liu 2003, Lustig 2010) and out-of-pocket payment levels (Dunn 2011). Separately, previous research has examined firm entry in this market (Chernew et al. 2005, Pizer and Frakt 2002, and Frakt, Pizer, and Feldman 2009), and a broad literature has considered other aspects of the program, including consumer choice (Dafny and Dranove 2008), and disparities in health care (Balsa, Cao, and McGuire 2007). A number of papers have examined the impact of MA enrollment on mortality: Gowrisankaran, Town and Barrette (2011) find no effect for plans with drug coverage and increased mortality for plans without drug coverage, which we measure. By contrast, in a later period, Afendulis, Chernew, and Kessler (2013) find evidence of reduced mortality. Our paper adds to this literature by examining the effect of policy-induced variation in plan generosity on market structure, MA plan enrollment, and on the financial and non-pecuniary generosity of MA coverage.

Our paper also adds to an expanding literature on the role of insurance market competition in shaping negotiations with providers (Ho and Lee 2013, Gowrisankaran, Nevo, and Town 2013), and premiums (Dafny 2010, Dafny, Duggan, and Ramanaryan 2012). Furthermore, our paper is similar in spirit to a number of papers that evaluate the impact of the Medicare program on private insurers and consumers (see Cabral and Mahoney 2013 and Starc 2014 on Medigap, Abaluck and Gruber, 2011, Ketcham et al. 2012, Kling et al. 2012, or Einav, Finkelstein, and Schrimpf 2013 on demand in Medicare Part D, and Clemens and Gottleib 2013 on the relationship between public and private reimbursement). Finally, Gaynor and Town (2012) provide an in-depth summary of competition in health care markets more broadly.

In a complementary study to the current one, Cabral et al. (2015) examine the effect of the urban-county payment floor on plan premiums and on other measures of plan quality. In that

study, the authors focus on the 1998 through 2003 period, and examine within-county changes in plan characteristics following the introduction of urban floor payments in 2001. However, today's MA program is significantly different from what existed during their study period. For example, while essentially all U.S. counties were served by one or more MA plans during our more recent study period, only one in five floor counties had non-zero MA enrollment during theirs. In addition, the introduction of the Part D program and private fee-for-service MA plans in 2006 and the concurrent move to risk adjustment and plan bidding in Medicare Advantage reshaped firm incentives. Furthermore and as shown in Figure 1, enrollment was substantially higher in our more recent study period, partially reflecting more generous program reimbursement. Altogether, our study complements theirs by exploring pass-through across a wider range of floor counties and during a time of MA growth, with both studies suggesting that imperfect competition is important in shaping the program's effect on consumers.

3 Data and Identification Strategy

We obtain Landscape files from CMS on Medicare Advantage enrollment levels for the combination of the following: county, month, insurer, and the insurance package offered by that insurer (which carries the technical term of contract). Our final dataset is at the county-year-insurance contract level. We exclude contracts with 10 or fewer enrollees in a year, as CMS does not report enrollment for this subset. In addition, we obtain information on county-year level Medicare enrollment levels, which allows us to calculate Medicare Advantage's share of each county's Medicare population. For counties with 10 or fewer MA enrollees, MA enrollment information is likewise not reported.[9]

To measure plan financial characteristics, we draw on plan-year level data from the CMS landscape files, which includes plan-level monthly premiums and indicators for whether prescription drug coverage is included.[10] To calculate an average for each county in each year, we weight each plan by its share of county-specific MA enrollment in that same year. We obtain additional data

[9] Given the small number of counties in our analysis sample missing this data, our empirical results below are not sensitive to whether we exclude these counties from our sample or assume that MA enrollment there is equal to 0.

[10] We also obtain information from CMS on the parent companies operating each specific insurance plan, as well as the type of coverage offered (HMO/HMOPOS, PFFS, or PPO). Following the literature, we consider the plan with the lowest plan ID to be most representative of the insurance contract as a whole (Hall 2007 and Nosal 2012). In matching contract enrollments to individual plan characteristics, we match enrollments to the characteristics of the lowest plan ID within the contract.

for each plan-year on an MA recipient's total expected out-of-pocket costs, which are taken from CMS. This cost data matches what is included in the Medicare Compare database used by many Medicare recipients, and hence ought to be salient to consumers. To the extent that a plan provides drug coverage or subsidizes a portion of the Part B premium, it would be captured by this out-of-pocket measure (though the plan-specific premium is not included as part of it). In addition to measures of overall expected out-of-pocket costs, this data breaks out estimated costs for individual components (such as Part B premiums, inpatient hospital costs, and prescription drugs).[11]

For measures of plan quality, we rely on the Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey data, which contains enrollees' ratings of plans, self-assessments of health status, and other measures of plan experience, such as the self-reported number of physician visits. The CAHPS survey is administered yearly, and covers every Medicare Advantage plan that is at least one year old (including HMO, PPO, as well as PFFS plans). As part of the survey, 600 individuals from each MA contract are selected for questioning (if a contract has fewer than 600 enrollees, then all of its enrollees get selected).[12]

We initially group counties into three categories - those with monthly per-capita FFS spending below $662 in 2007, those between $662 and $732, and finally those above $732. Among the first group, the benchmark is universally set to the payment floor and hence is typically 10.5 percent higher in urban counties than in non-urban counties. Among the third group, the benchmarks are essentially identical across urban and non-urban counties, after conditioning on FFS spending. And for the second group, the gap in benchmarks between the two types of counties declines linearly from about $70 at per-capita FFS spending of $662 to 0 by $732. Urban counties in this group typically have their benchmarks set at the payment floor while non-urban counties do not.

Figure 4 shows the relationship between average fee-for-service expenditures and county bench-

[11] Further, these data break down expected out-of-pocket costs across different demographics by age as well as self-reported health status. For example, the database provides an expected out-of-pocket cost for a 65-72 year old in excellent health, enrolled in a given insurance contract. We average these estimates across demographic groups to construct a single composite metric. As with the other plan-year measures, variation across counties in this measure is driven by differences in the relative share of each plan in each county.

[12] While 600 are selected for questioning, fewer respond and the average non-response rate is approximately 25%. Our individual-level data include responses from approximately 160,000 MA enrollees in each year from 2007 through 2011. This CAHPS data identifies the insurance contract in which each survey respondent is enrolled, along with that respondent's age, race, education, and county of residence. Additionally, the data contains the respondent's answers to each of the survey questions. The first column of Table A.12 provides the average measures (on a 0-10 scale) for several quality measures including overall satisfaction with health plan and with primary care physician. As this table shows, MA enrollees are on average quite satisfied with their plans, with especially high ratings for the two physician measures.

marks for the three types of counties as of 2004, while Figure 5 presents the analogous relationship for 2007.[13] As these figures show, the effect of being designated an urban county is largest for those with average fee-for-service spending below $662 and this effect declines steadily upon approaching the urban floor level of $732.[14] Both the fraction of Medicare recipients enrolled in MA plans and the average HHI concentration index are comparable across the three types of counties. However, the composition of MA enrollment is quite different, with PFFS plans relatively more important in low-FFS spending counties. Additionally, counties with high FFS spending have greater populations on average and, as expected, substantially higher MA benchmarks. The last several rows of Table 1 summarize the average financial characteristics for MA plans, including plan premiums, rebate payments, and average out-of-pocket costs.

For our empirical analyses, we focus on counties in metropolitan areas close to the 250,000 population threshold so as to have a more comparable set of counties with which to estimate our effects of interest; we restrict to counties belonging to metropolitan areas with populations between 100,000 and 600,000. The population range is set somewhat wider above the threshold as the corresponding density of metropolitan area populations is somewhat thinner above the threshold than below. These criteria yield a sample of 576 counties, with 304 below the population threshold and 272 above. These 576 counties belong to 280 distinct metropolitan areas, with approximately half of these metro areas comprised of just 1 county, 20 percent made up of exactly two counties, and the remaining 30 percent having between 3 and 6 counties.

More than 60 percent of counties have average monthly FFS spending in 2007 less than $662 and therefore tend to receive the full 10.5 percent increase if they are urban counties. Of the 576 counties with metro populations between 100,000 and 600,000, approximately 60 percent (348) fall below this expenditure threshold. These 348 counties comprise our primary analysis sample and we refer to them as "group one" counties. We refer to counties with average 2007 FFS expenditures of $662 to $732 as "group two" and counties above $732 as "group three".

Our key source of variation is the urban population threshold, whereby benchmarks are 10.5

[13] As of 2007, a number of of counties-approximately 7%-no longer have benchmarks determined in the same manner as in 2004. The reasons for this are described in Section 2.2.

[14] It is worth noting that a county's floor status can change from one year to the next. More specifically, a floor county in which per-capita FFS spending grows relatively rapidly may move out of the floor category. This is of course more likely for counties close to the kinks in the schedule displayed in Figure 4. Rather than redefining the floor "treatment" each year, we use a county's 2007 FFS expenditures and its status as an urban or non-urban county in that year as our primary source of variation in the generosity of plan reimbursement below.

percent higher in urban than in non-urban floor counties. To account for the possibility that other factors vary smoothly with population, we control flexibly for both the county population and for the population of the county's metropolitan area. We also include each county's per-capita FFS expenditures as part of the controls. Counties with higher FFS expenditures would, by construction, get a smaller increase from the payment floor (relative to the counterfactual absent the floor). All else equal, FFS expenditures would therefore have an effect opposite to that of the policy-induced increase in benchmarks. But because many other factors - such as patient preferences and provider treatment patterns - are likely to co-vary with per-capita FFS expenditures, we do not assign a causal interpretation to estimates for this covariate.

We begin by estimating the effect of urban status on the level of benchmarks. While the observation level in our data is at a county-year, our key source of variation comes from each county's associated metro population, with our sample restrictions also based on metro population. To prevent metro areas with equal populations but a greater number of constituent counties from being mechanically over-represented in our sample, we inverse weight our regressions based on the number of counties making up a metropolitan area. We then estimate specifications of the following type:

$$Y_{jt} = b_0 + b_1 * FFS_{j,2007} + b_2 * Urban_j + f(CountyPop_{j,2007}) + g(MetroPop_{j,2007}) + g_t.$$

In this equation, our coefficient of interest is b_2, which represents our estimate of the average impact of urban status on outcome variable Y_{jt}.

One potential concern is that factors associated with urban status are not adequately captured by our controls, including for county and metropolitan area population and fee-for-service expenditures. This concern is to some extent mitigated by focusing on a smaller and more comparable set of counties situated relatively close to the 250 thousand population threshold. To probe the robustness of our results, we estimate additional specifications that vary the population bandwidth as well as our method of controlling for county and metropolitan population. We also investigate whether other factors that might influence our outcome variables of interest are correlated with urban status. Undertaking a balance test, we show in Table 1 that demographic and other county characteristics are stable around the population threshold. Additional details are provided in the

appendix.

In addition to these cross-sectional analyses, we perform difference-in-differences and triple difference specifications. First, we compare high FFS and low FFS counties. The controls here include an urban indicator (based on our definition) and a "Low" variable that captures the extent to which floor payments bind. This variable takes on a value of one if FFS costs are below the rural floor ($662/month) and a zero if FFS costs are above the urban floor ($732/month). We assign counties with FFS costs between the two floors a value between 0 and 1 that is simply the linear interpolation of the two endpoints. We estimate the following equation:

$$\begin{aligned} Y_{jt} &= b_0 + b_1 * FFS_{j,2007} + b_2 * Urban_j + b_3 * Low_j + b_4 * (Urban_j * Low_j) \\ &\quad + f(CountyPop_{j,2007}) + g(MetroPop_{j,2007}) + g_t, \end{aligned}$$

where the coefficient of interest is b_4, on the interaction of the urban indicator and the low variable. Similarly, we estimate difference-in-difference specifications using the pre-2001 period as a control group. We construct the variable "Post" to take on a one after the differential floors take effect. We estimate the following equation:

$$\begin{aligned} Y_{jt} &= b_0 + b_1 * FFS_{j,2007} + b_2 * Urban_j + b_3 * Post_{jt} + b_4 * (Urban_j * Post_{jt}) \\ &\quad + f(CountyPop_{j,2007}) + g(MetroPop_{j,2007}) + g_t, \end{aligned}$$

where again the coefficient of interest is b_4, on the interaction of the two indicators. Finally, we combine these two analyses in a single triple difference specification.

One final concern could be the indirect manner through which county benchmarks affect plan reimbursement; insurers submit bids for how much it would cost to provide traditional Medicare services, for an average enrollee, while looking to the county benchmark as an important reference point. Insurers can bid up to the county benchmark. However, they have some incentive to bid below the benchmark, as they can then allocate 75 percent of the difference between the bid and benchmark towards additional services, which could help attract additional enrollees. In Table 2, we show that a $1 increase in the county benchmark in urban relative to non-urban counties is

accompanied by a $0.91 average increase in plan bids and that there is no difference between the ratio of bids to benchmarks in urban versus non-urban counties. Given this, we argue that county benchmark increases are transmitted almost fully to insurers, even in the presence of this bidding mechanism, and we therefore abstract away from this bidding structure for the remainder of our analyses.

Under perfect competition and constant marginal costs (perfectly elastic supply), we expect full pass-through of reimbursements to consumers.[15] However, competition may be imperfect and there may be (adverse or advantageous) selection, even conditional on risk adjustment, leading to incomplete pass-through. Our research design allows us to identify pass-through by exploiting three primary sources of variation. First, we compare urban and non-urban "floor" counties, to estimate the effect of a 10.5 percent increase in MA county benchmarks. Second, we compare the effect of urban status among low FFS counties, which were subject to a payment bump, to high FFS counties that were not. Finally, we explore the relationship between urban status and our outcome variables of interest in our analysis sample before the urban increase was introduced in 2001. These multiple approaches allow us to obtain a credible estimate of the impact of policy-induced variation in reimbursement on several outcome variables of interest in the Medicare Advantage market.

4 Results

4.1 The Impact on County Plan Benchmarks

The first column of Table 3 summarizes the results of a specification for "group one" counties - those with average FFS expenditures below $662 in 2007.[16] As discussed above, the effect of urban status should be largest for these counties. The specification also controls (with a linear and quadratic term) for both the county population and the metropolitan area population along with monthly FFS expenditures. Standard errors are clustered at the metropolitan area level given the level of variation of the urban indicator. The point estimate of 68.57 for the urban coefficient is very precisely estimated and suggests an increase of more than 10 percent in the average monthly MA

[15] Therefore, the reimbursement is optimal when the marginal consumer in Medicare Advantage places a value on the additional coverage provided at an amount equal to the shadow price of public funds. A more detailed theoretical treatment can be found in the appendix.

[16] By using the 2007 floor definitions, we guarantee a balanced panel. If we used the contemporaneous payment rate to define the sample, we would lose 25 counties in 2009 and 2010.

benchmark. None of the four coefficients on the population variables are statistically significant. The estimate for the FFS expenditure coefficient is statistically significant though the magnitude of the estimate (0.04) is small. The positive point estimate reflects the fact that counties with spending close to $662 are more likely to rise above this floor in 2008 and later years.

The next column repeats this specification though focuses on "group two" counties - those with average 2007 FFS expenditures between $662 and $732. The statistically significant point estimate of 21.81 indicates that urban counties in this intermediate range of per-capita FFS spending did experience an increase in their monthly benchmarks relative to their non-urban counterparts. Not surprisingly given the noisy relationship between benchmarks and FFS spending in this range displayed in Figure 5, this coefficient estimate is less precise.

The analysis sample for the third specification in Table 3 includes counties with per-capita FFS expenditures above $732 per month. For these counties, urban status should not lead to an increase in monthly benchmarks, as payment floors do not bind for either type of county. Consistent with this, the coefficient estimate is actually negative though is even less precisely estimated than for group two counties. When we pool together group 2 and group 3 counties in the final specification, we find little evidence of an increase in monthly benchmarks resulting from urban status. The results in this table strongly suggest that relatively low FFS counties in urban areas experience a large policy-induced increase in monthly MA benchmarks while high FFS counties do not.

While we do not have enough counties near the urban threshold to employ all the techniques of a standard regression discontinuity design, Figure 6 presents a graphical illustration of the monthly change in benchmarks for group one counties using a uniform kernel and the optimal bandwidth of Imbens and Kalaynaraman (2012). The figure shows a clear discontinuity in payment rates at the urban threshold.[17]

4.2 Market Structure and MA Enrollment

Increases in the generosity of reimbursement may cause additional firms to enter the MA market. Here, we consider counties in the first group described above, with FFS expenditures per enrollee

[17] For symmetry, we restrict this analysis to counties with metro population between 100,000 and 400,000. We also allow the slopes to differ across the discontinuity. While the results are qualitatively similar, there is not a direct mapping from the figures to our coefficient estimates.

below $662 in 2007.[18] We once again control for both county population and metropolitan area population (with both a linear and quadratic term) and for average per-capita FFS expenditures in 2007.

The first panel of Table 4 considers the effect of urban status on the number of insurers. The point estimate of 1.78 for the urban indicator variable represents more than 25 percent of a county's mean number of insurers for our analysis sample. This estimate is highly significant with a t-statistic of 3.8. The significantly negative point estimate of -.69 for the per-capita FFS expenditures variable suggests that fewer insurers enter as the gap between the payment floor and a county's average fee-for-service expenditures declines.

The second specification yields a similar picture by considering the effect of urban status on the HHI concentration index. Urban counties in metropolitan areas with a population of 250,000 or more have significantly lower market concentrations, with the point estimate of -873 representing almost one-fourth the mean HHI in our analysis sample. The HHI increases as FFS spending rises and thus the gap between this and the payment floor declines. As expected, the point estimates in column 2 have the opposite sign to those for the previous specification given that here a larger number implies fewer insurers operating. As we show below, our HHI estimates are somewhat noisier in our robustness checks. This is not surprising, as HHI is a highly non-linear measure and the effect of additional entrants is not necessarily large. In a companion set of results not summarized here, we find that the percentage of plans sold by the three largest insurers in a market is not significantly different in urban counties. Therefore, our results suggest that higher reimbursement leads additional fringe insurers to enter, but not to capture large market shares.

The specifications summarized in the next three columns investigate whether and to what extent the additional reimbursement leads to more MA enrollment. The third column shows that the fraction of Medicare recipients enrolled in Medicare Advantage HMO or PPO plans increases by 7.1 percentage points as a result of the greater reimbursement, while column 4 shows a corresponding increase of 5.9 percentage points in the share enrolled in MA private fee-for-service plans. Figure 7 presents a graphical illustration of the effect of urban status on MA penetration. MA penetration averages about 11 percent immediately to the left of the threshold and about 22 percent immediately

[18] For this group of counties, the average number of insurers offering an MA plan during the 2007 through 2011 period was 6.5 and the average HHI concentration index 3,907 (measured on a 10,000 scale).

to the right, providing additional evidence of a causal effect.

In subsequent panels of Table 4, we test the robustness of these results in a number of ways. The second and third panels show results under narrower population windows. The advantage of the wide range used in the preceding specifications (100,000-600,000) is that it encompasses one-fourth of all Medicare eligibles. The disadvantage is that by including such a broad population range, we may introduce bias. The specifications summarized in the second panel include only counties in metropolitan areas with populations from 150,000 to 350,000. All of our results are qualitatively similar (though the estimate in the HHI specification is no longer statistically significant) and suggest that the policy-induced increase in reimbursement leads to substantially more entry and an increase in MA enrollment in urban counties. Figure 8 plots our results graphically for the number of insurers. Table A.1 shows that our results are also robust to alternative methods of controlling for population and the inclusion of the race and gender controls described in Table 1 (as suggested by Altonji et al. 2005). Finally, we present the coefficients on the population variables in Table A.2.

We also present difference-in-differences and triple difference specifications as a further robustness check. First, we compare floor counties in our sample to non-floor counties in the same population range. Because urban status does not lead to additional reimbursement in non-floor counties, this allows us to account for possible differences between urban and non-urban counties, independent of reimbursement. The estimates for the coefficient on the interaction between urban status and floor county status are displayed in the fourth panel of Table 4 (with the full results reported in Table A.3). The coefficient estimate of 1.53 in column 1 reveals that the difference between urban and non-urban floor counties is significantly different from that across non-floor counties. Similarly, urban floor counties have an average HHI that is lower by 1087 points and MA penetration that is higher by 4.7 percentage points. While the enrollment estimates are smaller in these specifications, the results are broadly consistent with those based off of the floor counties alone.

Next, we investigate the pre-2001 period for our analysis sample. In this earlier time period, floors were not differentiated based on urban status. By comparing the results for this period to those for our study period, we can control for time-invariant features of urban floor relative to non-urban floor counties, which may be driving our results. Our results are largely consistent with

Table 4, with the exception of HHI. This is largely a compositional issue, as 67 percent of floor counties had no MA insurers before 2001. If we replace these missing values with a monopoly-level HHI, we obtain a negative (though not statistically significant) coefficient.

Finally, we implement triple difference specifications that utilize both the non-floor counties and the earlier time period. The results from these specifications are summarized in Appendix Table A.4. The results are also consistent with Table 4. Taken together, these results provide additional evidence that the differences in market structure and MA enrollment between urban and non-urban floor counties are due to differential reimbursement rather than other unobserved factors.

Our results indicate that MA enrollment is very responsive to reimbursement rates. While the estimates are large, they are consistent with previous findings. Based on a survey of the literature, the Congressional Budget Office (2007) estimates that a 15 percent reduction in reimbursement would cut enrollment levels in half. Cawley, Chernew, and McLaughlin (2005) estimate an elasticity over the 1997-2001 time period of 4.94. Our implied elasticity from the panel 1 estimate is 7.2 and our confidence interval includes the Cawley et al. estimate. Furthermore, Cabral, Geruso, and Mahoney (2015) find a large effect of reimbursements during the 2001-2003 time period, with an implied elasticity of 4.1. While their estimates are also smaller in magnitude than ours, there are several plausible explanations for this difference. First, during our time period insurers could offer both Part D coverage and private fee-for-service MA plans, both of which could reduce the costs to incumbents of expanding enrollment or of new insurers to entering. Indeed, almost half of our enrollment effect is driven by private fee-for-service plans, which are inexpensive to set up given that they do not require the creation of provider networks. Therefore, when we restrict to plan types that are comparable to the ones present during the earlier time period, our estimates are much closer in magnitude. Second, plan reimbursement was much higher during our time period, and elasticities may not be constant with reimbursement. Finally, our estimates are more likely to capture long-run effects, given that our study period begins years after the policy change (while the Cabral et al. estimates consider only three years after the introduction of floor payments and Cawley et al also estimate the short-term effects of policy-induced reimbursement changes).

4.3 Financial Characteristics of Plans

Insurers may respond to the higher benchmarks in urban counties and to the resulting increase in competition by reducing their premiums or out-of-pocket costs or by offering additional services. To test this possibility, we begin by exploring the relationship between urban status and the monthly MA plan premium, which has an average value of approximately $30 in our analysis sample. As shown in the first column of the first panel of Table 5, the point estimate for the urban indicator is very small in magnitude (-0.88) and statistically insignificant. This suggests that despite the substantially higher benchmarks in urban counties, MA enrollees do not see substantial premium reductions from it.

In the second column we consider the effect on the amounts that insurers allocate toward supplemental Medicare services through the rebates they are provided by CMS (if and when their bids fall below the benchmarks). The average rebate value in our analysis sample is $55 per month, with the data extending from 2007 through 2010, and hence being 20% smaller than the regular sample. Consistent with our estimate for the premium measure, our results do not show higher plan reimbursement translating into substantial additional benefits to enrollees. The point estimate of 3.38 for the rebate represents about 5 percent of the additional reimbursement, and we can rule out an increase in the rebate of more than $12 at the 95 percent level of confidence.

In the third column, we investigate the effect on out-of-pocket costs (OOPC). To the extent that an insurer responds to the additional reimbursement by, for example, reducing deductibles or offering supplemental services such as vision coverage, it would be reflected in this measure. The point estimate of -$7.02 (on a base of $365) for the urban coefficient is statistically insignificant. With this point estimate, we can rule out an out-of-pocket cost reduction of more than $24 per month at the 95 percent level of confidence.[19]

In the fourth column, the outcome variable is a measure of total expected costs for the enrollee, based on the sum of premiums and out-of-pocket costs indicators and with rebates subtracted out (given that higher rebate values correspond to more generous coverage). The statistically insignificant point estimate of -8.30 suggests only about one-eighth of the additional reimbursement

[19] The statistically significant negative estimate for the FFS variable in the OOPC specification suggests that, as the wedge between the floor and FFS spending grows, plans become less generous. However, as we emphasize above, other factors likely vary with FFS expenditures, and thus we do not assign a causal interpretation to this estimate.

is passed on to consumers and we can rule out a benefit of more than $34 (forty-nine percent of the benchmark effect) at the 95 percent level of confidence. In the fifth column, we focus on prescription drug coverage and find no evidence that this benefit is more common among plans in urban counties. This could once again reflect marginal entrants being less generous than incumbent firms on this dimension.[20]

We probe the robustness of these results in a number of ways. In the next two panels, we investigate whether these results hold up when looking at narrower population ranges. While the point estimates become less precise, they remain small in magnitude. For example, the insignificant point estimate of 5.80 in the second column of panel two suggests plans in urban counties offer somewhat less generous coverage. Our estimates in the fourth and fifth panels further support our findings, which come from difference-in-difference specifications with the control groups set to be high FFS spending counties and the pre-period, respectively. That said, we do not have data on all of the outcome variables of interest in the pre-2001 period. Finally, Figure 9 plots our results graphically. While our earlier results provide evidence of a significant effect of MA reimbursement on MA penetration and market structure, these results suggest that more generous reimbursement has little impact on the financial features of MA plans.

4.4 Heterogeneity

While overall pass-through could be low given the entry of relatively inefficient firms, it could be higher among a set of fixed or incumbent plans, including those that were already present nationally. To test this, we break out results separately for Humana and non-Humana plans, with Humana serving as a proxy for an incumbent or fixed plan set given its substantial pre-existing market share. Humana operates in 87% of markets and 86% of floor markets, nearly twice the number of the next largest insurer, UnitedHealth. Humana also captures 18% of the national MA market. The results in Table 6 show that Humana plans are significantly more generous in urban floor counties than non-urban floor counties. The sum of premiums and OOPC are $14 lower in urban floor counties,

[20] For all five of the outcome variables considered here, we weight by each plan's share of county-specific MA enrollment in the year. If MA recipients in urban counties were, for example, less likely to choose low-premium plans or plans with generous cost sharing, our estimates could provide a misleading estimate of average plan quality. To investigate this possibility, we estimate a companion set of specifications in which we weight each plan in a county-year with non-zero MA enrollment equally. As shown in Table A.5, our point estimates for the urban indicator are qualitatively quite similar and also suggest limited pass-through.

indicating much higher pass-through (19%) accruing to consumers in Humana plans. In unreported regressions, we find pass-through of 30% if we restrict to plans (Humana and other) that are offered in at least half of all markets. Altogether, among incumbents, pass-through is larger than among non-incumbents, though still incomplete.

What drives the difference between these estimates and those in Table 5? Increased benchmarks may be attracting marginal insurers who are not as efficient as incumbents or must incur fixed costs of entry. These new insurers attract consumers who prefer their plans due to differential networks, idiosyncratic errors, or behavioral biases (Stockley et al. 2014). While these consumers are made better off by the increased reimbursement, the plans chosen are not necessarily better in purely financial terms. Therefore, we are cautious about making welfare inferences from our results.

These results also suggest that the effects of benchmarks may be both heterogeneous and non-linear. Therefore, we also replicate our analysis across more and less competitive markets, with the results shown in Table A.6. We find nearly full pass-through in the most competitive quintile of markets, but limited effect of benchmark generosity outside of this subset. This is broadly consistent with findings in Cabral et al. (2014) who find more pass-through in the more competitive counties. These specifications support our basic results and provide additional evidence on mechanisms and heterogeneity.

5 Plan Quality

To identify possible changes to the quality of health care coverage (as distinct from the financial measures considered above), we use respondent-level survey data from the federal government's Consumer Assessment of Healthcare Providers and Systems covering the 2007 through 2011 period. These data contain information on respondents' counties of residence, allowing us to examine the relationship between county-level reimbursement and the measures included in the CAHPS. Upon restricting to our analysis sample for our relevant counties and time period, we are left with more than 82,000 person-year level observations.

We examine the impact of additional plan reimbursement on respondents' overall ratings of plan quality along different dimensions: health care received, the primary care provider, specialists seen, and the plan overall. We aggregate our data to the county-year level, while restricting to

counties in the 100,000 to 600,000 metro population range with 2007 FFS values below the $662 monthly amount described above. The main results are displayed in Table 7. We find no significant relationship between a county's urban status and each of these rating measures, with the exception of ratings for primary care physicians, whose average ratings are actually significantly worse in urban counties. Using the approach introduced in Kling et al. (2007), we calculate standardized treatment effects, to examine whether urban status has an impact on these ratings measures, as a collective. These results also indicate no significant relationships between higher MA benchmarks and plan ratings. Results are similar in the second panel of Table 7 when we expand our sample to include all counties in metro areas with 100,000 - 600,000 and interact our urban indicator with Low as in the specifications above.

We further examine the effect on plan quality by looking to plan-level quality measures ("star ratings") compiled by CMS, relating to health outcomes, chronic care management, customer service, and the plan overall. These results, displayed in Table A.7, also show no significant relationship between a county's urban status and metrics of plan quality. We can rule out an increase in consumers' average rating of "Overall Health Plan" of more than 3.1 percent at a 95 percent level of confidence.

We also consider the impact on measures of utilization and outcomes contained in the CAHPS, such as number of specialist visits, number of personal MD visits, and self-reported health status. To the extent that additional reimbursement leads plans to expand access to care or to improve enrollee health more, it would potentially be captured by these estimates. These results, which are presented in Table 8, provide no evidence of a significant relationship between urban status and utilization or health outcomes across the counties in our analysis sample. These findings along with those presented in Table 7 - are robust to sample definition as shown in Tables A.8 and A.9. Finally, we address compositional issues in the appendix.

6 Advertising and Firm Returns

Numerous studies suggest that both framing and advertising can substantially impact consumers making complicated financial decisions. For example, there is substantial evidence that seniors have a hard time choosing cost minimizing Medicare Part D plans (Abaluck and Gruber 2011) and

that informational interventions identifying lower cost plan options influence choice (Kling et al. 2012). Furthermore, advertising may help firms select favorable risks (Aizawa and Kim 2013). As a result, firms in this market may compete on advertising, rather than price or quality. Advertising competition is an important feature of the market for a wide range of complex financial products. Hastings et al. (2013) find that exposure to sales personnel in the market for investment funds decreases price sensitivity and increases brand loyalty. Gurun et al. (2013) show that mortgage lenders who advertise more tend to sell more expensive mortgages, target unsophisticated borrowers, and advertise teaser, rather than reset rates.[21]

We utilize data from Kantar Ad$pender, which contains advertising data at the media-product-year-designated market area (DMA) level. Because DMAs are bigger than counties, we need to aggregate our reimbursement data accordingly. We create variables that denote the percentage of Medicare beneficiaries in a DMA that live in an urban, urban floor, and floor county. We then examine the impact of these variables on TV spot advertising spending per Medicare beneficiary in a DMA. We define this advertising measure in two ways. In the first, we pull together all products with "Medicare" in their name. This includes Medicare Advantage plans, but also Part D and Medicare supplement plans. The Kantar data does not allow us to distinguish between these products though there is little reason to expect that advertising for Medicare supplement or Part D plans would vary significantly with floor status. Average spending per Medicare enrollee is $5.90 per year. For the second definition, we take the Kantar definition of "health insurance" as given, noting that not all Medicare products are denoted by name.[22] This variable is skewed, with only about half of DMAs having advertising and total spending at the 90th percentile of DMAs is $2.2 million per year.

In Panel A of Table 9, we summarize the results from specifications of the following type:

$$Y_{jt} = b_1 + b_2 * \%\, Urban_j + b_3 * \%\, Urban\ Floor_j + b_4 * \%\, Floor_j + d * FFS_j + g(MetroPop_{j,2007}) + \gamma * X_{jt} + \epsilon_{jt}.$$

[21] Taken together, these effects result in higher costs for consumers. These studies are consistent with a theoretical literature highlighting the impact of complex pricing rules (primarily add-on pricing, but similar logic could be applied to cost sharing or interest rates). Complex pricing rules can arise from incentives to price discriminate (Ellison 2005) or behavioral biases such as myopia (Laibson and Gabaix 2006).

[22] While we would prefer to restrict to only Medicare Advantage products within health insurance, the products are not coded finely enough in the data. However, Medicare products comprise the bulk of individual insurance plans sold (and, presumably, targeted advertising) within all DMAs.

In all specifications, we include year fixed effects as well as a spline that controls for the DMA-year population. There are 210 DMAs and we observe four years of advertising data (2007 through 2010), giving us 840 total observations, with standard errors clustered at the DMA level. If more generous MA reimbursements in urban floor counties translate into greater advertising, we would expect a positive estimate for b_3. It is important to note that, due to the level of aggregation in the advertising data, we are unable to restrict attention to the counties in metropolitan areas with populations between 100 and 600 thousand as we did in the preceding sections. Instead, our analysis sample in these specifications encompasses essentially all geographic areas in the U.S., which could make it more difficult to disentangle the effect of MA reimbursement from other factors.

The first specification summarized in Panel A indicates that urban floor counties have significantly higher advertising for Medicare products. The estimate of \$6.35 is substantial, as it slightly exceeds the mean of our dependent variable, though its precision is limited with a standard error of \$2.23. This lack of precision is not surprising given that we have just 210 DMAs and the dependent variable is highly skewed. The corresponding estimate in Panel B, which uses the broader health insurance measure as the dependent variable, is also large in magnitude and statistically significant. Of course, urban floor counties may attract more advertising for reasons unrelated to MA reimbursement generosity. To address this concern, we include two additional sets of controls: the metropolitan-area average TV spot advertising price (across industries) (specification 2) and per-capita FFS expenditures (specification 3) in the DMA-year. Higher ad prices are associated with more ad spending (consistent with Barrage, Chyn, and Hastings (2014)) and higher FFS costs are associated with lower ad spending, as expected. Our results are robust to the inclusion of both controls.

In the fifth and final specification, we introduce controls for the share of a county residing in an urban county and in a floor county. This reduces the magnitude and the precision of our key coefficient estimate in Panel A, though it remains statistically significant. However, it has essentially no impact on the estimate that uses the broader measure of health insurance as our advertising measure, which remains statistically significant and economically large.

The results in this section suggest that the more generous reimbursement given to MA plans in urban floor counties leads to substantially more advertising. We believe these results can rationalize much of the increase in firm entry and MA enrollment in urban floor counties. While the precision

of our estimates is limited due to the level of aggregation in the advertising data, it provides some insight as to why pass-through of MA reimbursement may be limited, and suggests that increased benchmarks need not accrue to insurers.[23] Additionally, our findings are consistent with much previous literature regarding the importance of advertising in the market for complex financial products.

Despite dissipation of some rents through marketing costs, it is plausible that insurers also capture part of the increased benchmarks. Figure 3 shows dramatic increases in stock prices for the four publicly traded health insurers with the most MA enrollment (Humana, United, Cigna, and Aetna) as a result of a surprisingly large increase in benchmarks on April 1, 2013. Interestingly, it is Humana, the most active insurer in the Medicare Advantage market from Table A.10, that has the biggest increase. A simple pre-post comparison of market capitalization for these four firms, which accounted for about 44 percent of MA enrollment at the time of the policy change, indicates a market capitalization increase of approximately $2.7 billion. The announced benchmarks represented an increase of approximately 5.6 percent relative to what otherwise was specified by legislation. Multiplying this percentage by our estimate of baseline MA revenues for each insurer (calculated by multiplying enrollment weighted benchmarks for each insurer by the average risk score of its enrollees) yields an estimated increase in annual MA revenue of about $2.9 billion.

It is important to note that investors apparently expected a significant increase in benchmarks around this time. For example, according to Humana's press release, the firm had expected a 4.4 percent increase in benchmarks instead of 5.6 percent. If one assumes that this also reflects the assumptions of investors, this would suggest that just $0.62 billion of the $2.9 billion increase in annual MA revenues came as a surprise. Using a discount rate of 5 percent, this implies an increase in the present value of MA revenues of approximately $12.4 billion. Combining our estimate of a $2.7 billion increase in market capitalization with the $12.4 billion increase in the present value of MA revenues, we estimate that 22 percent of the increase in benchmarks is passed through to insurers in the form of higher profits. Of course, the precision of this estimate is necessarily

[23] The increase in ad spend is $23.60 per Medicare enrollee. Given an enrollment effect of 13%, this implies spending of $182 per marginal MA beneficiary. This represents 22% of the increase in reimbursement, though we admit that these estimates are noisy. By comparison, the Humana results imply an increase of generosity of $13.29/month (or $159 per year). This represents 19% of the increase in reimbursement, and we note that this increase in spending applies to both marginal and inframarginal enrollees. This spending is substantial, totaling nearly $340 per marginal enrollee per year and implies a smaller rate of return, even as comparted to the Curto et al. 2015 estimate of $500 per enrollee, which is certainly within the confidence interval around these estimates.

more speculative than our estimates relating to consumers. But the sharp stock market reaction to changes in the level of MA reimbursement strongly suggests that insurers capture much of the benefit of policy-induced increases in plan reimbursement.[24] Our estimates and back of the envelope calculations indicate that at most 49 percent of the increased reimbursement goes to consumers and approximately 22 percent goes to insurers. Our advertising results suggest that some of the increased expenditure is dissipated through marketing costs.

Theory suggests that hospitals, physicians, and other health care providers could also capture some of the increased reimbursements, by virtue of market power. However, the aforementioned calculations leave relatively little for providers. The absence of stock price reaction from the largest publicly-owned hospital operator, HCA, on April 1, 2013, is also suggestive of limited benefits to providers.

7 Conclusion

Our results strongly suggest that increased subsidies for private insurance in the Medicare Advantage market result in increased insurer advertising, but little additional monetary or medical benefit for consumers.[25] Low pass-through cannot be attributed to selection and is, more likely, a result of market power. While our results indicate that insurers capture much of the increase in reimbursements (similar to Curto et al. 2015), we are hesitant to draw conclusions about welfare. For example, MA plans may be more efficient than traditional Medicare by reducing low-value care or improving health status. Additional choice, due to insurer entry, could lead to meaningful gains in consumer welfare through better matching. Given that MA penetration rates increase alongside reimbursements, a revealed preference argument would imply that MA is more valuable to consumers when the benchmark is higher. The impact on consumer surplus may also depend on the welfare

[24] The benchmark increase of 5.6% applied not only to 2014 benchmarks, but also to all future year benchmarks; for 2014, this resulted in a benchmark that was 1.2% higher than the expectation. In our calculations, we thereby assume that all future year benchmarks would also be 1.2% higher than expected. However, for some of these years, higher benchmarks may have already been anticipated; congressional action on Medicare SGR policies would produce a benchmark increase of commensurate magnitude and would supercede CMS's action. While CMS preempted such legislation through its unilateral action, following any Congressional legislation, past CMS action (or lack thereof) would not affect subsequent benchmarks. In our calculations, we do not account for this possibility. As such, our estimate of the unexpected revenue increase, from CMS's action, represents an upper-bound, meaning that our estimated pass-through rate to insurers represents a lower-bound.

[25] The extent to which this is welfare enhancing depends on the view of advertising. We simply highlight that insurers in this market, as well as other insurance markets (Starc, 2014), tend to compete on advertising, rather than plan generosity or innovative benefit packages.

consequences of advertising. All of this notwithstanding, the measures of plan financial characteristics and quality that we examine suggest that only about one-eighth of the policy-induced increase in plan reimbursement is captured by consumers.

While reimbursement increases have an ambiguous welfare impact on consumers, they unambiguously increase costs, through increased numbers of MA enrollees and through increased government spending per MA enrollee. A back-of-the-envelope estimate suggests that this additional spending amounted to approximately $6.7 billion during the final year of our sample period.[26] Therefore, given the deadweight loss associated with taxation, policy-makers should carefully weigh the possible gains in consumer welfare against the costs to the federal government. Future work should attempt to quantify the full welfare benefit of increased reimbursements and quantify the costs and benefits of alternative policies, including vouchers that allow Medicare beneficiaries to actively opt into traditional Medicare or private plans.

[26] Approximately 5.0 million MA enrollees resided in floor counties in 2011. In non-floor counties, the benchmark is on average 6.1 percent higher than the lagged 5-year average FFS expenditure measure. If this same 6.1 percent ratio existed in floor counties, monthly (annual) benchmarks would be $63.09 ($757.08) lower and spending for the 5.0 million MA enrollees would be $3.8 billion lower. Additionally, our estimates for the effect of benchmarks on MA enrollment suggest the benchmark increase leads to about a 13 percentage point increase in MA enrollment. With 20.1 million Medicare recipients in floor counties, this represents about 2.6 million additional MA recipients. Recent research (Brown et al., 2014) indicates that switching into MA increases Medicare spending by more than $1,200 per recipient because of favorable selection and this suggests about $2.9 billion more in Medicare spending.

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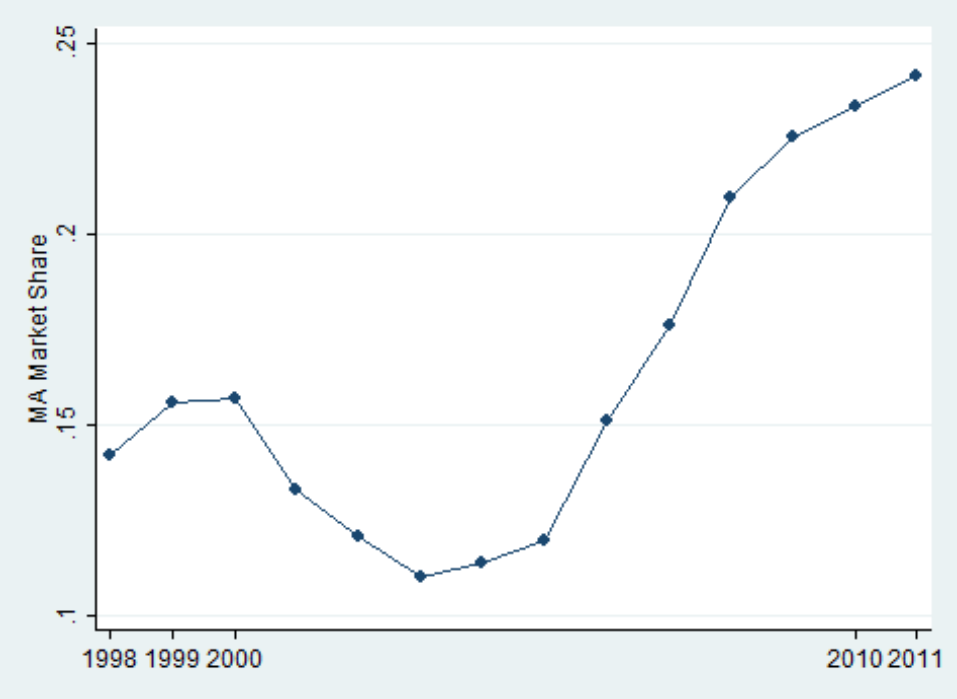
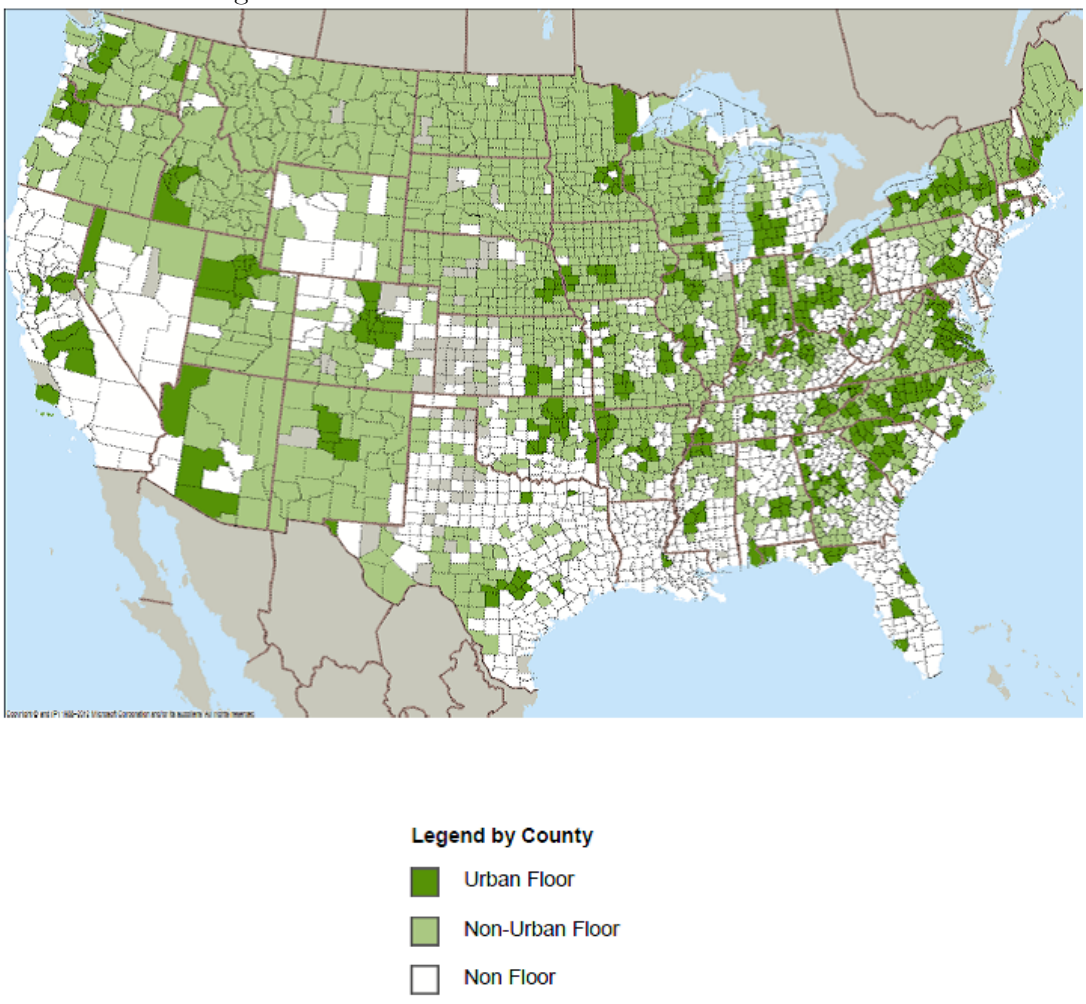
9 Tables and Figures

Figure 1: Medicare Advantage Penetration by Year



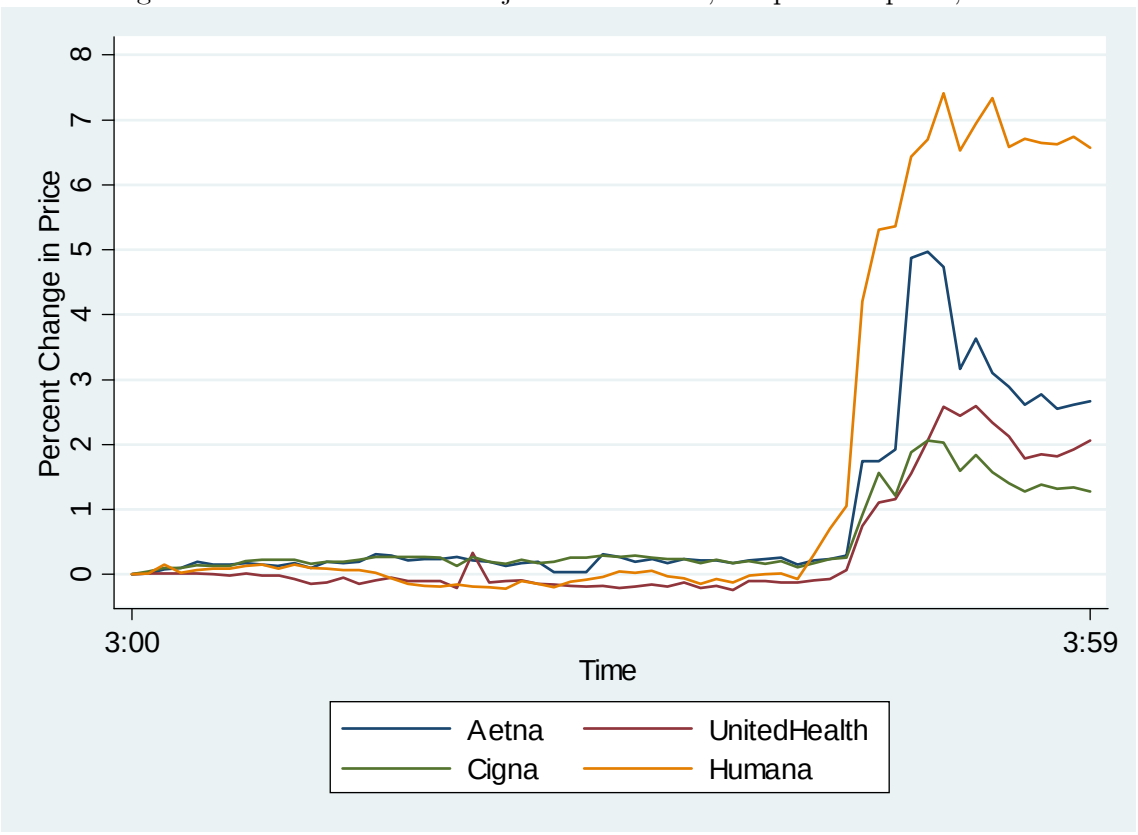
Note: Enrollment data are taken from publicly available CMS files and aggregated to the year level. The X-axis denotes year, while the Y-axis denotes the % of Medicare recipients enrolled in Medicare Advantage plans.

Figure 2: Nationwide Distribution of Floor Counties



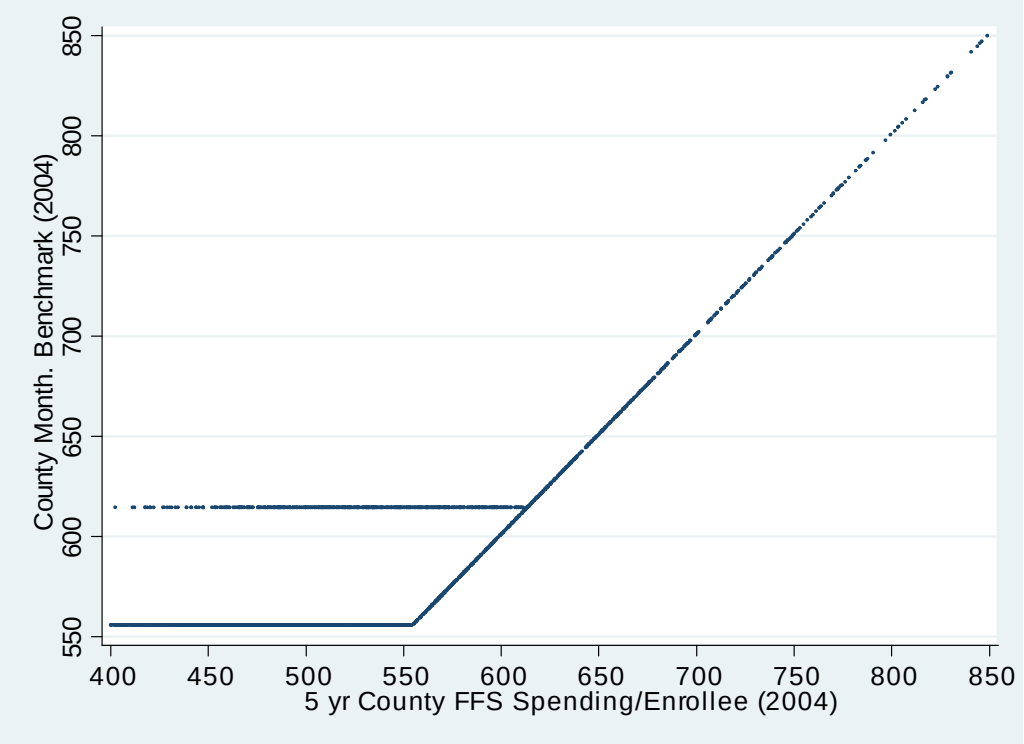
Note: Benchmark data are taken from publicly available CMS files. Dark and light green counties correspond to urban and non-urban floor counties, respectively. Meanwhile, white areas correspond to non-floor counties.

Figure 3: Stock Returns of Major MA Insurers, 3-4 pm on April 1, 2013



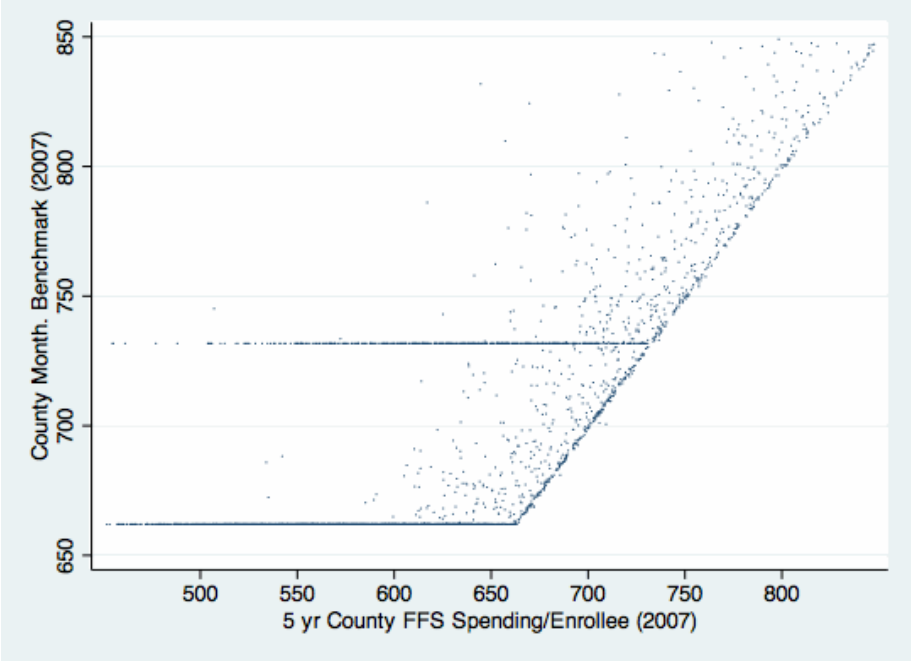
Note: Figure plots stock returns on April 1, 2013, when CMS announced a reversal to a planned cut to MA benchmarks (at 3 pm). The stock price change observed among health-insurance stocks-over this period-was absent for other firm types. Stock price data is taken from CRSP.

Figure 4: County Benchmark and FFS Costs in 2004



Note: FFS cost and benchmark data are taken from publicly available CMS files. The X-axis denotes 2004 FFS costs (based on CMS's 5-yr look-back average), while the y-axis denotes the 2007 benchmark payment amount.

Figure 5: 2007 FFS Costs and County Benchmarks



Note: FFS cost and benchmark data are taken from publicly available CMS files. The X-axis denotes 2007 FFS costs (based on CMS's 5-yr look-back average), while the y-axis denotes the contemporaneous benchmark payment amount.

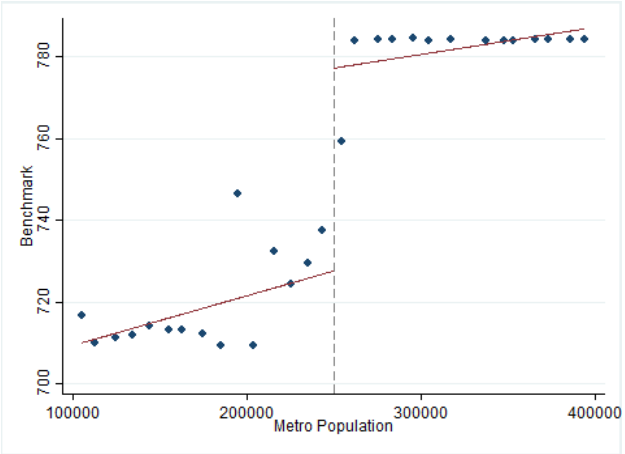


Figure 6: Effect of Urban Status on Benchmarks. Binscatter with each dot representing 10,000 in population. Plot lines are constructed separately for each side of the discontinuity.

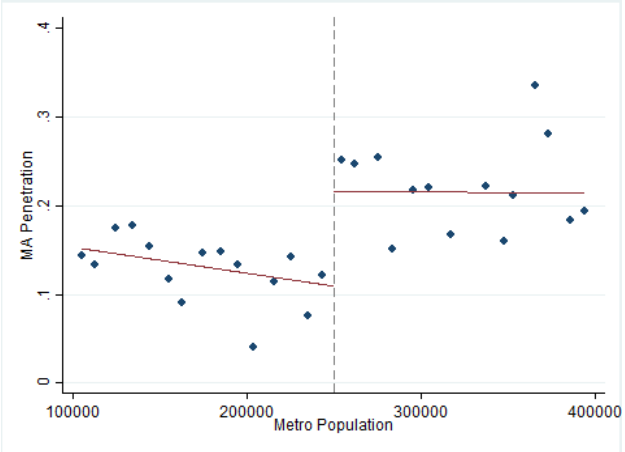


Figure 7: Effect of Urban Status on MA Penetration. Binscatter with each dot representing 10,000 in population. Plot lines are constructed separately for each side of the discontinuity.

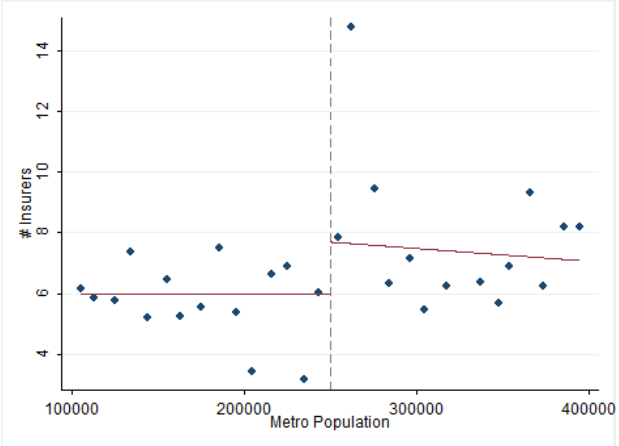


Figure 8: Effect of Urban Status on Number of Insurers. Binscatter with each dot representing 10,000 in population. Plot lines are constructed separately for each side of the discontinuity.

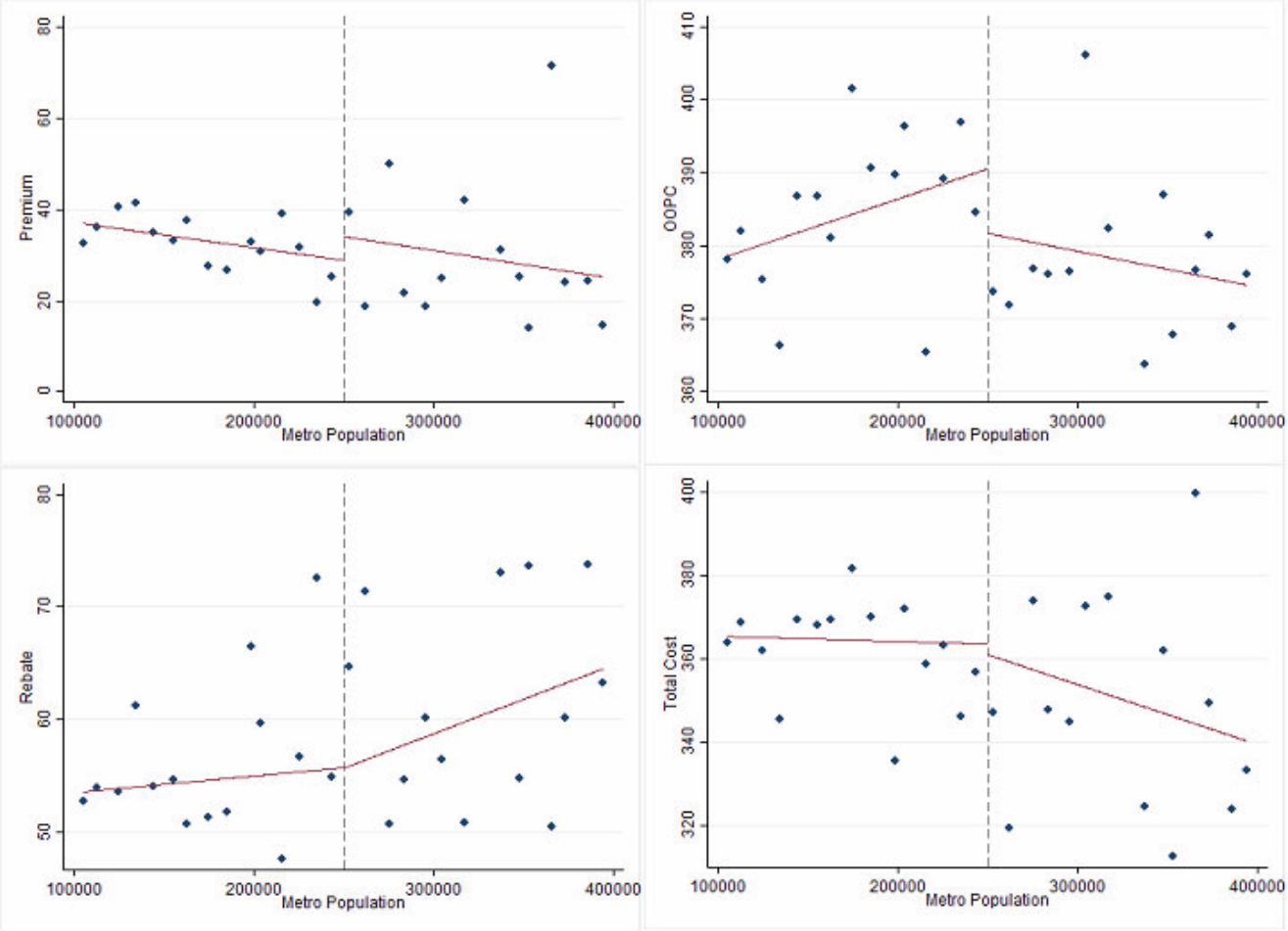


Figure 9: Effect of Urban Status on Plan Financial Characteristics. Binscatter with each dot representing 10,000 in population. Plot lines are constructed separately for each side of the discontinuity

Table 1: Covariate Balance for Full Analytic Sample

	Full Sample		Boundary Analysis			
	Mean	*Std. Dev.*	*Low Side Mean*	*High Side Mean*	*Difference in Means*	*Test of Difference*
County Bnchmk	747	46	714	784	70	51.06
Market Structure						
No of Insurers	6.17	2.64	5.41	7.02	1.61	4.95
HHI Index	3,970	1,634	4,308	3,592	-716	-3.16
MA Share	0.167	0.104	0.128	0.211	0.083	4.93
PFFS Share	0.074	0.049	0.063	0.087	0.024	3.14
PPO Share	0.039	0.040	0.029	0.051	0.022	3.4
HMO Share	0.053	0.080	0.036	0.072	0.036	2.59
Financial Chars						
Drug Cov	0.66	0.20	0.63	0.69	0.06	1.74
Rebate Pmt	55.7	13.1	53.2	58.5	5.3	2.88
Prem	29.0	17.6	30.3	27.5	-2.9	-0.98
OOPC	367.4	27.5	371.6	362.8	-8.8	-1.97
OOPC+ Prem	396.4	31.3	401.9	390.2	-11.7	-2.40
OOPC+Prem-Rebate	348.0	40.3	355.2	340.1	-15.1	-2.56
County Chars						
5 yr FFS	591.7	47.0	590.4	593.2	2.8	0.40
Medicare Enroll	15,666	14,920	12,877	18,795	5,918	3.87
County Pop	97,827	97,344	80,178	117,627	37,449	3.79
Metro Pop	273,234	139,752	160,358	399,873	239,515	16.62
Percent White	88.22	14.15	88.45	87.95	-0.50	-0.23
Percent Black	7.98	13.16	7.13	8.92	1.79	0.83
Percent Hispanic	5.99	10.45	7.07	4.78	-2.29	-1.89
Percent Female (Among 65+)	0.57	0.02	0.57	0.57	0.00	0.81
Personal Income	28,415	4,681	27,935	28,921	986	1.66
Number of Counties	*348*		*184*	*164*		

Notes: Table presents a test for covariate balance between urban and non-urban counties in our sample. The unit of observation is at the county-level, and is aggregated across the 2007-2011 period. All financial measures are inflation-adjusted, and represented in 2007 dollars. We restrict to counties in the baseline analytic sample; this limits to counties in 100-600k metro population range, and with 2007 FFS levels below the lowest floor value. Counties classified as 'High Side' are those in metro areas with populations of 250-600k, while those classified as 'Low Side' have population of 100-250k. The original data is obtained from publicly available CMS files, including enrollment and other data. Rebates are not available for 2011. The original data is aggregated first to a county-year level, while weighing by plan enrollment; subsequently, it is aggregated to a county-level, while weighing all years equally.

Table 2: MA Bid Analysis

	(1)	(2)
	Bid As	
	Fraction of Benchmark	Total Amount
Urban	**0.004**	
	(0.008)	
Instr. County Benchmark		**0.906*** **
		(0.080)
2007 FFS 5yr (in 100s)	0.004	2.538
	(0.003)	(2.351)
Metro Pop (100k)	-0.006	-4.007
	(0.009)	(6.047)
Metro Pop (100k) Sq	0.001	0.496
	(0.001)	(0.783)
Cnty Pop (100k)	0.001	0.759
	(0.003)	(2.327)
Cnty Pop (100k) Sq	-0.001	-0.530
	(0.001)	(0.667)
Counties	Metro 100-600k, & 2007 FFS 5 yr Blw 662	
Mean	0.897	645.25
	(0.034)	(44.73)
N	1,360	1,360
R-squared	0.339	0.815

Notes: Table presents linear regression model; outcome variable include plan bids, represented as fractions of county benchmarks and in absolute monthly terms. The unit of observation is aggregated to the county-year level. The underlying data is from CMS and covers the 2007-2010 period. In our sample construction, we exclude counties whose adjusted FFS level-as of 2007-was above that of the lowest possible floor. Further, we restrict to those counties in the 100-600k metro population band. We include year-level indicators and also control for 5-yr per capita Medicare FFS spending, from 2007. Populations are stated in terms of 100k. Standard errors are clustered at the metro-level.

Table 3: First Stage Regression Results

VARIABLES	(1)	(2)	(3)	(4)
	County Benchmark			
Urban	68.57***	21.81*	-21.23*	0.75
	(2.27)	(11.08)	(12.42)	(9.27)
County Pop (100k)	-1.61	-1.59	-7.97	-6.32
	(1.44)	(4.90)	(7.52)	(4.62)
County Pop (100k) Sq	0.49	0.17	0.59	0.69
	(0.46)	(0.91)	(1.39)	(0.87)
Metro Pop	0.59	1.55	22.04*	12.92
	(2.90)	(13.03)	(12.77)	(10.10)
Metro Pop Sq	-0.09	-0.27	-2.14	-1.35
	(0.36)	(1.54)	(1.67)	(1.28)
2007 FFS 5-yr	0.04***	0.53***	1.02***	1.00***
	(0.01)	(0.13)	(0.06)	(0.04)
FFS Restriction	**Group 1**	**Group 2**	**Group 3**	**Groups 2 & 3**
Observations	1,740	650	490	1,140
R-squared	0.96	0.51	0.77	0.84

Notes: Table presents results of our first-stage regression, a linear model with County-Level Monthly MA Benchmarks as the outcome variable. Benchmark values are inflation-adjusted, and represented in 2007 dollars. The Urban variable serves as the instrument of interest. The unit of observation is at the county-year level, for the 2007-2011 period. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. Year fixed effects are included in the analysis. The county sample is restricted to a variety of FFS cost groupings, with benchmark floors typically binding for Group 1, partially binding for Group 2, and not binding for Group 3. We include year-level indicators and also control for 5-yr per capita Medicare FFS spending, from 2007. Standard errors are clustered at the metro level. The original data is obtained from publicly available CMS files, including enrollment and other data. Note that populations are stated in terms of 100k.

Table 4: Reimbursement Impact: Market Structure and Plan Penetration

VARIABLES	(1) Insurers	(2) HHI	(3) HMO+PPO Sh.	(4) PFFS Sh.	(5) MA Sh.
Mean (Baseline Sample)	*6.49*	*3,907*	*0.097*	*0.068*	*0.166*
Urban	1.78***	-873**	0.071***	0.059***	0.131***
	(0.47)	(370)	(0.019)	(0.013)	(0.023)
2007 FFS 5-yr (100s)	-0.69***	558***	-0.041***	-0.031***	-0.072***
	(0.23)	(187)	(0.015)	(0.008)	(0.015)
N	1,740	1,728	1,740	1,740	1,740
Sample	*Baseline: 100-600k Metros, 2007-2011, 2007 FFS < 662*				
Urban	1.89***	-541	0.070***	0.041**	0.111***
	(0.52)	(373)	(0.021)	(0.016)	(0.026)
2007 FFS 5-yr (100s)	-0.35	486*	-0.034***	-0.021**	-0.054***
	(0.37)	(252)	(0.011)	(0.010)	(0.015)
N	750	739	750	750	750
Sample	*Robustness: 150-350k Metros*				
Urban	1.98***	-29	0.070**	0.026	0.096***
	(0.66)	(503)	(0.028)	(0.022)	(0.030)
2007 FFS 5-yr (100s)	-0.10	421	-0.023	-0.024*	-0.048*
	(0.47)	(361)	(0.017)	(0.014)	(0.024)
N	395	386	395	395	395
Sample	*Robustness: 200-300k Metros*				
Urban*Low	1.53***	-1,087***	0.028	0.019*	0.047*
	(0.46)	(370)	(0.027)	(0.009)	(0.028)
2007 FFS 5-yr (100s)	-0.50**	407***	-0.032**	-0.021***	-0.053***
	(0.21)	(144)	(0.013)	(0.006)	(0.013)
N	2,880	2,855	2,880	2,880	2,880
Sample	*Diff-in-Diff: Comparing Low and High FFS*				
Urban*Post	1.14***	6	0.050***		0.050***
	(0.30)	(506)	(0.017)		(0.017)
2007 FFS 5-yr (100s)	-0.38*	388**	-0.046***		-0.051***
	(0.20)	(187)	(0.016)		(0.013)
N	2,784	2,072	2,784		2,784
Sample	*Diff-in-Diff: Comparing Pre and Post*				

Notes: Table presents linear regression models, where outcome variables are measures of MA market structure. The unit of observation is aggregated at the county-year, for the period specified, with the aggregation weighed by plan enrollment. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. The original data is obtained from publicly available CMS files, including enrollment, landscape, OOPC, and other data. For the baseline sample, we exclude counties whose adjusted FFS level-as of 2007-was above that of the lowest possible floor, and also focus on the 2007 to 2011 post-period. We also restrict to those counties within the specified population band. In one alternate specification shown, we expand the baseline sample to include High FFS counties; in another, we expand the baseline sample to include the pre-2001 period (while still excluding the 2001 to 2006 period). In these alternate specifications, high FFS counties/pre-2001 observations serve as a control group, given that Urban status would not explicitly impact benchmarks for those observations. Prior to 2004, only HMO plans could be offered, meaning that the MA share and HMO+PPO share levels are identical for the pre-period analysis. We include year-level indicators and also control for 5-yr per capita Medicare FFS spending, from 2007. We also include quadratic population controls, for counties as well as metros. Populations are stated in terms of 100k. Standard errors are clustered at the metro-level.

Table 5: Reimbursement Impact: Plan Characteristics

VARIABLES	(1) Premium	(2) Rebate	(3) OOPC	(4) Premium+OOPC-Reb	(5) Drug Coverage
Mean (Baseline Sample)	*31.96*	*54.80*	*364.92*	*348.82*	*0.66*
Urban	-0.88	3.38	-7.02	-8.30	-0.064
	(5.97)	(4.11)	(8.48)	(12.87)	(0.070)
2007 FFS 5-yr (100s)	2.18	-1.00	-9.73**	-7.86	0.106***
	(3.23)	(1.93)	(4.16)	(6.48)	(0.032)
N	1,701	1,360	1,701	1,360	1,701
Sample	*Baseline: 100-600k Metros, 2007-2011, 2007 FFS < 662*				
Urban	1.37	-1.15	2.58	5.80	0.020
	(7.38)	(5.87)	(11.75)	(17.87)	(0.098)
2007 FFS 5-yr (100s)	0.44	2.87	-24.43***	-30.06***	0.099*
	(4.41)	(3.04)	(5.56)	(8.55)	(0.050)
N	711	568	711	568	711
Sample	*Robustness: 150-350k Metros*				
Urban	7.27	5.55	0.40	3.51	-0.050
	(8.07)	(8.58)	(17.98)	(26.67)	(0.147)
2007 FFS 5-yr (100s)	4.20	-2.18	-25.95***	-18.47	0.081
	(4.82)	(4.42)	(7.35)	(11.88)	(0.073)
N	361	288	361	288	361
Sample	*Robustness: 200-300k Metros*				
Urban*Low	6.56	-5.71	1.02	11.2	-0.036
	(6.35)	(6.86)	(8.79)	(17.32)	(0.050)
2007 FFS 5-yr (100s)	-0.81	2.68	-12.38***	-16.40**	0.096***
	(2.74)	(3.22)	(3.95)	(7.79)	(0.025)
N	2,809	2,246	2,809	2,246	2,809
Sample	*Diff-in-Diff: Comparing Low and High FFS*				
Urban*Post	-2.28				0.063
	(7.09)				(0.105)
2007 FFS 5-yr (100s)	0.63				0.091***
	(3.25)				(0.034)
N	1,786	1,360	1,701	1,360	1,786
Sample	*Diff-in-Diff: Comparing Pre and Post*				

Notes: Table presents linear regression models, where outcome variables are measures of the financial characteristics of MA plans. All outcome measures are inflation-adjusted, and represented in 2007 dollars. The unit of observation is aggregated at the county-year, for the period specified, with the aggregation weighed by plan enrollment. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. The original data is obtained from publicly available CMS files, including enrollment, landscape, OOPC, and other data. For the baseline sample, we exclude counties whose adjusted FFS level-as of 2007-was above that of the lowest possible floor, and also focus on the 2007 to 2011 post-period. We also restrict to those counties within the specified population band. In one alternate specification shown, we expand the baseline sample to include High FFS counties; in another, we expand the baseline sample to include the pre-2001 period (while still excluding the 2001 to 2006 period). In these alternate specifications, high FFS counties/pre-2001 observations serve as a control group, given that Urban status would not explicitly impact benchmarks for those observations. Prior to 2004, only HMO plans could be offered, meaning that the MA share and HMO+PPO share levels are identical for the pre-period analysis. We include year-level indicators and also control for 5-yr per capita Medicare FFS spending, from 2007. We also include quadratic population controls, for counties as well as metros. Populations are stated in terms of 100k. Standard errors are clustered at the metro-level.

Table 6: Effect on Insurers

VARIABLES	(1) HMO+PPO Sh.	(2) PFFS Sh.	(3) MA Sh.	(1) Prem	(2) Rebate	(3) OOPC	(4) Prem+ OOPC	(5) Prem+ OOPC-Reb	(6) Drug Cov
Restriction	**Top Insurer by Market Penetration (Humana)**								
Urban	0.008	0.011*	0.018**	-0.50	2.34	-13.83	-14.33*	-13.29**	-0.002
	(0.005)	(0.006)	(0.009)	(3.61)	(1.96)	(9.39)	(8.04)	(6.29)	(0.002)
2007 FFS 5 yr	0.004	-0.008***	-0.004	2.769**	-0.71	-5.34	-2.57	-1.02	0.001
(in 100s)	(0.002)	(0.003)	(0.004)	(1.23)	(0.71)	(3.54)	(3.31)	(2.80)	(0.000)
Mean	0.014	0.024	0.038	30.44	41.34	395.39	425.83	393.23	1.000
	(0.028)	(0.025)	(0.035)	(30.65)	(23.20)	(52.00)	(40.43)	(44.01)	(0.007)
N	1,740	1,740	1,740	1,623	1,316	1,623	1,623	1,316	1,623
Restriction	**Non-Top Insurer by Market Penetration**								
Urban	0.064***	0.048***	0.112***	-0.85	-0.11	-3.05	-3.74	-0.35	-0.007
	(0.020)	(0.011)	(0.023)	(7.24)	(5.75)	(10.19)	(13.57)	(16.88)	(0.086)
2007 FFS 5 yr	-0.045***	-0.023***	-0.068***	3.02	0.50	-13.10***	-10.08*	-13.87*	0.10**
(in 100s)	(0.015)	(0.007)	(0.015)	(3.64)	(2.37)	(4.45)	(5.65)	(7.41)	(0.040)
Mean	0.084	0.044	0.128	32.10	59.17	353.51	385.64	332.06	0.499
	(0.100)	(0.051)	(0.106)	(28.48)	(19.71)	(40.49)	(50.18)	(57.87)	(0.321)
N	1,740	1,740	1,740	1,681	1,344	1,682	1,681	1,344	1,682
Additional FEs	Year								
Counties	Metro 100-600k, FFS 5 yr Under 662 (from 2007)								

Notes: Table presents linear regression models, where outcome variables are measures of MA market structure and the financial characteristics of MA plans. All financial measures are inflation-adjusted, and represented in 2007 dollars. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. In the top panel, the sample is restricted to the MA insurer with the greatest geographic penetration: Humana. The results here capture the impact on MA enrollment across these two insurers, as a share of all Medicare, along with the impact on characteristics of this insurer's plans. In the bottom panel, the sample is restricted to all insurers, excluding Humana, with the results accordingly capturing the impact across non-top insurer. Altogether, these results capture whether pass-through differs across incumbent insurers and new insurer entrants. The unit of observation is aggregated at the county-year, for the period specified, with the aggregation weighed by plan enrollment. For the baseline sample, we exclude counties whose adjusted FFS level-as of 2007-was above that of the lowest possible floor, and also focus on the 2007 to 2011 post-period. We also restrict to those counties within the specified population band. We include year-level indicators and also control for 5-yr per capita Medicare FFS spending, from 2007. We also include quadratic population controls, for counties as well as metros. Populations are stated in terms of 100k. Standard errors are clustered at the metro-level.

Table 7: CAHPS Ratings

	(1) Overall Health Plan	(2) Overall Healthcare	(3) PCP	(4) Specialist Seen	(5) Drug Benefits
Mean (Baseline)	8.39	8.51	9.02	8.9	8.35
Urban	-0.044	-0.177	-0.204**	-0.050	-0.067
	(0.157)	(0.126)	(0.083)	(0.116)	(0.126)
2007 FFS 5-yr (100s)	0.061***	0.010	-0.000	0.003	0.023
	(0.018)	(0.015)	(0.014)	(0.019)	(0.018)
Stand. Treat. Effect			-0.119		
			(.083)		
N	1,657	1,641	1,625	1,545	1,588
Urban*Low	-0.200	-0.146	-0.040	-0.011	0.119
	(0.127)	(0.096)	(0.057)	(0.073)	(0.111)
2007 FFS 5-yr (100s)	0.041**	-0.008	-0.009	0.000	0.012
	(0.017)	(0.014)	(0.012)	(0.019)	(0.017)
Stand. Treat. Effect			-0.065		
			(0.056)		
N	2,607	2,584	2,565	2,455	2,525

Notes: Table presents linear regression models, where outcome variables are enrollee-reported ratings of plan quality. The unit of observation is at the county-year level, for the 2007-2011 period. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. The original data is obtained from CMS, from the CAHPS survey of MA enrollees; while the data was originally at an individual respondent level, we aggregate this data to the county-year level for purposes of our analysis, with each observation weighed equally. We exclude counties whose adjusted FFS level-as of 2007-was above that of the lowest possible floor. Further, we restrict to those counties within the 100-600k metro population band. Plan ratings are coded on a 0-10 scale, while self-reported health ratings are coded on a 1-5 scale; higher corresponds to better. CAHPS survey data only covers plans that are at least a year old. As such, counties that have only new MA plans or no MA plans whatsoever do not appear in the data. We include year-level indicators and also control for 5-yr per capita Medicare FFS spending, from 2007. We also include controls for age categories, race, and gender. In addition, we include quadratic population controls, for counties as well as metros. Populations are stated in terms of 100k. Standard errors are clustered at the metro-level. Standardized treatment effects are calculated consistent with the approach in Kling et al (2007) and Finkelstein et al (2012).

Table 8: CAHPS Utilization and Health

	(1) Specialist Visits	(2) Personal MD Visits	(3) Routine Visits	(4) SRH Overall	(5) SRH Mental Health
Mean (Baseline)	1.66	1.90	2.27	2.92	2.26
Urban	-0.029	0.054	-0.070	0.094	0.121
	(0.080)	(0.110)	(0.121)	(0.081)	(0.084)
2007 FFS 5yr (in 100s)	0.011	0.007	-0.001	-0.012	-0.005
	(0.012)	(0.016)	(0.017)	(0.009)	(0.009)
Stand. Treat. Effect			0.071		
			(0.110)		
N	1,554	1,651	1,661	1,661	1,662
Urban*Low	0.059	0.041	0.084	0.064	-0.020
	(0.050)	(0.094)	(0.085)	(0.066)	(0.061)
2007 FFS 5yr (in 100s)	0.011	0.014	-0.001	-0.004	-0.002
	(0.013)	(0.017)	(0.017)	(0.009)	(0.009)
Stand. Treat Effect			0.020		
			(0.061)		
N	2,467	2,598	2,611	2,612	2,614

Notes: Table presents linear regression models, where outcome variables are enrollee-reported utilization levels and health status. The unit of observation is at the county-year level, for the 2007-2011 period. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. The original data is obtained from CMS, from the CAHPS survey of MA enrollees; while the data was originally at an individual respondent level, we aggregate this data to the county-year level for purposes of our analysis, weighing each observation equally. We exclude counties whose adjusted FFS level-as of 2007-was above that of the lowest possible floor. Further, we restrict to those counties in the 100-600k metro population band. Plan ratings are coded on a 0-10 scale, while self-reported health ratings are coded on a 1-5 scale; higher corresponds to better. CAHPS survey data only covers plans that are at least a year old. As such, counties that have only new MA plans or no MA plans whatsoever do not appear in the data. We include year-level indicators and also control for 5-yr per capita Medicare FFS spending, from 2007. We also include controls for age categories, race, and gender. In addition, we include quadratic population controls, for counties as well as metros. Populations are stated in terms of 100k. Standard errors are clustered at the metro-level. Standardized treatment effects are calculated consistent with the approach in Kling et al (2007) and Finkelstein et al (2012).

Table 9: Advertising Spending in $ per Medicare Beneficiary

	(1)	(2)	(3)	(4)	(5)
Panel A: Health Insurance Products denoted "Medicare" Lines					
% Urban Floor	6.352***	6.971***	5.237**	5.668***	4.440*
	(2.228)	(1.962)	(2.373)	(2.069)	(2.362)
% Urban					2.351
					(2.493)
% Floor					-0.745
					(1.239)
FFS Spending			-1.527	-1.794	-2.311*
			(1.262)	(1.246)	(1.254)
Spot Ad Price, Demeaned		0.0383***		0.0387***	0.0383***
		(0.0130)		(0.0130)	(0.0131)
Observations	840	840	840	840	840
R-squared	0.059	0.127	0.063	0.132	0.134
Panel B: All Health Insurance Products					
% Urban Floor	20.69***	23.13***	16.22**	17.92***	23.60*
	(7.455)	(6.340)	(7.394)	(6.315)	(13.80)
% Urban					-5.572
					(17.73)
% Floor					-3.799
					(3.622)
FFS Spending			-6.126	-7.178*	-7.744**
			(4.082)	(4.079)	(3.817)
Spot Ad Price, Demeaned		0.151***		0.153***	0.154***
		(0.0442)		(0.0452)	(0.0468)
Observations	840	840	840	840	840
R-squared	0.097	0.198	0.102	0.206	0.207

Notes: Table present results of an OLS regression with TV spot advertising expenditures for Medicare insurance products per Medicare beneficiary per year as the dependent variable. All measures are inflation-adjusted, and represented in 2007 dollars. The unit of observation is the DMA-year. The key explanatory variables of interest, % Urban Floor and % Rural Floor are aggregated from the county-level dataset using the same crosswalk provided by Gentzkow and Shapiro (2008). Population controls include a quadratic in metro-area population, and are included in all specifications. Advertising price index is given in SQAD points.

Appendix: For Online Publication

A.1 Theory

This section describes the theoretical framework that informs the empirical specifications and highlights the fact that incidence depends on the degree of competition in the market as well as selection. For simplicity, we consider the case of linear demand. Just as manufacturers face upward sloping supply curves because the last plant location is not as efficient as the first plant location, insurance companies may face upward sloping average cost curves as well. If there is advantageous selection, then the marginal Medicare Advantage consumer is sicker and more costly to insure than the average. The average cost curve for a plan traces out costs from those who value the plan the most to those who value it least. Under advantageous selection, the low cost enrollees have the highest valuation for Medicare Advantage plans. In this case, we should expect a pass-through rate of less than one. As the amount of the subsidy increases, Medicare Advantage penetration rates increase, and sicker consumers begin to enroll in plans. As a result a dollar increase in the subsidy must fund the health costs of the sicker enrollees in addition to providing additional benefits to existing enrollees. Figure A.1 illustrates that incomplete pass-through under advantageous selection into Medicare Advantage policies.[27] Let AC_1 be average costs under initial reimbursement generosity. If generosity increases by some amount m, there is a downward shift in the insurer's average cost curve to AC_2. If demand were completely inelastic, the price would fall from p_1 to $p_1 - m$. However, if demand is not completely inelastic, the price will fall to some intermediate level p_2: the incidence of the increased generosity depends on the relative elasticity of supply (determined by selection) and demand.[28]

Furthermore, various studies (Dafny, 2010, Lustig, 2010, and Starc, 2014) have argued that

[27] We collapse this average out-of-pocket cost to an effective price p and assume no differences in plan quality. We will relax this assumption in the empirical section and explore the relationship between contract generosity and plan quality.

[28] The intuition is reversed if there is adverse selection. Pass-through is greater than one because the increased subsidy serves to internalize part of the asymmetric information problem. If there is relatively little selection (and thus a flat AC curve) and the market for MA plans is perfectly competitive, then virtually all of the additional spending passes through to consumers in the form of a lower premium.

The intuition is reversed if there is adverse selection. Pass-through is greater than one because the increased subsidy serves to internalize part of the asymmetric information problem. If there is relatively little selection (and thus a flat AC curve) and the market for MA plans is perfectly competitive, then virtually all of the additional spending passes through to consumers in the form of a lower premium.

perfect competition is a poor benchmark in insurance markets, and the incidence of the MA subsidy also depends on market structure. Consider pass-through under monopoly. Figure A.2 shows a downward shift of the average cost curve and assumes no selection; the marginal consumer and average consumer are the same. When the monopolist sets price equal to marginal revenue, the decrease in price is smaller than under perfect competition because the marginal revenue curve is steeper than the demand curve. In our example with constant marginal costs, linear demand would imply a pass-through rate of one-half, as the marginal revenue curve is twice as steep as the demand curve. Advantageous selection amplifies this effect. Therefore, both advantageous selection and imperfect competition theoretically reduce pass-through rates. Weyl and Fabinger (2013) expand this analysis to intermediate cases and more flexible models of demand. They find that the less competitive the conduct in a market is, the smaller the pass-through rate.[29]

In addition, more firms may enter as a result of increased plan generosity. If entry is costly, then an increase in government benefits could induce additional firms to enter. This is socially beneficial if the benefits to consumers in the form of increased competition and product variety are greater than the additional fixed costs incurred and the deadweight loss of taxation to fund any increase in Medicare spending. However, if increased generosity spurs excess entry, fixed and marketing expenditures are real economic costs. A model describing the full strategic interaction of imperfectly competitive firms is outside the scope of this paper; however, we can describe the strategic decisions made by insurers.

First, the firm must decide which markets to enter. Second, conditional on being active in a market, they must design insurance products, and then set premiums for those insurance products. Finally, the firm may choose to make ongoing quality investments over the course of the year, and earn variable profits on each policy. If the discounted sum of future variable profits is higher than the fixed cost of entry, the firm enters the market.[30] Therefore, in order to predict firm entry and the associated increase in competitive pressure, we are interested in a comparative static that links

[29] Similarly, Mahoney and Weyl (2013) specifically consider the case of selection markets.

[30] A firm f may have a number of products j in market m. The firms variable profits from that policy can be written as:

$$\pi_{jm} = \sum_i \left(b_m + p_j - c_{ijm}\right) s_{ijm}$$

where b_m is the benchmark (which in practice is adjusted by the individual's risk score), p_{jm} the plan's premium (if any), c_{ijm} the cost of individual i covered by plan j in market m, and s_{ijm} the probability that the same consumer purchases the plan. In order to get firm-level variable profits in a given market, aggregate over all plans within a market offered by the firm and subtract any fixed or sunk cost of entry.

benchmarks to firm variable profits. This comparative static depends on four effects.

The first is the direct effect, where increased benchmarks lead to higher reimbursements for firms. The second is a price effect: for the same vector of bids, an increased benchmark means a lower price for consumers, depending on the pass-through rate.[31] Third, there is a cost effect, where higher benchmarks could change the composition of enrollees. For example, increasing penetration rates may lead to firms attracting sicker consumers, increasing costs, if there is advantageous selection in the market. Finally, there is a market power effect, in which high benchmarks may lead to more entry. As more firms enter, consumers have access to more plans that may prove to be closer substitutes, driving down markups. The overall effect of more generous plan reimbursement is ultimately an empirical question.

A.2 Data

Across all counties nationwide with MA enrollment exceeding ten, the average number of insurers offering an MA plan is 4.0 and the average HHI concentration index is 5,117. These market measures treat PFFS, HMO, and PPO types of Medicare Advantage similarly. In Table A.10, we list the most active insurers in the MA market, based on the number of county-years in which they operate from 2007 through 2011. As Table A.10 shows, Humana is by far the most active MA insurer, in terms of county-years in which it is present (comprising 87 percent of all possible markets) and in terms of the number of enrollees it covers.

The urban payment floor for MA plans, which is 10.5 percent higher than the non-urban payment floor, was introduced in 2001. To the extent that our estimates are capturing a causal effect of this policy, we should detect little relationship between urban status and monthly MA benchmarks in the preceding years. To investigate this issue, we estimate a specification analogous to the first one in Table A.11 for the 1998 through 2000 period with the same sample of group one counties. The results from this specification are summarized in the first column of Table A.11. The point estimate of -4.11 is insignificant and precisely estimated.

We next estimate this same specification using data from the 2001 through 2003 period, the

[31] A higher benchmark need not change the competitive environment or optimal prices; increased benchmarks may simply affect firm profits by increasing quantity, as decreased premiums may increase Medicare penetration rates, and, therefore profits.

period immediately following the increase in MA reimbursement, with the results summarized in the third column of Table A.11. The point estimate for b_2 of 24.69 is precisely estimated though is considerably smaller than the corresponding one estimated for the 2007 through 2011 period. This is primarily because CMS categorized counties somewhat differently during this period, so that many counties with an urban designation after 2003 did not have an urban designation previously. In specification 4 we account for this by adding an indicator variable with the pre-2004 definition. The point estimate for the coefficient on this second indicator variable is approximately twice as large at 49.58.

A.3 Compositional Effects

We do not find evidence of substantial pass-through of higher reimbursements to consumers in the form of either cost-sharing reductions or quality improvements. However, our results could be biased by reimbursement-driven changes to enrollee composition within Medicare Advantage. As we showed in Table 4, urban status leads to a substantial increase in MA enrollment. We proceed by examining whether these MA enrollment increases, under higher reimbursement, are accompanied by compositional changes to underlying enrollment.

Using data from the CAHPS, we once again restrict to counties in the 100,000 to 600,000 metro population range, and with average per-capita FFS expenditures in 2007 of less than $662. We then characterize the demographic and health attributes of enrollees in urban and non-urban counties, respectively. As shown in Table A.13, we do not find substantial differences in age, gender, or race across these two sets of counties. This does not definitively rule out other differences between the marginal and average MA enrollee. That said, we find very little evidence that compositional differences are driving our results on market structure or on the measured quality of MA coverage. In Table A.7, we consider additional metrics of enrollee composition - the average risk score of MA enrollees (which is increasing with patient disease burden) and the average costs of those remaining in FFS. These results also do not provide any evidence of significant changes in enrollee composition as a result of increased reimbursement.

A.4 Tables and Figures

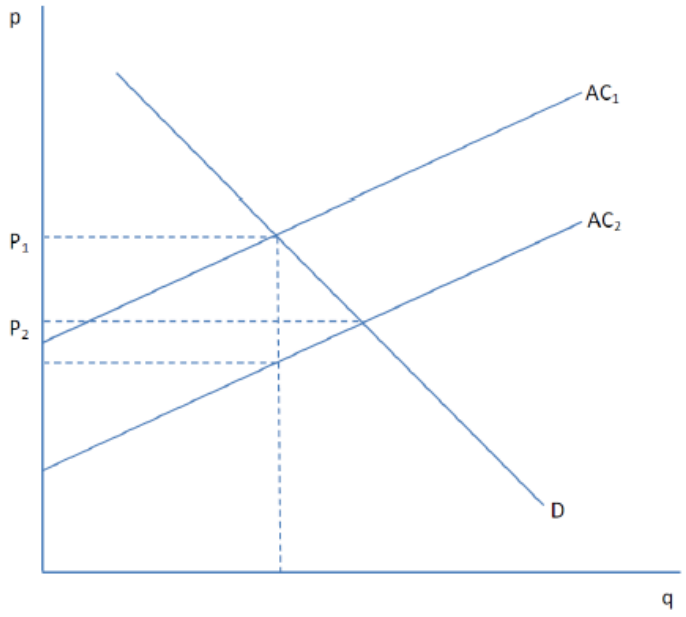


Figure A.1: Pass-Through Under Advantageous Selection

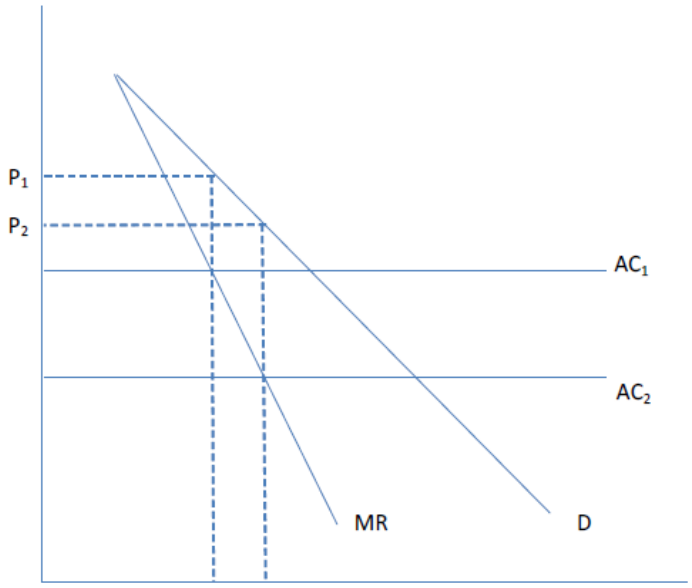


Figure A.2: Pass-Through Under Constant Average Cost and Monopoly

Table A.1: Stability Table

	(1)	(2)	(3)	(4)	(5)
Dep Var.	Insurers	HHI	HMO/PPO Sh.	PFFS Sh.	MA Sh.
Urban	1.64***	-756**	0.068***	0.054***	0.122***
	(0.44)	(324)	(0.021)	(0.013)	(0.024)
Controls	Linear Metro Population				
Urban	1.78***	-873**	0.071***	0.059***	0.131***
	(0.47)	(370)	(0.019)	(0.013)	(0.023)
Controls	Quadratic Metro Population				
Urban	1.61***	-698*	0.051**	0.058***	0.109***
	(0.50)	(398)	(0.022)	(0.015)	(0.026)
Controls	Cubic Metro Population				
Urban	1.74***	-593	0.063***	0.050***	0.112***
	(0.52)	(420)	(0.023)	(0.017)	(0.027)
Controls	Quartic Metro Population				
Urban	1.88***	-494	0.065***	0.034*	0.098***
	(0.51)	(472)	(0.024)	(0.018)	(0.020)
Controls	Spline Metro Population				
Urban	1.48***	-351	0.053**	0.039***	0.092***
	(0.48)	(382)	(0.025)	(0.014)	(0.026)
Controls	Linear Metro Population Trend on Each Side of Discontinuity				
Urban	2.03***	-406	0.077***	0.037**	0.114***
	(0.56)	(414)	(0.025)	(0.018)	(0.022)
Controls	Quadratic Metro Population Trend on Each Side of Discontinuity				
Urban	2.00***	-1,008***	0.074***	0.055***	0.129***
	(0.47)	(370)	(0.020)	(0.013)	(0.023)
Controls	Quadratic Metro Population, Demographic Controls				

Notes: Table presents linear regression models, where outcome variables include measures of MA plan penetration, market structure, and plan financial characteristics, as specified by the column. All financial measures are inflation-adjusted, and represented in 2007 dollars. Each panel presents results using a different type of control. The unit of observation is aggregated at the county-year, for the 2007-2011 period, with aggregation weighed by plan enrollment. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. The original data is obtained from publicly available CMS files, including enrollment, landscape, OOPC, and other data. We exclude counties whose adjusted FFS level-as of 2007-was above that of the lowest possible floor. In addition, we restrict to those counties within the metro population band of 100,000 to 600,000. We include quadratic controls in county and metro-area population. We also control for 2007 per capita Medicare FFS spending, and include year-level indicators. Standard errors are clustered at the metro-area level.

Table A.2: Market Structure Baseline Analysis-Expanded

VARIABLES	(1) Insurers	(2) HHI	(3) HMO+PPO Sh.	(4) PFFS Sh.	(5) MA Sh.
Urban	1.78***	-873**	0.071***	0.059***	0.131***
	(0.47)	(370)	(0.019)	(0.013)	(0.023)
2007 FFS 5yr (in 100s)	-0.69***	558***	-0.041***	-0.031***	-0.072***
	(0.22)	(187)	(0.015)	(0.008)	(0.015)
Metro Pop (100k)	-0.57	435	-0.014	-0.022*	-0.036
	(0.59)	(465)	(0.023)	(0.013)	(0.024)
Metro Pop (100k) Sq	0.05	-38	0.001	0.002	0.003
	(0.09)	(65)	(0.003)	(0.002)	(0.004)
Cnty Pop (100k)	0.37	-574	-0.001	-0.003	-0.004
	(0.49)	(407)	(0.021)	(0.012)	(0.023)
Cnty Pop (100k) Sq	-0.38***	169**	-0.005	-0.001	-0.005
	(0.07)	(77)	(0.004)	(0.002)	(0.003)
Mean	*6.49*	*3,907*	*0.097*	*0.068*	*0.166*
	(3.072)	(1,802)	(0.105)	(0.060)	(0.108)
N	1,740	1,728	1,740	1,740	1,740
R-squared	0.61	0.167	0.303	0.277	0.320

Notes: Table presents linear regression models, where outcome variables are measures of MA market structure and the financial characteristics of MA plans. The unit of observation is aggregated at the county-year, for the 2007-2011 period, with aggregation weighed by plan enrollment. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. The original data is obtained from publicly available CMS files, including enrollment, landscape, OOPC, and other data. We exclude counties whose adjusted FFS level-as of 2007-was above that of the lowest possible floor. Further, we restrict to those counties within the 100-600k metro population band. We include a control for 5-yr per capita Medicare FFS spending, from 2007, and also include year-level indicators. We also include quadratic population controls, for counties as well as metros. Populations are stated in terms of 100k. Standard errors are clustered at the metro-level.

Table A.3: Difference-in-Differences Specifications

	(1) Cnty Benchmark	(2) Insurers	(3) HHI	(4) MA Sh.	(5) Premium	(6) Drug Coverage
Urban*Low	70.326***	1.529***	-1,087***	0.047*	6.561	-0.036
	(8.379)	(0.464)	(370)	(0.028)	(6.355)	(0.050)
Urban	-12.460	-0.529	650*	0.043	-8.735	0.035
	(9.089)	(0.484)	(385)	(0.028)	(7.980)	(0.066)
Low	-27.476***	-0.630	241	-0.062*	-1.725	0.051
	(9.679)	(0.584)	(401)	(0.032)	(6.233)	(0.061)
2007 FFS 5-yr (100s)	30.472***	-0.502**	407***	-0.053***	-0.810	0.096***
	(4.673)	(0.207)	(144)	(0.013)	(2.740)	(0.025)
N	2,880	2,880	2,855	2,880	2,809	2,809
Urban*Post	66.271***	1.136***	6	0.050***	-2.276	0.063
	(4.369)	(0.303)	(506)	(0.017)	(7.094)	(0.105)
Urban	-3.522	0.358	-794	0.053**	1.224	-0.090
	(5.512)	(0.422)	(545)	(0.022)	(8.143)	(0.118)
Post	184.964***	3.014***	-4,017***	0.124***	-29.184***	0.099
	(3.284)	(0.223)	(332)	(0.012)	(5.470)	(0.078)
2007 FFS 5-yr (100s)	15.734***	-0.381*	388**	-0.051***	0.626	0.091***
	(1.924)	(0.204)	(187)	(0.013)	(3.245)	(0.034)
N	2,784	2,784	2,072	2,784	1,786	1,786

Notes: Table presents linear regression models, where outcome variables are measures of MA market structure and the financial characteristics of MA plans. All financial measures are inflation-adjusted, and represented in 2007 dollars. The unit of observation is aggregated at the county-year, for the 2007-2011 period, with aggregation weighed by plan enrollment. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. The original data is obtained from publicly available CMS files, including enrollment, landscape, OOPC, and other data. We exclude counties whose adjusted FFS level-as of 2007-was above that of the lowest possible floor. Further, we restrict to those counties within the 100-600k metro population band. We include a control for 5-yr per capita Medicare FFS spending, from 2007, and also include year-level indicators. We also include quadratic population controls, for counties as well as metros. Populations are stated in terms of 100k. Standard errors are clustered at the metro-level.

Table A.4: Triple Difference

VARIABLES	(1) County Benchmark	(2) Insurers	(3) HHI	(4) MA Sh.	(5) Premium	(6) Drug Cov
Urban*Low FFS*Post	82.127***	1.921***	-1,283	0.065**	14.720	0.056
	(13.751)	(0.651)	(825)	(0.026)	(11.856)	(0.159)
Urban*Post	-16.006	-0.604	1,418**	-0.015	-14.964	0.005
	(12.598)	(0.568)	(643)	(0.020)	(9.521)	(0.117)
Low FFS*Post	-28.403***	0.102	-565	0.034**	-21.934**	-0.013
	(9.226)	(0.351)	(503)	(0.016)	(8.553)	(0.126)
Urban*Low FFS	-20.717	-0.445	156	-0.017	-9.047	-0.085
	(15.093)	(0.457)	(701)	(0.024)	(12.214)	(0.164)
Urban	9.422	0.387	-691	0.047**	8.120	0.030
	(14.363)	(0.420)	(513)	(0.021)	(10.997)	(0.134)
Low FFS	-23.456*	-0.193	632	-0.068***	18.407*	0.084
	(14.108)	(0.372)	(528)	(0.023)	(9.908)	(0.138)
Post	204.410***	3.776***	-3,284***	0.022	-4.965	0.112
	(8.504)	(0.303)	(399)	(0.013)	(6.408)	(0.097)
2007 FFS 5yr (in hundreds)	0.450***	-0.255	177	-0.030***	-0.021	0.089***
	(0.052)	(0.162)	(137)	(0.011)	(2.603)	(0.024)
Metro Pop (100k)	15.713*	-0.274	79	-0.032*	-2.169	0.030
	(8.116)	(0.350)	(299)	(0.019)	(5.702)	(0.061)
Metro Pop (100k) Sq	-1.989*	0.046	-9	0.005*	0.295	-0.002
	(1.102)	(0.050)	(43)	(0.003)	(0.781)	(0.008)
Cnty Pop (100k)	-1.388	0.660***	-631***	0.011	4.603	-0.026
	(4.446)	(0.230)	(205)	(0.013)	(3.496)	(0.025)
Cnty Pop (100k) Sq	0.806	-0.280***	145***	-0.001	-1.518**	0.009*
	(0.933)	(0.047)	(39)	(0.003)	(0.667)	(0.005)
Additional Controls			Year			
Counties			Metro 100-600k			
Mean	668.88	4.270	4,813	0.113	33.880	0.691
	(119.41)	(3.698)	(2,509)	(0.115)	(26.710)	(0.260)
N	4,608	4,608	3,535	4,608	2,975	2,975
R-squared	0.901	0.739	0.424	0.351	0.132	0.134

Notes: Table presents linear regression models, where outcome variables are measures of MA market structure and the financial characteristics of MA plans. All financial measures are inflation-adjusted, and represented in 2007 dollars. The triple interaction of Urban, Low FFS, and Post serves as the key instrument. The unit of observation is aggregated at the county-year, with aggregation weighed by plan enrollment. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. The Post period corresponds to 2007-2011, while Low FFS counties correspond to those with 2007 5-yr FFS below the lowest floor. For counties with 2007 5-yr FFS in between the two floors, we scale the Low FFS coefficient accordingly. The original data is obtained from publicly available CMS files, including enrollment, landscape, OOPC, and other data. The market structure data covers the period from 1998-2000 and 2007-2011; meanwhile, the financial measures are only available for 2000, and 2007-2011. We restrict to counties in metros with population of 100-600k. We include a control for 5-yr per capita Medicare FFS spending, from 2007, and also include year-level indicators. We also include quadratic population controls, for counties as well as metros. Populations are stated in terms of 100k. Standard errors are clustered at the metro-level.

Table A.5: Plan Financial Characteristics Results, Not Weighted by Enrollment

VARIABLES	(1) Premium	(2) OOPC	(3) Premium+OOPC	(4) Rebate	(5) Drug Coverage
Mean (Baseline Sample)	33.29	*362.90*	*396.19*	*53.50*	*0.570*
Urban	0.451	-12.512**	-12.060*	-0.575	-0.010
	(3.512)	(5.843)	(7.175)	(3.552)	(0.050)
2007 FFS 5yr (in 100s)	1.755	-5.876**	-4.121	1.677	0.038**
	(1.689)	(2.588)	(2.943)	(1.201)	(0.019)
N	1,701	1,701	1,701	1,360	1,701
Sample			*Baseline: 100-600k Metros, 2007-2011, 2007 FFS < 662*		
Urban	2.210	-12.946	-10.736	-1.627	-0.013
	(4.414)	(8.356)	(9.835)	(5.508)	(0.062)
2007 FFS 5yr (in 100s)	1.479	-12.743***	-11.264**	3.139	0.031
	(2.464)	(3.619)	(4.482)	(2.232)	(0.039)
N	711	711	711	568	711
Sample			*Robustness: Narrower Bandwidth Sample (150-350k Metros)*		
Urban	6.243	-1.547	4.696	2.903	-0.026
	(6.363)	(13.659)	(15.859)	(8.790)	(0.092)
2007 FFS 5yr (in 100s)	0.683	-12.081**	-11.398**	2.846	-0.012
	(3.012)	(5.099)	(5.517)	(3.444)	(0.050)
N	361	361	361	288	361
Sample			*Robustness: Narrower Bandwidth Sample (200-300k Metros)*		
Urban	0.231	-2.998	-2.767	-1.441	0.045
	(6.200)	(7.172)	(11.374)	(5.216)	(0.050)
2007 FFS 5yr (in 100s)	0.050	-4.753*	-4.703	3.073	0.023*
	(1.746)	(2.709)	(3.898)	(2.151)	(0.012)
N	1,108	1,108	1,108	886	1,108
Sample			*Falsification: High FFS Cnty Sample (2007 FFS > 662)*		

Notes: Table presents linear regression models, where outcome variables are financial characteristics of MA plans. All financial measures are inflation-adjusted, and represented in 2007 dollars. The unit of observation is aggregated at the county-year, for the 2007-2011 period, with the variables NOT weighed by plan enrollment. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. The original data is obtained from publicly available CMS files, including enrollment, landscape, OOPC, and other data. We restrict to counties with associated metro pop of 100-600k. Further, we exclude counties whose adjusted FFS level-as of 2007-was above that of the lowest possible floor. Finally, we restrict to those counties within the specified population band. We include year-level indicators and also control for 5-yr per capita Medicare FFS spending, from 2007. We also include quadratic population controls, for counties as well as metros. Populations are stated in terms of 100k. Standard errors are clustered at the metro-level.

Table A.6: Pass-Through By HHI Quintile

	(1) Premium	(2) Rebate	(3) OOPC	(4) Premium+OOPC-Reb	(5) Drug Coverage
Mean (Baseline Sample)	*31.96*	*54.80*	*364.92*	*348.82*	*0.66*
Urban	-15.36	7.03	-44.30**	-58.683***	0.119
	(15.80)	(6.17)	(17.03)	(21.717)	(0.086)
2007 FFS 5yr (in 100s)	-7.81	5.40	-6.00	-20.071	0.123***
	(11.57)	(4.12)	(7.29)	(12.403)	(0.043)
Observations	348	278	348	278	348
Restriction:				First Quintile	
Urban	0.36	0.08	-7.69	-3.245	-0.041
	(7.35)	(6.54)	(15.75)	(22.970)	(0.107)
2007 FFS 5yr (in 100s)	9.16***	-0.14	-13.44**	-5.842	0.099**
	(3.07)	(2.23)	(5.33)	(7.836)	(0.044)
Obs	338	271	338	271	338
Restriction:				Second Quintile	
Urban	-0.30	11.51*	-3.21	-9.213	-0.289**
	(7.31)	(5.96)	(14.67)	(20.461)	(0.110)
2007 FFS 5yr (in 100s)	3.75	-7.83**	-6.49	7.310	-0.013
	(6.40)	(3.48)	(8.04)	(13.406)	(0.065)
Obs	343	274	343	274	343
Restriction:				Third Quintile	
Urban	14.78*	0.50	-8.80	0.587	0.077
	(8.12)	(8.49)	(19.41)	(28.537)	(0.102)
2007 FFS 5yr (in 100s)	6.10	-3.16	-9.17	-1.179	-0.006
	(5.04)	(5.60)	(11.08)	(18.689)	(0.053)
Obs	333	266	333	266	333
Restriction:				Fourth Quintile	
Urban	-3.34	-8.17	-2.93	9.867	0.078
	(15.82)	(14.35)	(20.40)	(31.257)	(0.217)
2007 FFS 5yr (in 100s)	-11.90*	-0.14	-7.84	-22.905**	0.203**
	(7.01)	(3.74)	(7.85)	(11.018)	(0.086)
Observations	339	271	339	271	339
Restriction:				Fifth Quintile	

Notes: Table presents linear regression models, where outcome variables are financial characteristics of MA plans. The panels present results for different counties, based on the quntile in which their HHI falls. The unit of observation is aggregated at the county-year, for the 2007-2011 period, with the variables weighed by plan enrollment. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. Financial measures are inflation adjusted, and represented in 2007 dollars. The original data is obtained from publicly available CMS files, including enrollment, landscape, OOPC, and other data. We exclude counties whose adjusted FFS level-as of 2007-was above that of the lowest possible floor. Finally, we restrict to those counties with metro pop of 100-600k. We include year-level indicators and also control for 5-yr per capita Medicare FFS spending, from 2007. We also include quadratic population controls, for counties as well as metros. Populations are stated in terms of 100k. Standard errors are clustered at the metro-level.

Table A.7: Additional Metrics

VARIABLES	(1) FFS Costs	(2) Risk Scores	(3)	(4)	(5)	(6)
			Star Ratings			
			Health Outcomes	*Chronic Care Mgmt*	*Cust Service*	*Plan Ratings*
Urban	1.11	0.021	0.147	0.099	-0.061	0.271*
	(14.03)	(0.025)	(0.145)	(0.144)	(0.116)	(0.139)
2007 FFS 5yr (in 100s)		0.065***	0.019	-0.025	0.027	0.029
		(0.009)	(0.026)	(0.025)	(0.026)	(0.026)
Metro Pop (100k)	26.97	0.013	-0.057	-0.035	0.078	-0.184
	(16.79)	(0.009)	(0.159)	(0.142)	(0.126)	(0.148)
Metro Pop (100k) Sq	-3.51	-0.003	0.007	0.001	-0.010	0.020
	(2.21)	(0.002)	(0.023)	(0.019)	(0.018)	(0.019)
Cnty Pop (100k)	7.52	0.005	0.176	0.225*	-0.011	0.054
	(14.81)	(0.029)	(0.129)	(0.121)	(0.075)	(0.141)
Cnty Pop (100k) Sq	2.13	-0.002	-0.037**	-0.028*	0.005	-0.024
	(2.02)	(0.004)	(0.019)	(0.017)	(0.012)	(0.018)
Additional Controls	Year					
Counties	Metro 100-600k, FFS 5 yr Below 662 (from 2007)					
Mean	616.84	0.886	3.147	2.460	3.760	3.300
	(56.14)	(0.081)	(0.570)	(0.570)	(0.630)	(0.580)
N	1,740	1,724	1,270	1,224	1,387	1,394
R-squared	0.11	0.197	0.139	0.281	0.268	0.213

Notes: Table presents linear regression models, where outcome variables include county-year level measures of MA & FFS enrollee composition, along with measures of MA plan quality. These include measures of per capita FFS spending, MA risk scores, as well as plan star ratings. FFS costs are inflation adjusted, and represented in 2007 dollars. The unit of observation is aggregated at the county-year. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. The enrollee composition measures cover the 2007-2011 period, while the star ratings cover 2007-2010. The original data is obtained from publicly available CMS files, including enrollment, star ratings, and other data. We exclude counties whose adjusted FFS level-as of 2007-was below that of the lowest possible floor. We restrict to those counties within the metro population band of 100,000 to 600,000, also as of 2007. We include quadtratic controls in county and metro-area population. We also control for 2007 per capita Medicare FFS spending, and include year-level indicators. Standard errors are clustered at the metro-area level

Table A.8: CAHPS Ratings, 150-350k Sample

	(1) Overall Health Plan	(2) Overall Healthcare	(3) PCP	(4) Specialist Seen	(5) Drug Benefits
Urban	-0.018	0.064	-0.081	0.074	-0.021
	(0.198)	(0.200)	(0.108)	(0.145)	(0.157)
2007 FFS 5yr (in 100s)	0.022	0.042	0.012	0.017	0.038
	(0.033)	(0.046)	(0.020)	(0.030)	(0.026)
Metro Pop (100k)	-0.026	0.295	-0.254	0.450	-0.257
	(0.930)	(0.736)	(0.414)	(0.594)	(0.623)
Metro Pop (100k) Sq	-0.001	-0.089	0.052	-0.111	0.038
	(0.181)	(0.150)	(0.080)	(0.118)	(0.116)
Cnty Pop (100k)	0.068	-0.014	-0.079	0.212	-0.122
	(0.242)	(0.225)	(0.170)	(0.200)	(0.197)
Cnty Pop (100k) Sq	0.029	0.089	0.079	0.003	0.093
	(0.066)	(0.065)	(0.049)	(0.059)	(0.057)
Standarized Treatment Effect			-0.002		
			(0.104)		
Mean	8.41	8.51	9.04	8.88	8.39
	(0.99)	(0.82)	(0.62)	(0.93)	(0.94)
N	650	642	635	598	622
R-squared	0.039	0.037	0.029	0.011	0.044

Notes: Table presents linear regression models, where outcome variables are enrollee-reported levels of plan quality, levels of utilization, and health status. The unit of observation is at the county-year level, for the 2007-2011 period. The original data is obtained from CMS, from the CAHPS survey of MA enrollees; while the data was originally at an individual respondent level, we aggregate this data to the county-year level for purposes of our analysis. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. We exclude counties whose adjusted FFS level-as of 2007-was above that of the lowest possible floor. Finally, we restrict to those counties within the 150-350k population band. We include a control for 2007 per capita Medicare FFS spending and include year-level indicators. We also include quadratic population controls, for counties as well as metros. Populations are stated in terms of 100k. Standard errors are clustered at the metro-level. Standardized treatment effects are calculated consistent with the approach in Kling et al (2007) and Finkelstein et al (2012). All specifications include controls for age categories, race, and gender.

Table A.9: CAHPS Utilization and Health, 150-350k Sample

	(1) Specialist Visits	(2) Personal MD Visits	(3) Routine Visits	(4) SRH Overall	(5) SRH Mental Health
Urban	0.099	-0.111	-0.142	-0.087	0.006
	(0.100)	(0.159)	(0.137)	(0.115)	(0.116)
2007 FFS 5yr (in 100s)	-0.011	-0.042	-0.018	-0.013	0.007
	(0.032)	(0.028)	(0.030)	(0.016)	(0.016)
Metro Pop (100k)	0.237	0.202	0.417	-0.517	-0.267
	(0.394)	(0.597)	(0.597)	(0.426)	(0.453)
Metro Pop (100k) Sq	-0.059	-0.011	-0.060	0.130	0.061
	(0.078)	(0.123)	(0.112)	(0.082)	(0.088)
Cnty Pop (100k)	0.030	-0.206	-0.244	-0.196	0.032
	(0.115)	(0.199)	(0.258)	(0.201)	(0.180)
Cnty Pop (100k) Sq	-0.014	0.043	0.063	0.007	-0.022
	(0.037)	(0.063)	(0.077)	(0.056)	(0.055)
Standardized Treatment Effect			-0.057		
			(0.155)		
Mean	1.70	1.89	2.28	2.93	2.25
	(0.55)	(0.69)	(0.78)	(0.48)	(0.47)
N	602	645	651	652	652
R-squared	0.009	0.038	0.024	0.055	0.016

Notes: Table presents linear regression models, where outcome variables are enrollee-reported levels of plan quality, levels of utilization, and health status. The unit of observation is at the county-year level, for the 2007-2011 period. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. The original data is obtained from CMS, from the CAHPS survey of MA enrollees; while the data was originally at an individual respondent level, we aggregate this data to the county-year level for purposes of our analysis. We exclude counties whose adjusted FFS level-as of 2007-was above that of the lowest possible floor. Finally, we restrict to those counties within the 150-350k metro population band. We include a control for 2007 per capita Medicare FFS spending and include year-level indicators. We also include quadratic population controls, for counties as well as metros. Populations are stated in terms of 100k. Standard errors are clustered at the metro-level. Standardized treatment effects are calculated consistent with the approach in Kling et al (2007) and Finkelstein et al (2012). All specifications include controls for age categories, race, and gender.

Table A.10: Most Active Firms in Markets of Interest

	All	*Sub-Group 1*	*Sub-Group 2*	*Sub-Group 3*
Per Capita 2007 FFS Rest:	**None**	***Below 662***	***Above 662 & Below 732***	***Above 732***
Humana Inc.	12,998	8,094	2,840	2,064
UnitedHealth Group, Inc.	7,146	4,444	1,407	1,295
Universal American Corp.	5,844	3,511	1,356	977
Coventry Health Care Inc.	5,463	3,427	1,121	915
WellPoint, Inc.	5,100	3,303	1,082	715
Aetna Inc.	4,042	1,826	1,077	1,139
XLHealth Corporation	2,099	974	677	448
WellCare Health Plans, Inc.	1,910	980	410	520
Blue Cross Blue Shield of Michigan	1,466	620	425	421
	15,020	**9,430**	**3,160**	**2,430**

Notes: Table presents number of county-year units through which any given firm offers contracts, where enrollment exceeds 10. This analysis extends for the period 2007-2011. The original data is obtained from publicly available CMS files, including contract-county level enrollment data and contract characteristics data.

Table A.11: First Stage Regression Results: Pre-Period

	(1)	(2)	(3)	(4)
VARIABLES	**County Benchmark**			
Urban	-4.11	-4.97	24.69***	1.11
	(7.28)	(7.34)	(5.59)	(1.60)
Pre-2003 Urban		1.82		49.58***
		(4.89)		(1.29)
County Pop (100k)	-4.41	-4.72	7.93***	-0.32
	(4.10)	(4.16)	(2.43)	(0.88)
County Pop (100k) Sq	1.35	1.38	-0.63	0.19
	(1.28)	(1.28)	(0.57)	(0.27)
Metro Pop	5.15	4.98	3.33	-1.15
	(8.36)	(8.36)	(3.57)	(2.08)
Metro Pop Sq	-0.63	-0.62	-0.15	0.15
	(1.11)	(1.10)	(0.55)	(0.26)
2007 FFS 5-yr	0.29***	0.29***	0.07***	0.03***
	(0.03)	(0.03)	(0.02)	(0.01)
FFS Restriction	**Group 1**			
Population Restriction	100-600k Metro Areas			
Year Range	*1998-2000*		*2001-2003*	
Observations	1,044	1,044	1,044	1,044
R-squared	0.41	0.41	0.66	0.94

Notes: Table presents results of our first-stage regression, a linear model with Monthly, County-Level MA Benchmark as the outcome measure; urban serves as the instrument of interest. The unit of observation is at the county-year level, for the period specified. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. The sample is restricted to counties in the 100-600k metro population range, as well as to counties with 2007 FFS levels below the lowest floor value. We include year-level indicators and also control for 5-yr per capita Medicare FFS spending, from 2007. The original data is obtained from publicly available CMS files, including enrollment and other data. Note that populations are stated in terms of 100k.

Table A.12: Summary Statistics: CAHPS Data

	All	100-600k	**100-600k, FFS Blw Floors**	
			Urban	*Non-Urban*
Overall Healthcare Received	8.45	8.49	8.52	8.48
	(0.71)	(0.49)	(0.38)	(0.60)
Primary Care Physician	9.00	9.02	9.03	9.03
	(0.58)	(0.37)	(0.31)	(0.45)
Specialist Physicians Seen	8.85	8.90	8.92	8.89
	(0.79)	(0.50)	(0.32)	(0.69)
Overall Health Plan	8.30	8.34	8.42	8.30
	(0.80)	(0.58)	(0.43)	(0.70)
Prescription Drug Benefits	8.32	8.33	8.40	8.27
	(0.86)	(0.57)	(0.38)	(0.69)
Specialists Seen	1.66	1.70	1.67	1.64
	(0.44)	(0.31)	(0.24)	(0.35)
Visits to Personal MD	2.01	1.97	1.94	1.89
	(0.63)	(0.51)	(0.39)	(0.59)
Visits for Routine Care	2.29	2.33	2.28	2.29
	(0.66)	(0.48)	(0.35)	(0.62)
Self-Reported Overall Health Status	2.96	2.95	2.93	2.94
	(0.41)	(0.31)	(0.26)	(0.37)
Self-Reported Mental Health Status	2.27	2.27	2.27	2.28
	(0.42)	(0.31)	(0.26)	(0.37)
No. Obs	2,923	560	167	195

Notes: This panel presents summaries of self-reported plan ratings, utilization, and outcomes for MA enrollees, across different sets of counties. The unit of aggregation is at the county-year level. The original measures were denoted for each enrollee, per year. The original data is taken from the CAHPS and is originally provided at an individual respondent level. Plan ratings are coded on a 0-10 scale, while self-reported health ratings are coded on a 1-5 scale. CAHPS survey data only covers plans that are at least a year old. As such, counties that have only new MA plans or no MA plans whatsoever do not appear in the data. SRH refers to self-reported health.

Table A.13: MA Enrollment: Demographic Composition Analysis

VARIABLES	(1) Age					(2) Demographics	
	65-74	*75-80*	*81-84*	*85+*	*Unknown*	*White*	*Female*
Urban	0.02	-0.03	-0.00	-0.02	-0.01	0.01	0.01
	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)	(0.04)	(0.02)
2007 FFS 5yr (in 100s)	0.00	0.00	-0.02**	-0.02**	-0.01**	-0.06**	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)	(0.01)
Metro Pop (100k)	-0.04	0.04	0.01	0.03	0.01	-0.01	-0.01
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.05)	(0.03)
Metro Pop (100k) Sq	0.01**	-0.00	-0.00	-0.01*	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
Cnty Pop (100k)	0.00	0.01	0.03**	0.03**	0.01	-0.09**	0.01
	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.05)	(0.02)
Cnty Pop (100k) Sq	-0.00	-0.00	-0.00*	-0.00	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
Additional Controls	**Year**						
Counties	**Metro 100-600k, FFS 5 yr Under 662 (from 2007)**						
Mean	0.296	0.222	0.143	0.104	0.061	0.895	0.535
	(0.196)	(0.158)	(0.128)	(0.115)	(0.094)	(0.190)	(0.186)
N	1,618	1,618	1,618	1,618	1,618	1,618	1,618
R-squared	0.25	0.03	0.11	0.05	0.13	0.04	0.02

Notes: Table presents linear regression models, where outcome variables are enrollee-reported demographic characteristics. The unit of observation is at the county-year level, for the 2007-2011 period. The regression results are weighed inversely with the number of counties in a metro area, such that each metro area is equally represented in the regression. The original data is obtained from CMS, from the CAHPS survey of MA enrollees; while the data was originally at an individual respondent level, we aggregate this data to the county-year level for purposes of our analysis, weighing each observation equally. We exclude counties whose adjusted FFS level-as of 2007-was above that of the lowest possible floor. Further, we restrict to those counties in the 100-600k metro population band. CAHPS survey data only covers plans that are at least a year old. As such, counties that have only new MA plans or no MA plans whatsoever do not appear in the data. We include year-level indicators and also control for 5-yr per capita Medicare FFS spending, from 2007. In addition, we include quadratic population controls, for counties as well as metros. Populations are stated in terms of 100k. Standard errors are clustered at the metro-level.